CIN: U60300UP2013SGC060836

UPMRC

उत्तर प्रदेश मेट्रो रेल कॉरपोरेशन लि0
UTTAR PRADESH METRO RAIL CORPORATION LTD.
(Formerly Known as Lucknow Metro Rail Corporation Ltd.)
(भारत सरकार एवं उत्तर प्रदेश सरकार का एक संयुक्त उपक्रम)
(A JOINT VENTURE OF GOVT. OF INDIA & GOVT. OF U.P.)

No. UPMRC/CE-Contract/AGCC-05/2023-24 Date: 09.01.2024

ADDENDUM-03

Name of Work: Tender AGCC-05: Design and Construction of elevated viaduct and 3 Nos. elevated stations (viz. ISBT, Guru Ka Taal & Sikandara Metro Station) including Civil, Associated Ancillary Structure, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire Fighting, Fire Detection, E&M works and PEB structures on Balance Section chainage (-) 42.96 m to 3682.941 m of Corridor-1 of Agra Metro at Agra, Uttar Pradesh, India

Addendum-03 along with replies to pre-bid queries and excel file of BOQ is being uploaded on CPP Portal.

Bidders to note that **Shastri Nagar Metro station** shall be a future metro station and all necessary arrangements to make this station functional in future shall be included in Lump Sum cost. Related General Arrangement Drawings (GAD) shall be uploaded shortly.

Further, tender submission start date/ end date/ opening date of tender has been extended in following manner:

Activity	Existing Dates	Extended Dates
Tender Submission Start Date	10-01-2024 (11:00 hrs.)	**25-01-2024 (11:00 hrs.)**
Tender Submission End Date	18-01-2024 (15:00 hrs.)	**05-02-2024 (15:00 hrs.)**
Date of Opening of Tender	19-01-2024 (15:00 hrs.)	**06-02-2024 (15:00 hrs.)**

For any further modifications/changes (if any), bidders are advised to stay updated on e-tendering portal (https://etenders.gov.in/eprocure/app) for information please.

09/01/24

CE/Contract

Reply to Pre-bid queries : Tender AGCC-05				
Tender AGCC-05: Design and Construction of elevated viaduct and 3 Nos. elevated stations (viz. ISBT, Guru Ka Taal & Sikandara Metro Station) including Civil, Associated Ancillary Structure, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire Fighting, Fire Detection, E&M works and PEB structures on Balance Section chainage (-) 42.96 m to 3682.941 m of Corridor-1 of Agra Metro at Agra, Uttar Pradesh, India				
Sl. No.	**Reference Volume / Clause**	**Existing Clause**	**Queries**	**UPMRC's Reply**
1	Vol 1, 48 **ITT** F4.1	The Performance Guarantee should be valid for a period of 6 (six) months beyond the Defect Liability Period	We seek that the performance security shall be valid for a period of 28 days beyond the Defect Liability Period.	As per Tender Conditions.
2	GCC and SCC 11 of 109 Definition and interpretation	**1.5 Priority of Documents** The documents forming the Contract are to be taken as mutually explanatory of one another. If there is an ambiguity or discrepancy or inconsistency in the documents, the Engineer shall issue any necessary clarification or instruction to the Contractor, and the priority of the documents shall be as follows: a) The Contract Agreement; b) The Letter of Acceptance; c) Pre and Post bid proceeds d) Form of Tender e) BOQ/Payment schedule f) NIT g) ITT h) The Outline Design Specifications (Design Criteria) and Outline Construction Specifications; or any other specification i) Drawings j) The Employer's Requirements k) The Special Conditions of Contract; l) The General Conditions of Contract; m) The Contractor's Proposal; and n) Any other document forming part of the Contract.	We request Employer to modify the priority of documents as follows: a) The Contract Agreement; b) The Letter of Acceptance; c) The Contractor's Proposal; and d) Pre and Post bid proceeds e) The Special Conditions of Contract; f) The General Conditions of Contract; g) The Employer's Requirements h) Form of Tender i) BOQ/Payment schedule j) ITT k) NIT l) Drawings m) The Outline Design Specifications (Design Criteria) and Outline Construction Specifications; or any other specification n) Any other document forming part of the Contract.	As per Tender Conditions.
3	GCC and SCC 13 of 109 The Employer	2.2 Access to and Possession of the site […] For any such delay in handing over of site, Contractors will be entitled to only reasonable extension of time and no monetary claims, whatsoever shall be paid or entertained on this account.	Bidder request for cost compensation in case of delay in access to site.	As per Tender Conditions.
4	GCC and SCC 18 of 109 The Contractor	4.4 Facilities for and co-ordination with others. […] b. The Contractor shall undertake design co-ordination with other Contractors who are carrying out Works forming part of the Project as described in the Employer's Requirements. At the end of each such co-ordination period, the Contractor and the other Contractor with whose Works the interface period refers shall jointly state in writing that their design co-ordination activities are complete and that their respective designs are integrated […]Unless and until copies of all relevant and necessary design co-ordination statements have been submitted to the Engineer, the Engineer shall be entitled to suspend any review or further review of the Contractor's or the other Contractor's design submissions. Such suspension shall not be grounds for the Contractor to claim nor shall be entitled to receive an extension of time or additional payments.	Bidder request the Employer to delete "Such suspension shall not be grounds for the Contractor to claim nor shall be entitled to receive an extension of time or additional payments." Portion from the clause.	As per Tender Conditions.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
5	GCC and SCC 19 of 109 The Contractor	g. If the Contractor suffer delay by reasons of failure by any Designated Contractor to meet the specified installation interfacing and co-ordination, completion dates and if such delay has been caused otherwise than the fault of the Contractor, or, if compliancewith Sub-clause (f) herein shall involve the Contractor in delay beyond that which could be reasonably foreseen by an experienced Contractor at the time of Tender, then the Engineer shall take such delay into account in determining any extension of time to which the Contractor is entitled under the Contract.	Bidder request the Employer to provide cost compensation for delay due to designated contractor.	As per Tender Conditions.
6	GCC and SCC 24 of 109 The Contractor	4.23 Unforeseeable Physical Conditions If, during the execution of the Works, the Contractor shall encounter physical conditions, which, in his opinion, could not have been reasonably foreseen by an experienced Contractor, the Contractor shall forthwith give written notice thereof to the Engineer and if, in the opinion of the Engineer, such conditions could not have been reasonably foreseen by an experienced Contractor, then the Engineer may certify and the Employer may pay reasonable additional cost to which the Contractor shall have been put by reason […] The decision of the Engineer as to the additional cost shall be final and binding.	We request to provide time for any delay in progress due to such unforeseeable physical conditions. Also, we request to delete “The decision of the Engineer as to the additional cost shall be final and binding”	As per Tender Conditions.
7	GCC and SCC 38 of 109 Time management	8.3 Delay Failure or delay by the Employer or the Engineer, to hand over to the Contractor the Site necessary for execution of Works, or any part of the Works, or to give necessary notice to commence the Works, or to provide necessary Drawings or instructions or clarifications or to supply any material, Plant or Machinery, which under the Contract, is the responsibility of the Employer, shall in no way affect or vitiate the Contract or alter the character thereof; or entitle the Contractor todamages or compensation thereof but in any such case, the Engineer shall extend the time period for the completion of the Contract, as in his opinion is/are reasonable.	We request the Employer to provide cost compensation for delay due to Employer.	As per Tender Conditions.
8	GCC and SCC 40 of 109 Time management	8.5 Liquidated damages for Delay The aforesaid Liquidated Damages do not, however, include the sums payable by the Employer to Designated Contractors on account of delay caused by the Contractor to Designated Contractors. Such sums shall be recoverable from the Contractor in addition to any Liquidated Damages payable under this clause, the total ceiling limit of which is 15% of the Contract value including Liquidated Damages levied under the provision of Appendix 1 to the Form of Tender. […] The Employer may, without prejudice to any other method of recovery, deduct the amount of such damages from due, or to become due, to the Contractor. In the event of an extension of time being granted under Sub-Clause 8.3 and the anount due under this Sub-Clause shall be recalculated accordingly, if excess recovery has been done, same will be refunded.	Bidder request, the total ceiling limit shall be 10% of the contract value including Liquidated damages. Bidder request that the deducted amount shall be refunded once the subsequent milestone has been achieved.	As per Tender Conditions.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
9	GCC and SCC 41 of 109 Time management	<table><tr><th>Suspension Period</th><th>Extension of Time</th><th>Compensation for the suspension period</th><th>Remarks</th></tr><tr><td>Upto 14 days</td><td>No</td><td>No</td><td>Engineer may, at his sole discretion, give extension of time in exceptional circumstances.</td></tr><tr><td>15-30 days</td><td>Yes</td><td>No</td><td>Extension of time as considered proper by the Engineer</td></tr></table>	We request the Employer to provide EOT and compensation during suspension upto 14 days and Compensation from 15 to 30 days.	As per Tender Conditions.
10	GCC and SCC 44 of 109 Defect liability	10.9 Performance Certificate [...] Notwithstanding anything contained herein the Contractor would continue to remain liable to the Employer for any cost, loss, damage or compensation which arises from hidden or latent defect in the work executed by the Contractor under the Contract, even if such hidden and latent defects arise after the expiry of Defect Liability period or grant of Performance Certificate by the Employer under the Contract to the Contractor.	Bidder seeks deletion of this clause	As per Tender Conditions.
11	GCC and SCC 44 of 109 Contract price and payment	11.2 Advances 11.2.1 (b) Mobilisation Advance shall be paid interest free against acceptable Bank Guarantee from a scheduled commercial bank in India. The value of Bank Guarantee taken towards security of “Mobilisation Advance” shall be 110% of the Advance taken by the Contractor.	Bidder request the Employer to reduce the Advance bank guarantee to 100% of the Advance amount.	As per Tender Conditions.
12	GCC and SCC 45 of 109 Contract price and payment	11.2 Advances 11.2.2 Plant and Machinery Advance shall generally be limited to 5% of Original Contract Value […] The value of Bank Guarantee taken towards Security of "Plant & Machinery Advance shall be 110% of the Advance taken by the Contractor. The Contractor, once the 50% of Plant & Machinery Advance has been recovered, shall have a one-time option to reduce the Bank Guarantee for the Plant & Machinery Advance by the amount recovered. […] The Advance will be given only if the Plant/Machinery has been purchased for this Contract and not for those which are already in the books of the Contractor.	Bidder request the Employer to reduce the Advance bank guarantee to 100% of the Advance amount. Also, Bidder seeks deletion of following portion as follows: “The Advance will be given only if the Plant/Machinery has been purchased for this Contract and not for those which are already in the books of the Contractor.”	As per Tender Conditions.
13	GCC and SCC 45 of 109 Contract price and payment	11.2 Advances 11.2.4 a) The recovery of Advances shall commence when 20% of the Original Contract Value of the Work has been paid and it will be completed by the time, 85% of the Original Contract Value has been paid or the original completion date whichever is earlier. As far as possible ,the recovery of Advance shall be limited to 30% of on account bill.	Bidder request the Employer to reduce the rate of recovery to 16% on-account bill.	As per Tender Conditions.
14	GCC and SCC 47 of 109 Contract price and payment	11.4 Application for Interim Payment Certificate 11.4.1 […] The Contractor shall be entitled to submit to the Engineer requests for interim payments only upon the achievement of one or more of the Milestones described in the Cost Centre.	Bidder request that the bills may be submitted end of each month irrespective of milestones.	As per Tender Conditions. Please also refer clause 11.4.2 of GCC.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
15	GCC and SCC 47 of 109 Contract price and payment	11.5 Issue of Interim Payment Certificates a. After preliminary scrutiny and certification by the Engineer, payment of 80% of the certified interim amount shall be made by the Employer within 07 days. The amount certified shall account for all deductions, including statutory deductions, recoveries for Advances and any amounts due from the Contractor. The balance 20% shall be paid within 28 days, from the date of the preliminary certification of the bill by the Engineer.	Bidder request to specify the duration of Preliminary scrutiny.	As per Tender Conditions.
16	GCC and SCC 51 of 109 Variations	12.2.1 Variation Proposals […] The decision of the Engineer in this regard shall be final and binding.	Bidder request that the decision shall be upon mutual discussion.	As per Tender Conditions.
17	GCC and SCC 57 of 109 Termination of the Contract	13.3.4 Payment on Termination […] a. The value of approved materials actually brought to the site and reasonably required to execute the Works during next three months, as per approved Programme, and b. Value of Work completed up to date by the Contractor at rates specified in the Contract, after taking into ccount any deductions, retentions, setoff, damages, compensation, loss payable to Employer etc.	We request that the Contractor shall be eligible for cost plus profit.	As per Tender Conditions.
18	Vol 2, pg 83 **SCC 28**	Adjust in Contract Price	Kindly clarify if the Contract Price would be adjusted for costs incurred by Contractor due to Change in Law.	As per Tender Conditions. Please also refer clause 11.1.4 of SCC.
19	GCC and SCC 85 of 109 SCC	11.1.3 Adjust in Contract price (i) No adjustment in the contract price on account of inflation shall Be done for E & M works.	Bidder request Employer to Consider Price adjustment for E&M works.	As per Tender Conditions.
20	GCC and SCC 88 of 109 SCC	11.1.3 Adjust in Contract price […] (ii) (c) Adjustment on Account of Price adjustment The price adjustment shall be applicable only beyond 2 percentage of variation of the contract price i.e. where the resultant increase is lower than two per cent of the contract price, no price adjustment will be made in favour of the contractor.	We request that the price adjustment shall be at actuals.	As per Tender Conditions.
21	GCC and SCC 88 of 109 SCC	11.1.3 Adjust in Contract price […] (ii) (e) Price adjustment during Extended Period of Completion In case the indices fall below the indices applicable to a bill made on the last date of the original or extended period of completion, then the lower indices will be adopted for Price Adjustment for	We request the Employer to consider the indices as of project completion or extended project completion date.	As per Tender Conditions.
22	GCC and SCC 89 of 109	11.1.4 Change in taxes/Duty […] (b) Any other changes (except on account of Clause (a) (i) above) in existing taxes/ new taxes on supply of materials/ services/ works etc. will not be considered and its impact shall be considered covered in the Price Variation Clause provided in the Contract and in Contract where Price Variation Clause is not provided, the impact on any other change (except on account of Clause (a) (i) above) in existing taxes/ new taxes on supply of materials/ services/ works etc. will be deemed to be included in the quoted contract price.	We request that any changes in taxes / new taxes shall be adjusted to the Contract price.	As per Tender Conditions.
23	**Vol 2, Pg 19** GCC 4.7	Any breach of Sub-clauses 4.5 to 4.6 shall entitle the Employer to rescind the Contract under Clause 13.2 of these conditions and also render the Contractor liable for loss or damage arising due to such cancellation.	We seek deletion of the extracted portion of this clause. Employer shall only invoke termination for significant material breach by Contractor.	As per Tender Conditions.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
24	**Vol 2, Pg 23** GCC 4.19	On completion of the Works, the Contractor shall hand over the unused balance of the Tools, Plants and equipments to the Employer in good order and repair, fair wear and tear expected, and shall be responsible for any failure to account for the same or any damage done thereto	We understand that damage resulting out of fair wear and tear is excepted during the calculation of amount recoverable as per this provision. Kindly confirm Also we seek the Condition that decision of Engineer shall be final and binding shall be deleted.	As per Tender Conditions.
25	**Vol 2, Pg 32** GCC 6.4(e)	The decision of Engineer with regard to the merits of imposition of penalty, determination of non-compliance and amount of penalty shall be final and binding on Contractor	We seek deletion of the extracted portion	As per Tender Conditions.
26	**Vol 2, Pg 37** GCC 8.3	Failure or delay by the Employer or the Engineer, to hand over to the Contractor the Site necessary for execution of Works, or any part of the Works, or to give necessary notice to commence the Works, or to provide necessary Drawings or instructions or clarifications or to supply any material, Plant or Machinery, which under the Contract, isthe responsibility of the Employer, shall in no way affect or vitiate the Contract or alter the character thereof; or entitle the Contractor to damages or compensation thereof but in any such case, the Engineer shall extend the time period for the completion of the Contract, as in his opinion is/are reasonable.	**We seek addition of the following at the end of this Sub-Clause "**However, If the Engineer's instruction on commencement of Works is not received by the Contractor within 180 days from his receipt of the Letter of Acceptance, the Contractor shall be entitled to terminate the Contract"	As per Tender Conditions.
27	**Vol 2, Pg 40** GCC 8.8	Consequences of Suspension	The Contractor shall be entitled to all costs incurred due to suspension otherwise than for Contractor's default. Kindly confirm	As per Tender Conditions.
28	Vol 2, 49 GCC 11.17	Withholding and Lien for Sums Claimed	We seek deletion of this Clause. Employer shall not have such lien over any amount that has become due and payable to the Contractor or the Performance Security.	As per Tender Conditions.
29	Vol 2, 58 GCC 14.6	Except that this Sub-clause shall not limit the liability of the Contractor: a) under Sub-clauses 4.18, 4.19, 5.7, 8.6, and Clauses 7.10 and 7.11 b) under any other provisions of the Contract which expressly impose a greater liability, c) in cases of fraud, wilful misconduct or illegal or unlawful acts, or d) in cases of acts or omissions of the Contractor which are contrary to the most elementary rules of diligence which a conscientious Contractor would have followed in similar circumstances.	We seek extracted portion of this clause is to be modified as: "Except that this Sub-Clause shall not limit the liability of the Contractor: (a) under Sub-Clauses 4.18, 7.10 and 7.11 (b) in cases of fraud, wilful misconduct or illegal or unlawful acts" Kindly confirm	As per Tender Conditions.
30	Vol 2, 60 GCC 16.1	Definition of Force Majeure	We seek the addition of "pandemic, epidemic" in the definition of Force Majeure.	As per Tender Conditions.
31	Vol 2, 65 17.10	Where the Arbitral award is for the payment of money, no interest shall be payable on whole or any part of the money for any period, till the date on which the award is made.	We seek deletion of this Clause. The payment of interest on any amounts claimed shall be determined by the Arbitrator.Kindly Confirm	As per Tender Conditions.
32	Vol 2, 61- 62 GCC 17.6, GCC 17.7, GCC 17.8	Conciliation, Conciliation Procedure, Termination of Conciliation Proceedings	We seek that in order to expedite the dispute resolution process, it is preferable to directly invoke Arbitration. Hence, we seek deletion of the mentioned clauses.	As per Tender Conditions.
33	Vol 2, pg 70 SCC 11	A copy of the contract between the Contractor and Sub-Contractor shall be given to the Engineer within 15 days of signing and in any case 7 days before the Sub Contractor starts the Work and thereafter the Contractor shall not carry any modification without the consent in writing of the Engineer.	We seek deletion of this condition and the Contractor shall have unhindered rights over the Sub-contracts.	As per Tender Conditions.
34	General	General	Please provide CAD alignment drawings and RMZ file	AutoCad version of all drawings are being uploaded on CPP Portal. However, in case of any discrepancy between soft copy and hard copy, hard copy attached with tender will prevail.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
35	Employer's requirements, 16 of 140 General	13 Climatic Conditions The work site experiences extreme climatic conditions and tenderers must acquaint themselves about the same before submitting the tender. The Employer shall in no way be responsible on this account.	Bidder request to provide EOT in case of extreme climatic conditions.	As per Tender Conditions.
36	Employer's requirements, Pg No. 46	For Casting Yard, Batching Plant and other activities, Land of approx. 05 Ha should be arranged by Contractor at his own cost	Bidder request to provide the land free of cost	As per Tender Conditions.
37	Employer's requirements, 23 of 140 Functional	1.4 The Contractor shall be responsible for obtaining all necessary approvals from the relevant Public/Government/Local/Statutory or any agencies in the design and construction of the works.	We request the Employer to provide list of approvals to be obtained.	As per Tender Conditions.. Agra being in TTZ area, the bidder shall visit the site and judiciously assess the various approval required from all local bodies and utility owning agencies. Please also refer clause A7 of ITT.
38	Employer's requirements, 52 of 140 Functional	2.10 Scope of work under BOQ Items (Schedule-B) (ii) Utility identification at foundation locations will be done by the contractor and in case utility(ies) is encountered or obligatory requirement is to be met out; the contractor shall modify the span configuration at such location out of the standard span's configurations provided in the tender drawing to save the utility(ies) or to meet obligatory requirements within the accepted price.	Bidder request for price variation in case of any change in span configuration.	As per Tender Conditions.
39	Employer's requirements 53 of 140 Functional	2.10 Scope of work under BOQ Items (Schedule-B) (ii) […] Payment for diversion of chartered utilities will be part of lumpsum schedule- A. The carriage of excavated earth involved in utility diversion is covered under lump-sum quoted price. No claim as regard to delay on account of execution of utility diversion will be entertained. All temporary diversion of any utilities done to facilitate the construction activity shall also be the part of the lump sum quoted price. No payment shall however be made for supporting the utilities, carriage of excavated earth during execution of work.	Bidder request that any uncharted utilities shall be paid as per the actuals.	2.1.B.4 of Employer's requirement functional Part-1 Civil wherein it is mentioned that cost of uncharted utility shifting will be paid separately under relevant item of BOQ. In case of non availability of item in relevant BOQ, the rate is to be finalised as per GCC Clause 12.5B. For Viaduct section- Please refer Addendum 3.
40	UPMRC/AGCC-05/Vol-4/OCS/Part-2/Architectural & Plumbing, Clause No 23.3 Page No.162	Table 23-2: Domestic Wastewater Characteristic.	(i) As per Schedule-C (C2 NDSR) of BOQ, S. No 15, The **BOD** of treated Sewage is <20 mg/l but as per technical specification the BOD of Treated Sewage <30 mg/l please Clarify. (ii) As per Schedule-C (C2 NDSR) of BOQ, S. No 15, The **COD** of Raw Sewage is 400-600mg/l but as per technical specification the COD of Raw Sewage 400-500 mg/l please Clarify. As per Schedule-C (C2 NDSR) of BOQ, S. No 15, The **TSS of Raw Sewage** is 200-300mg/l and of Treated Sewage is <30mg/l but as per technical specification the TSS of Raw Sewage 200-250 mg/l and of treated sewage is <100mg/l please Clarify	Please refer Addendum-3
41	UPMRC/AGCC-05/Vol-4/OCS/Part-2 /Architectural & Plumbing, Clause No 22.3.2 Page No.140	Cl 22.3.2 Water supply system water supply system for station is through overhead tank by gravity	As per schematic drawing **(DRG No. AGCC 05-11718A-TDR-GKT- ME-PLB-61202)** of water supply booster pump is provided in between Overhead tank and building. Please clarify.	Please quote as per BOQ.
42	DRG No: AGCC05-11718A- TDR-GKT-ME-PLB-61202	Water Supply System- Schematic Diagram	As per schematic drawing **(DRG No. AGCC 05-11718A-TDR-GKT- ME-PLB-61202)** of water supply water meter is provided but in BOQ of schedule C (C2 NSDR) it is missing. Please clarify.	Please quote as per BOQ.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
43	UPMRC/AGCC-05/Vol-4/OCS/ Part-2/ Architectural & Plumbing, Clause No 22.3.2 Page No.150	**Cl 22.4.3 Piping Materials 4 Traps** Floor Traps: As per Technical specification, Floor trap shall be provided of UPVC (SWR) confirm to IS:14735:1999 with deep seal for 50 mm, The trap and waste pipes shall be set in cement concrete blocks of size 300mm*300mm and of required depth, firmly supported on the structural floor.	Floor trap is missing in BOQ (schedule C). Please clarify.	Please refer Clause 12.5 B(i) of GCC.
44	Volume -06 E&M Drawings Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61238	Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61238	The Bidder requests the employer to provide the layouts with a better clarity.	Please quote as per BOQ and also refer Addendum 03.
45	Volume -06 E&M Drawings & BOQ- 187649 Schedule D (E&M Works)	Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61237 & BOQ Line Item- 1.0	Bidder noticed there is a mismatch in VRF unit between the quantities mentioned in the BOQ (14HP x 6Nos & 16HP x 1No) and in the schematic (14HP x 3Nos) each for 3 stations. However, Bidder understands that the schematic provided is typical for only 3 stations. However, another 16 HP as mentioned in the BOQ is understood is a requirement for the third station. Please Clarify.	Please quote as per BOQ and also refer Addendum 03.
46	Volume -06 E&M Drawings & BOQ- 187649 Schedule D (E&M Works)	Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61237 & BOQ Line Item- 1.1	Bidder noticed that there is a mismatch between the quantities of indoor units mentioned in the BOQ and the schematic for 3 stations. However, Bidder understands that the schematic provided is typical for all the three stations. However, a 2.5 TR FCU has been indicated in the BOQ which is understood as a requirement for the third station. Please Clarify.	Please quote as per BOQ.
47	Volume -06 E&M Drawings & BOQ- 187649 Schedule D (E&M Works)	Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61237 & Drg. No. AGC05-11718A-TDR-GKT-ME-VAC-61240 BOQ Line Item- 1.20	Bidder noticed that there is a mismatch between the quantities of axial fans indicated in the VAC schematic (12 Nos.) and the BOQ (6 Nos). Please Clarify.	Please quote as per BOQ.
48	Volume -06 E&M Drawings & BOQ- 187649 Schedule D (E&M Works)	Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61237 & BOQ Line Item- 1.1 (c)	Bidder noticed that there is a mismatch between the quantities of cassette units mentioned in the BOQ and the schematic. 2.5 TR (2Nos.) have been mentioned in the BOQ, whereas the same has not been indicated in the schematic. Please Clarify.	Please quote as per BOQ.
49	Vol_04_AGCC_05_OCS_ODS _SOD/E 01 MV Switchgear/8.3 Constructional features/8.6 Switch board bus bars/	The bus bar and interconnections shall be of electrolytic tinned copper and of rectangular. cross sections suitable for full load current for phase bus bars and full rated current for neutral bus bar as specified in BOQ and shown on drawings and rated for a temperature rise over the ambient temperature specified as per IEC standards. based on insulated conductor rating and the maximum current density for copper shall be 1.4 amp per mm2 for ratings up to 500 Amp and beyond 500-amp maximum current density shall be 1.2 amp per mm2.	The specification specifies electrolytic tinned copper bus bar for the panels, whereas Aluminum busbars are considered in the SLD and BOQ. The bidder seeks confirmation on the bus bars material and current density details for the panels.	Bus bar shall be Aluminum. Please also refer Addendum-03.
50	BOQ_187649/ Schedule D (E&M ork)/ AC Power Panel (ACPP & MLP) / Outgoings BOQ_187649/ Schedule D (E&M Work)/E.02 Distribution Boards	B)06 nos.63A,415V, Ics=10KA,4P MCB's (Motor Duty) with indicating lamps on/off to give indications with multifunction meter along with required CT's Etc.	Quantity of LDB's, Panel configuration such as Breaker and kA ratings are mismatch with SLD and BOQ. Bidder understands that the BOQ is definitive and will take precedence over all other tender documents. Kindly confirm.	Please quote as per BOQ and also refer Tender Conditions.
51	Vol_06_E_&_M_Drawings	General	The tender documents include the single-line diagram (SLD) for Sikandra station. Bidder understands that the given SLD (SIKANDRA) is typical for the remaining two stations (ISBT and Guru Ka Taal). Kindly confirm	Bidder's understanding is correct as SLD is typical for all three stations.
52	BOQ_187649/ Schedule D (E&M Work)	MV switchgear	The gas flooding system is only considered for AMF panels in the Electrical BOQ. Kindly Confirm Bidder seeks the gas flooding system requirements for MDB's.	Please quote as per BOQ and also refer section E.10.Section F.06

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
53	BOQ_187649	General	The APFC panels, UPS & batteries, and Emergency Power Panel (UPS) are not captured in the BOQ. Bidder understands that these items are not in the scope of works. Kindly confirm.	Please quote as per BOQ.
54	Vol_04_AGCC_05_OCS_ODS_SOD/ Section :E.01/13.Liist of switch boards/page no.508	Switch boards and panels as per following list need be provided. The incoming & outgoing feeders, indications, metering, and protection details are shown on various drawings as also referred in BOQ. A Main Distribution Board MDB B Essential power panel EPP C Main Lighting Panel MLP D Emergency Power Panel (UPS) EMLP E Air conditioning Power panel ACPP F Escalator Power Panel ESPP G Fire pump panel FPP H Water pump panel WPP I Passenger Amenities Panel PAP J Light Distribution Boards LDB H Capacitor Panel CAP		It will be provided during detailed designing stage. Please quote as per BOQ.
55	Vol_06_E_and_M_Drawings/ Electrical Schematic diagram for Panels Overall/ Page No.02	MDB	Feeder provision for the APFC panel is not considered in MDB. Bidder seeks the requirement of power factor correction in the system.	Please quote as per BOQ.
56	BOQ_187649/ Distribution Boards.	General	Power distribution Board (PDB), UPS power DB quantities are not captured in BOQ. Kindly clarify.	Please quote as per BOQ.
57	BOQ_187649/Distribution Boards BOQ_187649/ E.08 External Lighting /3.1 poles	General	Feeder Pillars, poles for street lighting (high bays) are not captured in BOQ. Bidder seeks the requirements of the same. Kindly clarify.	Please quote as per BOQ.
58	BOQ_187649/E.08 External Lighting	General	Viaduct Light fixtures quantities are not captured in BOQ. Kindly clarify	Viaduct lighting is not under the scope of E&M Contractor. Please quote as per BOQ.
59	BOQ_187649/Distribution Boards	General	Viaduct small power socket DB's are not captured in BOQ and SLD. Bidder seeks that requirement of power sockets (maintenances sockets) for viaduct.	Viaduct switch/sockets are not under the scope of E&M Contractor. Please quote as per BOQ.
60	BOQ_187649 - E-01. 1. t &u	Cable supplying and laying from main LT panel to RTU panel to done by E&M contractor. Screened cable for SCADA connectivity to be laid inside main distribution board as well as from main panel to RTU Panel	Bidder seeks the scope of screened cable between the main panel and the RTU Panel. And the respective item is not captured in the BOQ.	Please refer Addendum-03.
61	VOL_06_E_AND_M_DRAWINGS	General	Bidder request the employer to provide BMS Tray layout for ISBT, Sikandara & Guru Ka Taal Metro station	Please quote as per BOQ and also refer Clause E.03
62	VOL_06_E_AND_M_DRAWINGS	General	Bidder request the employer to provide BMS architecture for ISBT & Sikandara Metro Station	Please refer Addendum-03.
63	VOL_06_E_AND_M_DRAWINGS	General	Bidder request the employer to provide FAS architecture for ISBT & Sikandara Metro Station	As per Tender Conditions and also quote as per BOQ.
64	VOLUME 4 OCS, ODS & SOD	General	Bidder request the employer to provide technical specifications for Building Management System	Please refer Addendum-03.
65	VOLUME 4 OCS, ODS & SOD	Table – SCADA Signals	Bidder request the employer to provide IO list for ISBT, Sikandara & Guru Ka Taal Metro station	Please refer Addendum-03.
66	VOLUME 4 OCS, ODS & SOD	General	Bidder request the employer to provide Operational & Functional requirement for Building Management System	Please refer Addendum-03.
67	UPMRC/AGCC-05/Vol-1/NIT	**Date & time of Submission of Tender online:** Tender submission start date: 09.12.2023 (11:00 hrs). Tender submission end date: 19.12.2023 (15:00 hrs).	Since the subject project is an amalgamation of various complex and long lead items, the employer is requested to extend the tender submission duration by at least 30 days more in order to submit the optimum bid.	Please refer Addendum for extension of bid submission uploaded on CPP Portal.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
68	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/ Section-B/Functional Part-1 ,2.8 CASTING YARD & DUMPING AREA	For casting yard, batching plant and other activities a plot of land of approx. 5 Ha (approx) or as required for timely completion of work has to be arranged by the contractor at his own cost.	The employer is requested to ammend relvant contractual provions for arrangement of land for casting yard or offices/laboratories etc. near to site (of 5 hectares approx. area at one or more location) under its scope, in line with general MRTS industry practice which would be very difficult as well as time consuming task if arranged by any private organisation instead of Govt. organisation (i.e. employer). Kindly consider our request while duly considering such stringent time schedule.	As per Tender Conditions.
69	UPMRC/AGCC-05/Vol. 3/ Employer's R equirement (Appendix)/Appendix 2B	(I) VIADUCT - Key Date 1 (4 weeks) - Submission of Detailed Works programme including finishing and E&M work...	Employer is requested to review the key date description and change the same to initial outline work programme since it would not be possible for any construction agency to submit the detailed programme within such short duration subject to availability of sufficient GFC drawings and site details.	As per Tender Conditions.
70	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/Section-B/Functional Part-1, Clause: 2.1.A.3	No claim as regard to delay on account of execution of utility diversion will be entertained.	The contractor believes that extension of time pursuant to GCC sub-clause 8.4.1 shall be granted if execution of utility diversion is delayed by utility owing agency the Kindly confirm the same.	As per Tender Conditions.
71	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/ Section-B/ Functional Part-1 Clause: 1.4	The Contractor shall be responsible for obtaining all necessary approvals from the relevant Public/Government/Local/Statutory or any agencies in the design and construction of the works.	Employer is requested to provide status of already accorded statutatory & working permissions for construction of AGCC.	As per Tender Conditions.. Agra being in TTZ area,the bidder shall visit the site and judiciously assess the various approval required from all local bodies and utility owning agencies. Kindly also refer clause A7 of ITT.
72	UPMRC/AGCC-05/Volume–2/SCC Clause 11.1.3	**c) Adjustment on Account of Price adjustment** The price adjustment shall be applicable only beyond 2 percentage of variation of the contract price i.e. where the resultant increase is lower than two per cent of the contract price, no price adjustment will be made in favour of the contractor.	The employer is requested to waive off this clause as no ceiling limit is considered for price adjustment in MRTS project. Kindly consider our request as the same is being followed across all similar projects. OR The employer is hereby requested to amend the clause as follows,"The price adjustment shall be applicable only beyond 2 percentage of variation of the contract price (Excluding Schedule A) i.e. where the resultant increase is lower than two per cent of the contract price, no price adjustment will be made in favour of the contractor"	As per Tender Conditions.
73	UPMRC/AGCC-05/Volume–2/SCC Clause 11.1.3	**c) Adjustment on Account of Price adjustment** Where stage payments are made after consideration of inflation, no price variations will be admissible on such portions of the price, after the dates of such payment.	The employer is requested to waive off this clause as entire structural works are under pricing schedule and shall be paid in stage payment and thus challenges the purpose of providing price adjustment/price variation. Also, contractor's cash flow will be disrupted if price variation will not be applicable on structural works. As discussed in pre-bid meeting and confirmed by employer's representative, Price Variation shall be applicable on all schedules of BOQ except that of E&M works. Thus contractor belives that Price Variation will be applicable on Schedule A. Kindly confirm the same.	As per Tender Conditions.
74	UPMRC/AGCC-05/Vol-8/Geotechnical Report	**GEOTECHNICAL INVESTIGATION REPORT** FOR CONSTRUCTION OF AGRA METRO PROJECT, AT AGRA, UTTAR PRADESH, INDIA. (AGCC-01 AGRA ELEVATED METRO PROJECT).	The provided geotechnical investigation report is for Pkg. AGCC-01. Thus, employer is hereby requested to provide Geotechnical Investigation Report for Pkg. AGCC-05 mentioning the locations and/or chaingae of Bore Holes for design purpose and submission of optimum bid.	Provided Geotechnical Report is for tender AGCC-05. The chainage/location detail is attached in Addendum-3.
75	UPMRC/AGCC-05/Vol-4/OCS/ Civil works for Viaduct& Station 12.1.4 EXPANSION JOINTS	The design of expansion joint shall be done as per Revised Highways "Interim Specification for expansion joint" issued by MOST circular No. RW/NH – 34059/1/96 – S & R dated 30th November 2000…..	Employer is hereby requested to ammend the prescribed contract condition, as follows: design of expansion joint shall be done as per **latest MORTH order circular/letter as on date of tender opening**... (considering the fact that MORTH regulary updates the list of empanel agencies based on their meeting prescribed criteria.	As per Tender Conditions.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
76	VOL_02_GCC_SCC_AGCC_05 GCC Clause: 4.12	**Rights of Way and facility** The Employer will acquire and provide land for Permanent Works and right of way (within UPMRC's land) for access thereto over routes established by the Contractor.	Employer is requested to provide availability status of clear work front for execution of works and priority stretches & stations	Please refer Clause 2.2 of GCC.
77	UPMRC/AGCC-05/Vol-2 GCC Clause: 4.2.1	**Performance Security** (a) If variation amount on plus side exceeds 25% of the Original Contract Value either due to Employer's variation or due to Contractor's variation, the Contractor shall submit additional performance security equal to an amount of 10% of the variation amount exceeding 25% of the Original Contract Value.	Employer is requested to amend the subject clause as follows: " If variation amount on plus side exceeds 25% of the Original Contract Value either due to Employer's variation or due to Contractor's variation, the contractor shall submit Additional Performance Security **equal to an amount of 3% of the variation reduced by an amount equal to 1.5% of the work already certified as completed by the Engineer-in-Charge on the date of variation subject to a maximum limit of 3% of the variation amount.**" Kindly consider the same.	As per Tender Conditions.
78	UPMRC/AGCC-05/Vol-2/SCC SCC Clause: 11.1.3	**Adjustment in Contract Price** No adjustment in the contract price on account of inflation shall be done for E & M works.	The employer is requested to provide price adjustment/variation for E&M works as well. As the same has a high probability of rate fluctuations.	As per Tender Conditions.
79	VOL_02_GCC_SCC_AGCC_05 GCC Clause: 15.1	**Professional Indemnity Insurance** This insurance, which shall ensure the Contractor's liability by reason of professional negligence and errors in the design of the works, shall be valid from the date of commencement of Works, until 5 years after the date of issue of Performance Certificate.	As per standard practice to maintain contractor's cash flow Professional Idemnity Insurance shall be valid from date of commencement of works to project completion. Kindly consider the same.	As per Tender Conditions.
80	VOL_02_GCC_SCC_AGCC_05 GCC Clause: 11.6 (b)	**Payment- Interim and Final** Next 80% interim payment shall be made only after 100% payment of preceding interim payment certified has been completed.	Employer is requested to amend the GCC clause 11.6 (b) as follows "Next **100%** interim payment (excluding provisional payment) shall be made only after 100% payment of preceding interim payment certified has been completed."	As per Tender Conditions.
81	Tender Drawings	**Tender Drawings**	The employer is requested to provide AutoCAD file of tender drawings & KMZ file of project aligment as the provided scanned copy is not clear.	AutoCad version of all drawings are being uploaded on CPP Portal. However, in case of any discrepancy between soft copy and hard copy, hard copy attached with tender will prevail.
82	VOL_02_GCC_SCC_AGCC_05 GCC Clause: 4.2.1	**Performance Security** Performance Security, for an amount of ten per cent of the Contract value	Ministry of Finance, Department of Expenditure has issued office memorandum no. F.No.G-20016/01/2020-TF-II dated 17.11.2020 for reduction of Performance Security to 3% for all exisiting/forthcoming projects for faciliation of construction agencies. Employer is hereby requested to amend the relevant clause, accordingly.	As per Tender Conditions.
83	VOL_02_GCC_SCC_AGCC_05 GCC Clause: 2.2	**Access to and Possession of the Site** The Employer shall grant the Contractor right of access to, and / or possession of, the Site progressively for the completion of Works.	1. The employer is requested to clarify the viaduct stretch which will be handed over in progressive manner as specified in contract agreement. 2. The employer is requested to specify the status of land availability, R&R issues and status of already obtained permissions if any, by it.	Required land/areas shall be made available in accordance with clause 2.2 of GCC.
84	UPMRC/AGCC-05/Vol. 3/ Employer's Requirement (General) Clause no.: 10.4	**TRAINING** The Contractor shall provide training for the Employer's staff to enable the Employer to make proper use of any software(including BIM) and its new versions. In case Contractor fails or unable to provide training, the Engineer may ask for value engineering proposal.	The employer is requested to provide number of personnels for software training for submission of optimum bid.	3-5 Person

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
85	Tender Drawing No. AGCC05-11718A-TDR-EST-CV-STR-30505	Minimum clearance from Road Level: 5.6 meter	A conflict has been observed for minimum vertical clearance and thus employer is requested to provide minimum vertical clearance to be considered for design & execution purpose so that optimum bid can be submitted, accordingly.	Please refer Clause 2.1.A of Employer's Requirements/Section-B /Functional Part-1.
86	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/Section-B/Functional Part-1, Clause: 2.1.A (Note no. 04)	Contractor has to maintain a minimum vertical clearance of 5.5m from road surface to bottom of any structure.		
87	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/Section-B/Functional Part-1, Clause: 2.1.A (Note no. 14)	Any change in rail level up to +/- 300mm from the tender drawing subject to fulfilment of the other tender conditions will be part of lump sum price and nothing will be paid/deducted for this variation.	The employer is requested to amed the subject clause as follows: "Any change in rail level from the tender drawing shall be payable on **pro-rata basis**" OR "Any change in rail level up to **+/- 100mm** from the tender drawing subject to fulfilment of the other tender conditions will be part of lump sum price and nothing will be paid/deducted for this variation. Kindly consider our request.	As per Tender Conditions.
88	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/Section-B/Functional Part-1, Clause: 2.1.B.4	Shifting/diversion cost of all the charted utilities is included in Lump Sum price of Schedule-A.	The employer is requested to provide charted & uncharted utility data for the purpose of optimum bid submission.	Please refer definition of charted and uncharted utility as defined in employer's requirement Part-General under clause definition and interpretation. The separate drawing is attached and titled as Utility Drawing in Addendum-3.
89	VOL_02_GCC_SCC_AGCC_05 GCC Clause: 4.2.1 (ii)	Performance Security in the form of two Bank Guarantees/FDRs, each for an amount of 5% of Contract Value with one Bank Guarantee/FDR valid up to 6 months beyond the date of completion of work and second Bank Guarantee/FDR valid up to 6 months beyond the Defect Liability Period.	The employer is requested to cosider the DLP period from the date of taking over/partial taking over of project works by employer/Engineer. Kindly consider our request.	As per Tender Conditions.
90	UPMRC/AGCC-05-/Vol-3/ Employer's Requirements/Section-B/Functional Part-1, Clause no.: 2.1.A.3 (xxi)	Final carpeting of road (including base preparation wherever required) within barricading areas and outside the barricade i.e. overall width of road along the alignment as per technical specification of road owning agency shall be done before handing over to road owning agency.	The employer is requested to amend subject clause as follows, "Final carpeting of road (including base preparation wherever required) within barricading areas shall be done before handing over to road owning agency." The contractor's scope of work includes restoration/final carpeting of area falling under barricading only as per standard practice of MRTS project. Kindly consider our request.	As per Tender Conditions.
91	General	-	We request you to kindly provide the Auto CAD drawings for this project please.	AutoCad version of all drawings are being uploaded on CPP Portal. However, in case of any discrepancy between soft copy and hard copy, hard copy attached with tender will prevail.
92	General	-	The drawings provided in the tender are not clear, since the same are scanned copies. Hence, we request you to kindly Provide the tender drawings clearly please.	AutoCad version of all drawings are being uploaded on CPP Portal. However, in case of any discrepancy between soft copy and hard copy, hard copy attached with tender will prevail.
93	General	-	We request you to kindly provide the latest Geotechnical report for this project please.	Geotechnical report provided in the bid is latest report and for AGCC-05 contract. The bore hole chainage/location is attached in Addendum-3.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
94	General	-	Hindrance free site may please be handover before commencement of work - Please confirm.	Required land/areas shall be made available in accordance with clause 2.2 of GCC.
95	General	-	Please confirm any working hour's restriction is there for this project.	As per Tender Conditions. Please also refer clause A7 of ITT and 6.5 of GCC. The bidder should obtain requisite information and satisfy themselves regarding the relevant site and working conditions. However, in UPMRC's best knowledge, there is no restriction is to be imposed. It must however be noted that Government/ administration's rules, regulations & guidelines as applicable from time to times shall have to be complied.
96	General	-	We request to please provide the list of any approvals, clearances to be obtained by the Contractor.	As per Tender Conditions. Agra being in TTZ area, the bidder shall visit the site and judiciously assess the various approval required from all local bodies and utility owning agencies. Kindly also refer clause A7 of ITT.
97	General	-	We request you to please provide the BOQ in editable excel format indicating complete description of items, since the provided BOQ is restricted for editing and some of the item descriptions are hidden beyond the boundary of the cell .	Revised BOQ is being uploaded on CPP Portal.
98	General	-	We presume that, the Land for the Site offices for Employer and Contractor shall be provided free of cost by the Employer at designated site locations. Please confirm.	As per Tender Conditions.
99	General	-	What are the list of documents required to be submitted along with tender for the proposed Designer. Kindly clarify please.	No documents are required to be submitted along with tender for proposed designer. Please also refer Clause 2.1.A.2 of the Employer Requirements/ functional/part-1
100	General	-	We presume that, the Design Verification/Proof checking/ Peer review for the permanent structures design will be in the scope of the Employer. Kindly confirm.	Yes, it is confirmed.
101	General	-	We requesting you to please clarify for the Mullion column, Lintel beam, Sill concrete work is a part of Lumpsum or Claimed in Architecture item rate BOQ	Please refer Clause 2.1.B.1(VI) of Employer Requirements Section-B/ functional/ PART-1
102	General	-	We requesting you to please clarify for the screed concrete work is a part of Lumpsum or Claimed in Architecture item rate BOQ	Please refer Clause 2.1.B.1(VI) of Employer Requirements Section-B/ functional/ PART-1
103	General	-	We requesting you to please clarify the Station service road, Pedestrian walk way is a whose scope, If these are GC scope is a part of Lumpsum or Claimed in Architecture item rate BOQ	It is part of lump sum in Schedule A.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
104	General	-	We requesting you to please provide the Length of FOB & detail Auto cad drawing. Already given PDF drawing is not clarity	AutoCad version of all drawings are being uploaded on CPP Portal. However, in case of any discrepancy between soft copy and hard copy, hard copy attached with tender will prevail.
105	General	-	We requesting you to please clarify for the architectural façade, partition work structural support is a part of Lumpsum or Claimed in Architecture item rate BOQ	Please refer Clause 2.1.B.1(VIII) of Employer Requirements Section-B/ functional/ PART-1
106	General	-	We request the Employer to kindly provide the stage wise payments for the E&M works to maintain a smooth cash flow please. 1. Upon supply of Material at site - 75% 2. Upon Completion Installation - 20% 3. Upon Testing and Commissioning - 5%	As per Tender Conditions. Please also refer Employer Requirements.
107	Volume 2 - GCC & SCC - SCC for Clause 2.2	The Employer shall grant the Contractor right of access to, and / or possession of, the Site progressively for the completion of Works.	We request you to please confirm that, For any such delay in handing over of site, Contractors will be entitled to reasonable extension of time and cost compensation.	As per Tender Conditions.
108	Volume 2 - GCC & SCC - SCC for Clause 2.3	It shall be Contractor's exclusive responsibility to get approvals, permits or license required for the Contract. However, the Employer shall (where he is in a position to do so) provide reasonable assistance to Contractor at the request and cost of the Contractor in getting Permits, License or Approvals required during the Contract.	We request to please provide the List of Permits, License, etc., to be obtained by us for this project.	As per Tender Conditions.
109	Volume 2 - GCC & SCC - SCC for Clause 4.12	The Employer will acquire and provide land for Permanent Works and right of way (within UPMRC's land) for access thereto over routes established by the Contractor.	We request you to provide the status of land acquisition and provide schedule of land handing over please.	Required land/areas shall be made available in accordance with Clause 2.2 of GCC.
110	Volume 2 - GCC & SCC - SCC for Clause 4.18	The Contractor shall be responsible for making his own arrangements at his own cost to obtain supply of water, electricity or gas for the Works. The Employer where feasible may at its discretion assist the Contractor in this respect.	We request to kindly provide the water & power for construction works at free of cost at casting yard please.	As per Tender Conditions.
111	Volume 2 - GCC & SCC - SCC for Clause 4.18	The Contractor shall be responsible for making his own arrangements at his own cost to obtain supply of water, electricity or gas for the Works. The Employer where feasible may at its discretion assist the Contractor in this respect.	We request to kindly provide the water & power for construction works at free of cost within the project alignment please.	As per Tender Conditions.
112	Volume 2 - GCC & SCC - SCC for Clause 11.1.3	No adjustment in the contract price on account of inflation shall be done for E & M works. (Schedule 'D' of BOQ)	We request you to please include the Adjustment in Contract Price clause for E & M works (i.e. Schedule D of BOQ) also.	As per Tender Conditions.
113	DRAWINGS	Schedule A - Existing Utilities Schedule B2 - Shifting of Unchartered Utilities	We are Requesting you to kindly share the Existing Utilities and Shifting Uncharted drawing for Civil, Electrical, Plumbing and Telecom works pertaining to the scope of this package please. Note: The same are provided for the KNPCC12 package by M/s. UPMRCL.	Please refer definition of charted and uncharted utility as defined in employer's requirement Part-General under clause definition and interpretation. The separate drawing is attached and titled as Utility Drawing in Addendum-3.
114	Vol_03_AGCC_05_Employee_ Requirement - EMPLOYER'S REQUIREMENTS - DESIGN	The Contractor shall establish an office for his core design team at the Site in (i). The core design team shall function from this office and all meetings and discussions relating to design shall be held in this office.	We request you to please confirm that, Only the Design coordinators shall be deployed at the site at Agra, all the other Key personnel's of Designer's shall operate from their respective design offices.	As per Tender Conditions.Please also refer Clause no.1(iii) of Employer's Requirements (design).
115	Vol_04_AGCC_05_OCS_ODS _SOD - List of Approved Make	MV/LV switchboards	We presume that the Channel Partners of the authorized OEM manufactures can be considered as approved makes. Kindly confirm please.	As per Tender Conditions.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
116	Vol_04_AGCC_05_OCS_ODS_SOD - List of Approved Make	Lightning Protection, Earthling system	Requesting you to please provide the Approved Make List for Lightning Protection, Earthling system. Can we consider the JMV, CAPE, DHEN and OBO Makes for Lightning Protection system? Please Confirm.	As per tender conditions. Please also refer vendor list attached in tender documents.
117	Vol_04_AGCC_05_OCS_ODS_SOD - List of Approved Make	DG Set	Request you to please include KIRLOSKAR also as an equivalent make for DG Set.	Please quote as per BOQ.
118	Vol_04_AGCC_05_OCS_ODS_SOD - List of Approved Make	HVAC System VRF/ VRV Units	Requesting you to please add the Make list for HVAC System VRF/ VRV Units, FCUs, LG, HITACHI (JCI), Makes also. Please confirm.	As per tender conditions. Please also refer vendor list attached in tender documents.
119	Vol_06_E&M DRAWING_Part_03- MV Switchgear	AGCC05-11718A-TDR-SKN-EL-SLD - 41308 - Electrical and schematic drawing	Panel incoming and outgoing breaker details are not visible properly in the drawing. Request you to please provide the clear visible drawing	Please refer Addendum-03.
120	Vol_08_AGCC_05_Geotechnical_Report	4.3.5 Summary of Boreholes	Kindly Provide the chainage locations of the Boreholes provided in the tender please.	Chainage location of Bore Holes are attached in Addendum-3.
121	BOQ - Schedule B2	-	We request you to please provide the Bill of quantities for the BOQ - Schedule B2 (i.e. Shifting of Uncharted Utilities) as only rates are mentioned.	Please refer Clause 3 of Preamble of BOQ.
122	BOQ - Schedule D (E& M WORKS) Vol_06_DRAWING_Part_03	AGCC05-11718A-TDR-GKT-EL-FAS - 51204	Only schematic drawings for Fire alarm works provided in the tender. Requesting you to please provide each level fire alarm system drawing for further clarity.	It will be provided during detailed designing stage. Please quote as per BOQ.
123	BOQ - PART-A ELECTRICAL WORKS , E.01- MV Switchgear & Vol_04_AGCC_05_OCS_ODS_SOD	PART-A ELECTRICAL WORKS , E.01- MV Switchgear & Specification SECTION: E.01, Page No: 492 (34)	As per specifications, All the MV Switchgear Panels are (TTA) Totally Type tested Assemblies as per IEC-61439. Please confirm	It will be provided during detailed designing stage. Please quote as per BOQ.
124	BOQ - Schedule D - Part F: BUILDING MANAGEMENT SYSTEM FOR STATION	BUILDING MANAGEMENT SYSTEM FOR STATION	Requesting you to kindly provide the Approved Makes and Technical specifications for BMS System please.	Please refer Addendum-03.
125	BOQ - Schedule D - PART-A ELECTRICAL WORKS , E.02- Distribution Boards & Volume 5 - Technical Specifications_AGCC_06	BOQ - PART-A ELECTRICAL WORKS , E.02- Distribution Boards	Requesting you to please provide the Distribution Board schematic diagram for Lighting and Power circuit separately.	It will be provided during detailed designing stage. Please quote as per BOQ.
126	BOQ - Schedule D - PART-A ELECTRICAL WORKS , E.04- Conduit Wiring	PART-A ELECTRICAL WORKS , E.04- Conduit Wiring - Point wiring - BOQ No: 1.1 to 1.6	Requesting you to please provide the Lighting and Power Layout (Auto Cad & Pdf) with circuit details for each level. Without drawings the actual average measurements per point in point wiring is not possible. Please Clarify.	It will be provided during detailed designing stage. Please quote as per BOQ.
127	BOQ - Schedule D - PART-A ELECTRICAL WORKS , E.05- Indoor Lighting and Fans	PART-A ELECTRICAL WORKS , E.05- Indoor Lighting and Fans	Requesting you to please provide the Indoor Light Fixtures & Fans Drawing with Circuit details.	It will be provided during detailed designing stage. Please quote as per BOQ.
128	BOQ - Schedule D - PART-A ELECTRICAL WORKS , E.06- PROTECTIVE EARTHING	PART-A ELECTRICAL WORKS , E.06- PROTECTIVE EARTHING	Requesting you to please provide the Earthing schematic Layout, EarthMat drawings and Typical details for Earthing System	It will be provided during detailed designing stage. Please quote as per BOQ.
129	BOQ - Schedule D - PART-A ELECTRICAL WORKS , E.07- LIGHTNING PROTECTION	PART-A ELECTRICAL WORKS , E.07- LIGHTNING PROTECTION	Requesting you to please provide the Lightning Protection system drawings and Typical details.	It will be provided during detailed designing stage. Please quote as per BOQ.
130	BOQ - Schedule D - PART-A ELECTRICAL WORKS , E.08 - External Lighting	PART-A ELECTRICAL WORKS , E.08- External Lighting	Requesting you to please provide the External Lighting Layout drawings and Typical details.	It will be provided during detailed designing stage. Please quote as per BOQ.

Sl. No.	Reference Volume / Clause	Existing Clause	Queries	UPMRC's Reply
131	General	-	We request you to kindly extend the due date of submission of tender for one month from the date of receipt of reply to pre bid queries to enable us to get the competitive quotes from our various sub vendors and quote our tender competitively for this project.	Please refer Addendum for extension of bid submission uploaded on CPP Portal.
135	Clause 1.4.2 /Vtinimum Eligibility Criteria: A. Work Experience:	A. Work Experience: (i) The tenderers will be qualified only if they have successfully completed or ** substantially completed *similar work(s) as a prime contractor / member ol JV, completion date (s) of which (ailing during last seven years ending last day o(the month previous to the month of tender submission end date as given below (Value shall be rounded off to two decimal places): At least one "similar work" * o(value o(INR 237.42 Crore or more. OR At least Two “similar works" * each of value of INR 148.39 Crore or more. OR At least Three “similar works" each of value of INR 118.71 Crore or more. ” “Similar Work/s" for this tender shall be “Construction of Viaduct (which may include station along with viaduct / Bridge / Flyover (excluding approaches & embankments) having a pre/post-stressed concrete super-structure”.	We presume that (or similar work as mentioned herein i(more than one bridges are executed in the single contract and which total value is equal or more than to required value of similar as applicable for one/ two/ three similar works as applicable such a proiect shall be considered for meeting the eligibility criteria as mentioned herein. For e.g. Total Project Cost : 1000 Crores In its the cost of Bridges are: Bridge A: 100 Crores Bridge B: 80 Crores Bridge C: 60 Crores In above scenario the proiect having total costs o(Bridges o(Rs 240 Crores shall be considered for meeting eligibility criteria of” At least one “similar work" ” of value of INR 237.42 Crore or more.” Please Confirm.	As per Tender Conditions.
136		Due Date Extension	We are keenly interested to participate in the above bid, but looking into the clarity required for participation in bid as requested above and looking into the size and complexity of project, we request the Authority we reqUest the AUthority to please extend the bid Due date of the Project by 4 weeks from the date of pre bid reply received from your end for submitting a comprehensive bid.	Please refer Addendum for extesion of bid submission uploaded on CPP Portal.

Summary Sheet of Addendum No.03: AGCC-05

Tender AGCC-05: Design and Construction of elevated viaduct and 3 Nos. elevated stations (viz. ISBT, Guru Ka Taal & Sikandara Metro Station) including Civil, Associated Ancillary Structure, Architectural Finishes, Water Supply, Sanitary Installation, Drainage, External Development, Fire Fighting, Fire Detection, E&M works and PEB structures on Balance Section chainage (-) 42.96 m to 3682.941 m of Corridor-1 of Agra Metro at Agra, Uttar Pradesh, India

S. No.	Reference Clause/ Page No.	Clause in Existing Tender Document	Revised Clause	Revised Clause placed as Annexure/ Pg. No.
1	Vol. 4, OCS , Clause EOO-3.2.3 - Tcchnical Specification: Page 229	All bus bars shall be electrolytic copper with purity of 99.9% and rated for the incoming switch or breaker rating. Current density shall be 1.4 amp/sq. mm up to 500 amp and 1.2 amp/sqmm beyond 500 amp. The Bus Bar temperature rise over ambient shall be as per IS/IEC standards. The calculations for temperature rise should be furnished for approval	All bus bars shall be electrolytic ~~copper with purity of 99.9%~~ **Aluminium** and rated for the incoming switch or breaker rating. Current density shall be ~~1.4 amp/sq. mm up to 500 amp and 1.2 amp/sqmm beyond 500 amp~~. **as per IEC or relevant standards** The Bus Bar temperature rise over ambient shall be as per IS/IEC standards. The calculations for temperature rise should be furnished for approval.	Please refer Annexure -1 of Addendum-3 Page 229R
2	Vol. 4, OCS , Clause EO1-8.6.1, 8.6.9 & 8.8.1 & EO1-8.14.2 - Tcchnical Specification: Page 245,246, 247 & 248	The bus bar and interconnections shall be of electrolytic tinned copper and of rectangular cross sections suitable for full load current for phase bus bars and full rated current for neutral bus bar as specified in BOQ and shown on drawings and rated for a temperature rise over the ambient temperature specified as per IEC standards. based on insulated conductor rating and the maximum current density for copper shall be 1.4 amp per mm2 for ratings up to 500 Amp and beyond 500 amp maximum current density shall be 1.2 amp per mm2. Bus bar supporting system shall be suitable to withstand the stresses of a 31 MVA sustained symmetrical fault level at 415 volts for 1 second or as per schedule of quantities. ' Feeder connections shall be solid copper bars duly insulated with bimetallic clamps wherever required. ' Instruments and indicating lamps shall not be mounted on the Circuit Breaker Compartment door. The current transformers for metering and for protection shall be mounted on the solid copper busbars with proper supports A main earth bar of copper shall be provided throughout the full length of the Switch Board to earth all switchgears with a provision to make connections to the sub-station earth's on both sides with double bi- metallic washers.	The bus bar and interconnections shall be ~~of electrolytic tinned copper~~ **aluminium** and of rectangular cross sections suitable for full load current for phase bus bars and full rated current for neutral bus bar as specified in BOQ and shown on drawings and rated for a temperature rise over the ambient temperature specified as per IEC **61439** standards. ~~based on insulated conductor rating and the maximum current density for copper shall be 1.4 amp per mm^2 for ratings up to 500 Amp and beyond 500 amp maximum current density shall be 1.2 amp per mm^2~~. Bus bar supporting system shall be suitable to withstand the stresses ~~of a 31 MVA~~ **as per standard to** sustained symmetrical fault level at 415 volts **side** for 1 second or as per schedule of quantities. Feeder connections shall be solid ~~copper~~ **Aluminium bus** bars duly insulated with bimetallic clamps wherever required. Instruments and indicating lamps shall not be mounted on the Circuit Breaker Compartment door. The current transformers for metering and for protection shall be mounted on the solid ~~copper~~ **Aluminium** busbars with proper supports A main earth bar of ~~copper~~ **Aluminium** shall be provided throughout the full length of the Switch Board to earth all switchgears with a provision to make connections to the sub-station earth's on both sides with double bi- metallic washers	Please refer Annexure -2 of Addendum-3 Page 245R,246R, 247R & 248R
3	Volume -06 E&M Drawings Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61238	Drg. No.- AGC05-11718A-TDR-GKT-ME-VAC-61238	Please refer drawings for VAC, Lighting, SLD & BMS attached	Please refer Annexure 3 of Addendum-3
4	Clause no 23.3 of OCS/Part 2/Architechural and plumbing, Table no 23.2- Domestic water charecterstics, Page 162	BOD- <30 mg/l COD- 400-500 mg/l TSS- Raw sewage -200-250 mg/l Treated sewage- <100 mg/l	BOD- <20 mg/l COD- 400-600 mg/l TSS- Raw sewage- 200-300 mg/l Treated swage- <30 mg/l	Please refer Annexure 4 of Addendum-3 Page 162R

S. No.	Reference Clause/ Page No.	Clause in Existing Tender Document	Revised Clause	Revised Clause placed as Annexure/ Pg. No.
5	Clause no 2.1.A.3(i) of Employer's requirment/section-B/Functional Part-1 Page 23	Though Alignment plans (both vertical and horizontal) and pier ..... The shifting of the utility(ies) would be undertaken only in exceptional circumstances where in the opinion of the Engineer no other option is available. Shifting/diversion cost of all chartered utilities in included in Lump sum price of Schedule-A. The maintenance of diverted/supported utilities shall be from the start of construction till handling over it to concerned owning agency and cost ofthe same is included in Lump sum price of schedule-A.The carriage of excavated earth involved in utility diversion is covered under lump-sum quoted price. No claim as regard to delay on account of execution of utility diversion will be entertained. All temporary diversion of any utilities done to facilitate the construction activity shall also be the part of the lump sum quoted price. RCC drain/ Hume pipe drain/Masonry drain will be encountered at most of the places which will be restored back with similar specification after casting of pile cap & cost of the same is included in lump sum quoted price. No payment shall however be made for supporting the utilities, carriage of excavated earth during execution of work.	Though Alignment plans (both vertical and horizontal) and pier ..... The shifting of the utility(ies) would be undertaken only in exceptional circumstances where in the opinion of the Engineer no other option is available. **Cost of such uncharted utilities shifting except RCC drain will be paid separately under relevant item of BOQ**. Shifting/diversion cost of all chartered utilities in included in Lump sum price of Schedule-A. The maintenance of diverted/supported utilities shall be from the start of construction till handling over it to concerned owning agency and cost of the same is included in Lump sum price of schedule-A.The carriage of excavated earth involved in utility diversion is covered under lump-sum quoted price. No claim as regard to delay on account of execution of utility diversion will be entertained. All temporary diversion of any utilities done to facilitate the construction activity shall also be the part of the lump sum quoted price. RCC drain/ Hume pipe drain/Masonry drain will be encountered at most of the places which will be restored back with similar specification after casting of pile cap & cost of the same is included in lump sum quoted price. No payment shall however be made for supporting the utilities, carriage of excavated earth during execution of work.	Please refer Annexure-5 of Addendum-3 Page 23R.
6	BOQ - Schedule D - Part F: BUILDING MANAGEMENT SYSTEM FOR STATION	NIL	Please refer Technical specification for BMS attached in Annexure-06	Please refer Annexure-06 for BMS Technical specification of Addendum-3.
7	Cl 4.3.5 of Vol_08_AGCC_05_Geotechnical _Report	Summary of Boreholes	NA	Please refer Annexure-07 for chainage details of boreholes.
8	Cl 2.1 B1 (xxxii), Employers requirement, Vol-3, Functional 2 Page 29		**Shastri Nagar Metro station is a future metro station, however all necessary arrangements as shown in drawings to make this station functional in future shall be included in Lump Sum.**	Please refer Annexure-08 of Addendum-3. Page 29R
9	Volume 5 BOQ	Excel sheet of BOQ has been uploaded on CPP Portal		

required for such redesign to the Employer.

3.1.7.5 Where the work of the contractor has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Employer or his representative, the contractor shall prepare composite working drawings and sections at a suitable scale not less than 1:50 clearly showing how his work is to be installed in relation to the work of other trades. If the contractor installs his work before coordinating with other trades, or so as to cause any interference with work of other trades, he shall make all the necessary changes without extra cost to the owners.

3.1.7.6 After approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive variation in quantity statement.

3.1.7.7 The contractor should also submit two copies of Catalogues, Manufacturer's drawings, equipment characteristics data, performance chart etc. as required by the Engineer.

3.2 Switchboards

3.2.1 All panels/boards shall be dead front, front operated, dust, vermin proof, extensible, top/bottom cable entry, compartmentalized made of CRCA sheet steel of thickness of 2.0mm & rigid supports for components and with lockable hinged doors

3.2.2 All components like, circuit breakers, switches, hook-up wiring etc. shall be compatible with the short-circuit levels. Bus bar supporting systems shall withstand without deflection or deformation, the short circuit forces due to the stated short circuits. All inter wiring shall be with suitable stranded copper conductor FR insulated wire

3.2.3 All bus bars shall be electrolytic ~~copper with purity of 99.9%~~ **Aluminium** and rated for the incoming switch or breaker rating. Current density shall be ~~1.4 amp/sq. mm up to 500 amp and 1.2 amp/sqmm beyond 500 amp~~ **as per IEC or relevant standards.**The Bus Bar temperature rise over ambient shall be as per IS/IEC standards. The calculations for temperature rise should be furnished for appproval

3.2.4 Indicating lamps shall be multiple LED/neon type preferably

3.2.5 All CT's & PT's shall be resin cast

3.2.6 All relays, meters & switches shall be flush mounted

3.2.7 All metering equipments shall be digital unless specified otherwise or as approved by the employers' representative

3.3 Cabling

3.3.1 All cables used on this work shall meet the requirements of specifications and standards specified

3.3.2 Cables up to 10-sqmm shall be of copper conductor and be of aluminium for higher cross sections and cables up to size 25-sqmm shall be 4 core type or as specified.

3.3.3 Cables shall be laid in air/ surface/ recess/ pipes/ trench etc as required

3.4 Conduit Wiring

3.4.1 All conduits and all the accessories there with shall be Hot-dip galvanized / or as specified and ISI marked.

3.4.2 Where lighting Bus trunking is specified in BOQ the same shall be of approved makes as specified compliance to latest standards and UL/CE certified to ensure good quality with matching tap off boxes/ end boxes etc.

8.3.10 All connections shall normally be accessible from the front side of the panel. Where connections are not accessible from the front, the back side shall be provided with doors with handles and panel type locks. Required number of lifting lugs fixed on separate sections of the framework shall be provided. Two earthing studs shall be provided on the framework.

8.3.11 All panels shall have digital meters connected through RS 485 port to BMS. All other BMS connections, unless specified otherwise, shall be through potential free contacts and it should be ensured that all such connection points are brought to one place at a suitable terminal strip duly numbered, easily accessible for the purpose. BMS wiring shall start from this designated terminal strip.

8.4 Switchboard dimensional limitations

8.4.1 A **base channel** of ISMC 100 shall be provided at the bottom.

8.4.2 A minimum of 200 mm blank space between the floor of switch board and bottom most units shall be provided. The overall height of the Switch Board shall be limited to 2500 mm. The height of the operating handle, push buttons etc shall be restricted between 300 mm and 1850 mm from finished floor level.

8.5 Switch board compartmentalization - The Switch Board shall be conforming to Form 4B as per IEC. Board shall be divided into distinct separate compartments comprising:

8.5.1 A completely enclosed ventilated dust and vermin proof bus bar compartment for the horizontal and vertical busbars.

8.5.2 Each circuit breaker, switch fuse units and MCCB housed in separate compartments enclosed on all sides.

8.5.3 Sheet steel hinged lockable doors for each separate compartment provided and duly interlocked with the breaker/switch fuse unit in "on" and "off" position.

8.5.4 Separate and adequate compartments for all Circuit Breakers provided for accommodating instruments, indicating lamps, control contactors and control fuses etc. These shall be accessible for testing and maintenance without any danger of accidental contact with live parts of the circuit breaker, busbars and connections.

8.5.5 A horizontal wire way with screwed cover provided at the top to take interconnecting control wiring between vertical sections.

8.5.6 Separate cable compartments running the height of the Switch Board in the case of front access Boards provided for incoming and outgoing cables.

8.5.7 Cable compartments of adequate size for easy termination of all incoming and outgoing cables entering from bottom or top.

8.5.8 Adequate and proper support provided in cable compartments to support cables.

8.5.9 Inter-changeable feeder compartments for all identical feeders of same rating.

8.6 Switch board bus bars

8.6.1 The bus bar and interconnections shall be of ~~electrolytic tinned copper~~ **Aluminium** and of rectangular cross sections suitable for full load current for phase bus bars and full rated current for neutral bus bar as specified in BOQ and shown on drawings and rated for a temperature rise over the ambient temperature specified as per IEC **61439** standards~~. based on insulated conductor rating and the maximum current density for copper shall be 1.4 amp per mm^2 for ratings up to 500 Amp and beyond 500 amp maximum current density shall be~~

~~1.2 amp per mm^2~~. Bus bar supporting system shall be suitable to withstand the stresses ~~of a 31 MVA~~ **as per standard to** sustained symmetrical fault level at 415 volts **side** for 1 second or as per schedule of quantities.

8.6.2 The bus bars shall be insulated with colour coded or heat shrinkable PVC Sleeves. Accessible bus bar joints shall be shrouded in an approved manner. Minimum clearances between phase to phase and between phases and neutral (including protruding nuts and bolts if any) shall be 25 mm. Minimum clearance between phases and earth (including protruding nuts and bolts if any) shall be 20 mm.

8.6.3 While providing the bus-bar section, the total load with 25% over load margin may be considered which may be transferred to an individual panel through the inter-connection between panels in the event of failure of incoming supply to the other panels. The diversity factor of various loads shall be taken as 1 for design purposes. The bus bar shall be designed for easy extension in future at either end.

8.6.4 An earthing bus made of Copper as approved shall be provided throughout the switchboard/panel with securely connected earthing bimetallic terminals at both ends and with double bimetallic washers.

8.6.5 Protective earthing shall be related to the incoming feeder as required.

8.6.6 In case of dissimilar materials the Protective Conductor shall be suitably sized for equal conductance.

8.6.7 All internal wiring, busbar metering etc. shall conform to IS: 5578 – 1984 with all amendments.

8.6.8 All bus bar connections in Switch Boards shall be bolted with high tensile strength steel bolts and nuts. Additional cross section of bus bars shall be provided wherever holes are drilled in the bus bars. No insulation tape shall be used in the busbars / interconnections.

8.6.9 Feeder connections shall be solid ~~copper~~ **Aluminium bus** bars duly insulated with bimetallic clamps wherever required.

8.6.10 Shrouds for bus bar joints /tapping points shall be FRP only. Bus insulators shall be flame retardant, track resistant type with high creapage surface and non-hygroscopic material such as epoxy/SMC/. Busbars shall be supported and braced to withstand the stress due to max. short circuit current and also the thermal expansion

8.6.11 Maximum remperature rise of bus bars and connections shall be as per IEC 61439.

8.7 Components installed in the assembly

8.7.1 All components shall conform to respective Indian Standards or IEC specifications and shall be suitable for the particular requirements of rated current, voltage, service life, making and breaking capacity and short-circuit withstand strength. Co-ordination of component matching shall be observed. The Employer's Representative shall be empowered to choose compact component/ accessories as deemed fit out of the list of the approved makes.

8.7.2 Separate current transformers shall be provided for each protection device and for instrumentation.

8.7.3 All assemblies of switchgear and control gear shall comply with IEC 61439 or approved equivalent. The clearance in front, back and side of all assemblies of switchgear and control gear shall be not less than 1.2 metres or minimum specified in standards, while switchgear considered in the fully drawn out condition.

8.7.4 All push buttons shall be of the push to actuate type and provided with number of contacts as required.

8.7.5 Control & selector switch - Control & selector switches shall be rotary type having enclosed (in removable cover) contacts, stay put maintenance type, provided with escutcheon plates clearly marked to show the position.

8.7.6 Auxiliary contacts including push button contacts – All main as well as auxiliary contacts should be rated for 10A minimum.

8.8 Instrument accommodation

8.8.1 Instruments and indicating lamps shall not be mounted on the Circuit Breaker Compartment door. The current transformers for metering and for protection shall be mounted on the solid ~~copper~~ **Aluminium** busbars with proper supports.

8.8.2 For MCCB's/SFU's**,** instrument, handlesand indicating lamps can be provided on the compartment doors.

8.9 Terminal arrangement

8.9.1 Both incoming and outgoing cables shall have top / bottom entry depending on site requirement.

8.9.2 The marking and arranging of switchgear, bus bars, connections and small wiring shall be clear and comply with an approved international standard. Terminal blocks for low voltage wiring shall be of the rail mounted type moulded from high-grade non-hygroscopic melamine having all live parts fully shrouded and assembled in banks with marking tags to fit into moulded tag slots.

8.9.3 Terminals for final connections for indication, instrumentation and metering circuitry shall have test probe facilities.

8.10 Contactors

8.10.1 Contactors shall comply with IEC 60947-4-1 and shall be of the break type having an uninterrupted rated duty, and utilization category AC 3. The contractors shall be capable of frequent switching & shall operate at 55 deg for AC3 applications

8.10.2 Contactor operating coils shall be AC suitable for the phase to neutral voltage of the supply and shall be protected by means of a low current MCB/cartridge fuse.

8.10.3 Main contactors shall be silver faced.

8.10.4 The rated voltage of the contactors shall be equal or superior at 415 V and rated insulation voltage shall be 690/1000 V. The rated impulse voltage of the contractor shall be 8 kV.

8.10.5 Contactors shall not dropout at voltage at 70% of rated voltage and minimum pickup voltage shall be 85% or as specified.

8.10.6 The contactor should be modular in design and should be suitable for the addition of auxiliary contacts and other electrical auxiliaries without any compromise on the performance or the operation of the contactors. The contactors from 4 kW to 400 kW will be associated with the same auxiliary contact block range.

8.11 Wiring

8.11.1 All wiring for relays and meters and other associated equipments shall be with FR, PVC insulated, stranded copper conductor wires.

8.11.2 The wiring shall be colour coded and labeled with approved ferrules for identification. PVC ferrules yellow in colour, locked to avoid movement & with black engraved letters shall be provided at each end of all wires marked to correspond with equipment/circuit designation & termination numbers as specified / approved or as required.

8.11.3 A separate bunching & separate route shall be followed for AC& DC wiring.

8.11.4 The minimum size of copper conductor control wires for switch-boards shall be 1.5 mm^2.

8.11.5 Wiring shall be terminated through cage clamps or using crimping lugs where former not feasible, without joints or Tee on their run. Wiring shall be run on sides of panels, neatly bunched, secured without affecting equipment mounting.

8.12 Cable terminations

8.12.1 The Switch Boards shall be complete with supporting clamps and brackets etc for termination of 1100 volt grade aluminium/copper conductor PVC/PVCA cables, Knockout holes of appropriate size and number shall be provided in the Switch Board in conformity with the location of incoming and outgoing conduits/cables. Gland plates, gland-brackets and extension boxes shall be removable and shall be of adequate size for the particular cables to be terminated.

8.12.2 The cable terminations for the MCCB's shall be brought out to the rear in the case of rear access switchboards or in the cable compartment in the case of front access Switch-Boards. The Contractor shall co-ordinate the cable sizes and corresponding crimping type copper lugs for each Incomer and Outgoing feeders and correct size lugs shall be provided bolted up in the switchboard.

8.13 **Space heaters** - The Switch Board shall have in each panel thermostatically controlled space heaters adjustable in the range of 30° C to 100° C with a controlling 15 amp 230 volt switch socket outlet to eliminate condensation.

8.14 Earthing

8.14.1 All switch panels shall be provided with protective earthing as specified.

8.14.2 A main earth bar of ~~copper~~ **Aluminium** shall be provided throughout the full length of the Switch Board to earth all switchgears with a provision to make connections to the sub-station earth's on both sides with double bi- metallic washers.

8.14.3 The frame of the Circuit Breaker shall be positively earthed when racked into the cubicle. Protective earthing of the switch-boards shall be connected to the building earth.

8.15 Sheet steel treatment and painting

8.15.1 Sheet Steel materials used in the construction of these units should have undergone a rigorous rust proofing process comprising of alkaline degreasing, descaling in dilute sulfuric acid and a recognized phosphating process. The steel work shall then receive two dip-coats of oxide filler/ primer before final painting. Castings shall be scrupulously cleaned and fettled before receiving a similar oxide primer coat. The manufacturer is required to have 7 tank treatment facility for this.

8.15.2 All sheet steel shall after metal treatment be powder coated with two coats of shade 692 or as approved to IS 5 on the outside and white on the inside. Each coat of paint shall be properly stoved and the paint thickness shall not be less than 80 microns. The panel manufacturer should have in-house power coating facility.

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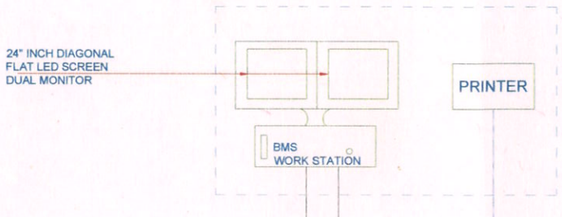


L2 16 PORT UNMANAGED SWITCH
(2 FO PORT AND 14 ETHERNET PORT)

COMMUNICATION CABLE MODBUS TCP/IP

COMMUNICATION CABLE MODBUS TCP/IP

COMMUNICATION CABLE MODBUS TCP/IP

COMMUNICATION CABLE MODBUS TCP/IP

COMMUNICATION CABLE MODBUS TCP/IP

DDC CONTROLLER (ASS ROOM)

- MAIN DISTRIBUTION BOARD
- ESSENTIAL POWER PANEL
- MAIN LIGHTING PANEL & AIR CONDITIONING PANEL
- EMERGENCY LIGHTING PANEL
- PASSENGER AMENITIES PANEL
- LIGHTING CONTROL PANEL
- UPS 1 & 2

CENTRALISED REMOTE CONTROLLER/VRV

LIFT & ESCALATOR

FIRE ALARM PANEL

DDC CONTROLLER (PUMP ROOM)

- FIRE PUMP PANEL
- DG PANEL

ABBREVIATION

	DESCRIPTION
DDC	DIRECT DIGITAL CONTROLLER
FACP	FIRE ALARM CONTROL PANEL
BMS	BUILDING MANAGEMENT SYSTEM
NS	NETWORK SWITCH
SCR	STATION CONTROL ROOM
MDB	MAIN DISTRIBUTION BOARD
RMS	REMOTE MONITORING SYSTEM
CLCP	CENTRAL LIGHTING CONTROL PANEL
VRV	VARIABLE REFRIGERANT VOLUME
UPS	UNINTERRUPTED POWER SUPPLY

NOTES:-

1. DDC PUMP ROOM SHALL BE LINKED TO THE CLOSEST SWITCH LOCATED IN THE SCR OR DDC ASS ROOM.
2. DDC CONTROLLER WILL BE EVALUATED IN ACCORDANCE WITH THE SPECIFICATIONS AND TENTATIVE IO LIST.
3. THIS SCHEMATIC IS TENTATIVE IN NATURE.

TENDER DRAWING

GENERAL NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS.
2. ALL DIMENSIONS ARE TO BE READ AND NOT MEASURED.
3. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING, FIRE FIGHTING & ELECTRICAL DRAWINGS.
4. ANY DISCREPANCIES MUST BE BROUGHT TO THE NOTICE OF THE CONSULTANT.

REV NO	DATE	DESCRIPTION
R1	07-DEC-2023	REVISED AS PER SC COMMENT
R0	28-MAR-2023	TENDER DESIGN

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

DDC / CONTRACTOR

DRAWN BY | DESIGN BY | CHECKED BY | APPROVED BY

DETAIL DESIGN CONSULTANT

SYSTRA MVA CONSULTING (INDIA) PVT. LTD.
VATIKA MINDSCAPES, TOWER-B, 12/3,
MATHURA ROAD, NH-2, SECTOR-27/D,
FARIDABAD, HARYANA-121013
PH: 0129 668 5600
SUBSIDIARY OF
SYSTRA S.A. - 5 AVENUE DU COQ - PARIS 75009

THIS DRAWING, DESIGN AND DETAILING HAVE BEEN PROOF CHECKED BY US AND IS SUITABLE FOR EXECUTION AND IS APPROVED.

☑ NOC ☐ NOWC ☐ RESUBMIT

SIGN	SIGN	SIGN
DATE	DATE	DATE: 08-12-2023
NAME	NAME	NAME: Divakar Jha
DESIGNATION	DESIGNATION	DESIGNATION: Chief VAC Expert
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights
Vibhuti Khand, Gomti Nagar,
Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		
DY CE /CIVIL		
CPM		

PROJECT: KANPUR & AGRA METRO RAIL PROJECT : CORRIDOR-2
UTTAR PRADESH METRO RAIL CORPORATION LIMITED,
ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR,
LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

TITLE: AGRA ELEVATED STATIONS (TYPICAL)
BMS SCHEMATIC OVERVIEW

MEP

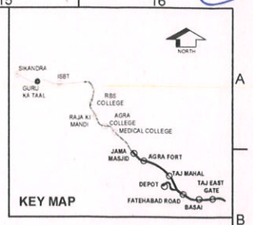
SCALE: As indicated | DATE: 28-MAR-2023 | STAGE: TENDER DESIGN

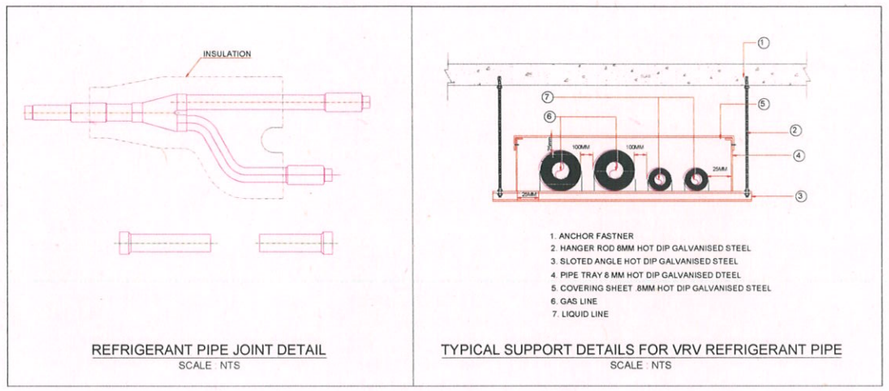
DRG NO: KNPAGDDC-01-TDR-TYP-BMS-VEW-63403

OFFICE OF ORIGIN

SYSTRA

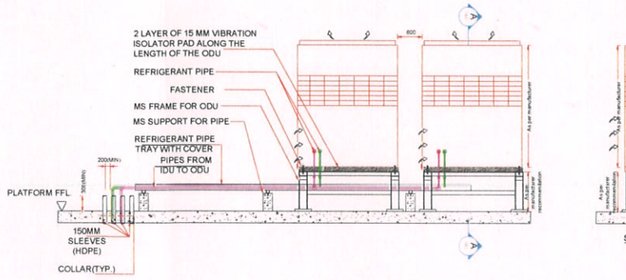
REVISION NO: R1



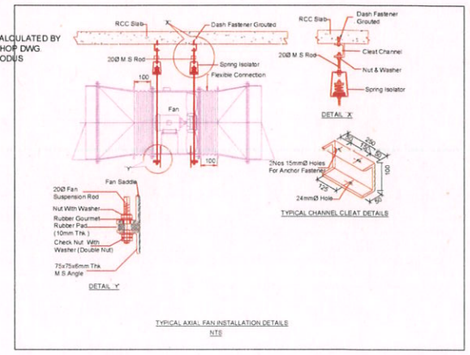


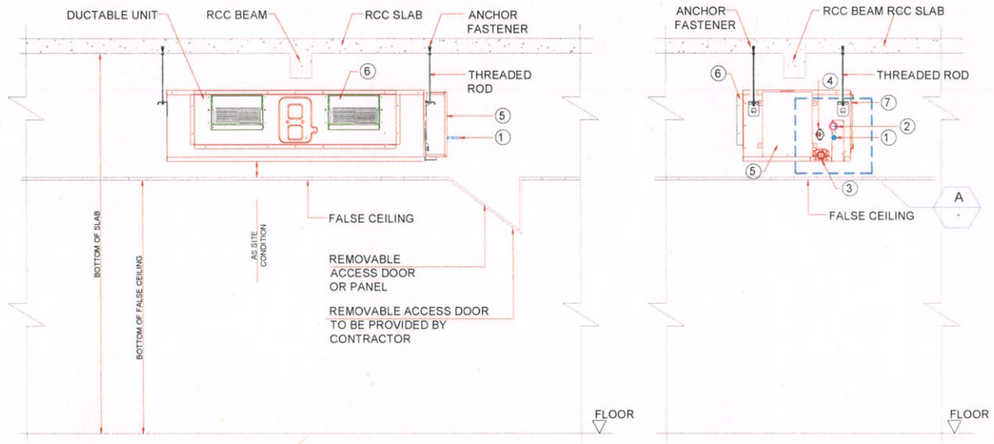
REFRIGERANT PIPE JOINT DETAIL
SCALE : NTS

TYPICAL SUPPORT DETAILS FOR VRV REFRIGERANT PIPE
SCALE : NTS

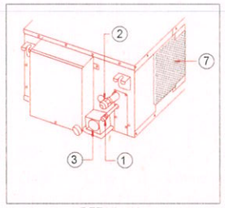


TYPICAL VRV OUTDOOR UNIT INSTALLATION DETAILS
SCALE : NTS





1	LIQUID PIPE CONNECTION
2	GAS PIPE CONNECTION
3	CONDENSATE DRAIN PIPE CONNECTION
4	CONDENSATE DRAIN PIPE CONNECTION WITH OPTIONAL DRAIN PUMP KITS
5	POWER SUPPLY / COMMUNICATION CONNECTION
6	AIR OUTLET
7	AIR INLET

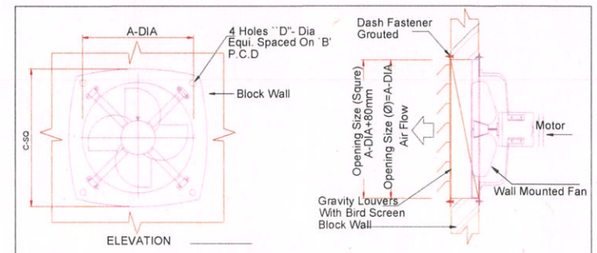


INSTALLATION DETAIL FOR DUCTABLE UNIT
SCALE : NTS

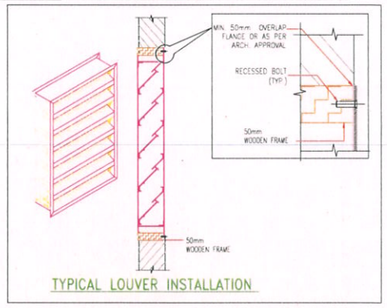
ECS LEGEND	
	REFRIGERANT PIPE (GAS)
	REFRIGERANT PIPE (LIQUID)

NOTES:-

1. CONDENSATE DRAIN PIPES ARE GALVANISED STEEL (GS) MATERIAL.
2. GRILLE SHALL BE SUITABLY SELECTED & PROVIDED BY CONTRACTOR ACCORDING TO THE UNIT SIZE & FLOW RATE. VOLUME CONTROL DAMPER (VCD)TO BE CONSIDERED IN EACH AND EVERY BRANCH DUCT WHETHER VCD IS SHOWN IN DRAWING OR NOT.
3. CORDED REMOTE CONTROLLER SHALL BE INSTALLED IN WALL WITH SUITABLE HEIGHT.
4. U-TRAP SHALL BE MADE UP OF CPVC MATERIAL.
5. CONDENSATE DRAIN PIPE SLOPE SHALL BE KEPT ABOVE 1/100 i.e 1 CM /1 MT.
6. VRV OUTDOOR UNIT SHALL BE MOUNTED ON PEDESTAL. VIBRATION ISOLATOR PAD SHALL BE INSTALLED TO MINIMIZE THE NOISE LEVEL.
7. SLEEVES TO BE COVERED WITH TRAY COVER TO AVOID WATER ENTRY TO THE DOWN ELECTRICAL ROOMS.
8. HEIGHT OF THE ODU WILL BE VARY AS PER THE SELECTION OF MANUFACTURER.
9. INDOOR UNIT STANDARD INSTALLATION DETAILS WILL BE PROVIDED BY OEM AS PER THEIR STANDARD DETAILS IN SHOP DWG.
10. SLEEVES TO BE FILLED BY FIRE RATED MATERIALS.
11. HVAC VENDER SHALL PROVIDE SHOP DRAWINGS FOR FINAL EXECUTION AT SITE.



TYPICAL PROPELLER FAN INSTALLATION DETAILS
SCALE : NTS



TYPICAL LOUVER INSTALLATION

REV NO	DATE	DESCRIPTION	SIGN
P0	26-07-2023	-	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

DDC

P0	SIGN.													26-07-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE	
CLEARED														

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A., ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

THIS DRAWING, DESIGN AND DETAILING HAVE BEEN PROOF CHECKED BY US AND IS SUITABLE FOR EXECUTION AND IS APPROVED.

☑ NOC ☐ NOWC ☐ RESUBMIT

SIGN:	SIGN:	SIGN:
DATE: 15-09-2023	DATE:	DATE:
NAME: Divakar Jha	NAME:	NAME:
DESIGNATION: Chief VAC Expert	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

DESIGN CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A., 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: TYPICAL SUPPORT & INSTALLATION DETAILS FOR REFRIGERANT PIPE, VRV AND DUCTABLE UNIT

SCALE: NTS	DATE: 26-07-2023	STAGE: TDR

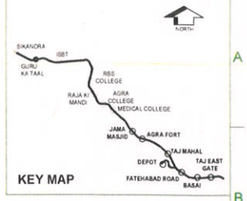
DRG NO: AGCC05-11718A-TDR-GKT-ME-VAC-61242

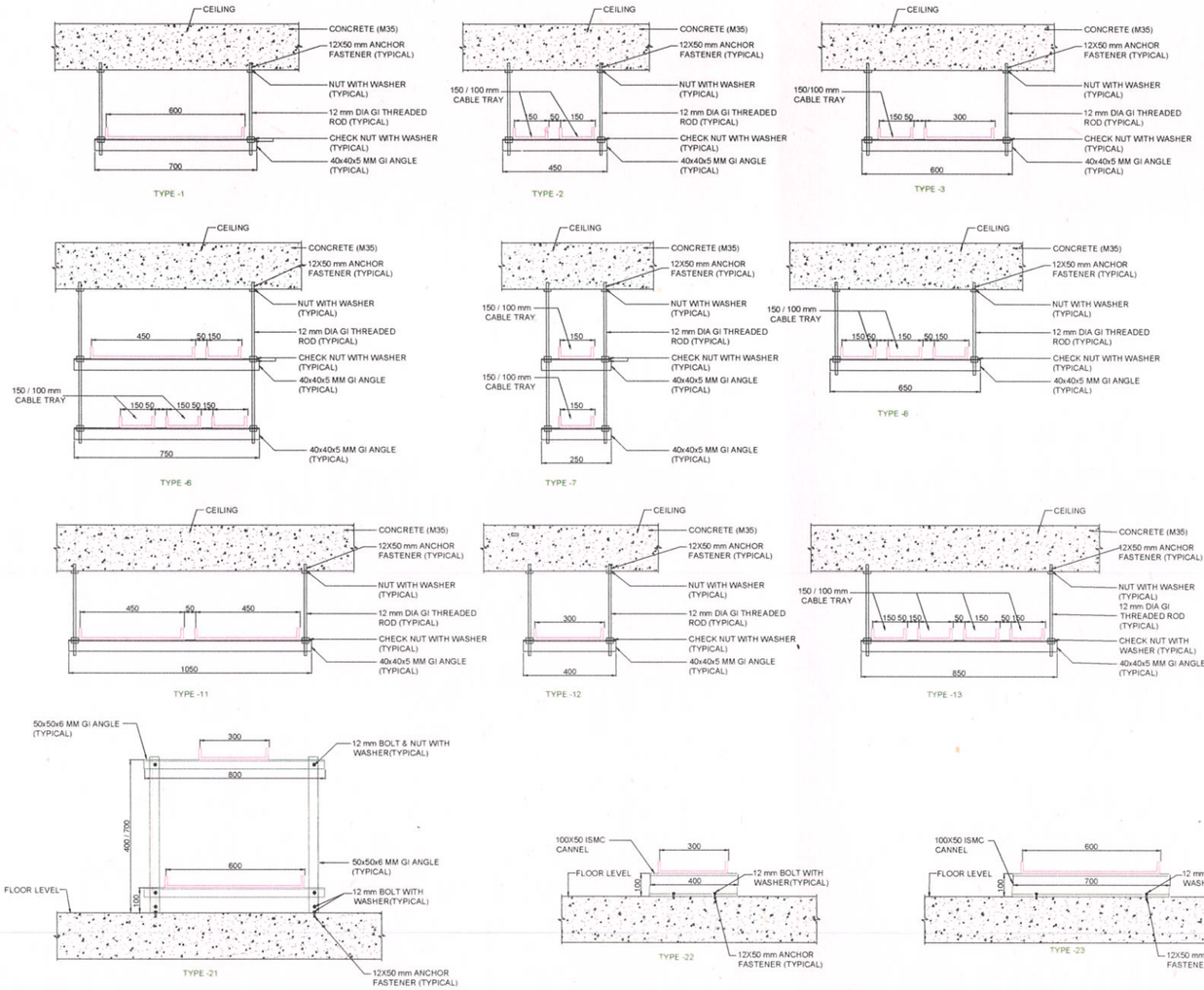
OFFICE OF ORIGIN: TATA, 3TI, lipl

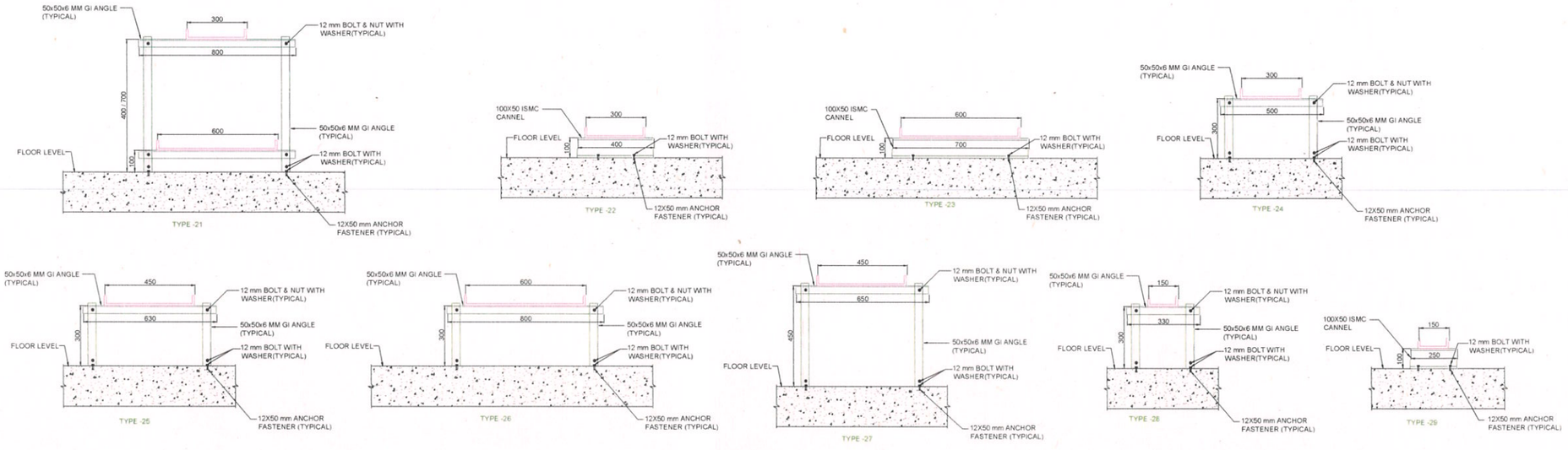
REVISION NO: P0

plot scale 50mm

TYPICAL ELECTRICAL INSTALLATION DETAIL







GENERAL NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE MENTIONED.
2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING & FIRE FIGHTING, ECS, TVS DRAWINGS.
3. ANY DISCREPANCIES MUST BE BROUGHT TO THE NOTICE OF THE CONSULTANT.
4. ALL DIMENSIONS ARE TO BE READ AND NOT MEASURED.
5. LOCATION, SIZE & QUANTITY OF CABLE CONTAINMENT CAN BE CHANGED AT THE TIME OF DETAIL DESIGN.
6. ELECTRICAL DRAWINGS ARE SUBJECTED TO BE CHANGED BASED ON THE CHANGES OF ARCHITECTURAL & STRUCTURAL DRAWINGS.

REV NO	DATE	DESCRIPTION	SIGN
P0	03-08-2023	-	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

DDC

P0	SIGN.	SOUR ABH Y		Faizu ddin Siddi qui		Shyamal Raychan				Abhij eet K. Vaidy a			03-08-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
		CLEARED											

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A. ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED FARIDABAD

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☐ NOC ☑ NOWC ☐ RESUBMIT

REVIEWED BY	APPROVED BY	VETTED BY
SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED STATION OF AGRA METRO CORRIDOR-1

TITLE: TYPICAL ELECTRICAL INSTALLATION DETAIL

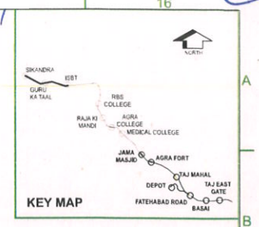
SCALE: NTS | DATE: 03-08-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-EST-EL-CTL-41603

OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm



Sn.	Drawing No.	Drawing Title
	E&M DRAWING	
	ELECTRICAL & FIRE ALARM	
1	AGCC05-11718A-TDR-SKN-EL-SLD-41308	ELECTRICAL SCHEMATIC DIAGRAM FOR PANELS OVERALL
2	AGCC05-11718A-TDR-GKT-IC-BMS-41201	BMS SCHEMATIC DIAGRAM
3	AGCC05-11718A-TDR-GKT-EL-FAS-51204	STATION SCHEMATIC FOR FIRE ALARM SYSTEM
4	AGCC05-11718A-TDR-GKT-EL-CTL-41214	CONCOURSE LEVEL CABLE TRAY LAYOUT
5	AGCC05-11718A-TDR-GKT-EL-CTL-41215	PLATFORM LEVEL CABLE TRAY LAYOUT
6	AGCC05-11718A-TDR-GKT-EL-CTL-41218	CABLE TRAY LAYOUT-DG ROOM AND PUMP ROOM
7	AGCC05-11718A-TDR-EST-EL-CTL-41603	TYPICAL ELECTRICAL INSTALLATION DETAIL
	PLUMBING	
8	AGCC05-11718A-TDR-GKT-ME-PLB-61201	DRAWING LIST, LEGENDS AND NOTES
9	AGCC05-11718A-TDR-GKT-ME-PLB-61202	WATER SUPPLY SYSTEM-SCHEMATIC DIAGRAM
10	AGCC05-11718A-TDR-GKT-ME-PLB-61204	GROUND LEVEL DRAINAGE LAYOUT
11	AGCC05-11718A-TDR-GKT-ME-PLB-61206	CONCOURSE LEVEL DRAINAGE LAYOUT
12	AGCC05-11718A-TDR-GKT-ME-PLB-61207	PLATFORM LEVEL DRAINAGE LAYOUT
13	AGCC05-11718A-TDR-GKT-ME-PLB-61208	ROOF LEVEL PLAN-DRAINAGE LAYOUT
14	AGCC05-11718A-TDR-GKT-ME-PLB-61209	GROUND LEVEL PLAN-WATER SUPPLY LAYOUT
15	AGCC05-11718A-TDR-GKT-ME-PLB-61210	CONCOURSE LEVEL PLAN-WATER SUPPLY LAYOUT
16	AGCC05-11718A-TDR-GKT-ME-PLB-61211	PLATFORM LEVEL PLAN-WATER SUPPLY LAYOUT
17	AGCC05-11718A-TDR-GKT-ME-PLB-61212	ROOF LEVEL PLAN-WATER SUPPLY LAYOUT
18	AGCC05-11718A-TDR-GKT-ME-PLB-61215	SCHEMATIC LAYOUT OF SEEPAGE DRAINAGE SYSTEM
19	AGCC05-11718A-TDR-GKT-ME-PLB-61216	SCHEMATIC LAYOUT OF SEWAGE DRAINAGE SYSTEM
20	AGCC05-11718A-TDR-GKT-ME-PLB-61217	PUMP ROOM LEVEL PLAN
21	AGCC05-11718A-TDR-GKT-ME-PLB-61218	TYPICAL PIPE SUPPORT DETAIL
22	AGCC05-11718A-TDR-GKT-ME-PLB-61219	TYPICAL PIER DRAINAGE ARRANGEMENT
23	AGCC05-11718A-TDR-GKT-ME-PLB-61220	TYPICAL DETAIL OF RAIN WATER HARVESTING PIT
	FIRE FIGHTING	
24	AGCC05-11718A-TDR-GKT-ME-FPS-51250	DRAWING LIST, LEGENDS AND NOTES
25	AGCC05-11718A-TDR-GKT-ME-FPS-51251	TYPICAL DETAIL OF YARD HYDRANT
26	AGCC05-11718A-TDR-GKT-ME-FPS-51252	SCHEMATIC FOR FIRE FIGHTING SYSTEM
27	AGCC05-11718A-TDR-GKT-ME-FPS-51253	GROUNDLEVEL PLAN-FIRE FIGHTING LAYOUT
28	AGCC05-11718A-TDR-GKT-ME-FPS-51254	CONCOURSE LEVEL PLAN-FIRE FIGHTING LAYOUT
29	AGCC05-11718A-TDR-GKT-ME-FPS-51255	PLATFORM LEVEL PLAN-FIRE FIGHTING LAYOUT
30	AGCC05-11718A-TDR-GKT-ME-FPS-51256	PUMP ROOM-FIRE FIGHTING LAYOUT
	VENTILATION AIR CONDITIONING	
31	AGCC05-11718A-TDR-GKT-ME-VAC-61237	VAC SCHEMATIC LAYOUT
32	AGCC05-11718A-TDR-GKT-ME-VAC-61238	CONCOURSE LEVEL PLAN
33	AGCC05-11718A-TDR-GKT-ME-VAC-61240	PUMP ROOM LAYOUT AND SECTION
34	AGCC05-11718A-TDR-GKT-ME-VAC-61241	DG ROOM LAYOUT AND SECTION
35	AGCC05-11718A-TDR-GKT-ME-VAC-61242	TYPICAL SUPPORT & INSTALLATION DETAILS FOR REFRIGERANT PIPE VRV AND DUCTABLE UNIT

NOTES:

1. PLEASE NOTE THAT, THE QUANTITY OF SPARE & SPACE FEEDER MENTIONED IN PANELS ARE TENTATIVE. HOWEVER, THE EXACT QUANTITY SHALL AS PER THE TECHNICAL SPECIFICATION.
2. THE MATERIAL OF BUS BAR SHALL BE CU. FOR ALL PANELS.
3. UNLESS OTHERWISE SPECIFIED ALL MCCB SHALL BE MANUALLY OPERATED.
4. ELECTRICAL LOADS FOR INTERFACE CONTRACTORS LIKE LIFTS & ESCALATORS ETC. LOAD ARE TAKEN CONSIDERING AS ENERGY EFFICIENT EQUIPMENT.
5. UPS TO FEED EMERGENCY, CRITICAL AND S&T LOAD.
6. FOR ALL THE CIRCUIT BREAKERS/SWITCHES lcu=Ics.
7. THIS SCHEMATIC DRAWING IS TO BE READ IN CONJUCTION WITH BOQ AND SPECIFICATION.
8. TRANSFORMER DETAILS & SPECIFICATION ARE INCLUDED IN HT POWER SUPPLY WORK.

REV NO	DATE	DESCRIPTION	SIGN
P1	21-09-2023	REVISED	
P0	14-04-2023	-	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

DDC

ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
P1	SIGN.	SOUR... ADH... DUBEY	PUNIT... LUHA...	Faizu ddin Siddi qui		Vikash Kumar		Anu Kuma...			Abhij eet K Vaidy a		21-09-2023
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A., ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

THIS DRAWING, DESIGN AND DETAILING HAVE BEEN PROOF CHECKED BY US AND IS SUITABLE FOR EXECUTION AND IS APPROVED.

☐NOC ☐NOWC ☐RESUBMIT

REVIEWED BY	APPROVED BY	VETTED BY
SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
7'10, 7th Floor, Cyber Heights, Vishruti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: ISBT TO SIKANDRA ELEVATED SECTION MEP DRAWING LIST

TITLE: DRAWING LIST

SCALE: NTS | DATE: 21-09-2023 | STAGE: TDR

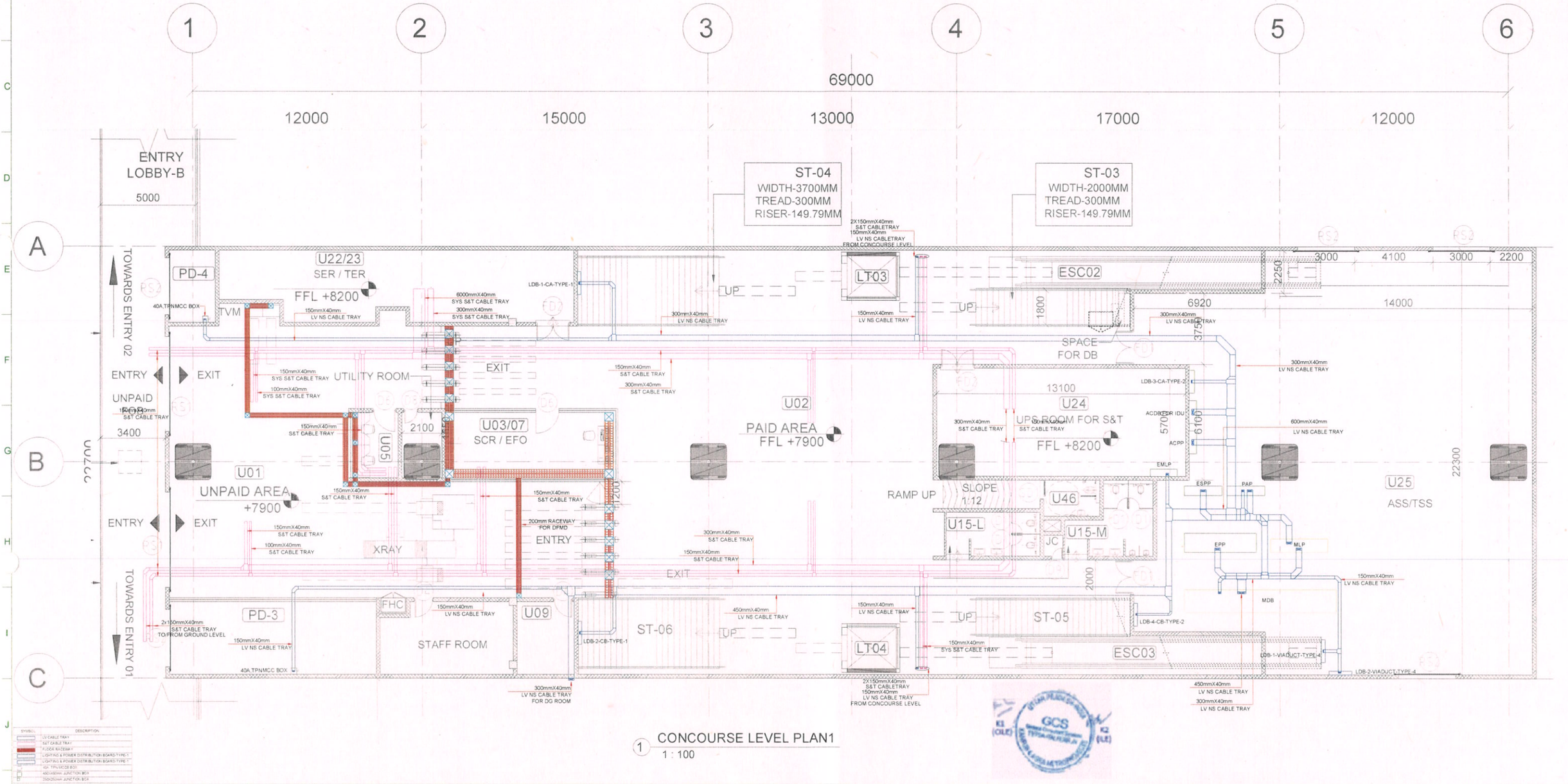
DRG NO: AGCC05-11718A-TDR-GEN-CO-LST-81150

OFFICE OF ORIGIN

REVISION NO: P1

plot scale 50mm

33



1 CONCOURSE LEVEL PLAN1
1 : 100

NOTES:
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING, FIRE FIGHTING, ELECTRICAL DRAWINGS.
3. ANY DISCREPANCY SHALL MUST BE BROUGHT TO THE NOTICE OF THE CONSULTANT.
4. CABLE TRAY, FLOOR RACEWAY, JUNCTION BOX, MCC & ACT, DISTRIBUTION BOARDS LOCATION AND SIZES ARE TENTATIVE/INDICATIVE ONLY. MAY BE CHANGE DURING DETAIL DESIGN STAGE.
5. ELECTRICAL DRAWINGS ARE SUBJECTED TO BE CHANGED BASED ON THE CHANGES IN ARCHITECTURAL & STRUCTURAL DRAWING.
6. ELECTRICAL PANEL AND OTHER EQUIPMENT SIZES ARE TENTATIVE AND SUBJECTED TO CHANGE DURING DETAIL DESIGN STAGE.
7. ELECTRICAL LOCATION ARE SUBJECTED TO BE CHANGE BASED ON THE CHANGES IN ARCHITECTURAL & STRUCTURAL DRAWING.

THE RESPONSIBILITY OF CONTROL CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

DDC

P0	SIGN.	SOURABH DUBEY	FUNEET GULATI	Faizu ddin Siddi qui			Shyamal Routhan				Abhij eet K Vaidy a		07-08-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A., ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

REV NO	DATE	DESCRIPTION	SIGN
P0	07-08-2023	-	

THIS DRAWING, DESIGN AND DETAILING HAVE BEEN PROOF CHECKED BY US AND IS SUITABLE FOR EXECUTION AND IS APPROVED.

☑ NOC ☐ NOWC ☐ RESUBMIT

SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: CONCOURSE LEVEL CABLE TRAY LAYOUT

SCALE: AS SHOWN | DATE: 07-08-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-EL-CTL-41214

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

TBA

32

NOTES:-
1. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE SPECIFIED.
2. THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTURAL, STRUCTURAL, PLUMBING, FIRE FIGHTING, ELECTRICAL, DRAWINGS.
3. ANY DISCREPANCIES MUST BE BROUGHT TO THE NOTICE OF THE CONSULTANT.
4. CABLE TRAY, FLOOR RACEWAY, JUNCTION BOX, MCCB BOX, DISTRIBUTION BOARDS LOCATION AND ROUTING ARE TENTATIVE/INDICATIVE ONLY, MAY BE CHANGE DURING DETAIL DESIGN STAGE.
5. ELECTRICAL DRAWINGS ARE SUBJECTED TO BE CHANGED BASED ON THE CHANGES IN ARCHITECTURAL & STRUCTURAL DRAWING.
6. ELECTRICAL PANEL AND OTHER EQUIPMENT SIZES ARE TENTATIVE AND SUBJECTED TO CHANGE DURING DETAIL DESIGN STAGE.
7. ROOM NO/ROOM LOCATION ARE SUBJECTED TO BE CHANGE BASED ON THE CHANGES IN ARCHITECTURAL & STRUCTURAL DRAWING.

1 PLATFORM LEVEL
1 : 150

REV NO	DATE	DESCRIPTION	SIGN
P0	03-08-2023	-	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

DDC

ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
P0	SIGN.	SOUR ABH DUBE Y	PRINCE GAUR	Faizuddin Siddiqui	Shyamal Raulhan					Abhijeet K Vaidya			03-08-2023
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A, ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

THIS DRAWING, DESIGN AND DETAILING HAVE BEEN PROOF CHECKED BY US AND IS SUITABLE FOR EXECUTION AND IS APPROVED.

☑ DOC ☐ NOWC ☐ RESUBMIT

SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 7/C, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: PLATFORM LEVEL CABLE TRAY LAYOUT

SCALE: AS SHOWN | DATE: 03-08-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-EL-CTL-41215

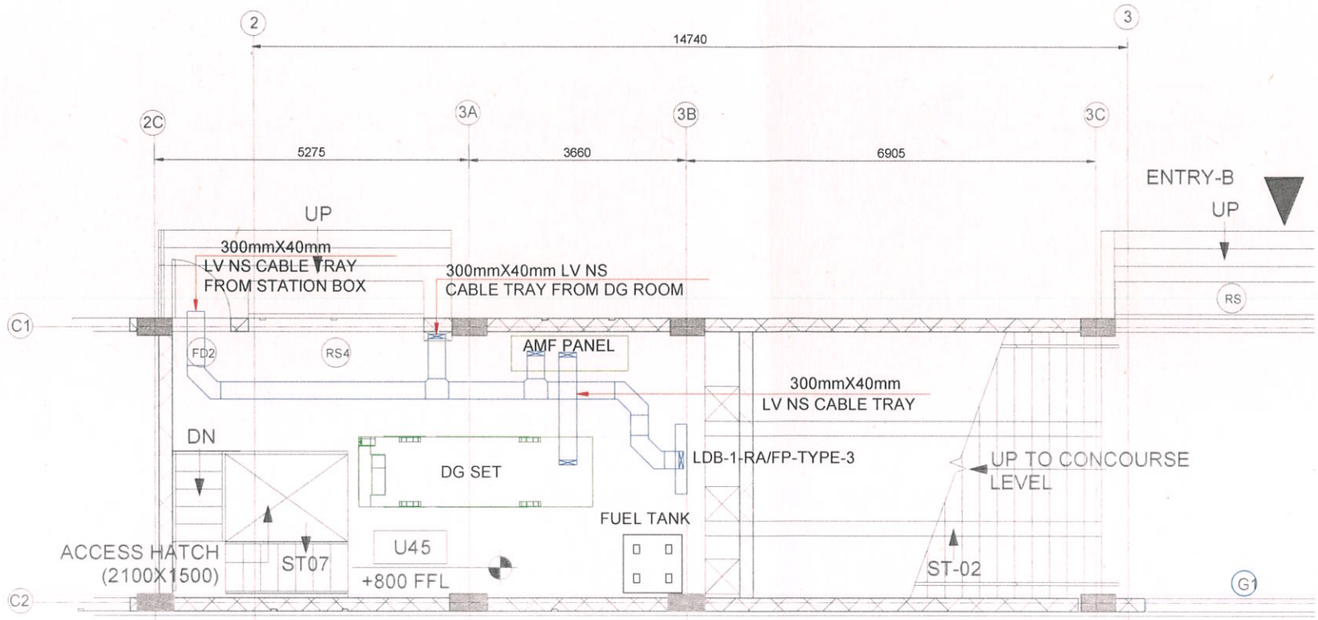
OFFICE OF ORIGIN: TATA, 3TI, lipl

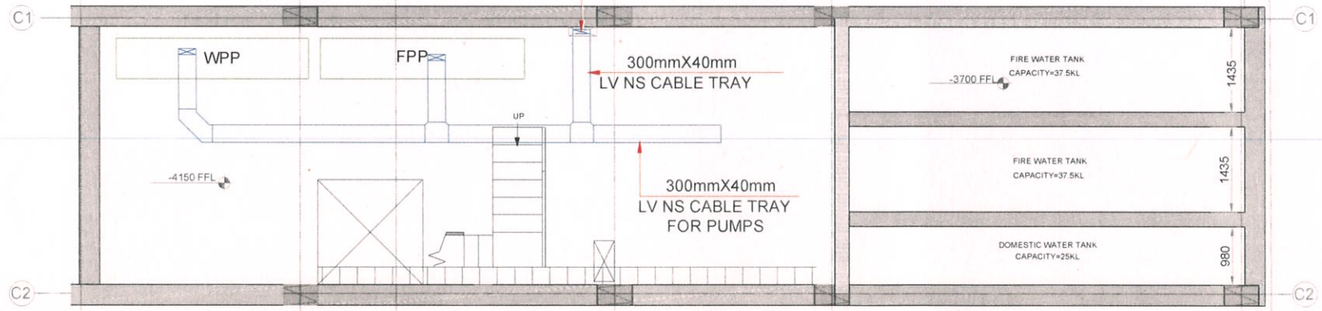
REVISION NO: P0

plot scale 50mm

31

GURU KA TAL METRO STATION





SYMBOL	DESCRIPTION
	LV CABLE TRAY

NOTES:-

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5. ELECTRICAL DRAWINGS ARE SUBJECTED TO BE CHANGED BASED ON THE CHANGES IN ARCHITECTURAL & STRUCTURAL DRAWING
6. ELECTRICAL PANEL AND OTHER EQUIPMENT SIZES ARE TENTATIVE AND SUBJECTED TO CHANGE DURING DETAIL DESIGN STAGE.
7. ROOM NO/ROOM LOCATION ARE SUBJECTED TO BE CHANGE BASED ON THE CHANGES IN ARCHITECTURAL & STRUCTURAL DRAWING

1 CABLE TRAY LAYOUT-DG ROOM AND PUMP ROOM

SCALE 1:50

REV NO	DATE	DESCRIPTION	SIGN
P0	08-08-2023	-	

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
P0	SIGN.	SOURABH DUBEY	PUNEET GUPTA	Fazruddin Siddiqui			Shyamal Raizbhan				Abhijeet K Vaidya		08-08-2023
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A. ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED FARIDABAD

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL | DATE | SIGNATURE

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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: CABLE TRAY LAYOUT-DG ROOM AND PUMP ROOM

SCALE: NTS | DATE: 08-08-2023 | STAGE: TDR

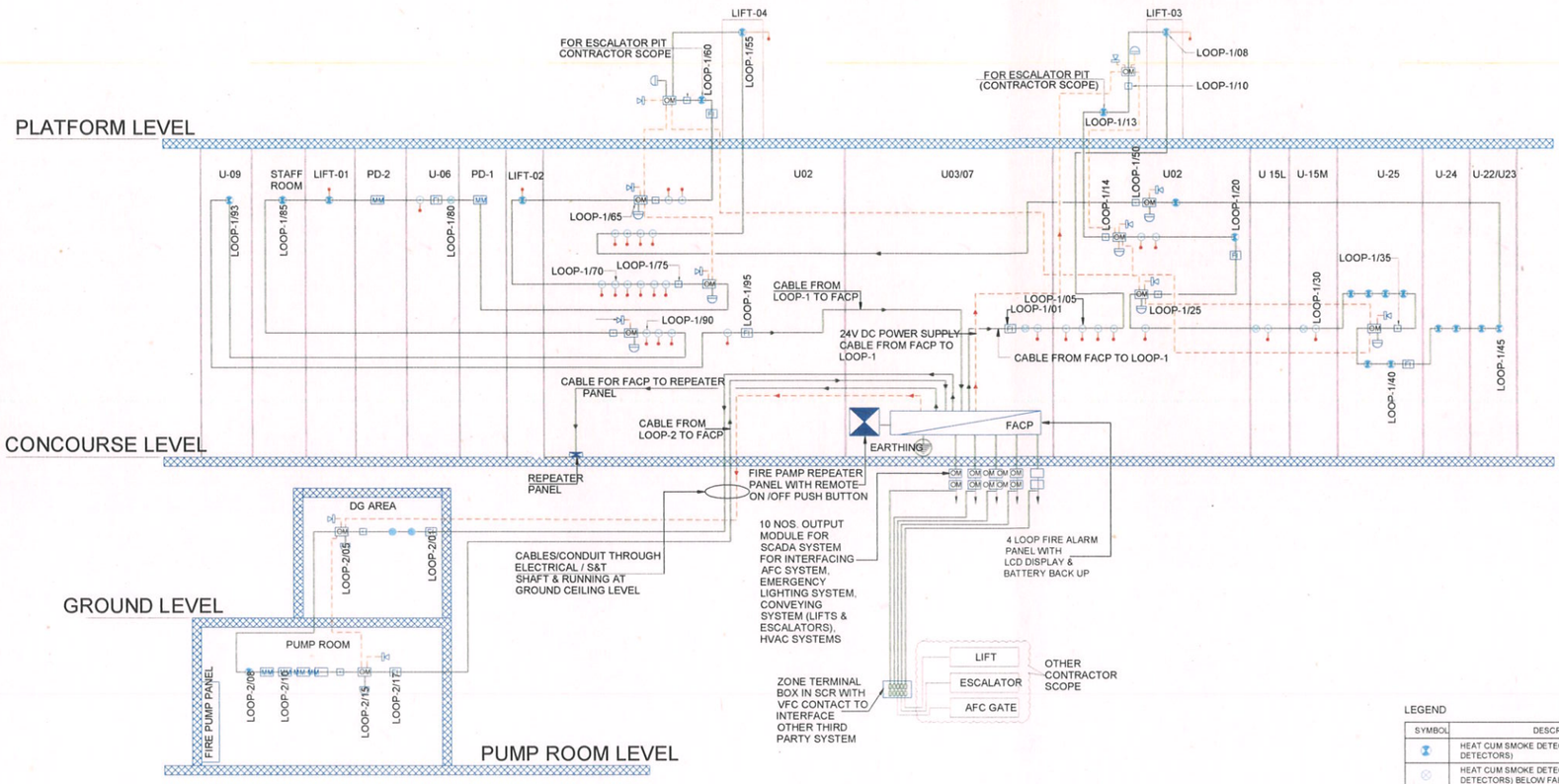
DRG NO. AGCC05-11718A-TDR-GKT-EL-CTL-41218

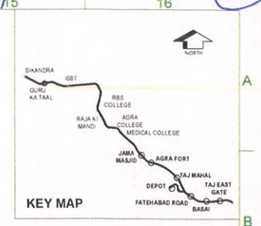
OFFICE OF ORIGIN

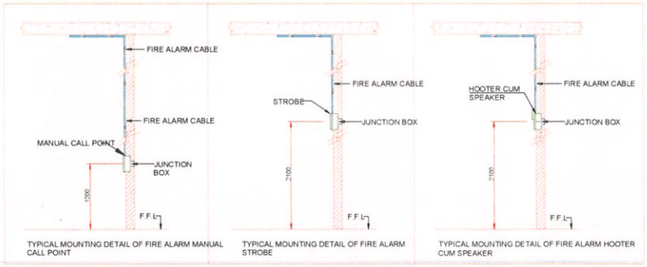
REVISION NO: P0

plot scale 50mm

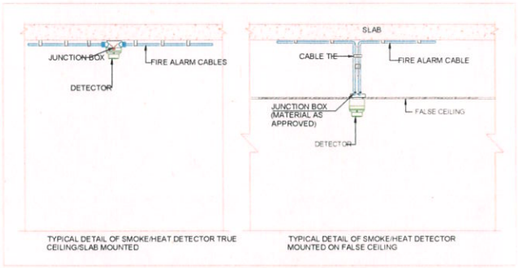
30







FIRE ALARM DETECTOR MOUNTING DETAIL



FIRE ALARM DETECTOR MOUNTING DETAIL

LEGEND

SYMBOL	DESCRIPTION
	HEAT CUM SMOKE DETECTORS (COMBINED TYPE FULL SENSOR DETECTORS)
	HEAT CUM SMOKE DETECTORS (COMBINED TYPE FULL SENSOR DETECTORS) BELOW FALSE CEILING
	HEAT CUM SMOKE DETECTORS (COMBINED TYPE FULL SENSOR DETECTORS) ABOVE FALSE CEILING
	HEAT CUM SMOKE DETECTORS (COMBINED TYPE FULL SENSOR DETECTORS) BELOW FALSE FLOOR
	RATE OF RISE CUM FIXED TEMPERATURE THERMISTER TYPE HEAT DETECTOR
	STROBE OF 100 CANDELAS AT 2.1 M HEIGHT.
	HOOTER CUM SPEAKER WITH 4 WATT SPEAKER & LMT.
	ADDRESSABLE MANUAL CALL BOX RECESSED IN WALL AT 1.2m HEIGHT.
OM	ADDRESSABLE OUTPUT MODULE.
MM	MONITOR MODULE
FI	ADDRESSABLE FAULT ISOLATOR
	FIRE ALARM CONTROL PANEL.
	REPEATER PANEL
	FIRE PUMP REPEATER PANEL WITH REMOTE ON/OFF PUSH BUTTON
	RESPONSE INDICATOR.
	CABLE FOR FIRE ALARM
	CABLE FOR 24V DC POWER SUPPLY.
	6CX1.5 SQ.MM. CU. CABLE FOR FIRE PUMP PANEL.

NOTES:-

1. ALL DETECTORS LOCATED IN AN ENCLOSED SPACE AND ABOVE / BELOW FALSE CEILING OR BELOW FALSE FLOOR SHALL BE CENTRALLY LOCATED IN THAT SPACE.
2. CABLING SHALL BE 2 X 1.5 SQ MM FR SHEATHED STRANDED COPPER CONDUCTOR WITHIN 25MM CONDUIT.
3. 4" X 4" JUNCTION BOXES TO BE LEFT AT POINT OF EACH DETECTOR / MANUAL CALL BOX.
4. MAIN FIRE ALARM PANEL SHALL BE 4 LOOP WITH BATTERY, AUTO DIALING AND RS 485 PORT FOR CONNECTION TO REPEATER PANEL.
5. EACH LEVEL OF ROOM BELOW FALSE FLOOR, FALSE CEILING & ROOM SHALL HAVE INDIVIDUAL RESPONSE INDICATOR AS SHOWN.
6. THE FIRE ALARM SYSTEM SHALL HAVE 10 NOS. OUTPUT MODULES / RELAYS FOR INTERFACING WITH AFC GATES , ESCALATOR & ELEVATOR PANEL CONTROL WIRING FROM FIRE PUMP PANEL / LOCAL PANEL TO REMOTE PUSH BUTTON IN CONTROL ROOM SHALL BE CONNECTED WITH 6CX1.5SQMM CU.WIRE.
7. SPACING OF DETECTORS SHALL BE BASE OF CEILING HEIGHT AND AS PER IS2189:2008, CLAUSE NO. 6.3.2. SMOKE DETECTORS SPACING SHALL NOT EXCEED 7.5M UPTO 7.0M HEIGHT AND HEAT DETECTORS SPACING SHALL NOT EXCEED 5.3M UPTO HEIGHT 5.0M. FURTHEST POINT OF A SIDE WALL OR CORNER WITHIN A ZONE OF PROTECTION IS NOT GREATER THAN (0.7M) TIMES THE DETERMINED SPACING.
8. SPACING OF MANUAL CALL POINT SHALL BE AS PER IS2189:2008, CLAUSE NO. 6.3.8. SPACING SHALL NOT EXCEED 30M FOR INSIDE BUILDING AND SHALL NOT EXCEED 45M FOR OPEN AREAS. MCP SHALL MOUNT AT A HEIGHT OF 1.5M FROM SURROUNDING FLOOR LEVEL.
9. CABLE LAYING AND TERMINATION OF PANEL GAS FLOODING SYSTEM WITH FIRE ALARM SYSTEM SHALL BE DONE BY THE FIRE FIGHTING CONTRACTOR.
10. ALL DISTANCE MEASUREMENTS SHALL BE IN 'MM' NOT IN METER.
11. FIRE ALARM DETECTORS USEING IN ESCALATOR PIT SHALL BE IN ESCALATOR CONTRACTOR SCOPE.
12. CONTRACTOR WILL BE ENSURED THAT GAS FLOODING SYSTEM IS INTEGRATED WITH FIRE ALARM SYSTEM.
13. THE ROUTING OF CABLE SHOWN IN DRAWING MAY BE SLIGHTLY MODIFIED TO SUITE THE SITE CONDITION TO AVOID CLASHING WITH UNDERGROUND OR ABOVEGROUND SERVICES

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P0	SIGN:										Abhijeet K Vaidya		05-07-2023
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DETAIL DESIGN CONSULTANT

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DATE:			
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GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

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P0	05-07-2023	-	

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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: STATION SCHEMATIC FOR FIRE ALARM SYSTEM

SCALE: NTS | DATE: 05-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-EL-FAS-51204

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

29

GURU KA TAL METRO STATION			
FIRE FIGHTING SYSTEM DRAWING LIST			
S.No.	**DRAWING NUMBER**	**DRAWING TITLE**	**REVISION**
1	AGCC05-11718A-TDR-GKT-ME-FPS-51250	DRAWING LIST, LEGENDS AND NOTES	P0
2	AGCC05-11718A-TDR-GKT-ME-FPS-51251	TYPICAL DETAIL OF YARD HYDRANT	P0
3	AGCC05-11718A-TDR-GKT-ME-FPS-51252	SCHEMATIC FOR FIRE FIGHTING SYSTEM	P0
4	AGCC05-11718A-TDR-GKT-ME-FPS-51253	GROUND LEVEL PLAN- FIRE FIGHTING LAYOUT	P0
5	AGCC05-11718A-TDR-GKT-ME-FPS-51254	CONCOURSE LEVEL PLAN- FIRE FIGHTING LAYOUT	P0
6	AGCC05-11718A-TDR-GKT-ME-FPS-51255	PLATFORM LEVEL PLAN- FIRE FIGHTING LAYOUT	P0
7	AGCC05-11718A-TDR-GKT-ME-FPS-51256	PUMP ROOM- FIRE FIGHTING LAYOUT	P0

REV NO	DATE	DESCRIPTION	SIGN
P0	07-07-2023	-	

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DETAIL DESIGN CONSULTANT

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DESIGNATION:	DESIGNATION:	DESIGNATION:

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TYPSA - ITALFERR

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710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: DRAWING LIST, LEGENDS AND NOTES

SCALE: NTS | DATE: 07-07-2023 | STAGE: TDR

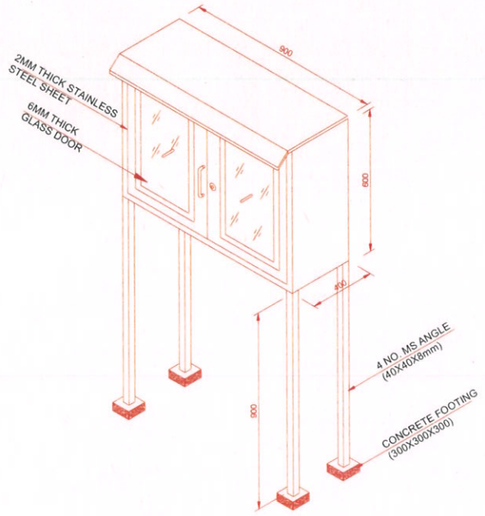
DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51250

OFFICE OF ORIGIN

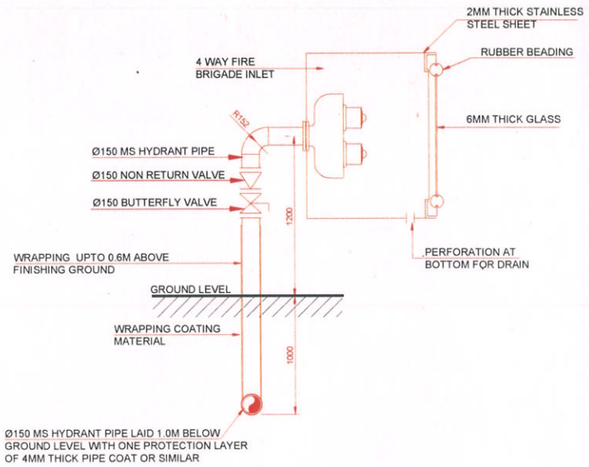
REVISION NO: P0

plot scale 50mm

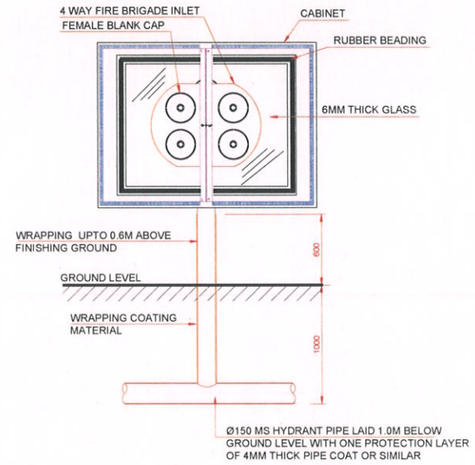
TBA



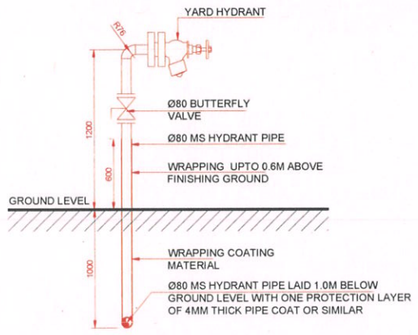
(TYP.) DETAIL OF STAINLESS STEEL HOSE BOX CONTAINING 38 MM SYNTHETIC HOSE, 2X15 M LONG & ONE NO. BRANCH STAINLESS STEEL PIPE



FOUR WAY FIRE BRIGADE COLLECTION



FRONT VIEW OF FOUR WAY FIRE BRIGADE COLLECTION



DETAIL OF YARD HYDRANT

NOTES

1. ALL UNDERGROUND PIPES SHALL BE PROVIDED WITH WRAPPING & COATING OF MINIMUM 4 MM THICK PIPE COTE OR SIMILAR MATERIAL. FOR PIPE TAPPING ABOVE GROUND THE PIPE SHALL BE PROVIDED WITH PIPE COTE FOR MINIMUM 600 MM HEIGHT ABOVE FINISHED LEVEL.

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DETAIL DESIGN CONSULTANT

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: TYPICAL DETAIL OF YARD HYDRANT

SCALE: NTS | DATE: 06-07-2023 | STAGE: TDR

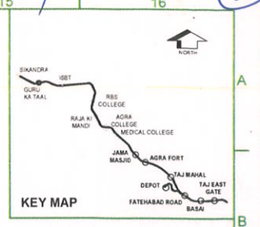
DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51251

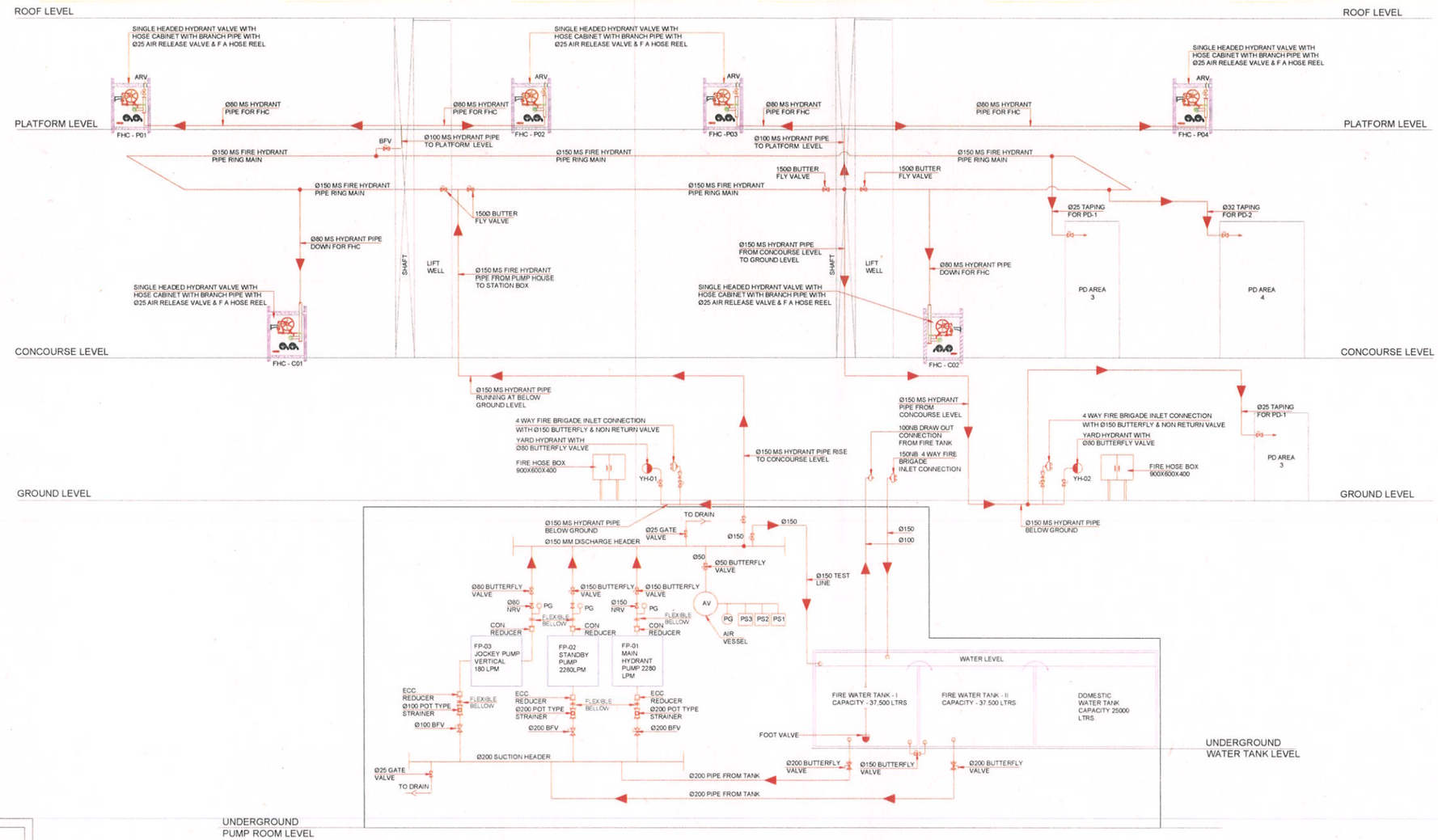
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm

TBA





FIRE FIGHTING SCHEMATIC DIAGRAM

LEGEND:-	
	BRANCH PIPE WITH NOZZLE
	FIRST AID HOSE REEL (THERMOPLASTIC)
	SYNTHETIC HOSE WITH STAIN LESS STEEL COUPLING
	FHC = FIRE HOSE CABINET SIZE AS PER ARCH/SITE
FS	FLOW SWITCH
	FLOW SWITCH FOR SPRINKLER PIPE
	4.5kg CO2 TYPE FIRE EXTINGUISHER
	6 KG. ABC POWDER TYPE FIRE EXTINGUISHER
B.F.V	BUTTERFLY VALVE
G.V	GATE VALVE

SCHEDULE OF PUMPS & PRESSURE SWITCH

QTY.	TAG NO.	DESCRIPTION	HEAD	CAPACITY	POWER	PRESSURE SWITCH	SETTING IN BAR	SIGNAL
1	FP-01	MAIN HYDRANT PUMP	70m	2280LPM	60 HP	PS-01	5.0 BAR	TO START MAIN HYDRANT PUMP
1	FP-02	STANDBY PUMP	70m	2280LPM	60 HP	PS-02	4.0 BAR	TO START STAND BY PUMP
1	FP-03	JOCKEY PUMP (VERTICAL)	70m	180LPM	5.0 HP	PS-03	6.0 BAR	TO START JOCKEY PUMP
						PS-04	7.0 BAR	TO STOP JOCKEY PUMP

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

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DETAIL DESIGN CONSULTANT

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GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A.
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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: SCHEMATIC FOR FIRE FIGHTING SYSTEM

SCALE: NTS | DATE: 05-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51252

OFFICE OF ORIGIN: TATA, 3TI, lipl

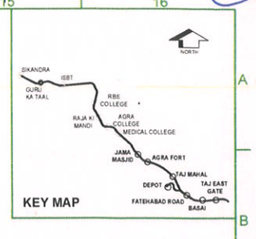
REVISION NO: P0

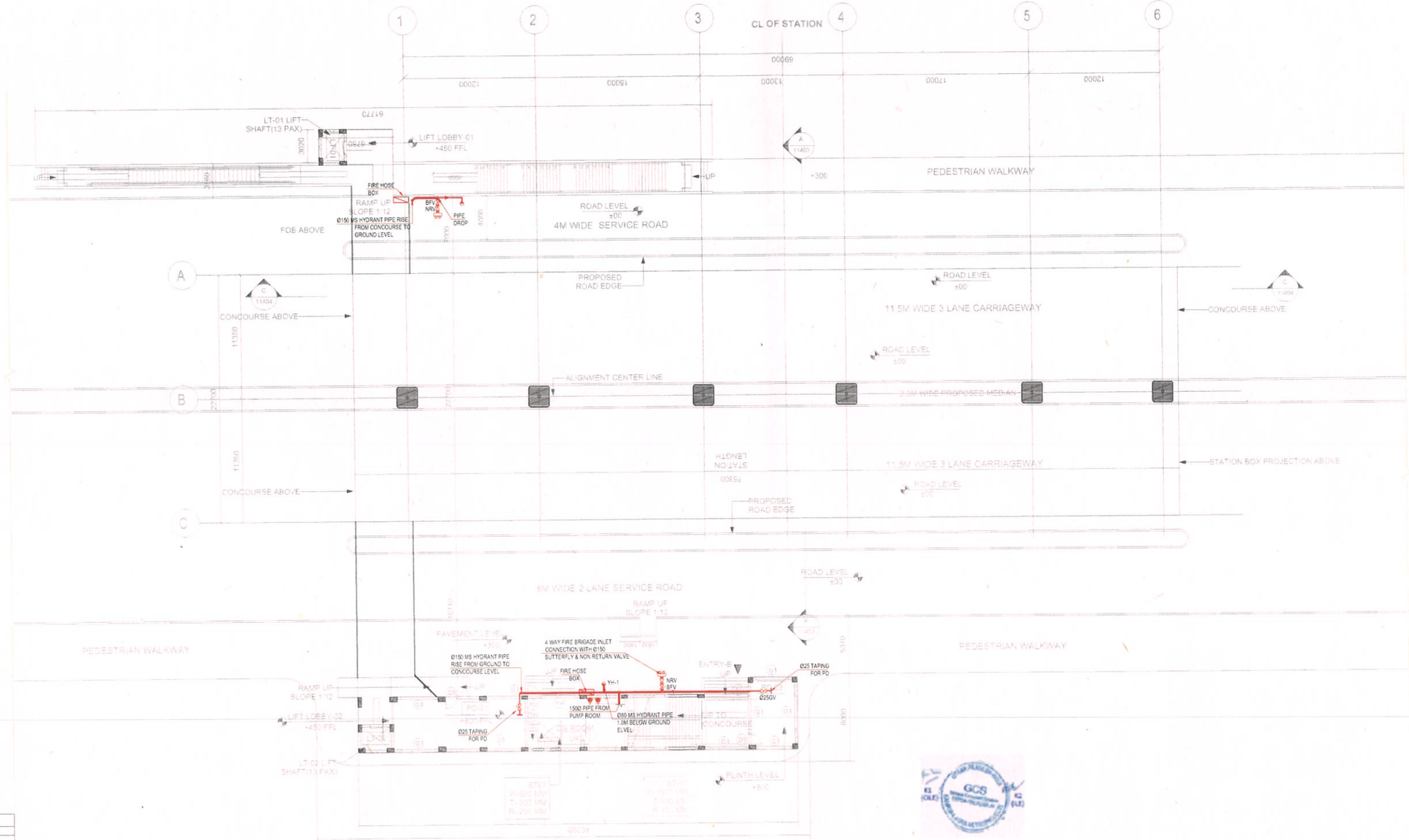
plot scale 50mm

TBA

Annexure - 01 (26)

GURU KA TAL METRO STATION





GROUND FLOOR PLAN - FIRE FIGHTING LAYOUT

SCALE:1:200

LEGEND

SYMBOL	DESCRIPTION
	MS FIRE HYDRANT PIPE ABOVE GROUND LEVEL
	MS FIRE HYDRANT PIPE BELOW GROUND LEVEL
BFV	BUTTERFLY VALVE
	4.5KG CO2 TYPE
	9 LTS. WATER TYPE
	9LTR. MECHANICAL FOAM TYPE FIRE EXTINGUISHER
YH	YARD HYDRANT
NRV	NON-RETURN VALVE
	4 WAY FIRE BRIGADE INLET CONNECTION
	DRAW OUT CONNECTION FROM TANK

NOTES :-
1. AIR RELEASE VALVE SHALL BE PROVIDED AT HIGHEST POINT OF EACH RISER
2. ALL PIPES SHALL BE MS HEAVY GRADE
3. THE DRAWING WILL CHANGE IF ARCHITECTURAL DRAWING CHANGES.

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
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DETAIL DESIGN CONSULTANT

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GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: GROUNDLEVEL PLAN-FIRE FIGHTING LAYOUT

SCALE: NTS | DATE: 06-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51253

OFFICE OF ORIGIN

REVISION NO: P0

REV NO	DATE	DESCRIPTION	SIGN
P0	06-07-2023	-	

plot scale 50mm

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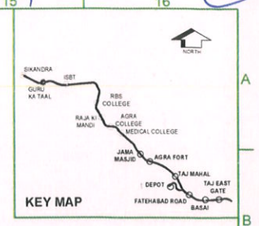
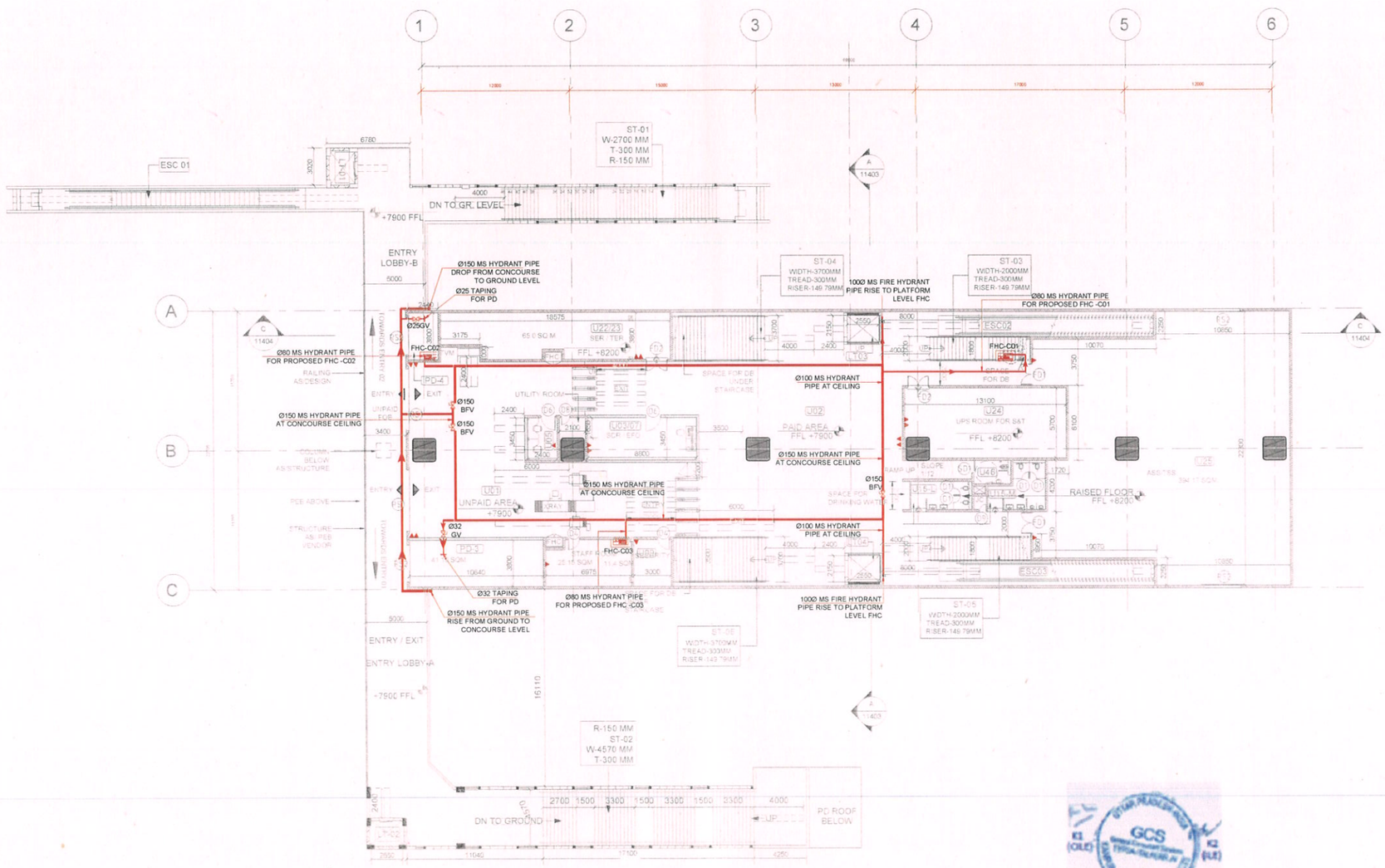
Annexure-01 (25)

GURU KA TAL METRO STATION





CONCOURSE LEVEL PLAN - FIRE FIGHTING LAYOUT

SCALE:1:200

LEGEND:-

SYMBOL	DESCRIPTION
	MS FIRE HYDRANT PIPE
	BUTTERFLY VALVE
(BFV)	BALL VALVE
	4.5KG CO2 TYPE
	9 LTS. WATER TYPE
FHC	FIRE HOSE CABINET

CONCOURSE LEVEL ROOM SCHEDULE (SQ. MT.)

ROOM NO.	ROOM NAME
U01	UNPAID AREA
U02	PAID AREA
U03/07	SCR/EFO- STATION CONTROL ROOM
U05	TOM - TICKET OFFICE MACHINE
U06	SECURITY ROOM
U1F-L	TOILET - LADIES
U1F-G	TOILET - GENTS
U22/23	SER/TER
U24	UPS ROOM FOR S&T
U25	ASS - AUXILIARY SUBSTATION

CONCOURSE LEVEL ROOM SCHEDULE (SQ. MT.)

ROOM NO.	ROOM NAME
U46	TOILET - DIFFERENTLY ABLED
PD-1	PROPERTY DEVELOPMENT
PD-2	PROPERTY DEVELOPMENT

NOTES :-

1. AIR RELEASE VALVE SHALL BE PROVIDED AT HIGHEST POINT OF EACH RISER
2. ALL PIPES SHALL BE MS HEAVY GRADE
3. THE DRAWING WILL CHANGE IF ARCHITECTURAL DRAWING CHANGES

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

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GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights
Vibhuti Khand, Gomti Nagar,
Lucknow-226010

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P0	06-07-2023	-	

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: CONCOURSE LEVEL PLAN-FIRE FIGHTING LAYOUT

SCALE: NTS | DATE: 06-07-2023 | STAGE: TDR

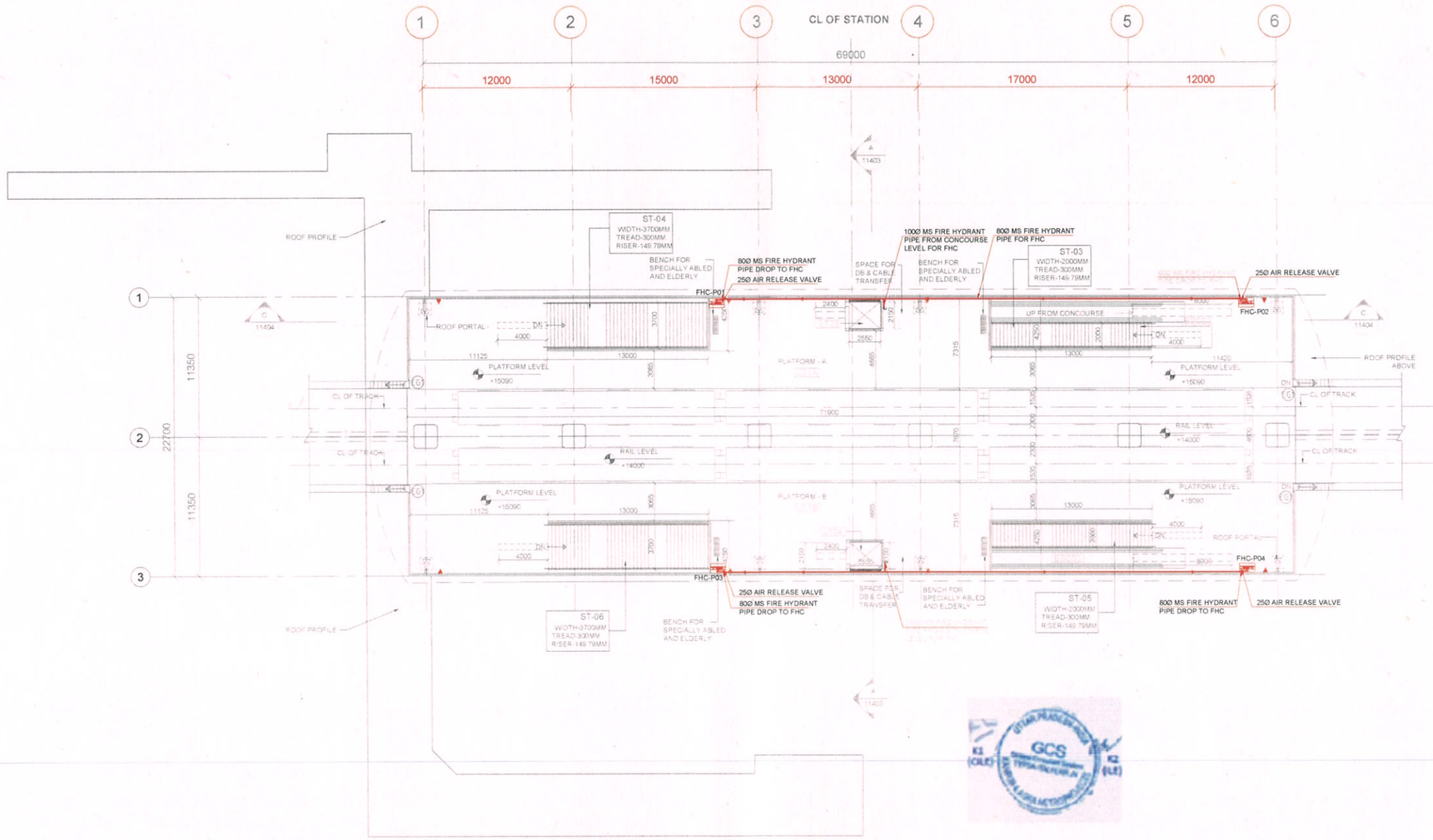
DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51254

OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm

GURU KA TAL METRO STATION



LEGEND:-

SYMBOL	DESCRIPTION
	MS FIRE HYDRANT PIPE
(BFV)	BUTTERFLY VALVE
(BV)	BALL VALVE
	4.5KG CO2 TYPE
	9 LTS WATER TYPE
FHC	FIRE HOSE CABINET

PLATFORM LEVEL PLAN - FIRE FIGHTING LAYOUT

SCALE:1:200

NOTES :-
1. AIR RELEASE VALVE SHALL BE PROVIDED AT HIGHEST POINT OF EACH RISER
2. ALL PIPES SHALL BE MS HEAVY GRADE.
3. THE DRAWING WILL CHANGE IF ARCHITECTURAL DRAWING CHANGES.

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
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GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

REV NO	DATE	DESCRIPTION	SIGN
P0	06-07-2023	-	

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: PLATFORM LEVEL PLAN-FIRE FIGHTING LAYOUT

SCALE: NTS | DATE: 06-07-2023 | STAGE: TDR

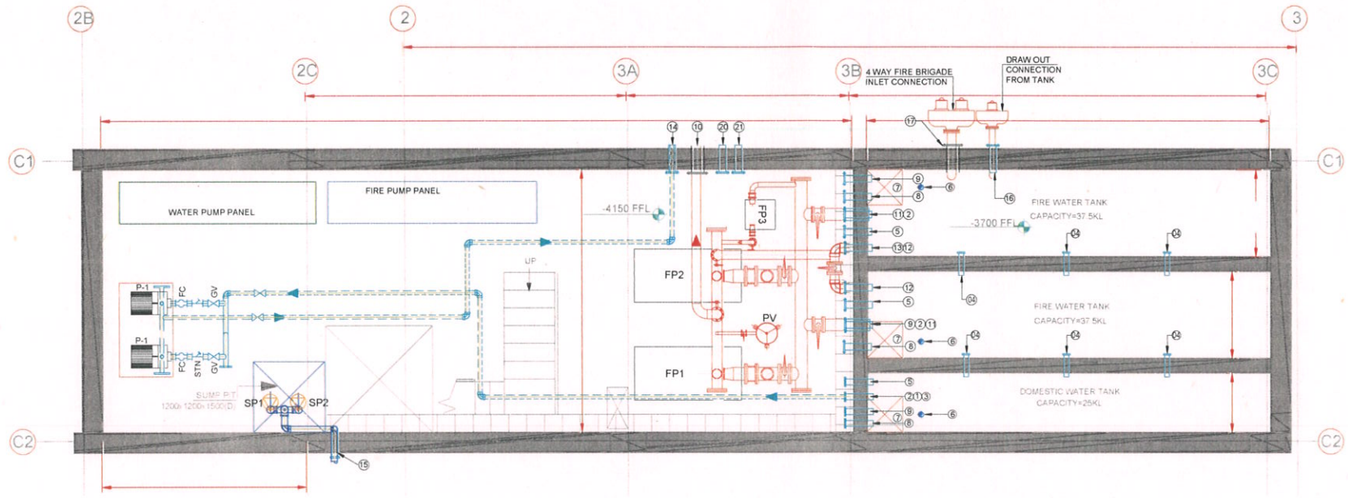
DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51255

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

GURU KA TAL METRO STATION



PUMP ROOM LEVEL - FIRE FIGHTING LAYOUT

SCALE 1:50

SCHEDULE OF INSERTS:-

SR. NO.	DESCRIPTIONS	SIZE	NOS. OF SLEEVES
1	PUDDLE FLANGE FOR SUCTION PIPE FROM DOMESTIC WATER TANK TO DOMESTIC WATER SUPPLY PUMPS	100Ø	1
2	PUDDLE FLANGE FOR DRAIN PIPE	100Ø	3
3	PUDDLE FLANGE FOR OVER FLOW PIPE	100Ø	1
4	SLEEVE IN WALL FOR OVER FLOW	100Ø	4
5	PUDDLE FLANGE FOR LEVEL CONTROLLER	65Ø	3
6	PUDDLE FLANGE FOR VENT PIPE	100Ø	3
7	MEDIUM DUTY MANHOLE COVER	600X600	3
8	TANK FILLING PIPE FROM BOREWELL	80Ø	4
9	TANK FILLING PIPE FROM MUNICIPAL	65Ø	4
10	PUDDLE FLANGE FOR FIRE DISCHARGE PIPE TO STATION	150Ø	1
11	PUDDLE FLANGE FOR SUCTION PIPE FROM FIRE WATER TANK	200Ø	2
12	PUDDLE FLANGE FOR INTER CONNECTION PIPE BETWEEN FIRE WATER TANK - I & II	150Ø	2
13	PUDDLE FLANGE FOR FIRE TEST LINE	150Ø	1
14	SLEEVE FOR DOMESTIC WATER SUPPLY	65Ø	1
15	SLEEVE FOR SUMP RISER PIPE	100Ø	1
16	PUDDLE FLANGE FOR DRAW OUT CONNECTION FROM TANK	100Ø	1
17	PUDDLE FLANGE FOR 4 WAY FIRE BRIGADE INLET TO TANK	150Ø	1
18	SLEEVE FOR ELECTRICAL	150Ø	1
19	SLEEVE FOR S&T	150Ø	1
20& 21	SLEEVE FOR BOREWELL & MUNICIPAL WATER INLET		

SYMBOL	DESCRIPTION
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	NON-RETURN VALVE (NRV)
	BUTTERFLY VALVE (BFV)
	FLEXIBLE BELLOW
	GATE VALVE
	FOUR WAY FIRE BRIGADE INLET CONNECTION
	DRAW OUT CONNECTION
	EXTERNAL FIRE HYDRANT WITH HOSE CABINET
	MS FIRE HYDRANT PIPE

SCHEDULE OF PUMPS & PRESSURE SWITCH

QTY.	TAG NO.	DESCRIPTION	CAPACITY	HEAD	PRESSURE SWITCH	SIGNAL
1	FP1	MAIN HYDRANT PUMP	AS PER BOQ	70M	PS-01	TO START MAIN HYDRANT PUMP
1	FP2	STANDBY PUMP	AS PER BOQ	70M	PS-02	TO START STAND BY PUMP
1	FP3	JOCKEY PUMP (VERTICAL)	AS PER BOQ	70M	PS-03 PS-04	TO START JOCKEY PUMP TO STOP JOCKEY PUMP

SCHEDULE OF PLUMBING PUMPS

DESCRIPTION	TYPE	CAPACITY	HEAD
DOMESTIC WATER SUPPLY PUMP 2 Nos. (1W+1S)	P1	AS PER BOQ	35M
SUBMERSIBLE PUMP 2 Nos. (1W+1S)	P2	AS PER BOQ	12M

REV NO	DATE	DESCRIPTION	SIGN
P0	06-07-2023	-	

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P0	SIGN.	SOURABH DUBEY	ANIL KUMAR							Abhijeet K Vaidya			06-07-2023
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A, ROME ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT

TYPSA - ITALFERR

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710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: PUMP ROOM-FIRE FIGHTING LAYOUT

SCALE: NTS | DATE: 06-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-FPS-51256

OFFICE OF ORIGIN

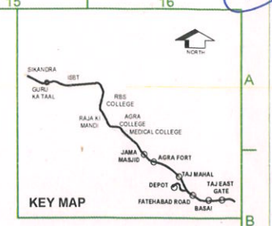
REVISION NO: P0

plot scale 50mm

TBA

Annexure-01

(22)



GURU KA TAL METRO STATION
PLUMBING SYSTEM DRAWING LIST

S.No.	DRAWING NUMBER	DRAWING TITLE	REVISION
1	AGCC05-11718A-TDR-GKT-ME-PLB-61201	DRAWING LIST, LEGENDS AND NOTES	P0
2	AGCC05-11718A-TDR-GKT-ME-PLB-61202	WATER SUPPLY SYSTEM-SCHEMATIC DIAGRAM	P0
3	AGCC05-11718A-TDR-GKT-ME-PLB-61204	GROUND LEVEL PLAN - DRAINAGE LAYOUT	P0
4	AGCC05-11718A-TDR-GKT-ME-PLB-61206	CONCOURSE LEVEL PLAN - DRAINAGE LAYOUT	P0
5	AGCC05-11718A-TDR-GKT-ME-PLB-61207	PLATFORM LEVEL PLAN - DRAINAGE LAYOUT	P0
6	AGCC05-11718A-TDR-GKT-ME-PLB-61208	ROOF LEVEL PLAN - DRAINAGE LAYOUT	P0
7	AGCC05-11718A-TDR-GKT-ME-PLB-61209	GROUND LEVEL PLAN- WATER SUPPLY LAYOUT	P0
8	AGCC05-11718A-TDR-GKT-ME-PLB-61210	CONCOURSE LEVEL PLAN - WATER SUPPLY LAYOUT	P0
9	AGCC05-11718A-TDR-GKT-ME-PLB-61211	PLATFORM LEVEL PLAN - WATER SUPPLY LAYOUT	P0
10	AGCC05-11718A-TDR-GKT-ME-PLB-61212	ROOF LEVEL PLAN - WATER SUPPLY LAYOUT	P0
11	AGCC05-11718A-TDR-GKT-ME-PLB-61215	SCHEMATIC LAYOUT OF SEEPAGE DRAINAGE SYSTEM	P0
12	AGCC05-11718A-TDR-GKT-ME-PLB-61216	SCHEMATIC LAYOUT OF SEWAGE DRAINAGE SYSTEM	P0
13	AGCC05-11718A-TDR-GKT-ME-PLB-61217	PUMP ROOM LEVEL PLAN	P0
14	AGCC05-11718A-TDR-GKT-ME-PLB-61218	TYPICAL PIPE SUPPORT DETAIL	P0
15	AGCC05-11718A-TDR-GKT-ME-PLB-61219	TYPICAL PIER DRAINAGE ARRANGEMENT	P0
16	AGCC05-11718A-TDR-GKT-ME-PLB-61220	TYPICAL DETAIL OF RAIN WATER HARVESTING PIT	P0

K3 (OLD) GCS K2 (LC)

REV NO	DATE	DESCRIPTION	SIGN
P0	13-07-2023	-	

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DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

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CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: DRAWING LIST, LEGENDS AND NOTES

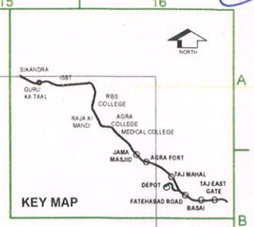
SCALE: NTS | DATE: 13-07-2023 | STAGE: TDR

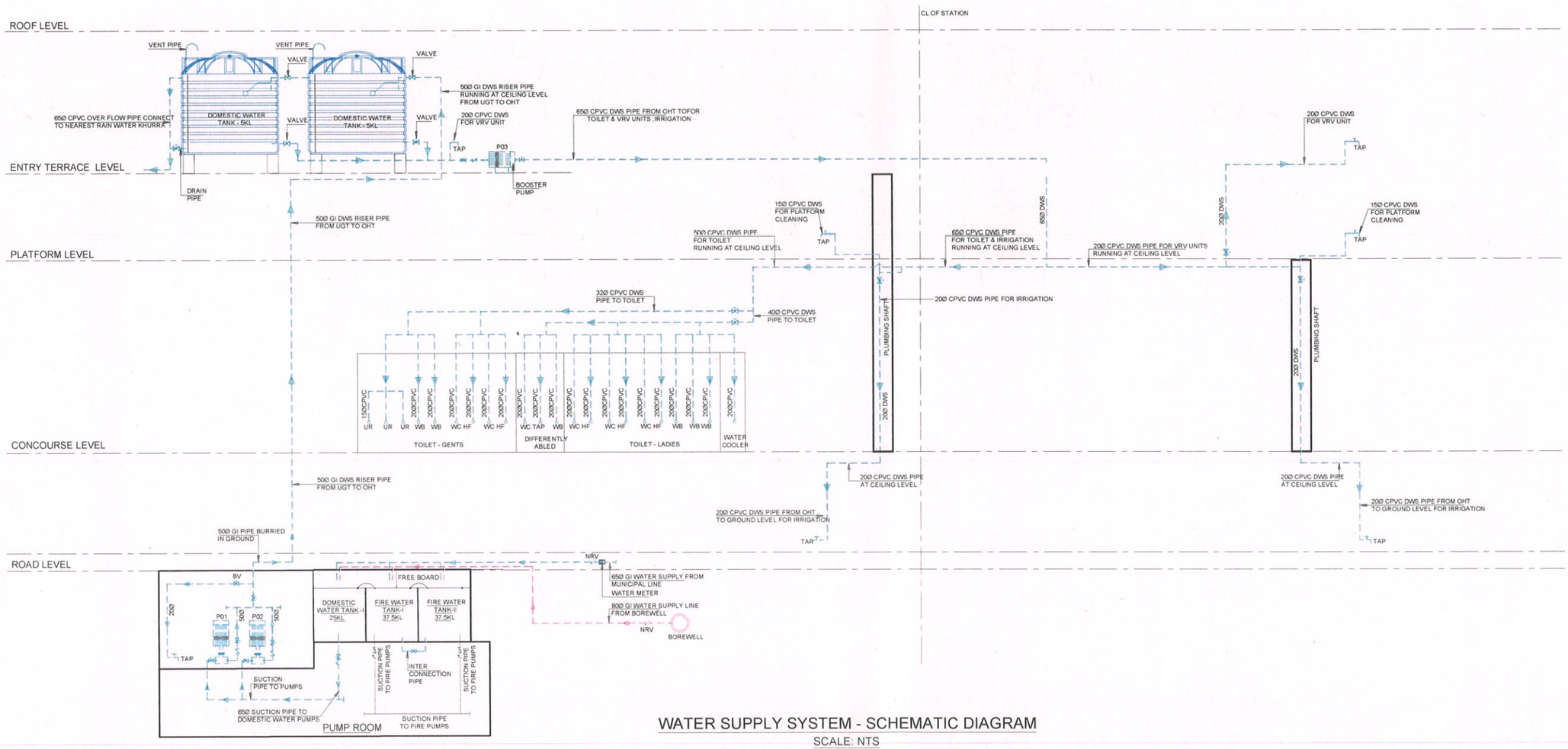
DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61201

OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm





WATER SUPPLY SYSTEM - SCHEMATIC DIAGRAM

SCALE: NTS

LEGENDS	
	DOMESTIC WATER SUPPLY PIPE
BFV	BUTTER FLY VALVE
NRV	NON RETURN VALVE
PG	PRESSER GAUGE
	STRAINER
WB	WASH BASIN
WC	WATER CLOSET
HF	HEALTH FAUCET
UR	URINAL
AT	ABLUTION TAP

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE	
					CLEARED									

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT

TYPSA - ITALFERR

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710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION:

TITLE: WATER SUPPLY SYSTEM-SCHEMATIC DIAGRAM

SCALE: AS SHOWN | DATE: 05-07-2023 | STAGE:

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61202

OFFICE OF ORIGIN

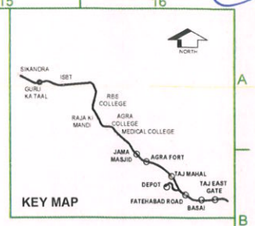
REVISION NO: P0

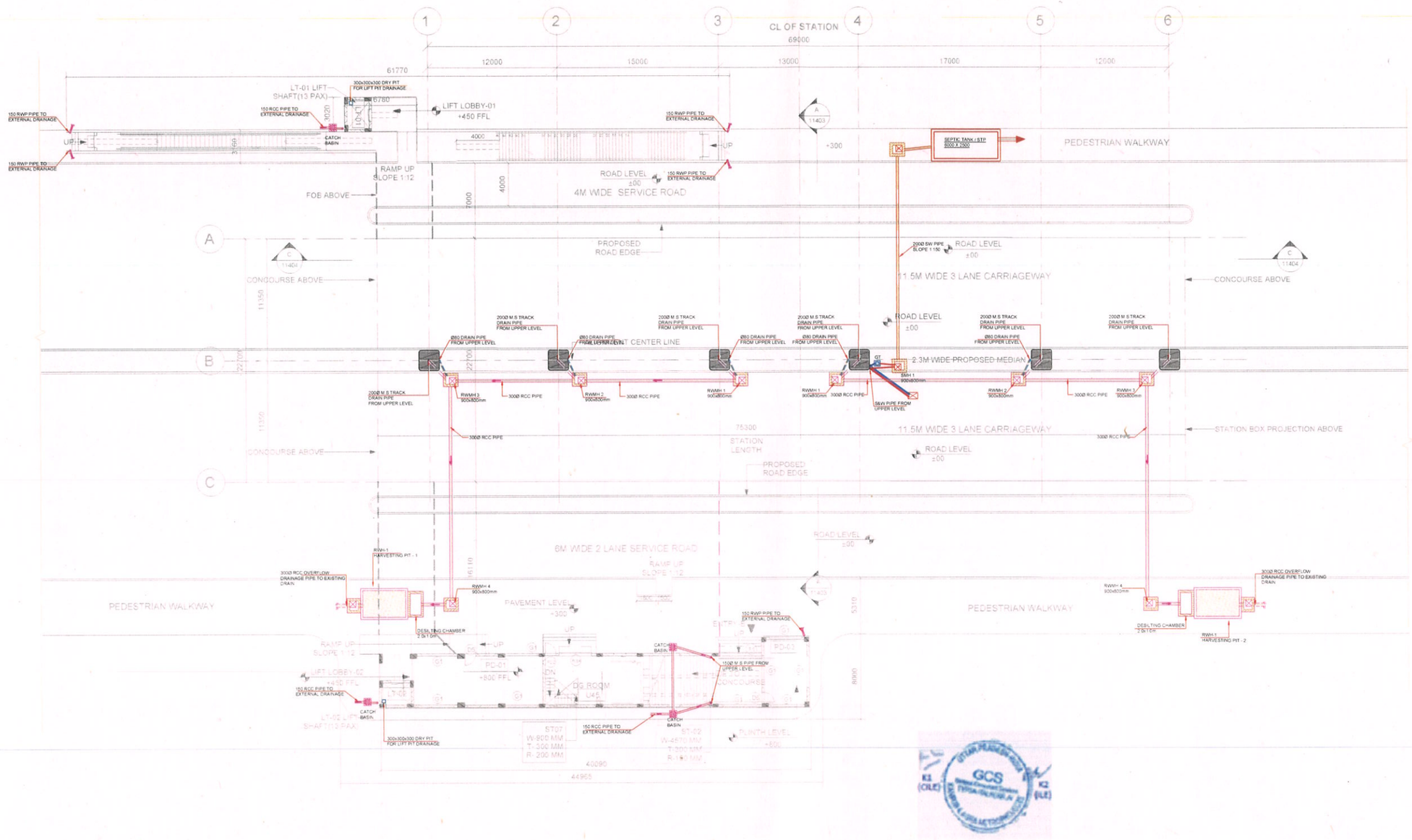
REV NO	DATE	DESCRIPTION	SIGN
P0	05-07-2023	-	

plot scale 50mm

Annexure – 01

(20)





LEGENDS:	
	RAIN WATER PIPE
	STORM WATER PIPE
	SAUCER DRAINAGE PIPE
	SOIL PIPE
	WASTE PIPE
	SEWERAGE PIPE
	GULLY TRAP
	RAIN WATER MANHOLE (RWMH)
	CATCH BASIN

GROUND LEVEL PLAN - DRAINAGE LAYOUT

SCALE:1:200

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE	
					CLEARED									

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A, ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

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☑ ROC ☐ NOWC ☐ RESUBMIT

REVIEWED BY	APPROVED BY	VETTED BY
SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: GROUND LEVEL DRAINAGE LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61204

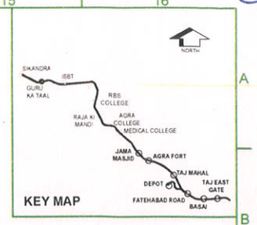
OFFICE OF ORIGIN: TATA, 3TI, lipl

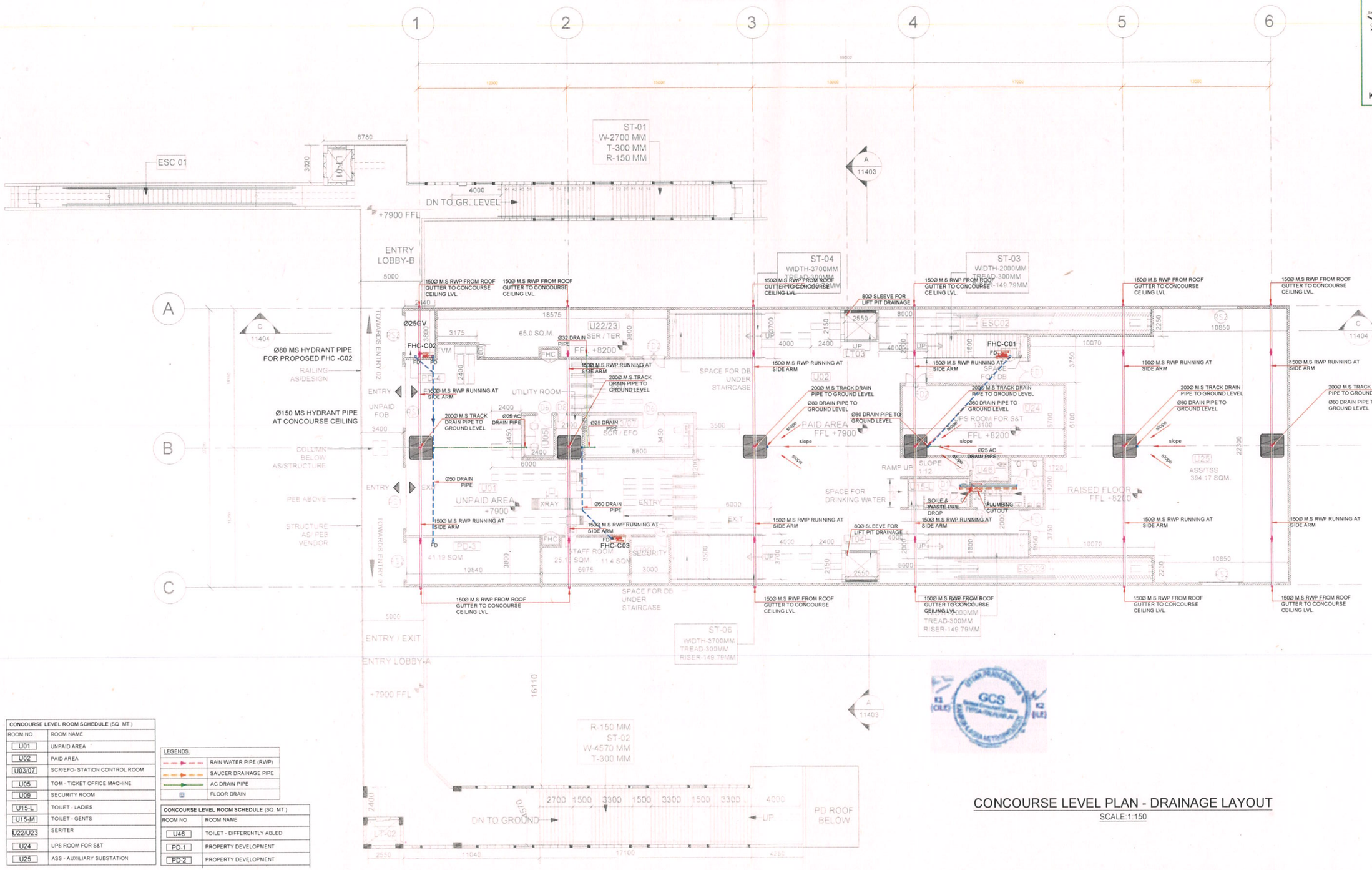
REVISION NO: P0

plot scale 50mm

TBA

GURU KA TAL STATION





CONCOURSE LEVEL ROOM SCHEDULE (SQ. MT.)	
ROOM NO.	ROOM NAME
U01	UNPAID AREA
U02	PAID AREA
U03/07	SCR/EFO- STATION CONTROL ROOM
U05	TOM - TICKET OFFICE MACHINE
U09	SECURITY ROOM
U15-L	TOILET - LADIES
U15-M	TOILET - GENTS
U22/U23	SER/TER
U24	UPS ROOM FOR S&T
U25	ASS - AUXILIARY SUBSTATION

CONCOURSE LEVEL ROOM SCHEDULE (SQ. MT.)	
ROOM NO.	ROOM NAME
U46	TOILET - DIFFERENTLY ABLED
PD-1	PROPERTY DEVELOPMENT
PD-2	PROPERTY DEVELOPMENT

CONCOURSE LEVEL PLAN - DRAINAGE LAYOUT

SCALE:1:150

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

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P0 SIGN.	ANIL KUMAR			Faizuddin Siddiqui						Abhijeet K. Vaidya		11-07-2023
	CLEARED											

☑ ROC ☐ NOWC ☐ RESUBMIT

REVIEWED BY	APPROVED BY	VETTED BY
SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A., ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: CONCOURSE LEVEL DRAINAGE LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61206

OFFICE OF ORIGIN

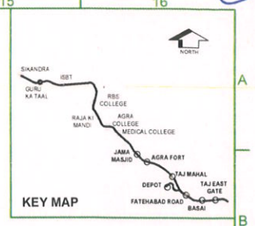
REVISION NO: P0

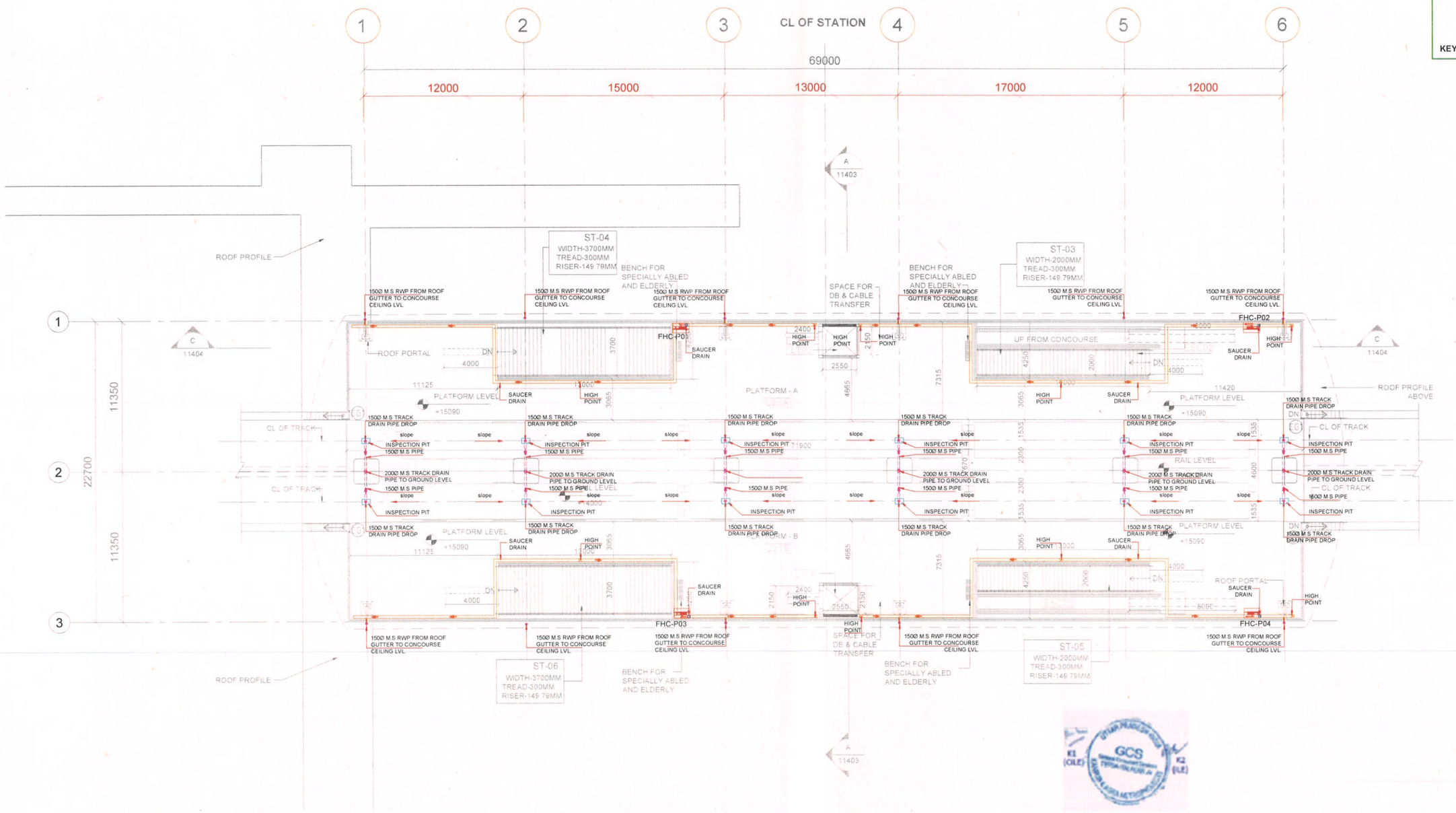
plot scale 50mm

Annexure-01

(18)

GURU KA TAL METRO STATION





PLATFORM LEVEL PLAN - DRAINAGE LAYOUT

SCALE:1:150

LEGENDS:	
	RAIN WATER PIPE (RWP)
	SAUCER DRAINAGE PIPE
	FLOOR DRAIN

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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P0	SIGN.		ANIL KUMAR				Fazuddin Siddiqui					Abhijeet K. Vaidya		11-07-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
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DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3Ti PROGETTI S.p.A, ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
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GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: PLATFORM LEVEL DRAINAGE LAYOUT

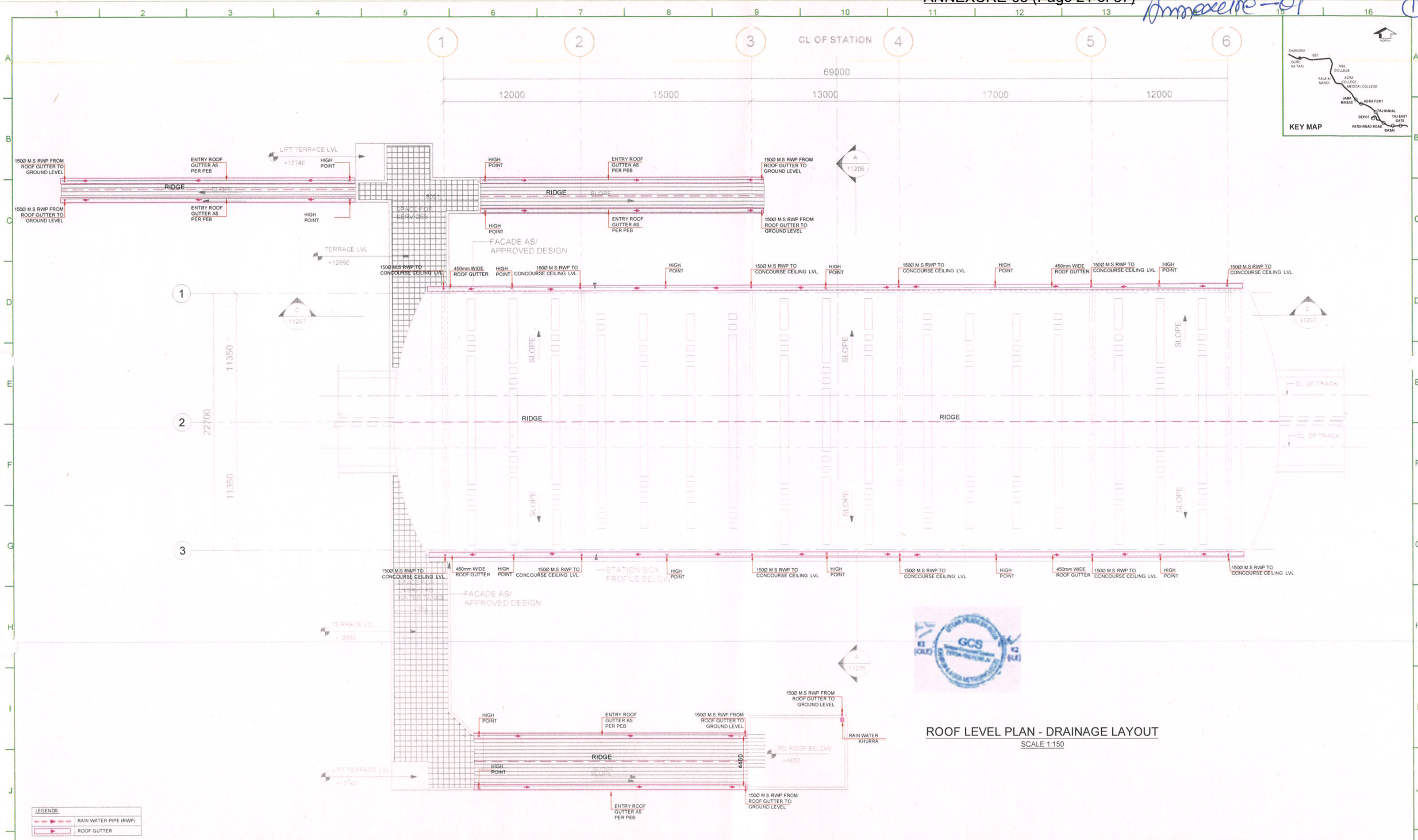
SCALE: NTS | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61207

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm



ROOF LEVEL PLAN - DRAINAGE LAYOUT

SCALE:1:150

LEGENDS
- RAIN WATER PIPE (RWP)
- ROOF GUTTER

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

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REVIEWED BY	APPROVED BY	VETTED BY
SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: ROOF LEVEL PLAN-DRAINAGE LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61208

OFFICE OF ORIGIN: TATA, 3TI, lipl

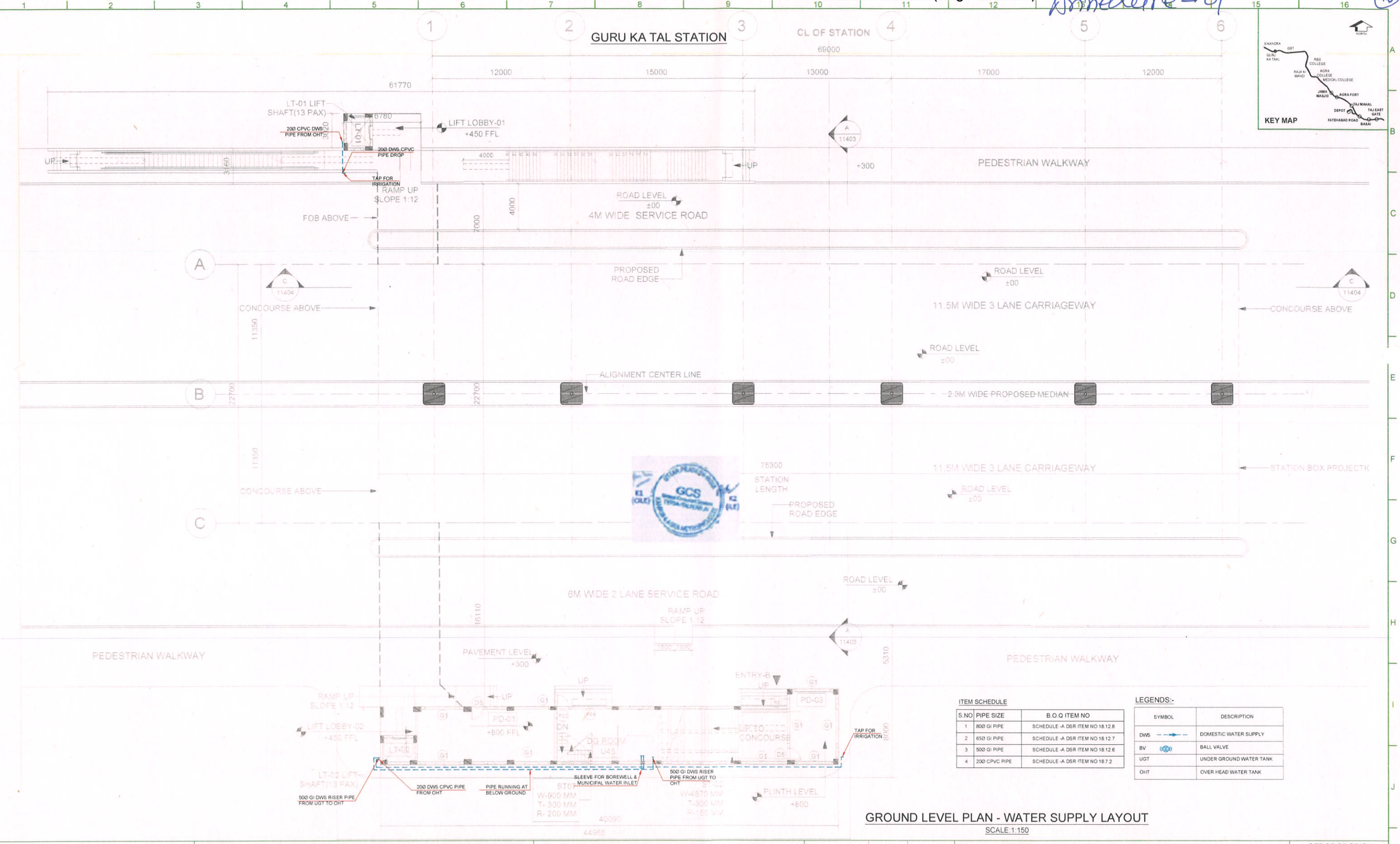
REVISION NO: P0

plot scale 50mm

Annexure – 01

(16)

GURU KA TAL STATION



ITEM SCHEDULE

S.NO	PIPE SIZE	B.O.Q ITEM NO
1	80Ø GI PIPE	SCHEDULE -A DSR ITEM NO 18.12.8
2	65Ø GI PIPE	SCHEDULE -A DSR ITEM NO 18.12.7
3	50Ø GI PIPE	SCHEDULE -A DSR ITEM NO 18.12.6
4	20Ø CPVC PIPE	SCHEDULE -A DSR ITEM NO 18.7.2

LEGENDS:-

SYMBOL	DESCRIPTION
DWS	DOMESTIC WATER SUPPLY
BV	BALL VALVE
UGT	UNDER GROUND WATER TANK
OHT	OVER HEAD WATER TANK

GROUND LEVEL PLAN - WATER SUPPLY LAYOUT

SCALE:1:150

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
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DETAIL DESIGN CONSULTANT

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REVIEWED BY	APPROVED BY	VETTED BY
SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos. S.A. and Italferr S.P.A. 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: GROUND LEVEL PLAN-WATER SUPPLY LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61209

OFFICE OF ORIGIN: TATA, 3TI, lipl

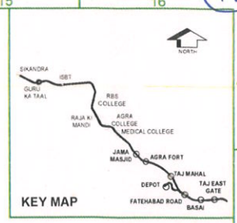
REVISION NO: P0

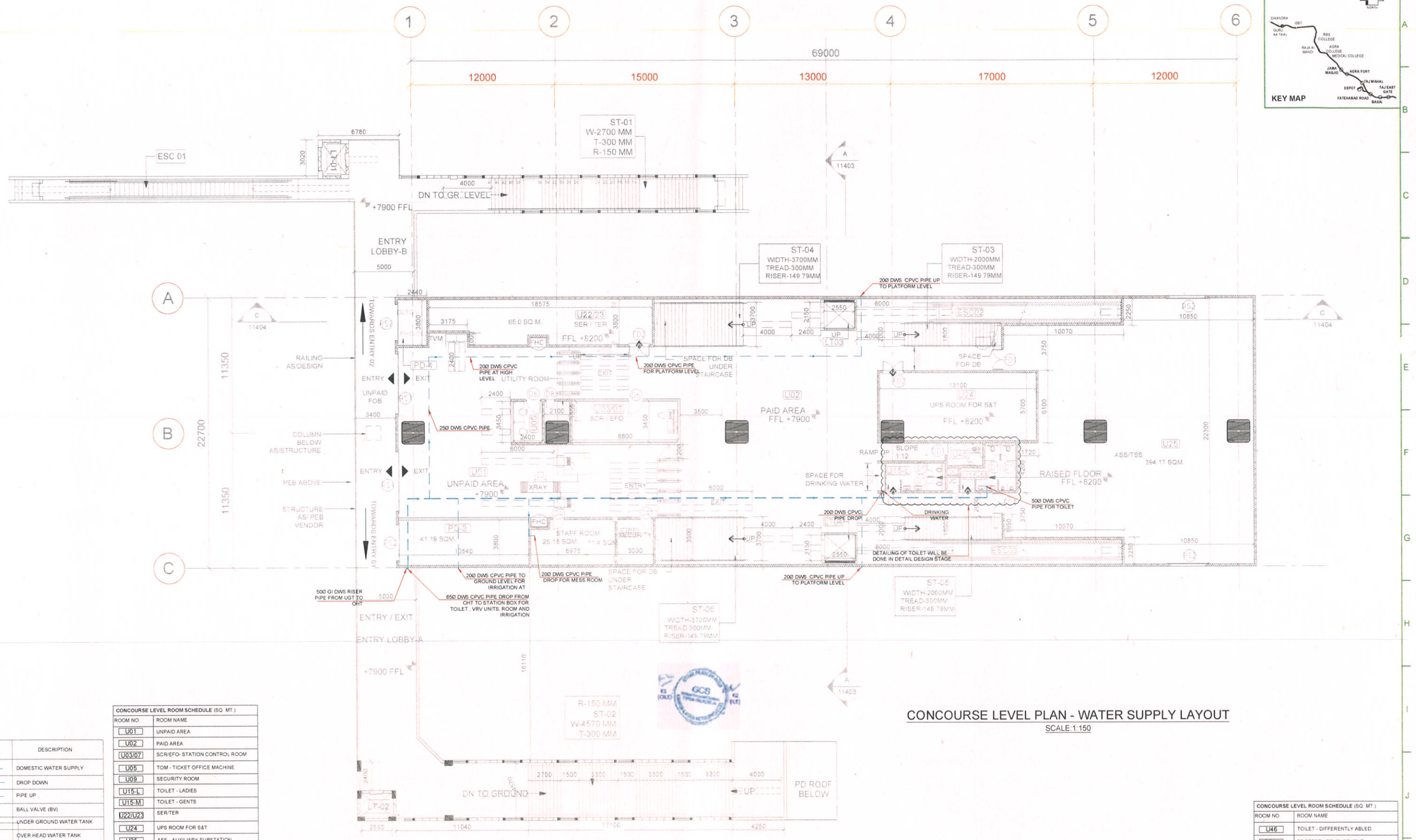
REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

plot scale 50mm

Annexure-01

15





CONCOURSE LEVEL PLAN - WATER SUPPLY LAYOUT

SCALE:1:150

LEGENDS:-

SYMBOL		DESCRIPTION
DWS		DOMESTIC WATER SUPPLY
DD		DROP DOWN
UP		PIPE UP
BV		BALL VALVE (BV)
UGT		UNDER GROUND WATER TANK
OHT	TION	OVER HEAD WATER TANK

R SUPPLY

CONCOURSE LEVEL ROOM SCHEDULE (SQ. MT.)	
ROOM NO.	ROOM NAME
U01	UNPAID AREA
U02	PAID AREA
U03/07	SCR/EFO- STATION CONTROL ROOM
U05	TOM - TICKET OFFICE MACHINE
U09	SECURITY ROOM
U15-L	TOILET - LADIES
U15-M	TOILET - GENTS
U22/U23	SER/TER
U24	UPS ROOM FOR S&T
U25	ASS - AUXILIARY SUBSTATION

CONCOURSE LEVEL ROOM SCHEDULE (SQ. MT.)	
ROOM NO.	ROOM NAME
U46	TOILET - DIFFERENTLY ABLED
PD-1	PROPERTY DEVELOPMENT

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

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	SIGN.	DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
P0	SOUR Abh DUBEY	ANIL KUM AR			Faizuddin Siddiqui					Abhij eet K Vaidy a			11-07-2023
ISSUE					CLEARED								

DETAIL DESIGN CONSULTANT

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
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GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: CONCOURSE LEVEL PLAN-WATER SUPPLY LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61210

OFFICE OF ORIGIN

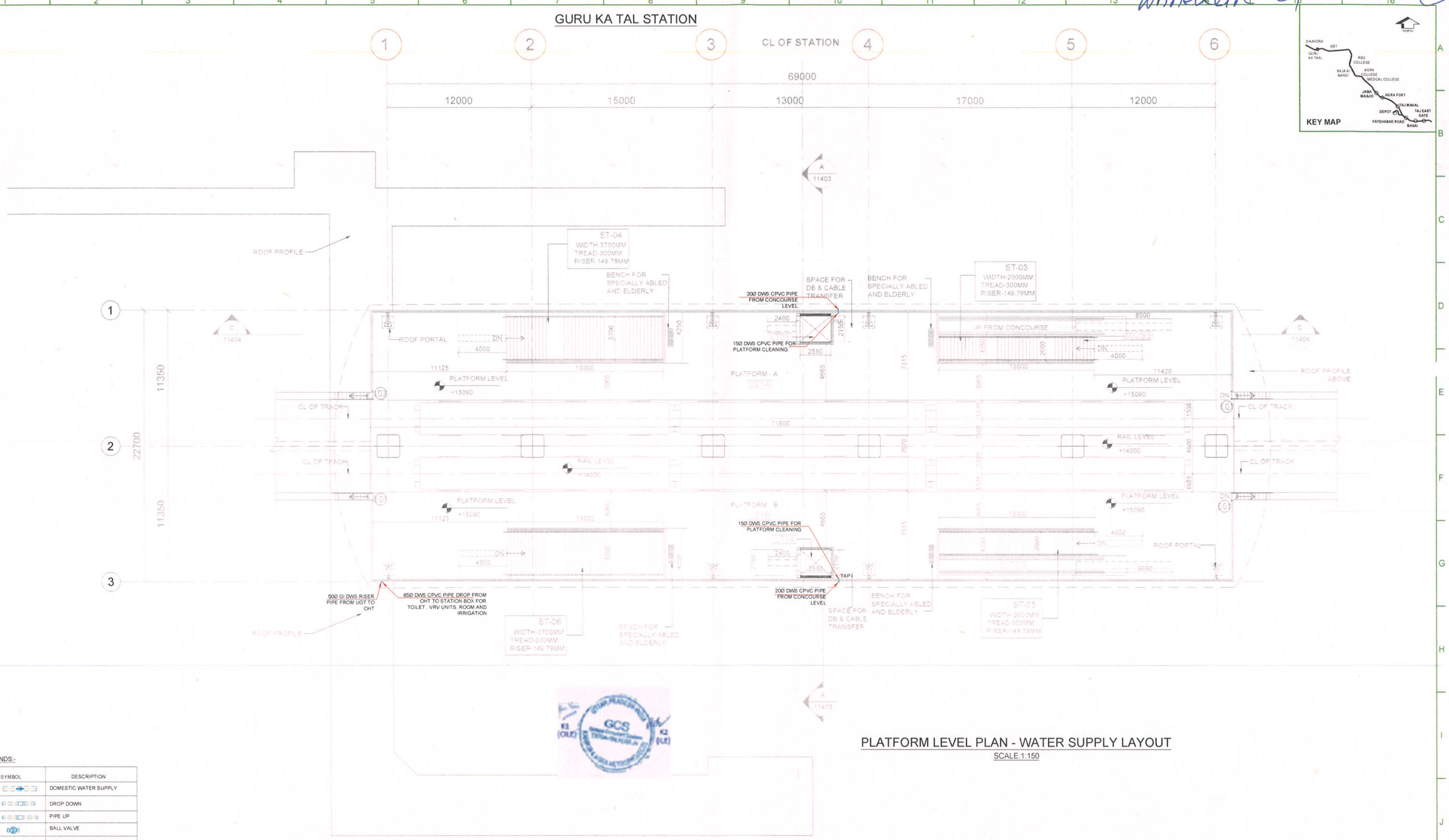
REVISION NO. P0

plot scale 50mm

TBA

Annexure-01 (14)

GURU KA TAL STATION



PLATFORM LEVEL PLAN - WATER SUPPLY LAYOUT

SCALE:1:150

LEGENDS:-

SYMBOL	DESCRIPTION
DWS	DOMESTIC WATER SUPPLY
DD	DROP DOWN
UP	PIPE UP
BV	BALL VALVE
UGT	UNDER GROUND WATER TANK
OHT	OVER HEAD WATER TANK

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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P0	SIGN.		ANIL KUMAR			Fazuddin Siddiqui				Abhijeet K Vaidya			11-07-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
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DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A. ROME ITALY | LEAP INFRAASYS PRIVATE LIMITED FARIDABAD

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SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: PLATFORM LEVEL PLAN-WATER SUPPLY LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

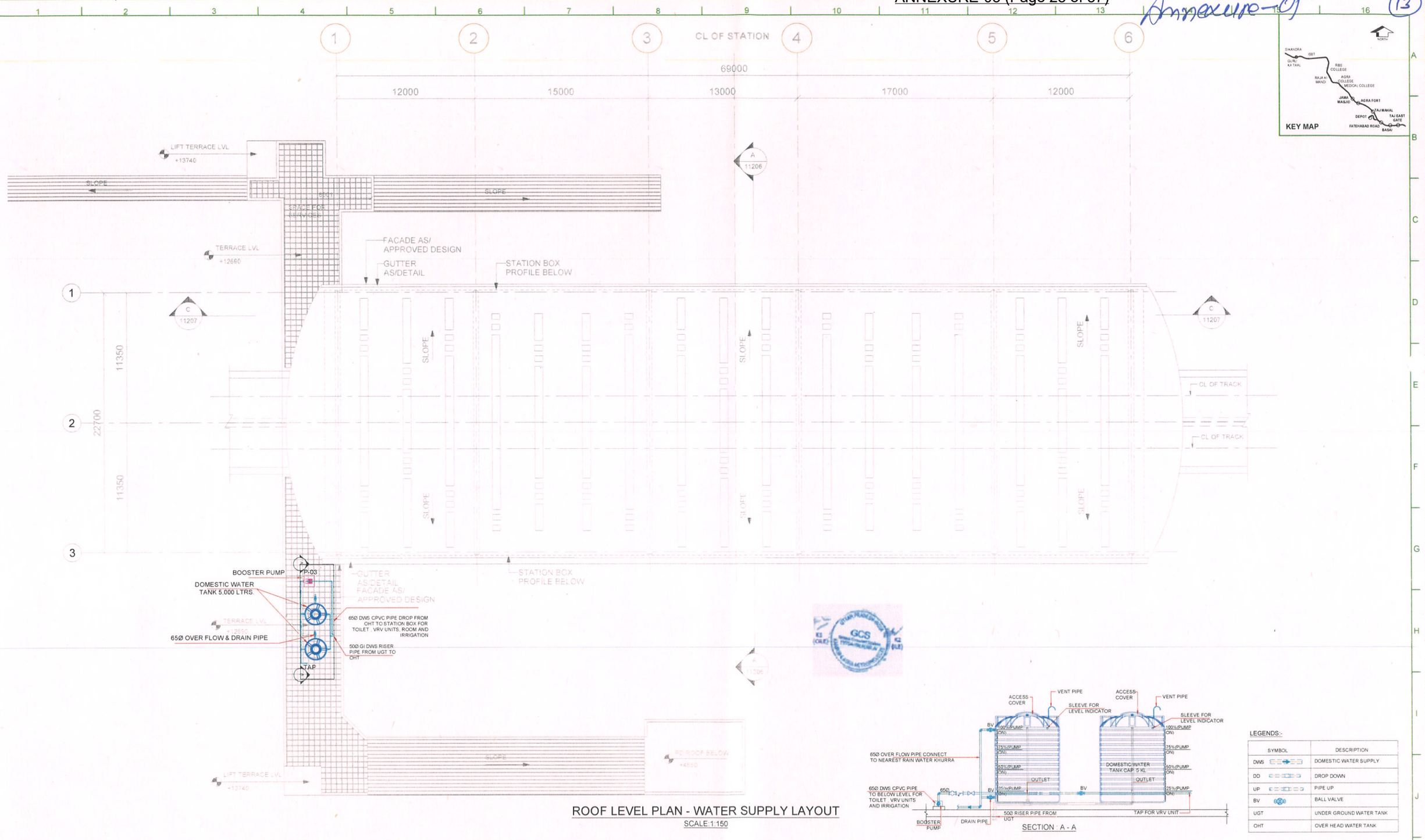
DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61211

OFFICE OF ORIGIN

REVISION NO. P0

plot scale 50mm

Annexure-01 (13)



ROOF LEVEL PLAN - WATER SUPPLY LAYOUT

SCALE:1:150

SECTION : A - A

LEGENDS:-

SYMBOL	DESCRIPTION
DWS	DOMESTIC WATER SUPPLY
DD	DROP DOWN
UP	PIPE UP
BV	BALL VALVE
UGT	UNDER GROUND WATER TANK
OHT	OVER HEAD WATER TANK

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: ROOF LEVEL PLAN-WATER SUPPLY LAYOUT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO. AGCC05-11718A-TDR-GKT-ME-PLB-61212

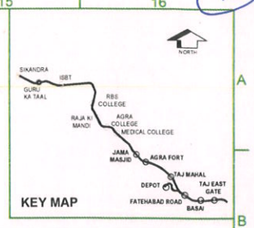
OFFICE OF ORIGIN

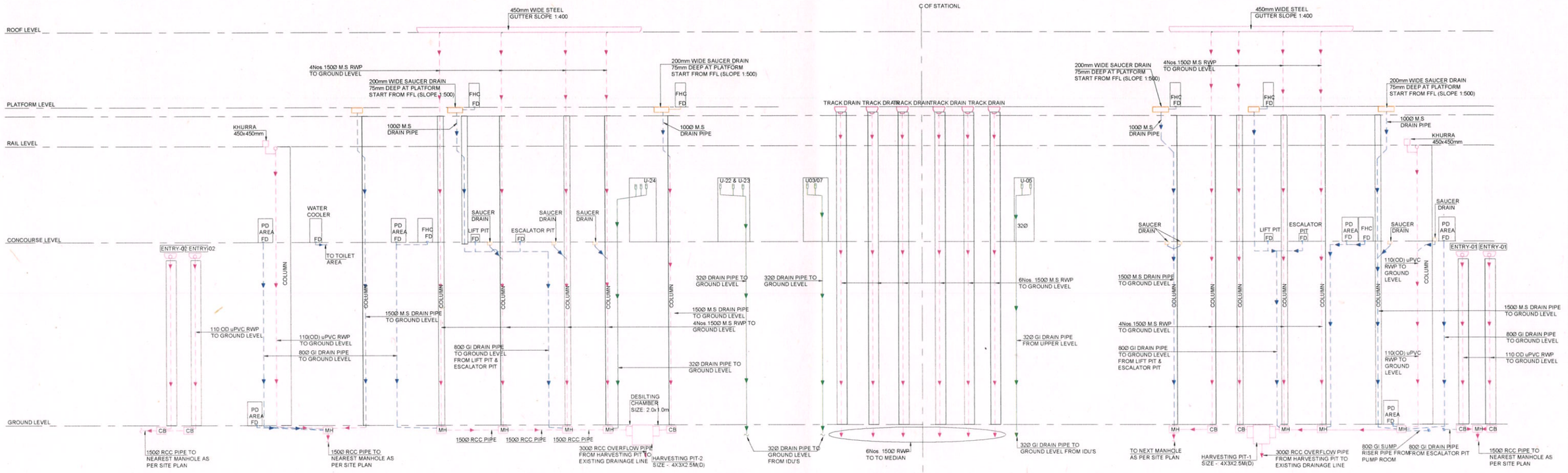
REVISION NO. P0

REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

plot scale 50mm

Annexure-01 (12)





SCHEMATIC LAYOUTS OF SEEPAGE DRAINAGE SYSTEM
SCALE: NTS

LEGENDS:	
——— ——— ———	RAIN WATER PIPE (RWP)
——— ——— ———	STORM WATER PIPE
——— ——— ———	AC DRAINAGE PIPE
——— ——— ———	SAUCER DRAINAGE PIPE
MH	MANHOLE
CB	CATCH BASIN

REV NO	DATE	DESCRIPTION	SIGN
P0	05-07-2023	-	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT .

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P0	SIGN.		ANIL KUMAR			Faizuddin Siddqui				Abhijeet K Vaidya			05-07-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

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SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 710, 7th Floor, Cyber Heights Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: SCHEMATIC LAYOUT OF SEEPAGE DRAINAGE SYSTEM

SCALE: AS SHOWN | DATE: 05-07-2023 | STAGE: TDR

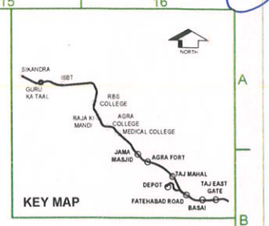
DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61215

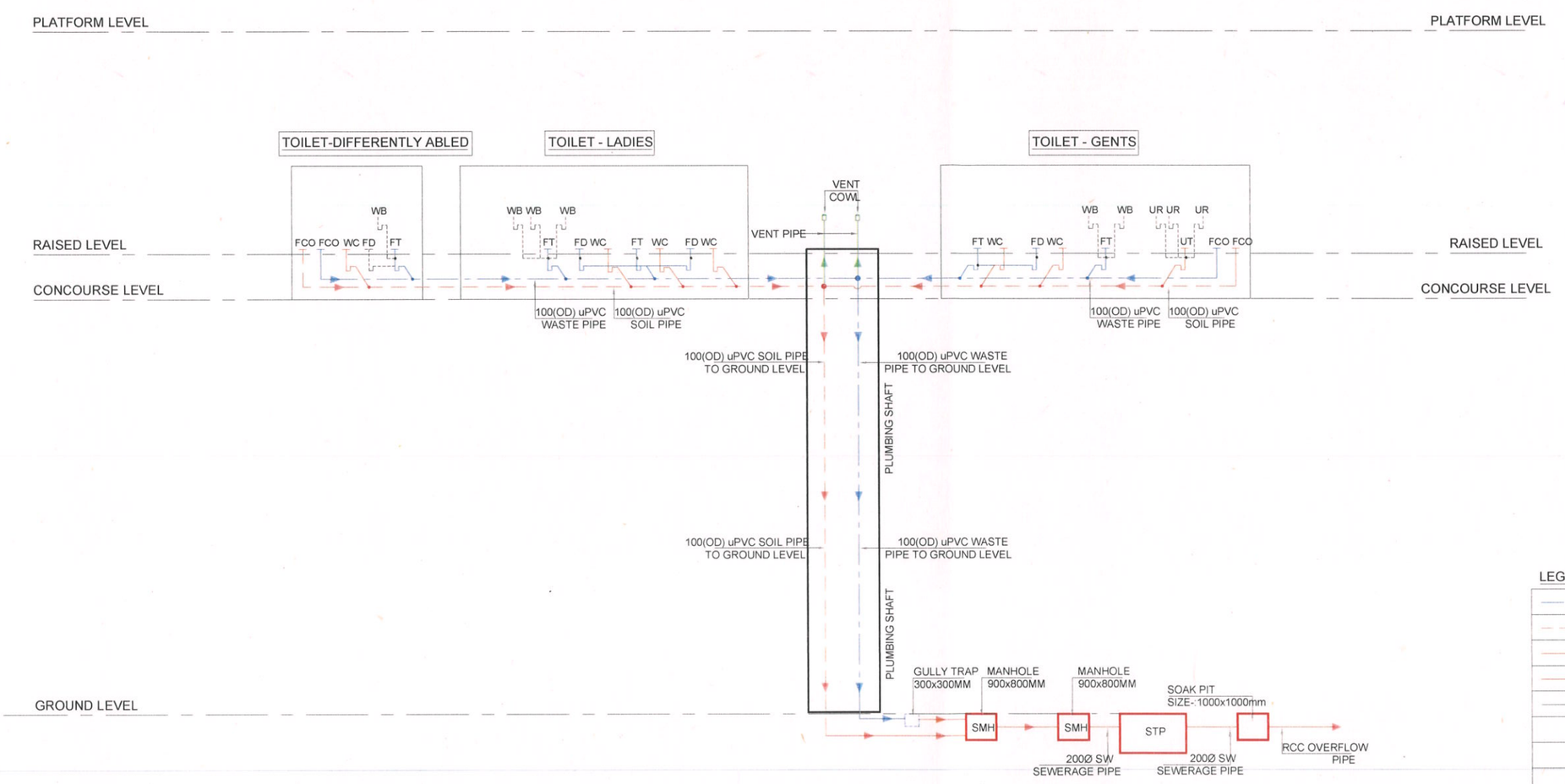
OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

Annexure-01





LEGENDS:

	WASTE DRAINAGE PIPE
	SOIL DRAINAGE PIPE
	SEWERAGE DRAINAGE PIPE
	STONEWARE (SW)
	VENT PIPE
WB	WASH BASIN
WC	WATER CLOSET
HF	HEALTH FAUCET
FT	FLOOR TRAP
FD	FLOOR DRAIN
UR	URINAL
UT	URINAL TRAP
FCO	FLOOR CLEAN OUT

SEWAGE DRAINAGE SYSTEM - SCHEMATIC DIAGRAM

SCALE: NTS

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
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REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: SCHEMATIC LAYOUT OF SEWAGE DRAINAGE SYSTEM

SCALE: AS SHOWN | DATE: 05-07-2023 | STAGE: TDR

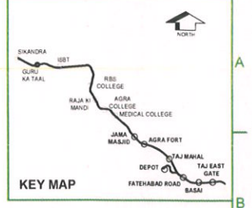
DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61216

OFFICE OF ORIGIN

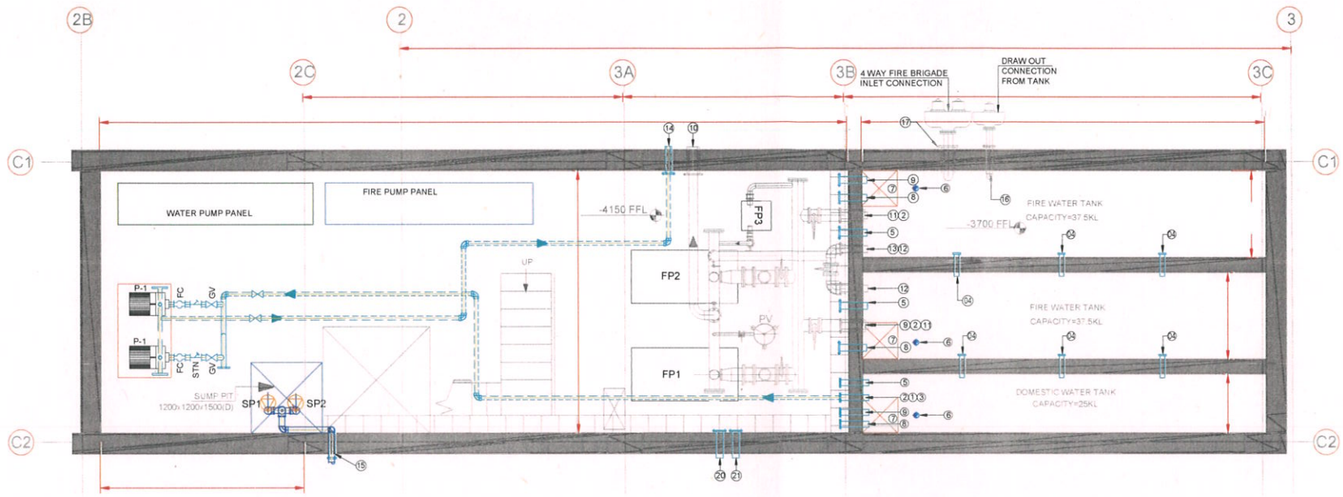
REVISION NO: P0

plot scale 50mm

Annexure-01 (10)



GURU KA TAL METRO STATION



PUMP ROOM LEVEL PLAN

SCALE:1:50

SCHEDULE OF INSERTS:-			
SR. NO.	DESCRIPTIONS	SIZE	NOS. OF SLEEVES
1	PUDDLE FLANGE FOR SUCTION PIPE FROM DOMESTIC WATER TANK TO DOMESTIC WATER SUPPLY PUMPS	100Ø	1
2	PUDDLE FLANGE FOR DRAIN PIPE	100Ø	3
3	PUDDLE FLANGE FOR OVER FLOW PIPE	100Ø	1
4	SLEEVE IN WALL FOR OVER FLOW	100Ø	4
5	PUDDLE FLANGE FOR LEVEL CONTROLLER	65Ø	3
6	PUDDLE FLANGE FOR VENT PIPE	100Ø	3
7	MEDIUM DUTY MANHOLE COVER	600X600	3
8	TANK FILLING PIPE FROM BOREWELL	80Ø	4
9	TANK FILLING PIPE FROM MUNICIPAL	65Ø	4
10	PUDDLE FLANGE FOR FIRE DISCHARGE PIPE TO STATION	150Ø	1
11	PUDDLE FLANGE FOR SUCTION PIPE FROM FIRE WATER TANK	200Ø	2
12	PUDDLE FLANGE FOR INTER CONNECTION PIPE BETWEEN FIRE WATER TANK - I & II	150Ø	2
13	PUDDLE FLANGE FOR FIRE TEST LINE	150Ø	1
14	SLEEVE FOR DOMESTIC WATER SUPPLY	65Ø	1
15	SLEEVE FOR SUMP RISER PIPE	100Ø	1
16	PUDDLE FLANGE FOR DRAW OUT CONNECTION FROM TANK	100Ø	1
17	PUDDLE FLANGE FOR 4 WAY FIRE BRIGADE INLET TO TANK	150Ø	1
18	SLEEVE FOR ELECTRICAL	150Ø	1
19	SLEEVE FOR S&T	150Ø	1
20& 21	SLEEVE FOR BOREWELL & MUNICIPAL WATER INLET		2

SYMBOL	DESCRIPTION
	ECCENTRIC REDUCER
	CONCENTRIC REDUCER
	NON-RETURN VALVE (NRV)
	BUTTERFLY VALVE (BFV)
	FLEXIBLE BELLOW
	GATE VALVE
	FOUR WAY FIRE BRIGADE INLET CONNECTION
	DRAW OUT CONNECTION
	EXTERNAL FIRE HYDRANT WITH HOSE CABINET
	MS FIRE HYDRANT PIPE

SCHEDULE OF PUMPS & PRESSURE SWITCH

QTY.	TAG NO.	DESCRIPTION	CAPACITY	HEAD	PRESSURE SWITCH	SIGNAL
1	FP1	MAIN HYDRANT PUMP	AS PER BOQ	70M	PS-01	TO START MAIN HYDRANT PUMP
1	FP2	STANDBY PUMP	AS PER BOQ	70M	PS-02	TO START STAND BY PUMP
1	FP3	JOCKEY PUMP (VERTICAL)	AS PER BOQ	70M	PS-03 PS-04	TO START JOCKEY PUMP TO STOP JOCKEY PUMP

SCHEDULE OF PLUMBING PUMPS

DESCRIPTION	TYPE	CAPACITY	HEAD
DOMESTIC WATER SUPPLY PUMP 2 Nos. (1W+1S)	P1	AS PER BOQ	35M
SUBMERSIBLE PUMP 2 Nos. (1W+1S)	P2	AS PER BOQ	12M

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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
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GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

REV NO	DATE	DESCRIPTION	SIGN
P0	11-07-2023	-	

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

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CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL METRO STATION

TITLE: PUMP ROOM LEVEL PLAN

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

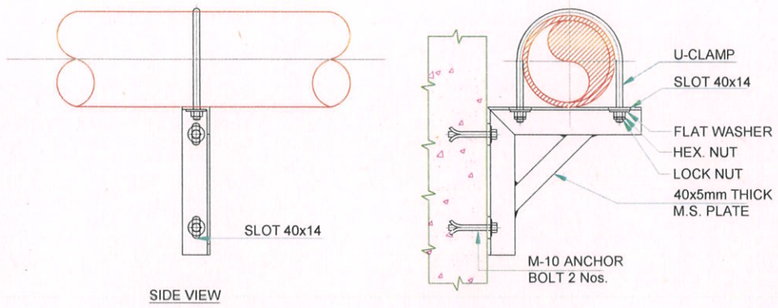
DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61217

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

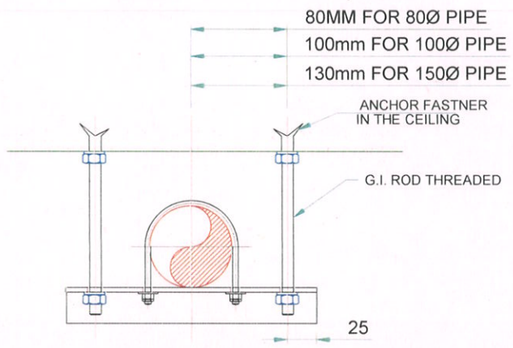
Annexure-01 (9)



PS-1 WALL MOUNTED SUPPORTING ARRANGEMENT
FOR HORIZONTAL OVER HEAD PIPE FOR 100Ø AND ABOVE

PIPE DIA(MIN.)	ISA - (mm.)	ANCHOR DIM (mm.)	'U' BOLT DIA (mm.)	SPACING FOR SUPPORT.(M)
100Ø	40x40x5	M10x40	12	4.0
150Ø	50x50x5	M10x40	12	4.5

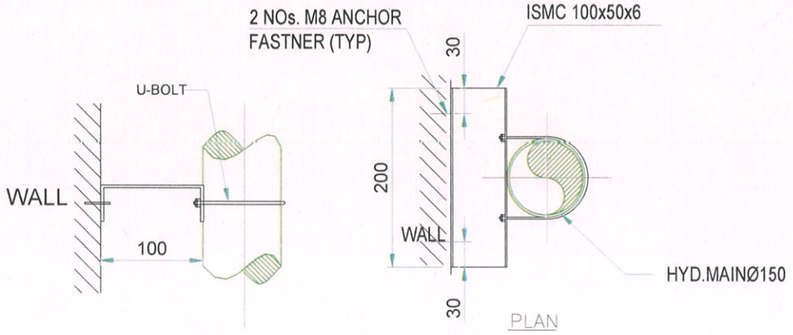
FOR HORIZONTAL OVER HEAD PIPE FOR 100Ø AND ABOVE



PS-2 CEILING MOUNTED SUPPORTING ARRANGEMENT

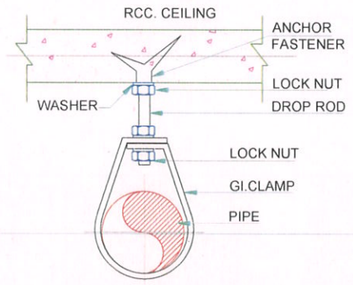
PIPE DIA(MIN.)	ISA (mm.)	ANCHOR DIA(MIN.)	ROD DIA. (mm.)	U BOLT DIA. (mm.)	SPACING FOR SUPPORT.(M)
80Ø	32x32x5	M10x40	10	10	3.6
100Ø	40x40x5	M12x50	12	12	4.0
150Ø	50x50x5	M14x50	14	14	4.5

U-BOLT DETAIL



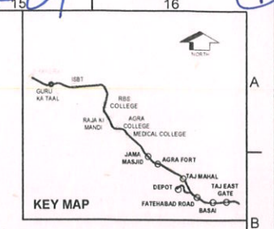
DETAIL B

PS-7 FOR 100Ø VERTICAL STAND PIPE
FOR HYDRANT IN TUNNEL (QTY - 38 NOS.)



PS-4 HANGING SUPPORT FOR HORIZONTAL PIPING

PIPE DIA(MIN.)	CLAMP DIM (mm.)	DROP ROD DIM (mm.)	ANCHOR DIM (mm.)	SPACING FOR SUPPORT.(M)
25Ø	20x1.2	M10	M10x40	2.5
32Ø	20.1.2	M10	M10x40	2.7
40Ø	20x1.2	M10	M10x40	3.0
50Ø	25x2.0	M10	M10x40	3.0
65Ø	25X2.0	M12	M12x50	3.6
80Ø	25X2.5	M12	M12x50	3.6
100Ø	25X2.5	M14	M14x50	4.0
150Ø	25X2.5	M20	M20x50	4.5



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REV NO	DATE	DESCRIPTION	SIGN
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P0	SIGN.	SOUR ABH... DUTT...	ANIL KU MAR...		Fezuddin Siddiqui					Abhij eet A. Vardy a			11-07-2023
					CLEARED								

DETAIL DESIGN CONSULTANT

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DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: TYPICAL PIPE SUPPORT DETAIL

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61218

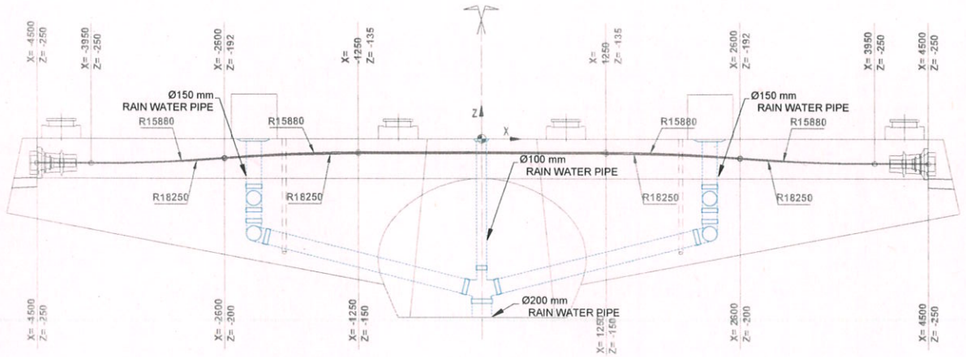
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

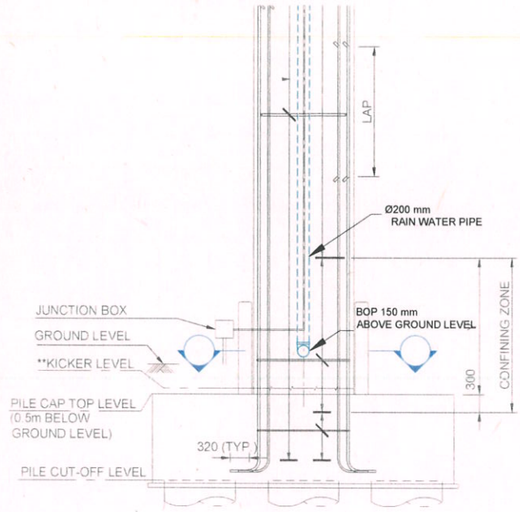
plot scale 50mm

TBA

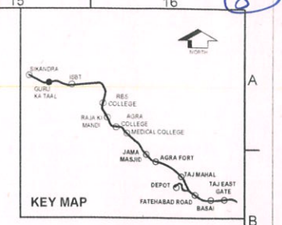
Annexure-01 (8)

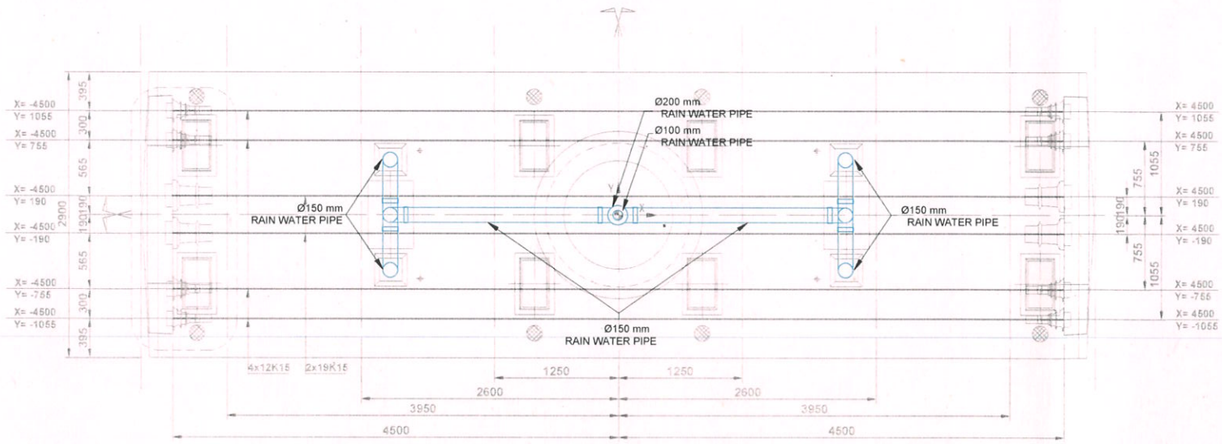


3 **VIADUCT DRAINAGE ARRANGEMENT ELEVATION - PIER CAP**
1 : 30

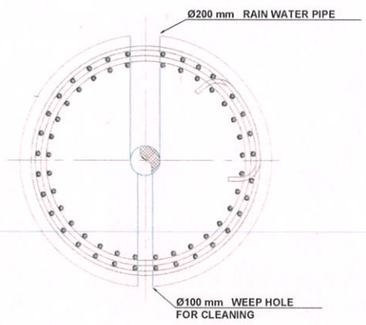


2 **VIADUCT DRAINAGE ARRANGEMENT - PIER**
1 : 50





4 **VIADUCT DRAINAGE ARRANGEMENT PLAN - PIER CAP**
1 : 30



A **SECTION A-A**
1 : 20

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P0	11-07-2023	-	

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
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COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

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UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: TYPICAL PIER DRAINAGE ARRANGEMENT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61219

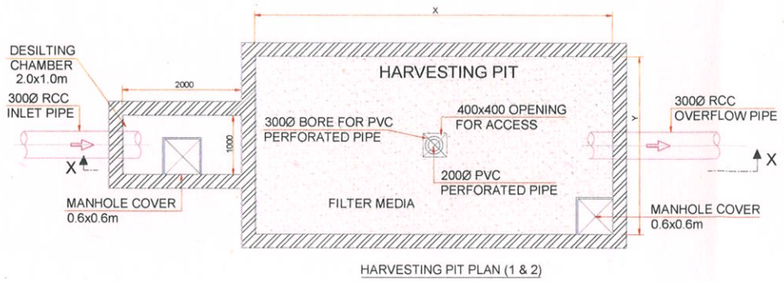
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

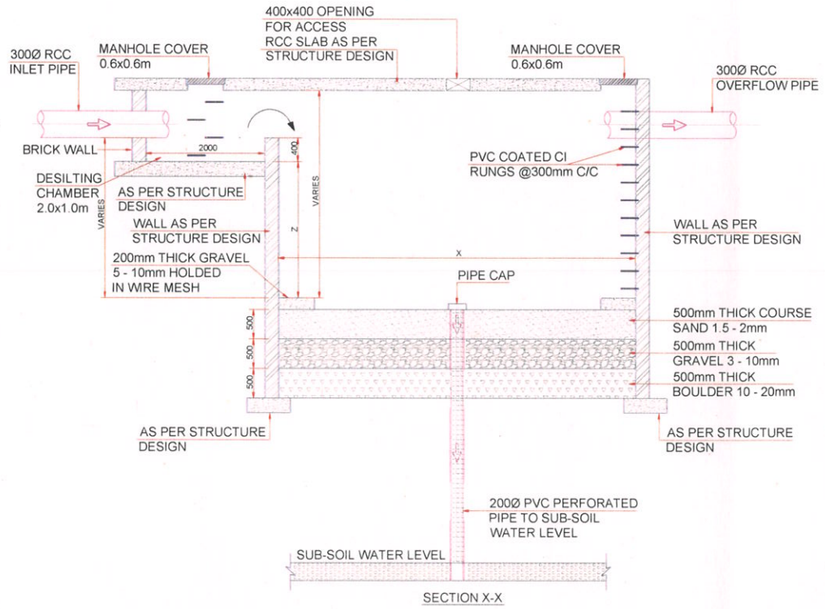
plot scale 50mm

Annexure-01

(7)



HARVESTING PIT PLAN (1 & 2)



SECTION X-X

SCHEDULE OF RAIN WATER HARVESTING PIT

S.NO.	RAIN WATER HARVESTING (RWH) PIT NO.	LENGHT(m) X	WIDTH (m) Y	DEPTH(m) Z
1	RWH-1	4.0	2.5	2.5
2	RWH-2	4.0	2.5	2.5

TYPICAL DETAIL OF RAIN WATER HARVESTING PIT

NOTES

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DETAIL DESIGN CONSULTANT

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SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

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UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL

TITLE: TYPICAL DETAIL OF RAIN WATER HARVESTING PIT

SCALE: AS SHOWN | DATE: 11-07-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-GKT-ME-PLB-61220

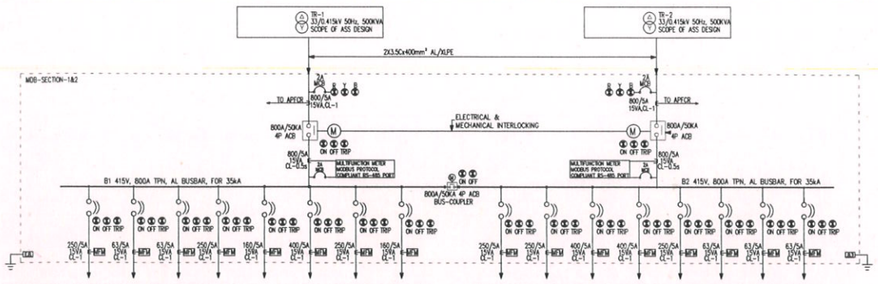
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm

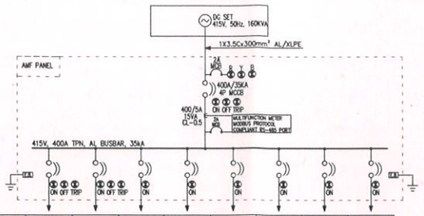
Annexure – 01

(B)

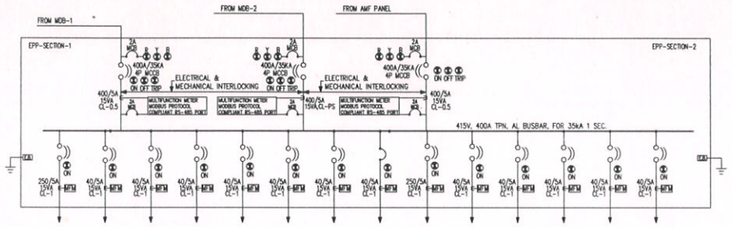


FEEDER NUMBER	F1	F2	F3	F4	F5	F6	F7	F8
MAX. DEMAND LOAD IN kW	67.50kW	15.0kW	15.0kW	61.00kW	42.00kW	125 KW	–	–
MCCB RATING IN AMPS	250A	63A	63A	250A	160A	400A	250A	160A
TYPE OF MCCB/MCB/RCCB	4P MCCB	TP MCCB	TP MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB
BREAKING CAPACITY IN kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA
CABLE SIZE IN SQ.MM AL. XLPE	1X3.5Cx120	1X4Cx16	1X4Cx16	1X3.5Cx150	1X3.5Cx120	1X3.5Cx300	–	–
FEEDER DESCRIPTION	UPS (E&M AND S&T)	ESCALATOR1	ESCALATOR2	ACPP	PAP	EPP–1	SPARE	SPARE

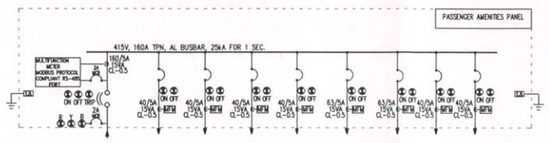
FEEDER NUMBER	F9	F10	F11	F12	F13	F14	F15	F16
MAX. DEMAND LOAD IN kW	–	0.00kW	125 KW	----	----	15.0kW	15.0kW	
MCCB RATING IN AMPS	250A	250A	400A	400A	250A	63A	63A	63A
TYPE OF MCCB/MCB/RCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	TP MCCB	TP MCCB	TP MCCB
BREAKING CAPACITY IN kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA
CABLE SIZE IN SQ.MM AL. XLPE	–	1X3.5Cx150	1X3.5Cx300	----	1X3.5Cx240	1X4Cx16	1X4Cx16	–
FEEDER DESCRIPTION	SPARE	ACPP	EPP–2	SPARE	FPP & WPP	ESCALATOR3	ESCALATOR4 (FUTURE)	SPARE



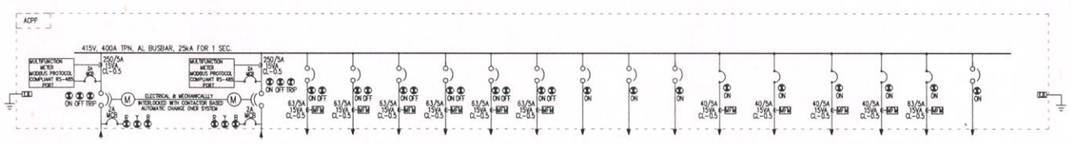
FEEDER NUMBER	F1	F2	F3	F4	F5	F6	F7	F8
MAX. DEMAND LOAD IN kW	125.0kW	22.0kW	0.50kW	0.50kW	–	–	–	–
MCCB RATING IN AMPS	400A	250A	16A	16A	16A	16A	16A	16A
TYPE OF MCCB/MCB/RCCB	4P MCCB	4P MCCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB
BREAKING CAPACITY IN kA	35kA	35kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM AL. XLPE	1X3.5Cx300	1X3.5Cx240	1X2Cx2.5 CU	1X2Cx2.5 CU	–	–	–	–
FEEDER DESCRIPTION	ESSENTIAL PANEL	FPP & WPP	DG ROOM EX FAN	DG ROOM FA FAN	SPARE	SPARE	SPARE	SPARE



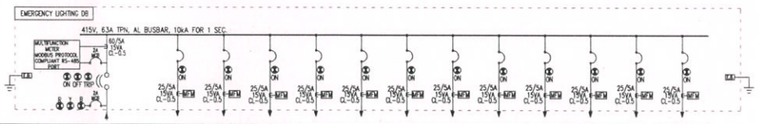
FEEDER NUMBER	F1	F2	F3	F4	F5	F6	F7	F8	F8	F9	F10	F11	F12	F13
MAX. DEMAND LOAD IN kW	67.50kW	10.0kW	10.0kW	10.0kW	10.0kW	7.20kW	–	–	–	1.25kW	1.25kW	1.25kW	1.25kW	3.20kW
MCCB RATING IN AMPS	250A	40A	40A	40A	40A	40A	40A	40A	250A	40A	40A	40A	40A	40A
TYPE OF MCCB/MCB/RCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB	4P MCCB
BREAKING CAPACITY IN kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA	35kA	25kA	25kA	25kA	25kA	25kA
CABLE SIZE IN SQ.MM AL. XLPE	1X3.5Cx120	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx10	1X4Cx10	–	–	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16
FEEDER DESCRIPTION	UPS (E&M AND S&T)	ELEVATOR–1	ELEVATOR–2	ELEVATOR–3	ELEVATOR–4	ACDB (PS)	DCDB (Batt. Charger)	SPARE	SPARE	LDB–1, PA	LDB–2, PB	LDB–1, CA	LDB–2, CB	LDB–1, FP/DG



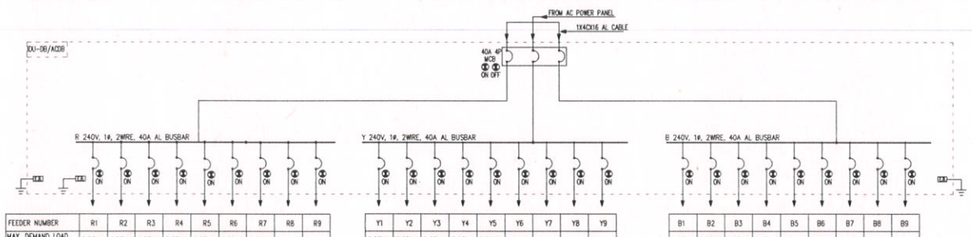
FEEDER NUMBER		F1	F2	F3	F4	F5	F6	F7	F8
MAX. DEMAND LOAD IN kW	42.00kW	7.00kW	7.00kW	7.00kW	7.00kW	14.00kW	–	–	–
MCCB RATING IN AMPS	160A	40A	40A	40A	40A	63A	63A	40A	40A
TYPE OF MCCB/MCB/RCCB	4P MCCB	TP MCB	TP MCB	TP MCB	TP MCB	TP MCB	TP MCB	TP MCB	TP MCB
BREAKING CAPACITY IN kA	25kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM AL. XLPE	1X3.5Cx120	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	–	–	–
FEEDER DESCRIPTION	INCOMER FROM MDB	RETAIL SHOP–1	RETAIL SHOP–2	RETAIL SHOP–3	RETAIL SHOP–4	RETAIL SHOP–5 (FUTURE PD)	SPARE	SPARE	SPARE



FEEDER NUMBER			F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
MAX. DEMAND LOAD IN kW	61.00kW	–	11.00kW	11.00kW	0.00kW	3.60kW	0.00kW	5.15kW	1.50kW	1.50kW	1.50kW	3.50kW	3.50kW	4.00kW	–	8.00kW	–
MCCB RATING IN AMPS	250A	250A	63A	63A	63A	63A	63A	63A	20A	20A	20A	63A	63A	63A	63A	63A	20A
TYPE OF MCCB/MCB/RCCB	4P MCCB	4P MCCB	4P MCB	4P MCB	4P MCB	4P MCB	4P MCB	4P MCB	DP MCB	DP MCB	DP MCB	4P MCB	4P MCB	4P MCB	4P MCB	4P MCB	4P MCB
BREAKING CAPACITY IN kA	35kA	35kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM AL. XLPE	3.5Cx150		1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	1X4Cx16	1X3Cx4	1X3Cx4	1X3Cx4	1X4Cx16	1X4Cx16	1X4Cx16	–	–	–
FEEDER DESCRIPTION	INCOMER FROM MDB–1	INCOMER FROM MDB–2	VRF–1	VRF–2	VRF–3	VRF–4	VRF–5	IDU–DB	ROLLING SHUTTER–1	ROLLING SHUTTER–2	ROLLING SHUTTER–3	LDB–1 VIDUCT–1	LDB–2 VIDUCT–2	LDB–3 FASADE	SPARE	LDB–4	SPARE



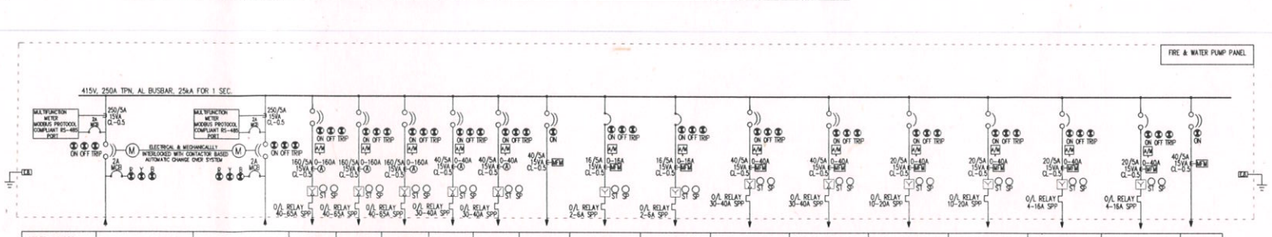
FEEDER NUMBER	–	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12
MAX. DEMAND LOAD IN kW	5.90kW	0.90kW	0.90kW	0.90kW	0.90kW	–	–	0.50kW	–	0.90kW	0.90kW	–	–
MCCB RATING IN AMPS	63A	25A	25A	25A	25A	25A	25A	25A	25A	25A	25A	25A	25A
TYPE OF MCCB/MCB/RCCB	4P MCCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB
BREAKING CAPACITY IN kA	25kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM AL. XLPE	1X3.5Cx25	1X2Cx16	1X2Cx16	1X2Cx16	1X2Cx16	–	–	1X2Cx16	–	1X2Cx16	1X2Cx16	–	–
FEEDER DESCRIPTION	INCOMER FEEDER FROM SAT UPS	LDB–1, PA	LDB–2, PB	LDB–1, CA	LDB–2, CB	SPARE	SPARE	FACP/SCR	SPARE	LDB–3, CA	LDB–4, CB	SPARE	SPARE



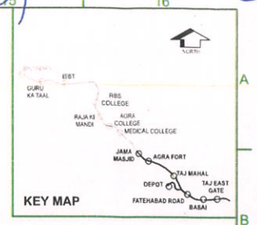
FEEDER NUMBER	R1	R2	R3	R4	R5	R6	R7	R8	R9
MAX. DEMAND LOAD IN kW	0.25kW	0.25kW	0.25kW	0.25kW	0.25kW	0.50kW	0.50kW	–	–
MCB RATING IN AMPS	10A	10A	10A	10A	10A	10A	10A	10A	10A
TYPE OF MCCB/MCB/RCCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB
BREAKING CAPACITY IN kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM CU XLPE	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	–	–
FEEDER DESCRIPTION	IDU–4	IDU–2	IDU–5	IDU–9	IDU–13	ASS. EX. FAN–1	ASS. EX. FAN–2	SPARE	SPARE

FEEDER NUMBER	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9
MAX. DEMAND LOAD IN kW	0.25kW	0.25kW	0.25kW	0.25kW	0.50kW	0.00kW	–	–	–
MCB RATING IN AMPS	10A	10A	10A	10A	10A	10A	10A	10A	10A
TYPE OF MCCB/MCB/RCCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB
BREAKING CAPACITY IN kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM CU XLPE	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	–	–	–	–
FEEDER DESCRIPTION	IDU–3	IDU–6	IDU–10	IDU–12	ASS. EX. FAN–3	ASS. EX. FAN–6	SPARE	SPARE	

FEEDER NUMBER	B1	B2	B3	B4	B5	B6	B7	B8	B9
MAX. DEMAND LOAD IN kW	0.25kW	0.25kW	0.25kW	0.25kW	0.25kW	0.50kW	0.00kW	–	–
MCB RATING IN AMPS	10A	10A	10A	10A	10A	10A	10A	10A	10A
TYPE OF MCCB/MCB/RCCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB	SP MCB
BREAKING CAPACITY IN kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM CU XLPE	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	2Cx2.5	–	–	–
FEEDER DESCRIPTION	IDU–1	IDU–7	IDU–8	IDU–11	IDU–14	ASS. EX. FAN–4	ASS. EX. FAN–5	SP	SP



FEEDER NUMBER	–	–	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	F14	F15
MAX. DEMAND LOAD IN kW	74.20kW	74.20kW	52.20kW	0.00kW	–	3.45kW	–	–	0.75kW	0.00kW	5.60kW	0.00kW	2.00kW	0.00kW	3.00kW	0.00kW	0.00kW
MCCB RATING IN AMPS	250A	250A	160A	160A	160A	40A	40A	16A	16A	16A	40A	40A	20A	20A	20A	20A	20A
MCCB/MCB/RCCB	4P MCCB	4P MCCB	TP MCCB	TP MCCB	TP MCCB	TP MCCB	TP MCCB	TP MCB	TP MCB	TP MCB	TP MCCB	TP MCCB	DP MCB	DP MCB	DP MCB	DP MCB	DP MCB
BREAKING CAPACITY IN kA	25kA	25kA	25kA	25kA	25kA	25kA	25kA	10kA	10kA	10kA	25kA	25kA	10kA	10kA	10kA	10kA	10kA
CABLE SIZE IN SQ.MM AL. XLPE	1X3.5Cx240	1X3.5Cx240	2X3Cx95	2X3Cx95	–	2X3Cx16	–	–	1X3Cx4 CU	1X3Cx4 CU	2X4Cx16	2X4Cx16	1X3Cx4 CU	1X3Cx4 CU	1X3Cx4 CU	1X3Cx4 CU	
STARTER CAPACITY	–	–	75/60HP	75/60HP	75/60HP	7.5HP	7.5HP	–	2HP	2HP	15HP	15HP	2HP	2HP	1.5HP	1.5HP	––
FEEDER DESCRIPTION	INCOMING FROM MDB	INCOMING FROM DG SET	FIRE HYDRANT–1	FIRE HYDRANT–2	SPARE	JOCKEY PUMP	SPARE	SPARE	AXIAL FAN (PUMP ROOM)	AXIAL FAN (PUMP ROOM)	BOREWELL PUMP–1	BOREWELL PUMP–2	DOMESTIC WATER PUMP–1	DOMESTIC WATER PUMP–2	SUMP PUMP–1	SUMP PUMP–2	SPARE



LEGENDS:–

	MCB
	MCCB
	AIR CIRCUIT BREAKER
M	MOTORISED MECHANISM
	CURRENT TRANSFORMER
MFM	MULTI FUNCTION METER
A/M	AUTO MANUAL SELECTOR SWITCH
E.B	EARTH BUS
TNC	TRIP NEUTRAL CLOSE
	INDICATING LAMP

NOTES:

1. PLEASE NOTE THAT, THE CABLE SIZE ARE TENTATIVE IT WILL BE FINALISE IN THE CABLE SIZE CALCULATION ON CRD STAGE.
2. PLEASE NOTE THAT, THE FEEDER LOADs ARE TENTATIVE IT WILL BE FINALISE IN THE LOAD CALCULATION ON CRD STAGE.
3. PLEASE NOTE THE QUANTITY OF SPARE & SPACE FEEDER MENTIONED IN PANELS ARE TENTATIVE. HOWEVER THE EXACT QUANTITY SHALL BE AS PER TECHNICAL SPECIFICATION.

REV NO	DATE	DESCRIPTION	SIGN
P0	02-06-2023	-	

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

DDC

P0	SIGN.	Vikash Kumar	Vikash Kumar	Shyamal Rauthan		Faizuddin Siddiqui				Abhijit K Vaidya	Shyamal Rauthan	02-06-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A., ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

THIS DRAWING, DESIGN AND DETAILING HAVE BEEN PROOF CHECKED BY US AND IS SUITABLE FOR EXECUTION AND IS APPROVED.

☐NOC ☐NOWC ☐RESUBMIT

SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
7'10, 7th Floor, Cyber Heights, Vishudi Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
DY.CEE		
CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: SIKANDRA STATION

TITLE: ELECTRICAL SCHEMATIC DIAGRAM FOR PANELS

SCALE: NTS | DATE: 02-06-2023 | STAGE: TDR

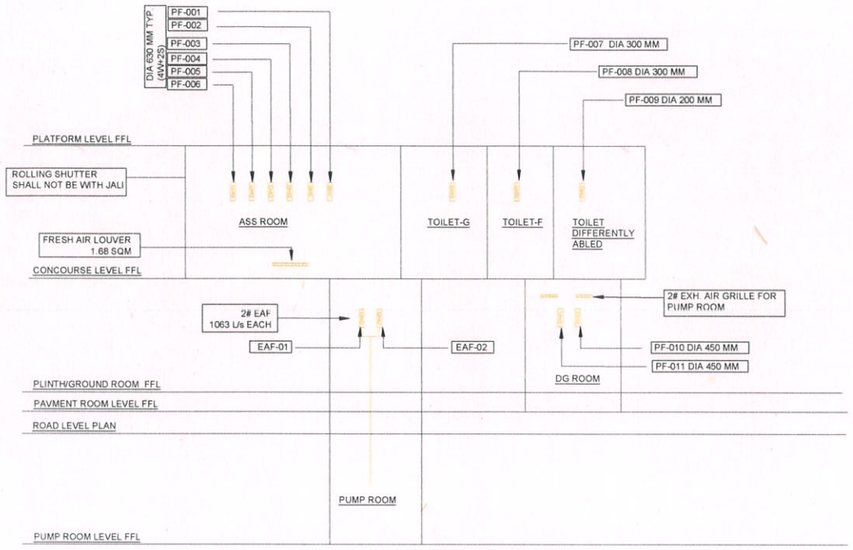
DRG NO: AGCC05-11718A-TDR-SKN-EL-SLD-41308

OFFICE OF ORIGIN

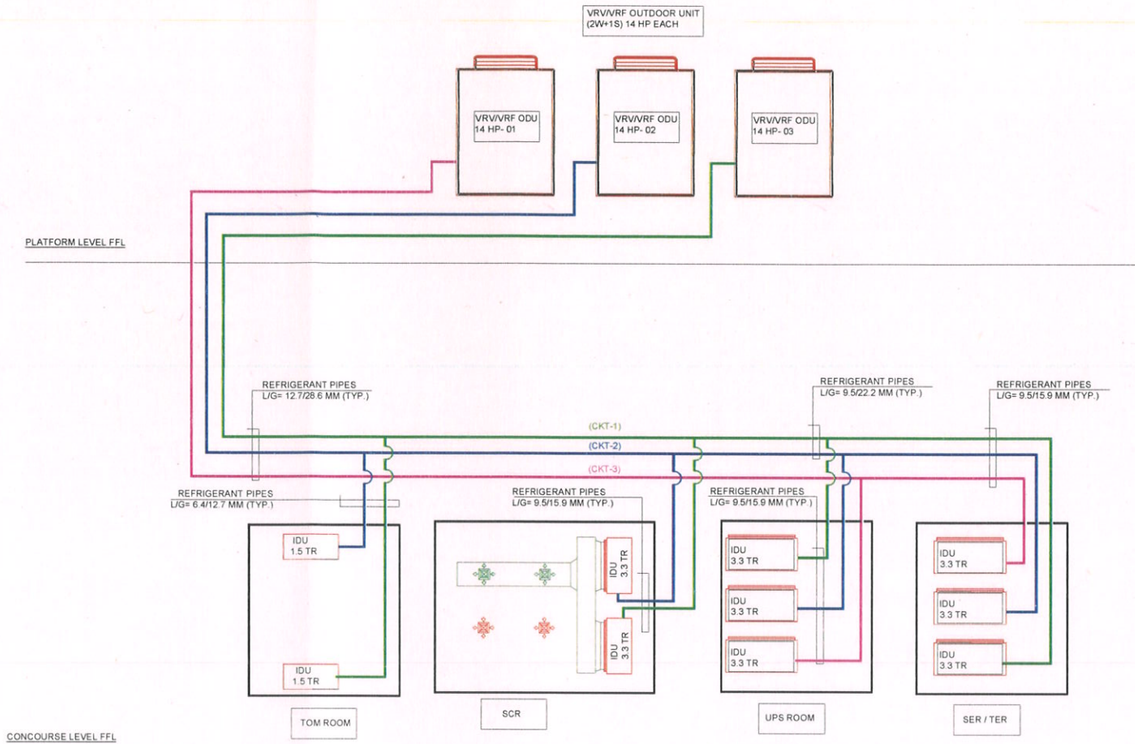
REVISION NO: P0

plot scale 50mm

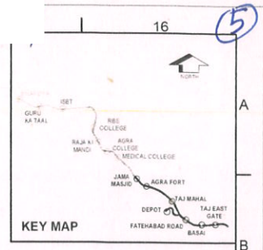
TBA



VENTILATION SCHEMATIC DIAGRAM
SCALE: NTS



VAC SCHEMATIC DIAGRAM



S. NO	TYPE OF ROOM	CAP	REMARKS
001	STATION CONTROL ROOM(SCR)	3.3 TR	1W+1S-8HRS EACH
002	TOM ROOM	1.5 TR	1W+1S
003	SIGNALING EQUIP. ROOM(SER) & TELECOM EQUIP. ROOM(TER)	3.3 TR	2W+1S-16HRS EACH
004	UPS ROOM	3.3 TR	2W+1S-16HRS EACH

	OUTDOOR UNIT
	CEILING SUSPENDED INDOOR UNIT (DUCTABLE)
	TUBE AXIAL FAN
	PROPELLER FAN
	EXHAUST AIR DUCT
	SUPPLY AIR DUCT
	EXHAUST / TRANSFER AIR GRILLE
	SUPPLY AIR DIFFUSER

	SUPPLY AIR DIFFUSER
	EXHAUST/RETURN AIR DIFFUSER
	CONDENSATE DRAIN PIPE
	REFRIGERANT PIPE (CKT 1)
	REFRIGERANT PIPE (CKT 2)
	REFRIGERANT PIPE (CKT 3)
	INDOOR UNIT (Hi WALL)
	WALL CUTOUT
ØXX.X	LIQUID PIPE SIZE
ØXX.X	GAS PIPE SIZE

OPERATIONAL LOGIC FOR ODUS

1. CKT-01,CKT-02 & CKT-03 EACH WILL BE IN CONTINUOUS OPERATION FOR 16 HOURS FOR A DAY WITH 3RD ODU AS STANDBY SYSTEM. FOR 1ST 8HOURS OF A DAY ODU-01 & ODU-03 WILL BE IN WORKING CONDITION WHILE ODU-02 WILL BE KEPT IN STAND BY MODE. FOR NEXT 8 HOURS ODU-02 & ODU-03 WILL BE IN WORKING MODE AND ODU-01 WILL BE IN STAND BY MODE AND FOR REST 8 HOURS ODU-01 & ODU-02 WILL BE IN WORKING MODE WHILE ODU-03 WILL BE IN STAND BY. CRITICAL ROOM SER-TER & UPS SHALL BE FED BY ANY OF THE TWO ODUS IN CONTINUOUS OPERATION FOR 24 HOURS WHILE SCR & TOM SHALL BE FEB BY ANY OF THE ONE ODU FOR TOTAL 16HOURS.
2. WORKING PERIODS SHALL ALSO BE ROTATED WEEKLY.IN CASE OF FAILURE OF ANY ODU,THE STANDBY UNIT SHALL START AUTOMATICALLY THROUGH CENTRAL SYSTEM CONTROLLER. AFTER A UNIT HAS BEEN BROUGHT ON LINE, A TIMER STARTS TO PREVENT FROM CYCLING ON AND OFF THROUGH SCHEDULE TIMER.

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT, CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

DDC

ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
P0	SIGN												26-07-2023
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A, ROME, ITALY | LEAP INFRAESYS PRIVATE LIMITED, FARIDABAD

REV NO	DATE	DESCRIPTION	SIGN
P0	26-07-2023	-	

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☑ NOC ☐ NOWC ☐ RESUBMIT

SIGN:	SIGN:	SIGN:
DATE: 15-09-2023	DATE:	DATE:
NAME: Divakar Jha	NAME:	NAME:
DESIGNATION: Chief VAC Expert	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos S.A. and Italferr S.P.A.
710 7th Floor, Eldeco Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: VAC SCHEMATIC LAYOUT

SCALE: NTS | DATE: 26-07-2023 | STAGE: TDR

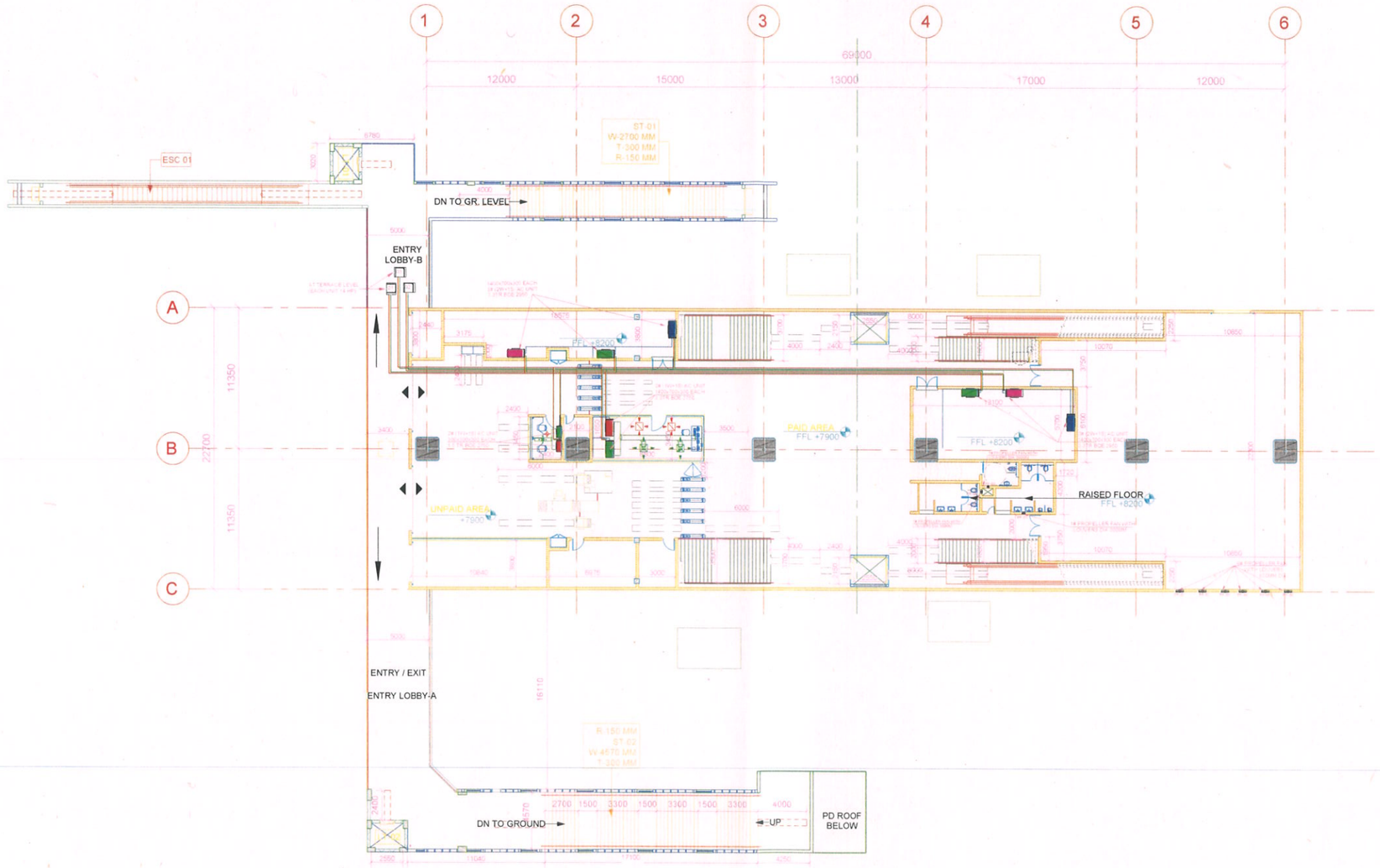
DRG NO: AGCC05-11718A-TDR-GKT-ME-VAC-61237

OFFICE OF ORIGIN

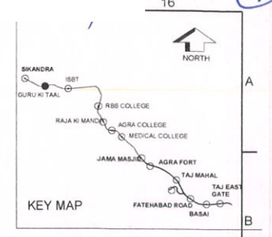
REVISION NO: P0

plot scale 50mm

GURU KA TAL STATION



1 CONCOURSE LEVEL PLAN1
1 : 200



ABBREVIATIONS

ALS - ASSISTANT LINE SUPERVISOR
CD - COOLING DUMPING
CONC. - CONCOURSE
EFO - EXCESS FARE OFFICE
ELEC. - ELECTRICAL
EVS - EXHAUST VENTILATION SHAFT
E&M - ELECTRICAL AND MECHANICAL
FHC - FIRE HOSE CABINET
HVAC - HEATING AND VENTILATION AIR CONDITIONER
LT. - LIFT
OTE - OVER TRAIN EXHAUST
PLT. - PLATFORM
ST. - STAIR
SAD - SUPPLY AIR DUCT
S&T - SIGNALLING AND TELECOM
SVS - SUPPLY VENTILATION SHAFT
TEF - TRACK WAY EXHAUST FAN
TVS - TUNNEL VENTILATION SHAFT
UPE - UNDER PLATFORM EXHAUST
OP. - WALL OPENING

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SIGN:	SIGN:	SIGN:
DATE: 15-09-2023	DATE:	DATE:
NAME: Divakar Jha	NAME:	NAME:
DESIGNATION: Chief VAC Expert	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR

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UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: CONCOURSE LEVEL PLAN

SCALE: As indicated | DATE: 26-07-2023 | STAGE: TDR

DRG NO.: AGCC05-11718A-TDR-GKT-ME-VAC-61238

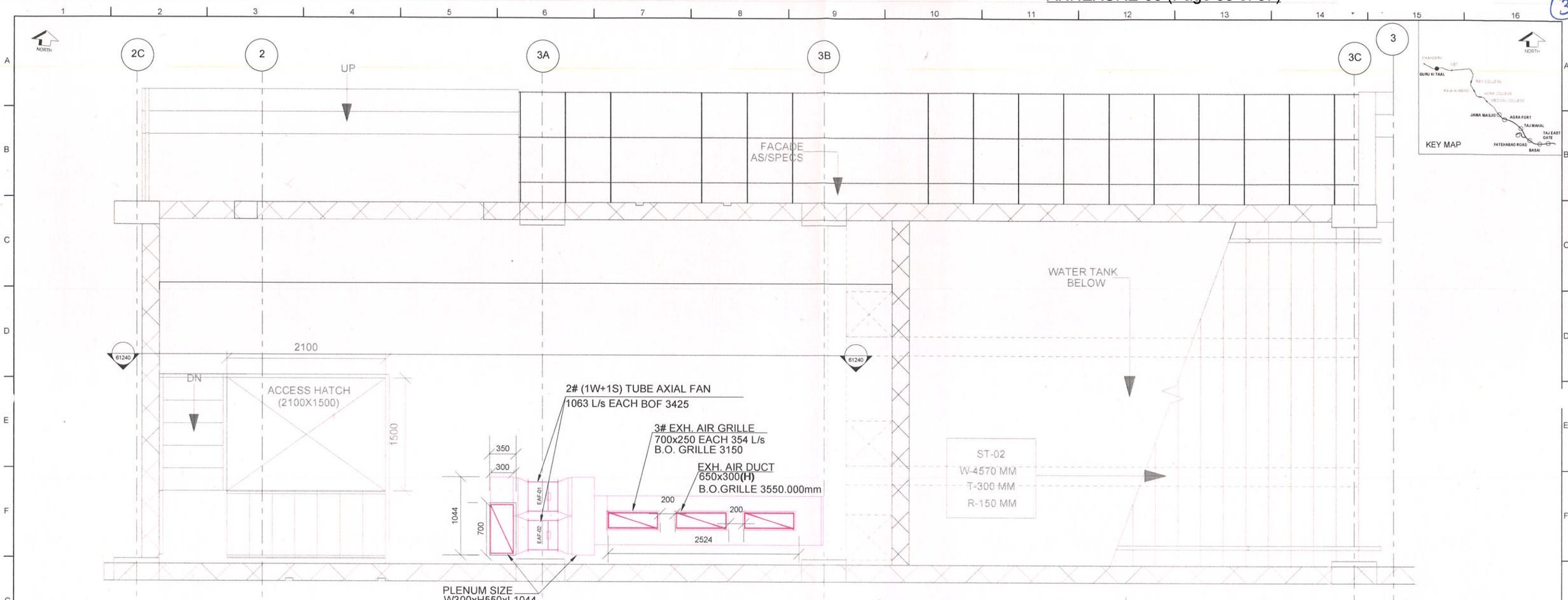
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

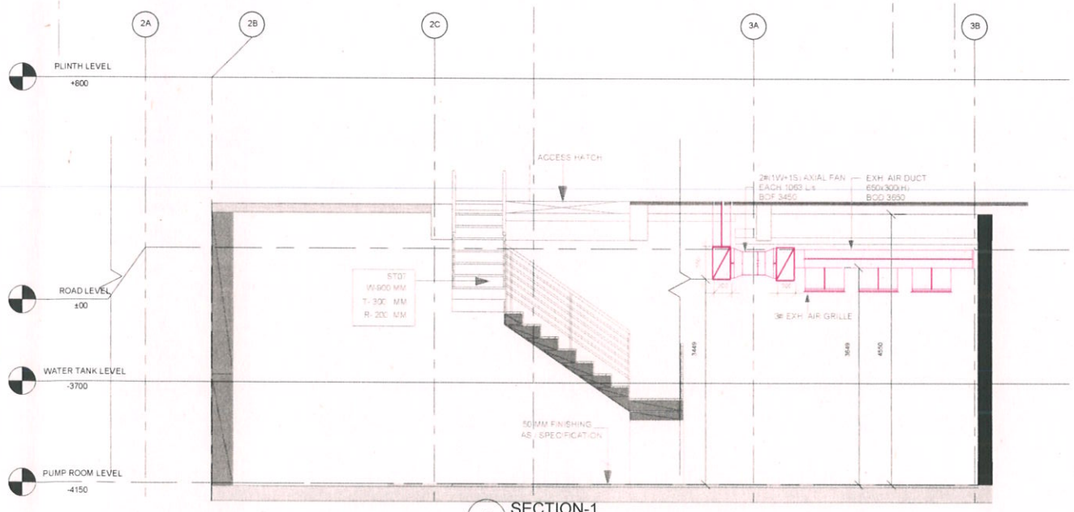
P0	26-07-2023	-	SIGN

plot scale 50mm

(3)



3 PUMP ROOM LEVEL PLAN
1 : 25



1 SECTION-1
1 : 50

LEGENDS :

- OUTDOOR UNIT
- CEILING SUSPENDED INDOOR UNIT (DUCTABLE)
- TUBE AXIAL FAN
- PROPELLER FAN
- EXHAUST AIR DUCT
- SUPPLY AIR DUCT
- EXHAUST / TRANSFER AIR GRILLE
- SUPPLY AIR DIFFUSER
- EXHAUST/RETURN AIR DIFFUSER
- DRAIN PIPE
- REFRIGERANT PIPE(GAS)
- REFRIGERANT PIPE(LIQUID)
- INDOOR UNIT (HI WALL)
- WALL CUTOUT
- ØXX X — LIQUID PIPE SIZE
- ØXX X — GAS PIPE SIZE

ABBREVIATIONS :

IDU	INDOOR UNIT
ODU	OUTDOOR UNIT
S/R	SUPPLY/RETURN
SA	SUPPLY AIR
EXH	EXHAUST
BOE	BOTTOM OF ELEVATION
BOD	BOTTOM OF DUCT
BOF	BOTTOM OF FAN
FAL	FRESH AIR LOUVERS
DTG	DOOR TRANSFER GRILLES

NOTES :
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2. ALL DIMENSIONS ARE TO BE READ AND NOT MEASURED.
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5. ROLLING SHUTTER IN DG ROOM WILL BE PERFORATED TYPE FOR MAKE UP AIR IN DG ROOM AND WELL AS PUMP ROOM.
6. HVAC VENDER SHALL PROVIDE SHOP DRAWINGS FOR FINAL EXECUTION.

REV NO.	DATE	DESCRIPTION	SIGN
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SIGN:	SIGN:	SIGN:
DATE: 15-09-2023	DATE:	DATE:
NAME: Divakar Jha	NAME:	NAME:
DESIGNATION: Chief VAC Expert	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT : TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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CEE		

PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: PUMP ROOM LAYOUT & SECTION

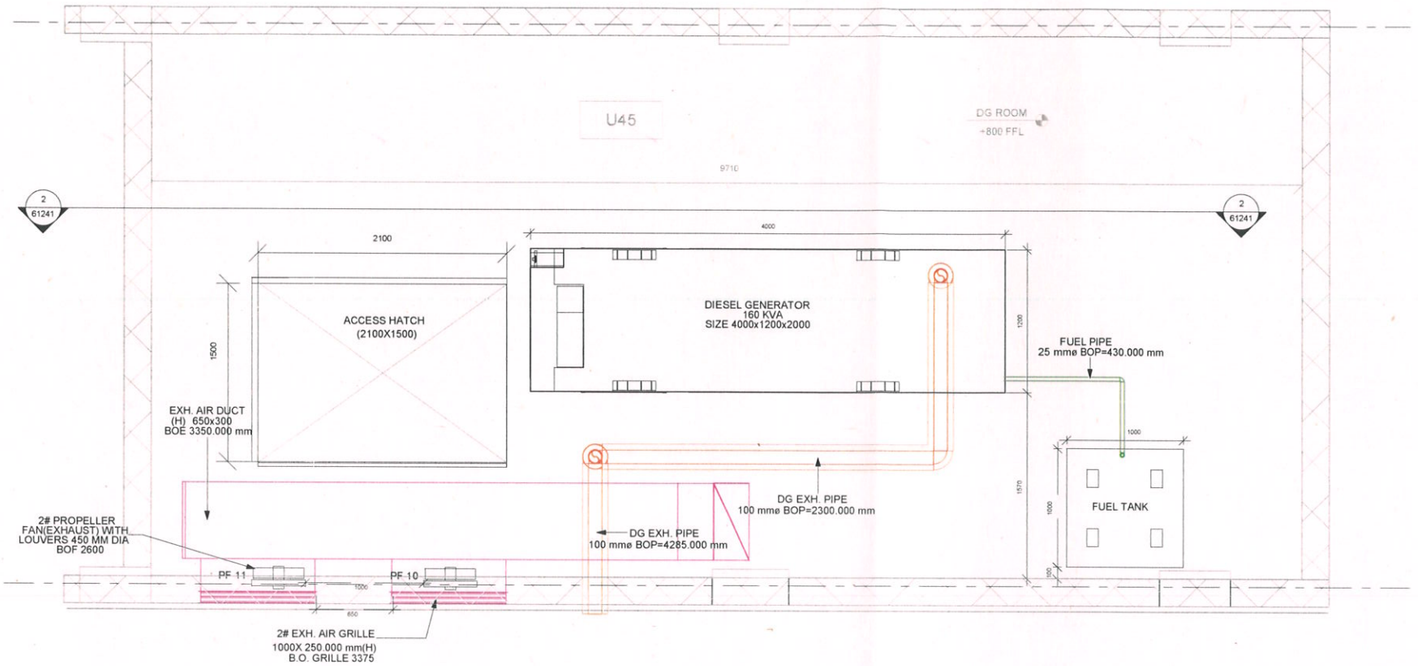
SCALE: As indicated | DATE: 26-07-2023 | STAGE: TDR

DRG NO.: AGCC05-11718A-TDR-GKT-ME-VAC -61240

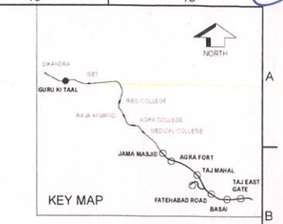
OFFICE OF ORIGIN

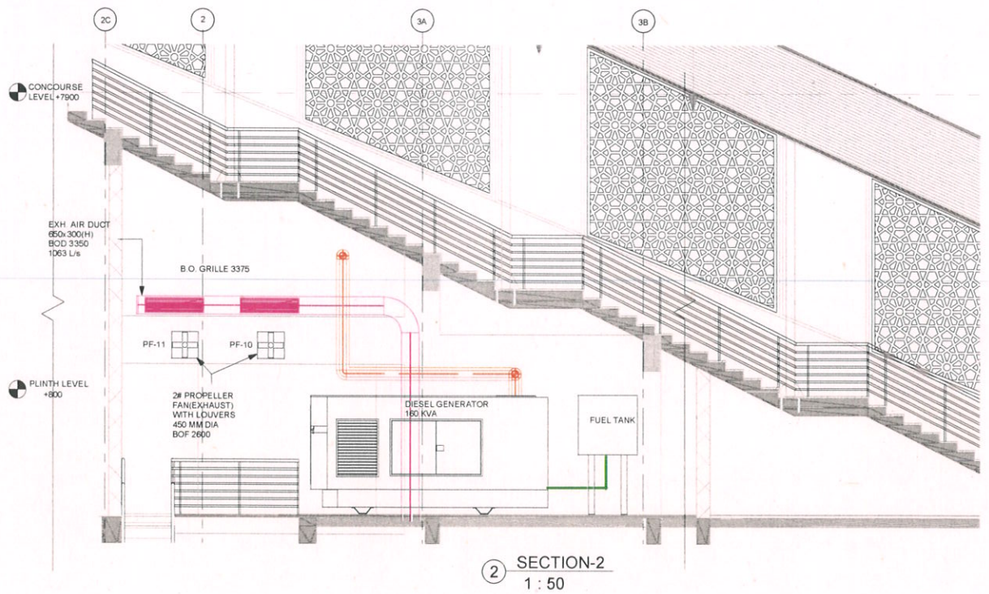
REVISION NO: P0

plot scale 50mm



1 DG ROOM LAYOUT
1 : 25





2 SECTION-2
1 : 50

LEGENDS

	OUTDOOR UNIT
	CEILING SUSPENDED INDOOR UNIT (DUCTABLE)
	TUBE AXIAL FAN
	PROPELLER FAN
	EXHAUST AIR DUCT
	SUPPLY AIR DUCT
	EXHAUST / TRANSFER AIR GRILLE
	SUPPLY AIR DIFFUSER
	EXHAUST/RETURN AIR DIFFUSER
	DRAIN PIPE
	REFRIGERANT PIPE(GAS)
	REFRIGERANT PIPE(LIQUID)
	INDOOR UNIT (Hi WALL)
	WALL CUTOUT
ØXX X	LIQUID PIPE SIZE
ØXX X	GAS PIPE SIZE

NOTES:-

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4. ANY DISCREPANCIES MUST BE BROUGHT TO THE NOTICE OF THE CONSULTANT.
5. ROLLING SHUTTER IN DG ROOM WILL BE PERFORATED TYPE FOR FRESH AIR INTAKE.
6. ALL PROPELLER FAN SHALL BE WITH LOUVEERS.
7. HVAC VENDER SHALL PROVIDE SHOP DRAWINGS FOR FINAL EXECUTION

ABBREVIATIONS :-

IDU	INDOOR UNIT
ODU	OUTDOOR UNIT
S/R	SUPPLY/RETURN
SA	SUPPLY AIR
EXH.	EXHAUST
BOE	BOTTOM OF ELEVATION
BOD	BOTTOM OF DUCT
BOF	BOTTOM OF FAN
FAL	FRESH AIR LOUVERS
DTG	DOOR TRANSFER GRILLES

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DATE: 15-09-2023	DATE:	DATE:
NAME: Divakar Jha	NAME:	NAME:
DESIGNATION: Chief VAC Expert	DESIGNATION:	DESIGNATION:

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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: SIKANDRA STATION

TITLE: DG ROOM LAYOUT & SECTION

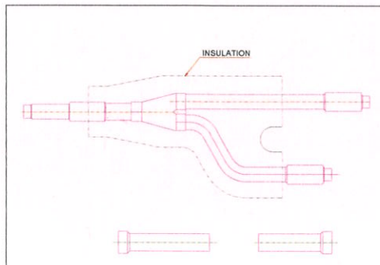
SCALE: As indicated | DATE: 10-08-2022 | STAGE: TDR

DRG NO.: AGCC05-11718A-TDR-GKT-ME-VAC-61241

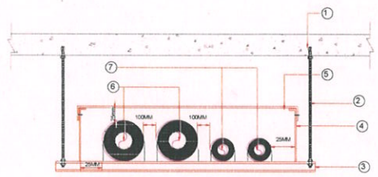
OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

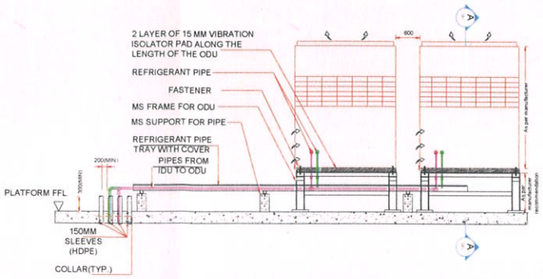


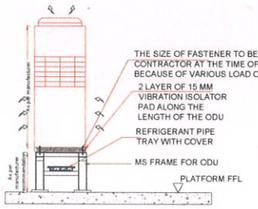
REFRIGERANT PIPE JOINT DETAIL
SCALE : NTS



1. ANCHOR FASTNER
2. HANGER ROD 8MM HOT DIP GALVANISED STEEL
3. SLOTED ANGLE HOT DIP GALVANISED STEEL
4. PIPE TRAY 8 MM HOT DIP GALVANISED DTEEL
5. COVERING SHEET .8MM HOT DIP GALVANISED STEEL
6. GAS LINE
7. LIQUID LINE

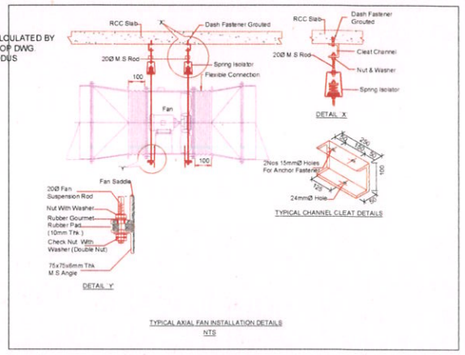
TYPICAL SUPPORT DETAILS FOR VRV REFRIGERANT PIPE
SCALE : NTS



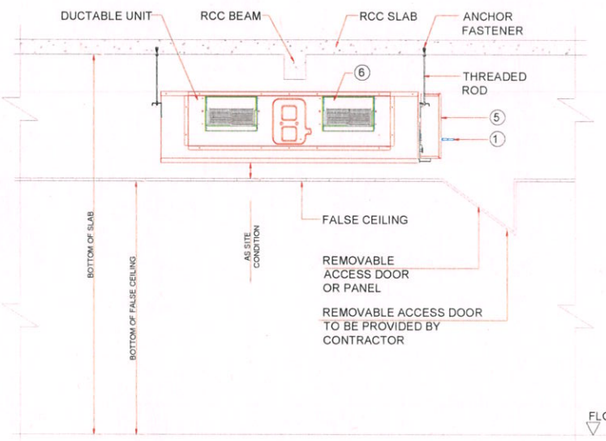


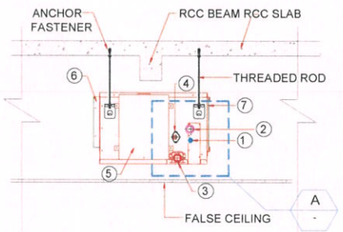
SECTION -'AA'

TYPICAL VRV OUTDOOR UNIT INSTALLATION DETAILS
SCALE : NTS

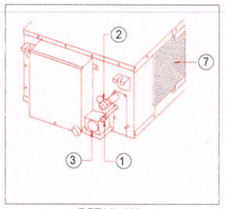


TYPICAL AXIAL FAN INSTALLATION DETAILS
NTS





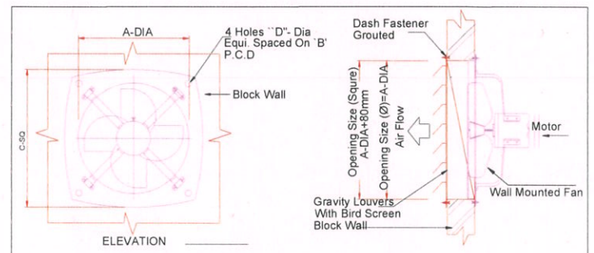
1	LIQUID PIPE CONNECTION
2	GAS PIPE CONNECTION
3	CONDENSATE DRAIN PIPE CONNECTION
4	CONDENSATE DRAIN PIPE CONNECTION WITH OPTIONAL DRAIN PUMP KITS
5	POWER SUPPLY / COMMUNICATION CONNECTION
6	AIR OUTLET
7	AIR INLET



DETAIL- 'A'

INSTALLATION DETAIL FOR DUCTABLE UNIT
SCALE : NTS

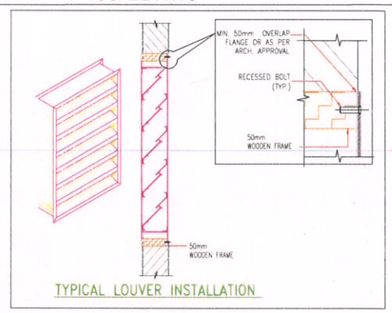
ECS LEGEND	
	REFRIGERANT PIPE (GAS)
	REFRIGERANT PIPE (LIQUID)



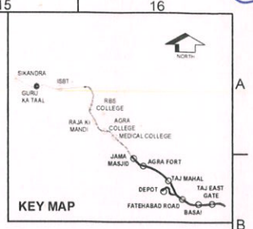
TYPICAL PROPELLER FAN INSTALLATION DETAILS
SCALE : NTS

NOTES:-

1. CONDENSATE DRAIN PIPES ARE GALVANISED STEEL (GS) MATERIAL .
2. GRILLE SHALL BE SUITABLY SELECTED & PROVIDED BY CONTRACTOR ACCORDING TO THE UNIT SIZE & FLOW RATE. VOLUME CONTROL DAMPER (VCD)TO BE CONSIDERED IN EACH AND EVERY BRANCH DUCT WHETHER VCD IS SHOWN IN DRAWING OR NOT.
3. CORDED REMOTE CONTROLLER SHALL BE INSTALLED IN WALL WITH SUITABLE HEIGHT.
4. U-TRAP SHALL BE MADE UP OF CPVC MATERIAL .
5. CONDENSATE DRAIN PIPE SLOPE SHALL BE KEPT ABOVE 1/100 i.e 1 CM /1 MT
6. VRV OUTDOOR UNIT SHALL BE MOUNTED ON PEDESTAL. VIBRATION ISOLATOR PAD SHALL BE INSTALLED TO MINIMIZE THE NOISE LEVEL.
7. SLEEVES TO BE COVERED WITH TRAY COVER TO AVOID WATER ENTRY TO THE DOWN ELECTRICAL ROOMS.
8. HEIGHT OF THE ODU WILL BE VARY AS PER THE SELECTION OF MANUFACTURER.
9. INDOOR UNIT STANDARD INSTALLATION DETAILS WILL BE PROVIDED BY OEM AS PER THEIR STANDARD DETAILS IN SHOP DWG.
10. SLEEVES TO BE FILLED BY FIRE RATED MATERIALS.
11. HVAC VENDER SHALL PROVIDE SHOP DRAWINGS FOR FINAL EXECUTION AT SITE.



TYPICAL LOUVER INSTALLATION



KEY MAP

THE RESPONSIBILITY OF CONTROL, CHECK & VERIFICATION OF ACCURACY, CORRECTNESS, COMPLETENESS, INTEGRATION & FULL COMPLIANCE OF THE CONTRACT / CODAL PROVISIONS IN RESPECT OF DESIGN, ANALYSIS AND DRAWINGS RESTS WITH THE DETAILED DESIGN CONSULTANT.

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DESIGNATION: Chief VAC Expert	DESIGNATION:	DESIGNATION:

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Consortium of Tecnica y Proyectos S.A. and Italferr S.P.A.
7th To 11th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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PROJECT: AGRA METRO RAIL PROJECT
UTTAR PRADESH METRO RAIL CORPORATION LIMITED, ADMINISTRATIVE BUILDING, VIPIN KHAND, GOMATI NAGAR, LUCKNOW, UTTAR PRADESH-226010

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: GURU KA TAL STATION

TITLE: TYPICAL SUPPORT & INSTALLATION DETAILS FOR REFRIGERANT PIPE, VRV AND DUCTABLE UNIT

SCALE: NTS | DATE: 26-07-2023 | STAGE: TDR

DRG NO: AGCC05-11716A-TDR-GKT-ME-VAC-61242

OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale: 50mm

Backfill material put into the trenches/pits for backfilling, shall unless otherwise specified be compacted and built up as to minimize future settlement as much as is reasonably possible. For this, care shall be exercised in selecting backfill material free from large hard clay lumps, especially in cramped areas directly adjoining the walls of structures.

If from the excavated spoil, enough backfill material is not available, imported, selected and approved backfill material from the borrow pits is required to be placed for backfill, on approval of the Engineer. Backfilling of trenches where the excavation is in the rock shall be with the surplus soft soil obtained from borrows pits.

23.2.6 Disposal of Surplus Excavated Material

The excavated material, which is in surplus to the requirements after backfilling, shall be disposed off as directed by the Engineer, with all lead and lift from the site for which no extra payment shall be made.

23.3 Particular Specification of Sewage Treatment Plant

23.3.1 Broad Design Basis

Table 23-1: STP Capacity

Item	Type	Capacity Required
STP	Module/Package	10 cum/day

Table 23-2: Domestic Wastewater Characteristic.

S.No	Parameter	Incoming Flow Characteristic	Recommended after treatment Value
1	PH	6.5-7.5	6.5-7.5
2	Total Suspended Solids	200-~~250~~ **300** mg/l	<~~100~~ **30** mg/lit
3	Oil & grease	30-50 mg/l	<10 mg/lit
4	BOD_5	200-300 mg/l	<~~30~~ **20** mg/l
5	COD	400-~~500~~ **600** mg/l	<100 mg/l

23.3.2 Services to Be Provided by the Contractor

1. The Contractor shall take the responsibility for all the testing and inspection to be conducted in a manner as specified in these specifications.
2. Transportation of all equipments from manufacturers work to the project site inclusive of all insurances, intermediate handling and unloading / storage at site.
3. Supply, erection as per manufacturers recommendations, inspection, testing, start up and running of the equipment during trial run / performance guarantee period at rated capacity and speed.
4. Furnishing all erection and commissioning supervision service. The Contractor shall also arrange for maintenance of equipment during performance guarantee and commissioning period.
5. Application of final paint of approved colour shall be done by the Contractor after complete erection and testing.
6. The Contractor shall also arrange technical experts of equipments from proprietary supplier as and when necessary until the commissioning and guarantee run of the plant are completed.

this variation.

15) Cleaning of pier cap top surface & drainage pipe hole, pedestal, wedge plates etc. to remove all types of debris, dirt, loose materials using manual or mechanical means without damage to the structures. Finishing the exposed surface of pedestals to remove all irregularities.

16) Earthing and stray current measuring arrangement on piers to be provided as per tender drawings.

2.1.A.1 There is possibility of some of the items not getting mentioned in the above list of works of viaduct. Contractors are requested to go through the tender drawings also in details as the works listed in 2.1.A above as well as indicated in the tender drawings would be considered inclusive in the scope of work under lump sum quoted price. Employer decision shall be final in this regard in case of dispute. Some of the major utilities cannot be diverted. Contractor shall take into consideration the existence of these utilities and design the foundations at these locations accordingly, if required, the pile cap top level shall be fixed at the bottom of the utilities without any extra cost. No payment shall however be made for supporting the utilities during course of work. However, if neither the utility(ies) can be diverted/shifted nor the pier location be altered then the substructure will be designed by accommodating the utility(ies) and the extra cost incurred on this account shall be paid. This difference shall be calculated by working out the difference between the cost of actual substructure work executed vis-a-vis the assessed cost of substructure that would have been constructed at this location as per tender requirements and conditions . No additional payment shall be made for re-designing of any structures due to utilities/underground structures etc.

2.1.A.2 The Detail Design Consultant(s) for structural designs for sub structure/super structure of viaduct shall be engaged by the contractor subject to having executed similar one work in last 7 years and their concerned structural engineer having minimum 15 years relevant experience of designing viaduct structures. All documentation pertaining to the DDC having the relevant experience shall be submitted to UPMRC for approval prior to engagement. The work is to be designed, constructed and maintained as per relevant codes, Outline Design Specifications, Outline construction Specifications and drawings and/or as directed by the Engineer.

2.1.A.3 The work content against the lumpsum component of the work shall also include but not limited to the following:

(i) Though Alignment plans (both vertical and horizontal) and pier locations are provided by the Employer to the Contractor. Contractor would however design the span configuration (only) based upon his proposal subject to obligatory requirements. Utility identification at all the foundation locations will be done by the Contractor before starting piling/excavation and in case utility(s) is encountered or obligatory requirements of Local Authorities are to be met out, the Contractor would modify the span configuration at such locations to save the utility(s) or to meet out the obligatory requirements within the accepted price. The shifting of the utility(ies) would be undertaken only in exceptional circumstances where in the opinion of the Engineer no other option is available. **Cost of such uncharted utilities shifting except RCC drain will be paid separately under relevant item of BOQ** Shifting/diversion cost of all chartered utilities in included in Lump sum price of Schedule-A. The maintenance of diverted/supported utilities shall be from the start of construction till handing over it to concerned owning agency and cost of the same is included in Lump sum price Schedule-A .The carriage of excavated earth involved in utility diversion is covered under lump-sum quoted price. No claim as regard to delay on account of execution of utility diversion will be entertained. All temporary diversion of any utilities done to facilitate the construction activity shall also be the part of the lump sum quoted price. RCC drain/ Hume pipe drain/Masonry drain will be encountered at most of the places which will be restored back with similar specification after casting of pile cap & cost of the same is included in lump sum quoted price. No payment shall however be made for supporting the utilities, carriage

Annexure-5(1/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	

PROPOSED DEAD END

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DETAIL DESIGN CONSULTANT

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REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

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COUNTER SIGNED BY UPMRCL		
CE /ELECTRICAL		
JCE /ELECTRICAL	8/12/23	
DY.CE /CIVIL	8/12/23	
CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-1

OFFICE OF ORIGIN

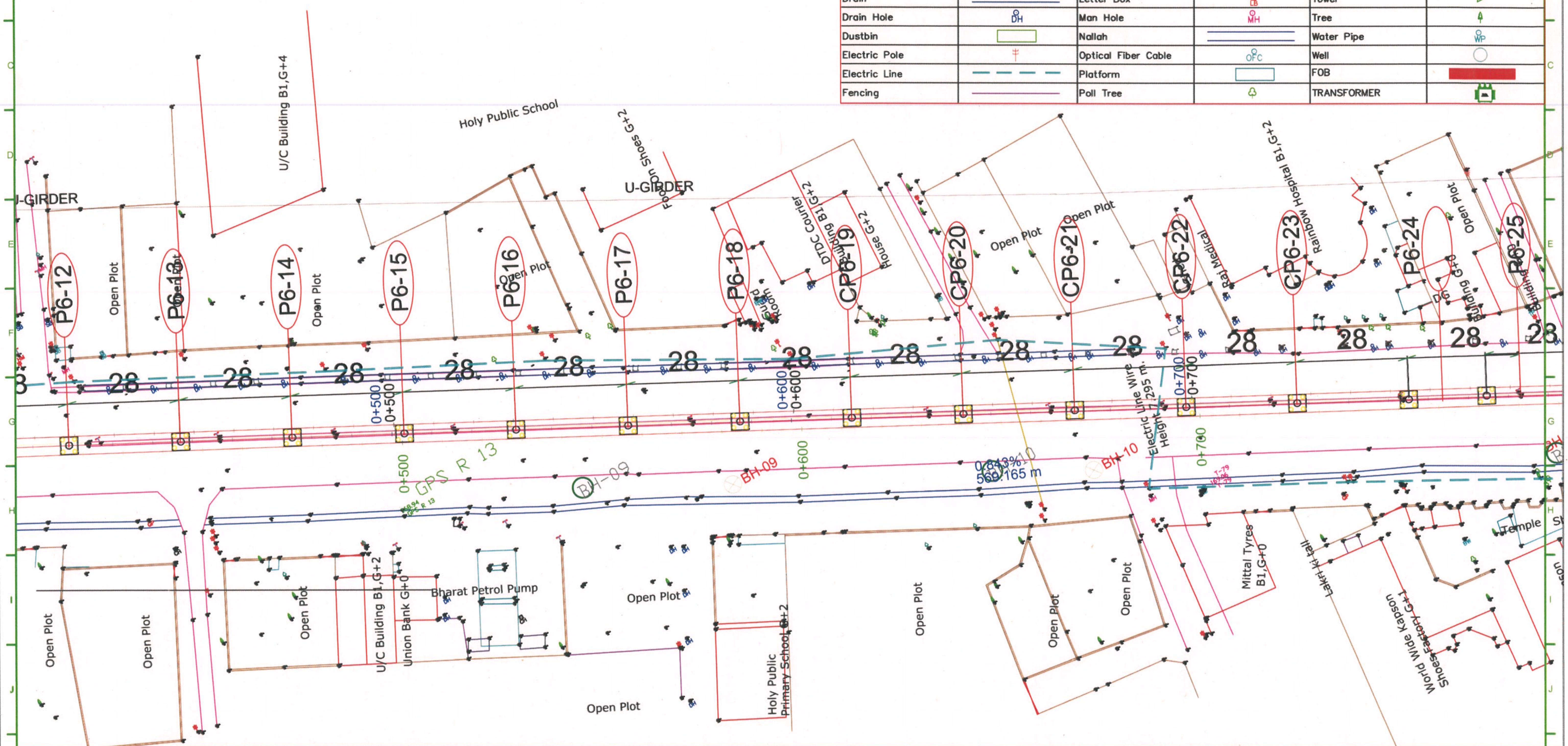
REVISION NO: P0

plot scale 50mm

Annexure-5 (2/10)

LEGEND

DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	



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DETAIL DESIGN CONSULTANT

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DESIGNATION:	DESIGNATION:	DESIGNATION:

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights
Vibhuti Khand, Gomti Nagar,
Lucknow-226010

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CE /ELECTRICAL		
JCE /ELECTRICAL	18/12	(signed)
DY.CE /CIVIL	18/12/23	(signed)
CPM		(signed)

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-2

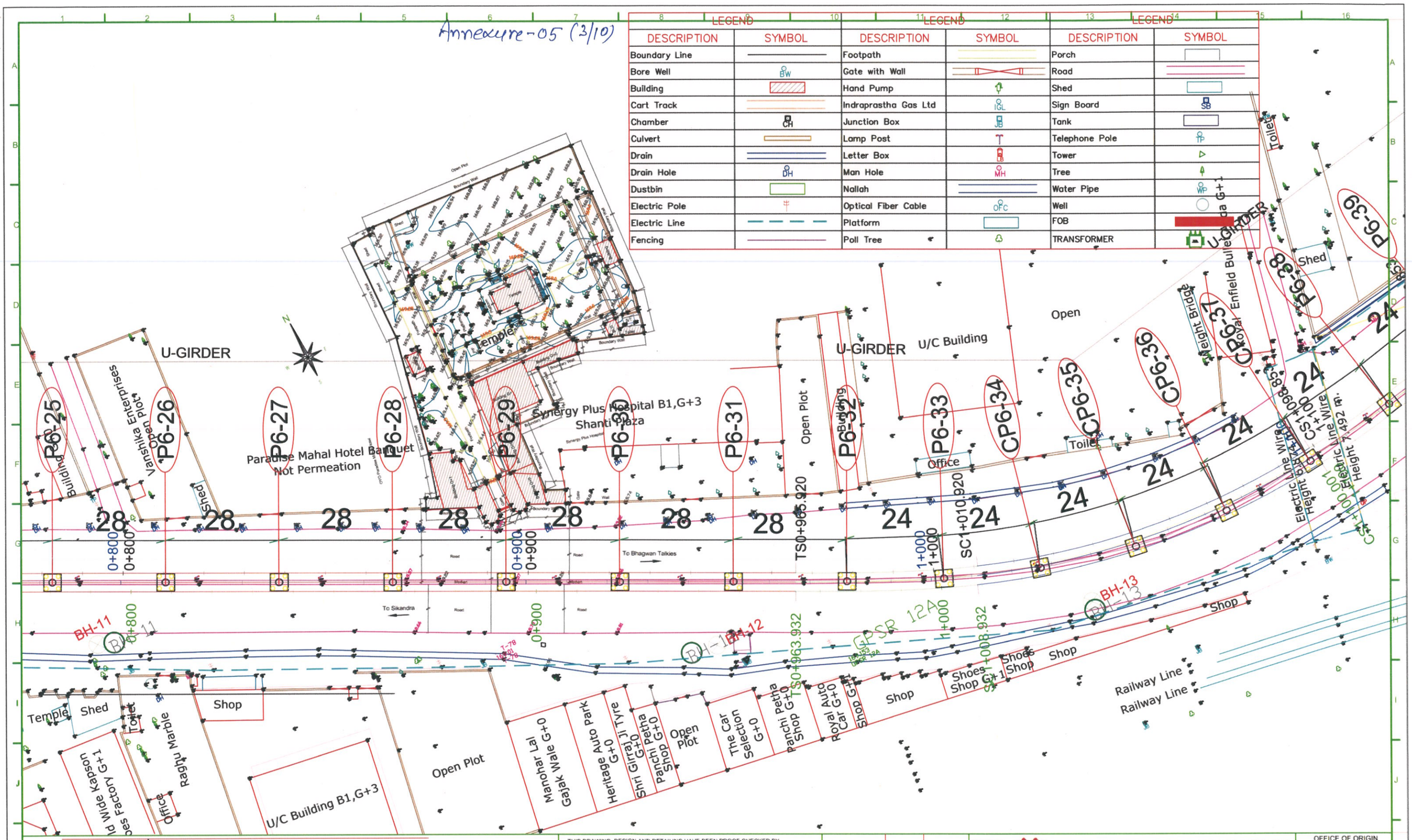
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm

Annexure-05 (3/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	



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DETAIL DESIGN CONSULTANT

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NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR — Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A, 710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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JCE /ELECTRICAL	8/12/23	
DY.CE /CIVIL		
CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-3

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

Annexure-05 (4/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	

GURU KA TAAL

P6-39 P6-40 P6-41 P6-42 ST6-01 ST6-02 P7-01 P7-02 P7-03 CP7-04 CP7-05 P7-06

U-GIRDER

Agriculture Land

Parking

Green Belt

Truck Parking

Shop

Park

Platform

Gurudwara

Gurudwara Building

Toilet

ST1+143.853 ST1+145.001 1+200 1+247.34 (Central Chainage) 1+246.39 1+245.24 1+300 TS1+384.843 TS1+385.992 1+400 SC1+424.843 SC1+425.992 CS1+476.770 CS1+477.383

4 28 28 28 16.20 12 17 13 15 12 69 15.98 28 28 28 28 28 28 28

0.0000% 140.0000 m

0.8410% 57.7359 m

Ch = 1+211.1494 Elev = 183.8000m Ch = 33.8270m

-1.2894% 333.4903 m

Ch = 1+351.7494 Elev = 183.8000 m Ch = 33.5075m

BH-15 BH-17 BH-16 BH-18

Patthar Ka Ghoda

Dhaba

Flyover

Railway

Pind Baluchi Restaurant B1,G3

Mankind B1,G+1

House

Agra Tyre G+0

Kulkatta Punjab Transport G+0

Open Plot

House G+1

House G+0

Girraj Dhaba

Aata Chakki

Cantilever Pier/ Pe

FOB

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GENERAL CONSULTANT

TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A

710, 7th Floor, Cyber Heights Vibhuti Khand, Gomti Nagar, Lucknow-226010

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	DY.CE /CIVIL	8/12	
	CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.

AGRA METRO RAIL PROJECT-CORRIDOR 1

AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-4

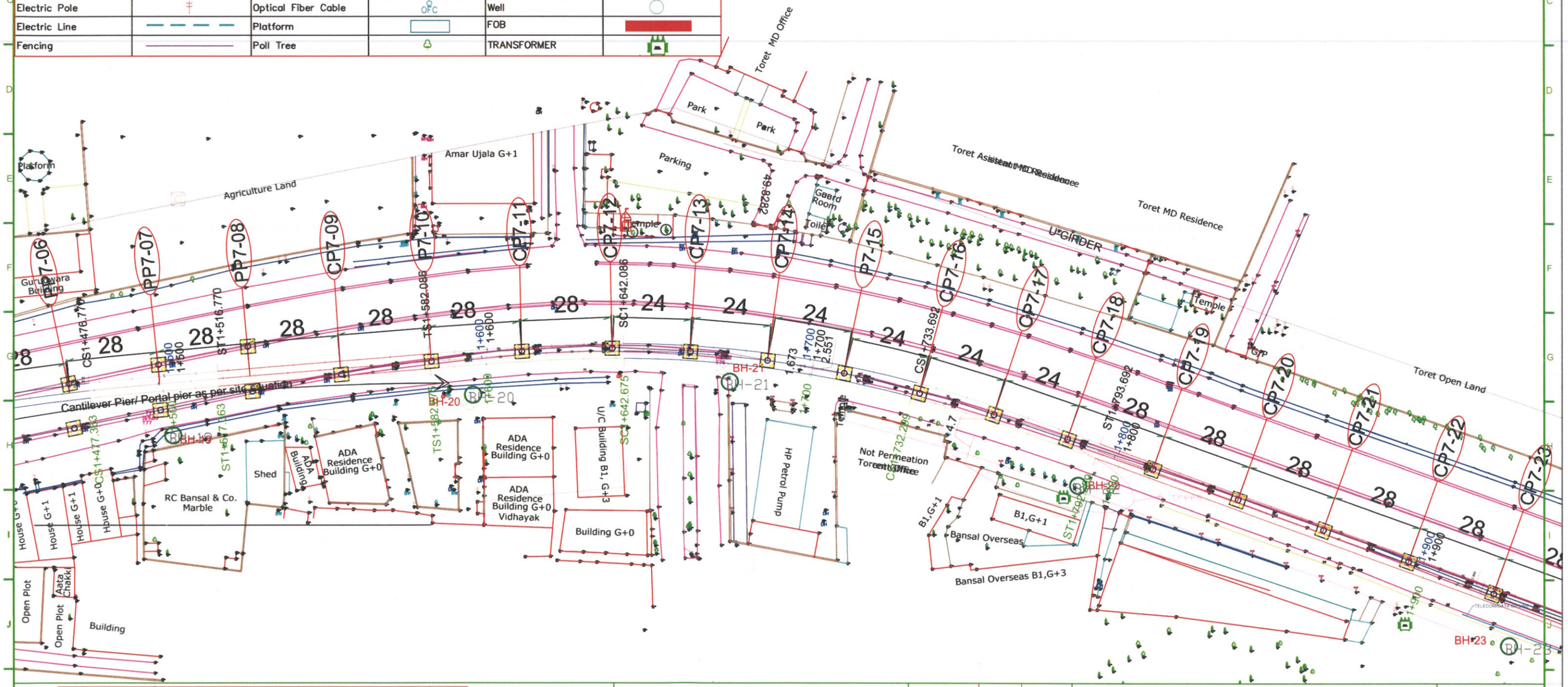
OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

Annexure -05 (5/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	



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GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

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DY.CE /CIVIL	8/12/23	
CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-5

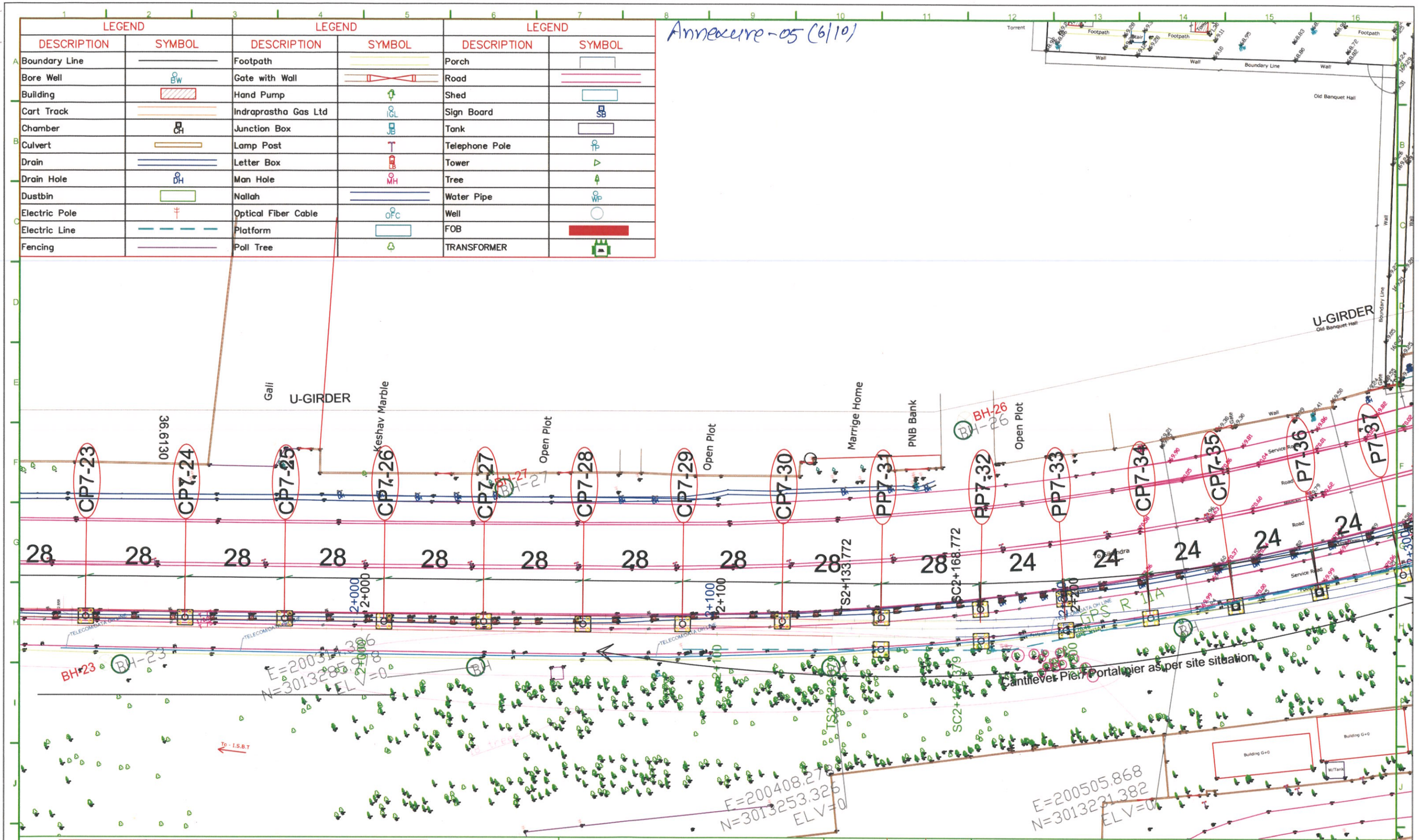
OFFICE OF ORIGIN: TATA, 3TI, lipl

REVISION NO: P0

plot scale 50mm

Annexure-05 (6/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	



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DATE:		DATE:	DATE:
NAME:		NAME:	NAME:
DESIGNATION:		DESIGNATION:	DESIGNATION:
REVIEWED BY		APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
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COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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JCE /ELECTRICAL	8/12	
DY.CE /CIVIL	8/12/23	
CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-6

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

Annexure-05 (7/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	

U-GIRDER

T-GIRDER

3 ISBT

P7-37 P7-38 P7-39 P7-40 P7-41 P7-42 ST7-01 ST7-02 P8-01 P8-02 P8-03 P8-04 P8-05 P8-06

24 24 24 24 28 28 30 30 30 24 24 28

CS2+393.658 SW2+428.658 2+448.45 (Central Chainage) 2+447.52 2+446.92 ST2+429.265 CS2+394.265

BH-24 BH-25

E=200796.16
N=3013229.555
ELV=0

E=200884.003
N=3013238.881
ELV=0

E=200710.97
N=3013220.702
ELV=0

1.2876%
411.6035 m

0.0000%
287.9040 m

Ch = 2+360.2093
ELV = 185.8000 m
51.7078 m

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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JCE /ELECTRICAL	8/11	
DY.CE /CIVIL	8/11/23	
CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-7

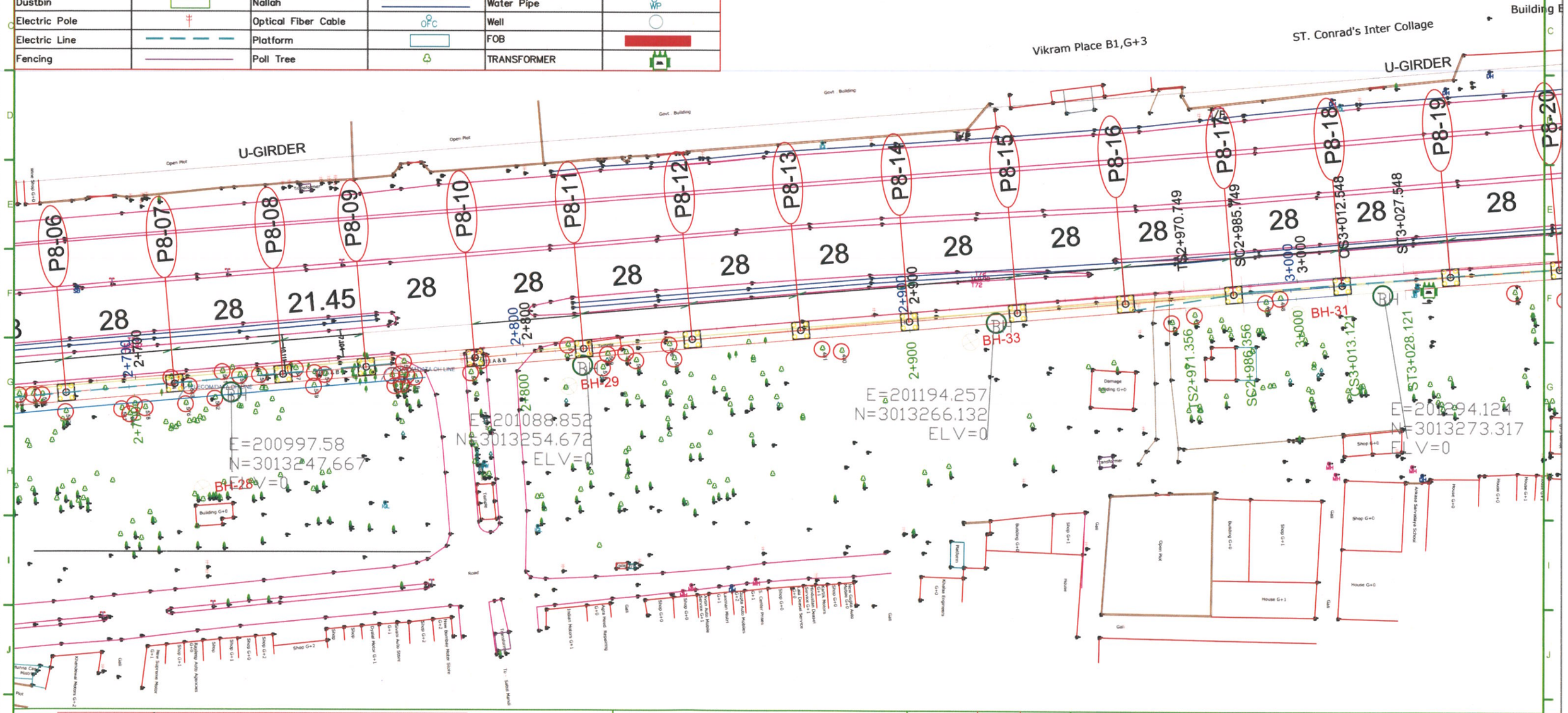
OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

Annexure-05 (8/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	



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	SIGN.				DDC							26-09-2023
ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								

DETAIL DESIGN CONSULTANT

TATA CONSULTING ENGINEERS LIMITED, MUMBAI | 3TI PROGETTI S.p.A., ROME, ITALY | LEAP INFRAASYS PRIVATE LIMITED, FARIDABAD

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DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
REVIEWED BY	APPROVED BY	VETTED BY

GENERAL CONSULTANT: TYPSA - ITALFERR

Consortium of Tecnica y Proyectos, S.A. and Italferr S.P.A
710, 7th Floor, Cyber Heights, Vibhuti Khand, Gomti Nagar, Lucknow-226010

COUNTER SIGNED BY UPMRCL	DATE	SIGNATURE
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JCE /ELECTRICAL	8/12	
DY.CE /CIVIL	8/12/23	
CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-8

OFFICE OF ORIGIN

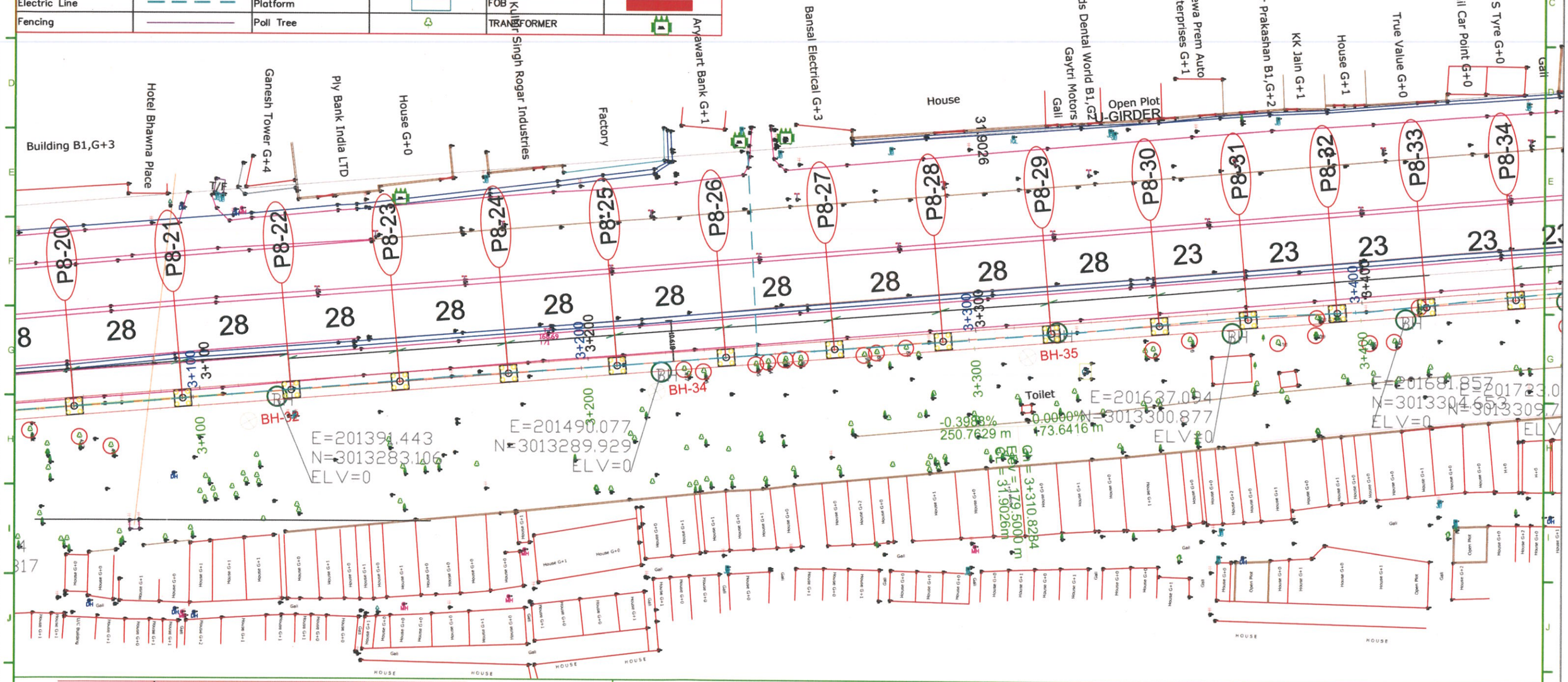
REVISION NO: P0

plot scale 50mm

Annexure-05 (9/10)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	

Feasibility of 'SHASTRI NAGAR (FUTURE STATION)' is to be assessed & confirmed by DDC. Accordingly necessary steps enabling its construction in future is to be considered & incorporated.



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ISSUE		DRN	DSN	CHD	AR	EL	IC	ME	-	-	PE/PM	APPD	DATE
					CLEARED								26-09-2023

DETAIL DESIGN CONSULTANT

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SIGN:	SIGN:	SIGN:
DATE:	DATE:	DATE:
NAME:	NAME:	NAME:
DESIGNATION:	DESIGNATION:	DESIGNATION:
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GENERAL CONSULTANT: TYPSA - ITALFERR

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CPM		

PROJECT: UTTAR PRADESH METRO RAIL CORPORATION LTD.
AGRA METRO RAIL PROJECT-CORRIDOR 1
AGCC-05: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

CLIENT: UP METRO RAIL CORPORATION LTD.

LOCATION: BALANCE ELEVATED SECTION FROM SIKANDRA TO RBS RAMP

TITLE: UTILITY DRAWINGS

SCALE: 1:750 | DATE: 26-09-2023 | STAGE: TDR

DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-9

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

Annexure-05(10/9)

LEGEND		LEGEND		LEGEND	
DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION	SYMBOL
Boundary Line		Footpath		Porch	
Bore Well	BW	Gate with Wall		Road	
Building		Hand Pump		Shed	
Cart Track		Indraprastha Gas Ltd	IGL	Sign Board	SB
Chamber	CH	Junction Box	JB	Tank	
Culvert		Lamp Post		Telephone Pole	TP
Drain		Letter Box	LB	Tower	
Drain Hole	DH	Man Hole	MH	Tree	
Dustbin		Nallah		Water Pipe	WP
Electric Pole		Optical Fiber Cable	OFC	Well	
Electric Line		Platform		FOB	
Fencing		Poll Tree		TRANSFORMER	

Ayushman Hospital B,1G+1
Chinar Photo
State G+2
Samsung Mobile Shop G+1
Goyal Traders G+1
Gupta Homeopathic G+1
House
Bushra Restaurant G+1
Vansh Daily Needs G+1
Shop G+1
Wine Shop G+0
Bhadawe Seals G+1
Hotel City Square B1,G+2
Gla University Office G+2
Kaveri House B+4
T/F
Transformer
Cover Drain
Building G+1
Mary Elec. B+4
Open Plot
Toilet
Nikhil Car Point G+0
N S Tyre G+0
Gali
Open Plot
Open Plot
House
Bikaner Sweet G+2
U-GIRDER
Police Bath
Temple
Kamal Medical Store G+0
Vikash Bike Repairing G+0
Nitin Footwear G+0
Gate
P8-34
P8-35
P8-36
P8-37
P8-38
P8-39
P8-40
P8-41
P8-42
P8-43
P8-44
AGCC-02 CONTRACT BOUNDARY
23
23
23
23
22.85
24
24
24
24
24.11
28
0.000%
173.6416 m
-3.448%
901.7100 m
Ch = 3+484.4700
Elev = 179.5000 m
CL = 61.7145m
0.000%
173.636 m
-3.448%
905.580 m
Ch = 3+484.570
Elev = 179.500 m
CL = 61.715m
E201723.057
N3013309.736
ELV=0
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CCL:25.2435 m
TRL:20.0000 m
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E: 201821.4256
CLC: 8
E=201822.007
N=3013318.894
ELV=0
E=201921.646
N=3013322.506
ELV=0
TS3+518.977
SC3+538.977
CS3+584.221
ST3+584.221
TS3+760.007
TS3+458.892
(Capital Chainage)

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DRG NO: AGCC05-11718A-TDR-AE5-CV-UTL-10

OFFICE OF ORIGIN

REVISION NO: P0

plot scale 50mm

SECTION: E.09

BMS SPECIFCIATION

BMS SPECIFICATION

1. Purpose and Scope

1.1 This Specification describes the minimum standards of the Integrated Station Management System (BMS) for AGRA Metro elevated stations. The Works to be executed under the Contract include the design, development, manufacture, verification, delivery, installation, testing, commissioning (including integrated testing and commissioning) and technical support for a complete BMS to fully integrate the control, monitoring, and supervision of Ventilation & Air Conditioning , Low Voltage Power & Distribution, Firefighting & Alarm System, Hydraulic System (water pumps & Bore Well Pumps etc.) and other nominated station Services including all DDC Equipment, , Modules, Sub Modules, Power Supplies, Local Control Panels, Local Area Network (LAN), Ethernet Hubs and Switches, Interface with electrical containment and wiring systems, and other components as required whether or not specified necessary to deliver the requirements of this Specification.

1.2 The BMS is to be detailed engineering, designed manufactured, supplied, installed, tested and commissioned by the Contractor and shall meet all performance and functional requirements as defined in the Specification. This specification contains a general description of the system concepts and major components, and sections covering definitions, requirements for interfaces with other contracts, general mechanical and electrical installation design/performance requirements, and testing requirements.

1.3 The emphasis is to explain the requirements of work, interfaces with other contractors for achieving an efficient & safe working system commensurate to the best international standards and practices. Every effort has been made to cite the requirements very clearly, however in this contract, the contractor shall follow acceptable standards & procedures similar to the best available in world Metros where this is not explicitly mentioned.

1.4 In this document the term “provide” shall mean “the detailed covering specifications, calculations, drawings for installations & maintenance, manufacture and factory testing or procurement, delivery, off-loading, installation, testing, commissioning, handover to UPMRC, UPMRC staff training including supply of O&M manuals & as-built drawings, interface and co-ordination with other contractors or arising out of concurrent works and warranties”.

1.5 Submittals shall be in the form of reports, drawings, calculation sheets & schedules both in hard copy and on computer diskette. The contractor shall furnish backup materials such as codes / Standards / software programs free of cost for the Engineer use in understanding/evaluation of the submittals. The contractor will furnish a list and format of submittals for each area of work to the Engineer for consent covering the requirements given herein.

2. BMS for Elevated Station

2.1 The contractor shall Detail Engineering, Design, Supply, Installation, Testing and Commissioning of DDC based BMS system for all elevated stations. The system shall be IP (MODBUS/ BACNET etc.) based and Control and Monitor of the following equipment's at each elevated station. The contractor shall ensure that DDC to Main Switching network shall be through MODBUS TCP/IP Communication. Also shall ensure that all associated components as part of DDC system (specified under BOQ) shall be supplied without any variation to the contract.

a) LV Distribution Board
b) Public area Normal Lighting Control.
c) Variable Refrigerant Volume (VRV) Controller and CRC temp control.
d) Fire Alarm Control Panel (FACP)
e) Fire Fighting (Main Electric Pump, Jockey Pump) & Domestic Water Pumps, Water Tank level indication etc.
f) Lift and Escalator RMS
g) DG Sets
h) Other systems as per requirement.

2.2 **HARDWARE & SOFTWARE FUNCTION SPECIFICITION**

2.2.1 Workstation cum server

Standalone commercial grade industrial compatible Desktop workstation cum server , features Intel core I9 processor (should be latest processor) with 3.0 GHz or higher, 16GB RAM or higher, DVD R/RW, Dual LAN card, Video Accelerator, 2 Serial, 1 parallel, Windows 11 OS or latest based (64 bit) latest Desktop with standard MS office package, complete with one No. USB mouse, 2 Nos. spare USB ports, minimum 4 Nos. High speed parallel ports, one No. 2 TB hard disk drive, 101 keys keyboard having 30 programmable function keys, Latest Norton/MacAfee Anti-virus with lifetime validity vaccine suitable for operation on 230 volts A/C. 50 Hz.

The Dual colour monitor shall be minimum 32" diagonal nonglare flat LED screen high resolution with minimum HDMI resolution of 3840 pixels horizontal, 2160 lines vertical and minimum contrast ratio of 700:1. with minimum 16 based colour as per specifications etc. including dual monitor holder as required. Workstations shall include all accessories needed to comply to UL requirements. 1 Nos. Additional Programming terminal (Laptop) shall be provided to Facilitate O&M activities at each station.

2.3 **A4 Colour Printer**

i. 02 Nos. full colour A4 page printer, shall be provided for creating paper copies of Workstation screen displays, reports, etc

ii. For Elevated stations & Station level, Report printer (A4) shall be provided. Laser printers shall be like friendly maintenance and eco-friendly savings. Laser printer shall produce both black and white and colour prints.

iii. The minimum requirements for Printer are as follows,

S.NO.	DESCRIPTION	REQUIREMENT
a.	Printer	A4 Color Printer
b.	Functions	Print, Copy, Scan

c.	Resolution	Min. 1200x1200 dpi for Black Upto. 4800x1200 dpi for Color
d.	Print Speed	Color: Min. 20 ppm Black: Min. 20 ppm
e.	Ports	USB & Ethernet
f.	Wireless Connectivity	Wi-Fi and Bluetooth
g.	Network Protocol	Modbus TCP/IP
h.	Duplex Printing	Automatic

2.4 **DDC Controller**

2.4.1 DDC Controllers shall be IP based and communicate with BMS System. Automation stations must be IP based, intelligent. Automation stations must be freely programmable and feature graphical programming optimized for building automation and control. The following functions must be available: Control, measure, signal at various priorities and by event, monitor, alarm, count, calculate, schedule, save trend values, and log.

2.4.2 At the heart of the DDC system shall be the Microprocessor based modules, which can be individually programmed according to the functional requirements.

2.4.3 The IP DDC controllers shall be selected from either a modular or compact type of unit to suit the most economic inclusion of all the data points specified. To facilitate this controller should come in various configurations to handle at least up to 250 I/O points. Each control module shall be capable of operating on a stand-alone basis without control from a central computer.

2.4.4 The IP DDC Controllers shall have onboard IO points and also shall support flexible I/O expansion modules (both hard points and soft points).

2.4.5 The DDC Controllers support protocols such as BACNet/IP, BACnet/MSTP, Modbus TCP IP, etc.,

2.4.6 The input/output connection to Modular controllers shall be via individual plug-in modules suitable for the particular peripheral device.

2.4.7 The DDC Controllers shall be used for Total Automation application with Trending availability at controller level.

2.4.8 It shall be possible to integrate both types of control module (compact and modular) onto the same BACnet communication network/MODBUS TCP IP network. Each controller performance shall be to 0.5% control accuracy with sample rates of less than one second.

2.4.9 The products used in constructing the BMS management and automation levels shall conform to BACnet protocol / MODBUS TCP/IP protocol for station automation and control networks.

2.4.10 DDC must be UL approved, must have real time clock and be suitable for PID control.

2.4.11 The Distributed direct digital control (DDC) system shall be designed with functions distributed both physically and functionally over the field controller.

2.4.12 The DDC's shall be true autonomous with peer-to-peer communication and shall have minimum the following features.

i. Optional connection to operator terminal, management station and via Web browser with Web server device.
ii. Freely Programmable
iii. Universal inputs, which can be connected to passive and active sensor elements, or to binary volt-free contacts, for signalling functions.
iv. Flash ROM, real time processing and multi tasking
v. 32 bit processor system

vi. Supply voltage AC 240V +/-20% 50/60 Hz
vii. Event driven data transmission
viii. Historical data memory storage
ix. Software application stored in nonvolatile memory
x. The system shall have the facility for a Web server to be added to allow full operation of all automation station control modules connected to the Lon Talk BACnet network via a standard thin client/web browser. Functions to include
xi. Process control & interlock functions.
xii. Alarm transmission via SMS and e-mail
xiii. Operation of all-time schedules, exception calendar and heating curves.
xiv. Reading of trend data with facility to export data to Microsoft Excel.
xv. Multi user level access protection
xvi. Ethernet or Modem connection
xvii. Runtime totalization.
xviii. Trend logging of specific data-points with transmission of the logged values to the management level
xix. Energy calculations

2.5 **Communication**

2.5.1 Contractor shall share the data communication between the Controller and BMS Server/Workstation through MODBUS TCP IP Communication. All third-party systems integration with BMS System through MOBUS TCP/IP communication only.

2.6 **DDC Enclosure**

2.6.1 Supply, Installation, Testing & Commissioning of Front operated front/back access cubicle type indoor duty floor/wall/recess/surface mounting, totally enclosed dust and vermin proof (minimum protection IP 54) Industrial type panels with Min 8 Fold Frame ,Colour shade of the panel shall have NONO from employer foamed-in PU gaskets, fabricated from 2mm thick CRCA sheets & gland plate min 3 mm, 7 Inches TFT display, etc. All the panel shall humidity & temp. monitoring facility.

2.6.2 Incorporating IP 54 protection, Free standing DDC enclosure equipment complete with Single ended TBs, SMPS, MCBs, etc including interconnections, labelling, earthing, associated foundation/ masonry work and all cable ducting, control wiring, fixing accessories, LV Power isolation indicator lamps, OFC Converter, LED's, fuses, circuit breakers, terminal rail, terminals, marker ferrules and all accessories as may be called for under the specifications.

i. The Switchboards shall be provided with detachable gland plates for entry of cables from the top/bottom as required.

ii. All accessories and supporting structures such as channels, base frame, mounting brackets, lifting lugs, panel heaters, ventilation arrangement etc as required.

iii. The makes of components and accessories shall be same for panels for uniformity, standardization and replaceability shall be applicable to all panels/boards under the scope of work

iv. Panel shall have additional 30% Space provision for future expansion. I/Os shall have additional 30% Spare provision for future expansion.

2.7 **BMS Software**

2.7.1 Proprietary software packages shall be used within the System, but it should be 2023-year version or latest version at the time of installation.

2.7.2 The Contractor shall submit the BMS software compactable certificate with DDC hardware.

2.7.3 All software shall be fully proven, including operation at maximum processing load. This feature shall be simulated during the Factory Acceptance Test.

2.7.4 The Operating system shall support multi-tasking, multi user, inter process communication and foreground/background processing with real time capabilities, virtual memory management and at least 32-bit virtual addressing scheme and GUI. It shall conform to standards for Open Systems. It shall also maintain a system activity log which shall be used for system recovery. It shall support all I/O devices used including high speed network protocol, TCP/IP, disk arrays, etc.

2.7.5 The BMS software shall be divided into the following basic functions:

2.7.6 Data base management: Maintenance of the primary database for real time and historical data, signal processing and calculations. The structure of the database shall accommodate easy access of data for use in other proprietary software packages.

2.7.7 Communications management: Support of communications protocols with comprehensive error detection and error correction facilities. Support of operating regimes, which optimize performance and operating costs on communication networks using, either dedicated or shared communications channels where operating costs can be either dependent or independent of traffic loading.

2.7.8 Alarm and event reporting: Detection of alarms and events, support of alarm reporting and acceptance procedures on the Workstations and generation of printed logs.

2.7.9 Peripheral management: Support of operator procedures on the keyboard and mouse units, construction of display page formats and printer page formats.

2.7.10 BMS System Control and Monitoring at operator workstations of equipment connected to the terminal units and manual control from the operator workstations or automatic control by pre-programmed sequences resident either in terminal units or designated operator workstations.

2.7.11 Fault Diagnosis and Maintenance: Self-diagnosis and fault reporting to replaceable module level, notification when software back-ups are due and general housekeeping to maintain optimum operation. 1 Nos. Additional Tablet with preloaded O&M manual shall be provided.

1. In BMS Development below Display Screens to be developed as minimum,
2. Station overview Display screen
3. E&M Overview Display Screen
4. Fire Alarm Display Screen
5. VAC Overview Display Screen
6. L&E Overview Display Screen
7. BMS System Station Architecture Display Screen
8. Energy Reading Display Screen for VAC panels and E&M Panels
9. Energy Dashboard display screen
10. Trends Display screen
11. Events and Alarm Display screen

All station BMS Equipment datasheets, warranty, etc., shall be available at BMS workstation for Operations and Maintenance procedures.

INPUT/OUTPUT SCHEDULE

The BMS Contractor shall refer the Station IO Schedule.

Indicative Elevated Station Typical I/O list									
S.No.	**Attribute Description**	**Equipment Location**	**Type**	**Signal Category**	**AI**	**AO**	**DI**	**DO**	**SOFT IO**
1	**Sump pit level sensor**								
	Low level	pump room	HW	VFC			1		
	Midium level		HW	VFC			1		
	High level		HW	VFC			1		
	Sump Pump operation Logic		SW						1

2	**FIRE WATER TANKS LEVELS**								
	Fire Water Tank Low Level Alarm	pump room	HW	VFC			2		
	Fire Water Tank Medium Level		HW	VFC			2		
	Fire Water Tank HighLevel		HW	VFC			2		
	Water Inlet logic		SW						1
3	**Over head WATER TANKS LEVELS**								
	OH Water Tank Low Level Alarm	terrace level	HW	VFC			2		
	Treated Water Tank Medium Level		HW	VFC			2		
	OH Water Tank HighLevel		HW	VFC			2		
	Water Inlet logic		SW						2
4	**FACP**								
	FACP Integration to BMS (to mimic complete FACP on the BMS screen)		SW	**ModBus/RS 485**					120
5	**Centralised remote controller/VRV**								
	CRC integration (to provide complete control to BMS as available with the CRC such as scheduling, unit control, error code display, etc. Approx.Soft points are as follows)	SCR	SW	RS485/TCP-IP					3
	VRV On/Off Command		SW						3
	VRV Running feedback		SW						3
	VRV Local/Remote Position		SW						3
	VRV Current low/High alarm		SW						3
	VRV Trip alrm		SW						3
	VRV Refrigerant pressure Low/High Alarm		SW						3
	VRV Temperature High Alarm		SW						3
	Capacity Limited		SW						3
	Maximum Capacity		SW						3
	Run Enabled		SW						3
	Motor Current		SW						3
	Motor Running KW		SW						3
	COP		SW						3
	IKW/TR		SW						3
	Tonnage		SW						3
S.No.	**Attribute Description**	**Equipment Location**	**Type**	**Signal Category**	**AI**	**AO**	**DI**	**DO**	**SOFT IO**
6	**Lifts**								
	Maintenance mode status		SW	MODBUS TCP/IP					4
	Run/Stop status		SW						4
	Power Available Status		SW						4
	Emergency Alarm Status		SW						4
	Lift Parking Status		SW						4
	Fault status		SW						4
	Homing command (parking/ un-parking)		SW						4
	Fire Mode Stop		SW						4
7	**Escalators (ESC)**								
	Power on/off status		SW	MODBUS TCP/IP					4
	UP & DN direction of travel status		SW						4

	Stop status		SW						4
	Local/Remote Status		SW						4
	Speed of the escalator status		SW						4
	Fault codes of escalator		SW						4
	Escalator fault status		SW						4
	Maintenance mode status		SW						4
	Stop Command		SW						4
	Start (UP) Command		SW						4
	Start (DN) Command		SW						4
	Fault reset command		SW						4
	Override Command		SW						4
8	**Main Distribution Board (MDB)** - Type - 1								
	TRANSFORMER - I INCOMING								
	Auto/Manual status		HW				1		
	Circuit Breaker Open/Close Status		SW						1
	Circuit Breaker Trip Status	ASS	SW						1
	ESPB		HW	VFC			1		
	Control Supply Status		HW	VFC			1		
	TRANSFORMER - II INCOMING								
	Auto/Manual status	ASS	HW				1		
	Circuit Breaker Open/Close Status		SW						1
	Circuit Breaker Trip Status		SW						1
	ESPB		HW	VFC			1		
	Control Supply Status		HW	VFC			1		
	BUS COUPLER & BUSBAR								
	Circuit Breaker Open/Close Status		SW						1
	Circuit Breaker Trip Status	ASS	SW						1
	Auto/Manual status		HW				1		
	Metering (at Busbar)								
	Line Voltage		SW						1
	Line Current		SW						1
	KW		SW						1
	KVA		SW						1
S.No.	**Attribute Description**	ASS	**Type**	RS485		**AO**	**DI**	**DO**	**SOFT IO**
	KWHr		SW						1
	KVAR		SW						1
	PF		SW						1
	MDI		SW						1
	Frequency		SW						1
	B1 OUTGOINGS								
	EPP+ESC/PAP + Spare								
	Open/Close status	ASS	SW						5
	Trip status		SW	RS **485**					5
	ACPP+MLP+spare	ASS							
	Open/Close status		SW						2

	Trip status		SW						2
	S&T **UPS**								
	Open/Close status		SW						1
	Line Voltage		SW						1
	Line Current		SW						1
	KW		SW						1
	KVA	ASS	SW	RS **485**					1
	KWHr		SW						1
	KVAR		SW						1
	PF		SW						1
	Trip status		SW				1		
	B2 OUTGOINGS								
	EPP+ESC/PAP+Spare								
	Open/Close status	ASS	SW						4
	Trip status		SW						4
	FPP+Spare								
	Open/Close status	ASS	SW						2
	Trip status		SW						2
	ACPP+MLP/ Spare								
	Open/Close status	ASS	SW						2
	Trip status		SW						2
9	**Essential Power Panel (EPP)**								
	INCOMER (Normal supply)								
	Open/Close status	ASS	HW				3		
	Trip status		SW						3
	Auto/manual Status		HW				1		
	ESPB		HW				1		
	BUSBAR								
	Metering (at Busbar)								
S.No.	**Attribute Description**	**Equipment Location**	**Type**	**Signal Category**	**AI**	**AO**	**DI**	**DO**	**SOFT IO**
	Line Voltage	ASS	SW						1
	Line Current		SW						1
	KW		SW						1
	KVA		SW	RS **485**					1
	KWHr		SW						1
	KVAR		SW						1
	PF		SW						1
	Lift(4) + ACDB + S&T UPS + Spare								
	Line Voltage		SW						7
	Line Current		SW						7
	KW	ASS	SW	RS **485**					7
	KVA		SW						7
	KWHr		SW						7

	KVAR		SW						7
	PF		SW						7
	Open/Close status		SW						7
	Trip status		SW						7
10	**AC Power Panel +Main lighting panel (ACPP+MLP)**								
	INCOMER								
	Open/Close status		HW				2		
	Trip status	ASS	SW						2
	Auto/manual Status		HW				1		
	ESPB		HW				1		
	Metering (at Busbar)								
	Line Voltage		SW						1
	Line Current		SW						1
	KW		SW						1
	KVA		SW	RS **485**					1
	KWHr		SW						1
	KVAR		SW						1
	PF		SW						1
11	**Emergency lighting panel (EMLP)**								
	INCOMER								
	Open/Close status		HW				2		
	Trip status	ASS	SW						2
	Auto/manual Status		HW				1		
	ESPB		HW				1		
	Metering (at Busbar)								
	Line Voltage		SW						1
	Line Current		SW						1
	KW		SW						1
	KVA	ASS	SW	RS **485**					1
	KWHr		SW						1
	KVAR		SW						1
	PF		SW						1
S.No.	**Attribute Description**		**Type**	**Signal Category**	**AI**	**AO**	**DI**	**DO**	**SOFT IO**
12	**Fire Pump Panel (FPP + WPP)**								
	INCOMER - I from MDB and 2 from DG set								
	Circuit Breaker Open/Close Status		HW				2		
	Trip Status	PUMP ROOM	SW						2
	Auto/manual Status		HW				1		
	ESPB		HW				1		
	Metering (at Busbar)								
	Line Voltage		SW						1
	Line Current		SW						1
	KW	PUMP ROOM	SW	RS **485**					1
	KVA		SW						1
	KWHr		SW						1
	KVAR		SW						1

	PF		SW						1
	OUTGOING **(Main** + **Standby** + **Spare)**								
	Running Feedback Status	PUMP ROOM	SW						3
	Auto/Manual Status		HW				1		
	Local/Remote Status		HW				3		
	Trip Status		SW						3
	On/OFF Command		SW						3
	Motor Current		SW						3
	Pump Running Hours		SW						3
	Low pressure alarm taken		SW						1
	OUTGOING **(Jockey** + **Spare)**								
	Running Feedback Status	PUMP ROOM	SW						2
	Local/Remote Status		HW				2		
	EPB Status		HW	VFC			2		
	Trip Status		SW				2		
	Motor Current		SW						2
	Pump Running Hours		SW						2
	2 Nos. Bore well								
	Pump Running Feedback	PUMP ROOM	SW						2
	A/M/R STATUS		HW				2		
	ON/OFF Command		HW					2	
	Pump Current		SW						2
	Pump Running Hours		SW						2
	2 Nos. Domestic + 1 Nos. Booster								
	Pump Running Feedback	PUMP ROOM	SW						3
	A/M/R STATUS		HW				3		
	ON/OFF Command		HW					3	
	Pump Current		SW						3
	Pump Running Hours		SW						3
	2 Nos. Sump Pump								
S.No.	**Attribute Description**	**Equipment Location**	**Type**	**Signal Category**	**AI**	**AO**	**DI**	**DO**	**SOFT IO**
	Pump Running Feedback	PUMP ROOM	SW						2
	A/M/R STATUS		HW				2		
	ON/OFF Command		HW					2	
	Pump Current		SW						2
	Pump Running Hours		SW						2
	2 Nos. Inline Fan								
	Local/Remote Status	PUMP ROOM	HW				2		
	Auto/Manual STATUS		HW				2		
	ON/OFF Command		HW					2	
	Trip status						2		
	On/OFF Status		HW				2		
	Running Hours		SW						2

13	**PAP PANEL**								
	INCOMER								
	Open/Close status		HW				2		
	Trip status	ASS	SW						2
	Auto/manual Status		HW				2		
	ESPB		HW				1		
	BUSBAR								
1	Metering (at Busbar)								
	Line Voltage		SW						1
	Line Current		SW						1
	KW		SW						1
	KVA	ASS	SW	RS **485**					1
	KWHr		SW						1
	KVAR		SW						1
	PF		SW						1
14	DG **AMF PANEL**								
	INCOMER								
	Auto/Manual Status		HW				1		
	Open/Close Status		SW						1
	Trip Status		SW						1
	ESPB		HW				1		
	Outgoing								
	Open/Close Status		SW						3
	Trip Status		SW						3
	AMF-160/200/250KVA DG								
	DG Local/Remote Status		HW				1		
	DG Set / Engine Start Feedback		HW				1		
	DG common Fault Alarm		SW						1
	DG Battery Voltage		SW						1
	DG Output Voltage		SW						1
S.No.	**Attribute Description**		**Type**	**Signal Category**	**AI**	**AO**	**DI**	**DO**	**SOFT IO**
	DG Output Frequency		SW						1
	DG set failed to start or tripped alarm		SW						1
	Hours of operation	DG ROOM	SW						1
	Starter battery voltage alarm		SW						1
	DG Canopy open alarm		SW						1
	Low Lube Oil Pressure		SW						1
	High water tem Alarm		SW						1
	ESPB Alarm		HW				1		
	Over cranking alarm		HW						1
	DG radiator low level alarm		SW						1
	Fule consumption		SW						1
	DG fuel level indication		HW						1
	DG not run for 15 days		SW						1

15	LDB								
	Local/Remote status		HW				11		
	R PHASE	Concourse ,Platform, DG ROOM, Viaduct							
	Open/Close status		HW				11		
	ON/OFF COMMAND		HW					11	
	Y PHASE								
	Open/Close status		HW				11		
	ON/OFF COMMAND		HW					11	
	B PHASE								
	Open/Close status		HW				11		
	ON/OFF COMMAND		HW					11	
16	UDB								
	Local/Remote status	Concourse, Platform and DG Room	HW				5		
	UPS supply								
	Open/Close status		HW				5		
	ON/OFF COMMAND		HW					5	
					0	0	129	47	486

Note; - * IO Summary Indicative only. 30 % IO's in addition for spare & Specified IO's scope shall be considered as scope within the contract.

Annexure-07

Geotechnical investigation Boreholes Chainage Details		
S.no.	BH ID	Chainage (m)
1	BH-1	-64.663
2	BH-2	-164.500
3	BH-3	-274.000
4	BH-4	40.000
5	BH-5	95.000
6	BH-6	189.846
7	BH-7	289.167
8	BH-8	389.288
9	BH-9	553.200
10	BH-10	670.000
11	BH-11	795.543
12	BH-12	940.494
13	BH-13	1037.296
14	BH-14	1129.513
15	BH-15	1228.894
16	BH-16	1307.222
17	BH-17	1273.390
18	BH-18	1397.100
19	BH-19	1500.000
20	BH-20	1600.000
21	BH-21	1678.896
22	BH-22	1796.605
23	BH-23	1940.000
24	BH-24	2479.256
25	BH-25	2040.000
26	BH-26	2180.000
27	BH-27	2240.000
28	BH-28	2720.000
29	BH-29	2820.000
30	BH-30	2620.000
31	BH-31	3000.000
32	BH-32	3110.000
33	BH-33	2910.000
34	BH-34	3220.000
35	BH-35	3310.000

Asst Engineer
Civil

DY (E

work.

(xxviii) Multimodal integration at ISBT metro station with ISBT by providing covered walkway/FOB.

(xxix) Multimodal integration with Sikandara monument by providing covered walkway/FOB.

(xxx) Design & Construction of temporary structures/ construction methodology and getting it approved from third party.

(xxxi) PEB Work:

a) Designing, providing, fabricating, transporting, erecting and securing in position prefabricated structural steel roof work for Elevated stations building/Entry Exits complete-as per specifications, approved shop drawings. Work under this item would generally cover all structural steel work for roof in the stations, including roof portals, Purlins, runners gutters etc. in the station steel roof structure, down take pipes up to ground level along with provision for attachment .Structural Supports for all fixing E&M and Signalling / Telecommunications equipments in the steel roof structure. Work to include all intermediate stages of activities not defined herein, but otherwise implied for total completion of work. Cost to include but not be limited to, all materials including wastage, all consumables, fasteners of all types for both temporary and permanent stages of work, all temporary stays, labour, temporary works including staging, scaffolding, tools, plant and equipment, and additional costs of all incidentals and necessary testing of material, workmanship etc including cost of painting as per specifications. PEB height/span may very +/- 0.5 mts from the tender drawing. This variation including variation in sheeting will also be the part of lump sum scope and nothing will be paid / deducted for this variation

b) Providing and fixing single skin Hi-Rib (Crimp curved) profiled sheeting 1000-1020 mm cover width, 28-30 mm crests @200-250 mm c/c manufactured out of 0.50 mm TCT (Total coated thickness) Hi- tensile galvalume steel. The sheets shall have wide pans with 2-3 nos. stiffening ribs for effective water shedding and special male/female ends with full return legs on side laps for purlins support and anti- capillary flute in side lap. The sheets shall have a hot-dip metallic coating of ZINC and Aluminium (150 gms/sq.m. zinc/alum. Coating mass total on both sides. AZ-150 as per AS 1397), 330Mpa to 550 Mpa yield stress, providing PVDF coating of approved colour of total thickness of 35 microns comprising of 20 microns exterior coat of PVDF over 5 microns PU back coat over 5 micron primer coats on both surfaces including side and end laps and using 8mm galvalume hex self- drilling. Item to include curved sheets and crimping also. Rate shall include providing fasteners on each crest of sheets for connection with purlins and seam bolts etc.

c) Providing, supplying, erecting and fixing in position 3mm thick corrugated clear Polycarbonate sheets of approved make texture and colour for Sky light. The corrugation Profile shall match with the profile of roof sheets as listed out in item (b) above, including capping and fixing to roof sheets and steel girts by same fasteners as used by roof sheeting, minimum end laps of 200 mm sealing of laps with silicon sealant, water tight complete in all respects.

d) Provisioning in PEB structure for required hanger arrangement for E&M and Signalling / Telecommunications equipments. The supply of hangers and its fixing shall be done by the respective system contractors. However, supplying and fixing the hanging arrangement required for signage is in the scope of this contract. Work to include all intermediate stages of activities not defined herein, but otherwise implied for total completion of work.

(xxxii) **Shastri Nagar Metro station is a future metro station, however all necessary arrangements as shown in drawings to make this station functional in future shall be included in Lump Sum.**

2.1.B.2 There is possibility of some of the items not getting mentioned in the above list of works of station. Contractors are requested to go through the tender drawings also in details as