

Amritsar Smart City Limited
International Competitive Bidding (Single stage two parts)

For

**Performance Based Management Contract for Construction
of Trunk Storm Water Drainage & Allied Works,
Strengthening and Rehabilitation of Sewer Network with
House Connections for Sullage and Defect Liability Period of
1 year followed by Operation & Maintenance Services of the
Entire System for 5 Years at Walled City Amritsar**

Bid Document

Duration: 24 Months

Bid No. ASCL/___/2018-19

November 2018

**Chief Executive Officer,
Amritsar Smart City Limited,
Amritsar**

Bidding Document

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AMRITSAR SMART CITY LIMITED

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DETAILED NOTICE INVITING BID (NIB) No: ___/ASCL/ 2018-19

Amritsar Smart City Limited invites online unconditional tenders under Single Stage Two Cover system are invited through e-procurement portal <https://eproc.punjab.gov.in> from eligible bidders as per criteria mentioned in bid document, for Performance Based Management Contract for Strengthening and Rehabilitation of Sanitary and Storm Sewer Package for ABD area, Amritsar with 1 year of Defect Liability Period followed by O&M of 5 years

Name & Address of the Procuring Entity	Ms. Komal Mittal, Chief Executive Officer Amritsar Smart City Limited, SCO-21, 2nd Floor, B - Block, District Shopping Complex, Ranjit Avenue, Amritsar, Punjab 143001
Subject Matter of Procurement	Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar
Period of completion of physical works	24 months
Bid Procedure	Single-stage: Two Part (envelope) open competitive eBid procedure at https://eproc.punjab.gov.in
Bid Evaluation Criteria (Selection Method)	Least Cost Based Selection
Eligibility Criteria	As detailed in bid documents
Websites for downloading Bidding Document	https://eproc.punjab.gov.in
Fees	Bidding Document Fee (Non-Refundable): Rs.25,000/- (Rupees Twenty Five Thousand only) the same shall be paid online through Net Banking/NEFT/RTGS at portal www.eproc.punjab.gov.in . Tender Processing Fee (Non-Refundable): It will be as per the terms and conditions of the portal and payable online through Net Banking/NEFT/RTGS at portal www.eproc.punjab.gov.in .
Estimated Procurement Cost	INR 1,05,51,33,876/- (Rupees One Hundred Five Crores Fifty One Lakh Thirty Three Thousand, Eight Hundred Seventy Six Only)
Bid Security and Mode of	Amount: INR 1,05,51,340/- (Rupees One Crore Five Lakh Fifty One

Payment	Thousand Three Hundred and Forty Only) Mode of Payment: NEFT/ RTGS/ Net Banking/ Demand Draft/ Bank Guarantee drawn on any Scheduled Commercial Bank as per Bid document.
Period of on-line availability of Bidding Documents (Start/ End Date)	From: X November 2018,11.00 AM onwards till 03:00 PM of X+28 November 2018
Pre-bid Meeting	Date/Time X+11 at 3:00 PM Place: PMIDC office, Chandigarh
Manner, End Date for submission of Bids	Manner: Online at eProc website (http://eproc.punjab.gov.in) End Date: x+28 (upto 04:00P.M.)
Submission of original Banker's Cheque/ Demand Draft/ Bank Guarantee for Bid Security & other documents listed hereinafter	X+28 till 03:00PM
Date & Time of Technical Bid Opening	Date: X+29 Time: 11:00 AM
Date/ Time/ Place of Financial Bid Opening	Will be intimated later to the Technically qualified bidders
Bid Validity	120 days from the bid submission deadline

Note:

1. Bidders (Authorized Signatory) shall submit their offer on-line in Electronic formats both for technical and financial proposal. However, DD/ Banker's Cheque/ BG (if opted for by the bidder) for Bid Security should be submitted physically in original at the office of Amritsar Smart City Limited, Amritsar by time and date mentioned above as prescribed in bid document and scanned copy of same should also be uploaded alongwith the technical Bid/ cover.
2. Any subsequent addendum/ corrigendum shall be published only at <https://eproc.punjab.gov.in>. In case there is a holiday on the day of opening of bids, activities assigned on that date shall be carried out on the next working day.
3. Before electronically submitting the bids, it should be ensured that all the bid documents including conditions of contract are digitally signed by the bidder.
4. Procuring Entity will not be responsible for delay in online submission due to any reason. For this, bidders are requested to upload the complete bid well advance in time so as to avoid 11th hour issues like slow speed; choking of website due to heavy load or any other unforeseen problems.
5. All the prospective bidders are encouraged to participate in the pre-bid meeting and it is advised that the work sites are visited and bid documents are studied thoroughly.
6. The procuring entity reserves the sole right to cancel the bid process and reject any or all of the Bids without assigning any reason.
7. Procurement entity disclaims any factual/ or other errors in the bidding document (the onus is solely

on the individual bidders to verify such information) and the information provided therein are intended only to help the bidders to prepare a logical bid-proposal.

8. **No conditional bids shall be accepted** and such bids shall be summarily rejected forthwith.

**Chief Executive Officer
Amritsar Smart City Limited
Amritsar Punjab**

Section-I: Instructions to Bidders

INSTRUCTION TO BIDDERS

1. General			
1.1	Scope of Bid	1.1.1	In support of the Invitation to Bid indicated in the Bid Data Sheet (BDS), the Procuring Entity as indicated in the BDS, issues this Bidding Document for the procurement of works as named in the BDS and as specified in Section V, Procuring Entity's Requirements.
1.2	Interpretation	1.2.1	<p>Throughout this Bidding Document: the term "in writing" means communicated in written form through letter, fax, e-mail etc. with proof of receipt.</p> <p>If the context so requires, singular means plural and vice versa; and</p> <p>"Day" means calendar day</p>
1.3	Code of Integrity	1.3.1	<p>Any person participating in the procurement process shall -</p> <ul style="list-style-type: none"> i. not offer any bribe, reward or gift or any material benefit either directly or indirectly in exchange for an unfair advantage in procurement process or to otherwise influence the procurement process; ii. not misrepresent or omit that misleads or attempts to mislead so as to obtain a financial or other benefit or avoid an obligation; iii. not indulge in any collusion, bid rigging or anti-competitive behavior to impair the transparency, fairness and progress of the procurement process; iv. not misuse any information shared between the Procuring Entity and the Bidders with an intent to gain unfair advantage in the procurement process; v. impairing or harming or threatening not indulge in any coercion including to do the same, directly or indirectly, to any party or to its property to influence the procurement process; vi. not obstruct any investigation or audit of a procurement process; vii. disclose conflict of interest, if any; and viii. disclose any previous transgressions with any Entity in India or any other country during the last three years or any debarment by any other Procuring Entity.
		1.3.2	<p>Conflict of Interest: A conflict of interest is considered to be a situation in which a party has interests that could improperly influence that party's performance of official duties or responsibilities, contractual obligations, or compliance with applicable laws and regulations.</p> <p>A Bidder may be considered to be in conflict of interest with one or more parties in this bidding process if, including but not limited to:</p> <ul style="list-style-type: none"> i. have controlling partner's/ shareholders in common; or

			<ul style="list-style-type: none"> ii. receive or have received any direct or indirect subsidy from any of them; or iii. have the same legal representative for purposes of this Bid; or iv. have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the Bid of another Bidder, or influence the decisions of the Procuring Entity regarding this bidding process; or v. the Bidder participates in more than one Bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all Bids in which the Bidder is involved. However, this does not limit the inclusion of the same subcontractor, not otherwise participating as a Bidder, in more than one Bid; or vi. the Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the Works that are the subject of the Bid; or vii. the Bidder or any of its affiliates has been hired (or is proposed to be hired) by the Procuring Entity as Engineer-in-charge/consultant for the Contract.
		1.3.3	The Bidder shall have to give a declaration regarding compliance of the Code of Integrity stated above in this Clause along with its Bid, in the format specified in Section IV, Bidding Forms.
		1.3.4	Breach of Code of Integrity by the Bidder:- In case of any breach of the Code of Integrity by a Bidder or prospective Bidder, as the case may be, the Procuring Entity may take appropriate action.
1.4	Eligible Bidders	1.4.1	<p>A Bidder may be a natural person, private Entity, government-owned Entity or, where permitted in the Bidding documents, any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a Joint Venture [JV].</p> <p>In the case of a Joint Venture, all parties to the Joint Venture, shall sign the Bid and they shall be jointly and severally liable; and a Joint Venture shall nominate a representative who shall have the authority to conduct all business for and on behalf of any and all the parties of the Joint Venture during the Bidding process. In the event the Bid of Joint Venture is accepted, either they shall form a registered Joint Venture as company/firm or otherwise all the parties to Joint Venture shall sign the Agreement.</p>
		1.4.2	A Bidder, and all parties constituting the Bidder, shall have the nationality of India. In case of International Competitive Bidding or Joint Venture, the nationality of the Bidder and all parties constituting the Bidder shall be of India or an eligible country declared as such by Government of India. A Bidder shall be deemed to have nationality of a country if the Bidder is a citizen

			or constituted or incorporated, and operates in conformity with the provisions of the Laws of that country. This criterion shall also apply to the determination of the nationality of proposed Sub-Contractors or suppliers for any part of the Contract including related services.
	1.4.3		A Bidder should not have a conflict of interest in the procurement in question as stated in this Bidding document.
	1.4.4		A Bidder debarred by the State/ Central Government/ Ministry/ Department and a Procuring Entity shall not be eligible to participate in any procurement process.
	1.4.5		The Bidder must be experienced as per the criteria mentioned in this document. He shall furnish necessary proof for the same. PSU can participate in tender without registration.
	1.4.6		<p>i. Any change in the constitution of the firm, etc., shall be notified forth with by the Bidder in writing to the Procuring Entity and such change shall not relieve any former partner/ member of the firm, etc from any liability under the Contract.</p> <p>ii. No new partner/ partners shall be accepted in the firm by the Bidder in respect of the contract unless he/ they agree to abide by all its terms, conditions and deposit with the Procuring Entity a written agreement to this effect. The Bidder's receipt for acknowledgement or that of any partners subsequently accepted as above shall bind all of them and will be sufficient discharge for any of the purpose of the Contract.</p> <p>iii. The status of the lead partner/ representative of the Joint Venture as a major stake holder shall not change without the consent of the Procuring Entity. New major stake holder must agree to abide by all terms and conditions of the Contract.</p>
	1.4.7		Bidders shall provide such evidence of their continued eligibility satisfactory to the Procuring Entity, should the Procuring Entity request.
	1.4.8		In case a prequalification or empanelment or registration process has been conducted prior to the bidding process, this bidding shall be open only to the pre-qualified, empanelled or registered Bidders.
	1.4.9		Each Bidder shall submit only one Bid except in case of alternative bids, if permitted.
	1.4.10		<p>Bidder who is not registered under the GST Act prevalent in the State of Punjab can bid, however selected bidder shall have to be got registered with the GST department of the state government and submit the proof of registration before signing the Contract agreement.</p> <p>He is also required to provide proof of Permanent Account Number (PAN) given by Income Tax Department.</p>
2. Contents of Bidding Document			
2.1	Sections of the	2.1.1	The Bidding Document consists of Parts I, II and III, which include

	Bidding Document		<p>all the Sections indicated below, and should be read in conjunction with any Addenda issued in accordance with ITB Clause 2.3 [Amendment of Bidding Document].</p> <p>Part I: Bidding Procedures Section I: Instructions to Bidders (ITB) Section II: Bid Data Sheet (BDS) Section III: Evaluation and Qualification Criteria Section IV: Bidding Forms</p> <p>Part II: Requirements Section V: Procuring Entity's Requirements.</p> <p>Part III: Contract Section VI A: General Conditions of Contract [GCC] Section VI B: Special Conditions of Contract [SCC] Section VI C: Contract Forms</p> <p>Part IV: Bill of Quantities Section VII: Bill of Quantities [BoQ]</p>
	2.1.2		The Invitation for Bids (NIB) issued by the Procuring Entity is also part of the Bidding Document.
	2.1.3		The Bidding Document shall be uploaded on the e-procurement portal, https://eproc.punjab.gov.in alongwith the Notice Inviting Bids. The prospective Bidders may download the bidding document from this portal. The price of the Bidding Document and processing fee of e-bid shall have to be paid by the Bidder in the amount and manner as specified in Bid Data Sheet and e-procurement portal.
	2.1.4		The Procuring Entity is not responsible for the completeness of the Bidding Document and its addenda, if they were not downloaded correctly from the e-procurement portal or the State Public Procurement Portal.
	2.1.5		The Bidder is expected to examine all instructions, forms, terms and specifications in the Bidding Document. Failure to furnish all information or authentic documentation required by the Bidding Document may result in the rejection of the Bid.
2.2	Clarification of Bidding Document and Pre-Bid Conference	2.2.1	The Bidder shall be deemed to have carefully examined the conditions, specifications, size, make and drawings, etc. of the Works and Related Services to be provided. If any Bidder has any doubts as to the meaning of any portion of the conditions or of the specifications, drawings etc., it shall, before submitting the Bid, refer the same to the Procuring Entity and get clarifications. A Bidder requiring any clarification of the Bidding Document shall contact the Procuring Entity in writing or e-mail at the Procuring Entity's address indicated in the BDS. The Procuring Entity will respond in writing or e-mail to any request for clarification, within seven days provided that such request is received no later than Fouteen (14) days prior to the deadline for submission of Bids as specified in ITB Sub-Clause 4.2.1[Deadline for Submission of Bids]. The clarification issued, including a description of the inquiry but

			without identifying its source shall be placed on the e Procurement Portal and should the Procuring Entity deem it necessary to amend the Bidding Document as a result of a clarification, it shall do so following the procedure under ITB Clause 2.3 [Amendment of Bidding Document] through an addendum which shall form part of the Bidding Document
		2.2.2	The Bidder or his authorized representative is invited to attend the Pre-Bid Conference, if provided for in the BDS. The purpose of the Pre-Bid Conference will be to clarify issues and to answer questions on any matter related to this procurement that may be raised at that stage. If required, a site visit may be arranged by the Procuring Entity.
		2.2.3	The Bidder is requested, to submit questions in writing, to reach the Procuring Entity not later than one week before the date of Pre-Bid Conference.
		2.2.4	The text of the questions raised, and the responses given, without identifying the source, shall be placed on the e-procurement portal. Any modification to the Bidding Document that may become necessary as a result of the Pre-Bid Conference shall be made by the Procuring Entity exclusively through the issue of an addendum (part of Bid document) and not through the minutes of the Pre-Bid Conference.
		2.2.5	At any time prior to the deadline for submission of the Bids, the Procuring Entity, suo motto, may also amend the Bidding Document, if required, by issuing an addenda which will form part of the Bidding Document.
		2.2.6	Non-attendance at the Pre-Bid Conference will not be a cause for disqualification of a Bidder.
2.3	Amendment of Bidding Document	2.3.1	Any corrigendum/ addendum issued shall be part of the Bidding Document and shall be uploaded on the e-procurement portal.
		2.3.2	To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Procuring Entity may, at its discretion, extend the deadline for the submission of the Bids, pursuant to ITB Sub-Clause 4.2 [Deadline for Submission of Bids], under due publication on the e-procurement portal.
3. Preparation of Bids			
3.1	Cost of Bidding	3.1.1	The Bidder shall bear all costs associated with the preparation and submission of its Bid, and the Procuring Entity shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
		3.1.2	<p>The Bidder shall furnish the scanned self attested with date copies of following documents with its Bid:</p> <ul style="list-style-type: none"> i. Partnership Deed and valid registration certificate with the Registrar of Firms in case of Partnership Firms. Duly notarised Power of Attorney in favour of the partner signing/submitting the Bid, authorizing him to represent all partners of the firm. ii. GST registration certificate and GST clearance certificate from the concerned Department and Permanent Account Number (PAN) given by the Income Tax Department. iii. Address of residence and office, telephone numbers, e-mail

			<p>iv. address in case of sole Proprietorship.</p> <p>v. Certificate of Registration and Memorandum of Association issued by Registrar of Companies in case of a registered company and in case of any other statutory or registered body, certificate of incorporation or registration issued by concerned authorities. Board Resolution/ Power of Attorney in favour of the person signing the Bid (as applicable).</p> <p>v. Where permitted to bid as Joint Venture, letter of formal intent to enter into an agreement or an existing agreement in the form of a Joint Venture.</p>
3.2	Language of Bid	3.2.1	The Bid, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and the Procuring Entity, shall be written in English or a language specified in the BDS. Supporting documents and printed literature that are part of the Bid may be in another language provided they are accompanied by an accurate translation of the relevant passages duly accepted by the Bidder in English or the language specified in the BDS, in which case, for purposes of interpretation of the Bid, such translation shall govern.
3.3	Documents Comprising the Bid	3.3.1	The Bid shall comprise of two covers, one containing the Technical Bid/ Proposal and the other the Financial or Price Bid/ Proposal.
		3.3.2	<p>The Technical Bid/ Proposal shall contain the following:</p> <ul style="list-style-type: none"> i. Technical Bid/ Proposal Submission Sheet and Technical Bid containing the filled-up Bidding Forms and Declarations related to Technical Bid; ii. proof of payment of price of Bidding Document, processing fee, Bid Security, in accordance with ITB Clause 3.10; iii. written confirmation authorizing the signatory of the Bid to bind the Bidder, in accordance with ITB Clause 3.11; iv. documentary evidence in accordance with ITB Clause 3.7 establishing the Bidder's eligibility to bid; v. documentary evidence in accordance with ITB Clause 3.8 establishing the Bidder's qualifications to perform the contract if its Bid is accepted; vi. Drawings/ designs in support of the Works to be executed (if any); vii. Declaration that bidder has read and understood the terms and conditions in the NIT; viii. any other document required in the BDS; and ix. others considered necessary to strengthen the Bid submitted.
		3.3.3	<p>The Financial Bid/ Price Proposal shall contain the following:</p> <ul style="list-style-type: none"> i. Financial Bid/ Price Proposal Submission Sheet and the applicable Price Schedules, in accordance with ITB Clauses 3.4, 3.5; ii. Any other document required in the BDS.
3.4	Bid Submission Sheets and Price Schedules	3.4.1	The Bidder shall submit the Technical Bid and Financial Bid using the Bid Submission Sheets provided in Section IV [Bidding Forms]. These forms must be completed without any alterations to their format, and no substitutes shall be accepted. All blank spaces shall be filled in with the information requested.

		3.4.2	The Bidder shall submit as part of the Financial Bid, the Price Schedules for Works, using the forms provided in Section IV [Bidding Forms].
3.5	Bid Prices	3.5.1	<p>i. In case of Item Rate Contracts, the Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by the Bidder will not be paid for by the Procuring Entity but will have to be executed and shall be deemed to have been covered by the rates for other items and prices in the Bill of Quantities.</p> <p>ii. In case of Percentage Rate Contracts, combined single percentage above or below must be quoted by the Bidder for all items of the Bill of Quantities.</p> <p>iii. In case of Lump Sum Contracts, only Total Price which the Bidder wants to charge for the entire Works with all its contingencies in accordance with drawings and specifications shall be quoted by the Bidder. A Schedule of Rates shall be specified in the Bid Data Sheet in order to regulate the amount to be added to or deducted from the fixed sum on account of additions and alterations not covered by the Contract. Payments shall be linked to various stages of completion of the Works specified in Activity Schedule given in Bid Data Sheet.</p>
		3.5.2	Prices quoted by the Bidder shall be fixed during the Bidder's Performance of the Contract and not subject to variation on any account, unless otherwise specified in the BDS. A Bid submitted with an adjustable price quotation shall be treated as non-responsive and shall be rejected, pursuant to ITB Clause 5.7 [Responsiveness of Bids]. However, if in accordance with the BDS, prices quoted by the Bidder shall be subject to adjustment during the performance of the Contract, a Bid submitted with a fixed price quotation shall not be rejected, but the price adjustment shall be treated as zero.
		3.5.3	<p>The rates quoted by the Contractor shall be deemed to be inclusive of all the taxes (including GST), levies, etc. including their variations as notified by the concerned authority from time to time and also of all the new taxes and levies that may be imposed that the Contractor will have to pay for the performance of this Contract. The Engineer on behalf of the Employer will perform such duties in regard to the deduction of such taxes at source as per applicable law.</p> <p>Nothing in the Contract shall relieve the Contractor from its responsibility to pay any tax that may be levied in India on profits made or otherwise by it in respect of the Contract.</p> <p>The Contractor shall comply with the proper bye-laws and legal orders of the local body or public authority under the jurisdiction of which the work is executed and pay all fees and charges for which he may be liable. Nothing extra shall be payable on this account.</p>
3.6	Currencies of Bid	3.6.1	The unit rates and the prices shall be quoted by the Bidder entirely in Indian Rupees unless otherwise specified in BDS. All

			payments shall be made in Indian Rupees only, unless otherwise specified in the BDS.
3.7	Documents Establishing the Eligibility of the Bidder	3.7.1	<p>To establish their eligibility in accordance with ITB Clause 1.4 [Eligible Bidders], Bidders shall complete the eligibility declarations in the Bid Submission Sheet and Declaration Form included in Section IV [Bidding Forms].</p> <p>If the Bidder is an existing or intended Joint Venture [JV] in accordance with ITB Sub-Clause 1.4.1, it shall submit a copy of the Agreement, or a letter of intent to enter into such Agreement. The respective document shall be signed by all legally authorized signatories of all the parties to the existing or intended JV, and the existing or intended JV shall authorize an individual/partner in one of the firms as lead partner of the JV to act and commit all the partners of JV for the Bid.</p>
3.8	Documents Establishing the Qualifications of the Bidder	3.8.1	To establish its qualifications to perform the Contract, the Bidder shall submit as part of its Technical Proposal the documentary evidence indicated for each qualification criteria specified in Section III, [Evaluation and Qualification Criteria].
3.9	Period of Validity of Bids	3.9.1	Bids shall remain valid for 120 days or the period specified in the BDS after the Bid submission deadline date as specified by the Procuring Entity. A Bid valid for a shorter period shall be rejected by the Procuring Entity as non-responsive.
		3.9.2	In exceptional circumstances, prior to the expiration of the Bid validity period, the Procuring Entity may request Bidders to extend the period of validity of their Bids. The request and the responses shall be made in writing. The Bid Security or a Bid Securing Declaration in accordance with ITB Clause 3.10 [Bid Security] shall also be got extended for thirty days beyond the dead line of the extended validity period. A Bidder may refuse the request without forfeiting its Bid Security or a Bid Securing Declaration. A Bidder granting the request shall not be permitted to modify its Bid.
3.10	Bid Security	3.10.1	Unless otherwise specified in the BDS, the Bidder shall furnish as part of its Bid, a Bid Security for the amount specified in the BDS.
		3.10.2	Bid Security shall be 1% of the value of the Works indicated in the NIB. The bid security shall be in Indian Rupees, if not otherwise specified in the BDS.
		3.10.3	The Bid Security may be deposited through RTGS/ NEFT/ Net Banking or given in the form of a banker's Cheque or Demand Draft or Bank Guarantee of a Scheduled Bank in India, in specified format.
		3.10.4	Scanned copy of Bid Security instrument shall necessarily accompany the sealed Bid. Any Bid not accompanied by Bid Security, if not exempted, shall be liable to be rejected.
		3.10.5	Bid Security of a Bidder lying with the Procuring Entity in respect of other Bids awaiting decision shall not be adjusted towards Bid Security for this Bid.
			No interest shall be payable by anyone on the Bid Security.
		3.10.6	The issuer of the Bid Security and the confirmers, if any, of the Bid Security, as well as the form and terms of the Bid Security, must

		be acceptable to the Procuring Entity.
	3.10.7	Prior to submitting its Bid, a Bidder may request the Procuring Entity to confirm the acceptability of a proposed issuer of a Bid Security or of a proposed confirmor, if different than as specified in ITB Clause 3.10.3. The Procuring Entity shall respond promptly to such a request.
	3.10.8	The Bank Guarantee presented as Bid Security shall be got confirmed from the concerned issuing bank. However, the confirmation of the acceptability of a proposed issuer or of any proposed confirmor does not preclude the Procuring Entity from rejecting the Bid Security on the ground that the issuer or the confirmor, as the case may be, has become insolvent or is under liquidation or has otherwise ceased to be creditworthy.
	3.10.9	<p>The Bid Security of unsuccessful Bidders shall be refunded as per the policy of the eprocurement portal. The procuring entity shall not be responsible for any delay on the part of eprocurement portal in refunding the Bid Security.</p> <p>In case of Bid Security submitted in form of Demand Draft/ Bank Guarantee/ Fixed Deposit, Bid Security shall be refunded soon after final acceptance of successful Bid and signing of Contract Agreement and submitting Performance Security by successful Bidder pursuant to ITB Clause 6.4 [Performance Security].</p>
	3.10.10	<p>The Bid Security taken from a Bidder shall be forfeited in the following cases, namely:</p> <ul style="list-style-type: none"> i. When the Bidder withdraws or modifies or substitutes his Bid after submission of the bid and during the bid validity period; or ii. When the Bidder does not execute the agreement in accordance with ITB Clause 6.3 [Signing of Contract] after issue of letter of acceptance/ placement of Work order within the specified time period; or iii. When the Bidder fails to commence the Works as per Work Order within the time specified; or iv. When the Bidder does not deposit the Performance Security in accordance with ITB Clause 6.4 [Performance Security]; in the prescribed time limit after the work order is placed; or v. If the Bidder breaches any provision of the Code of Integrity as specified in ITB Clause 1.3 [Code of Integrity]; or vi. If the Bidder does not accept the correction of its Bid Price pursuant to ITB Sub-Clause 5.5 [Correction of Arithmetical Errors].
	3.10.11	In case of the successful bidder, the amount of Bid Security may be adjusted in arriving at the amount of the Performance Security, or refunded if the successful bidder furnishes the full amount of Performance Security. No interest will be paid by the Procuring Entity on the amount of Bid Security.
	3.10.12	The Procuring Entity shall promptly refund (in case of Bid Security submitted in form of DD/ Bank Guarantee) the Bid Security of the

			Bidders at the earliest of any of the following events, namely: i. The expiry of validity of Bid Security; or ii. The execution of agreement for procurement and Performance Security is furnished by the successful bidder; iii. The cancellation of the procurement process; or iv. The withdrawal of Bid prior to the deadline for presenting Bids, unless the Bidding Document stipulates that no such withdrawal is permitted.
		3.10.13	The Bid Security of a Joint Venture, must be in the name of the Joint Venture that submits the Bid. If the Joint Venture has not been legally constituted at the time of Bidding, the members of the proposed JV shall enter in to an Agreement to form a legally constituted JV after the issue of Letter of Acceptance / Letter of Intent to them and also declare a partner as the lead partner in whose name the Bid Security may be submitted.
3.11	Format and Signing of Bid	3.11.1	All the documents forming part of the Technical and Financial Bid shall be digitally signed by the Bidder or authorized signatory on behalf of the Bidder. This authorization shall consist of a written confirmation as specified in the BDS and shall be attached to the Bid. In case of a Joint Venture, if the Joint Venture has not been legally constituted at the time of Bidding, all the members of the proposed Joint Venture shall digitally sign the Bid.
4. Submission and Opening of Bids			
4.1	Sealing and Marking of Bids	4.1.1	Bidders shall submit their Bids to the Procuring Entity electronically only on the e-procurement portal. In submission of their Bids, the Bidders should follow the step by step instructions given on the e-procurement portal.
		4.1.2	The Bidder shall enclose the Technical Bid and the Financial Bid in separate covers. The proof of payment of price of Bidding Document, processing fee and Bid Security shall be enclosed in third cover. The price of Bidding Document, processing fee and Bid Security shall be paid in the name of the Procuring Entity.
4.2	Deadline for Submission of Bids	4.2.1	Bids shall be submitted electronically only upto the time and date specified in the Notice Inviting Bids and BDS or an extension issued thereof.
4.3	Withdrawal, Substitution and Modification of Bids	4.3.1	A Bidder may withdraw, substitute or modify its Bid after it has been submitted by submitting electronically on the e-procurement portal a written Withdrawal/ Substitutions/ Modifications etc. Notice on the e-procurement portal, duly digitally signed by the Bidder or his authorized representative, and shall include a copy of the authorization in accordance with ITB Sub-Clause 3.11.1 [Format and Signing of Bid]. The corresponding Withdrawal, Substitution or Modification of the Bid must accompany the respective written Notice. All Notices must be received by the Procuring Entity on the e-procurement portal prior to the deadline specified for submission of Bids in accordance with ITB Sub-Clause 4.2. [Deadline for Submission of Bids].
		4.3.2	No Bid shall be withdrawn, substituted or modified in the interval

			between the deadline for submission of the Bid and the expiration of the period of Bid validity specified in ITB Clause 3.9.[Period of Validity of Bids] or any extension thereof.
4.4	Bid Opening	4.4.1	The electronic Technical Bids shall be opened by the Bids Opening Committee constituted by the Procuring Entity at the time, date and place specified in the Bid Data Sheet in the presence of the Bidders or their authorized representatives, who choose to be present.
		4.4.2	The Bids Opening Committee may co-opt experienced persons in the committee to conduct the process of Bid opening.
		4.4.3	The Bidders may choose to witness the electronic Bid opening procedure online.
		4.4.4	The Financial Bids shall be kept unopened until the time of opening of the Financial Bids. The date, time, and location of electronic opening of the Financial Bids shall be intimated to the bidders who are found qualified by the Procuring Entity in evaluation of their Technical Bids.
		4.4.5	The Bids Opening Committee shall prepare a list of the Bidders or their representatives attending the opening of Bids and obtain their signatures on the same. The list shall also contain the representative's name and telephone number and corresponding Bidders' names and addresses. The Authority Letters brought by the representatives shall be attached to the list. The list shall be signed by all the members of Bids Opening Committee with date and time of opening of the Bids.
		4.4.6	Only the Technical Bids are to be opened, read out, and recorded at the opening. Financial Bids will remain unopened in accordance with ITB Sub-Clause 4.4.4.
		4.4.7	<p>All other covers containing the Technical Bids shall be opened one at a time and the following read out and recorded:</p> <ul style="list-style-type: none"> i. The name of the Bidder; ii. Whether there is a modification or substitution; iii. Whether proof of payment of Bid Security, payment of price of the Bidding Document and processing fee have been enclosed; iv. Any other details as the Bids Opening Committee may consider appropriate. <p>After all the Bids have been opened, their hard copies shall be printed and shall be initialed and dated on the first page and other important papers of each Bid by the members of the Bids opening committee.</p>
		4.4.8	Only Technical Bids shall be read out and recorded at the bid opening and shall be considered for evaluation. No Bid shall be rejected at the time of opening of Technical Bids except Alternative Bids (if not permitted) and Bids not accompanied with the proof of payment of the required price of Bidding Document, processing fee and Bid Security.
		4.4.9	The Bids Opening Committee shall prepare a record of opening of

			Technical Bids that shall include, as a minimum: the name of the Bidder and any conditions put by Bidder and the presence or absence of the price of Bidding Document, processing fee and Bid Security. The Bidders or their representatives, who are present, shall sign the record. The members of the Bids Opening Committee shall also sign the record with date.
	4.4.10		After completion of the evaluation of the Technical Bids, the Procuring Entity shall invite Bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified to attend the electronic opening of the Financial Bids. The date, time, and location of the opening of Financial Bids will be intimated in writing by the Procuring Entity. Bidders shall be given reasonable notice of the opening of Financial Bids.
	4.4.11		The Procuring Entity shall notify Bidders in writing whose Technical Bids have been rejected on the grounds of being substantially non-responsive and not qualified in accordance with the requirements of the Bidding Document.
	4.4.12		The Bids Opening Committee shall conduct the electronic opening of Financial Bids of all Bidders who submitted substantially responsive Technical Bids and have qualified in evaluation of Technical Bids, in the presence of Bidders or their representatives who choose to be present at the address, date and time specified by the Procuring Entity.
	4.4.13		<p>All covers containing the Financial Bids shall be opened one at a time and the following read out and recorded:</p> <ul style="list-style-type: none"> i. The name of the Bidder; ii. Whether there is a modification or substitution; iii. The Bid Prices; iv. Any other details as the Bids opening committee may consider appropriate. <p>After all the Bids have been opened, their hard copies shall be printed and shall be initialed and dated on the first page of the each Bid by the members of the Bids Opening Committee. All the pages of the Price Schedule and letters, Bill of Quantities attached shall be initialed and dated by the members of the committee. Key information such as prices, completion period, etc. shall be encircled and unfilled spaces in the Bids shall be marked and signed with date by the members of the Bids Opening Committee.</p>
	4.4.14		The Bids Opening Committee shall prepare a record of opening of Financial Bids that shall include as a minimum: the name of the Bidder, the Bid Price, any conditions, any discounts and alternative offers (if they were permitted). The Bidders or their representatives, who are present, shall sign the record. The members of the Bids opening committee shall also sign the record with date.
5. Evaluation and Comparison of Bids			
5.1	Confidentiality	5.1.1	Information relating to the examination, evaluation, comparison, and post-qualification of Bids, and recommendation of contract

			award, shall not be disclosed to Bidders or any other persons not officially concerned with such process until information on Contract award is communicated to all Bidders.
		5.1.2	Any attempt by a Bidder to influence the Procuring Entity in its examination of qualification, evaluation, comparison of the Bids or Contract award decisions, may result in the rejection of its Bid, in addition to the legal action which may be taken by the Procuring Entity.
		5.1.3	Notwithstanding ITB Sub-Clause 5.1.2 [Confidentiality], from the time of opening the Bid to the time of Contract award, if any Bidder wishes to contact the Procuring Entity on any matter related to the Bidding process, it shall do so in writing.
		5.1.4	The Procuring Entity, while procuring a subject matter of such nature which requires the procuring Entity to maintain confidentiality, may impose condition for protecting confidentiality of such information.
5.2	Clarification of Technical or Financial Bids	5.2.1	To assist in the examination, evaluation, comparison and qualification of the Technical or Financial Bids, the Bid Evaluation Committee may, at its discretion, ask any Bidder for a clarification regarding his Bid. The Committee's request for clarification and the response of the Bidder shall be in writing.
		5.2.2	Any clarification submitted by a Bidder with regard to his Bid that is not in response to a request by the Bid Evaluation Committee shall not be considered.
		5.2.3	No change in the prices or substance of the Bid shall be sought, offered, or permitted, except to confirm the correction of arithmetical errors discovered by the Bid evaluation committee in the evaluation of the financial Bids.
		5.2.4	No substantive change to qualification information or to a submission, including changes aimed at making an unqualified Bidder, qualified or an unresponsive submission, responsive shall be sought, offered or permitted.
5.3	Deviations, Reservations and Omissions in Technical or Financial Bids	5.3.1	<p>During the evaluation of Technical or Financial Bids, the following definitions apply:</p> <ul style="list-style-type: none"> i. “Deviation” is a departure from the requirements specified in the Bidding Document; ii. “Reservation” is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document; and iii. “Omission” is the failure to submit part or all of the information or documentation required in the Bidding Document.
5.4	Nonmaterial non-conformities in Technical or Financial Bids	5.4.1	Provided that a Technical or Financial Bid is substantially responsive, the Procuring Entity may waive any non-conformities (with recorded reasons) in the Bid that do not constitute a material deviation, reservation or omission.
		5.4.2	Provided that a Technical or Financial Bid is substantially responsive, the Procuring Entity may request the Bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial non-conformities or omissions in the Bid related to documentation

			requirements. Request for information or documentation on such nonconformities shall not be related to any aspect of the Financial Proposal of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.
		5.4.3	Provided that a Technical or Financial Bid is substantially responsive, the Procuring Entity will rectify nonmaterial nonconformities or omissions (with recorded reasons). To this effect, the Bid Price shall be adjusted during evaluation of Financial Proposals for comparison purposes only, to reflect the price of the missing or non-conforming item or component. The adjustment shall be made using the method indicated in Section III, Evaluation and Qualification Criteria.
5.5	Correction of Arithmetical Errors in Financial Bid	5.5.1	<p>Provided that a Financial Bid is substantially responsive, the Bid Evaluation Committee shall correct arithmetical errors during evaluation of Financial Bid on the following basis:</p> <ul style="list-style-type: none"> i. if there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected, unless in the opinion of the Procuring Entity there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected; ii. if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and iii. if there is a discrepancy between words and figures, the amount in words shall prevail, unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail subject to (i) and (ii) above.
		5.5.2	If the Bidder that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be disqualified and its Bid Security shall be forfeited or its Bid Securing Declaration shall be executed.
5.6	Preliminary Examination of Technical or Financial Bids	5.6.1	The Procuring Entity shall examine the Technical or Financial Bids to confirm that all documents and technical documentation requested in ITB Sub-Clause 3.3 [Documents Comprising the Bid] have been provided, and to determine the completeness of each document submitted.
		5.6.2	<p>The Procuring Entity shall confirm, following the opening of the Technical or Financial Bids, that the following documents and information have been provided:</p> <ul style="list-style-type: none"> i. Bid is signed, as per the requirements listed in the Bidding documents; ii. Bid has been sealed as per instructions provided in the Bidding documents; iii. Bid is valid for the period, specified in the Bidding documents; iv. Bid is accompanied by Bid Security; v. Bid is unconditional and the Bidder has agreed to give the

			<p>required performance Security;</p> <ul style="list-style-type: none"> vi. Price Schedules in the Financial Bids are in accordance with ITB Clause 3.4 [Bid Submission Sheets and Price Schedules]; vii. written confirmation of authorization to bind the Bidder; and viii. other conditions, as specified in the Bidding Document are fulfilled.
5.7	Responsiveness of Technical or Financial Bids	5.7.1	The Procuring Entity's determination of the responsiveness of a Technical or Financial Bid is to be based on the contents of the Bid itself, as defined in ITB Sub-Clause 3.3 [Documents Comprising the Bid].
		5.7.2	<p>A substantially responsive Technical or Financial Bid is one that meets without material deviation, reservation, or omission to all the terms, conditions, and specifications of the Bidding Document. A material deviation, reservation, or omission is one that:</p> <ul style="list-style-type: none"> a) if accepted, would- <ul style="list-style-type: none"> i. affect in any substantial way the scope, quality, or performance of the Works specified in Section V, Procuring Entity's Requirement; or ii. limits in any substantial way, inconsistent with the Bidding Document, the Procuring Entity's rights or the Bidder's obligations under the proposed Contract; or b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.
		5.7.3	The Procuring Entity shall examine the technical aspects of the Bid in particular, to confirm that requirements of Section V, Procuring Entity's Requirements have been met without any material deviation, reservation, or omission.
		5.7.4	If a Technical or Financial Bid is not substantially responsive to the Bidding Document, it shall be rejected by the Procuring Entity and may not subsequently be made responsive by the Bidder by correction of the material deviation, reservation, or omission.
5.8	Examination of Terms and Conditions of the Technical or Financial Bids	5.8.1	The Procuring Entity shall examine the Bids to confirm that all terms and conditions specified in the GCC and the SCC have been accepted by the Bidder without any material deviation or reservation.
		5.8.2	The Procuring Entity shall evaluate the technical aspects of the Bid submitted in accordance with ITB Clauses 3.3 [Documents Comprising the Bid] and to confirm that all requirements specified in Section V [Procuring Entity's Requirements] of the Bidding Document and all amendments or changes requested by the Procuring Entity in accordance with ITB Clause 2.3 [Amendment of Bidding Document] have been met without any material deviation or reservation.
5.9	Evaluation of Qualification of Bidders in	5.9.1	The determination of qualification of a Bidder in evaluation of Technical Bids shall be based upon an examination of the documentary evidence of the Bidder's qualifications submitted by

	Technical Bids		the Bidder, pursuant to ITB Clause 3.8 [Documents Establishing the Qualifications of the Bidder] and in accordance with the qualification criteria indicated in Section III [Evaluation and Qualification Criteria]. Factors not included in Section III, shall not be used in the evaluation of the Bidder's qualification.
5.10	Evaluation of Financial Bids	5.10.1	The Procuring Entity shall evaluate each Financial Bid, the corresponding Technical Bid of which has been determined to be substantially responsive.
		5.10.2	To evaluate a Financial Bid, the Procuring Entity shall only use all the criteria and methodologies defined in this Clause and in Section III - Evaluation and Qualification Criteria. No other criteria or methodology shall be permitted.
		5.10.3	To evaluate a Financial Bid, the Procuring Entity shall consider the following: i. The Bid Price quoted in the Financial Bid; ii. Price adjustment for correction of arithmetical errors in accordance with ITB Clause 5.5 [Correction of Arithmetical Errors]; iii. Adjustment of bid prices due to rectification of nonmaterial nonconformities or omissions in accordance with ITB Sub Clause 5.4.3 [Nonmaterial Nonconformities in Bids], if applicable.
		5.10.4	If the Bid, which results in the lowest evaluated Bid Price, is considered to be seriously unbalanced, or front loaded, in the opinion of the Procuring Entity, the Procuring Entity may require the Bidder to produce detailed rate analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those rates with the construction methods and schedule proposed. After evaluation of the rate analysis, taking into consideration, the schedule of estimated Contract payments, the Procuring Entity may require that the amount of the Performance security be increased at the cost of the Bidder to a level sufficient to protect the Procuring Entity against financial loss in the event of default of the successful Bidder under the Contract.
5.11	Comparison of Bids	5.11.1	The Procuring Entity shall compare all substantially responsive Financial Bids to determine the lowest-evaluated Financial Bid in accordance with ITB Sub-Clause 5.10 [Evaluation of Financial Bids].
5.12	Procuring Entity's Right to Accept Any Bid, and to Reject Any or All Bids	5.12.1	The Procuring Entity reserves the right to accept or reject any Bid, and to annul the Bidding process and reject all Bids at any time prior to Contract award without assigning any reasons thereof and without thereby incurring any liability to the Bidders.
6. Award of Contract			
6.1	Procuring Entity's Right to Vary Quantities	6.1.1	If the Procuring Entity does not procure any subject matter of procurement or procures less than the quantity specified in the Bidding Document due to change in circumstances, the Bidder shall not be entitled for any claim or compensation except otherwise provided in the Bidding Document.
		6.1.2	Order for additional quantity of an item of the Works up to 15

			percent of the original quantity of that item in the Bill of Quantities and for extra items not provided for in the Bill of Quantities may be given but the amount of the additional quantities and extra items, taken together, shall not exceed 10 percent of the Contract Price.
6.2	Acceptance of the successful Bid and award of contract	6.2.1	The Procuring Entity after considering the recommendations of the Bid Evaluation Committee and the conditions of Bid, if any, financial implications, samples, test reports, etc., shall accept or reject the successful Bid.
		6.2.2	Before award of the Contract, the Procuring Entity shall ensure that the price of successful Bid is reasonable and consistent with the required specifications.
		6.2.3	A Bid shall be treated as successful only after the competent authority has approved the procurement in terms of that Bid.
		6.2.4	The Procuring Entity shall award the contract to the Bidder whose offer has been determined to be the lowest in accordance with the evaluation criteria set out in the Bidding Document if the Bidder has been determined to be qualified to perform the contract satisfactorily on the basis of qualification criteria fixed for the Bidders in the Bidding Document for the subject matter of procurement.
		6.2.5	Prior to the expiration of the period of validity of Bid, the Procuring Entity shall inform the successful Bidder in writing, by registered post or email, that its Bid has been accepted.
		6.2.6	If the issuance of formal Letter of Acceptance (LOA) is likely to take time, in the meanwhile a Letter of Intent (LOI) may be sent to the Bidder. The acceptance of an offer is complete as soon as the letter of acceptance or letter of intent is posted and/ or sent by email (if available) to the address of the Bidder given in the Bidding Document.
6.3	Signing of Contract	6.3.1	In the written intimation of acceptance of its Bid sent to the successful Bidder, it shall also be requested to execute an agreement in the format given in the Bidding Document on a non-judicial stamp of requisite value at his cost and deposit the Performance Security or a Performance Security Declaration, if applicable, within a period specified in the BDS or where the period is not specified in the BDS, then within fifteen days from the date on which the LOA or LOI is dispatched to the Bidder. In case the successful bidder is a JV still to be legally constituted, all parties to the JV shall sign the Agreement.
		6.3.2	If the Bidder, whose Bid has been accepted, fails to sign a written procurement contract or fails to furnish the required Performance Security or Performance Security Declaration within the specified time period, the Procuring Entity shall forfeit the Bid Security of the successful bidder / execute the Bid Securing Declaration and take required action against it as per the provisions of the Act and the Rules.
		6.3.3	The Bid Security, if any, of the Bidders whose Bids could not be accepted shall be refunded soon after the contract with the successful Bidder is signed and his Performance Security is obtained. Until a formal contract is executed, LOA or LOI shall constitute a binding contract.

	6.4 Performance Security	6.4.1	<p>i. The amount of Performance Security shall be five percent, or as specified in the BDS, of the amount of the Work Order. The currency of Performance Security shall be Indian Rupees, if otherwise not specified in BDS.</p> <p>ii. If the Bid, which results in the lowest evaluated bid price, is seriously unbalanced or front loaded in the opinion of the Procuring Entity, the Procuring Entity may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, taking into consideration the schedule of estimated Contract payments, the Procuring Entity may require that the amount of the performance security be increased (to a maximum of 20% of the bid value of such items) at the expense of the Bidder to a level sufficient to protect the Procuring Entity against financial loss in the event of default of the successful Bidder under the Contract.</p>
		6.4.2	<p>Performance Security shall be furnished in one of the following forms or as specified in the BDS as applicable:</p> <ul style="list-style-type: none"> a) Deposit through ePayment i.e. NEFT/RTGS/Internet Banking; or b) Bank Draft or Banker's Cheque of a Scheduled Bank in India; or c) National Savings Certificates and any other script/instrument under National Savings Schemes for promotion of small savings issued by a Post Office in Punjab, if the same can be pledged under the relevant rules. They shall be accepted at their surrender value at the time of Bid and formally transferred in the name of the Procuring Entity with the approval of Head Post Master; or d) Bank Guarantee: It shall be got verified from the issuing bank. Other conditions regarding bank guarantee shall be same as specified in ITB Sub-Clause 3.10 [Bid Security]; or e) Fixed Deposit Receipt (FDR) of a Scheduled Bank: It shall be in the name of the Procuring Entity on account of Bidder and discharged by the Bidder in advance. The Procuring Entity shall ensure before accepting the Fixed Deposit Receipt that the Bidder furnishes an undertaking from the bank to make payment/ premature payment of the Fixed Deposit Receipt on demand to the Procuring Entity without requirement of consent of the Bidder concerned. In the event of forfeiture of the Performance Security, the Fixed Deposit shall be forfeited along with interest earned on such Fixed Deposit.
		6.4.3	<p>Performance Security furnished in the form of a document mentioned at options (a) to (e) of Sub-Clause 6.4.2 above, shall remain valid for a period of sixty days beyond the date of completion of all contractual obligations of the Bidder, including</p>

		Operation and / or Maintenance and Defect Liability Period, if any.
	6.4.4	Failure of the successful Bidder to submit the above-mentioned Performance Security or sign the Contract shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security. In that event the Procuring Entity may either cancel the procurement process or if deemed appropriate, award the Contract at the rates of the lowest Bidder, to the next lowest evaluated Bidder whose offer is substantially responsive and is determined by the Procuring Entity to be qualified to perform the Contract satisfactorily.
	6.4.5	<p>Forfeiture of Performance Security: Amount of Performance Security in full or part may be forfeited in the following cases:</p> <ul style="list-style-type: none"> i. when the Bidder does not execute the agreement in accordance with ITB Clause 6.3 [Signing of Contract] within the specified time; or ii. when the Bidder fails to commence the Works as per Work order within the time specified; or iii. when the Bidder fails to complete Contracted Works satisfactorily within the time specified; or iv. when any terms and conditions of the contract is breached; or v. to adjust any established dues against the Bidder from any other contract with the Procuring Entity. <p>Notice of reasonable time will be given in case of forfeiture of Performance Security. The decision of the Procuring Entity in this regard shall be final.</p>

Section-II: Bid Data Sheet

SECTION II: BIDDING DATA SHEET (BDS)

The following specific data for the works shall complement, amend, or supplement the provisions in Instructions to Bidders – Section I. Whenever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

Instructions to Bidders Clause Reference

1. Introduction	
ITB 1.1.1	<p>The Number of the Invitation for Bids: _____/ASCL/2018-19 The Procuring Entity is: Amritsar Smart City Limited, Amritsar</p> <p>Name of the Works: Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar (Detailed Scope of work has been defined in Section 5)</p>
ITB 1.1.2	<p>Period of Completion: The Physical Works shall be completed in its entirety within Twenty Four (24) months (including Design period of Four months) to be calculated from the date of signing of the Contract or such other Start Date as may be specified in the Notice to proceed by the Procuring Entity.</p> <p>Defect Liability Period: 1 year (One Year)</p> <p>Operation and Maintenance (O&M): O&M of the assets thus de-silted / rehabilitated / created will also have to be carried out by the selected contractor for a period of 05 (Five) years, from the date of Completion of Defect Liability Period.</p>
ITB 1.1.3	<p>Type of Contract: Percentage Rate Basis</p>
ITB 1.4.1	Joint Ventures are permitted comprising not more than 03 (Three) partners. The minimum equity under JV of lead firm should be 51% and that of other firm should be 15% at the minimum.
ITB 1.4.2	Bidders of " ANY NATIONALITY " are permissible.
ITB 1.4.5	The Bidder/ all partners of JV must be a person/ company/ firm/ organization duly registered with the Registrar of Companies/ Firms (wherever applicable)
ITB 1.4.8	The bidding process is open to bidders who fulfil the prescribed eligibility criteria.
ITB 1.4.9	Each bidder shall upload online only one bid for the work. A bidder/ a member of Joint Venture who submits or participates in more than one bid for the particular Work will be disqualified.
2. Bidding Documents	
ITB 2.1.3	This is an " on-line tender ". Therefore, tender documents in physical form shall not be available for sale but can be downloaded from the website. The cost of bid document Rs 25,000/- and bid security Rs 1,05,51,340/- shall be deposited online as per the payment

	<p>procedure of https://eproc.punjab.gov.in. Processing fee of the eprocurement portal shall be according to the policy of the web portal.</p> <p>The bidder should submit, by date & time specified in bid document, in original, hard copies of (i) Letter of Technical Bid, (ii) Power of Attorney and (iii) Joint Venture Agreement, if applicable. The bidder should also upload scanned copies of these documents on e-procurement web-site.</p>
ITB 2.2.1	<p>For Clarification purposes only, the Procuring Entity's address is:</p> <p>OFFICE OF THE CHIEF EXECUTIVE OFFICER Amritsar Smart City Ltd., SCO – 21, 2nd Floor, District Shopping Centre, Block – B, Ranjit Avenue, Amritsar - 143001 Telephone: : +91-183-5015048 Email address: ceoasclasr@gmail.com</p>
ITB 2.2.2	<p>Pre-bid Meeting: X+11 at 11:00 A.M.</p> <p>Place:</p> <p>PMIDC, Punjab Municipal Bhawan, 5th Floor, Plot No. 3, Dakshin Marg, Section 35-A, Chandigarh</p> <p>No Site visit shall be organized by the Procuring Entity, however, bidder is advised to visit the site at his own expenses and if any support is required, shall be provided by the Nodal Officer of ASCL.</p>
ITB 2.2.3	<p>The Bidder is requested, to submit questions in writing, to reach the Procuring Entity preferably not later than one week before the Pre- Bid Conference. However, ASCL may also consider questions / queries raised in writing only, during the pre-bid conference.</p>
ITB 2.2.4	<p>The text of the questions raised, and the responses given, without identifying the source, will be transmitted promptly to all Bidders who attended the Pre-Bid Conference and shall also be placed on the e-procurement portal. Any modification to the Bidding Document that may become necessary as a result of the Pre-Bid Conference shall be made by the Procuring Entity exclusively through the issue of an addendum (part of Bid document).</p>
ITB 2.2.5	<p>At any time prior to the deadline for submission of the Bids, the Procuring Entity, suo moto, may also amend the Bidding Document, if required, by issuing an addenda which will form part of the Bidding Document.</p>
ITB 2.3.1	<p>Any addendum issued shall be part of the Bidding Document and shall be uploaded on the State Public Procurement Portal i.e. https://eproc.punjab.gov.in</p>
ITB 2.3.2	<p>To give prospective Bidders reasonable time in which to take an addendum into account in preparing their Bids, the Procuring Entity may, at its discretion, extend the deadline for the submission of the Bids, pursuant to ITB Sub-Clause 4.2 [Deadline for Submission of Bids], under due intimation to the Bidders by uploading it on its e-procurement portal.</p>

3. Preparation of Bids

	The Bidder/ all partners of JV (in case of bidder is JV) shall furnish the scanned self attested copies with dates of following documents with its Bid: <ol style="list-style-type: none"> i. Partnership Deed and valid registration certificate with the Registrar of Firms in case of Partnership Firms. Duly notarised Power of Attorney in favor of the partner signing/submitting the Bid, authorizing him to represent all partners of the firm; ii. GST registration certificate and GST clearance certificate from the concerned Department and Permanent Account Number (PAN) given by the Income Tax Department; iii. Residence and office address, telephone numbers and e-mail address in case of sole Proprietorship; iv. Certificate of Registration and Memorandum of Association issued by Registrar of Companies in case of a registered company and in case of any other statutory or registered body, certificate of incorporation or registration issued by concerned authorities. Board Resolution in favour of the person signing the bid; v. Where permitted to bid as Joint Venture, letter of formal intent to enter into an agreement or an existing agreement in the form of a Joint Venture.
ITB 3.1.2	The language of the bid shall be English
ITB 3.2.1	The online Bid shall comprise of two covers/ envelopes submitted simultaneously - one containing the Technical Bid/ Proposal and the other the Financial or Price Bid/ Proposal.
ITB 3.3.1	The Bidder shall submit the forms, declarations and documents, as specified in section IV of Bid Document, with the Technical Bid.
ITB 3.3.2	The Bidder shall upload the following documents with its Financial Bid: <ol style="list-style-type: none"> a) Financial Proposal Submission Sheet b) Preamble to BOQ c) And other details as mentioned in this document.
ITB 3.3.3	Type of Contract is PERCENTAGE RATE only. The percentage quoted shall be applicable for total estimated cost in the tender and also for items/ sub-items and their estimated rates mentioned in the BoQ in section VII.
ITB 3.5.1	The Prices quoted by the Bidder shall be fixed. There will no Provision of Price escalation.
ITB 3.5.2	Bid price quoted by the Bidder shall be inclusive of all taxes including GST. All variations in taxes and duties including GST shall be borne by the contractor.
ITB 3.9.1	The Bid validity period shall be 120 (One hundred twenty) days from deadline for submission of bids.
ITB 3.10.2	Bid Security shall be Rs.1,05,51,340/- (Rupees One Crore Five Lakh Fifty One Thousand Three Hundred Forty only).

ITB 3.10.3	The Bid Security shall be provided as a part of the bid through RTGS/NEFT/Internet Banking. The Unique Transaction Reference (UTR) of RTGS/NEFT shall be uploaded by the Bidder alongwith scanned copies of eligibility documents with "Eligibility Bid" as per Bid document in specified format which shall remain valid for a period of 45 (forty five) days beyond the validity of the bid.
ITB 3.10.6	Bid Security of a Bidder lying with the Procuring Entity in respect of other Bids awaiting decision shall not be adjusted towards Bid Security for this Bid.
ITB 3.10.9	If Bank Guarantee (BG) is presented as Bid Security then it shall be got confirmed from the concerned issuing Bank. However, the confirmation by the issuing Bank does not preclude the Procuring Entity from rejecting the Bid Security on the ground that the Bank has become insolvent or is under liquidation or has otherwise ceased to be creditworthy.
ITB 3.10.13	<p>In case Bid Security is submitted in the form of BG, The Procuring Entity shall promptly return the Bid Security of the Bidders at the earliest on happening of any of the following events, namely:</p> <ul style="list-style-type: none"> i. The expiry of validity of Bid Security; ii. The execution of agreement for procurement and Performance Security is furnished by the successful bidder; iii. The cancellation of the procurement process; or iv. The withdrawal of Bid prior to the deadline for presenting Bids, unless the Bidding Document stipulates that no such withdrawal is permitted. <p>For Bid Security submitted using NEFT/RTGS/Internet Banking on Procurement portal, the Procuring Entity shall not be liable for prompt refund of the Bid Security. The Bid Security will be refunded by the Procurement Portal as per their own procedure and time. The Bidder has to contact the helpdesk of Procurement Portal for any refund of Bid Security related queries.</p>
ITB 3.11.1	Only Digitally signed copy of the bid documents shall be submitted through e-procurement website.
ITB 3.11.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Power of Attorney
4. Submission and Opening of Bids	
ITB 4.1.1	<p>For bid submission purposes only, the Procuring Entity's address is :</p> <p>OFFICE OF THE CHIEF EXECUTIVE OFFICER Amritsar Smart City Limited, SCO – 21, 2nd Floor, District Shopping Centre, Block-B, Ranjit Avenue, Amritsar - 143001, INDIA</p> <p>Bidders shall submit their Bids electronically only.</p> <p>The Bidders shall submit the Bid online with all pages numbered serially and by giving an index of submissions. Each page of the submission shall be initialled by the Authorised Representative of the Bidder as per the terms of the tender. The Bidder shall be</p>

	<p>responsible accuracy and correctness of documents as per the version uploaded by the Procuring Entity and shall ensure that there are no changes caused in the content of the downloaded document. The bidder shall follow the following instructions for online submission:</p> <ul style="list-style-type: none"> • Bidder who wants to participate in bidding will have to procure digital certificate as per IT Act to sign their electronic bids. Offers which are not digitally signed will not be accepted. Bidder shall submit their offer in electronic format on above mentioned website after digitally signing the same. • The Procuring Entity will not be responsible for any mistake occurred at the time of uploading of bid or thereafter. • If holiday is declared on physical submission (depositing documents in hard copy) and opening date of tender the scheduled activity will take place on next working day. • If holiday is declared on submission & opening date of tender the scheduled activity will take place on next working day. <p>Bids are required to be submitted online, it should be submitted/ uploaded on the eprocurement portal of state government: https://eproc.punjab.gov.in. The bid security shall be paid as stipulated in tender document.</p>
ITB 4.2.1	<p>The Deadline for electronic Bid submission is:</p> <p>Date: X+28</p> <p>Time: 05:00 PM</p>
ITB 4.5.1	<p>The online Bid opening shall take place at:</p> <p>OFFICE OF THE CHIEF EXECUTIVE OFFICER Amritsar Smart City Limited. SCO – 21, 2nd Floor, District Shopping Centre, Block-B, Ranjit Avenue, Amritsar - 143001, INDIA</p>
ITB 4.5.5	The tendering/ bidding process shall be conducted online only.
ITB 4.5.14	The Procuring Entity will open the Financial proposal as per e-tendering procedure.
5. Evaluation and Comparison of Bids	
ITB 5.11.1	The Bidder quoting the least cost shall be selected for the Assignment.
6. Award of Contract	
ITB 6.3.1	The period within which the Performance Security is to be submitted by the successful Bidder and the Contract Agreement is to be signed by him from the date of issue of Letter of Acceptance is 15 Days .
ITB 6.4.2 ITB 6.4.3 ITB 6.4.4	The Contractor shall provide a Performance Security equivalent to 5% of the Contract Value (excluding O&M) at his cost for its proper performance of the Contract, to be delivered to the Employer within 15 days after the receipt of the Letter of Acceptance. The Performance Security will be as specified in the format provided in this document, and shall be in the form of an unconditional and irrevocable Bank Guarantee issued

either by a Nationalized or Scheduled Bank located in India or a foreign bank through a correspondent bank located in India and acceptable to the Employer.

The Performance Security shall be valid upto defect liability period and extended until the Contractor has fully and satisfactorily completed all of its obligations of the Contract. Performance Security shall be released to contractor after one year (1 Year) from issuing of Commissioning Certificate i.e., after Completion of Defects Liability Period.

Prior to 60 days of Start of Operation & Maintenance period the contractor should submit another performance security for Operation & Maintenance which will be Five Percent (5%) of Total cost of Operation & Maintenance and shall be valid up to 60 days beyond expiry of the Operation and Maintenance Period. The Performance Security for the Operation and Maintenance Period will be released to the Contractor within 14 days of the issue of the Final Contract Completion Certificate following completion of Operation and Maintenance.

Section-III:

Evaluation and Qualification Criteria

SECTION III: EVALUATION AND QUALIFICATION CRITERIA

A. Evaluation Criteria

The successful Bid will be the lowest evaluated responsive Bid, which qualifies technical evaluation. This evaluation will consist of the following:

- 1.1** Evaluation of the Bidder's Technical Proposal and Presentation will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail.
- 1.2** Quantifiable Nonconformities, Errors and Omissions.
- 1.3** Demonstrate capability to undertake similar Works contracts, by documented demonstration of execution of similar type of works. The bidder will submit Completion Certificate from the Employer(s).

Enhancement Factor: The Price enhancement factor, as tabulated below, would apply to assess the cost of completed contractual experiences claimed in Clause 4.4.4, as per the year of completion.

Period of completion of contracts calculated from the date of bid submission	Multiplying Factor
Up and including One year	1.0
More than One year up to and including Two years	1.08
More than Two years up to and including Three years	1.17
More than Three years up to and including Four years	1.26
More than Four years up to and including Five years	1.36
More than Five years up to and including Six years	1.47
More than Six years up to and including Seven years	1.59
More than Seven years up to and including Eight years	1.72
More than Eight years up to and including Nine years	1.86
More than Nine years up to and including Ten years	2.01

Eligibility and Qualification Criteria				Compliance Requirements		
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)		
				All members combined	Each member	At least one member
1. Eligibility						
1.1	Nationality	National/ International	Must meet requirement	N/A	Must meet requirement	N/A
1.2	Conflict of Interest	No conflicts of interest in accordance with ITB Sub-clause 1.4.3	Must meet requirement	N/A	Must meet requirement	N/A
1.3	Debarment/ Transgression by any Procuring Entity	Must declare	Must meet requirement	N/A	Must meet requirement	N/A
2. Pending Litigation						
2.1	Pending Litigation	All pending litigation shall be treated as resolved against the Bidder and so shall in total not represent more than 50 percent of the Bidder's net worth.	Must meet requirement	N/A	Must meet requirement	N/A
2.2	Litigation History	No consistent history of Court/ Arbitral Award decisions against the bidder since last ten years from the proposal due date	Must meet requirement	N/A	Must meet requirement	N/A

Note: The certificate from CA shall be given showing clearly calculations that pending litigation in total is not more than 50% of Bidder's net worth.

Eligibility and Qualification Criteria				Compliance Requirements		
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)		
				All members combined	Each member	At least one member
3. Technical Experience						
3.1	Specific Experience	<p>Bidder should have successfully completed/ *part completed within the last 10 (Ten) years:</p> <p>One Similar Contract of the value not less than Rs.84.41 Crore</p> <p>OR</p> <p>Two Similar Contracts of the value not less than Rs.52.76 Crore each</p> <p>OR</p> <p>Three Similar Contracts of the value not less than Rs.42.21 Crore each</p> <p>*Bidders Claiming eligibility under Ongoing Projects which are Part completed, the Experience shall be considered for the part of the Work Completed which shall be duly certified from the Client not less the rank of Executive Engineer.</p>	Must meet requirement	Must meet requirement	N/A	N/A

		<p>Similar Contract is defined as the Contract(s) containing design, rehabilitation, upgradation and construction of sewerage system in a brownfield area which may include construction of new sanitary/ storm water sewer system or sewerage house connections or a combination of the two. Bidder / Joint venture should also have O&M experience of at least one year of similar contract.</p> <p>In case a project has been executed by a joint venture, weightage towards experience of the project would be given to each joint venture in proportion to their participation in the joint venture.</p> <p>The applicant has to attach the copies of JV agreement and Certificate in support which has been issued from the concerned officer not less the rank of Executive Engineer or Equivalent.</p>			
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Note:

- i) The Bidder shall submit copies of Work Orders, Completion Certificates in support of their experience claims.
- ii) Client's certificate of experience must clearly indicate whether the work has been completed and commissioned OR part completed.

Eligibility and Qualification Criteria				Compliance Requirements		
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)		
				All members combined	Each member	At least one member
4. Financial Situation and Performance						
4.1	Financial Capabilities	The audited balance sheets for the last 3 years shall be submitted and must demonstrate the current soundness of the Bidder's financial position and <i>shall be of positive net-worth as per the latest balance sheet.</i>	Must meet requirement	Must meet requirement	Must meet requirement	N/A
4.2	Average Annual Turnover	Minimum average annual turnover of INR 63.31 Crores , calculated as total certified payments received for contracts in progress and/or completed within the last 3 years, divided by 3 years.	Must meet requirement	Must meet requirement	N/A	Must meet 60% of the requirement
4.3	Working Capital	Working Capital based on the current assets and current liabilities (including the short term loan repayments due in current years) should be more than	Must meet requirement	Must meet requirement	N/A	Must meet minimum 51% requirement

		or equal to Rs.26.38 Crore (Available working capital should be evaluated as current assets + revolving line of credit – current liabilities including loan repayments due within one year).				
4.4	Bid Capacity	<p>The bid capacity of the bidder shall not be less than Rs. 105.51 Crore.</p> <p>The formula for calculating Bid capacity is: (2xAxN)-B</p> <p>A= Maximum value of Annual Turnover from any one year during the last three financial years (updated to present price level)</p> <p>N= Prescribed completion period of the work for which bids are invited in years.</p> <p>B= Value at present price level (2017-18) of existing commitments and ongoing works to be completed during N period i.e., the period of completion of works for which bids are invited.</p>	Must meet requirement	Must meet requirement	N/A	Must meet minimum 51% requirement

NOTE:

1. The latest **certificate of CA** regarding **Net worth, Turnover, Working Capital, revolving line of credit and Bid Capacity must be submitted otherwise bid shall not be considered.** The certificate should clearly show the calculation how the Bid Capacity is calculated as per formula given in tender.
2. The contractor should submit an affidavit on a Non Judicial stamp paper that he has divulged all necessary and relevant information regarding current contract commitments for projects being executed by the bidder, which is necessary for calculation of B value for the calculation of Bid Capacity.
3. The bidder shall provide all the supporting documents on the basis of which Net Worth, Turnover, Working Capital, revolving line of Credit and Bid Capacity are based.
4. The audited balance sheet of last three years shall be provided.

Section-IV: Bidding Forms

SECTION IV: BIDDING FORMS

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- 4.5 Letter of Financial Bid
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 - Statement for Work in Hand
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- 4.10 Self Appraisal Sheet to be filled by the Bidder for Determination of Responsiveness

4.1 TECHNICAL PROPOSAL CHECK LIST

In addition to the forms given in this section, a Technical Proposal must necessarily contain the following otherwise the bid shall be considered incomplete and may lead to non-responsiveness:

1. CA's certificates for Networth, Turnover, Working Capital, Revolving Line of Credit and Bid Capacity
2. Bank's letter as required in tender Document (if applicable).
3. GST Registration
4. GST Clearance Certificate
5. Copy of PAN & TAN Numbers
6. Service Tax Registration, if required as per law
7. Proof of payment of Bid Security
8. Proof of Cost of bidding document or receipt of such cost.
9. Proof of Bid processing fee as specified.
10. Bid Capacity stipulations as required in Tender Document.
11. Work Orders and Completion Certificates of works which have been cited in support of fulfilment of eligibility criteria as specified in Tender Document.
12. Drawings / designs / technical documents (if required) in support of works to be executed
13. Any modifications or withdrawal
14. Other documents considered necessary to strengthen the bid
15. JV agreement against which experience for eligibility is claimed to demonstrate clearly the JV member's work in that JV
16. Check Points and Self appraisal sheet
17. Audited Annual Reports for last 3 years
18. Registration Certificate of the Firm/ Company
19. Technical datasheet of quoted items.

4.2 Letter of Technical Bid

Technical Bid Submission Sheet

Date: _____

NIB No.: _____

To

Chief Executive Officer
Amritsar Smart City Limited
Amritsar

We, the undersigned, hereby submit our Bid, in two parts, namely:

- (a) the Technical Part, and
- (b) the Financial Part

In submitting our Bid, we make the following declarations:

- (a) We have examined and have no reservations to the Bidding Document, including Addenda issued in accordance with Instructions to Bidders;
- (b) We offer to execute in conformity with the Bidding Document the following Works: *Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and defect liability period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar.*
- (c) Our Bid shall be valid for a period of 120 days from the date fixed for the bid submission deadline in accordance with the Bidding Document, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;
- (d) If our Bid is accepted, we commit to obtain a Performance Security as per the provisions of Tender Document relating to the Performance Security, as the case may be, for the due performance of the Contract;
- (e) Our firm or suppliers for any part of the Contract, have nationalities from the eligible countries;
- (f) We are not participating, as Bidder, in more than one Bid in this bidding process, other than alternative offers, if permitted, in the Bidding Document;
- (g) Our firm, its affiliates or subsidiaries or suppliers has not been debarred by any Central/ State Government or the Procuring Entity;
- (h) We understand that this Bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal Contract is prepared and executed;
- (i) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive;

- (j) We agree to permit Government of Punjab or the Procuring Entity or their representatives to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors appointed by the Procuring Entity;
- (k) We declare that we have complied with and shall continue to comply with the provisions of the Code of Integrity including Conflict of Interest as specified for Bidders in this Bidding Document during this procurement process and execution of the Works as per the Contract;
- (l) Other comments, if any:

Name and address of the Bidder: *[insert complete name of person signing the Bid]

Name and address of the person duly authorized to sign the Bid on behalf of the Bidder: ** [insert complete name of person duly authorized to sign the Bid]

Title of the person signing the Bid: [insert complete title of the person signing the Bid]

Signature of the person named above: [insert signature of person whose name and capacity are shown above]

Date signed [insert date of signing] **day of** [insert month], [insert year]

Note:

*In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder

**Person signing the Bid shall have the power of attorney given by the Bidder to be attached with the Bid

4.3.1 Bid Security (Bank Guarantee Unconditional)*

Form of Bid Security

[insert Bank's Name, and Address of Issuing Branch or Office]

Beneficiary: Chief Executive Officer,

Amritsar Smart City Limited,
2nd Floor, SCO-21,
Block-B, Distt. Shopping Complex,
Ranjit Avenue, Amritsar, Punjab, 143001

Date: [insert date]

BID GUARANTEE No.: [insert number]

We have been informed that [insert name of the Bidder] (hereinafter called "the Bidder") has submitted to you its bid dated [insert date] (hereinafter called "the Bid") for the execution of "*Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar*" under Notice Inviting Bids No. [Insert NIB number] ("The NIB").

Furthermore, we understand that, according to your conditions, bids must be supported by a bid guarantee.

At the request of the Bidder, we [insert name of Bank] hereby irrevocably undertake to pay you any sum or sums not exceeding in total an amount of ----- [insert amount in figures] [insert amount in words] upon receipt by us of your first demand in writing accompanied by a written statement stating that the Bidder is in breach of its obligation(s) under the bid conditions, because the Bidder:

- (a) has withdrawn its Bid during the period of bid validity specified by the Bidder in the Letter of Technical Bid; or
- (b) having been notified of the acceptance of its Bid by the Procuring Entity during the period of bid validity,
 - (i) fails or refuses to execute the Contract Agreement,
 - (ii) fails or refuses to furnish the performance security, in accordance with the Instructions to Bidders (hereinafter "the ITB")
- (c) has not accepted the correction of mathematical errors in accordance with the ITB, or
- (d) has breached a provision of the Code of Integrity specified in the TB;

This guarantee will expire: (a) if the Bidder is the successful Bidder, upon our receipt of copies of the contract signed by the Bidder and the performance security issued to you upon the instruction of the Bidder; and (b) if the Bidder is not the successful Bidder, upon the earlier of (i) our receipt of a copy of your notification to the Bidder of the name of the successful Bidder; or (ii) forty five days after the expiration of the validity of the Bidder's bid. Consequently, any demand for payment under this guarantee must be received by us at the office on or before that date.

Signed: _____

[Insert signature of person whose name and capacity are shown]

NOTE:- Scheduled Bank Only

Name: _____

[Insert complete name of person signing the Bid Security]

In the capacity of: _____

[Insert legal capacity of person signing the Bid Security]

Duly authorized to sign the Bid Security for and on behalf of _____

[Insert name of the Bank]

Dated on day of **[Insert date of signing]**

Bank's Seal _____

[Affix seal of the Bank]

[Note: In case of a Joint Venture, the Bid-Security must be in the name of all partners to the Joint Venture/Lead bidder that submits the bid.]

4.4.1 Bidder's Qualification

To establish its qualifications to perform the contract in accordance with Section III (Evaluation and Qualification Criteria) the Bidder shall provide the information requested in the corresponding Information Sheets included hereunder:

4.4.1 (a) Form ELI-1: Bidder's Information Sheet

BIDDER'S INFORMATION	
Bidder's legal name	
In case of JV, legal name of each partner	
Bidder's /all JV partners' country of constitution.	
Bidder's /all JV partner's year of constitution	
Bidder's /all JV partners legal address in country of constitution	
Bidder's /all JV partners authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	

Attached are self-attested copies of the following original documents:

1. Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above;
2. In case of JV, letter of intent to form JV or JV agreement;
3. In case of state-owned enterprise or institution, documents establishing (a) Legal and financial autonomy (b) Operation under commercial law (c) Establishing that the Bidder is not under the supervision of the Employer
4. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.
5. Authorization to represent the firm or JV named in above.

4.4.2 : JV Information Sheet

Attach the Letter of Intent to form JV or certificate of registration/ Incorporation and memorandum of association or constitution of the legal entity, if JV is already in existence.

Each member of a JV must fill in this form

JV / SPECIALIST CONTRACTOR'S INFORMATION	
Bidder's JV name	
JV member's name	
JV partners' country of constitution.	
JV partner's year of constitution	
JV partners legal address in country of constitution	
JV partners authorized representative (name, address, telephone numbers, fax numbers, e-mail address)	

Attached are self attested copies of the following original documents:

1. Certificate of registration/ Incorporation and memorandum of association or constitution of the legal entity named above.
2. Authorization to represent the firm named above.

4.4.3 LIT 1- Pending Litigation

Each Bidder or member of a JV must fill in this form

4.4.4 Form EXP-1: Specific Experience

Note: Please fill up one sheet per contract

CONTRACT OF SIMILAR SIZE AND NATURE		
Contract No..... of.....	Contract Identification	
Award Date	Completion Date	
Role in Contract	Contractor / Management Contractor / Subcontractor	
Total Contract Amount		
If partner in a JV or subcontractor, specify participation of total contract amount	Percent of Total	Amount
Procuring Entity's Name Address Telephone Number Fax Number E-mail address		

Enclosed:

1. Work order.
2. Experience certificate as per relevant clause from an officer not below the rank of executive Engineer or Equivalent.

4.4.5 Form: Format for assured revolving line of credit facility

(To be submitted by a Scheduled Bank on the Bank's Letter head)

Date:

To:

Chief Executive Officer
 Amritsar Smart City Limited,
 SCO – 21, 2nd Floor, District Shopping Centre,
 Block-B, Ranjit Avenue,
 Amritsar - 143001

Subject: Letter of Assurance for Revolving line of credit facility for INR _____

Dear Sir,

WHEREAS _____ [name and address of Bidder] (hereinafter called the "Bidder") intends to submit a bid for "Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of

the Entire System for 5 Years at Walled City Amritsar" under the Amritsar Smart City Limited, Amritsar (hereinafter called the "Procuring Entity") in response to the Invitation for Bids issued by the Amritsar smart City Limited Amritsar through NIB no. _____; and

WHEREAS the Bidder has requested that an assured revolving line of credit be provided to it for executing the beforementioned project. In the event that the Contract is awarded to it, then

KNOW ALL THESE PEOPLE by these presents that We _____ [name of Bank] of _____ [name of Country] having our registered office at _____ [address of registered office] are willing to provide to _____ (the Bidder) a sum of up to _____ [Amount of guarantee in figures and words] as an assured revolving line of credit for executing the Works under "*Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar*" should the Bidder be awarded the contract based on its tendered prices.

We understand that this assurance may be taken into consideration by the Employer during evaluation of the Bidder's financial capabilities, and further assure that we intend to maintain this revolving line of credit until such time as the Works are completed and taken over by the Employer.

SEALED with the Common Seal of the said Bank on the _____ day of _____ 2018

Signature of the Bank: _____

Witness: _____

[Signature, name and address]

4.5 Letter of Financial Bid

Date of this Bid submission:

Request for Bid No.:

To

Chief Executive Officer,
Amritsar Smart City Limited,
Amritsar

We, the undersigned, hereby submit the second part of our Bid, the Bid Price and Bill of Quantities.
This accompanies the Letter of Technical Part.

In submitting our Bid, we make the following additional declarations:

1. I/We hereby bid for the execution of the above work within the time specified at the rate (in figures) _____ (in words) _____ percent below/ above or at par based on the Bill of Quantities and item wise rates given therein in all respects and in accordance with the specifications, designs, drawings and instructions in writing in all respects in accordance with such conditions so far as applicable.
2. I/We undertake if our Bid is accepted to commence the works as soon as is reasonably possible after the receipt of the Engineer's notice to commence, and to complete the whole of the works comprised of the works comprised in the contract within the time stated in the document.
3. I/We agree to abide by this Bid for the period of 120 days from the date fixed for receiving the same, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
4. Unless and until a formal agreement is prepared and executed this Bid together with your written acceptance thereof, shall constitute a binding contract between us.
5. I/We understand that you are not bound to accept the lowest or any tender you may receive.
6. Other comments, if any:

Note:

1. Only one rate of percentage above or below or at par based on the Bill of Quantities and item wise rates given therein shall be quoted.
2. Percentage shall be quoted in figures as well as in words. If any difference in figures and words is found lower of the two shall be taken as valid and correct rate. If the bidder is not ready to accept such valid and correct rate and declines to furnish performance -security and sign the agreement his earnest money deposit shall be forfeited.
3. In case the percentage "above" or "below" is not given by a bidder, his bid shall be treated as non-responsive.
4. All duties, taxes (including GST), and other levies payable by the bidder shall be included in the percentage quoted by the bidder.

Name/ address: _____

In the capacity of: _____

Signed: _____

Duly authorised to sign the Bid for and on behalf of: _____

Date: _____

Tel: _____ Fax _____

E-mail: _____

4.6 Format of Power of Attorney for Bidding

Power of Attorney (POA)

(Printed on the INR 500/- stamp paper)

Know all men by these presents, We..... [name of the firm and address of the registered office] do hereby irrevocably constitute, nominate, appoint and authorise Mr/ Ms [name], son/daughter/wife of and presently residing at, who is presently employed with us and holding the position of, as our true and lawful attorney (hereinafter referred to as the —Attorney) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our application for submission of our Bid for the "*Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar*" proposed by the Amritsar Smart City Limited, Amritsar (the Procuring Entity) including but not limited to signing and submission of Bid and other documents and writings, participate in Pre-bid and other conferences and providing information/ responses to the Procuring Entity, representing us in all matters before the Procuring Entity, signing and execution of all contracts including the Contract Agreement and undertakings consequent to acceptance of our Bid, and generally dealing with the Procuring Entity in all matters in connection with or relating to or arising out of our Bid for the said Work and/ or upon award thereof to us and/or till the entering into of the Contract Agreement with the Procuring Entity.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE,, THE ABOVE NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF 2018

(Signature, name in block letters, designation and address of the signatory delegating the POA)

Witnesses:

Witness 1:

Witness 2:

Name:

Name:

Address:

Address:

Occupation:

Occupation:

Accepted

.....

(Signature)

(Name in block letters, Title and Address of the Attorney)

Notes:

1. The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.
2. Wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a board or shareholders' resolution/ power of attorney in favour of the person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.
3. For a Power of Attorney executed and issued overseas, the document will also have to be legalised by the Indian Embassy and notarised in the jurisdiction where the Power of Attorney is being issued. However, the Power of Attorney provided by Bidders from countries that have signed the Hague Legislation Convention 1961 are not required to be legalised by the Indian Embassy if it carries a conforming Apostille certificate.

4.7 Joint Venture Agreement (Maximum Three Partners)

JOINT BIDDING AGREEMENT FOR JOINT VENTURE

[To be executed on Stamp paper of appropriate value]

THIS JOINT BIDDING AGREEMENT is entered into on this the day of 2018

BETWEEN

1, a company/ firm/ sole proprietorship having its registered office at (hereinafter referred to as the —**First Part** which expression shall, unless repugnant to the context include its successors and permitted assigns)

AND

2., a company/ firm/ sole proprietorship having its registered office at (hereinafter referred to as the —**Second Part** which expression shall, unless repugnant to the context include its successors and permitted assigns).

AND

3., a company/ firm/ sole proprietorship having its registered office at (hereinafter referred to as the —**Third Part** which expression shall, unless repugnant to the context include its successors and permitted assigns).

The above mentioned parties of the FIRST, SECOND and THIRD are collectively referred to as the —**Parties** and each is individually referred to as a —**Party**

WHEREAS,

- A. Amritsar Smart City Limited, represented by its Chief Executive Officer and having its office at SCO 21, 2nd Floor, Distt. Shopping Complex, B-Block, Ranjit Avenue, Amritsar (hereinafter referred to as the “Procuring Entity” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and assigns) has invited applications (the Applications”) by its Request for Bids No. dated (the “RFB”) for selection of Bidders for “Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar (the “Works”).
- B. The Parties are interested in jointly Bidding for the Works as members of a Joint Venture Agreement (JVA) and in accordance with the terms and conditions of the RFB document and other Bid documents in respect of the Works, and
- C. It is a necessary condition under the RFB document that the members of the JVA shall enter into a Joint Bidding Agreement and furnish a copy thereof with the Application.

NOW IT IS HEREBY AGREED as follows:

- 1. Definitions and Interpretations**

In this Agreement, the capitalised terms shall, unless the context otherwise requires, have the meaning ascribed thereto under the RFB.

2. **JVA**

- (a) The Parties do hereby irrevocably constitute a Joint Venture (the _____ **JVA**) for the purposes of jointly participating in the Bidding Process for the Works. The Parties confirm that all JVA members shall sign the Contract Agreement.
- (b) The Parties hereby undertake to participate in the Bidding Process only through this JVA and not individually and/ or through any other JV constituted for this Works, either directly or indirectly or through any of their associates.

3. **Covenants**

The Parties hereby undertake that in the event the JVA is declared the selected Bidder and awarded the Contract, the JVA members shall enter into a Contract Agreement with the Procuring Entity and, through its lead partner, undertake to perform all its obligations in compliance with the Contract Agreement for the Works.

4. **Role of the Parties**

The Parties hereby undertake to perform the roles and responsibilities as described below:

- (a) Party of the First Part shall be the Lead member of the JVA and shall have the power of attorney from all Parties for conducting all business for and on behalf of the JVA during the Tendering Process and until the Contract Agreement is entered into with the Procuring Entity; Party of the First Part shall be the and
- (b) Party of the Second Part shall be the _____
- (c) Party of the Third Part shall be the _____

5. **Joint and Several Liabilities**

The Parties do hereby undertake to be jointly and severally responsible for all obligations and liabilities relating to the Works and in accordance with the terms of the RFB, Bidding Document and the Contract Agreement.

6. **Percentage Participation in the JVA**

- (a) The Parties agree that the proportion of percentage participation in works among the Parties in the JVA shall be as follows:
 - First Party (Lead Member): *[should have at-least 51% percentage participation]*
 - Second Party:
 - Third party:
- (b) The Parties undertake that they shall collectively hold 100% (hundred percent) of the percentage participation of the JVA at all times until the completion of O&M period.

7. **Representation of the Parties**

Each Party represents to the other Parties as of the date of this Agreement that:

- (a) Such Party is duly organised, validly existing and in good standing under the laws of its incorporation and has all requisite power and authority to enter into this Agreement;
- (b) The execution, delivery and performance by such Party of this Agreement has been authorised by all necessary and appropriate corporate or governmental action and a copy of the extract

of the charter documents and board resolution/ power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the JVA Member is annexed to this Agreement, and will not, to the best of its knowledge:

- i. require any consent or approval not already obtained; or
 - ii. violate any Applicable Law presently in effect and having applicability to it; or
 - iii. violate the memorandum and articles of association, by-laws or other applicable organisational documents thereof; or
 - iv. violate any clearance, permit, concession, grant, license or other governmental authorisation, approval, judgement, order or decree or any mortgage agreement, indenture or any other instrument to which such Party is a party or by which such Party or any of its properties or assets are bound or that is otherwise applicable to such Party; or
 - v. create or impose any liens, mortgages, pledges, claims, security interests, charges or encumbrances or obligations to create a lien, charge, pledge, security interest, encumbrances or mortgage in or on the property of such Party, except for encumbrances that would not, individually or in the aggregate, have a material adverse effect on the financial condition or prospects or business of such Party so as to prevent such Party from fulfilling its obligations under this Agreement.
- (c) This Agreement is the legal and binding obligation of such Party, enforceable in accordance with its terms against it; and
- (d) there is no litigation pending or, to the best of such Party's knowledge, threatened to which it or any of its associates is a party that presently affects or which would have a material adverse effect on the financial condition or prospects or business of such Party in the fulfilment of its obligations under this Agreement.

8. Termination

This Agreement shall be effective from the date hereof and shall continue in full force and effect until the Operation and Maintenance is completed under and in accordance with the Contract Agreement, in case the Contract is awarded to the JVA.

However, in case the JVA is either does not get selected for award of the Contract, the Agreement will stand terminated in case the Applicant is not pre-qualified or upon return of the Bid Security by the Employer to the Bidder, as the case may be.

9. Miscellaneous

- (a) This Joint Bidding Agreement shall be governed by laws of India.
- (b) The Parties acknowledge and accept that this Agreement shall not be amended by the Parties without the prior written consent of the Employer.

IN WITNESS WHEREOF THE PARTIES ABOVE NAMED HAVE EXECUTED AND DELIVERED THIS AGREEMENT AS OF THE DATE FIRST ABOVE WRITTEN.

SIGNED, SEALED AND DELIVERED

SIGNED, SEALED AND DELIVERED

For and on behalf of

For and on behalf of

LEAD MEMBER by:

SECOND/ THIRD/ FOURTH PART

(Signature)

(Signature)

(Name)

(Name)

(Designation)

(Designation)

(Address)

(Address)

In the presence of:

(Witness 1)

(Witness 2)

Notes:

1. The mode of the execution of the Joint Bidding Agreement should be in accordance with the procedure, if any, laid down by the Applicable Law and the charter documents of the executant(s) and when it is so required, the same should be under common seal affixed in accordance with the required procedure.
2. Each Joint Bidding Agreement should attach a copy of the extract of the charter documents and documents such as resolution / power of attorney in favour of the person executing this Agreement for the delegation of power and authority to execute this Agreement on behalf of the JV Members.
3. For a Joint Bidding Agreement executed and issued overseas, the document shall be legalised by the Indian Embassy and notarized in the jurisdiction where the Power of Attorney has been executed. However, the Power of Attorney provided by Applicants from countries that have signed the Hague Legislation Convention 1961 are not required to be legalised by the Indian Embassy if it carries a conforming Apostille certificate.

4.8 Bidding Capacity = (A x N x 2) - 2

4.8.1 STATEMENT FOR WORK IN HAND (for calculation of value of B) (In the shape of an affidavit)

This is to certify that the status of the present works in hand as on date of publication of NIT of order value more than Rs. 100.00 lacs for which either order is received or the work is under execution but which are still not completed is as under:

Amount in Lakh Rs.

Sr. No.	Brief Description of Work	Stipulated Date of Start	Stipulated Date of Completion	Time left for execution after date of publication of NIT (in months)	Cost of awarded work	Cost of work executed up to date of publication of NIT	Balance Cost of un-executed work as on date of publication of NIT in 30 month from and date of submission
1	2	3	4	5	6	7	8 = 6-7

1. If the value of Balance work goes beyond 30 months from the date of bid submission then client certificate mentioning the amount of work to be executed beyond 30 months, otherwise full balance work shall be accounted for calculation of 'B' value.
2. This is certified that this is true in all respect and can be used for calculation of the bidding capacity as per the formula given in ITB. This is also certified that other orders under execution by the firm shall not materially affect the bidding capacity of the firm as required in this tender.

Signatures with Seal of Authorized Signatory for tender

4.9 Check Points must be filled by Bidder

Sr. No.	Requirements / Documents required to be submitted		Check Points	Yes / No	Enclosed at page no. of bid and any other detail as required
1	Cost of Bid Document as Rs. 25,000/-	NEFT/RTGS/Net Banking	Proof of online transaction		
2	Bid Processing Fee	NEFT/RTGS/Net Banking	Proof of online transaction		
3	Bid Security/ EMD of Rs. 1,05,51,340/- (In case of JV, the Bid Security must be in the name of all members of JV/ Lead member that submitted the bid)	NEFT/ RTGS/ Net Banking/ Bank Guarantee/ DD in favour of Chief Executive Officer, Amritsar Smart City Limited, Amritsar	Proof of online transaction/ Original BG/DD It is unconditional It is in the prescribed format Valid up to 45 days beyond the validity of Bid		
4	Power of Attorney	On Stamp Paper, as per page Original hard copy to be submitted in the office of CEO, Amritsar smart city limited, Amritsar by date and time mentioned in NIB and scanned copy to be uploaded with technical bid	Value of Stamp Paper is Rs.100/- Name & designation of person who has issued POA Name & designation of person to whom POA is issued		
5	Joint Venture Agreement	Agreement as per format on page (Among Four) Original hard copy to be submitted in the office of CEO, Amritsar Smart City Limited Amritsar by date and time mentioned in NIB and scanned copy to be uploaded with technical bid	Value of Stamp Paper is Rs.1,000/- Financial responsibility of lead partner is minimum 51% financial responsibility of other partner bidder is minimum 15% each JV is in prescribed format. If not, liable to be rejected		

4.10 Self appraisal sheet to be filled by the bidder for determination of responsiveness

Sr. No.	Requirements as per Bid Document	Check Points	Tick the correct option or fill in information	Enclosed at page no. of bid and any other detail as required
General Requirements				
1	GST Registration	Self attested copy	Yes/ No	
Eligibility Criteria				
2	Nationality - Indian/International firms	Specify nationality	Indian/ International	
3	Declaration as per format. Requirement to be fulfilled by: Each of the JV partner	Confirm that declaration submitted by bidder / each partner in case of JV	Yes / No	
		Confirm that it is in the prescribed format. If not, bid is liable to be rejected	Yes / No	
4	Declaration regarding Debarment/ Transgression by any procuring entity Requirement to be fulfilled by: Each of the JV member	Confirm that declaration submitted by bidder / each partner in case of JV	Yes / No	
		Confirm that it is in the prescribed format; If not, bid is liable to be rejected	Yes / No	
5	Pending Litigation in Form LIT-1 - All pending litigation shall be treated as resolved against the bidder and so shall in total not represent more	Confirm that declaration submitted by bidder / each partner in case of JV	Yes / No	

	<p>than 50 percent of Bidder's net worth</p> <p>Requirement to be fulfilled by: Each of the JV partner</p>	<p>Confirm that it is in the prescribed format; If not, bid is liable to be rejected</p>	Yes / No	
		<p>Confirm that value of litigations is less than 50% of bidder's net worth and CA certificate showing calculation</p>	Yes / No	
	<p>Bidder should have successfully completed/ *part completed within the last 10 (Ten) years:</p> <p>One Similar Contract of the value not less than Rs. 84.41 Crore</p> <p>OR</p> <p>Two Similar Contracts of the value not less than Rs. 52.76 Crore each</p> <p>OR</p> <p>Three Similar Contracts of the value not less than Rs 42.21 Crore each</p>	<p>Confirm that Certificate of CA attached; If not, bid is liable to be rejected</p>	Yes / No	
5	Copies of Work Orders, Completion and satisfactory performance Certificates in support of their experience claims. The works which have been completed during the period mentioned above, though may have commenced earlier, and shall be considered for experience purposes.	<p>Name of client</p>		
		<p>Value of work done</p>		
		<p>value of work done by bidder in case work is carried out in JV</p>		

		Stipulated Date of start (as per work order)		
		Stipulated Date of completion (as per work order)		
		Confirm that copy of work order is attached		
		Confirm that copy of client's certificate is attached and it has reference of above work order.		
		Confirm that the certificate is issued by the officer not below the rank of Executive Engineer or equivalent		
		Similar information to be given for each work if work done is more than one		
6	If Contractor has completed the work at least of the amount required for qualification, out of large size contract. In case of JV, all partners combined should meet the requirement	Details of qualifying works Work no. 1		
		Name of work (in brief)		
		Name of client		
		Value of work done		
		value of work done by bidder in case he carried out this work as JV		
		Stipulated Date of start (as per work order)		

		Stipulated Date of completion (as per work order)		
7	Certificate of Chartered Accountant certifying Net worth for the Financial Year 2017-18 is positive, along with calculations. In case of JV, each partner should meet requirement.	Confirm that Certificate of Chartered Accountant attached with calculation of net worth; If not, bid is liable to be rejected		
8	Average Annual Similar work Turnover of last three Financial years (Financial Year 2015-16 to 2017-18) should be equal to or more than Rs.63.31 Crores. The calculation sheet for annual average turnover shall be certified by a Chartered Accountant. In case of JV, all partners combined should meet the requirement.	Confirm that Certificate of Chartered Accountant for each financial year and calculation of average value at present price level, attached; If not, bid is liable to be rejected		
		Indicate value of average annual turnover		
9	Bid capacity = 2A X N - B	Confirm that affidavit of bid capacity submitted on Stamp Paper of appropriate value		
		Confirm that certificate of CA submitted for Bid Capacity clearly showing calculation; If not, bid is liable to be rejected		
		Value of A		
		Value of B		

		Bid Capacity		
		Confirm that bidder has mentioned in affidavit that all works above Rs. 100 lakh, to be completed in next 30 months (period of completion + bid validity period), required for determination of value of 'B' are declared		
10	Working Capital Working Capital based on the current assets and current liabilities (including the short term loan repayments due in current years) should be atleast 25% of the estimated cost of bid. (Available Working Capital shall be evaluated as Current Assets + Revolving Line of Credit – Current Liabilities (including loan repayment due within one year).)	Confirm that certificate of CA submitted indicates clearly that the working capital is as per formula given in tender. Confirm that CA has clearly mentioned that he has gone through the letter of Revolving Line of Credit and bank's (scheduled Bank) commitment letter is project specific and assured without any ambiguity otherwise bid is liable to be rejected.		
		Confirm that bank's letter submitted for revolving line of credit, If required		
		Confirm that the above bank's letter is as per		

		format		
		Value of working capital		

Section-V: Procuring Entity's Requirements

EXISTING CONDITIONS AND PROCURING ENTITY'S REQUIREMENTS

1. Project Background

The Smart Cities Mission of the Government is a bold new initiative. The objective of the Smart Cities Mission (SCM) is to develop cities with core infrastructure and decent quality of life for its citizens, a clean and sustainable environment and application of "Smart" Solutions. The focus of the Mission is on sustainable and inclusive development, aiming to drive economic growth and improve the quality of life of people by enabling Area Based Development (ABD) through development, rehabilitation, retrofitting and redeveloping of the infrastructure. Application of Smart Solutions will enable cities to use technology, information and data to improve infrastructure and services. This sort of a comprehensive development is expected to improve the quality of life, create employment and enhance incomes for all, especially the poor and the disadvantaged, leading to inclusive Cities. It is also meant to set examples that can be replicated both within and outside the Smart City, catalyzing the creation of similar Smart Cities in various regions and parts of the country.

In July 2014, Government of India formally announced the Smart City Scheme to build 100 smart cities across India. In April 2015, announcement detailed the selection process of cities based on a Smart Cities Challenge Competition process. Amritsar was nominated as one of the three cities from Punjab to participate in this challenge. The city was selected in third round along with 26 other cities.

Amritsar literally means the pool of nectar or immortality. It was founded by the Fourth Sikh Guru Sri Guru Ram Dass. The name is derived from the sacred pool in which the holy shrine Shri Harmandir Sahib (Golden Temple) stands today and around which Amritsar town has flourished from a small village, originally known as "Guru Ka Chak" and later on Ram Dass Pur. Amritsar commanded a central position in the North-western India. It became the biggest trade centre in this part of the country, besides being the religious capital of the Sikhs.

Amritsar city comprises of total area of 139 Sq.km. including 3.55 Sq.km. for walled city area. Population of the municipal area has been reported at 11.33 lakhs as per census 2011.

The City of Amritsar got a Town Committee in 1858 and a Municipal Committee in 1868. Amritsar was declared a city on 29th March 1977 under the Punjab Municipal Corporation Act 1976 and the Municipal Corporation was constituted in place of Municipal Committee.

Amritsar is situated on Delhi-Amritsar Lahore Railway line at a distance of 450 kms from Delhi and 45 kms from Lahore. It is connected by all-weather road to all adjoining districts and sub divisional headquarters. The city has an international airport.

Amritsar city is about 230m above mean sea level and is close to the sub mountainous districts of the Punjab State. The topography of Amritsar town is fairly flat but the walled city was originally cup shaped. However, over the years the topography of the walled city changed sloping from centre to outwards on the peripheral road except for some local depression

The climate of this city varies between two extremes of very hot in summer to severe cold in winters. Heavy monsoon rain occurs in the month of July and August and modest winter rains in the month of December & January.

The average annual rainfall in the district is 541.9mm. The rainfall in the district increases generally from the south-west towards the north-east and varies from 435.5 mm at Khara to 591.7 mm at Rayya. About 74 per cent of the annual normal rainfall in the district is received during the period June to September. On an average, there are 30 rainy days (i.e. days with rainfall of 2.5mm or more) in a year in the district

Relative humidity is generally high in the mornings, exceeding 70 per cent except during the summer season when it is less than 50 per cent. The humidity is comparatively less in the afternoons. The driest part of the year is the summer season when the relative humidity in the afternoons is about 25 per cent or less

The project area of walled city of Amritsar is densely populated having a density of population ranging from 300 to 550 persons per acre.

The Municipal Corporation of Amritsar (MCA), as part of the Amritsar Smart City Project being executed through Amritsar Smart City Limited (ASCL), proposes to provide Strengthening and Rehabilitation of Sewerage and Storm Water Drainage system along with house connections for Sullage to the 877 acre (3.55 km^2) of the Walled City (Area Based Development) which is the city core, comprising 2.5% of municipal area and housing 15% population of the city.

1.1. Project Components

The components of the Amritsar Strengthening and Rehabilitation of Sewerage and Storm Water Drainage system along with house connections for Sullage Project are detailed below;

- i. Cleaning and de-silting of entire Sewerage and Storm Sewer and Double Barrel Storm sewer system in ABD area (for CCTV and ascertaining the condition of sewer for repair works)
- ii. Providing and Laying storm sewer on the main roads in walled city and connect them to Ganda Nallah / Peripheral Storm Sewer as per revised designed statement with RCC NP3 pipes
- iii. Replacement of damaged brick sewers on the periphery of walled city with new sewer line including dismantling and filling the existing Sewer using RCC NP3 with HDPE lining
- iv. Upsizing of branch sewer network along with replacement of faulty / damaged sewer line wherever required
- v. Rehabilitation of existing manholes and construction of new MH (New, Plaster and Raising of MH) wherever required
- vi. Clubbing of House Sullage connections with existing sewage connections to the remaining households in the walled city wherever required
- vii. CIPP/MWSL lining of existing brick sewer lines including all type of repair of the structure wherever required in ABD area wherever it is not possible to lay new sewer line
- viii. Separating Existing Water Supply line (passing through sewerage MH) from sewage by either shifting sewerage MH or water supply lines whichever is more feasible Including House Service Connection from manhole chamber and Road restoration.
- ix. De-silting of open Ganda Nallah 3m depth approx for a length 250m and width 12m with lining of the Ganda Nallah in the stretch
- x. Providing and Installation of Litter Trap at Open Ganda Nallah to trap the floating debris at d/s of H Point near Bengali Basti
- xi. Cleaning and de-silting of entire Sewerage and Storm Sewer and Double Barrel Storm sewer system in ABD area (for CCTV and ascertaining the condition of sewer for repair works)
- xii. Operation and Maintenance of the Sanitary and Storm Sewer system for 5 years

1.2. Need of the Project

Amritsar currently faces serious Infrastructure challenges even at city level, besides a greater need in Walled City of Amritsar. The Walled city was developed about 500 years back and all basic infrastructure i.e. water, sewerage and power has been developed in a piece meal basis and that too more than 40-60 years back. The need for a strengthening and rehabilitation project could be substantiated due to following factors:

- i. Existing Infrastructure is aging with time and could collapse in very near future
- ii. A piece meal approach of implementation and operation has been adopted till date
- iii. With change of living practices, the need for a state of the art infrastructure becomes essential

- iv. An integrated yet customised, need of the citizens living in walled city, is required
- v. During implementation, citizen convenience shall be given highest importance for this brownfield development
- vi. Heritage and cultural ethos are also of significant practice for such development

1.3. Project Phases

The Amritsar Strengthening and Rehabilitation Project shall be implemented in following phases:

Phase	Particular	Duration
I	Design and Approval	4 Months
II	Construction and Rehabilitation in ABD Area	18 Months
III	Final Acceptance & Testing	2 Months
IV	Defect Liability Period	12 Months
IV	Operation & Maintenance	5 Years

The Selected Bidder shall require working in a sequential but integrated manner to ensure highest standard of infrastructure delivery in this very critical walled city area. It shall also be responsible for all activities during the complete contract period of 8 years (2+1+5). At no point during the Contract Period, the Selected Bidder would be absolved of its responsibilities as defined in the Contract document.

1.4. Project Timelines

The Project shall be implemented as defined broadly, the chart below:

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
De-silting Works and CCTV Survey								
- Design & Approval								
Implementation activity								
- Final Acceptance & Testing								
Sewerage and Allied Works								
- Design & Approval								
- Construction activity								
- Final Acceptance & Testing								
Storm Water Drainage and Allied Works								
- Design & Approval								
- Construction activity								
- Final Acceptance & Testing								
House Sullage Connections and Allied Works								
- Design & Approval								
- Construction activity								
- Final Acceptance & Testing								

*Q1, Q2, Q3 is quarter a years and activities starts from date of signing of the Contract

The construction of components is to be completed within **Two (2) years** followed by **Defect Liability Period of One (1) year, Operation and Maintenance of all the works for Five (5) years.**

Present Status, Scope of work, Technical Specifications, Sector Specific Conditions and Performance Parameters are provided in subsequent sections.

1.5. Present Status of Utilities in the Walled City

Sewerage

The city of Amritsar has been divided under 3 Sewerage Zone and the Walled City falls under Sewerage South Zone which has a treatment facility at 95 MLD STP at Baserki Bhaini near Khapper Kheri. This STP has been constructed and recently commissioned with JICA assistance. Entire Walled City is covered with Sewerage Network which are directed outwards and connected to trunk sewer on its periphery.

The existing system in walled city area of Amritsar is operated & maintained by Municipal Corporation Amritsar. The existing Sewerage mains were found to be even older than 50 years and constructed under various schemes starting from 1960-70s. The laterals are majorly 200mm dia SW pipes while the sub trunk and trunk sewers are brick sewers ranging from 600mmX900mm egg shaped to 1750mm circular sewers. The existing sewerage network in the walled city is presented in drawing no. DI1245-101-100/RFP/SEW/NET/01

Sewerage Project executed under JNNURM

In year 2009, a project of rehabilitation of sewerage system in the walled city area was initiated under JNNURM. The excessive infiltration through faulty joints and damaged pipes was identified as one of the most major source of drinking water contamination. Hence, it was concluded that the sanitary condition, particularly in the congested & narrow lanes of the walled city area was very poor.

To replace the faulty sewer line a detailed project report (Rehabilitation of Existing Sewerage System for Walled City Area in the southern part of G.T. road of Amritsar was approved during 2009 by Government of India, Ministry of Urban development, Central Public Health Engineering and Environment Organization (CPHEEO) New Delhi vide No.12045/22/2/NURM/2008 for Rs.40.79 Crores. The following scope of work was covered under this DPR.

- Replacement of faulty sewer = 60.65 km
- HDPE pipe sewer (160 to 315 mm) = 11.95 km
- House connections = 15,000

In the above DPR, whole area falling within walled city was covered. But due to non-availability of funds with the executive agencies i.e. PWSSB, this project could not be initiated as per the scheduled programme. MoUD had categorized this project under non-starter, as per the result of initiative taken by the state Govt, MoUD vide letter no K-140(2)/80/8-2014 dtd Feb 2014 has directed to revise DPR with curtailed scope of work. Subsequently a joint survey with technical staff of Municipal Corporation Amritsar (O & M) cell & site engineer of PWSSB may be conducted & sewerage lines which are in very critical condition may be identified. On dtd 28.05.13 a joint survey had been done & following work of scope was finalized by the committee.

- Replacement of S.W. pipe faulty sewer = 17530m
- RCC main sewer = 420m
- Rehabilitation of House connection = 5844 no

Even after execution of the above work, sullage of many of the households are not connected to sewerage network and it is discharged directly to the road side drains, resulting in the sights of sullage flowing in the road side drains which gives very unpleasant feel to this heritage city. These drains are connected to the sewerage system typically at the road junctions, thus making the sewerage system as combined system with storm water is also being carried through the sanitary sewer.

Work done by MCA in the walled city sewerage network

Municipal Corporation of Amritsar (MCA) is responsible for the operation and maintenance of sewerage system in the walled city and they attend to the complaints by the residents about any sewer overflow etc. in the walled city through manual rodding. At present, there are no cleaning machines available for regular mechanical cleaning of the sewerage network. In year 2016, MCA de-silted the trunk sewer inside the walled city and on periphery of the walled city from RS Tower to Hall Gate to Khazana Gate. Apart from this no major work has been undertaken by MCA in recent past. The sewer line de-silted has been presented in drawing no. DI1245-101-100/RFP/SEW/NET/02

Sewerage Project executed under JICA

With an objective to improve existing sewerage facilities and help create durable public assets and quality oriented services in city of Amritsar, a sewerage project was formulated by PWSSB with the financial assistance by JICA. It was formulated to provide an improved and extended sewerage and sanitation system for disposing of wastewater from the City of Amritsar, in an environmentally and socially acceptable manner, to meet the forecasted population demand for year 2021 in the first phase and for the ultimate planning horizon of 2045.

Prior to this project, the city had sewerage coverage but no treatment facility. The untreated sewage was pumped directly to the Ganda Nallah which ultimately joined Hudiara drain and entered Pakistan. One of the objective of the project was to intercept the existing disposal points and treat the sewage at STP, however, even after the execution and commissioning of the project in south zone, some of these disposal points are still under operation and discharging untreated wastewater in Ganda Nallah, probably due to siltation in the trunk sewer from Focal Point temporary DP to O point.

Situation Analysis of Existing Sewerage System

Major deficiencies in the existing sewage collection system are listed below:

- Regular instances of choking of sewer lines. The sewer lines are choked frequently due to old system and in absence of regular maintenance of the sewer lines. Moreover, people through plastic bags and solid waste in the sewer are also the reason for regular choking. The problem was even more acute before shifting of dairies outside the walled city.
- Due to development of hotels around Golden Temple, the load on existing sewer line has increased, due to siltation in the existing system and this increased load has put even more pressure on the existing sewerage system in walled city.
- The layout of the sewerage system has been prepared based on the condition assessment survey and the same has been presented in drawing no. DI1245-101-100/RFP/SEW/NET/01. The dia-wise length of existing sewerage system in within walled city and its periphery has been presented in table below:

Table 1-1: Dia-wise lengths of Sewerage Network in ABD area

Dia / Size	Length (m)
Sewer Line within walled city and on periphery	
200mm	86279
250mm	7410
300mm	14850
400mm	1490
800mm	310
600mmX900mm	6170
750mmX1100mm	250
950mmX1400mm	620
1050mm	1690
1150mm	1270
1200mm	400

Dia / Size	Length (m)
1300mm	110
1350mm	1030
1450mm	510
1750mm	1133
Total	123522
	123.522 Km

House Connections

As per the household survey conducted within walled city area, the total no. of households in walled city are around 32000. Almost all the households are connected to sewerage system existing in the walled city, however the sullage from bathroom and kitchen from many of the households are still being discharged into the roadside open drain. Under various scheme such as JNNURM, HRIDAY etc. the sullage from households have been connected to sewerage system, however, still there are around 9,160 households whose sullage is not connected to sewerage system.

Situation Analysis of Existing Storm Water Drainage System

Amritsar falls under the catchment of Hudiara drain which flows in the north of the city and moves downwards before entering into Pakistan. The storm water of the city of Amritsar is carried through following two main drains being maintained by drainage division of Irrigation department:

- Tung Dhab drain
- City Outfall drain

The overall drainage system of the city of Amritsar has been presented in drawing no. DI1245-101-100/RFP/SW/NET/07

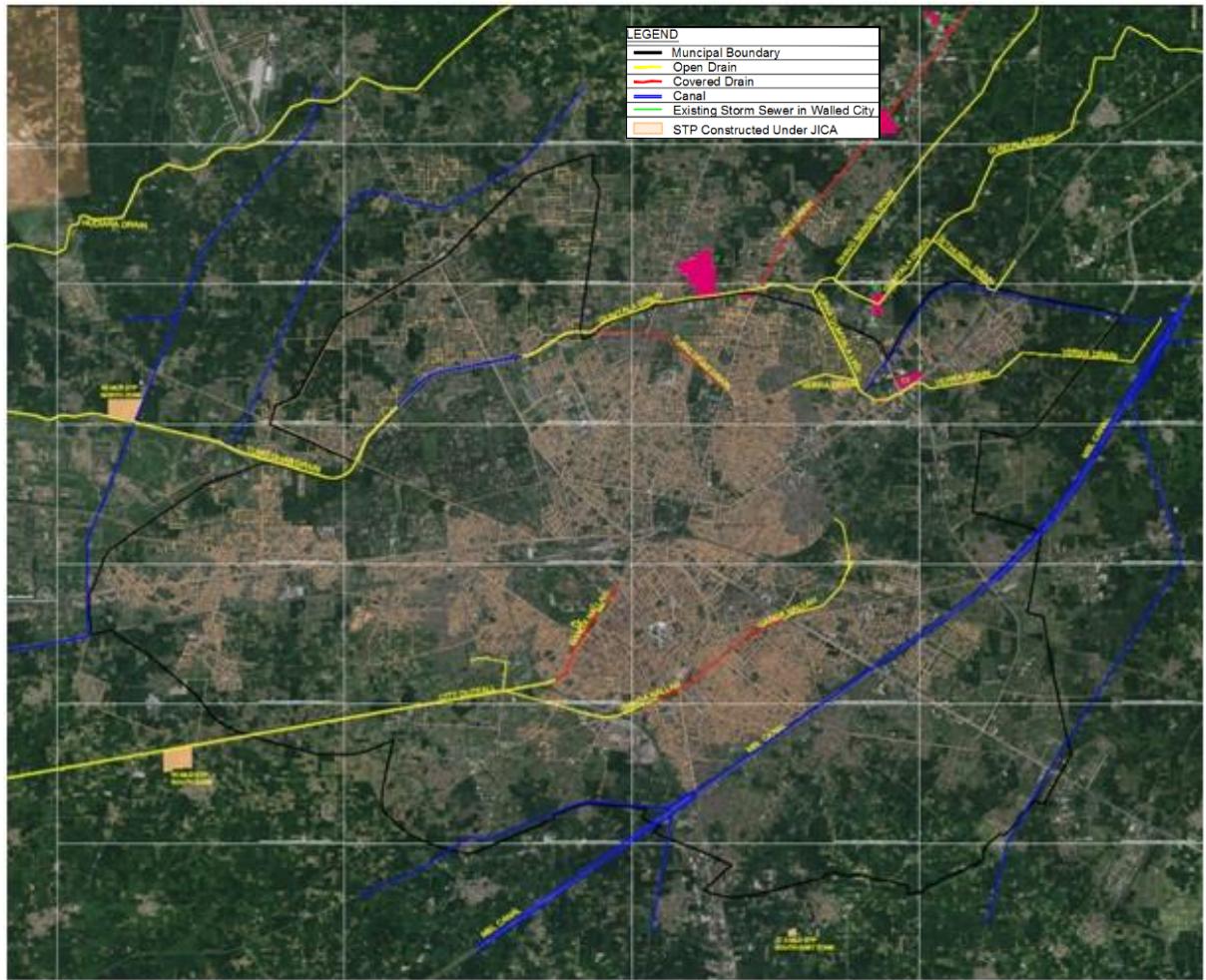


Figure 1-1: Overall Drainage System of Amritsar City



Figure 1-2: Drainage System of Walled City (ABD Area)

The walled city falls under the catchment of city outfall which has been further highlighted in **Error! Reference source not found.**. As seen the figure, there are two Nallahs flowing around the walled city of the Amritsar town

Ganda Nallah starting from city centre passing through old Sabji Mandi, Durgiana Mandir, Hindustan Basti upto city outfall drain.

Ganda Nallah starting from Amritsar Jalandhar Railway line passing through East Mohan Nagar, Tarn Taran road Himmat pura up to city out fall drain.

The drains before discharging into City outfall are being maintained by Municipal Corporation of Amritsar.

Ganda Nallah on south eastern side of walled city

The storm water drain on southern side of the walled city starts from Rasoolpur and crosses the railway line and passing through East Mohan Nagar, Himatpura before discharging into city outfall. The drain was converted into a piped drain of 2600mm dia from East Mohan Nagar to Himmatpura with total length as 2X3200m double barrel

In year 2011, as per the project report by PWSSB, practically this storm sewer is being served as a disposal point of refuse & solid waste. To make the existing storm water sewer functional, the desilting of existing sewer was found to be a must, wherein the 75% of the storm sewer was filled with Gar.

Ganda Nallah on north western side of walled city

The storm water drain on northern side of the walled city starts from Sherawala Gate as a single barrel drain of sizes 450mm to 1650mm till Pink Plaza. After that there is a double barrel drain which converted open Gandha Nallah into underground storm water sewer passing through Sabzi Mandi, Durgiana Mandir, and Hindustani Basti upto railway culvert. The size of the double barrel drain is 2200mm upto Beri Gate Market having a length of 2X833m and after that, there is a 2400mm double barrel pipe drain upto Hindustani Basti near Railway crossing having a length of 2X1640mm.

Storm Sewers within walled city

As shown in **Error! Reference source not found.**, the storm sewers have been laid in the walled city in phases with peripheral storm water drain laid in year 1995. Other existing storm sewers were laid mainly to carry storm water from areas around Golden Temple and discharging into the peripheral storm sewer, however, due to siltation in the peripheral storm sewer, the storm sewer inside the walled city does not work efficiently and there were incidents reported of flooding in the walled city. Since, the existing storm sewers were laid towards peripheral drain from Shera Wala Gate to Ganda Nallah near Hindustani Basti, the worst affected area of walled city was area around Town Hall, Katra Jaimal Singh and Gaggarmal Road. Keeping this in mind a storm sewer was laid from Town Hall through Gaggarmal Road to PBN School outside the walled city.

After completion of the project, the instances of flooding were reduced in the area, however, the issues of flooding have not been completely eliminated and the area still faces flooding during heavy rains.

The dia-wise lengths of storm sewer pipeline in and around walled city has been presented in the table below

Table 1-2: Dia-wise Lengths of Storm Sewer Pipelines in walled city and its periphery

Diameter (mm)	Length (m)
600mm	1868
750mm	549
900mm	1574
1200mm	1893
1275mm	2333
1300mm	144

Diameter (mm)	Length (m)
1400mm	744
1575mm	588
1600mm	710
1800mm	294
2000mm	264
2100mm	624
2325mm	353
2700mm	760
3000mm	597
Total	13295

1.6. Project Objectives:

- a) Connecting sullage of all the remaining households in the walled city to the sewerage network and closing all road side open drains
- b) Replace / rehabilitate existing sewer lines which are either damaged or undersized
- c) Provide trunk drainage in the walled city for maximum coverage and discharge it directly into Ganda Nallah or peripheral storm sewer so that flooding issues within walled city gets resolved
- d) Resolving the issues of blockages in the sewer line through de-silting operation in the entire walled city and further regular cleaning and maintenance of sewer line in walled city
- e) Shifting of identified water supply lines passing through the sewerage manholes
- f) Rehabilitation of brick sewers in the walled city to prolong their life and facilitate easy operation and maintenance

1.7. Employer's General Requirement

1. Background	1.1	Amritsar Smart City Limited (ASCL) has been mandated to develop Strengthening and Rehabilitation of Sewerage and Drainage Project in Walled City (ABD Area) of Amritsar, as part of its Smart City Mission Program.
	1.2	Work will be executed through a Performance Based Management Contract (PBMC) contract where the contractor shall undertake the design and construction of the project, and undertake operation and maintenance for a period of 5 years including a Default Liability Period of 12 months wherein 20% of the construction cost shall be paid as annuity during O&M phase
	1.3	The executing agency is Amritsar Smart City Limited (ASCL) and project management unit (PMU) is designed to function as the implementing agency for project administration and coordination and monitor all the project implementation activities of ASCL. The project will support Municipal Corporation, Amritsar's efforts toward sustainable urban development in the Walled City of Amritsar.
2. Project Location	2.1	Amritsar is situated on Delhi-Amritsar Lahore Railway line at a distance of 450 kms from Delhi and 45 kms from Lahore. It is connected by all-weather road to all adjoining districts and sub divisional headquarters. The city has an international airport.
3. Climate	3.1	Amritsar city has particularly a tropical climate. The three main

Conditions		<p>seasons, summer, monsoon and winter respectively, dominate the city of Amritsar. Being located in the desert lands of Punjab, the climate and weather of Amritsar is usually hot. The summer season runs from mid-March to June and touches temperature ranging from 23 °C (73 °F) to 44 °C (111 °F) in the months of March to June. Monsoons arrive in the month of July heralded by dust and thunder storms. With lush greenery and enchanting lakes, the sporadic rainfalls enhance the beauty of the city, making it one of the top monsoon destinations of the country. The winter season prevails from the month of November till the month of March. Humidity, which prevails during monsoons, diminishes at the arrival of winters. The city observes pleasant sunny days and enjoyable cool nights with the temperature ranging from 5 °C (41 °F) to 30 °C (86 °F).</p> <p>Amritsar's winter climate is the most appealing time to visit. Tourists arrive in large numbers, anytime between mid-September to late March or early April. Even in January, the coldest month, the days are bright, sunny and warm with maximum temperature around 28.3 °C (82.9 °F). Mornings, evenings and nights are cold.</p>
4. Topography	4.1	Amritsar city is about 230m above mean sea level and is close to the sub mountainous districts of the Punjab State. The topography of Amritsar town is fairly flat but the walled city was originally cup shaped. However, over the years the topography of the walled city changed sloping from centre to outwards on the peripheral road except for some local depression
5. Communication	5.1	Amritsar is easily accessible by air, rail and road. Guru Ramdas Ji International Airport in Amritsar City is a modern airport and most airlines have daily flights from all metros across India via Delhi. Amritsar is touched upon by National Highway No. 1 connecting Amritsar with Delhi.
Particular Requirement of the Package		
6.Completeness of the Offer	6.1	The Bidder shall be fully responsible to include in his bid the whole of the Works, including each individual component, designed and constructed in accordance with technical specification defined herein. In absence, good engineering practice and best Industrial standards should be followed. The integrated project shall function as a whole citizen services, a system that is capable of achieving the sewerage & storm water strengthening and rehabilitation. The Bidder within the tendered cost shall provide any accessories which are not specifically mentioned in the specifications/requirement, but which are usual or necessary for completion of the Works and successful performance of the facilities. The Bidder shall, to the maximum extent practical and feasible, endeavor to offer standardized designs and Plant and equipment keeping in view minimization of operation and maintenance requirements. The Bidder shall ensure that his offered designs and equipment are "maintenance-friendly".
7. Facilities for the Client's Representa	7.1	The Bidder shall provide upkeep, and maintain the following facilities during construction and execution work. The cost for these facilities shall be included in the Contract Price.

tives		a) Testing Laboratory at site office b) Testing Equipment at site
	7.2	Within 60 days, of award of work, contractor shall provide a site office Building including required office equipment i.e. fax, photocopy, internet/email, computer with colour laser printer of latest configuration / software (MS Projects, MS office, Primavera, AutoCAD). The location and layout of site office shall be got approved from the Engineer.
	7.3	Storage for the equipment to be installed under the subject contract will be provided by the Employer.
8. Construction Management	8.1	Site Organization
	8.2	Bidder shall describe the roles and responsibilities of each of the personnel proposed and shall describe the roles, relationships, and division of responsibilities between the site management and the representative head/branch office that will be responsible for the Project. In particular, the Bidder shall provide details of the technical and financial responsibility and authority of the Project Manager who will be responsible for the day-to-day operations at the Site.
	8.3	The Bidder shall provide a preliminary organization chart which indicates the relationship between the site management and the representative head/branch office, the direct on-site works operations, the sub-bidders and suppliers, and the Employer's Representative. Details shall be furnished separately for the design and construction phase, and for the operations and maintenance phase.
	8.4	Plant and Construction Equipment
	8.5	The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key plant and construction equipment. A separate Form shall be prepared for each item of plant and/or equipment listed, or for alternative equipment proposed by the Bidder.
	8.6	The overall requirements and mobilization/deployment schedule for each major item of plant and equipment (such as plant & equipment to be used, excavators, concrete batching plants, hot mix plants, etc.)
	8.7	Construction Schedule
	8.8	<p>The Bidder shall submit his proposed construction program in sufficient detail so as to demonstrate: the order in which he proposes to carry out the Works (including each stage of design, procurement, manufacture, pre- delivery inspection and testing, delivery to Site, construction, erection, testing and commissioning); all major events and activities in the production of Construction Documents; the periods for the design reviews and approvals and for any other submissions, approvals and consents specified in the Employer's Technical Requirements; the sequence of all tests specified in the Contract; etc.</p> <p>The bidder shall also submit the micro planning program showing detail of area-wise and street wise execution of all activities in time bound manner. The construction program shall not be considered unless street wise plan has been prepared. Any street should not be left dug up for a period more than period proposed and approved by</p>

		Authority. Any breach of this condition shall constitute a major violation of contract as convenience of citizens is the major reason for bundling all the components together.			
	8.9	The Bidder should pay particular attention to demonstrating how his proposed program for supply of major items of plant and equipment to be incorporated into the Permanent Works is to be managed to satisfy the requirements of the Contract, including the time required for design, placing of confirmed orders, manufacturing, pre-delivery inspections and tests, delivery to the Site, storage, installation, etc.			
	8.10	Such construction program shall be developed on a commercially available project management software (such as Primavera, MS Project or equivalent) showing level-3 activities, together with bar charts and CPM diagrams which clearly illustrate the critical path, and the resources required to be provided by the Bidder to achieve the desired results.			
	8.11	The Bidder's attention is drawn to the requirements set out in this contract, and the Bidder is required to clearly demonstrate how he proposes to meet the Milestone Targets that have been established to ensure that pro-rata progress is maintained on all sub-components of the Works throughout the execution period.			
	8.12	Details shall be furnished separately for the design and construction phase, and for the operations and maintenance phase.			
	8.13	List of Manufacturers, Suppliers and Vendors			
	8.14	The Bidder shall provide details on the proposed manufacturers/vendors/suppliers of major items of materials, plant and equipment that are to be incorporated into the Permanent Works.			
		Sl. No	Description of Item (Material / Plant / Equipment)	Name and Address of Manufacturer /Supplier/Vendor	As per List of Preferred Makes/ Approved by ASCL
	(A)	Mechanical Work Components			
					Yes/No
					Yes/No
					Yes/No
	(B)	Sewerage, Drainage, Civil Works			
					Yes/No
					Yes/No
					Yes/No
	8.15	Bidders QA & QC Plan			
	8.16	The Bidder shall provide his proposed Quality Assurance and Quality Control (QAQC) Plan which describes the type, frequency and procedure of tests to be done on sites; type, frequency and procedure of tests to be done at manufacturers' locations outside the sites; all parameters to be measured in these tests; permissible limits of such parameters; details of laboratories to be established at sites; details of testing equipment & machines and their calibration schedules; details of the Bidder's internal systems for assuring quality control at the manufacturers' outside the sites; details of qualifications and experience of the Quality Control professionals to be deployed for the entire project; and the systems of Quality Audit to be instituted for			

		systematic and professional management as well as adherence with the highest standards of quality of all construction works.
	8.17	The Bidder shall provide separate descriptions of its proposed QA/QC plan during the design and construction phase, and the subsequent operations and maintenance phase. The Bidder shall also provide copies of the company's standard rules and regulations regarding quality assurance and quality control procedures for works in general and works of a similar nature.

1.8. Project Design & Approvals

This contract involves Design, Build and Operational liabilities on the contractor. The Contractor will undertake Detailed Engineering Design for all the components, and Work Plan / System Improvement Plan for implementation which will be approved by the Engineer – In – Charge, during the Design Phase of Four (4) months. Only after the Approval of the Detailed Engineering Designs and Good for Construction drawings, to be prepared by the contractor and approved by the Engineer-In-Charge, within the Design Period, work will start

1.9. Project Implementation

The implementation of the work shall be as per the approved System Improvement Plan / Work Plan prepared by the contractor and approved by Engineer In Charge and the work shall be executed as per approved Work Plan / System Improvement Plan. The contractor shall start taking ownership of the stretch which has been constructed / de-silted / rehabilitated once a stretch is completed and approved by Engineer In Charge. The contractor shall be responsible for O&M of the stretch owned by him during implementation phase without any any additional cost.

1.10. Final Acceptance Testing and Schedule of Guarantees

The Final Acceptance Testing shall be conducted as per process defined in detailed scope of work and all critical civil, mechanical are required to pass the test. Only after passing of Final Acceptance Test and with approval of EIC, the work will be deemed complete and Completion Certificate will be issued.

1.11. Defect Liability Period

The contractor shall be responsible for any defect in the construction / rehabilitation / de-silting and shall do O&M of the entire system during defect liability period of 12 months without any additional cost

1.12. Operation & Maintenance

The Contractor will Operate and Maintain the facilities created for a duration of Five (5) years after completion of defect liability period, as per the KPIs defined below. The contractor will provide manpower and spare parts as deemed required at site for O&M of the facilities. The list of minimum manpower required attached with the bid is only indicative. Sector wise O&M details are indicated in subsequent sections of this document

1.13. Key Performance Indicators (KPIs)

Penalty will be levied on the contractor when the “Non-Compliance” of the KPIs of the O&M phase, as detailed in the Contract Agreement, is/are due to an act of negligence, improper, un-professional methodology adopted for O&M of the system, by the contractor and/or absence of qualified and experienced manpower to be supplied by the contractor, at site.

During Implementation Phase:

- No leaks / blockages in pipes for the stretch undertaken by contractor
- No overflows from the Manholes on the stretch covered by contractor
- Frequency of cleaning of sewers with jetting machine as per the approved work plan
- Frequency of submission of CCTV inspection report for the sewers as per approved work plan
- Execution of the entire work including finishing according to the drawings and specifications as per approved work plan
- Submission of "As built" drawings both in soft copies and hard copies
- Silt removed from the sewerage system should be removed by next day from the road side.
- CCTV inspection to be carried out after removal of silt from the system and submitted to the Employer within a week and taking approval from Special Technical Committee for further interventions required for that stretch

During DLP and O&M phase:

- The Contractor shall submit a monthly report during DLP and weekly report during O&M phase to the Employer detailing the Operation and Maintenance indicating the labour hours expended and other Consumables consumed and also problems faced and rectified.
- Minimum time for rectification
 - Blockage and overflows - 12hours
 - Stolen / Broken man hole covers - 12hours
 - Sewer spills from main sewer, branch and house service connections (between property chamber and public - 72hours
- Record all complaints received regarding sewer blockage and clearance with same date and time.
- Record condition of sewer found at the time of attending complaint. Damage notice should be recorded by attending staff
- The Contractor shall carry out mandatory annual cleaning of all road gulleys before the monsoon season.
- Identification and reporting of illegal connections on the sewerage network as soon as these are detected.

1.14. Key Personnel

Bidder shall provide minimum key experts for the integrated project as mentioned below during construction and O&M

Position	Minimum Experience Requirements	Number
Project Manager	BE Civil, 15 years' experience in construction works and working at equivalent position.	1
Civil Engineer	BE Civil, 5 years' experience in construction works	3
QAQC engineer	Degree (Civil) with 10 years' experience in similar type of works.	1
	Degree (Civil) with 5 years' experience in similar type of works.	2
Safety Expert	professional having 10 years of experience in the similar nature	1

SCOPE OF WORK

2. Scope of work

2.1. Objectives

The Area based development (ABD) envisions strengthening and rehabilitating sewerage and storm water drainage system of the “Walled City Area” also referred as Project area, as most of the sewerage / drainage network in Walled City Area is silted and the trunk sewers have mostly outlived their lives, thus causing unhygienic conditions in the project area.

Services under this contract have been bifurcated into three parts to facilitate easy understanding of the scope and for better planning and execution of the project. The bidder has to include in his offer the entire scope of services needed for achieving the objectives and intentions of the project and the program.

- Service Improvement Plan (SIP) Preparation (Survey, Investigation, Methodology for project execution, Design Submissions, approval, etc).
- Design & Build (Design, Construction and commissioning of the project components including continual designs submissions and approval as per the project methodology approved during SIP preparation) based on the scope defined in this tender
- Operating & Maintenance of assets created / de-silted / rehabilitated for 5 years after the successful commissioning of the project. The first year of the O&M period shall be after completion of the defect liability period.

2.2. Proposal of the Employer

With the above objective in view, a proposal for de-silting / constructing / rehabilitating the sewerage and storm water drainage system in walled city Amritsar has been developed and is briefly described below and shall form part of the contractor's scope of services.

Based on the scope given in the subsequent sections, contractor shall verify the same with respect to its hydraulics and site conditions and suggest modifications accordingly. The layout pattern and zoning of sewerage / drainage system design is guided by:

- Topography and existing important physical feature.
- Existing Drainage Pattern and availability of land for laying sanitary/ storm sewer line and appurtenances.
- Existing and proposed layout with regard to right of way, width of road, traffic densities of roads and streets.

2.3. Scope of Work During Design Build Phase

The Scope of Services shall include all technical, managerial, administrative, commercial, environmental, and social interventions as required in accordance with acceptable, prudent waste water utility construction, rehabilitation and management practices. The Scope of Services mentioned here, above and below are indicative only and the contractor is required to undertake his own detailed investigation of the Project Facilities to determine the complete Scope of Services for achieving the Minimum specified Service Levels.

The Sewerage and Storm Water Drainage Network to be Designed, Built, refurbished, operated and maintained, as detailed in the ITB sections, Tested and Commissioned by the Contractor shall comply with the guidelines contained in “Manuals on Sewerage and Sewage Treatment 2013” published by the Central Public Health & Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India.

The detailed scope of work under this RFP during Design Build phase has been described in the section as below

2.3.1. Cleaning and De-silting of sanitary and storm sewers

As identified through condition assessment survey of the sewerage system in walled city, almost all the pipes (especially laterals) are heavily silted and filled with solid waste. This puts tremendous pressure on the existing sewerage system and leads to routinely overflowing of sewer manholes and creating very unhygienic sanitary condition in the walled city. Through this project it is proposed to clean and de-silt the entire sewerage and storm sewer system in the walled city.

Moreover, the Ganda Nallah from East Mohan Nagar to Himmat Pura is also filled up with silt and solid waste and its capacity to safely discharge the storm water in its catchment is largely reduced. As learnt from MCA, a DPR has been prepared for de-silting of Ganda Nallah from East Mohan Nagar to Himmat Pura, this stretch has been excluded to remove and duplicity of the work. Moreover, the storm water from the walled city is not directly discharging into this Ganda Nallah, hence its cleaning and de-silting will not affect the system in walled city.

Further the stretch of Ganda Nallah from Pink Plaza PBN School to Bengali Basti Railway Curvert was cleaned in year 2016, thus, it was excluded from this project during draft DPR stage. However, as discussed during a review meeting with MCA officials and CEO-ASCL, it was pointed out that since the downstream open Ganda Nallah is heavily silted, the double barrel Ganda Nallah would also have been silted again and require de-silting. Hence, this stretch of Ganda Nallah has been included in the project.

Also, the stretch of trunk sewer on the circular road from RS Tower on Hall Road to Hall Gate to Khazana Gate was cleaned by MCA in year 2016. However, as discussed with MCA, this line may also have silted to some extent in last 2 years and since the brick sewer is to be structurally lined through CIPP / MWSL technology, this stretch has been considered under for cleaning and de-silting under this project.

The dia-wise lengths of sewerage system, storm sewer in ABD area and Ganda Nallah has been presented in Table 2-1, Table 2-2 and Table 2-3 respectively. The layout of Existing Sewerage and Existing & Proposed Storm Sewer network has been presented in drawing no. DI1245-101-100/RFP/SEW/NET/01 and DI1245-101-100/RFP/SW/NET/05 respectively.

Table 2-1: Dia-wise lengths of sewerage pipes for de-silting and cleaning in ABD area

Dia / Size	Length (m)
Sewer Line within walled city and on periphery	
200mm	86178
250mm	6950
300mm	14850
400mm	1490
800mm	310
600mmX900mm	6170
750mmX1100mm	250
950mmX1400mm	620
1050mm	1690
1150mm	1270
1200mm	400

Dia / Size	Length (m)
1300mm	110
1350mm	1030
1450mm	510
1750mm	1133
Total	122961
	122.96 Km

Table 2-2: Storm water lines within walled city for de-silting and cleaning

Dia / Size	Length (m)
600mm	1868
750mm	549
900mm	1574
1200mm	1893
1275mm	2333
1300mm	144
1400mm	744
1575mm	588
1600mm	710
1800mm	294
2000mm	264
2100mm	624
2325mm	353
2700mm	760
3000mm	597
Total	13295
	13.30 Km

Table 2-3: Double Barrel Ganda Nallah on north western and South-Eastern side of walled city for de-silting

Dia / Size	Length (m)
Double barrel RCC pipe to cover Ganda Nallah from Pink Plaza to Indra Colony	
2200mm	2X833
2400mm	2X1640

After cleaning of the pipe drain, a CCTV survey is proposed to check the effectiveness of the de-silting operation and rehabilitation works required in the system. Based on CCTV Survey of the existing system the existing sewerage and drainage layout drawing shall be revised by the contractor with correct connectivity, Dia, MoC and Invert Levels

2.3.2. Trunk Storm Sewer on the main roads in walled city

Since the walled city is highly commercial and prominent area of Amritsar, it is recommended that a return period of once in two years to be adopted for the project area

Minimum time of concentration has been considered as 15 mins and for once in two year return period.

Since the designed storm event is expected to come once in two years, the surcharging inside the manhole has been allowed (without flooding) so that the dia of storm sewer is minimised and same could be laid in the narrow lanes of walled city.

Since the walled city has narrow lanes and the roads are not straight; and are intercepted by secondary lanes after short distances, the manhole spacing has been kept around 30m. The depth of manholes has been proposed 300mm below outgoing pipe IL so as to allow silt to settle in the manholes itself which could be cleaned once before the monsoon and siltation in the pipe itself is minimized. The details of manholes have been presented in drawing no. DI1245-101-100/RFP/SW/STD/02 to 05

Road Gulleys are the interface between storm water flowing on the road and the Storm Sewer. Therefore, it is utmost important the inlet grating and chamber remains clean during the rainfall. Although it has more to do with O&M but in the design also, this aspect has been tried to cover so that choking could be minimized during O&M.

The SFRC grating with higher perforation (min. 30% perforation) is proposed, but at the same time the grating should be strong enough to withstand the load of vehicles over it. The bidder shall get the design of cover approved from Engineer In Charge before executing the work

Further, as provided in the main storm sewer manholes, a drop of 300mm has been proposed in the chamber below the outgoing pipe to the main storm sewer manhole for its cleaning and maintenance.

The details of Road gulleys have been provided in drawing no. DI1245-101-100/RFP/SW/STD/07

The proposed Storm Sewer layout in the walled city has been presented in Figure 2-1. The Di-
wise lengths of the proposed Storm Sewer RCC NP3 have been provided in Table 2-4

S.NO	NAME	SYMBOL
1	PROPOSED STORM SEWER	
2	EXISTING STORM SEWER	
3	DOUBLE BARREL GANDA NALLAH	
4	FLOW DIRECTION	
5	MANHOLE (M.H)	
6	GROUND LEVEL (G.L)	0.00M
7	INVERT LEVEL (I.L)	0.00M
8	DIAMETER (D)	Ø MM
9	ROAD	
10	CATCHMENT AREA	
11	RAILWAY LINE	

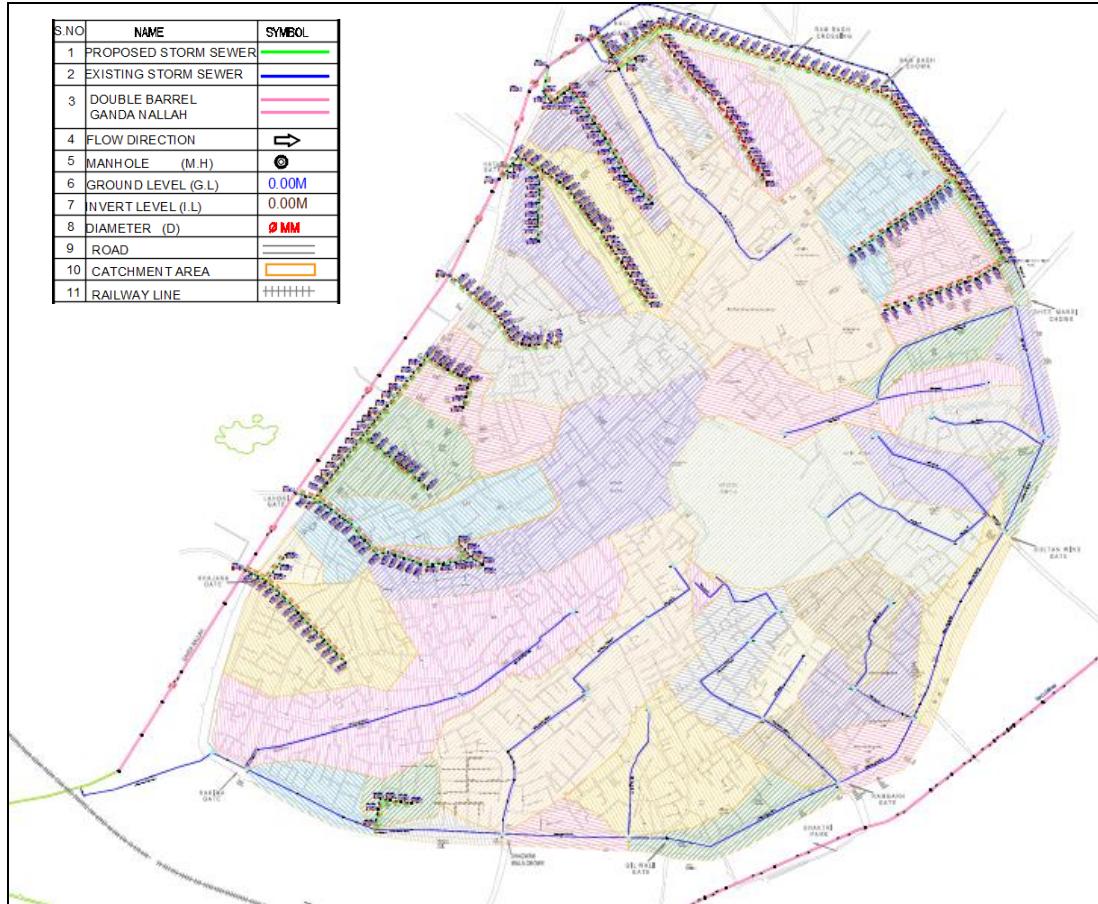


Figure 2-1: Storm Sewer network layout in walled city

Table 2-4: Dia-wise of proposed storm sewer in walled city

S. No.	Diameter (mm)	Length (m)
1	400	67
2	500	411
3	600	575
4	700	152
5	800	431
6	900	353
7	1000	1774
8	1100	251
9	1200	971
10	1400	1380
11	1600	441
12	1800	54
	Total	6860

The layout of the storm sewer network has been presented as Drawing No. DI1245-101-100/RFP/SW/NET/05 and the L-sections of the proposed storm network have been presented in drawing no. DI1245-101-100/RFP/SW/LSEC/06. During the design, the efficacy of the receiving double barrel Ganda Nallah has also been checked considering additional flow from the surrounding areas in the Nallah. The same has been found sufficient in the design return period. Contractor is required to recheck the design during design phase.

2.3.3. Removal of existing sewage connections in existing storm sewers

At some locations the sanitary sewers were not able to take the load of upstream sewers due to blockage in sanitary sewer downstream. At these locations, the sanitary sewers were connected to the storm sewer as temporary solution to issues of overflowing of sewers. Through these connections, the storm sewers are receiving sewage during dry weather without any dilution; itself dilutes the concept of separate storm sewer. After proper cleaning and strengthening of sanitary sewers under this project, these connections shall be removed. The identified locations have been presented in the Table 2-5 and Figure 2-2

Table 2-5: Location of discharge of sewage in storm sewers

S. No.	Location of discharge of sewage in Storm Sewer
1	T-Point at Galiyara Behind Sri Guru Arjan Dev Niwas Near Asha Guest House.
2	In Between Chowk Baba Sahib to Kamboj Handloom Behind Sri Baba Atal Sahib
3	In Between Chowk Laxman Sar to Moni Chowk Near Pehlwan Kulcha and Iskcon Mandir.
4	Near Moni Chowk
5	T-Point Side Dargah Baba Panj Peer Near Giwali Chowk

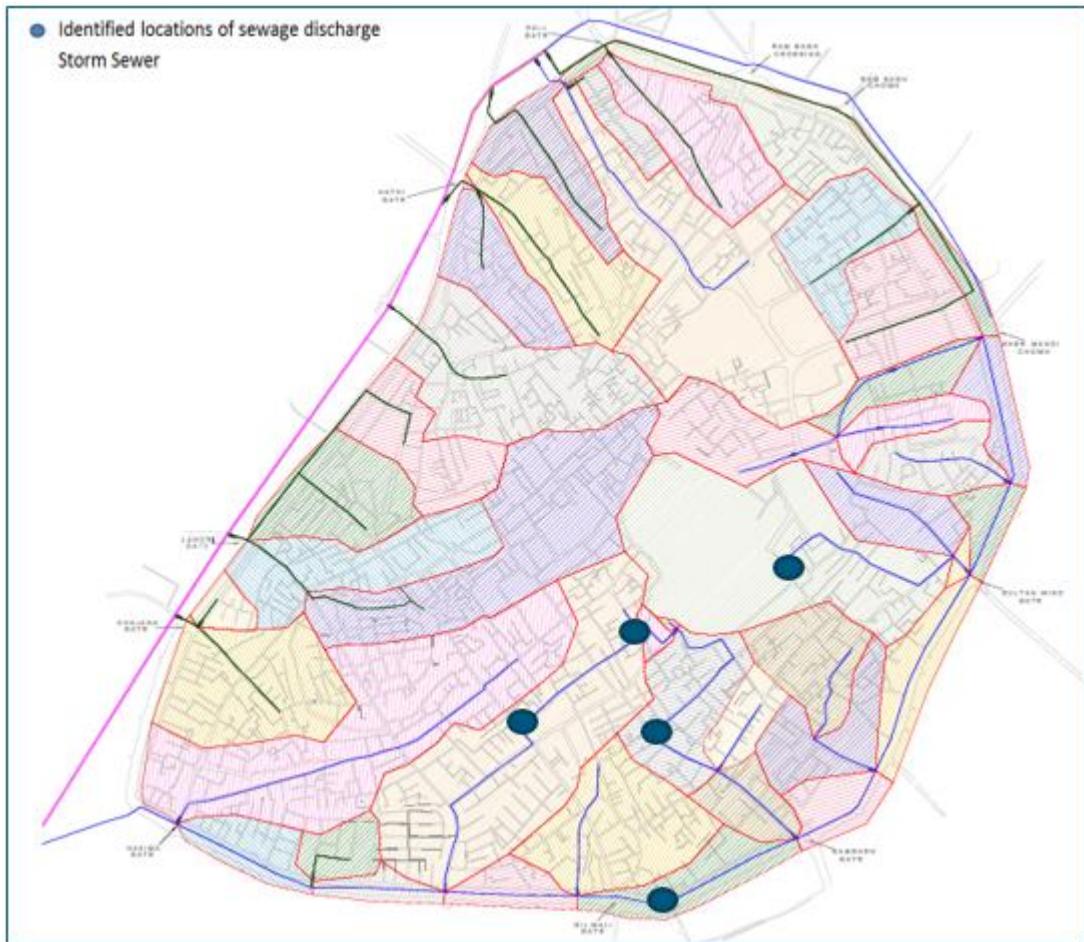


Figure 2-2: Identified Locations of Sewage Connections in Storm Sewer in walled city

Apart from these locations, there may be some other locations where sewage in dry weather is being discharged into storm sewer. Any other such location shall be identified during de-silting and CCTV survey and the same shall also be removed during execution.

2.3.4. De-silting of Open Ganda Nallah at Bengali Basti

The open Ganda Nallah near Bengali Basti is heavily silted, the double barrel storm sewer (from Pink Plaza to Bengali Basti) and peripheral storm sewer (from Ghee Mandi Chowk to H Point at Bengali Basti) cannot discharge effectively which leads to flooding and siltation upstream side. The cleaning and de-silting of this Nallah is utmost important to drain out storm water in the walled city. Nallah of 12m width and 250m length is required to be cleaned and de-silted. The existing condition of the Nallah has been presented in Photograph 2-1



Photograph 2-1: Heavily silted open Ganda Nallah at Bengali Basti

2.3.5. Providing Litter Trap at open Ganda Nallah at Bengali Basti

The litter trap is designed to float in waterways in order to capture litter before it flows farther downstream by using the current to guide debris into the trap. This performance floatable control technology continuously operates 365 days a year without any mechanical assistance to capture floating litter. This is a technology for floatables control and is the answer to the growing problem of litter in storm water drains.

The floating matters in the Ganda Nallah are eye-sore and contribute to the choking of the Nallah. It is proposed to provide a litter trap at open Ganda Nallah at the most critical location at Bengali Basti (merging point for Double Barrel pipe Ganda Nallah and peripheral storm water drain) for regular maintenance of the Nallah at this location



Photograph 2-2: Current and proposed condition of open Ganda Nallah at Bengali Basti

2.3.6. Upsizing of sewer network where required alongwith replacement of faulty / damaged sewer line

The entire Sub trunk Sewers inside the walled city are connected to the sewers running around the periphery of the walled city. The existing sewerage network catchment of the walled city has been presented in drawing no. DI1245-101-100/RFP/SEW/NET/08. The detailed existing sewerage network is presented in drawing no. DI1245-101-100/RFP/SEW/NET/01

These peripheral trunk sewers are further connected to the trunk main and treated at South Zone STP at Baserki Bhaini near Khappar Kheri.

After analysing the existing sewerage network in the walled city for the efficacy to carry the sewage generated in the walled city, it was found that majority of the sewer lines are sufficient to carry the sewage load generated in the walled city. However, in few stretches of the sewer network in walled city, the sewers are undersized and insufficient to carry the sewage load, let alone the combined flow of sewage and storm water drainage.

The layout of the sewerage network with highlighted undersized sewer has been presented in drawing no. DI1245-101-100/RFP/SEW/NET/03. The details of the undersized sewers are presented in the Table 2-6.

Table 2-6: Undersized / known damaged Sewer lines in walled city area

Location	Length (m)	Existing Size	Proposed Size
Nimak Mandi Road	152m	200mm/250mm SW	315mm PVC SN-8
From Harminder Sahib Langar Hall	409m	250mm SW	500mm RCC NP-3 HDPE Lined
Fawwara Chowk to Ghee Mandi Chowk to eliminate 2 disposal points	623m	Broken damaged after construction of elevated road	600mm RCC NP-3 HDPE Lined

Further, as discussed with MCA officials and joint site visit with their engineers, it was learnt that while constructing the elevated road from Shera wala Gate to saragarhi parking, the existing 600X900 brick sewer from Fawwara Chowk to Sherawala Gate was damaged and could not take the load from upstream sewers. Although a new sewer line was laid after construction of elevated road, the depth of upstream pipeline could not be maintained due to foundation of elevated road. In order to keep the systems running, disposal point in front of Saragarhi parking was used which pumps the sewage to another disposal point near Shera Wala Gate.

2.3.7. Replacement of faulty sewer lines

The lateral sewer pipelines which are SW upto 300mm dia in the walled city area were laid progressively from 1980s and are very old and as discussed with MCA officials, there are damaged pipelines in the system or pipelines which are not laid to the correct gradient. It is proposed that through this project, these faulty pipelines shall be replaced

The material of construction for open trench technology shall be SW. The estimated dia-wise lengths of pipelines to be replaced has been presented in Table 2-7

Table 2-7: Length of lateral sewer lines considered for replacement in walled city area

Existing Dia / MoC	Proposed Dia / MoC	Length (m)
200mm SW	200mm SW	3700m
250mm SW	250mm SW	180m

300mmSW	315mm SW	420m
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Wherever upsizing was required as per the efficacy check has been discussed in section **Error! Reference source not found.**, however, there are some locations where regular issues of overflowing have been reported which may be due to faulty gradients or broken pipes. It is recommended that while addressing replacement of faulty pipelines, these areas should be evaluated on priority through CCTV survey. Some of these locations have been presented in the Table 2-8.

Table 2-8: Locations need to be evaluated on priority for faulty pipelines

S.No	Location of probable locations of faulty pipeline
1	On Purani Lakkar Mandi
2	On Jalebi Chowk
3	On Galiara Road behind Guru Nanak Niwas
4	From Gali No. 1 to Guru Ravidas Ji Gurudwara
5	On Mahana Singh Road

2.3.8. CIPP/MWSL lining and replacement of existing brick sewer lines in ABD area and at its periphery

Entire stretch of brick sewer inside the walled city and in the periphery upto Khemkaran Road (till the flow from walled city is safely discharged into newly constructed pipe line under JICA), are proposed to be either lined from inside by suitable CIPP/MWSL lining or replaced with new sewer so that its life is increased by 40-50 years. It is considered that non-circular pipes to be rehabilitated through Cured In Place Pipe (CIPP) technology and the circular pipes be rehabilitated through more advanced Machine Wound Spiral Lining (MWSL) technology.

In the congested lanes of walled city, it is extremely difficult to lay new deep sewer line, much of streetscape works have already been done under HRIDAY on these streets and therefore, laying new sewer line is not proposed and CIPP lining of sewer is proposed inside the walled city except for two stretches i.e. Hall Road and stretch from Mahan Singh Gate to Rambagh Chowk where replacement of pipe with RCC NP3 pipes with HDPE lining is proposed.

On the peripheral road, the road width varies between 12m to 18m and it is feasible to lay a new sewer line and therefore, the existing sewer line on the periphery shall be replaced by similar dia RCC pipeline and the connections to the existing brick sewer shall be re-connected to the new sewer line. Though laying of sewer line at busy peripheral road require traffic management and inconvenience to the people. However, proper planning and implementation, this inconvenience could be minimized.

The peripheral sewers discharge into a 1750mm dia brick sewer line starting from Hakima Gate passes through congested Bengali Basti, crosses the railway line and further passes through heavy encroached area upto Khermkaran Road is proposed to be lined with MWSL as laying new line will require clearing of these encroachments till it is discharged into RCC pipeline laid under JICA.

The layout of these pipes has been presented in drawing no. DI1245-101-100/RFP/SEW/NET/04 and the dia-wise lengths of sewers has been presented in Table 2-9

Table 2-9: Dia-wise length of pipes for CIPP / MWSL lining and replacing brick sewers by new pipes

S.N.	Existing Brick sewer dia/ size	Proposed Dia of Pipe	Length (m)
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S.N.	Existing Brick sewer dia/ size	Proposed Dia of Pipe	Length (m)
<u>CIPP Lining</u>			
1	600X900mm egg shape brick sewer		3,335
<u>MWSL Lining</u>			
1	1750mm dia		1,133
<u>Replacing existing brick sewer with new RCC pipelines</u>			
1	600X900mm	800	2,584
2	750X1150mm	900	245
3	950X1450mm / 1050mm	1,100	2,317
4	1150mm, 1200mm	1,200	1,669
5	1300mm, 1350mm, 1450mm	1,400	1,641

Although, the entire length of brick sewer has been considered for rehabilitation, the actual length of sewer and location of rehabilitation shall be reviewed after de-silting and evaluating CCTV footage by a “special technical committee” to be constituted by the competent authority through PMIDC / Local Government Department.

After construction of new sewer line, the existing brick sewer on the periphery of walled city shall be abandoned. After that, since, there would be no flow in the brick sewer line it is highly likely that the sewer would collapse.

It is therefore, proposed that the abandoned brick sewer shall be excavated from the top up to its crown and refilled and compacted. This stretch can be used for laying other services in future.

2.3.9. House sullage connections to the remaining households in the walled city

One of the major purpose of the household survey was to know whether sullage from households are connected to the sewerage system or is being discharged into the road side drain which creates a very un-hygienic condition in the walled city. Based on the data from household survey, it is estimated that sullage from 9,160 households are not connected directly to the sewerage manhole but discharged into the road side drains

Under this project, these households sullage shall be connected to sewerage system and rainwater pipes shall be left with a bend on the road after closing of road side drain.

There are pipes carrying three categories of wastewater from the households:

- a) Soil water from W/C
- b) Grey water from bathroom and kitchen
- c) Rainwater pipes from terrace and open area in house

The night soil water from W/C and kitchen and bathroom waste shall be collected in an inspection chamber to be constructed over the existing sewage pipe coming from inside the house or if existing pipe from inside the house is not available new pipeline shall be laid to connect inspection chamber to existing sewerage manhole. For estimation purpose, 50% of houses have

been considered with using the existing sewer line from household to sewer manhole and for other 50%, a new pipeline from inspection chamber to existing sewer manhole has been considered.

There will be maximum three pipes connected to a inspection chamber. If there are more than three pipe outlets from the property, they can be joined by suitable bends, tees, door bends and connected to inspection chamber. In large plots, where more than three pipe outlets from property, more than one inspection chamber could be installed as per site condition. The chamber shall, in turn, be connected to the main sewer manhole through existing pipe. The rain water from the households shall be discharged over the road side through a bend. The storm water from the roof top shall flow on the road till it reaches the nearest road gully.

The road side drain shall be closed after construction of house connection chambers. The typical detail of house connection has been presented in drawing no. DI1245-101-100/RFP/SEW/STD/01

2.3.10. Rehabilitation of existing manholes

The condition assessment survey of sewerage reveals the poor condition of the manholes in the walled city. Based on this survey, the interventions required for rehabilitation of manholes in the walled city have been assessed and the percentage of one type of interventions required has been estimated. The total number of manholes in the walled city counted from topographical survey are 8,350.

The total number of different types of manholes and types of interventions required has been tabulated in Table 2-10

Table 2-10: Details of manhole rehabilitation in the walled city

Manhole Size	Interventions required		Total No of Manhole
	Raising and Plastering	Only Plastering	
750x1200	1372	644	2016
900x1500	1372	644	2016
1200x1800	588	276	864
1500x1800	392	184	576
1500x2400	196	92	288
New Manhole (6%)			500

2.3.11. Separating water supply pipelines running through sewerage manholes

In ABD area, there are some water supply pipelines passing through the existing sewerage manholes. Probably, due to water supply lines laid first in the centre of narrow streets and after that when sewerage system was laid, it was laid in the same alignment due to lack of space and the water supply pipelines came inside the sewerage manhole. This has led to severe health problems for the residents living in that area as drinking water is contaminated with sewage. During condition assessment survey, some of these locations were identified and have been presented in drawing no. DI1245-101-100/RFP/WS/NET/03.

For separating the water supply pipelines of 100mm from sewerage manhole, first preference would be shifting the manhole, however, in case it is not possible water supply pipeline shall be shifted. The estimated length of 100mm dia water supply pipeline has been considered under

shifting of sewer line. The same has been considered under “replacement of faulty sewer line”. At places where it is not possible to shift the manhole, shifting of 100mm dia pipeline shall be considered. A very small quantity has been considered for shifting of pipeline. Based on the condition assessment, the lengths and size of such pipelines have been extrapolated and estimated as presented in Table 2-11

Table 2-11: Water supply pipelines to be shifted

Dia	Existing MoC	Proposed MoC	Length
100mm	CI / AC	DI	0.1 Km
40mm	GI	HDPE	2.0 Km

2.3.12. Development of campaign for creating awareness about the project and participation of residents in its upkeep

It has been noted that any infrastructure/ facility created without people's participation results in negligence of the people towards upkeep and maintenance of the facility. When the citizens move from the centre of attention to the centre of action, involve and participate, only then the city becomes a responsive and smart city. Community participation should not only be in terms of ideas and decisions but also in terms of cost of the project.

An awareness campaign must be initiated in the area. The issues which might be covered while public awareness campaign

- Throwing solid waste in the road side drain or sewerage network
- Solid kitchen waste from the Dhaba / households / hotels should not be thrown in the sewerage system
- Use of polythene bags should be discouraged as they find way to sewerage system and block the system
- Use of water conservation methods.
- Judicious use of water as over draft of Ground water affects long term sustainability and generation of excessive wastewater
- Components of the scheme being proposed/ constructed by ASCL.
- Importance of segregating storm water from grey and soil water.
- Benefits of recycle and reuse of waste (will reduce volume of waste)

The community participation strategy is a set of ideas on how to help people become more involved in the decisions that affect their own well-being and that of their community. This community participation strategy is to be founded on a shared commitment, agreed processes and shared outcomes. In this strategy, community means individual people, their families, groups of people and other organizations within Amritsar.

Contractor has to specify in the proposal about what all activities will be undertaken by him to spread this awareness to the local residents.

3. Operation and Maintenance during Design Built and Defect Liability Phase

The stretches covered by the contractor either by de-silting / construction / rehabilitation shall be

taken over by him after approval by Engineer In Charge for maintaining it during Design Built and Defect Liability phase without any additional cost.

4. Operation and Maintenance during O&M phase

The activities required, but not limited to; to maintain the sewerage and storm water drainage system of the walled city for problem free sewerage and drainage system have been mentioned as below:

- Repair of sanitary / storm sewer network in walled city and periphery considered under this project as per instructions of engineer in charge as and when required,
- Cleaning of manholes and road gulley's in storm sewer network once before every monsoon season,
- Cleaning of litter trap and disposal to Bhagawala landfill once in three days or as per instructions of engineer in charge as and when required,
- Cleaning and de-silting of open Ganda Nallah near Bengali Basti after every 2.5 years or as per instructions of engineer in charge as and when required
- Cleaning and de-silting of sanitary 300mm and above after 5 years before handing over to MCA or as per instructions of engineer in charge as and when required
- Maintaining the point-wise solution to minimize rodents by catching them using chemicals and trapping them by identifying their underground network and placing the traps and shifting them as per the requirements from time to time and season to season,
- Maintaining call centre for addressing the complaints from the residents or as per instructions of engineer in chief or as and when required and attending them within 24 hours

TECHNICAL SPECIFICATIONS

5. General

Specifications for additional specialized items shall be adopted as stipulated in this section. For items that are not covered in the following sections, the relevant standards issued by BIS, PWD Punjab, CPWD, International standards and good engineering practices shall be referred.,,

The Technical Standards consist of Technical Specification to be followed during Construction of Sewerage Network and other ancillary/ allied works for all Civil and Mechanical required to be executed under this Contract. Notwithstanding the said Specifications, the Contractor shall adopt and follow necessary standards and approved Codes /specification wherever required for fulfilment of all the works under this contract. In respect of the Design-Build Services, the Contractor shall ensure that the design of the Sewerage Network is prepared by qualified designers who are professionally recognized to design the Sewerage Network and allied services. The Contractor warrants that the Contractor and its designers have the experience and capability necessary for the design. Planning of the entire system should be done in such a manner so as to optimize capital and operational costs on whole on sustainable basis.

This part of section outlines the detailed specifications of various components under scope of work for Design, Construction, Rehabilitation, Supply, Installation, testing and Commissioning of Sewerage, Storm Water Network including CIPP and MWSL, Operation and Maintenance of the entire sewerage system for 5 years excluding one year of defect liability period which starts from the date of commissioning comprising of Civil, Pipeline and Mechanical works. Generally, the following activities shall be carried out for each component of this contract, but shall not be limited to

5.1. Investigations, Surveys and Submissions

- i. Setting up fully equipped / staffed field office to carry out the required surveys and investigations and preparing the necessary designs and drawings at the very start of the System Improvement Plan (SIP).
- ii. Carry out necessary verification of the topographical survey and soil investigations for the sewerage network.
- iii. Planning, design and preparation of the working drawings for the proposed Works. Preparation and submission of the L-sections, layout plans and cross sections and conceptual drawings etc. and all other drawings at appropriate scale and details for planning and construction of all components of the project.
- iv. Submission of documents (designs, drawings, data sheets, etc.) and samples required according to the Contract for approval by the Employer's Representative of all design and drawings, material to be used, equipment specifications, etc., prior to construction.
- v. Submission of the design, drawings, catalogues and the technical data sheets of all the equipment.
- vi. Preparation and submission of all detailed working drawings on the basis of conceptual designs and plans approved by the EIC.
- vii. Equipment for surveying and measurement of the work shall be procured by the contractor for his use. The same shall also be made available to the EIC at the site for any work related with the contract with any additional charge.

5.2. Works

5.2.1. General

- i. Setting up of suitably equipped/manned field offices for supervision of the works for the Contractor's staff and the Employer's Representative.
- ii. Development of suitable storage spaces for construction material and equipment to be received for the works.
- iii. Identification of suitable quarries/sources for construction material and get them approved from the Employer's Representative. Setting up laboratory and deploying qualified engineers/ technicians.
- iv. Setting up suitable labour camps with all water and sanitation arrangements and other facilities required under the relevant labour laws.
- v. Implementation of all the environmental and relevant social mitigation measures as required.
- vi. Making arrangements for equipment and material required for maintaining safety of the sites and the workmen on site (helmets, boots, jackets, safety belts, gloves, scaffolding, barricading, etc.)
- vii. Submission of initial work program and updating the same every month for approval by the Employer's Representative.
- viii. Site clearance and levelling of site. Layout of the works as per the approved drawings.
- ix. Disposal of surplus soil as directed by Employer's Representative, construction of civil components of all the units, and maintaining the construction site in orderly manner.
- x. Carrying out tests on materials received and finished works and maintaining complete records and registers required on site as per the QA/QC Manual of Department of Water Supply and Sanitation, Govt. of Punjab.
- xi. Manufacturing, shop testing, pre-dispatch inspection, packaging, transportation to site, providing transit insurance, storage, handling at site, installation, sectional testing, pre-commissioning testing, trial runs and commissioning of all components of the system including the pipes, fittings, hydraulic and mechanical equipment.
- xii. Providing spares, tools and tackles.
- xiii. Approval of all sources of materials and equipments shall be obtained in writing from the EIC before their use on the project.

5.2.2. Quality Assurance

Contractor shall prepare detailed plan for this Contract for Quality Assurance and Quality Control and get it approved from the Engineer. The Contractor shall deploy adequate number of suitable experts whose sole responsibility shall be to strictly implement the QA/QC plan and conduct necessary tests to ensure highest quality standard. All other measures that the Contractor may feel necessary or as may be directed by the Employer's Representative i.e. the Engineer or his representative shall be followed. It covers the inspections of construction material, manufacture and supply of equipment and of the works carried out.

5.2.3. Safety Plan

The Bidder shall describe his proposed Safety Plan which shall be developed to ensure zero fatal accidents and zero hazardous incidents/occurrences in all construction works, including descriptions of the company's standard policies and procedures regarding its site organization and procedures, methods and frequency of conducting safety audits at the Site(s), record keeping and reporting, providing safety training for its personnel, issue and mandatory use of safety equipment, details of the qualifications and experience of the Bidder's safety officers to be deployed at the Site(s), etc.

The Bidder shall provide separate descriptions of its proposed safety plan during the design

and construction phase, and the subsequent operations and maintenance phase.

5.2.4. Environmental Quality Management Plan

The Bidder shall provide details of its proposed environmental management plan in sufficient detail so as to demonstrate the procedures that will be used to ensure that the environmental requirements and shall be satisfactorily met.

The Bidder shall provide separate descriptions of its proposals for minimizing any adverse environmental impacts/effects during the design and construction phase, and the subsequent operations and maintenance phase.

5.2.5. Facilities to be provided for the Engineer, his Representatives & Consultants

The Contractor shall provide and upkeep the following facilities for the Employer and Employer's Representative. The cost for these facilities shall be included in the Contract Price.

Provision of toilets and pantry should be kept at office building of sufficient floor area. The Employer's Representative will provide the layout of the building within 10 days of issuance of the Letter of Acceptance. The office building shall be equipped with office furniture (at least 2 tables, 6 chairs, necessary filing and drawing cabinets, etc.), and shall be provided with electricity, fan, computer and ink jet printer A4 size.

5.3. Standard Basic Specification

- i. During construction of work all the conditions as per Punjab, C.S.R. will be applicable
- ii. Sanction from Railways, Forest Dept., B&R and PSEB etc. will be arranged by the ASCL.
Payment if made to the concerned Department by the agency will be reimbursed to the agency on actual receipt of the Department.
- iii. All the safety precautions will be taken to avoid any damage/incident.
- iv. Electric poles, telephone cables, trees etc. should be protected with due care. The contractor will be responsible for any damage to Electric Pole & Wires Telephone cables etc. any payment on this account, will be borne by him.
- v. Suitable arrangement must be made for street drainage.
- vi. There should be approach for houses.
- vii. Specification may have to be changed as per site conditions for which nothing extra will be paid.
- viii. All the sewer lines will be got tested by contractor before filling. If there is any leakage or damage during execution or after commissioning, the same will be rectified by the contractor at his own cost, loss or damage what so ever may be shall be borne by the contractor.
- ix. Material defect, execution defect or other defect such as gradient etc if any on the part of the contractor, found at later stage which could not be traced while execution due to hidden work and are not part of maintenance, will remain the responsibility of the contractor to set right the same at his own cost though he may have taken his all dues.
- x. Cross-Sections of Excavation: The cross-section of excavations adopted in Estimate is not standard. Hence depending upon the nature of soil, depth of excavation and spring level, the required slope should be approved by the concerned SE and paid accordingly.
- xi. Offset in Excavation: Since, the excavation is not too deep and suitable side slope have been proposed. Hence there is no need of providing offset in the excavation (as in such cases, sub-soil water level very near to the ground level), pumping sets can be provided

- at ground level. Payment should be restricted accordingly.
- xii. Carriage of Surplus Earth/Spoils: Carriage of surplus earth should be paid as per CSR Item No 29.7 C
 - xiii. Tender Rated: To avoid in-balanced tenders, it should be ensured that rates quoted by contractor should be % below or above the scheduled item taken in DNIT of the work.
 - xiv. uPVC/RCC Pipes should be ISI Marked.
 - xv. All the RCC / uPVC Pipes to be utilized in the work should be procured from and approved manufactured (who has the manufacturing unit as per the laid down IS standard i.e. has the requisite BIS Certificate). Before procuring these pipes should be got tested as per the relevant IS Code.
 - xvi. Level & Gradients. While execution of the work it should be ensure that sewers have been laid as per Design Statement (approved) i.e. at proper levels and gradients.
 - xvii. Execution of work. The work of laying pipeline should commence from the downstream and no gap should be maintained while laying the pipe lines.
 - xviii. Commissioning of Pipes. Before commissioning the pipe line, they should be tested to confirm there is no leakage and requisite water flows in the concerned pipe line.
 - xix. The detailed technical specifications for all the items are covered in this part of the tender documents. In case any item is not covered or missing, Punjab, PWD book of specifications, relevant IS code Manual on water supply & water treatment & Manual on sewerage and sewage treatment shall have to be followed upon. Approval of Engineer-in-Charge is required in this case.
 - xx. Moreover, in case of any discrepancy between specifications laid down in this document and Punjab PWD book of specifications/relevant IS code, the decision of the Engineer-in-Charge will be final & applicable.
 - xxi. Wherever reference is made to Indian Standard Specifications, the latest amendments shall be applicable.
 - xxii. Miscellaneous
 - a) Road cutting
Road cutting of any type viz. Brick flooring, CC flooring, metal led road will be done wherever required before laying the storm water / Water Supply/sewerage lines.
 - b) Shifting of Electric and Telephone poles
Electric and telephones poles coming in the alignment of sewerage lines and causing any hindrance in the execution of the work will be got shifted by the agency from the concerned department at his level. Payment if any made to the concerned department will be reimbursed to the agency on actual receipt of the department.
 - xxiii. As-built Drawings
After construction and commissioning of all civil works mentioned above, the contractor shall submit the five complete sets of As-built Drawings along with editable soft copy. The As-built Drawings are the Detailed Engineering Drawings showing the actual details on which the Construction/Fabrication/Erection has been carried out. The contractor shall have to obtain approval of the As-built Drawings from the Engineer.
 - xxiv. Activity Bar Chart
The successful bidder shall submit Activity Bar Chart, giving Time Schedule for each

activity according to priorities of Engineer-in-charge. The construction activities shall be based on this Bar Chart. Whenever there is a deviation from the approved Bar chart, a revised Bar chart shall be submitted by the Contractor. During the construction duration, the updated Bar Chart shall be submitted to the Engineer-in-Charge from time to time.

5.4. Earth Work

5.4.1. General

The conditions/specifications laid down hereunder will hold good whether the excavation is to be carried out over areas for leveling, foundations of structures, trenches for pipes or cables or any other type of work which involves earth work like leveling or forming/embankments etc as per Punjab, PWD specifications.

- i. Earthwork in excavation includes site-clearing activities like removal of shrubs, loose stones, and rubbish of all kinds, interfering with the works and with complete removal of roots.
- ii. The products of the above clearing operations shall be removed from the site, dumped, stacked at a place or places, burnt or otherwise disposed of as directed by the Engineer-in-Charge with in the compound.
- iii. A permanent base line and cross lines shall be established to serve as reference grid using MS plates, pegs, pins set in concrete or brick masonry pillars where they will be free from disturbances.
- iv. A permanent bench mark or marks as required necessary for the works connected to the nearest GTS benchmark shall be established for reference.
- v. Excavation shall be carried out in all types of soil like top soil, silt, sand, gravel, soft murram, clay, kanker, hard materials like disintegrated rock shale which can be removed by picks, crow bars and showels. Soil/earths may contain boulders. Loosening of rocks include the other methods of excavation other than blasting such as chiseling, wedging line drilling to avoid shattering of rock. The Engineer-in-Charge shall decide what method shall be adopted for removal of the hard rock.
- vi. All excavation shall be strictly done true to line, level, grade or slope as the case may be for the respective structure as shown in the drawings/directed by the Engineer-in-Charge.
- vii. Sides and bottoms of excavation shall be cut sharp and true. Under cutting shall not be permitted. Earth sides of excavation shall not be used in lieu of formwork for placement of concrete unless authorised in special cases, by the Engineer-in-Charge where limitation of space for larger excavation necessitates such decision.
- viii. Excavation, whose sides are required to be maintained at a steeper slope than the stable slopes, will be required to be properly stored and struttured failing which the contractor will be required to execute the work by open cutting by the approval of Engineer-in-Charge.
- ix. Negligence on account of this leading to any mishap will be entirely the responsibility of the contractor.
- x. All surplus soil/earth shall be transported and disposed off as directed by the Engineer-in-charge. The rates quoted by the contractor shall be deemed to be inclusive of all such works.

5.4.2. Drainage in the vicinity of Excavation

- i. The contractor shall control the drainage in the vicinity of all Excavation so that the surface of the ground will be properly sloped to prevent surface water running into excavated areas during construction. Arrangements shall be made for preventing rain and other

extraneous liquids entering the excavated parts. Seepage water shall be directed to flow away from the trenches by gravity. If any pumping is required to keep the trench and the exposed areas dry for further work the same shall be done by the contractor at his own expenses.

- ii. The rates quoted by the contractor shall be deemed to be inclusive of all the above costs or charges for stipulations stated above.
- iii. Excavated material shall not be deposited within 1.5 meters from the top edge of the excavation in case of MPS and 0.6m in case of sewerage.
- iv. The contractor shall remove the excavated material to spoil heaps on the site transport the same to a place as directed by the Engineer-in-Charge.
- v. If the bottom of the excavation is left exposed by the contractor and in the opinion of the Engineer-in-Charge it has become deleteriously affected by atmospheric changes or affected by water then the contractor shall remove at his own cost such portions of the affected foundations and shall make good by filling with lean concrete or with compacted sand as directed by the Engineer-in-Charge.
- vi. Where Excavation is made in excess of the depths required as shown in the drawings or as directed by the Engineer-in-Charge the contractor shall at his own expense fill up to the required level with lean concrete or well compacted sand as decided by the Engineer-in-Charge.
- vii. Loose, soft or bad soil encountered in Excavation at the required depth on Engineer-in-Charge's directions shall be excavated to the firm bed and the difference of levels between the required level and the firm bed shall be filled up or dealt with as directed by the Engineer-in-Charge.
- viii. Any obstacle encountered during excavation shall be reported immediately to the Engineer-in-Charge and shall be dealt with as instructed by him. Same shall be applicable for any antiques/treasure found during Excavation.
- ix. Any public utility services/facilities like water supply lines, sewers, telephone/electric cables poles etc., met with during Excavation shall not be damaged and no disruption is caused to the utility service on account of damages caused by the contractor. Such facilities shall be properly supported in their original positions by giving slings, suspension beams etc. at contractors own expenses.
- x. The contractor shall undertake any concreting or construction work of any nature on the excavated surfaces in the presence of representative of Engineer-in-charge.
- xi. The contractor shall be solely responsible for the protection of adjoining properties from damages that may be on account of excavation close to the properties whether the property belongs to government or to a private party.
- xii. The contractor shall make all arrangements for proper warnings like providing fences, danger flags, barricading, night warning lights, watch and ward etc., to caution the public as well as the labourers engaged by him about the dangers that may be involved by excavation of trenches, pits, foundations etc. Safety code for excavation work IS: 3764-1966 shall be rigidly followed unless instructed otherwise by the Engineer-in-charge.
- xiii. Any useful material obtained during Excavation shall be stacked as directed by the Engineer-in-Charge and will be the property of the department. The decision of the Engineer-in-Charge in this regard shall be final and binding on the contractor.
- xiv. Any material used by the contractor out of the excavated stuff in lieu of his own materials

shall be charged to the contractor at the market rates as decided by Engineer-in-charge.

- xv. The rates quoted shall include back filling of excavated material & disposal of surplus earth as directed by the Engineer-In-Charge.

5.4.3. Excavation in Trenches

- i. Excavation as required for manholes, other overflow structures, cross drainage works, extra depths for joints of pipes shall be carried out as shown in the drawings/directed by the Engineer-in-Charge.
- ii. For deep foundations necessary shoring and strutting shall be executed as directed by the Engineer-in-Charge. If additional slopes are to be provided where vertical cuts are not possible the same shall be executed without any additional cost. The rates quoted shall be deemed to be inclusive of all such extra work.
- iii. The trench shall be kept perfectly dry by preventing the extraneous water entering the pits and also wherever necessary by pumping at the cost of the contractor. No additional cost of dewatering shall be payable.
- iv. The trenches after laying, jointing and testing of pipes/cables are to be back filled. The trenches shall be filled with the excavated material as directed by the Engineer-in-Charge.
- v. All surplus soil/earth shall be transported and disposed of as directed by the Engineer-in-Charge. The back filling shall be done very carefully so as not to damage the pipe/cables or disturb the alignments/levels of the pipe / cables. The back filling shall be done in layers on both sides of the pipes, watered, consolidated by ramming to a dense layer. The thickness of each layer shall not be more than 15 cms. Special care shall be taken to avoid unequal pressures and not to disturb the pipe.
- vi. In case the excavated material falls short of requirement the backfill soil/earth shall be taken from borrow pits approved by the Engineer-in- Charge. The rates quoted by the contractor shall be deemed to be inclusive of all such works.
- vii. Sight rails and boning rods are to be used at regular intervals as directed by the Engineer-in-Charge to excavate the trenches true to line and grade.

5.4.4. Back Filling / Earth Filling

- i. Back filling of earth around liquid retaining structures and pipes shall be done only after the water-tightness test is done to the satisfaction of the Engineer-in-Charge. Chosen earth out of the excavated earth shall be used for backfilling/embankments.
- ii. Care shall be taken to see that unsuitable soil/earth does not get mixed up with the material proposed to be used for filling.
- iii. The soil/earth to be used for back-filling shall have the prior approval of the Engineer-in-Charge.
- iv. Backfill shall be placed in successive horizontal layers of loose material not more than 15 cm thick. The material shall be brought to within + or -2% of the optimum moisture content as described in IS:2720 (part VIII) after adjusting the moisture content, the layers shall be thoroughly compacted with such equipment as may be required to obtain a density equal to or greater than 95% of maximum laboratory dry density.
- v. Successive layers of filling shall not be placed until the layer under construction has been thoroughly compacted to satisfy the requirements laid down in the requirements.

5.4.5. Filling and Embankment

- i. The area where filling or embankment is to be carried out shall be cleared from loose

material and the virgin soil shall be exposed. All shrubs and vegetation with roots are cleared. All soft patches shall be removed and filled with selected soil/earth and consolidated. Exposed soil/earth shall be consolidated properly to obtain 95% of maximum laboratory dry density of the soil.

- ii. Approved filling material shall be uniformly spread in layers not exceeding 15 cms in loose depth. All clods, lumps, etc. shall be broken before consolidation.
- iii. Successive layers of filling shall not be placed until the layer under construction has been thoroughly compacted to satisfy the requirements laid down in these specifications.
- iv. The contractor shall give the samples of the earth he proposes to use for back filling for testing, if required or directed by the Engineer-in-Charge along with the following characteristics of the soil/earth.
- v. Soil/earth having laboratory maximum dry density of less than 1500 kg per cubic meter shall not be used.
- vi. If the layer fails to meet the required density it shall be reworked or the materials shall be replaced and method of compaction altered as directed by the Engineer-in-Charge to obtain the required density.
- vii. If any test indicates less than the specified degree of compaction the Engineer-in-Charge may require all the fill placed subsequent to the latest successfully tests to be removed and compacted and compaction procedure to be done once again to obtain satisfactory density.
- viii. The contractor shall perform all necessary tests to determine optimum moisture content and the degree of compaction. He shall furnish the results to the Engineer -in-charge.
- ix. Prior to rolling the moisture content of the material shall be brought to within x. + or - 2% of the optimum moisture content as described in IS: 2720 (part VIII). The moisture content shall preferably be on the wet side for potentially expansive soil/earth. After adjusting the moisture content as described in this clause, the layers shall be thoroughly compacted by means of rollers till 95% of maximum laboratory dry density is obtained.
- x. If the layer fails to meet the required density it shall be reworked or the materials shall be replaced and method of compaction altered as directed by the Engineer-in-Charge to obtain the required density.
- xii. The embankment shall be finished to the alignment levels and grades, cross sections, dimensions shown in the drawings or as directed.
- xiii. If sand filling is specified in the tender for filling the trenches, plinth or foundations the sand used shall be hard, free from inorganic materials and deleterious materials and approved by the Engineer-in-Charge. Filling shall be carried out in layers not exceeding 15 cms in loose depth and flooded and tamped till it meets the approval of the Engineer-in-Charge.
- xiv. The contractor shall perform all necessary tests to determine optimum moisture content and the degree of compaction. He shall furnish the results to the Engineer -in-charge.

5.4.6. Shoring / Strutting / Timbering

- i. When the depth of foundation or pipe trench is deep and the soil/earth is soft and generally for depths more than 1.5 mtrs. stepping, sloping and or paneling and strutting of sides shall be done as directed by the Engineer-in- Charge. The decisions regarding the positions and depths at which and what type of precautions are to be provided shall be decided by the Engineer-in-Charge.
- ii. It shall be the responsibility of the contractor to take all necessary precautions or steps to

- prevent the sides of trenches from collapse. The contractor shall be responsible to make good any losses or damages caused to execute works, life and property due to his negligence.
- iii. Deep Excavation shall be inspected after every rain, storm, or other hazards and if necessary the precautions required shall be augmented.
 - iv. Planking and strutting shall be either "Close" or "Open" type depending upon the nature of the soil/earth surcharge and depth of excavation etc.
 - v. The timbering shall be of sufficient strength to resist earth pressure and ensure safety to the adjoining property and to persons. Where the Excavation is subjected to vibrations due to machinery, vehicles, rail traffic, blasting and other sources, additional bracings shall be provided.
 - vi. Generally, the specifications and sizes and spacing of sheeting, Waters and struts used for timbering of different depths shall be as given in the IS:3764- 1965 Safety code for excavation work unless otherwise specified in the tender elsewhere. Shoring shall extend 30 cms. above the vertical sides.
 - vii. Withdrawal of timbering shall be done very carefully to prevent collapse of the sides of Excavation and any damage to the work executed.
 - viii. Timbering will be provided in the trenches as per Punjab PWD specifications.

5.5. Cement Specifications

Cement shall be as per standard specifications which are as under:

- i. ISI marked/ ordinary Portland cement grade 43 as per IS: 8112(latest edition with up to date amendments.) (latest edition with up to date amendments).
- ii. Samples of cement arranged by the contractor shall be taken by the Engineer-in-charge and got tested in accordance with provisions of relevant BIS codes. In case test results indicate that the cement arranged by the contractor does not conform to the relevant BIS codes, the same shall stand rejected and shall be removed from the site by the contractor at his own cost within, a week's time of written order from the Engineer-in-charge to do so.
- iii. The bidder shall submit attested photo copies of licenses granted by BIS authority for marking the cement with ISI certification mark. The license should clearly indicate the validity and class covered in it. The bidder shall be responsible for safe delivery of cement in the store of Engineer-in-charge. Any bag found torn or damaged or having contents having less than 50 Kg. or sewed manually shall not be accepted and will have to be removed from the store of Engineer-in- charge.
- iv. Storage on the site
- v. The cement shall be stored in a suitable whether proof building and in such a manner as to permit easy access for proper inspection & counting. The cement shall be stored in such a manner as to prevent deterioration. Cement of different types & brands shall be kept in separate stacks and marked accordingly. All cement stored on the site shall be arranged in batches, and used in the same order as received from the manufacturer. A cement register shall be maintained at site in which all entries shall be completed day to day, showing the quantities received, date of receipt, source of receipt, type of cement etc. and also the daily cement consumption on site. This register shall be accessible to the Engineer-in-charge for his certification.
- vi. Rejection of cement

vii. The Engineer-in-charge may reject any cement as a result of any test thereof, notwithstanding the manufacturer's certificate. He may also reject cement which has deteriorated owing to inadequate protection during storage from moisture or due to intrusion of foreign matter or other causes. Any such cement which is considered defective by the Engineer-in-charge shall not be used, and shall be promptly removed from the site of the work by the contractor at his own expenses.

5.6. Steel Bars for Concrete Reinforcement

- i. ISI marked, high strength deformed steel bars (CTD bars) or TMT plant rolled bars grade Fe-500 as per IS: 1786.
- ii. The bidder shall procure steel reinforcement bars conforming to relevant IS codes from main producers. The contractor shall have to obtain, and furnish test certificates to the Engineer in Charge in respect of all supplies of steel brought by him to the site of work. Samples shall also be taken and got tested by the Engineer in Charge as per the provisions in this regard in the relevant IS codes. In case the test results indicate that the steel arranged by the contractor does not conform to IS codes, the same shall stand rejected and shall be removed from the site of work by the contractor at his cost within a week time from written orders from the Engineer in Charge to do so.
 - a) The steel reinforcement shall be brought to the site in bulk supply of 10 tonnes or more or as decided by the Engineer-in-charge.
 - b) The steel reinforcement shall be stored by the contractor at site of work in such a way as to prevent distortion and corrosion and nothing extra shall be paid on this account. Bars of different sizes and lengths shall be stored separately to facilitate easy counting and checking.
 - c) For checking nominal mass, tensile strength, bend test, re-bend test etc specimen of sufficient length shall be cut from each size of the bar at random at frequency not less than that specified below:
 - The bidder shall submit attested photocopy of license granted by BIS authority to the manufacturer for marking the steel with ISI certification mark. The license should clearly indicate the validity & class covered in it. The steel procured only from primary steel producers (who produce steel using iron ore as basic raw material) and have integrated plant such as SAIL, RINL, IISCO, TISCO, JINDAL etc. shall be used.

5.7. Samples and Tests of Materials

The Contractor shall submit samples of such materials as may be required by the Engineer-In-Charge and shall carry out the specified tests directed by the Engineer-In-Charge at the site or at the supplier's premises or at the laboratory approved by the Engineer-In-Charge. Approved laboratory for material testing are any public funded institution of National reputation or any other laboratory approved by Punjab Water Supply & Sewerage Board / DWSS/Municipal Corporation

Samples shall be submitted and tests carried out sufficiently early to enable further samples to be submitted and tested if required by the Engineer-In- Charge's.

The Contractor shall give the Engineer-In-Charge's seven days' notice in writing of the date on which any of the materials will be ready for testing or inspection at the supplier's premises or at a laboratory approved by the Engineer-In-Charge's. The Engineer-In-Charge's shall attend the test at the appointed place within seven days of the said date on which the materials are expected to be ready for testing or inspection according to the Contractor,

failing which the test may proceed in his absence unless instructed by the Engineer-In-Charge's to carry out such a test on a mutually agreed date in his presence. The Contractor shall in any case submit to Engineer-In-Charge's within seven days of every test such number of certified copies (not exceeding six) of the test results as the Engineer-In-Charge's may require. Approval by the Engineer-In-Charge's as to the placing of orders for materials or as to samples or tests shall not prejudice any of the Engineer-In-Charge's Powers under the Contract. The provisions of this clause shall also apply to materials supplied under any nominated sub-contract

5.7.1. General

- i. The cleaning & removal of debris etc. shall be carried out side by side during the execution of work as well as on the completion. All debris shall have to be removed by the contractor and the completed work to be handed over free of debris and allied structures created with the construction of work.
 - ii. The staking of materials for construction of work shall be done as per instructions of site Engineer.
 - iii. Work shall be executed strictly as per Punjab PWD specifications (latest edition with up to date amendments).
- Items/ part of items not covered under Punjab PWD specifications shall be carried out as per relevant ISI specifications with latest amendments.

5.7.2. Quality Control

- i. All testing procedures shall be as per Punjab PWD/ISI. Frequency of the mandatory test shall be carried out as per table of "List of Mandatory Tests". For all materials, as per "list of approved makes" the contractor shall submit manufacturers list certificates and no testing of such materials will be required, unless otherwise directed by the Engineer-in-charge. However, for all other equivalent materials to be incorporated in the work the contractor shall obtain prior approval of the Engineer-in-charge and have these materials tested from the Govt. recognized laboratories/Engineering College /Polytechnic at the cost of the construction agency.
- ii. Areas, where the sulphate contents in soil and sub soil water are predominant, the cement work shall be executed for all foundations & masonry of Super structure with sulphate resistant cement only.
- iii. In sulphate prone areas, where the intensity of sulphate is higher in Sub Soil Water only clear water shall be used for mixing and curing purposes.
- iv. Watch and ward liability of construction/demolished materials during execution of work shall be of the agency itself.
- v. The references to CSR in the BOQ are just for general guidance to bidders. The rates and prices to be quoted in BOQ shall except in so far as it is otherwise provided under the contract agreement, include all constructional plants, labour , supervision , material erection ,maintenance , insurance , profit, all carriages for bringing the materials to site and its reloading , taxes and duties , together with all general risks, liabilities and obligations set out as implied in the contract .All quoted rates shall include all expenses to complete all items of works as per specifications and no extra shall be payable.
- vi. The method of measurement of completed work for payment shall be in accordance with Punjab PWD specifications.
- vii. The rates should be written in words as well as in figures.
- viii. The Executive Engineer, reserves the option to take away any item of work or part thereof

- at any time during the currency of contract and to re-allot it to any other agency with due to notice to the Contractor without liability of any kind of payment or compensation.
- ix. Any material left at site one month after completion of work shall become the property of the Corporation/Board and no payment shall be made to the contractor for the material.
 - x. Surplus earth from excavation of foundations or basement shall be placed by the contractor at the places approved by the Engineer-in-charge. No earth so excavated shall be sold by the contractor to any private parties.
 - xi. No pits should be dug by the contractor near the site of work taking out for use on the work. In case of default the pits so dug will be filled in, at the cost of the contractor plus twelve percent departmental charges.
 - xii. All the concrete work shall be done with the use of concrete mixers to be arranged by the Contractor at his own cost. He will also make arrangement for concrete vibrator for the compaction concrete during placing.
 - xiii. The contractor will make his own arrangements for water required for construction purpose at his own cost.
 - xiv. Actual quantities of completed and accepted work will be paid for.
 - xv. The contractor will arrange his own tools and plants required for work.
 - xvi. No carriage or incidentals will be borne by the Employer for moving the materials beyond the place where the contractor has agreed to take delivery thereof.
 - xvii. The contractor shall provide at his own cost and expenses all labour and materials etc. necessary by layout and check of any portion of work whenever required by the Engineer-in-charge or his staff nothing extra shall be paid for that.
 - xviii. The contractor shall be responsible for housing, sanitation and medical treatment of the labour employed on the work and shall carry out all the Rules framed on the subject. In the event of the failure to provide any or all above amenities the same shall be provided by the Employer and the cost thereof shall be recovered from the Contractor. Any dispute regarding the above points shall be settled by the Engineer-in-charge whose decision shall be final.
 - xix. In case of emergency the contractor shall be required to pay his labour every day and if this is not done, the Employer will make the requisite payment and recover the same from the contractor.
 - xx. The contractor at all times shall keep his authorized Engineer agent stationed at the site of work.
 - xxi. Special conditions are binding over and above the similar conditions in the contractor agreement Performa.
 - xxii. Although all the material required for construction of work are to be arranged by the contractor but the important materials such as cement, steel, lead, etc. and brought at site by the contractor shall got checked from sub –Divisional Engineer-in-charge and be entered in the site register for their source and brands. This material shall not be removed from site by the contractor without the prior approval from the Executive Engineer-in-charge.

5.7.3. Quality Assurance

Agency shall have to procure necessary Equipment and apparatus for conducting field tests at site such as gradation of material, aggregate impact value of aggregates, sieve analysis of soils slump test of concrete, cold bend test of steel, compacted DBD of soil & testing of

percentage of bitumen in the bitumen mixes etc. Apparatus required for field laboratories are tabulated as under. The contractor shall set up a quality control field laboratory equipped with the test equipment indicated underneath and employ trained staff to carry out periodical tests, as per directions and procedure laid down by the Engineer-in-charge/Quality Control Cell of Employer. The record of test results shall be maintained properly at site of work.

- i. Pan Balance with standard set of weights up to 5 kg.
- ii. Physical balance with standard set of weight up to 2 kg along with fractional weights.
- iii. Sieve analysis set for sandy soils and sands
- iv. Sieve analysis set for coarse aggregates
- v. Moulds of (15 cm x 15 cm x 15cm) for moulding concrete cubes.
- vi. Slump test apparatus for concrete
- vii. Aggregate impact value machine.
- viii. Gas burner
- ix. Necessary Glass Ware and Trays etc.
- x. Compressive testing machine with calibration test certificate.
- xi. Oven for tests of bricks
- xii. Dumpy level for setting out of works
- xiii. Sub grade soil shall be laid in max 9" thick layers and shall be compacted to max DBD at optimum moisture content.
- xiv. For specialized tests, the services of approved laboratories shall be taken sealed respective samples shall be forwarded by the Engineer-in-Charge / his respective to a specific laboratory for specified tests and results shall be also obtained by him. Testing Charges for such tests shall be borne by the contractual agency. However Engineer in charge is also empowered to get any of the field test conducted through approved labs occasionally.
- xv. Fields tests, Lab tests and their frequency for the various materials and other activities which shall have to be observed is tabulated as under in the List of Mandatory Tests.

5.7.4. List of Mandatory Tests

S. No.	Name of Tests	Frequency of Tests for Works		Whether field test or lab test
		Up to Rs 2.00 Crore	Above Rs 2.00 Crore	
1.	Slump Test	Two tests/day or one test per 50m3 of concrete whichever is more	Two tests/ day or one test per 50m3 of concrete whichever is more	Field Test
2.	Molding of concrete cubes/Tests of crushing strength.	12 moulds per day (6 Nos. for 7 days and 6 Nos. for 28 days or 3 mould for 7 day and 9 moulds for 28	-same-	Field Test
3.	Grada tion	One test per 20 m3	-same-	Field Test

S. No.	Name of Tests	Frequency of Tests for Works	Whether field	
4.	Zoning and FM of Fine	One test per 50m3 of FA	-same-	Field Test
5.	Silt Contents	One test per 50m3 of FA	-same-	-do-
6.	Aggregate impact value	One test per 50m3 of Aggregate	-same-	-do-
7.	Shape and size test of bricks	2 No. samples of 5 bricks each per 50000 nos. bricks supply.	-same-	-do-
8.	Water absorption of	5 no. bricks per 50000 bricks supply	-same-	-do-
9.	Crushing strength of	5 no. bricks per 50000 bricks	-same-	-do-
10.	Consistency, initial & final setting time & 7/28 days compressive	One test for every 1000 bags supply	One test for every 3000 bags supply	Lab test
11.	Yield strength of steel reinforcement. & elongation	Two test for every 30 T supply of steel one for dia below 25mm & one above 25mm dia.	-same-	Lab test
12.	Cold bend test of Steel	Two tests for each supply	-same-	Field test

5.8. Inspection of Works

A necessary testing kit for the inspection of work made available as required by the Engineer-in-charge.

During the inspection if any work or its portion is found to be substandard it shall have to be dismantled and constructed by the contractual agency at his own cost.

5.9. Work to be executed in accordance with Specifications Drawings & Order

The contractor shall execute the whole and every part of the work in the most systematic and Workman like manner both as regards materials and labour and otherwise in every respect in strict accordance with the Punjab PWD specifications latest edition/IS codes or orders. The contractor shall also follow exactly, fully and faithfully to the designs, drawings and instructions in writing relating to the work assigned by the Engineer-in-Charge. The contractor shall be furnished free of charge three copies of all such drawings and one copy of agreement with complete documents. He shall, if so required, be entitled at his own expenses to make or cause to be made copies of the drawings, designs, specifications and instructions as aforesaid.

5.10. List of Indian Standards

(Latest Edition)

(Material & Execution of Works etc.)

S. No	IS Code	Description
1.	IS 3114	Laying of CI pipes
2.	IS 1536	CI S/S pipe
3.	IS 5382	Rubber gaskets
4.	IS 5330	Anchor or thrust blocks
5.	IS 8329	CI ductile pipes S/S

6.	IS 12820	Rubber gaskets
7.	IS 9523	Fittings
8.	IS 8329	Testing of Ductile Iron pipe
9.	IS 12288	Laying of ductile iron pipes
10.	IS 780	CI Plain ended SV and d/f SV
11.	IS 2685	Selection, installation & O & M of SV
12.	IS 5531	CI P/E specials
13.	IS 1538	CI socketed or flanged specials
14.	IS1363 Part I & III	Nut & Bolts
15.	IS638 (2 nd Rev.)	Rubber Insertion Joints
16.	IS 210	Material of CI specials
17.	IS 909	FH (SV type)
18.	IS 3950	CI surface box for SV
19.	IS 782	Caulking lead
20.	IS1239	Mild steel tubes, tubular and other wrought steel fitting (Part I and II)
21.	IS 1538	Cast iron fitting for pressure pipes for Water sewage (Part I – xxiii)
22.	IS 2906	Sluice valve for water works purpose (350 to 1200mm)

Note: Any item in the execution of works or material not covered in the above list shall be governed by the relevant Indian Standard CODE, PWD Specifications or prescribed specifications or orders as per the decision of Engineer-in-Charge.

5.11.Specifications: Sewerage and Storm Water Drainage Works

5.11.1. Pipeline Material

The Material used in Pipeline work for Sewerage is Un-Plasticized Poly Vinyl Chloride (U-PVC), Stoneware (SW) and RCC-NP3 HDPE Lining while for Storm Water Drainage pipeline RCC NP3 pipes shall be used. Construction of Manhole Brickwork has size of 1200mm x 7500mm, 1500mmx 900mm, 1200mmx 1800mm and 1500mmx 1800mm.

- i. U-PVC Pipe SN-8 as per IS:15328-2003 : 160mm outer dia to 315mm outer dia
- ii. RCC Pipe Class NP-3 as per IS:458-2003 : 400mm to 600mm dia
- iii. Stoneware Pipes : To be used for replacing the existing damaged sewer line upto 300mm
- iv. Brick work in Manhole : As per CSR Punjab
- v. Manhole Cover (MD, HD & EHD) : As per IS12592-2002
- vi. PVC Encapsulated Foot Steps : As per IS:10910
- vii. Pipe Bedding: Providing and filling local sand as per specification for uPVC & RCC NP3 pipes.

5.11.2. Unplasticized Polyvinyl Chloride (uPVC) Pipes and Fittings

i. Quality Assurance Protocol for uPVC Pipes

uPVC SN8 Non Pressure Pipes as per IS 15328: 2003

ii. Check of Documentation

As and when, the truck with the consignment reports to the Work Site, the Executive on ground from the Agencies should obtain the Certificate to the effect that the pipes have been manufactured strictly as per IS Code 15328:2003. This documentation will include Manufacturer's Certificate and the Test Reports. Normally, the driver of the

consignment should be in possession of the said Certificate.

iii. Sampling for physical characteristics visual appearance and dimensional requirements

Samples Required for Dimensional requirements as per IS 15328:2003

- d) **If no Failure:** Minimum 13 Nos and maximum 50 Nos
- e) **If Failure:** Maximum 100 Nos

As per Table 13 Clause F-1.4.1 and F-1.4.3 of IS 15328:2003

iv. Marking on the pipes

Conduct a check to ensure that each pipe is clearly and indelibly marked in ink/paint or hot embossed on white base at intervals of not more than 3m as under:-

- a) Manufacturer's name/Trade-mark
- b) Outside diameter
- c) Stiffness class (SN8)
- d) Batch or Lot Number and Period of Manufacture
- e) BIS Certification Marking
- f) Any other marking which would be prescribed by the ULB

The above marking should be on all pipes.

v. Physical Characteristics

A check of the following physical characteristics will be carried-out of samples as mentioned above as per IS Code 15328:

a) Dimensions

Clause 6.1.1 to 6.1.4.1 of IS 15328:2003 (Dimensions tests will be conducted at storage site)

b) Appearance

- Confirming to Clause 7.1 of IS 15328:2003
- The internal and external surface of the pipes should be smooth, clean and free from grooving, blistering and any other surface irregularity, which is likely to prevent conformance of the pipe with the standard.
- Slight shallow longitudinal grooves or irregularities in the pipe are permissible, provided the wall thickness remains within permissible limits.
- The pipe wall does not contain impurities or pores.
- The pipe ends should be clearly cut and reasonably square to the axis of pipe.

c) Colour

- Confirming to Clause 7.2 of IS 15328:2003
- The colour of the pipe should be dark (any shade of brown)
- The pipe shall have uniform colour throughout the entire wall
- Slight variations in the appearance of the colour are permitted.
- Check for Cracks: Pipes shall be checked to ensure that during transportation they have not cracked and care shall be taken during unloading at site.

- Storage: Pipes shall be stored under shade and on already prepared leveled ground.

Notes:

- A day before the pipes are to be received, CIPET Amritsar would be contacted to dispatch a suitable person to assist the Departmental and Consultant to conduct the above checks and take samples for the lab tests. The lab tests for which samples are to be sent to CIPET Amritsar and Sri Ram Lab at Delhi are mentioned at Para vi below.
- The samples for the lab tests would be signed and sealed by all concerned. This will ensure that no change can be made during transportation of samples. The samples required for lab tests will be as per (Table 14 Clause F-1.5.2 and F- 1.6.2 and Table 15 Clause F-1.7.2 of IS 15328:2003 (Three samples of one meter each are required for Resistance to Internal Hydrostatic Pressure Acceptance test (1 hr/27°C)
- 5 working days would be required to conduct the tests and the Report of the tests should be obtained from CIPET on the sixth day (through E-mail).
- Once confirmation is received that all Reports/Test Results are in order then the payment can be released as per the Contract Agreement.

vi. Tests to be conducted at two laboratories

The following tests are to be got conducted from the labs at CIEPT Amritsar and Sri Ram at Delhi as per relevant BIS:

- a) Vicat Softening Point (VSP)
- b) Longitudinal Reversion
- c) Resistance to External Blow at 0°C
- d) Ring Stiffness
- e) Resistance to Internal Hydrostatic Pressure
- f) Acceptance Test (1 hr/27C)
- g) Type Test (1000 hrs/60C)
- h) Internal Hydrostatic Pressure Test for Elastomeric Sealing Ring joints, Solvent Cement Joints. (applicable only for Pipe Joints)
- i) Internal negative Hydrostatic Pressure for Elastomeric Sealing ring joints. Solvent cement joints. (applicable only for Pipe Joints)
- j) Sulphated Ash Content (Max 11%) (11% requirement is for Pressure pipes. This being non-pressure uPVC pipe. The %age of Sulphated ash may be increased and fixed by Mutual understanding of buyer and seller, optimize the cost)
- k) Density (1.40 to 1.46 gm/cc) (1.40-1.46 gm/cc range for density requirement is for Pressure pipes. This being non-pressure UPVC pipe. The range for density may be increased and fixed by Mutual understanding of buyer and seller, To optimize the cost)

5.11.3. Stoneware pipe and fittings:

Stoneware pipes and fittings shall comply with IS 651 - 1965 in every respect and all stoneware

pipes, bends, etc. shall be of the best salt glazed variety, glazed inside as well as outside, hard, smooth, even textured, free from fire cracks, air blows and blisters. The pipe shall be truly circular in cross section, perfectly straight and of standard nominal diameter, length and depth of socket as mentioned in BOQ.

i. Trenches for SW Pipe Drains:

Alignment and Grade: The drains are to be laid to alignment gradients shown on the drawings but subject to such modifications, as shall be ordered by the Engineer In Charge from time to time, to meet the requirements of the works. No deviations from the lines, depths of cutting or gradients of sewers shown in the plans and sections shall be permitted, except by the expressed direction in writing, of the Engineer In Charge.

ii. Opening Out Trenches:

In excavating the trenches, etc. the road metalling, pavement kerbing, etc. are to be placed on one side and preserved for reinforcement when the trench or other excavation shall be filled up and laid back to original condition at no extra cost. Before any road metal is replaced, it shall be carefully shifted. The surface of all trenches and holes shall be restored and maintained to the satisfaction of the owner. The contractor shall not cut or break down any live fence or trees in the line of the proposed works but shall tunnel under them unless the Engineer In Charge shall order to the contractor. The contractor shall scrub up and clear the surface over the trenches and other encumbrances affecting execution of the work and shall remove them from the site to the approval of the Engineer In Charge.

iii. Excavation to be taken to Proper Depth

The trenches shall be excavated in all conditions of soil and to such a depth that the sewer shall rest as described in the several clauses relating thereto and so that the invert may be at the levels given on the section. In bad ground, the Engineer In Charge may order the contractor to excavate to a greater depth than shown on the drawings to fill up the excavation to the level of the sewer with the concrete, sand, gravel or other materials. For such materials, the contractor shall be paid extra at the rates laid down for such works in the schedule, if the extra work was ordered by the Engineer In Charge in writing. But if the contractor should excavate the trench to a greater depth than is required without a specific order to that effect in writing by the Engineer In Charge, the extra depth shall have to be filled up with concrete at the contractor's own cost to the requirements and satisfaction of the Engineer In Charge.

iv. Refilling:

After the sewer or other work has been laid and proved to be water tight, the trench or other excavation shall be refilled. Utmost care shall be taken in doing this, so that, no damage shall be caused to the sewer and other permanent works. Filling in the trenches and upto 50cms. Above the crown of the sewer shall consist of the finest selected materials placed carefully & consolidated. After this has been laid, the trench and other excavation shall be refilled carefully in 15cms.

Layers with materials taken from the excavation, each layer being watered and consolidated.

v. The contractor shall restore settlement and damages:

The contractor shall, at his own cost, make good promptly during the whole period the works are in hand, any settlement that may occur in the surfaces or roads, berms, foot paths, gardens, open spaces, etc., whether public or private, caused by his trenches or by his other excavation and he shall be liable for any accidents caused thereby. He also shall at his own expenses and charge, repair and make good any damage done to the buildings and other properties.

vi. Disposal of Surplus Soil:

The contractor shall at his own cost and charge, dispose within the site or outside the site as per the instruction from the Engineer In Charge.

vii. Timbering of Sewer and Trenches:

The contractor shall at all times, support efficiently and effectively, the sides of the sewer trenches and other excavations by suitable timbering, piling, sheeting, etc. All timbering, sheeting and piling with their walling's and supports shall be of adequate dimensions and strength and fully braced and strutted so that there is no risk of collapse or subsidence of the walls of the trench. The contractor shall be held accountable and responsible for the sufficiency of all timbering, bracing, sheeting and piling used and for all damages to persons and property resulting from the improper quality, strength, placing, maintenance or removal of the same.

viii. Removal of Water from Sewer, Trenches, etc.

The contractor shall at all times during the progress of work keep the trenches and excavations free from water which shall be disposed of by him in a manner as will neither cause injury to the public health nor to the work completed or in progress nor to the surface of any roads or streets nor cause any interference with the use of the same.

ix. Protection of Existing Services

All pipes, water mains, cables, etc. met in the course of excavation, shall be carefully protected and supported.

5.11.4. RCC NP 3 pipes

i. Quality Assurance steps to be taken at site

Precast Concrete Pipes (with Reinforcement) Socket and Spigot NP3 as per IS 458:2003

ii. Check of Documentation

The Executive at site should obtain the following documents from the Agency and Agency should obtain the same from the Supplier of pipes:

- a) Certificate to the effect that the Precast Concrete Pipes (with Reinforcement) Socket and Spigot NP3 pipes have been manufactured strictly as per IS code IS 458: 2003. This Certificate would include Manufacturer's Test Certificate and Test Reports
- b) Conduct a check to ensure that each pipe is clearly and indelibly marked in

ink/paint or embossed on white base as under. The following markings should be on all procured pipes/collars:

- Identification of the source of Manufacture
 - Class and size of S&S pipe
 - The words 'SPUN PIPE' or 'VERTICAL CAST (REINFORCED)' as may be applicable, for pipes
 - Date of manufacture
 - BIS Certification Marking
 - Any other marking which would be prescribed by the ULB.
- c) The above information shall be clearly marked on outside for pipes up to 300 mm internal diameter, and both outside and inside for pipes above 350 mm internal diameter.
- d) Obtain from the manufacturer a Certificate indicating the details relating to quality, quantity and dispersion of steel in the pipes as well as the clear cover to the steel provided in the pipes. (Clause 6.2.3 of IS 458:2003).

iii. Classification

Class	Description	Conditions Where Normally Used
NP3	Reinforced (in case of pipes manufactured by vibrated casing process) concrete, medium-duty, non-pressure	For drainage and irrigation use, for cross drains/culverts carrying medium traffic
NP4	Reinforced and also Non-reinforced (in case of pipes manufactured by vibrated casting process) concrete, heavy-duty, non- pressure pipes.	For drainage and irrigation use, for cross drains /culvert carrying heavy traffic

iv. Sampling for Physical Characteristics

- a) Scale of Sampling (as per IS 458:2003)

Nos of pipes in the Lot	For requirement under Clause 8 & 9		Sample size for Test under Clause 10.2 (Excluding Ultimate load test)
	Sample Size	Permissible Nos of Defects	
Up to 50	8	0	2
51 to 100	13	1	3
101 to 300	20	2	5
301 to 500	32	3	7
501 and above	50	5	10

- b) Dimensions, Workmanship and Finish (Clause 8 & 9 of IS 458:2003)
- c) Hydrostatic test, Three-edge bearing test and Permeability test (Clause 10.2 of IS 458:2003)
- d) In any consignment, all the pipes of same class, same size and belonging to the same mix of concrete shall be grouped together to constitute a lot.
- e) For ascertaining the conformity of the material to the requirements of this specification, samples shall be tested from each lot separately.
- f) A pipe failing to satisfy one or more of these requirements shall be considered

as defective.

- g) The lot shall be declared as conforming to these requirements if the number of defectives found in the sample does not exceed the number of defectives given in Column 3.
- h) To ascertain reinforcement, pipes may be broken from different locations.

v. Dimensions (Clause 8 of IS 458:2003)

A check of the following physical characteristics will be carried out of samples as listed above:

- a) All the pipes selected shall be inspected for dimensional requirements, finish and deviation from straight.
- b) A pipe failing to satisfy one or more of these requirements shall be considered as defective.

vi. Workmanship and Finish (Clause 9 of IS 458:2003)

- a) Pipes shall be straight and free from crack except that craze cracks may be acceptable.
- b) The ends of the pipes shall be square with their longitudinal axis so that when placed in a straight line in the trench, no opening between ends in contact shall exceed 3 mm in pipes up to 600 mm diameter (inclusive), and 6 mm in pipes larger than 600 mm diameter.
- c) The outside and inside surfaces of the pipes shall be dense and hard and shall not be coated with cement wash or other preparation.
- d) The inside surface of the pipe shall be smooth.
- e) For better bond, inner surface of the collar may have rough finish.
- f) The pipes shall be free from defects resulting from imperfect grading of the aggregate, mixing or moulding.
- g) Pipes shall be free from local dents or bulges greater than 3.0 mm in depth and extending over a length in any direction greater than twice the barrel wall thickness.
- h) Pipes may be repaired, if necessary, because of accidental injury during manufacture or handling and shall be accepted if in the opinion of the Engineer-in-Charge, the repairs are sound and appropriately finished and cured, and the repaired pipe conforms to the requirements of this specification.

vii. Deviation from Straight

The deviation from straight in any pipe throughout its effective length, tested by means of a rigid straight edge as described in IS 3597 shall not exceed, for all diameters, 3 mm for every metre run.

viii. Tests to be conducted at two Laboratories

The following tests are to be got conducted from an authorised and reputed NAB approved labs:

- a) The specimens of pipes selected in accordance with 10.1 of IS 458:2003 shall be subjected to the following tests in accordance with IS 3597:1998
 - Permeability Test
 - Hydrostatic Test

- Three-Edge Bearing Test
 - Split Tensile Tests of concrete cylinder (5.5.2 of IS 458:2003) made from the concrete used for the pipes.
 - Absorption Test
- b) Rubber Ring chords used in pipe joints shall conform to Type-2 of IS 5382.:1985

Note:

- The permeability test when conducted in accordance with the method described in IS: 3597:1998 shall meet the requirement of final permeability, which shall not exceed 0.3 cm³.
- Initial absorption should not exceed 2.0 cm³ and the deviation in any two readings during initial absorption should not be more than 8 cm³.
- For Non-pressure pipes, 2% of the pipes shall be tested for hydrostatic test pressure.

5.11.5. HDPE T-Grip for Lining for RCC Pipes

i. General

- a) T-grip liner is new introduction for lining of concrete pipes with a Polyethylene material. The following guidelines have been made to ensure that the product is of a material of laid down quality parameters.
- b) T-grip PE Liner should be made from Polyethylene compound. To maintain the characteristics, Manufacturers can use combination PE materials. However, the liner and allied products used for installation should be made from the propriety grade resin. The T-grip PE liners, the actual resin used in manufacture must constitute not less than 99% of the resin used in formulation. The Manufacturer is permitted to make changes in the formation of the T-grip PE liner, but only after prior approval from the Engineer-in-Charge of Project and technical demonstration no quality parameters are compromised.
- c) At any time during the course of Project, whether during Manufacture of the specified T-grip PE liner or in its installation finally in the RCC Pipe, the Engineer-in-Charge should retain samples of the T-grip PE liner or welding strips for testing.

ii. Properties

The following are the main properties T-grip PE liner:

S. No	Test	UOM	Value	Test Method
1.	Material		HDPE	
2.	Density	g/cc	0.93-0.94	ASTM D 1238
3.	Melt Flow Rate (190 deg. C, 2.16 kg. wt.)	g/10 min.	≤ 1.00	ASTM D 638

4.	Tensile Strength at Yield	MPa	≥ 15	ASTM D 638
	Tensile Strength at break	MPa	≥ 24	ASTM D 638
5.	Elongation at Yield	%	12(Min)	ASTM D 638
	Elongation at break	%	600(Min)	ASTM D 1603
6.	Carbon Black content	%	2-3	ASTM D 2240
7.	Shore durometer		1-sec. ≥ 50 10-sec. 240	ASTM D 570
8.	Water Absorption	%	≤ 0.08	ASTM D 4801
9.	Thickness	Mm	1.65 (Min)	

HDPE T-grip manufacturer should have in house testing facility for the tests which are mentioned in this circular.

- a) All T-grip PE liner including locking extensions, all joints and welding strip shall be free of cracks and other defects that may affect the protective properties of the material.
- b) Colour
Colour of T-Rib PE liner shall be of twin colour. In twin colour, Portion of T-rib (Outer layer) which is embeded in RCC Pipe shall be Black-UV resistant and portion (Inner layer) which are come in contact with fluid shall be Grey/Blue.
- c) Thickness of inner layer should be 20% of the thickness of total T- rib e.g. If T-rib liner thickness is 2.5mm, then inner layer thickness should be 0.5mm.

iii. Test

- a) General:
 - Sample taken fro T-grip PE liner, Joints or Weld Strips shall be tested to determine material properties.
 - Determination of tensile strength and elongation shall be accordance with ASTM D 638 using Die IV. Determination of indentation hardness shall be in accordance with ASTM D2240 using type D Durometer, except that a single thickness of material and indentation hardness shall be made on 1x3 inch (25x75mm) specimens. Thickness of specimen shall be the thickness of the sheet or strip.
- b) Measurement of initial Physical Properties:
This measurement determines the initial values for tensile strength, weight, elongation and indentation hardness prior to chemical resistance test.
- c) Chemical Resistance Test:
 - Determine the physical properties of the specimens after exposure to chemical solutions.
 - Test specimen shall be conditioned to constant weight as 72°F (24°C) before and after submersion in the followig solutions for a period of 112 days at 72°+or-5°F (24°+or-3°C).

Chemical	Test Method	Change in Weight Not more than
Sodium Hypo-Chloride 1%	As per ASTM D 543	0.09%
Ferric Chloride 1%		0.09%
Sodium Chloride 5%		0.09%
Sulphuric Acid 20%		0.09%
Nitric Acid 1%		0.09%
Sodium Hydroxide 5%		0.09%
Ammonium Hydroxide 5%		0.09%
Soap & Detergent Solution 2%		0.09%

- At 28 day intervals, specimen shall be removed from each chemical solution and tested. If any specimen fails to meet the 112 days exposure, the material will be subject to rejection.

- Chemical Resistance test to be performed as type test once in year.

d) Water Absorption Rate

- (% change maximum in original weight) as per ASTM D570.
- Results are 0.1% over first 24 hours then the rate drops rapidly. Total absorbed amount is not increased over prolonged period.

e) Water Vapour Transmission Rate:

- This test is to be performed as per ASTM E96 (38°C and 100% relative humidity).
- The transmission rate should be 0.020 (per 100 square inches per day) for T-grip PE liner thickness of 1.5mm.

f) Co-Efficient of Linear/Thermal Expansion:

- This test is to be performed as per ASTM D696. Test results should be 1.2×10^{-4} per °C rise in temperature.
- T-grip PE liner should not exhibit significant contraction/expansion differentials to concrete. Hardness-Shore Durometer "D" should be 55 to 25°C as per ASTM D2240 test method.

g) Oxidation Induction Time (OIT)

This test to be performed as per ISO-11357/ Test results should be ≥ 20 minutes minimum at 200°C.

h) Spark Test:

All liner shall be shop tested for holes with a spark tester set to 20,000 volts to 30,000 volts. Sheets having holes shall be satisfactorily repaired in the shop prior to shipment from the manufacturer's plant.

There should be marking of batch number and manufacturer brand at regular interval on every 50 meters.

iv. Details and Dimensions:

- a) **Approval of Detail:** T-grip PE liner, strip and other accessory pieces shall conform to the requirements of these specifications and applicable provision of standard plans.
- b) **Thickness of Material:** The minimum thickness of sheet and strip shall be as follows:

Material	Thickness
Sheet with Locking	1.65 mm min (for size up to 300mm RCC Pipe) 2.00 mm min (above 300 mm and less than 600 mm)
Extensions	2.50 mm min (above 600m and less than 1200mm)
Sheet Plain	1.65 mm min
Joint Strip	1.65 mm min
Weld Strip	1.65 mm min

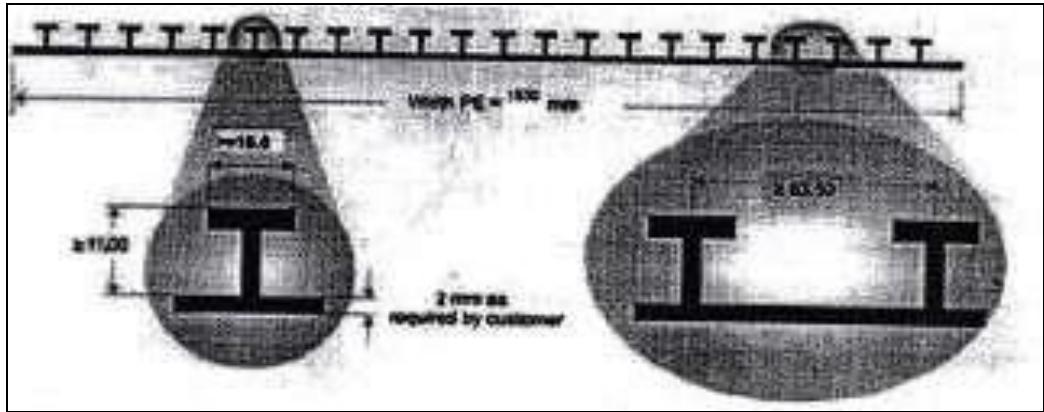
- c) **Unit weight w.r.t thickness of material:** The Approximate unit weight with respect to thickness shall be as follows:

Thickness	Unit weight-kg/m ²
2.00 mm	3±2%
2.50 mm	3.4±2%
3.00 mm	3.95±2%

- d) **Material Sizes:** T-grip PE liner used for RCC pipe shall be sized to provide the coverage by the plans.

v. Locking Extensions:

- a) T-grip PE liner to be embedded in concrete shall have internal locking extensions.
- b) T-grip PE liner be anchored to concrete surfaces during vertical casting of RCC pipes.
- c) Locking extensions shall be of the same material as the T-grip PE liner, shall be integrally extruded with the PE liner, it should have an approved cross section with a minimum web thickness of 3 mm. They shall be ≥ 63.5 mm apart and shall be such that when the extensions are embedded in the concrete, the liner will be held permanently in place. Height of Locking extensions should be ≥ 11 mm from bottom of PE liner. Width of locking extension should be ≥10.00 mm.



- d) Locking extensions shall be parallel and continuous except where interrupted for joints flaps, weep channels, strap channels and for other purposes shown on the plans or permitted by the engineer.
- e) The T-grip PE liner edge which will be lower terminal edge in the structure shall not extend beyond the base of the final locking extensions more than 3/8 inch (10mm).
- f) Flaps: When transverse flaps are specified or required, they shall be fabricated by removing locking extensions so that maximum of
- g) 0.32 inch (0.8mm) of the base of the locking extensions remains on the sheet.
- h) Pull Test for Locking Extensions: T-grip PE liner locking extensions embedded in concrete shall withstand a test pull of at least 75 pounds per linear inch applied perpendicularly to the concrete surface for a period of 1 minute, without rupture of the locking extensions or withdrawal from embedment. This test shall be made at a temperature between 86°F to 95°F (30°C to 35°C) inclusive.

vi. Shop Welded Joints:

Shop welded joints, used to fuse individual sections of T-grip PE liner together, shall be at least equal to the minimum requirements of the liner for thickness, and shall be tested for tensile strength. Tensile strength measured across the welded joints as well as Hot-air fabrication welds, shear value shall be 90% of Yield strength of the parent material using a 1x5 straight die.

5.11.6. Manhole Frame and Cover

Steel Fibre Reinforced Concrete (SFRC) frame and cover shall be used for covering the manhole. The selection of samples per lot for testing, failure percentage, no. of test, Concrete mix curing, etc shall be as per IS 12592 (part-I) for Pre-Cast Concrete Manhole Cover. The load of class AA shall be as per IRC guidelines.

The Manhole cover shall be heavy duty and shall confirm to IS 12592 (Part I & II). The inspection and testing for these shall be done by Third Party agency also in the presence of EIC or his representative. The load test shall be done in accordance with Table 1 of IS 12592 (Part – I). The cover & frame shall be manufactured as per approved drawing. The frame and cover of manhole shall be in SFRC as per approved drawing.

The Road Gulley covers shall have minimum 30% perforation or more with meeting the load test requirements of Heavy Duty as per IS 12592.

5.12.Sewer Rehabilitation Works

5.12.1. De-silting of pipes

i. Sewer Flow Control

Before starting desilting of the sewer shall be blocked in the certain sewer length taken up for desilting and rehabilitation work depending upon the schedule and pump the sewage out of this sewer length to the downstream or drain.

Simultaneously and as long as desilting, inspection and repair, rehabilitation work in the concerned sewer length is going on, over-pump the arriving sewage water in the blocked sewer from upstream to the to the first manhole downstream.

Over-pumping shall be as required on a 24 hours basis. The over-pumping system shall be of sufficient capacity to handle the maximum peak flow.

Sufficient precautions shall be taken to protect the upstream sewer lines from damage that might result from sewer surcharging. Also, sufficient precautions shall be taken to ensure that sewer flow control operations do not cause flooding or damage to public or private property being served by the sewer involved.

ii. Flow Bypassing

For carrying out the desilting and rehabilitation job, a number of pumps at different locations in the sewer line shall be installed as per site requirement for over-pumping / bypassing the sewage flow. the

necessary pump with suitable capacity, conduit / pipe network and other equipment to divert the flow of sewage around the manhole shall be installed. Suitable sewer line plugs shall be inserted / temporary brick wall shall be constructed into the line upstream & downstream of the section being worked. Plugs shall be designed in such a way that any portion of the sewage can be released or pumped out. After completion of the work in a particular stretch, the plugs / temporary wall shall be removed and the flow restored to the normal conditions. During the operation, we will keep the necessary labour and supervisors to set up and operate the pumping and bypass system.

If required the pumping operation shall be for 24-hour basis so that this will not cause flooding or damage to Public / Private Properties. As far as the pump is concerned, using suitable capacity of deep suction centrifugal pumps / submersible pumps according to the site requirement.

iii. Desilting of Non Man Entry Sewer

Engaging the vehicle mounted combined jetting-cum-suction unit for the desilting of non-man-entry sewer, which is capable of creating vacuum for sucking out dense waste / sludge like mud, slurry, grit etc. from the sewer line. High pressure cleaning system can jet water at about 100 to 140 bar, which can be adjustable as per the requirement by a control valve. By ensuring that no damage occur to the existing sewer

The concept of flushing with more water with less pressure is used for this cleaning operation. A specially designed rotary nozzle is used for the cleaning operation. High pressure water jet equipment will have about

120 meters long hose which will push the debris, sand in the opposite direction to the travel of the hose and the suction hose with suitable suction nozzle is used to remove all the debris, sand, sludge, etc., from the manhole into sludge tank. During the cleaning operation, manhole jack and hose guide system is used wherever it is necessary to prevent damage to the high-pressure hose. The jetting & suction operation can be operated simultaneously for effective cleaning of the pipeline. The suction operation can continue till the sludge tank is filled with slurry, sludge, sand, etc. The safety valve provided inside the sludge tank will stop the operation once the high level is reached. Afterwards for discharge of the debris either this unit can move to the destination for dumping the debris or can transfer this material into another tanker for transportation to the site by blow operation or sludge can be transferred to barrels and the barrels can be transferred to the dump yard / treatment plant. As far as this process is concerned, the silt for drying either at site or any other place shall not be dump or stack. Various special nozzles for sewer cleaning and root cutting application is used. Wherever there is no approach to take the jetting cum suction unit, other conventional method for desilting is followed.

iv. Desilting of man entry sewer

The super sucker unit with payload carrier for desilting the man-entry sewer line is engaged. The equipment is provided with dewatering arrangement so that only silt / sludge is sent to the dumping yard. Through the existing manhole chamber necessary suction hose is sent for desilting operation. One end of the suction hose is connected to the specially designed suction nozzle for carrying out desilting operation and another end is connected to the vehicle mounted payload carrier tank to collect all the sludge, solid, debris, sand, silt, etc. The pay load carrier outlet pipe is connected to the vehicle mounted super sucker unit which generate high level of vacuum in the payload carrier tank. Super sucker unit will have diesel engine driven vacuum blower and specially designed cartridge filter and multi-cyclone, pneumatic control system, etc. Once this super sucker is operated it creates high level of vacuum inside the payload carrier through outlet hose. The payload carrier inlet pipe with necessary valve arrangement is connected to the suction hose through quick release coupling which is sent inside the manhole chamber for desilting operation.

Desilting operation personnel with necessary safety gadgets will perform the desilting operation by proper manipulation of suction nozzle and hose inside the sewer pipe. Once the payload carrier is filled with sludge, silt, water and debris, etc., water is filtered back into the storm waterline by the dewatering arrangement and only the sludge and solid collected in the payload carrier is sent to the dumping yard. This operation is continuous till the silt in the entire stretch is cleaned completely. As far as our process is concerned we will not dump or stack the silt for drying either at site or any other place. Once the first payload carrier is filled with silt, it is sent for dumping and the second payload carrier is connected to the super sucker system so that the process can be continuous

without any time loss. After dumping the silt in the dumping yard, the payload carrier is returned back for further collection of silts.

v. Sewer Cleaning

During desilting operation if there is any hard deposit of silt high-pressure water jetting system to dislodge the same is used. After desilting to remove any deposits inside the sewer line, a high-pressure water jet system with specially designed manipulator with nozzle for cleaning is used. High pressure cleaning system can jet water at about 100 to 140 bar which can be adjustable as per the requirement by control valve. It is ensured that no damage occur to the existing sewer.

During the cleaning operation, manhole jack and hose guide system is used wherever it is necessary to prevent damage to the high-pressure hose. A trolley / truck mounted high-pressure water jet system for sewer cleaning is used.

HP water jet system is consisting of high pressure pump driven by diesel engine and necessary HP hose of about 120 meter length with suitable nozzles.

5.12.2. CCCTV for Pipe Rehabilitation

i. Intent and Specifications

- a) The Contractor shall carry out an initial Closed-Circuit Television (CCTV) survey of the complete length of pipelines indicated for rehabilitation to ascertain their material and conditions prior to proceeding with the pipeline rehabilitation works. The contractor shall note that pipe materials may vary along the length of the pipeline.
- b) Portions of the pipeline that are found to be beyond repair are to be brought to the notice of the "special technical committee" for a decision to replace / rehabilitate the pipeline.
- c) Prior to carrying out the rehabilitation works, the pipeline shall be cleaned and inspected again by members of expert committee, to ensure that the pipeline has been sufficiently prepared and that the pipeline is accessible for rehabilitation.
- d) On completion of the rehabilitation or pipe replacement works, a final CCTV survey shall be carried out to ascertain the acceptability of the works. This final survey, method of survey reporting required and some general requirements pertaining to the extent of survey, time of inspection and pipeline preparation, etc shall be elaborated in other Particular Specifications, in the tender document
- e) The equipment to be provided for the inspection and CCTV shall be elaborated in other Particular Specifications, in the tender document. The Contractor shall provide sufficient survey/inspection units, including standby units in the event of breakdown, in order to complete the CCTV surveys and/or inspections, within the duration specified by the Engineer-in-Charge. The Contractor shall maintain these equipment/ plant in full working order and shall satisfy the Engineer-in-Charge at the commencement of each working shift that all items of plant have been provided and are in full working order.

ii. CCTV Survey after De-Silting

- a) The Contractor shall carry out an initial colour CCTV survey for the purposes of:
 - Assessing the internal condition and material of the pipeline and enable the contractor to recommend the rehabilitation system to be adopted, for the approval of the "special technical committee", so constituted by PMIDC/Local Government Department
 - Verifying that the length and diameter of the pipeline are accurately measured and are as indicated on the Contract Drawings -and Specifications.
 - Ensuring that all defects, joints, access manhole, air valves, washouts, connection positions, etc have been identified, their position and size measured and noted, and their condition and locations recorded.
 - Providing a record of the initial conditions of the pipeline.
- b) The initial colour CCTV survey shall be recorded on high definition VHS format video cassette tapes, 35mm colour pictures or equivalent digital picture formats on digital media and typed survey logs all supplied and allowed for in the Contractor's tendered rates. The video record shall show the entire length of the pipeline. A 360° rotational scan indicating general condition shall be implemented at minimum intervals of 10 metres along the pipeline, at connections and at salient defect features.
- c) Colour snap shots shall be taken at a minimum of 10 m intervals, at every defect, at joints and at all appurtenances and connections. Each picture shall be systematically annotated with start and finish chamber reference numbers survey direction, chainage, street location and the date and time of the survey
- d) Based on the inspection results, the lining condition shall be assessed and inferred structural condition of the pipe line section assessed, where possible.
- e) The Contractor shall also assess whether the rehabilitation method proposed is suitable for the pipeline and submit a written report to the Engineer-in-Charge. The assessment shall be carried out by a Professional Engineer or technical committee with relevant experience, engaged by the client. A computer-based software programme approved by the Engineer-in-Charge. shall be used to capture and synthesise the data arising from the pipeline inspection and to grade the data.

iii. CCTV Inspection Prior to Rehabilitation

- a) The pipeline is to be cleaned immediately prior to rehabilitation. Following cleaning, the pipeline shall be inspected by colour CCTV to confirm that the pipeline is ready for rehabilitation. Although detailed photography is not required at this stage, the Engineer-in-Charge. may instruct the Contractor to provide pictures at locations of defects and other locations of significant interest. The cost of such additional pictures shall be included in the contractor's tendered rates. No additional data logging work is otherwise expected as part of this work.
- b) Video records of the CCTV inspection and in-pipeline pictures shall be handed to the Engineer-in-Charge. The video shall be handed over to Engineer-in-

Charge for record

- c) The Contractor shall be required to re-clean the pipeline if in the opinion of the Engineer-in-Charge, the pipeline is not ready for rehabilitation. A further CCTV inspection will be required to confirm that the pipeline is ready for rehabilitation subsequent to re-cleaning. The costs for such re-cleaning and further CCTV inspection shall be borne by the Contractor. It is therefore critical that the
- d) Contractor commences rehabilitation works as soon as possible after the Initial Colour Survey and once approval for rehabilitation has been granted by a "committee of experts".

iv. Final CCTV survey of Rehabilitated Pipes

- a) On completion of the pipeline rehabilitation, the Contractor shall re-clean the pipeline and shall carry out a further colour CCTV inspection. In pipeline pictures will only be taken at locations, where a pipeline has been lined, all appurtenances and connections and other distinguishing features (locations where wrinkling is observed, locations where the relined pipeline is not wholly circular, obvious defects in the cured materials, etc.), and at locations where repairs have been carried out.
- b) The video and pictures shall be submitted to the Engineer-in-Charge to assist the department in his assessment of the works carried out, following which a decision to accept (or not to accept) the works carried out, shall be made. The Engineer-in Charge's decision on this matter shall be binding and final to the Contractor. Although no data logging work is required as part of this work, all the colour pictures that are submitted to the S.O. shall be properly catalogued.

5.12.3. Rehabilitation through Cured-In-Place-Pipe (CIPP) Technology

- i. Surface preparation of the sewer to be rehabilitated is the most important work to be carried out prior to installation of the liner.
- ii. Initially, all manholes/access points along the length of the pipe to be lined have to be located and distances are measured.
- iii. Once this is achieved, the number and lengths of the liners to be installed shall be determined. Important characteristics are: the material of the pipe, the number of bends, the diameter of the pipe, and the condition of the pipe and possible diameter-reductions.
- iv. Pre-liner shall be used if the host pipe does not dry up even after cleaning or due to heavy infiltration into the host pipe so as to prevent "wash out" of the resin during the installation of main Liner.
- v. The thickness of the liners shall be determined according to the pipe conditions. The rehabilitated pipe should be able to resist all the super-imposed loads acting on the pipe (soil pressure, hydrostatic pressure, and live loads).
- vi. Design of the liner shall be as per ASTM F1216-07 "Standard Practice/ WRC SRM for Rehabilitation of Existing Pipelines and Conduits by the Inversion and Curing of a Resin Impregnated Tube".
- vii. The installation of the liner shall be done as per ASTM F1216-07 and ASTM F 1743-96 "Standard practice for Rehabilitation of Existing pipelines and conduits by Pulled -in-place Installation of Cured-in-place Thermosetting Resin pipe (CIPP)".

viii. The service life of the liner installed should have a life of more than 50 years under severe conditions and toxic effect of sewage and gases, resistant to scouring, acids, alkalis, solvent, etc and shall provide for 100% water tightness.

ix. The Liner shall be designed as a complete structural stand-alone liner and shall meet the following requirements.

- c) Liners shall be designed to have sufficient strength to support superimposed loadings such as earth pressure, hydrostatic loads and traffic surcharged load, etc.
- d) Liner shall be designed to seal the sewer to prevent the infiltration of ground water into the sewer and the leakage of sewage into the surrounding ground.
- e) Liner shall be designed to withstand all construction loads including handling, lifting, installation aid, without overstressing the liner or cracking.
- f) The lining of the sewer shall be totally wrinkle free and retain the grade and level of the existing sewer.
- g) The internal surface of the liner at the joints shall be flush with a tolerance step of not more than 1 mm between adjoining pipes.
- h) The joints shall be leak free, water tight and able to resist opening due to external or internal forces.
- i) Details shall be provided for cutting and making good of the laterals and branches. Necessary details shall be provided for end sealing of the liner.
- j) Design, manufacture and delivery of the liner will comply with ISO 9001 2000. Necessary certificate shall submit.
- k) All design calculations and area reduction calculation shall provide.

5.12.4. Rehabilitation through MWSL Technology

i. General Requirements

The MWSL process shall utilize a one-part extruded polyvinyl chloride (PVC) or High Density Polyethylene profile strip to be spirally wound by machine into an existing sewer (host pipe). The extruded profile strip shall be mechanically locked or HDPE welded as it is spirally wound to form a liner inside the host pipe by use of the MWSL winding machine. The installation system shall provide precise control of the internal dimensions of the newly formed PVC or HDPE conduit that shall ensure the specified annular space is maintained throughout the re-lined length.

- a) No grouting is required to fill the annular space between the outside of the liner and the inside of the host pipe when the liner pipe is expanded until it presses against the interior surface of the existing pipe. However, if the liner pipe is inserted as a fixed diameter into the existing pipeline and is not expanded, the annular space between the liner and existing pipeline shall be filled with a cementitious grout.
- b) The spiral wound PVC or HDPE profile process shall create a rehabilitated sewer with improved chemical resistance characteristics, improved flow coefficients, and structural enhancement for the host pipe.
- c) The reinforcing steel strip can be pre-inserted into the profile strip or formed into its profiled shape on site, immediately before being mechanically interlocked with the ribs of the PVC profile.

- d) For the lining system which is not close fit to the existing pipe wall, the annulus between the outside of the liner and the inside of the host pipe and the space between the ribs of the profile shall be filled with grout.
- e) The role of the grout is to provide a load path from the liner pipe to the host pipe, to position the liner within the existing pipeline and to prevent lateral infiltration along the liner/pipe interface. The reinforcing effect of the grout, if any, should not be included in the calculation of the strength of the profile. The grouting together with suitably designed end profiles shall provide watertight terminations to prevent infiltration at the ends of the liner and at any cut outs for lateral connections.

ii. Design of Liners

- a) The liner design shall address the structural requirements in accordance with ASTM F 1741 or other relevant pipe design standards.
- b) For lining of sewerage pipes with diameter 900mm and below, the liner may be installed with or without steel reinforcement. The lining shall be installed with diameter reduction at no more than 15 percent. Any annulus between the lining and the host pipe shall be filled with cementitious grout.
- c) Design loads shall comprise the combination of earth pressures, hydrostatic loads and traffic loads for each particular lining. Traffic live load given in WRc SRM (2001) 4th Edition or AS 2566 Standard W7 Wheel loading are acceptable with the prior approval of the Engineer.
- d) Soil modulus of 7 MPa and unit weight of 18 kN/m³ shall be assumed during design.
- e) All liners must be capable of resisting the combination of earth pressures, hydrostatic loads and traffic loads.
- f) For lining of sewer with diameter more than 900mm, only MWSL with approved steel reinforcement shall be installed. The annular space shall be filled with a cementitious grout as recommended by the spiral wound liner manufacturer / supplier and approved by the Engineer prior to commencement of the work.
- g) The composite PVC and steel profiles shall provide a liner with sufficient strength, taking into consideration of the strength of host pipe, to meet the design requirements in accordance with the loading conditions specified. The proposed profiles of PVC, steel, and grouting together with detailed design methodology shall be endorsed by a Professional Engineer registered in India, and the detailed calculations shall be submitted to show that they meet the design requirements.

iii. Material Requirements - Liner

- a) For extruded profile strip shall be made from unplasticized PVC compounds meeting the minimum requirements for cell classification 12344 or higher, as defined in ASTM D 1784, or made from HDPE compounds meeting the minimum requirements for cell classification 334320C or higher, as defined in ASTM D 3350.
- b) The proposed PVC lining material shall have the strength and chemical resistance to sewer system with a design life of not less than 50 years.

iv. Material Requirements - Grouting

- a) Grouting shall be carried out with the aim of filling the annular space along the whole length of the sewerage pipes completely. Grout can be injected into the annular space through openings in the termination end seals or at cut outs for service connections. Grout holes, if drilled into the liner pipe shall be reinstated and sealed with approved well-designed fitting caps. The grouting operation can take place either in a continuous stage or in lifts, depending on the condition of the host pipe, diameter and length.
- b) Grout to be used to fill the annular void space shall consist of Portland cement, water, and suitable admixtures.
- c) Flow characteristics, maximum drying shrinkage, and minimum compressive strength requirements for the grout shall be compatible with the design requirements for the renewed conduit and shall be compatible with the field conditions under which the grout will be installed
- d) At the terminations and cut-outs, a length of 300mm of the annulus space shall be sealed with a suitable water activated quick setting Polyurethane gel or foam. This grouting may need to be carried out under wet condition.

v. Material Requirements – Steel Reinforcing Strip

- a) MWSL system shall utilize Type 304 stainless steel reinforcement or approved steel reinforcing strip with demonstrated corrosion resistance in the sewerage pipe environment.
- b) For MWSL system where the steel reinforcement would be exposed to corrosion in the sewer environment, the cold formed steel profile reinforcement shall be formed from Type 304 stainless steel or equivalent and to the design thickness proposed in the liner submission. The thickness, formed shape, and yield strength of the strip shall be compatible with the design requirements for the renewed conduit and the specified PVC or HDPE profile designation.

vi. Material Marking and Handling

- a) The PVC or HDPE profile strip shall be distinctly marked on its inside surface at appropriate intervals with a code number identifying the manufacturer, date of manufacture, and profile designation.
- b) All other products required to complete the spiral wound lining renewal process shall be distinctly marked with product type and manufacturer.
- c) The product shall be inspected for defects at the time of manufacture and again in the field prior to installation. Defects to the PVC or HDPE profile include, but are not limited to, gouges, abrasion, flattening, cuts, punctures, and ultra-violet (UV) degradation. Defective product shall not be installed and shall be removed from the jobsite. Handling and storage of the profile reels shall be in accordance with the manufacturer's instructions.
- d) All other products required to complete the spiral wound PVC lining renewal process shall be handled and stored in accordance with the manufacturer's instructions. Each product shall be accompanied by its relevant specification and MSDS information.

vii. Submittals (prior to commencement of rehabilitation work)

- a) The Contractor has to submit the following documents to the Engineer In Charge for approval prior to commencement of rehabilitation work or if there is amendment of the document due to the changes of site conditions.
 - Detailed design calculations for the structural lining system offered, Engineering properties of lining materials, proposed liner thickness for each sewer stretch and reduction in cross sectional area, pre and post lining hydraulic calculations and durability performance data.
 - Flow diversion & management plan
 - Traffic management plan
 - Pre-installation cleaning method and CCTV survey of host pipe
 - Method statement for spiral winding process including details of all materials and equipment to be used during the winding process.
 - Grout mix design (if applicable).
 - Method statement for annulus grouting stating the spacing and details of bulkheads, details of the bracing system, grout injection / vent holes, the number of grout lifts required to fill the annular space, and methods for repairing holes in the lining.
 - Mill certificate for the steel strip reinforcing confirming that the steel satisfies the requirements of this specification and the Contractor's design submittal.
 - Documentation for the profile strip material confirming that the material satisfies the requirements of this specification and the Contractor's design submittal.
- b) Upon completion of installation work, the Contractor shall submit the following documents to the Engineer In Charge for final acceptance of the work:
 - Post-installation CCTV survey of the renewed conduit

viii. Liner Installation

- a) Profile Winding
 - Installation of the spiral wound PVC or HDPE lining shall follow closely the standard specification in ASTM F1741.
 - The existing pipeline shall be cleaned of any obstructions, to a standard suitable for installation of the liner, and televised. All existing live service connections shall be precisely located longitudinally and radially, and logged for subsequent reinstatement following installation of the liner.
 - Bypass pumping is not mandatory for installation of the spiral wound liner. The contractor shall be responsible for deciding the need for flow diversion to allow successful liner installation. Spilling of any sewage in any situation will not be acceptable. The Contractor shall be responsible for the cost of all cleanup and associated with activities that may be

required to rectify the effects of any spillage due to the liner installation.

- The PVC or HDPE profile shall be wound using equipment that is either self-running or static. For the self-winding method, the winding machine traverses down the host pipe forming the spiral wound PVC lining conduit as it goes. For the static method, the winding machine operates from a fixed location and feeds the spiral wound PVC lining conduit into the host pipe.
- The winding process shall be continuous until the spiral wound lining reaches the end manhole. Joining of profiles will be as recommended by suppliers, subject to approval from the Engineer.

ix. Annulus Grouting

- a) Annulus grouting where required shall conform to the contractor's approved submittals.
- b) The Contractor shall submit the grouting plan as recommended and approval from the supplier (a) prevent flotation of the spiral wound PVC or HDPE conduit, (b) align the liner pipe within the host pipe so that the required annular space is maintained between the liner pipe and host pipe, (c) prevent excessive deflection or buckling of the liner pipe.
- c) Grout shall be pumped into the annular space through pre-drilled locations around the circumference of the spiral wound PVC or HDPE conduit. The number and locations of the pre-drilled holes shall be subject to the approval of the Engineer. Vent holes shall be provided at suitable locations to permit air to be expelled from the annular space and to monitor grout fill levels.
- d) Grouting may be performed in one or more lifts in order to completely fill the annular space. The Contractor shall submit his proposed method, subject to Engineer's approval, to check and verify that the annular space has been completely filled. Any holes made in the profile during the grouting operation shall be sealed using means and methods approved by the Engineer.

x. Completion of MWSL Work

- a) Ends of Renewed Conduit:
 - The ends of the spiral wound PVC or HDPE conduit shall be securely grouted in position. The PVC or HDPE conduit shall be sealed to the host pipe with material capable of achieving a watertight seal.
 - The transition between the liner invert and the invert in the manhole base shall be rendered smooth to reinstate the sewer flow line with appropriate materials.
- b) Final Inspection and Acceptance:
 - The completed spiral wound PVC or HDPE profile lining in the renewed conduit shall be continuous over the entire length of an installation run and be free from defects such as foreign inclusions, holes, cuts, tears, and grout voids. The renewed conduit shall be impervious against leakage out of the conduit to the surrounding ground or into the conduit from the surrounding ground.

- Any defect which will or potentially could affect the structural integrity or performance of the renewed conduit shall be repaired at the Contractor's expense using means and methods approved by the Engineer.
- The Contractor shall perform a post-installation CCTV survey of the renewed conduit as required by the Engineer.

xii. Reference Standards and Specifications

The MWSL system shall conform to the following standards, specifications, WRc Sewer Rehabilitation Manual and other relevant codes and standards where applicable:

- a) C109 Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. Cube Specimen)
- b) D256 Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics
- c) D638 Standard Test Method for Tensile Properties of Plastics
- d) D648 Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position
- e) D 790 Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials
- f) D1784 Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compound
- g) F1697 Standard Specification for Poly (Vinyl Chloride) (PVC) Profile Strips for Machine Spiral-Wound Liner Pipe Rehabilitation of Existing Sewers and Conduits.
- h) F1741 Standard Practice for the Installation of Machine Spiral Wound Poly (Vinyl Chloride) (PVC) Liner Pipe for Rehabilitation of Existing Sewers and Conduits.
- i) D 3350 Standard Specification for Polyethylene Plastics Pipe and Fittings Materials
- j) D 1505 Test Method for Density of Plastics by the Density Gradient Technique
- k) D 1238 Test Method for Melt Flow Rates of Thermoplastics by Extrusion Plastometer
- l) D 1693 Test Method for Environmental Stress-Cracking of Ethylene Plastics
- m) F 1473 Test Method for Notch Tensile Test to Measure the Resistance to Slow Crack Growth of Polyethylene Pipes and Resins

xiii. Quality Assurance

- a) MWSL work shall be performed by a Contractor who has a proven record of performance for similar installations. The Contractor shall submit resumes for superintendents, foremen, and other applicable lead personnel for field installation crews demonstrating competency and experience to perform the work scope as defined in this specification and all other applicable contract documents.
- b) Final Inspection: The renewed conduit shall be subject to a final inspection, and no such work shall be scheduled or started without having made prior arrangements with the Engineer In Charge to provide for the required

inspections.

xiii. Type Testing and Quality Control for Spiral Wound Lining

- a) Type testing shall be carried out prior to commencement of the works. The materials for spiral wound linings and steel reinforcements are specified above. The test for PVC profile shall be carried out meeting the minimum requirements for cell classification 12344 or higher, as defined in ASTM D 1784. The test for HDPE profile shall be carried out meeting the minimum requirements for cell classification 334320C or higher, as defined in ASTM D 3350. Test specimen for verification of cell classification shall be prepared by machining operations, or die cutting from a flat profile.
- b) Type testing for stainless steel that is going to be used in rehabilitation works shall be carried out meeting the chemical composition and mechanical properties of 304 stainless steel.
- c) The above tests shall be carried out by an accredited laboratory approved by Engineer or a reputable independent testing body if the tests can only be conducted overseas. New type tests shall be conducted if there is a change in manufacturer and/or change in source of materials during the course of the works.

5.12.5. De-silting of open Nallah

- i. The nala must be cleaned and desilted by machineries i.e. Excavator, JCB, Barge Mounted Poclain etc. without damaging to the above ground and underground utilities / properties etc.
- ii. The desilted material shall be disposed with all lead and lift as instructed by the HDMC officials
- iii. In case of main roads/bye-lanes with more than 4.0 m width the desilted materials must not be dumped in road/footpath side, it should be loaded directly in ripper/dumper/carrier etc. for dispose off to the site as directed by the Engineer.
- iv. Involvement of man power should be very minimum in all the nala and machineries should be engaged as far as possible.
- v. Involvement of the drains along the narrow roads and Liquid state silt the desilted materials may be dumped by the side of the road temporarily which must be removed within 24 hours of dumping. Failing to remove the same within 24 hrs will attract a penalty.
- vi. Target date of Completion for all works is as per the approved System Improvement Plan.

5.13. Separating Water Supply lines from Sewerage Manholes

5.13.1. Specification for Ductile Iron Pipes

- i. Specification of Double Flanged D.I. Pipes ISI marked centrifugally cast DI pressure pipes with flanged ends should be confirming to IS 8329 latest edition with up to date amendments. The flanges should be class PN 16 and the barrel shall be K-7. The rubber gaskets shall confirm to IS 638.
- ii. ISI marked centrifugally cast (spun) Ductile iron pressure pipes with socket/spigot ends confirming to IS8329 in standard working length of 4.00m, 5.00m, 5.50m and 6.00m for class K-7 suitable for push on joint (Rubber Gasket Jointing) with inside cement mortar lining.

- iii. ISI marked SBR quality Tyton Rubber Gaskets (Push on joint type) as per IS5382& IS12820 suitable for jointing of DI spun Tyton pipes.
- iv. The bidder shall supply attested photocopies of license granted by BIS authority to the manufacturer for marking the pipes & rubber rings with ISI certification mark before inspection of material.
- v. At the time of supply, the bidder shall supply a certificate of manufacturer at the time of inspection of material that each and every pipe has been tested for "WORKS HYDRAULIC PRESSURE TIGHTNESS TEST" as per relevant IS code.
- vi. The bidder shall supply attested photocopies of license granted by BIS authority for making the DI Detachable joints & rubber rings with ISI certification mark before inspection of material.

5.13.2. Design Requirements

i. Classification

The class of DI pipes to be provided shall be as specified in the data sheet attached with this sub section. The external diameter and wall thickness of socket and spigot pipes for the specified Class shall be as per IS 8329 or equivalent international standard.

Pressure class and thickness class of pipe flanges shall be as specified in the data sheet attached with this sub section and shall conform to the requirements of IS 8329 or equivalent international standard.

ii. Length

Socket and Spigot pipes shall be supplied in standard working lengths of 5.5m or 6m and flanged pipes in lengths of 4m / 5m / 5.5m as per requirements.

iii. Tolerances

Tolerances on External diameter, ovality, thickness and length of pipes etc. shall conform to the provisions of IS 8329 or equivalent international standard.

iv. Material Requirements

The metal used for manufacturing the pipes shall be of good quality, commensurate with the mechanical requirements laid down in IS 8329 or equivalent international standard.

v. Manufacturing Requirements

Pipes supplied shall be centrifugally cast (spun) Ductile Iron pipes conforming to IS 8329 or equivalent international standard. The pipes shall be stripped with all precautions to avoid warping or shrinkage defects, detrimental to their good quality. The pipes shall be sound and free from surface or other defects.

vi. External Layer

The DI pipes supplied shall be provided with external protection of metallic zinc coating with finishing layer of bituminous paint as per IS 8329 or equivalent international standard.

vii. Internal Lining

The pipes shall be provided with suitable cement mortar internal lining as per IS 8329 or equivalent international standard.

viii. Joints

Push on flexible joints shall be provided for pipe to pipe connection as per IS 8329 or equivalent. Wherever, flange joints are required e.g. at terminal points, valves, over

ground and underground pipe connection etc., Welded on flanges shall be used.

ix. Rubber Gaskets

Rubber gasket used with push on flexible joints shall conform to the requirements of IS 5382 or equivalent. Rubber gaskets for use with flanged joints shall conform to IS 638 or approved equivalent.

5.13.3. QA Requirements for DI Pipes, Fittings And Specials

Following tests / inspections to be carried out on the finished pipes, Joints, Gaskets, DI Fittings & specials as per relevant IS/ISO standard.

i. Pipes produced are subject to following checks

- a) Visual Inspection for workmanship, marking, visual defect etc.
- b) Mechanical Properties as per relevant governing Standard
- c) Dimension
 - Inside Diameter
 - Outside Diameter
 - Wall Thickness
 - Ovality of Pipes
 - Length of Pipes
 - Straightness

ii. Hydrostatic Leak Tightness to be carried out as per relevant standard.

iii. Zn coating & Bituminous painting on external layer DI pipes shall be carried out as per relevant standard / Technical Specifications.

iv. Identification – Manufacturer Logo, Nominal Diameter, Class, length indication for cutting of pipe at site, ISI certification mark, pipe no.

- a) Internal lining of suitable cement mortar shall be done as per relevant standard / Technical Specifications.
- b) Rubber gaskets shall confirm to the requirement of relevant standard / Technical Specifications.
- c) Joints for pipe, DI Fittings & specials shall be as per relevant standard / Technical Specifications.

5.13.4. Data Sheet for DI Pipes, Fittings & Specials

S. No.	Description	Parameters
1.	Pipe Material	Ductile Iron (DI) pipe internally cement mortar lined and externally coated with metallic zinc & finishing layer of bituminous paint
2.	Applicable standards	IS / ISO / AWWA / BS as listed in technical specification
3.	Hazen & William's constant	140
4.	Pipe Class	K7/K9 based on approved design as per IS 8329 or equivalent
5.	Pipe Joint type	Push on flexible joints as per IS 8329

S. No.	Description	Parameters
6.	Pipe Joint type at valves, pumps and other piping	Flange Joints as per IS8329 & IS 9523
7.	Welded on Flange (as applicable) Pressure Class	PN 16
8.	DI fittings class	K12 as per IS 9523 or equivalent
9.	DI fittings flange (as applicable) class	PN 16 / as per approved design
10.	Restrain mechanism at bends, specials etc.	Thrust Blocks
11.	Other Requirements	As per technical specification

5.13.5. Quality Assurance Protocol (Di Pipes) Quality Assurance Steps to be taken at Site

DI Pipes Is 8329:2000 and Amendments

i. Check of Documentation

As and when, the truck with the consignment reports to the Work Site, the Executive on ground from the Agencies should obtain the Certificate to the effect that the pipes have been manufactured strictly as per IS Code 8329:2000. This documentation will include Manufacturer's Certificate and the Test Reports. Normally, the driver of the consignment should be in possession of the said Certificate.

ii. stacking

Three types of stacking are recommended (*Figure 5-1*):

- a) Square Stacking: suitable for pipes up to and including DN400
- b) Parallel Stacking Using 2 no timber between each layer: Suitable for pipes of all sizes
- c) Pyramid Stacking: suitable for pipes of all sizes

Figure 5-1: Types of Stackings



Stacking Heights	
Diameter (mm)	No. of Layers
100	16
150	14
200	12
250	10
300	8
350 and 400	7
450 and 500	6
600	4
700	3
750 and above	2

The hooks should be wide as possible and padded with rubber to minimize damage to cement linings. Smaller sizes up to DN400, may be lifted with wide fabric sling. Wire ropes or chain slings should not be used.

iii. Marking on the Pipes

Conduct a check to ensure that each pipe shall have as cast or stamped or legibly and indelibly painted on it with the following appropriate marks (Clause: 18.1 &18.2 of IS 8329:2000)

- a) Indication of the source of manufacture;
- b) The nominal diameter;
- c) Class reference;
- d) The last two digits of the year of manufacture;
- e) The non-standard length of the pipe if specially ordered;
- f) Where applicable, an indication of length over which the pipe is suitable for cutting on site; and
- g) A short white line at the spigot end of each pipe with push-on joint in sizes DN 700 and above, to indicate the major axis of the spigot.
- h) BIS Certification Marking

The above marking should be on all pipes.

iv. Jointing System

- a) Joints: The joint design and gasket shape are outside the scope of this standard (Clause 6).
- b) Push-on-Joint: In case of push-on flexible joints, the spigot ends shall be suitably chamfered or rounded off to facilitate smooth entry of pipe in the socket fitted with the rubber gasket (Clause 6.1, 6.1.1 & 6.1.2 of IS 8329:2000).

v. Physical Characteristics

- a) A check of the following physical characteristics will be carried-out of samples as mentioned above:
 - Sampling (Table in Clause 9.2)
 - Dimensions & Ovality (Clause 13, Table 2, Tolerances: Clause 15, Table 7&8 of of IS 8329:2000)

Dimensions tests will be conducted at storage site

vi. Manufacturer Tests

- a) Sampling for Mechanical Acceptance Tests

The mechanical acceptance tests shall be carried out on samples of ductile iron pipes which shall be grouped in following batch sizes.(Clause 9.2)

DN (mm)	Maximum Batch
Size 80 250	200 Pipes
300- 600	100 Pipes
700 - 1000	60 Pipes
1100 - 1400	40 Pipes
1600 - 2000	30 Pipes

In order to check compliance with the requirements specified in 10, a sample ring or bar shall be taken from the spigot end of pipe. (Clause 9.3 of of IS 8329:2000)

vii. Mechanical Tests (Clause 10 of of IS 8329:2000)

Mechanical tests shall be carried out during manufacture. One test shall be conducted for every batch of production. The number of pipes for each batch shall be as laid down in clause 9.2 of IS 8329:2000. The results obtained shall be taken to represent all the pipes of that batch. (Clause 10.1 of IS 8329:2000)

viii. Zinc Coating (Clause 16.2 Annex A of IS 8329:2000)

The mean dry film thickness of the finishing layer shall not be less than 70 µm with nowhere less than 50 µm.

ix. Bituminous Coating (Clause 16.2 Annex C)

The mean thickness of the coating shall be not less than 70 µm and the local.

x. Cement Mortar Lining (Clause 16.3 Annex B)

Thickness of the Lining (Clause B-5 Table 15)

xi. Hydrostatic Site Test Pressures and Hydraulic Working Pressure

Annex E Table 1 Amendment

xii. Tests to be conducted for DI Pipe and Fittings at Two Laboratories

The following tests for DI Pipe and Fittings (as per IS 9523:2000) suitable for push-on flexible joints are to be got conducted from the labs at CIPET Amritsar and Sri Ram at Delhi as per BIS:

- a) Tensile Test (Clause 10.1.1 as per IS 8329:2000)
- b) Brinell Hardness Test (Clause 10.2 as per IS 8329:2000)
- c) Hydrostatic Test (Clause 11 as per IS 8329:2000)
- d) Sizes (Clause 12 as per IS 8329:2000)
- e) Dimensions (Clause 13 as per IS 8329:2000)
- f) Tolerances (Clause 15 as per IS 8329:2000)
- g) Quality Assurance (Clause 17 as per IS 8329:2000)
- h) Cement Mortar Lining (Clause 16.3 Annex B as per IS 8329:2000)
- i) Bituminous Coating (Clause 16.2 Annex C as per IS 8329:2000)

xiii. Rubber Gasket

The following test is to be got conducted from the labs at CIPET Amritsar and Sri Ram at Delhi as per BIS:

- a) The test is to be got conducted as per IS 5382 (1985): Rubber Sealing Rings for Gas Mains, Water Mains and Sewers [PCD 13: Rubber and Rubber Products] suitable for push-on flexible joints.

5.13.6. DI Fittings & Specials

i. General

- a) The manufacturing unit should have ISO 9001 certification.
- b) The company should have fully equipped laboratory with in-house microscope to check modularity and to check chemical composition along with tensile, hardness & elongation by universal testing machine. The laboratory of the manufacturer should be accredited by NABL.
- c) Since the socket design is not given in the standard the min. socket thickness of fittings at any point must not be lesser than minimum body thickness given in the standard.

ii. Design Requirements

- a) The class of DI fittings to be provided shall be as specified in the data sheet attached with this sub section. The external diameter and wall thickness of fittings for Push on joints for the specified Class shall be as per IS 9523 or equivalent.

- b) The Pressure class of flanged fittings shall be as specified in the data sheet attached with this sub section and shall conform to the requirements of IS 9523 or equivalent.

iii. Permissible Deviations on Length of Fittings

The permissible deviations on the length of fittings shall be as per IS 9523 or equivalent.

iv. Tolerances

Tolerances on external diameter, raised face height, thickness and Flange drilling of fittings etc. shall conform to the provisions of IS 9523 or to the provisions of international equivalent standard to which they are supplied.

v. Material Requirements

The metal used for manufacturing the fittings shall conform to the appropriate grade as specified in IS 1865, in commensurate with the requirements of IS 9523 or equivalent.

vi. Manufacturing Requirements

- a) The fittings shall be stripped with all precautions to avoid warping or shrinkage defects, detrimental to their good quality. The fittings shall be sound and free from surface or other defects.
- b) Linings and Coatings for Ductile Iron Fittings
- c) The DI Fittings are to be lined with Cement Mortar Linings with a sand cement mixture and the lining thickness should be as per Table 33 (Annex B) of IS 9523. The Coatings to DI fittings shall be similar in line with the provisions of DI pipes. All fittings must be painted with Zinc rich paint as per Annexure A of IS 9523. Bitumen being used for External coating should be approved By WRAS or similar approval authority. However, in soil conditions where soil resistivity is less than 1000 ohm-cm with or without water table, fusion bonded epoxy lined and coated DI fittings to be used in place of other type of lined and coated fittings.
- d) Fittings with Flexible Push-on joint
- e) Flexible joints shall be of spigot and socket “push-on” type suitable for angular deflection in any direction and capable of axial movement to compensate for thermal expansion or contraction and ground movement.
- f) Fittings with Flanged joint
- g) Fittings with Flanged joints will be with raised face and they shall be supplied complete with approved gaskets, hot dipped galvanized or cadmium plated bolts, nuts.
- h) Fittings with Mechanical joint
- i) Where Fittings with mechanical type joints are specified, proposed and approved they shall be supplied complete with approved gaskets, glands, hot dipped galvanized or cadmium plated bolts, nuts and all other necessary accessories.
- j) Fittings with Restrained Joints
- k) DI fittings with restrained joints shall be utilized in underground application where pipelines have to cross roads through existing ducts or in areas with restricted accessibility where the use of concrete anchor blocks is prohibited, or as directed by the Engineer-in-Charge. The CONTRACTOR shall submit with his bid with full details of the type of restrained joint he proposes to use.
- l) Whenever in the course of work the CONTRACTOR intends to utilize restrained joints he shall obtain prior approval from the Engineer-in- Charge.
- m) Calculation of the number of pipe lengths with restrained joints required on both sides of the fitting shall follow the manufacturer's recommendation and shall be subject to the Engineer-in-Charge approval.

- n) Restrained joints shall be designed in accordance with ISO 10804-1. The permissible angular deflection will be as declared by the manufacturer. The performance Type test of this Joint in line with ISO 10804-1/EN545 has to be established by the manufacturer by getting it witnessed by a NABC (National Accreditation Board for Certification Bodies) or IAF (International Accreditation Forum) or EA (European Cooperation for Accreditation) accredited institution / certification agency. The certificate must be produced with the technical bid.
- o) Rubber ring for joints shall be of a type that will not deteriorate when stored under manufacturer's guidelines or during operation. The rubber gasket shall be of EPDM elastomer in accordance with IS5382 suitable for water supply.

vii. Joints Between Pipe and Fittings

- a) Push on flexible joints shall be provided for pipe to fitting connection as per IS 9523 or equivalent. Flange joints, wherever required, shall conform to the requirements of IS 9523 or equivalent.
- b) Rubber gaskets
- c) Rubber gasket used shall conform to IS: 53821985 or amended up to date. Other requirements of gaskets are as per clause-7 of IS 952:32000. Rubber Gaskets to be ISI marked EPDM quality.

viii. Type Tests

- a) The contractor / manufacturer shall carry out the type tests as listed in this specification on the pipes to be supplied under this contract. The bidder shall indicate the charges for each of these type tests separately in the relevant schedule of Section VII (Forms & Procedures) and the same shall be considered for the evaluation of the bids. The type tests charges shall be paid only for the test(s) actually conducted successfully under this contract and upon certification by the Employer.
- b) The type tests shall be carried out in presence of the Employer's representative, for which minimum 15 days' notice shall be given by the contractor. The contractor shall obtain the Employer's approval for the type test procedure before conducting the type test. The type test procedure shall clearly specify the test set-up, instruments to be used, procedure, acceptance norms, recording of different parameters, interval of recording, precautions to be taken etc. for the type test(s) to be carried out.
- c) In case the contractor / manufacturer has already conducted such specified type test(s), he may submit the type test reports to the Employer during detailed engineering for consideration of waiver of conductance of such type test(s) or otherwise as deemed fit by Employer. Such test(s) should have been either conducted at an independent laboratory or duly approved by accredited third party agency. The Employer reserves the right to waive conducting of any or all the specified type test(s) under this contract. In case type tests are waived, the type test charges shall not be payable to the contractor.
- d) The type test shall be performed whenever a significant change is made in the design, material or process of manufacture or a new size or size range of the product is being supplied by the manufacturer.

ix. Joint Leak Tightness Test

- a) Tests for joints (push on flexible joints) shall be conducted as per the guidelines of ISO 2531 to establish adequate joint performance with respect to internal pressure, external pressure and vacuum pressure under both normal alignment of joints and deflected alignment of joints as dictated in ISO 2531.

- b) Tests for Leak tightness and mechanical resistance of flanged joints shall be conducted as per ISO 2531.
- c) Cement Lining Smoothness Type Test
- d) The contractor / manufacturer should have carried out Cement Lining Smoothness test to establish C value (Hazen & William's constant) of the offered DI pipe as 140. Necessary certificate for the same shall be furnished to the Employer.
- e) In case the contractor / manufacturer has not carried out the test, the same shall be carried out by the contractor / manufacturer within the scope of this contract.
- f) Ring bend test
- g) Ring bend test for 3% deflection with respect to external diameter of DI pipe offered shall be conducted by contractor / manufacturer to prove that internal cement mortar lining does not come off the substrate surface of Ductile Iron on random basis for each manufacturing lot.
- h) If the contractor / manufacturer of pipes do not have the facility for this type test at his own works, the same can be arranged by him to conduct and demonstrate the test.

x. Marking

Each Pipe shall have as cast or stamped or legibly and indelibly painted on it with the following marks:

- a) The Manufacturer's name or trademark on each pipe
- b) The nominal diameter of pipes and batch number.
- c) Class of Pipes and fittings
- d) A white ring line showing length of insertion at spigot end
- e) Standard ISI certification mark for the pipes conforming to IS or international standard mark to which they are supplied.
- f) The last two digits of the year of manufacture
- g) Any important information that the manufacturer deems fit to be inscribed on pipe.

5.13.7. Laying and Jointing of Di Pipes

i. Laying Underground

- a) Pipes shall be lowered into the trench with tackle suitable for the weight of pipes. For smaller sizes, up to 250 mm nominal bore, the pipe may be lowered by the use of ropes but for heavier pipes suitable mechanical equipment shall be used.
- b) All construction debris shall be cleared from the inside of the pipe either before or just after a joint is made. All persons shall vacate any section of trench into which the pipe is being lowered.
- c) The assembly for the pipes shall be made as recommended by the pipe manufacturer and using the suitable tools.
- d) The socket and spigot ends of the pipes shall be brushed and cleaned. The chamfered surface and the end of the spigot end have to be coated with a suitable lubricant recommended by the manufacturer of the pipes. Oil, petroleum bound oils, grease or other material, which may damage the rubber gasket, shall not be used as lubricant. The rubber gasket shall be inserted into the cleaned groove of the socket. It shall be checked for correct positioning.
- e) The two pipes shall be aligned properly in the pipe trench and the spigot end shall be pushed axially into the socket either manually or with a suitable tool specially designed for the assembly of pipes and as recommended by the manufacturer. The spigot has to be inserted up to the insertion mark on the pipe spigot. After

- insertion, the correct position of the socket has to be tested with a feeler blade.
- f) Deflection of the pipes, if any, shall be made only after they have fully been assembled. The deflection shall not exceed 75% of the values indicated by manufacturer.
 - g) On gradients of 1 in 115 or steeper, precautions shall be taken to ensure that the spigot of the pipe being laid does not move into or out of the socket of the laid pipe during the jointing operations. As soon as the joint assembly has been completed, the pipe shall be held firmly in position while the trench is back filled over the barrel of the pipe. The backfill shall be well compacted.
 - h) Special provisions in trench shall be made for accommodating socket (Bell) of each pipe, as applicable so that barrel is uniformly rested on even trench bed surface, which is well compacted as recommended in codes / standards.
 - i) At the end of each working day and whenever work is interrupted for any period of time, the free ends of laid pipes shall be protected against the entry of dirt, water or other foreign matter by means of approved plugs or end caps.

ii. Laying above Ground

- a) The following is applicable only when no additional bending moments except that those due to self-weight of pipe and its content are present. If any additional moments are present, piping contractor has to suitably support the pipe in consultation with manufacturer and Employer.
- b) Socket and spigot pipes
- c) Socket (Bell) and spigot pipes shall be provided with one support (usually pedestal or steel pipe support) per pipe. The supports shall be positioned behind the socket of each pipe.
- d) Pipes shall be fixed to the supports with mild steel straps so that axial movement due to expansion and contraction resulting from temperature fluctuations is taken up at individual joints in the pipeline. Joints shall be assembled with the spigot end withdrawn 5 to 10 mm from the bottom of the socket to accommodate thermal movements.
- e) The designed anchorage shall be provided to resist the thrusts developed by internal pressure at bends, tees, etc.
- f) Where a pipeline crosses a watercourse, the design and method of construction shall take into account the characteristics of the watercourse to ascertain the nature of bed, scour levels, maximum velocities, high flood levels, seasonal variation, etc., which affect the design and laying of pipeline.
- g) Flanged pipes
- h) The maximum unsupported span for flanged pipes shall not be more than 8 m. The supports shall be located at the centre of every second pipe.
- i) The maximum unsupported span at water course shall also be not more than 8 m. The relative position of pipe joints and pipe supports shall be as per IS 12288 or equivalent.
- j) The supports of all flanged pipe work spans shall be stable and unyielding due to movements in the pipeline.
- k) The straps shall prevent any lateral movement or lifting of the pipelines but not restrict expansions and contractions caused by temperature fluctuations.

iii. Cutting of Pipes

- a) The cutting of pipe, if required, for inserting valves, fittings etc. shall be done in a neat and workman like manner without damage to the pipe or lining so as to leave a smooth end at right angles to the axis of the pipe. Cutting of pipes shall be

- reduced to a minimum required.
- b) Cutting has to be made with suitable tools as per IS 12288 or equivalent and according to the recommendations of the manufacturer. The spigot end has to be chamfered again at the same angle as the original chamfered end. If there is no mark for the insertion depth on the spigot ends of the (cut) pipe it shall be marked again according to the instructions of the manufacturer.

iv. Pipeline Anchorage

- a) Pipeline shall be securely anchored at dead ends, tees, bends, tapers and valves to resist thrust arising from internal pressure. Suitable thrust blocks made of concrete shall be designed and cast- in-situ.
- b) All specials like bends, tees etc. and appurtenances like valves etc. shall be laid in synchronization with the pipes. The Contractor has to ensure that the specials and accessories are available at site ready to be installed together with the pipes.

v. External Protection

- a) The details of soil resistivity data when enclosed with this specification is for general guidance of the contractor and the accuracy, validity & adequacy of the data shall be verified by the Contractor.
- b) The contractor shall carry out soil resistivity survey along the ROW of the pipeline using Wenner's 4 pin method in the presence of Employer's representatives.
- c) On completion of all field work, a report incorporating resistivity (on semilog graph sheets) data shall be prepared by the contractor and submitted to the Employer.
- d) In case of highly corrosive soil (soil resistivity less than 1000 ohm cm), polyethylene sleeving shall be provided for encasement of the pipes, fittings and joints against corrosion. This encasement shall be so designed to prevent the contact of pipe, fittings and joints with the surrounding backfill and bedding material. It shall conform to the requirements of IS 8329 & IS 12288 or equivalent international standards.

vi. Hydraulic Testing of Pipelines

- a) After laying and jointing, the pipeline shall be tested for soundness and leak tightness of pipes, fittings and joints, and soundness of any construction work. The pipeline may be tested in sections.
- b) Water and other facilities as required for such hydro testing shall be arranged by the Contractor. Each section shall be properly sealed off with special stop ends secured by adequate temporary anchors. The thrust on the stop ends shall be calculated and the anchors designed to resist it. All permanent anchors shall be in position and, if of concrete, shall have developed adequate strength before testing begins.
- c) Hydraulic Testing of Sections
- Pipes may be covered during testing. Joints shall be kept open for visual inspection. The pipeline shall be filled with water and pressure tested from the lowest point.
 - The section under test shall be filled with water, taking care that all the air is displaced either through vents at the high points or by using a pig or a sphere. After filling with water, the pipeline shall be left to stabilize for a period of 1 hr. During the test period, make-up water is continuously added to maintain the pressure. After filling, the pipeline shall be adequately pressurized for a period of time to achieve stable conditions.

- The pipeline is then pressurized up to the full test pressure and the section under test completely shall be closed off. The test pressure shall be 1.5 times the rated pressure of pipes or of the proposed maximum design pressure of the section. Apply the pressure by continuously pumping at a constant rate.
- The test pressure shall be maintained for a period of not less than 10 minutes to reveal any defects in the pipes, joints or anchorages. The test pressure shall be measured such as to ensure that the required test pressure is not exceeded at any point in the entire pipeline.
- If the test is not satisfactory, the fault shall be found and rectified. Methods employed for finding faults shall be as per IS 12288.
- Tests should be performed on reasonable lengths of pipelines. Long lengths more than 2000 mtr.

d) Hydraulic Testing of Complete Pipeline

After all the sections have been joined together on completion of section testing, a test on the complete pipeline shall be carried out. This test shall be carried out at a pressure as specified in the data sheet attached with this subsection. During the test, the pressure at any point in the pipeline shall not exceed the pressure as specified in the data sheet attached with this subsection.

5.14.G.I Pipes

G.I. Pipes and specials should be medium class (B-Class) ISI marked as per IS Code. Pipes should be wiped, clean & dry and free from clay, oil and grease before they are laid. Inside of the socket and outside of spigot should be wire brushed.

The pipe line should be properly cleaned/flushed before commissioning.

5.15.List of approved makes

S. No	ITEM / EQUIPMENT	APPROVED MAKES
PIPES		
1	DI PIPES	JINDAL SAW/ TATA METALIKS/ KUBOTA/ ELECTROSTEEL
2	DI SPECIALS	JINDAL/BHARAT INDUSTRIAL CORPORATION/ ORIENTAL CASTING S / ELECTRO STEEL CASTINGS/ KEJRIWAL CASTING
3	HDPE/MDPE PIPES	JAIN IRRIGATION/ KIMPLAS/ TIMEPLAST/DURALINE
4	HDPE FITTINGS	KIMPLAS/GEORGE FISCHER /AVIVA/ PRESTO/ JAIN IRRIGATION
5	uPVC PIPES	SUPREME/PRINCE/FINOLEX/ JAIN IRRIGATION
6	RCC PIPES	INDIAN HUME PIPES/ KK SPUN/JSP INFRA

S. No	ITEM / EQUIPMENT	APPROVED MAKES
7	DISMANTLING JOINTS	BHARAT INDUSTRIAL CORPORATION /ORIENTAL CASTINGS / ELECTRO STEEL CASTINGS / TATA IRON & STEEL CO/KEJRIWAL CASTING
8	RCC Manhole Covers / Road Curbs	KK SPUN / USHA

If the above makes are not available or a particular item is not listed above, the approval of the same shall be taken from Engineer In Charge before execution of the work

5.16. Operation and Maintenance of The Sewerage & Storm Water Network System

The Contractor shall ensure the Operation and Maintenance of the Sewerage Network; in compliance to the guidelines contained in the Manual on "Sewerage & Sewage Treatment", latest edition as published by the Central Public Health Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India, New Delhi and the prescription laid down here under.

5.16.1. Standard Operating procedures (SOP)

Operating instructions and Standard Operating Procedures (SOP) shall be formulated by the Contractor for all sewerage network component, equipment, etc comprising of process equipment schedules, operation & maintenance data, etc. The operating parameters shall be optimized based on the data collected on commissioning of the facilities. All the activities in the preventive maintenance schedule shall be followed without any lapse. Indicative functions that are expected to be performed at each site are given below:

- i. The Contractor shall make his own arrangements at his own cost for staff required for operation and maintenance of networks and other assets, sewer cleaning vehicles, CCTV machine and other equipment maintenance of all types such as routine, breakdown, periodic and repair maintenance, replacement of damaged/unserviceable sewers, maintenance of house service connections. The Contractor will also maintain a Customer grievance redressal centre and ensure that O&M services meet the standards of services/service levels.
- ii. The work of sewer maintenance would also include the following:
 - a) Checking of manhole condition for deposition of silt, flow, new connections done, damaged walls or steps, manhole covers, clogged vertical pipes in drop manholes etc. While the
 - b) cleaning of the manhole, pipes etc., will be undertaken by the gang, repairs etc. may be reported to be handled by a separate construction gang of mason and helpers. It is preferable that the repair gang comes out on the work when the sewer cleaning or maintenance gang is working, so that brick bats, debris mortar etc., which fall in the manhole are removed there and then. This will cause a major blockage if the same is allowed to flow into the sewer line, which usually occurs when repairs are done separately. In such cases, a couple of sewer men should be deputed to clean the manhole of the debris immediately after repair work is completed.
 - c) Checking of the sewer line between two successive manholes for silting and flow

- conditions and remove the deposited silt and
- d) Checking for any harmful and extraneous matter entering into the sewer lines so that further investigation for the cause and location can be determined.
 - e) Check air release valves in rising or force mains, sluice gates or stoppage in the sewer lines, overflow arrangement etc.
 - f) Operation of jetting machine
 - g) Carrying out CCTV inspection
 - h) Identify and inform the Employer / Employer's Representative about the illegal connections on the Sewerage Network within seven days of its being detected.
 - i) The Contractor shall submit a weekly report to the Employer detailing the Operation and Maintenance indicating the labour hours expended and other Consumables consumed and also problems faced and rectified.
 - j) The Contractor shall submit detailed schedule/manual of all O& M activities with references of equipment manufacturers' maintenance schedules/manuals to the Employer for review and approval.
 - k) The Contractor shall submit Guidelines and Instructions manual for the maintenance staff of all levels for all the tools, plants and equipment and Operating Sewerage Network to maintain the service levels within the standards prescribed within the contract;
 - l) The Contractor shall carry out all O&M activities as per the approved Operation and Maintenance Manuals.
 - m) During the Operation and Maintenance period, the Contractor shall ensure that the sewage detention time in wet well not exceeds 30 min. and there is no backflow of sewage. The Contractor is responsible for maintaining back up power arrangements at his cost to ensure that the O&M services are not affected due to failure of power supply from the Public Utility Company.
 - n) The Contractor's responsibility shall also include the safety and security of the Works during the course of Operation and Maintenance.

5.16.2. Maintenance & repairs

A properly designed sewerage network shall be capable of delivering desired output at all times. During Operation and Maintenance period, the Contractor shall appoint an Operational manager for whole sewer system In addition, the Contractor shall appoint suitable number of cleaners, helpers, labourers as required for the operation and maintenance of complete proposed sewerage network for three shifts and adequate other staff/supporting personnel during general Shift. To ensure the desired output at all times, a proper maintenance management plan shall be formulated, which shall have following arrangements:

- a) Minimum time for rectification
 - Blockage and overflows - 12hours
 - Stolen / Broken man hole covers - 12hours
 - Sewer spills from main sewer, branch and house service connections (between property chamber and public - 72hours
- b) Staff

The Contractor shall mention the personnel required for O&M in his bid. The work shall be carried out on a 24 hour basis without intermission and the staff deployed by the Contractor shall be in accordance with this contract. The work shall be

carried out on a 24 hr. basis, without intermission and the staff deployed by the Contractor shall be in accordance with this contract. Minimum staff required for sewerage network shall be as given in point 1.5 above:

The Contractor shall give or provide all necessary superintendence during the O&M and as long thereafter as the Employer may consider necessary. No labour below the age to 18 years shall be employed on the work. Employer shall be authorized to direct the contracting agency to remove any or all staff employed on O&M of the sewerage network if in his opinion continued presence of such staff is detrimental to safety or proper O&M of the sewerage network. The Contractor shall comply with such directions & post suitable substitute(s) thereof. Whenever the EIC has to inform the Contractor in writing that any person on the work is in his opinion unsatisfactory or/incompetent or unfaithful or dishonest, untruthful or disorderly or to be otherwise unsuitable/such person shall be discharged by the Contractor from the work and shall not be employed again on it.

c) Report and recordkeeping

The Contractor shall maintain a record for the entire Term of the following:

- record of all consumables, tools, equipment's manhole covers, etc. used / replaced towards operations and maintenance of the Sewerage Network;
- identification and reporting of illegal connections on the sewerage network;
- Nature and scope of any ancillary activities being carried out in accordance with the terms and conditions of this Contract; and
- Record all complaints received regarding sewer blockage and clearance with same date and time.
- Record condition of sewer found at the time of attending complaint. Damage notice should be recorded by attending staff.

5.16.3. Operation and maintenance manual

- i. The Contractor shall prepare a detailed program (referred to as O&M Manual) covering the operation and maintenance of the Sewerage Network as a whole. This program shall include the work and activities as relevant to the specific items and technology.
- ii. The Contractor shall provide 4 copies of draft O&M Manual to the Employer, at the time of the commissioning of the project and on approval of draft, 10 copies of operation &maintenance manual shall be supplied by the Contractor.
- iii. The O&M Manual shall include the daily, weekly, monthly, quarterly, half yearly and annual checks and remedies if necessary to be performed for effective operation of the proposed sewerage system
- iv. Without limiting the generality of the foregoing, the O&M Manual shall include descriptions, procedures; schedule of maintenance, and shall comply with the requirements, set forth in the provisions of the Bid Documents.
- v. The draft of the O&M Manual shall be subject to the review and approval of Employer, which shall have the right to make any changes and revisions to the O&M Manual as it may deem appropriate. The Contractor shall revise such draft O&M Manual prior to the commencement of the O&M period.
- vi. Employer shall have the right to require revisions to the draft O&M Manual as it may deem

appropriate. The Contractor shall prepare and submit to Employer, for its review and approval, 30 days prior to the proposed date of commencement of O&M, a revised draft O&M Manual which reflects all changes, revisions and modifications. The Contractor shall prepare the O&M Manual, as approved by the Employer, prior to the start of O&M.

5.16.4. Planned and scheduled maintenance (preventive)

- i. The contractor shall prepare and follow a maintenance plan, detailing the maintenance activities scheduled for each of the component of the sewerage network at periodic intervals and approved by the Employer.
- ii. Every part of the works and all the materials to be used therein shall be subjected to such tests from time to time during the execution of the work as the Employer/Employer Representative may direct and the whole of such tests shall in all cases be made at the Contractor's sole expense.
- iii. The work shall be carried on and completed under the exclusive control direction and supervision and to the satisfaction of the Employer/Employer Representative. The Employer/Employers Representative shall likewise have full power to reject or condemn any work or material that he may deem unsuitable. In case of any work or material being rejected by the Employers Representative, the Contractor shall immediately remove and replace the same to the satisfaction of the Employer/Employer Representative or the Employer/Employer Representative shall have full powers to get the same removed and replaced and deduct the expenditure incurred in the process from any amount due or that may become due to the Contractor.
- iv. If any material brought to the site of works, be in the judgment of the Engineer, found inferior or improper & not as per described standards, the said materials or workmanship shall where required by the Employer/Employer Representative shall be removed or amended by the Contractor forthwith or within such period for every breach by the Contractor in this clause.
- v. All leakages should be attended and all network blockages shall be removed within three days of them being identified and reported. The performance indicators shall be adhered to in any case. All the valves/gates which are not used regularly should be operated at least once a week and make sure that they are properly lubricated/greased.
- vi. Consumables such as Manhole covers, POL (petrol/Diesel Oil & Lubricants), etc has to be arranged by the Contractor as and when needed as per manufactures recommendations for periodical maintenance of entire Network.
- vii. The Contractor shall carry out mandatory biannual cleaning of network before and after the monsoon season including cleaning of all manhole chambers and collection network irrespective of the regular maintenance work.
- viii. In case of major repair due to normal wear and tear/break down, the Contractor should bring the same to the notice of the Employer/Employer Representative immediately and necessary measures for its repair should be taken simultaneously. Breakdown, all repairs of any kind are to be attended by the Contractor.

Section VI A: General Conditions of Contract

Section VIA: General Conditions of Contract

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- 16.1 Termination by Procuring Entity
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- 22. Installation**
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 - 22.3 Contractor's Equipment
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 - 22.6 Emergency Work
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- 25.1 Commissioning
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Appendix A: General Conditions of Admissibility of Escalation

Appendix B: Dispute Resolution during execution of the Contract

1. General Provisions		
Definitions	1.1	In the Conditions of Contract (these General Conditions) which include Special Conditions, the following works and expressions shall have the meaning stated as under: Words indicating persons or parties include firms, companies, and other legal entities except where context requires otherwise.
The Contract	1.1.1	
	1.1.1.1	Bill of Quantities (BOQ) means the priced and completed Bill of Quantities forming part of the Bid. Activity Schedule means the various stages of execution of the Works in case of Lump Sum Contract which are linked to payment Schedule.
	1.1.1.2	Contract means the document forming the Bid and acceptance thereof and the formal agreement executed between the competent authority on behalf of the Chief Executive Officer, ASCL and the Contractor, together with the documents referred to therein including these conditions, the Specifications, Designs, Drawings and Instructions issued from time to time on Contract and shall be complementary to one another.
	1.1.1.3	Contract Agreement means the Contract Agreement referred to in Sub-Clause 1.81 [Signing of the Contract].
	1.1.1.4	Contract Data means the pages completed by the Procuring Entity titled as Contract Data which constitute the Special Conditions of the Contract.
	1.1.1.5	Drawings means the Drawings of the Works, as included in the Contract and any additional and modified drawings issued by (or on behalf of) the Procuring Entity in accordance with the Contract.
	1.1.1.6	Letter of Acceptance means the letter of formal acceptance, Signed by the Procuring Entity, including any annexed memoranda comprising agreements between and signed by both Parties. If there is no such Letter of Acceptance, the expression "Letter of Acceptance" means the Contract Agreement and the date of issuing the Letter of Acceptance means the date of signing the Contract Agreement.
	1.1.1.7	Letter of Technical/ Financial Bid means the document titled as Letter of Technical or Letter of Financial Bid, which was completed by the Bidder and includes the signed offer to the Procuring Entity for the Works.
	1.1.1.8	Risk and Cost means when the Contractor fails to complete the Contract despite due notices, the procuring entity may terminate the Contract with full 5% compensation and/ or measure the acceptable work done and get the balance work of the BOQ/Activity Schedule carried out at the risk and cost of the Contractor and the difference of cost at which the balance works carried out through the

		Department/ Organisation or another Agency is debited to the Contractor.
	1.1.1.9	Schedules means the document(s) titled as Schedules, completed by the Contractor and submitted with the letter of Bid, as included in the Contract. Such documents may include the Bill of Quantities, data, lists and Schedules of rates and /or prices.
	1.1.1.10	Specifications means the BIS, IRC, and other Code Specification of the Works followed by relevant Department of the Government of India/ State Government and /or included in the Contract and any modification or addition made or approved by the Engineer-in-Charge.
	1.1.1.11	Technical/ Financial Bid means the Letter of Technical or Financial Bid and all other documents which the Bidder submitted with the Letter of Technical or Financial Bid, as included in the Contract.
	1.1.1.12	<p>Scope of Facilities</p> <ol style="list-style-type: none"> 1. Unless otherwise expressly limited in the Procuring Entity's Requirements, the Contractor's obligations cover the provision of all Plant and the performance of all Installation Services required for the design, the manufacture (including procurement, quality assurance, construction, installation, associated civil works, pre-commissioning and delivery) of the Plant and the installation, completion, and commissioning of the Facilities in accordance with the plans, procedures, specifications, drawings, codes, and any other documents as specified in the section Employer's Requirements. Such specifications include, but are not limited to, the provision of supervision and engineering services; the supply of labor, materials, equipment, spare parts (as specified in GCC Subclause 3 below) and accessories; Contractor's Equipment; construction utilities and supplies; temporary materials, structures, and facilities; transportation (including, without limitation, unloading and hauling to, from and at the Site); and storage, except for those supplies, works, and services that will be provided or performed by the Employer, as set forth in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement. 2. The Contractor shall, unless specifically excluded in the Contract, perform all such work and/or supply all such items and materials not specifically mentioned in the Contract but that can be reasonably inferred from the Contract as being required for attaining Completion of the Facilities as if such work and/or items and materials were expressly mentioned in the Contract. 3. In addition to the supply of Mandatory Spare Parts included in the Contract, the Contractor agrees to supply spare parts required for the operation and maintenance of the Facilities for the period specified in the SCC and the provisions, if any, specified in the SCC. However, the identity, specifications, and

		quantities of such spare parts and the terms and conditions relating to the supply thereof are to be agreed between the Employer and the Contractor, and the price of such spare parts shall be that given in Price Schedule, which shall be added to the Contract Price. The price of such spare parts shall include the purchase price therefore and other costs and expenses (including the Contractor's fees) relating to the supply of spare parts.
Parties and Persons	1.1.2	
	1.1.2.1	Party: means the Procuring Entity or the Contractor, or both as the context requires.
	1.1.2.2	Contractor shall mean the individual, firm or company, whether incorporate or not undertaking the Works and shall include the legal or authorised representative of such individual or the persons composing such firm or company or the successors of such firm or company and the permitted assignees of such individual, firm or company.
	1.1.2.3	Contractor's Personnel means the Contractor and Contractor's Representative and all personnel whom the Contractor utilizes on Site, who may include the staff, labour and other employees of the Contractor and of each Subcontractor; and any other personnel assisting the Contractor in the execution of the Works. All communications addressed to the Contractor can be handed over at site to the Contractor's personnel.
	1.1.2.4	Contractor's Representative means the person named by the Contractor in the Contract or appointed from time to time by the Contractor under Sub-Clause 4.5 [Contractor's Representative], who acts on behalf of the Contractor.
	1.1.2.5	Engineer-in-Charge or Engineer means the Executive Engineer/ any other Engineer appointed by the Procuring Entity who shall be in-charge of the Works and who shall sign the Contract on behalf of the Procuring Entity and who shall be responsible for supervising the Contract, administering the Contract, certifying payments due to the Contractor, issuing and valuing Variations to the Contract, awarding extension of time, valuing the Compensation events, etc.
	1.1.2.6	The Procuring Entity or PE means the Party who employs the Contractor to carry out the Works.
	1.1.2.7	Procuring Entity's Personnel means the Engineer-in-Charge, the assistants referred to in Sub-Clause 3.2 [Delegation by the Engineer-in-Charge] and all other staff, labour and other employees of the Engineer -in-Charge and of the Procuring Entity; and any other personnel notified to the Contractor, by the Procuring Entity or the Engineer-in-Charge, as Procuring Entity's Personnel.
	1.1.2.8	Subcontractor means any person / firm named in the Bid /Contract and approved by the Engineer-in-Charge as a Subcontractor, or any person appointed and approved as a Subcontractor subsequently, for

		a part of the Works; and the legal successors in title to each of these persons/ firms.
Dates, tests and periods of completion	1.1.3	
	1.1.3.1	Base Date means the date 28 Days prior to the last date specified for submission of the Bid.
	1.1.3.2	Commencement/ start Date means the date specified under Sub-Clause 8.3.1 [Commencement of Works].
	1.1.3.3	A Defect is any part of the Works not completed in accordance with the approved specifications, designs and/ or drawings of the Contract.
	1.1.3.4	The Defect Liability Certificate is the certificate issued by Engineer-in-Charge after Defect Liability Period has ended and upon correction of Defects pointed out by the Engineer-in-Charge.
	1.1.3.5	The Defect Liability Period will be decided by the Department/ Organisation depending on nature of the Works, from the date of completion of the Works and shall be mentioned in the Contract Data.
	1.1.3.6	Defects Notification Period means the period for notifying Defects in the Works or a Section(as the case may be) under Sub-Clause 1.3.2 [Completion of Outstanding Work and Remedying Defects], which extends over twelve Months except if otherwise stated in the Contract Data (with any extension under Sub- Clause 13.4 [Extension of Defects Notification Period], calculated from the date on which the Works or Section is completed as certified under Sub-Clause 1 2.1 [Taking Over of the Works and Sections].
	1.1.3.7	Performance Certificate means a certificate issued under Sub-Clause 13.10 [Performance Certificate].
	1.1.3.8	Taking-Over Certificate means a certificate issued under Sub-Clause 1 2.1 [Taking Over of the Works and Sections].
	1.1.3.9	Tests on Completion means the tests which are specified in the Contract or agreed by both Parties or instructed as a Variation, and which are carried out under Clause 11 [Tests on Completion] before the Works or a Section (as the case may be) are taken over by the Procuring Entity.
	1.1.3.10	Tests after Completion means the tests (if any) which are specified in the Contract and which are carried out in accordance with the Specification after the Works or a Section (as the case may be) is taken over by the Procuring Entity.
	1.1.3.11	The Intended Completion Date is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Engineer-in Charge by issuing an extension of time.
	1.1.3.12	Time for Completion means the time for completing the Works or a section (as the case may be) under Sub-Clause 8.4 [Time for Completion], as stated in the Contract Data (with any extension under

		Sub-Clause 8.6 [Extension of Time for Completion], calculated from Commencement Date.
	1.1.3.13	Day means calendar Day; Year means a period of 365 Days.
Money and Payments	1.1.4	
	1.1.4.1	Accepted Contract Amount means the amount accepted in the Letter of Acceptance for execution and completion of the Works and remedying of any defects and maintaining the Works, if stated in the Contract.
	1.1.4.2	Cost means all expenditure reasonably incurred (or to be incurred) by the Contractor, whether on or off the Site, including overhead and similar charges, but does not include profit.
	1.1.4.3	Final Payment Certificate means the Payment Certificate issued under Sub- Clause 15.9 [Issue of Final Completion Certificate].
	1.1.4.4	Final Statement means the statement defined in Sub-Clause 15.10 [Final Statement of Payments].
	1.1.4.5	Interim Payment Certificate means a Payment Certificate issued under Sub- Clause 15.5 [Issue of Interim Payment Certificate], other than the Final Payment Certificate.
	1.1.4.6	Market Rate of an item shall be the current rate as decided by the Engineer-in Charge on the basis of the Cost of Materials and Labour at the Site where the work is to be executed for a variation item.
	1.1.4.7	Payment Certificate means a Payment Certificate issued under Clause 15 [Contract Price, Payment and Lien].
	1.1.4.8	Provisional sums/ Lump sums means a sum (if any) which is specified in the Contract as a provisional sum, for the execution of any part of the Works or for supply of Plant, Materials or services under Sub- Clause 9.6 [Provisional Sums]. These are also moneys provided in the estimate of the project to pay for unforeseen / un-quantified items. It may also include lump sum provided in the estimate/ BOQ for unforeseen items to be paid after approval of analysis of rates of such items and charges payable to Government agencies or the contractor for approvals, service connections and extensions of services from the supply lines etc., as the case may be.
	1.1.4.9	Performance Security means an amount as percentage of the Accepted Contract Price deposited in the form of Bank Guarantee or any other prescribed form deposited by the Contractor as a security for due performance of the Contract.
Works and Materials	1.1.5	
	1.1.5.1	Materials are all supplies, including consumables, used by the Contractor for consumption in the Works.
	1.1.5.2	Permanent Works means the Permanent Works to be executed by the Contractor under the Contract. These works shall have a defined designed life and durability.
	1.1.5.3	Plant means the apparatus, machinery and other equipment intended

		to form or forming part of the Permanent Works.
	1.1.5.4	Scope of work shall cover execution of all aspects of the Works as per the Contract.
	1.1.5.5	Section means apart from the Works specified in the Contract Data as a Section (if any).
	1.1.5.6	Specifications means the Specification (BIS, IRC etc. or specifications approved by the department or others) of the Works included in the Contract and any modification or addition made or approved by the Engineer-in Charge.
	1.1.5.7	Temporary Works are Works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.
	1.1.5.8	Work or Works shall, unless there is something either in the subject or context repugnant to such construction, be construed and taken to mean the Works by virtue of the Contract contracted to be executed whether temporary or permanent and whether original, altered, substituted or additional works.
Others	1.1.6	
Interpretations	1.1.6.1	
	1.1.6.2	Contractor's documents are the bids (technical and financial) submitted software, bills, reports, drawings, designs, letters/communications, test results, etc., submitted by the Contractor to the Procurement Entity in connection with the Contract.
	1.1.6.3	Department means any Department of Government of Punjab to which completed works will be handed over after the Contract period on behalf of Governor of Punjab as specified in Contract Data.
	1.1.6.4	Field laboratory means the Contractor's equipped laboratory provided with equipment, experienced personnel, and consumables, books of specifications, codes for use on quality testing /inspections on the works.
	1.1.6.5	Force Majeure is defined in Sub-Clause 19.1 [Definition of Force Majeure].
	1.1.6.6	Government/ Governor of Punjab means the State Government of Punjab/ Governor of Punjab
	1.1.6.7	Laws mean the entire national or the state legislations, statutes, ordinances and other laws, and regulations and by-laws of India and Punjab and any legally constituted public authority.
	1.1.6.8	Procuring Entity's Equipment means the apparatus, machinery and vehicles (if any) made available by the Procuring Entity on hire for the use of the Contractor in the execution of the Works, as stated in the Specifications; but do not include Plant which has not been taken over by the Procuring Entity.
	1.1.6.9	
	1.1.6.10	Site shall mean land and/or other places on, into or through which

		work is to be executed under the Contract or any adjacent land, path or street through which work is to be executed under the Contract or any adjacent land, path or street which may be allotted or used for the purpose of carrying out the Contract.
	1.1.6.11	Site office means a suitable covered all weather usable space built by the Contractor at Site of Works at his cost for use by him and the Procuring Entity.
	1.1.6.12	Unforeseeable means not reasonably foreseeable by an experienced Contractor by the Base Date.
	1.1.6.13	Variations mean any change to the Works, which is instructed or approved as a variation under Clause 9 [Deviations, Variations and Adjustments].
	1.2	<p>In the Contract, except where the context requires otherwise</p> <ul style="list-style-type: none"> a) words indicating one gender include all genders; b) words indicating the singular also include the plural and c) words indicating the plural also include the singular; d) provisions including the word "agree", "agreed" or "agreement" require the agreement to be recorded in writing; e) "written" or "in writing" means hand-written, type-written, printed or electronically made, and resulting in a permanent record; f) the word "tender" is synonymous with "bid" and "tenderer" with "bidder" and the words "tender document" with "bidding document". <p>The marginal words and other headings shall not be taken into consideration in the interpretation of these Conditions.</p>
Communications	1.3	<p>Wherever these Conditions provide for the giving or issuing of approvals, certificates, consents, determinations, notices, requests and discharges, by one party to the other, these communications shall be:</p> <ul style="list-style-type: none"> i. in writing and delivered by hand against receipt, sent by mail or courier, or transmitted using any of the agreed systems of electronic transmission as stated in the Contract Data; and ii. delivered, sent or transmitted to the address for the recipient's Communications as stated in the Contract Data. However: <ul style="list-style-type: none"> a) if the recipient gives notice of another address, communications shall thereafter be delivered accordingly; and b) if the recipient has not stated otherwise when requesting an approval or consent, it may be sent to the address from which the request was issued. <p>Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed. When a certificate is issued to a Party, the certifier shall send a copy to the other Party. When a notice is issued to a Party, by the other Party or the Engineer-in-Charge, a</p>

		copy shall be sent to the Engineer-in-Charge or the other Party, as the case may be.
Law and language	1.4	The Contract shall be governed by the laws of India and the State of Punjab. The ruling language of the Contract shall be English or that stated in the Special Conditions of Contract.
Works to carried out	1.5	<p>The Works to be carried out under the Contract shall, except as otherwise provided in these conditions, include all labour, materials, equipment, tools, plants, testing and quality assurance, and transport which may be required in preparation of and doing in the full and entire execution and completion of the Works. The descriptions given in the Schedule of Quantities (Activity Schedule in case of Lump Sum Contract) shall unless otherwise stated, be held to include wastage on Materials, carriage and cartage, carrying and return of empties, hoisting, setting, fitting and fixing in position and all other Labour necessary in and for the full and entire execution and completion of the Works as aforesaid in accordance with good practice and recognized principles to deliver a work of specified quality and durability conforming to designs, drawings etc.</p> <p>The Works include clearance, levelling and dressing of Site within a distance of 15 meters of the work site on all sides except where the building adjoins another building.</p>
Sufficiency of Tender/ Bid	1.6	The Contractor shall be deemed to have satisfied himself before bidding as to the correctness and sufficiency of his Bid for the Works and of the rates and prices quoted in the Schedule of Quantities, which rates and prices shall, except as otherwise provided, cover all his obligations under the Contract and all matters and things necessary for the proper completion and maintenance of the Works. He shall also be responsible for satisfying himself on the completeness of the documents /data provided by the Procuring Entity. He shall not raise any objections or deficiencies or inaccuracies in such documents.
Discrepancies and adjustment of errors	1.7.1	The several documents forming the Contract are to be taken as mutually explanatory of one another, detailed Drawings being followed in preference to small scale Drawing and figured dimensions in preference to scale and special conditions in preference to General Conditions.
	1.7.2	<p>In the case of discrepancy between the Bill of Quantities, the Specifications and/or the Drawings, the following order of preference shall be observed:</p> <ul style="list-style-type: none"> • Description of Bill of Quantities • Particular detailed Specification and Special Condition, if any • Drawings / Designs • IRC / MORT&H , ASTHO Specification, if required • Indian Standard Specifications or B.I.S.
	1.7.3	If there are varying or conflicting provisions made in any one document forming part of the Contract, the Procuring Entity shall be the deciding authority with regard to the intention of the document

		and his decision shall be final and binding on the Contractor.
	1.7.4	Any error in description, quantity or rate in Bill of Quantities or any omission therefore shall not impair the legal validity of the Contract or release the Contractor from the responsibility of execution of the whole or part of the Works comprised there in according to Drawings and Specifications or from any of his obligations under the Contract.
Signing of the Contract	1.8.1	<p>The successful Bidder, after submitting the performance guarantee i.e. within 15 Days of receipt of Notification of Award or as specified in the Contract Data, shall attend the office of the Procurement Entity / Engineer- in-charge for authentication, signing and completion of the Contract document and execute the agreement consisting of: The notice inviting Bid, all the documents including Drawings, if any, forming the Bidding Document as issued at the time of invitation of bids and acceptance thereof together with any correspondence leading there to, Standard Forms consisting of various standard Sub-Clauses with corrections up to the date stipulated in Contract Data along with annexure thereto and drawings etc.</p> <p>The Costs of stamp duties and similar charges (if any) imposed by Law in connection with entry in to the Contract Agreement shall be borne by the Contractor.</p>
Signed copy of Contract Document to be given to Contractor	1.8.2	The Contractor shall be furnished, free of Cost one signed copy of the Contract Documents together with all Drawings except standard Specifications (BIS or IRC or others), Schedule of Rates and such other printed and published documents, which shall be procured by the Contractor at his cost. These documents shall be deemed to be part of the Contract. These shall be kept in the Site office. None of these documents shall be used for any purpose other than that of this Contract.
Conditions of the Contract	1.8.3	The Contract shall be governed by the General Conditions of Contract (GCC). The Special Conditions of Contract (SCC)/ Contract Data, wherever applicable, shall supersede/ clarify the GCC to the extent specified.
Priority of Documents	1.8.4	<p>The documents forming the Contract are to be taken as mutually explanatory of one another. For the purposes of interpretation, the priority of the documents shall be in accordance with the following sequence:</p> <ul style="list-style-type: none"> a) the Contract Agreement, b) the Letter of Acceptance, c) the Technical Bid and Financial Bid along with the letters of the Technical Bid and Financial Bid d) the Contract Data/ Special Conditions of Contract, e) the General Conditions of Contract, f) the Scope of Work &Specifications, g) the Instructions to Bidders, h) the Notice Inviting Bids, i) the Schedules and any other documents forming part of the

		<p>Contract, and</p> <p>j) the Drawings.</p> <p>If an ambiguity or discrepancy is found in the documents, the Engineer-in-Charge shall issue any necessary clarification or instruction.</p>
Personnel	1.9.1	The Contractor shall employ the key personnel named in the Schedule of Key Personnel as referred to in the qualification criteria to carry out the functions stated in the Schedule or other personnel approved by the Engineer-in-Charge. The Engineer-in-Charge will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experiences are substantially equal to or better than those of the personnel listed in the Schedule.
	1.9.2	If the Engineer-in-Charge asks the Contractor to remove a person who is a member of the Contractor's staff or his work force stating reasons, the Contractor shall ensure that the person leaves the Site within seven Days and has no further connection with the work in the Contract.
Procuring Entity's Risks	1.10	<p>The Procuring Entity is responsible for the excepted risks which are:</p> <p>a) In so far as they directly affect the execution of the Works in India, the risks of war, hostilities, invasion, act of foreign enemies, rebellion, revolution, insurrection or military or usurped power, civil war, riot commotion or disorder (unless restricted to the Contractor's employees), and contamination from any nuclear fuel or nuclear waste or radioactive toxic explosive, or</p> <p>b) A cause due solely to the design of the Works, other than the Contractor's design.</p>
Contractor's Risks	1.11	All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the Procuring Entity's risks are the responsibility of the Contractor.
Procuring Entity's use of Contractor's documents	1.12	<p>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 the Contract) to give to the Procuring Entity a non-terminable transferable non- exclusive royalty-free license to copy, use and communicate the Contractor's Documents, including making and using modifications of them. This license shall:</p> <p>i. Apply throughout the actual or intended working life (whichever is longer) of the relevant parts of the Works,</p> <p>ii. 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 in the case of Contractor's Documents which are in</p>

		<p>the form of computer programs and other software, permit their use on any computer on the Site and other places as envisaged by the Contract, including replacements of any computers supplied by the Contractor.</p> <p>iii. 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 Procuring Entity for purposes other than those permitted under this Sub-Clause.</p>
Contractor's use of Procuring Entity's Documents	1.13	As between the Parties, the Procuring Entity shall retain the copyright and other intellectual property rights in the Specification, the Drawings and other documents made by (or on behalf of) the Procuring Entity. The Contractor may, at his Cost, copy, use, and obtain communication of these documents for the purposes of the Contract. They shall not, without the Procuring Entity's consent, be copied, used or communicated to a third Party by the Contractor, except as necessary for the purposes of the Contract.
Care and Supply of documents	1.14	<p>The approved Specification, Designs and Drawings shall be in the custody and care of the Procuring Entity. Unless otherwise stated in the Contract, one copy of the Contract and of each subsequent Drawing shall be supplied to the Contractor, who may make further copies at his Cost.</p> <p>Each of the Contractor's Documents shall be in the custody and care of the Contractor, unless and until taken over by the Procuring Entity. Unless otherwise stated in the Contract, the Contractor shall supply to the Engineer-in-Charge four copies of each of the Contractor's Documents.</p> <p>The Contractor shall keep, on the Site, a copy of the Contract, publications named in the Specification, the Contractor's Documents (if any), the Drawings and Variations and other communications given under the Contract. The Procuring Entity's Personnel shall have the right of access to all these documents at all reasonable times.</p> <p>If a Party becomes aware of an error or Defect in a document which was prepared for use in executing the Works, the Party shall promptly give notice to the other Party of such error or Defect.</p>
Delays in issuing drawings or instructions	1.15	<p>The Contractor shall give notice to the Engineer-in-Charge whenever the Works are likely to be delayed or disrupted if any necessary Drawing or instruction is not issued to the Contractor within a particular time, which shall be reasonable. The notice shall include details of the necessary Drawing or instruction, details of why and by when it should have been issued, and the nature and amount of the delay or disruption likely to be suffered if it is late.</p> <p>If the Contractor suffers delay and/or incurs Cost as a result of a failure of the Engineer-in-Charge to issue the notified Drawing or instruction within a time which is reasonable and is specified in the notice with supporting details, the Contractor shall give a further</p>

		<p>notice to the Engineer-in-Charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion],</p> <p>However, if and to the extent that the Engineer-in-Charge's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time.</p>
Confidential Details	1.16	<p>The Contractor's and the Procuring Entity's Personnel shall not disclose all such confidential and other information as may be reasonably required in order to verify compliance with the Contract and allow its proper implementation.</p> <p>Each of them shall treat the details of the Contract as private and confidential, except to the extent necessary to carry out their respective obligations under the Contract or to comply with applicable Laws. Each of them shall not publish or disclose any particulars of the Works prepared by the other Party without the previous agreement of the other Party. However, the Contractor shall be permitted to disclose any publicly available information, or information otherwise required to establish his qualifications to compete for other projects.</p>
2. The Procuring Entity		
Right of Access to the Site	2.1	<p>The Procuring Entity shall give the Contractor right of access to, and possession of at least 80% of the Site within 30 days of signing of the Contract or within the time specified in the Special Conditions of Contract (SCC). If under the Contract the Procuring Entity is required to give to the Contractor possession of any foundation, structure, plant or means of access, the Procuring Entity shall do so in the time and manner stated in the Specification. However, the Procuring Entity may withhold any such right or possession until the Performance Security has been received.</p> <p>If the Contractor suffers delay as a result of a failure by the Procuring Entity to give any such right or possession within such time, the Contractor shall give notice to the Engineer-in-charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to an extension of time for any such delay, if completion is or will be delayed.</p> <p>After receiving this notice, the Engineer-in-charge shall proceed to agree or determine these matters.</p> <p>However, if and to the extent that the Procuring Entity's failure was caused by any error or delay by the Contractor, including an error in, or delay in the submission of, any of the Contractor's Documents, the Contractor shall not be entitled to such extension of time.</p>
	2.2	The right and possession may not be exclusive to the Contractor.
Assistance by Procuring Entity	2.3	The Procuring Entity shall provide, at the request of the Contractor, such reasonable assistance as to allow the Contractor to obtain expeditiously any permits, licenses or approvals which the Contractor is required to obtain:

		<ul style="list-style-type: none"> i. For the delivery of Goods, including clearance through customs, and ii. For the export of Contractor's Equipment when it is removed from the Site.
Procuring Entity's Personnel	2.4	The Procuring Entity shall be responsible for ensuring that the Procuring Entity's Personnel and the Procuring Entity's other Contractors on the Site, co-operate with the Contractor's efforts under Sub-Clause 4.7 [Co-operation], and take actions similar to those which the Contractor is required to take under Sub-Clause 4.8 [Safety Procedures] and under Sub-Clause 4.17 [Protection of the Environment].
Procuring Entity's Claims	2.5	<p>If the Procuring Entity considers himself to be entitled to any payment under any Sub-Clause of these Conditions or otherwise in connection with the Contract, and/or to any extension of the Defects Liability Period, the Procuring Entity or the Engineer-in- charge shall give notice and particulars to the Contractor. However, notice is not required for payments due under Sub-Clause 4.18 [Electricity, Water and Gas], under Sub-Clause 4.19 [Issue of Procuring Entity's Equipment and Materials], or for other services requested by the Contractor.</p> <p>The notice shall be given as soon as practicable and no longer than 28 Days after the Procuring Entity became aware, or should have become aware, of the event or circumstances giving rise to the claim. A notice relating to any extension of the Defects Notification Period shall be given 28 days before the expiry of such period. The particulars shall specify the Sub-Clause or other basis of the claim, and shall include substantiation of the amount and/or extension Defects Notification Period to which the Procuring Entity considers himself to be entitled in connection with the Contract. The Engineer-in-charge shall then proceed in accordance with Sub- Clause 3.5 [Determinations] to agree or determine the amount (if any) which the Procuring Entity is entitled to be paid by the Contractor, and/or the extension (if any) of the Defects Notification Period in accordance with Sub-Clause 13.4 [Extension of Defects Notification Period].</p> <p>This amount may be included as a deduction in the Contract Price and Payment Certificates. The Procuring Entity shall be entitled to set off against or make any deduction from an amount certified in a Payment Certificate, or to otherwise claim against the Contractor, in accordance with this Sub-Clause.</p>
Quality Control	2.6	<p>The Procuring Entity shall have the right to exercise proper Quality Control measures. The Contractor shall provide a fully equipped field laboratory, testing personnel, consumables and other assistance at his cost to conduct such tests. The Quality Control shall be in three tiers:</p> <ul style="list-style-type: none"> i. tier one by the Contractor's Engineers to the specified frequency, ii. by the Engineer-in-Charge's personnel to conform the quality and acceptance of the work and

		<p>iii. by the Technical Examiner's organisation or such other independent bodies of State Government/ the Department/ Organisation or QCI approved Third Party Quality Inspection Agency. The work shall have to be completed to conform to the specifications and shall be acceptable only after rectification of deficient/ defective works as per 'Non-Conformance Reports', if any, issued by the above mentioned agency or the Engineer-in-Charge.</p>
3. Engineer-in-Charge		
Duties and Responsibilities	3.1.1	<p>The Superintending Engineer (SE) of the concerned Division will function as the Engineer-in-Charge for the purpose of the Contract or the Procuring Entity shall appoint another engineer as the Engineer-in-charge, as specified in the Contract Data, who shall carry out the duties assigned to him in the Contract and ensure execution of works as per approved drawings, designs, specifications etc. The Engineer-in-charge's staff shall include suitably qualified Engineers and other professionals who are competent to carry out these duties.</p> <p>The Engineer-in-charge shall have no authority to amend the Contract. The Engineer-in-charge may exercise the authority attributable to the Engineer-in- charge as specified in or necessarily to be implied from the Contract. If the Engineer-in- charge is required to obtain the approval of the Procuring Entity before exercising a specified authority, he shall have to obtain that approval.</p>
	3.1.2	<p>The Procuring Entity shall promptly inform the Contractor of any change to the authority attributed to the Engineer-in-charge.</p> <p>However, whenever the Engineer-in-charge exercises a specified authority for which the Procuring Entity's approval is required, then (for the purposes of the Contract) the Procuring Entity shall be deemed to have given approval.</p> <p>Except as otherwise stated in these Conditions:</p> <ul style="list-style-type: none"> i. whenever carrying out duties or exercising authority, specified in or implied by the Contract, the Engineer- in-charge shall be deemed to act for the Procuring Entity; ii. the Engineer-in-charge has no authority to relieve either Party of any duties, obligations or responsibilities under the Contract; and iii. any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by the Engineer-in- charge (including absence of disapproval) shall not relieve the Contractor from any responsibility he has under the Contract, including responsibility for errors, omissions, discrepancies, quality of works and non-compliances to specifications/ instructions of the Engineer-in-charge /Procuring Entity. iv. Any act by the Engineer-in-charge in response to a Contractor's request except otherwise expressly specified shall be notified in writing to the Contractor within 28 Days of

		<p>receipt.</p> <p>The Engineer-in-charge shall obtain the specific approval of the competent authority before taking action under the following Sub-Clauses of these Conditions and other Sub-Clauses, if specified in the Contract Data:</p> <ul style="list-style-type: none"> i. Sub-Clause 4.12 [Unforeseeable Physical Conditions] agreeing or determining an extension of time and/or additional Cost; ii. Sub-Clause 9.1 [Right to Vary]: Instructing a Variation, except: <ul style="list-style-type: none"> a) In an emergency situation as determined by the Engineer-in-charge, or b) If such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the Contract Data. iii. Approving a proposal for Variation submitted by the Contractor or in accordance with Sub-Clause 9.1 [Right to Vary] or Sub-Clause 9.3 [Value Engineering]. <p>Notwithstanding the obligation, listed out above, to obtain approval, if, in the opinion of the Engineer-in-charge, an emergency occurs affecting the safety of life or of the Works /work men or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor or to execute all such work or to do all such things as may, in the opinion of the Engineer-in-charge, be necessary to abate or reduce the risk. The Contractor or shall forth with comply, despite the absence of approval of the competent authority, with any such instruction of the Engineer-in-charge. The Engineer-in-charge shall determine (after due approval from the competent authority) an addition to the Contract Price, in respect of such instruction, in accordance with Clause 9 [Deviations, Variations and Adjustments] and shall notify the Contractor or accordingly, with a copy to the Procuring Entity.</p>
Delegation by Engineer-in-Charge	3.2	<p>The Engineer-in-charge may from time to time assign duties and delegate authority to assistants and may also revoke such assignment delegation. These assistants may include a resident Engineer, and/or independent inspectors appointed to inspect and/or test items of works and/or Materials. The assignment, delegation or revocation shall be in writing and shall not take effect until copies have been received by both Parties.</p> <p>However, unless otherwise agreed by both Parties, the Engineer-in-charge shall not delegate the authority to determine any matter in accordance with Sub-Clause 3.5 [Determinations]. Each assistant, to whom duties have been assigned or authority has been delegated, shall only be authorized to issue instructions to the Contractor to the extent defined by the delegation. Any approval, check, certificate, consent, examination, inspection, instruction, notice, proposal, request, test, or similar act by an assistant, in accordance with the delegation, shall have the same effect as though the act had been an act of the Engineer-in-charge. However:</p>

		<ul style="list-style-type: none"> i. any failure to disapprove any work, Plant or Materials shall not constitute approval, and shall therefore not prejudice the right of the Engineer-in-charge to reject the work, Plant or Materials; ii. if the Contractor questions any determination or instruction of an assistant, the Contractor may refer the matter to the Engineer-in-charge, who shall promptly confirm, reverse or vary the determination or instruction.
Instruction of the Engineer-in-Charge	3.3	<p>The Engineer-in-charge may issue to the Contractor (at any time) instructions and additional or modified Drawings which may be necessary for the execution of the Works and the remedying of any Defects, all in accordance with the Contract. The Contractor shall only take instructions from the Engineer-in-charge, or from an assistant to whom the appropriate authority has been delegated under Sub-Clause.</p> <p>If an instruction constitutes a Variation, Clause 9 [Deviations, Variations and Adjustments] shall apply.</p> <p>The Contractor shall comply with the instructions given by the Engineer-in-charge or delegated assistant, on any matter related to the Contract. Whenever practicable, their instructions shall be given in writing. If the Engineer-in-charge or a delegated assistant:</p> <ul style="list-style-type: none"> i. gives an oral instruction, ii. receives a written confirmation of the instruction, from (or on behalf of) the Contractor, within two working Days after giving the instruction, and iii. does not reply by issuing a written rejection and/or instruction within two working Days after receiving the confirmation, then the confirmation shall constitute the written instruction of the Engineer-in-charge or delegated assistant (as the case may be).
Replacement of Engineer-in-Charge	3.4	If the Procuring Entity intends to replace the Engineer-in-charge, the Procuring Entity shall inform the contractor by a notice before the intended date of replacement, the name and contact details of the intended replacement of the Engineer-in-charge.
Determinations	3.5	Whenever these Conditions provide that the Engineer-in-charge shall proceed in accordance with this Sub-Clause 3.5 to agree or determine any matter like variations, extensions of time, responsibilities / valuation for loss and or damage to works etc., the Engineer-in-charge shall peruse the Contract, Specifications, Codes and consult the Contractor in an endeavour to reach an agreement. If an agreement is not reached, the Engineer-in-charge shall make a fair determination in accordance with the Contract, taking due regard of all relevant circumstances. The Engineer-in-charge shall give notice to the Contractor of each agreement or determination, with supporting particulars, within 28 Days from the likely date of implementation of such agreement or determination and obtain receipt of the corresponding claim or request except when otherwise specified. The

		Contractor shall give effect to each determination unless and until revised under Clause 21 [Claims, Disputes and Arbitration].
Minutes of Meeting	3.6	<p>The Engineer-in-charge may require the Contractor to attend a progress review / or quality assurance/ design review meeting during execution of the Works. The Engineer- in-charge shall record the minutes of the meeting and provide a copy within 7 days to the Contractor for compliance. These minutes will be a part of evidence in case of request for extension of time or variation or punitive action against the Contractor as per terms of the Contract.</p> <p>In case the issue of minutes is delayed, the Contractor may issue the record note of discussions and decisions taken in the meeting for record and confirmation by the Engineer-in Charge. These shall be treated as confirmed if not denied within 15 days by the Engineer-in-Charge.</p>
4. The Contractor		
General Obligations and Contractor's personnel.	4.1.1	<p>The Contractor shall design, prepare drawings (to the extent specified in the Contract), execute as per specifications and complete the Works in accordance with the Contract and with the Engineer-in-Charge's instructions, and shall remedy any Defects in the Works.</p> <p>The Contractor shall provide the Plant and Contractor's Documents specified in the Contract, and all Contractor's Personnel, Goods, consumables and other things and services, whether of a temporary or permanent nature, required in and for this design, execution, completion and remedying of Defects.</p>
	4.1.2	<p>The Contractor shall be responsible for the adequacy, stability and safety of all Site operations and of all methods of construction. Except to the extent specified in the Contract, the Contractor shall be responsible for all Contractor's Documents, Temporary Works, and such design of each item of works, Plant and Materials as is required for the item to be in accordance with the specifications for items of Contract, and shall not otherwise be responsible for the design or Specification of the Permanent Works.</p>
	4.1.3	<p>The Contractor shall deploy experienced and competent personnel to execute the works. The quality of workmanship has to be as specified. Personnel not found capable of good workmanship shall be removed and replaced with better workman.</p>
	4.1.4	<p>The Contractor shall, whenever required by the Engineer-in-charge, submit details of the arrangements and methods which the Contract or proposes to adopt for the execution of the Works. He shall also be responsible for the safety of works and personnel at the site and shall submit a safety execution plan (as per relevant code for safety at construction site) for the approval by the Engineer - in-charge. No significant alteration to these arrangements and methods shall be made without this having previously been approved by the Engineer-in-charge. He shall also comply with the requirements of the mitigations of the Environmental impacts of the execution of works.</p>
	4.1.5	If the Contract specifies that the Contractor shall design any part of

		<p>the Permanent Works, then unless otherwise stated in the Special Conditions of Contract:</p> <ul style="list-style-type: none"> i. the Contractor shall submit to the Engineer-in-charge the Contractor's Documents for this part in accordance with the procedures specified in the Contract. ii. these Contractor's Documents shall be in accordance with the Specification and Drawings, shall be written in the language for communications defined in the Sub-Clause 1.4 [Law and Language] and shall include additional information required by the Engineer-in-charge to add to the Drawings for co-ordination of each Party's designs; iii. the Contractor shall be responsible for this part and it shall, when the Works are completed, be fit for such purposes for which the part is intended as are specified in the Contract; and iv. prior to the commencement of the Tests on Completion, the Contractor shall submit to the Engineer-in-charge the "as-built" drawings, designs and documents and, if applicable, operation and maintenance manuals in accordance with the Specification and in sufficient detail for the Procuring Entity to operate, maintain, dismantle, reassemble, adjust and repair all parts of the Works. Such part shall not be considered to be completed for the purposes of taking-over under Clause 12 [Taking Over of the Works and Sections] until these documents and manuals have been submitted to the Engineer-in-charge.
	4.1.6	The Contractor shall allow the Engineer-in-charge and any person authorized by the Engineer-in-charge access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where Materials or plant are being installed / assembled for the Works. The contractor may satisfy himself regarding site, acquisition of land, approach roads etc.
	4.1.7	The liability, if any, on account of quarry fees, royalties, octroi, service tax, and any other taxes and duties in respect of materials actually consumed on public work shall be borne by the Contractor.
	4.1.8	The cost of all water / power connections necessary for the execution of the Works and the cost of water consumed and hire charges of meters and the cost of electricity consumed in connection with the execution of the Works shall be paid by the Contractor except where otherwise specifically indicated. He shall also be responsible for environment mitigated disposal of waste water released during execution.
	4.2.1	The Contractor shall permit the Procuring Entity to inspect the Contractor's accounts and records relating to the performance of the Contract and to have them audited by auditors appointed by the Procuring Entity, if so required by the Procuring Entity.
Performance	4.3.1	The Contractor shall have the option to furnish a Performance

Security		<p>Security @ 5% of the Contract value, in Indian Rupees, in one of the following forms [strike out which is not applicable]:</p> <ul style="list-style-type: none"> i. Deposit through ePayment i.e. NEFT/RTGS/Internet Banking; or ii. Bank Draft or Banker's Cheque of a Scheduled Bank in India; or iii. National Savings Certificates and any other script/ instrument under National Savings Schemes for promotion of small savings issued by a Post Office in Punjab, if the same can be pledged under the relevant rules. They shall be accepted at their surrender value at the time of Bid and formally transferred in the name of the Procuring Entity with the approval of Head Post Master; or iv. Bank Guarantee. It shall be of a scheduled Bank in India in prescribed or other acceptable format or from other Issuer acceptable to the Procuring Entity. The bank guarantee shall be got verified from the issuing bank and confirmee, if any; or v. Fixed Deposit Receipt (FDR) of a Scheduled Bank in India. It shall be in the name of the Procuring Entity on account of Bidder and discharged by the Bidder in advance. The Procuring Entity shall ensure before accepting the Fixed Deposit Receipt that the Bidder furnishes an undertaking from the bank to make payment/ premature payment of the Fixed Deposit Receipt on demand to the Procuring Entity without requirement of consent of the Bidder concerned. In the event of forfeiture of the Performance Security, the Fixed Deposit shall be forfeited along with interest earned on such Fixed Deposit.
Additional Performance Security	4.3.2	<ul style="list-style-type: none"> i. If the Bid, which results in the lowest evaluated bid price, is seriously imbalanced or front loaded in the opinion of the Procuring Entity, the Procuring Entity may require the Bidder to produce detailed price analysis for any or all items of the Bill of Quantities to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analysis, taking into consideration the schedule of estimated Contract payments, the Procuring Entity may require that the amount of the performance security be increased (to a maximum of 20% of the bid value of such items) at the expense of the Bidder to a level sufficient to protect the Procuring Entity against financial loss in the event of default by the successful Bidder under the Contract. ii. Without limitation to the provisions of the rest of this Sub-Clause, whenever the Engineer-in-charge determines an addition to the Contract Price as a result of a change in Cost, or as a result of a Variation of the Contract Price, the Contractor shall at the Engineer-in-charge's request promptly

		<p>increase the Performance security to a level of 10 percent of the increased Contract Price.</p>
	4.3.3	<p>The proceeds of the Performance Security shall be forfeited and shall be payable as compensation to the Procuring Entity on happening of any of the events mentioned below:</p> <ul style="list-style-type: none"> i. when the Contractor does not execute the agreement within the specified time; after issue of letter of acceptance/placement of work order; or ii. when the Contractor fails to commence the work within the time specified; or iii. when the Contractor fails to complete the work satisfactorily within the time specified; or iv. when any terms and conditions of the contract is breached; or v. Failure by the Contractor to pay the Procuring Entity any amount due, either as agreed by the Contractor or determined under any of the Sub-Clauses of these Conditions or another agreement, within 30 Days of the service of notice to this effect by Engineer-in-Charge; or vi. if the Contractor breaches any provision of the Code of Integrity prescribed for Bidders. <p>Notice of reasonable time will be given in case of forfeiture of Performance Security. The decision of the Procuring Entity in this regard shall be final.</p>
	4.3.4	<p>The Contractor shall ensure that the Performance Security remains valid up to a period of 60 days beyond fulfilment of all the obligations of the Contractor under the Contract, including defect liability and maintenance, if any. If the terms of the Performance Security specify its expiry date, and the Contractor has not become entitled to receive the Performance Certificate by the date 28 Days prior to the expiry date as provided in the Contract, the Contractor shall get extended the validity of the Performance Security.</p> <p>Failure by the Contractor to extend the validity of the Performance security as described herein above, in which event the Engineer-in-charge may claim the full amount of the performance security.</p>
	4.3.5	<p>The Procuring Entity shall return the Performance Security to the Contractor as below after completion of all obligations under the Contract, more specifically, after the expiry of the period as specified below:</p> <ul style="list-style-type: none"> i. In case of contracts relating to hiring of trucks and other T&P, transportation including loading, unloading of materials, the Performance Security will be refundable along with the final bill. ii. Ordinary repairs: 3 months after the completion of the Works, provided the final bill has been paid. iii. Original Works / Special Repair Works: Performance Security will be refunded six months after completion, or after expiry of one full rainy season, or after expiry of defect liability

		<p>period and maintenance period, if any specified in the Contract Data, whichever is later, provided the final bill has been paid.</p> <p>iv. In case of supply of materials: after 3 months of completion of supply, provided the final bill has been paid.</p>
	4.3.6	In the event of the Contract being determined or rescinded under any of the provisions of Sub-Clause 16.1, the Performance Security shall stand forfeited in full and shall be absolutely at the disposal of the Procuring Entity.
	4.3.7	For works for which a maintenance period of 3-5 years is also specified in addition to the defect liability period. The regular maintenance shall be a part of the BOQ of the Contract as an amount per annum to be paid on quarterly basis.
Commencement of Work at the earliest. Record the commencement or start date.	4.4	The Contractor shall commence the Works after signing of the Contract within the period as specified in the Special Conditions of the Contract. In case the Contractor does not commence the works within the above period, the Engineer-in-charge shall issue a notice after the expiry of the said period. The actual date of commencement shall be duly recorded by the Engineer-in-Charge.
Contractor's Representative	4.5	<p>Contractor shall appoint the Contractor's Representative and shall give him all authority necessary to act on the Contractor's behalf under the Contract.</p> <p>Unless the Contractor's Representative is named in the Contract, the Contractor shall, prior to the Commencement Date, submit to the Engineer-in-charge for consent the name and particulars of the person the Contractor proposes to appoint as Contractor's Representative. If consent is withheld or subsequently revoked in terms of this Sub-Clause, or if the appointed person fails to act as Contractor's Representative, or conducts improperly at the Site, the Contractor shall submit the name and particulars of another suitable person for such appointment. The former representative shall be removed within 24 hours of such notice by the Engineer-in-charge.</p> <p>The Contractor shall not, except if the representative has lost the confidence of the Contractor or is not complying to the instructions of the Engineer-in-charge or his assistants, remove without the prior consent of the Engineer-in-charge, revoke the appointment of the Contractor's Representative or appoint a replacement.</p> <p>The whole time of the Contractor's Representative shall be given to directing the Contractor's performance of the Contract. If the Contractor's Representative is to be temporarily absent from the Site during the execution of the Works, a suitable replacement person shall be appointed, subject to the Engineer-in-charge's prior consent, and the Engineer-in-charge shall be notified accordingly. The Contractor's Representative shall, on behalf of the Contractor, receive instructions under Sub-Clause 3.3 [Instructions of the Engineer-in-charge] and comply with them.</p>

		<p>The Contractor's Representative may delegate any powers, functions and authority to any competent person and may at any time revoke the delegation. Any delegation or revocation shall not take effect until the Engineer-in-charge has received prior notice signed by the Contractor's Representative, naming the person and specifying the powers, functions and authority being delegated or revoked. The Contractor's Representative shall be fluent in the language for communications defined in Sub-Clause 1.4. If the Contractor's Representative's delegates are not fluent in the said language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer-in-charge.</p>
Sub-Contractor, nominated Sub- Contractor.	4.6	<p>The Contractor shall not Sub-let or subcontract the whole/ or even part of the Works without the consent of the Engineer-in-charge. The Contractor shall submit a list of sub-contractors along with their credentials about (a) Technical capacity, (b) Financial capability and (c) the Experience of similar work, which is proposed to be subcontracted. The Engineer-in-Charge (EIC) shall scrutinize the offers submitted by the Contractor, and shall approve the sub-contractors based on their overall capability to execute the proposed subcontracted work. The agreement between the Contractor and each sub-contractor shall be submitted by the Contractor to the EIC and would require prior approval of the EIC. Such agreement between the Contractor and sub-contractor should be reasonable, workable and justified.</p> <p>If at any stage during execution, a sub-contractor is found working at Site without prior approval of the EIC, then the work being done by such Contractor shall be stopped at Site and payment to the Contractor for that particular work shall not be made by the EIC.</p> <p>It shall be responsibility of the Contractor to ensure that no unauthorized sub-contractor works on any work Site.</p> <p>If the Contractor does so, the Contract shall be liable to be terminated under Sub-Clause 16.1 [Termination by Procuring Entity]. Details of the capability of such proposed Sub-Contractors (except the nominated Sub-Contractor named by the Engineer-in-charge) shall be approved by the Engineer-in-charge. The Contractor shall be responsible for the misconduct, acts or defaults of any Sub contractor, his agents or employees, as if they were the acts or defaults of the Contractor.</p> <p>Unless otherwise stated:</p> <ul style="list-style-type: none"> i. the Contractor shall not be required to obtain consent to suppliers solely of materials, or to a subcontract for which the nominated Sub contractor is named in the Contract. ii. the Contractor shall give the Engineer-in-charge not less than 28 Days' notice of the intended date of the commencement of each Sub-Contractor's work, and of the commencement of such work on the Site.

		<p>iii. The Contractor shall not be required to obtain such consent for:</p> <ul style="list-style-type: none"> a) The provision of labours, b) The purchase of materials which are in accordance with the standards specified in the Contract, or c) The subcontracting of any part of the works for which subcontractor is named in the Contract <p>The Contractor shall ensure that the requirements imposed on the Contractor regarding Confidentiality as defined in the GCC Sub-Clause 1.16 [Confidential Details] shall apply equally to each nominated Subcontractor / Subcontractor.</p>
Co-Operation	4.7	<p>The Contractor shall, as specified in the Contract or as instructed by the Engineer- in-charge, allow appropriate opportunities for carrying out work to:</p> <ul style="list-style-type: none"> i) the Procuring Entity's Personnel, ii) any other Contractors employed by the Procuring Entity, and iii) the personnel of any legally constituted public authorities, who may be employed in the execution on or near the Site of any work not included in the Contract. <p>Any such instruction shall constitute a Variation if and to the extent that it causes the Contractor to suffer delays and/or to incur Unforeseeable Cost. Services for these personnel and other Contractors may include the use of Contractor's Equipment, Temporary Works or access arrangements which are the responsibility of the Contractor.</p> <p>If, under the Contract, the Procuring Entity is required to give to the Contractor, possession of any foundation, structure, plant or means of access in accordance with Contractor's Documents, the Contractor shall submit such documents to the Engineer-in-charge in the time and manner stated in the Specifications.</p>
Safety Procedures at the site of works	4.8.1	<p>The Contractor shall:</p> <ul style="list-style-type: none"> i. prepare and submit for approval by the Engineer-in-charge an auditable safety plan at Site in accordance with relevant Code. The Contractor shall comply with all applicable safety regulations; ii. take care for the safety of all persons entitled to be on the Site; iii. use reasonable efforts to keep the Site and Works clear of unnecessary obstruction so as to avoid danger to these persons; iv. provide fencing, lighting, guarding and watching of the works until completion and taking over under Sub-Clause 12.1 [Taking over of Works]; and v. provide any Temporary Works (including roadways, footways, guards and fences) which may be necessary, because of the execution of the Works, for the use and protection of the public and of owners and occupiers of adjacent land. <p>In addition to the provisions of this Contract, the Contractor shall</p>

		follow the safety code of the Department.
Safety Provisions for labour	4.8.2	In respect of all labour directly or indirectly employed, noncompliance in the work for the performance of the Contractor's part of this Contract, the Contractor shall at his own expense arrange for the safety provisions as per P.W.D. Safety Code framed from time to time and shall at his own expense provide for all facilities in connection therewith. In case the Contractor fails to make arrangement and provide necessary facilities as aforesaid, the Engineer-in- Charge shall be entitled to provide for all such arrangements at the risk and cost of the Contractor plus 15% as agency charges.
Quality Assurance	4.9.1	<p>The Procuring Entity shall have the right to exercise proper Quality Control measures to ensure that the works have been executed as per specifications and have the designed durability. It will be in three tiers:</p> <ul style="list-style-type: none"> i. The first tier being the Contractor's engineers ensuring full compliance to specifications and conforming the same through testing (as per frequencies specified in the BIS, IRC or other relevant codes) on input materials, processes and the output in the field laboratory established by the Contractor at his cost. The second tier shall be the Engineer-in-charge's team conducting such tests to the extent of the specified code frequency at the Contractor's field laboratory or Department/ Organization's laboratory and comparing the results with those carried out by the Contractor's Engineers; and iii. The third tier shall be the 'Third Party Quality Inspections' by the QCI approved / accredited Inspection Bodies as per ISO 17020, or by the Technical Examiner of the Department/ Organisation, where exists. The QCI approved / accredited Inspection Body may be selected through competitive bidding. The third tier shall conduct such tests to the extent of 10% of the specified frequencies duly witnessed by the Contractor's & Procuring Entity's Engineers and providing a final acceptability on the Works costing above Rs. 10 crores for buildings and structures and Rs.20 crores for roads, bridges/ flyovers, canals, dams, etc, as specified in the SCC. ii. The Contractor shall provide all assistance to conduct such tests
	4.9.2	<p>The Contractor shall institute an approved quality assurance plan stating the methodology / responsibility for sampling, testing/ confirmatory testing, testing frequencies, statistical quality controls, observation / report formats, acceptance criteria, issue and resolution of Non-Conformance Reports etc. to demonstrate compliance with the requirements of the specifications. The system shall be in accordance with the details stated in the Contract. The Engineer-in-charge shall be entitled to audit any aspect of the system.</p> <p>Details of all procedures and compliance documents shall be submitted to the Engineer-in-charge for information before each design and execution stage is commenced. When any document of a technical nature is issued to the Engineer- in-charge, evidence of the prior acceptance by the Contractor himself shall be apparent on the document itself.</p> <p>Compliance with the quality assurance system shall not relieve the Contractor of any of his duties, obligations or responsibilities under the Contract.</p>
Site Data	4.10.1	The Procuring Entity shall have made available to the Contractor for his

		<p>information, prior to the Base Date, all relevant data in the Procuring Entity's possession on sub-surface and hydrological conditions at the Site, including environmental aspects. The Procuring Entity shall similarly make available to the Contractor all such data which come in to the Procuring Entity's possession after the Base Date. The Contractor shall be responsible for verifying and interpreting all such data. The Procuring Entity shall not be held responsible about the correctness of all such data and the Contractor shall confirm/ verify all such data at his own cost.</p>
	4.10.2	<p>To the extent which was practicable (taking account of Cost and time), the Contractor shall be deemed to have obtained all necessary information as to risks, contingencies and other circumstances which may influence or affect the Bid for Works. To the same extent, the Contractor shall be deemed to have inspected and examined the Site, its surroundings, the above data and other available information, and to have been satisfied before submitting the Bid as to all relevant matters, including (without limitation):</p> <ul style="list-style-type: none"> i the form and nature of the Site, including sub-surface conditions, ii the hydrological and climatic conditions, iii the extent and nature of the work and goods necessary for the execution and completion of the Works and the remedying of any Defects, iv the Laws, procedures and labour practices of India, particularly Punjab, and v the Contractor's requirements for access, accommodation, facilities, personnel, power, transport, water and other services.
Sufficiency of the Contracted Amount	4.11	<p>The Contractor shall be deemed to:</p> <ul style="list-style-type: none"> i. have satisfied himself as to the correctness and sufficiency of the Accepted Contract Amount, and ii. have based the Accepted Contract Amount on the data, interpretations, necessary information, inspections, examinations and satisfaction as to all relevant matters referred to in Sub-Clause 4.10 [Site Data]. <p>Unless otherwise stated in the Contract, the Accepted Contract Amount covers all the Contractor's obligations under the Contract (including those under Provisional Sums, if any) and all things necessary for the proper execution and completion of the Works and the remedying of any Defects.</p>
Unforeseeable Physical Conditions	4.12	<p>In this Sub-Clause, "physical conditions" means natural physical conditions and man-made and other physical obstructions and pollutants, which the Contractor encounters at the Site when executing the Works, including sub-surface and hydrological conditions but excluding climatic conditions.</p> <p>If the Contractor encounters adverse physical conditions which the Procuring Entity considers to have been Unforeseeable, the Contractor shall give notice to the Engineer-in-charge as soon as practicable. This notice shall describe the physical conditions, so that they can be inspected by the Engineer-in-charge, and shall set out the reasons why the Contractor considers them to be Unforeseeable. The Contractor shall continue executing the Works, using such proper and reasonable measures as are appropriate for the physical conditions, and shall comply with any instructions which the Engineer-in- charge may give. If an instruction constitutes a Variation, Clause 9 [Deviations, Variations and Adjustments] shall apply.</p> <p>If and to the extent that the Contractor encounters physical conditions</p>

		<p>which are Unforeseeable, gives such a notice, and suffers delay and/ or incurs Cost due to these conditions, the Contractor shall be entitled subject to notice under Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion], and ii. payment of any such Cost, directed to be incurred by the Contractor as approved extra item which shall be included in the Contract Price. <p>Upon receiving such notice and inspecting and/or investigating these physical conditions, the Engineer-in-charge shall proceed in accordance with Sub- Clause 3.5 [Determinations] to agree or determine whether and (if so) to what extent these physical conditions were Unforeseeable, and the matters described in sub-paragraphs (i) and (ii) above related to this extent by the Contractor, but the Engineer-in-charge shall not be bound by the Contractor's interpretation of any such evidence.</p> <p>However, before additional Cost is finally agreed or determined under sub-paragraph (ii), the Engineer-in-charge may also review whether other physical conditions in similar parts of the Works (if any) were more favourable than could reasonably have been foreseen when the Contractor submitted the Bid. If and to the extent that these more favourable conditions were encountered, the Engineer- in-charge may proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the reductions in Cost which were due to these conditions, which may be included (as deductions) in the Contract Price and Payment Certificates. However, the net effect of all adjustments under sub-paragraph (ii) and all these reductions, for all the physical conditions encountered in similar parts of the Works, shall not result in a net reduction in the Contract Price.</p>
Right of Way and Facilities	4.13.1	Unless otherwise specified in the Contract the Procuring Entity shall provide access to and possession of the Site including special and/or temporary rights-of-way which are necessary for the Works. The Contractor shall obtain, at his risk and Cost, any additional rights of way or facilities outside the Site which he may require for the purposes of the Works.
	4.13.2	The Contractor shall allow the Engineer-in-charge and any person authorized by the Engineer-in-charge access to the Site, to any place where work in connection with the Contract is being carried out or is intended to be carried out and to any place where materials are being collected or stored or plant are being installed/ assembled for the Works. The contractor may satisfy himself regarding site, acquisition of land, approach roads etc.
Avoidance of Interference with public conveniences	4.14	<p>The Contractor shall not interfere unnecessarily or improperly with:</p> <ul style="list-style-type: none"> i. the convenience of the public, or ii. the access to and use and occupation of all roads and footpaths, irrespective of whether they are public or in the possession of the Procuring Entity or of others <p>The Contractor shall indemnify and hold the Procuring Entity harmless against and from all damages, losses and expenses (including legal fees and expenses) resulting from any such unnecessary or improper interference.</p>
Access Routes to Site	4.15	The Contractor shall be deemed to have been satisfied as to the suitability and availability of access routes to the Site at Base Date. The Contractor shall use reasonable efforts to prevent any road or bridge from being damaged by the Contractor's traffic or by the Contractor's

		<p>Personnel. These efforts shall include the proper use of appropriate vehicles and routes.</p> <p>Except as otherwise stated in these Conditions:</p> <ul style="list-style-type: none"> i the Contractor shall (as between the Parties) be responsible for any maintenance which may be required for his use of access routes; ii the Contractor shall provide all necessary signs or directions along access routes, and shall obtain any permission which may be required from the relevant authorities for his use of routes, signs and directions; iii the Procuring Entity shall not be responsible for any claims which may arise from the use or otherwise of any access route; iv the Procuring Entity does not guarantee the suitability or availability of particular access routes; and v Costs due to non-suitability or non-availability, for the use required by the Contractor, of access routes shall be borne by the Contractor.
Contractor's Equipment	4.16	The Contractor shall be responsible for all Contractor's Equipment. When brought on to the Site, Contractor's Equipment shall be deemed to be exclusively intended for the execution of the Works. The Contractor shall not remove from the Site any major items of Contractor's Equipment without the consent of the Engineer-in-Charge. However, consent shall not be required for vehicles transporting Goods or Contractor's Personnel offsite.
Protection of the Environment	4.17	<p>The Contractor shall take all reasonable steps to protect the environment (both on and off the Site) and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations. The Contractor shall ensure that emissions, surface discharges and effluent from the Contractor's activities shall not exceed the values stated in the Specifications or prescribed by applicable Laws.</p> <p>The Contractor shall, throughout the execution and completion of the Works and the remedying of any Defects therein:</p> <ul style="list-style-type: none"> i. have full regard for the safety of all persons entitled to be upon the Site and keep the Site (so far as the same is under his control) and the Works (so far as the same are not completed or occupied by the Procuring Entity) in an orderly state appropriate to the avoidance of danger to such persons; and ii. provide and maintain at his own Cost all lights, guards, fencing, warning signs and watchmen and other things necessary or required by the Engineer-in- charge or by any duly constituted authority, for the protection of the Works or for the safety and convenience of the public or others.
Electricity, Water and Gas	4.18	<p>The Contractor shall, except as stated below, be responsible for the provision of all power, water and other services he may require for his construction activities and to the extent defined in the Specifications, for the tests.</p> <p>The Contractor shall be entitled to use for the purposes of the Works such supplies of electricity, suitable water, gas and other services as may be available on the Site with due permission of the service provider, on payment of billing value. The Contractor shall, at his risk and cost, provide any apparatus necessary for his use of these services and for measuring / paying for the quantities consumed.</p> <p>The quantities consumed and the amounts due for such services shall be agreed or determined by the Engineer- in- Charge in accordance with Sub-Clause 2.5 [Procuring Entity's Claims] and Sub-Clause 3.5 [Determinations]. The Contractor shall pay these amounts to the</p>

		Procuring Entity /service provider.
Issue of Procuring Entity's Equipment and Materials <i>(Not applicable in case of Lump Sum Contract)</i>	4.19	<p>i The Procuring Entity may on request issue its machinery and equipment on hire to the Contractor, if available, for the use in the execution of the Works. The hire charges shall be as provided in the Contract Data or on the rates declared by the Procuring Entity in general. The Procuring Entity shall hand over the equipment in good working condition duly confirmed by the Contractor at the time of issue, along with departmental operators, helpers. The Contractor shall be responsible for the proper operation and care of the Procuring Entity's Equipment, POL, washout and ordinary repairs Contractor's operators shall not operate the equipment and the rentals / hire and other charges shall be deposited in advance for every 15 days by the Contractor failing which these shall be recovered from the immediately next Interim payment due to the Contractor.</p> <p>ii The Procuring Entity may issue materials like cement, steel, etc.(if available) to the Contractor for bonafide use in the Works at the rates specified in the Contract Data or at issue rate plus storage charges or free of cost, if it is a labour rate Contract, at the time and place specified in the Contract. <i>Such materials shall be issued at different stages in quantities calculated for each stage by the Engineer-in-Charge.</i></p>
Progress Reports	4.20	<p>Unless otherwise stated in the Conditions, monthly progress reports shall be prepared by the Contractor and submitted to the Engineer-in-charge in specified number of copies along with the interim payment certificates, and the updated construction programme on MS Project or similar software for the next month. The first report shall cover the period up to the end of the first calendar month following the Commencement Date. Reports shall be submitted monthly thereafter, each within 7 Days after the last day of the month to which it relates. Reporting shall continue until the Contractor has completed all works which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.</p> <p>Each report shall include:</p> <ul style="list-style-type: none"> i charts, drawings, outputs and detailed descriptions of progress, including each stage of design (if any) on MS project or similar software, Contractor's Documents, procurement, manufacture, delivery to Site, construction, erection and testing; and including these stages for work by each nominated Subcontractor (as defined in Sub-Clause 5.2 [Nomination of Sub-Contractors]); ii photographs (in adequate numbers) showing the status of progress of works on the Site; iii the details described in Sub-Clause 6.12 [Records of Contractor's Personnel & Equipment]; iv copies of quality assurance documents, test results, test certificates of manufactured Materials and action taken on Third Party Quality Inspections by the Contractor; v list of notices given under Sub-Clause 2.5 [Procuring Entity's Claims] and notices given under Sub-Clause 21.2 [Contractor's Claims]; vi safety statistics, including details of any hazardous incidents and activities relating to environmental aspects and public relations; and vii comparisons of actual and planned progress, hindrances, with details of any events or circumstances which may jeopardize the completion in accordance with the Contract, and the measures being (or to be) adopted

		to overcome delays.
Security of the Site and Works	4.21	<p>Unless otherwise stated in the Conditions:</p> <ul style="list-style-type: none"> i the Contractor shall be responsible for keeping unauthorized persons off the Site, ii authorized persons shall be limited to the Contractor's Personnel and the Procuring Entity's Personnel; and to any other personnel notified to the Contractor by the Procuring Entity or the Engineer-in-charge, as authorized personnel of the Procuring Entity's other Contractors on the Site. iii The contractor shall arrange to protect, at his own cost, in an adequate manner, all cut stone work and other work, requiring protection and to maintain such protection as long as work is in progress. He shall remove and replace this protection, as required by the Engineer-in-charge, from time to time. Any damage to the work, so protected, no matter how it may be caused, shall be made good by the Contractor free of cost. All templates, forms, moulds, centering, false works and models which in the opinion of the Engineer-in-charge are necessary for the proper and workman like execution of the work, shall be provided by the Contractor free of cost. iii The Contractor shall arrange to keep the site and works secure from manmade disasters, explosions by design or by accident or both at his own cost.
Contractor's Operations on Site	4.22	<p>The Contractor shall confine his operations to the Site, and to any additional areas which may be obtained by the Contractor and agreed to by the Engineer-in-charge as additional working areas. The Contractor shall take all necessary precautions to keep Contractor's Equipment and Contractor's Personnel within the Site and these additional areas, and to keep them off adjacent land.</p> <p>During the execution of the Works, the Contractor shall keep the Site free from all unnecessary obstruction, and shall store or dispose of any Contractor's Equipment or surplus Materials. The Contractor shall clear away and remove from the Site any wreckage, rubbish and Temporary Works which are no longer required.</p> <p>When the annual repairs and maintenance of Works are carried out, all rubbish shall be removed and the site cleaned simultaneously with the completion of the work in the individual sections where the work is done without waiting for the actual completion of all the other items of work in the Contract. In case the Contractor fails to comply with the requirements of this Sub-Clause, the Engineer-in-Charge shall have the right to get this work done at the Cost of the Contractor either Departmentally or through any other agency. Before taking such action, the Engineer-in-Charge shall give ten Days' notice in writing to the Contractor.</p> <p>Upon the issue of a Taking-Over Certificate, the Contractor shall clear away and remove, from that part of the Site and Works to which the Taking-Over Certificate refers, all Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works. The Contractor shall leave that part of the Site and the Works in a clean and safe condition. However, the Contractor may retain on Site, during the Defects Notification Period, such goods, equipment as are required by the Contractor to fulfil obligations under the Contract.</p>
Fossils / Antiques and articles of value	4.23	All fossils, coins, articles of value or antiquity, and structures and other remains or items of geological or archaeological interest found on the Site shall be placed under the care and authority of the Engineer-in-charge / Procuring Entity. The Contractor shall take reasonable precautions to prevent

		<p>Contractor's Personnel or other persons from removing or damaging any of these findings.</p> <p>The Contractor shall, upon discovery of any such finding, promptly give notice to the Engineer-in-charge, who shall issue instructions for dealing with it. If the Contractor suffers delay and/or incurs Cost from complying with the instructions, the Contractor shall give a further notice to the Engineer-in-charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion]; and ii. Payment of any such Cost, which shall be included in the Contract Price. <p>After receiving this further notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.</p>
Completion Plans to be Submitted by the Contractor	4.24	<p>The Contractor shall submit completion drawings, designs within thirty Days of the virtual completion of the Works.</p> <p>In case, the Contractor fails to submit the completion drawings, designs as aforesaid, the Engineer-in-charge shall be authorised to get these as built drawings, designs and other data prepared in 6 copies (4 hard and two soft) at the cost of the Contractor.</p>
Contractor to Supply Tools & Plants etc.	4.25	<p>The Contractor shall provide at his own Cost all materials plant, tools, appliances, implements, ladders, cordage, tackle, scaffolding and Temporary Works required for the proper execution of the Works, whether original, altered or substituted and whether included or not in the Specification or other documents forming part of the Contractor referred to in these conditions, or which may be necessary for the purpose of satisfying or complying with the requirements of the Engineer-in-Charge as to any matter as to which under these conditions he is entitled to be satisfied, or which he is entitled to require together with carriage therefore to and from the Works. The Contractor shall also supply without charge the requisite number of persons with the means and materials, necessary for the purpose of setting out Works, and counting, weighing and assisting the measurement for examination at any time and from time to time of the work or Materials. Failing his so doing the same may be provided by the Engineer-in-Charge at the actual Cost +15% as agency charges to the Contractor, under this Contract or otherwise and/ or from his Performance Security or the proceeds of sale thereof, or of a sufficient portion thereof.</p>
Changes in the firm's constitution to be intimated	4.26	<p>Where the Contractor is a partnership firm, the previous approval in writing of the Engineer-in-Charge shall be obtained before any change is made in the constitution of the firm. Where the Contractor is an individual or a Hindu undivided family business concern such approval as aforesaid shall likewise be obtained before the Contractor enters into any partnership agreement where under the partnership firm would have the right to carry out the Works hereby undertaken by the Contractor. If previous approval as aforesaid is not obtained, the Contract shall be deemed to have been subcontracted in contravention of Sub-Clause 4.6 [Sub-Contractor, nominated Sub-Contractor] and the same action may be taken and the same consequences shall ensue as provided in the Sub-Clause 16.1 [Termination by Procuring Entity]</p>
5. Sub-Contractor and Nomination of Sub-Contractor		
Sub-Contractor	5.1	A Sub Contractor, if permitted under the Contract, is a firm or a person

		specified by the Contractor in his Bid along with details of his capabilities on equipment/ machineries, personnel (technical and others), experience on similar works specific to the project, commitment to Quality assurance etc. He should not have been debarred by the Procuring Entity or the State Government.
Nomination of Sub-Contractor	5.2	In the Contract, "nominated Sub-Contractor" means a Sub-Contractor: (a) who is stated in the Contract as being a nominated Sub-contractor, or (b) Whom the Engineer-in-charge, instructs the Contractor to employ as a Sub contractor subject to Sub-Clause 5.3 [Objection to Nomination].
Objections to nominations	5.3	The Contractor shall not be under any obligation to employ a nominated Sub-contractor against whom the Contractor raises reasonable objection by notice to the Engineer-in-charge as soon as practicable, with supporting particulars.
Payment to Nominated Sub-Contractor	5.4	The Contractor shall pay to the Nominated Sub-Contractors the amounts shown on the Nominated Sub-contractor's invoices approved by the Contractor which the Engineer-in-charge certifies to be due in accordance with the sub-contract. These amounts plus other charges paid to the Nominated Sub-Contractor shall be included in the Contract Price in accordance with Sub-Clause 9.6 [Provisional Sums].
Evidence of payments	5.5	Before issuing a Payment Certificate which includes an amount payable to a nominated Subcontractor, the Engineer-in-Charge may request the Contractor to supply reasonable evidence that the nominated Subcontractor has received all amounts due in accordance with previous Payment Certificates, less applicable deductions for retention or otherwise. Unless the Contractor: (a) submits this reasonable evidence to the Engineer-in-Charge, or (b) (i) satisfies the Engineer-in-Charge in writing that the Contractor is reasonably entitled to withhold or refuse to pay these amounts, and (ii) submits to the Engineer-in-Charge reasonable evidence that the nominated Subcontractor has been notified of the Contractor's entitlement, then the Procuring Entity may (at his sole discretion) pay, direct to the nominated Subcontractor, part or all of such amounts previously certified (less applicable deductions) as are due to the nominated Subcontractor and for which the Contractor has failed to submit the evidence described in sub-paragraphs (a) or (b) above. The Contractor shall then repay, to the Procuring Entity, the amount which the nominated Subcontractor was directly paid by the Procuring Entity.
6. Engagement of Staff and Labour by the Contractor		
Staff and Labour	6.1	<ul style="list-style-type: none"> i. Except as otherwise stated in the Specifications, the Contractor shall make arrangements for the engagement of all staff and labour, local or otherwise, and for their payment, water, power, healthcare backup, transport and, when appropriate, housing. ii. The Contractor is encouraged, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from sources within India. iii. No Engineer of gazetted rank or other gazetted officer employed in Engineering or administrative duties in an Engineering Department of the Government of Punjab shall work as a Contractor or employee of a Contractor for a period of two years after his retirement from Government service without the previous permission of State Government in writing. The Contract is liable to be cancelled if either the Contractor or any of his employees is found at any time to be such a

		person who had not obtained said permission prior to engagement in the Contractor's service, as the case may be.
Bidder barred from bidding if near Relatives working in Procuring Entity's office	6.2	<p>The Contractor shall not be permitted to bid for works of a Procuring Entity in which his near relative is an employee. He shall also not have a person as his employee who is a near relative of an employee of the Procuring Entity. Any breach of this condition by the Contractor shall be considered as breach of Code of Integrity and shall render him liable to action under Section 11(3) of the Act which includes exclusion of his Bid from procurement process, forfeiture of Bid Security, Performance Security or any other security or bond relating to procurement, recovery of payments made, if any, along with interest at bank rate, cancellation of the Contract, if already made, debarment from future bidding for a period up to three years, etc.</p> <p>Note: By the term 'near relative' is meant wife, husband, parents and grandparents, children and grand- children, brothers and sisters, uncles and cousins and their corresponding in- laws.</p>
Employment of Technical Staff and other Employees	6.3.1	<p>The Contractor shall Engage technical personnel as per list provided for in the Contract and provide all necessary superintendence during execution of the Works and as long thereafter as may be necessary for proper fulfilling of the obligations under the Contract. The EIC of the Contractor shall be his principal technical representative. Other personnel shall be engaged as specified in the qualification criteria.</p>
	6.3.2	<p>The technical staff should always be available at site whenever required by Engineer-in-charge to take instructions.</p> <p>The Contractor shall comply with the provisions of the Apprenticeship Act, 1961, and the Rules and Orders issued, there under, from time to time. If he fails to do so, his failure will be a breach of Contract. The Contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.</p>
Responsibility of the Technical Staff and employees	6.4	<p>Technical officers/ staff deployed by the Contractor at any construction Site will be responsible for proper quality of Works and physical targeted progress of the Works.</p>
Rate of Wages and Conditions of Labour	6.5	<p>The Contractor shall not pay less than fair wages/ minimum wages to labourers engaged by him on the Works as revised from time to time by the State Government, but the Procuring Entity shall not be liable to pay anything extra for it except as stipulated in price escalation Sub-Clause of the agreement.</p> <p>Explanation: "Fair Wage" means minimum wages for time or piece work, fixed or revised, by the State Government under the Minimum Wages Act, 1948.</p> <p>The Contractor shall, notwithstanding the provisions of any contract to the contrary, cause to be paid fair wages to labourers directly or indirectly engaged on the Works, including any labour engaged by his Sub-Contractors in connection with the said Works as if the labourers have been immediately or directly employed by him.</p> <p>In respect of all labourers, immediately or directly employed on the Works, for the purpose of Contractor's part of this agreement, the Contractor shall comply with or cause to be complied with the Public Works Department Contractor's Labour Regulations made, or that maybe made by the State Government from time to time in Regard to payment of wages, wage period, deductions from wages, recovery of wages not paid, and unauthorized deductions, maintenance of wages register, wage card, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and other matters of a like nature.</p>

		<p>The Engineer-in-charge shall have the right to deduct from the money due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers, by reasons of non-fulfilment of the conditions of the Contract, for the benefit of the worker or the workers, non-payment of wages or of deductions made there from, which are not justified by the terms of the Contract, or as a result of non-observance of the aforesaid regulations.</p> <p>Vis-à-vis the State Government of Punjab, the Contractor shall be primarily liable for all payments to be made and for the observance of the regulations aforesaid, without prejudice to his right to claim indemnity from his Sub-Contractors.</p> <p>The regulations, aforesaid, shall be deemed to be part of this Contract and any breach, thereof, shall be deemed to be breach of the Contract.</p>
Contractor not to engage staff of Procuring Entity	6.6	The Contractor shall not recruit, or attempt to recruit, full time (on leave) or part time the staff and labour from amongst the Procuring Entity's Personnel in any capacity.
Working Hours	6.7	<p>No work shall be carried out on the Site on locally recognized Days of rest, or outside the normal working hours stated in the Contract Data, unless:</p> <ul style="list-style-type: none"> i otherwise stated in the Contract, ii. the Engineer-in-charge gives consent, or iii the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Engineer-in-charge.
Facilities for Staff and Labour	6.8	<p>Except as otherwise stated in the Specifications, the Contractor shall provide and maintain all necessary accommodation and welfare facilities for the Contractor's Personnel. The Contractor shall also provide work site facilities for the Procuring Entity's Personnel as stated in the Specifications.</p> <p>The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.</p>
Health & Safety	6.9	<p>The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay, doctor at call and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Procuring Entity's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.</p> <p>The Contractor shall appoint a safety officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified and trained for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the execution of the Works, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.</p> <p>The Contractor shall send, to the Engineer-in-charge, details of any accident occurred at the Site or to or due to the Works, as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer- in-charge may reasonably require.</p>
Contractor's Superintendence	6.10	Throughout the execution of the Works, and as long thereafter as is necessary to fulfil the Contractor's obligations, the Contractor shall

		<p>provide all necessary superintendence to plan, arrange, direct, manage, inspect and test the Works.</p> <p>Superintendence shall be given by a sufficient number of persons having adequate knowledge of the language for communications (defined in Sub-Clause 1.4 [Law and Language] and of the operations to be carried out (including the methods and techniques required, the hazards likely to be encountered and methods of preventing accidents), for the satisfactory and safe execution of the Works.</p>
Contractor's Personnel	6.11	<p>Contractor's Personnel shall be appropriately qualified, skilled and experienced in respective trades or occupations. The Engineer-in-charge may require the Contractor to remove (or cause to be removed) any person employed on the Site or Works, including the Contractor's Representative, if applicable, who:</p> <ul style="list-style-type: none"> i. persists in any misconduct or lack of care, ii. carries out duties incompetently or negligently, iii. fails to conform with any provisions of the Contract, or iv. Persists in any conduct which is prejudicial to safety, health, or the protection of the environment. <p>If appropriate, the Contractor shall then appoint (or cause to be appointed) a suitable replacement person.</p>
Records of Contractor's personnel and Equipment	6.12	The Contractor shall provide all required equipment, machinery at the Site and submit to the Engineer-in-charge, details showing the number of each category of Contractor's Personnel and of each type of Contractor's Equipment on the Site. Details shall be submitted each calendar month, in a form approved by the Engineer-in-charge, until the Contractor has completed all work which is known to be outstanding at the completion date stated in the Taking-Over Certificate for the Works.
Disorderly Conduct	6.13	The Contractor shall at all times take all reasonable precautions to prevent any unlawful, riotous or disorderly conduct by or amongst the Contractor's Personnel, and to preserve peace and protection of persons and property on and near the Site.
Foreign Personnel	6.14	<p>Is permitted, the Contractor may bring in to the Country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Procuring Entity will, if requested by the Contractor, use his best endeavours in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or Government permission required for bringing in the Contractor's personnel.</p> <p>The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.</p>
Supply of Food Stuffs	6.15	The Contractor shall arrange for the provision of a sufficient supply of suitable food stuff as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.
Supply of Water and Electricity	6.16	<p>The Contractor shall, provide at his cost an adequate supply of potable drinking water, as well as water for use in construction and for use of the Contractor's Personnel, at site.</p> <p>The Contractor shall, provide at his cost an adequate supply of electricity for use in construction and for use of the Contractor's Personnel, at site.</p>

Measures against Insect and Pest Nuisance	6.17	The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.
Alcoholic Liquor or Drugs	6.18	The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift, barter or disposal there to by Contractor's Personnel. He shall also not allow the consumption of such Alcoholic Liquor/Drugs at Site during working hours.
Arms and Ammunition	6.19	The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.
No unlicensed storage of Explosives and POL	6.20	The Contractor is not authorised to store explosives and POL or other inflammable materials without a valid license from the competent legal authority.
Prohibition of Forced or Compulsory labour	6.21	The Contractor shall not employ forced or compulsory labour, which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.
Prohibition of Child Labour	6.22	The Contractor shall comply with the provisions of Acts and rules pertaining to prohibition of employment of child labour including not employing any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.
Festivals and Religious Customs	6.23	The Contract or shall respect the Country's recognized festivals, days of rest and religious or other customs.
Employment Records of Workers	6.24	The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Engineer-in-charge, and these records shall be available for inspection by Auditors / labour inspectors and others as per law during normal working hours. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.12 [Records of Contractor's Personnel and Equipment].
Compliance with Labour Laws	6.25	<p>The Contractor shall comply with all the relevant labour Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights. The Contractor shall require his employees to obey all applicable Laws, including those concerning safety at work.</p> <p>The Contractor shall obtain a valid license under the State Labour Act, and the Contract Labour (Regulation and Abolition) Central Rules 1961, before the commencement of the Works, and continue to have a valid license until the completion of the Works. The Contractor shall also abide by the provisions of the Child Labour (Prohibition and Regulation) Act, 1986.</p> <p>The Contractor shall also comply with the provisions of the Building and Other Construction Workers (Regulation of Employment & Conditions of</p>

		Service) Act, 1996 and the Building and Other Construction Workers Welfare Cess Act, 1996.
Payment of Wages	6.26	<ul style="list-style-type: none"> i The Contractor shall pay to labour employed by him either directly or through Sub-Contractors, wages not less than fair wages as defined in P.W.D. Contractor's Labour Regulations or as per the provisions of the Contract Labour (Regulation and Abolition) Act 1970 and the Contract Labour (Regulation and Abolition) Central Rules, 1971, where applicable. ii The Contractor shall, notwithstanding the provisions of any Contract to the contrary, cause to be paid for wages to labour indirectly engaged on the Works including any labour engaged by his sub-Contractors in connection with the said Works, as if the labour had been immediately employed by him.
Penalty for non-compliance with labour Laws	6.27	<ul style="list-style-type: none"> i In respect of all labour directly or indirectly employed in the Works of performance of the Contractor's Part of this Contract, the contractor shall comply with or cause to be complied with the Public Works Department Contractor's Labour Regulations made by the Government from time to time in regard to payment of wages, wage period, deductions from wages, recovery of wages not paid and any unauthorised deductions made, maintenance of wage books or wage slips, publication of scale of wages and other terms of employment, inspection and submission of periodical returns and all other matters of the like nature as per the Provisions of Contract Labour (Regulation & Abolition) Act, 1970, and the Contract Labour (Regulation & Abolition) Central Rules, 1971, wherever applicable. ii The Engineer-in-Charge concerned shall have the right to deduct from the moneys due to the Contractor any sum required or estimated to be required for making good the loss suffered by a worker or workers by reason of non-fulfilment of the conditions of the Contract for the benefit of the workers, non-payment of wages or of deductions, made from his or their wages which are not justified by their terms of the Contract or non-observance of the Regulations. iii Under the provision of Minimum Wages (Central) Rules 1950, the Contractor is bound to allow to the labour directly or indirectly employed in the Works one day rest for 6 Days continuous work and pay wages at same rate as for duty. In the event of default the Engineer-in-Charge shall have the right to deduct the sum or sums not paid on account of wages for weekly holidays to any labour and pay the same to the persons entitled thereto from any money due to the Contractor by the Engineer-in-Charge concerned. iv The Contractor shall comply with the provisions of the Payment of Wages Act, 1936, Minimum Wages Act, 1948, Employees Liability Act, 1938, Workmen's Compensation Act, 1923, industrial Disputes Act, 1947, Maternity Act, 1970, or the modifications thereof or any other relevant Labour Laws and the rules made there under from time to time. v The Contractor shall indemnify and keep indemnified the State Government/ Procuring Entity against payments to be made under and for the observance of the Laws aforesaid and the P.W.D. Contractor's Labour Regulations without prejudice to his right to claim indemnity from his Sub- Contractors.

		<p>vi The Laws aforesaid shall be deemed to be a part of this Contract and any breach thereof shall be deemed to be a breach of this Contract.</p> <p>vii Whatever is the minimum wage for the time being, or if the wage payable higher than the minimum wage, such wage shall be paid by the Contractor to the workmen directly without the intervention of Jamadar and that Jamadar shall not be entitled to deduct or recover any amount from the minimum wage payable to the workmen as and by way of commission or otherwise. The Contractor shall ensure that no amount by way of commission or otherwise is deducted or recovered by the Jamadar from the wage of workmen.</p>
7. Execution of works and workmanship		
Manner of Execution	7.1	<ol style="list-style-type: none"> 1. The Contractor shall procure and transport all materials in an expeditious and orderly manner to the Site and shall at its own risk and expense transport all the materials and the Contractor's Equipment to the Site by the mode of transport that the Contractor judges most suitable under all the circumstances. 2. Unless otherwise provided in the Contract, the Contractor shall be entitled to select any safe mode of transport operated by any person to carry the materials and the Contractor's Equipment. 3. Upon dispatch of each shipment of materials and the Contractor's Equipment, the Contractor shall notify the Employer by telex, cable, facsimile, or electronic means, of the description of the materials and of the Contractor's Equipment, the point and means of dispatch, and the estimated time and point of arrival in the country where the Site is located, if applicable, and at the Site. The Contractor shall furnish the Employer with relevant shipping documents to be agreed upon between the parties. 4. The Contractor shall be responsible for obtaining, if necessary, approvals from the authorities for transportation of the materials and the Contractor's Equipment to the Site. The Employer shall use its best endeavors in a timely and expeditious manner to assist the Contractor in obtaining such approvals, if requested by the Contractor. The Contractor shall indemnify and hold harmless the Employer from and against any claim for damage to roads, bridges, or any other traffic facilities that may be caused by the transport of the materials and the Contractor's Equipment to the Site. 5. The Contractor shall, at its own expense, handle all imported materials and Contractor's Equipment at the point(s) of import and shall handle any formalities for customs clearance, subject to the Employer's obligations under GCC, provided that if applicable laws or regulations require any application or act to be made by or in the name of the Employer, the Employer shall take all necessary steps to comply with such laws or regulations. In the event of delays in customs clearance that are not the fault of the Contractor, the Contractor shall be entitled to an extension in the Time for Completion, pursuant to GCC Clause 40. 6. The Contractor will carry out works, production of mixes, the procurement of input materials, and all other execution of the Works: <ul style="list-style-type: none"> a. in the manner (if any) specified in the Contract, b. in a proper workman like and careful manner, in

		<p>accordance with recognized good practices, and</p> <p>c. with properly equipped facilities and non-hazardous materials, except as otherwise specified in the Contract.</p>
Samples	7.2	<p>The Contractor shall submit the following samples of Materials, and relevant information, to the Engineer-in-charge for consent prior to using the Materials in or for the Works:</p> <ul style="list-style-type: none"> i Contractor's standard samples of raw/ produced Materials and samples specified in the Contract, all at the Contractor's Cost, and ii additional samples instructed by the Engineer-in-Charge as a Variation. Each sample shall be labelled as to origin and intended use in the Works. <p>Samples shall also be collected by the Quality testing/inspection teams from the works in progress and the Contractor shall willingly cooperate with such quality assurance procedures.</p>
Inspection	7.3	<p>7.3.1 The Procuring Entity's Personnel shall at all reasonable times:</p> <ul style="list-style-type: none"> i have full access to all parts of the Site and to all places from which natural materials are being obtained, and ii during production, manufacture and construction (at the Site and elsewhere), be entitled to examine, inspect, measure and test the materials and workmanship, and to check the progress of manufacture of Plant and production and manufacture of materials. <p>The Contractor shall give the Procuring Entity's Personnel full opportunity to carry out these activities, including providing access, facilities, permissions and safety equipment. No such activity shall relieve the Contractor from any obligation or responsibility.</p> <p>7.3.2 The Contractor shall give notice of minimum 07 days to the Engineer-in- charge whenever any work is ready and before it is covered up, put out of sight, or packaged for storage or transport, beyond measurement, any work in order that the same may be measured and correct dimensions thereof, be taken before the same is covered up. The Engineer-in-charge shall then either carry out the examination, inspection, measurement or testing without unreasonable delay, or promptly give notice to the Contractor that the Engineer-in-charge does not require to do so. If the Contractor fails to give the notice, he shall, if and when required by the Engineer-in-charge, uncover the work and thereafter reinstate and make good, all at the Contractor's Cost.</p> <p>7.3.3 The Engineer-In-Charge may require the Contractor to carry out any test and/or inspection not required by the Contract, provided that the Contractor's reasonable costs and expenses incurred in the carrying out of such test and/or inspection shall be added to the Contract Price. Further, if such test and/or inspection impedes the progress of work on the Facilities and/or the Contractor's performance of its other obligations under the Contract, due allowance will be made in respect of the Time for Completion and the other obligations so affected.</p> <p>7.3.4 The Contractor shall provide the Engineer-In-Charge (EIC) with a certified report of the results of any such test and/or inspection.</p> <p>If the Employer or EIC or their designated representatives fails to attend the test and/or inspection, or if it is agreed between the parties that such persons shall not do so, then the Contractor may proceed with the test</p>

		<p>and/or inspection in the absence of such persons, and may provide the EIC with a certified report of the results thereof.</p> <p>7.3.5 If any Plant or any part of the Facilities fails to pass any test and/or inspection, the Contractor shall either rectify or replace such Plant or part of the Facilities and shall repeat the test and/or inspection upon giving a notice under GCC Subclause 7.3.1</p> <p>7.3.6 The Contractor agrees that neither the execution of a test and/or inspection of Plant or any part of the Facilities, nor the attendance by the Employer or the EIC, nor the issue of any test certificate pursuant to GCC Subclause 7.3.4, shall release the Contractor from any other responsibilities under the Contract.</p> <p>7.3.7 No part of the Facilities or foundations shall be covered up on the Site without the Contractor carrying out any test and/or inspection required under the Contract. The Contractor shall give a reasonable notice to the EIC whenever any such parts of the Facilities or foundations are ready or about to be ready for test and/or inspection; such test and/or inspection and notice thereof shall be subject to the requirements of the Contract. The Contractor shall uncover any part of the Facilities or foundations, or shall make openings in or through the same as the EIC may from time to time require at the Site, and shall reinstate and make good such part or parts.</p>
Stores supplied by the Procuring Entity <i>(Not applicable in case of Lump Sum Contract)</i>	7.4	If the specification or estimate of the Works provide for the use of any special description of materials, to be supplied from the Engineer In Charge's stores, or if, it is required that Contractor shall use certain stores to be provided by the Engineer In Charge specified in the Schedule or Memorandum hereto annexed, the Contractor shall be bound to procure and shall be supplied such materials and stores as are, from time to time, required to be used by him for the purpose of the Contract only, and the value of the full quantity of materials and stores, so supplied, at the rates specified in the said Schedule or Memorandum, may be set off or which may be deducted from any sum, then due or thereafter become due, to the Contractor under the Contract or otherwise or against or from the Performance Security or the proceeds of sale, if the same is held in Government securities, the same or a sufficient portion thereof being in this case, sold for this purpose. All materials supplied to the Contractor, either from departmental stores or with the assistance of the Procuring Entity, shall remain the absolute property of the Procuring Entity. The Contractor shall be the trustee of the stores/ materials, so supplied/ procured and these shall not, on any account, be removed from the Site of the Works and shall be, all times, open to inspection by the Engineer In charge. Any such materials, unused and in perfectly good condition at the time of completion or determination or rescinding of the Contract, shall be returned to the Engineer In charge's Stores, if, by a notice in writing under his hand, he shall so require, and if on service of such notice, the Contractor fails to return the materials, so required, he shall be liable to pay the price of such materials. But the Contractor shall not be entitled to return any such materials, unless with such consent, and shall have no claim for compensation on account of any such materials, so supplied to him as aforesaid being unused by him, or for any wastage in or damage to any such materials. For the stores returned by the

		Contractor, he shall be paid for, at the price originally charged excluding storage charges, in case of materials supplied from departmental stores and actual cost including freight, cartage, taxes etc., paid by the Contractor, in case of supplies received with the assistance of the Procuring Entity, however, should in no case exceed market rate prevailing at the time the materials are taken back. The decision of the Engineer In charge, as to the price of the stores returned, keeping in view its condition etc., shall be final and conclusive. In the event of breach of the aforesaid condition, the Contractor shall, in addition to throwing himself open to account for contravention of the terms of the license or permit and/or for criminal breach of trust, pay to the Procuring Entity, all advantages or profits resulting or which in the usual course, would result to him by reason of such breach. Provided that the Contractor shall, in no case be entitled to any compensation or damage on account of any delay in supply, or non-supply thereof, all or any such materials and stores.
Penalty rate in case of excess consumption <i>(Not applicable in case of Lump Sum Contract)</i>	7.5	The Contractor shall return the materials issued free of cost to him and found surplus after its intended consumption in the Works, immediately. The Contractor shall be charged for the materials which were not returned or consumed in excess of the requirements calculated on the basis of standard consumption approved by the Procuring Entity, at double of the issue rate including storage and supervision charges or market rate, whichever is higher. A Materials Supply and Consumption Statement shall be submitted with every Payment Certificate, distinguishing materials supplied by the Procuring Entity and materials procured by the Contractor himself. The recovery for such materials shall be made from Payment Certificate next after the consumption and shall not be deferred. Certificate of such nature shall be given in each Payment Certificate.
Hire of Plant and Machinery	7.6	Plant and Machinery, required for execution of the Works, may be issued to the Contractor, if available, on the rates of hire charges and other terms and conditions as per the departmental/ Organisation Rules. Rates of such Plant & Machinery shall be got revised periodically so as to bring them at par with market rate.
Imported Store articles to be obtained from the Procuring Entity <i>(Not applicable in case of Lump Sum Contract)</i>	7.7	The Contractor shall obtain from the stores of the Engineer-in-charge, all imported store articles, which may be required for the Works or any part thereof, or in making up articles required thereof, or in connection therewith, unless he has obtained permission, in writing, from the Engineer In charge. To obtain such stores and articles from elsewhere. The value of such stores and articles, as may be supplied to the Contractor by the Engineer In charge, will be debited to the Contractor, in his account at cost price, which for the purposes of this Contract, shall include the cost of carriage and all other expenses, whatsoever, which shall have been incurred in obtaining delivery of the same at the stores aforesaid plus storage charges.
Materials Supplied by the Contractor	7.8	The Contractor shall, at his own expense, provide all materials conforming to the specifications from the sources approved by the Engineer-In-Charge, required for the Works other than those, which are stipulated, to be supplied by the Procuring Entity. Samples for all such materials shall be collected by the Contractor and tested in the presence of representative of the Engineer-in-Charge, at the field laboratory established by the Contractor at the site. Tests which cannot be carried out at the field laboratory, shall be got tested at an NABL accredited laboratory, or any ISI approved laboratory or a

		<p>Government /Departmental laboratory approved by the Engineer-in-Charge. Only materials so approved shall be used in the works and any change of materials shall be similarly got approved again. Works constructed/executed with unapproved materials shall be summarily rejected without any further investigation or testing.</p> <p>The Contractor shall not be eligible for any claim or compensation either arising out of any delay in the work or due to any corrective measures required to be taken on account of and as a result of testing of materials.</p> <p>The Engineer-in-Charge shall have full powers to require the removal from the premises, of all materials which in his opinion are not in accordance with the Specifications and in case of default the Engineer-in-Charge shall be at liberty to employ at the expense of the Contractor, other persons to remove the same without being answerable or accountable for any loss for damage that may happen or arise to such Materials. The Engineer-in-Charge shall also have full powers to require other proper Materials to be substituted thereof and in case of default the Engineer-in-charge may cause the same to be supplied from other suitable sources and all Costs which may be incurred for such removal and substitution shall be borne by the Contractor.</p>
Testing	7.9.1	<p>This Sub-Clause shall apply to all tests specified in the Contract, other than the Tests after Completion (if any).</p> <p>Except as otherwise specified in the Contract, the Contractor shall provide a field laboratory with all apparatus, assistance, documents and other information, electricity, equipment, fuel, consumables, instruments, labour, materials, and suitably qualified and experienced staff, as are necessary to carry out the specified tests efficiently. The Contractor shall agree, with the Engineer- in- charge, the time and place for the specified testing of any Plant, Materials and other parts of the Works.</p> <p>The Engineer-in-charge may, under Sub-Clause 9.2.1 [Deviations/ Variations, Extent and Pricing], vary the location or details of specified tests, or instruct the Contractor to carry out additional tests. If these varied or additional tests show that the tested Plant, Materials or works or workmanship is not in accordance with the Contract, the Cost of carrying out this variation shall be borne by the Contractor, notwithstanding other provisions of the Contract.</p> <p>The Engineer-in-charge shall give the Contractor not less than 24 hours' notice of the Engineer-in-charge's intention to attend the tests. If the Engineer-in- charge does not attend at the time and place agreed, he may designate a qualified and authorised person to attend the testing, if not, the Contractor may approach the Procuring Entity for deputing an Engineer / any other experienced person to witness the tests. In no case shall the tests be conducted without an Engineer/competent person representing the Procuring Entity.</p>
	7.9.2	<p>If the Contractor suffers delay and/or incurs Cost from complying with these instructions or as a result of a delay for which the Procuring Entity is responsible, the Contractor shall give notice to the Engineer-in-charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion], and

		<p>ii payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters</p> <p>The Contractor shall promptly forward to the Engineer-in-charge, duly certified reports of the tests. When the specified tests have been passed, the Engineer-in-charge shall endorse the Contractor's test certificate.</p>
Cost of Samples	7.10	All samples shall be supplied by the Contractor at his own Cost if the supply thereof is clearly intended by or provided for in the Contract.
Cost of Tests	7.11	<p>The Cost of conducting any test shall be borne by the Contractor if such test is:</p> <ul style="list-style-type: none"> i. clearly intended by or provided for in the Contract, or ii. particularised in the Contract (In case only of a test under load or of a test to ascertain whether the design of any finished or partially finished work is appropriate for the purposes for which it was intended to fulfil) in sufficient detail to enable the Contractor to price or allow for the same in his Bid.
Cost of Tests not provided for	7.12	<p>If any test required by the Engineer-in-charge which is:</p> <ul style="list-style-type: none"> i. not so intended by or provided for in the Contract or codes; ii. (in the cases above mentioned) not so particularized, or iii. (though so intended or provided for), if required by the Engineer-in-charge to be carried out at any place other than the Site or the place of manufacture, fabrication or preparation of the Materials or Plant, on test shows the Materials, Plant or work or workmanship not to be in accordance with the provisions of the Contract/specifications to the satisfaction of the Engineer-in-charge, then the Cost of such test shall be borne by the Contractor, but in any other case Department/ Organisation will bear the Cost.
Rejection	7.13	<p>If, as a result of an examination, inspection, measurement or testing, any Plant, Materials, works or workmanship is found to be defective or otherwise not in accordance with the Contract, the Engineer-in-charge may reject the works, Plant, Materials or workmanship by giving notice to the Contractor, with reasons. The Contractor shall then promptly make good the defect and ensure that the reconstructed/ reproduced/replaced item complies with the Contract.</p> <p>If the Engineer-in-charge requires this Plant, Materials, works, or workmanship to be retested, the tests shall be repeated under the same terms and conditions. If the rejection and retesting cause the Procuring Entity to incur additional Costs, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay these Costs to the Procuring Entity.</p>
Remedial Work	7.14	<p>Notwithstanding any previous test or certification, the Engineer-in-charge may instruct the Contractor to:</p> <ul style="list-style-type: none"> i. remove from the Site and replace any works, Plant or Materials which is not in accordance with the Contract, ii. remove and re-execute any other work which is not in accordance with the Contract, and iii. execute any work which is urgently required for the safety of the Works, whether because of an accident, unforeseeable event or otherwise. <p>The Contractor shall comply with the instruction within a reasonable time, which shall be the time (if any) specified in the instruction, or immediately if urgency is specified under sub-paragraph iii.</p>

		If the Contractor fails to comply with the instruction, the Procuring Entity shall be entitled to employ and pay other persons to carry out the work. Except to the extent that the Contractor would have been entitled to payment for the work, the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity all Costs arising from this failure.
Ownership of Plant and Materials	7.15	Except as otherwise provided in the Contract, each item of Plant and Materials shall, to the extent consistent with the Contract, become the property of the Procuring Entity at whichever is the earlier of the following times, free from liens and other encumbrances: i when it is incorporated in the Works; ii when the Contractor is paid the corresponding value of the Plant and Materials under Sub-Clause 8.12 [Payment for Plant and Materials in event of Suspension].
Dismantled Material Government Property	7.16	The Contractor, in course of the Works, should understand that all materials e.g. stone, bricks, steel and other materials obtainable in the Works by dismantling etc. will be considered as the property of the Procuring Entity and will be disposed off to the best advantage of the Procuring Entity, as per directions, of the Engineer-in-charge.
Action where no Specifications are provided.	7.17	In the case of any class of works for which there are no specifications in Bureau of Indian Standards Specifications, Indian Road Congress for road Works and Indian Building Congress for building Works or any Central Government agency, or Departmental Specifications, such works shall be carried out in accordance with the relevant International Standards under the instructions and requirements of the Engineer-in-Charge.
Royalties	7.18	The Contractor shall pay all royalties, rents and other payments for: i. natural Materials obtained from outside the Site, and ii. disposal of materials from demolitions and excavations and of other surplus materials (whether natural or man-made), except to the extent that disposal areas within the Site are specified in the Contract. iii. the liability, if any, on account of quarry fees, royalties, octroi and any other taxes and duties in respect of materials, actually consumed on public work shall be borne by the Contractor.
8. Commencement, Delays and Suspension		
Fixing center lines, reference points and bench marks.	8.1	The basic centre lines, reference points and benchmarks will be fixed by the Contractor and checked/confirmed by the Engineer-in-Charge. The Contractor shall establish at his own Cost at suitable points, additional reference lines and benchmarks as may be necessary and instructed by the Engineer-in-Charge. The Contractor shall remain responsible for the sufficiency and accuracy of all the benchmarks and reference lines.
Setting out of works.	8.2	The Contractor shall set out the Works in relation to original points, lines and levels of reference specified in the Contract or notified by the Engineer-in-Charge. 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 Procuring Entity shall be responsible for any errors in these specified or notified items of reference, but the Contractor shall use reasonable efforts to verify their accuracy before they are used. If the Contractor suffers delay and/or incurs Cost from executing work which

		<p>was necessitated by an error in these items of reference, and an experienced contractor could not reasonably have discovered such error and avoided this delay and/ or Cost, the Contractor shall give notice to the Engineer-in-Charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion], and ii. payment of any such Cost, which shall be included in the Contract Price. <p>After receiving this notice, the Engineer-in-Charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (a) whether and (if so) to what extent the error could not reasonably have been discovered, and (b) the matters described in sub-paragraphs i and ii above related to this extent.</p>
Commencement of Works	8.3.1	<p>Except otherwise specified in the Contract Data/ Special Conditions of Contract, the Commencement Date shall be the date at which the following precedent conditions have all been fulfilled and the Engineer-in-charge's instruction recording the agreement of both Parties on such fulfilment and instructing to commence the Work is received by the Contractor:</p> <ul style="list-style-type: none"> i signature of the Contract Agreement (after submission of Performance security and Insurance by the Contractor) by both Parties, and if required, approval of the Contract by relevant authorities; ii delivery to the Contractor of reasonable evidence of the Procuring Entity's Financial arrangements; iii except if otherwise specified in the Contract Data, possession of the Site given to the Contractor together with such permission(s) under (a) of Clause 2.1 [Right of Access to the Site] as required for the commencement of the Works; <p>The Contractor shall commence the execution of the Works as soon as is reasonably practicable after the Commencement Date, and shall then proceed with the Works with due expedition and without delay. The date of commencement and stipulated completion shall be entered in the Contract Agreement.</p>
	8.3.2	<p>In case, the work cannot be started within one-fourth time of the stipulated period of completion of the Works due to reasons not within the control of the Contractor as decided by the Procuring Entity, either Party may close the Contract. In such eventuality, the Performance Security of the Contractor shall be refunded, but no payment on account of interest, loss of profit or damages etc. shall be payable at all.</p>
Time for Completion	8.4	<p>The Contractor shall complete the whole of the Works, and each Section (if any), within the Time for Completion for the Works or Section (as the case may be), including:</p> <ul style="list-style-type: none"> i achieving the passing of the Tests on Completion, and ii completing all work which is stated in the Contract as being required for the Works or Section to be considered to be completed for the purposes of taking-over under Clause 12 [Taking Over of the Works and Sections]. iii completion of as built drawings and a manual for maintenance and operations, if required. iv completion of each milestone as per the current (original

		<p>updated every month) construction program.</p> <ul style="list-style-type: none"> v rectification and or reconstruction of all deficient items of work or works/items of works for which 'Non Conformance Reports' were issued. vi restoration of the approach roads, fencing and appurtenant works damaged during execution of the Contracted project and clearance of Site. vii Operation and maintenance of the facilities viii The Contractor shall commence work on the Facilities within the period specified in the SCC and without prejudice to any GCC Subclause hereof, the Contractor shall thereafter proceed with the Facilities in accordance with the time schedule specified in the Appendix 2 (Time Schedule) to the Contract Agreement. ix The Contractor shall attain Completion of the Facilities or of a part where a separate time for Completion of such part is specified in the Contract, within the time stated in the SCC or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.
Construction Programme <i>(Activity Schedule in case of Lump Sum Contract)</i>	8.5	<p>The Contractor shall submit a detailed execution time programme on MS Project or other similar software to the Engineer-in-charge within 28 Days after receiving the notice under Sub-Clause 8.3 [Commencement of Works]. The Contractor shall also submit a revised programme whenever the previous programme is inconsistent with actual progress or with the Contractor's obligations. Each programme shall be revised every month and shall include:</p> <ul style="list-style-type: none"> i the order in which the Contractor intends to carry out the Works, including the anticipated timing of each stage of design (if any), drawings, Contractor's Documents, procurement, manufacture of Plant, delivery to Site, construction of works, erection and testing, ii each of these stages for work by each Sub-Contractor/ Nominated Sub- Contractor, iii the sequence and timing of quality and other inspections and tests specified in the Contract, and iv a supporting report which includes: <ul style="list-style-type: none"> a. a general description of the time, methods which the Contractor intends to adopt, and of the major stages, in the execution of the Works, and b. details showing the Contractor's reasonable estimate of the number of each class of Contractor's Personnel and of each type of Contractor's Equipment, required on the Site for each major stage. <p>Unless the Engineer-in-charge, within 21 Days after receiving a programme, gives notice to the Contractor stating the extent to which it does not comply with the Contract, the Contractor shall proceed in accordance with the programme, subject to his other obligations under the Contract. The Procuring Entity's Personnel shall be entitled to rely upon the programme when planning their activities.</p> <p>The Contractor shall promptly give notice to the Engineer-in- charge of specific probable future events or circumstances which may adversely affect the Works, increase the Contract Price or delay the execution of the Works. The Engineer- in-charge may require the Contractor to submit an estimate of the anticipated effect of the future event or circumstances, and/or a proposal under Sub-Clause 9.2 [Deviations/</p>

		Variations Extent and Pricing]. If, at any time, the Engineer-in-charge gives notice to the Contractor that a programme fails (to the extent stated) to comply with the Contract or to be consistent with actual progress and the Contractor's stated intentions, the Contractor shall submit a revised programme to the Engineer-in-charge in accordance with this Sub-Clause.
Extension of Time for Completion	8.6	The Contractor shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to an extension of the Time for Completion if and to the extent that completion for the purposes of Clause 12 [Taking Over of the Works and Sections] is or will be delayed by any of the following causes: i. a Variation (unless an adjustment to the Time for Completion has been agreed under Clause 9 [Deviations, Variations and Adjustments] or other substantial change in the quantity/design of an item of work included in the Contract, ii. a cause of delay giving an entitlement to extension of time under a Sub- Clause of these Conditions, iii. exceptionally adverse climatic conditions, excluding the rains, high or low variations in temperatures, iv. Unforeseeable shortages in the availability of personnel or Goods caused by epidemic or Governmental actions, or v. any delay, impediment or prevention caused by or attributable to the Procuring Entity, the Procuring Entity's Personnel, or the Procuring Entity's other Contractors If the Contractor considers himself to be entitled to an extension of the Time for Completion, the Contractor shall give notice to the Engineer-in-charge in accordance with Sub-Clause 21.2 [Contractor's Claims]. When determining each extension of time under Sub-Clause 3.5 [Determinations], the Engineer-in- charge shall review previous determinations and may increase, but shall not decrease, the total extension of time.
Delays Caused by Authorities	8.7	If the following conditions apply, namely: i. the Contractor has diligently followed the procedures laid down by the relevant legally constituted public authorities in the Country, ii. these authorities delay or disrupt the Contractor's work, and iii. the delay or disruption was Unforeseeable, Then this delay or disruption will be considered as a cause of delay under Sub- Clause 8.6 [Extension of Time for Completion].
Rate of progress of works.	8.8	As soon as possible after the Contract is concluded the Contractor shall submit a time and progress chart (preferably on MS Project or other similar software) for each milestone and get it approved by the Engineer-in-Charge. The chart shall be prepared in direct relation to the time stated in the Contract documents for completion of items of the work. It shall indicate the forecast of the dates of commencement and completion of various tasks or sections of the work and may be amended as necessary by agreement between the Engineer- in-Charge and Contractor within the limitations of time imposed in the Contract documents, and further to ensure good progress during the execution of the work, the Contractor shall in all cases in which the time allowed for any work, exceeds one month complete the work as per milestone. If, at any time: i. actual progress is too slow to complete within the Time for Completion, and/or progress has fallen (or will fall) behind the

		<p>current programme under Sub-Clause 8.5 [Construction Programme], other than as a result of a cause listed in Sub-Clause 8.6 [Extension of Time for Completion], then the Engineer-in-charge may instruct the Contractor to submit, under Sub-Clause 8.5 [Construction Programme], a revised programme and supporting report describing the revised methods which the Contractor proposes to adopt in order to expedite progress and complete within the Time for Completion.</p> <ul style="list-style-type: none"> ii. Unless the Engineer-in-Charge notifies otherwise, the Contractor shall adopt these revised methods, which may require increases in the working hours and/or in the numbers of Contractor's Personnel and/or Goods, at the risk and Cost of the Contractor. If these revised methods cause the Procuring Entity to incur additional Costs, the Contractor shall subject to notice under Sub-Clause 2.5 [Procuring Entity's Claims] pay these Costs to the Procuring Entity, in addition to delay damages (if any) under Sub-Clause 8.9 below. iii. Additional Costs of revised methods including acceleration measures, instructed by the Engineer-in-charge to reduce delays resulting from causes listed under Sub-Clause 8.6 [Extension of Time for Completion] shall be paid by the Procuring Entity, without generating, however, any other additional payment benefit to the Contractor <p>If the progress of the work has fallen so much in arrears as to prevent other contractors on the work from carrying out their part of the work within the stipulated time, he will be liable for the settlement of any claim put in by any of these contractors for the expenses of keeping their labour unemployed to the extent considered reasonable by the Engineer-in-charge.</p>
Compensation/ Damages for Delay (Liquidated Damage)	8.9	<ul style="list-style-type: none"> I. If the Contractor fails to maintain the required progress in terms of Sub- Clause 8.4 [Extension of Time for Completion] or to complete the Works and clear the Site on or before the original or extended date of completion, he shall, without prejudice to any other right or remedy available under the Law to the procuring Entity on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below as the Engineer-in-charge (whose decision in writing shall be final and binding) may decide on the amount of contracted value of the Works for every time span that the progress remains below that specified in Sub- Clause 8.4 [Extension of Time for Completion] or that the Works remains incomplete. This will also apply to items or group of items for which a separate period of completion has been specified. II. To ensure good progress during the execution of Works, the Contractor shall be bound, in all cases in which the time allowed for any Works exceeds one month (save for special jobs or where time spans have been fixed in light of the specific construction program), to complete 1/8th of the whole of the work before 1/4th of the whole time allowed under the contract has elapsed, 3/8th of the work before 1/2 of such time has elapsed and 3/4th of the work before 3/4 of such time has elapsed. If the Contractor fails to complete the work in accordance with this time schedule in terms of cost in money, and the delay of execution of Works is attributable to the Contractor, the Contractor shall be liable to pay compensation to

	<p>the Procuring Entity at every time span as below:</p> <p>For delay beyond the scheduled completion period of six months, liquidated damages equivalent to 0.5% of the total Contract Value for each week or part thereof shall be imposed. Maximum delay period shall be 8 weeks after which Termination of Contract can be initiated.</p> <p>Note-1: In case delayed period over a particular time span is split up and is jointly attributable to the Procuring Entity and the Contractor, the competent authority may reduce the compensation in proportion of delay attributable to the Procuring Entity over entire delayed period over that time span after clubbing up the split delays attributable to the Procuring Entity and this reduced compensation would be applicable over the entire delayed period without paying any escalation.</p> <p>Note-2: The compensation, levied as above, shall be recoverable from the Payment Certificate payable after the concerned time span. The total compensation for delays shall, however, not exceed 7.5 percent of the total value of the Works.</p> <p>III. The Contractor shall further be bound to carry out the work in accordance with the date and quantity entered in the progress statement attached to the Bid. However, if a time schedule has been submitted by the Contractor before execution of the agreement, and it is entered in agreement as submitted or as modified by the Procuring Entity or the Engineer-in-Charge, the Contractor shall complete the Works within the said time schedule. In the event of the Contractor failing to comply with the time schedule, he shall be liable to pay compensation as prescribed in foregoing paragraph of this Sub-Clause. While granting extension in time attributable to the Procuring Entity, reasons shall be recorded for each delay.</p> <p>IV. The amount of compensation may be adjusted or set off against any sum payable to the Contractor under this or any Contract with the Procuring Entity. In case, the Contractor does not achieve a particular milestone mentioned in Contract Data or the rescheduled milestone(s), the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of extension of time.</p> <p>V. Withholding of this amount on failure to achieve a milestone shall be automatic without any notice to the Contractor. However, if the Contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the Contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequent also shall be withheld. However, no interest, whatsoever, shall be payable on such withheld amount.</p> <p>VI. If the Contract is completed in the original time period as agreed upon in the Contract, then the Liquidated Damages so imposed for delays of intermediate milestones will be adjusted/ paid. Also, price escalation shall not be applicable if Liquidated Damages have been imposed. However, if the Contractor finishes the work as per the original time period, he shall be eligible to receive the price escalation.</p>
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Suspension of Work	8.10.1	<p>I. If the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix (Terms and Procedures of Payment) to the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Subclause 18.3, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, or fails to remedy the breach or take steps to remedy the breach within 14 days after receipt of the Contractor's notice; or</p> <p>II. the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas in accordance with GCC Subclause 18.3, or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities,</p> <p>then the Contractor may by 14 days' notice to the Employer suspend performance of all or any of its obligations under the Contract, or reduce the rate of progress.</p> <p>8.10.1.3 If the Contractor's performance of its obligations is suspended, or the rate of progress is reduced pursuant to this GCC Clause 8.10, then the Time for Completion shall be extended in accordance with GCC Subclause 39.1, and any and all additional costs or expenses incurred by the Contractor as a result of such suspension or reduction shall be paid by the Employer to the Contractor in addition to the Contract Price, except in the case of suspension order or reduction in the rate of progress by reason of the Contractor's default or breach of the Contract.</p> <p>8.10.1.4 During the period of suspension, the Contractor shall not remove from the Site any Plant, any part of the Facilities or any Contractor's Equipment, without the prior written consent of the Employer.</p>
	8.10.2	<p>The Contractor shall, on receipt of the order in writing of the Engineer-in-Charge (whose decision shall be final and binding on the Contractor) suspend the progress of the Works or any part thereof for such time and in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage or injury to the work already done or endanger the safety thereof, for any of the following reasons:</p> <ul style="list-style-type: none"> i. on account of any default on the part of the Contractor; or ii. for proper execution of the Works or part thereof for reasons other than the default of the Contractor; or iii. for safety of the Works or part thereof. <p>The Contractor shall, carry out the instructions given in that behalf by the Engineer-in-Charge.</p>

		If the suspension is ordered for reasons ii and iii above, the Contractor shall be entitled to an extension of time equal to the period of every such suspension for completion of the item or group of items of work for which a separate period of completion is specified in the Contract and of which the suspended work forms a part.
Consequences of Suspension	8.11	<p>If the Contractor suffers delay and/ or incurs Cost from complying with the Engineer-in-charge's instructions under Sub-Clause 8.10 [Suspension of Work] and/ or from resuming the work, the Contractor shall give notice to the Engineer- in- charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i. An extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion], and ii. payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters. <p>The Contractor shall not be entitled to an extension of time for, or to payment of the Cost incurred in making good the consequences of the Contractor's faulty design, workmanship or Materials, or of the Contractor's failure to protect, store or secure the work in accordance with Sub-Clause 8.10 [Suspension of Work].</p>
Payment for Plant and Materials in Event of Suspension	8.12	<p>The Contractor shall be entitled to payment of the value (as at the date of suspension) of Plant and/ or Materials which have not been delivered to Site, if:</p> <ul style="list-style-type: none"> i. the work on Plant or delivery of Plant and/ or Materials has been suspended for more than 28 Days, and ii. The Contractor has marked the Plant and/ or Materials as the Procuring Entity's property in accordance with the Engineer-in-charge's instructions.
Prolonged Suspension	8.13	<p>If the suspension under Sub-Clause 8.10 [Suspension Work] has continued for more than 84 Days, the Contractor may request the Engineer-in-charge's permission to proceed. If the Engineer-in- charge does not give permission within 28 Days after being requested to do so, the Contractor may, by giving notice to the Engineer-in-charge, treat the suspension as an omission under Sub-Clause 9.2 [Deviations/ Variations Extent and Pricing] of the affected part of the Works. If the suspension affects the whole of the Works, the Contractor may give notice of termination under Sub-Clause 17.2 [Termination by Contractor].</p>
Resumption of Work	8.14	<p>After the permission or instruction to proceed is given, the Contractor and the Engineer-in-charge shall jointly examine the Works and the Plant and Materials affected by the suspension. The Contractor shall make good any deterioration or Defect in or loss of the Works or Plant or Materials, which has occurred during the suspension after receiving from the Engineer-in- charge an instruction to this effect under Sub-Clause 9.2 [Deviations/ Variations, Extent and Pricing].</p>
Work to be executed strictly as per specifications	8.15	<p>All Works under or in course of execution or executed in pursuance of the Contract shall at all times be executed strictly as per specifications of the Contract as established by regular testing at the specified frequency and be open and accessible to the quality inspection and supervision of the Engineer- in-Charge, his authorized subordinates in charge of the work and all the superior officers, officers of the Quality Control Organization, Third Party Inspection Agency, if</p>

		engaged by the Procuring Entity, and the Contractor shall, at all times, during the usual working hours and at all other times at which reasonable notice of the visit of such officers has been given to the Contractor, either himself be present to receive written orders and instructions or have a responsible agent duly accredited in writing, present for that purpose. Orders given to the Contractor's agent shall be considered to have the same force as if they had been given to the Contractor himself. All payments shall be linked to the specified quality of works and works failing on tests or not executed as per design, drawings and specifications shall not be paid unless rectified to the specified quality by the Contractor.
Action when Work executed with unsound materials, imperfect and unskilled workmanship	8.16	If it shall be established through regular testing or post execution quality testing by the third party quality inspection agency to the Engineer-in-Charge or his higher authority or his authorized subordinates in charge of the Works, that any work has been executed with unsound, imperfect, or unskilled workmanship, or with Materials or articles provided by him for the execution of the work which are unsound or of a quality inferior to that contracted or otherwise not in accordance with the Contract, the Contractor shall, on demand in writing from the Engineer-in-Charge specifying the work, Materials or articles complained of, notwithstanding that the same may have been passed, certified and paid for, forthwith rectify, or remove and reconstruct the work so specified in whole or in part, as the case may require or as the case may be, remove the Materials or articles so specified and reconstruct, provide other proper and suitable Materials or articles at his own charge and Cost. In the event of the Contractor failing do so within a period specified by the Engineer-in-Charge in his demand aforesaid, then the Contractor shall be liable to pay compensation for the specified period, at the same rate as under Sub-Clause for non-completion of the work in time for this default. In such case the Engineer-in-Charge may not accept the item of work at the rates applicable under the Contract but may accept such items at reduced rates as the competent authority may consider reasonable during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the structure and incidental items rectified, or removed and re-executed at the risk and cost of the Contractor. Decision of the Engineer- in-Charge to be conveyed in writing in respect of the same will be final and binding on the Contractor.
9. Deviations, variations and adjustments		
Right to Vary <i>(Additions and Alterations in case of Lump Sum Contract)</i>	9.1	Variations may be initiated by the Engineer-in-charge at any time during the execution of the Works prior to issuing the Taking-Over Certificate for the Works, either by an instruction or by a request for the Contractor to submit a proposal. The Contractor shall execute and be bound by each Variation, unless the Contractor promptly gives notice to the Engineer-in- charge stating (with supporting particulars) that: <ul style="list-style-type: none"> i. the Contractor cannot readily obtain the Goods required for the Variation, or ii. such Variation triggers a substantial change in the sequence or progress of the Works. Upon receiving this notice, the Engineer-in-charge shall cancel, confirm

		<p>or vary the instruction.</p> <p>Each Variation may include:</p> <ul style="list-style-type: none"> i. changes to the quantities of any item of work included in the Contract (however, such changes do not necessarily constitute a Variation), ii. changes to the quality and other characteristics of any item of work, iii. changes to the levels, positions and/or dimensions of any part of the Works, iv. omission of any work unless it is to be carried out by others, v. any additional work, Plant, Materials or services necessary or incidental to the Works, including any associated Tests on Completion, boreholes and other testing and exploratory work, vi. Changes to the sequence or timing of the execution of the Works. <p>The Contractor shall not make any alteration and/ or modification of the Permanent Works, unless and until the Engineer-in-charge instructs or approves a Variation.</p>
Deviations/ Variations Extent and Pricing	9.2.1	The Engineer-in-charge shall have power (i) to make alterations in, omissions from, additions to, or substitutions for the original Specifications, quantities, Drawings, designs and instructions that may appear to him to be necessary or advisable during the progress of the Works, and (ii) to omit a part of the Works in case of non-availability of a portion of the Site or for any other reasons and the Contractor shall be bound to carry out the Works in accordance with any instructions given to him in writing signed by the Engineer-in-charge after approval from competent authority and such alterations, omissions, additions or substitutions shall form part of the Contract as if originally provided therein and any altered, additional or substituted work which the Contractor may be directed to do in the manner specified above as part of the Works, shall be carried out by the Contractor on the same conditions in all respects including price on which he agreed to do the main work except as hereafter provided.
(In case of Lump Sum Contract, Rates of measured up additions and alterations shall be as per applicable BSR or rates of Day Work given be the Contractor and forming part of the Contract)	9.2.2	<p>The rates for such additional, altered or substituted works shall be determined in accordance with the following provisions:</p> <ul style="list-style-type: none"> i. If the rates for the additional, altered or substituted work are specified in the Contract for the Works, the Contractor is bound to carry out the additional, altered or substituted work at the same rates as are specified in the Contract for the Works. ii. If the rates for the additional, altered or substituted work are not specifically provided in the Contract for the Works, such rates will be derived from the rates for a similar class of work as are specified in the Contract for the Works. iii. If the rates for the additional, altered or substituted work cannot be determined in the manner specified in the sub-clauses i and ii above, then the rates for such composite work item shall be worked out on the basis of the concerned Schedule of Rates of the district/ area specified above minus/ plus the percentage which the total Bid amount bears to the estimated cost of the entire Works put to bid. Provided always that if the rate for such part or parts of the item is not in the Schedule of Rates, the rate for such part or parts will be determined by the Engineer-in-charge on the basis of the prevailing market rates when the work was done but the percentage of bid discount/ premium will not be subtracted/ added to such market rates. iv. If the rates for the additional, altered or substituted work item

		cannot be determined in the manner specified in sub sub-clause I to III above then the contractor shall within 7 days of the date of receipt of order to carry out the work, inform the Engineer-in-charge of the rate which it is his intention to charge for such class of work supported by analysis of the rate(s) claimed and the Engineer-in-charge shall determine the rate/ rates on the basis of prevailing market rates and pay the contractor accordingly. However, the Engineer-in-charge, by notice in writing, will be at liberty to cancel his order to carry out such class of work and arrange to carry it out in such manner as he may consider advisable but under no circumstances, the Contractor shall suspend the work on the plea of non-settlement of rates on items falling under this sub-clause.
	9.2.3	The quantum of additional work for each item shall not exceed 50% of the original quantity of the item given in the Contract and the total value of additional, altered, and substituted items of work shall not exceed 50% of the Accepted Contract Price. (<i>This para is not applicable in case of Lump Sum Contract</i>)
	9.2.4	The time for completion of the Works shall in the event of any deviations resulting in additional Cost over the Contract Price being ordered be extended if requested by the Contractor in the proportion which the additional Cost of the altered, additional or substituted work, bears to the original Contract Price. Similarly, the proportionate time period for an item of work deleted shall be reduced from the total time period provided in the Contract.
Value Engineering	9.3	<p>The Contractor may, at any time, submit to the Engineer-in-charge a written proposal which (in the Contractor's opinion) will, if adopted, (i) accelerate completion, (ii) reduce the Cost to the Procuring Entity of executing, maintaining or operating the Works, (iii) improve the efficiency or value to the Procuring Entity of the completed Works, or (iv) otherwise be of benefit to the Procuring Entity</p> <p>The proposal shall be prepared at the Cost of the Contractor and shall include the items listed in Sub-Clause 9.2 [Deviations, Variations and Pricing].</p> <p>If a proposal, which is approved by the Engineer-in-charge, includes a change in the design of part of the Permanent Works, then unless otherwise agreed by both Parties:</p> <ul style="list-style-type: none"> ii. the Contractor shall design this part, iii. Sub-Clause 4.1[Contractor's General Obligations] shall apply, and iv. If this change results in a reduction in the Contract value of this part, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine a fee, which shall be included in the Contract Price.
No compensation for alterations in or restriction of works to be carried out	9.4	If, at any time after the commencement of the Works, the Procuring Entity shall, for any reason, whatsoever, not require the whole Works, thereof, as specified in the Contract, to be carried out, the Engineer-in-charge shall give notice, in writing, of the fact to the Contractor, who shall have no claim to any payment or compensation, whatsoever, on account of any profit or advantage which he might have derived from the execution of the Works in full but which he did not derive in consequence of the full amount of the Works not having been carried out. Neither shall he have any claim for compensation by reason of alterations having been made in the original specifications, drawings and design and instructions, which shall involve any curtailment of the

		Works, as originally contemplated. Provided, that the contractor shall be paid the charges for the carriage only, of Materials actually brought to the Site of the Works by him for bona fide use and rendered surplus as a result of the abandonment or curtailment of the Works or any portion thereof, and taken them back by the Contractor, provided, however, that the Engineer-in-charge shall have, in all such cases, the option of taking over all or any such Materials at their purchase price or at local market rates whichever may be less. In the case of such stores, having been issued from Procuring Entity's Stores, charges recovered, including storage charges shall be refunded after taking into consideration any deduction for claim on account of any deterioration or damage while in the custody of the Contractor and in this respect the decision of the Engineer-in-charge shall be final.
Monthly Return of Extra Claims	9.5.1	To facilitate timely resolution of Contractor's claims due against the orders/ instructions of the Engineer-in-Charge, the Contractor shall submit every month along with the Intermediate Payment Claims, a comprehensive statement of claims raised by him for any work claimed as extra, up to the previous month and awaiting resolution by the Engineer-in-Charge and/ or Procuring Entity. Value of claims shall be based upon the rates and prices mentioned in the Contract or in the Schedule of Rates in force in the District/ Division/ Circle for the time being. The Engineer-in-Charge shall duly acknowledge it and proceed to act as per Sub-Clause 3.5 [Determinations]. He will communicate the resolution to the Contractor and also reasons for rejection to the Contractor's claims. The contractor shall be deemed to have waived all claims, not included in such return and will have no right to enforce any such claims not included, whatsoever be the circumstances. However, the Contractor shall continue performance on the Contract despite rejection of his claims by the Engineer-in-Charge. Such rejected claims may then be raised before the CEO, ASCL or the Arbitration Tribunal, as appropriate.
	9.5.2	The Contractor shall send to the Engineer-in-Charge once every three Months an up to date account giving complete details of all claims for additional payments to which the Contractor may consider himself entitled and of all additional work ordered by the Engineer-in-Charge after approval from competent authority which he has executed during the preceding quarter .
	9.5.3	Any operation or procedure incidental to or necessary to the execution of the Works has to be in contemplation of Bidder while submitting his Bid, whether or not, specifically indicated in the description of the item and the relevant Specifications, shall be deemed to be included in the rates quoted by the Bidder or the rate given in the said schedule of rates, as the case may be. Nothing extra shall be admissible for such operations/ procedures.
Provisional Sums	9.6	Each Provisional Sum shall only be used, in whole or in part, in accordance with the Engineer-in-charge's instructions and the Contract Price shall be adjusted accordingly. The total sum paid to the Contractor shall include only such amounts, for the work, supplies or services to which the Provisional Sum relates, as the Engineer-in-charge shall have instructed. For each Provisional Sum, the Engineer-in-charge may instruct: i. work to be executed (including Plant, Materials, labour or services to be supplied) by the Contractor and valued; and/or

		<p>ii. Plant, Materials or services to be procured by the Contractor from a Nominated Sub-Contractor as defined in Sub-Clause 5.2 [Nomination of Sub-Contractor] or otherwise; and for which there shall be included in the Contract Price:</p> <ul style="list-style-type: none"> (a) the actual amounts paid (or due to be paid) by the Contractor, and (b) A sum for overhead charges, calculated at 10% percent of these actual amounts. <p>The amount of overheads (10%) shall be subject to tax liability as per law. The Contractor shall, when required by the Engineer-in-charge, produce invoices, vouchers and accounts or receipts in substantiation.</p>
Day Work	9.7	<p>For works of a minor or incidental nature, the Engineer-in-charge may instruct that a Variation shall be executed on a Day work basis. The work shall then be valued in accordance with the Day work Schedule included in the Contract, and the following procedure shall apply. If a Day work Schedule is not included in the Contract, this Sub-Clause shall not apply.</p> <p>Before ordering materials for the work, the Contractor shall submit quotations to the Engineer-in-charge. When applying for payment, the Contractor shall submit invoices, vouchers and accounts or receipts for any Materials/ Equipment/ Plant/ Temporary Works.</p> <p>Except for any items for which the Day work Schedule specifies that payment is not due, the Contractor shall deliver each day to the Engineer-in-charge accurate statements in duplicate which shall include the following details of the resources used in executing the previous day's work:</p> <ul style="list-style-type: none"> i. the names, occupations, day wages and required time period of Contractor's Personnel, ii. the identification, type and time of Contractor's Equipment and Temporary Works, and iii. The quantities and types of Plant and Materials used. <p>One copy of each statement will, if correct, or when agreed, be signed by the Engineer-in-charge and returned to the Contractor. The Contractor shall then submit priced statements of these resources to the Engineer-in-charge, prior to their inclusion in the next Statement under Sub-Clause 15.5 [Issue of Interim Payment Certificates].</p>
10. Price Variation		
Price Variation due to changes in the prices of labour, materials, bitumen, petroleum, cement and steel	10.1	<p>If, during the progress of the contract of value exceeding Rs. 50 lakh (accepted Contract Price minus cost of material supplied by the Procuring Entity), and where stipulated completion period is more than 3 months (both the conditions should be fulfilled), the price, of any materials/ bitumen/ diesel and petrol/ cement/ steel incorporated in the Works (not being materials to be supplied by the Procuring Entity) and/ or wages of labour increases or decreases, as compared to the price and/ or wages prevailing at the date of opening of bids or date of negotiations for the Works, the amounts payable to Contractor for the Works shall be adjusted for increase or decrease in the rates of materials (excluding those materials supplied by the Procuring Entity)/ labour/ bitumen /diesel and petrol/ cement/ steel. If negotiated rates have been accepted, prices as on the date of negotiation shall be considered for price adjustment. Similarly, if rates received on the date of opening of bids have been accepted, then prices on the date of opening of bids shall be considered for price adjustment.</p> <p>(c.) Credit the cost of materials, hire charges of Contractor's plant and machinery if Increase or decrease in the cost of labour/ material/ diesel</p>

and petrol/ cement/ steel shall be calculated quarterly and cost of bitumen shall be calculated on monthly basis in accordance with the following formula:-

(A) Labour

$$\frac{P_L}{100} \times \frac{(I_{L1} - I_{L0})}{I_{L0}} \times R = 0.75 \times \dots \times R \dots$$

Where,

V_L = Increase or decrease in the cost of Works during the quarter under consideration due to change in rates for labour.

R = The value of the Works done in rupees during the quarter under consideration excluding the cost of materials supplied by the Procuring Entity and excluding other items as mentioned in this Sub-Clause.

I_{L0} = The average consumer price index for industrial workers (whole-sale prices) for the quarter in which bids were opened/ negotiated (as published in Reserve Bank of India Journal, for the area).

I_{L1} = The average consumer price index for industrial workers (whole-sale prices) for the quarter of calendar year under consideration (as published in Reserve Bank of India Journal, for the area).

P_L = Percentage of labour components.

Note: In case of revision of minimum wages by the Government or other competent authority, nothing extra would be payable except the price escalation permissible under this Sub-Clause.

(B) Materials (excluding materials supplied by the Procuring Entity). $P_M \times (L_{M1} - L_{M0})$

$$V_M = 0.75 \times \frac{100}{L_{M0}} \times R \dots$$

Where,

V_M = Increase or decrease in the cost of Works during the quarter under consideration due to change in rates for materials.

R = The value of the Works done in rupees during the quarter under consideration excluding the cost of materials supplied by the Procuring Entity and excluding other items as mentioned in this Sub-Clause.

L_{M0} = The average wholesale price index (all commodities) for the quarter in which bids were opened/ negotiated (as published in Reserve Bank of India Journal/ Economic Adviser to Government of India, Ministry of Industries, for the area).

L_{M1} = The average wholesale price index (all commodities) for the quarter under consideration (as published in Reserve Bank of India Journal/ Economic Adviser to Government of India, Ministry of Industries, for the area).

P_M = Percentage of materials components (excluding materials supplied by the Procuring Entity).

(C) Bitumen

$$V_b = 0.85 \times \frac{P_b}{100} \times \frac{(B_i - B_0)}{B_0} \times R \dots$$

Where,

V_b = Increase or decrease in the cost of Works during the month under consideration due to changes in the rate for bitumen.

R = The value of the Works done in rupees during the month under consideration excluding the cost of materials supplied by the Procuring Entity and excluding other items as mentioned in this

Sub-Clause.
 B_0 = The official retail price of bitumen at the IOC depot at nearest center on the day 28 days prior to date of opening of Bids.
 B_i = The official retail price of bitumen of IOC depot at nearest center for the 15th day of the month under consideration.
 P_b = Percentage of bitumen components of the Works.]

(D) Petroleum

$$V_f = 0.75 \times \frac{P_f}{100} \times R \times \frac{(F_i - F_0)}{F_0}$$

Where,

V_f = Increase or decrease in the cost of Works during the quarter under consideration due to change in rates for fuel and lubricants.
 R = The value of the Works done in rupees during the quarter under consideration excluding the cost of materials supplied by the Procuring Entity and excluding other items as mentioned in this Sub-Clause.

F_0 = The average wholesale price index of High Speed Diesel (HSD) as published by the Economic Adviser to the Government of India, Ministry of Industry on the day of opening of bids/ negotiations.

F_i = The average whole sale price Index of HSD for the quarter under consideration as published weekly by the Economic Adviser to the Government of India, Ministry of Industry for the quarter under consideration.

P_f = Percentage of fuel and lubricants components excluding fuel and lubricants supplied by the Procuring Entity (Specified in the sanctioned estimate for the Works).

R = Total Works done during the quarter as prescribed under this Sub-Clause. Note: For application of this Sub-Clause price of HSD is chosen to indicate fuel and lubricants components.

(E) Cement

$$V_c = 0.75 \times \frac{P_c}{100} \times R \times \frac{(L_{c1} - L_{c0})}{L_{c0}}$$

Where,

V_c = Increase or decrease in the cost of Works during the quarter under consideration due to change in the rates of cement.
 R = The value of the Works done in rupees during the quarter under consideration excluding the cost of cement supplied by the Procuring Entity and excluding other items as mentioned in this Sub-Clause.

L_{c0} = The average wholesale price index for the quarter in which bids were opened/ negotiated (as published by the Economic Adviser to the Government of India, Ministry of Industries).
 L_{c1} = The average whole sale price Index for the quarter under consideration (as published by the Economic Adviser to Government of India, Ministry of Industries).

P_c = Percentage of cement components (excluding cement supplied by the Procuring Entity).

(F) Steel

$$V_s = 0.75 \times P_s \times R \times \frac{(L_{s1} - L_{s0})}{L_{s0}}$$

		<p style="text-align: center;">100</p> <p style="text-align: center;">L_{S0}</p> <p>Where,</p> <p>V_S = Increase or decrease in the cost of Works during the quarter under consideration due to change in the rates of steel.</p> <p>R = The value of the Works done in rupees during the quarter under consideration excluding the cost of steel supplied by the Procuring Entity and excluding other items as mentioned in this Sub-Clause.</p> <p>L_{S0} = The average wholesale price index for the quarter in which bids were opened/ negotiated (as published by the Economic Adviser to the Government of India, Ministry of Industries).</p> <p>L_{S1} = The average wholesale price Index for the quarter under consideration (as published by the Economic Adviser to Government of India, Ministry of Industries).</p> <p>P_S = Percentage of steel components (excluding steel supplied by the Procuring Entity).</p>
Price Variation in installation of elevators, supply/installation of Centrally Air Conditioning and Central Evaporating Cooling Works.	10.2	Deleted
General Conditions for admissibility of Price Variation	10.3	The General Conditions for admissibility of Price Variation are given in Appendix A to these General Conditions.
11. Tests on completion		
Contractor's obligations	11.1	<p>The Contractor shall carry out the Tests on Completion in accordance with the BIS/ IRC and other standard codes and Sub-Clause 7.9 [Testing], after providing the documents in accordance with the requirements for tests on completion.</p> <p>The Contractor shall give to the Engineer-in-charge not less than 15 Days' notice of the date after which the Contractor will be ready to carry out each of the Tests on Completion. Unless otherwise agreed, Tests on Completion shall be carried out within 7 Days after this date, on such day or Days as the Engineer-in-charge shall instruct.</p> <p>In considering the results of the Tests on Completion, the Engineer-in-charge shall make allowances for the effect of any use of the Works by the Procuring Entity on the performance or other characteristics of the Works. As soon as the Works, or a Section, have passed any Tests on Completion, the Contractor shall submit a certificate of the results of these Tests to the Engineer-in-charge.</p>
Delayed Tests	11.2	<p>If the Tests on Completion are being unduly delayed by the Engineer-in-charge, Sub-Clause 7.9.2 of 7.9 [Testing] shall be applicable.</p> <p>If the Tests on Completion are being unduly delayed by the Contractor, the Engineer-in-charge may by notice require the Contractor to carry out the Tests within 21 Days after receiving the notice. The Contractor shall carry out the Tests on such day or Days within that period as the Contractor may fix and of which he shall give notice to the Engineer-in-charge.</p> <p>If the Contractor fails to carry out the Tests on Completion within the period of 21 Days, the Procuring Entity's/ Engineer-in-Charge's</p>

		Personnel may proceed with the Tests at the field laboratory or at an outsourced laboratory at the risk and cost of the Contractor. The Tests on Completion shall then be deemed to have been carried out in the presence of the Contractor and the results of the Tests shall be accepted as accurate and binding on the Contractor.
Retesting	11.3	If the Works, or a Section, fails to pass the Tests on Completion, Sub-Clauses 7.13 [Rejection] and 11.4 [Failure to Pass Tests on Completion] shall apply, and the Engineer-In-Charge or the Contractor may require the failed Tests, and Tests on Completion on any related work, to be repeated under the same terms and conditions.
Failure to Pass Tests n Completion	11.4	<p>If the Works, or a Section, fails to pass the Tests on Completion repeated under Sub-Clause 11.3 [Retesting], the Engineer-in-Charge shall be entitled to:</p> <ul style="list-style-type: none"> i. Order further repetition of Tests on Completion; ii. If failure deprives the Procuring Entity of substantially the whole benefit of the Works or Section, reject the Works or Section (as the case may be), in which event the Procuring Entity shall have the same remedies as provided in Sub-paragraph (c) of Sub-Clause 13.6 [Failure to Remedy Defect]; or iii. Issue a Taking-Over Certificate, if the Procuring Entity so requires. iv. In the event of Sub-para iii, the Contractor shall proceed in accordance with all other obligations under the Contract, and the Contract Price shall be reduced by such amount as shall be appropriate to cover the reduced value to the Procuring Entity as a result of this failure. Unless the relevant reduction for this failure is stated (or its method of calculation is defined) in the Contract, the Procuring Entity may require the reduction to be (i) agreed by the Contractor (in full satisfaction of this failure only) and paid before this Taking-Over certificate is issued, or (ii) determined and paid under Sub-Clause 3.5 [Determinations].
12. Taking over of the Works and Sections by Procuring Entity		
Taking over of works.	12.1	<p>Except as stated in Sub-Clause 11.4 [Failure to Pass Tests on Completion], the Works shall be taken over by the Procuring Entity when (a) the Works have been completed in accordance with the Contract, including the matters described in Sub-Clause 8.4 [Time for Completion] and except as allowed in sub-paragraph i. below, and (b) a Taking-Over Certificate for the Works has been issued, or is deemed to have been issued in accordance with this Sub-Clause.</p> <p>The Contractor may apply by notice to the Engineer-in-charge for a Taking-Over Certificate not earlier than 14 Days before the Works will, in the Contractor's opinion, be complete and ready for taking over. If the Works are divided into Sections, the Contractor may similarly apply for a Taking-Over Certificate for each Section.</p> <p>The Engineer-in-charge shall, within 28 Days after receiving the Contractor's application:</p> <ul style="list-style-type: none"> i. issue the Taking-Over Certificate to the Contractor, stating the date on which the Works or Section was completed in accordance with the Contract, except for any minor outstanding work and Defects which will not substantially affect the use of the Works or Section for their intended purpose (either until or whilst this work is completed and these Defects are remedied); or ii. reject the application, giving reasons and specifying the work

		<p>required to be done by the Contractor to enable the Taking-Over Certificate to be issued. The Contractor shall then complete this work before issuing a further notice under this Sub-Clause.</p> <p>If the Engineer-in-charge fails either to issue the Taking-Over Certificate or to reject the Contractor's application within the period of 28 Days, and if the Works or Section (as the case may be) are substantially in accordance with the Contract, the Taking-Over Certificate shall be deemed to have been issued on the last day of that period.</p>
Taking over of Parts of the Works	12.2	<p>The Engineer-in-charge may, at the sole discretion of the Procuring Entity, issue a Taking-Over Certificate for any part of the Permanent Works. The Procuring Entity shall not use any part of the Works (other than as a temporary measure which is either specified in the Contract or agreed by both Parties) unless and until the Engineer-in-charge has issued a Taking-Over Certificate for this part. However, if the Procuring Entity does use any part of the Works before the Taking-Over Certificate is issued:</p> <ul style="list-style-type: none"> i. the part which is used shall be deemed to have been taken over as from the date on which it is used, ii. the Contractor shall cease to be liable for the care of such part as from this date, when responsibility shall pass to the Procuring Entity, and iii. if requested by the Contractor, the Engineer-in-charge shall issue a Taking-Over Certificate for this part. <p>After the Engineer-in-charge has issued a Taking-Over Certificate for a part of the Works, the Contractor shall be given the earliest opportunity to take such steps as may be necessary to carry out any outstanding Tests on Completion. The Contractor shall carry out these Tests on Completion as soon as practicable before the expiry date of the relevant Defects Notification Period.</p> <p>If the Contractor incurs Cost as a result of the Procuring Entity taking over and/ or using a part of the Works, other than such use as is specified in the Contract or agreed by the Contractor, the Contractor shall:</p> <p>(a) give notice to the Engineer-in-charge, and (b) be entitled subject to Sub- Clause 21.2 [Contractor's Claims] to payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this Cost.</p> <p>If a Taking-Over Certificate has been issued for a part of the Works (other than a Section), the delay damages thereafter for completion of the remainder of the Works shall be reduced. Similarly, the delay damages for the remainder of the Section (if any) in which this part is included shall also be reduced. For any period of delay after the date stated in this Taking-Over Certificate, the proportional reduction in these delay damages shall be calculated as the proportion which the value of the part so certified bears to the value of the Works or Section (as the case may be) as a whole. The Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these proportions. The provisions of this paragraph shall only apply to the rate of delay damages under Sub-Clause 8.9 [Compensation/ Damages for Delay], and shall not affect the maximum amount of these damages.</p>

Taking over if Tests on Completion suffer Interference	12.3	<p>If the Contractor is prevented, for more than 14 days, from carrying out the Tests on Completion by a cause for which the Procuring Entity is responsible, the Procuring Entity shall be deemed to have taken over the Works or Section (as the case may be) on the date when the Tests on Completion would otherwise have been completed.</p> <p>The Engineer-in-charge shall then issue a Taking-Over Certificate accordingly, and the Contractor shall carry out the Tests on Completion as soon as practicable, before the expiry date of the Defects Notification Period. The Engineer-in-charge shall require the Tests on Completion to be carried out by giving 14 days' notice and in accordance with the relevant provisions of the Contract.</p> <p>If the Contractor suffers delay and/ or incurs Cost as a result of this delay in carrying out the Tests on Completion, the Contractor shall give notice to the Engineer-in-Charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of time for Completion], and ii. payment of any such Cost, which shall be included in the Contract Price. After receiving this notice, the Engineer-in-Charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.
Surfaces Requiring Reinstatement	12.4	Except as otherwise states in a Taking Over Certificate, a Certificate for a Section or part of the Works shall not be deemed to certify completion of any ground or other surfaces requiring reinstatement.
13. Defect Liability		
Defect Liability Period		<p>13.1 The Contractor warrants that the Facilities or any part thereof shall be free from defects in the design, engineering, materials, and workmanship of the material supplied and of the work executed.</p> <p>The Defect Liability Period shall be 1 year from the date of Operational Acceptance of the Facilities (or any part thereof) unless specified otherwise in the SCC pursuant to GCC Subclause 13.10.</p> <p>If during the Defect Liability Period any defect should be found in the design, engineering, materials, and workmanship of the material supplied or of the work executed by the Contractor, the Contractor shall promptly, in consultation and agreement with the Employer regarding appropriate remedying of the defects, and at its cost, repair, replace, or otherwise make good as the Contractor shall determine at its discretion, such defect as well as any damage to the Facilities caused by such defect. The Contractor shall not be responsible for the repair, replacement, or making good of any defect, or of any damage to the Facilities arising out of or resulting from any of the following causes:</p> <ul style="list-style-type: none"> (a) improper operation or maintenance of the Facilities by the Employer, or (b) operation of the Facilities outside specifications provided in the Contract, or (c) normal wear and tear.

	<p>13.3 The Contractor's obligations under this GCC Clause 27 shall not apply to:</p> <ul style="list-style-type: none"> (a) any materials that are supplied by the Employer, if any, as per conditions of the Contract Agreement, are normally consumed in operation, or have a normal life shorter than the Defect Liability Period stated herein; (b) any designs, specifications or other data designed, supplied, or specified by or on behalf of the Employer or any matters for which the Contractor has disclaimed responsibility herein; or (c) any other materials supplied or any other work executed by or on behalf of the Employer, except for the work executed by the Employer under GCC Subclause 13.7. <p>13.4 The Employer shall give the Contractor a notice stating the nature of any such defect together with all available evidence thereof, promptly following the discovery thereof. The Employer shall afford all reasonable opportunity for the Contractor to inspect any such defect.</p> <p>13.5 The Employer shall afford the Contractor all necessary access to the Facilities and the Site to enable the Contractor to perform its obligations under this GCC Clause 13.</p> <p>The Contractor may, with the consent of the Employer, remove from the Site any Plant or any part of the Facilities that are defective if the nature of the defect, and/or any damage to the Facilities caused by the defect, is such that repairs cannot be expeditiously carried out at the Site.</p> <p>13.2 If the repair, replacement or making good is of such a character that it may affect the efficiency of the Facilities or any part thereof, the Employer may give to the Contractor a notice requiring that tests of the defective part of the Facilities shall be made by the Contractor immediately upon completion of such remedial work, whereupon the Contractor shall carry out such tests. If such part fails the tests, the Contractor shall carry out further repair, replacement or making good, as the case may be, until that part of the Facilities passes such tests. The tests shall be agreed upon by the Employer and the Contractor.</p> <p>13.7 If the Contractor fails to commence the work necessary to remedy such defect or any damage to the Facilities caused by such defect within a reasonable time (which shall in no event be considered to be less than 15 days), the Employer may, following notice to the Contractor, proceed to do such work, and the reasonable costs incurred by the Employer in connection therewith shall be paid to the Employer by the Contractor or may be deducted by the Employer from any monies due the Contractor or</p>
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		<p>claimed under the Performance Security.</p> <p>13.8 If the Facilities or any part thereof cannot be used by reason of such defect and/or making good of such defect, the Defect Liability Period of the Facilities or such part, as the case may be, shall be extended by a period equal to the period during which the Facilities or such part cannot be used by the Employer because of any of the aforesaid reasons.</p> <p>13.9 Except as provided in GCC Clauses 13 and 32, the Contractor shall be under no liability whatsoever and howsoever arising, and whether under the Contract or at law, in respect of defects in the Facilities or any part thereof, the Plant, design, or engineering, or work executed that appear after Completion of the Facilities or any part thereof, except where such defects are the result of the gross negligence, fraud, criminal, or willful action of the Contractor.</p> <p>13.3 In addition, any such component of the Facilities and during the period of time as may be specified in the SCC shall be subject to an extended Defect Liability Period. Such obligation of the Contractor shall be in addition to the Defect Liability Period specified under GCC Subclause 13.2.</p>
Completion of Outstanding Work and Remedying Defects.	13.11	<p>In order that the Works and Contractor's Documents, and each Section, shall be in the condition required by the Contract (fair wear and tear excepted) by the expiry date of the relevant Defects Notification Period or as soon as practicable thereafter, the Contractor shall:</p> <ul style="list-style-type: none"> i. complete any work which is outstanding on the date stated in a Taking-Over Certificate, within such reasonable time as is instructed by the Engineer-in-charge, and ii. Execute all work required to remedy Defects or damage, as may be notified by (or on behalf of) the Procuring Entity on or before the expiry date of the Defects Notification Period for the Works. <p>If a Defect appears or damage occurs, the Contractor shall be notified accordingly, by (or on behalf of) the Procuring Entity. The Contractor is required to repair, rectify, the defects, restore the damages at his own cost within the period indicated in the notice by the Procuring Entity. If the Contractors fails to do so, action as per Sub-Clause 13.7 shall be taken.</p>
Cost of Remedying Defects	13.12	<p>All work referred to in Sub-Clause 13.11 above [Completion of Outstanding Work and Remedying Defects] shall be executed at the risk and cost of the Contractor, if and to the extent that the work is attributable to:</p> <ul style="list-style-type: none"> i. any design for which the Contractor is responsible, ii. Plant, Materials or workmanship not being in accordance with the Contract, or iii. Failure by the Contractor to comply with any other obligation.
Extension of Defects Notification Period	13.13	<p>The Procuring Entity shall be entitled subject to Sub-Clause 2.5 [Procuring Entity's Claims] to an extension of the Defects Notification Period for the Works or a Section if and to the extent that the Works, Section or a major item of work (as the case may be, and after taking over) cannot be used for the purposes for which they are intended by reason of a Defect, deficiency or by reason of damage attributable to the Contractor. However, a Defects Notification Period shall not be extended</p>

		<p>by more than one year.</p> <p>If delivery and/ or erection of structure and/ or Materials was suspended under Sub- Clause 8.10 [Suspension of Work] or Sub-Clause 17.1 [Contractor's Entitlement to Suspend Work], the Contractor's obligations under this Sub-Clause shall not apply to any Defects or damage occurring more than one year after the Defects Notification Period for the Plant and/ or Materials would otherwise have expired.</p>
Contractor liable for Damages done and for Imperfections	13.14	<p>If the Contractor or his personnel shall break, deface, injure or destroy any part of a building or any structure in which they may be working, or any building, road, fence, enclosure, water pipe, power/ telecom cables, drains, electric or telephone post or wires, trees, etc. or cultivated ground contagious to the Site where the Works or any part of it is being executed, or if any damage shall happen to the work while in progress, from any cause whatever or if any defect, shrinkage or other faults or imperfection appear in the work within Defect Liability Period after a certificate final or otherwise of its completion shall have been given by the Engineer-in-Charge as aforesaid arising out of Defect or improper Materials, procedures or workmanship the Contractor shall upon receipt of a notice in writing on that behalf make the same good at his own expense or in default the Engineer- in-Charge cause the same to be made good by employing other workman/ agency and deduct the expense from any sums that may be due or at any time thereafter may become due to the Contractor, or from his Performance Security or the proceeds of sale thereof or a sufficient portion thereof.</p>
Failure to remedy the defect	13.15	<p>If the Contractor fails to remedy any Defect, deficiency or damage within a reasonable time, a date may be fixed by (or on behalf of) the Procuring Entity, on or by which the Defect, deficiency or damage is to be remedied. The Contractor shall be given reasonable notice of this date.</p> <p>If the Contractor fails to remedy the Defect or damage by this notified date and this remedial work was to be executed at the cost of the Contractor under Sub- Clause 13.3 [Cost of Remedying Defects], the Procuring Entity may (at his option):</p> <ul style="list-style-type: none"> i. carry out the work himself or by others, in a reasonable manner and at the Contractor's cost, but the Contractor shall have no responsibility for this work; and the Contractor shall subject to Sub-Clause 2.5 [Procuring Entity's Claims] pay to the Procuring Entity the costs reasonably incurred by the Procuring Entity in remedying the Defect or damage; ii. require the Engineer-in-charge to agree or determine a reasonable reduction in the Contract Price in accordance with Sub-Clause 3.5 [Determinations]; or iii. If the Defect or damage deprives the Procuring Entity of substantially the whole benefit of the Works or any major part of the Works, terminate the Contract as a whole, or in respect of such major part which cannot be put to the intended use. Without prejudice to any other rights, under the Contract or otherwise, the Procuring Entity shall then be entitled to recover all sums paid for the Works or for such part (as the case may be), plus financing Costs and the Cost of dismantling the same, clearing the Site and returning Plant and Materials to the Contractor.
Removal of	13.16	If the Defect or damage cannot be remedied expeditiously on the Site

Defective Work		and the Procuring Entity gives consent, the Contractor may remove from the Site for the purposes of repair such items of Plant as are Defective or damaged. This consent may require the Contractor to increase the amount of the Performance Security by the full replacement Cost of these items, or to provide other appropriate security.
Further Tests	13.17	If the work of remedying of any Defect or damage may affect the performance of the Works, the Engineer-in-charge may require the repetition of any of the tests described in the Contract. The requirement shall be made by notice within 28 Days after the Defect or damage is remedied. These tests shall be carried out in accordance with the terms applicable to the previous tests, except that they shall be carried out at the risk and cost of the Party liable, under Sub-Clause 13.3 [Cost of Remedying Defects], for the cost of the remedial work.
Contractor / Third Party Quality Inspection Agency to Search for the Cause of the Defect.	13.18	The Contractor or third party quality inspection agency shall, if required by the Engineer-in-charge, search for the cause of any Defect, under the direction of the Engineer-in-charge. Unless the Defect is to be remedied at the cost of the Contractor under Sub-Clause 13.3 [Cost of Remedying Defects], the cost of the search shall be agreed or determined by the Engineer-in-charge in accordance with Sub-Clause 3.5 [Determinations] and shall be included in the Contract Price or of the third party quality inspection agency.
Performance Certificate	13.19	Performance of the Contractor's obligations shall not be considered to have been completed until the Engineer-in-charge has issued the Performance Certificate to the Contractor, stating the date on which the Contractor completed his obligations under the Contract. The Engineer-in-charge shall issue the Performance Certificate within 28 Days after the latest of the expiry dates of the Defects Liability Periods, or as soon thereafter as the Contractor has supplied all the Contractor's Documents and completed and tested all the Works, including remedying any Defects. A copy of the Performance Certificate shall be issued to the Procuring Entity. Only the Performance Certificate shall be deemed to constitute acceptance of the Works.
Substantial Completion of Parts	13.20	If any part of the Permanent Works has been substantially completed and has satisfactorily passed any Test on Completion prescribed by the Contract, the Engineer-in-charge may issue a Taking-Over Certificate in respect of that part of the Permanent Works before completion of Works and upon the issue of such Certificate, the Contractor shall be deemed to have undertaken to complete with due expedition any outstanding work in that part of the Permanent Works during Defect Liability Period.
Unfulfilled Obligations	13.21	After the Performance Certificate has been issued, each Party shall remain liable for the fulfilment of any obligation which remains unperformed at that time. For the purposes of determining the nature and extent of unperformed obligations, the Contract shall be deemed to remain in force.
Right to Access	13.22	Until the Performance Certificate has been issued, the Contractor shall have such right of access to the Works as is reasonably required in order to comply with this Sub-Clause, except as may be inconsistent with the Procuring Entity's reasonable security restrictions.
Clearance of Site	13.23	Upon receiving the Performance Certificate, the Contractor shall

		<p>remove any remaining Contractor's Equipment, surplus material, wreckage, rubbish and Temporary Works from the Site.</p> <p>If all these items have not been removed within 28 days after receipt by the Contractor of the Performance Certificate, the Procuring Entity may sell or otherwise dispose of any remaining items. The Procuring Entity shall be entitled to be paid the costs incurred in connection with, or attributable to, such sale or disposal and restoring the Site.</p> <p>Any balance of the moneys from the sale shall be paid to the Contractor. If these moneys are less than the Procuring Entity's costs, the Contractor shall pay the outstanding balance to the Procuring Entity.</p>
14. Measurement and Evaluation. (<i>In case of Lump Sum Contract measurement of only additions and alterations shall be taken</i>)		
Measurement of Work Done	14.1	<p>Whenever the Engineer-in-charge requires any part of the Works to be measured/ re-measured, reasonable notice shall be given to the Contractor's Representative, who shall:</p> <ul style="list-style-type: none"> i. promptly either attend or send another qualified representative to assist the Engineer-in-charge in taking/ verifying the measurement, and ii. Supply any particulars requested by the Engineer-in-charge for his satisfaction of the measurements. <p>If the Contractor fails to attend or send a representative, the measurement made by (or on behalf) of the Engineer-in-charge shall be accepted as accurate.</p>
Method of measurement.	14.2.1	<p>The measurements (as per IS 1200) of the executed and acceptable work shall be recorded once in a month by the representative of the Engineer-in-Charge and the Contractor or his representative jointly and shall be signed by the Contractor in acceptance. The Engineer-in-Charge shall, except as otherwise provided, shall check, ascertain and determine measurement and the value of the work done in accordance with the Contract. The Procuring Entity reserves to itself the right to prescribe a scale of check measurements of work, in general, or a specific scale for specific works or by other special orders (about which the decision of the Procuring Entity shall be final). Checking of measurement by a superior officer shall supersede the measurements taken by the subordinate officers and the former will become the basis of the payment. Any excess payments detected, as a result of such check measurement or otherwise at any stage up to the date of completion and the Defect Liability Period specified elsewhere in this Contract, shall be recoverable from the Contractor as any other dues payable to the Procuring Entity.</p> <p>The Contractor shall, without extra charge, provided all necessary assistance with labour and equipment necessary for measurements and recording levels.</p> <p>If the Contractor objects to any of the measurements recorded, a note</p>

		shall be made to that effect with reason and signed by both the parties.
	14.2.2	All measurement of all items having financial value shall be recorded in Measurement Book or MS Excel file and printed out in two copies. The original shall be treated as the Measurement book. Such files in original shall be mailed to the Engineer-in-Charge and shall be saved with a dedicated password. Other data like initial field levels or survey field books or findings of the geo tech investigations shall be similarly recorded and protected so that a complete record is obtained of all works performed under the Contract.
	14.2.3	<p>If for any reason the Contractor or his authorized representative is not available and the work of recording measurements is suspended by the Engineer-in-charge or his representative, the Engineer-in-Charge and the Department/ Organisation shall not entertain any claim from Contractor for any loss or damages on this account. If the Contractor or his authorized representative does not remain present at the time of such measurements after the Contractor or his authorized representative has been given a notice in writing three (3) Days in advance or fails to countersign or to record objection within seven days from the date of the measurement, then such measurements recorded in his absence by the Engineer- in-charge or his representative shall be deemed to have been accepted by the Contractor.</p> <p>Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken of the net actual quantities in accordance with the procedure set forth in the Bill of Quantities and IS 1200 notwithstanding any general or local practice.</p> <p>The Contractor shall give not less than seven Day's notice to the Engineer-in- Charge or his authorized representative in charge of the Works before covering up or otherwise placing beyond the reach of measurement any work in order that the same may be measured and correct dimension thereof be taken before the same is covered up or placed beyond the reach of measurements and shall not cover and place beyond reach of measurement any work without consent in writing of the Engineer-in-Charge or his authorized representative in charge of the Works who shall within the aforesaid period of seven Days inspect the work, and if any work shall be covered up or placed beyond the reach of measurements without such notice having been given or the Engineer-in-charge's consent being obtained in writing, the same shall be uncovered at the Contractor's expense, for the due measurement or in default thereof no payment or allowance shall be made for such works or the materials with which the same was executed. The covering shall then be restored by the Contractor at his cost.</p> <p>Engineer-in-Charge or his authorized representative may cause either themselves or through another officer of the Department/ Organisation to check the measurements recorded jointly or otherwise as aforesaid and all provisions stipulated herein above shall be applicable to such checking of measurements or levels.</p> <p>It is also a term of this Contract that recording of measurements of any item of work in the measurement sheets/ Measurement book and/ or its payment in the interim, on account or final bill shall not be considered as conclusive evidence as to the sufficiency of any work or material to which it relates, nor shall it relieve the Contractor from liabilities from any other measurement, Defects noticed till completion of the Defects liability period.</p>

Omissions	14.3	Whenever the omission of any work forms part (or all) of a Variation, the value of which has not been agreed, if: i. the Contractor will incur (or has incurred) Cost which, if the work had not been omitted, would have been deemed to be covered by a sum forming part of the Accepted Contract Amount; ii. the omission of the work will result (or has resulted) in this sum not forming part of the Contract Price; and iii. this Cost is not deemed to be included in the evaluation of any substituted work; then the Contractor shall give notice to the Engineer-in-charge accordingly, with supporting particulars. Upon receiving this notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine this Cost, which shall be included in the Contract Price.
15. Contract Price, Payment and Lien		
Contract price	15.1	Unless otherwise stated in the Particular Conditions: i. the Contract Price shall be agreed or determined and be subject to adjustments in accordance with the Contract; ii. the Contractor shall pay all taxes, duties and fees required to be paid by him under the Contract, and the Contract Price shall not be adjusted for any of these Costs except as stated in Sub-Clause 15.21 [Adjustments for Changes in Legislation] or Price adjustment; iii. any quantities which may be set out in the Bill of Quantities or other Schedule are estimated quantities and are not to be taken as the actual and correct quantities: (a) of the Works which the Contractor is required to execute, or (b) for the purposes of Sub-Clause 11 [Measurement and Evaluation]; and iv. the Contractor shall submit to the Engineer-in-charge, within 28 Days after the Commencement Date, a proposed breakdown of each lump sum price in the Schedules. The Engineer-in-charge may take account of the breakdown when preparing Payment Certificates, but shall not be bound by it.
Lump sum provisions in Estimate/ Contract	15.2	When the estimate includes lump sum provisions primarily in respect of parts of work/ items whose specifications and costs are not known at the time of framing the Estimate, and if a bid is to be invited on such an estimate, such lump sum shall be excluded from the bid. Subsequently, when the specifications and costs of such items are known, their execution, if to be completed concurrently with the Contract, shall either be done as a variation item or on market rates (without bid premium) of the Contract. Such variation should be approved by the competent authority and then the Contractor shall be entitled to payment in respect of such items of work, or separate bids shall be invited for the work to be executed concurrently with the present Contract.
Schedule of Payments (<i>in case of Lump Sum Contract payments shall be</i>	15.3	The schedule of payments shall be as included in the Contract. If the Contract does not include a schedule of payments, the Contractor shall submit non-binding estimates of the payments which he expects to become due during each quarterly period. The first estimate shall be submitted within 28 Days after the Commencement Date. Revised

<i>linked to various stages of completion of Works given in the Activity Schedule)</i>		estimates shall be submitted at quarterly intervals, until the Taking-Over Certificate has been issued for the Works. The percentage (if any) accepted in the Contract will be deducted/added from/to the gross amount of the bill.
Application for Interim Payment Certificates (Running Account Bills)	15.4	The Contractor shall submit a Statement in required number of copies to the Engineer-in-Charge after the end of each month, in a form approved by the Engineer-in-Charge, showing in detail the amounts to which the Contractor considers himself to be entitled on the basis of measurement (or Activity Schedule in case of Lump sum Contract) and advance payment, secured advance, deductions, etc. as applicable, together with supporting documents which shall include the report on the progress during this month in accordance with Sub-Clause 4.20 [Progress Reports].
Issue of Interim Payment Certificates	15.5	<p>No amount will be certified or paid until the Procuring Entity has received and accepted the Performance Security. Thereafter, the Engineer-in-charge shall, within 28 Days after receiving a Statement and supporting documents, deliver to the Procuring Entity and to the Contractor an Interim Payment Certificate which shall state the amount which the Engineer-in-charge fairly determines to be due, with all supporting particulars for any reduction or withholding made by the Engineer-in-charge on the Statement, if any.</p> <p>However, prior to issuing the Taking Over Certificate for the Works, the Engineer-in-charge shall not be bound to issue an Interim Payment Certificate in an amount which would (after retention and other deductions) be less than the minimum amount of Interim Payment Certificate (if any) stated in the Contract Data. In this event, the Engineer-in-charge shall give notice to the Contractor accordingly.</p> <p>An Interim Payment Certificate shall not be withheld for any other reason, although:</p> <ul style="list-style-type: none"> i. if anything supplied or work done by the Contractor is not in accordance with the Contract, the cost of rectification or replacement may be withheld until rectification or replacement has been completed; and/or ii. if the Contractor was or is failing to perform any work or obligation in accordance with the Contract, and had been so notified by the Engineer-in-charge, the value of this work or obligation may be withheld until the work or obligation has been performed. <p>The Engineer-in-charge may in any Payment Certificate make any correction or modification that should properly be made to any previous Payment Certificate. A Payment Certificate shall not be deemed to indicate the Engineer-in-charge's acceptance, approval, consent or satisfaction.</p>
Payment of an Interim Payment Certificate	15.6.1	A bill shall be submitted by the Contractor each month on or before the date fixed by the Engineer-in-charge for all work executed in the previous month and the Engineer-in-charge shall take or cause to be taken or check the requisite measurement for the purpose of having the same verified and the claim, as far as admissible, authorized or paid, if possible, before the expiry of thirty days from the presentation for the bill. If the contractor does not submit the bill within the time fixed, as aforesaid, the Engineer-in-charge may depute a subordinate to measure up the said work in the presence of the Contractor, whose signature in the Measurement Book or sheet will be sufficient warrant

		and the Engineer-in-charge may prepare a bill from such Measurement Book, which shall be binding on the Contractor in all respects.
Payment at Part Rates	15.6.2	<p>The rates for several items of works may be paid in part rates provisionally in running bills in proportion to the quantum of items executed as per specifications at the discretion of the Engineer-in-charge. The deferred payment, will however, be released after the successful completion of the item of work.</p> <p>In case of item rates, if the rate quoted for certain items is very high in comparison to the average/overall bid value over the estimated cost of the work, the payment at running stages shall not be made until an appropriate additional performance security for items for which rates have been quoted high, has been submitted by the Contractor. This security shall be refunded at the final stage of completion.</p>
Payment at Reduced Rates	15.6.3	<p>In case certain item of the Works has not been executed as per specifications, design, drawings and the specified durability and the Engineer-in-Charge is not convinced to accept the item of Works at the full rate applicable under the Contract, may accept such item at a reduced rate (in proportion to the designed and executed capability and or the designed and assessed service life of the structure and its components) with a minimum reduction of 25% of the full rate during the preparation of on account bills or final bill if the item is so acceptable without detriment to the safety and utility of the item and the whole Works. Decision of the Engineer-in-Charge to be conveyed in writing in respect of the same will be final and binding on the Contractor.</p>
Recovery of Cost of Water and Electricity consumed by the Contractor	15.6.4	<p>The cost of all water connections necessary for the execution of Works, and the cost of water consumed and hire charges of meters and the cost of electricity consumed in connection with the execution of the Works shall be paid by the Contractor except where otherwise specifically provided in the Contract Data.</p>
Recovery of materials issued and hire charges of Machinery and Equipment, etc.	15.6.5	<p>Recoveries on account of materials issued to the Contractor by the Procuring Entity, Machinery and Equipment lent on hire, advance payment, secured advance, etc. or on any other account, and dues shall be made from each payment certificate from the Contractor as per conditions of this Contract.</p>
Payment on Intermediate Certificate to be regarded as Advances	15.7	<p>All interim payments shall be regarded as payment by way of advances against final payment only and shall not preclude the requiring of bad, unsound and imperfect or unskilled work to be rejected, removed, taken away and reconstructed or re-erected. Any certificate given by the Engineer-in-Charge relating to the work done or Materials delivered forming part of such payment may be modified or corrected by any subsequent such certificate(s) or by the final certificate and shall not by itself be conclusive evidence that any work or Materials to which it relates is/are in accordance with the Contract and Specifications. Any such interim payment, or any part thereof shall not in any respect conclude, determine or affect in any way powers of the Engineer-in-Charge under the Contract or any of such payments be treated as final settlement and adjustment of accounts or in any way vary or affect the Contract.</p>
Application for issue of final completion certificate	15.8	<p>The Contractor shall apply to the Engineer-in-Charge for issue of the Final Completion Certificate at least 45 days in advance of the likely date of full/ satisfactory completion. The Engineer-in-Charge during this period shall review and finalise the requirements of work to</p>

		qualify as final completion with respect to the third party quality inspection agency reports, if any. The Final completion certificate shall be issued within 30 days of its becoming due as per notice.
Issue of final completion certificate	15.9	After the Contractor has rectified all deficiencies pointed out by the Engineer-in- Charge in the final payment documents, and complied to all observations of the Third Party Quality Inspection Agency and the Independent Engineer to the entire satisfaction of the Engineer-in-Charge, the Contractor shall apply to the Engineer- in-Charge releasing the final payment as per final statement and also issue a final payment certificate. The Engineer-in-Charge shall proceed to issue the final payment certificate after reviewing all tests on completion, determinations, as built design and drawings, and other compliances required under the Contract.
Final Statement of payments	15.10	<p>Within 28 Days after receiving the Taking Over Certificate for the Works, the Contractor shall submit to the Engineer-in-charge, six copies of a draft final statement with as built drawings (with two soft copies also) and all other supporting documents showing in detail in a form approved by the Engineer-in-charge the value of all work done in accordance with the Contract, and any further sums which the Contractor considers to be due to him under the Contract or otherwise.</p> <p>If the Engineer-in-charge disagrees with or cannot verify any part of the draft final statement, the Contractor shall submit such further information as the Engineer- in-charge may reasonably require within 28 Days from receipt of said draft and shall make such changes in the draft as may be agreed between them. The Contractor shall then prepare and submit to the Engineer-in- charge the final statement as agreed. This agreed statement is referred to in these Conditions as the "Final Statement".</p> <p>However if, following discussions between the Engineer-in- charge and the Contractor and any changes to the draft final statement which are agreed, it becomes evident that a dispute exists, the Engineer-in-charge shall deliver to the Procuring Entity's competent authority (with a copy to the Contractor) an Interim Payment Certificate for the agreed parts of the draft final statement.</p>
Discharge	15.11	When submitting the Final Statement, the Contractor shall submit a discharge which confirms that the total of the Final Statement represents full and final settlement of all moneys due to the Contract or under or in connection with the Contract. This discharge may state that it becomes effective when the Contractor has received the Performance Security and the outstanding balance of this total, in which event the discharge shall be effective on such date.
Payment of Final Bill	15.12	<p>The final value of the acceptable works done, less payments already received, value of claims raised and paid, value of claims not paid along with Interim Payment Certificates, final statement of price escalation due and paid, etc. shall be submitted by the Contractor along with the Final Bill. The final bill shall be submitted by the Contractor in the same manner as specified in interim bills within three Months of physical completion of the work or within one month of the date of the final certificate of completion issued by the Engineer-in-Charge whichever is earlier. No further claims shall be made by the Contractor after submission of the final bill and these shall be deemed to have been waived and extinguished.</p> <p>Payments of those items of the bill in respect of which there is no dispute and of items in dispute, for quantities and rates as approved by Engineer-in-</p>

		Charge, will, as far as possible be made within a period of 90 days, the period being reckoned from the date of receipt of the bill by the Engineer-in-Charge complete with accounts of advances, Materials issued, Machinery & Equipment lent on hire by the Procuring Entity, dismantled Materials, etc.
Recovery of cost of preparation of the bill	15.13	<p>In case the Contractor does not submit the bill within the time fixed, the Engineer- in-charge may prepare the bill as per provision of Sub-Clause 15.6.1 [Payment of an Interim Payment Certificate] but a deduction @ 0.5 % of the amount of such a bill shall be made and credited to the general revenue account of the Department/ Organisation on account of preparation of the bill.</p> <p>The Contractor shall submit all bills on the printed forms, to be had on application, at the office of the Engineer- in- charge and the charges in the bills shall always be entered at the rates specified in the Contract or in the case of any extra work ordered in pursuance of these conditions, and not mentioned or provided for in the Contract, at the rates approved for such work.</p>
Payment of Contractor's Bills to Banks	15.14	<p>Payments due to the Contractor may, if so desired by him, be made to his Bank instead of direct to him provided that the Contractor furnishes to the Engineer-in- Charge (i) the account number with name and address of branch of the Bank, (ii) an authorization in the form of a legally valid document such as a power of attorney conferring authority on the Bank to receive payments, and (iii) his own acceptance of the correctness of the amount made out as being due to him by Procuring Entity or his signature on the bill or other claim preferred against Procuring Entity before settlement by the Engineer-in-Charge of the account or claim by payment to the Bank. While the receipt given by such copy of Banks statement shall constitute a full and sufficient discharge for the payment, the Contractor shall also acknowledge with a receipt. Wherever possible the Contractor shall present his bills duly receipted and discharges through his Bankers.</p> <p>Nothing herein contained shall operate to create in favour of the Bank any rights or equities vis.-a-vis. the Procuring Entity/ Governor of Punjab.</p>
Advance Payments	15.15	<p>If provided in the SCC, the Procuring Entity shall make an advance payment on simple interest (rate as specified in SCC) as mobilization for the Works, when the Contractor submits a Bank Guarantee of an amount equal to 110% of the amount from a Scheduled Bank in India. The total advance payment, the number and timing of instalment (if more than one), and the applicable currencies and proportions, shall be as stated in the Contract Data.</p> <p>Unless and until the Procuring Entity receives this Bank Guarantee and got confirmed from the issuing Bank, or if the provision of advance payment is not stated in the SCC, this Sub-Clause shall not apply.</p> <p>Unless stated otherwise in the Contract Data, the advance payment shall be repaid through percentage deductions from the interim payments determined by the Engineer-in-charge in accordance with Sub-Clause 15.5 [Issue of Interim Payment Certificates], as follows</p> <p>i. deductions shall commence in the next interim Payment Certificate following that in which the total of all certified interim payments (excluding the advance payment and deductions and repayments of retention) exceeds 30 percent of the Accepted Contract Amount less Provisional Sums; and</p>

		<p>ii. deductions shall be made at the amortisation rate stated in the Contract Data of the amount of each Interim Payment Certificate (excluding the advance payment and deductions for its repayments as well as deductions for retention money) in the currencies and proportions of the advance payment until such time as the advance payment has been repaid; provided that the advance payment shall be completely repaid prior to the time when 90 percent of the Accepted Contract Amount less Provisional Sums has been certified for payment.</p> <p>If the advance payment has not been repaid prior to the issue of the Taking-Over Certificate for the Works or prior to termination under Sub-Clause 16.1 [Termination by Procuring Entity], Sub-Clause 17.2 [Termination by Contractor] or Sub-Clause 19 [Force Majeure] (as the case may be), the whole of the balance then outstanding shall immediately become due to the Procuring Entity.</p>
Secured Advance on Non- Perishable Materials (<i>Not applicable in case of Lump Sum Contract</i>)	15.16	The Contractor, on signing an indenture in the form to be specified by the Engineer-in-Charge, may be paid during the progress of the execution of the work, up to 75% of the assessed value of any Materials which have been actually brought at the Site and which, in the opinion of the Engineer-in-charge, are non- perishable, non-fragile and non-combustible and will be consumed in the Works within next three months in accordance with the construction programme and the Contract provided that they are adequately stored and/ or protected against damage by weather or other causes but which have not, at the time of granting advance, been incorporated in the Works. When Materials on account of which advance has been made under this Sub-Clause are incorporated in the work, the amount of such advance shall be recovered/ deducted from the next payment made under any of the Sub-Clauses of this Contract.
Ensuring Payment and Amenities to Workers if Contractor fails to pay	15.17	In every case in which by virtue of the provisions of the Contract Labour (Regulation and Abolition) Act, 1970, and of the Contract Labour (Regulation and Abolition) Central Rules, 1971, any applicable Labour Laws, the Procuring Entity is obliged to pay any amounts of wages to a workman employed by the Contractor in execution of the Works, or to incur any expenditure in providing welfare and health amenities required to be provided under the above said Laws or under the P.W.D. Contractor's Labour Regulations, or under the Rules framed by Government from time to time for the protection of health and sanitary arrangements for workers employed by the Contractor, the Procuring Entity shall recover from the Contractor the amount of wages so paid or the amount of expenditure so incurred; and without prejudice to the rights of the Procuring Entity under sub-section (2) of Section 20, and sub-section (4) of Section 21, of the Contract Labour (Regulation and Abolition) Act, 1970, Government shall be at liberty to recover such amount or any part thereof by deducting it from the Performance Security or from any sum due by the Procuring Entity to the Contractor whether under this Contract or otherwise. The Procuring Entity shall not be bound to contest any claim made against it under sub- section (1) of Section 20, sub-section (4) of Section 21, of the said Act, except on the written request of the Contractor and upon his giving to the Procuring Entity full security for all costs for which the Procuring Entity might become liable in contesting such claim.

Withholding and lien in respect of sums due from Contractor	15.18	<p>i. Whenever any claim or claims for payment of a sum of money arises out of or under the Contract or against the Contractor, the Engineer-in-Charge or the Procuring Entity shall be entitled to withhold and also have a lien to retain such sum or sums in whole or in part from the Performance Security, if any, deposited by the Contractor and for the purpose aforesaid, the Engineer-in- Charge or the Procuring Entity shall be entitled to withhold the Performance Security furnished, if any and also have a lien over the same pending finalization or adjudication of any such claim. In the event of the security being insufficient to cover the claimed amount or amounts or if no security has been taken from the Contractor, the Engineer-in-Charge or the the Procuring Entity shall be entitled to withhold and have a lien to retain to the extent of payable or which may at any time thereafter become payable to the Contractor under the same Contract or any other Contract with the Engineer- in-Charge or the the Procuring Entity or any Contracting person through the Engineer-in-Charge pending finalization of adjudication of any such claim. It is an agreed term of the Contract that the sum of money or moneys so withheld or retained under the lien referred to above by the Engineer-in- Charge or the Procuring Entity will be kept withheld or retained as such by the Engineer-in-Charge or the Procuring Entity till the claim arising out of or under the Contract is determined by the arbitrator (if the Contract is governed by the arbitration Sub-Clause) or by the competent court, as the case may be and that the Contractor will have no claim for interest or damages whatsoever on any account in respect of such withholding or retention under the lien referred to above and duly notified as such to the Contractor. For the purpose of this Sub-Clause, where the Contractor is a partnership firm or a limited company, the Engineer-in-Charge or the the Procuring Entity shall be entitled to withhold and also have a lien to retain towards such claimed amount or amounts in whole or in part from any sum found payable to any partner/ limited company as the case may be, whether in his individual capacity or otherwise.</p> <p>ii. The Procuring Entity shall have the right to cause an audit and technical examination of the Works and the final bills of the Contractor including all supporting vouchers, abstract etc., to be made within two years after payment of the final bill and if as a result of such audit and technical examination any sum is found to have been overpaid in respect of any work done by the Contractor under the Contract or any work claimed to have been done by him under the Contract and found not to have been executed, the Contractor shall be liable to refund the amount of over-payment and it shall be lawful for the Procuring Entity to recover the same from him in the manner prescribed or in any other manner legally permissible; and if is found that the Contractor was paid less than what was due to him under the Contract in respect of any work executed by him under it, the amount of such under payment shall be duly paid by the Procuring Entity to the Contractor, without any interest thereon whatsoever.</p>
Lien in respect of claims in other Contracts	15.19	Any sum of money due and payable to the Contractor (including the Performance Security returnable to him) under the Contract may be withheld or retained by way of lien by the Engineer-in-Charge or the the Procuring Entity or any other Contracting person or persons

		through Engineer-in-charge against any claim of the Engineer- in-Charge or the Procuring Entity or such person or persons in respect of payment of a sum of money arising out of or under any other Contract made by the Contractor with the Engineer-in-Charge or the Procuring Entity or with such person or persons. It is an agreed term of the Contract that the sum of money so withheld or retained under this Sub-Clause by the Engineer-in- Charge or the Procuring Entity will be kept withheld or retained as such by the Engineer-in-Charge or the Procuring Entity till his claim arising out of the same Contract or any other Contract is either mutually settled or determined by the arbitration Sub-Clause or by the competent court, as the case may be and that the Contractor shall have no claim for interest or damages whatsoever on this account or on any other ground in respect of any sum of money withheld or retained under this Sub-Clause and duly notified as such to the Contractor.
Levy or Taxes payable by Contractor	15.20	<ul style="list-style-type: none"> i. VAT/ Sales Tax/ GST, service tax or any other taxes and duties on Materials, works or services in respect of this Contract shall be payable by the Contractor according to Law in effect. ii. The Contractor shall deposit royalty and obtain necessary permit for supply of the red earth, moorum, sand, chips, bajri, stone, kankar, etc. from local authorities. The liability, if any, on account of quarry fees, royalties, octroi and other taxes and duties in respect of materials actually consumed on the Works, shall be borne by the Contractor. iii. If pursuant to or under any Law, notification or order any royalty, cess or the hike becomes payable to the Government of India and does not at any time become payable by the Contractor to the State Government/ Local authorities in respect of any Material used by the Contractor in the Works then in such a case, it shall be Lawful to the Government of India and it will have the right and be entitled to recover the amount paid in the circumstances as aforesaid from the dues of the Contractor.
Adjustments for changes in Legislation	15.21	<ul style="list-style-type: none"> i All the bid rates shall be inclusive of all taxes and levies payable under respective statutes. ii The Contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the Procuring Entity and/ or the Engineer-in-Charge and further shall furnish such other information/ document as the Engineer-in-Charge may require from time to time. iii The Contractor shall, within a period of 30 Days of the imposition of any such further tax or levy, give a written notice thereof to the Engineer-in-Charge that the same is given pursuant to this condition, together with all necessary information relating thereto. <p>This Sub-Clause shall not be applicable if the effect of changes in legislation has been included in price variation formulae in Clause 10 [Price Variation].</p>
Pre Check and Post Check of Bills	15.22	The Procuring Entity shall have a right to provide a system of pre check of Contractor's bills by a specified organization and payment by an Accounts Organisation as the Government/ Procuring Entity may in its absolute discretion decide. Any overpayments detected as a result of

		such pre check or post check of Contractor's bills can be recovered from the Contractor's bills and the Contractor will refund such excess payments.
16. Termination of Contract by Procuring Entity		
Termination by Procuring Entity	16.1	<p>16.1 Termination for Employer's Convenience</p> <p>16.1.1 The Employer may at any time terminate the Contract for any reason by giving the Contractor a notice of termination that refers to this GCC Subclause 16.1.</p> <p>16.1.2 Upon receipt of the notice of termination under GCC Subclause 16.1.1, the Contractor shall, either immediately or upon the date specified in the notice of termination,</p> <ul style="list-style-type: none"> (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition; (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii) below; (c) remove all Contractor's Equipment from the Site, repatriate the Contractor's and its Subcontractors' personnel from the Site, remove from the Site any wreckage, rubbish and debris of any kind, and leave the whole of the Site in a clean and safe condition; and (d) subject to the payment specified in GCC Subclause 16.1.3, <ul style="list-style-type: none"> (i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination; (ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and (iii) deliver to the Employer all non-proprietary drawings, specifications and other documents prepared by the Contractor or its Subcontractors as at the date of termination in connection with the Facilities. <p>16.1.3 In the event of termination of the Contract under GCC Subclause 16.1.1, the Employer shall pay to the Contractor the following amounts:</p> <ul style="list-style-type: none"> (a) the Contract Price, properly attributable to the parts of the Facilities executed by the Contractor as of the date of termination; (b) the costs reasonably incurred by the Contractor in the removal of the Contractor's Equipment from the Site and in the

	<p>repatriation of the Contractor's and its Subcontractors' personnel;</p> <p>(c) any amounts to be paid by the Contractor to its Subcontractors in connection with the termination of any subcontracts, including any cancellation charges;</p> <p>(d) costs incurred by the Contractor in protecting the Facilities and leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Subclause 16.1.2; and</p> <p>(e) the cost of satisfying all other obligations, commitments and claims that the Contractor may in good faith have undertaken with third parties in connection with the Contract and that are not covered by paragraphs (a) through (d) above.</p> <p>Subject to the other provisions contained in this Sub-Clause the Engineer-in-charge may, without prejudice to his any other rights or remedy against the Contractor in respect of any delay, inferior workmanship, any claims for damages and/or any other provisions of this Contract or otherwise and whether the date of completion has or has not elapsed by a notice of reasonable period in writing absolutely determine the Contract in any of the following cases:</p> <ul style="list-style-type: none"> i If the Contractor, having been given by the Engineer-in-Charge a notice in writing to rectify, reconstruct or replace any defective work or that the work is being performed in an inefficient or otherwise improper or un-workmanlike manner, or by workers who do not understand the instructions of the Engineer-in-Charge, or do not execute the work as per specifications or in contravention of the advice of the third party quality inspections agency about the quality of works, if any, shall omit to comply with the requirement of such notice for a period of fifteen Days thereof. ii If the Contractor being a company shall pass a resolution or the Court shall make an order that the company shall be wound up or if a receiver or a manager on behalf of a creditor shall be appointed or if circumstances shall arise which entitle the Court or the creditor to appoint a receiver or a manager or which entitle the Court to make a winding up order. iii If the Contractor has, without reasonable cause, suspended the progress of the Works for a continuous period of 30 days, or has failed to proceed with the Works with due diligence so that, in the reasoned opinion of the Engineer-in-Charge (which shall be final and binding), he will be unable to secure completion of the Works by the stipulated date of completion and continues to do so after a notice in writing of fifteen Days from the Engineer-in-Charge. iv If the Contractor fails to complete the Works within the stipulated time or spans of the Works with individual date of completion, if any stipulated, on or before such date(s) of completion and or fails to achieve two continuous mile stones, does not complete them within the period specified in a notice given in writing on that behalf by the Engineer-in-Charge.
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	<p>v If the Contractor persistently neglects to carry out his obligations under the Contract and/ or commits default in complying with any of the terms and conditions of the Contract and does not remedy it or take effective steps to remedy it within fifteen Days after a notice in writing is given to him on that behalf by the Engineer-in-charge.</p> <p>vi If the Contractor sublets the Works or a part of Works without specific permission of the Procuring Entity/ Engineer-in-charge.</p> <p>vii If the Contractor has not been commenced the Works by the Commencement Date or within 1/8th of the stipulated time for completion subject to a maximum of 45 Days, whichever is earlier. When the Contractor has made himself liable for action under any of the cases aforesaid, the Engineer-in-Charge on behalf of the Procuring Entity shall have the powers:</p> <p>(a) To determine or rescind the Contract as aforesaid (of which a 28 days termination or rescission notice in writing to the Contractor under the hand of Engineer-in-Charge shall be conclusive evidence). Upon such determination or rescission the Bid Security and Performance Security under the Contract shall be liable to be forfeited and shall be absolutely at the disposal of the Procuring Entity.</p> <p>(b) To employ labour paid by the Procuring Entity and to supply materials to carry out the Works or any part of the Works, debiting the Contractor with the cost of the labour and the price of the materials (of the amount of which cost and price certified by the Engineer-in-charge shall be final and conclusive against the Contractor) and crediting him with the value of the work done in all respects in the same manner and at the same rates, as if it has been carried out by the Contractor under the terms of this Contract. The certificate of the Engineer-in- Charge, as to the value of the work done, shall be final and conclusive evidence against the Contractor provided always that action under the sub Sub-Clause shall only be taken after giving notice in writing to the Contractor. Provided also that if the expenses incurred by the Procuring Entity are less than the amount payable to the Contractor at his agreement rates, the difference shall not be paid to the Contractor.</p> <p>(c) After giving notice specifying the date and time to the Contractor to measure up the acceptable (executed as per design, drawings and specifications) work of the Contractor at Site and to take such part thereof, as shall be unacceptable out of his hands and to give it to another contractor to complete, in which case any expenses which may be incurred in excess of the sum which would have been paid to the original Contractor, if the whole work had been executed by him (of the amount of which excess, the certificate in writing of the Engineer- in-charge shall be final and conclusive) shall be borne and paid by the original Contractor and may be deducted from any money due to him by the Procuring Entity under this Contract or any other account, whatsoever, or from his Bid Security, Performance Security or the Enlistment Security or the proceeds of sale thereof, or a sufficient part thereof as the case may be.</p> <p>In the event of any one or more of the above courses being adopted by the Engineer-in-charge the contractor shall have no claim to</p>
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		<p>compensation for any loss sustained by him by reason of his having purchased or procured any materials or entered into any engagements or made any advances on account or with a view to the execution of the Works or the performance of the Contract.</p> <p>(i) In case action is taken under any of the aforesaid provisions, the Contractor shall not be entitled to recover or be paid any sum for any work thereof or actually performed under this Contract unless and until the Engineer-in-charge has certified in writing the performance of such work and value payable in respect thereof and he shall only be entitled to be paid the value so certified.</p>
Contractor liable to pay compensation even if action not taken under Sub-Clause 16.1 above	16.2	<p>i In any case in which the powers conferred upon the Engineer-in-Charge by Sub-Clause 16.1 [Termination by Procuring Entity] shall have become exercisable and the same are not exercised, the non-exercise of such powers shall not constitute a waiver of any of the conditions hereof and such powers shall, notwithstanding, be exercisable in the event of any future case of default by the Contractor and the liability of the Contractor for compensation shall remain unaffected.</p> <p>ii In the event of the Engineer-in-Charge putting in force all or any of the powers vested in him under the preceding Sub-Clause 16.1, he may, if he so desires, after giving a notice in writing to the Contractor, take possession of all or any tools, plants, materials and stores, in or upon the Works or the Site, thereof or belonging to the Contractor or procured by him and intended to be used for execution of the Works or any part thereof, paying or allowing for the same in account, at the Contract rates or, in the case of these not being applicable, at current market rates to be certified by the Engineer-in-Charge (whose certificate, thereof, shall be final and conclusive), otherwise the Engineer-in-Charge may, by notice in writing to the Contractor or his authorized agent, require him to remove such tools, plants, materials or stores from the premises (within a time to be specified in such notice), and in the event of the Contractor failing to comply with any such requisition, the Engineer-in-Charge may remove them at the Contractor's expense or sell them by auction or private sale on account of the Contractor and his risk in all respects, and the certificate of the Engineer-in-Charge as to the expenses of any such removal, and the amount of the proceeds and expenses of any such sale shall be final and conclusive against the Contractor.</p>
Valuation at the date of termination:	16.3	As soon as practicable after a notice of termination under Sub-Clause 16.1 has taken effect, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine the value of the Works, Goods and Contractor's Documents, and any other sums due to the Contractor for work executed in accordance with the Contract.
Payment after Termination	16.4	<p>After a notice of termination under Sub-Clause 16.1 has taken effect, the Procuring Entity may:</p> <p>i proceed in accordance with Sub-Clause 3.5 [Procuring Entity's Claims],</p> <p>ii withhold further payments to the Contractor until the Costs of execution, completion and remedying of any Defects, damages for delay in completion (if any), and all other Costs incurred by</p>

		<p>iii the Procuring Entity, have been established, and recover from the Contractor any losses and damages incurred by the Procuring Entity and any extra Costs of completing the Works, after allowing for any sum due to the Contractor under Sub-Clause 16.3. After recovering any such losses, damages and extra Costs, the Procuring Entity shall pay balance to the Contractor, if any.</p>
Procuring Entity's Entitlement to Termination for Convenience	16.5	If, at any time after the commencement of the Works, the Procuring Entity shall, for any reason, whatsoever, not require the whole work, thereof, as specified in the Contract, to be carried out, the Engineer-in-charge shall give notice, in writing, of the fact to the Contractor, who shall have no claim to any payment or compensation, whatsoever, on account of any profit or advantage which he might have derived from the execution of the Works in full but which he did not derive in consequence of the full amount of the Works not having been carried out. Neither shall he have any claim for compensation by reason of alterations having been made in the original specifications, drawings and design and instructions, which shall involve any curtailment of the Works, as originally contemplated. Provided, that the contractor shall be paid the charges for the cartage only, of materials actually brought to the Site of the Works by him for bona fide use and rendered surplus as a result of the abandonment or curtailment of the Works or any portion thereof, and taken them back by the Contractor provided, however, that the Engineer-in-charge shall have, in all such cases, the option of taking over all or any such materials at their purchase price or at local market rates whichever may be less.
Corrupt, Fraudulent, Collusive or Coercive Practices	16.6	<p>If the Procuring Entity determines that the Contractor, his Sub-Contractors or any of their personnel has breached the Code of Integrity prescribed in the Instructions to Bidders [Section I of the Bidding Document] or has engaged in corrupt, fraudulent, collusive or coercive practices, in competing for or in executing the Contract, then the Procuring Entity may, after giving 14 Days notice to the Contractor:</p> <ul style="list-style-type: none"> i terminate the Contract and expel him from the Site, ii forfeit or encash performance security and any other security or bond relating to this Contract, iii recover the payments made under the Contract along with interest thereon at bank rate, iv recover compensation for loss incurred due to termination of the Contract including excess expenditure, if any incurred in getting the remaining work executed from other agency under Sub-Clause 16.1. <p>For the purposes of this Sub-Clause:</p> <ul style="list-style-type: none"> i "corrupt practice" means the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in the Contract execution; ii "fraudulent practice" means a misrepresentation or omission of facts in order to influence a procurement process or the execution of the Contract; iii "collusive practice" means a scheme of arrangement between two or more bidders, with or without the knowledge of the

		<p>Procuring Entity, designed to establish bid prices at artificial, non-competitive levels;</p> <p>iv “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a Contract.</p> <p>Should any employee of the Contractor be determined to have engaged in corrupt, fraudulent or coercive practice during the execution of the Works then that employee shall be removed in accordance with Sub-Clause 6.11 [Contractor’s Personnel].</p>
Termination of Contract on Death of Contractor	16.7	Without prejudice to any of the rights or remedies under this Contract, if the Contractor dies, the Procuring Entity shall have the option of terminating the Contract without compensation to the Contractor after the affidavit of his/ their legal heir/heirs that they are not in a position to complete the work as Contracted or are not going to be in this profession in future.
17. Suspension of Works and Termination by the Contractor		
Contractor’s Entitlement to Suspend Work	17.1	<p>17.1.1 Termination for Contractor’s Default</p> <p>17.1.1 The Employer, without prejudice to any other rights or remedies it may possess, may terminate the Contract forthwith in the following circumstances by giving a notice of termination and its reasons therefor to the Contractor, referring to this GCC Subclause 17.1:</p> <ul style="list-style-type: none"> (a) if the Contractor becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, if the Contractor is a corporation, a resolution is passed or order is made for its winding up, other than a voluntary liquidation for the purposes of amalgamation or reconstruction, a receiver is appointed over any part of its undertaking or assets, or if the Contractor takes or suffers any other analogous action in consequence of debt; (b) if the Contractor assigns or transfers the Contract or any right or interest therein in violation of the provision of GCC Clause 40; and (c) if the Contractor, in the judgment of the Employer has engaged in corrupt or fraudulent practices, in competing for or in executing the Contract. <p>17.2.2 If the Contractor</p> <ul style="list-style-type: none"> (a) has abandoned or repudiated the Contract; (b) has without valid reason failed to commence work on the Facilities promptly or has suspended, other than pursuant to GCC Subclause 16, the progress of Contract performance for more than 28 days after receiving a written instruction from the Employer to proceed;

	<p>(c) persistently fails to execute the Contract in accordance with the Contract or persistently neglects to carry out its obligations under the Contract without just cause;</p> <p>(d) refuses or is unable to provide sufficient materials, services or labor to execute and complete the Facilities in the manner, specified in the Work program furnished by the contractor at the time of agreement and at rates of progress that give reasonable assurance to the Employer that the Contractor can attain Completion of the Facilities by the Time for Completion as extended;</p> <p>then the Employer may, without prejudice to any other rights it may possess under the Contract, give a notice to the Contractor, stating the nature of the default and requiring the Contractor to remedy the same. If the Contractor fails to remedy or to take steps to remedy the same within 14 days of its receipt of such notice, then the Employer may terminate the Contract forthwith by giving a notice of termination to the Contractor that refers to this GCC Subclause 17.1.</p> <p>17.2.3 Upon receipt of the notice of termination under GCC Subclauses 17.1.1 or 17.1.2, the Contractor shall, either immediately or upon such date as is specified in the notice of termination,</p> <ul style="list-style-type: none"> (a) cease all further work, except for such work as the Employer may specify in the notice of termination for the sole purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition; (b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) below; (c) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination; (d) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its Subcontractors; and (e) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities. <p>17.1.4 The Employer may enter upon the Site, expel the Contractor, and complete the Facilities itself or by employing any third party. The Employer may, to the exclusion of any right of the Contractor over the same, take over and use with the payment of a fair rental rate to the Contractor, with all the maintenance costs to the account of the Employer and with an indemnification by the Employer for all liability including damage or injury to persons arising out of</p>
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	<p>the Employer's use of such equipment, any Contractor's Equipment owned by the Contractor and on the Site in connection with the Facilities for such reasonable period as the Employer considers expedient for the supply and installation of the Facilities.</p> <p>Upon completion of the Facilities or at such earlier date as the Employer thinks appropriate, the Employer shall give notice to the Contractor that such Contractor's Equipment will be returned to the Contractor at or near the Site and shall return such Contractor's Equipment to the Contractor in accordance with such notice. The Contractor shall thereafter without delay and at its cost remove or arrange removal of the same from the Site.</p> <p>17.1.5 Subject to GCC Subclause 17.1.6, the Contractor shall be entitled to be paid the Contract Price attributable to the Facilities executed as of the date of termination, the value of any unused or partially used Plant on the Site, and the costs, if any, incurred in protecting the Facilities and in leaving the Site in a clean and safe condition pursuant to paragraph (a) of GCC Subclause 17.1.3. Any sums due the Employer from the Contractor accruing prior to the date of termination shall be deducted from the amount to be paid to the Contractor under this Contract.</p> <p>17.1.6 If the Employer completes the Facilities, the cost of completing the Facilities by the Employer shall be determined.</p> <p>If the sum that the Contractor is entitled to be paid, pursuant to GCC Subclause 17.1.5, plus the reasonable costs incurred by the Employer in completing the Facilities, exceeds the Contract Price, the Contractor shall be liable for such excess.</p> <p>If such excess is greater than the sums due the Contractor under GCC Subclause 17.1.5, the Contractor shall pay the balance to the Employer, and if such excess is less than the sums due the Contractor under GCC Subclause 17.1.5, the Employer shall pay the balance to the Contractor.</p> <p>The Employer and the Contractor shall agree, in writing, on the computation described above and the manner in which any sums shall be paid.</p> <p>17.2 <u>Termination by Contractor</u></p> <p>17.2.1 If</p> <p>(a) the Employer has failed to pay the Contractor any sum due under the Contract within the specified period, has failed to approve any invoice or supporting documents without just cause pursuant to the Appendix (Terms and Procedures of Payment) to the Contract Agreement, or commits a substantial breach of the Contract, the Contractor may give a notice to the Employer that requires payment of such sum, with interest thereon as stipulated in GCC Subclause 15.6, requires approval of such invoice or supporting documents, or specifies the breach and requires the Employer to remedy the same, as the case may be. If the Employer fails to pay such sum together with</p>
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	<p>such interest, fails to approve such invoice or supporting documents or give its reasons for withholding such approval, fails to remedy the breach or take steps to remedy the breach within 14 days after receipt of the Contractor's notice; or</p> <p>(b) the Contractor is unable to carry out any of its obligations under the Contract for any reason attributable to the Employer, including but not limited to the Employer's failure to provide possession of or access to the Site or other areas or failure to obtain any governmental permit necessary for the execution and/or completion of the Facilities;</p> <p>then the Contractor may give a notice to the Employer thereof, and if the Employer has failed to pay the outstanding sum, to approve the invoice or supporting documents, to give its reasons for withholding such approval, or to remedy the breach within 28 days of such notice, or if the Contractor is still unable to carry out any of its obligations under the Contract for any reason attributable to the Employer within 28 days of the said notice, the Contractor may by a further notice to the Employer referring to this GCC Subclause 17.2.1, forthwith terminate the Contract.</p> <p>17.2.2 The Contractor may terminate the Contract forthwith by giving a notice to the Employer to that effect, referring to this GCC Subclause 17.2.2, if the Employer becomes bankrupt or insolvent, has a receiving order issued against it, compounds with its creditors, or, being a corporation, if a resolution is passed or order is made for its winding up (other than a voluntary liquidation for the purposes of amalgamation or reconstruction), a receiver is appointed over any part of its undertaking or assets, or if the Employer takes or suffers any other analogous action in consequence of debt.</p> <p>17.2.3 If the Contract is terminated under GCC Subclauses 17.2.1 or 17.2.2, then the Contractor shall immediately</p> <p>(a) cease all further work, except for such work as may be necessary for the purpose of protecting that part of the Facilities already executed, or any work required to leave the Site in a clean and safe condition;</p> <p>(b) terminate all subcontracts, except those to be assigned to the Employer pursuant to paragraph (d) (ii);</p> <p>remove all Contractor's Equipment from the Site and repatriate the Contractor's and its Subcontractors' personnel from the Site; and subject to the payment specified in GCC Subclause 17.2.4,</p> <p>(i) deliver to the Employer the parts of the Facilities executed by the Contractor up to the date of termination;</p> <p>(ii) to the extent legally possible, assign to the Employer all right, title and benefit of the Contractor to the Facilities and to the Plant as of the date of termination, and, as may be required by the Employer, in any subcontracts concluded between the Contractor and its</p>
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		<p>Subcontractors; and</p> <p>(iii) deliver to the Employer all drawings, specifications and other documents prepared by the Contractor or its Subcontractors as of the date of termination in connection with the Facilities.</p> <p>17.2.4 If the Contract is terminated under GCC Subclauses 17.2.1 or 17.2.2, the Employer shall pay to the Contractor all payments specified in GCC Subclause 16, and reasonable compensation for all loss, except for loss of profit, or damage sustained by the Contractor arising out of, in connection with or in consequence of such termination.</p> <p>17.2.5 Termination by the Contractor pursuant to this GCC Subclause 17.2 is without prejudice to any other rights or remedies of the Contractor that may be exercised in lieu of or in addition to rights conferred by GCC Subclause 17.2.</p> <p>17.3 In this GCC Clause 42, the expression "Facilities executed" shall include all work executed, Installation Services provided, and all Plant acquired, or subject to a legally binding obligation to purchase, by the Contractor and used or intended to be used for the purpose of the Facilities, up to and including the date of termination.</p> <p>If the Engineer-in-charge fails to certify an Interim Payment Certificate in accordance with Sub-Clause 15.5 [Issue of Interim Payment Certificates] or fails to make a payment of an Interim Payment Certificate within time period specified in accordance with Sub-Clause 15.6 [Payment of an Interim Payment Certificate], the Contractor may, after giving not less than 21 Days' notice to the Procuring Entity, suspend work (or reduce the rate of progress of work) unless and until the Contractor has received the Payment Certificate or payment, as the case may be as described in the notice.</p> <p>If the Contractor subsequently receives such Payment Certificate or payment (as described in the relevant Sub-Clause and in the above notice) before giving a notice of termination, the Contractor shall resume normal working as soon as is reasonably practicable.</p> <p>If the Contractor suffers delay and/ or incurs Cost as a result of suspending the Works (or reducing the rate of progress of the Works) in accordance with this Sub- Clause, the Contractor shall give notice to the Engineer-in-charge and shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <p>i an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion], and</p> <p>payment of any such Cost, which shall be included in the Contract Price.</p> <p>After receiving this notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.</p>
Termination by Contractor	17.2	The Contractor shall be entitled to terminate the Contract if: i the Contractor does not receive the amount due under an

		<p>Interim Payment Certificate within 28 Days after the expiry of the time stated in Sub-Clause 15.6 [Payment of an Interim Payment Certificate] within which payment is to be made (except for deductions in accordance with Sub-Clause 2.5 [Procuring Entity's Claims], or</p> <ul style="list-style-type: none"> ii the Procuring Entity substantially fails to perform his obligations under the Contract in such manner as to materially and adversely affect the economic balance of the Contract and/ or the ability of the Contractor to perform the Contract, or iii a prolonged suspension affects the whole of the Works as described in Sub- Clause 8.13 [Prolonged Suspension], or iv the Contractor does not receive the Engineer-in-charge's instruction recording the agreement of both Parties on the fulfilment of the conditions for the Commencement of Works under Sub-Clause 8.3 [Commencement of Works]. <p>In any of these events or circumstances, the Contractor may, upon giving 28 Days' reasoned notice to the Procuring Entity, terminate the Contract.</p>
Cessation of Work and Removal of Contractor's Equipment	17.3	<p>After a notice of termination under Sub-Clause 16 [Termination of Contract by Procuring Entity], Sub-Clause 17.2 [Termination by Contractor] or Sub-Clause 19.6. [Optional Termination, Payment and Release] has taken effect, the Contractor shall promptly:</p> <ul style="list-style-type: none"> i cease all further work, except for such work as may have been instructed by the Engineer-in-charge for the protection of life or property or for the safety of the Works, ii hand over Contractor's Documents, as built drawings, Plant, Materials and other work, for which the Contractor has received payment, and iii remove all other Goods from the Site, except as necessary for safety, and leave the Site.
Payment on Termination	17.4	<p>After a notice of termination under Sub-Clause 17.2 [Termination by Contractor] has taken effect, the Procuring Entity shall promptly pay the Contractor in accordance with Sub-Clause 19.6. [Optional Termination, Payment and Release].</p>
18. Risk and responsibilities		
Indemnities	18.1	<p>The Contractor shall indemnify and hold harmless the Procuring Entity, the Procuring Entity's Personnel, and their respective agents, against and from all claims, damages, losses and expenses (including legal fees and expenses) in respect of:</p> <ul style="list-style-type: none"> i bodily injury, sickness, disease or death, of any person whatsoever arising out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying of any Defects, unless attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, or any of their respective agents, and ii damage to or loss of any property, real or personal (other than the Works), to the extent that such damage or loss arises out of or in the course of or by reason of the Contractor's design (if any), the execution and completion of the Works and the remedying

		of any Defects, unless and to the extent that any such damage or loss is attributable to any negligence, willful act or breach of the Contract by the Procuring Entity, the Procuring Entity's Personnel, their respective agents, or anyone directly or indirectly employed by any of them.
Contractor's Care of the Works	18.2.1	<p>The Contractor shall take full responsibility for the care of the Works and materials and Goods from the Commencement Date until the Taking-Over Certificate is issued (or is deemed to be issued under Clause 12 [Taking Over of the Works and Sections by Procuring Entity] for the Works, when responsibility for the care of the Works shall pass to the Procuring Entity. If a Taking-Over Certificate is issued (or is so deemed to be issued) for any Section or part of the Works, responsibility for the care of the Section or part shall then pass to the Procuring Entity.</p> <p>After responsibility has accordingly passed to the Procuring Entity, the Contractor shall take responsibility for the care of any work which is outstanding on the date stated in a Taking-Over Certificate, until this outstanding work has been completed.</p> <p>If any loss or damage happens to the Works, Materials or Goods or Contractor's Documents during the period when the Contractor is responsible for their care, from any cause not listed in Sub-Clause 18.3 [Procuring Entity's Risks], the Contractor shall rectify/ reimburse the loss or damage at the Contractor's risk and Cost, so that the Works, Materials or Goods or Contractor's Documents conform with the Contract.</p> <p>The Contractor shall be liable for any loss or damage caused by any actions performed by the Contractor after a Taking-Over Certificate has been issued. The Contractor shall also be liable for any loss or damage which occurs after a Taking Over Certificate has been issued and which arose from a previous event for which the Contractor was liable.</p>
	18.2.2	All risks of loss of or damage to physical property and of personal injury and death which arise during and in consequence of the performance of the Contract other than the excepted risks are the responsibility of the Contractor.
Procuring Entity's Risks.	18.3	<p>The risks referred to in Sub-Clause 18.4 [Consequences of Procuring Entity's Risks] below, insofar as they directly affect the execution of the Works, are:</p> <ul style="list-style-type: none"> i war, hostilities (whether war be declared or not), invasion, act of foreign enemies, ii rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, within the Country, iii riot, commotion or disorder within the Country by persons other than the Contractor's Personnel, iv munitions of war, explosive Materials, ionizing radiation or contamination by radio-activity, within the Country, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, v pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds, vi use or occupation by the Procuring Entity of any part of the Permanent Works, except as may be specified in the Contract, vii design of any part of the Works by the Procuring Entity's Personnel or by others for whom the Procuring Entity is responsible, and

		<p>viii Any operation of the forces of nature which is Unforeseeable or against which an experienced Contractor could not reasonably have been expected to have taken adequate preventive precautions.</p>
Consequences of Procuring Entity's Risks	18.4	<p>If and to the extent that any of the risks listed in Sub-Clause 18.3 above results in loss or damage to the Works, materials or Goods or Contractor's Documents, the Contractor shall promptly give notice to the Engineer-in-charge and shall rectify this loss or damage to the extent required by the Engineer-in-charge.</p> <p>If the Contractor suffers delay and/ or incurs Cost from rectifying this loss or damage, the Contractor shall give a further notice to the Engineer-in-charge and shall be entitled subject to Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i An extension of time for any such delay, if completion is or will be delayed, under Clause 8.6 [Extension of Time for Completion], and ii payment of any such Cost, which shall be included in the Contract Price. After receiving this further notice, the Engineer-in-charge shall proceed in accordance with Clause 3.5 [Determinations] to agree or determine these matters.
Intellectual and Industrial Property Rights	18.5	<p>In this Sub-Clause, "infringement" means an infringement (or alleged infringement) of any patent, registered design, copyright, trade mark, trade name, trade secret or other intellectual or industrial property right relating to the Works; and "claim" means a claim (or proceedings pursuing a claim) alleging an infringement.</p> <p>Whenever a Party does not give notice to the other Party of any claim within 28 Days of receiving the claim, the first Party shall be deemed to have waived any right to indemnity under this Sub-Clause.</p> <p>The Contractor shall fully indemnify and keep indemnified the Procuring Entity and the State Government against any action, claim or proceeding relating to infringement or use of any patent or design or any alleged patent or design rights and shall pay any royalties which may be payable in respect of any article or part thereof included in the Contract. The Contractor shall indemnify and hold the Procuring Entity harmless against and from any other claim which arises out of or in relation to (i) the manufacture, use, sale or import of any Goods, or (ii) any design for which the Contractor is responsible.</p> <p>The Procuring Entity shall indemnify and hold the Contractor harmless against and from any claim alleging an infringement which is or was:</p> <ul style="list-style-type: none"> i an unavoidable result of the Contractor's compliance with the Contract, or ii a result of any Works being used by the Procuring Entity: <ul style="list-style-type: none"> (a) for a purpose other than that indicated by, or reasonably to be inferred from, the Contract, or (b) in conjunction with anything not supplied by the Contractor, unless such use was disclosed to the Contractor prior to the Base Date or is stated in the Contract <p>If a Party is entitled to be indemnified under this Sub-Clause, the indemnifying Party may (at its Cost) conduct negotiations for the settlement of the claim, and any litigation or arbitration which may arise from it. The other Party shall, at the request and Cost of the indemnifying Party, assist in contesting the claim. This other Party (and its Personnel) shall not make any admission which might be prejudicial to the indemnifying Party, unless the indemnifying Party failed to take over the conduct of any negotiations, litigation or</p>

		arbitration upon being requested to do so by such other Party.
Use of Procuring Entity's Accommodation/Facilities	18.6	<p>The Contractor shall take full responsibility for the care of the accommodation and facilities, if any, provided by the Procuring Entity as detailed in the Specifications, from the respective dates of hand-over to the Contractor until cessation of occupation (where hand-over or cessation of occupation may take place after the date stated in the Taking-Over Certificate for the Works).</p> <p>If any loss or damage happens to any of the above items while the Contractor is responsible for their care arising from any cause whatsoever other than those for which the Procuring Entity is liable, the Contractor shall, at his own cost, rectify the loss or damage to the satisfaction of the Engineer-in-Charge.</p>
19. Force Majeure		
Definition of Force Majeure	19.1	<p>In this Sub-Clause, "Force Majeure" means an exceptional event or circumstance:</p> <ul style="list-style-type: none"> i. which is beyond a Party's control, ii. which such Party could not reasonably have provided against before entering into the Contract, iii. which, having arisen, such Party could not reasonably have avoided or overcome, and iv. which is not substantially attributable to the other Party. <p>Force Majeure may include, but is not limited to, exceptional events or circumstances of the kind listed below, so long as conditions (i) to (iv) above are satisfied:</p> <ul style="list-style-type: none"> (a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, (b) rebellion, terrorism, sabotage by persons other than the Contractor's Personnel, revolution, insurrection, military or usurped power, or civil war, (c) riot, commotion, disorder, strike or lockout by persons other than the Contractor's Personnel, (d) munitions of war, explosive Materials, ionizing radiation or contamination by radio-activity, except as may be attributable to the Contractor's use of such munitions, explosives, radiation or radio-activity, and (e) natural catastrophes such as earthquake, hurricane, typhoon or volcanic activity.
Notice of Force Majeure	19.2	<p>If a Party is or will be prevented from performing its substantial obligations under the Contract by Force Majeure, then it shall give notice to the other Party of the event or circumstances constituting the Force Majeure and shall specify the obligations, the performance of which is or will be prevented. The notice shall be given within 14 Days after the Party became aware, or should have become aware, of the relevant event or circumstance constituting Force Majeure.</p> <p>The Party shall, having given notice, be excused performance of its obligations for so long as such Force Majeure prevents it from performing them.</p> <p>Notwithstanding any other provision of this Clause, Force Majeure shall not apply to obligations of either Party to make payments to the other Party under the Contract.</p>
Duty to Minimize Delay	19.3	<p>Each Party shall at all times use all reasonable endeavours to minimize any delay in the performance of the Contract as a result of Force Majeure.</p> <p>A Party shall give notice to the other Party when it ceases to be</p>

		affected by the Force Majeure.
Consequences of Force Majeure	19.4	<p>If the Contractor is prevented from performing its substantial obligations under the Contract by Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], and suffers delay and/or incurs Cost by reason of such Force Majeure, the Contractor shall be entitled subject to Sub-Clause 21.2 [Contractor's Claims] to:</p> <ul style="list-style-type: none"> i. an extension of time for any such delay, if completion is or will be delayed, under Sub-Clause 8.6 [Extension of Time for Completion], and ii. if the event or circumstance is of the kind described in Sub-Clause 19.1 [Definition of Force Majeure] and, in the case of subparagraphs (a) to (e), occurs in the Country, payment of any such Cost incurred rectifying or replacing the Works and/or Goods damaged or destructed by Force Majeure, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 20.2 [Insurance for Works and Contractor's Equipment]. <p>After receiving this notice, the Engineer-in-charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine these matters.</p>
Force Majeure Affecting Subcontractor	19.5	If any Subcontractor is entitled under any Contract or agreement relating to the Works to relief from force majeure on terms additional to or broader than those specified in this Sub-Clause, such additional or broader force majeure events or circumstances shall not excuse the Contractor's non-performance or entitle him to relief under this Sub-Clause.
Optional Termination, Payment and Release	19.6	<p>If the execution of substantially all the Works in progress is prevented for a continuous period of 84 Days by reason of Force Majeure of which notice has been given under Sub-Clause 19.2 [Notice of Force Majeure], or for multiple periods which total more than 140 Days due to the same notified Force Majeure, then either Party may give to the other Party a notice of termination of the Contract. In this event, the termination shall take effect 7 Days after the notice is given, and the Contractor shall proceed in accordance with Sub-Clause 17.3 [Cessation of Works and Removal of Contractor's Equipment].</p> <p>Upon such termination, the Engineer-in-charge shall determine the value of the work done and issue a Payment Certificate which shall include:</p> <ul style="list-style-type: none"> i. the amounts payable for any acceptable work carried out for which a price is stated in the Contract; ii. the Cost of Plant and Materials ordered for the Works which have been delivered to the Contractor, or of which the Contractor is liable to accept delivery: this Plant and Materials shall become the property of (and be at the risk of) the Procuring Entity when paid for by the Procuring Entity, and the Contractor shall place the same at the Procuring Entity's disposal; iii. other Costs or liabilities which in the circumstances were reasonably and necessarily incurred by the Contractor in the expectation of completing the Works; iv. the Cost of removal of Temporary Works and Contractor's Equipment from the Site.
Release from Performance	19.7	Notwithstanding any other provision of this Clause, if any event or circumstance outside the control of the Parties (including, but not

		<p>limited to, Force Majeure) arises which makes it impossible or unlawful for either or both Parties to fulfill its or their Contractual obligations or which, under the Law governing the Contract, entitles the Parties to be released from further performance of the Contract, then upon notice by either Party to the other Party of such event or circumstance:</p> <ul style="list-style-type: none"> i The Parties shall be discharged from further performance, without prejudice to the rights of either Party in respect of any previous breach of the Contract, and ii the sum payable by the Procuring Entity to the Contractor shall be the same as would have been payable under Sub-Clause 19.6 [Optional Termination, Payment and Release] if the Contract had been terminated under Sub- Clause 19.6.
20. Insurance		
General Requirements for Insurance	20.1	<p>In this Sub-Clause, "insuring Party" means, for each type of insurance, the Party responsible for effecting and maintaining the insurance specified in the relevant Sub-Clause.</p> <p>Wherever the Contractor is the insuring Party, each insurance shall be effected with insurers and in terms approved by the Procuring Entity. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Sub-Clause.</p> <p>Wherever the Procuring Entity is the insuring Party, each insurance shall be effected with insurers and in terms acceptable to the Contractor. These terms shall be consistent with any terms agreed by both Parties before the date of the Letter of Acceptance. This agreement of terms shall take precedence over the provisions of this Sub-Clause.</p> <p>If a policy is required to indemnify joint insured, the cover shall apply separately to each insured as though a separate policy had been issued for each of the joint insured. If a policy indemnifies additional joint insured, namely in addition to the insured specified in this Sub-Clause, (i) the Contractor shall act under the policy on behalf of these additional joint insured except that the Procuring Entity shall act for Procuring Entity's Personnel, (ii) additional joint insured shall not be entitled to receive payments directly from the insurer or to have any other direct dealings with the insurer, and (iii) the insuring Party shall require all additional joint insured to comply with the conditions stipulated in the policy.</p> <p>Each policy insuring against loss or damage shall provide for payments to be made in the currencies required to rectify the loss or damage. Payments received from insurers shall be used for the rectification of the loss or damage.</p> <p>The relevant insuring Party shall, within the respective periods stated in the Contract Data (calculated from the Commencement Date), submit to the other Party:</p> <ul style="list-style-type: none"> i evidence that the insurances described in this Sub-Clause have been effected, and ii copies of the policies for the insurances described in Sub-Clause 20.2 [Insurance for Works and Contractor's Equipment] and Sub-Clause 20.3 [Insurance against Injury to Persons and Damage to Property]. <p>When each premium is paid, the insuring Party shall submit evidence of payment to the other Party. Whenever evidence or policies are submitted, the insuring Party shall also give notice to the Engineer-in-charge.</p>

		<p>Each Party shall comply with the conditions stipulated in each of the insurance policies. The insuring Party shall keep the insurers informed of any relevant changes to the execution of the Works and ensure that insurance is maintained in accordance with this Sub-Clause. Neither Party shall make any material alteration to the terms of any insurance without the prior approval of the other Party. If an insurer makes (or attempts to make) any alteration, the Party first notified by the insurer shall promptly give notice to the other Party.</p> <p>If the insuring Party fails to effect and keep in force any of the insurances it is required to effect and maintain under the Contract, or fails to provide satisfactory evidence and copies of policies in accordance with this Sub-Clause, the other Party may (at its option and without prejudice to any other right or remedy) effect insurance for the relevant coverage and pay the premiums due. The insuring Party shall pay the amount of these premiums to the other Party, and the Contract Price shall be adjusted accordingly.</p> <p>Nothing in this Sub-Clause limits the obligations, liabilities or responsibilities of the Contractor or the Procuring Entity, under the other terms of the Contract or otherwise. Any amounts not insured or not recovered from the insurers shall be borne by the Contractor and/ or the Procuring Entity in accordance with these obligations, liabilities or responsibilities. However, if the insuring Party fails to effect and keep in force an insurance which is available and which it is required to effect and maintain under the Contract, and the other Party neither approves the omission nor effects insurance for the coverage relevant to this default, any moneys which should have been recoverable under this insurance shall be paid by the insuring Party.</p> <p>Payments by one Party to the other Party shall be subject to Sub-Clause 2.5 [Procuring Entity's Claims] or Sub-Clause 21.2 [Contractor's Claims], as applicable.</p>
Cargo Insurance	20.2	Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefore) and to the construction equipment to be provided by the Contractor or its Subcontractors.
Installation All Risks Insurance	20.3	Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.
Third Party Liability Insurance	20.4	<p>Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.</p> <p>A) Insurance against Injury to Persons and Damage to Property</p> <p>The insuring Party shall insure against each Party's liability for any loss, damage, death or bodily injury which may occur to any physical property (except things insured under Sub-Clause 20.2 [Insurance for Works and Contractor's Equipment]) or to any person (except persons insured under Sub-Clause 20.4 [Insurance for Contractor's Personnel]),</p>

		<p>which may arise out of the Contractor's performance of the Contract and occurring before the issue of the Performance Certificate.</p> <p>This insurance shall be for a limit per occurrence of not less than the amount stated in the Contract Data with no limit on the number of occurrences.</p> <p>Unless otherwise stated in the Special Conditions, the insurances specified in this Sub-Clause:</p> <ul style="list-style-type: none"> i shall be effected and maintained by the Contractor as insuring Party, ii shall be in the joint names of the Parties, iii shall be extended to cover liability for all loss and damage to the Procuring Entity's property (except things insured under Sub-Clause 20.2 [Insurance for Works and Contractor's Equipment]) arising out of the Contractor's performance of the Contract, and iv may however exclude liability to the extent that it arises from: <ul style="list-style-type: none"> (a) the Procuring Entity's right to have the Permanent Works executed on, over, under, in or through any land, and to occupy this land for the Permanent Works, (b) damage which is an unavoidable result of the Contractor's obligations to execute the Works and remedy any Defects, and <p>a cause listed in Sub-Clause 18.3 [Procuring Entity's Risks], except to the extent that cover is available at commercially reasonable terms.</p> <p>B) Insurance for Contractor's Personnel</p> <p>The Contractor shall effect and maintain insurance against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel.</p> <p>The insurance shall cover the Procuring Entity and the Engineer-in-charge against liability for claims, damages, losses and expenses (including legal fees and expenses) arising from injury, sickness, disease or death of any person employed by the Contractor or any other of the Contractor's Personnel, except that this insurance may exclude losses and claims to the extent that they arise from any act or neglect of the Procuring Entity or of the Procuring Entity's Personnel.</p> <p>The insurance shall be maintained in full force and effect during the whole time that these personnel are assisting in the execution of the Works. For a Subcontractor's employees, the insurance may be effected by the Subcontractor, but the Contractor shall be responsible for compliance with this Sub-Clause.</p>
Automobile Liability Insurance	20.5	Covering use of all vehicles used by the Contractor or its Subcontractors (whether owned by them or not) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.
Workers' Compensation		In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.
Employer's Liability		In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.
Other Insurance	20.5	The Contractor is also required to take out and maintain at its own cost the following types of insurance:

Insurance for Works and Contractor's Equipment	20.5.1	<p>The insuring Party shall insure the Works, Plant, Materials and Contractor's Documents for not less than the full reinstatement Cost including the Costs of demolition, removal of debris and professional fees and profit. This insurance shall be effective from the date by which the evidence is to be submitted under Sub- Clause 20.1 [General Requirements for Insurances], until the date of issue of the Taking-Over Certificate for the Works.</p> <p>The insuring Party shall maintain this insurance to provide cover until the date of issue of the Performance Certificate, for loss or damage for which the Contractor is liable arising from a cause occurring prior to the issue of the Taking-Over Certificate, and for loss or damage caused by the Contractor in the course of any other operations including those under Clause 13 [Defect Liability].</p> <p>The insuring Party shall insure the Contractor's Equipment for not less than the full replacement value, including delivery to Site. For each item of Contractor's Equipment, the insurance shall be effective while it is being transported to the Site and until it is no longer required as Contractor's Equipment.</p> <p>Unless otherwise stated in the Special Conditions, insurances under this Sub- Clause:</p> <ul style="list-style-type: none"> i shall be effected and maintained by the Contractor as insuring Party, ii shall be in the joint names of the Parties, who shall be jointly entitled to receive payments from the insurers, payments being held or allocated to the Party actually bearing the Costs of rectifying the loss or damage, iii shall be extended to cover liability for all loss and damage from any cause not listed in Sub-Clause 18.3 [Procuring Entity's Risks], iv shall also cover, to the extent specifically required in the Contract Data, loss or damage to a part of the Works which is attributable to the use or occupation by the Procuring Entity of another part of the Works, and loss or damage from the risks listed in Sub-Clause 18.3 [Procuring Entity's Risks], excluding (in each case) risks which are not insurable at commercially reasonable terms, and v may however exclude loss of, damage to, and reinstatement of: <ul style="list-style-type: none"> (a.) a part of the Works which is in a defective condition due to a defect in its design, materials or workmanship (but cover shall include any other parts which are lost or damaged as a direct result of this defective condition and not as described in subparagraph (b) below), (b.) a part of the Works which is lost or damaged in order to reinstate any other part of the Works if this other part is in a defective condition due to a defect in its design, material or workmanship, and <p>A part of the Works which has been taken over by the Procuring Entity, except to the extent that the Contractor is liable for the loss or damage.</p>
	20.5.2	Any other such item mentioned in SCC of this bid document
21. Claims, disputes and Arbitration		
Recovery	21.1.1	Any amount inadvertently paid as not due to the Contractor shall be treated as acknowledged recovery/ or debt due from the Contractor. The Contractor shall immediately inform the Engineer-in-charge about such amount and offer to reimburse immediately to the Engineer-in-charge.

	21.1.2	Whenever any claim against the Contractor for the payment of a sum of money arises out of or under the Contract, the Procuring Entity shall be entitled to recover such a sum by appropriating, in part or whole of the Performance Security, or enlistment deposit of the Contractor. In the event of the Performance Security and enlistment deposit being insufficient or if no Performance Security has been taken, then the balance or the total sum recoverable, as the case may be, shall be deducted from any sum, then due or which at any time, thereafter, may become due to the Contractor, under this Contract or other Contracts with the Procuring Entity. Should these sums not be sufficient to cover the full amount recoverable, the balance remaining due shall be recovered from the Contractor as arrears of land revenue under the relevant laws.
Contractor's Claims	21.2	<p>If the Contractor considers himself to be entitled to any extension of the Time for Completion and/ or any additional payment, under any Sub-Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall give notice to the Engineer-in-charge, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, but not later than 28 Days after the Contractor became aware, or should have become aware, of the event or circumstance.</p> <p>If the Contractor fails to give notice of a claim within such period of 28 Days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Procuring Entity shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Sub- Clause shall apply.</p> <p>The Contractor shall also submit any other notices which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.</p> <p>The Contractor shall keep such contemporary records as may be necessary to substantiate any claim included in the claim, either on the Site or at another location acceptable to the Engineer-in-charge. Without admitting the Procuring Entity's liability, the Engineer-in-charge may, after receiving any notice under this Sub-Clause, monitor the record-keeping and/ or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Engineer-in-charge to inspect all these records, and shall (if instructed) submit copies to the Engineer- in-charge.</p> <p>Within 42 Days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Engineer-in- charge, the Contractor shall send to the Engineer-in-charge a fully detailed claim which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect:</p> <ul style="list-style-type: none"> i. this fully detailed claim shall be considered as interim; ii. the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/ or amount claimed, and such further particulars as the Engineer-in-charge may reasonably require; and iii. the Contractor shall send a final claim within 28 Days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor

		<p>and approved by the Engineer-in- charge.</p> <p>Within 42 Days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Engineer- in-charge and approved by the Contractor, the Engineer-in-charge shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within the above defined time period.</p> <p>Within the above defined period of 42 Days, the Engineer-in- charge shall proceed in accordance with Sub-Clause 3.5 [Determinations] to agree or determine (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with Sub-Clause 8.6 [Extension of Time for Completion], and/ or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.</p> <p>Each Payment Certificate shall include such additional payment for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.</p> <p>If the Engineer-in-charge does not respond within the timeframe defined in this Sub-Clause, the matter may be brought to the attention of the Procuring Entity by the Contractor within 15 days (beyond the initial period of 42 days) for timely intervention. If the Contractor is not satisfied with the decision of the Engineer-in- charge/ Procuring Entity, the Parties may refer the dispute to the Arbitration of the Sole Arbitrator.</p> <p>The requirements of this Sub-Clause are in addition to those of any other Sub- Clause which may apply to a claim. If the Contractor fails to comply with this or another Sub-Clause in relation to any claim, any extension of time and/ or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Sub-Clause.</p>
Dispute Resolution	21.3.1	The procedure of reference of disputes to the Arbitrator shall be as per the the Arbitration and Conciliation, 1996(as amended).
22.0 Installation		<p>22.1 Setting Out/Supervision</p> <p>22.1.1 <u>Benchmark</u></p> <p>(a) The Contractor shall be responsible for the true and proper setting-out of the Facilities in relation to bench marks, reference marks, and lines provided to it in writing by or on behalf of the Employer.</p> <p>(b) If, at any time during the progress of installation of the Facilities, any error shall appear in the position, level, or alignment of the Facilities, the Contractor shall forthwith notify the EIC of such error and, at its own expense, immediately rectify such error to the reasonable satisfaction of the EIC. If such error is based on incorrect data provided in writing by or on behalf of the Employer, the expense of rectifying the same shall be borne by the Employer.</p> <p>22.1.2 <u>Contractor's Supervision</u></p>

	<p>The Contractor shall give or provide all necessary superintendence during the installation of the Facilities, and the Construction Manager or its deputy shall be constantly on the Site to provide full-time superintendence of the installation. The Contractor shall provide and employ only technical personnel who are skilled and experienced in their respective callings and supervisory staff who are competent to adequately supervise the work at hand.</p> <p>22.2 Labor</p> <p>22.2.1 <u>Engagement of Staff and Labor</u></p> <ul style="list-style-type: none"> (a) Except as otherwise stated in the Specification, the Contractor shall make arrangements for the engagement of all staff and labor, local or otherwise, and for their payment, housing, feeding, and transport. (b) The Contractor shall provide and employ on the Site in the installation of the Facilities such skilled, semi-skilled, and unskilled labor as is necessary for the proper and timely execution of the Contract. The Contractor is encouraged to use local labor that has the necessary skills. (c) The Contractor shall be responsible for obtaining all necessary permit(s) and/or visa(s) from the appropriate authorities for the entry of all labor and personnel to be employed on the Site into the country where the Site is located. The Employer will, if requested by the Contractor, use his best endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel. (d) The Contractor shall at its own expense provide the means of repatriation to all of its and its Subcontractor's personnel employed on the Contract at the Site to the place where they were recruited or to their domicile. It shall also provide suitable temporary maintenance of all such persons from the cessation of their employment on the Contract to the date programmed for their departure. In the event that the Contractor defaults in providing such means of transportation and temporary maintenance, the Employer may provide the same to such personnel and recover the cost of doing so from the Contractor. <p>22.2.2 <u>Persons in the Service of Employer</u></p> <p>The Contractor shall not recruit, or attempt to recruit, staff and labor from amongst the Employer's Personnel.</p> <p>22.2.3 <u>Labor Laws</u></p> <ul style="list-style-type: none"> (a) The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration, and
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	<p>emigration, and shall allow them all their legal rights.</p> <p>(b) The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous, or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.</p> <p>(c) The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious, or other customs and all local laws and regulations pertaining to the employment of labor.</p>
	<p>22.2.4 <u>Rates of Wages and Conditions of Labor</u></p> <p>(a) The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.</p> <p>The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages, and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.</p>
	<p>22.2.5 <u>Working Hours</u></p> <p>(a) No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours stated in the SCC, unless</p> <ul style="list-style-type: none"> (i) otherwise stated in the Contract; (ii) the EIC gives consent; or (iii) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the EIC. <p>(b) If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the EIC's consent thereto, the EIC shall not unreasonably withhold such consent.</p> <p>(c) This Subclause shall not apply to any work which is customarily carried out by rotary or double shifts.</p>
	<p>22.2.6 <u>Facilities for Staff and Labor</u></p> <p>(a) Except as otherwise stated in the Specification, the Contractor shall provide and maintain all necessary accommodation and</p>

	<p>welfare facilities for the Contractor's Personnel. The Contractor shall also provide facilities for the Employer's Personnel as stated in the Specification.</p> <p>(b) The Contractor shall not permit any of the Contractor's Personnel to maintain any temporary or permanent living quarters within the structures forming part of the Permanent Works.</p>
	<p>22.2.7 <u>Health and Safety</u></p> <p>(a) The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay, and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.</p> <p>(b) The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide whatever is required by this person to exercise this responsibility and authority.</p> <p>The Contractor shall send to the EIC, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety, and welfare of persons, and damage to property, as the EIC may reasonably require.</p>
	<p>22.2.8 <u>Records of Contractor's Personnel</u></p> <p>The Contractor shall keep accurate records of the Contractor's personnel, including the number of each class of Contractor's Personnel on the Site and the names, ages, gender, hours worked, and wages paid to all workers. These records shall be summarized on a monthly basis in a form approved by the EIC and shall be available for inspection by the EIC until the Contractor has completed all work.</p>
	<p>22.2.9 <u>Supply of Foodstuff</u></p> <p>The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.</p> <p>22.2.10 <u>Supply of Water</u></p>

	<p>The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.</p> <p>22.2.11 <u>Measures against Insect and Pest Nuisance</u></p> <p>The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.</p> <p>22.2.12 <u>Alcoholic Liquor or Drugs</u></p> <p>The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter, or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter, or disposal by Contractor's Personnel.</p> <p>22.2.13 <u>Arms and Ammunition</u></p> <p>The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.</p> <p>22.2.14 <u>Prohibition of All Forms of Forced or Compulsory Labor</u></p> <p>The contractor shall not employ "forced or compulsory labor" in any form. "Forced or compulsory labor" consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.</p> <p>22.2.15 <u>Prohibition of Harmful Child Labor</u></p> <p>The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.</p> <p>22.3 <u>Contractor's Equipment</u></p> <p>22.3.1 All Contractor's Equipment brought by the Contractor onto the Site shall be deemed to be intended to be used exclusively for the execution of the Contract. The Contractor shall not remove the same from the Site without the EIC's consent that such Contractor's Equipment is no longer required for the execution of the Contract.</p> <p>22.3.2 Unless otherwise specified in the Contract, upon completion of the Facilities, the Contractor shall remove from the Site all Equipment brought by the Contractor onto the Site and any surplus materials remaining thereon.</p> <p>22.3.3 The Employer will, if requested, use its best endeavors to assist the Contractor in obtaining any local, state or national government</p>
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	<p>permission required by the Contractor for the export of the Contractor's Equipment imported by the Contractor for use in the execution of the Contract that is no longer required for the execution of the Contract.</p> <p>22.4 <u>Site Regulations and Safety</u></p> <p>The Employer and the Contractor shall establish Site regulations setting out the rules to be observed in the execution of the Contract at the Site and shall comply therewith. The Contractor shall prepare and submit to the Employer, with a copy to the EIC, proposed Site regulations for the Employer's approval, which approval shall not be unreasonably withheld.</p> <p>Such Site regulations shall include, but shall not be limited to, rules in respect of security, safety of the Facilities, gate control, sanitation, medical care, and fire prevention.</p> <p>22.5 <u>Opportunities for Other Contractors</u></p> <p>22.5.1 The Contractor shall, upon written request from the Employer or the EIC, give all reasonable opportunities for carrying out the work to any other contractors employed by the Employer on or near the Site.</p> <p>22.5.2 If the Contractor, upon written request from the Employer or the EIC, makes available to other contractors any roads or ways the maintenance for which the Contractor is responsible, permits the use by such other contractors of the Contractor's Equipment, or provides any other service of whatsoever nature for such other contractors, the Employer shall fully compensate the Contractor for any loss or damage caused or occasioned by such other contractors in respect of any such use or service, and shall pay to the Contractor reasonable remuneration for the use of such equipment or the provision of such services.</p> <p>22.5.3 The Contractor shall also so arrange to perform its work as to minimize, to the extent possible, interference with the work of other contractors. The EIC shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors and the workers of the Employer in regard to their work.</p> <p>The Contractor shall notify the EIC promptly of any defects in the other Contractors' work that come to its notice, and that could affect the Contractor's work. The EIC shall determine the corrective measures, if any, required to rectify the situation after inspection of the Facilities. Decisions made by the EIC shall be binding on the Contractor.</p> <p>22.6 <u>Emergency Work</u></p> <p>If, by reason of an emergency arising in connection with and during the execution of the Contract, any protective or remedial work is necessary as a matter of urgency to prevent damage to the Facilities, the Contractor shall immediately carry out such work.</p> <p>If the Contractor is unable or unwilling to do such work immediately, the Employer may do or cause such work to be done as the Employer may determine is necessary in order to prevent damage to the Facilities. In</p>
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		<p>such event the Employer shall, as soon as practicable after the occurrence of any such emergency, notify the Contractor in writing of such emergency, the work done and the reasons therefor. If the work done or caused to be done by the Employer is work that the Contractor was liable to do at its own expense under the Contract, the reasonable costs incurred by the Employer in connection therewith shall be paid by the Contractor to the Employer. Otherwise, the cost of such remedial work shall be borne by the Employer.</p> <p>22.7 <u>Site Clearance</u></p> <p>22.7.1 <u>Site Clearance in Course of Performance</u></p> <p>In the course of carrying out the Contract, the Contractor shall keep the Site reasonably free from all unnecessary obstruction, store, or remove any surplus materials, clear away any wreckage, rubbish, or temporary works from the Site, and remove any Contractor's Equipment no longer required for execution of the Contract.</p> <p>22.7.2 <u>Clearance of Site after Completion</u></p> <p>After Completion of all parts of the Facilities, the Contractor shall clear away and remove all wreckage, rubbish, and debris of any kind from the Site, and shall leave the Site and Facilities in a clean and safe condition.</p> <p>22.8 <u>Watching and Lighting</u></p> <p>The Contractor shall provide and maintain at its own expense all lighting, fencing, and watching when and where necessary for the proper execution and the protection of the Facilities, or for the safety of the owners and occupiers of adjacent property and for the safety of the public.</p>
Completion of Facilities	24	<p>24.1 As soon as the Facilities or any part thereof has, in the opinion of the Contractor, been completed operationally and structurally and put in a tight and clean condition as specified in the Employer's Requirements, excluding minor items not materially affecting the operation or safety of the Facilities, the Contractor shall so notify the Employer in writing.</p> <p>24.2 Within 7 days after receipt of the notice from the Contractor under GCC Subclause 24.1, the Employer shall supply the operating and maintenance personnel specified in the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement for Pre-commissioning of the Facilities or any part thereof.</p> <p>Pursuant to the Appendix (Scope of Works and Supply by the Employer) to the Contract Agreement, the Employer shall also provide, within the said 7- day period, the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services, and other matters required for Pre-commissioning of the Facilities or any part thereof.</p>

	<p>24.3 As soon as reasonably practicable after the operating and maintenance personnel have been supplied by the Employer and the raw materials, utilities, lubricants, chemicals, catalysts, facilities, services, and other matters have been provided by the Employer in accordance with GCC Subclause 24.2, the Contractor shall commence Pre-commissioning of the Facilities or the relevant part thereof in preparation for Commissioning, subject to GCC Subclause 25.5.</p> <p>24.4 As soon as all works in respect of Pre-commissioning are completed and, in the opinion of the Contractor, the Facilities or any part thereof is ready for Commissioning, the Contractor shall so notify the EIC in writing.</p> <p>24.5 The EIC shall, within 14 days after receipt of the Contractor's notice under GCC Subclause 24.4, either issue a Completion Certificate in the form specified in the Employer's Requirements (Forms and Procedures), stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's notice under GCC Subclause 24.4, or notify the Contractor in writing of any defects and/or deficiencies.</p> <p>If the EIC notifies the Contractor of any defects and/or deficiencies, the Contractor shall then correct such defects and/or deficiencies, and shall repeat the procedure described in GCC Subclause 24.4.</p> <p>If the EIC is satisfied that the Facilities or that part thereof have reached Completion, the EIC shall, within 7 days after receipt of the Contractor's repeated notice, issue a Completion Certificate stating that the Facilities or that part thereof have reached Completion as of the date of the Contractor's repeated notice.</p> <p>If the EIC is not so satisfied, then it shall notify the Contractor in writing of any defects and/or deficiencies within 7 days after receipt of the Contractor's repeated notice, and the above procedure shall be repeated.</p> <p>24.6 If the EIC fails to issue the Completion Certificate and fails to inform the Contractor of any defects and/or deficiencies within 14 days after receipt of the Contractor's notice under GCC Subclause 24.4 or within 7 days after receipt of the Contractor's repeated notice under GCC Subclause 24.5, or if the Employer makes use of the Facilities or part thereof, then the Facilities or that part thereof shall be deemed to have reached Completion as of the date of the Contractor's notice or repeated notice, or as of the Employer's use of the Facilities, as the case may be.</p> <p>As soon as possible after Completion, the Contractor shall complete all outstanding minor items so that the Facilities are fully</p>
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		<p>in accordance with the requirements of the Contract, failing which the Employer will undertake such completion and deduct the costs thereof from any monies owing to the Contractor.</p> <p>24.8 Upon Completion, the Employer shall be responsible for the care and custody of the Facilities or the relevant part thereof, together with the risk of loss or damage thereto, and shall thereafter take over the Facilities or the relevant part thereof.</p>
Commissioning and Operational Acceptance	25	<p>25.1 <u>Commissioning</u></p> <p>25.1.1 Commissioning of the Facilities or any part thereof shall be commenced by the Contractor immediately after issue of the Completion Certificate by the EIC, pursuant to GCC Subclause 24.5, or immediately after the date of the deemed Completion, under GCC Subclause 24.6.</p> <p>25.1.2 The Employer shall supply the operating and maintenance personnel and all raw materials, utilities, lubricants, chemicals, catalysts, facilities, services, and other matters required for Commissioning.</p> <p>25.1.3 In accordance with the requirements of the Contract, the Contractor's and EIC's advisory personnel shall attend the Commissioning, including the Guarantee Test, and shall advise and assist the Employer.</p> <p>25.2 <u>Guarantee Test</u></p> <p>25.2.1 Subject to GCC Subclause 25.5, the Guarantee Test and repeats thereof shall be conducted by the Contractor during Commissioning of the Facilities or the relevant part thereof to ascertain whether the Facilities or the relevant part can attain the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement. The Employer shall promptly provide the Contractor with such information as the Contractor may reasonably require in relation to the conduct and results of the Guarantee Test and any repeats thereof.</p> <p>25.2.2 If for reasons not attributable to the Contractor, the Guarantee Test of the Facilities or the relevant part thereof cannot be successfully completed within the period from the date of Completion specified in the SCC or any other period agreed upon by the Employer and the Contractor, the Contractor shall be deemed to have fulfilled its obligations with respect to the Functional Guarantees, and GCC Subclauses 28.2 and 28.3 shall not apply.</p> <p>25.3 <u>Operational Acceptance</u></p> <p>25.3.1 Subject to GCC Subclause 25.4 below, Operational Acceptance shall occur in respect of the Facilities or any part thereof when</p> <ul style="list-style-type: none"> (a) the Guarantee Test has been successfully completed and the Functional Guarantees are met; or (b) the Guarantee Test has not been successfully completed or has not been carried out for reasons not attributable to the Contractor

	<p>within the period from the date of Completion specified in the SCC, or any other agreed upon period as specified in GCC Subclause 25.2.2 above; or</p> <p>(c) the Contractor has paid the liquidated damages specified in GCC Subclause 8.9 hereof; and</p> <p>(d) any minor items mentioned in GCC Subclause 24.7 hereof relevant to the Facilities or that part thereof have been completed.</p> <p>25.3.2 At any time after any of the events set out in GCC Subclause 25.3.1 have occurred, the Contractor may give a notice to the EIC requesting the issue of an Operational Acceptance Certificate in the form provided in the Employer's Requirements (Forms and Procedures) in respect of the Facilities or the part thereof specified in such notice as of the date of such notice.</p> <p>25.3.3 The EIC shall, after consultation with the Employer, and within 7 days after receipt of the Contractor's notice, issue an Operational Acceptance Certificate.</p> <p>25.3.4 If within 7 days after receipt of the Contractor's notice, the EIC fails to issue the Operational Acceptance Certificate or fails to inform the Contractor in writing of the justifiable reasons why the EIC has not issued the Operational Acceptance Certificate, the Facilities or the relevant part thereof shall be deemed to have been accepted as of the date of the Contractor's said notice.</p> <p>25.4 <u>Partial Acceptance</u></p> <p>25.4.1 If the Contract specifies that Completion and Commissioning shall be carried out in respect of parts of the Facilities, the provisions relating to Completion and Commissioning including the Guarantee Test shall apply to each such part of the Facilities individually, and the Operational Acceptance Certificate shall be issued accordingly for each such part of the Facilities.</p> <p>25.4.2 If a part of the Facilities comprises facilities such as buildings, for which no Commissioning or Guarantee Test is required, then the EIC shall issue the Operational Acceptance Certificate for such facility when it attains Completion, provided that the Contractor shall thereafter complete any outstanding minor items that are listed in the Operational Acceptance Certificate.</p> <p>25.5 <u>Delayed Pre-Commissioning and/or Guarantee Test</u></p> <p>25.5.1 In the event that the Contractor is unable to proceed with the Pre-commissioning of the Facilities pursuant to Subclause 24.3, or with the Guarantee Test pursuant to Subclause 25.2, for reasons attributable to the Employer either on account of non-availability of other facilities under the responsibilities of other contractor(s), or for reasons beyond the Employer's control, the provisions leading to "deemed" completion of activities such as Completion, pursuant to GCC Subclause 24.6, and</p>
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		<p>Operational Acceptance, pursuant to GCC Subclause 25.3.4, and Contractor's obligations regarding Defect Liability Period, pursuant to GCC Subclause 27.2, Functional Guarantee, pursuant to GCC Clause 28, and Care of Facilities, pursuant to GCC Clause 32, and GCC Clause 41.1, Suspension, shall not apply. In this case, the following provisions shall apply.</p> <p>25.5.2 When the Contractor is notified by the EIC that he will be unable to proceed with the activities and obligations pursuant to above Subclause 25.5.1, the Contractor shall be entitled to the following:</p> <ul style="list-style-type: none"> (a) the Time of Completion shall be extended for the period of suspension without imposition of liquidated damages pursuant to GCC Subclause 8.9; (b) payments due to the Contractor in accordance with the provision specified in the Appendix (Terms and Procedures of Payment) to the Contract Agreement, which would not have been payable in normal circumstances due to noncompletion of the subject activities, shall be released to the Contractor against submission of a security in the form of a bank guarantee of equivalent amount acceptable to the Employer, and which shall become null and void when the Contractor will have complied with its obligations regarding those payments, subject to the provision of Subclause 25.5.3 below; (c) the expenses towards the above security and extension of other securities under the contract, of which validity needs to be extended, shall be reimbursed to the Contractor by the Employer; (d) the additional charges towards the care of the Facilities pursuant to GCC Subclause 32.1 shall be reimbursed to the Contractor by the Employer for the period between the notification mentioned above and the notification mentioned in Subclause 25.5.4 below. The provision of GCC Subclause 33.2 shall apply to the Facilities during the same period. <p>25.5.3 In the event that the period of suspension under above Subclause 25.5.1 actually exceeds 180 days, the Employer and Contractor shall mutually agree to any additional compensation payable to the Contractor.</p> <p>(b) When the Contractor is notified by the EIC that the plant is ready for Pre- commissioning, the Contractor shall proceed without delay in performing all the specified activities and obligations under the contract.</p>
Completion Time Guarantee	26	26.1 The Contractor guarantees that it shall attain Completion of the Facilities (or a part for which a separate time for completion is specified) within the Time for Completion specified in the SCC pursuant to GCC Subclause 8.4, or within such extended time to which the Contractor shall be entitled under GCC Clause 40 hereof.

		<p>26.2 If the Contractor fails to attain Completion of the Facilities or any part thereof within the Time for Completion or any extension thereof under GCC Clause 39, the Contractor shall pay to the Employer liquidated damages in the amount specified in the SCC as a percentage rate of the Contract Price or the relevant part thereof. The aggregate amount of such liquidated damages shall in no event exceed the amount specified as "Maximum" in the SCC as a percentage rate of the Contract Price. Once the "Maximum" is reached, the Employer may consider termination of the Contract, pursuant to GCC Subclause 17.</p> <p>Such payment shall completely satisfy the Contractor's obligation to attain Completion of the Facilities or the relevant part thereof within the Time for Completion or any extension thereof under GCC Clause 39. The Contractor shall have no further liability whatsoever to the Employer in respect thereof.</p> <p>However, the payment of liquidated damages shall not in any way relieve the Contractor from any of its obligations to complete the Facilities or from any other obligations and liabilities of the Contractor under the Contract.</p> <p>Save for liquidated damages payable under this GCC Subclause 8.9, the failure by the Contractor to attain any milestone or other act, matter or thing by any date specified in the Appendix (Time Schedule) to the Contract Agreement and/or other program of work prepared pursuant to GCC Subclause 8.5 shall not render the Contractor liable for any loss or damage thereby suffered by the Employer.</p> <p>26.3 If the Contractor attains Completion of the Facilities or any part thereof before the Time for Completion or any extension thereof under GCC Clause 40, the Employer shall pay to the Contractor a bonus in the amount specified in the SCC. The aggregate amount of such bonus shall in no event exceed the amount specified as "Maximum" in the SCC.</p>
Functional Guarantees	27	<p>27.1 The Contractor guarantees that during the Guarantee Test, the Facilities and all parts thereof shall attain the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement, subject to, and upon the conditions therein specified.</p> <p>27.2 If, for reasons attributable to the Contractor, the minimum level of the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement are not met either in whole or in part, the Contractor shall at its cost and expense make such changes, modifications, and/or additions to the Plant or any part thereof as may be necessary to meet at least the minimum level of such Guarantees. The Contractor shall notify the Employer upon completion of the necessary changes, modifications, and/or additions, and shall request the Employer to repeat the Guarantee Test until the minimum level of the Guarantees has been met. If the Contractor eventually fails to</p>

		<p>meet the minimum level of Functional Guarantees, the Employer may consider termination of the Contract, pursuant to GCC Subclause 17</p> <p>27.3 If, for reasons attributable to the Contractor, the Functional Guarantees specified in the Appendix (Functional Guarantees) to the Contract Agreement are not attained either in whole or in part, but the minimum level of the Functional Guarantees specified in the said Appendix to the Contract Agreement is met, the Contractor shall, at the Contractor's option, either</p> <ul style="list-style-type: none"> (a) make such changes, modifications, and/or additions to the Facilities or any part thereof that are necessary to attain the Functional Guarantees at its cost and expense, and shall request the Employer to repeat the Guarantee Test or (b) pay liquidated damages to the Employer in respect of the failure to meet the Functional Guarantees in accordance with the provisions in the Appendix (Functional Guarantees) to the Contract Agreement. <p>27.4 The payment of liquidated damages under GCC Subclause 27.3, up to the limitation of liability specified in the Appendix (Functional Guarantees) to the Contract Agreement, shall completely satisfy the Contractor's guarantees under GCC Subclause 28.3, and the Contractor shall have no further liability whatsoever to the Employer in respect thereof. Upon the payment of such liquidated damages by the Contractor, the Project Manager shall issue the Operational Acceptance Certificate for the Facilities or any part thereof in respect of which the liquidated damages have been so paid.</p>
Patent Indemnity	28.	<p>28.1 The Contractor shall, subject to the Employer's compliance with GCC Subclause 28.2, indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions, or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Employer may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of (a) the installation of the Facilities by the Contractor or the use of the Facilities in the country where the Site is located, and (b) the sale of the products produced by the Facilities in any country.</p> <p>Such indemnity shall not cover any use of the Facilities or any part thereof other than for the purpose indicated by or to be reasonably inferred from the Contract, any infringement resulting from the use of the Facilities or any part thereof, or any products produced thereby in association or combination with any other equipment, plant, or materials not supplied by the Contractor, pursuant to the Contract Agreement.</p>

		<p>28.2 If any proceedings are brought or any claim is made against the Employer arising out of the matters referred to in GCC Subclause 28.1, the Employer shall promptly give the Contractor a notice thereof, and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.</p> <p>If the Contractor fails to notify the Employer within 28 days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the 28-day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.</p> <p>The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.</p> <p>28.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers, and Subcontractors from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, which the Contractor may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract arising out of or in connection with any design, data, drawing, specification, or other documents or materials provided or designed by or on behalf of the Employer.</p>
Limitation of Liability	29.	<p>29.1 Except in cases of criminal negligence or willful misconduct,</p> <ul style="list-style-type: none"> (a) the Contractor shall not be liable to the Employer, whether in contract, tort, or otherwise, for any indirect or consequential loss or damage, loss of use, loss of production, or loss of profits or interest costs, provided that this exclusion shall not apply to any obligation of the Contractor to pay liquidated damages to the Employer, and (b) the aggregate liability of the Contractor to the Employer, whether under the Contract, in tort or otherwise, shall not exceed a multiple of the Contract Price specified in the SCC or, if a multiple is not so specified, the total Contract Price, provided that this limitation shall not apply to the cost of repairing or replacing defective equipment, or to any obligation of the Contractor to indemnify the Employer with respect to patent infringement. (c) 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

		<p>consequential loss or damage which may be suffered by the other Party in connection with the Contract, other than as specifically provided in Sub-Clause 8.9 [Compensation/ Damages for Delay]; Sub-Clause 13.3 [Cost of Remedying Defects]; Sub-Clause 16.4 [Payment after Termination]; Sub-Clause 17.4 [Payment on Termination]; Sub-Clause 18.1 [Indemnities]; Sub-Clause 18.2 [Contractor's Care of the Works], Sub-Clause 18.4 [Consequences of Procuring Entity's Risks] and Sub-Clause 18.5. [Intellectual and Industrial Property Rights].</p> <p>d) The total liability of the Contractor to the Procuring Entity, under or in connection with the Contract shall not exceed twice the Accepted Contract Amount. This amount does not include charges, if any, for consumption of Electricity, Water and Gas provided by the Procuring Entity under Sub- Clause 4.18 [Electricity, Water and Gas], and use of Procuring Entity's Equipment and Materials under Sub-Clause 4.19 [Procuring Entity's Equipment and Issue of Materials].</p> <p>This Sub-Clause shall not limit liability of the Contractor in any case of fraud, deliberate default or reckless misconduct by the Contractor or Sub- Contractors or their personnel or offences under any other Law for the time being in force.</p>
Transfer of Ownership	30.	<p>30.1 Ownership of the Plant (including spare parts) to be imported into the country where the Site is located shall be transferred to the Employer upon loading on to the mode of transport to be used to convey the Plant from the country of origin to that country.</p> <p>30.2 Ownership of the Plant (including spare parts) procured in the country where the Site is located shall be transferred to the Employer when the Plant are brought on to the Site.</p> <p>30.3 Ownership of the Contractor's Equipment used by the Contractor and its Subcontractors in connection with the Contract shall remain with the Contractor or its Subcontractors.</p> <p>30.4 Ownership of any Plant in excess of the requirements for the Facilities shall revert to the Contractor upon Completion of the Facilities or at such earlier time when the Employer and the Contractor agree that the Plant in question are no longer required for the Facilities.</p> <p>30.5 Notwithstanding the transfer of ownership of the Plant, the responsibility for care and custody thereof together with the risk of loss or damage thereto shall remain with the Contractor pursuant to GCC Clause 31 (Care of Facilities) hereof until Completion of the Facilities or the part thereof in which such Plant are incorporated.</p>
Care of Facilities	31	<p>31.1 The Contractor shall be responsible for the care and custody of the Facilities or any part thereof until the date of Completion of the Facilities pursuant to GCC Clause 24 or, where the Contract provides for Completion of the Facilities in parts, until the date of Completion of the relevant part, and shall make good at its own</p>

	<p>cost any loss or damage that may occur to the Facilities or the relevant part thereof from any cause whatsoever during such period. The Contractor shall also be responsible for any loss or damage to the Facilities caused by the Contractor or its Subcontractors in the course of any work carried out, pursuant to GCC Clause 27. Notwithstanding the foregoing, the Contractor shall not be liable for any loss or damage to the Facilities or that part thereof caused by reason of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Subclauses 31.2 and 37.1.</p> <p>31.2 If any loss or damage occurs to the Facilities or any part thereof or to the Contractor's temporary facilities by reason of</p> <ul style="list-style-type: none"> (a) nuclear reaction, nuclear radiation, radioactive contamination, pressure wave caused by aircraft or other aerial objects, or any other occurrences that an experienced contractor could not reasonably foresee, or if reasonably foreseeable could not reasonably make provision for or insure against, insofar as such risks are not normally insurable on the insurance market and are mentioned in the general exclusions of the policy of insurance, including War Risks and Political Risks, taken out under GCC Clause 33 hereof; or (b) any use or occupation by the Employer or any third party other than a Subcontractor, authorized by the Employer of any part of the Facilities; or (c) any use of or reliance upon any design, data, or specification provided or designated by or on behalf of the Employer, or any such matter for which the Contractor has disclaimed responsibility herein, the Employer shall pay to the Contractor all sums payable in respect of the Facilities executed, notwithstanding that the same be lost, destroyed, or damaged, and will pay to the Contractor the replacement value of all temporary facilities and all parts thereof lost, destroyed, or damaged. If the Employer requests the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Contractor shall make good the same at the cost of the Employer in accordance with GCC Clause 38. If the Employer does not request the Contractor in writing to make good any loss or damage to the Facilities thereby occasioned, the Employer shall either request a change in accordance with GCC Clause 39, excluding the performance of that part of the Facilities thereby lost, destroyed or damaged, or, where the loss or damage affects a substantial part of the Facilities, the Employer shall terminate the Contract pursuant to GCC Subclause 16 hereof. <p>31.3 The Contractor shall be liable for any loss of or damage to any Contractor's Equipment, or any other property of the Contractor used or intended to be used for purposes of the Facilities, except (i) as mentioned in GCC Subclause 31.2 with respect to the Contractor's temporary facilities, and (ii) where such loss or damage arises by reason of any of the matters specified in GCC Subclauses 31.2 (b) and (c) and 38.1.</p>
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		<p>31.4 With respect to any loss or damage caused to the Facilities or any part thereof or to the Contractor's Equipment by reason of any of the matters specified in GCC Subclause 37.1, the provisions of GCC Subclause 37.3 shall apply.</p>
Loss of or Damage to Property; Accident or Injury to Workers; Indemnification	32	<p>32.1 Subject to GCC Subclause 32.3, the Contractor shall indemnify and hold harmless the Employer and its employees and officers from and against any and all suits, actions, or administrative proceedings, claims, demands, losses, damages, costs, and expenses of whatsoever nature, including attorney's fees and expenses, in respect of the death or injury of any person or loss of or damage to any property other than the Facilities whether accepted or not, arising in connection with the supply and installation of the Facilities and by reason of the negligence of the Contractor or its Subcontractors, or their employees, officers, or agents, except any injury, death, or property damage caused by the negligence of the Employer, its contractors, employees, officers, or agents.</p> <p>32.2 If any proceedings are brought or any claim is made against the Employer that might subject the Contractor to liability under GCC Subclause 32.1, the Employer shall promptly give the Contractor a notice thereof and the Contractor may at its own expense and in the Employer's name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claim.</p> <p>If the Contractor fails to notify the Employer within 28 days after receipt of such notice that it intends to conduct any such proceedings or claim, then the Employer shall be free to conduct the same on its own behalf. Unless the Contractor has so failed to notify the Employer within the 28-day period, the Employer shall make no admission that may be prejudicial to the defense of any such proceedings or claim.</p> <p>The Employer shall, at the Contractor's request, afford all available assistance to the Contractor in conducting such proceedings or claim, and shall be reimbursed by the Contractor for all reasonable expenses incurred in so doing.</p> <p>32.3 The Employer shall indemnify and hold harmless the Contractor and its employees, officers, and Subcontractors from any liability for loss of or damage to property of the Employer, other than the Facilities not yet taken over, that is caused by fire, explosion, or any other perils, in excess of the amount recoverable from insurances procured under GCC Clause 33, provided that such fire, explosion, or other perils were not caused by any act or failure of the Contractor.</p> <p>32.4 The party entitled to the benefit of an indemnity under this GCC Clause 32 shall take all reasonable measures to mitigate any loss or damage which has occurred. If the party fails to take such</p>

		measures, the other party's liabilities shall be correspondingly reduced.
Insurance	33	<p>33.1 To the extent specified in the Appendix (Insurance Requirements) to the Contract Agreement, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the insurances set forth below in the sums and with the deductibles and other conditions specified in the said Appendix. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, who should not unreasonably withhold such approval.</p> <p>(a) <u>Cargo Insurance During Transport</u> Covering loss or damage occurring while in transit from the Contractor's or Subcontractor's works or stores until arrival at the Site, to the Plant (including spare parts therefor) and to the Contractor's Equipment.</p> <p>(b) <u>Installation All Risks Insurance</u> Covering physical loss or damage to the Facilities at the Site, occurring prior to Completion of the Facilities, with an extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the Defect Liability Period while the Contractor is on the Site for the purpose of performing its obligations during the Defect Liability Period.</p> <p>(c) <u>Third Party Liability Insurance</u> Covering bodily injury or death suffered by third parties including the Employer's personnel, and loss of or damage to property occurring in connection with the supply and installation of the Facilities.</p> <p>(d) <u>Automobile Liability Insurance</u> Covering use of all vehicles used by the Contractor or its Subcontractors, whether or not owned by them, in connection with the execution of the Contract.</p> <p>(e) <u>Workers' Compensation</u> In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.</p> <p>(f) <u>Employer's Liability</u> In accordance with the statutory requirements applicable in any country where the Contract or any part thereof is executed.</p> <p>(g) <u>Other Insurances</u></p>

	<p>Such other insurances as may be specifically agreed upon by the parties hereto as listed in the Appendix (Insurance Requirements) to the Contract Agreement.</p> <p>33.2 The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Subclause 33.1, except for the Third Party Liability, Workers' Compensation, and Employer's Liability Insurances, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Subclause 33.1 except for the Cargo Insurance During Transport, Workers' Compensation, and Employer's Liability Insurances. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.</p> <p>33.3 The Contractor shall, in accordance with the provisions of the Appendix (Insurance Requirements) to the Contract Agreement, deliver to the Employer certificates of insurance or copies of the insurance policies as evidence that the required policies are in full force and effect. The certificates shall provide that no less than 21 days' notice shall be given to the Employer by insurers prior to cancellation or material modification of a policy.</p> <p>33.4 The Contractor shall ensure that, where applicable, its Subcontractor(s) shall take out and maintain in effect adequate insurance policies for their personnel and vehicles and for work executed by them under the Contract, unless such Subcontractors are covered by the policies taken out by the Contractor.</p> <p>33.5 The Employer shall at its expense take out and maintain in effect during the performance of the Contract those insurances specified in the Appendix (Insurance Requirements) to the Contract Agreement, in the sums and with the deductibles and other conditions specified in the said Appendix. The Contractor and the Contractor's Subcontractors shall be named as co-insureds under all such policies. All insurers' rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies. The Employer shall deliver to the Contractor satisfactory evidence that the required insurances are in full force and effect. The policies shall provide that not less than 21 days' notice shall be given to the Contractor by all insurers prior to any cancellation or material modification of the policies. If so requested by the Contractor, the Employer shall provide copies of the policies taken out by the Employer under this GCC Subclause 33.5.</p> <p>33.6 If the Contractor fails to take out and/or maintain in effect the insurances referred to in GCC Subclause 33.1, the Employer may take out and maintain in effect any such insurances and may</p>
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		<p>from time to time deduct from any amount due the Contractor under the Contract any premium that the Employer shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Contractor. If the Employer fails to take out and/or maintain in effect the insurances referred to in GCC 33.5, the Contractor may take out and maintain in effect any such insurances and may from time to time deduct from any amount due the Employer under the Contract any premium that the Contractor shall have paid to the insurer, or may otherwise recover such amount as a debt due from the Employer. If the Contractor fails to or is unable to take out and maintain in effect any such insurances, the Contractor shall nevertheless have no liability or responsibility towards the Employer, and the Contractor shall have full recourse against the Employer for any and all liabilities of the Employer herein.</p> <p>Unless otherwise provided in the Contract, the Contractor shall prepare and conduct all and any claims made under the policies effected by it pursuant to this GCC Clause 33, and all monies payable by any insurers shall be paid to the Contractor. The Employer shall give to the Contractor all such reasonable assistance as may be required by the Contractor. With respect to insurance claims in which the Employer's interest is involved, the Contractor shall not give any release or make any compromise with the insurer without the prior written consent of the Employer. With respect to insurance claims in which the Contractor's interest is involved, the Employer shall not give any release or make any compromise with the insurer without the prior written consent of the Contractor.</p>
Unforeseen Conditions	34.	<p>34.1 If, during the execution of the Contract, the Contractor shall encounter on the Site any physical conditions other than climatic conditions, or artificial obstructions that could not have been reasonably foreseen prior to the date of the Contract Agreement by an experienced contractor on the basis of reasonable examination of the data relating to the Facilities including any data as to boring tests, provided by the Employer, and on the basis of information that it could have obtained from a visual inspection of the Site if access thereto was available, or other data readily available to it relating to the Facilities, and if the Contractor determines that it will in consequence of such conditions or obstructions incur additional cost and expense or require additional time to perform its obligations under the Contract that would not have been required if such physical conditions or artificial obstructions had not been encountered, the Contractor shall promptly, and before performing additional work or using additional Plant or Contractor's Equipment, notify the Project Manager in writing of</p> <p>(a) the physical conditions or artificial obstructions on the Site that could not have been reasonably foreseen;</p>

		<p>(b) the additional work and/or Plant and/or Contractor's Equipment required, including the steps which the Contractor will or proposes to take to overcome such conditions or obstructions;</p> <p>(c) the extent of the anticipated delay; and</p> <p>(d) the additional cost and expense that the Contractor is likely to incur.</p> <p>On receiving any notice from the Contractor under this GCC Subclause 34.1, the Project Manager shall promptly consult with the Employer and Contractor and decide upon the actions to be taken to overcome the physical conditions or artificial obstructions encountered. Following such consultations, the Project Manager shall instruct the Contractor, with a copy to the Employer, of the actions to be taken.</p> <p>34.2 Any reasonable additional cost and expense incurred by the Contractor in following the instructions from the Project Manager to overcome such physical conditions or artificial obstructions referred to in GCC Subclause 34.1 shall be paid by the Employer to the Contractor as an addition to the Contract Price.</p> <p>34.3 If the Contractor is delayed or impeded in the performance of the Contract because of any such physical conditions or artificial obstructions referred to in GCC Subclause 34.1, the Time for Completion shall be extended in accordance with GCC Clause 39.</p>
Change in Laws and Regulations	35.	<p>35.1 If, after the date 28 days prior to the date of Bid submission any law, regulation, ordinance, order or by-law having the force of law is enacted, promulgated, abrogated, or changed, which shall be deemed to include any change in interpretation or application by the competent authorities, that subsequently affects the costs and expenses of the Contractor and/or the Time for Completion, the Contract Price shall be correspondingly increased or decreased, and/or the Time for Completion shall be reasonably adjusted to the extent that the Contractor has thereby been affected in the performance of any of its obligations under the Contract. Notwithstanding the foregoing, such additional or reduced costs shall not be separately paid or credited if the same has already been accounted for in the price adjustment provisions where applicable, in accordance with the SCC, pursuant to GCC Subclause 10</p>
Force Majeure	36.	<p>36.1 "Force Majeure" shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the party affected, and shall include, without limitation, the following:</p> <p>(a) war, hostilities, or warlike operations whether a state of war be declared or not, invasion, act of foreign enemy and civil war;</p> <p>(b) rebellion, revolution, insurrection, mutiny, usurpation of civil or</p>

	<p>military government, conspiracy, riot, civil commotion, and terrorist acts;</p> <p>(c) confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government or de jure or de facto authority or ruler or any other act or failure to act of any local state or national government authority;</p> <p>(d) strike, sabotage, lockout, embargo, import restriction, port congestion, lack of usual means of public transportation and communication, industrial dispute, shipwreck, shortage or restriction of power supply, epidemics, quarantine, and plague;</p> <p>(e) earthquake, landslide, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or other inclement weather condition, nuclear, and pressure waves or other natural or physical disaster; and</p> <p>(f) shortage of labor, materials, or utilities where caused by circumstances that are themselves Force Majeure.</p> <p>36.2 If either party is prevented, hindered, or delayed from or in performing any of its obligations under the Contract by an event of Force Majeure, then it shall notify the other in writing of the occurrence of such event and the circumstances thereof within 14 days after the occurrence of such event.</p> <p>36.3 The party who has given such notice shall be excused from the performance or punctual performance of its obligations under the Contract for so long as the relevant event of Force Majeure continues and to the extent that such party's performance is prevented, hindered, or delayed. The Time for Completion shall be extended in accordance with GCC Clause 39. The party or parties affected by the event of Force Majeure shall use reasonable efforts to mitigate the effect thereof upon its or their performance of the Contract and to fulfill its or their obligations under the Contract, but without prejudice to either party's right to terminate the Contract under GCC Subclauses 36.6 and 37.5.</p> <p>36.5 No delay or nonperformance by either party hereto caused by the occurrence of any event of Force Majeure shall</p> <p>(a) constitute a default or breach of the Contract; or</p> <p>(b) give rise to any claim for damages or additional cost or expense occasioned thereby, subject to GCC Subclauses 31.2, 37.3 and 37.4 if and to the extent that such delay or nonperformance is caused by the occurrence of an event of Force Majeure.</p> <p>36.6 If the performance of the Contract is substantially prevented, hindered, or delayed for a single period of more than 60 days or</p>
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		<p>an aggregate period of more than 120 days on account of one or more events of Force Majeure during the currency of the Contract, the parties will attempt to develop a mutually satisfactory solution, failing which either party may terminate the Contract by giving a notice to the other, but without prejudice to either party's right to terminate the Contract under GCC Subclause 37.5.</p> <p>36.7 In the event of termination pursuant to GCC Subclause 36.6, the rights and obligations of the Employer and the Contractor shall be as specified in GCC Subclauses 16</p> <p>36.4 Notwithstanding GCC Subclause 36.5, Force Majeure shall not apply to any obligation of the Employer to make payments to the Contractor herein.</p>
War Risks	37	<p>37.1 "War Risks" shall mean any event specified in paragraphs (a) and (b) of GCC Subclause 36.1 and any explosion or impact of any mine, bomb, shell, grenade, or other projectile, missile, munitions or explosive of war, occurring or existing in or near the country (or countries) where the Site is located.</p> <p>37.2 Notwithstanding anything contained in the Contract, the Contractor shall have no liability whatsoever for or with respect to</p> <ul style="list-style-type: none"> (a) destruction of or damage to Facilities, Plant, or any part thereof; (b) destruction of or damage to property of the Employer or any third party; or (c) injury or loss of life <p>if such destruction, damage, injury or loss of life is caused by any war risks, and the Employer shall indemnify and hold the Contractor harmless from and against any and all claims, liabilities, actions, lawsuits, damages, costs, charges, or expenses arising in consequence of or in connection with the same.</p> <ul style="list-style-type: none"> (a) If the Facilities or Contractor's Equipment or any other property of the Contractor used or intended to be used for the purposes of the Facilities shall sustain destruction or damage by reason of any war risks, the Employer shall pay the Contractor for any part of the Facilities or the Plant so destroyed or damaged to the extent not already paid for by the Employer and so far as may be required by the Employer, and as may be necessary for completion of the Facilities; (b) replacing or making good any Contractor's Equipment or other property of the Contractor so destroyed or damaged; and

		<p>(c) replacing or making good any such destruction or damage to the Facilities or the Plant or any part thereof.</p> <p>If the Employer does not require the Contractor to replace or make good any such destruction or damage to the Facilities, the Employer shall either request a change in accordance with GCC Clause 38 excluding the performance of that part of the Facilities thereby destroyed or damaged or, where the loss, destruction, or damage affects a substantial part of the Facilities, shall terminate the Contract, pursuant to GCC Subclause 16.</p> <p>If the Employer requires the Contractor to replace or make good on any such destruction or damage to the Facilities, the Time for Completion shall be extended in accordance with GCC 39</p> <p>37.4 Notwithstanding anything contained in the Contract, the Employer shall pay the Contractor for any increased costs or incidentals to the execution of the Contract that are in any way attributable to, consequent on, resulting from, or in any way connected with any war risks, provided that the Contractor shall as soon as practicable notify the Employer in writing of any such increased cost.</p> <p>37.5 If during the performance of the Contract any war risks shall occur that financially or otherwise materially affect the execution of the Contract by the Contractor, the Contractor shall use its reasonable efforts to execute the Contract with due and proper consideration given to the safety of its and its Subcontractors' personnel engaged in the work on the Facilities, provided, however, that if the execution of the work on the Facilities becomes impossible or is substantially prevented for a single period of more than sixty (60) days or an aggregate period of more than one hundred and twenty (120) days on account of any war risks, the parties will attempt to develop a mutually satisfactory solution, failing which either party may terminate the Contract by giving a notice to the other.</p> <p>37.3 In the event of termination pursuant to GCC Subclauses 37.3 or 37.5, the rights and obligations of the Employer and the Contractor shall be specified in GCC Subclauses 16</p>
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Change in the Facilities	38	<p>38.1 Introducing a Change</p> <p>38.1.1 Subject to GCC Subclauses 38.2.5 and 38.2.7, the Employer shall have the right to propose, and subsequently require, that the Project Manager order the Contractor from time to time during the performance of the Contract to make any change, modification, addition, or deletion to, in or from the Facilities hereinafter called "Change," provided that such Change falls within the general scope of the Facilities and does not constitute unrelated work and that it is technically practicable, taking into account both the state of advancement of the Facilities and the technical compatibility of the Change envisaged with the nature of the Facilities as specified in the Contract.</p> <p>38.1.2 The Contractor may from time to time during its performance of the Contract propose to the Employer with a copy to the Project Manager, any Change that the Contractor considers necessary or desirable to improve the quality, efficiency, or safety of the Facilities. The Employer may at its discretion approve or reject any Change proposed by the Contractor, provided that the Employer shall approve any Change proposed by the Contractor to ensure the safety of the Facilities.</p> <p>38.1.3 Notwithstanding GCC Subclauses 38.1.1 and 38.1.2, no change made necessary because of any default of the Contractor in the performance of its obligations under the Contract shall be deemed to be a Change, and such change shall not result in any adjustment of the Contract Price or the Time for Completion.</p> <p>38.1.4 The procedure on how to proceed with and execute Changes is specified in GCC Subclauses 38.2 and 38.3, and further details and forms are provided in the Employer's Requirements (Forms and Procedures).</p>
		<p>38.2 Changes Originating from Employer</p> <p>38.2.1 If the Employer proposes a Change pursuant to GCC Subclause 38.1.1, it shall send to the Contractor a "Request for Change Proposal," requiring the Contractor to prepare and furnish to the Project Manager as soon as reasonably practicable a "Change Proposal," which shall include the following:</p> <ul style="list-style-type: none"> (a) brief description of the Change, (b) effect on the Time for Completion, (c) estimated cost of the Change, (d) effect on Functional Guarantees (if any), (e) effect on the Facilities, and (f) effect on any other provisions of the Contract. <p>38.2.2 Prior to preparing and submitting the "Change Proposal," the Contractor shall submit to the Project Manager an "Estimate for Change Proposal," which shall be an estimate of the cost of preparing and</p>

	<p>submitting the Change Proposal.</p> <p>Upon receipt of the Contractor's Estimate for Change Proposal, the Employer shall do one of the following:</p> <ul style="list-style-type: none"> (a) accept the Contractor's estimate with instructions to the Contractor to proceed with the preparation of the Change Proposal, (b) advise the Contractor of any part of its Estimate for Change Proposal that is unacceptable and request the Contractor to review its estimate <p>advise the Contractor that the Employer does not intend to proceed with the Change.</p> <p>38.2.3 Upon receipt of the Employer's instruction to proceed under GCC Subclause 38.2.2 (a), the Contractor shall, with proper expedition, proceed with the preparation of the Change Proposal, in accordance with GCC Subclause 38.2.1.</p> <p>38.2.4 The pricing of any Change shall, as far as practicable, be calculated in accordance with the rates and prices included in the Contract. If such rates and prices are inequitable, the parties thereto shall agree on specific rates for the valuation of the Change.</p> <p>38.2.5 If before or during the preparation of the Change Proposal it becomes apparent that the aggregate effect of compliance therewith and with all other Change Orders that have already become binding upon the Contractor under this GCC Clause 39 would be to increase or decrease the Contract Price as originally set forth in Article 2 (Contract Price) of the Contract Agreement by more than 15%, the Contractor may give a written notice of objection thereto prior to furnishing the Change Proposal as aforesaid. If the Employer accepts the Contractor's objection, the Employer shall withdraw the proposed Change and shall notify the Contractor in writing thereof.</p> <p>The Contractor's failure to so object shall neither affect its right to object to any subsequent requested Changes or Change Orders herein, nor affect its right to take into account, when making such subsequent objection, the percentage increase or decrease in the Contract Price that any Change not objected to by the Contractor represents.</p> <p>38.2.6 Upon receipt of the Change Proposal, the Employer and the Contractor shall mutually agree upon all matters therein contained. Within 14 days after such agreement, the Employer shall, if it intends to proceed with the Change, issue the Contractor with a Change Order.</p> <p>If the Employer is unable to reach a decision within 14 days, it shall notify the Contractor with details of when the Contractor can expect a decision.</p>
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Extension of Time for Completion	39	<p>39.1 The Time(s) for Completion specified in the SCC shall be extended if the Contractor is delayed or impeded in the performance of any of its obligations under the Contract by reason of any of the following:</p> <ul style="list-style-type: none"> (a) any Change in the Facilities as provided in GCC Clause 38; (b) any occurrence of Force Majeure as provided in GCC Clause 36, unforeseen conditions as provided in GCC Clause 35, or other occurrence of any of the matters specified or referred to in paragraphs (a), (b) and (c) of GCC Subclause 31.2; (c) any suspension order given by the Employer under GCC Clause 41 hereof or reduction in the rate of progress pursuant to GCC

		<p>Subclause 16 or</p> <ul style="list-style-type: none"> (d) any changes in laws and regulations as provided in GCC Clause 35; or (e) any default or breach of the Contract by the Employer, or any activity, act or omission of the Employer, or the Project Manager, or any other contractors employed by the Employer; or (f) any other matter specifically mentioned in the Contract; or (g) any delay on the part of a sub-contractor, provided such delay is due to a cause for which the Contractor himself would have been entitled to an extension of time under this Subclause by such period as shall be fair and reasonable in all the circumstances and as shall fairly reflect the delay or impediment sustained by the Contractor. <p>39.2 Except where otherwise specifically provided in the Contract, the Contractor shall submit to the Project Manager a notice of a claim for an extension of the Time for Completion, together with particulars of the event or circumstance justifying such extension as soon as reasonably practicable after the commencement of such event or circumstance. As soon as reasonably practicable after receipt of such notice and supporting particulars of the claim, the Employer and the Contractor shall agree upon the period of such extension. In the event that the Contractor does not accept the Employer's estimate of a fair and reasonable time extension, the Contractor shall be entitled to refer the matter to a Dispute Board, pursuant to Appendix – B of the GCC.</p> <p>39.3 The Contractor shall at all times use its reasonable efforts to minimize any delay in the performance of its obligations under the Contract.</p> <p>In all cases where the Contractor has given a notice of a claim for an extension of time under GCC 39.2, the Contractor shall consult with the Project Manager in order to determine the steps (if any) which can be taken to overcome or minimize the actual or anticipated delay. The Contractor shall thereafter comply with all reasonable instructions, which the Project Manager shall give in order to minimize such delay. If compliance with such instructions shall cause the Contractor to incur extra costs and the Contractor is entitled to an extension of time under GCC 39.1, the amount of such extra costs shall be added to the Contract Price.</p>
Assignment	40.	<p>40.1 Neither the Employer nor the Contractor shall, without the express prior written consent of the other party which consent shall not be unreasonably withheld, assign to any third party the Contract or any part thereof, or any right, benefit, obligation or interest therein or thereunder, except that the Contractor shall be entitled to assign either absolutely or by way of charge any</p>

		<p>monies due and payable to it or that may become due and payable to it under the Contract.</p>
Contractor's Claims	41.	<p>41.1 If the Contractor considers himself to be entitled to any extension of the Time for Completion and/or any additional payment, under any Clause of these Conditions or otherwise in connection with the Contract, the Contractor shall submit a notice to the Project Manager, describing the event or circumstance giving rise to the claim. The notice shall be given as soon as practicable, and not later than 28 days after the Contractor became aware, or should have become aware, of the event or circumstance.</p> <p>If the Contractor fails to give notice of a claim within such period of 28 days, the Time for Completion shall not be extended, the Contractor shall not be entitled to additional payment, and the Employer shall be discharged from all liability in connection with the claim. Otherwise, the following provisions of this Subclause shall apply.</p> <p>The Contractor shall also submit any other notices, which are required by the Contract, and supporting particulars for the claim, all as relevant to such event or circumstance.</p> <p>The Contractor shall keep such contemporary records as may be necessary to substantiate any claim, either on the Site or at another location acceptable to the Project Manager. Without admitting the Employer's liability, the Project Manager may, after receiving any notice under this Subclause, monitor the record keeping and/or instruct the Contractor to keep further contemporary records. The Contractor shall permit the Project Manager to inspect all these records, and shall (if instructed) submit copies to the Project Manager.</p> <p>Within 42 days after the Contractor became aware (or should have become aware) of the event or circumstance giving rise to the claim, or within such other period as may be proposed by the Contractor and approved by the Project Manager, the Contractor shall send to the Project Manager a fully detailed claim, which includes full supporting particulars of the basis of the claim and of the extension of time and/or additional payment claimed. If the event or circumstance giving rise to the claim has a continuing effect,</p> <ul style="list-style-type: none"> (a) this fully detailed claim shall be considered as interim; (b) the Contractor shall send further interim claims at monthly intervals, giving the accumulated delay and/or amount claimed, and such further particulars as the Project Manager may reasonably require; and (c) the Contractor shall send a final claim within 28 days after the end of the effects resulting from the event or circumstance, or within such other period as may be proposed by the Contractor and approved by the Project Manager. <p>Within 42 days after receiving a claim or any further particulars supporting a previous claim, or within such other period as may be proposed by the Project Manager and approved by the Contractor, the</p>

	<p>Project Manager shall respond with approval, or with disapproval and detailed comments. He may also request any necessary further particulars, but shall nevertheless give his response on the principles of the claim within such time.</p> <p>Each payment certificate shall include such amounts for any claim as have been reasonably substantiated as due under the relevant provision of the Contract. Unless and until the particulars supplied are sufficient to substantiate the whole of the claim, the Contractor shall only be entitled to payment for such part of the claim as he has been able to substantiate.</p> <p>The Project Manager shall agree with the Contractor or estimate: (i) the extension (if any) of the Time for Completion (before or after its expiry) in accordance with GCC Clause 40, and/or (ii) the additional payment (if any) to which the Contractor is entitled under the Contract.</p> <p>The requirements of this Subclause are in addition to those of any other Subclause, which may apply to a claim. If the Contractor fails to comply with this or another Subclause in relation to any claim, any extension of time and/or additional payment shall take account of the extent (if any) to which the failure has prevented or prejudiced proper investigation of the claim, unless the claim is excluded under the second paragraph of this Subclause.</p> <p>In the event that the Contractor and the Employer cannot agree on any matter relating to a claim, either party may refer the matter to Arbitration.</p>
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APPENDIX A

General Conditions for admissibility of Escalation

1. The exact percentage of labour/ material (excluding materials to be supplied by the Procuring Entity)/ bitumen/ diesel and petrol/ cement/ steel component for the Works shall be approved by the authority while sanctioning the detailed Estimates.
2. The breakup of components of labour/ materials (excluding materials to be supplied by the Procuring Entity)/ bitumen/ diesel and petrol/ cement/ steel as indicated in this Clause have been pre-determined as below:-

(a) Labour -----	30 percent
(b) Material -----	50 percent
(c) Bitumen -----	01 percent
(d) Diesel and Petrol -----	01 percent
(e) Cement -----	12 percent
(f) Steel -----	06 percent
Total-----100%]	
3. While allowing price escalation the following shall be deducted from the value of Works done (R):
 - (a) Cost of material supplied by the Procuring Entity.
 - (b) Cost of services rendered for protection of the Works.
 - (c) Secured Advance/ any advance added earlier but deducted now after Works is measured.
 - (d) Cost of extra items, the rates for which have been worked out based on market rates/ mutually agreed rates.
4. The first statement of escalation shall be prepared at the end of three months in which the Works was awarded and the Works done from the date of start to the end of this period shall be taken into account. For subsequent statement, cost of Works done during every quarter shall be taken into account. At the completion of Works, the Works done during the last quarter or fraction, thereof, shall be taken into account.
5. For the purpose of reckoning the Works done during any period, the bills prepared during the period shall be considered. The dates of recording measurements in the Measurement Book by the Assistant Engineer shall be the guiding factor to decide the bills relevant to any period. The date of completion, as finally recorded by the competent authority in the Measurement Book, shall be the criterion.
6. The index relevant to any quarter, for which such compensation is paid, shall be the arithmetical average of the indices relevant of the calendar month.
7. Price adjustment Clause shall be applicable only for the Works that is carried out within the stipulated time, or extension thereof, as are not attributable to the Contractor.
8. If during the progress in respect of Contract Works stipulated to cost Rs.50 lacs or less, the value of Works actually done excluding cost of material supplied by the Procuring Entity, exceeds Rs. 50 lacs and completion period is more than 3 months, then escalation would be payable only in respect of value of Works in excess over Rs.50 lacs from the date of satisfying both the conditions.
9. Where originally stipulated period is 3 months or less but actual period of execution exceeds beyond 3 months on account of reasons not attributable to the Contractor, escalation amount would be payable only in respect of extended period if amount of Works is more than Rs.50 lacs.

10. In case the Contractor does not make prorata progress in the first or another time span and the short fall in progress is covered up by him during subsequent time span within original stipulated period then the price escalation of such Works expected to be done in the previous time span shall be notionally given based upon the price index of that quarter in which such Works was required to be done.
11. No claims for price adjustment other than those provided herein, shall be entertained.
12. If the period of completion including extended period attributable to the Procuring Entity exceeds three months but cost does not exceed more than Rs.50 lacs, no escalation is admissible.
13. Similarly, if cost of Works increases more than Rs.50 lacs but completion period including extended period attributable to the Procuring Entity is less than 3 months, no escalation is admissible.
14. No provisional escalation is payable on the basis of indices of the previous quarter in absence of non publication of indices for concerned quarter by the RBI.
15. Escalation is always payable quarterly and no provisional escalation is payable monthly or fortnightly.
16. In case at the time of executing agreement, both the conditions (completion period 3 months and amount of Works Rs.50 lacs for admissibility of price escalation) are not fulfilled and subsequent due to additional Works and extension of time attributable to Procuring Entity, both the conditions become fulfilled, in that case the escalation shall be payable from the date of satisfying both the conditions and only for Works done beyond Rs.50 lacs and in period of Works beyond 3 months.
17. The Contractor shall for the purpose of these conditions keep such books of account and other documents as are necessary to show the amount of any increase claimed or reduction available and shall allow inspection of the same by a duly authorised representative of the Government/ Procuring Entity and further shall at the request of the Engineer-in-charge furnish, verified in such a manner as the Engineer-in-charge may require any documents so kept and such other information as the Engineer- in-charge may require.
18. Price variation Clause shall be applicable in case of lump sum contracts estimated to cost more than Rs.100 crores with stipulated completion period of more than 18 months.
19. The component of operation and maintenance (O&M) cost included in the Contract Price shall not be subject to price variations. The price may be adjusted by the use of prescribed formula (or formulae) which breaks down the total price into components.
20. The amount of price variation in case of lump sum contracts will be made by adding or deducting, as the case may be, from the payments made at the stages of Works specified in the Contract document.

APPENDIX B
Dispute Resolution during execution of the Contract

1. Arbitration

- (a) Any dispute in respect of which the recommendations (if any) of Procuring Entity has not become final and binding, shall be finally settled by arbitration in accordance with the Indian' Arbitration and Conciliation Act, 1996, or any statutory amendment thereof.
- (b) The Arbitral Tribunal will comprise one Arbitrator to be appointed by the CEO, PMIDC, Chandigarh.
- (c) The Tribunal shall have full power to open up, review and revise any certificate, determination, instruction, opinion or valuation of the Engineer-in-Charge, and any decision of the Procuring Entity, relevant to the dispute.
- (d) Arbitration may be commenced prior to or after completion of the Works. The obligations of the Parties shall not be altered by reason of any arbitration being conducted during the progress of the Works.

2. Language

All proceedings before Arbitrator shall be in the Language of the Contract/ English.

3. Place of Arbitration

All proceedings before Arbitrator shall be held at a place decided by CEO, PMIDC.

Section-VI B: Special Conditions of the Contract

Section VI B: Contract Data/ Special Conditions of Contract

Ref. to GCC	Subject	Data
1.1	Procuring Entity's Designation and address	The Chief Executive Officer, Amritsar Smart City Limited SCO-21, 2 nd Floor, Distt. Shopping Complex, B-Block, Ranjit Avenue, Amritsar
	The Works or Work:	Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar
	The Time for Completion and the Intended Completion Date:	Twenty – Four (24) months - Design (4 Months) and Execution (20 Months) followed by Defect Liability Period (DLP) of One (1) Year, followed by Operation and Maintenance of Five (5) Years Partial Completion of the subject contract will not be admissible
	The Department:	Amritsar Smart City Limited (ASCL)
1.31 .1	Scope of Facilities	The contractor will be responsible for Operation and Maintenance of the facilities created for a period of Five (5) years starting from end of successful completion of Defect Liability Period of One (1) year. The price quoted by bidder for O&M phase activites will include cost of all essential spare parts, for the entie duration of the O&M phase. The details of quantity, specification and cost of the spare parts included in the Price Bid will have to be provided separately using additional sheets.
1.3	Communication:	Electronic transmission shall include e-mail, fax etc. and delivered shall include their transmission sent successfully to correct address, as mentioned above Clause 1.1
1.4	The Language of the Contract is:	English
1.4. 8	Provisional Sum	A Provisional Sum (PS) is mentioned in the Price Bid BoQ, Item 4.11, Section IV Bidding Forms of this bid document. The Procuring Entity may decide to utilise the PS for any such expenditure (e.g. Third Party Inspection etc.) as the Procuring Entity may decide at their sole discretion, during any point in time during the contract period
1.8. 1	Signing of the Contract Agreement:	Within 30 Days of issue of notification of the award. Add following text; It is mandatory to register the JV under relevant Act after award of Letter of Acceptance but before signing of Contract Agreement within 30 days of issuance of Letter of Acceptance. Failure to register the JV in stipulated period may lead to forfeiture of bid

		<p>security.</p> <p>The equity sharing as declared at the time of bidding shall be maintained while registering the JV before Contract execution. The minimum equities of all partners shall be maintained throughout the currency of contract.</p> <p>The Contract Agreement shall be executed with authorized representative of JV and all partners of JV.</p>
1.14	Care and Supply of documents	<p>Add:</p> <p>The Contractor shall maintain standard Site Order Books at the Site at all times during the execution of the Works for the use of the Procuring Entity's Representative and the Contractor. All instructions issued by the Procuring Entity's Representatives to the Contractor shall be recorded in duplicate in the Site Order Book and shall be signed by the issuer and countersigned by the Contractor. After compliance with the instruction the Contractor shall record the same in the Site Order Book duly signed and countersigned by the Procuring Entity's Representative. Acceptance of any part of the Works executed by the Contractor shall be subject to verification with respect to compliance of respective instructions of the Procuring Entity's Representative through the Site Order Book. The Procuring Entity's Representative shall retain the original copy of the site orders, while the Contractor shall retain the duplicate ones.</p>
4.1.5	Requirement of designing by the Contractor:	<p>The scope to carry out designs & drawings are as specified in Section V of the document, Work Requirements. And shall be approved by EIC.</p>
4.3.1	Performance Security	<p>Replace GCC Clause 4.3.1 (i) with the following: The bidder has to submit Two (2) sets of Performance Securities.</p> <p>Design & Execution Phase: Performance Security amounting to 5% of the contract value for works of the Design & Execution Phase shall be submitted in advance at the time of signing of agreement in form of BG. If the bidder fails to deposit the Performance Security within the stipulated time frame the Bid Security will be forfeited.</p> <p>Operation and Maintenance (O&M) Phase: Performance Security amounting to 5% of the contract value of the O&M Phase shall be submitted in advance before submitting the final bill/ completion of design and execution phase in form of BG. If the bidder fails to deposit the Performance Security within the stipulated time frame the Performance Security of the Design & Execution Phase will not be released.</p> <p>The BG should be issued by any nationalized / schedule bank and shall remain valid up to 60 days beyond defect liability period. Bank Guarantee submitted against the performance guarantee, shall be unconditional and encashable/invokable at Amritsar when presented in specified Branch Office.</p>
4.3.5	Refund of Performance Security	<p>Replace GCC Clause 4.3.5 with the following:</p> <p>The Procuring Entity shall return or release the Performance Security to the Contractor as given below after completion of all obligations under the Contract, more specifically, after the expiry of the period as specified below:</p> <p>Construction Phase: Performance Security, shall be refunded within 60 days after the satisfactory completion of the Defect Liability Period, subject to completion of all obligations under the Contract and after submission of O&M</p>

		Phase Performance Security O&M Phase: Performance Security , shall be refunded within 60 days after the satisfactory completion of all obligations for the phase under the Contract.
4.4	Commencement of the Works	The Works shall be commenced within a period of 7 Days from the date of signing of the Contract or handing over of the site by the Employer, whichever is later.
4.14	Avoidance of Interference with public conveniences	<p>Add,</p> <p>In case any operation connected with the works necessitates diversion, obstruction or closure of any road, railway, waterway or any other right of way, the approval of the Engineer-in-charge or the Engineer's Representative and the respective competent authorities shall be obtained well in advance by the Contractor. In case the Contractor's operations obstruct access to adjacent properties, the Contractor shall be responsible to provide reasonable temporary access to the affected parties. In case the Contractor fails to provide adequate temporary facilities, this shall be deemed to be an uncorrected Defect under the terms of Clause 13 and the Procuring Entity shall have the right to engage a third party to correct the Defect and the cost of such correction will be deducted from the Contract Price.</p> <p>The contractor will also be responsible to ensure completion of his work with utmost effort in earliest possible period to ensure minimum inconvenience to the public at large. If in the opinion of the Engineer in Charge, the work has not been done in time and the passage way not restored satisfactorily in time, he may after giving a notice of seven days have the work done through any other agency. He will in these circumstances enter the work done as work done by the contractor in measurement book and pay for the same to the contractor and also recover the actual cost paid by him for the work plus 5% of the value of this work from the payments or any other money due to the contractor.</p>
4.18	Cost of water & electricity	<p>Add:</p> <p>Charges for power connection and water, if required, for trial run and commissioning of the facility, shall be borne by contractor</p>
5	Norms related to NBC	That anything and everything to do with built environment must be in accordance with the newly released National Building Code of India 2016 (part 3, section 13)
6.5	Safety Norms	<p>Add Sub Clause 6.5.1 as follows:</p> <p>The Contractor has to:</p> <ul style="list-style-type: none"> (a) Prepare a detailed Safety Plan, to be implemented under supervision of Safety Officer of the Contractor, within 28 (twenty eight) days of receiving of Letter of Acceptance to be approved by the Engineer-in-Charge. (b) Provide for all safety measures, security and protection of equipment as provided in the Clause and shall be paid as per relevant items in the Bill of Quantities. Any item not covered in the Bill of Quantities shall be deemed to have been included in the bidders quoted rates.
6.7	The normal working hours at the Site and Days of rest	<p>9 AM to 5 PM as per relevant Labour Laws.</p> <p>However, when work is stopped, it should be ensured by the contractor that all safety measures have been taken to avoid any untoward incident during non-working hours.</p>

	shall be:	
7.18	Royalties	The contractor will provide documented evidence of payment of Royalties, Rent and Octroi and all other payment, as stipulated by the laws of the state of Punjab, with each invoice raised per month.
7.3	Inspection	<p>Add:</p> <p>The Contractor shall place order for the material and the equipment only after approval of the Engineer-in-charge. The Contractor shall submit the detailed drawings, if any, to the Engineer-in-charge for approval.</p> <p>For Equipment:</p> <p>The Contractor shall inform the Engineer-in-charge about the likely dates of testing and dispatching of the material. The Contractor shall notify the Engineer-in-charge for inspection and testing, at least seven (7) days prior to packing and shipping and shall supply the manufacturer's test results and quality control certificates.</p> <p>The inspection and test categories shall be applied prior to delivery of the equipment, of various categories as indicated in the technical specifications for each type of equipment.</p> <p>Category A: The drawing has to be approved by the Procuring Entity's Representative before manufacture and testing. The material has to be inspected by the Engineer-in-charge or an inspecting agency after approval of Procuring Entity's Representative at the manufacturer's premise before packing and dispatching. The inspection charges of the agency will be borne by the Procuring Entity but the contractor has to pay the inspection charges. The contractor will include in their next bill the inspection charges and the same will be reimbursed by the Procuring Entity from the provisional sum. The contractor shall provide the necessary equipment and facilities for tests and the cost thereof shall be borne by the Contractor.</p> <p>Category B: The drawings of the equipment have to be submitted and to be approved by the Engineer-in-charge prior to manufacture. The material has to be tested by the manufacturer and the manufacturer's test certificates are to be submitted and approved by the Engineer-in-charge before dispatching of the equipment. Notwithstanding the above, the Engineer-in-charge, after examination of the test certificates, reserves the right to instruct the Contractor for retesting, if required, in the presence of the Contractor's representative.</p> <p>Category C: The material may be manufactured as per relevant standards and delivered to the site.</p> <p>For material / equipment under Category 'A' and 'B' the Engineer-in-charge will provide an\ authorization for packing and shipping after inspection.</p>
8.4	Time for Completion	<p>The Time for Completion of the whole of the Facilities shall be Eight (08) Years from the Effective Date as described in the Contract Agreement.</p> <p>Add the following clause:</p> <p>Time for Completion for parts of the Facilities: are given below:</p> <ul style="list-style-type: none"> a) Execution period – Twenty-Four (24) months, including Four (4) months of Design period b) DLP Period: 12 months c) Operation and Maintenance period of Sixty (60) months,

8.5	Construction Program	The Contractor shall submit for approval a Program for the Works within 21 days from the date of the Letter of Acceptance. The period between Program updates is 30 days. The amount to be withheld for late submission of an updated Program is INR 50,000.									
10.3	General Conditions for admissibility of Price Variation	Payment against price variation shall not be admissible in this contract.									
13.1	Defect Liability Period	The Defects Liability Period is: 365 days.									
15.1 5	Advance Payment	Simple Interest Rate @ 12% will be charged on advance payment. Advance payment shall be released in three equal installments. Second and third shall be released after utilization certificate of the previous installment.									
15.3 <i>Schedule of Payments (in case of Lump Sum Contract payments shall be linked to various stages of completion of Works given in the Activity Schedule)</i>	The breakup of fee payable against works executed under execution phase shall be as under: Contract Period including DLP and O&M	Mo n-ths	96	Design/ Execution Phase	DLP	O&M Phase					
	Total Management Fee	%	100%								
	Fixed fee: To be paid on completion of execution phase on executed quantities with rates considered in BoQ or quoted cost by	%	80%								

Design Period [Four (4) Months]: After approval of the Detailed Engineering Design of each component, payment will be released as per the Price quoted by the Contractor and agreed to by the employer, as detailed in the Contract Agreement, for the item of work.

Construction period [Twenty (20) Months]: This being an Admeasurement contract, the selected contractor will raise monthly invoices, against the work done in the preceding month and will be paid accordingly after deductions, if any, as per the contract condition.

During construction period, the stretch of sewerage and storm water drainage de-silted / constructed / rehabilitated by the bidder shall be taken over by him progressively, thereby responsibility of O&M for that stretch shall rest with the contractor without any additional cost during this period.

Any variation in the quantities executed, shall be paid as per the quantities break up of an item in Bill of Quantities (Section VII)

The actual quantities of CIPP / MWSL / replacement of sanitary sewer shall be finalized by special technical committee after reviewing the CCTV of the sewer line

Defect Liability Period [Twelve (12) Months]: The O&M cost for sewerage and drainage in walled city area during DLP of 12 months shall be undertaken by selected contractor without any extra cost.

Operation and Maintenance Period (Five Years): The selected contractor will raise monthly invoices, and will be paid accordingly after deductions, if any, as per the contract condition.

Penalty:

		<p>For non-compliance with the following parameter/issues, during the Operation and Maintenance Period of Five (05) years,</p> <ul style="list-style-type: none"> • No leaks / blockages in pipes, joints, locations of specials and valves - Penalty for non-compliance will be INR 10,000 per instance. • No overflows from the Manholes,- Penalty for non-compliance will be INR 10,000 per instance • Submission of "As built" drawings both in soft copies and hard copies (two prints and one polyester film) - Penalty for non-compliance will be INR 50,000 • Silt removed from the sewerage system should be removed by next day from the road side - Penalty for non- compliance will be INR 20,000 per instance. • CCTV inspection to be carried out after removal of silt from the system and submitted to the Employer within a week - Penalty for non-compliance will be INR 10,000 per instance • The Contractor shall submit a weekly report to the Employer detailing the Operation and Maintenance indicating the labour hours expended and other Consumables consumed and also problems faced and rectified - Penalty for non-compliance will be INR 10,000 per instance • Minimum time for rectification • Blockage and overflows - 12hours - Penalty for non- compliance will be INR 10,000 per instance • Stolen / Broken man hole covers - 12hours - Penalty for non-compliance will be INR 10,000 per instance • Sewer spills from main sewer, branch and house service connections (between property chamber and public - 72hours - Penalty for non-compliance will be INR 10,000 per instance • Record all complaints received regarding sewer blockage and clearance with same date and time - Penalty for non- compliance will be INR 10,000 per instance • Record condition of sewer found at the time of attending complaint. Damage notice should be recorded by attending staff - Penalty for non-compliance will be INR 10,000 per instance • The Contractor shall carry out mandatory biannual cleaning of network before and after the monsoon season including cleaning of all manhole chambers and collection network irrespective of the regular maintenance work - Penalty for non-compliance will be INR 10,000 per instance. • identification and reporting of illegal connections on the sewerage network as soon as these are detected - Penalty for non-compliance will be INR 10,000 per instance. • Non submission of monthly report shall invite penalty of INR 10,000 for each such occurrence. <p>In case any Child labour is employed at site in violation with the laws of the state and India, the employer will levy an additional penalty of Rs 25,000 per incidence and in such instance occurs more than once the contract may be terminated, to be decided at the sole discretion of the Employer.</p>
15.1 6	Secured Advance	<p>Add to this clause:</p> <p>Payment against pipes and valve, specials etc intended to form part of permanent works shall be made to the contractor as per the following provisions:</p> <ol style="list-style-type: none"> 1. 75% of the accepted rate against supply of material, after the satisfactory field inspection and proper stocking at site / yard, and submission of test reports and other relevant documents; <p>However, at any point of time, the maximum length of un-laid pipes qualified under</p>

		<p>this provision shall not exceed 12.5% of the quantity specified in Bill of Quantity</p> <ol style="list-style-type: none"> 2. 20% of accepted rate after satisfactory laying and jointing including installation and fixing all required specials, fittings, backfilling and completion in layers as specified; However, at any point of time, the maximum length of untested pipes qualified under this provision shall not exceed 12.5% of the quantity specified in Bill of Quantities; and 3. 12.5% of accepted rate after completion of satisfactory sectional testing and completion of road restoration as per specifications
20	Insurance	<p>The details of Insurance covers to be obtained by the Contractor and the Procuring Entity, including their value, terms and extent of coverage and other terms and conditions shall be as under:</p> <ul style="list-style-type: none"> (a) for the Works, Plant and Materials; (b) for loss or damages to equipment; (c) for loss or damage to property (except the Works, Plant, Materials and Equipment) in connection with Contract; (d) for personal injury or death; (i) of the Contractor's employees; (ii) of other people <p>The Sum Insured against each of these items will be as per the Laws of the state of Punjab.</p> <p>For Road and Drainage component: The minimum amount of Third Party Liability insurance cover shall be Rs. 10,00,000 (Rupees ten Lakhs only) per occurrence or event, with the number of occurrences not less than four. The Contractor shall promptly notify the Engineer-in-Charge of each claim made under the Third Party Liability coverage, and shall renew the Third Party Insurance after each such occurrence in order to maintain the number of covered occurrences at not less than four.</p> <p>The minimum coverage against damage to the Works and materials during construction shall be Rs. 5,00,000 (Rupees Five Lakhs only).</p>
22.2	Labor	<p>22.2.5 Working Hours</p> <p>(a) Normal working hours are: Eight</p> <p>22.2.7 Health and Safety</p> <p>(d) The Contractor shall throughout the contract (including the Defect Liability Period):</p> <ul style="list-style-type: none"> (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Employer's and Project Manager's employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as

		<p>appropriate; and</p> <p>(iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.</p> <p>The Contractor shall include in the program to be submitted for the execution of the Facilities under Subclause 18.2 an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Subclause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for the preparation and implementation this program shall not exceed the amount dedicated for this purpose.</p>
25	Commissioning and Operational Acceptance	25.2.2 The Guarantee Test of the Facilities shall be successfully completed within .Twenty-eight (28) days from the date of Completion
26	Completion	26.3 No bonus will be given for earlier Completion of the Facilities or part thereof.
29 b)	Limitation of Liability	The multiplier of the Contract Price is: 1.1

Section-VI C: Contract Forms

Section VI C: Contract Forms

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1. Letter of Acceptance

Letter of Acceptance

[on letterhead paper of the Procuring Entity]

No.

Dated

To:..... [name and address of the Contractor].....

Subject:..... [Notification of Award Contract No.].....

This is to notify you that your Bid dated [**date**]..... for execution of the Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar for the Accepted Contract Amount of the equivalent of [**amount in numbers and words and name of currency**] as corrected and modified in accordance with the Instructions to Bidders has been accepted by Amritsar Smart City Limited (ASCL).

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the form given in the Contract Forms.

Authorized Signature:.....

Name and Title of Signatory: Chief Executive Officer,

Amritsar Smart City Limited.

Attachment: Contract Agreement

2A. Contract Agreement

Contract Agreement

THIS AGREEMENT made the day of, between **Amritsar Smart City Limited** (hereinafter “the Procuring Entity”) which expression shall, where the context so admits, be deemed to include his successors in office and assigns, of the one part, and **[name of the Contractor]** (Hereinafter “the Contractor”), which expression shall, where the context so admits, be deemed to include his heirs, successors, executors and administrators, of the other part:

WHEREAS the *Procuring Entity* desires that the Works known as **Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar** should be executed by the Contractor, and has accepted a Bid by the Contractor for the execution and completion of these Works and the remedying of any defects therein, and for which the Contractor has submitted Performance Security for Rupees ----- in the form of ----- (For Amritsar Smart City Limited)

The Procuring Entity and the Contractor agree as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Contract documents referred to.
2. The following documents shall be deemed to form and be read and construed as part of this Agreement. This Agreement shall prevail over all other Contract documents.
 - a) The Letter of Acceptance;
 - b) The Bid (Technical and Financial part) of the Contractor as accepted alongwith the correspondence done on it, if any;
 - c) the Special Conditions of Contract/ Contract Data;
 - d) the General Conditions of Contract;
 - e) the Specifications;
 - f) the Drawings; and
 - g) the Instructions to Bidders and Notice Inviting Bids including Procurement Entity's Requirement
3. In consideration of the payments to be made by the Procuring Entity to the Contractor as indicated in this Agreement, the Contractor hereby covenants with the Procuring Entity to execute the Works and to remedy defects therein (and, if applicable, maintain the Works for a period of five years) in conformity in all respects with the provisions of the Contract.
4. The Procuring Entity hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein (and, if applicable, maintain the Works for a period of five years), the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the

manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of India and Punjab on the day, month and year indicated above.

Signed by.....

on behalf of the Procuring Entity

(Chief Executive Officer,

Amritsar Smart City Limited)

in the presence of

Witness, Name, Signature, Address, Date

Signed by for and

.for and on behalf the Contractor

in the presence of

Witness, Name, Signature,
Address, Date

3A. Performance Security

Performance Security

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: Chief Executive Officer, Amritsar Smart City Limited, SCO 21, 2nd Floor, Distt. Shopping Complex, B-Block, Ranjit Avenue, Amritsar

Date: [Insert date of issue]

Performance Guarantee No.: [Insert guarantee reference number]

We have been informed that _ [insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture] (hereinafter called "the Applicant") has entered into Contract No. [insert reference number of the contract] dated [insert date] with the Beneficiary, for the execution of **Performance Based Management Contract for Construction of Trunk Storm Water Drainage & Allied Works, Strengthening and Rehabilitation of Sewer Network with House Connections for Sullage and Defect Liability Period of 1 year followed by Operation & Maintenance Services of the Entire System for 5 Years at Walled City Amritsar** (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, a performance security is required.

At the request of the Applicant, we as Guarantor hereby irrevocably undertake to pay the Beneficiary any sum or sums, not exceeding in total an amount of Rupees*.....[amount in figures](Rupees.....[amount in words].....) such sum being payable upon receipt by us of your first demand in writing accompanied by a written statement stating that the Contractor is in breach of its obligation(s) under the Contract, without your needing to prove or to show grounds for your demand or the sum specified therein.

The Guarantor agrees to extend this guarantee for a specified period in response to the Procuring Entity's written request for such extension for that specified period, provided that such request is presented to the Guarantor before the expiry of the guarantee.

This guarantee shall expire, no later than the. Day of., **, and any demand for payment under it must be received by us at this office on or before that date.

.....
Seal of Bank and Authorised Signature(s)

**The Guarantor shall insert an amount representing the percentage of the Contract Price specified in the Contract*

***Insert the date sixty days after the expected completion date, including defect liability period and maintenance period, if any.*

Notes: 1. All italicized text is for guidance on how to prepare this advance payment guarantee and shall be deleted from the final document.

2. The Procuring Entity should note that in the event of an extension of the time for completion of the Contract, the Procuring Entity would need to request an extension of this guarantee from the Guarantor. Such request must be in writing and must be made prior to the expiration date established in the guarantee.

Appendix 1 –Insurance Requirements

(A) Types of Insurance to Be Taken Out by the Contractor

In accordance with the provisions of GCC Clause 20, the Contractor shall at its expense take out and maintain in effect, or cause to be taken out and maintained in effect, during the performance of the Contract, the types of insurance set forth below in the sums and with the deductibles and other conditions specified. The identity of the insurers and the form of the policies shall be subject to the approval of the Employer, such approval not to be unreasonably withheld.

(a) Cargo Insurance

Covering loss or damage occurring, while in transit from the supplier's or manufacturer's works or stores until arrival at the Site, to the Facilities (including spare parts therefore) and to the construction equipment to be provided by the Contractor or its Subcontractors.

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]

(a) Installation All Risks Insurance

Covering physical loss or damage to the Facilities at the Site, occurring prior to completion of the Facilities, with extended maintenance coverage for the Contractor's liability in respect of any loss or damage occurring during the defect liability period while the Contractor is on the Site for the purpose of performing its obligations during the defect liability period.

Amount [in currency(ies)]	Deductible limits [in currency(ies)]	Parties insured [names]	From [place]	To [place]

(b) Third Party Liability Insurance

Covering bodily injury or death suffered by third parties (including the Employer's personnel) and loss of or damage to property (including the Employer's property and any parts of the Facilities that have been accepted by the Employer) occurring in connection with the supply and installation of the Facilities.

Amount [in INR]	Deductible limits [in INR]	Parties insured [names]	From [place]	To [place]

(c) Automobile Liability Insurance

Covering use of all vehicles used by the Contractor or its Subcontractors (whether owned by them or not) in connection with the supply and installation of the Facilities. Comprehensive insurance in accordance with statutory requirements.

(d) Workers' Compensation

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(e) Employer's Liability

In accordance with the statutory requirements applicable in any country where the Facilities or any part thereof is executed.

(f) Other Insurance

The Contractor is also required to take out and maintain at its own cost the following types of insurance:

Details:

Amount [in INR]	Deductible limits [in INR]	Parties insured [names]	From [place]	To [place]

The Employer shall be named as co-insured under all insurance policies taken out by the Contractor pursuant to GCC Subclause 20, except for the Third Party Liability, Workers' Compensation, and Employer's Liability Insurance, and the Contractor's Subcontractors shall be named as co-insureds under all insurance policies taken out by the Contractor pursuant to GCC Subclause 20, except for the Cargo, Workers' Compensation and Employer's Liability Insurance. All insurer's rights of subrogation against such co-insureds for losses or claims arising out of the performance of the Contract shall be waived under such policies.

(B) Types of Insurance to Be Taken Out by the Employer– NOT APPLICABLE

Appendix 2 –Time Schedule

1. Execution Period–Twenty (20) months
 - a) Design Period– Four (4) months
2. Defect Liability Period: Twelve (12) months
3. Operation and Maintenance period – Sixty (60) Months

The Time Schedule mentioned above is merely indicative. The Contractor will finalise a detailed time schedule to be included in the Contract Agreement.

Section-VII: Bill of Quantities

Ser No	CSR Item No	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		Sub Head- 1 Desilting and CCTV of Sanitary and Storm Sewer				
	NS	Desilting/Cleaning all types of lateral/main sewer pipe/section by silt, clearing machine Jetting cum suction sewer cleaning machine with water recycling technology, super sucker cum jetting or any improved mechanized system adopting all safety measures and disposal of silt/sludge up to 5 km complete and evaluating pipeline condition through in line closed circuit television (CCTV) survey and material of the buried pipelines including accurate measurement of length & diameter/ cross section, invert levels and other physical attribute of buried pipelines, identification of all defects, joints and connections, measurement and recording of their location, position, sizes & conditions of such pipeline including provision of survey report and records of the conditions, both through video recording in new DVD (3 set) as well as a report on the structural conditions of the pipelines as per the instructions of Engineer-in-Charge.				
1		200mm	Mtr	86178.30	199.00	One hundred ninety nine only
2		250mm	Mtr	6950.10	241.00	Two hundred forty one only
3		300mm	Mtr	14850.00	262.00	Two hundred sixty two only
4		400mm	Mtr	1490.00	376.00	Three hundred seventy six only
5		800mm	Mtr	310.00	1513.00	One thousand five hundred thirteen only
6		1050mm	Mtr	1690.00	2212.00	Two thousand two hundred

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
						twelve only
7		1150mm	Mtr	1270.00	2780.00	Two thousand seven hundred eighty only
8		1200mm	Mtr	400.00	2780.00	Two thousand seven hundred eighty only
9		1300mm	Mtr	110.00	3675.00	Three thousand six hundred seventy five only
10		1350mm	Mtr	1030.00	3675.00	Three thousand six hundred seventy five only
11		1450mm	Mtr	510.00	4135.00	Four thousand one hundred thirty five only
12		1750mm	Mtr	1133.00	5673.00	Five thousand six hundred seventy three only
13		2000mm	Mtr	1375.00	6874.00	Six thousand eight hundred seventy four only
14		600mmX900mm	Mtr	6170.00	1513.00	One thousand five hundred thirteen only
15		750mmX1100mm	Mtr	250.00	2212.00	Two thousand two hundred twelve only
16		950mmX1400mm	Mtr	620.00	3675.00	Three thousand six hundred seventy five only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	NS	Disilting/Cleaning all types of lateral/main sewer pipe/section by silt, clearing machine Jetting cum suction sewer cleaning machine with water recycling technology, super sucker cum jetting or any improved mechanized system adopting all safety measures and disposal of silt/sludge up to 5 km complete and evaluating pipeline condition through in line closed circuit television (CCTV) survey and material of the buried pipelines including accurate measurement of length & diameter/ cross section, invert levels and other physical attribute of buried pipelines, identification of all defects, joints and connections, measurement and recording of their location. position, sizes & conditions of such pipeline including provision of survey report and records of the conditions, both through video recording in new DVD (3 set) as well as a report on the structural conditions of the pipelines as per the instructions of Engineer-in-Charge.				
17		600mm	Mtr	1868.00	992.00	Nine hundred ninety two only
18		750mm	Mtr	549.00	1513.00	One thousand five hundred thirteen only
19		900mm	Mtr	1574.00	1513.00	One thousand five hundred thirteen only
20		1200mm	Mtr	1893.00	2780.00	Two thousand seven hundred eighty only
21		1275mm	Mtr	2333.00	3675.00	Three thousand six hundred seventy five only
22		1300mm	Mtr	144.00	3675.00	Three thousand six hundred seventy five only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
23		1400mm	Mtr	744.00	3675.00	Three thousand six hundred seventy five only
24		1575mm	Mtr	588.00	5214.00	Five thousand two hundred fourteen only
25		1600mm	Mtr	710.00	5214.00	Five thousand two hundred fourteen only
26		1800mm	Mtr	294.00	6874.00	Six thousand eight hundred seventy four only
27		2000mm	Mtr	264.00	6874.00	Six thousand eight hundred seventy four only
28		2100mm	Mtr	624.00	9276.00	Nine thousand two hundred seventy six only
29		2325mm	Mtr	353.00	9276.00	Nine thousand two hundred seventy six only
30		2700mm	Mtr	760.00	10948.00	Ten thousand nine hundred forty eight only
31		3000mm	Mtr	597.00	10948.00	Ten thousand nine hundred forty eight only
	NS	Disilting/Cleaning all types of lateral/main sewer pipe/section by silt, clearing machine Jetting cum suction sewer cleaning machine with water recycling technology, super sucker cum jetting or any improved mechanized system adopting all safety measures and disposal of silt/sludge up to 5 km complete and evaluating pipeline condition through in line closed circuit television (CCTV) survey and material of the buried pipelines including accurate measurement of length & diameter/ cross section, invert levels and other physical attribute of buried pipelines, identification of all defects, joints and connections, measurement and recording of their location.				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		position, sizes & conditions of such pipeline including provision of survey report and records of the conditions, both through video recording in new DVD (3 set) as well as a report on the structural conditions of the pipelines as per the instructions of Engineer-in-Charge.				
32		2200mm	Mtr	1665.00	9276.00	Nine thousand two hundred seventy six only
33		2400mm	Mtr	3280.00	10668.00	Ten thousand six hundred sixty eight only
	Sub Head- 2 P/L of New and Rehabilitation of Sanitary Sewer and Storm Sewer					
34	24.3 (b)	Dismantling of bituminous courses of flexible pavements by mechanical means and disposal of dismantled materials up to a lead of 1000 meters, stacking serviceable and unserviceable materials separately as per technical clause 202 of MORT&H specifications	Cum	4195.90	233.00	Two hundred thirty three only
35	24.3 (C)	Dismantling of Granular courses of flexible pavements by mechanical means and disposal of dismantled materials up to a lead of 1000 meters, stacking serviceable and unserviceable materials separately as per technical clause 202 of MORT & H specifications	Cum	15970.18	434.16	Four hundred thirty four and sixteen paise only
	8.6	Dismantling concrete or precast concrete				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
36	(a)	Lime concrete, cement concrete 1:6:12 of leaner	Cum	3627.54	255.38	Two hundred fifty five and thirty eight paise only
37	(d)	Cement concrete plain 1:2:4	Cum	4836.74	845.41	Eight hundred forty five and forty one paise only
	29.4	Excavation manually in trenches with straight or Open cutting in a built up street / lanes having wall to wall width up to 3 metre for sewers and manholes to full depths as shown in drawings, including Shoring, dressing to correct sections and dewatering of rain water provision for diversion for traffic, protection of existing services i.e. telephone cables, electric lines, water supply lines and gas lines etc. night signals, profiles, Pegs, Sight rails, boning rods, ,fixing and maintenance of caution boards, fencing refilling trenches, watering , dressing and restoration of surface to original level and removal of surplus spoils from the site of works up to one chain(15 mtrs) complete in all respect. As per Note-11 Chapter 29 , Where wall to wall width is up to 3.0 Mtr. where as in open area or built up street/lane having wall to wall width more than 3.0 Mtr, excavation will be done by mechanical means. In case of unavoidable circumstances, if, manual excavation is required other than the specified above, Superintending Engineer is competent to permit after his personal satisfaction subject to prior approval on the record. If prior approval is not accorded for manual excavation then contractor will be paid as excavation by mech. means and the contractor will have no claim for that.				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	A	For Depth not exceeding 2.0 m B.G.L				
38	(a)	For all classes of soil except rocky	Cum	35407.85	111.67	One hundred eleven and sixty seven paise only
	29.5	Excavation in trenches with straight or Open cutting in streets, lanes or in open area with 3D/JCB or excavator including manually dressing bed, trimming sides and side slopes for sewer and manhole to full depths as shown in drawing, including dressing to correct sections and dewatering of rain water provision for diversion for traffic, protection of existing services i.e. telephone cables, electric lines, water supply lines and gas lines etc. night signals, profiles, Pegs, Sight rails, boning rods, ,fixing and maintenance of caution boards, fencing refilling trenches, watering , dressing and restoration of surface to original level and removal of surplus spoils from the site of works up to 15 Mtr for all works other than connections to complete in all respect.				
	A	For depth not exceeding 3 mtr B.G.L				
39	(a)	For all classes of soil expect rocky	Cum	191635.24	65.55	Sixty five and fifty five paise only
	B	For depth exceeding 3 mtr but exceeding 4.50 Mtr B.G.L				
40	(a)	For all classes of soil expect rocky	Cum	27852.00	66.43	Sixty six and forty three paise only
	C	For depth exceeding 4.50 mtr but exceeding 6.00 Mtr B.G.L				
41	(a)	For all classes of soil expect rocky	Cum	2223.00	82.73	Eighty two and seventy three paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	29.8	Providing and fixing timbering on face of trenches if required for sewers and manholes for item 29.4 and 29.5 irrespective of the depth, measuring Each timbered surfaces of trench on which timbering is done.				
	A	Type I, Simple form of timbering				
42	(i)	For Trench Having Width Up to 1.0 Metre	Sqm	83.00	19.19	Nineteen and nineteen paise only
43	(ii)	For Trench Having Width above 1.0 Metre & Up to 2.0 Metre.	Sqm	1269.00	26.86	Twenty six and eighty six paise only
44	(iii)	For Trench Having Width above 2.0 Metre & Up to 3.0 Metre.	Sqm	10958.00	34.53	Thirty four and fifty three paise only
	29.9	Providing & fixing pile driven type close board timbering and withdrawing the same as per specifications & desired by Engineer-incharge required in running sandy strata complete in all respect. measuring surface area of trench on which timbering is done.				
45	A	For trench having width upto 1.0 Metre	Sqm	29371.00	337.00	Three hundred thirty seven only
46	B	For trench having width above 1.0 Metre & Up to 2.0 Metre.	Sqm	6052.00	339.00	Three hundred thirty nine only
	5.2 (i)	Earth, Surkhi, Sand, Earth, Fly Ash, Bajri, Ballast, Stone Boulders, Kankar and Building Rubbish Earth.				
		Earth				
47		1.0 Km	Cum	13059.92	90.00	Ninety only
		Fine Sand				
48		6 to 10 KM	Cum	12205.31	70.31	Seventy and thirty one paise only
49		11 to 20 KM	Cum	12205.31	93.75	Ninety three and seventy five paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		Coarse Sand and Bajri	Cum			
50		6 to 10 KM	Cum	33092.41	70.31	Seventy and thirty one paise only
51		11.0 to 20 KM	Cum	33092.41	93.75	Ninety three and seventy five paise only
52		21.0 to 40 KM	Cum	33092.41	112.50	One hundred twelve and fifty paise only
53		41.0 to 60 KM	Cum	33092.41	83.75	Eighty three and seventy five paise only
54		61.0 to 125 KM	Cum	33092.41	132.60	One hundred thirty two and sixty paise only
	5.2 (iii)	Tar, Bitumen and other road binders				
55		6 to 10 Km	Tonne	263.51	51.56	Fifty one and fifty six paise only
56		11.0 to 20 Km	Tonne	263.51	68.75	Sixty eight and seventy five paise only
57		21.0 to 40 Km	Tonne	263.51	112.50	One hundred twelve and fifty paise only
58		41.0 to 60 Km	Tonne	263.51	101.25	One hundred one and twenty five paise only
59		61.0 to 150 Km	Tonne	263.51	248.40	Two hundred forty eight and forty paise only
60		151.0 to 730 Km	Tonne	263.51	1000.50	One thousand and fifty paise only
61	As per CSR	Less difference of Bajri	Cum	26968.20	-168.57	Minus one hundred sixty eight and fifty seven paise only
62	As per CSR	Less difference of Cement	Cum	140592.99	-50.00	Minus fifty only
63	As Per CSR	Less Coarse Sand	Cum	8676.26	-13.88	Minus thirteen and eighty eight paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
64	As Per CSR	Less Brick	Each	4397.00	44.40	Forty four and forty paise only
65	As Per CSR	Less Steel	Qtl	585.84	-942.57	Minus nine hundred forty two and fifty seven paise only
66	As Per CSR	Add Bitumen	Tonne	263.51	12912.39	Twelve thousand nine hundred twelve and thirty nine paise only
	As Per CSR	Add difference of quarry rate i/c contractor profit and cess				
67		For 13.2 mm crushed bazri	Cum	3703.08	-168.57	Minus one hundred sixty eight and fifty seven paise only
68		For 11.2 mm crushed bazri	Cum	2076.10	-137.41	Minus one hundred thirty seven and forty one paise only
	As Per CSR	Add difference for query rate				
69		For stone metal(63-45 mm)	Cum	3194.00	-151.81	Minus one hundred fifty one and eighty one paise only
70		For stone metal(53-22.4 mm)	Cum	3194.00	-158.65	Minus one hundred fifty eight and sixty five paise only
71	10.46 (ii) - 10.46 (i)	Less Vol Metric	Cum	1065.12	-45.74	Minus forty five and seventy four paise only
	29.69	Providing, lowering in trenches to correct gradient and alignment, jointing with tyton rubber joint and cutting of reinforced cement concrete spigot and socketed pipes and specials with rubber ring ISI marked as per IS code IS 458-2003 into trenches for all depths and laying out the same to correct alignment, gradients, levels etc. cutting of concrete beds and joints holes, supporting the pipes and specials in correct position in a				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		suitable rigid manner while the same are being jointed and until the surrounding benchings, haunches and envelopes are completed. The pipes shall rest on the beds at all joints through their lengths and fixing of rubber ring, facing, testing the pipes for leakage and making good the same leakage and all defects to the entire satisfaction of the Engineer-in-charge including all cartage etc.				
	(III)	RCC Pipes class NP-3				
72	(c)	200 mm i/d	Mtr	64.00	616.70	Six hundred sixteen and seventy paise only
73	(d)	250 mm internal diameter	Mtr	9555.00	805.20	Eight hundred five and twenty paise only
74	(f)	400 mm internal diameter	Mtr	62.10	2029.60	Two thousand twenty nine and sixty paise only
75	(h)	500 mm internal diameter	Mtr	379.10	2777.40	Two thousand seven hundred seventy seven and forty paise only
76	(i)	600 mm internal diameter	Mtr	531.40	3322.00	Three thousand three hundred twenty two only
77	(j)	700 mm internal diameter	Mtr	137.70	4028.10	Four thousand twenty eight and ten paise only
78	(k)	800 mm internal diameter	Mtr	391.40	4952.70	Four thousand nine hundred fifty two and seventy paise only
79	(l)	900 mm internal diameter	Mtr	328.10	6091.00	Six thousand ninety one only
80	(m)	1000 mm internal diameter	Mtr	1665.60	6996.50	Six thousand nine hundred ninety six and fifty paise only
81	(n)	1100 mm internal diameter	Mtr	236.50	8088.70	Eight thousand eighty eight and seventy paise only
82	(o)	1200 mm internal diameter	Mtr	913.30	8815.60	Eight thousand eight hundred

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
						fifteen and sixty paise only
83	(p)	1400 mm internal diameter	Mtr	1282.90	11418.40	Eleven thousand four hundred eighteen and forty paise only
84	(q)	1600 mm internal diameter	Mtr	410.20	14431.90	Fourteen thousand four hundred thirty one and ninety paise only
85	(r)	1800 mm internal diameter	Mtr	50.10	17743.60	Seventeen thousand seven hundred forty three and sixty paise only
	29.64 A	Providing, lowering in trenches to correct gradient and alignments, jointing with tytone rubber joint and cutting of RCC S/S pipes having inside HDPE. lining ISI marked as per ISI code IS:458-2003 into trenches for all depths and laying out the same to correct alignment, gradients, levels etc., cutting of concrete beds and joints holes, supporting the pipes and specials in correct position in a suitable rigid manner while the same are being jointed and until the surrounding benchings, haunches and envelopes are completed. The pipes shall rest on the beds at all joints through their lengths and to ensure this, testing the pipes for leakage and making good the same leakage and all defects to the entire satisfaction of the Engineer incharge including all cartage etc complete in all respects.				
	(l)	RCC pipes with inside HDPE lining class - NP-3				
86	(c)	500 mm internal diameter	Mtr	377.60	3834.80	Three thousand eight hundred thirty four and eighty paise only
87	(d)	600 mm internal diameter	Mtr	584.60	4590.80	Four thousand five hundred

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
						ninety and eighty paise only
88	(f)	800 mm internal diameter	Mtr	2429.24	7346.20	Seven thousand three hundred forty six and twenty paise only
89	(g)	900 mm internal diameter	Mtr	231.00	8732.00	Eight thousand seven hundred thirty two only
90	(i)	1100 mm internal diameter	Mtr	2198.00	11871.20	Eleven thousand eight hundred seventy one and twenty paise only
91	(j)	1200 mm internal diameter	Mtr	1581.00	12945.30	Twelve thousand nine hundred forty five and thirty paise only
92	(k)	1400 mm internal diameter	Mtr	1551.00	17688.00	Seventeen thousand six hundred eighty eight only
	29.70	Extra for providing 1:2 cement sand mortar on tytöne rubber joint of RCC pipes having sockets extended out of barrel, in trenches including facing trowelling and finishing the joints at the angle of 45 degree with faces of socket keeping joints wet till cured, testing the pipe joints for leak proof and making good all leakage and defects as per specifications.				
	II	NP-3 & NP4 Pipes S/S joints having internal dia meter of pipe:-				
93	(d)	250 mm internal diameter	Each	3822.00	15.80	Fifteen and eighty paise only
94	(f)	400 mm internal diameter	Each	25.00	38.90	Thirty eight and ninety paise only
95	(h)	500 mm internal diameter	Each	303.00	48.70	Forty eight and seventy paise only
96	(i)	600 mm internal diameter	Each	447.00	55.10	Fifty five and ten paise only
97	(j)	700 mm internal diameter	Each	55.00	65.40	Sixty five and forty paise only
98	(k)	800 mm internal diameter	Each	1129.00	90.50	Ninety and fifty paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
99	(l)	900 mm internal diameter	Each	223.00	110.90	One hundred ten and ninety paise only
100	(m)	1000 mm internal diameter	Each	666.00	136.00	One hundred thirty six only
101	(n)	1100 mm internal diameter	Each	974.00	147.40	One hundred forty seven and forty paise only
102	(o)	1200 mm internal diameter	Each	997.00	177.30	One hundred seventy seven and thirty paise only
103	(p)	1400 mm internal diameter	Each	1133.00	204.20	Two hundred four and twenty paise only
104	(q)	1600 mm internal diameter	Each	164.00	232.90	Two hundred thirty two and ninety paise only
105	(r)	1800 mm internal diameter	Each	20.00	260.60	Two hundred sixty and sixty paise only
	29.103	Extra for making connections of all sizes newly laid sewers within benching of fully charged sewers including plugging of sewer, dewatering & desilting of manholes etc. complete in all respects.				
106	(a)	with existing sewer of 300 mm i/d and below	Each	28.00	1026.40	One thousand twenty six and forty paise only
107	(b)	With existing sewer above 300 mm id up to 700 mm id	Each	13.00	2052.80	Two thousand fifty two and eighty paise only
108	(c)	With existing sewer above 760 mm id and above	Each	33.00	4550.30	Four thousand five hundred fifty and thirty paise only
109	10.7 b (ii)	Cement concrete 1:6:12 with 40mm stone aggregate using concrete mixer volumetric type	Cum	12212.85	1993.11	One thousand nine hundred ninety three and eleven paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
110	29.7 C /5.2	Extra for Disposal of Surplus Spoils/Earth if any beyond 15 Mtr as covered for item no 29.4 to 29.5 (1 Km Lead) As per Note-11 Chapter 29, As per Specified Engineer- In - charge Note : 13 Removal of surplus spoils/earth from the site of work if required, will be decided by the Engineer in charge. He must take up tentative quantities in writing with Local Administrations (M.C./ N.A.C./ Panchayat/ Owner of the project) so that surplus spoils/ earth may be filled in public place (the destination/ destinations). Before so fillings, levels of site be recorded with respect to fixed bench mark near site and then again levels be recorded after filling. Record actual measurement of earth filling and lead in measurement book (loading or unloading will not be payable). If local administration do not response to repeated requests, then Engineer in charge will decide the destination in public interest and the record the reasons of his choice and paid accordingly.	Cum	51694.47	60.38	Sixty and thirty eight paise only
	29.7 B	Extra for filling for earth in 15 cm layer and compaction.				
111	(ii)	For item No 29.4 and 29.5	Cum	187478.60	7.16	Seven and sixteen paise only
112	10.12 (ii)	Cement concrete 1:2:4 with stone ballast or shingle using concrete mixer volumetric type	Cum	4098.37	3486.53	Three thousand four hundred eighty six and fifty three paise only
113	NS	Providing and Fixing of Form Work for Block	Sqm	5427.99	24.40	Twenty four and forty paise only
114	10.10 b) (ii)	Cement Concrete 1:4:8 with stone ballast using concrete mixer volumetric type.	Cum	5097.80	2413.30	Two thousand four hundred thirteen and thirty paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
115	10.15	Reinforced cement concrete M-20 mechanically batch mixed using batch type concrete mixer as per IS :1791 and vibrated by needle vibrated but excluding steel reinforcement centring and shuttering in foundation and Plinth.	Cum	1311.98	4191.95	Four thousand one hundred ninety one and ninety five paise only
116	11.5 (i)	First class burnt brick work laid in cement sand mortar 1:5 in foundation and plinth.	Cum	5013.66	3827.64	Three thousand eight hundred twenty seven and sixty four paise only
117	11.6 (i)	First class burnt brick work laid in cement sand mortar 1:5 in first storey upto 4 metres above plinth level.	Cum	1458.37	4108.84	Four thousand one hundred eight and eighty four paise only
118	15.7	12.5 mm thick cement plaster 1:2	Sqm	55481.95	150.05	One hundred fifty and five paise only
119	18.18	Cold twisted deformed (Ribbed/ Tor Steel Bar) Bars Fe 500 grade as per IS 1786-2000, for R.C.C works, where not including in the complete rate of RCC including bending and placing in position complete	Qtl	585.85	5993.65	Five thousand nine hundred ninety three and sixty five paise only
120	29.68	Extra over the rate laid down in this schedule for cement concrete work for making and finishing benching and complicated floor work in manholes including formation of channels and bulldozing and smooth finishing the surface accurately to template.	Sqm	2162.43	36.40	Thirty six and forty paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
121	29.37	Providing orange colour safety footrest of minimum 6mm thick plastic encapsulated as per IS:10910 on 12mm dia steel bar confirming to IS: 1786 having minimum cross section as 23mm x 25mm and over all minimum length 263mm and width as 165mm with minimum 112mm space between protruded legs having 2mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to withstand the bend test and chemical resistance test as per specification and having manufacturer's permanent identification mark to be visible even after fixing, including fixing in manholes with 230x150x75cm cement concrete block 1:2:4 (1 cement: 2 sand: 4 stone aggregate) complete as per design.	Each	5455.00	144.74	One hundred forty four and seventy four paise only
	29.36	Providing & fixing 560 mm, 500 mm and 450 mm internal diameter circular or 450 mm x 600 mm clear inside opening rectangular RCC manhole cover and frame ISI marked as per IS:12592-2002 including carriage from the stores of the Engineer-in-charge to site of work, loading, unloading including stacking and setting the same to correct lines over manholes including cement concrete coping (M:20) around the frame etc. Dia of steel for lifting hook is 16mm. (for EHD and HD).				
	A	560 mm id R.C.C. Manhole cover with frame				
122	(a)	Extra Heavy duty	Each	668.00	1844.55	One thousand eight hundred forty four and fifty five paise

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
						only
123	(a)	Extra Heavy duty Labour Rate	Each	230.00	124.25	One hundred twenty four and twenty five paise only
124	(b)	Heavy duty	Each	1573.00	1678.62	One thousand six hundred seventy eight and sixty two paise only
125	9.1	Shuttering for faces of concrete foundations and foundation beam & plinth beam (vertical or battering)	Sqm	1973.84	158.31	One hundred fifty eight and thirty one paise only
126	9.8	Centring and shuttering for flat surfaces such as suspended floors, roofs, landings, chajjas, shelves etc.	Sqm	2608.96	204.01	Two hundred four and one paisa only
127	15.48	Cement Rendering on Plaster 1mm Thick	Sqm	33469.35	40.78	Forty and seventy eight paise only
	NS	Constructing brick masonry road gully chambers as per standard drawings (as per sizes given below) including dressing of beds and sides of chambers to exact profiles, 15cm thick lime concrete 16:24:100 (as per specified in item No. 10.3) in foundation, first class brick work laid in cement sand mortar 1:5, 40mm thick cement concrete 1:2:4 topping inside the chamber with a floating coat of 1.5mm thick neat cement laid in one operation to the topping, the entire inner surface of the chamber rendered with neat cement not less than 12.50mm in thickness of 1:2 cement sand plaster and finished with a floating coat of neat cement 1mm thick left absolutely smooth polished and correct to template including cost of SFRC RCC HD road gully grating and frame				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		complete and to the requirement of the Engineer-In-Charge.				
	A	Single Road Gully Chamber				
128	(b)	Size 610mm x 457mm x 1105mm	Each	637.00	5145.60	Five thousand one hundred forty five and sixty paise only
	6.2	Earth work excavation in ordinary soil exclusive of compensation of earth				
129	(i) (a)	Kassi work undressed	Cum	3849.79	50.71	Fifty and seventy one paise only
130	10.6 b) (ii)	Cement concrete 1:8:16 with 40mm gauge stone aggregate using concrete mixer volumetric type	Cum	1946.98	1795.47	One thousand seven hundred ninety five and forty seven paise only
131	24.4 (b)	Compacting original ground below embankment- Loosening, levelling and compacting original ground below embankment to facilitate placement of first layer of embankment t facilitate placement of first layer of embankment, scarified to a depth of 150 mm, mixed with water at OMC and then compacted by rolling so as to achieve minimum dry density as given in Table 300-2 for embankment construction as per technical clause305 of MORT & H specifications	Cum	16783.58	26.28	Twenty six and twenty eight paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	24.13 (ii)	Water Bound Macadam Grading II (Without Screening for low volume Roads/ undersigned roads). Providing, laying, spreading and compacting stone aggregates of grading II to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with smooth wheeled roller 8 -10 tonnes in stages to proper grade and camber, applying and brooming requisite type of binding Materials to fill up the interstices of coarse aggregates, watering and compacting to the required density complete as per technical clause 404 of MORT&H specifications.				
132		Through rate	Cum	3194.00	1165.05	One thousand one hundred sixty five and five paise only
133		Labour rate	Cum	4790.99	318.36	Three hundred eighteen and thirty six paise only
	24.14 (ii)	Water Bound Macadam Grading III (Without Screening for low volume Roads/ undersigned roads). Providing, laying, spreading and compacting stone aggregates of grading III to water bound macadam specification including spreading in uniform thickness, hand packing, rolling with smooth wheeled roller 8 -10 tonnes in stages to proper grade and camber, applying and brooming requisite type of binding Materials to fill up the interstices of coarse aggregates, watering and compacting to the required density complete as per technical clause 404 of MORT&H specifications.				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
134		Through rate	Cum	3194.00	1188.41	One thousand one hundred eighty eight and forty one paise only
135		Labour rate	Cum	4790.99	318.36	Three hundred eighteen and thirty six paise only
	24.18	Tack coat @ 0.40 Kg per sqmt.				
136	(b)	Providing and applying Tack coat with penetration grade bitumen VG 10 using bitumen pressure distributor at the rate of 0.40 kg/sqm on the prepared surface/granular surface treated with primer coatas per technical clause 503 of MORT&H specifications	Sqm	83917.88	25.40	Twenty five and forty paise only
137	24.24	Providing, laying surface dressing in single coat using crushed stone aggregate size on a layer of bituminous binder VG-10 @1 kg/sqm laid on prepared surface complete as per CSR item.	Sqm	83917.88	78.90	Seventy eight and ninety paise only
138	24.25	Providing, laying and compaction of open - graded premix surfacing of 20 mm thickness consisting of crushed stone aggregates of specified grading premixed in a batch type hot mix plant with bituminous binder VG-30 @ 1.46 kg per sqm, and laid with paver and rolling with a smooth wheeled roller 8-10 tonne capacity, finished to required level and grades complete as per technical clause 511 of MORT&H specifications	Sqm	83917.88	133.89	One hundred thirty three and eighty nine paise only
	24.27 (b)	Seal coat type B				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
139		Providing and laying of premix sand seal coat premixed in batch type hot mix plant using specified fine aggregates and penetration grade bitumen VG-30 @ 0.68kg per sqm, carriage of mixed material to site of work, Sqm laid to the specified levels, grade and cross fall complete as per technical clause 513 of MORT&H specifications	Sqm	83917.88	54.42	Fifty four and forty two paise only
	29.40	Erection of cast RCC ventilating column having minimum 200mm internal diameter including excavation, base columns, caps, cowls or wire domes, etc. complete including carriage from the stores of the Engineer-In-Charge of works, to sites of works, loading and unloading fixing and jointing and setting the same in position complete in all respects.				
140	(b)	9.1m Height Including cost of ventilation shaft	Each	8.00	29884.75	Twenty nine thousand eight hundred eighty four and seventy five paise only
141	NS	Dewatering of Pits or ground by dewatering pump inclusive of all consumables, petrol, lubricants etc and disposal of water.	HP/Hour	8230.00	48.00	Forty eight only
142	NS	Repair of Existing Water House Connection (Including all material) Complete.	Each	400.00	663.80	Six hundred sixty three and eighty paise only
	8.5	Dismantling brickwork tile masonry or tile lining				
143	(c)	Arch work in cement or lime	Cum	5290.52	513.70	Five hundred thirteen and seventy paise only
	29.96	Dismantling of manhole chamber including R.C.C. top slab, C.I. cover with frame including stacking of useful materials near the site including disposal of unserviceable material within 100 m. as desired by Engineer-in-				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		charge.				
144	(b)	Rectangular manhole 90x150 cm and 120 cm deep	Each	86.00	1303.60	One thousand three hundred three and sixty paise only
145	(c)	Rectangular manhole 120x180 cm and 120 cm deep	Each	121.00	1676.70	One thousand six hundred seventy six and seventy paise only
146	(d)	Rectangular manhole 150x180 cm and 120 cm deep	Each	37.00	1907.40	One thousand nine hundred seven and forty paise only
147	NS	Rectangular manhole 180x2400 cm and 120 cm deep	Each	31.00	2946.00	Two thousand nine hundred forty six only
	29.97	Extra for depth of manholes dismantled for additional depth of 0.300 m. including disposal of dismantled material within 100 m. as desired by Engineer-in-charge.				
148	(b)	Rectangular manhole 90x150 cm	Each	516.00	164.90	One hundred sixty four and ninety paise only
149	(c)	Rectangular manhole 120x180 cm	Each	565.00	202.90	Two hundred two and ninety paise only
150	(d)	Rectangular manhole 150x180 cm	Each	222.00	219.80	Two hundred nineteen and eighty paise only
151	NS	Rectangular manhole 180x2400 cm	Each	83.00	421.40	Four hundred twenty one and forty paise only
	29.63	Providing, lowering, cutting & jointing salt glazed stone ware pipes and specials ISI marked as per IS: 651-2007 class Sp-1 into trenches for all depths and laying out the same to correct alignment, gradients, levels etc., cutting of concrete beds and joints holes, supporting the pipes and specials, in correct position in a suitable rigid manner while the same are being jointed and until the				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		surrounding benching, haunching and envelopes are completed including jointing of pipes and specials in trenches, using cement sand mortar 1:1 and best spun Jute yarn as per IS:1887, finishing and trowelling of each joint at an angle of 45 degree with the longitudinal axes of pipe, watering, keeping the joint covered and wetted till the same are cured, testing the sewerage line for leakage and making all leakages and defects good as laid in the contract specification, chipping and finishing the cut surface to uniform finish to the entire satisfaction of engineer-in-charge Including all cartage etc complete in all respects.				
152	(c)	200mm i/d Pipe	Mtr	3700.00	370.90	Three hundred seventy and ninety paise only
153	(d)	250mm i/d Pipe	Mtr	180.00	634.20	Six hundred thirty four and twenty paise only
154	(e)	300mm i/d Pipe	Mtr	420.00	908.80	Nine hundred eight and eighty paise only
	29.94	Making connection of drain or sewer line with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1:2 (1 cement : 2 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete.				
155	(a)	For Pipes 100 to 250 mm dia	Each	10580.00	144.90	One hundred forty four and ninety paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
156	(b)	For Pipes 300 to 450 mm dia	Each	600.00	189.50	One hundred eighty nine and fifty paise only
	NS	Labour cost for Cutting of Stoneware Pipe				
157		200mm i/d Pipe	Each	12333.00	25.21	Twenty five and twenty one paise only
158		250mm i/d Pipe	Each	600.00	32.32	Thirty two and thirty two paise only
159		300mm i/d Pipe	Each	1400.00	38.78	Thirty eight and seventy eight paise only
	29.65	Providing, laying in trenches to correct gradient and alignment and jointing of UPVC pipes having ISI specification IS:15328-2003 class-SN-8 marked make Supreme, Finolex, Kissan, Jain, Prince or equivalent good on them and laying the same in trenches to correct alignment and gradients, cutting and jointing, testing for water tightness and making good the leakages and defects including cost of specials (Specials and Solvent should be of same make as that of pipes) complete in all respects.				
		Class SN-8				
160	(a)	110 mm o/d Pipe	Mtr	16000.00	298.60	Two hundred ninety eight and sixty paise only
161	(f)	315mm o/d Pipe	Mtr	141.30	2395.60	Two thousand three hundred ninety five and sixty paise only
162	28.48	Providing and filling sand grading as per specifications or fine grade around the various sizes of G.I pipes in external work.	Cum	1040.99	472.00	Four hundred seventy two only
	29.102	Making connection of newly laid sewer in walls of existing manhole of fully charge sewer including cost of plugging sewer,				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		desilting, removal of sullage water and making good of khudda				
163	a	Sewer connection upto 300mm i/d	Each	452.00	442.20	Four hundred forty two and twenty paise only
164	NS	Repair of Existing Water House Connection (Including all material) Complete.	Each	1442.00	663.80	Six hundred sixty three and eighty paise only
165	29.23	First class dry brick on edge flooring or paving in ordinary bonded courses or in herring bond or other special courses or bond, laid as described in item no. 29.22.	Sqm	1.23	364.85	Three hundred sixty four and eighty five paise only
	Sub Head- 3 Raising and Plaster of Manhole					
166	29.101	Disilting of manhole including all safety measures, cost of T&P and disposal of silt upto 5km complete in all respect	Cum	2905.63	1394.40	One thousand three hundred ninety four and forty paise only
167	16.68	Finishing with epoxy paint two coat at all locations prepared and applied as per manufacturer specification complete	Sqm	45581.19	119.91	One hundred nineteen and ninety one paise only
168	NS	Dismantling of manhole cover and frame and Slab	Each	5760.00	130.00	One hundred thirty only
	29.98	Raising RCC slab of manhole chamber to desired height and placing back in position after raising the manhole(raising depth of brickwork and plaster will be paid extra as per CSR item)				
169	(a)	Inside size 75x120 cm to 150x180 cm	Each	2940.00	760.50	Seven hundred sixty and fifty paise only
	Sub Head- 4 Sullage House Service Connection					

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	29.89	Construction of brick masonry inspection chambers size as given below upto 0.60 metre average depth in 1:5 cement sand mortar, lime concrete with 40 per cent lime mortar 2:3 in foundation, cement concrete 1:2:4 benching 12.50mm thick cement plaster 1:2 with a floating coat of 1mm thick of neat cement, R.C.C. 1:2:4 slabs 100mm thick cement concrete topping 50mm thick with 455mm x 455mm, 455mm x 610mm inside light duty C.I. inspection chamber cover and frame (Weight as per I.S.I specifications) painted with 3 coats of black bitumastic paint conforming to I.S.I complete as per standard design.				
170	(a)	Size 450mm x 450mm inside with RCC 455mm 455mm cover and frame light duty double seal.	Each	9160.00	3338.80	Three thousand three hundred thirty eight and eighty paise only
	28.13	Providing, laying, fixing & jointing of P.V.C. Pipes ISI Marked as per ISI-4985 (ISI marked with the prior approval of Engineer-in-charge) along the Trenches and laying the same in Trenches to correct alignment and gradients, cutting, jointing and testing complete as per specifications.				
171	(xiii)	75mm o/d pipe of 6 Kgf. / Sqcm	Mtr	18320.00	133.00	One hundred thirty three only
172	(xv)	110mm o/d pipe of 6 Kgf. / Sqcm	Mtr	18320.00	275.00	Two hundred seventy five only
173	NS	Lifting of Sludge water for close the drain	Hrs	4580.00	250.00	Two hundred fifty only
	Sub Head- 5 Construction of CIPP and MWSL Lining					
	NS	Design, manufacture, supply, deliver on site and install CIPP structural lining system as per WRc/ASTM including preparatory site work &				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		<p>construction of working shaft and reinstatement and making good of rehabilitated sewer & lateral connections etc.</p> <p>The design of the CIPP liner is to be done as per ASTM F1216 and shall be approved by the engineer-in-charge before the installation. All the liners installed shall be tested by the lab approved by the engineer-in -charge.</p> <p>including all safety precautions such as temporary barricading lighting display caution boards, and shifting/restoration of public utilities damaged during construction & disposal of all debris & surplus earth etc.</p> <p>complete. All works to be carried out taking all safety precautions and using necessary safety equipment like gas detector rescue-winch, overall, boots, hand gloves, face mask, air compressor & glove, exhaust fan, D.C torches, oxygen cylinder & mask etc. It will be mandatory that without safety equipment no labour is allowed to work. All labours & machinery should be sufficiently insured for any accident or loss of life & It will be mandatory to follow NGT norms.</p>				
174	(a)	600mmX900mm	Mtr	3722.76	41300.00	Forty one thousand three hundred only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	NS	Design, manufacture, supply, and install Spiral Wound Liner (MWSL) structural lining system including preparatory site work such as making good the sewer etc, grouting/sealing of cracks and joints suitable as per site and local repairs to provide structural action consistent with the assumptions made in the structural design & construction of working shaft and reinstatement and making good of rehabilitated sewer & laterals connections etc and end sealing of the migration gap between the liner and the sewer at Manholes. After MWSL lining perform CCTV of all pipe/Brick Sewer. and Survey report and records of the conditions, both through video recording in new DVD (3 set) The paying length will be from wall to wall (inner face) between two successive manholes. This item is payable subject to completion of manhole/chamber rehabilitation with in the stretch of the completed liner.				
175	(a)	1750mm	Mtr	1133.00	136408.00	One lakh thirty six thousand four hundred eight only
	NS	Evaluating pipeline condition through in line closed circuit television (CCTV) survey and material of the buried pipelines including accurate measurement of length & diameter/ cross section, invert levels and other physical attribute of buried pipelines, identification of all defects, joints and connections, measurement and recording of their location. position, sizes & conditions of such pipeline including provision of survey report and				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		records of the conditions, both through video recording in new DVD (3 set) as well as a report on the structural conditions of the pipelines as per the instructions of Engineer-in-Charge.				
176	(a)	For Sewers up to 900 mm Dia	Mtr	3722.76	371.00	Three hundred seventy one only
		Sub Head- 6 Shifting of Water Supply Pipe Line Including HSC				
	28.1	Excavation manually in trenches for pipe lines with straight or open cutting in streets and lanes in built-up area where width of street / Lane from wall to wall is less than 3 meter including trimming and dressing sides levelling of beds of trenches to correct grade, cutting joint holes, refilling consolidation, watering, including the cost of dewatering of rain water, diversion for traffic, night signals. Providing & fixing caution boards, watching, fencing, etc. and removal of surplus soil from the site up to 15 meter distance complete in all respects.				
	(a)	Earth work up to 1.5 Mtr depth				
177	(i)	In classes of soil except rocky	Cum	1629.42	104.50	One hundred four and fifty paise only
	28.7 B	Providing, Stringing out, cutting, Jointing and testing of ISI Marked D.I. Pipe (S&S) as per IS 8329 and laying the same in trenches to correct alignment and gradients, jointed with rubber tyton joints fitted complete including all cartage.				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	A	DI pipe as per IS 8329 DI-K7				
178	(b)	100 mm i/d	Mtr	100.00	999.50	Nine hundred ninety nine and fifty paise only
	28.25	Supplying & laying D.I. specials / fittings as per IS :9523-2000 (ISI marked with prior approval of Engineer-in-Charge) class K-12 suitable for tyton joint with external bitumen coating and inside cement mortar lining, scaffolding, tools and plants, ropes, guys, etc. complete in all respects.				
179	(a)	DI Specials : Up to 300 mm.i/d.	Kg	102.51	97.50	Ninety seven and fifty paise only
	NS	Providing, lowering, laying, aligning, fixing in position and jointing CI D- joint class-10 as per IS specifications complete of the following sizes including all jointing material, cost of all labour, testing and commissioning as per Technical Specifications and as per direction of Engineer.				
180		100mm dia	Each	17.00	615.00	Six hundred fifteen only
	28.59	Dismantling lead Caulked Joints of cast iron Socketed Pipes, Valves and Specials by heating the Joints including the cast of Labour, Fuel and tools, etc., collecting the lead taken out from the joints and ride back the same to the Engineer-in-charge.				
181	(d)	100 mm i/d pipes of , valves and specials	Mtr	40.00	48.00	Forty eight only
	28.63	Dismantling, disjointing, removal of G.I. pipe lines, specials, valves and fittings complete in all respects.				
182	(d)	32mm i/d pipe line	Mtr	800.00	30.00	Thirty only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	28.36	Providing and laying, jointing, fixing, testing ISI Marked G.I. Pipe (as per IS 1239) B- Class, premium make such as (Jindal Hisar) including cost of Specials such as tees, bends, sockets elbow etc., cutting, threading and testing in trenches in the ground complete.				
183	(a)	15mm i/d	Mtr	400.00	126.00	One hundred twenty six only
	28.15	Providing, Laying, fixing & jointing of ISI Marked H.D.P.E. Pipes as per ISI - 4984-1995 casting (Premium make such as Dura-line/Reliance with the approval of Engineer-in-charge) along the Trenches and laying the same in Trenches to correct alignment and gradients, cutting, jointing and testing complete as per specifications.				
	B	HDPE pipe of 8 Kg. PE-80				
184	(b)	40mm o/d	Mtr	2000.00	93.00	Ninety three only
	28.18	Supplying, fixing and jointing PVC / H.D.P.E pipe's specials complete as desired by Engineer-in-Charge.				
185	(a)	For pipe lines laid inside habitation.	Each	100.00	93.00	Ninety three only
186	NS	Supply and Fixing of PVC Service Saddle Complete				
187	(a)	40mmx15mm to 63mmx20mm	Each	133.00	165.00	One hundred sixty five only
	NS	Providing and Laying of MDPE PE 80 Blue Pipe PN 16 for 15mm & PN 12.5 for 25mm and 32mm				
188	(a)	15mm	Each	465.50	32.00	Thirty two only
189	NS	Dewatering of Pits/Trenches or ground by dewatering pumps including all consumables items,diesel, oil & lubricant etc. disposal of water.	HP/Hr	374.00	48.00	Forty eight only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
						Minus twenty five only
190	NS	Credit of Material Like CI/GI/DI pipe/Fittings etc	Kg	750.00	-25.00	
	NS	Providing and Fixing of clamp saddles should be Non corrosive Engineering Plastic body moulded with Stainless steel threaded metal insert for tapping outlet. Clamp saddles for service connection from water distribution mains shall be of wrap around design, wide skirt and wide straps support, which shall reinforce the pipe while providing excellent stability to the saddle. Clamp Saddles for service connections shall be of fastened strap type with threaded (as per IS:554)female outlet of Stainless steel for service connection. The design of the saddle body should be such that, the service connection outlet metal insert shall project out towards pipe side and align with the hole drilled on the pipe to ensure positive locking against rocking or creeping on the pipe, as might be caused by vibration, pressure or excessive external loading. Saddle Seal shall be of virgin rubber SBR Grade 30 / NBR (NSF 61 approved). It shall be of type pressure activated hydro-mechanical design. It shall be contoured gasket to provide a positive initial seal which increases with increase in the line pressure. Saddle straps shall be made of plastic with or without metal reinforcement depending on size and injection moulded to prevent galvanic corrosion over the long service life. In case of metal reinforcement, the metal should not come in direct contact with pipe. Fasteners details: Stainless Steel				

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
		Type 202, NC rolled thread, Tightening torque for $\frac{1}{2}$ " (M12) Fastener: 14-15 kg.m and for 5/8" (M 16) Fastener: 21-23 kg.m				
		80 mm-100 mm.				
191		15 mm.connection	Each	80.00	500.00	Five hundred only
	28.34	Providing ISI G.M ferrule as per IS:2692, drilling and tapping cast iron pipe lines of all diameters and screwing in Ferrule and connections complete in all respect.				
192	(b)	15 mm i/d Ferrule Medium	Each	80.00	412.00	Four hundred twelve only
	NS	Providing and Fixing of PP Compression Metal Insert Female Thread Adaptors as specified in the drawing with SS304 material with BSP Threads as per ISO 14236 standard. Body, Nut / Cap –Polypropylene, Clip Ring-POM (Acetylic resin),Packing bush- Polypropylene, "O" ring – NBR. Pressure rating will be PN 16.The Compression fittings for intended for conveyance of Potable water for Human consumption to be tested to comply with BS 6920 specifications in any of the laboratories like DVGM / KIWA / SPGN / WRc –NSF and certificate of compliance to be produced for the following parameters.				
193		15 mm.connection	Each	80.00	110.00	One hundred ten only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	NS	Providing and Fixing of Double Compression Elbow with Body, Nut / Cap – Polypropylene, Clip Ring-POM (Acetylic resin),Packing bush-Polypropylene, "O" ring – NBR. Pressure rating will be PN 16. The Compression fittings for intended for conveyance of Potable water for Human consumption to be tested to comply with BS 6920 specifications in any of the laboratories like DVGM / KIWA / SPGN / WRc – NSF and certificate of compliance to be produced for the following parameters.				
194		15 mm.connection	Each	160.00	50.00	Fifty only
	NS	Providing and Laying of MDPE PE 80 Blue Pipe PN 16 for 15mm & PN 12.5 for 25mm and 32mm				
195		15 mm connection	Mtr	80.00	32.00	Thirty two only
196	11.8 (i)	First class burnt brick work laid in cement sad mortar 1:4 in first storey up to 4 mtr above plinth level (For any repair)	Cum	15.00	4243.45	Four thousand two hundred forty three and forty five paise only
	Sub Head- 7 Disilting of Gandha Nallha					
197	25.4	Providing, Running and maintenance of pumping set 8 H.P./ Generator set for dewatering arrangements complete in all respects.	HP per Hour	360.00	573.84	Five hundred seventy three and eighty four paise only
198	25.8	Removal/Clearance of slush from wet drains by mechanical means.	Cum	9000.00	62.24	Sixty two and twenty four paise only
199	5.2 (i)	Earth, Surkhi, Sand, Earth, Fly Ash, Bajri, Ballast, Stone Boulders, Kankar and Building Rubbish, Earth. 5 KM (Proposed by MCA)	Cum	9000.00	81.00	Eighty one only
200	23.26	Filling cement bags with sand, sewing and laying in position within 30 Ms in dry including cost of E.C. bag & strings.	100 Nos	133.33	987.66	Nine hundred eighty seven and sixty six paise only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
201	NS	Diversion of sewerage water	Job		500000.00	Five lakh only
		Sub Head- 8 Supply and Installation of Litter Trap				
	NS	Litter Trap with Trash Booms for arresting the trashes:- Equipment by Registered manufacturer. With Design Patent certificate and permanently inflated boom made of Polyester coated PVC fabric with following characteristics: Anti fungi, UV resistant, resistant to chemicals and fire retardent. Size L= 5 Mtr X B= 3 Mtr X D= 1 mtr				
202		Size of Trap 5 Mtr x 3 Mtr x 1Mtr	Each	1.00	3218125.00	Thirty two lakh eighteen thousand one hundred twenty five only
203	NS	Lake Boom of Section Length minimum 10 metres with Height 18", Freeboard 6", Draft 12", Connection - Aluminium connector,Dansforth Anchor,Tow bridle of ISI mark Boom Colour must be bright and visible in dark like florescent shade of Yellow, Orange etc	Mtr	25.00	26718.75	Twenty six thousand seven hundred eighteen and seventy five paise only
		Sub Head- 9 Public Awareness Campaign Program				
204		Public Awareness Campaign	LS	1.00	1000000.00	Ten lakh only
		Sub Head- 10 Operational and Maintenance of Sanitary Sewer and Storm Sewer				
	1	Sewerage Network in Walled City				
	a	Existing and Replacement of Sewer Network				
205	(i)	1st Year	Quarterly	4.00	973250.00	Nine lakh seventy three thousand two hundred fifty only
206	(ii)	2nd Year	Quarterly	4.00	1046244.00	Ten lakh forty six thousand two hundred forty four only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
207	(iii)	3rd Year	Quarterly	4.00	1124712.00	Eleven lakh twenty four thousand seven hundred twelve only
208	(iv)	4th Year	Quarterly	4.00	1209065.00	Twelve lakh nine thousand sixty five only
209	(v)	5th Year	Quarterly	4.00	1299745.00	Twelve lakh ninety nine thousand seven hundred forty five only
	b	De-Silting of Trunk Sewer in 5th Year				
210	(v)	5th Year			62456725.00	Six crore twenty four lakh fifty six thousand seven hundred twenty five only
		300mm	Mtr	14850		
		400mm	Mtr	1490		
		800mm	Mtr	310		
		1050mm	Mtr	1690		
		1150mm	Mtr	1270		
		1200mm	Mtr	400		
		1300mm	Mtr	110		
		1350mm	Mtr	1030		
		1450mm	Mtr	510		
		1750mm	Mtr	1133		
		2000mm	Mtr	1375		
		600mmX900mm	Mtr	5590		
		750mmX1100mm	Mtr	250		
		950mmX1400mm	Mtr	620		
	c	De-Silting of Open Gandha Nallha in 5th Year				
211	(v)	5th Year	Mtr	250.00	2841113.00	Twenty eight lakh forty one thousand one hundred thirteen only

Ser No	CSR	Specification	Unit	Quantity	Net Rate (In Rs)	Rupees in words
	d	Collection and Disposal of Litter in Open Gandha Nallha.				
212	(i)	1st Year	Quarterly	4.00	450000.00	Four lakh fifty thousand only
213	(ii)	2nd Year	Quarterly	4.00	483750.00	Four lakh eighty three thousand seven hundred fifty only
214	(iii)	3rd Year	Quarterly	4.00	520031.00	Five lakh twenty thousand thirty one only
215	(iv)	4th Year	Quarterly	4.00	559034.00	Five lakh fifty nine thousand thirty four only
216	(v)	5th Year	Quarterly	4.00	600961.00	Six lakh nine hundred sixty one only
2	Storm Network in Walled City					
	a	Existing and Proposed storm Network (With all manholes and road gullies clean before monsoon season)				
217	(i)	1st Year	Quarterly	4.00	1761250.00	Seventeen lakh sixty one thousand two hundred fifty only
218	(ii)	2nd Year	Quarterly	4.00	1893250.00	Eighteen lakh ninety three thousand two hundred fifty only
219	(iii)	3rd Year	Quarterly	4.00	2035250.00	Twenty lakh thirty five thousand two hundred fifty only
220	(iv)	4th Year	Quarterly	4.00	2188000.00	Twenty one lakh eighty eight thousand only
221	(v)	5th Year	Quarterly	4.00	2352000.00	Twenty three lakh fifty two thousand only

Section-VIII: Tender Drawings

LIST OF DRAWINGS			
S. No.	Drawing No.	Title	Size
1	DI1245-101-100/RFP/SEW/NET/01	Existing Sewerage Layout-Walled City Amritsar	A0
2	DI1245-101-100/RFP/SEW/NET/02	Existing Sewerage Layout-Walled City Amritsar-Work done under JNNURM & by MCA	A0
3	DI1245-101-100/RFP/WS/NET/03	Location of Shifting of Water Pipelines & Upsizing of Sewer Pipelines	A0
4	DI1245-101-100/RFP/SEW/NET/04	Existing Sewerage Layout of Walled city Amritsar-Brick / RCC Sewer Lines for CIPP/ MWSL Lining and sewer replacement	A0
5	DI1245-101-100/RFP/SW/NET/05	Proposed Trunk Storm Sewer Layout in ABD Area	A0
6	DI1245-101-100/RFP/SW/LSEC/06	Proposed Trunk Storm Sewer in ABD Area Longitudinal Sections	A0
7	DI1245-101-100/RFP/SW/NET/07	Existing Drainage System in Amritsar	A0
8	DI1245-101-100/RFP/SW/NET/08	Sewerage Catchments of Walled City	A3
9	DI1245-101-100/RFP/SW/NET/09	Storm Sewer Catchments of Walled City	A3
10	DI1245-101-100/RFP/SEW/STD/01	Typical House Connection Detail	A3
11	DI1245-101-100/RFP/SEW/STD/02	Typical Details of Brick Manholes 1200mmX750mmX1800mm	A3
12	DI1245-101-100/RFP/SEW/STD/03	Typical Details of Brick Manholes 1500mmX900mmX1800mm	A3
13	DI1245-101-100/RFP/SEW/STD/04	Typical Details of Brick Manholes 1500mmX900mmX3600mm	A3
14	DI1245-101-100/RFP/SEW/STD/05	Typical Details of Brick Manholes 1800mmX1200mmX above 3600mm	A3
15	DI1245-101-100/RFP/SEW/STD/06	Sewerage Network- Pipe Bedding Details	A3
16	DI1245-101-100/RFP/SEW/STD/07	Storm Sewer Network- Pipe Bedding Details and Typically Gully Details	A3