



Lahore Water and Wastewater Management
Project (LWWMP)

AIIB Project No. P000074

Contract No. 0074-PAK-01

Minutes of 1st Pre-Tender Meeting

**SINGLE-STAGE TWO-ENVELOPE
FOR
PROCUREMENT OF WORKS UNDER ENGINEERING,
PROCUREMENT AND CONSTRUCTION MODE
(EPC/TURNKEY BASIS)**

**LAHORE WASTEWATER AND DRAINAGE MANAGEMENT
PROJECT (LWDMP) - SEWERAGE SYSTEM FROM LARECHS
COLONY TO GULSHAN E RAVI, LAHORE (THROUGH
TRENCHLESS TECHNOLOGY)**

30th October 2025



ASIAN INFRASTRUCTURE
INVESTMENT BANK

**LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDMP) –
SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI LAHORE
MINUTES OF 1st PRE-TENDER MEETING HELD ON 30/10/2025 AT 1500 HRS
IN COMMITTEE ROOM, WASA HEAD OFFICE**

A Pre-Tender Meeting for the Contract “*Lahore Wastewater and Drainage Management Project (LWDMP) – Sewerage System from Larechs Colony to Gulshan-e-Ravi, Lahore (Through Trenchless Technology)*” was held under the chairmanship of the Project Director (LWWMP), in the Committee Room, WASA Head Office, Lahore, on 30th October 2025 at 1500 hrs. The meeting was attended by the representatives of the PMU, Project Management Consultants (PMC), and prospective tenderers. The list of participants is attached herewith.

The meeting commenced with recitation from the Holy Quran. The Chair welcomed all participants and invited them to briefly introduce themselves. Thereafter, the Project Director delivered a detailed presentation on the project, explaining the overall scope, key components, and major technical features of the works, including collection system, conveyance system (Trunk Sewer Lines A, B & C through MTBM), disposal station, and associated building infrastructure. The presentation also outlined the broader context of LWWMP and phasing of the program.

It was highlighted that the AIIB Standard Tender Documents are being followed for this procurement, including the Instructions to Tenderers, Evaluation & Qualification Criteria, Employer’s Requirements, and Conditions of Contract based on FIDIC Silver Book (2017 Edition, reprinted 2022). The importance of complying strictly with the tender documents and relying solely on written communication issued by the Employer was emphasized. Tenderers were informed that the purpose of the Pre-Tender Meeting was to clarify provisions and respond to queries; however, the meeting does not form part of the tender documents.

Tenderers were advised to submit their queries in writing, and responses shall be provided formally in writing. Further, the Tenderers were advised to visit and examine the site of the Works and its surroundings, as stipulated under ITT 7.2 of the Tender Documents.

The list of queries by the tenderers and their responses are given hereunder:

| Sr # | Reference Section | Queries | Employer's Response |
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| 1. | Volume 1, Part I, Section 2, Tender Data Sheet, ITT 24.1 | <p>Extension of the Bid Submission Deadline:</p> <p>Due to the requirements of the Chinese enterprise, including the application for a consular support letter, the acquisition of a security commitment letter from the Pakistani police, and the visa application for the design and technical personnel needed for the project to travel to Pakistan, coupled with the approximately three-week cycle required for the project design work and factors such as holidays, it is estimated that an extension of at least six weeks will be needed. Whether to accept or not?</p> | <p>The Employer considers that sufficient time has already been provided for preparation and submission of the Tender, however, the request for extension of the Tender submission deadline is under consideration.</p> |
| 2. | Volume 1, Part I, Section 4 – Tender Forms, Table of Adjustment Data, Table B – Foreign Currency (Excluding Electrical Works and Mechanical Works of Main Disposal Station) | <p>We note that no provision for price adjustment has been made for the Electrical and Mechanical (E&M) components of the Ultimate Disposal Station. Given that the E&M works constitute a substantial and integral part of the Disposal Station and are significantly affected by fluctuations in the prices of foreign-supplied materials and equipment, we request that the E&M portion of the Disposal Station be included in the scope of price adjustment to ensure fair compensation for cost variations during project execution.</p> | <p>It is envisaged that the major portion of expenditure in the component of E&M works shall be comprised of such mechanical equipment which the Contractor shall have to design and place order within six (06) to twelve (12) months after its commencement to ensure completeness of project within stipulated time, therefore, these E&M items do not qualify for provision of price adjustment. Moreover, the Electrical works for the Ultimate Disposal Station represent a relatively minor portion of the overall Contract value. Accordingly, price adjustment for the E&M portion is not envisaged owing to the project duration i.e., 30 months.</p> |
| 3. | Volume 4, Part III, Section 9, Appendix 1 – Schedule of Payments, Sr. No. 3.27 | <p>It is stated that payment for the Office Building will be made upon completion of the building, including all finishing works. In our opinion, this milestone represents a significant portion of the total building works and would require a considerable period to achieve. To facilitate smoother cash flow and to better align payments with actual progress, we kindly propose that this milestone be subdivided into appropriate sub-milestones with proportional payments linked to each stage.</p> | <p>The office building component represents a very small portion of the overall Contract value. In view of its limited financial weight and to maintain simplicity in contract administration, it is considered appropriate to retain a single milestone for this item. Tenderers are advised to prepare their tenders accordingly.</p> |
| 4. | Volume 4, Part III, Section 8, Particular Conditions, Part A - Contract Data, | <p>Time for Completion: 915 Calendar Days Considering the EPC nature of the project, the stipulated period of 915 days is insufficient due to the</p> | <p>The Time for Completion has been established based on the detailed schedule prepared by the Employer and Project Management Consultants (PMC) and has been</p> |

| Sr # | Reference Section | Queries | Employer's Response |
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| | Sub Clause 1.1.76 | extensive time required for design, field investigations, pre-construction activities, and procurement of MTBMs. Therefore, it is requested to extend the project completion period to 1,460 days. | duly approved at the highest forums. The stipulated period therefore remains unchanged. Tenderers are advised to plan and allocate their resources accordingly to meet the Time for Completion specified in the Tender Documents. |
| 5. | Volume 3, Part II, Section 6, Employer's Requirement | The location for disposal of debris, muck, and slurry has not been specified. Kindly specify the designated disposal site, as the lead distance for transportation depend on this information. | <p>The designated location for disposal of debris, muck, and slurry has already been indicated in Drawing No. LW-TD-005. This land can also be used for Camps.</p> <p>It is further clarified that the WASA-owned land indicated near Ferozepur Road in Drawing No. LW-TD-005A is no more available for Contractor's use, whereas an alternate land located at Bhaini Road can be made available (subject to site clearance and preparation by the Contractor). However, the Contractor may propose any Government Owned Land for its use subject to its availability, for which the Employer may provide reasonable assistance to in providing the land for intended purpose through coordination with the respective department. In case, no suitable land is provided for camps and labour, material / equipment, pipe manufacturing facility by the Employer, the Contractor shall arrange the land through its own means and costs.</p> <p>The updated Drawing of WASA owned land (LW-TD-005A) at Bhaini Road is attached as Annexure-A.</p> <p>An addendum will be issued reflecting the above.</p> |
| 6. | | Please clarify whether specific hours will be designated for the movement of equipment such as dumpers, loader trailers, and other heavy vehicles within the city, or if transportation during daytime hours will be permitted. | <p>Kindly refer to Page 2-6 wherein the Tenderer is required to prepare and submit the traffic management plan as part of the Technical Tenders for evaluation purposes.</p> <p>Kindly refer to Page 6-21, 6-86, 6-383 of the Employer Requirements, the Contractor is required to prepare detailed traffic management plan and its implementation in consultation with the Employer and respective Department (Chief Traffic Police Officer, Lahore). Accordingly, the Contractor shall inform the total requirement of heavy machinery mobility and preferred timings, to enable the Employer to seek special permission for heavy machinery</p> |

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| | | | <p>commutation during the restricted times. Normally, the specific hours for movement of equipment such as dumpers, loader trailers, and other heavy vehicles within the city is 11 pm to 6 am.</p> <p>As a precedence, the Permission for performing Geotechnical Investigations was obtained from CTO Office and Letter is attached as Annexure-B for information purposes.</p> |
| 7. | Volume 3, Part II, Section 6, Employer's Requirement | The location for RCC pipe manufacturing site have not been specified. Kindly clarify whether the client will provide land for pipe manufacturing facility and TSF to the Contractor free of cost. | <p>WASA-owned land identified for the Contractor's camp and RCC pipe manufacturing facility has been shown in Drawing LW-TD-005. This area will be made available to the Contractor free of cost.</p> <p>However, Tenderers may alternatively propose any other suitable land for the Contractor's camp and RCC pipe manufacturing facility at their own cost and responsibility.</p> <p>Please also refer to reply at Sr. No. 5.</p> |
| 8. | | Please confirm that Water for Construction purposes will be provided by WASA to facilitate the Contractor. Furthermore, WASA will also facilitate the Contractor to arrange electricity from LESCO. | <p>Please refer to 6-84 and 6-108 of the Employer's Requirements, the Contractor may drill water wells for construction purpose, subject to prior permission from WASA. The Contractor shall apply for electricity from LESCO as applicable under their Policy and Tariff.</p> <p>The Employer will extend the necessary facilitation to the Contractor for obtaining the requisite utilities in accordance with the provisions specified in Section 7, GCC Sub-Clause 2.2 'Assistance' of the Tender Documents. Tenderers are advised to refer to the relevant clauses for details.</p> |
| 9. | Volume 1, Part I, Section 3 – Evaluation and Qualification Criteria (EQC). 2.4.1.i. (Construction of tunnel/sewer/stormwater pipeline & O&M) and 2.4.1.ii (Operation & Maintenance of MTBM) of | In accordance with 2.4.1.i. (Construction of tunnel/sewer/stormwater pipeline & O&M) and 2.4.1.ii (Operation & Maintenance of MTBM) of Section 3 – Evaluation and Qualification Criteria (EQC), Tenderer's experience shall be based on "Construction of tunnel/sewer/storm water pipeline in the urban/metropolitan development environment through pipe jacking technology using slurry micro-tunnelling boring machine (MTBM)". Under such context, will the Tenderer's following experience be | <p>The qualification requirement under Sub-clauses 2.4.1.i and 2.4.1.ii pertains to demonstrated experience in construction of tunnel/sewer/stormwater pipelines in an urban/metropolitan environment using slurry MTBM pipe-jacking technology, including associated operation and maintenance of MTBM equipment.</p> <p>(a) Experience limited to metro/subway tunnel construction using TBM technology does not fulfill this requirement, as the scope and technology differ from slurry micro-tunnelling for sewerage works.</p> |

| Sr # | Reference Section | Queries | Employer's Response |
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| | | <p>accepted by the Employer:</p> <p>a) the tunnel construction using TBM technology in metro/subway construction projects;</p> <p>b) the sewer/storm water pipeline using pipe jacking technology that are included as part of metro/subway construction project (which is also in the urban development environment).</p> | <p>(b) Experience relating to sewer/stormwater pipelines installed using slurry MTBM/pipe-jacking technology within metro/subway projects may be considered, subject to provision of satisfactory documentary evidence of the experience in compliance with the specified criteria in the Tender Documents.</p> <p>The acceptability of any experience submitted shall be reviewed and determined by the Procurement Committee at the time of evaluation, based on compliance with the specified criteria in the Tender Documents.</p> |
| 10. | <p>Volume 1, Part I, Section 3, Evaluation and Qualification Criteria (EQC).</p> <p>2.4.1.i. (Construction of tunnel/sewer/stormwater pipeline & O&M) and 2.4.1.ii (Operation & Maintenance of MTBM) of</p> | <p>In accordance with 2.4.1.i. (Construction of tunnel/sewer/stormwater pipeline & O&M) and 2.4.1.ii (Operation & Maintenance of MTBM) of Section 3 – Evaluation and Qualification Criteria (EQC), will the Tenderer's specialist subcontractor's experience be accepted by the Employer?</p> | <p>The experience requirements stipulated under Sub-clauses 2.4.1.i and 2.4.1.ii of Section 3 – Evaluation and Qualification Criteria must be fulfilled by the Tenderer/JV partners themselves as 'All Partners Combined' must meet this requirement.</p> |
| 11. | <p>Volume 1, Part I, Section 2, Tender Data Sheet, ITT 11.2(l)</p> | <p>Will all experience evidence documents have to be notarized and certified by Apostille?</p> | <p>Pursuant to ITT 11.2(l) of the Tender Documents, it is clarified that:</p> <p>For documents verifiable under the provisions of Hague Apostille Convention: Verified copies and translations of documents submitted with the Tender shall certify the authenticity of documents by Apostille of the Ministry of Foreign Affairs of the Tenderer's country.</p> <p>For documents not verifiable under the provisions of Hague Apostille Convention: Verified copies and translations of all documents comprising the tender, submitted by the foreign firm with the tender, by foreign firm's country of origin "Chamber of Commerce". The authenticity of Chamber of Commerce verification will be done by Pakistani Embassy/ Consulate in foreign firm's country of origin.</p> <p>An addendum will be issued reflecting the above.</p> |

| Sr # | Reference Section | Queries | Employer's Response |
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| 12. | Volume 1, Part I, Section 2, Tender Data Sheet | For the portion of the Contract Price quoted in foreign currency, please confirm whether such payments will be made by the Asian Infrastructure Investment Bank (AIIB), at the Borrower's request, directly to the Contractor's designated bank account in a foreign country, or instead to the Contractor's foreign currency account maintained with a local bank in Pakistan? | For the purpose of Foreign Currency Payment, it is clarified that Foreign Currency Payment can be made, in a Foreign Bank Account outside Pakistan as per direct payment by the Bank or Foreign Currency Account in Local Bank in Pakistan, as per requirement of the Contractor, under provisions of tender documents and applicable regulations. |
| 13. | Volume 1, Part I, Section 2, Tender Data Sheet | For the revenue corresponding to the foreign currency portion, please clarify whether such income will be subject to sales tax and income tax in Pakistan? | Pursuant to PCOC 22.7 'Deduction of Income Tax and PRA in Advance' of the Tender Documents, deduction of advance income tax and PRA from the net payable bill amounts shall be made in accordance with prevalent Income Tax Laws of the Government of Pakistan. In this regard, the tenderers are responsible for obtaining all necessary information regarding applicable taxes, duties, and levies from the relevant authorities. |
| 14. | Volume 1, Part I, Section 2, Tender Data Sheet, ITT 21.8 | ITT 21.8, Since the Joint Venture has not been legally constituted at the time of Tendering, could the members of the Joint Venture issue their Tender Security to the Employer respectively in accordance with their respective proportional shares? | A single Tender Security covering the full required amount shall be submitted in accordance with ITT 21.8 of the Tender Documents with any proportional shares. |
| 15. | Volume 3, Part II, Section 6, Employer's Requirements | As per the tender drawing, the jacking shaft uses Steel Sheet Piles as supporting system. However, some jacking shaft have depth up to 22m, in which case the steel sheet piles are not safe for construction. Will the contractor be allowed to use other supporting system to ensure construction safety? Please kindly acknowledge it. | As this is an EPC Contract, the Tenderer may propose an alternative support of excavation system, where considered necessary to ensure construction safety and performance. However, any such alternative shall meet or exceed the requirements of the Tender Documents and applicable design, safety, and regulatory standards, and shall be subject to review and acceptance by the Employer / Consultants / Bank. |
| 16. | Volume 3, Part II, Section 6, Employer's Requirements | During the construction, some road will have be temporarily blocked. Does the Employer mandatorily request that all blocked section must be area-equally diverted or compensated to maintain local traffic? For example, an existing two-lane road can be temporarily blocked in half, remaining a lane available as traffic diversion strategy. | Reference is made to Section 6 – Employer's Requirements, Table 1-4: Environmental and Social Management Plan (Design Phase) , which specifies that a traffic study must be conducted during the design stage to evaluate existing traffic conditions, potential congestion during construction, and appropriate mitigation measures. Accordingly, Tenderers are requested to prepare and submit a comprehensive Traffic Management Plan, addressing lane closures, diversions, and any other |

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| | | | <p>measures deemed necessary based on the findings of the traffic study and in compliance with the requirements of the relevant authorities. For reference, Tenderers may consult the Traffic Management Plan provided as Annexure-VI of the ESIA, which is publicly available on the WASA and AIIB websites.</p> <p>All proposed traffic management arrangements must prioritize public safety, minimize disruption, and will be subject to review and approval by the Employer and PMC.</p> <p>Please also refer to Reply No. 6.</p> |
| 17. | Volume 2, Part II, Section 6, Employer's Requirements | When using slurry MTBM system, the Contractor needs about 1,000 square meters around jacking shaft to establish slurry system and pipe stacking. The occupation of such area will last about 6 months. Will such area be provided by the Employer free of charge, or the Contractor has to pay rent accordingly? | <p>The estimation of area and time required for mentioned activities are much on higher side. The task can be performed in much lesser area and time through proper planning, management and resource allocation.</p> <p>Contractor is required to devise a comprehensive plan for laying of trunk sewer through micro tunneling so that minimal disruption to livelihood activities would be occurred. Similarly, location of shafts should be selected in such a way that issues concerning to traffic disruption, public inconvenience and utilities shifting would have been avoided as much as possible. In case construction of shafts involves temporary occupation of roads, private land, govt owned etc. then proper E&S due diligence, approval of NOCs from relevant departments should have to be obtained by contractor prior to mobilization of machinery and commencement of works.</p> <p>Kindly refer to Section 6 – Employer's Requirements, wherein, the readily available lands are already mentioned, however, the Contractor is required to work out any such requirements during the design phase (Stage-I). For the said activity or any other related activity, the Contractor shall propose nearby Government owned land, where available. However, in case there is no suitable Government owned land for the said and similar purpose, the Contractor shall be responsible to arrange the land suitable to the Contractor with its own resources to</p> |

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| | | | complete the tasks, upon seeking the approval from the Employer / PMC. |
| 18. | Volume 1, Part I, Section 3, Evaluation and Qualification Criteria (Item No. 3) | In accordance with 3.3 Approach & methodology of Section 3 – Evaluation and Qualification Criteria (EQC), Item No.3 is “Value Engineering by introducing innovative aspects of the design to enhance quality at reduced cost & time”. Does it mean that the Tenderer is allowed to optimize the tender design to achieve the cost & time saving while ensuring the same quality? If yes, will the tenderer be allowed to revise the quantities of jacking/receiving shafts during tender submission? | Tenderers may optimize their Tender design as they deem appropriate with proper details and justifications; however, the design shall fully comply with all requirements set out in the Tender Documents, including but not limited to the immutable information and parameters prescribed therein. It is further clarified that Value Engineering is not limited to increases or decreases in quantities, rather, it primarily relates to proposing optimized construction methodologies, strategies, and technical solutions that enhance efficiency in terms of cost and time at enhanced quality. Any proposed optimizations must not alter the mandatory design requirements or reduce the functional performance and standards specified. |
| 19. | Volume 2, Part II, Section 6, Employer's Requirement | Given there are grating and automatic screen in mechanic design, who will be responsible for the disposal of the trash collected by grating/screen, the Employer or the Contractor? Will the trash be directly transported for dumping, or they will be temporarily stacked locally? | Subsequent to Section 7, GCC Sub-clause 10.1 (Taking Over the Works and Sections) and GCC Sub-clause 11.11 (Clearance of Site), during the Operation and Maintenance Period, the Employer shall be responsible for the transportation and disposal of trash collected by the grating/screen system. However, any trash or debris generated as a result of the Contractor's construction activities shall be collected, transported, and disposed of by the Contractor at its own cost. |
| 20. | Volume 4, Part III, Section 8, Particular Conditions of Contract | Given there are many resident and private property next to the design jacking shaft, will the Contractor be allowed to operate MTBM during nighttime to achieve the targeted construction period? | Pursuant to Section 8, PCOC (Contract Data) Sub-Clause 6.5, 'Normal working hours', the working hours will be Twenty-Four (24) hours per day. Accordingly, night-time MTBM operations will be permitted, provided that such activities do not adversely affect the safety, comfort, and well-being of nearby residents and comply with applicable Environmental and Social Management Plan during Construction and Operational Phase given in Section 5, Employer's Requirements. All night-time works shall be planned and executed with appropriate mitigation measures and will remain subject to approval by the Employer and relevant authorities, as required. |
| 21. | Volume 2, Part II, Section 6, Employer's | The Employer will provide dumping site and construction camp site as shown below based on the | The designated dumping site and construction camp site identified in the Tender Documents will be provided to the |

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| | Requirement | tender document. Will the Contractor have to compensate for such area? If yes, what will be the cost of the compensation? | <p>Contractor free of cost, and no compensation shall be payable in this regard. However, the Contractor shall be responsible for maintaining these sites and ensuring that natural ecology, existing topography, access routes, and all social and environmental requirements of the Employer and the Bank are duly complied with. Any associated costs in fulfilling these obligations shall be borne by the Contractor.</p> <p>It is further clarified that the WASA-owned land indicated near Ferozepur Road in Drawing No. LW-TD-005A is no more available for Contractor's use, whereas an alternate land located at Bhaini Road can be made available (subject to site clearance and preparation by the Contractor). However, the Contractor may propose any Government Owned Land for its use subject to its availability, for which the Employer may provide reasonable assistance to in providing the land for intended purpose through coordination with the respective department. In case, no suitable land is provided for camps and labour, material / equipment, pipe manufacturing facility by the Employer, the Contractor shall arrange the land through its own means and costs.</p> <p>Please also refer to reply at Sr. No. 05</p> <p>An addendum will be issued reflecting the above.</p> |
| 22. | Volume 2, Part II, Section 6, Employer's Requirement | The Employer requires that the Contractor provides no less than new 6 MTBM machines for this contract. In case that the Contractor thinks more quantity of MTBMs are needed, will the Contractor allowed to provide extra used, refurbished or rented MTBMs on top of the existing 6 new TBMs? | Provision of a minimum of six (6) new MTBMs is a mandatory requirement of the Tender Documents as per Sub-Clause 4.1 (4.1.11 & 4.1.12) of Section VI, Employer's Requirements. The Contractor may mobilize additional resources after meeting the minimum requirements, as deemed necessary to meet its construction schedule and resource allocation plan. |
| 23. | Volume 2, Part II, Section 6, Employer's Requirement, Sub-Clause 4.1.3 | In accordance with 4.1.3. THE PROJECT BRIEF (Page 8) of V2 - Part II - Employer's Requirements, it is required that "The sewer pipelines shall be RCC Pipelines having strength at least 6000psi...". Based upon our experience, we believe such strength is too | The specified minimum concrete strength of 6000 psi for RCC sewer used for MTBM Jacking Operation is part of the immutable data as per Sub-Clause 5.1 (4(a)) of Section VI, Employer's Requirements and shall not be altered. Tenderers are therefore required to comply with |

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| | | high for RCC pipe of small diameters and not cost-efficient. Will the Contractor be allowed to optimize the design by lowering the strength for small diameter RCC pipe? | the stated requirement. It is pertinent to mention here that the pipes to be laid without MTBM Jacking Operation for by-pass arrangement are required to have 5000 psi strength as given in Section VI, Employer's Requirements. The minimum recommended strength of RCC pipe to be laid through MTBM is 6000 psi. |
| 24. | Volume 2, Part II, Section 6, Employer's Requirements, Clause 4.1.10 (Page 19) | In accordance with 4.1.10. (Page 19) of V2 - Part II – Employer's Requirements, the Contractor is responsible for "Design of Rehabilitation of drains (Cantonment drain, Gulberg Drain I&II, Central Drain etc. not less than 7 km), in selected reaches.". However, there is no description about the corresponding quantities of work in the tender document. Please kindly provide the data or documents demonstrating the plan, elevation, specifications of existing drains along with the description of their defects so that we could determine the rehabilitation methodology which defines the corresponding cost estimation. | The scope of work includes the rehabilitation and beautification of existing drains by constructing retaining walls up to four (4) feet in height along both sides of the drain, in reaches susceptible to solid-waste intrusion, with a cumulative length of up to 7 km out of which mostly will be brick lined and some sensitive points shall be with RCC wall. In addition, it also involves rehabilitation of drains including lining, restoration of damaged portions to ensure hydraulic efficiency of drains. The specific reaches requiring rehabilitation shall be identified by the Contractor during the detailed design phase in consultation with the Employer and PMC. Tenderers may conduct site visits and collect all necessary information in accordance with ITT 7.2 of the Tender Documents to support their tender preparation. |
| 25. | Volume 2, Part II, Section 6, Employer's Requirements, Clause 4.1.10 (Page 19) | In accordance with 4.1.10. (Page 19) of V2 - Part II – Employer's Requirements, the Contractor is responsible for "Design of Rider Sewers of variable sizes 450 mm having length of 0.85 km, 600 mm having length of 2.5 km, 750 mm having length 5.13 km, to collect flows from direct connections along the Cantonment Drain (approx. length = 8.48 km). However, there is no detailed drawing. Please kindly provide the data or documents demonstrating the plan and profile of the Rider Sewers of variable sizes so that we could verify and define the corresponding cost estimation. | As per ER sub clause 4.1, the scope includes the design of Rider Sewers of variable sizes, 450 mm (0.85 km), 600 mm (2.5 km), and 750 mm (5.13 km), to intercept direct sewage discharges along approximately 8.48 km of the Cantonment Drain. Detailed design, including plan and profile, shall be developed by the Contractor during the detailed design stage in consultation with the Employer and PMC. Relevant base information has been provided in the Tender Documents and Tenderers are encouraged to conduct site visits and collect any additional information required in accordance with ITT 7.2 to support their cost estimation and methodology. |
| 26. | Volume 2, Part II, Section 6, Employer's Requirements, Clause 4.1.11 (Page 30) | In accordance with 4.1.11. (Page 30) of V2 - Part II – Employer's Requirements, the Contractor is responsible for: "• The Contractor is also responsible for construction of buildings/ rooms at all 23 Lift stations, where the | Being EPC Contract, the detailed design shall be carried out by the EPC Contractor during the design phase. The topographic surveys for all lift stations have already been shared. Additionally, the drawings from Drawing No. LW-TD-170 onwards indicate, through cloud markings, the |

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| | | <p>contractor has demolished existing structures (as per requirements).</p> <ul style="list-style-type: none"> • Replacement shifting and placement of generators at new location for 14 Nos. existing disposal stations, including construction of new foundations, excavation, dismantling of old foundation, etc. • Replacement shifting and placement of Control Panel rooms at 11 Nos. existing disposal stations, including excavation, concreting, installation of windows & doors, roof slabs with water proofing, backfilling and compaction in layers, plinth protection, access path, etc. • Construction of By-pass sewer and manholes for diverting the increased flow or excessive storm water runoff to existing drains by utilizing the existing pumping stations arrangements at lift stations to be decommissioned after implementation of instant project. Provision & Laying of the following diameter and length of concrete pipes (having strength at least 5000 PSI), along with required manholes, by steel casing & manual excavation, including transportation of pipes, handling of pipes, installation of pipe, grouting, transportation of excavated material at designated location, etc. <ul style="list-style-type: none"> a. 1050 mm with approximately length of 210 m. b. 1,500 mm with approximately length of 300 m.” <p>However, there is no detailed drawing. Please kindly provide data/documents and requirement so that we reasonably work out the corresponding cost estimation.</p> | <p>structures that require reconstruction after dismantling of the existing structures. Further relevant details are also provided in Section 4 – Tender Forms, Price Schedule.</p> <p>Further, the relocation of structures (estimated) needed at Lift stations is given in the Table attached at Annexure-C.</p> |
| 27. | Volume 2, Part II, Section 6, Employer's Requirements, Clause 4.1.5 (Page 72) | In accordance with 4.1.5. (Page 72) of V2 - Part II – Employer's Requirements, it provides that “Sewage pump arranged in Cardan shaft were selected.” Are Cardan Shaft Pumps the conventional application for sewer projects in Pakistan? Is the tenderer allowed to select other type of pumps while entertaining the flow rate, head and efficiency? | Cardan Shaft Pumps are specified as part of the immutable data in the Tender Documents pursuant to Section 5, Employer's Requirements and shall not be changed. Tenderers are therefore required to comply with the specified pump type and its associated requirements. |

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| 28. | Volume 1, Part II, Section 4, Tender Forms | Please provide the Excel form of Schedule No.1 ~ No.9 of Schedules of Rates and Prices Priced Activity Schedule Table in Section 4 –Tender Forms. (Page85-Page150 of V1 - Part I - Tender Procedures) | The Tender Documents provided on the WASA Website are convertible into excel format. The Contractor is required to do the needful, as required. |
| 29. | Volume 2, Part II, Section 6, Employer's Requirements | In accordance with MTBMs Specifications (Page 35) of V2 - Part II - Employer's Requirements, it is required that "The machine design, construction and its operation should be based on ASCE/CI 36-15 (Standard design and construction guidelines for micro tunnelling operation)." Is the tenderer allowed to provide MTBM machine design and manufacturing by the equivalent Chinese standard with the same performance and quality other than ASCE/CI 36-15? | The Tenderer shall be required to provide MTBM equipment meeting or exceeding the specified standards and in conformity of specifications/design or manufacturing requirements of MTBMs laid down in ER Sub Clause 4.1. The matter regarding equivalency of any particular standards with the required standards will be thoroughly examined for consideration on case-to-case basis during the tender evaluation and project execution stage. |
| 30. | Volume 1, Part I, Section 3, 6 (Qualification Section) | Regarding PEC registration, is it mandatory for the firm to be registered under the FC-A category, or is it sufficient to possess the relevant PEC discipline codes mentioned in Section 2.1.6 (Qualification Section)? Furthermore, if a firm is already registered in Pakistan and holds all the required codes except one, how will this affect the technical evaluation or scoring? | The Tenderer is required to fulfill all requirements applicable as per Pakistan Engineering Council by-laws in line with the Bank Procurement Guidelines. For the purpose of PEC registration, it is clarified that the Tenderer (Single Entity or Joint Venture) whose country of origin is Pakistan must satisfy the requirements stipulated under EQC Clause 2.1.6 – Registration with Pakistan Engineering Council. Accordingly, the Tenderer whose country of origin is Pakistan must hold the requisite PEC registration category and discipline codes as specified in the Tender Documents. |
| 31. | Volume 1, Part I, Section 2, ITT 11.2(l) | I. Attestation of Document of Foreign Bidders Per ITB 11.2 (1) "Verified copies & translations of all documents comprising the tender, submitted by the foreign firm with the tender, by foreign firm's country of origin "Chamber of Commerce". The authenticity of Chamber of Commerce verification will be done by Pakistani Embassy/ Consulate in foreign firm's country of origin". This clause is not feasible for a foreign bidder of Chinese nationality. We have confirmed with the Chamber of Commerce of the P.R.C. and the Economic and Commercial Office of the Embassy of the Islamic Republic of Pakistan in China only to be informed that currently NEITHER of | As clarified at Sr. No. 11. |

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| | | <p>the two organizations are responsible for the attestation of document or its translated copies. As an alternative, we propose the document and its translation to be attested with Apostille by Ministry of Foreign Affairs of China. Since both Pakistan and China are abiding countries of The Hague Convention, the Apostille attestation is inter-acknowledged by both countries. In addition, please confirm that the said attestation only applies to document in a language other than English and its English translation, and NOT to document that are originally already in English.</p> | |
| 32. | Volume 1, Part I, Section 4, Tender Forms | <p>Limitation in Pages of Tender Forms Per “Design Methodology” in ITB Section IV Tender Forms, “The design methodology submission shall comprise no more than 20 sides of A4 text”. Such limitation in pages of the design methodology will compromise the overall quality of the design methodology, and is requested to be eased to 100 pages or completely deleted. In addition, per ITB 11.2(k) “The Tenderer shall submit with its Technical Tender the following additional documents”. Please confirm that the above limitation in pages do not apply to those “additional documents” listed in ITB 11.2(k).</p> | <p>The Design Methodology is intended to specifically present requirements given in Tender Form ‘Design Methodology’. As such, it is expected to be concise and focused. The limitation of 20 sides of A4 text is therefore considered appropriate and shall remain unchanged.</p> <p>The “additional documents” required under ITT Clause 11.2(k)—such as drawings, charts, design calculations, schedules, implementation plans, manuals, and other supporting materials—are exempt from the 20-page restriction, provided they are clearly referenced and organized in the submission.</p> <p>Accordingly, the main report may compose of 20 pages, whereas additional annexures may be added.</p> |
| 33. | Volume 1, Part I, Section 2, Tender Data Sheet | <p>Method of Bid Evaluation</p> <p>As an EPC project, the bidder’s qualification, design proposal, and price bid are interconnected and shall be considered together in bid evaluation. The employer is requested to revise the final evaluation method to a mechanism where the bidders will be evaluated with a final score by combining their scores of technical bid and price bids with their assigned weightage. For example, the final bid score (100 marks) equals to technical bid score (60% of technical bid mark) plus price bid score (40% of price bid mark).</p> | <p>It is to clarify that the Contract shall be awarded to the substantially responsive lowest evaluated Tender, in accordance with ITT 43 – Award Criteria. The evaluation procedure prescribed in the Tender Documents is consistent with the requirements of the Bank’s Standard Tender Documents, and as such there will be no change in the prescribed evaluation methodology.</p> |

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| 34. | <p>Volume 1, Part I, Section 3, Evaluation and Qualification Criteria (EQC).</p> <p>2.4.1.i. (Construction of tunnel/sewer/stormwater pipeline & O&M) and 2.4.1.ii (Operation & Maintenance of MTBM) of</p> | <p>Definition of Wording in Evaluation and Qualification Criteria (EQC) Per EQC 2.4.1, the following wording appears as part of the experience required from the bidder:</p> <p>“micro-tunnelling drive length 250m” in 2.4.1 i “minimum length of pipeline as 2km” in 2.4.1 ii “Aggregate minimum length of the pipelines ... at least 8km”</p> <p>Please confirm that “micro-tunnelling drive length” refers to the one-time drive length between a launch shaft and a reception shaft in a certain section, and that “length of pipeline” refers to the entire and combined length of all pipelines in a certain project.</p> | <p>For the purpose of clarification, it is confirmed that:</p> <ul style="list-style-type: none"> - “Micro-tunnelling drive length of 250m” refers to a single continuous drive length between a launch/jacking shaft and a receiving shaft within one section of a Contract, meeting all other requirements specified under Section 3 – Evaluation and Qualification Criteria (EQC), Sub-clause 2.4.1.i (Construction of tunnel/sewer/stormwater pipeline & O&M); and - “Minimum length of pipeline as 2 km” refers to the total installed length of pipeline including manholes / shafts etc. within a single Contract, meeting all other requirements specified under EQC Sub-clause 2.4.1.ii (Operation & Maintenance of MTBM); and - “Aggregate minimum length of pipelines of at least 8 km” refers to the combined total length of pipelines executed by the Tenderer across the two submitted Contract(s) to demonstrate compliance with EQC Sub-clauses 2.4.1.i and 2.4.1.ii. <p>Tenderers are advised to ensure that all submitted reference projects and supporting documents clearly demonstrate compliance with the above definitions and requirements.</p> |
| 35. | <p>Volume 2, Part II, Section 6 Employer Requirements</p> | <p>Document Required in Volume II Part II Employer Requirements;</p> <p>Please confirm that documents listed in this volume regarding design and construction in Volume II Part II Employer Requirements are for reference of the standard and requirements in the project execution phase after signing of contract and do not constitute mandatory documents required in the bidding phase. The bidder shall prepare its document based on ITB 11.2 only.</p> | <p>It is to clarify that the tenderers are required to prepare and submit their Technical Tender documents strictly in accordance with the provisions of ITT 11.2 and all other applicable requirements of the Tender Documents.</p> |

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| 36. | Volume 1, Part I, Section 2, Tender Data Sheet, ITT 24.1 | Request for Extension of Bid Submission Deadline Please be requested to extend the bid submission deadline to Dec. 31, 2025 as more time is required for bidders to digest all the requirement before producing a responsive bid. | As clarified at Sr. No. 1. |
| 37. | Volume 3, Part II, Section 6 Employer Requirements 16 Nos. in Employer's Requirements (Clause 4.1.11.(iii) pg#6-28, Clause 4.1.12.(xii,b) Table 4.9 Pg#6-53); 17 Nos. in Tender Drawings (Dwg# LW-TD-171) | Discrepancy between Employer's Requirements and Tender Drawings regarding number of drop structures at collection system. Inconsistency has been observed regarding number of drop structures mentioned at various locations in tender documents (references provided in reference section). Kindly confirm the exact number of drop structures. | It is to clarify that total number of drop structures are sixteen (16) i.e., 14 No.s at intake structures (lift stations) and 2 No.s at conveyance system (along Trunk Sewer). The number of drop structures anywhere in Tender Documents shall be read as sixteen (16). The updated drawing (LW-TD-171) in context to the referred drawing are attached as Annexure-D for Bidder's consideration. An addendum will be issued reflecting the above. |
| 38. | Volume 3, Part II, Section 6 Employer Requirements Dwg# LW-TD-141 to LW-TD-144, & Dwg# LW-TD-149 to LW-TD-152 | Provision of Thrust Block and Circular Shaft Wall for Receiving shafts. Thrust block is also given for receiving shafts in the table of dimensions and not in the sectional details. As per our operational understanding, Thrust Block should not be the part of the receiving shaft. Kindly confirm. | It is to clarify that thrust block shall not be part of receiving shafts. The updated drawings (LW-TD-141 to LW-TD-143) in context to referred drawing are attached as Annexure-E for Bidder's consideration. An addendum will be issued reflecting the above. |
| 39. | Volume 3, Part II, Section 6 Employer Requirements Dwg # LW-TD-411 to LW-TD-424 | Discrepancy in Layout and Structural Details of Ultimate Disposal Station Building. Several mismatches have been observed in the General Layout and Structural Details of the Final Disposal Station Building. Kindly suggest the correct layout drawing? | It is to clarify that Updated Drawing No. 402 is attached at Annexure-F and shall prevail in case of any discrepancy. An addendum will be issued reflecting the above. |
| 40. | Volume 3, Part II, Section 6 Employer Requirements Dwg # LW-TD-411 to LW-TD-424 | Consideration for foundation overhangs in excess of the plot size for Ultimate Disposal Station Building. Outer wall of final DS Building is connected to the retaining piles at few locations. Foundations overhangs required for bearing pressures and Buoyancy checks may need to increase plot size. Kindly confirm if this consideration can be incorporated at the project stage. | It is to clarify that construction boundary and foundation of the disposal station is already planned within the premises of existing Gulshan e Ravi Disposal Station. No additional land shall be provided other than the land specified in the Tender Documents. Further contractor will be required to prepare structural design and foundation design of new disposal station as per available footprint area of existing Gulshan-e-Ravi |

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| | | | Disposal Station. |
| 41. | Volume 3, Part II, Section 6 Employer Requirements | Clarity with respect to the Dismantling/Relocation Scope. There is a lack of clarity with respect to the dismantling and relocation/shifting scope of existing structures, utilities and installations of both temporary and permanent nature. No such (comprehensive) information and drawings are provided in this regard in tender documents. Kindly clarify the scope. | It is to clarify the dismantling of structures and their details in the Section 6 - Employer's Requirements and in drawings Dwg # LW-TD-179 to Dwg # LW-TD-321, there are cloud markings on the structures that need to be dismantled and relocated. Please also refer to the Reply No. 26 and Annexure-C . |
| 42. | Volume 3, Part II, Section 6 Employer Requirements (Table 4.10 pg#6-55, & Table 4.11 pg#6-57); Dwg # LW-TD-177 | Conflict in the number of Odour Control and Ventilation System. Inconsistent number of Odour Control Systems have been observed at various locations in the tender documents as mentioned in the reference section. Kindly confirm the exact number/quantity. | It is to clarify that total number of of Odour Control and Ventilation System are 29. The number of of Odour Control and Ventilation System anywhere in Tender Documents shall be read as 29 as mentioned in Section 6, Employer's Requirements Table 4.11 (Page 6-57). The Updated drawing (LW-TD-177) is attached as Annexure-G . An addendum will be issued reflecting the above. |
| 43. | Volume 2, Part II, Section 6 Employer Requirements Borehole logs (BH-120 J06 & BH-120 R07) | Inconsistency in GWT depth in boreholes near/at Ultimate disposal station at Gulshan e Ravi. Ground Water table (GWT) is not observed in all Borehole logs (BH-120 J06 & BH-120 R07) near/at final Disposal Station at Gulshan e Ravi. However, GWT is shown at other BH's. Kindly clarify the validity of Geotechnical Report? | It is to clarify that as per Geotechnical Investigation Report presented in DWG # LW-TD-015 shows presence of water in Borehole logs along cantonment drain. The Tenderer is at liberty to verify or validate any field investigations. |
| 44. | Volume 2, Part II, Section 6 Employer Requirements Clause 4.1.11, subclause xx (page 6-67) | Construction of office Building It is mentioned that contractor must construct a fully functional three-story building other than ground floor (500 sq.m. per floor). However, in price schedule (item no. 3.27). It is only mentioned as a three-story office building. Please clarify, is it ground plus three story building or only 3 floors each of 500 sq.m. area? | It is to clarify that the Contractor shall construct a fully furnished ground plus three storey office building (total four storeys) with covered area of 296 sq-m of each floor with elevator. The layout of the building is given in Drawing attached as Annexure-H . An addendum will be issued reflecting the above. |

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| 48. | Volume 2, Part II, Section 6 Employer Requirements Clause 4.1.11, subclause xx (page 6-67) | It is mentioned that contractor shall be liable for paints, false ceilings, flooring & wall paneling. You are please requested to provide specifications for building finishes as the variation of brands and prices can cause considerable impact on the overall cost of the building. | As stipulated in the Employer's Requirements, the Contractor shall be responsible for the design, supply, and installation of all building finishes, including but not limited to paints, false ceilings, flooring, and wall paneling. The Contractor shall ensure the use of high-quality materials appropriate for administrative and control building environments, consistent with the standards of durability, functionality, and aesthetics required for such facilities. Same should be in conformity of ER Sub clause 5.1. |
| 49. | Volume 2, Part II, Section 6 Employer Requirements Clause 4.1.11, subclause xx (page 6-68) | The Contractor shall also be responsible for the provision of 1 pipe of each diameter 1050, 1500, 2400, 3500mm at the Gulshan-e-Ravi DS. These pipes shall be converted to the fully furnished office building with all basic amenities as a site office. The same shall be retained as a functional office after the project for aesthetics and maintain the MTBM theme. Please clarify this statement. Are pipes supposed to be used as office space or only display of pipes is required. Client is requested to share a sample of expected design. | It is to clarify that the pipes of diameter 1050, 1500 mm are required for demonstration purposes, whereas, the pipes of diameter 2400, 3500 mm are required for office purposes and will be placed in the premises of ultimate disposal station. |
| 50. | General | It is the Bidder's understanding that, in cases where WAPDA standards or specifications are not available for any particular electrical equipment or system, the equipment and materials offered shall be deemed acceptable if they comply with relevant and recognized international standards such as IEC, IEEE, or BS/BS EN, as applicable. Please confirm. | Equivalent standards from recognized international standards such as IEC, IEEE, BS or equivalent as applicable shall be acceptable subject to the Contractor's submission and approval of the Employer and WAPDA / LESCO and Relevant Authority. The Contractor shall use the international standards as per the Employer's Requirements as per Sub-Clauses 4.1 & 5.1. However, the matter regarding equivalency of any standards with the required standards will be thoroughly examined for consideration on case-to-case basis during the tender evaluation and project execution stage. The Employer discretion shall prevail for acceptance of any such applicable standards. |
| 51. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-243. | LOW VOLTAGE CABLES SCOPE The scope of work includes the design, supply, delivery, installation, testing, and commissioning of all low voltage (LV) cables required to provide | Insulation rating of 450/750 V shall be acceptable for internal panel wiring, signal / control cables and lighting branch circuits (not sharing containment with power feeders). For all other LV cables (main feeders, sub-distribution, |

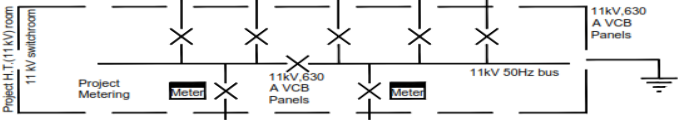
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| | | <p>electrical power to all associated electrical and mechanical equipment. The Contractor shall coordinate with the Employer's Representative to finalize the electrical layout and ensure proper routing, location, and positioning of LV cables onsite, avoiding any clashes with other services.</p> <p>All LV cables and accessories shall comply with the general specifications for electrical works, along with other relevant provisions in the tender document.</p> <p>The minimum voltage rating for LV cables shall be 600/1000 v.</p> <p>It is the Bidder's understanding that the specified insulation level of 600/1000 V applies only to multicore, 3-phase power cables. For single-phase wiring and control cabling, insulation levels of 300/500 V and 450/750 V, as commonly offered by standard cable manufacturers, shall be acceptable. Kindly confirm.</p> | <p>multicore cables installed in trays/ducts or sharing with other services) minimum rating remains 600/1000 V". Applicable standards are mentioned in Employer's Requirements at Page 6-244.</p> |
| 52. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-244. | <p>WIRING TYPES AND APPLICATIONS</p> <p>PVC Insulated and Sheathed Cables: PVC-insulated XLPE cables and steel wire armoured (SWA) cables for all sub-mains and final sub-circuits to electrical equipment installed in trunkings, trays, or conduits.</p> <p>It is the Bidder's understanding that the specified cable types — PVC-insulated XLPE and Steel Wire Armoured (SWA) cables — are intended for direct-buried power cable applications only. For installations within trunking, trays, or conduits, PVC-insulated (non-armoured) multicore cables shall be suitable. Similarly, for wiring purposes, single-core PVC cables installed in PVC conduits shall be used. Kindly confirm this understanding.</p> | <p>It is to clarify that the requirement for armouring shall be governed by the installation conditions, environmental exposure, segregation from power circuits, and mechanical protection requirements, rather than solely by the routing method. Therefore, where cables are laid in outdoor routes, buried ducts, exposed mechanical risk areas, shared containment with power feeders, or any location requiring additional protection, PVC-insulated XLPE and Steel Wire Armoured (SWA) cables shall be used.</p> <p>For installations within trunking, trays, or conduits, PVC-insulated (non-armoured) multicore cables shall be suitable.</p> <p>For wiring purposes, single-core PVC cables installed in PVC conduits shall be used.</p> <p>An addendum will be issued reflecting the above.</p> |

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| 53. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-247. | <p>MEDIUM VOLTAGE SWITCHGEAR SCOPE</p> <p>The scope of work includes the design, manufacture, type and routine testing at the manufacturer's premises, supply, delivery to the site, installation, testing, and commissioning of medium voltage (MV) switchgear. The electrical panels shall conform to Form 4 construction and shall be fully Type Tested. The Contractor shall provide detailed drawings for the Employer's Representatives review and approval prior to commencement of manufacturing. The Form 4 classification applies only to LV switchboards as per IEC 61439. For MV switchgear, internal separation and service continuity are defined by IEC 62271-200 using the LSC designations. It is Bidder's understanding that equipment shall comply with the relevant applicable standards. Please confirm.</p> | <p>It is to clarify that the Form 4 internal separation classification applies on LV switchboards under IEC 61439, whereas, as per Employer's Requirements Form-2b is required for LV Switchgear as per IEC 61439-2 .</p> <p>MV switchgear shall be designed and type-tested in full compliance with IEC 62271-200.</p> <p>An addendum will be issued reflecting the above.</p> |
| 54. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-252. | <p>LOW VOLTAGE SWITCHBOARD AND DISTRIBUTION BOARDS SCOPE</p> <p>The scope of work involves the design, supply, delivery, installation, connection, testing, and commissioning of all low voltage (LV) switchboards, sub-switchboards, and distribution boards. These panels shall include control switches, molded case circuit breakers (MCCBs), miniature circuit breakers (MCBs), isolators, surge arrestors, Automatic Transfer Switches (ATS), Power Factor Improvement Panels, Synchronization Panels, and all related underground incoming cables. All LV panels must be Type Tested and conform to Form 2B minimum construction standards, as specified under IEC 61439. These panels shall be manufactured under the Original Equipment Manufacturer's (OEM) facilities to ensure compliance with international standards. The requirement specifies that all LV panels must be</p> | <p>Type-tested panels remain mandatory for all LV switchgear, Form 2B shall apply to main and sub-main panels, while Form 1 type-tested DB will be acceptable for lighting and small power distribution boards.</p> <p>An addendum will be issued reflecting the above.</p> |

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| | | <p>Type Tested and conform to a minimum of Form 2B construction in accordance with IEC 61439. However, it is to inform that Form 2B segregation is generally applicable to main or sub-main switchboards, whereas small distribution boards (e.g., for lighting and small power) are typically not designed with internal segregation. Furthermore, such small DBs are usually not type-tested assemblies. It is therefore requested that the requirement be reviewed and clarified to distinguish between main LV panels and distribution boards.</p> | |
| 55. | <p>Volume-2, Part II, Section 6 - Employer Requirements, Page 6-252.</p> | <p>LOW VOLTAGE SWITCHBOARD AND DISTRIBUTION BOARDS All panels shall be designed to comply with an insulation voltage level of 2.2 kV. For low-voltage panels designed in accordance with IEC 61439, the rated insulation voltage is typically up to 1000 V. It is therefore requested to review the stated requirement accordingly.</p> | <p>It is to clarify that the electric panels shall have rated insulation voltage $U_i = 1000$ V, while the stated 2.2 kV value pertains to impulse withstand level (U_{imp}) and remains applicable.</p> |
| 56. | <p>Volume-2, Part II, Section 6 - Employer Requirements, Page 6-263.</p> | <p>MV VARIABLE FREQUENCY DRIVE GENERAL The VFD shall accept nominal input voltages up to 690V AC, 50/60 Hz. The supply input voltage tolerance shall be $\pm 10\%$ of the nominal line voltage. The specified input voltage of 690 V corresponds to a low-voltage VFD and not a medium-voltage unit. As per the Project requirements, the Medium Voltage (MV) Variable Frequency Drives (VFDs) shall be designed to operate at a nominal input voltage of 3.3 kV, 50 Hz. Please confirm.</p> | <p>It is to clarify that the stated 690 V input reference relates to general LV VFD capability requirements, whereas for MV Variable Frequency Drives shall operate at a nominal input voltage of 3.3 kV, 50 Hz, with standard supply tolerance levels applicable as per IEC.</p> |
| 57. | <p>Volume-2, Part II, Section 6 - Employer Requirements, Page 6-280.</p> | <p>LIGHTNING PROTECTION SYSTEM It is the Bidder's understanding that the Lightning Protection System is required only for the newly proposed Disposal Station Building. Kindly confirm.</p> | <p>It is to clarify that the Lightning Protection System is required only for the newly proposed Disposal Station Building and office building.</p> |
| 58. | <p>Volume-2, Part II, Section 6 - Employer Requirements, Page 6-269.</p> | <p>PAD MOUNTED POWER TRANSFORMERS SCOPE Transformers shall feature HT and LT switchgear compartments, fully equipped with all necessary accessories. The LT compartments shall be modified as required for compatibility with</p> | <p>It is to clarify that the requirement for HT and LT switchgear compartments applies only to the LV auxiliary supply transformers, and is not intended for medium-voltage power transformers, which shall follow standard MV connection and termination arrangements as per IEC</p> |

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| | | <p>consumer-side LV panels. Copper windings shall be used, and transformers shall include an IP-rated canopy to ensure protection against environmental conditions. For MV transformers, the secondary voltage shall be determined based on the detailed design and specific selection of MV motors required for the sewage disposal pumps. This ensures optimal compatibility with motor operating conditions and overall system requirements.</p> <p>It is the Bidder's understanding that the requirement for HT and LT switchgear compartments pertains only to the LV Auxiliary Supply Transformers, since MV power transformers are generally not provided with such compartments. Kindly confirm.</p> | <p>and utility practices.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>59.</p> | <p>Volume-2, Part II, Section 6 - Employer Requirements, Clause 4.1.5 (xii) - Supply and Installation of Generators at Ultimate Disposal Station. Page 6-76.</p> <p>Volume-2, Part II, Section 6 - Employer Requirements, Technical Specifications and Detailed Electrical Configurations. Page 6-78.</p> <p>Volume-3, Part II, Section 6 - Employer Requirements, Tender Drawings, Single Line Diagram (Drawing No. LW-TD-491).</p> | <p>Supply and Installation of Generator at Ultimate Disposal Station EPC is responsible for supply, erection, testing and commissioning and synchronizing with SCADA system of the emergency generator sets having the below specification at Ultimate Disposal station.</p> <table border="1" data-bbox="622 852 1285 1094"> <thead> <tr> <th>Sr. No.</th> <th>Description</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>1</td> <td>3.3 kV Motors, each 525 kW (VFD Operated)</td> <td>525</td> <td>kW</td> </tr> <tr> <td>2</td> <td>No. of Motors on Genset</td> <td>2</td> <td>Nos.</td> </tr> <tr> <td>3</td> <td>Total Load of 2 Motors</td> <td>1050</td> <td>kW</td> </tr> <tr> <td>4</td> <td>Power Factor</td> <td>0.8</td> <td></td> </tr> <tr> <td>5</td> <td>Total Load of 2 Motors</td> <td>1312.5</td> <td>kVA</td> </tr> <tr> <td>6</td> <td>Genset to be loaded at 85 % of its Rating</td> <td>0.85</td> <td></td> </tr> <tr> <td colspan="2">Therefore, required Genset size for the existing Load</td> <td>1544.1</td> <td>kVA</td> </tr> <tr> <td colspan="2">Genset Rating Selected (Prime)</td> <td>1600</td> <td>kVA</td> </tr> <tr> <td colspan="4">Gensets (6 No. x 1600 kVA) & (1 No. x 500 kVA)</td> </tr> </tbody> </table> <p>For safeguard against power failure, at least 75% of ultimate pumping capacity will have additional electric power generators (diesel driven). Moreover, a 500 kVA generator will also be provided other than these generators by the contractor.</p> <p>We have made the following observations among the tender documents regarding the required number of generators:</p> <p>1. Volume-2, Part II, Section 6 – Employer Requirements, Clause 4.1.5 (xii) – Supply and Installation of Generators at Ultimate Disposal</p> | Sr. No. | Description | | | 1 | 3.3 kV Motors, each 525 kW (VFD Operated) | 525 | kW | 2 | No. of Motors on Genset | 2 | Nos. | 3 | Total Load of 2 Motors | 1050 | kW | 4 | Power Factor | 0.8 | | 5 | Total Load of 2 Motors | 1312.5 | kVA | 6 | Genset to be loaded at 85 % of its Rating | 0.85 | | Therefore, required Genset size for the existing Load | | 1544.1 | kVA | Genset Rating Selected (Prime) | | 1600 | kVA | Gensets (6 No. x 1600 kVA) & (1 No. x 500 kVA) | | | | <p>It is to clarify that the ultimate power requirement has been worked out considering 16 pumps/motors i.e. 8400KW. However, the total requirement / capacity of standby power (Generators) has been worked out as 75% of the power requirement for ultimate pumping station capacity (i.e. power requirement for 13 nos). Accordingly, the proposed procurement of Generators for MV are 06 Nos for 6825KW (total power of pumps).</p> <p>Other than above, Three (03) LV Generators (630 KVA each) are proposed for Low Voltage Power Requirements.</p> <p>Since, the number of pumps are mutable, the contractor while selecting the number of Generators shall ensure that the capacity of the generators shall be equal to 75% of the ultimate power requirement of the pumping station.</p> <p>The updated Single Line Diagram (LW-TD-491) is attached as Annexure-I.</p> <p>An addendum will be issued reflecting the above.</p> |
| Sr. No. | Description | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3.3 kV Motors, each 525 kW (VFD Operated) | 525 | kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2 | No. of Motors on Genset | 2 | Nos. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3 | Total Load of 2 Motors | 1050 | kW | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4 | Power Factor | 0.8 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5 | Total Load of 2 Motors | 1312.5 | kVA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6 | Genset to be loaded at 85 % of its Rating | 0.85 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Therefore, required Genset size for the existing Load | | 1544.1 | kVA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Genset Rating Selected (Prime) | | 1600 | kVA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Gensets (6 No. x 1600 kVA) & (1 No. x 500 kVA) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Sr # | Reference Section | Queries | Employer's Response | | | | | | |
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| | | <p>Station (Page 6-76): Six (06) MV / 3.3 kV generators and Two (02) LV generators.</p> <p>2. Volume-2, Part II, Section 6 – Employer Requirements, Technical Specifications and Detailed Electrical Configurations (Page 6-78): Four (04) MV / 3.3 kV generators and One (01) LV generator.</p> <p>3. Volume-3, Part II, Section 6 – Employer Requirements, Tender Drawings, Single Line Diagram (Drawing No. LW-TD-491): Four (04) MV / 3.3 kV generators and Two (02) LV generators.</p> <p>Client is kindly requested to confirm which of the above reflects the actual requirement and to confirm the final quantities for:</p> <p>a) MV / 3.3 kV Generators (number), and b) LV Generators (number).</p> | | | | | | | |
| 60. | Volume-2, Part II, Section 6 - Employer Requirements, Technical specifications and detailed electrical configurations. Page 6-79. | <table border="1" data-bbox="616 758 1288 1109"> <tr> <td data-bbox="616 758 660 1109">8</td> <td data-bbox="660 758 795 1109">Power Factor Improvement Panel</td> <td data-bbox="795 758 952 1109"> 2330 x 800 x 700 2330 x 2400 x 700 </td> <td data-bbox="952 758 1064 1109"> IEC 61921, 60831-1-2, 61439-1, 60529 IEEE 18, 1036, 519 B.S. 1650, 142, </td> <td data-bbox="1064 758 1220 1109"> For 525 kW Motors, 3.3kV, 200 kVAR PFIP, 3-Steps of 50kVAR each and 2 step of 25kVAR. For 327 kW demand load, 400V, 125 kVAR PFIP, 5-Steps of 25kVAR. </td> <td data-bbox="1220 758 1288 1109"> 16 1 </td> </tr> </table> <p>It is Bidder's understanding that for VFD-operated MV motors, no separate PFI is required, as the VFD input inherently operates at a high power factor (typically ≥ 0.95 lagging). Capacitors should not be installed on the motor or VFD side to prevent harmonic and resonance issues. Client is kindly requested to review and confirm this understanding.</p> | 8 | Power Factor Improvement Panel | 2330 x 800 x 700 2330 x 2400 x 700 | IEC 61921, 60831-1-2, 61439-1, 60529 IEEE 18, 1036, 519 B.S. 1650, 142, | For 525 kW Motors, 3.3kV, 200 kVAR PFIP, 3-Steps of 50kVAR each and 2 step of 25kVAR. For 327 kW demand load, 400V, 125 kVAR PFIP, 5-Steps of 25kVAR. | 16 1 | Please refer to the Page 6-80 and 6-262 to 6-264, for the detailed specifications of the MV VFD. Tenderer is advised to follow the instructions and accordingly, no additional Power Factor Improvement (PFI) Panel is required. |
| 8 | Power Factor Improvement Panel | 2330 x 800 x 700 2330 x 2400 x 700 | IEC 61921, 60831-1-2, 61439-1, 60529 IEEE 18, 1036, 519 B.S. 1650, 142, | For 525 kW Motors, 3.3kV, 200 kVAR PFIP, 3-Steps of 50kVAR each and 2 step of 25kVAR. For 327 kW demand load, 400V, 125 kVAR PFIP, 5-Steps of 25kVAR. | 16 1 | | | | |

| Sr # | Reference Section | Queries | Employer's Response | | | | | | | | | | |
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| 61. | <p>Volume-3, Part II, Section 6 - Employer Requirements, Technical specifications and detailed electrical configurations. Page 6-78.</p> <p>Volume-3, Part II, Section 6 - Employer Requirements, Tender Drawings.. Single Line Diagram (Drawing No. LW-TD-491)</p> | <table border="1" data-bbox="618 177 1305 451"> <tr> <td data-bbox="618 177 651 451">3</td> <td data-bbox="651 177 786 451">Consumer Metering and Protection Panel</td> <td data-bbox="786 177 943 451">As per WAPDA/LESCO</td> <td data-bbox="943 177 1066 451">WAPDA / NTDC IEC publication 56, 51, 185,85, B.S.88/1967, WAPDA standard specification P-44:2018</td> <td data-bbox="1066 177 1223 451">11kV-VCB Consumer Panel protection and metering, as per WAPDA/NTDC specification i.e. P-44.2018.</td> <td data-bbox="1223 177 1305 451">2</td> </tr> </table>  <p data-bbox="607 675 1317 1042"> 1) It is the Bidder's understanding that the Consumer Metering and Protection Panels correspond to the two (02) Incomer Panels indicated in the Single Line Diagram (Tender Drawing No. LW-TD-491) for the MV/11 kV Switchgear. Kindly confirm. 2) The Outgoing MV/11 kV Panels (05 Nos.), as shown in the Single Line Diagram (Tender Drawing No. LW-TD-491), are not referenced or described in the relevant Technical Specifications or detailed electrical configuration. Please clarify. </p> | 3 | Consumer Metering and Protection Panel | As per WAPDA/LESCO | WAPDA / NTDC IEC publication 56, 51, 185,85, B.S.88/1967, WAPDA standard specification P-44:2018 | 11kV-VCB Consumer Panel protection and metering, as per WAPDA/NTDC specification i.e. P-44.2018. | 2 | <p>1) It is to clarify that the Consumer Metering and Protection Panels correspond to the two (02) incomer panels indicated in the MV/11 kV switchgear on Tender Drawing No. LW-TD-491.</p> <p>2) It is to clarify that the five (05) outgoing MV/11 kV panels indicated in Tender Drawing No. LW-TD-491 are covered under the MV switchgear technical specifications already provided in the Tender Documents. The Bidder is referred to Section 6 – Employer's Requirements, Page 6-246, and our response at Serial No. 53 regarding MV type-testing and IEC 62271-200 compliance requirements.</p> | | | | |
| 3 | Consumer Metering and Protection Panel | As per WAPDA/LESCO | WAPDA / NTDC IEC publication 56, 51, 185,85, B.S.88/1967, WAPDA standard specification P-44:2018 | 11kV-VCB Consumer Panel protection and metering, as per WAPDA/NTDC specification i.e. P-44.2018. | 2 | | | | | | | | |
| 62. | <p>Volume-2, Part II, Section 6 - Employer Requirements, Technical specifications and detailed electrical configurations. Page 6-78.</p> | <table border="1" data-bbox="618 1078 1305 1385"> <tr> <td data-bbox="618 1078 651 1385" rowspan="2">4</td> <td data-bbox="651 1078 786 1385" rowspan="2">Power Transformer</td> <td data-bbox="786 1078 943 1241">2950 x 2630 x 2000</td> <td data-bbox="943 1078 1066 1305">IEC 60076 BS EN 50464, BS 171, 148, 358, 2757, WAPDA approved</td> <td data-bbox="1066 1078 1223 1241">11/3.3kV 3150 KVA Transformers, as per WAPDA specs</td> <td data-bbox="1223 1078 1305 1241">4</td> </tr> <tr> <td data-bbox="786 1241 943 1385">1600 x 2350 x 1726</td> <td data-bbox="943 1241 1066 1305"></td> <td data-bbox="1066 1241 1223 1385">11/0.4kV 630 KVA Transformers, as per WAPDA specs</td> <td data-bbox="1223 1241 1305 1385">1</td> </tr> </table> <p data-bbox="607 1390 1317 1479">The specification indicates One (01) Auxiliary Transformer (11/0.4 kV, 630kVA), while the Single Line Diagram (Drawing No. LW-TD-491) shows Two</p> | 4 | Power Transformer | 2950 x 2630 x 2000 | IEC 60076 BS EN 50464, BS 171, 148, 358, 2757, WAPDA approved | 11/3.3kV 3150 KVA Transformers, as per WAPDA specs | 4 | 1600 x 2350 x 1726 | | 11/0.4kV 630 KVA Transformers, as per WAPDA specs | 1 | <p>The Employer confirms that two (02) auxiliary transformers (11/0.4 kV, 630 kVA each) are required. The load shall be normally shared between both transformers, while in case one transformer is unavailable due to maintenance or fault, the remaining transformer shall be capable of supporting the essential load of the facility in accordance with the project's redundancy and reliability requirements.</p> |
| 4 | Power Transformer | 2950 x 2630 x 2000 | | | IEC 60076 BS EN 50464, BS 171, 148, 358, 2757, WAPDA approved | 11/3.3kV 3150 KVA Transformers, as per WAPDA specs | 4 | | | | | | |
| | | 1600 x 2350 x 1726 | | 11/0.4kV 630 KVA Transformers, as per WAPDA specs | 1 | | | | | | | | |

| Sr # | Reference Section | Queries | Employer's Response | | | | | | | | | | | | | | | |
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| | | (02). The Client is kindly requested to confirm the required quantity. | | | | | | | | | | | | | | | | |
| 63. | Volume-2, Part II, Section 6 - Employer Requirements, Technical specifications and detailed electrical configurations. Page 6-79. Sr. No. 9 - MV Electric Panel | <table border="1" data-bbox="622 308 1272 563"> <tr> <td rowspan="4" style="text-align: center; vertical-align: middle;">9</td> <td rowspan="4" style="text-align: center; vertical-align: middle;">MV Electric Panel</td> <td style="text-align: center;">2330 x 1405 x 800</td> <td rowspan="4" style="text-align: center; vertical-align: middle;">IEC 62271-200, 62271-100, 62271-1, 60529</td> <td style="text-align: center;">MV Switchgear 3.3kV Rated Voltage Level Incoming Panel: 630A VCB</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">2330 x 1405 x 800</td> <td style="text-align: center;">Bus Riser panel</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">2330 x 1505 x 650</td> <td style="text-align: center;">Outgoing Feeders: 04 Nos x 400Amp VCB for Motors</td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: center;">2225 x 1700 x 2092</td> <td style="text-align: center;">Starter Panels: Variable Frequency Drive 525kW, 3.3kV</td> <td style="text-align: center;">16</td> </tr> </table> <p data-bbox="611 603 1305 1137">We have noted certain inconsistencies between the Tender Specifications and the Single Line Diagram (Drawing No. LW-TD-491) for the MV / 3.3 kV Main Plant Switchgear, as outlined below: 1) Bus Couplers — Not mentioned in the Specifications but shown in Drawing LW-TD-491. 2) Bus Riser Panels — Specifications indicate Four (04), whereas Drawing LW-TD-491 indicates Seven (07), corresponding to the number of Bus Coupler Panels. 3) Outgoing MV Feeders for Pump Motors — Specifications indicate Four (04), whereas Drawing LW-TD-491 shows Sixteen (16). 4) MV Generator Incomers — Four (04) generator incomers are shown on Drawing LW-TD-491 but are not mentioned in the Specifications. Kindly confirm the actual requirements.</p> | 9 | MV Electric Panel | 2330 x 1405 x 800 | IEC 62271-200, 62271-100, 62271-1, 60529 | MV Switchgear 3.3kV Rated Voltage Level Incoming Panel: 630A VCB | 4 | 2330 x 1405 x 800 | Bus Riser panel | 4 | 2330 x 1505 x 650 | Outgoing Feeders: 04 Nos x 400Amp VCB for Motors | 4 | 2225 x 1700 x 2092 | Starter Panels: Variable Frequency Drive 525kW, 3.3kV | 16 | <p data-bbox="1328 300 2103 563">1) It is to clarify that the Bus Couplers shown in Tender Drawing LW-TD-491 form an integral part of the MV / 3.3 kV Switchgear assembly. Being functionally identical to breaker-controlled incoming/outgoing panels, their design and performance requirements are fully covered under the existing MV Switchgear specifications in accordance with IEC 62271 and accordingly shall be incorporated by the tenderer.</p> <p data-bbox="1328 603 2103 699">2) It is to clarify that the Bus Riser arrangement shall be provided by the MV switchgear manufacturer in compliance with IEC 62271.</p> <p data-bbox="1328 738 2103 1074">3) It is to clarify that each MV VFD operated pump motor shall be provided with a dedicated outgoing circuit breaker as shown on the Single Line Diagram (LW-TD-491) attached at Annexure-I. The reference to four (04) circuit breakers in the specification relates to the feeders. The overall required quantity remains sixteen (16) outgoing MV motor feeders, arranged in a group of four (04). Further the Tenderer is advised to follow the Single Line Diagram (LW-TD-491) attached as Annexure-I for bidding purposes.</p> <p data-bbox="1328 1114 2103 1169">04) Please refer to our response at Sr. No. 50 above for the Specifications of the Generator incomers.</p> |
| 9 | MV Electric Panel | 2330 x 1405 x 800 | | | IEC 62271-200, 62271-100, 62271-1, 60529 | | MV Switchgear 3.3kV Rated Voltage Level Incoming Panel: 630A VCB | 4 | | | | | | | | | | |
| | | 2330 x 1405 x 800 | | | | | Bus Riser panel | 4 | | | | | | | | | | |
| | | 2330 x 1505 x 650 | | | | | Outgoing Feeders: 04 Nos x 400Amp VCB for Motors | 4 | | | | | | | | | | |
| | | 2225 x 1700 x 2092 | Starter Panels: Variable Frequency Drive 525kW, 3.3kV | 16 | | | | | | | | | | | | | | |
| 64. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-369. | <p data-bbox="622 1185 925 1209">On-Grid Solar Smart Inverter</p> <table border="1" data-bbox="622 1225 1294 1471"> <thead> <tr> <th data-bbox="633 1233 678 1265">Sr. No</th> <th data-bbox="678 1233 835 1265">Parameters</th> <th data-bbox="835 1233 1283 1265">Min, Specifications- Required</th> </tr> </thead> <tbody> <tr> <td data-bbox="633 1265 678 1297">1</td> <td data-bbox="678 1265 835 1297">Inverter Make</td> <td data-bbox="835 1265 1283 1345">1 GW or above deployment in last two years. Renowned and verifiable brand having successful performance history in similar climatic conditions.</td> </tr> <tr> <td data-bbox="633 1345 678 1377">2</td> <td data-bbox="678 1345 835 1377">Inverter Type</td> <td data-bbox="835 1345 1283 1385">Grid Synchronized pure sine wave. Also able to synchronize with generators on site.</td> </tr> <tr> <td data-bbox="633 1385 678 1425">3</td> <td data-bbox="678 1385 835 1425">Output Voltage Range</td> <td data-bbox="835 1385 1283 1425">230Vac/400 Vac +-5% for string/micro inverters. For central inverters selects as per design.</td> </tr> <tr> <td data-bbox="633 1425 678 1465">4</td> <td data-bbox="678 1425 835 1465">IP Protection</td> <td data-bbox="835 1425 1283 1465">IP 65 if under shed or IP 66 for outdoor (IEC60529) use with natural heat sink.</td> </tr> </tbody> </table> | Sr. No | Parameters | Min, Specifications- Required | 1 | Inverter Make | 1 GW or above deployment in last two years. Renowned and verifiable brand having successful performance history in similar climatic conditions. | 2 | Inverter Type | Grid Synchronized pure sine wave. Also able to synchronize with generators on site. | 3 | Output Voltage Range | 230Vac/400 Vac +-5% for string/micro inverters. For central inverters selects as per design. | 4 | IP Protection | IP 65 if under shed or IP 66 for outdoor (IEC60529) use with natural heat sink. | <p data-bbox="1328 1185 2103 1417">It is to clarify that the Tenderer may propose design using forced-air cooled inverters, along with supporting technical documentation demonstrating full compliance with the required IP rating, environmental conditions, performance guarantees, reliability, and maintainability criteria. The Employer shall review the submission in detail during the technical evaluation stage prior to acceptance.</p> <p data-bbox="1328 1449 2103 1479">Any other proposal by the EPC Contractor shall be subject</p> |
| Sr. No | Parameters | Min, Specifications- Required | | | | | | | | | | | | | | | | |
| 1 | Inverter Make | 1 GW or above deployment in last two years. Renowned and verifiable brand having successful performance history in similar climatic conditions. | | | | | | | | | | | | | | | | |
| 2 | Inverter Type | Grid Synchronized pure sine wave. Also able to synchronize with generators on site. | | | | | | | | | | | | | | | | |
| 3 | Output Voltage Range | 230Vac/400 Vac +-5% for string/micro inverters. For central inverters selects as per design. | | | | | | | | | | | | | | | | |
| 4 | IP Protection | IP 65 if under shed or IP 66 for outdoor (IEC60529) use with natural heat sink. | | | | | | | | | | | | | | | | |

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| | | <p>The requirements specify solar inverters with natural (passive) heat sinks. However, passive cooling designs are typically available only up to limited unit ratings, which would require multiple parallel units for a 450 kW system—leading to higher cost, complexity, and maintenance. The Bidder therefore proposes that inverters with forced-air (fan) cooling be accepted, provided they meet the specified IP rating and performance requirements. Please confirm.</p> | <p>to prior approval by the Employer.</p> <p>An addendum will be issued reflecting the above.</p> |
| 65. | Volume 2, Part II, Section 6 Employer Requirements | <p>Specifications are provided for:</p> <ol style="list-style-type: none"> 1) On-Grid Solar Smart Inverter on Page 6-369 2) Hybrid Solar Inverter on Page 6-371 3) Smart Energy Storage on Page 6-372. <ol style="list-style-type: none"> 1) The Client is requested to clarify whether an On-Grid system without battery storage or a Hybrid system with battery storage is required. 2) The Client is also requested to confirm the required battery storage capacity (in kWh), in case hybrid system is required. 3) It is the Bidder's understanding that the Client will provide adequate area/space for the installation of solar panels, inverter(s), batteries (if required), and all associated ancillary equipment. Please confirm. | <p>The Contractor shall design and install the Solar System having capacity of 450 kW by ensuring that the SCADA and light load shall operate through the Smart/ Hybrid System with batteries backup to provide at least 12 hours backup. While the remaining will be on-Grid system.</p> <p>For space Requirements, please refer to Page 6-71 of the Employer Requirements wherein it has been mentioned that the Contractor will design, install, test and commission a solar system on the roofs of existing pump house and ultimate pump house (proposed building) having roof area 980 m² and 2900 m², respectively.</p> |
| 66. | Volume 2, Part II, Section 6 Employer Requirements | <p>Low Voltage Panels Low Voltage Switchgear Design, supply, installation, testing, and commissioning of type-tested Low Voltage (LV) switchgear panels required at all project sites i.e disposal station, drop structures for odour control system, trunk sewers ventilation system with odour control, and screens area, this shall include but not limited to main distribution boards (MDBs), sub-distribution boards (SDBs), motor control centres (MCCs), Power Factor Improvement (PFI) Panels, lighting and small power distribution boards, circuit breakers (ACBs, MCCBs, MCBs), relays for protection and control, busbars, bus coupler, cable</p> | <p>Kindly refer to section 4 - Tender Form, item 3.12 & 3.13, wherein, the tenderer is required to fill the cost against the E&M works.</p> <p>It is to clarify that the tenderer is required to complete the works in all respects to meet the objective of the project. As such the tenderer is required to provide costing of any item which the tenderer deems necessary related to electrical works against Section 4 –Tender Forms item 5.49.</p> |

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| | | <p>terminations, control wiring, and all associated accessories; complete with necessary civil works, cable trenches, and supports, as per project requirements and in compliance with the instructions given in the Employer's Requirements and technical specifications in accordance with ER Sub Clause 4.1 & 5.1.</p> <p>It is the Bidder's understanding that the Electrical Works associated with the odour control system for drop structures and the trunk sewer ventilation system with odour control are not included under this BOQ item. These works shall instead be covered separately under the relevant BOQ items listed at Sr. No. 5.8 of the Electrical BOQ. Kindly confirm.</p> | |
| 67. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-228. | <p>Drop Structure for Odor Control System The odour control system shall be implemented at 17 different locations across the project area, which requires reliable and sufficient power to operate air quality equipment, including fans, odour control units, and PLC/RTU systems. The Contractor shall be responsible for the design, procurement, installation, testing, maintenance (during the guarantee period) and commissioning of the complete electrical system to ensure uninterrupted operation of these systems. This includes, but is not limited to, the Motor Control Center (for Fans), Electrical Distribution Board, LV Cabling, Earthing System, Lighting etc. The Contractor shall conduct a comprehensive survey of all 17 locations to verify the availability of the utility power supply. While power is readily available at most locations, it is the Contractor's responsibility to confirm availability at each site. Where utility power is not readily available, the Contractor shall arrange for power to be sourced from the nearest available supply point.</p> <p>1) As per the stated requirements, the Contractor is to arrange power supply from the nearest utility source. However, it is important to highlight that the</p> | <p>1) It is to clarify that the Contractor is required to arrange and integrate power from the nearest available utility connection to ensure reliable system operation in line with normal utility supply performance. Further the standby Generators are already available at each lift station, accordingly the contractor is required to make the necessary arrangements within the motor control center to ensure the uninterruptable power supply to the equipment at drop structures for odor control system. However, the contractor if consider necessary for his proposed equipment shall provide the uninterruptable power supply at such locations.</p> <p>2) The Electric Power Distribution and Transmission Lines are available at all RTU sites, however, the contractor shall be required to get the connection from LESCO for operation of the system as per the Employer's Requirements "Trunk Sewer Ventilation System with Odor Control" at Page No. 6-228 & Page 4-48 of Section 4 - Price Schedules.</p> |

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| | | <p>utility power supply may be subject to interruptions caused by load shedding, feeder tripping, or maintenance activities.</p> <p>Given these potential interruptions, ensuring truly uninterrupted operation of the systems, as mentioned in the requirements, may not be practically achievable relying solely on the utility supply. These external factors are beyond the Contractor's control and may lead to temporary power outages affecting system performance.</p> <p>Therefore, the Bidder seeks your acknowledgment of this inherent limitation regarding uninterrupted power availability from the utility source.</p> <p>2) As the scope related to the Utility Connections cannot be fully determined at this stage, it is requested that the Client allocate a Provisional Sum to adequately cover all associated costs and contingencies.</p> | |
| 68. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-228. | <p>Trunk Sewer Ventilation System with Odor Control</p> <p>The sewer ventilation and odor control system is implemented at 13 locations across the project area, which requires continuous power to maintain airflow and optimal environmental conditions. The Contractor shall be responsible for the design, procurement, installation, testing, maintenance (during the guarantee period) and commissioning of the complete electrical system to ensure uninterrupted operation of these systems. This includes, but is not limited to, the Motor Control Center (for ventilation fans), Electrical Distribution Boards, LV Cabling, Earthing Systems, and Lighting. The Contractor shall conduct a comprehensive survey of all 13 locations to verify the feasibility of sourcing power from nearby transformers or distribution boards. It is the Contractor's responsibility to arrange the necessary connections and establish a reliable power</p> | <p>1) It is to clarify that the Contractor is required to arrange and integrate power from the nearest available utility connection to ensure reliable system operation in line with normal utility supply performance. No alternate or additional backup source is required for ventilation and odor control system along the sewer line. However, the contractor if consider necessary for his proposed equipment shall provide the uninterruptable power supply at such locations.</p> <p>2) Please refer to our response against Sr. No. 67.</p> |

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| | | <p>supply at each location.</p> <p>1) As per the stated requirements, the Contractor is to arrange power supply from the nearest utility source. However, it is important to highlight that the utility power supply may be subject to interruptions caused by load shedding, feeder tripping, or maintenance activities.</p> <p>Given these potential interruptions, ensuring truly uninterrupted operation of the systems, as mentioned in the requirements, may not be practically achievable relying solely on the utility supply. These external factors are beyond the Contractor's control and may lead to temporary power outages affecting system performance.</p> <p>Therefore, the Bidder seeks your acknowledgment of this inherent limitation regarding uninterrupted power availability from the utility source.</p> <p>2) As the scope related to the Utility Connections cannot be fully determined at this stage, it is requested that the Client allocate a Provisional Sum to adequately cover all associated costs and contingencies.</p> | |
| 69. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-229. | <p>Screens Areas Screens are located at 23 different locations across the project area. These screens are installed for filtering debris and preventing blockages in sewage lines, The screens are motor operated and requires a stable power supply for their operation and maintenance. The Contractor shall be responsible for the design, procurement, installation, testing, maintenance (during the guarantee period) and commissioning of the complete electrical system to ensure uninterrupted power to the screens and conveyor belts (where applicable) and instruments at the screen areas. This includes, but is not limited to, the Motor Control Center (for screen operation), Electrical Distribution Boards, LV Cabling, Earthing Systems, and Lighting.The Contractor shall utilize the available power</p> | <p>1) It is to clarify that the Contractor is required to arrange and integrate power from the nearest available utility connection to ensure reliable system operation in line with normal utility supply performance. Further, contractor is required to ensure sufficient availability of standby Generators as per ER 4.1 & 5.1 to ensure sustainable operation of onsite activities. It is further added that at most of existing lift stations the standby Generators are already available, the contractor is required to make the necessary arrangements within the motor control centre to ensure the uninterruptable power supply to the screens. However, the contractor if consider necessary for his proposed equipment shall provide the uninterruptable supply of power at such locations.</p> |

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| | | <p>source at each respective location to power the mechanical equipment and instruments. It is the Contractor's responsibility to verify the adequacy and reliability of the existing power supply at each site and make any necessary arrangements to ensure stable and continuous operation.</p> <p>1) As per the stated requirements, the Contractor is to arrange power supply from the nearest utility source. However, it is important to highlight that the utility power supply may be subject to interruptions caused by load shedding, feeder tripping, or maintenance activities.</p> <p>Given these potential interruptions, ensuring truly uninterrupted operation of the systems, as mentioned in the requirements, may not be practically achievable relying solely on the utility supply. These external factors are beyond the Contractor's control and may lead to temporary power outages affecting system performance.</p> <p>Therefore, the Bidder seeks your acknowledgment of this inherent limitation regarding uninterrupted power availability from the utility source.</p> <p>2) As the scope related to the Utility Connections cannot be fully determined at this stage, it is requested that the Client allocate a Provisional Sum to adequately cover all associated costs and contingencies.</p> | <p>2) Please refer to our response against Sr. No. 67.</p> |
| 70. | <p>Volume-3, Part II, Section 6 - Employer Requirements, Tender Drawings.</p> <p>Master Layout Plan Pump House (Drawing No. LW-TD-402)</p> <p>Volume-3, Part II, Section</p> | <p>While reviewing both drawings in conjunction, it has been observed that the Admin Building and access roads are overlapping with the electrical buildings / installations.</p> <p>It is the Bidder's understanding that the provision of adequate space for the buildings, equipment, and other infrastructure works included in the Contractor's scope of work shall be the Client's responsibility. Please confirm.</p> | <p>It is to clarify that the updated switchgear and allied electrical installations, including the 132/11 kV grid area, transformers, panels, and trench layout, can be accommodated adjacent to and outside the pump house, as shown in the updated drawings (Drawing Nos. 492 and 493) annexed at Annexure-J.</p> <p>Furthermore, the control room, along with all associated accessories, shall be located on a dedicated floor within the administration/office building.</p> |

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| | 6 - Employer Requirements, Tender Drawings.. 132/11kV Grid Space & Transformers, Panels, Trench Layout (Drawing No. LW-TD-492) | | Adequate space for all required buildings, equipment, and associated infrastructure has already been allocated within the existing Gulshan-e-Ravi Pumping Station premises and is reflected in the tender drawings. No additional land or space allocation shall be provided. |
| 71. | Volume-1, Part I, Price Schedules, Schedule No. 5: Electrical Works, Page 4-46. | <p>Electrical works in 23 Intermittent Pumping Stations (23 Nos. Intake Structures for 23 Screen Systems & 16 control rooms & 28 buildings/ rooms reconstructed & 14 generators operated & 11 control panels shifted approximately in accordance with ER Sub Clause 4.1 & 5.1) (See *Note 2)</p> <p>1) Referring to Note 2, locations of 23 Nos. Disposal / Lift Stations and 16 Nos. Odor Control Systems for Drop Structures are provided. It is the Bidder's understanding that 16 Nos. Control Rooms, housing the Odor Control Systems only, are to be constructed at the indicated locations. Please confirm.</p> <p>2) The Client is also requested to provide details and architectural drawings for the 28 Nos. Buildings / Rooms to be reconstructed.</p> <p>3) It is further understood that existing Generators are to be relocated at 14 locations and existing Control Panels at 11 locations, with no requirement for new Generators, ancillary equipment, or replacement of panels, etc. Please confirm.</p> <p>4) The Electrical Works under line items 5.1 to 5.7 of Schedule No. 5 (Electrical Works) are understood to be limited to:</p> <ul style="list-style-type: none"> • Provision of LV Switchgear Panel and power distribution to new equipment (Screen System, Odor Control System, and newly constructed buildings) • Outdoor lighting for newly installed equipment areas • Electrification and earthing of newly constructed | <p>1) Please refer to Page 6-128 of Employer Requirements, wherein it has been mentioned that all the structures shall be constructed within the premises of the existing lift stations to avoid land acquisition.</p> <p>2) Please refer to Drawing No. LW-TD-169 to Drawing No. LW-TD-321 for layout of structures at the existing Lift Stations. Accordingly, the scope of demolition and the construction/ shifting of these structures can be determined by the Tenderers based on their Tender Design. The EPC contractor is at liberty to visit the relevant site and estimate the relocation and reconstruction scope of work, as per its own design and layout, however, as per ER 4.1 all the proposed structures including intake, screening chamber, outlet chamber, odour and ventilation system shall be accommodated within available footprint area of existing lift stations.</p> <p>3) Please refer to Drawing No. LW-TD-169 to Drawing No. LW-TD-321 for layout of structures at the existing Lift Stations. Accordingly, the scope of demolition and the construction/ shifting of these structures can be determined by the Tenderers based on their Tender Design. The EPC contractor is at liberty to visit the relevant site and estimate the relocation and reconstruction scope of work, as per its own design and layout. However during relocation of Generators, control panels and other equipment, contractor shall ensure that existing system shall remain intact including its functionality. In addition, the ancillary equipment and control panels required for the new system shall be provided by the EPC contractor.</p> <p>4) The Employer confirms that the Electrical Works under line items 5.1 to 5.7 of Schedule No. 5 shall include:</p> |

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| | | <p>buildings and equipment only Kindly review and confirm the above understanding.</p> | <ul style="list-style-type: none"> • Provision of LV switchgear/distribution panels and complete power distribution to the newly installed equipment (Screen System, Odour Control System, and newly constructed buildings), • Outdoor and Indoor lighting for buildings and premises, and • Full electrification including cables, cable laying, earthing of newly constructed building, housing associated equipment. <p>The Contractor shall ensure complete and functional integration of these works within the overall electrical system.</p> |
| 72. | <p>Volume-1, Part I, Price Schedules, Schedule No. 5: Electrical Works, Item No. 5.6.</p> | <p>Medium Voltage Cables Design, supply, installation, testing, and commissioning of Medium Voltage (MV) cables for indoor and outdoor installations, complete with excavation, backfilling, laying, terminations, joints, and associated civil works such as cable trenches, supports, and protective covers, installation on cable ladders with appropriate fixtures and supports. The scope shall also include the provision of cable route markers, mechanical protection, and all necessary accessories to ensure safe and reliable operation. Where required, bus tie ducts may be used to facilitate project needs, particularly in cases of increased cable terminations or additional cable runs. All works shall comply with the Employer's Requirements, and technical specifications, adhering to relevant industry standards in accordance with ER Sub Clause 4.1 & 5.1.</p> <p>The Line Item specifies Medium Voltage Cables under Electrical Works in 23 Intermittent Pumping Stations. It is the Bidder's understanding that no Medium Voltage Equipment (such as switchgear, transformers, or related apparatus) is required at any of the 23 Intermittent Pumping Stations. Please confirm.</p> | <p>It is to clarify that shifting of existing Generators and Control rooms at 23 lift stations at new location (within the existing premises) will require Medium Voltage Cables for restoring / reinstating the connection with the existing Pumping system.</p> |

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| 73. | Volume-1, Part I, Price Schedules, Schedule No. 5: Electrical Works, Page 4-48. | <p>Electrical works along sewer lines (15 Nos. Control System at Drop Structures) & 15 Nos. Control Points on Manholes along Lines and Laterals preferably at drop structures in accordance with ER Sub Clause 4.1 & 5.1.</p> <p>The detailed Electrical works is applicable to below</p> <p>1) Electrical works in 23 Intermittent Pumping Stations (23 Nos. Intake Structures for 23 Screen Systems & 16 control rooms & 28 buildings/ rooms reconstructed & 14 generators operated & 11 control panels shifted approximately in accordance with ER Sub Clause 4.1 & 5.1)</p> <p>2) Electrical works along sewer lines (15 Nos. Control System at Drop Structures) & 15 Nos. Control Points on Manholes along Lines and Laterals preferably at drop structures in accordance with ER Sub Clause 4.1 & 5.1</p> <p>3) Trunk Sewer Ventillation System with odor Control System</p> <p>The above 1 & 2 items are covered in schedule No. 5, Electrical Works Item No. 5.1 to 5.7, while 3 items are covered in schedule No. 5, Electrical Works Item No. 5.8 to 5.18 and item 5 is covered in schedule No. 5, Electrical Works Item No. 5.19 to 5.49</p> | <p>Unless otherwise stated in the Tender Documents, the Electrical works are such as:</p> <p>The item 1 of the Tenderers Queries is covered in schedule No. 5, Electrical Works Item No. 5.1 to 5.7, while items 2 and 3 are covered in schedule No. 5, Electrical Works Item No. 5.8 to 5.13.</p> |
| 74. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-177. | <p>Electric Motors • The pump shall be driven by a vertical, fan-cooled, permanent magnet synchronous motor. • All motors shall unless otherwise stated be suitable for 3300 volts +/- 10%, 3 phase, 50 Hz and shall be controlled through variable frequency drive (VFD). The electric motor shall be compatible with VFD drive and fitted with suitable designed bearings.</p> <p>The stated requirement for Permanent Magnet Synchronous Motor (PMSM) contradicts the requirement for Squirrel-Cage Induction Motors specified on Page 6-266 of the Employer's Requirements. For the 525 kW, 3.3 kV vertical sewage pump, a squirrel-cage induction motor is</p> | <p>It is to clarify that for 3.3 kV, 525 kW vertical sewage pump, a squirrel-cage induction motor shall be provided by the Contractor.</p> |

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| | | recommended, as it offers a simpler design, cost-effectiveness, and proven compatibility with VFD-based flow control, which is standard practice for sewage pumping applications. In view of the above, the Client is requested to clarify the applicable motor type requirement. | |
| 75. | Volume-2, Part II, Section 6 - Employer Requirements, Page 6-266. | <p>ELECTRIC MOTORS</p> <p>Cage induction motors shall operate on full-voltage direct-on-line (DOL) starting, while wound rotor induction motors shall utilize rotor resistance starting. Motors shall achieve a minimum efficiency of 97% at full load.</p> <p>The stated minimum required efficiency of 97% at full load appears quite high, as squirrel-cage induction motors of the specified rating — 3.3 kV, 525 kW, 10-pole — are typically available with efficiencies in the range of 95% to 96% (approx.). It is therefore recommended that MV motors conforming to IE3 efficiency class be considered acceptable, even if their efficiency is slightly lower than the stated 97%. Client is requested to confirm.</p> | <p>It is to clarify that the Medium-voltage pump motors shall be provided with a minimum efficiency class of IE3 in accordance with IEC 60034-30-1. Where the guaranteed full-load efficiency is slightly lower than 97% yet remains compliant with IE3 performance for the rated power and pole configuration, such motors shall be acceptable subject to submission of OEM certification for Employer's review and approval.</p> <p>An addendum will be issued reflecting the above.</p> |
| 76. | Volume 2, Part II, Section 6 Employer Requirements SUB-CLAUSE 5.1 (4(a)) | <p>• The Contractor shall install dry pit Vertical non-clogging Cardan Shaft Pumps (for accumulative ultimate discharge capacity 848 cusecs) at Gulshan e Ravi Disposal Station. Total capacity of disposal station is 848 cusec. This capacity shall be met by all installed pumps, including duty and standby. Total no of pumps given in tender documents are 16 with 13 duty and 3 stand by, with 53 cusec capacity of each pump. So total capacity is 16x53 =cusec.</p> | <p>The hydraulic design capacity of the ultimate disposal station shall be 688 cusecs. The total installed pumping capacity shall be 848 cusecs.</p> |
| 77. | Volume 2, Part II, Section 6 Employer Requirements Third Party Inspection of Imported Items, p 6-165 | <p>All imported items like, pumps, motors, GV, screens, OH crane, penstock gates, odor control units. Contractor shall arrange third party inspection of all imported mechanical items like pumps, motors, GV, screens, OH crane, penstock gates, odor control units. But not FAT by the consultant or client.</p> | <p>It is clarified that Factory Acceptance Testing (FAT) shall be carried out for all equipment and materials to be supplied under the Contract, in accordance with the provisions of Section 6 – Employer's Requirements (Page 6-170). The FAT, along with inspection, testing, and certification,</p> |

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| | | | shall be conducted in the presence of the Employer and/or the PMC, as required, to ensure full compliance with the specified standards and performance criteria. |
| 78. | Volume 2, Part II, Section 6 Employer Requirements Program of Works for Machinery : Part I: Manufacturing Period p. 6-170 of Volume 2 | <p>Design and manufacture all equipment to be supplied under the contract including Inspection and factory testing (FAT). please confirm if the client need FAT of</p> <ol style="list-style-type: none"> 1. screen, cleaning equipment and hoisting system 2.GV 3.Pumps both main 4.Penstock gate 6.Ventilation system 7.FF system 8.Odor control system 9. any other mechanical part?? <p>The bidder understands that only major equipment shall be liable for FAT i.e Main Pump and Motor, Further no of person attending FAT is also not mentioned. Please note that increasing no of trips and person shall increase the bidding cost accordingly.</p> | <p>As clarified at Sr. # 77), the Factory Acceptance Testing (FAT) shall be carried out for all equipment and materials to be supplied under the Contract, in accordance with the provisions of Section 6 – Employer's Requirements (Page 6-170).</p> <p>The number of FAT trips will depend on the readiness and scheduling of each mechanical equipment item in accordance with the Contractor's implementation plan. However, for estimation purposes, the number of participants shall be considered up to eight (08) persons per trip, and the Contractor shall include in the tender all related costs and expenditures for these participants.</p> |
| 79. | Volume -1, Part I, Section 4.9, Tender Forms p. 4-42 BOQ mechanical works | <p>Hydraulic Modelling of Pumping Station (ultimate disposal station)</p> <p>Hydraulic Modelling and Design work (Detailed design of pumping station & drop structures of each size to prevent adverse flow conditions and avoid vortex formation, pre-swirl, air entrainment, etc., including CFD analysis & Prototype Sump hydraulic modelling and testing for a total design capacity of 688 cusec.</p> <p>1. CFD Modelling vs. Sump Model TestAs per the Employer's Requirements, a sump model test is specified. However, the design consultant has proposed a CFD (Computational Fluid Dynamics) modelling approach for the ultimate disposal station in BOQ.We request clarification on whether CFD modelling can be considered an acceptable</p> | <ol style="list-style-type: none"> 1. The contractor shall first conduct CFD Modelling and then the sump modelling based on satisfactory results of CFD. 2. The Client and PMC shall witness the sump modelling test till satisfactory results are achieved. |

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| | | <p>alternative to the physical sump model test, as CFD provides detailed hydraulic flow simulation and is widely accepted for design optimization in similar projects. Kindly confirm the Employer's preferred approach.</p> <p>2. There shall not be the witnessing of sump model test by the client or PMC. Please confirm. We understand that executing successful sump model test and onward implementing the same shall be contractor's responsibility.</p> | |
| 80. | Volume -1, Part I, Section 4.9, Tender Forms p. 4-42 BOQ mechanical works | <p>2. Design Capacity of Ultimate Disposal Station (688 vs 689 cusec) The total design capacity of the ultimate disposal station is mentioned as 688 cusec, which corresponds to 13 duty pumps × 53 cusec each = 689 cusec (minor rounding difference). Please confirm that the design capacity is 689 cusec, as per pump configuration, and that this small numerical variation is acceptable.</p> | The design capacity of the ultimate disposal station is 688 cusecs. However, for pumping capacity, the minor numerical variation is acceptable only on higher side. |
| 81. | Volume -1, Part I, Section 4.8, Tender Forms p. 4-42 BOQ mechanical works | <p>Pumps & Motors Procurement, manufacturing and delivery of pumps (having accumulative capacity 848-cusecs) along with motors and allied equipment & spares.</p> <p>3. Employer's Requirements Capacity (848 cusec) The Employer's Requirements indicate a total capacity of 848 cusec, which seems to include 16 pumps × 53 cusec each (i.e., 13 duty + 3 standby),. Please confirm whether the 848 cusec refers to the total installed capacity (including standby pumps), while the design operating capacity remains 689 cusec (for 13 duty pumps).</p> | As responded at Sr. No. 76. |
| 82. | Volume -1, Part I, Section 4.8, Tender Forms p. 4-41 BOQ mechanical works | <p>Screening Systems Screening System (Supply, installation, testing, and commissioning of complete screening system including Automatic Mechanical Bar Screen with cable-operated cleaning mechanism, utilizing an overhead travelling monorail crane to enable operation across multiple screens, screening disposal truck, Proportional Weir, etc., complete with all accessories as defined in</p> | <p>1. For the UDS, the contractor shall supply the screens with an automatic mechanical cleaning system only at the new Wet Well of the proposed system, however, the Contractor is not responsible for rehabilitating the screens of existing DS near proposed UDS.</p> <p>For each of the existing 23 lift stations, the contractor shall also provide the automatic mechanical bar screens as per design criteria and specifications. These newly installed</p> |

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| | | <p>Employer's Requirements and Technical Specifications, drawings, complete in all respects.).</p> <p>1. screening system in contractors scope is only for the ultimate disposal station (UDS) but not for the existing disposal station near proposed UDS.</p> <p>2. Bar screen SS316 can be locally manufactured as per design criteria. Quantity 06(5 duty + 1 Stand by). please confirm.</p> | <p>screens will be used in normal operation. The contractor shall also undertake the rehabilitation of existing wet wells as well as manual screens and use them as a standby option during the maintenance of newly installed screens, as mentioned in the Page 6-129.</p> <p>2. The complete set of screens and their mechanical cleaning mechanism shall be supplied by the same internationally reputed manufacturer with proven hands-on experience in similar applications.</p> |
| 83. | Volume -1, Part I, Section 4.8, Tender Forms valves p. 4-43 BOQ mechanical works | <p>Valves (Supply, installation, testing, and commissioning of all kinds of Valves including Gate Valves, Swing Check Valves, flexible joints/dismantling joints, air valves, Ball Valves with pressure gauges on the suction and discharge side of pumps, and any other required for the correct operation, etc.</p> <p>1. please mark location of air valves as required in BOQ.</p> <p>2. All gate valves provided at suction and delivery of pumps are manual gear operated.</p> | <p>1. The contractor shall provide its own design and determine the need and location of the air release valve on the discharge pipeline of the pumps.</p> <p>2. Manual gear operated with pedestal gate valves are considered at suction & discharge side of pumps.</p> |
| 84. | General | <p>Pipe and fittings and other mechanical equipment. Kindly clarify whether local procurement of ductile iron pipes and fittings is acceptable, subject to compliance with the relevant international and project standards. Kindly further confirm if local procurement of others mechanical equipment i.e valves, gates, screens etc. from reliable resources having significant experience of supplying the similar equipment and further confirms to strict compliance of international standards.</p> | <p>Locally manufactured items shall not be acceptable. The Contractor shall obtain prior approval of the manufacturer from the Client/PMC</p> |
| 85. | Volume -1, Part I, Section 4, Tender Forms accessories p. 4-44 BOQ mechanical works | <p>Accessories (Supply, installation, testing, and commissioning of Automatic Overhead Travelling Cranes with all required accessories/, submersible Sump Pumps for drainage with hose pipe/fittings, lifting arrangement, Chemical/Mechanical Anchors, Protection coating like hot dip galvanized, Epoxy, paints etc. with all accessories like Nuts,</p> | <p>The contractor will supply 2 sets of portable submersible drainage pumps with all their accessories. These pumps do not need to be fixed/installed at any site.</p> |

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| | | Bolts, Washers, Gaskets, safety of equipment and persons, storage, all kind of labour/manpower, consumables, utilities, power, etc. Submersible pumps installed in the drainage pits are one in each, total 2 nos and are portable types with hose pipe, but not fixed installation. | |
| 86. | Volume -1, Part I, Section 4.8, Tender Forms pump and motors p. 4-42 BOQ mechanical works | Pumps & Motors (Supply, installation, testing, and commissioning including but not limited to sewage centrifugal non-clogging dry pit single-stage volute casing in rugged construction, end suction and radial discharge pumps with cardan shaft arrangement, Electrical Motor compatible with VFD, in a vertical installation at floor level, complete job as defined in Employer's Requirements and Technical Specifications, drawings, complete in all respects.) It is observed that the cardan shaft length indicated in the tender drawings is relatively long, which could lead to potential alignment and vibration issues over time. Please confirm if this configuration is acceptable or requires revision. | The Contractor shall provide all necessary arrangements, as per their design requirements, to ensure the stability of the Cardan shaft, including bracket bearings or other suitable supports, as deemed necessary. |
| 87. | Volume 3, Part II, Section 6, Employer's Requirement, Tender drawings | Ultrasonic / Electromagnetic Flow Meter. 1. It is recommended to adopt an ultrasonic flow meter considering its accuracy and suitability for the proposed system. However, no corresponding BOQ item has been identified. Kindly review and include the required provision in the Bill of Quantities. 2. Some system components listed in the Employer's Requirements (Volume 2) are missing from the BOQ. Please review and amend the Bill of Quantities as necessary. | 1. Flow meters are given in the BOQ items, See section 4, schedule 6.2 Instrumentation for Ultimate Disposal Station p. 4-64 2. The Contractor may include any additional items under Section 4, Schedule 4.17 (Page 4-45) that are not depicted in the Tender BOQ. |
| 88. | Volume 3, Part II, Section 6, Employer's Requirement, Tender drawings | CAD files. Please provide CAD files of all tender dwg | The CAD files of all tender drawings can be accessed on the Google Drive Link . However, it is clarified that these drawings are provided for guidance purposes only, and the Employer shall in no case be responsible for any discrepancy / inconsistency contained therein whatsoever. Tenderers are advised to |

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| | | | obtain and verify all site-related information independently, in accordance with the provisions of ITT 7.2 of the Tender Documents. |
| 89. | General | <p>Equivalent Standards Please confirm if the Contractor be allowed to use equivalent international Standard to those mentioned the in the bidding documents</p> | <p>The Contractor shall use the international standards as per the Employer's Requirements as per Sub-Clause 4.1 & 5.1. However, the matter regarding equivalency of any particular standards with the required standards will be thoroughly examined for consideration on case-to-case basis during the tender evaluation and project execution stage. The Employer discretion shall prevail for acceptance of any such applicable standards.</p> |
| 90. | Volume -1, Part I, Section 4, Tender Forms Page:4-62~4-66 | <p>RTUs and Associated Instrumentation Bidders Understanding that the 23 Nos. of RTUs at Disposal Pump Stations and 16 Numbers of RTUs at Manholes along with associated Instrumentation as mentioned on reference pages shall be supplied, installed, tested and commissioned as per reference Quantity. Please confirm and provide recommended brand for PLCs, RTUS and SCADA.</p> | <p>Please refer to following in Tender Documents: a) Vol-1, Part I Section 4 – Tender Forms: Schedule No. 6 SCADA System Works. In brief, SCADA/RTUs shall be installed/commissioned at following locations: 1) Gulshan Ravi Pumping Station: SCADA Servers/Operating Station(s)/Accessories + One No. of PLC + Instrumentation (Refer to 6.1 of Schedule 6 - SCADA) 2) WASA Head Office: SCADA Servers/Operating Station(s)/Accessories 3) Manholes along Sewerage Trunk Line: 20 no. RTUs + Instrumentation (Refer to 6.5 of Schedule 6 - SCADA) 4) Disposal Lift Stations: 23 no. RTUs + Instrumentation (Refer to 6.6 of Schedule 6 - SCADA) (b) Vol-2 Part II Section 6 - SCADA – Employer's Requirements.</p> <p>The equipment can be from a renowned brand complying with the standards, specifications and guidelines as mentioned in Employer's Requirement.</p> |
| 91. | Volume -1, Part I, Section 4, Tender Forms Page:4-64~4-65 | <p>Instrumentation Please provide the Instruments details against Disposal Station, Conveyance System and Inlet Structure. Please provide in terms of Quantity requirements and general information and recommended brand</p> | <p>For Quantity and details, please refer to Vol 2 Part II, Section 6, Employer's Requirements (SCADA) - Summary List of Location and System Components (Page 6-324) of the Tender Documents. The equipment can be from a renowned brand complying with the standards, specifications and guidelines as</p> |

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| | | | mentioned in Employer's Requirements. |
| 92. | Volume -1, Part I, Section 4, Tender Forms Page:4-64~4-65 Volume 2, Part II, Section 6, Employer's Requirement, Page: 6-323 | Third Party Integration Is there any requirement of third party integration of specific system such as Generators, Transformer, Protection Relays, Energy Analysers, UPS, Solar System, VFDs etc | The integration of specific systems such as Generators, Transformers, Protection Relays, Energy Analyzers, UPS, Solar System, VFDs etc. shall be carried out by the EPC contractor. In particular, please refer to Vol 2 Part II, Section 6, Employer's Requirements (SCADA) (Page 6-331 & 6-332 of Tender Documents). |
| 93. | Volume -1, Part I, Section 4, Tender Forms Page:4-64~4-65 Volume 2, Part II, Section 6, Employer's Requirement, Page: 6-323 | Licenced Servers, Engineering Stations and Operator Work Stations at Pumping Station Client to check and confirm the below requirements with Licence Provision 1. Redundant SCADA Servers 2. Two Numbers Operator Work Stations 3. One Number Engineering work stations 4. One Number Historian Server 5. Redundant PLCs | EPC Contractor shall arrange licenses required for all software and hardware in entirety related to the SCADA system, as per the Employer's Requirements. |
| 94. | Volume -1, Part I, Section 4, Tender Forms Page:4-64~4-65 Volume 2, Part II, Section 6, Employer's Requirement, Page: 6-323 | Licenced Servers, Engineering Stations and Operator Work Stations at Wasa Head Office Client to check and advise the below requirements 1. Redundant SCADA Servers 2. Two Numbers Operator Work Stations 3. One Number Engineering work stations 4. One number Historian Server | EPC Contractor shall arrange licenses required for all software and hardware in entirety related to the SCADA system, as per the Employer's Requirements. |
| 95. | Volume 2, Part II, Section 6, Employer's Requirement, Page: 6-323 | Redundancy of FOC Cable Bidder understands that redundant 6Core Armoured single mode FOC shall be laid from Gulshan Ravi SACADA Room to WASA Head Office. Also please provide the estimated length | The EPC Contractor is not required to lay a new dedicated FOC. As per the Employer Requirement (SCADA Centre at Wasa Head Office) (Page 6-355), the connection shall be through Fiber Optic leased line/Broadband Internet connection. |
| 96. | Volume -1, Part I, Section 4, Tender Forms Page:4-64~4-65 | ESD Requirements No information is observed against Emergency Shut Down System in ITB Documents. Please confirm the requirement in terms of SIL Rating and Redundancy and recommended brand and also please advise Display station of ESD | A separate or independent ESD system is not required. If any shutdown function required, shall be implemented through the RTUs. |

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| 97. | Volume -1, Part I, Section 4, Tender Forms Page:4-62~4-66 | <p>Communication Path As per bidder understanding communication hierarchy — RTU → Cellular → Central SCADA Please provide</p> <ol style="list-style-type: none"> 1. recommended cellular network provider(s) available and signal strength at each site. 2. What is the required data update rate / polling frequency? 3. any cybersecurity standards to be followed <p>Dual Sim for each RTU</p> | <ol style="list-style-type: none"> 1. Tenderer shall carry out survey of available cellular services in the country and, accordingly, prepare the proposal. 2. Performance requirements are provided in SCADA Employer's Requirements in VOL 2 PART II of Tender Documents. 3. Like any public utility cybersecurity requirements, the Project shall have a baseline cybersecurity framework aligned with best practices for industrial control systems (ICS) and critical infrastructure protection. The Contractor shall ensure resilience and risk mitigation, and implement the following key cybersecurity controls: <ol style="list-style-type: none"> i. Isolation of SCADA and other operational technology (OT) systems from corporate IT networks and external internet connections to limit attack surface and lateral movement. ii. Utilize Multiprotocol Label Switching (MPLS) for remote site communications to enhance data integrity, reliability, and resistance to interception or tampering. iii. Enforce strict access management policies, including role-based access control (RBAC) and multi-factor authentication (MFA) for all remote access to critical systems. iv. Conduct regular cybersecurity risk assessments and audits to evaluate the effectiveness of controls and ensure alignment with emerging threats, regulatory requirements, and international standards. <p>Ongoing monitoring, threat intelligence integration, and workforce awareness will be part of the broader cybersecurity strategy to ensure continuous improvement and resilience against evolving cyber threats.</p> <p>4. Dual Sim is not mandatory.</p> |
| 98. | Volume 2, Part II, Section 6, Employer's Requirement Page:6-226~6-227 | <p>Interfacing of Electrical System Reference to Electrical System please advise what signals are required for interfacing with Pumping Station SACDA System. Is there any Substations and Electrical Systems need separate Automation</p> | <p>Interface signals between Pumps/Motors/Generators and SCADA shall be both hardwired as well as serial communication.</p> <p>There is no requirement of Substation Automation System (SAS), however, provision of integrating limited data from</p> |

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| | | System or it shall be interfaced through Mobus or hardwired signals through SCADA System. | SAS in future should be provided in the SCADA. |
| 99. | Volume 2, Part II, Section 6, Employer's Requirement Page:6-228 | Drop Structure for Odor Control System. Please confirm that the designated 17 Numbers of odor control shall be controlled through RTUs. Please confirm and provide what operations shall be controlled through RTUs and and what shall be controlled and operated through Local MCC Panels. | The Odor Control units on Drop structures are minimum 16 in number. Following minimum parameters shall be monitored/ controlled through each RTU: 1. High Pressure Fans (Operating Status, Start-Stop Operation and Fault Status) 2. Pressure Sensors and Transmitter 3. H ₂ S Sensor Please refer to Drawing No. LW-TD-375 of the Tender Drawings. Also refer to Reply to No. 37 and Annexure-D for updated drawing/ number of Drop Structure Table. |
| 100. | Volume 2, Part II, Section 6, Employer's Requirement Page:6-229 | Screens at Lift Stations Please clarify that the designated screens shall be controlled and operated through RTUs and each screen shall be provided with two level differential level transmitters. Please confirm | Yes, please refer to Vol-2 PART II – Employer's Requirements (Mechanically Raked Bar Screens) - Control System - Page 6-186 of the Tender Documents. |
| 101. | Volume 2, Part II, Section 6, Employer's Requirement Page:6-264 | Interfacing and Termination of MV Motor Bearings Temperature RTDs, Winding Temperature RTDs and Bearings Vibrations with VFD. Kindly advise that Temperature and Vibration parameters related to MV Motors shall be interfaced with MV VFD as per Motor protection. Please clarify if specific Motor and Vibration Protection is required | Yes, the Vibration parameter (if applicable) and protection shall be interfaced with MV VFD as per Motor protection. |
| 102. | Volume 2, Part II, Section 6, Employer's Requirement Page: 6-298~6-300 | Network and IP Telephony. Please specify all the locations where IP telephones are required (e.g., control room, pumping stations, field offices, admin office, remote sites)Should the system support internal dialling only, or external PSTN/VoIP calls as well?What is the total number of IP phones (desk, wall-mount, rugged, Wi-Fi phones, etc.) required per site?How many remote sites shall be provided with IP telephones and what communication media shall be used. | Kindly also refer to Vol-2 PART II – Employer's Requirements (Page 6-67), the fully functional Office Building is an intrinsic part of the Office Building at Gulshan e Ravi Disposal Station. Accordingly, the access to IP telephone shall be provided in relevant offices of this Office Building, which shall be worked out in the Detailed Design based on detailed justification. The IP telephones shall be minimum 20 in number at the designated locations. |

| Sr # | Reference Section | Queries | Employer's Response |
|------|---|---|---|
| 103. | Volume 2, Part II, Section 6, Employer's Requirement Page: 6-301~6-304 | <p>Fire Detection and Alarm System.</p> <p>Please advise the System requirement is only for Pumping station at Gulshan RAVI?</p> <p>Please confirm the system shall be supplied with dedicated SCADA Software and dedicated Station</p> <p>Please confirm the system shall be 6 Loop</p> <p>Please advise if system integration is required with Main SCADA System</p> | <p>As per the Employer's Requirements, the said system is required at overall disposal station including offices, lab and equipment locations.</p> <p>Dedicated SCADA software and Station is not required for Fire Detection and Alarm System. The 6 loop system shall be required for the said system</p> <p>The integration is required with Main SCADA system for limited data.</p> |
| 104. | Volume 2, Part II, Section 6, Employer's Requirement | <p>Availability of Utility Supply.</p> <p>Please provide Existing available Power supply details at all Remote Sites where RTUs will be installed</p> | <p>The Electric Power Distribution and Transmission Lines are available at all RTU sites, however, the contractor shall be required to get the connection from LESCO for operation of the system as per the Employer's Requirements "Trunk Sewer Ventilation System with Odor Control" at Page No. 6-228 & Page 4-48 of Section 4 - Price Schedules.</p> |
| 105. | Volume 2, Part II, Section 6, Employer's Requirement | <p>Earthing of Instruments, Instrument JBs and RTU Panel.</p> <p>Please provide existing earthing system layout.</p> <p>Please clarify whether new earthing system is required at each RTU site</p> | <p>Earthing System shall be required at each RTU site in accordance with the Electrical Employer's Requirements. Please refer to SCADA Employer's Requirements in VOLII PART II of Tender Documents.</p> |
| 106. | Volume 2, Part II, Section 6, Employer's Requirement | <p>Network Cabinet</p> <p>Please provide information against Network Cabinets for SCADA Systems, Telephone Systems, CCTV System etc</p> | <p>Please refer to Employer's Requirements in VOL-II PART II of Tender Documents, which are comprehensively defined therein.</p> |
| 107. | Volume 2, Part II, Section 6, Employer's Requirement | <p>OPC Server Requirement</p> <p>Please check and advise if OPC Server is required or not?</p> | <p>OPC server is an intrinsic part of SCADA and therefore shall be required.</p> |
| 108. | Volume 2, Part II, Section 6, Employer's Requirement | <p>Access Door System</p> <p>Please clarify the places and number of Access Doors</p> | <p>Two (02) No. of Access Door systems will be required at Ultimate Disposal Station at Gulshan e Ravi.</p> |
| 109. | Volume 1, Part I, Section 2 - Tender Data Sheet, ITT 11.2 (I), Page 2-7 | <p>The following sub-clause ITT 11.2 (I) is added:</p> <p>The tenderer shall submit with its Tender:</p> <p>(i) Verified copies & translations of all documents comprising the tender, submitted by the foreign firm with the tender, by foreign firm's country of origin "Chamber of Commerce". The authenticity of Chamber of Commerce verification will be done by</p> | <p>A foreign enterprise operating in Pakistan through a registered Branch Office shall be classified as a foreign firm for the purposes of ITT 11.2(I). Accordingly, the requirements applicable to foreign firms shall apply.</p> <p>Regarding attestation of the documents, the matter is clarified at Sr. No. 11.</p> |

| Sr # | Reference Section | Queries | Employer's Response |
|------|---|---|--|
| | | <p>Pakistani Embassy/ Consulate in foreign firm's country of origin. (ii) Notarized copies & translations of all documents comprising the tender, submitted by the local firms with the tender. Our company is a Chinese enterprise with a registered Branch Office in Pakistan. Kindly confirm whether our company should be classified as a local firm or a foreign firm.</p> <p>In case it is considered a foreign firm, please clarify whether submission of the Chamber of Commerce certificate from the country of origin, duly authenticated by the relevant authority, is still required. As China and Pakistan have recently signed the Apostille Agreement, we understand that the Pakistani Embassy/Consulate may no longer be performing document attestation services. Kindly confirm which organization or authority should now be approached for the required authentication.</p> | |
| 110. | Volume 1, Part I, Section 2 - Tender Data Sheet, ITT 24.1 | <p>The deadline for Tender submission is Date: 11th December 2025 (Thursday) Time: 12:00 hrs Pakistan Standard Time Considering the large project scope and complexity, and the requirement for verified copies and translations of all documents to be attested by the Chamber of Commerce and Pakistani Embassy/Consulate in the country of origin, we respectfully request a one-month extension of the Bid Submission Deadline to ensure thorough and compliant preparation of our submission.</p> | Responded as Sr. No. 1. |
| 111. | Volume 1, Part I, Section 3 - Evaluation and Qualification Criteria (EQC) | <p>Title: 4 Personnel Qualifications & Experience Each Key Personnel shall be evaluated as below: The proposed Key Personnel shall be evaluated as per the requirements stated under Section 3 (Evaluation and Qualification Criteria). If the Tenderer does not propose acceptable Key Personnel meeting the minimum requirements</p> | The Tenderer is required to provide CV and relevant documents of all the key personnel mentioned in Section 3 - Evaluation and Qualification Criteria (EQC). |

| Sr # | Reference Section | Queries | Employer's Response |
|------|---|--|---|
| | | <p>stipulated in Section 3 – Evaluation and Qualification Criteria, the Tender will not be rejected, but the Tenderer will be required to propose, without changing its Tender price, an acceptable Key Personnel meeting the minimum requirements stipulated in Section 3 – Evaluation and Qualification Criteria. If a Tenderer does not provide an acceptable Key Personnel by the date and time set in the Employer's request for acceptable Key Personnel, its Tender may be rejected.</p> <p>In Item 1, a total of 25 key personnel are listed. Please confirm whether the CVs of all 25 key personnel are required to be submitted at this stage, together with the Technical Tender.</p> | |
| 112. | Volume 1. Part I. Section 3 Evaluation and Qualification Criteria | <p>As per Section 3 – Qualification and Evaluation Criteria, Item No. 2.4.1, the Employer has specified evaluation criteria indicating a minimum tunnel diameter of 1500 mm with a length of 250 meters. Under Item 2.4.1(b), the criteria indicate a tunnel diameter of 3000 mm with a length of 2 km. We seek clarification on whether the required tunnel length experience must be demonstrated through a single continuous tunnel section of 250 meters and 2 km respectively, or whether the Employer will also accept experience from multiple projects where the aggregate tunnel length exceeds 250 meters and 2 km.</p> | <p>For the purpose of clarification, it is confirmed that the requirements stated under Sub-Clause 2.4.1(i) of the Evaluation and Qualification Criteria (EQC) refer to a single continuous micro-tunnelling drive length of at least 250 meters and a minimum pipeline length of 2 km, respectively, executed under a single contract.</p> |

| Sr # | Reference Section | Queries | Employer's Response |
|------|---|---|--|
| 113. | Volume 1. Part I. Section 3 Evaluation and Qualification Criteria | <p>include direct responsibility of (i) Operation and Maintenance of MTBM and</p> <p>2.4.1.ii (Operation & Maintenance of MTBM)</p> <p>The similarity of the Tenderer's participation in one of the above contracts shall be based on:</p> <p>i: Construction of tunnel/sewer/stormwater pipeline in the urban/metropolitan development environment through pipe jacking technology and using slurry micro-tunnelling boring machine (MTBM) with a pipe having internal diameter ranging from 3000 mm or above and minimum length of pipeline as 2 km, wherein the scope of work must include direct responsibility of Operation and Maintenance of MTBM.</p> <p>In Clause 2.4.1(ii), the heading refers to “operation and maintenance of MTBM”, whereas the description below specifies construction-related experience. This appears inconsistent — kindly clarify the correct requirement.</p> | <p>It is clarified that Sub-clause 2.4.1(ii) intends to assess the Tenderer construction experience of micro-tunnelling projects executed using slurry Micro-Tunnelling Boring Machines (MTBM), with other specific parameters stated under Evaluation and Qualification Criteria (EQC) - 2.4.1(ii) Operation & maintenance of MTBM).</p> <p>The phrase “operation and maintenance of MTBM” in the heading does not refer to post-construction operational services, but rather to the Tenderer's direct responsibility for operating and maintaining the MTBM during the execution of construction works.</p> <p>Therefore, the clause intends to verify that the Tenderer has practical experience in both:</p> <p>(i) The construction of tunnel/ sewer/ storm water pipe works using slurry Micro-Tunnelling Boring Machines (MTBM technology); and</p> <p>(ii) The operation and maintenance of the MTBM as part of that construction process.</p> <p>The description provided under this clause should therefore be read in conjunction with the heading, meaning that the tenderer must demonstrate experience in the operation and maintenance of MTBM equipment as part of the overall construction activities.</p> |
| 114. | Volume 1, Part I, Section 4 - Tender Forms, Page 4-90 | <p>Title: Personnel</p> <p>Form PER – 1: Proposed Personnel</p> <p>In the form PER – 1, it lists 4 categories of personnel in different stages, including</p> <p>1) Key Personnel (Design and Construction) – To be Evaluated</p> <p>Tenderers should provide the details of proposed personnel and their experience record in the relevant Information Forms below for each of the candidate. Requirement related to the Key Personnel qualification and experience are stipulated in Section 3 – Evaluation and Qualification Criteria and Employer's Requirements.</p> | <p>The Tenderers are required to submit CVs strictly in accordance with the provisions of the Section 3 Evaluation and Qualification Criteria of Tender Documents.</p> <p>Pursuant to Form PER-1 and the requirements specified in Section 3 – Evaluation and Qualification Criteria (EQC) and Employer's Requirements, CVs are required to be submitted for all Key Personnel (Design & Construction) who are subject to evaluation.</p> <p>For all other personnel categories listed (i.e., Other Key Personnel, Other Staff, and Staff during DNP), the CVs shall be provided and the Tenderers must commit to their availability and ensure deployment of qualified and experienced staff in accordance with the Tender</p> |

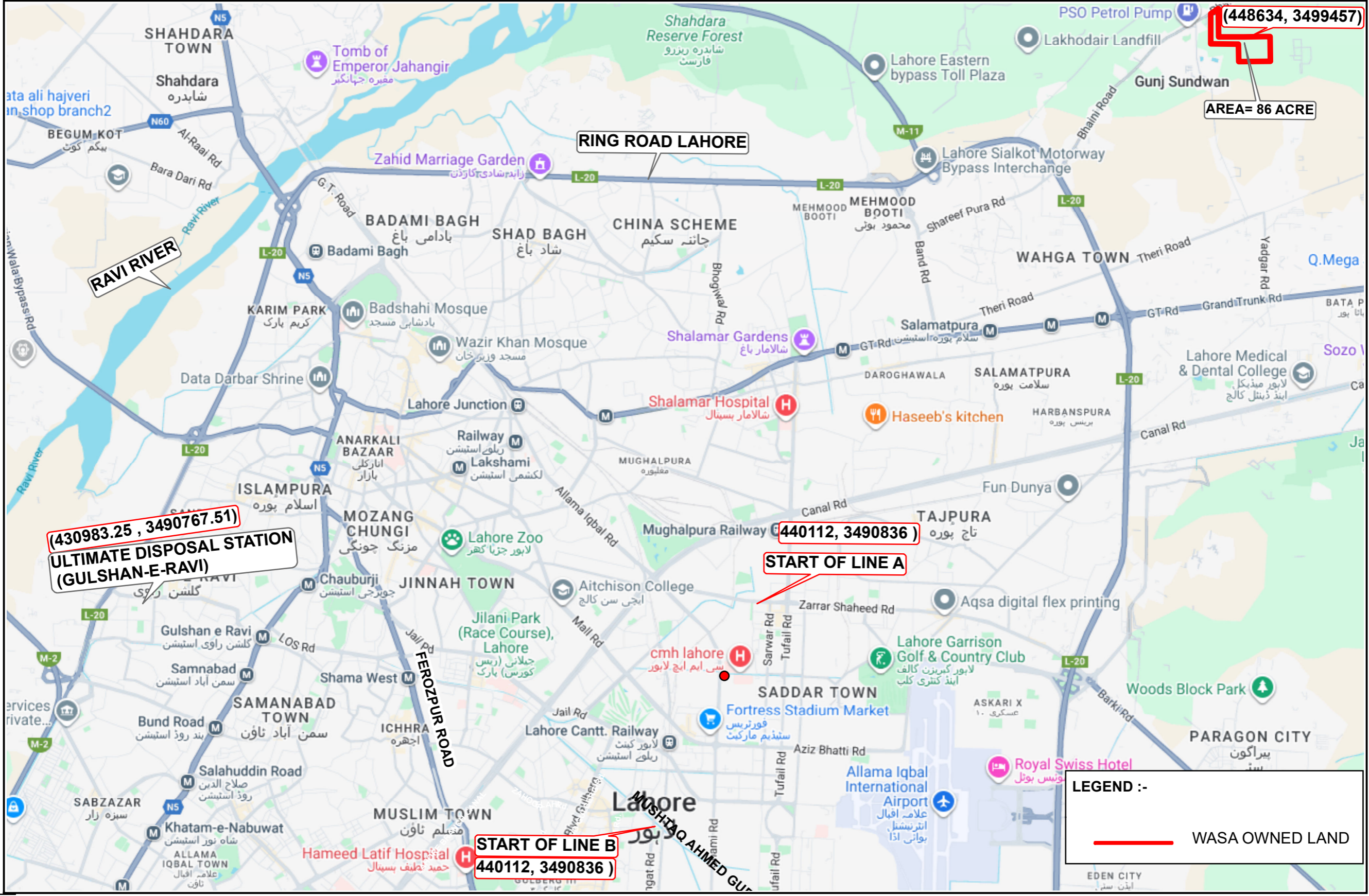
| Sr # | Reference Section | Queries | Employer's Response |
|------|--|--|--|
| | | <p>Tenderer shall keep sufficient provision of required experts of design phase during implementation phase. The Tenderers shall provide the CVs of above-mentioned staff for evaluation purposes, with the commitment of their availability for the duration of the project.</p> <p>2) Other Key Personnel (Design and Construction)</p> <p>3) Other Staff (Design and Construction)</p> <p>4) Staff during DNP</p> <p>The Tenderers shall provide the CVs of above-mentioned staff and with the commitment of their availability for the duration of the project.</p> <p>Besides key staff, the Tenderer shall hire/engage experienced and qualified staff as may be required for each site in order to ensure timely completion of various project activities.</p> <p>All experts including management staff of EPC contractor shall be fluent in English.</p> <p>In Item 1, a total of 25 key personnel are listed. Please confirm whether the CVs of all 25 key personnel are required to be submitted at this stage, together with the Technical Tender.</p> <p>In Item 2, a total of 52 key personnel are listed. Please confirm whether their CVs should also be included in the current submission.</p> <p>In Item 3, a total of 8 proposed staff are indicated. Please confirm whether the CVs of these personnel are required at this stage.</p> <p>In Item 4, 1 proposed staff member is indicated. Please confirm whether the CV of this individual is required to be submitted with the Technical Tender.</p> | Documents. |
| 115. | Volume 1, Part I, Section 4 Tender Forms, Page 4-6 | <p>Title: Country of Origin Declaration Form</p> <p>This Form requires filling in information related to "Item, Description and Country of Origin". Kindly clarify what is meant by the term "item" in the referenced form.</p> <p>What does it specifically include, and what</p> | In the referenced form, the term "Item" refers to the heading or title of the material, equipment, or product being supplied. The corresponding "Description" column shall include the relevant details of that item, such as specifications, make, or model, while the "Country of Origin" shall indicate the country where the item is |

| Sr # | Reference Section | Queries | Employer's Response |
|------|---|---|--|
| | | information is required to be provided? | manufactured or produced. |
| 116. | Volume 1, Part I, Section 4 - Tender Forms, Page 4-81 | <p>Title: Tender Security</p> <p>We have been informed that [name of the Tenderer] (hereinafter called "the Tenderer") has submitted to you its Tender dated [insert date] (hereinafter called "the Tender") for the execution of [name of contract] under Invitation for Tenders No. [insert IFB number] ("the IFB").</p> <p>Please confirm what is referred to as the "IFB Number". Does it correspond to the "IFT Number", the "IOCT Number", or another identifier?</p> <p>We note that only the IOCT Number is mentioned in the Tender Documents.</p> | The term "IFB Number" shall be interpreted as the IOCT Number, as specified in ITT 1.1 of Section 2 of the Tender Documents. Tenderers are advised to use the IOCT Number wherever reference to the IFB Number is required. |
| 117. | Volume 1, Part I, Section 2 - Tender Data Sheet, ITT 21.1 | <p>The bidder of ITT21.1 shall provide a bid deposit of 1.5 million US dollars (or the equivalent of Pakistani rupees, euros or RMB, calculated according to the exchange rate announced by the State Bank of Pakistan 28 days before the bidding deadline). The specific amount shall be subject to the provisions of the bidding documents.</p> <p>Can it be in the form of a bank letter of guarantee? If it takes time to process the bank guarantee letter, the processing time should be considered (submission of the bid on December 10).</p> | <p>As specified under ITT Clause 21 and the Tender Data Sheet, the Tender Security may be provided in the form of an unconditional Bank Guarantee issued by a reputable scheduled bank in Pakistan or a foreign bank of an eligible country counter-guaranteed by a scheduled bank in Pakistan, or through a call deposit receipt or demand draft or pay order in the Employer's designated account, as stated in the Tender Documents.</p> <p>Tenderers are advised to initiate the bank guarantee process well in advance to ensure timely submission, as no extension of the tender submission deadline will be granted on account of delays in arranging the Tender Security. The Employer considers that there is sufficient time available for the preparation and submission of both the Tender and the Tender Security within the prescribed deadline.</p> |
| 118. | Volume 2, Part II, Section 5 – Employer's Requirements | <p>The last requirement of the document: The whole project is expected to be completed within 2.5 years, and 6 brand-new mud micro tunnelling machines will be put into use.</p> <p>Is it a rigid requirement to put in six brand-new mud-type miniature tunnelling machines?</p> | The Contractor shall employ a minimum of six (6) new slurry Micro-Tunnelling Boring Machines (MTBMs). This requirement is essential, as the stipulated completion period of 2.5 years has been determined based on the deployment of six (6) new MTBMs operating efficiently at the site. |

| Sr # | Reference Section | Queries | Employer's Response |
|------|---|---|--|
| 119. | Volume 1, Part I, Section 3 – Evaluation and Qualification Criteria | Performance, Is it okay to provide the construction performance of subway shields, highways, railway tunnels and municipal pipelines? Or is it necessary to provide the performance of micro-tunnel excavation construction? | For the purpose of qualification, the experience must specifically relate to micro-tunnelling works executed using slurry Micro-Tunnelling Boring Machine (MTBM) technology in an urban/metropolitan development environment, as stipulated under Section 3 – Evaluation and Qualification Criteria (EQC) 2.4.1. Therefore, experience limited to subway shields, highway or railway tunnels, and municipal pipelines not executed through slurry MTBM technology shall not be considered for meeting the stated qualification requirements. |
| 120. | Volume 1, Part I, Section 2 - Tender Data Sheet, ITT 111.2 | Technical standards, It is mentioned in ITT 11.2 that the technical standard needs to be submitted together with the bidding drawings, and the design unit with corresponding qualifications needs to intervene and carry out the initial establishment? | Reference is made to ITT 11.2 regarding the submission of technical standards alongside the Tender drawings. It is to clarify that the Tenderer is required to submit all relevant technical standards and ensure that the design unit, possessing the requisite qualifications, is involved in the process to carry out the initial design establishment. This requirement ensures that the proposed designs comply with the specified technical standards The involvement of a qualified design unit is required to ensure that the submitted design documents, drawings, and related standards conform to recognized engineering practices and meet the relevant national and international standards applicable to the Works. The intent is to verify that the Tenderer's proposed design approach aligns with the technical, safety, and performance requirements of the Project. |
| 121. | Volume 2, Part II, Section 6 Employer's Requirements | We check some MTBM's vender from China and Germany. Even MTBM from Germany also can't meet the standards of ASCE/CI36-15. So Do you know which brand MTBM can meet ASCE/CI 36-15 from USA or any country. | The Employer is confident that there are multiple well-known MTBM manufacturers worldwide whose equipment is commonly used to meet the requirements of ASCE/CI 36-15 (Standard Design & Construction Guidelines for Microtunneling). It is the responsibility of the Tenderer to identify and procure suitable MTBM units through their own resources, ensuring full compliance with the specified standards. |

| Sr # | Reference Section | Queries | Employer's Response |
|------|--|---|--|
| 122. | Volume 1, Part I, Section 5 – Eligible Countries | Can the firms based in Iran eligible to participate? | <p>As this is an AIIB-funded project, firms, goods and services from certain countries are ineligible in accordance with ITT 4.8 and 5.1. This includes countries subject to UN Security Council sanctions or embargoes, as well as those subject to restrictions imposed by the AIIB or Government of Pakistan.</p> <p>Tenderers are advised to obtain updated information regarding such restrictions through their own resources.</p> |
| 123. | Volume 2, Part 2 | <p>Regarding the surroundings of the construction site, considering that the project is located in urban area and pump facilities are quite dispersed, we seek clarification on the following:</p> <ol style="list-style-type: none"> 1. Will the Employer make available to the Contractor the locations of all underground utilities, such as pipelines, power cables, fiber optic cables, or other concealed works after the contract is awarded? 2. Regarding adjacent residential areas, schools, and commercial districts, are there any specific restrictions imposed by the Employer concerning noise levels and permitted working hours? | <ol style="list-style-type: none"> 1. Refer to 6-12, 6-13, 6-32 of Employer's Requirements, the Contractor is responsible to confirm the locations of all underground utilities using GPR etc. Please also refer to the Employer Requirements (Page 6-60. 6-61) and Appendix A of Tender Drawings, wherein all detailed available data and drawings are provided after joint site visits with all concerned departments, however, the accuracy of the data rests with the Contractor to verify/validate. 2. The Contractor shall implement all noise mitigation measures outlined in the ESIA and ESMP to ensure compliance with the Pakistan Environmental Quality Standards (PEQS). For details, refer to serial number 5 of Table 7-5: Environmental and Social Management Plan during the Construction and Operational Phase of the ESIA. <p>Normally any activities resulting in Traffic Congestion is restricted during opening & closing hours of schools/colleges.</p> |

Annexure-A



LEGEND :-

——— WASA OWNED LAND

LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDMP) - SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)

| | | | | | | | |
|---|-------------------------------|------|------|-------------|-------------|--|----------------------------------|
| <p>WATER AND SANITATION AGENCY, LAHORE</p> | <p><i>A Joint Venture</i></p> | 04 | | | DRAWN | | WASA OWNED LAND |
| | | 03 | | | CHECKED BY | | |
| | | 02 | | | RECOMMENDED | | DATE :- NOVEMBER, 2025 |
| | | 01 | | | CHD./VER. | | |
| | | REV. | DATE | DESCRIPTION | APPROVED | | DRAWING No. LW-TD-005A |

Annexure-B

Valid Till
08 DEC 2023

From: The Chief Traffic Officer,
Lahore.

To: The Senior Traffic Officers,
City/Saddar Division, Lahore.

No. 15385 /CTO-Security

Dated: 11 / 10 /2023.

Subject: **PERMISSION OF GEOTECHNICAL INVESTIGATION FOR THE PROJECT OF WATER SANITATION AGENCY (LDA)**

Memorandum:-

Permission is hereby granted to WASA Lahore for geotechnical investigation for the project "sewerage system" for **two months from 08.10.2023 to 08.12.2023 (Except 07:00 AM to 09:00 AM & 01:00 PM to 03:00 PM)** and provided that all safety measures will be adopted with minimum inconvenience of road users while carried out the process.

Permission is granted only for the following roads:

| Sr. No | Road Names | Sr. No | Road Names |
|--------|------------------------|--------|----------------------------|
| 1. | Chuburji | 2. | Bahawalpur Road |
| 3. | Queen's Road | 4. | Egerton Road |
| 5. | Allama Iqbal Road | 6. | Mian Mir Road |
| 7. | Durrand Road | 8. | Dharam Pura Road |
| 9. | Feroz Pur Road | 10. | Shah Jamal Road |
| 11. | Canal Road | 12. | Syed Muratab Ali Shah Road |
| 13. | Zahoor Ilahi Road | 14. | Zanjani Road |
| 15. | College Raod Gulberg | 16. | Guru Mangat Road |
| 17. | Main Boulevard Gulberg | ---- | ----- |

PROJECT DIRECTOR (LWWMP)
WASA, LDA, LAHORE
Diary No. 342
Dated: 13-10-2023

(CAPT (R) MUSTANSAR FEROZE) PSP
Chief Traffic Officer
Lahore.

No. & Date Even:

A copy is forwarded for information to Water & Sanitation Agency (LDA) Office of the Project Director Lahore Water and Wastewater Management Project (LWWMP), Lahore.

Annexure-C

Annexure C - RELOCATION OF STRUCTURES **(ESTIMATED) NEEDED AT LIFT STATIONS**

| Sr. No | Structures need to Dismantle | Covered Area / Sqm | Sr. No | Structures need to Dismantle | Covered Area / Sqm |
|----------|------------------------------|--------------------|-----------|------------------------------|--------------------|
| 1 | Line-A Mian Mir | | 9 | Line-B Zafar Ali Road | |
| i | Panel Room | 29.00 | i | Panel Room | 19.30 |
| 2 | Line-A Infantry Road | | ii | Generator | 11.36 |
| i | Panel Room | 25.00 | 10 | Line-B Shareef Colony | |
| ii | Water Pump | 15.00 | i | Panel Room | 37.87 |
| iii | Generator | 12.50 | ii | Generator | 10.10 |
| 3 | Line-A Bird Market | | 11 | Line-B Ichra | |
| i | Panel Room | 13.50 | i | Panel Room | 26.00 |
| ii | Generator | 11.00 | ii | Water Pump | 19.52 |
| iii | Generator | 9.20 | 12 | Line-B Shadman | |
| 4 | Line-A Larechs Colony | | i | Pump Room | 21.00 |
| i | Building | 22.50 | ii | Motor Area | 18.60 |
| ii | Chamber | 13.70 | 13 | Line-B Shama | |
| iii | Generator | 10.00 | i | Generator | 9.60 |
| 5 | Line-A Lakshmi | | 14 | Line-B Rasool Park | |
| i | Shed | 11.00 | i | Panel & Motor Room | 100.00 |
| ii | Generator | 12.30 | ii | Generator | 13.25 |
| 6 | Line-A Jankidevi | | 15 | Line-C Lyton Road | |
| i | Store | 47.00 | i | Pump Room | 17.30 |
| ii | Clerk Office | 14.00 | ii | Generator | 8.13 |
| iii | Well | 6.60 | iii | Old Water Disposal Well | 3.70 |

| Sr. No | Structures need to Dismantle | Covered Area / Sqm | Sr. No | Structures need to Dismantle | Covered Area / Sqm |
|----------|------------------------------|--------------------|-----------|--|--------------------|
| iii | Toilet | 3.10 | | | |
| 7 | Line-B Center Point | | 16 | Line-C Poonch Road | |
| i | Generator | 9.12 | i | Panel Room | 45.80 |
| ii | Oil Tank | 4.67 | ii | Generator Room | 30.74 |
| 8 | Line-B G-Block | | 17 | Line-C PIA Planetarium | |
| i | Complaint Room | 54.28 | i | Panel Room | 26.10 |
| ii | Brick Path | 51.00 | 18 | Gulshan-e-Ravi Disposal Station | |
| iii | Generator | 11.87 | i | Admin Offices | 296.00 |

Annexure-D

Tangential Vortex Drop Structure

| Sr. No. | Line No. | Location | NSL (m) | FFL (m) | IL1 (m) | IL 2 (m) | A (m) | B (m) | C (m) | H (m) | F (m) | e (m) | Lt (m) | LC (m) | Lv (m) | D1 (m) | D2 (m) | D3 (DN) | D4 (DN) | T1 (mm) | T2 (mm) | Material of Construction (Approach Channel & Drop Shaft) |
|---------|------------------------|------------------------|---------|---------|---------|----------|--------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|---------|---------|---------|---------|--|
| 1 | Line A | Main Mir | 213.400 | 213.700 | 207.994 | 205.829 | 5.010 | 0.40 | 2.165 | 0.835 | 2.00 | 0.132 | 0.871 | 6.618 | 2.574 | 0.529 | 0.931 | 500 | 250 | - | - | GRP/SS316 |
| 2 | | Infantary | 214.630 | 214.930 | 208.662 | 204.892 | 8.443 | 0.67 | 3.770 | 1.407 | 2.00 | 0.223 | 1.468 | 11.153 | 4.338 | 0.892 | 1.570 | 800 | 450 | 300 | 300 | RCC |
| 3 | | Bird Market | 213.650 | 213.950 | 206.678 | 205.488 | 6.252 | 0.50 | 1.190 | 1.042 | 2.00 | 0.165 | 1.087 | 8.258 | 3.212 | 0.660 | 1.162 | 600 | 350 | - | - | GRP/SS316 |
| 4 | | Governor House | 212.550 | 212.850 | 206.387 | 203.237 | 4.157 | 0.33 | 3.150 | 0.693 | 2.00 | 0.110 | 0.723 | 5.491 | 2.136 | 0.439 | 0.773 | 400 | 250 | - | - | GRP/SS316 |
| 5 | | Lakshami Chowk | 210.460 | 210.760 | 204.036 | 202.770 | 9.819 | 0.78 | 1.266 | 1.637 | 2.00 | 0.259 | 1.707 | 12.970 | 5.045 | 1.037 | 1.826 | 900 | 500 | 300 | 300 | RCC |
| 6 | | Qurtaba Chowk (Line A) | 210.750 | 211.050 | 198.192 | 195.152 | 17.050 | 1.35 | 3.040 | 2.842 | 3.00 | 0.450 | 2.963 | 22.521 | 8.759 | 1.801 | 3.170 | 1600 | 900 | 300 | 300 | RCC |
| 7 | Line B | Gurumangat | 214.220 | 214.520 | 207.598 | 204.621 | 5.693 | 0.45 | 2.977 | 0.949 | 2.00 | 0.150 | 0.990 | 7.521 | 2.925 | 0.601 | 1.059 | 600 | 300 | - | - | GRP/SS316 |
| 8 | | Q Block | 214.430 | 214.730 | 208.543 | 204.672 | 5.582 | 0.44 | 3.871 | 0.931 | 2.00 | 0.148 | 0.970 | 7.374 | 2.868 | 0.589 | 1.038 | 500 | 300 | - | - | GRP/SS316 |
| 9 | | G Block | 213.120 | 213.420 | 206.695 | 202.330 | 7.034 | 0.56 | 4.365 | 1.173 | 2.00 | 0.186 | 1.223 | 9.292 | 3.614 | 0.743 | 1.308 | 700 | 350 | 300 | 300 | RCC |
| 10 | | Zafar Ali Road | 213.660 | 213.960 | 208.658 | 203.642 | 2.948 | 0.23 | 5.016 | 0.491 | 2.00 | 0.078 | 0.513 | 3.895 | 1.515 | 0.311 | 0.548 | 300 | 150 | - | - | GRP/SS316 |
| 11 | | Ichra | 212.170 | 212.470 | 206.071 | 202.728 | 6.144 | 0.49 | 3.343 | 1.024 | 2.00 | 0.162 | 1.068 | 8.115 | 3.156 | 0.649 | 1.142 | 600 | 300 | - | - | GRP/SS316 |
| 12 | | Shama | 213.470 | 213.770 | 206.167 | 201.370 | 4.947 | 0.39 | 4.796 | 0.824 | 2.00 | 0.131 | 0.860 | 6.534 | 2.541 | 0.522 | 0.920 | 450 | 250 | - | - | GRP/SS316 |
| 13 | Qurtaba Chowk (Line B) | 210.730 | 211.030 | 198.910 | 194.157 | 16.138 | 1.28 | 4.753 | 2.690 | 3.00 | 0.426 | 2.805 | 21.317 | 8.291 | 1.704 | 3.000 | 1600 | 850 | 300 | 300 | RCC | |
| 14 | Line C | Lytton Road | 208.120 | 208.420 | 202.929 | 197.080 | 6.661 | 0.53 | 5.849 | 1.110 | 2.00 | 0.176 | 1.158 | 8.798 | 3.422 | 0.703 | 1.238 | 600 | 350 | - | - | GRP/SS316 |
| 15 | | PIA Planetarium | 208.990 | 209.290 | 201.543 | 196.160 | 5.670 | 0.45 | 5.383 | 0.945 | 2.00 | 0.150 | 0.986 | 7.490 | 2.913 | 0.599 | 1.054 | 600 | 300 | - | - | GRP/SS316 |
| 16 | | Ponch Road | 209.000 | 209.300 | 201.756 | 194.570 | 9.444 | 0.75 | 7.186 | 1.574 | 2.00 | 0.249 | 1.642 | 12.475 | 4.852 | 0.997 | 1.756 | 900 | 500 | 300 | 300 | RCC |

Note:

- All those components of the drop structures like Approach Channel, Drop Shaft, & Deaeration Chamber whose sizes are small and their on-site construction in RCC is not possible, will be in SS316/GRP.
- For Rasool Park Disposal Station, the drop manhole is considered due to insufficient drop for the construction of the Drop Structure. The contractor will check the possibility and will incorporate it if required at that stage.

NOT FOR CONSTRUCTION

LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDMP) - SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)



WATER AND SANITATION AGENCY, LAHORE



| | | | | | |
|------|------|-------------|----------|----------|-------------|
| 04 | | | | | DRAWN |
| 03 | | | | | CHECKED BY |
| 02 | | | | | RECOMMENDED |
| 01 | | | | | CHD./VER. |
| REV. | DATE | DESCRIPTION | APPROVED | APPROVED | |

DROP STRUCTURE DIMENSION TABLE

DATE: MAY 2025 DRAWING NO: LW - TD - 171 REV: A

SCALE






Annexure-E

TABLE OF DIMENSIONS FOR JACKING & RECEIVING SHAFTS

| Sr. # | Pipe Inner Diameter (m) | Pipe Wall Thickness (m) | Pipe Outer Diameter (m) | Type of Shaft | No. of Shafts | Rectangular | | | | Circular | | | Depth H-I (m) | Bracing Beams C/C Spacing (mm) | | | Base Slab Thickness (m) | PCC Thickness (m) | Thrust Block | | Circular Shaft Wall Thickness (m) | Sheet Pile Embedment Depth H-II (m) | |
|-----------------------------------|-------------------------|-------------------------|-------------------------|---------------|---------------|---------------|----------------|---|----------------------|---------------------|-------------------|-------------------|---------------|--------------------------------|------|------|-------------------------|-------------------|--------------|---------------|-----------------------------------|-------------------------------------|------------|
| | | | | | | Width (B) (m) | Length (A) (m) | Length including Thrust Block Thickness (m) | Total Length (L) (m) | Total Width (W) (m) | Diameter (D1) (m) | Diameter (D2) (m) | | Diameter (D3) (m) | X | Y | | | Z | Thickness (m) | | | Height (m) |
| Jacking Shafts of Line-A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.4 | 0.225 | 2.85 | A | 7 | 6 | 8.8 | 10.0 | 10.9 | 6.9 | | | 14 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 5 | |
| 2 | 2.4 | 0.225 | 2.85 | B | 2 | 8.8 | 8.8 | 10.0 | 10.9 | 9.7 | | | 14 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 5 | |
| 3 | 2.4 | 0.225 | 2.85 | C | 7 | | | | | | 11 | 11.9 | 13.1 | 14 | 2750 | 2750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| Jacking Shafts of Line-B | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.4 | 0.225 | 2.85 | A | 4 | 6 | 8.8 | 10.0 | 10.9 | 6.9 | | | 14 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 5 | |
| 2 | 2.4 | 0.225 | 2.85 | B | 2 | 8.8 | 8.8 | 10.0 | 10.9 | 9.7 | | | 14 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 5 | |
| 3 | 2.4 | 0.225 | 2.85 | C | 4 | | | | | | 11 | 11.9 | 13.1 | 14 | 2750 | 2750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| 4 | 1.5 | 0.169 | 1.838 | D | 3 | | | | | | 10 | 10.9 | 12.1 | 12 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| 5 | 1.5 | 0.169 | 1.838 | E | 3 | 5 | 8.2 | 9.4 | 10.3 | 5.9 | | | 12 | 1950 | 1950 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 5 | |
| Jacking Shafts of Line-C | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3.5 | 0.3 | 4.1 | A | 2 | 7 | 8.8 | 10.0 | 10.9 | 7.9 | | | 18 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 8 | |
| 2 | 3.5 | 0.3 | 4.1 | B | 1 | 8.8 | 8.8 | 10.0 | 10.9 | 9.7 | | | 18.64 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 8 | |
| 3 | 3.5 | 0.3 | 4.1 | C | 2 | 6 | 10.0 | 11.2 | 12.1 | 6.9 | | | 18.76 | 2850 | 2850 | 5300 | 0.6 | 0.1 | 1.2 | 4 | | 8 | |
| 4 | 3.5 | 0.3 | 4.1 | D | 5 | | | | | | 12 | 12.9 | 14.1 | 20 | 3250 | 3250 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 8 |
| Receiving Shafts of Line-A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.4 | 0.225 | 2.85 | A | 9 | 3.5 | 5.5 | | 6.4 | 4.4 | | | 14 | | | | 0.6 | 0.1 | | | | 5 | |
| 2 | 2.4 | 0.225 | 2.85 | B | 7 | | | | | | 7 | | 7.9 | 14 | 750 | 750 | 5300 | 0.6 | 0.1 | | | 0.6 | 5 |
| Receiving Shafts of Line-B | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 2.4 | 0.225 | 2.85 | A | 4 | 3.5 | 5.5 | | 6.4 | 4.4 | | | 13 | | | | 0.6 | 0.1 | | | | 5 | |
| 2 | 1.5 | 0.169 | 1.838 | B | 4 | 2.5 | 4.5 | | 5.4 | 3.4 | | | 12 | | | | 0.6 | 0.1 | | | | 5 | |
| 3 | 2.4 | 0.225 | 2.85 | C | 1 | 5.5 | 5.5 | | 6.4 | 6.4 | | | 12.35 | | | | 0.6 | 0.1 | | | | 5 | |
| 4 | 1.5 | 0.169 | 1.838 | D | 2 | | | | | | 6 | | 6.9 | 11.77 | 250 | 250 | 5300 | 0.6 | 0.1 | | | 0.6 | 5 |
| 5 | 2.4 | 0.225 | 2.85 | E | 5 | | | | | | 7 | | 7.9 | 14 | 750 | 750 | 5300 | 0.6 | 0.1 | | | 0.6 | 5 |
| Receiving Shafts of Line-C | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 3.5 | 0.3 | 4.1 | A | 6 | 4 | 6.5 | | 7.4 | 4.9 | | | 19 | | | | 0.6 | 0.1 | | | | 8 | |
| 2 | 3.5 | 0.3 | 4.1 | B | 5 | | | | | | 8 | | 8.9 | 18.5 | 1250 | 1250 | 5300 | 0.6 | 0.1 | | | 0.6 | 8 |

NOT FOR CONSTRUCTION

LAHORE WATER & WASTEWATER MANAGEMENT PROJECT - SEWERAGE SYSTEM FROM LARECH COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)

| | | | | | | |
|--|---|-------------|----------|-------------|--|---|
|  WATER AND SANITATION AGENCY, LAHORE |     <i>A Joint Venture</i> | 04 | | DRAWN | | JACKING AND RECEIVING SHAFTS TABLES OF DIMENSIONS DATE:- May, 2025 DRAWING NO.:- LW - TD - 141 |
| | | 03 | | CHECKED BY | | |
| | | 02 | | RECOMMENDED | | |
| | | 01 | | CHD./VER. | | |
| REV. | DATE | DESCRIPTION | APPROVED | | | |

Jacking Shafts of Line-A Laterals

| MIAN MEER COLONY - L1A | | | | | | | | | | | | | | | | | | | | | | | |
|------------------------|------|-------|-------|---|---|-----|-----|-----|------|-----|----|------|------|-------|------|------|------|-----|-----|-----|---|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 10.82 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| INFANTRY ROAD - L2A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.5 | 0.169 | 1.838 | A | 1 | 5 | 8.2 | 9.4 | 10.3 | 5.9 | | | | 11.42 | 1950 | 1950 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| LARECH COLONY - L3A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 9.34 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| GHAZI MOHALLAH - L4A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 9.99 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| MUHAMMAD NAGAR - L6A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 10.72 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| GOVERNER HOUSE - L7A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 10.78 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | 9 | 9.9 | 11.1 | 11.43 | 1750 | 1750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| LAKSHAMI CHOWK - L8A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.5 | 0.169 | 1.838 | A | 1 | 5 | 8.2 | 9.4 | 10.3 | 5.9 | | | | 12.02 | 1950 | 1950 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |
| 2 | 1.5 | 0.169 | 1.838 | B | 1 | | | | | | 10 | 10.9 | 12.1 | 8.72 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| ABBOTT ROAD- L10A | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.5 | 0.169 | 1.838 | A | 1 | 5 | 8.2 | 9.4 | 10.3 | 5.9 | | | | 12.02 | 1950 | 1950 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | |

Jacking Shafts of Line-B Laterals






| Q BLOCK D/S - L1B | | | | | | | | | | | | | | | | | | | | | | | | |
|--------------------------|------|-------|-------|---|---|-----|-----|-----|------|-----|--|---|-----|-------|-------|------|------|------|-----|-----|-----|---|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | | | | | | | 9 | 9.9 | 11.1 | 11.23 | 1750 | 1750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| CENTER POINT D/S - L2B | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 6 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 10 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | | 9 | 9.9 | 11.1 | 9.43 | 1750 | 1750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| ZAFAR ALI ROAD D/S - L3B | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 14 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |
| SHAREEF COLONY - L4B | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 13 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | | 9 | 9.9 | 11.1 | 13.72 | 1750 | 1750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| SHADMAN COLONY - L5B | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 11.29 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | | 9 | 9.9 | 11.1 | 13.22 | 1750 | 1750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| RASOOL PARK - L6B | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.5 | 0.169 | 1.838 | A | 2 | 5 | 8.2 | 9.4 | 10.3 | 5.9 | | | | 10 | 1950 | 1950 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |

Jacking Shafts of Line-C Laterals

| LYTTON ROAD D/S - L1C | | | | | | | | | | | | | | | | | | | | | | | | |
|---------------------------|------|-------|-------|---|---|-----|-----|-----|-----|-----|--|----|------|-------|-------|------|------|------|-----|-----|-----|---|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 13.5 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |
| 2 | 1.05 | 0.15 | 1.35 | B | 2 | | | | | | | 9 | 9.9 | 11.1 | 13.5 | 1750 | 1750 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| PIA PLANETARIUM D/S - L2C | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | | | | | | | 9 | 9.9 | 11.1 | 12.93 | | | | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 5 |
| LAKE ROAD - L3C | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 4.5 | 7.6 | 8.8 | 9.7 | 5.4 | | | | 13.59 | 1650 | 1650 | 5300 | 0.6 | 0.1 | 1.2 | 4 | 5 | | |
| POONCH ROAD - L4C | | | | | | | | | | | | | | | | | | | | | | | | |
| 1 | 1.5 | 0.169 | 1.838 | A | 1 | | | | | | | 10 | 10.9 | 12.1 | 15.41 | 2250 | 2250 | 5300 | 0.6 | 0.1 | 0.6 | 4 | 0.6 | 8 |

NOT FOR CONSTRUCTION

LAHORE WATER & WASTEWATER MANAGEMENT PROJECT - SEWERAGE SYSTEM FROM LARECH COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)

| | | | | | | | |
|--|---|-------------|----------|--|-------------|--|---|
|  WATER AND SANITATION AGENCY, LAHORE |     <i>A Joint Venture</i> | 04 | | | DRAWN | | JACKING AND RECEIVING SHAFTS TABLES OF DIMENSIONS DATE:- May, 2025 DRAWING NO.:- LW - TD - 142 |
| | | 03 | | | CHECKED BY | | |
| | | 02 | | | RECOMMENDED | | |
| | | 01 | | | CHD./VER. | | |
| REV. | DATE | DESCRIPTION | APPROVED | | | | |

Receiving Shafts of Line-A Laterals

MIAN MEER COLONY - L1A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|---|--|-----|------|---|---|------|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | | | | 0.6 | 0.1 | | | | 5 |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | 5 | | 5.9 | 8.94 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |

INFANTRY ROAD - L2A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-------|-------|---|---|-----|-----|--|-----|-----|---|--|-----|-------|-----|-----|------|-----|-----|--|-----|---|
| 1 | 1.5 | 0.169 | 1.838 | A | 1 | 2.5 | 4.5 | | 5.4 | 3.4 | | | | | | | 0.6 | 0.1 | | | | 5 |
| 2 | 1.5 | 0.169 | 1.838 | B | 1 | | | | | | 6 | | 6.9 | 11.37 | 250 | 250 | 5300 | 0.6 | 0.1 | | 0.6 | 5 |

LARECH COLONY - L3A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|------|---|---|------|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | | | | | | 5 | | 5.9 | 8.89 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|------|---|---|------|-----|-----|--|-----|---|

GHARI SHAHU BAZAR - L5A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|------|---|---|------|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | | | | | | 5 | | 5.9 | 8.89 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|------|---|---|------|-----|-----|--|-----|---|

MUHAMMAD NAGAR - L6A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|--|--|--|-----|-----|--|--|--|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | | | | 0.6 | 0.1 | | | | 5 |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|--|--|--|-----|-----|--|--|--|---|

GOVERNER HOUSE - L7A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|----|--|--|--|-----|-----|--|--|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 3 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 11 | | | | 0.6 | 0.1 | | | 5 |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|----|--|--|--|-----|-----|--|--|---|

LAKSHAMI CHOWK - L8A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-------|-------|---|---|-----|-----|--|-----|-----|--|--|----|--|--|--|-----|-----|--|--|--|---|
| 1 | 1.5 | 0.169 | 1.838 | A | 2 | 2.5 | 4.5 | | 5.4 | 3.4 | | | 10 | | | | 0.6 | 0.1 | | | | 5 |
|---|-----|-------|-------|---|---|-----|-----|--|-----|-----|--|--|----|--|--|--|-----|-----|--|--|--|---|

ABBOTT ROAD - L10A

| | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-------|-------|---|---|-----|-----|--|-----|-----|---|--|-----|-------|-----|-----|------|-----|-----|--|-----|---|
| 1 | 1.5 | 0.169 | 1.838 | A | 1 | 2.5 | 4.5 | | 5.4 | 3.4 | | | | 12.72 | | | | 0.6 | 0.1 | | | 5 |
| 2 | 1.5 | 0.169 | 1.838 | B | 1 | | | | | | 6 | | 6.9 | 12.95 | 250 | 250 | 5300 | 0.6 | 0.1 | | 0.6 | 5 |

Receiving Shafts of Line-B Laterals

Q BLOCK D/S - L1B

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|-------|--|--|--|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 11.27 | | | | 0.6 | 0.1 | | 0.6 | 5 |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|-------|--|--|--|-----|-----|--|-----|---|

CENTER POINT D/S - L2B

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|------|--|--|--|-----|-----|--|--|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 7 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 10.5 | | | | 0.6 | 0.1 | | | 5 |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|------|--|--|--|-----|-----|--|--|---|

ZAFAR ALI ROAD D/S - L3B

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|----|---|---|------|-----|-----|--|-----|---|
| 2 | 1.05 | 0.15 | 1.35 | A | 3 | | | | | | 5 | | 5.9 | 14 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|----|---|---|------|-----|-----|--|-----|---|

SHAREEF COLONY - L4B

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|---|--|-----|-------|---|---|------|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 13.41 | | | | 0.6 | 0.1 | | | 5 |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | 5 | | 5.9 | 12.49 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |

SHADMAN COLONY - L5B

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|---|--|-----|-------|---|---|------|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 2 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 11 | | | | 0.6 | 0.1 | | | 5 |
| 2 | 1.05 | 0.15 | 1.35 | B | 1 | | | | | | 5 | | 5.9 | 11.53 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |

RASOOL PARK - L6B

| | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|-------|-------|---|---|--|--|--|--|--|---|--|-----|----|-----|-----|------|-----|-----|--|-----|---|
| 1 | 1.5 | 0.169 | 1.838 | A | 2 | | | | | | 6 | | 6.9 | 10 | 250 | 250 | 5300 | 0.6 | 0.1 | | 0.6 | 5 |
|---|-----|-------|-------|---|---|--|--|--|--|--|---|--|-----|----|-----|-----|------|-----|-----|--|-----|---|

Receiving Shafts of Line-C Laterals

LYTTON ROAD D/S - L1C

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|------|--|--|--|-----|-----|--|--|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 3 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 13.5 | | | | 0.6 | 0.1 | | | 5 |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|------|--|--|--|-----|-----|--|--|---|

PIA PLANETARIUM D/S - L2C

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|-------|---|---|------|-----|-----|--|-----|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | | | | | | 5 | | 5.9 | 13.74 | 0 | 0 | 4800 | 0.6 | 0.1 | | 0.6 | 5 |
|---|------|------|------|---|---|--|--|--|--|--|---|--|-----|-------|---|---|------|-----|-----|--|-----|---|

LAKE ROAD - L3C

| | | | | | | | | | | | | | | | | | | | | | | |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|-------|--|--|--|-----|-----|--|--|---|
| 1 | 1.05 | 0.15 | 1.35 | A | 1 | 2.5 | 3.5 | | 4.4 | 3.4 | | | | 15.85 | | | | 0.6 | 0.1 | | | 8 |
|---|------|------|------|---|---|-----|-----|--|-----|-----|--|--|--|-------|--|--|--|-----|-----|--|--|---|

POONCH ROAD - L4C

| | | | | | | | | | | | | | | | | | | | | | | |
|---|-----|------|-----|---|---|--|--|--|--|--|---|--|-----|------|-----|-----|------|-----|-----|--|-----|---|
| 1 | 1.5 | 0.15 | 1.8 | A | 2 | | | | | | 6 | | 6.9 | 15.3 | 250 | 250 | 5300 | 0.6 | 0.1 | | 0.6 | 8 |
|---|-----|------|-----|---|---|--|--|--|--|--|---|--|-----|------|-----|-----|------|-----|-----|--|-----|---|

NOT FOR CONSTRUCTION

LAHORE WATER & WASTEWATER MANAGEMENT PROJECT - SEWERAGE SYSTEM FROM LARECH COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)



WATER AND SANITATION AGENCY, LAHORE



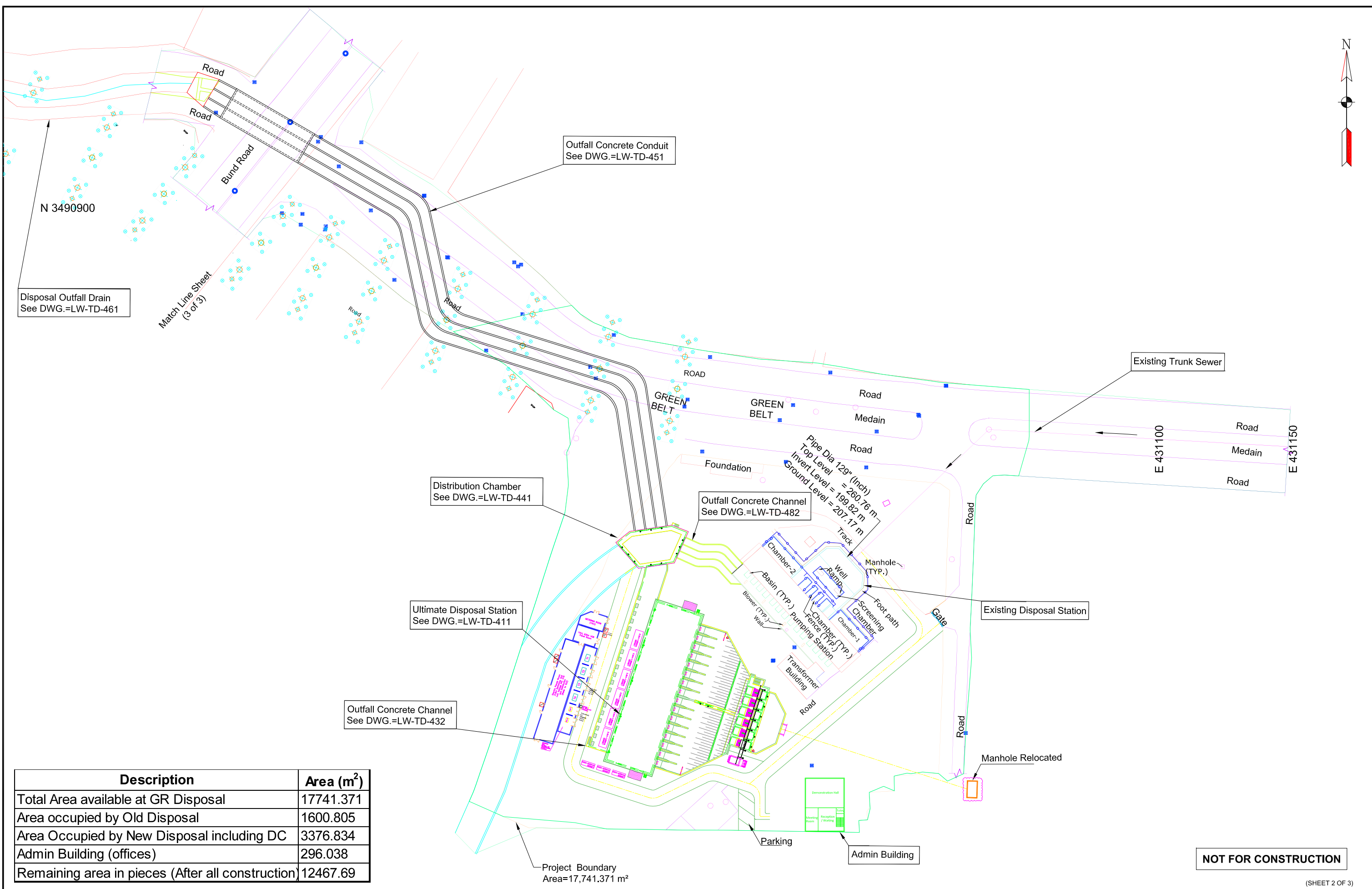
| | | | | | |
|------|------|-------------|----------|-------------|--|
| 04 | | | | DRAWN | |
| 03 | | | | CHECKED BY | |
| 02 | | | | RECOMMENDED | |
| 01 | | | | CHD./VER. | |
| REV. | DATE | DESCRIPTION | APPROVED | | |

JACKING AND RECEIVING SHAFTS TABLES OF DIMENSIONS

DATE:- May, 2025

DRAWING NO.:- LW - TD - 143

Annexure-F



| Description | Area (m ²) |
|---|------------------------|
| Total Area available at GR Disposal | 17741.371 |
| Area occupied by Old Disposal | 1600.805 |
| Area Occupied by New Disposal including DC | 3376.834 |
| Admin Building (offices) | 296.038 |
| Remaining area in pieces (After all construction) | 12467.69 |

NOT FOR CONSTRUCTION

(SHEET 2 OF 3)

LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDM) - SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)

| | | | | | | |
|---|------|------|-------------|-------------|------------------------|---|
| <p>WATER AND SANITATION AGENCY, LAHORE</p> <p><i>A Joint Venture</i></p> | 04 | | | DRAWN | MUHAMMAD HAMMAD NASEER | <p align="center">ULTIMATE DISPOSAL STATION MASTER LAYOUT PLAN PUMP HOUSE</p> <p>DATE:- NOVEMBER, 2025</p> <p>DRAWING NO.:- LW - TD - 402</p> |
| | 03 | | | CHECKED BY | MUHAMMAD SAQIB RAZA | |
| | 02 | | | RECOMMENDED | | |
| | 01 | | | CHD./VER. | | |
| | REV. | DATE | DESCRIPTION | APPROVED | | |

Annexure-G

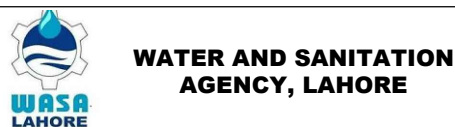
Note.
 1. READ ALL DRAWINGS IN CONJUNCTION
 2. WITH ARCHITECTURAL, PLUMBING/SEWERAGE,
 3. MECHANICAL, ELECTRICAL AND ANY OTHER
 4. RELEVANT DRAWINGS.

ODOUR CONTROL SYSTEM

| Sr. No. | Drop Structure Location | Odor Control Room Size (m) L x W x H | NSL(m) | FGL(m) | TL(m) | Depth of Foundation from NSL (m) | Width of Foundation (m) | | | | | Thickness of Foundation steps (m) | | | | Roof Slab Thickness (m) |
|---------|--|---|--------|--------|--------|----------------------------------|-------------------------|------|------|------|------|-----------------------------------|------|------|------|-------------------------|
| | | | | | | | W1 | W2 | W3 | W4 | W5 | T1 | T2 | T3 | T4 | T5 |
| 1 | Mian Mir (D1) | As shown on Plan | 213.40 | 213.70 | 217.70 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 2 | Infantry Road (D2) | 4.5 x 5.0 x 4.5 | 209.00 | 209.30 | 213.80 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 3 | Bird Market (D3) | 4.5 x 4.5 x 4.0 | 213.65 | 213.95 | 217.95 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 4 | Governor House (D4) | 3.5 x 3.5 x 4.0 | 212.55 | 212.85 | 216.85 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 5 | Lakshimi Chowk (D5) | 5.5 x 6.5 x 4.5 | 210.46 | 210.76 | 215.26 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 6 | Qurtaba Chowk (D6) | 4.5 x 4.5 x 4.0 | 210.75 | 211.05 | 215.05 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 7 | Gurumangat (D7) | 3.5 x 3.5 x 4.0 | 214.22 | 214.52 | 218.52 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 8 | Q Block (D8) | 3.5 x 3.5 x 4.0 | 214.43 | 214.73 | 218.73 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 9 | G Block (D9) | 3.5 x 4.0 x 4.0 | 213.12 | 213.42 | 217.42 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 10 | Zafar Ali Rd (D10) | 3.5 x 3.5 x 4.0 | 213.66 | 213.96 | 217.96 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 11 | Ichara (D11) | 4.5 x 4.5 x 4.0 | 212.17 | 212.47 | 216.47 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 12 | Shama (D13) | 6.5 x 6.5 x 4.5 | 213.47 | 213.77 | 218.27 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 13 | Qurtaba Chowk (D14) | 6.0 x 4.5 x 4.0 | 208.99 | 209.29 | 213.29 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 14 | Lyton Rd (D15) | 3.5 x 4.0 x 4.5 | 208.12 | 208.42 | 212.92 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 15 | Samnabad Poonch (D16) | 4.5 x 5.0 x 4.5 | 209.00 | 209.30 | 213.80 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 16 | PIA Plantrium (D17) | 3.5 x 3.5 x 4.0 | 214.43 | 214.73 | 218.73 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 17 | Karachi Phatak (E1) | 5.5 x 6.5 x 4.5 | 214.47 | 214.77 | 219.27 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 18 | Infantry Road Crossing (E2) | 5.5 x 6.5 x 4.5 | 215.31 | 215.61 | 220.11 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 19 | Alama Iqbal Rd Crossing (E3) | 3.5 x 4.0 x 4.0 | 212.67 | 212.97 | 216.97 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 20 | Durand Road to Davis Road crossing (E4) | 3.5 x 4.0 x 4.0 | 213.49 | 213.79 | 217.79 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 21 | Edgerton Road to Ganga Ram Hospital Emergency Chowk (E5) | 3.5 x 4.0 x 4.0 | 213.82 | 214.12 | 218.12 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 22 | Q Block link Rd Crossing (E6) | 4.0 x 3.5 x 4.5 | 214.27 | 214.57 | 219.07 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 23 | Gulberg Main Boulevard (E7) | 4.5 x 5.0 x 4.5 | 213.83 | 214.13 | 218.63 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 24 | Shareef to Canal Crossing (E8) | 5.5 x 6.5 x 4.5 | 212.41 | 212.71 | 217.21 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 25 | Canal crossing to Ichara (E9) | 5.5 x 6.5 x 4.5 | 211.32 | 211.62 | 216.12 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 26 | Rasool Park To ferozpur Rd (E10) | 3.5 x 4.0 x 4.0 | 210.90 | 211.20 | 215.20 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 27 | PIA Road Junction (E11) | 3.5 x 4.5 x 4.0 | 209.37 | 209.67 | 213.67 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 28 | Poonch Road Junction (E12) | 3.5 x 4.5 x 4.0 | 209.37 | 209.67 | 213.67 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| 29 | Gulshan-e-Ravi (E13) | 4.5 x 4.5 x 4.0 | 207.58 | 207.88 | 211.88 | 0.9 | 0.9 | 0.57 | 0.45 | 0.34 | 0.23 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |

NOT FOR CONSTRUCTION

LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDMP) - SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)



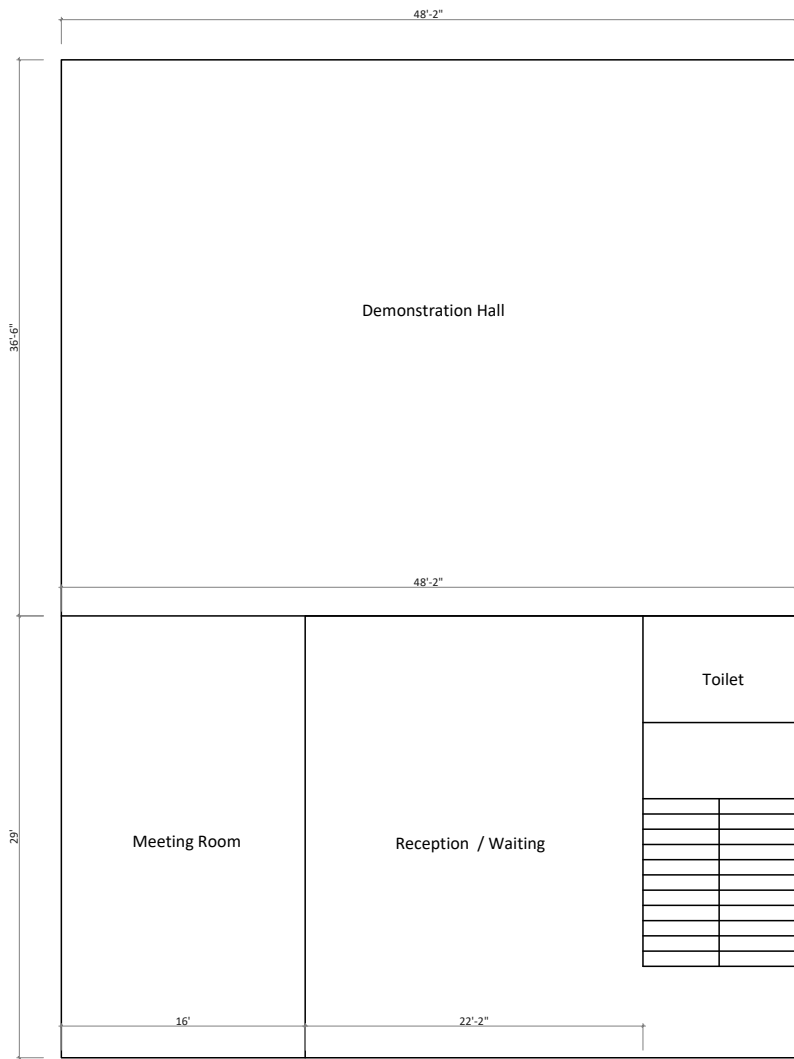
| | | | | |
|------|------|-------------|-------------|--|
| 04 | | | DRAWN | |
| 03 | | | CHECKED BY | |
| 02 | | | RECOMMENDED | |
| 01 | | | CHD./VER. | |
| REV. | DATE | DESCRIPTION | APPROVED | |

DIMENSION TABLE FOR ODOR CONTROL STRUCTURES

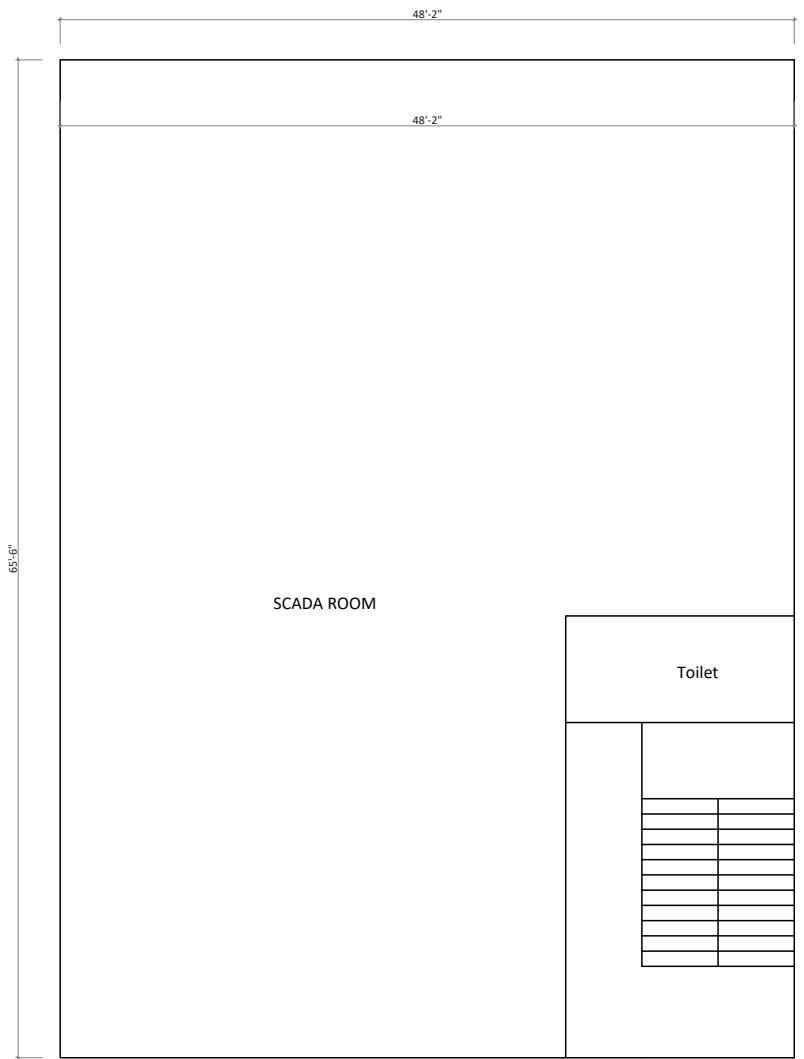
DATE:- November, 2025

DRAWING NO.:- LW - TD - 177

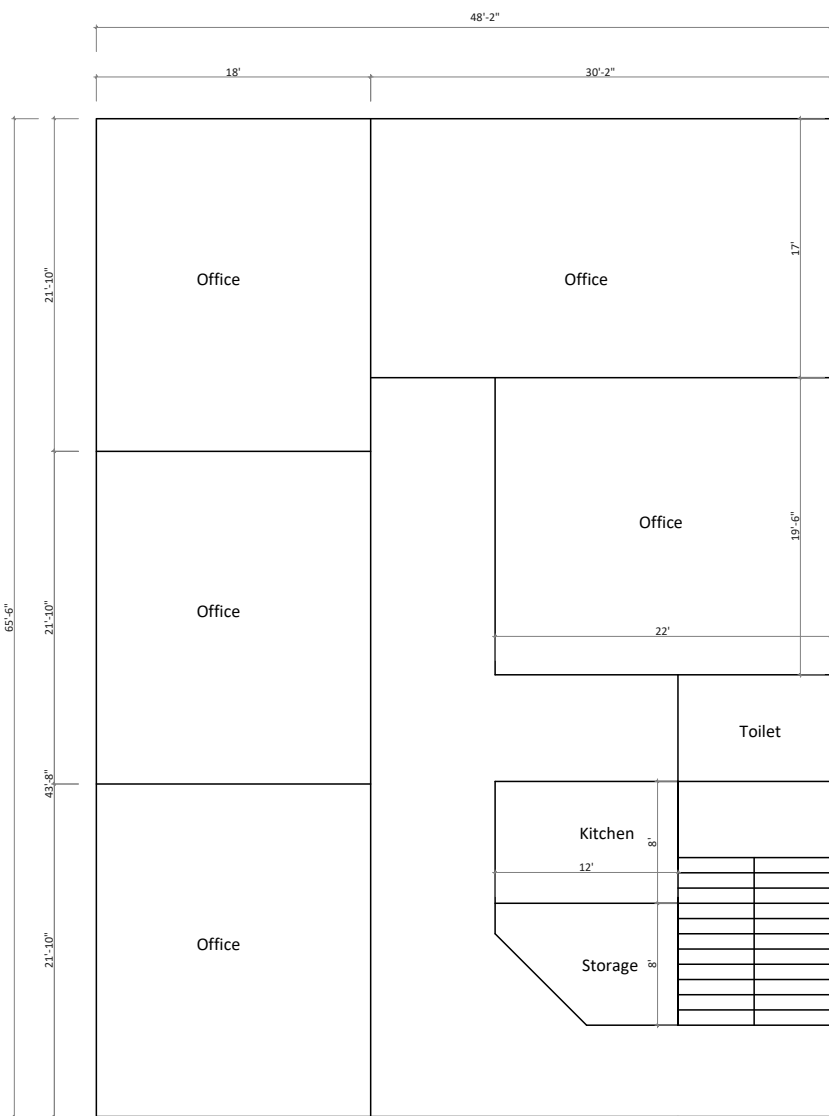
Annexure-H



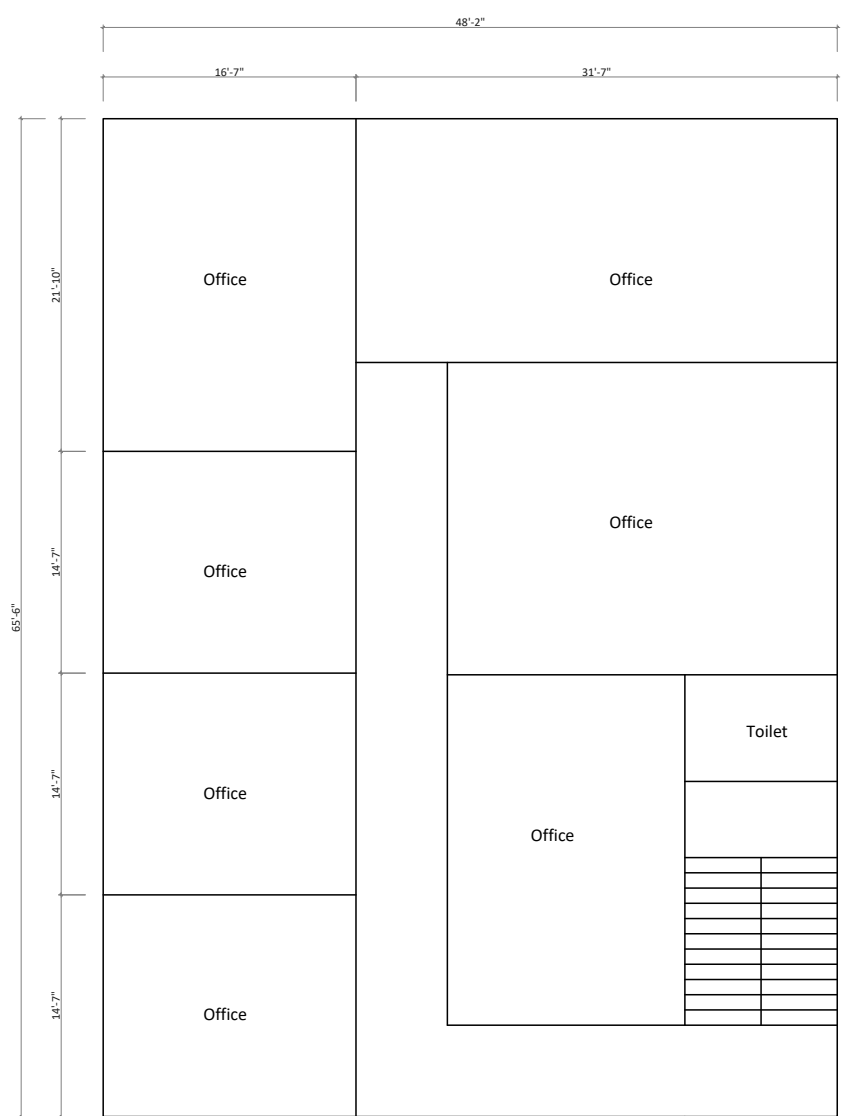
GROUND FLOOR



FIRST FLOOR

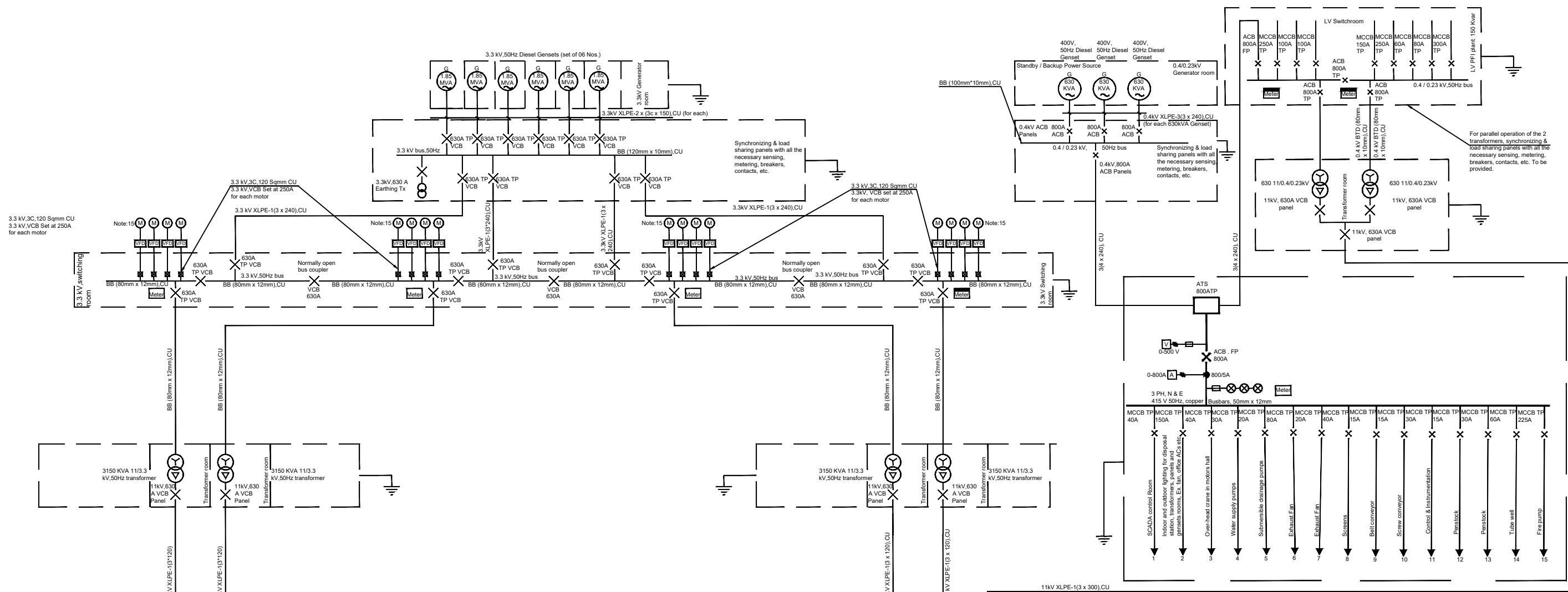


SECOND FLOOR

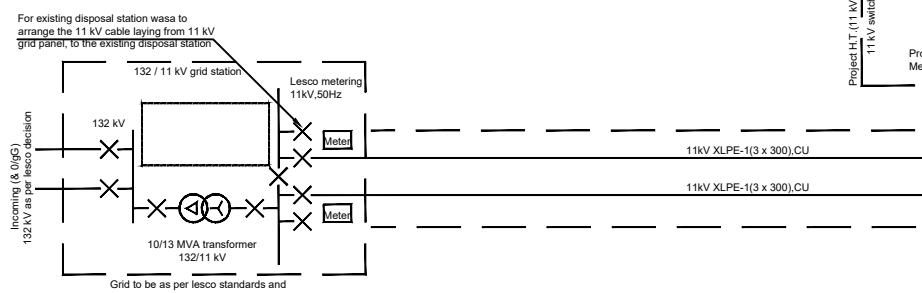


THIRD FLOOR

Annexure-I



- Notes:**
- The purpose of this drawing is to provide guidelines for the contractor.
 - The contractor to study this conceptual guidance schematic and coordinate with engineer if needed.
 - Due to nature of this diagram and space constraint, information has not been shown, for example, for earthing of transformers, generators, motors, PFI etc.
 - The contractor is required to do all necessary calculations and then prepare the final design drawing for engineers approval.
 - The following components (and info) to be shown at the required places, in the final design drawing:
 - i- Surge arrestors, digital energy analyzers, all kinds of metering instruments, such as ammeters, voltmeters, energy (Kwh) meters, KW & kvarh meters, power factor meters, power factor improvement plants (PFI) etc.
 - ii- Power factor improvement plant (PFI) separately, for each of the 3.3 kV motors, are to be provided.
 - iii- Earthing arrangement for transformers, generators, switchgear panels, motors, and all the equipment, along with proper sizing of earth conductors, as per codes.
 - iv- Bore-earthing is to be used for all the items (equipment), mentioned above in 5-iii see design criteria.
 - v- Rupturing capacities (kA) of all the circuit breakers, at all the voltage levels. In this regards, the contractor shall submit the software-based calculations and their results.
 - vi- Ratings of busbars and short-circuit current values at all the bus-bars, for all the voltage levels. The contractor will submit the software-based short circuit calculations.
 - vii- Interlocking arrangement (both mechanical and electrical) between various pieces of equipment, as needed for the safe operation of the installation, in coordination with engineer.
 - viii- Interface with the lightning protection earthing system.
 - An "Equipment layout plan". On the site plan has been provided for guidance of the contractor. The contractor is required to present the final "Equipment layout plan", for the entire installation, on scaled cad drawing, for engineers approval.
 - All the gensets shown are of prime rating.
 - The 3.3 kV gensets are to be synchronized, for parallel operation.
 - The contractor to submit, A separate control wiring diagram, describing the sequence of operation of various 3.3 kV breakers, in various situations.
 - In addition, parallel operation shall be made available for the following:
 - i- Between 3.3 kV transformers
 - ii- Between L.V. transformers
 - iii- Between L.V. generators
 - The contractor to submit calculations along with the software-based results of the calculations, for the following:
 - i- Short circuit calculations to support his given values. For this purpose, the utility fault level of 500 MVA, is to be taken. The BIL is 95 kV.
 - ii- Power factor improvement (PFI), for L.V. loads on transformer bus.
 - All ratings for outgoing L.V. (0.4 kV) breakers for loads are hypothetical; contractor to substitute with ratings, as per the actual loads and requirements.
 - The 3.3 kV motors are inclusive of their starters and protection gear.
 - Setting amps are written for 3.3 kV VCBs.
 - VFD Panels for each 3.3kV- 525kW Power Rated Motor (total 16 Nos.) shall be placed inside the dry well in-front of each associated motor.



Legend

| | | | |
|---|---|-----|--------------------------|
| ⊗ | Vacuum circuit breaker (VCB) | VFD | Variable Frequency Drive |
| ⊗ | Air circuit breaker (ACB) or MCCB, as noted | ⊕ | Transformer |
| — | Switchboard / busbar | ⊕ | Earthing Transformer |
| ⊕ | MV Diesel Genset | ⊕ | Metering |
| ⊕ | LV Diesel Genset | ⊕ | Earth |
| — | Cubicles | | |

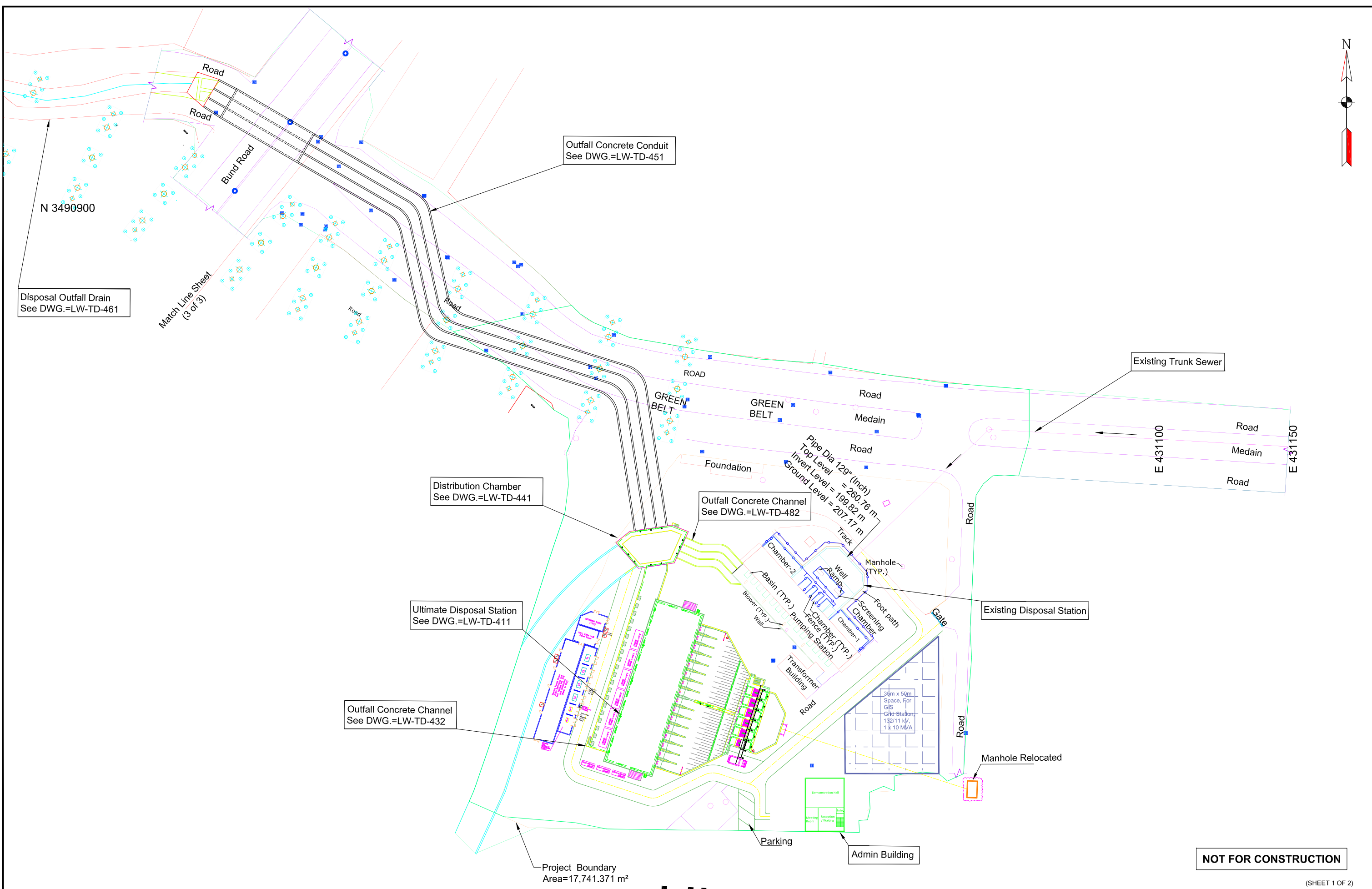
NOT FOR CONSTRUCTION

LAHORE WATER & WASTEWATER MANAGEMENT PROJECT - SEWERAGE SYSTEM FROM LARECH COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)

PACKAGE 2: CONSTRUCTION OF ULTIMATE DISPOSAL STATION, ITS APPURTENANT STRUCTURES AND INSTALLATION OF PUMP HOUSE E&M EQUIPMENT

| | | | | | | | | |
|--|------|-------------|-------------|-------------|--------------|--|--------------------------|--------------------------------|
| | 04 | | | DRAWN | ARS | ULTIMATE DISPOSAL STATION SINGLE LINE DIAGRAM (SLD) | DATE:- NOVEMBER, 2025 | DRAWING NO.:- LW - TD - 491 |
| | 03 | | | CHECKED BY | M.SAQIB RAZA | | | |
| | 02 | | | RECOMMENDED | | | | |
| | 01 | 11-NOV-2025 | | CHD./VER. | | | | |
| | REV. | DATE | DESCRIPTION | APPROVED | | | | |

Annexure-J

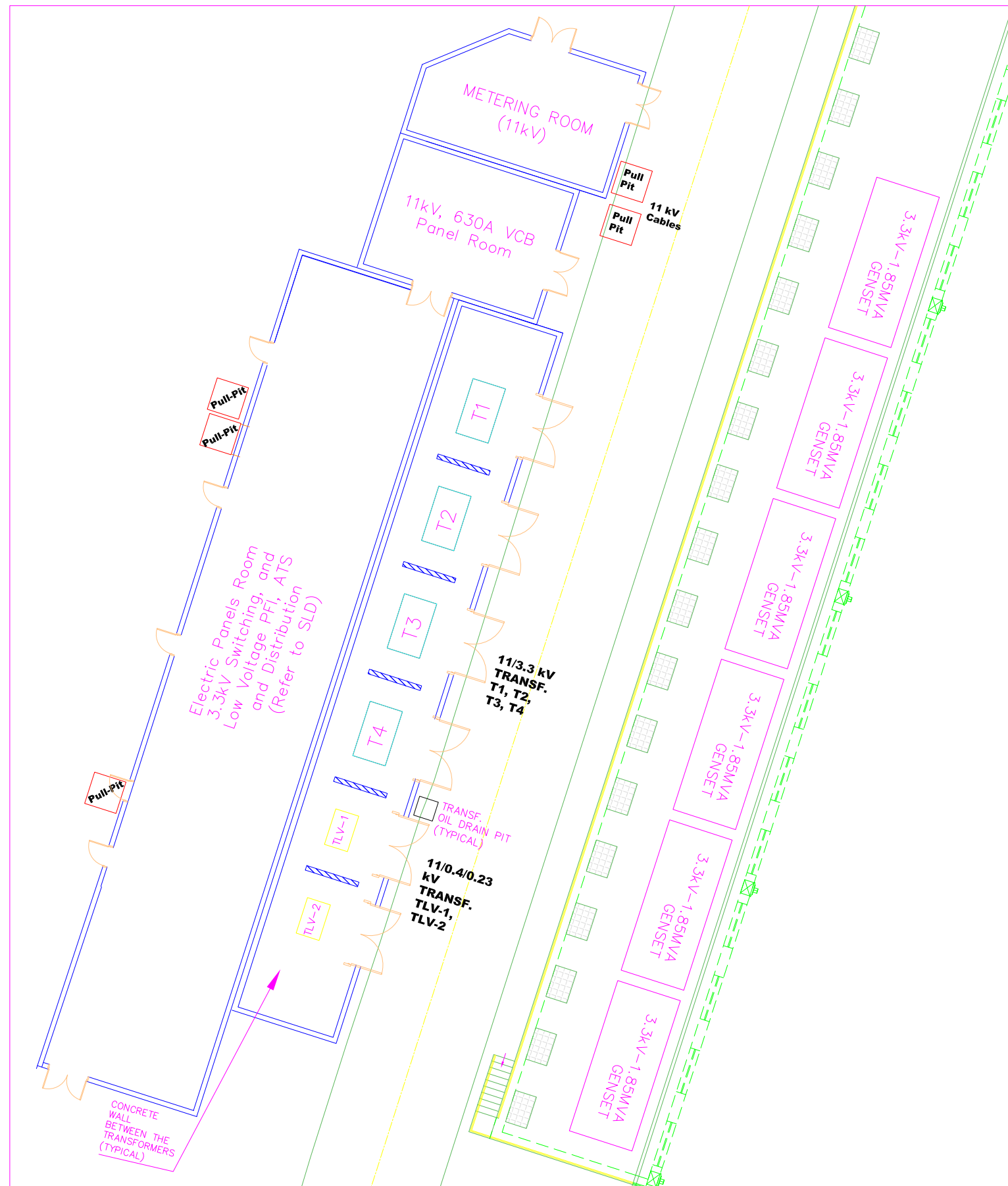


NOT FOR CONSTRUCTION

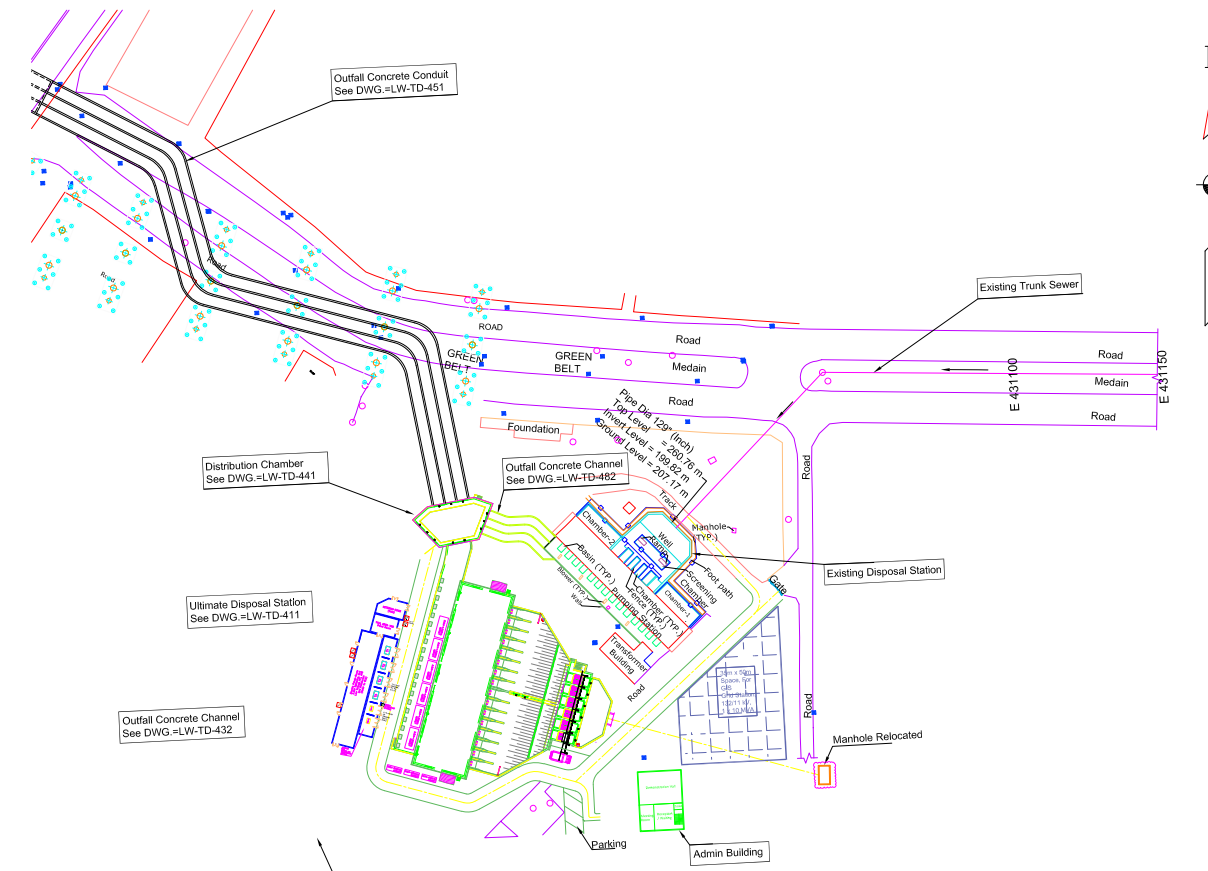
(SHEET 1 OF 2)

LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDM) - SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)

| | | | | | | |
|---|-------------------------------|------|------|-------------|------------------------|--|
| <p>WATER AND SANITATION AGENCY, LAHORE</p> | <p><i>A Joint Venture</i></p> | 04 | | DRAWN | MUHAMMAD HAMMAD NASEER | <p style="text-align: center;">ULTIMATE DISPOSAL STATION</p> <p style="text-align: center;">132/11 KV GRID SPACE & TRANSFORMERS, PANELS, TRENCH LAYOUT</p> |
| | | 03 | | CHECKED BY | MUHAMMAD SAQIB RAZA | |
| | | 02 | | RECOMMENDED | | |
| | | 01 | | CHD./VER. | | |
| | | REV. | DATE | DESCRIPTION | APPROVED | |
| | | | | | | <p>DATE:- NOVEMBER, 2025</p> <p>DRAWING NO.:- LW - TD - 492</p> |



DETAIL-A

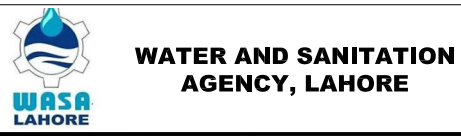


Ultimate Disposal Station

NOT FOR CONSTRUCTION

(SHEET 2 OF 2)

LAHORE WASTEWATER AND DRAINAGE MANAGEMENT PROJECT (LWDM) - SEWERAGE SYSTEM FROM LARECHS COLONY TO GULSHAN-E-RAVI, LAHORE (THROUGH TRENCHLESS TECHNOLOGY)



| | | |
|------|------|-------------|
| 04 | | |
| 03 | | |
| 02 | | |
| 01 | | |
| REV. | DATE | DESCRIPTION |

| | |
|-------------|------------------------|
| DRAWN | MUHAMMAD HAMMAD NASEER |
| CHECKED BY | MUHAMMAD SAQIB RAZA |
| RECOMMENDED | |
| CHD.VER. | |
| APPROVED | |

| | |
|---|----------------|
| ULTIMATE DISPOSAL STATION DETAIL-A | |
| DATE:- | NOVEMBER, 2025 |
| DRAWING NO.:- | LW - TD - 493 |

Attendees List

| Full Name | Company Name | Email Address |
|-----------------------------|--|--|
| Engineering Team | China Road and Bridge Corporation (CRBC) | pakistanrcbc@gmail.com |
| Wahib Qayyum | MK Engineers & Constructors Pvt Ltd | wahib@mkengineers.com.pk |
| Hamed khanali | Tunnel Saz Machine(TSM) | h.khanali@tunnelsazmachine.com |
| Talha Razzaq | Descon Engineering Limited | talha.razzaq@descon.com, descon@descon.com |
| Vaqar A. Babar | Alfajr International, Islamabad | vaqarbabar33@gmail.com |
| Ali Kamal | Floztek Private Limited | Ali.Kamal@Floztek.com |
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