BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

In Rejoinder to: M.A. No.28/2023

in OA No.215/2022

IN THE MATTER OF: -

Aashish Sardana ...Applicant

Versus

M/s Vatika Ltd. and Anr. ...Respondents

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NDOH 13.12.2023

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THROUGH FILED

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Place: NEW DELHI

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REJOINDER OF THE APPLICANT **TO THE REPLY FILED BY THE RESPONDENT NO. 1** IN M.A. NO 28/2023 FILED BY THE APPLICANT IN O.A. NO 215/2022

MOST RESPECTFULLY SHEWETH:

1. That, the contents of the Para 1 of the reply as averred by the Respondent-Project Proponent (hereinafter referred as Respondent-PP) are neither denied nor conceded at this stage while duly reserving the right to contest validity or authenticity of the same at a later date.

2. That, the contents of the Para 2 of the reply as averred by the Respondent-PP are neither denied nor conceded at this stage while duly reserving the right to contest validity or authenticity of the same at a later date.

3. That the contents of para 3 are incorrect and denied. It is submitted by the Applicant that a perusal of facts as shall be put across herein forth shall justify that while the SEIAA was correct in its finding of the defaults of the Answering Respondent, however the imposition of penalty and Environment Compensation Cost was paltry in light of the violations and intransigent and non-repentant attitude of the Respondent-PP.

4. The contents of para 4 (i) of the reply are incorrect and denied. It is rather submitted by the Applicant that at the time of seeking prior Environment Clearance from SEAC/SEIAA the project was a single project and neither divided into phases nor such a representation of construction of the project in phases was made to any authority. It is further submitted that SEAC had erred in granting Gold Rating to the project without due diligence and without even checking the Respondent-PP's documents wherein clearly two very distinct plans with different project areas or land parcels were being proposed within the same proposal/application. A copy of the said application of the Respondent made to SEAC/SEIAA for its consideration which was downloaded by the Applicant from MoEF&CC website is enclosed herewith as **Annexure P-1**. This error on part of SEAC actually brings all its approvals or recommendations to the Responding-PP, for its every

other project, also into question.

5. The contents of Para 4 (ii) are incorrect and denied. It is rather submitted by the Applicant that the said EIA notification dtd 14.09.2006, at para 8(iii) states –

> ***"8 (iii) In the event that the decision of the regulatory authority is not communicated to the applicant within the period specified in sub-paragraphs (i) or (ii) above, as applicable, the applicant may proceed as if the environment clearance sought for has been granted or denied by the regulatory authority in terms of the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned."***

So, as is evident to simplest of mind, it is submitted by the Applicant that while the Respondent-PP contends having assumed-deemed-EC on 04.07.2017 through communication of the same by it to various authorities; this exercise was an after-thought, since its case was taken up by SEIAA in its 102nd meeting held on 20.04.2017, within 15 days of SEAC's recommendation for grant of EC. However, it is a conceded position, that in the said meeting of SEIAA, it was decided that inspection of project site to check environmental violations, if any, was to be done.

Consequently, the matter was returned to SEAC and in the 153rd meeting of SEAC, that took place on 07.06.2017, which the Respondent had conveniently ignored, it was decided/discussed by SEAC with regards to the project as below –

> *"**153.01 Environment Clearance for Group Housing Colony Project at Sector-82A, Gurgaon, Haryana by M/s Vatika Ltd.***
>
> *The project was submitted to the SEIAA, Haryana on 27.12.2016. The project proponent submitted the case to the SEIAA as per check list approved by the SEIAA/SEAC. The case was appraised in the 150th meeting of the SEAC held on 07.04.2017 and file forwarded to SEIAA for grant of Environmental Clearance to the project proponent. **This case was taken up by the SEIAA in its 102nd meeting held on 20.04.2017, wherein it was decided to refer back the case to SEAC on 15.05.2017 with the remarks that the SEAC should visit the site to check status of construction or violation of environmental norms if any and submit its recommendation on merits alongwith the inspection report within stipulated period. Thereafter, the case was taken up in the 153rd meeting of the SEAC. It was decided to constitute a Sub-***

Committee for site visit:

The sub-committee will consist of the following:

1. Sh. Hitender Singh, Member (Coordinator)

2. Sh. A.K. Bhatia, Member

The sub-committee shall submit its report within 15 days from the issue of the letter by the Secretary SEAC."

It is therefore humbly submitted by the Applicant, that the final recommendation of the Expert Appraisal Committee on 04.07.2017 when the Responding-PP had 'assumed-deemed-EC' was to constitute a Sub-Committee for site visit & inspection and NOT for grant of EC to the project, as misconstrued by the Respondent-PP. Further, since the contention of SEIAA is that it had communicated its decision to the Consultant hired by the Respondent-PP, the entire matter then reduces to a bilateral issue between the principal and its agent, while from the regulatory perspective the agent, which in this case was the consultant, acting on behalf of the principal which in this case was the Respondent-PP had received the communication. A copy of the 153rd meeting of SEAC, dtd 07.06.2017, is enclosed here as **Annexure P-2**.

(i) The contents of para 4(iii) are also incorrect and denied. It is submitted by the Applicant, that the Respondent-PP is a repeat violator of environmental norms in its multiple projects and this itself could have raised suspicions and lead to site inspection prior to grant of EC. In the referred MoEF&CC notification no. 22-154/2015/1A.III dated 10.11.2015, it is nowhere mentioned that the authority cannot inquire into the validity of the licence or other documents presented for obtaining prior-EC. Further relying on the Annexure R-1/7 of the Respondent-PP in its reply, it is mentioned at Para 4(II) of the said notification that –

> *"4(II) xxx...SEIAA/SEAC should only focus on the following thrust areas of environmental sustainability while appraising the 'Building and Construction' and 'Township and Area Development' projects.*
>
> *a. Brief Description of the Project in terms of location and surroundings.*
> ***b. Environmental Impacts on Project Land and its surrounding developments and vice-versa.***
> *c. Water Balance Chart with a view to promote waste water treatment, recycle, reuse and water conservation.*
> ***d. Waster Water Treatment and its details***

<u>including target standards.</u>

e. *Alterations in the natural slope and drainage pattern and their environmental impacts on the surroundings.*

f. *Ground water potential of the site and likely impacts of the project.*

g. <u>Solid Waste Management during construction and post-construction phases.</u>

h. <u>Air Quality and Noise Levels; likely impacts of the project during construction and operational phases.</u>

i. <u>Energy requirements with a view to minimize power consumption and promote use of renewal energy sources.</u>

j. <u>Traffic Circulation System and connectivity with a view to ensure adequate parking, conflict free movements, Energy efficient Public Transport.</u>

k. <u>Green Belt/Green cover and Landscape Plan.</u>

l. <u>Disaster/Risk Assessment and Management Plan.</u>

m. <u>Socio Economic Impacts of the project</u> and CSR.

n. <u>EMP during construction and operational phases.</u>

o. *Any other related parameter of the project*

which may have any other specific impact on environmental sustainability and ecology."

It is also submitted by the Applicant, that evident from the above para 4(II) of the referred MoEF&CC notification, in absence of duly approved zoning-plan, sajra-plan, site-plan, project-plan and floor-framing-plan it is impossible to assess the number of apartments and residents in a project, project resource (water & electricity) utilization, resource (water or waste) recycling & management and its traffic connectivity and further impossible to assess its environmental impact or the disaster or risk-assessment plan during its operational phase. And the Respondent-PP did not have any approved project building plans when it had made its EC application to SEAC/SEIAA since the Building Plan Approvals were received on 16.02.2017 vide DTCP Memo No. ZP-759/SD(BS)/2017. A copy of the said approval is enclosed alongwith the approved site plan for construction of two normal buildings and a EWS building as **Annexure P-3**. It is further submitted that, the Respondent-PP had carried out construction work at the site in the period 2016-2017, which is evident from the copy of the Project Compliance Report (2017) of the TCP department enclosed here as **Annexure P-4**, wherein it is mentioned that the Respondent-PP prior to 31.03.2017 had expensed Rs 23.75 crores on construction work alone, which is a

week before SEAC had even recommended it for grant of EC on 07.04.2017 in its 150th meeting. It is further submitted by the Applicant, that the SEIAA Memo No. SEIAA/HR/18/286 dtd 17.04.2018, being referred by the Respondent-PP to contend that the requirement to submit a valid licence for the purposes of granting an EC had been done away with, however since this has to be considered prospectively it is not applicable to a decision taken by SEAC on 07.06.2017. However, if we do consider the above referred SEIAA Memo No. SEIAA/HR/18/286 dtd 17.04.2018, we consider that it is stated therein –

> *"xxx...The project proponents are also advised to submit a copy of valid license along with the application as per the check-list approved by SEIAA. The matter has been examined and it has been decided that:*
>
> *(i) The project proponent shall now submit land ownership, credible document showing the intent of the land owners to sell the land for the proposed project instead of valid license.*
>
> *(ii) The project proponent shall submit a proof that they have already made application with the concerned department for grant of license.*
>
> *(iii) It is however clarified that the environment clearance granted for a*

project on the basis of the aforesaid document shall become ***invalid in case the actual land for the project site turns out to be different from the land considered at the time of appraisal*** *of project and mentioned in` the Environment Clearance letter.*

*(iv) It is further clarified that after the grant of valid license/approved zoning plan/approved layout plan, if there is any change in the green belt plan, traffic circulation plan, STP location plan, RWH plan, orientation of building then the project proponent shall have to seek revised environment clearance before start of development on the project site/licensed area...**xxx**"*

It is submitted by the Applicant, that the Respondent-PP had **provided two different site maps within its same EC application** and did not provide land ownership details in the EC application nor any details of its TCP licence renewal application and instead of all of this, it had rather **applied to TCP for a land migration plan on 13.10.2016, wherein it had proposed exchange of approximately 45% of project land (5.125 acres out of 11.215 acres) from licence 22 of 2011 of the instant project** to another

licence and vice-versa. A copy of this migration application of the Respondent-PP is enclosed here as **Annexure P-5**. And basis this evidence as well as the SEIAA Memo referred it maybe concluded that even a deemed EC would become invalid-ab-initio, since the plan to change the project land preceded the EC application that was made basis the original project land. And to consider it otherwise would defeat the very purpose of obtaining prior-EC. It is submitted, that if, for argument-sake (theoretical-consideration) EC application/deemed-approval may not be considered invalid/void-ab-initio, then too, post-publication of SEIAA Memo No. SEIAA/HR/18/286 dtd 17.04.2018, basis the communication from the Respondent-PP dated 13.08.2018, copy of which is at page 136 of the Joint Committee Report in O.A. No. 215 of 2023 before NGT, the project lands for consideration of prior-EC / deemed-EC / EC were tentative at best and were under constant change even in 2017 and especially at the time EC application was being considered by SEAC/SEIAA which duly corresponded to the two differing project lands shown by the Respondent-PP in its EC application, and since this led all the way upto August 2018, it would make the so-called deemed-EC invalid. To put it briefly - the project land boundaries differed on 17.04.2018 from that which was considered for grant of EC in Feb 2017, and basis this any construction

after 17.04.2018 was in violation of Environmental norms.

(ii) The contents of Para 4(iv) are incorrect and denied. It is submitted by the Applicant, that construction and excavation work was started at the project site in 2015 and this can be not only adduced & deduced from the TCP Compliance Report (2017) enclosed as Annexure P-4, but also from the Google Earth Images for the period 2015-2023, which are enclosed here as **Annexure P-6**. The Respondent-PP had commenced construction at the project site with the start of excavation work prior to Oct-2015 and completed significant sub-ground level construction by Oct-2016. This is evident from the chats and messages shared on the India Real Estate Forum (IREF) by various project allottees as well, wherein they have shared site photographs of the period Aug-2016 showing completion of basement at site. A copy of these forum chats is enclosed as **Annexure P-7**. It is submitted by the Applicant, that the above submissions are corroborated by the GRIHA Council's Pre-Certification Report for the project Tranquil Heights, where it is mentioned at its Criterion 2 as below –

> *"**Criterion 2 – Preserve and protect landscape during construction** (Partly Mandatory)*

The intent of criterion 2 is to preserve and protect existing vegetation and soil on the site during construction. The project must demonstrate measures to prevent soil erosion, water run-off, protect existing trees and soil on site.

Commitment – Proposed site management plan has been submitted confining construction activities to pre-designated areas. Narratives and photographs demonstrating proper staging and spill prevention plan are also provided; hence 1 point has been committed.

Non-Compliant – Site management plan has been submitted demarcating the area to which the construction activity shall be restricted. ***Narrative has been submitted stating that excavation work was done from the month of June 2015 to September 2015.*** *As the excavation was done during the monsoon season hence 1 point has been denied.*

Non-applicable – According to the narrative and survey plan submitted, there were no existing trees inside the site boundary; hence, 2 points are non-applicable."

Now it is evident from the above that the excavation

work was conducted at the project site between June 2015 and September 2015 which was almost a year and half before it applied for the prior-EC for the project and full 2 years ahead of it assuming deemed-EC for the project. A copy of this GRIHA's report is enclosed here as **Annexure P-8**. All of this inter-alia are evidences of **the fact that the Respondent-PP had commenced construction or development work at site long before making application to SEAC/SEIAA for prior-EC in Dec 2017, thereby rendering the application itself as moot and legally invalid**.

(iii) The contents of Para 4(v) are incorrect and denied. It is humbly submitted by the Applicant, that in view of the correct facts as presented, what can be inferred even by the simplest application of mind is that the Respondent-PP is showing no remorse for its wrong actions, covering up evidences and drawing its own conclusions from misconstruction of facts and evidences, which is nothing but an extension of its utter contempt and intransigent behavior towards the law and the environmental norms in particular. It is submitted, that such practices and attitude has been adopted across every other project undertaken by the Respondent-PP in the past 15 years. It is also submitted, that there can be no deemed-EC when there were changes in the project land and project

plan and where the documents and representations made to SEIAA/SEAC for grant of EC contained false statements and concealed the fact - that construction activity had commenced long before the application was ever made. It is also submitted, that there can be no deemed-EC when there was no final recommendation for grant of EC from SEAC rather it was for inspection of the project site. It is duly submitted, that in so far as the handing over of the alleged document dated 01.05.2017 by SEIAA to Agent/Consultant of the Respondent-PP is concerned, that is an issue raised by the Respondent-PP as an afterthought once it became aware that its activity at the project site prior to grant of EC may get exposed, and further it is a bilateral principal-agent issue, with regards to which the principal which in this case is the Respondent-PP has brought to record no action taken by it against its agent/authorized-representative which in this case was its consultant. It is also a conceded position that the Respondent-PP had itself appointed the said Consultant and its employees/Directors as duly authorized representatives for all matter related to the case before SEIAA stating as follows in the said Authorization Letter – ***"We are appointing M/s Vardan Environet ... xxx ... as our environmental consultant and Mr SK Sharma and Mr RS Yadav and Mr Aman Sharma are hereby authorized as representatives for all matters related to this case***

from SEIAA and SEAC including submission of all documents and shortcomings to SEIAA, presentation before SEAC and collecting of final EC from SEIAA". A copy of the said authorization and appointment of consultant is enclosed here as **Annexure P-9**. This copy is also a part of Annexure P-1, which is the EC application and the said authorization letter is at EC application's originally numbered page 109.

(iv) The contents of para 4(vi) are incorrect and denied. It is humbly submitted by the Applicant, that delay on part of SEAC and the two officials who were appointed/directed to submit report within 15 days MUST be taken cognizance of and inquiry & action be taken and further there is a need to explore in this inquiry whether such delay was at the behest of the Respondent-PP itself or in order to cover up its violations. It is submitted, that SEAC's conduct through its shoddy review of the Respondent PP's EC-application and further through award of Gold-star rating without due diligence and finally erring in failing to expedite inquiry – all of these actions cannot be overlooked wherein the only one benefitting from all of them was the Respondent-PP as evident from the documents that have been placed on record including Annexure P-1 through Annexure P-9. It also brings into question every other EC-

recommendation of SEAC during the same 18-month period of Jan 2017 - Jul 2018, which may also need to be investigated post-haste. It would also not be out of place to submit at this juncture that the violations in the project were public knowledge through an article covered by PTI on 29.05.2017, while the project's EC Application was being considered and well before the Respondent-PP declared to the authorities that it was considering deemed-EC for the project and the violations were also known to SEIAA, since the similar violations were reported in the same and other nearby projects of the Respondent-PP in Sector 82, 82A, 83, 84 and 85 of Gurgaon. A copy of the news article covered by PTI and published in India Today and other news publications is enclosed here as **Annexure P-10**. It is finally submitted, that it would be a travesty of the justice system to concede and accept Respondent-PPs 'position' of having deemed-EC, even though prior to this supposed 'position' it was already public knowledge that environmental violations had been committed.

(v) The contents of Para 4(vii) are incorrect and denied. It is most humbly submitted by the Applicant, that the Respondent-PP has not placed on record any copy of the communication from SEAC / document which it had received with regards to recommendation for grant of EC to the project, which is essentially a

source of contention to begin with. It is submitted, that if the Respondent-PP was unaware of 102nd SEIAA meeting of 20.04.2017 and its decision with regards to the project, then it is failure of the Respondent-PP to follow-up on its EC application or failure to submit reminder to SEIAA for consideration of grant of EC for the project. It is a conceded position, that a person cannot claim any right arising out of his own wrong action/inaction (*Juri Ex Injuria Non Oritur*), which in this case is the failure of the Respondent-PP in checking with SEIAA regarding its EC approval, a task which it had actually assigned to its Authorized Representative / Agent / Consultant. It is also submitted, that the concoction of deemed-EC by Respondent-PP is a cover up for its violation of commencing construction at the project-site long before it made application for grant of EC and to that effect Google Earth images provided at Annexure P-6 are an indisputable and irrefutable evidence. It is also submitted that though the Respondent-PP is neither the Applicant nor appellant nor plaintiff in the matter, it is seeking equity in so far as delay on part of SEAC in investigating the project site is concerned, thereby claiming fault on part of SEAC, but while doing so it is trite that – *'one seeking equity must come with clean hands'*, although in this case - Respondent-PP is covering up the fact that it had commenced construction at site long before making the EC-

application and everything else is subsequent to it. This is laid out in the Latin legal maxim '*subla fundamento cedit opus'* i.e., a foundation being removed, the superstructure falls. Simply put, 'if the initial action is not in consonance with law, the subsequent conduct of a party cannot sanctify the same'. Infact, what is aptly applicable here is also the Latin Legal maxim of *'ex turpi causa non oritur actio'* i.e., no action can arise from an illegal act. Which implies, that the court should not grant aid/relief to someone who founds his cause of action upon an illegal act, which in this case is an invalid prior-EC application (with excavation/construction having been carried out before it) and subsequent concoction of the deemed-EC story by the Respondent-PP. It is submitted that as per the legal maxim - *nullus commodum capere potest de injuria sua propria*, the Respondent-PP having violated the environmental law cannot be permitted to urge/plead that its offence not be subjected to inquiry or investigation through any bar or limitation (in this instance of 15 days upon SEAC) or that it may be allowed to benefit from the same.

(vi) The contents of Para 4(viii) are incorrect and denied. It is however submitted by the Applicant, that even he is aggrieved by the miniscule levy of Rs 266.70 lakh @1% of the supposed total project cost as

penalty and Rs 533.40 lakhs @2% of the supposed total project cost as Environmental Compensation Cost or **ECC**. It is further submitted, that the Total Amount Expensed on the Project till 31.03.2021 as also verified by the Haryana TCP department during renewal of the project licence in 2021 stands as Rs 277.43 crore in TCP's Project Compliance Report dtd 20.07.2021. A copy of the said compliance report of TCP is enclosed here as **Annexure P-11**. It is therefore submitted, that since the construction carried out till such time was only 30% completed (basis the RERA LC report already provided with the O.A. 215/2022), the Actual Project Cost should be considered as atleast 3.3 times of the Total Amount Expensed on the Project till Mar-2021, and this comes to Rs 920 crore approx. It is finally submitted, that the Applicant is seeking that penalty @1% and ECC @10% be levied on this final Project Cost on the Respondent-PP in light of similar judgment in the Goel Ganga (supra) by the Hon. Supreme Court. The above is also evident from the Project site image part of the Google Earth Images at Annexure P-6, as per which the approval (and declared) was construction for two normal mid- to high-rise towers while actual construction at site was carried out for 5 towers with plans afoot to erect another 6 towers. It is also reported in the SEIAA report dtd 24.11.2022 that 5 structures are visible at the site photos/images and this supports the contention that the actual project

construction was atleast 2.5x times or possibly higher than what the proposed project plan was on paper.

(vii) The contents of Para 4(ix) are incorrect and denied. It is humbly submitted by the Applicant, that he had not only sought demolition of structures that were raised in violation of environmental norms in his O.A. No. 215 of 2022, rather had also sought levy of penalties and compensation on the Respondent-PP towards damages to the environment, at 10% and beyond. It is also submitted that the Applicant was not satisfied with the site visit of the Joint Committee or the manner in which it was done, nor satisfied with the content of the Report.

(viii) The contents of Para 4(x) are incorrect and denied. It is submitted that the Respondent-PP has not only failed come forth clean with regards to its violations rather has also demonstrated intransigent behavior towards the same and has made every effort to mislead the authorities as well as this Tribunal. It is therefore a case fit for levy of highest damages possible apart from penalty, as set out in Goel Ganga (supra).

6. The contents of Para 5 are incorrect and denied. It

is submitted by the Applicant, that the fact – the Respondent-PP had carried out illegal constructions at the site beyond the plan has already been established from the documents placed on record in O.A. 215/2022 and further by the copies of documents and evidences (including Google Earth Images) placed here amongst the Annexures. It is still succinctly pointed out that amongst the documents on record in O.A. 215/2022 is the investigation report of the Local Commissioner appointed by the HRERA Gurugram on 27.02.2019 in RERA Complaint 497 of 2018, wherein in its report basis site visit and inspection on 18.03.2019 in its observations it is stated that –

> *"**6. Observations:** During site inspection, it is observed that the construction of third tower is progressing on the project land which is not approved in the plan provided by respondent."*

As per Annexure P-10 placed in this rejoinder it is also evident that this was not the only time that violations of similar nature on part of the Respondent-PP have come before NGT. It is therefore most respectfully submitted that the Respondent-PP is demonstrating intransigent and non-remorseful attitude and seems committed to covering up its faults, violations and illegalities. It is pointed out that the Respondent-PP has not provided one shred of evidence in support of its arguments or that could refute the Google Earth Images and has also never appealed/contested the above-mentioned report of the

investigation done by RERA (sic LC) in Complaint No. 497 of 2018.

7. The contents of Para 6 of the reply are incorrect and denied. It is submitted by the Applicant, that as already established through a perusal of Annexure P-9, the Consultant and its employees/directors hired by Respondent-PP were also its authorized representative ("AR") before SEAC/SEIAA in all matters related to EC and its approval, and it is a conceded position that Principal cannot blame a 3rd party for any fault on part of its Agent / AR. It is also submitted, that though the Respondent-PP has made tall claims of being in conformity with Environmental norms and regulations it neither obtained dur approvals nor took appropriate measure for carrying out demolition activity at the site. Infact, it is to be pointed out that even in its instant reply it was not forthcoming about the same. This is evident from the information obtained through RTI by the Applicant from HSPCB on 22.12.2023. as per which the due norms laid out in *the Construction and Demolition Waste Management Rules, 2016* notified by the MoEF&CC, were not followed by the Respondent-PP within the same project for demolition of the 5 towers under mention. A copy of the reply dated 22.12.2023 obtained from HSPCB through RTI with regards to the demolition activity carried out by the Respondent-PP at the project site is enclosed here as **Annexure P-12**. It is

submitted, as is also evident from the Google Earth Images at Annexure P-6, that this demolition activity was carried out in the period starting from March 2022 after the matter was first filed in NGT in O.A. 215/2022 and an advance copy supplied to the Respondent-PP. It is further submitted, that if Respondent-PP is true to its stand of not having committed violations during construction and having not exceeded construction activity beyond that proposed, then it failed to provide its reason for demolition during the site visit of the Joint Committee constituted by NGT. It is also submitted that some of the videos showing demolition activity at site are as below –

SN.	**Video Link**
1.	https://youtu.be/AS3sdjRsq2w
2.	https://youtube.com/shorts/5SNd4a59J?feature=share
3.	https://youtube.com/shorts/dFySScfFNcI?feature=share
4.	https://youtube.com/shorts/3lczFKFWlHU?feature=share
5.	https://youtube.com/shorts/Lgr8xWCAQDI?feature=share
6.	https://youtube.com/shorts/TnoWr_B_VnA?feature=share
7.	https://youtu.be/-0Ztmv4byd0

It is therefore conclusively submitted, that not only there were grave violations far beyond what is on any record rather evidence of such violations was permanently destroyed through demolition including Towers D, E & F whose construction was carried out either on land ear-marked as green area or at unlicensed lands.

8. The contents of Para 7 of the reply are incorrect and

denied. It is submitted by the Applicant, that since the deemed EC could only have been a fruit of the EC application, so while the content / declarations of the EC application itself were misleading or false, since construction itself had commenced at site 18 months prior to EC application and further while the project lands and plans were ever changing, it is out of question to consider for any measure of reason whatsoever that there was a deemed-EC. It is also submitted, that on two separate occasions (prior to the order dated 24.11.2022) hearings were taken by SEIAA in which the Respondent-PP's counsel was present virtually while the Applicant was present physically, and all parties were duly heard. Even NGT was aware of the fact that these proceedings were concluded before SEIAA, therefore O.A. 215/2022 was disposed on 11.11.2022, with the order as below –

> *"**xxx**...*
>
> *4. During the hearing, it is stated by learned Counsel for SEIAA, Haryana that the SEIAA, Haryana has concluded hearing on the subject and order is reserved.*
>
> *5. In view of above, we dispose of the matter without expressing any final opinion in the matter so that SEIAA, Haryana takes decision in the matter on merits, in the first instance.*
>
> *The application is disposed of."*

It is bewildering then, as to why at this belated stage the

Respondent-PP is accusing of not having been duly heard by SEIAA and did not make the same submission earlier before NGT, during the proceedings of 11.11.2022.

9. The contents of Para 8 of the reply are incorrect and denied. It is submitted by the Applicant, that the Joint Committee in its report dated 19.08.2022 had cited ongoing demolition activity which is why it reported only the balance of the constructed built-up area at the project site for 04.07.2022, and by Nov 2022 with the entire project land laid flat it was impossible to assess the construction that was ever carried out merely by site visit. It is submitted, that the Respondent-PP had altered any means or measure of assessing the violations that were ever carried out and the damage it had caused to the environment in the process, which is evident from the videos of the un-monitored demolition activity that was carried out by the Respondent-PP at the project site as listed in the preceding paras. It is also submitted that the NGT in its order dated 23.03.2022 in O.A. No. 64/2019 titled as Tanaji Balasaheb Gambhire vs Union of India & Ors held that,

> *"14. **xxx** ... The standard formula adopted by the CPCB based on standard amount of compensation multiplied by period of violation can apply in absence of relevant data of project cost and cost of restoration ... **xxx**"*

It is therefore submitted, that even NGT had placed greater reliance on compensation basis project cost and cost of restoration and it is in the alternative that project cost could not have been assessed that the formula adopted by CPCB was advocated. It is also submitted, that the Respondent's averment that as on 02.06.2018 the construction at the project site was less than 20,000 sqm has no basis for two reasons –

(i) The Google Earth Images depict 5 towers in the project instead of 2 towers. Since only 2 were approved it implies that the other 3 were a part of the illegal constructions that were carried out.

(ii) Superstructure of Tower B was 100% completed and Superstructure of Tower A was upto 40% completed as per RERA LC Report (referred to above) which was uncontested by the Respondent-PP. In addition, as per the RERA LC there was a third unapproved Tower C.

It is submitted, that an estimate of construction that had been carried out in project up-until December 2021 has been prepared basis the Google Earth Images of Annexure P-6 and the Site Photos (marked & unmarked), and represented here-in below as Table RE-1. A copy of the Site Photos taken by Google Earth (marked & unmarked) are enclosed as **Annexure P – 13**.

Table P-1: **ESTIMATED CONSTRUCTION AT PROJECT SITE IN DEC. 2021**

	Approved For	**Built Upto**	**Approved Built-Up Area**	**Constructed Built-Up Area**
TOWER A	GF+39	GF+11	19692.28 sqm	6200 sqm approx.
TOWER B	GF+8	GF+8	4372.15 sqm	4372.15 sqm
Upper Basement	Below Tower A & B	Complete	4880.58 sqm	4880.58 sqm
Lower Basement	Below Tower A & B	Complete	6123.77 sqm	6123.77 sqm
**[Above is the construction that was approved by TCP and below is the construction that was unapproved]*				
TOWER C	**Unapproved** *(replica of Tower B)*	GF+8	Unapproved	4372.15 sqm
TOWER D	**Unapproved** *(replica of Tower A)*	GF+2	Unapproved	Approx. 1900 sqm
TOWER E	**Unapproved** *(replica of Tower A)*	GF+1	Unapproved	Approx. 1300 sqm
Additional Upper Basement	**Unapproved** *(below the unapproved Towers C, D & E)*	Complete	Unapproved	Approx. 8000 sqm *(the size of Khasra No. 161/2 and some other lands)*
Additional Lower Basement	**Unapproved** *(below the unapproved Towers C, D & E)*	Complete	Unapproved	Approx. 8000 sqm *(the size of Khasra No. 161/2 and some other lands)*
Total Estimate of Construction done at site till December 2021				Above **45,100 sq m**

It is submitted, that the above representation / estimate of construction activity takes into account the floor-level built-up-area declared in the project plan by the Respondent-PP and extrapolates it to assess the constructed built-up area as of Dec 2021, of both the TCP approved as well as the illegal construction. It is also submitted, that as per Annexure P-13, where the marked site photo *(Google Street View of the project)* depicts that in month of April 2022, demolition was being carried out of Tower C, Tower D had been entirely razed to ground and only a small part of Tower E or its adjoining structure was still above ground level, which matches the video-link shared for the same period depicting the demolition activity at site. It is therefore conclusively submitted, that any investigation at site to assess the extent of damage done to the environment after March 2022, would not have yielded the true picture and for the same reason entire reliance has to be placed either on estimates from Google Earth Images or on the project financials declared by the Respondent-PP to the TCP deptt. It is further submitted, that if anything, the above chain of events as laid to bare here, only show without any far stretch of imagination that the manner in which demolition was carried out was another environmental violation intended to cover-up the previous ones.

10. The contents of Para 9 of the reply are incorrect and denied. It is submitted by the Applicant, that the true picture with regards to this para has already been presented in the prior para, with nothing further to add and

the same not repeated here, in order to maintain brevity.

11. The contents of Para 10 of the reply are incorrect and denied. It is submitted by the Applicant, that ECC and penalty levied at respectively 2% and 1% is at below the threshold set by the Hon. Supreme Court in such cases. It is submitted that one must take into account the following –

(i) The Respondent-PP commenced construction in absence of EC in 2015

(ii) The Respondent-PP mis-declared project land and further made false declarations with regards to built up area in the project while seeking prior-EC in 2016/17.

(iii) The Respondent-PP while SEAC's recommendation for grant of EC was not final in July 2017, through misconstruction of facts claimed deemed-EC and in an intransigent manner continued to carry out its EC-violation.

(iv) The Respondent-PP when served show cause notices by SEIAA, provided false replies and falsified records.

(v) The Respondent-PP destroyed evidence of its wrong doing through non-monitored non-approved demolition.

(vi) The Respondent-PP fails to acknowledge its violations and rather being repentant about the same in the face of indisputable facts, continues to construct a web of lies.

(vii) The Respondent-PP even at this point fails to

come clean with regards true expense on the project and the true extent of its violations, with its attitude being fit for blacklisting of all its projects.

It is also reiterated, as already submitted at para 4(viii) herein above, that the Total Amount Expensed on the Project till 31.03.2021 as also verified by the Haryana TCP department during renewal of the project licence in 2021 stands as Rs 277.43 crore in TCP's Project Compliance Report dtd 20.07.2021, which is enclosed as Annexure P-11. It is also reiterated, that since the construction carried out till such time was only 30% completed (basis the RERA LC report already provided with the O.A. 215/2022), the Actual Project Cost for all intents and purposes should be considered as atleast 3.3 times of the Total Amount Expensed on the Project till Mar-2021, and this comes to Rs 920 crore approx.

12. The contents of Para 11 of the reply are incorrect and denied. It is submitted by the Applicant, that the Respondent-PP had claimed on February 20, 2017 (prior to its EC application being considered for recommendation by SEAC), before the Director General – TCP Haryana, as part of its Request for renewal of licence no. 22 of 2011 for the project under mention –

> *"...You are requested to renew the aforesaid licence for the Group Housing Colony on land admeasuring 11.218 acres at Sector 82-A, Gurgaon as there are some works still pending and require*

some more time for completion..."

It is therefore a foregone conclusion, that either the Respondent-PP made false statements before TCP Haryana or before SEIAA/SEAC and NGT, and that therefore its statements and assertions or averments cannot be relied upon to assess the true picture with regards to its own violations. A copy of the referred licence renewal application made by the Respondent-PP is enclosed here as **Annexure P-14**. It is further submitted that the averments made by the Respondent-PP with regards to Applicant are not only fraught with malice on its part but also a smoke-screen to distract the Hon. Tribunal from its own violations in the project. It is also conceded position, that the Applicant has also sought action with regards to 14 other Respondent-Builders, even though his personal monetary loss was solely at the hands of the Respondent-PP. And though the original Application was solely with regards to environmental violations committed by the Answering-Respondent as O.A. 215/2022, the instant M.A. is also regarding recoveries from other violators as well within the state of Haryana, which is evident enough that the Applicant is far more concerned about the environment than his own personal grievance, and the instant Application is not driven by vendetta as is being made out by the Respondent-PP. It is however, a fact that the Respondent-PP has committed several crimes and violations in several projects and the Applicant as a concerned citizen is duly cooperating and taking up the matter as and where reqd.

with the authorities concerned with regards to investigation in the same. It is submitted, that far from a reflection on Applicant's conduct this only reveals the facts that the Respondent-PP has never carried out its business practices in a clean manner and such and similar violations as averred above are rampant across several of its projects. It goes without saying, that as part of O.A. 215/2022 the Applicant had already stated as being an allottee within the same project Tranquil Heights as well as having complaint for refund against the Respondent-PP before RERA Authority as evident from the RERA LC report in Applicant's own case, and the Applicant did not hide any material facts from this Hon. Tribunal while instituting the O.A. 215/2022, and then again it was failure on part of the Respondent-PP to make such baseless and malicious statements against the Applicant at the stage when it has been found at fault, rather than bringing them to the fore when the Original Application was filed before this Hon. Tribunal by the Applicant.

13. The contents of Para 12 of the reply are incorrect and denied. It is submitted by the Applicant that sufficient and conclusive evidences have been provided enclosed in this Rejoinder and pleads that due consideration be accorded to all of them and to the whole gamut of facts at hand. That the prayers sought in the present application ought to be allowed in the interests of justice.

Applicant

Through

Uday Bedi

Advocate for the Applicant

C-6, LGF, Hauz Khas, New Delhi-110016

Email: Uday.bedi@outlook.com

Ph: 9810600533

Date: 07.12.2023

Place: New Delhi

BEFORE THE NATIONAL GREEN TRIBUNAL, PRINCIPAL BENCH, NEW DELHI

M.A. NO. 28/2023

IN

OA NO. 215/2022

IN THE MATTER OF:

AASHISH SARDANA ... APPLICANT

VERSUS

M/S VATIKA LTD. & ANR. ... RESPONDENTS

AFFIDAVIT

I, Aashish Sardana, s/o Sh. Kamal Kumar Sardana, aged about 42 years, r/o Flat 7E, BB-Block, Janakpuri, Delhi – 110058 do hereby solemnly affirm and declare as under:

1. I am the Applicant in the above captioned matter and as such fully aware of the facts and circumstances of the present case and I am fully competent to swear by the present affidavit.

2. That the contents of the accompanying Rejoinder have been prepared by my counsel on my instructions and I have read and understood the same. The contents of the accompanying Rejoinder are based on my personal knowledge and belief whereas the legal averments in the accompanying Rejoinder are based on the legal advice received by me and believed to be true. Last para is the humble prayer to this Hon'ble Court.

3. That I have read and understood the contents of the accompanying Rejoinder and state that the facts therein are true and correct to my knowledge and belief. The above statement is my true statement

4. The annexure(s) attached along with the Rejoinder are either original or true copies of their respective originals.

The Seal of the Oath Commissioner
Sl. No. 35/2022
RAKHI BHARTI
App. By Delhi High Court
Period : 17/10/2022
to 16/10/2024
Saket Court, New Delhi-110017

Identify the deponent
who has signed in my presence

DEPONENT

VERIFICATION

Verified this 05 DEC 2023 day of _____, 2023 that the contents of this affidavit are true and correct to the best of my knowledge and belief and nothing material has been concealed therefrom.

05 DEC 2023

DEPONENT

The Seal of the Oath Commissioner
Sl. No. 35/2022
RAKHI BHARTI
App. By Delhi High Court
Period : 17/10/2022
to 16/10/2024
Saket Court New Delhi-11

Certified that the deponent
Shri Aashish Bardaya
S/o Shri Jeda Ram
identified By Shri
has solemnly affirmed before me at new
Delhi on that the contents
of the affidavit which has been read over a
explained to him are true and
Oath Commissioner

vatika
creating lasting value

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www.vatikagroup.com

Date: 12-10-2016

To,

The Member Secretary,
State Environmental Impact Assessment Authority (SEIAA),
Bays 55-58, Paryatan Bhawan,
Sector -2, Panchkula, Haryana

Sub: Request for Environmental Clearance (EC) of Group Housing Colony project at Sector- 82A, Gurgaon, Haryana being developed by M/s Vatika Ltd.

Reference: License No. 22 of 2011

Dear Sir,

This is in reference to the subject mentioned above; we are hereby submitting the application for environment clearance for the development of Group Housing Colony project at Sector-82A, Gurgaon, Haryana. As per the mandatory requirements, we are hereby enclosing the following documents:-

- Form1
- Form 1 A
- Conceptual Plan
- Annexures

Therefore, in view of the above, we hereby request you to kindly process our case for issuance of Environmental Clearance to the project.

Thanking you,
Yours Sincerely,

Authorized Signatory,

For **M/s Vatika Ltd.**

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Checklist for Group Housing Colony project, Sec-82A, Gurgaon

S. NO.	CHECKLIST POINTS FOR DESCRIPTION	REPLY
1.	The PP should submit Form-I, Form-IA and Conceptual plan duly filled and signed and proposed TOR, if applicable.	Refer Enclosed Application Document Form I :- **Page No. 1- 19** Form I A :- **Page No. 20-51** Conceptual Plan :- **Page No. 52-105**
2.	The PP should submit Copy of valid license/CLU/Allotment letter along with self contained note mentioning name of each licensee with land share and proper justification of title of the project. The PP should also submit the developer agreement in case of more than one licensee and project proponent not been licensee.	Copy of License is enclosed as **Annexure -4 & 5** at **page No. 110-115.**
3.	The PP should submit copy of resolution authorizing/nominating person to file application. (Some authenticated document having signatures with names of Directors/ the Director who is authorizing the signatory of application).	Copy of Resolution authorizing person to file an application is enclosed as **Annexure- 2** at **Page No. 107-108.**
4.	The PP should submit copy of resolution for engaging services of consultant.	Authorization for engaging services of consultant is enclosed as **Annexure-3** at **Page No. 109.**
5.	The PP should submit copy of accreditation certificate of consultant issued by QCFNABET for the specific chapter.	Accreditation certificate of consultant issued by QCI/NABET is enclosed as **Annexure-1** at **Page No. 106.**
6.	The project proponent should submit brief description of the project.	Brief description of project is mentioned at **Page No. 52-54** of Conceptual Plan.
7.	The project proponent shall give details of soil type, soil analysis (physical and chemical), slope analysis, vulnerability to subsidence, and seismicity and natural drainage near the project site on contour maps and shall also give details of the quantities of earthwork involved and its use. In case of surplus excavated soil, its disposal to identified site with permission of mining department for disposal.	Soil Investigation Report is enclosed as **Annexure- 21** at **Page No.152-322.** Project falls under Seismic Zone IV. There is no surplus earth as cut and fill quantity is same.

S. NO.	CHECKLIST POINTS FOR DESCRIPTION	REPLY
8.	The project proponent shall give the total quantity of water requirement with the breakup of requirements for various uses and the sources along with water balance statement and shall provide physical, chemical, biological characteristics with class of water quality. The project proponent shall also submit depth of soil water availability and its analysis.	Water Requirement for the project is tabulated in **Table No. 3(a), 3(b), 3(c)** at **Page No. 51, 53, 55** of **Conceptual Plan.** Water Balance diagram is shown **at Page No. 52, 54, 56 of Conceptual Plan.** Water Analysis Report is enclosed as **Annexure- 10** at **page no. 121-131.**
9.	The project proponent shall give the quantum of water requirement to be met from recycling of wastewater and shall give the details of quantities, sources and usage.	Quantum of water requirement to be met from recycling of wastewater and details of quantities, sources and usage is mentioned at **page no. 51-56.**
10.	The project proponent shall give the incremental pollution load from wastewater generated from the proposed project along with details of the quantities and composition of wastewater generated from the proposed activity.	Refer **Page No.57** of Conceptual Plan for waste water generation.
11.	The project proponent shall give details of the water requirements met from water harvesting and also Furnish details of the facilities created.	Refer **page no. 74-76** of **Conceptual Plan** for rain Water harvesting calculation and its detail.
12.	Parking provision to be made as per NBC/DTCP norms whichever is higher with 20% extra capacity. It will further comply with approved zoning plan.	Refer Parking Calculations at **Page No. 77** of Conceptual Plan.
13.	The project proponent shall give the impacts of the proposal on the ground water and. shall give the details of ground water table, recharging capacity, and approvals obtained from competent authority.	Water demand for the proposed project will be fulfilled by HUDA. There will be positive impact by recharge of ground water from Rainwater Harvesting Pits with wells. Geotechnical Investigation Report is attached as **Annexure- 21** at **page no. 152-322.**
14.	The project proponent shall submit details of rain water precipitation and it's harvesting proposals including ground water	Rainwater Harvesting calculation and its detail is mentioned at **Page no. 74-76** of **Conceptual Plan.**

S. NO.	CHECKLIST POINTS FOR DESCRIPTION	REPLY
	recharge.	
15.	The project proponent shall submit details for collection, treatment & safe disposal of sewage by giving treatment capacities with technology & facilities for recycling and disposal along with duel plumbing system.	Refer **Page No. 57-67** for Sewage Generation and Treatment Facility. For Dual Plumbing Plan-Refer **Annexure- 34** at **page no. 335.**
16.	The project proponent shall give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions.	Refer **Annexure-10 at page no. 121-131** for Ambient Air Quality monitoring Report. There will be marginal impact on air quality by increase in traffic by project and by DG set emission.
17.	The project proponent shall give details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.	Refer **Annexure- 30 to Annexure-32** at **Page No. 331-333** for Traffic Circulation Plans.
18.	The project proponent shall give details of the sources and the measures proposed for mitigation of traffic noise and vibration.	**Refer page no. 97-98** of Conceptual Plan for mitigation of traffic noise and vibration.
19.	The project proponent shall give energy conservation measures in the selection of building materials and their energy efficiency. Lighting equipments and appliances and process and operations.	Refer **Page No. 89-90** of Conceptual Plan for Energy Conservation Measures.
20.	The project proponent shall give details of the power requirements, source of supply, backup source and distribution system.	Refer **Point No. 9.1 and 9.2** of Form IA at **Page No. 42-44 of Form-IA**.
21.	The project proponent shall give the passive solar architectural features being used in the Building.	Refer Architectural Design of Energy Conservation at **Page No. 89-90** of Conceptual Plan.
22.	The project proponent shall give the details of use of solar energy devices.	Refer **Point No. 9.5** and **9.13** of Form 1 A at **page No. 45 and 48**.
23.	The project proponent shall give precautions & safety measures proposed against fire hazards and shall furnish details of emergency plans and risk assessment aspects.	Refer **Point No. 9.10** of Form 1A at **Page No. 47.**
24.	The project proponent shall submit detailed	Refer **Page No. 48-51 of Form-IA and Page**

S. NO.	CHECKLIST POINTS FOR DESCRIPTION	REPLY
	Environment Management Plan suggesting all mitigation and also Environmental Monitoring plan for compliance of various environmental regulations, ventilation plan lighting (illumination) plan.	**No. 90-105** for Environment Management Plan and Environment Monitoring Plan.
25.	The project proponent shall submit application along with (legible plans on larger scale), he will also submit health, welfare safety and electrical safety plans.	Refer **Point no. 1.9** and **9.10** for Health, Safety of Form 1A at **page no. 23 and 47.**
26.	(i) Location of project in the sector plan. (ii) Plan showing surrounding features within 500 meters radius. (iii) Green belt development plan. (iv) Lay out plan/Building plan/Zoning plan.(different colours should be used to show existing and expansion proposal) (v) Traffic circulation plan. (vi) Parking plan. (vii) Location of STP and Rain Water Harvesting structures on plan. (viii) Prospective view. (ix) Elevation section plan.	(i) Location of project in the sector plan:- Refer **Annexure- 24** at **page No. 325.** (ii) Plan showing surrounding features within 2 km radius:- Refer **Annexure-25** at **page No. 326.** (iii) Landscape development plan:- Refer **Annexure- 29** at **page No. 330.** (iv) Sanction Layout plan- Refer **Annexure- 28** at **page No. 329.** (v) Traffic circulation plan for Surface Parking - **Refer Annexure-30** at **page No. 331.** Traffic Circulation Plans for Basements- **Annexure- 31, 32** at **page no. 332, 333** respectively. (vii) Location of STP and Rain Water Harvesting structures on plan enclosed as **Annexure-35** at **page no. 336.** (viii)Prospective view- Refer **Annexure-9** at **page no. 119-120.** ix) Section Elevation Plan attached.

S. NO.	CHECKLIST POINTS FOR DESCRIPTION	REPLY
26.	NOC from AAI regarding height clearance.	Attached as **Annexure- 6** at **page no.116.**
27.	Certificate from competent Authority regarding non applicability of Aravali Notification in case of District Gurgaon as on 07-05-1992.	Aravali NOC attached.
28.	Assurance of competent Authority (HUDA/Municipal Corporation/Local Authorities) for supply of water/permission of CGWA for withdrawal of ground water, if proposed.	Water Assurance from HUDA is attached as **Annexure-7** at **page no. 117.**
29.	Assurance for supply of power from HBVN.	Assurance of power supply from HBVN is enclosed as **Annexure-8** at **page no. 118.**
30.	All the original copies of analytical reports of soil, water, air and noise conducted and collected by NABL/MoEF&CC approved Laboratories.	All the original copies of analytical reports of soil, water, air and noise is enclosed as **Annexure- 10** at **page no. 121-131.**
31	NOC from the concerned Forest Department regarding non involvement of forest land.	NOC from the concerned Forest Department regarding non involvement of forest land is enclosed.
32.	The project proponent shall submit an undertaking stating that. (i) That no construction has been started at the site along with latest attested photograph. The affidavit shall be by project proponent /one of its directors duly authorized. (ii)That they will not encroach the revenue Rasta passing through the project area shown in the zoning plan and layout plan. (iii)That they will keep the ROW required for HT wire passing through the project area as per Government instruction. (iv) That they will use ultra low sulphur diesel.	Affidavit/Undertaking is enclosed as **Annexure- 11** at **page no. 132-133.**

S. NO.	CHECKLIST POINTS FOR DESCRIPTION	REPLY
	That provision for Helipad shall be made in case of the building having height more (v) Than 60 meter. Provision of at least one Hydraulic ladder for high rise building shall also be made. (vi) The infrastructure will not obstruct or divert the natural flow of water covered or open nallah, drainage of rain water as per natural flow of water. The infrastructure will not obstruct or divert the natural flow of water covered or open nallah, drainage of rain water as per proper index.	
33.	The document should bear page number with proper index.	The document contains page number with proper index.
34.	All the pages should bear the complete signature of authorized signatory with stamp.	All the pages has complete signature of authorized signatory with stamp.

FORM-I

(I) BASIC INFORMATION

S. No.	Items	Details
1	Name of the Project	Group Housing Colony M/s Vatika Ltd.
2	Serial No. in schedule	8(a) "Building & Construction Projects" as per MoEF notification 14/9/2006
3	Proposed capacity/area/length/tonnage to be handled/command area/lease area/ number of wells to be drilled	Total Plot Area = 45,397.5633 m^2/ 11.218 Acres
		Built up Area = 41,342.833 m^2
		Permissible Ground Coverage @ 35% : 15,889.147 m^2
		Proposed Ground Coverage @ 10.007%: 4543.008 m^2
		Permissible area of convenient shopping @ 0.5%: 226.988 m^2
		Proposed FAR for convenient shopping @ 0.445%: 202.209 m^2
		Permissible FAR @ 175%: 79,445.736 m^2
		Proposed FAR @ 57.094%: 25,919.206 m^2
4	New/Expansion/Modernization	New
5	Existing capacity/Area etc.	Not Applicable
6	Category of project	B
7	Does it attract the general condition? If Yes, please specify	No
8	Does it attract the specific condition? If Yes, please specify	No
9	i) Location of unit ii) Plot, Survey No, Khasra No. iii) Village iv) Tehsil v) District vi) State	Sector- 82-A, Distt. Gurgaon, Haryana 57, 58/1, 59/2, 60, 61, 147, 148, 149, 150, 152, 153, 154, 155, 156, 157min, 162 Sikohpur, Sector- 82A Gurgaon Gurgaon Haryana
10	Nearest Railway station/Airport along with distance in kms.	Garhi Harsaru junction – Approx. 6 km towards NW & Indira Gandhi International

		Airport – Approx. 21 km towards N from the project site.
11	Nearest town, City, Distt. Head Quarter along with distance in kms.	Gurgaon –Approx. 6.05 Km, N.
12	Village Panchayat, Zila Parishad, Municipal Corporation, Local body(Complete postal addresses with telephone nos. to be given)	**Municipal Corporation, Gurgaon** Opposite Civil Hospital (General) Sadar Bazar, Gurgaon, Haryana - 122 001 Phone: 18001801817, Email: contact@mcg.gov.in
13	Name of Applicant	M/s Vatika Ltd.
14	Regd. Address	4th Floor, Vatika Triangle, Sushant Lok-I, Block-A, M.G. Road, Gurgaon-122002
15	Address for correspondence(1) Name Designation Address Pin Code E mail Telephone Fax No.	M/s Vatika Ltd. 4th Floor, Vatika Triangle, Sushant Lok-I, Block-A, M.G.Road, Gurgaon Mr. Virender Dhar General Manager 4th Floor, Vatika Triangle, Sushant Lok-I, Block-A, M.G.Road, Gurgaon 122002 virendhar@vatikagroup.com 9810566938
	Address of correspondence(2):	Environment Consultant **M/s Vardan EnviroNet** D-142, Sushant Lok- III, Golf Course Extension Road, Gurgaon, Haryana Tel No.0124-4291036 Email: vardanenviro165@gmail.com
16	Detail of alternative site, if any. Location of these sites should be shown on a topo-sheet.	This is a building construction project for which license has already been awarded by Director Town and Country Planning. Zoning plan approved. Hence, Not applicable in this case.
17	Interlinked Project	There is not any interlinked project.
18	Whether separate application for interlinked project has been submitted	Not Applicable. In view of item No. 17 above
19	If, Yes Date of Submission	Not Applicable. In view of item No. 17 above
20	If no , reason	Not Applicable. In view of item No. 17 above

21	Whether proposal involves approval/clearance under: if yes, details of same and status to given a) Forest (conservation) Act 1980? b) Wild life protection Act 1972? c) CRZ notification 1991?	 No. The unit does not fall in any notified reserved forest area. No. The proposed project site does not fall in any notified area of Wild life protection Act 1972. No. The unit does not fall in any Notified coastal regulation zone.
22	Whether there is any Govt. order/policy relevant/relating site?	Town and Country Planning Department
23	Forest land involved (hectares)	No Forest land is involved in the proposed project.
24	Whether there is any litigation pending against the project and / or land in which is project is proposed to be setup: a) Name of court b) Case No. c) Orders/directions of Court, if any and its relevance with the proposed project.	There is no litigation pending against the project and land. Therefore, Information required against point a, b & c is not applicable.

(II) ACTIVITY:

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S. No	Information/Checklist Confirmation	Yes/ No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	Yes	Land has been allotted for residential purpose under Housing Policy 2013 of Govt. of Haryana. Hence, group housing colony will be constructed on the barren land of the proposed project site.
1.2	Clearance of existing land, vegetation and building?	Yes	There is no structure present on the site, the site is fully vacant. The existing vegetation at site consists of wild grasses

			and weeds which shall be cleared at the time of construction. The proposed project has green area development plan; the local and indigenous species shall be planted within the project area.
1.3	Creation of new land uses?	Yes	The proposed site is vacant consisting wild grass and weeds. The land shall be used for the construction of group housing colony.
1.4	Pre-construction investigations e.g. house, soil testing?	Yes	Soil investigation was carried out and the results were found satisfactory.
1.5	Construction works?	Yes	The Construction activities will be confined within the project premises; there will be no physical change outside the project boundary.
1.6	Demolition works?	No	Project site is vacant land. Hence, demolition is not required.
1.7	Temporary sites used for construction works or Housing of construction workers?	No	All the construction activity including stocking of raw materials will be confined within the project site only. No temporary shelters for labor are proposed. Local labors from nearby area will be hired. Sanitation facilities will be developed at site.
1.8	Above ground building, structures or Earthworks including linear structures, cut and fill or excavations	Yes	Excavation will be carried out for foundation of buildings and pillars. The excavated soil will be used in backfilling and other area development activities.
1.9	Underground work including mining or tunneling?	No	No underground work including mining/ tunneling is required except excavation of earth.
1.10	Reclamation works?	No	No reclamation work is required.
1.11	Dredging?	No	No dredging is required.
1.12	Offshore structures?	No	No offshore structure is required.
1.13	Production and manufacturing processes?	No	No production/manufacturing process is involved.
1.14	Facilities for storage of goods or materials?	Yes	Raw material will be stored at site in a covered area. Cement will be separately stored under cover in bales. Sand will be stacked neatly under tarpaulin cover.

			Bricks and steel will be laid in open.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	Yes	**Solid Waste:** The solid waste generated from the project will be in the form of: **Domestic Waste:** Approximately **786 kg/day** domestic solid waste is estimated to be generated from the project activity; this will be collected from designated locations and segregated into inorganic and organic wastes. The inorganic non-biodegradable wastes will be sold to authorize vendors for recycling and the biodegradable wastes will be disposed according to MSW (Management & Handling) Rules, 2000 and amended Rules, 2008. **Hazardous Waste:** No hazardous waste will be produced from project activities except some spent oil (Category 5.1) generated from D.G. sets; which will be sold to recyclers authorized by State Pollution Control Board. **Liquid effluents:** During construction phase, sewage will be treated through septic tank. The wastewater in operation phase will be treated up to tertiary level in a STP having the capacity of 220 KLD and the treated sewage will be reused for flushing, horticulture and DG cooling. Dewatered/dried sludge generated from the STP plant will be used as manure for green belt development.
1.16	Facilities for long term housing of operational workers?	No	Local labor will be hired from nearby areas during construction phase. So, there will be no need to create permanent facilities for long-term housing of operational workers.

1.17	New road, rail or sea traffic during construction of operation?	No	The site has good connectivity to NH- 8 & new sector road. Only internal roads, paths will be developed for vehicular movements for transportation of construction material during construction phase whereas internal tracks and paths will be developed for traffic circulation (to avoid any congestion) during operational phase.
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airport etc?	No	The site is well connected through the road network. The nearest highway is NH-8 at a distance of approximately 690 m towards East.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	No	Since the site is adjacent to NH-8 which has high traffic density; not required the diversion or closure of existing traffic routes.
1.20	New or diverted transmission lines or pipelines?	No	There will not be any new/diverted transmission line or pipeline around the proposed project.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	No	No impoundment, damming, culverting, realignment or other changes to the hydrology of surface watercourses is proposed.
1.22	Stream crossings?	No	There is no stream running across the site.
1.23	Abstraction or transfers of water from ground or surface waters?	No	Total water requirement of proposed project will be 296 KLD, which include 136 KLD for fresh water requirement & 160 KLD for recycled water requirement. During construction phase, water demand will be fulfilled by STP treated water. During operational phase, water will be supplied through HUDA.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	No	Runoff will increase due to increased paved surface. However, increased runoff will be managed by well-designed rainwater harvesting system and storm water management plan.
1.25	Transport of personnel or materials	Yes	Transport of personnel/material during

	for construction, operation or decommissioning?		construction and operation phase are envisaged. Adequate parking space within the project site for loading and unloading of materials will be provided. Adequate parking space i.e. 338 ECS (Stilt- 14 ECS, Covered surface- 240 ECS, Open surface-84) and, 258 Two Wheelers (Upper baasement-129 Two Wheelers, Lower basement-129 Two wheelers) will be provided during operational phase of the project to the residents of the premises.
1.26	Long-term dismantling or decommissioning or restoration works?	No	No Long term dismantling or decommissioning or restoration work will be involved.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	No	No decommissioning activity is involved, Hence, No impact on the environment by the proposed project is supposed.
1.28	Influx of people to an area in either temporarily or permanently?	No	Local laborers from nearby area will be employed during the construction phase. In the operation phase, most of the expected occupants will be from the surrounding areas. Hence, the project will lead to a redistribution of occupants within the city. Thus, no significant influx of people is envisaged.
1.29	Introduction of alien species?	No	The landscaping will be carried out with mainly local species with a few ornamental varieties of flora that are well suited to the local conditions.
1.30	Loss of native species or genetic diversity?	No	There will be no significant impact on the native species or genetic diversity.

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible)

			with source of information data
2.1	Land especially undeveloped or agricultural land (ha)	No	Proposed site is having wild grasses which shall be cleared and group housing colony shall be constructed on vacant land. Local and indigenous plant species shall also be planted at proposed project site.
2.2	Water (expected source & competing users) unit: KLD	Yes	Total water requirement for the proposed project will be 296 KLD which include 136 KLD for Fresh water requirement and 160 KLD for recycled/treated water requirement.
2.3	Minerals (MT)	Yes	Minerals such as sand and aggregates will be required during the construction phase.
2.4	Construction material – stone, aggregates, and/soil (expected source – MT)	Yes	All materials for construction will be arranged through selected suppliers.
2.5	Forests and timber (source – MT)	Yes	All material forests and timber will be provided by selected suppliers. However, steel frames etc shall be used to minimize the use of timber.
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	Yes	The total demand load is estimated 1853.825 KVA. Power will be supplied by DHBVN. Power backup for the proposed project will be through 2 number of DG sets of total capacity 2250 KVA (i.e. 1x1500+1x750 KVA)
2.7	Any other natural resources (use appropriate standard units)	No	No other natural resource will be involved in the project except the mentioned above.

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
3.1	Use of substance or materials,	Yes	The proposed project is a residential

	which are hazardous (as per **MSIHC** rules) to human health or the environment (flora, fauna and water supplies)		project. Hence, storage of hazardous chemicals (as per MSIHC Rules) is not expected. HSD is required to run standby D.G. sets, for which the stored quantity of diesel will be below the threshold limit specified in the MSIHC rules. Necessary permission will be obtained from the Explosives Department.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	No	Suitable drainage and waste management measures (with frequent spray of insecticides etc.) will be adopted in both the construction and operational phase such that there will be no stagnation of water or accumulation of waste. This will effectively restrict the reproduction and growth of disease vectors.
3.3	Affect the welfare of people e.g. by changing living conditions?	Yes	Socio-economic standard of people will improve due to increased employment opportunities provided by this project. This will lead to better quality of life and will also set a standard for future developments in the area.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc	No	Impacts of this type are not expected.
3.5	Any other causes	No	No other causes are involved except the mentioned above.

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
4.1	Spoil, overburden or mine wastes	No	No such spoil, overburden or mine wastes will be generated.
4.2	Municipal waste (domestic and or commercial wastes)	Yes	The total municipal solid waste to be generated is approximately 786 kg/day.

			The inorganic non-biodegradable wastes will be sold to authorized vendors for recycling and the biodegradable wastes will be disposed according to MSW (Management & Handling) Rules, 2000 and amended Rules, 2008.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	Yes	Spent oil from DG sets will be stored in HDPE drums in isolated covered facility. This spent oil will be sold to vendors authorized by HSPCB/MoEF&CC for the treatment of same. Suitable care will be taken so that spills/leaks of spent oil from storage could be avoided. This used oil will be sold to authorized recyclers. Suitable care will be taken so that spills/leaks of used oil from storage could be avoided.
4.4	Other industrial process wastes	No	Not applicable
4.5	Surplus product	No	Not applicable
4.6	Sewage sludge or other sludge from effluent treatment	Yes	Sludge generated from the STP plant will be dried and later will be used as manure for green belt development.
4.7	Construction or demolition wastes	Yes	The construction waste will consist of excess earth and construction debris along with cement bags, steel in bits and pieces, insulating and packaging materials etc. Recyclable waste construction materials will be sold to authorized recyclers. Unusable and excess construction debris will be disposed at designated places in tune with the local norms.
4.8	Redundant machinery or equipment	No	Redundant machinery will not be generated.
4.9	Contaminated soils or other materials	No	Contaminated soils or other materials will not be generated.
4.10	Agricultural wastes	No	No agricultural wastes will be generated
4.11	Other solid wastes	No	Not applicable

5. Release for pollutants or any hazardous, toxic or noxious substances to air (Kg/hr).

FORM-1

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	Yes	The project does not envisage any major air pollution sources except operation of DG sets during power failure and vehicular traffic. The emission from stationary sources (D.G. sets) has been predicated. The DG sets will be the only source of air emission used during the operation phase in case of power failure. The DG stacks of adequate height (as per CPCB norms) will be provided to disperse the pollutant generated from D.G. sets. The pollution generated from the vehicular movement will be checked by maintenance & regular check up of vehicles. Local native plants will be used in tree plantation all around the project site and road side to reduce the impact of pollution.
5.2	Emissions from production processes	No	No production processes is involved as it is group housing colony project. Hence, there will be no such emissions.
5.3	Emissions from materials handling including storage or transport	Yes	Small quantities of fugitive emissions are envisaged during transport and handling of construction materials. Such emissions will be temporary and controlled by the use of sprinkling and other viable techniques like covering of loose material.
5.4	Emissions from construction activities including plant and equipment	Yes	This will be restricted to the construction phase and the construction site only.
5.5	Dust or odors from handling of materials including construction materials, sewage and waste	Yes	Dust is anticipated during loading and unloading of construction material and excavation of upper earth surface. These will however be temporary in nature, which will be controlled by providing water sprinklers. Tarpaulin cover will be provided on stored loose materials to

			reduce the dust emission.
5.6	Emissions from incineration of wastes	No	Not applicable. There will not be any incineration of waste is proposed.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	No	Open burning of biomass/other material will be prohibited on site as this is a construction of residential project.
5.8	Emissions from any other sources	No	Not Applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	Yes	The machinery to be used for construction will be of high standard and will adhere to international standard. These standards itself take care of noise control/vibration control and air emission control. Hence, insignificant impacts due to construction machinery are envisaged. Apart from this, the construction activities will be restricted to day time only. Source of noise in the operational phase will be from DG sets (which will be used in operation only during power failure) and pumps & motors. All the machinery will be of highest standard of reputed make and will comply with standard. DG sets will be used during power failure only and will generate noise level below 75 dB (A) from 1 meter distance.
6.2	From industrial or similar processes	No	No industrial processes will be carried out in the proposed project except due to running of various construction equipments/machinery & D.G. Sets during construction phase of the projects. Proper maintenance of machineries will reduce the generation

			of noise and vibration. All the workers will be equipped with PPE's during construction phase and D.G. sets will be installed in acoustic enclosures with proper padding system to reduce vibration impact.
6.3	From construction or demolition	Yes	Due to various construction activities, there will be short-term noise impacts in the immediate vicinity of the project site. The construction activities will include the following noise generating activities: • Concreting, mixing & operation of DG sets. • Construction plant and heavy vehicle movement.
6.4	From blasting or piling	No	No blasting or mechanized piling will be done.
6.5	From construction or operational traffic	Yes	Some noise will be generated from vehicular movement in the construction and operational phase but that will be mitigated with green belt development.
6.6	From lighting or cooling systems	No	No significant noise impact will result from lighting or cooling systems.
6.7	From any other sources	No	There will be no other sources for noise & vibration generation except the mentioned above.

7. Risks of contamination of land or water from releases of pollutants into the ground of into sewers, surface waters, groundwater, coastal waters or the sea:

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
7.1	From handling, storage, use or spillage of hazardous materials	No	The used oil from DG sets will be carefully stored in HDPE drums and periodically sold to authorized recyclers. All precautions will be taken to avoid spillage from storage as per The Hazardous Wastes (Management, handling and Transboundary Movement) Rules, 2008.

7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	No	There will be no discharge of untreated sewage on land or into water bodies. Adequate treatment of sewage will be carried out in a STP having the capacity of 220 KLD within the project premises. Recycled water will be re-used for flushing; landscaping and DG cooling. External facility will be provided to discharge the excess treated water during monsoon and winter season as per The Water (Prevention and Control of Pollution) Act, 1974.
7.3	By deposition of pollutants emitted to air into the land or into water	No	The DG Sets will be provided with stacks of adequate height. Hence dispersion will be achieved and avoid deposition of pollutants in significant concentrations at any single location.
7.4	From any other sources	No	No other sources are involved except the mentioned above.
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?	No	There will be no such risk in the coming future.

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances	Yes	This is group housing project and does not involve major hazardous construction activity. Hence chances of explosions, spillages, fires etc. are minimal. During construction, suitable personal protective equipment will be provided to all construction workers as required under the health & safety norms.

			Awareness & Training about safety norms will be provided to all the supervisor and construction workers involved in construction activities. To deal with any fire related accident, fire fighting facility of single handed hydrant valve, long hose reel, and portable fire extinguisher shall be provided.
8.2	From any other causes	No	No other causes are involved except the mentioned above.
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	No	The project falls under seismic active Zone IV according to the Indian Standard Seismic Zoning Map. Suitable seismic coefficient will be adopted in horizontal and vertical direction respectively, while designing the structure. There is no possibility of flood as per records available on the proposed project site.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality.

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/ rates, wherever possible) with source of information data

9.1	Lead to development of supporting facilities, ancillary development or development stimulated by the project which could have impact on the environment e.g. • Supporting infrastructure (roads, power supply, waster or wastewater treatment, etc.) • housing development • extractive industries • supply industries • other	Yes Yes Yes No No No	The proposed project is for residential use; it may lead to development of supporting services and infrastructure in and around the area. The project will have positive impact on the ancillary infrastructure like road, markets, public health, amenities, conveyance facilities etc. The project is proposed for the development of group housing colony only. Not applicable Not applicable Not applicable
9.2	Lead to after-use of the site, which could have an impact on the environment	No	Not Anticipated
9.3	Set a precedent for later developments	No	Not applicable
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	No	Not Applicable

(III) ENVIRONMENTAL SENSITIVITY

S. No	Information/Checklist confirmation	Name/Identity	Aerial distance (within 15km.) Proposed project location boundary
1.	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value.	Not Applicable	There is no area under international conventions, national or local legislation for their ecological, landscape, cultural or other related value.

2.	Areas which are important or sensitive for ecological reasons – Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains & forests	Sultanpur National Park Basai Wetland	At an approx. distance of 10.11 km towards North-West. At an approx. distance of 8.96 km towards north-west.
3.	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Not Applicable	There is no ecologically sensitive species of flora or fauna found in the study area.
4.	Inland, coastal, marine or underground waters.	Not Applicable	Not Applicable
5.	State, National boundaries	Haryana-Delhi State Boundary	16.13 km towards North-East.
6.	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas.	NH-8	Approx. 690 m in East.
7.	Defense installations	Not Applicable	Not Applicable
8.	Densely populated or built-up area	Gurgaon	Approx. 6.05 km in North direction
9.	Areas occupied by sensitive manmade land uses (hospitals, schools, places of worship, community facilities)	**S. No.** / **Particulars** / **Distance** / **Direction**	
			Post Office & Police Station
		1. Post Office, Kherki Daula	3 km / North -East
		2. Police Station, Kherki daula	3.01 km / North -East
			Schools
		1. Matkiran High School, Sector-83	1.54 km / North
		2. DPS Manesar	4.0 km / South
			Banks
		1. Federal Bank	3.63 km / North-East
		2. Union Bank	5.77 km / North-East
10.	Areas containing important, high	Not Applicable	Ground-water resources

	quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)		in the study area are depleting at very fast rate and declared as scarce resources.
11.	Areas already subjected to pollution or environmental damage. (Those where existing legal environmental standards are exceeded)	Not Applicable	There is no area which is subjected to pollution or environmental damage. All parameters of Air, Water and Noise etc. will be maintained within permissible limit specified by SPCB/CPCB with proper mitigation measures.
12.	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	Not Applicable	The site falls under the zone IV as per the Seismic Zone Map of India. There are no possibilities of subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions on proposed project site getting as per records available.

"I hereby give undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance given, if any to the project will be revoked at our risk and cost.

Date: 12-10-2016
Place: Gurgaon

(Authorized Signatory)

CHECK LIST OF ENVIRONMENTAL IMPACTS

(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed Environmental Management Plan & Monitoring Programmed).

SECTION 1- LAND ENVIRONMENT:

(Attach panoramic view of the project site and the vicinity)

1.1 Will the existing land use get significantly altered from the project that is consistent with the surroundings? (Land use must conform to the approved Master Plan/Development Plan of the area. Change of land use, if any and the statutory approval from the competent authority are submitted). Attach Maps of (i) site location, (ii) surrounding features of the site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

- No

The project site is barren land and land use is residential as per master plan. It is anticipated that the construction activities of the project will not have an adverse effect on the land use activities in the project area. Land has been allotted for residential purpose under Housing Policy 2013 of Govt. of Haryana. The development of green belt and other landscaping will enhance the visual aesthetics of the area.

Connectivity

The site has good road connectivity with NH 8 which is approx 690m away from project site towards east direction. The connecting links to the project site are Garhi Harsaru Junction Station which is approx. 6 km in NW direction from the project site and Indira Gandhi International Airport is located at 21 km in North direction from project site.

1.2 List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

- **LAND REQUIREMENT**

Table 1: Area Statement

S. No.	Particulars	Area (m^2)
1.	Project Name	Group Housing Colony M/s Vatika Ltd.
2.	Activity in the complex	Residential Apartments, EWS,

		Convenient Shopping.
3.	Total Plot Area	45,397.5633 m^2/ 11.218 Acres
4.	Built-up area (FAR + Non-FAR)	25,919.206 m^2 + 15,423.627 m^2 = 41,342.833 m^2
5.	Permissible Ground Coverage @ 35%	15,889.147 m^2
	Proposed Ground Coverage @ 10.007%	4543.008 m^2
6.	Permissible area of convenient shopping @ 0.5%	226.988 m^2
	Proposed FAR for convenient shopping @ 0.445%	202.209 m^2
7.	Permissible FAR @ 175%	79,445.736 m^2
	Proposed FAR @ 57.094 %	25,919.206 m^2
8.	Basement Area	S. No. / Particulars / Area (m^2) 1. / Upper basement / 4880.584 2. / Lower basement / 6123.769 Total / 11,004.353
9.	Non-FAR (Stilt Area, basement, mumty & machine room area)	15,423.627 m^2
10.	Maximum height	136.5 m up to machine room
11.	No. of Towers	2+1EWS
12.	Maximum No. of Floor	G+39
13.	Required Parking	305 ECS
	Proposed Parking	338 ECS (Stilt- 14 ECS, Covered surface- 240 ECS, Open surface-84) and, 258 Two Wheelers(Upper baasement- 129 Two Wheelers, Lower basement- 129 Two wheelers)
14.	Power Requirement & Sources	1853.825 KVA Source: Dakshin Haryana Bijli Vitran Nigam
15.	No. of DG sets	2 No. of DG Sets with total capacity of 2250 KVA (1x1500+1x750 KVA)

16.	Water requirement & Sources	Total Water Requirement: 296 KLD Fresh Water Requirement: 136 KLD Treated Water Requirement: 160 KLD Source: HUDA
17.	Sewage Treatment & Disposal	STP capacity : 220 KLD Sewage discharge: Total 178 KLD of wastewater will be generated from the proposed project out of which 160 KLD of water recovers after the treatment in STP of capacity 220 KLD. 69 KLD recycled water shall be utilized for flushing, 79 KLD for horticulture and 12 KLD for DG cooling.
18.	Estimated Population	1705 persons
19.	Required Green Area @ 30%	13618.6 m^2
	Proposed Green Area @ 32.32%	14678 m^2
20.	Cost of the project	121 Crores (Approx.)

1.3 What are the likely impacts of the activity on the existing facilities adjacent to the site? (Such as open spaces, community facilities, details of the existing land use and disturbance to the local ecology).

The project being a well planned activity will result in organized open spaces and green areas. About 14678 m^2 of the area is earmarked for landscaping. The project will have an overall positive impact on the existing land use and will not cause any disturbance to the local ecology. Hence, proposed activity shall have no impact on surroundings.

1.4 Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Detail of soil type slope analysis, vulnerability to subsidence, seismicity etc may be given).

There shall be no land disturbance resulting in erosion, subsidence and instability as it is a flat land. The project site falls under the zone IV i.e., High Damage Risk Zone (MSK-VIII) as per Earthquake Hazard Map of Haryana. The project will be earthquake resistant taking into account the latest provisions of Indian Standards Codes.

1.5 Will the proposal involve alteration of natural drainage system? (Give details on a contour map showing the natural drainage near the project site).

The project does not intersect any natural drainage route. Well planned storm water drainage has been designed to take care of internal storm water drainage. Thus, no impact on the natural drainage system is anticipated.

1.6 What are the quantities of earthwork involved in the construction activity- cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc?)

The only excavation work is involved in the proposed project for establishing the foundation and basement of Group Housing Colony. The filling works will be done by the excavated material and no extra material will be used. All the topsoil excavated from construction activities shall be stored separately and used in greenbelt development within the project site. Hence, the need for movement of soil to and from the site is not anticipated.

1.7 Give details regarding water supply, waste handling etc. during the construction period.

- Water requirement during construction phase will be met from STP treated water and potable water for laborers will be provided from HUDA Basai water treatment plant.
- Waste handling during the construction phase shall be done by the site contractor whose responsibility lies with collection and storage of construction and demolition waste generated on the site. All construction wastes generated during construction will be used within the site itself for filling the floors, roads, aggregate for mortar etc. to the extent feasible. Remaining will be sent to the agency for proper disposal.

1.8 Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the activity).

No. The site area is a flat land and the surroundings are characterized by semi-urbanized stretch.

1.9 Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labor and the means of disposal).

- No significant health hazard is associated with the proposed construction.
- During construction period, source of fugitive dust generation will be material handling and vehicular movement. Impact due to fugitive dust emission is negligible as water sprinklers will be used to suppress fugitive dust emission as and when generate. However, the impacts will be confined to laborers/workers particularly with regard to occupational exposure. Proper Personal Protective Equipments will be provided to the workers working in the potential areas (e.g. masks, ear plugs etc.).

- Careful design, planning and good site management would minimize waste of materials such as concrete, mortars and cement grouts. Construction wastes will be segregated as much as possible at site itself to increase the feasibility of recycling concrete and masonry as filling material and steel pieces as saleable scrap. Litter disposal and collection points will be established around the work sites. Empty packaging materials, drums, glass, tin, paper, plastic, pet bottles, wood, thermocol and other packaging materials, etc will be disposed through recyclers. The construction spoils will be temporarily stored at designated dumpsite located inside the site premises. Later on these wastes will be used for land filling / leveling work within the site premises. An estimate of the average composition of waste generated from the onsite construction activities given in **Table-2**

Table-2: Waste Composition - During Construction Phase

S. No.	Constituents	Percentage Composition (%)
1	Soil, Sand and Gravel	35.80
2	Brick and Masonry	30.66
3	Concrete	23.24
4	Metal	5.10
5	Bitumen	2.10
6	Wood	2.10
7	Other	1.00
	Total	**100.00**

Source: TIFAC Report "Utilization of Waste from Construction Industry," 2001

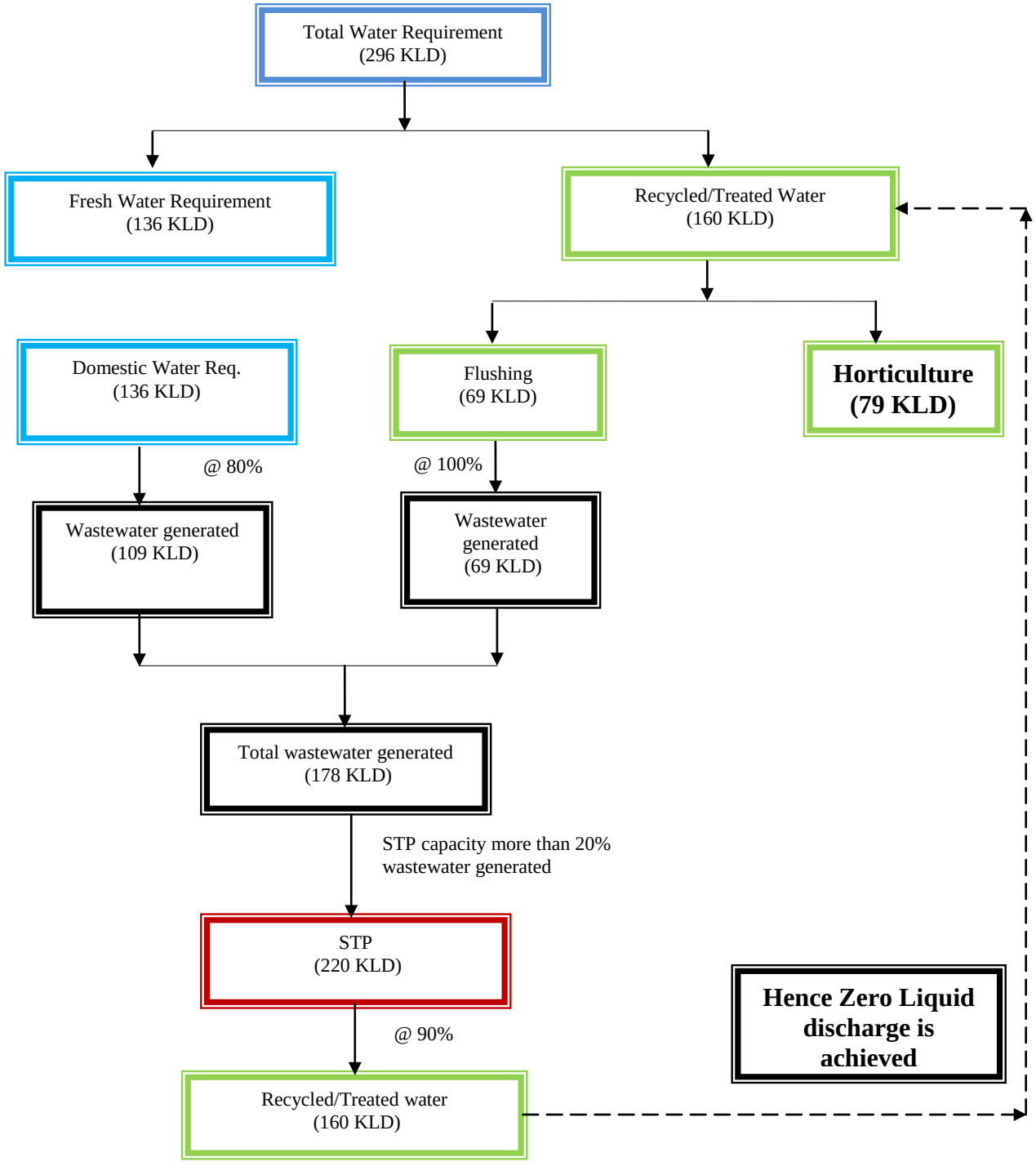
SECTION-2 WATER REQUIREMENT

2.1 Give the total quantity of water requirement for the proposed project with the breakup of requirement for various uses, how will the water requirement met? State the sources & quantities and furnish a water balance statement.

The water supply will be provided through the HUDA Supply. The total water requirement is approx. 296 KLD, out of which total fresh water requirement is 136 KLD and recycled water is 160 KLD. The daily water requirement calculation is given below in Table 3: **Table-3: Calculations for Daily Water Demand (Summer Season)**

S.No.	Detail	Population /Area in sq. meter	Unit water requirement	Domestic Water Requirement	Flushing Water Requirement	Total Water Requirement	Domestic Waste water	Flushing Waste Water	Total Waste Water
1.	Residential Population	1489	135	134.01	67.005	201.015	107.208	67.005	174.213
2.	Visitors in residential area	149	15	1.341	0.894	2.235	1.0728	0.894	1.9668
3.	Convenient shopping fixed population	22	45	0.66	0.33	0.99	0.528	0.33	0.858
4.	Convenient shopping floating population	45	15	0.405	0.27	0.675	0.324	0.27	0.594
5.	Landscape	14678	5.4 L/sqm/day			79			
6.	DG sets	2250 KVA @0.9 l/KVA/hr for 6 hours working				12			
	Total Water Requirement			136.416	68.499	295.915	109.132	68.499	177.631

(A)	**Total Water Requirement**			**Say 136**	**Say 69**	**Say 296**	**Say 109**	**Say 69**	**Say 178**



Water Balance Diagram, Wastewater Generation & Treatment (Summer Season)

2.2 What is the capacity (dependable flow or yield) of proposed sources of water?

Water requirement will be fulfilled by HUDA water supply.

2.3 What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, Biological characteristics with class of water quality).

Not Applicable as the water requirement will be fulfilled from HUDA.

2.4 How much of water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)

The water requirement for flushing, Horticulture and DG cooling is fulfilled through treated water from Sewage Treatment Plant (STP) of capacity 220 KLD.

Table-4: Details of Treated/Recycled Water from STP

Details	Water (KLD)
Water requirement for domestic purpose	136 KLD
Wastewater generated from domestic use (@ 80% of domestic water requirement)	109 KLD
Water requirement for Flushing Purpose	69 KLD
Wastewater generated from Flushing (@ 100% of flushing requirement)	69 KLD
Total Wastewater generated	**178 KLD**
Recycled water available for use @ 90% of wastewater generated	**160 KLD**
Use of Recycled Water	1. Horticulture: 79 KLD 2. Flushing : 69 KLD 3. DG cooling : 12 KLD **Total : 160 KLD**

2.5 Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption).

No, there will be no diversion of water from other users.

2.6 What is the incremental pollution load from wastewater generated from the activity? (Give details of the quantities and composition of wastewater generated from the activity)

Approximately 178 KLD of wastewater will be generated during the operational phase of the proposed project. This wastewater generated will be treated in well designed sewage treatment plant based on Moving Bed Bioreactor Technology. Dual plumbing system will be provided for reuse of treated water in flushing, Horticulture, DG cooling and to nearby construction site (during monsoon and winter season). Hence, no incremental pollution load is been expected from wastewater generated from the activity.

Table-5: Details of Wastewater Generation

S. No.	Details	Wastewater Generated (KLD)	Wastewater Treated/Recycled	Reuse
1.	Wastewater generated from domestic use (@ 80% of domestic water requirement)	109 KLD	160 KLD @ 90% of total wastewater generated	❖ 79 KLD in Horticulture ❖ 69 KLD in flushing ❖ 12 KLD for DG cooling.
2.	Wastewater generated from Flushing (@ 100% of flushing requirement)	69 KLD		
	Total Wastewater Generated	**109 + 69 = 178 KLD**	**160 KLD**	**160 KLD**

2.7 Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

Rainwater harvesting is proposed as a water conservation tool. Total **11** no. of rain water harvesting pits will be provided the storm water drainage within the project premises at selected locations, which will catch the maximum run-off from the area. It is self-sufficient to avoid any collection/stagnation and flooding of water.

1) Since the existing topography is congenial to surface disposal, a network of storm water pipe drains is planned adjacent to roads. All building roof water will be brought down through rain water pipes.
2) Proposed storm water system consists of pipe drain, catch basins and seepage pits at regular intervals for rain water harvesting and ground water recharging.
3) For basement parking, the rainwater from ramps will be collected in the basement storm water storage tank. This water will be pumped out to the nearest external storm water drain.
4) Peak Hourly rainfall of 45mm/hr shall be considered for designing the storm water drainage system. Rain water harvesting has been catered to and designed as per the

guidelines of CGWA. At the bottom of the recharge well, a filter media is provided to avoid choking of the recharge bore. Design specifications of the rain water harvesting plan are as follows:

- Catchments/roofs would be accessible for regular cleaning.
- The roof will have smooth, hard and dense surface which is less likely to be damaged allowing release of material into the water. Roof painting has been avoided since most paints contain toxic substances and may peel off.
- All gutter ends will be fitted with a wire mesh screen and a first flush device would be installed. Most of the debris carried by the water from the rooftop like leaves, plastic bags and paper pieces will get arrested by the mesh at the terrace outlet and to prevent contamination by ensuring that the runoff from the first 10-20 minutes of rainfall is flushed off.
- No sewage or wastewater would be admitted into the system.
- No wastewater from areas likely to have oil, grease, or other pollutants has been connected to the system.

2.8 What would be the impact of the land use changes occurring due to the project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long term basis? Would it aggravate the problems of flooding or water logging in any way?

The project will include paved areas and thus the runoff from the plot is expected to increase due to reduced infiltration. However, the increased runoff will not cause flooding or water logging as a well designed storm water drainage will be provided. The runoff will finally be collected into rainwater harvesting pits for groundwater recharging. The quality of the runoff is expected to improve due to paved areas.

2.9 What are the impacts of the proposal on the ground water? (will there be tapping of ground water; give the details of ground water table, recharging capacity and approvals obtained from competent authority, if any)

Water demand will be fulfilled from HUDA. No adverse impact is expected on this account as extensive rainwater harvesting will be implemented across the project site. To reduce the freshwater demand and hence the groundwater stress, recycled wastewater will be used for landscaping and flushing.

2.10 What precautions/ measures have been to check the surface run-off, as well as uncontrolled flow of water into any water body?

The following management measures are suggested to protect the water quality:

- Avoid excavation during monsoon season.

- Care would be taken to avoid soil erosion.
- Community toilets shall be constructed on the site during construction phase and the wastewater will be channelized to the septic tank in order to prevent wastewater from entering the water bodies.
- Any area with loose debris/soil within the site shall be fully planted by local plant species.
- To prevent surface and ground water contamination by oil/grease, leak proof containers would be used for storage and transportation of oil/grease. The floors of oil/grease handling area would be kept effectively impervious.
- Collection and settling in the storm water, prohibition of equipment wash downs, and prevention of soil loss and toxic release from the construction site will be adhered to minimize water pollution.

2.11 How is the storm water from within the site managed? (State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels).

Most of the storm water produced on site will be harvested for ground water recharge. Thus proper management of this resource is a must to ensure that it is free of contamination. A detailed Storm Water Management Plan will be developed which will consider the sources of storm water. The plan will incorporate best management practices which will include the following:

- Regular inspection and cleaning of storm drains.
- Installation of clarifiers or Oil/Water separators/traps system of adequate capacity around parking areas and garages as per requirement.
- Avoid application of pesticides and herbicides before wet season.
- Conducting routine inspections to ensure cleanliness.
- Preparation of spill response plans, particularly for fuel and oil storage areas.
- Provision of silt traps in storm water drains.
- Good housekeeping in the above areas.

2.12 Will the deployment of construction laborers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation).

No, mostly local laborers will be employed during the construction phase and thus negligible quantities of wastes will be generated. Mobile toilets will be provided and the wastewater generated will be collected in septic tanks.

2.13 What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal).

- It is expected that the project will generate approx. 178 KLD of wastewater. The wastewater will be treated in the STP provided within the premises generating 160 KLD of recoverable/recycled water which will be used in flushing, horticulture and DG cooling.
- Separate garbage bins with different colours will be provided for the management of bio-degradable and non-bio-degradable waste.

2.14 Give details of dual plumbing system if treated waste used for flushing of toilets or any other use.

Total water requirement of project will be 296 KLD. The fresh water required will be 136 KLD and treated water will be 160 KLD. During operation phase, 178 KLD of waste water will be generated which will be treated in STP having the capacity of 220 KLD. Treated water obtained from STP shall be 160 KLD, out of which 69 KLD shall be utilized for the purpose of flushing and 79 KLD use in green area development, 12 KLD of water will be used for DG cooling.

SECTION-3: VEGETATION

3.1 Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with its unique features, if any).

No ecologically sensitive area falls within the project site. Hence, no ecological/ biological threat has been anticipated.

3.2 Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

The project does not support any significant vegetation. It is to develop a multilayered peripheral greenbelt of native plant species to enhance the aesthetic value of the region and also provide an excellent habitat for various faunal groups.

3.3 What are the measures to be taken to minimize the likely impacts on important site – features (Give details of proposal for tree plantation, landscaping creation of water bodies etc along with a layout plan to an appropriate scale?)

Green belt will be developed along the periphery of the project premises along with the internal parks and lawns. 14678 m^2 the project area will be developed as green belt and organized green spaces. Plantation would be of large leaf trees that provide adequate shade and are evergreen to semi-evergreen.

SECTION 4: FAUNA

4.1 Is there likely to be any displacement of fauna both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

No. The existing land use around the site is semi-urban and does not provide a habitat for wild species. The multilayered peripheral greenbelt will provide an excellent habitat for the native fauna.

4.2 Any direct or indirect impacts on the avifauna of the area? Provide details.

The project will not have any direct or indirect impacts on the avifauna of the area. However, planting of trees bearing fruits in the greenbelt will be an attraction to the local bird population.

4.3 Prescribe measures such as corridors, fish ladders etc. to mitigate adverse impacts on fauna.

No direct or indirect impact on fauna is envisaged.

SECTION 5: AIR ENVIRONMENT

5.1 Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the construction).

Ambient air monitoring was carried out at the project site during the environmental assessment.

During the post construction phase, cars, scooter/motorcycle will be owned by the residents of the group housing colony project. Vehicular emissions will be the major source of air pollution in addition to DG set. Quantum and dispersion of pollutants from vehicular emission will depend upon the following:

- Volume of traffic on the roads,
- Meteorological conditions.
- Emission sources

From vehicular emissions, PM, NO_2 and CO is pollutants of primary concern. The dispersion of vehicular emission would be confined within 100 m from the road and concentration will decrease with increase in distance from road. It is anticipated that the contribution of vehicular emission in ambient air quality will be marginal but well within the stipulated National Ambient. Dispersion will be faster at higher wind speed.

Mitigation Measures: The proposed project will develop a green belt inside the premises of the project site and along the internal road, which will work as a barrier for the movement of pollutants and help in pollution control.

5.2 What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.

Ambient air quality monitoring was done on site and all values were found within the NAAQS for residential land use. During operational phase of the project, there will be increase in atmospheric concentration of gases and particulate matter due to running of DG sets. Total 2 D.G. sets having total capacity of 2250 KVA (1x1500+1x750 KVA) will be provided as power back up during power failure. This will cause emissions of PM, SO_2, NO_2 and CO. However, the D.G. sets will be functional only during power failure and ultra low sulphur diesel will be used. Adequate stack height for D.G. sets will be provided as per the stipulated guidelines of Central Pollution Control Board (CPCB) to facilitate natural dispersion of exhaust gases.

5.3 Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures for improvement including the traffic management at the entry and exit to the project site.

Adequate provision will be kept for car/vehicles parking at the project. There shall also be adequate provision for visitors parking so as not to disturb the traffic and allow smooth movement at the site.

5.4 Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc, with areas under each category.

Internal roads of 6 m width, footpaths/pedestrian pathways have been well planned for the project.

5.5 Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures for mitigation of the above.

No significant impact of noise has been anticipated within and outside of the project site due to provision of wide roads for smooth flow of traffic and greenbelt along the roads. Noise, due to the traffic, within site, will result in a marginal increase in the noise levels because noise control measures shall be provided in vehicles & DG sets as mentioned below, which will cause slight increase in noise level.

5.6 What will be the impact of D.G. sets and other equipment on noise levels and vibration in ambient air quality around the project site? Provide details.

During operational phase of the project, vehicular movement and operation of DG sets will be the major sources of noise pollution. But both these activities- DG set and vehicular movement will not have any significant impact on the people residing in the area. Since DG set will not be operational continuously and moreover it will be placed away from populated area and will be enclosed with suitable enclosures. Hence, no or minimal impact will be anticipated due to DG set and vehicular emission. It is envisaged that the movement of the motor vehicles will be restricted to designated carriageways only.

SECTION-6: AESTHETICS

6.1 Will the construction in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

The construction of proposed project is well planned. Thus, no obstruction of view or scenic beauty or landscape is anticipated. Furthermore, the construction will be planned in such a way that the organized open spaces and landscaped areas will render the plot aesthetically appealing.

6.2 Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

No impacts anticipated.

6.3. Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

The project will strictly follow the Area Building Regulation Norms of NBC. All norms on Ground Coverage, FAR, Height, Setbacks, Fire Safety Requirements, Structural Design and other parameters will be strictly adhered to.

6.4 Are there any anthropological or archaeological sites or artifacts nearby? State if any other significant features in the vicinity of the site have been considered?

No anthropological or archaeological sites or artifacts are found near the site area.

SECTION-7: SOCIO-ECONOMIC ASPECTS

7.1 Will the proposal result in any changes to the demographic structure of local population? Provide the details.

The project is situated in the residential zone and hence there will be no change in demographic structure.

Construction phase: Since local laborers will be engaged during construction phase, alteration to the existing demographic profile of the area is not anticipated.

Operation phase: The changing demography in the area is another impact that needs attention. The project will mainly lead to spatial redistribution of local population and hence no considerable influx of population is envisaged owing to the project.

7.2 Give details of the existing social infrastructure around the project.

The area around the project is surrounded by local land area. However all sorts of social infrastructure like transportation facilities, water supply & sanitation facilities, communication facilities, educational institutes, hospital, markets, banks, cultural amenities etc. already exist in Gurgaon.

7.3 Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards?

Construction phase: There are no religious sites or archeological monuments of historical significance in or near the project site. Hence, no adverse impact in this regard is anticipated. Rather, this phase will generate jobs that relate to unskilled, semi skilled as well as skilled labour category. Few supervisory positions will also open up, for which local candidates will be considered based on merit.

Operation phase: The project will provide state-of-the-art facility in the area, thereby improving the quality of life. A group housing colony project of such scale will also boost the local economy.

SECTION-8: BUILDING MATERIALS

8.1 May involve the use of building materials with high embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

While selecting the building materials appropriate weight-age will be given to select materials with low embodied energy. The aim is to replace at least a part of high energy intensive materials with low energy intensive materials and utilize regionally available materials. Products which use recycled materials like glass, crushed stone, and other waste which are resource efficient finishes such as finished concrete flooring, ceiling tiles, and ceramic tiles are useful. The advantages of using products with recycled content: Few examples are use of Fly ash based products e.g. Fly ash brick, AAC Block, PPC Cement, use of fly ash in RCC and Plaster. Materials with high recycle content e.g. steel, tiles, aluminium, pavers shall be selected. Use of glass which is manufactured using waste glass cullets saves about 26% of the total energy required for procuring and transportation of raw materials.

Gypsum boards use 92% gypsum, which can either be sourced naturally or is produced as a by-product of power plants. Thus gypsum boards used contain 100% post-industrial recycle content. Gypsum has high recyclability potential as well. Ceramic tiles are extremely

durable and require minimum maintenance. Ceramic tiles usually have 100% recycled content in the form of recycled glass.

Majority of the building materials are sourced locally e.g. sand, aggregate; stone are sourced from local areas. The RCC is constructed by mixing locally sourced sand, cement and aggregate to reduce transportation energy consumption.

Composite wood products such as hardboards block boards, lumber-core plywood, veneered panels, particle boards, medium/low density fiberboards made from recycled wood scrap from sawmill dust, and agriculture waste will be preferred.

Alternatively, rapidly renewable materials/products, which are made from small diameter trees and fast growing low utilized species harvested within 10 year cycle or shorter such as bamboo, rubber, eucrasia, eucalyptus, poplar, jute/cotton stalks, and so on.

Embodied energy is the energy consumed by all of the processes associated with the production of a building, from the mining and processing of natural resources to manufacturing, transport and product delivery. Embodied energy does not include the operation and disposal of the building material, which would be considered in a life cycle approach. Embodied energy is the 'upstream' or 'front-end' component of the life cycle impact of a home.

Gross energy requirement (GER) is a measure of the true embodied energy of a material, which would ideally include all of the above and more. In practice this is usually impractical to measure.

Process energy requirement (PER) is a measure of the energy directly related to the manufacture of the material. This is simpler to quantify. Consequently, most figures quoted for embodied energy are based on the PER. This would include the energy used in transporting the raw materials to the factory but not energy used to transport the final product to the building site.

In general, PER accounts for 50–80% of GER. Even within this narrower definition, arriving at a single figure for a material is impractical as it depends on:

1. efficiency of the individual manufacturing process
2. the fuels used in the manufacture of the materials
3. the distances materials are transported

4. the amount of recycled product used.

Each of these factors varies according to product, process, manufacturer and application. They also vary depending on how the embodied energy has been assessed.

Estimates of embodied energy can vary by a factor of up to ten. As a result, figures quoted for embodied energy are broad guidelines only and should not be taken as correct. We will consider the relative relationships and try to use materials that have the lower embodied energy.

Typical figures for some materials are given in the tables that follow. Generally, the more highly processed a material is the higher its embodied energy.

Embodied energy for common building materials

Material	PER embodied energy MJ/kg

* Fibre cement figure updated from earlier version and endorsed by Dr Lawson.

Source: Lawson 1996

Kiln dried sawn softwood	3.4
Kiln dried sawn hardwood	2.0
Air dried sawn hardwood	0.5
Hardboard	24.2
Particleboard	8.0
MDF (medium density fibreboard)	11.3
Plywood	10.4

Embodied energy for common building materials	
Material	PER embodied energy MJ/kg
Glue-laminated timber	11.0
Laminated veneer lumber	11.0
Plastics — general	90.0
PVC (polyvinyl chloride)	80.0
Synthetic rubber	110.0
Acrylic paint	61.5
Stabilised earth	0.7
Imported dimensioned granite	13.9
Local dimensioned granite	5.9
Gypsum plaster	2.9
Plasterboard	4.4
Fibre cement	4.8*
Cement	5.6
In situ concrete	1.9
Precast steam-cured concrete	2.0

Embodied energy for common building materials	
Material	PER embodied energy MJ/kg
Precast tilt-up concrete	1.9
Clay bricks	2.5
Concrete blocks	1.5
Autoclaved aerated concrete (AAC)	3.6
Glass	12.7
Aluminium	170.0
Copper	100.0
Galvanised steel	38.0

These figures should be used with caution because: the actual embodied energy of a material manufactured and used in one location, is very different from the same material transported by road to other location.

Aluminium from a recycled source contains less than 10% of the embodied energy of aluminium manufactured from raw materials.

Materials of high monetary and high embodied energy value, such as stainless steel, are almost certain to have been recycled many times, reducing their life cycle impact.

Materials with the lowest embodied energy, such as concrete, bricks and timber, will be usually consumed in large quantities. Materials with high energy content such as stainless steel are often used in much smaller amounts. As a result, the greatest amount of embodied energy in a building can be from either low embodied energy materials such as concrete or high embodied energy materials such as steel.

Guidelines for reducing embodied energy

Lightweight building construction such as timber frame is usually lower in embodied energy than heavyweight construction. This is not necessarily the case if large amounts of light but high energy materials such as steel or aluminium are used.

There are many situations where a lightweight building is the most appropriate and may result in the lowest life cycle energy use (e.g. hot, humid climates; sloping or shaded sites; sensitive landscapes).

In climates with greater heating and cooling requirements and significant day–night temperature variations, embodied energy in a high level of well-insulated thermal mass can significantly offset the energy used for heating and cooling.

There is little benefit in building a house with high embodied energy in the thermal mass or other elements of the envelope in areas where heating and cooling requirements are minimal or where other passive design principles are not applied.

Each design should select the best combination for its application based on climate, transport distances, availability of materials and budget, balanced against known embodied energy content.

The guidelines

1. Design for long life and adaptability, using durable low maintenance materials.
2. Ensure materials can be easily separated.
3. Avoid building a bigger house than you need — and save materials.
4. Modify or refurbish instead of demolishing or adding.
5. Ensure construction wastes and materials from demolition of existing buildings are reused or recycled.
6. Use locally sourced materials (including materials salvaged on site) to reduce transport.
7. Select low embodied energy materials (which may include materials with a high recycled content), preferably based on supplier-specific data.
8. Avoid wasteful material use. For example, specify standard sizes wherever possible (windows, door, panels) to avoid using additional materials as fillers. Some energy

intensive finishes, such as paints, often have high wastage levels so try to buy only as much as you need.

9. Ensure offcuts are recycled and use only sufficient structural materials to ensure stability and meet construction standards.

10. Select materials that can be reused or recycled easily at the end of their lives using existing recycling systems.

11. Give preference to materials that have been manufactured using renewable energy sources.

12. Use efficient building envelope design and fittings to minimise materials (e.g. energy efficient building envelope can downsize or eliminate the need for heaters and coolers, water-efficient taps can allow downsizing of water pipes).

Reuse and recycling

Reuse of building materials commonly saves about 95% of embodied energy that would otherwise be wasted. However, some materials such as bricks and roof tiles may be damaged when reused.

Savings from recycling of materials for reprocessing varies considerably, with savings up to 95% for aluminium but only 20% for glass. Also, some reprocessing may use more energy, particularly if long transport distances are involved.

8.2 Transport and handling of materials during construction may results in pollution, noise and public nuisance. What measures are taken to minimize the impacts?

Mitigation Measures for Air Pollution during Construction Stage:

- Construction materials will be suitably covered with tarpaulin cover etc during transportation.
- Water sprinkling shall be done on haul roads where dust generation is anticipated.
- Raw material storage and handling yard will be enclosed from all sides.
- To minimize the occupational health hazard, proper personal protective gears i.e. mask shall be provided to the workers working in the dust prone areas.

Mitigation Measures for Noise Pollution during Construction Stage:

- Administrative as well as engineering control of noise will be implemented.

- Isolation of noise generation sources and temporal differentiation of noise generating activities will ensure minimum noise at receiver's end.
- To prevent any occupational hazard, earmuff / earplug shall be given to the workers working around construction plant & machinery emitting high noise levels.
- Use of such plant or machinery shall not be allowed during night time. Careful planning of machinery operation and scheduling of operations shall be done to minimise such impact.

8.3 Are recycled materials used in roads and structures? State the extent of savings achieved?

Yes, for road construction fly-ash will be utilized. Recycled materials will be bought from outside sources and will be used as fillers in base and sub-base of the carriageway, footpaths pavements or pedestrian way, as needed.

8.4 **Give detail of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.**

The solid waste of the project will be segregated into biodegradable waste and non-biodegradable. Biodegradable waste and non biodegradable waste will be collected in separate bins. Biodegradable waste will be treated in the project premises by Organic Waste Converter. The recyclable wastes will be sent off to the government authorized recyclers. Proper guidelines for segregation, collection and storage will be prepared as per Municipal Solid Wastes (Management and Handling) Rules, 2000 and amended Rules, 2008.

SECTION-9: ENERGY CONSERVATION

9.1 Give details of the power requirements, source and supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

The details of power requirement, sources, and backup power requirement are given in the Table below:

Power Requirement, Sources and Backup Plan

Power Requirement	1853.825 KVA
Sources of Power	Dakshin Haryana Bijli Vitran Nigam (DHBVN)
Backup power supply arrangement	2 DG Sets of capacity 2250 KVA (1x1500+1x750 KVA) will be used in case of power failure only.

Energy Consumption assumed per square foot of built-up area is **0.004 KVA/square foot**.
Energy conservation will be one of the focuses during the project planning and operation stages. The conservation efforts would consist of the following.

Energy Saving Practices

- Automatic Control of Power factors through APFC Relay controlled capacitor Panel.
- Use of solar energy for external lighting.
- Purchase of energy efficient appliances, motors & pumps.
- Use of Energy Efficient lighting i.e LED, 9/18W and T-5 fixtures. T5- 21/28W fluorescent lights will be used in basement parking instead of conventional 40W tube lights to save a lot of energy as compared with 40W TL.
- Constant monitoring of energy consumption and defining targets for energy conservation.

Architectural design

- Maximize the use of natural lighting through design
- Passive solar cooling utilizing building shading through overhangs.
- Glazed areas on the façade are limited to 40% of the total façade area which will be provided with double glazed units.
- Over deck insulation on roof meeting thermal conductivity as defined under ECBC along with the reflective surface on roof top with High Solar Reflectance Index.

Urban Heat Island Impact

In order to reduce impact of urban Heat Island and improving the microclimate at site, following measures are being undertaken:

- Light colored paving materials for hard paved areas at pedestrian level
- Grass lawn with shrubs
- Provision of Trees to shade open surface areas.

Behavioral change on consumption

- Promoting awareness on energy conservation
- Training staff & occupants on methods of energy conservation and to be vigilant to such opportunities.

9.2 What type and capacity of power backup do you plan to provide?

Power backup will be provided by 2 Nos. of DG sets of total capacity 2250 KVA (1x1500+1x750 KVA). The DG sets will be operated only during power failure.

9.3 What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

Glass plays a unique and important role in building design and the environment. It affects design, appearance, thermal performance and occupant comfort. The selection of the right glass is a crucial component of the design process.

India being a tropical country, we need to be careful while selecting a glass. Selection of glass has become more complex since a variety of glasses are available to choose from, ranging from performance to aesthetics.

Key factors which play an important role in designing the building envelope with glass are as follows.

- Solar Factor (SF) / Solar Heat Gain Co-efficient (SHGC)
- U-Value
- Relative Heat Gain (RHG)
- Visual Comfort

Solar Factor (SF) /Solar Heat Gain Co-efficient (SHGC)

A combination of the directly transmitted solar and radiant energy and the proportion of the absorbed solar energy that enters into the building's interior. We will use low SF/SHGC type of glass.

U-Factor (U-Value)

This is the measurement of air-to-air thermal conductance or insulation between indoors and outdoors through the glass. We will use low U-Value type of glass.

Relative Heat Gain (RHG)

RHG is calculated as follow = (Solar heat gain factor (ASHRAE) 630° W/m2 X shading coefficient of the glass) + (Temperature Difference x U value)

- Heat gain due to Solar Factor contributes to 80% of RHG value

- Heat gain due to U-value contributes to 20% of RHG value
  As we have proposed for low U-value and low SF/SHGC value, thus RHG value will remain low.

Visual Comfort

Visual Light Transmission

It is defined as the percentage of light transmitted through the glass. It does not determine the color of the glass.

We will use Glass that should provide for optimum daylight inside as per the outside condition. Excessive daylight creates glare and makes the occupant uncomfortable.

9.4 What passive solar architectural features are being used in the building? Illustrate the applications made in the project.

Passive solar design refers the use of the sun's energy for heating and cooling of living spaces. Pergolas, projections, façade elements, metal louvers will be provided for sun shading to reduce the heat influx into the building and thus reduce the air conditioning loads.

9.5 Does the layout of street & building maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.

Layout of buildings has been done as per the sun path analysis so that the design cuts off direct radiations of critical hours which are specific to the orientation. Solar energy will be harnessed to meet various energy requirements of the project such as:

- Solar street lights.
- Solar blinkers.
- Solar power packs/inverters.
- Roof top SPV (Solar Photo voltaic) systems with or without grid interaction.

9.6 Is the shading effectively used to reduce cooling/heating lands? What principles have been used to maximize the shading of walls on the East and the West and the Roof? How much energy saving has been effected?

Pergolas, projection, façade elements, metal louvers will be provided to reduce cooling loads. Green area and open areas will be so spaced that a reduction in temperature is achieved.

9.7 Do the structures use energy-efficient space conditioning, lightening and mechanical systems? Provide technical details. Provide details of the transformers

and motor efficiencies, lightening intensity and air conditioning load assumption? Are you using CFC and HCFC free chillers? Provide specifications.

Yes. The walls and rooms will be insulated such that air conditioning load is reduced. Well designed building structures will allow natural light to enter. Only prescribed quality of glasses will be used. Measures prescribed in Energy Conservation Building Code 2007 will be adopted to reduce the heat influx by walls, roofs and openings.

a) Lighting power density

S.No	Lighting	Lighting Power Density for proposed Group Housing project
1.	Interior lighting	< 5.0 W/ m2
2.	Exterior Lighting	< 2.5 W/m2
3.	Parking	< 2.5 W/m2
4.	Common Area lighting (corridors, lobby, staircase)	< 4.0 W/m2

b) Pumps: BEE 4-star rated Pumps (or) Minimum 60% efficiency for Pumps of capacity greater than 3 HP and ISI certified pumps for others

c) Motors: BEE 4-star rated Motors (or) Minimum 75% efficiency for Motors of capacity greater than 3 HP and ISI certified motors for others

d) Transformer : efficiency- 90 to 95%

9.8 What are the likely effects of the building activity in altering the micro-climates? Provide a self assessment on likely impacts of the construction on creation of heat island & inversion effects?

Heat emissions from the construction may be from the following sources:

- Heat absorbed from the paved and concrete structures
- Heat generated from equipment/appliances

- Heat increase due to population increase
- However, the heat generated will not be significant and will be dissipated in the greens and open areas provided within the project area.

9.9 What are the thermal characteristics of the building envelope? (a) Roof (b) external walls and (c) fenestration? Give details of the material used and the U value or the R values of the individual components.

The roof tops of the buildings will be planned with puffing/bricks for water proofing and thermal insulation. Roof tops will also have partly landscaped area/gardens.
External wall-external opening will have regular door windows with slightly tinted glass. Regular walls have some cladding/fixture paints.

9.10 What precautions & safety measures are against fire hazards? Furnish details of emergency plans.

Firefighting measures shall be adopted as per the guidelines of NBC. External yard hydrants installed around all buildings in the complex and galvanized steel fire hose boxes/cabinet (weather proof). All external yard hydrants shall be at one meter height from finished ground level as per NBC at a distance of 45 m along the road. External fire hydrants shall be located such that no portion of any building is more than 45 m from a hydrant and the external hydrants are not vulnerable to mechanical or vehicular damage.

Fire hydrant system will be provided within the buildings, fire escape staircases and refuge areas will be provided and the building structures will be planned as per NBC. In addition, 10 kg fire extinguishers will be provided for class A, B, and C fires. CO_2 extinguishers will also be provided.

9.11 If you are using glass as wall materials, provide details and specifications including emissivity and thermal characteristics.

The project being a Group Housing Colony project will not involve use of glass as wall material. All fenestration with U-factors, SHGC, or visible light transmittance determined, certified and labeled in accordance with ISO 15099 shall be adopted.

9.12 What is the rate of air infiltration in to the building? Provide details of how you are mitigating the effects of infiltration.

The project will not be centrally air conditioned and hence there will be provision for ample natural ventilation.

9.13 To what extent the non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.

Solar energy will be variedly used as:

- Solar street lights.
- Solar blinkers.
- Solar power packs/inverters.
- Roof top SPV (Solar Photo voltaic) systems with or without grid interaction.

Green area is provided along with tree plantation which will result in natural air cooling and will reduce the load on conventional energy sources.

SECTION-10: ENVIRONMENT MANAGEMENT PLAN

10.1 The Environment Management Plan (EMP) would consist of all mitigation measures for each component of the environment due to the activities increased during the construction, operation and the entire life cycle to minimize adverse environmental impacts resulting from the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the sites including fire.

A detailed environmental management plan is presented in Table-6 to mitigate all the identified environmental impacts that are found to be significant.

Table-6: Environmental Management Plan – Construction Phase

S. No	Environmental Impacts	Mitigation Measures	Implementing Agency	Monitoring Agency
(i)	Air pollution due to emissions from construction machinery and movement of vehicles.	a) Vehicles transporting construction materials prone to fugitive dust emissions should be covered. b) Trucks carrying sand should be provided with tarpaulin sheets to cover the bed and sides of the trucks. c) Idling of delivery trucks or other equipment should not be permitted during loading and unloading. d) All construction vehicles should comply with air emission standards and be maintained properly. e) Development of alternative access routes to the site by passing the residential areas to avoid air pollution	Building Contractor	Project proponent
(ii)	Air pollution, noise and safety hazard due to movement of construction vehicles through internal roads of project premises.	a) Improvement of road surface to standards adequate to withstand movement of heavy construction vehicles b) Installing appropriate signage and deploying flagmen during peak traffic period to regulate the movement of traffic	Building Contractor	Project proponent
(iii)	Noise pollution due to operation of construction machinery at the site.	a) Construction contracts should specify that the construction equipment should meet the noise and air emission levels as per EPA Rules, 1986. b) Generator sets should be provided with noise shields around them.	Building Contractor	Project proponent

		c) Vehicles used for transportation of construction material should be well maintained. d) The workers operating high noise machinery or operating near it should be provided with ear plugs e) The high noise generating stationary machinery should be located at the southern or central portion of the site		
(iv)	Impact on community water resources (quality).	a) All waste water discharges from construction site will be received in septic tanks, adequate capacity and soak pits. b) Oil handling and storage area will be surfaced and provided with catch pit to intercept any accidental spillages.	Building Contractor	Project proponent
(v)	Sanitation and healthcare at workers camp	a) The contractor shall install adequate lavatories; soak pits and baths at the construction camp to cater to the requirements of the workers. b) The construction camp should be located on the south-west corner of the site c) The contractor shall build septic tanks with adequate capacity at the workers colony and at construction yard. d) All organic waste guaranteed at construction yard and worker camp should be composted in compost trench. e) Quarterly health check-ups of construction workers should be organized at workers colony. f) Adequate provision of water supply and fuel for cooking should be made at workers colony.	Building Contractor	Project proponent
(vii)	Improvement of Access Roads to the site	a) Improvement and widening of the existing access roads. b) Establishing road connection c) Relocation of the encroachments in temporary shelters if	Building Contractor	Project proponent

		the approach road along the boundary of the project site connecting the road is used for transportation of construction materials to the site.		
(viii)	Impact on Micro Climate	a) On-site planting of shading trees b) Planting of numbers of trees, of species suitable to the semi arid climatic condition and alluvial soil of the project site along the roads and on the designated open spaces to ensure the improvement of micro-climatic condition of the project site.	Building Contractor	Project proponent

INTRODUCTION

M/s Vatika Ltd. proposes to develop Group Housing Colony in Sector-82A Gurgaon. The company has already purchased the land measuring 11.218 acres at Sector-82A District–Gurgaon, Haryana to develop and construct a Group Housing Colony at the proposed site. The License has already been taken from DTCP, Haryana vide License no. 22 of 2011 dated 24/03/2011. Renewal of the license no. 22 of 2011 has already been taken vide Memo No.: LC-2409/2015/20150. The site is ideal as Gurgaon is situated at NH-8 which is also nearest to Delhi. Gurgaon is going to become a hub for education and multispecialty medical facilities. The area is already attracted by well known builders and developers those are developing the area very fast.

SITE LOCATION AND SURROUNDINGS

The proposed project site is located at Sector-82A, Tehsil and District– Gurgaon, Haryana. The Co-ordinate of the project site is 28°23'13.36"N and 76°57'41.25"E. The nearest highway is NH-8 which is approx. 690 m away in East direction .The nearest railway station is Garhi Harsaru Junction at a distance of approx. 6 Km. in NW direction from the proposed project site. The nearest airport is Indira Gandhi International Airport at a distance of approx. 21 km in North direction from the project site.



Figure-1: Google image showing location of project

PROJECT LAYOUT AND ENVIRONMENTAL CONTEXT

The total plot area of the proposed project for Group Housing Colony is 45,397.5633 m^2 (11.218 Acres). The detailed Area Statement is provided below in Table 1.

SALIENT FEATURES OF PROJECT: Salient features of the project are as follows:-

Table 1: Area Statement

S. No.	Particulars	Area (m^2)
1.	Project Name	Group Housing Colony M/s Vatika Ltd.
2.	Activity in the complex	Residential Apartments, EWS, Convenient Shopping.
3.	Total Plot Area	45,397.5633 m^2/ 11.218 Acres
4.	Built-up area (FAR + Non-FAR)	25,919.206 m^2 + 15,423.627 m^2 = 41,342.833 m^2
5.	Permissible Ground Coverage @ 35%	15,889.147 m^2
	Proposed Ground Coverage @ 10.007%	4543.008 m^2
6.	Permissible area of convenient shopping @ 0.5%	226.988 m^2
	Proposed FAR for convenient shopping @ 0.445%	202.209 m^2
7.	Permissible FAR @ 175%	79,445.736 m^2
	Proposed FAR @ 57.094 %	25,919.206 m^2
8.	Basement Area	S. No. / Particulars / Area (m^2) 1. / Upper basement / 4880.584 2. / Lower basement / 6123.769 Total / 11,004.353
9.	Non-FAR (Stilt Area, basement, mumty & machine room area)	15,423.627 m^2
10.	Maximum height	136.5 m up to machine room
11.	No. of Towers	2+1EWS
12.	Maximum No. of Floor	G+39
13.	Required Parking	305 ECS

	Proposed Parking	338 ECS (Stilt- 14 ECS, Covered surface- 240 ECS, Open surface-84) and, 258 Two Wheelers(Upper baasement-129 Two Wheelers, Lower basement-129 Two wheelers)
14.	Power Requirement & Sources	1853.825 KVA Source: Dakshin Haryana Bijli Vitran Nigam
15.	No. of DG sets	2 No. of DG Sets with total capacity of 2250 KVA (1x1500+1x750 KVA)
16.	Water requirement & Sources	Total Water Requirement: 296 KLD Fresh Water Requirement: 136 KLD Treated Water Requirement: 160 KLD Source: HUDA
17.	Sewage Treatment & Disposal	STP capacity : 220 KLD Sewage discharge: Total 178 KLD of wastewater will be generated from the proposed project out of which 160 KLD of water recovers after the treatment in STP of capacity 220 KLD. 69 KLD recycled water shall be utilized for flushing, 79 KLD for horticulture and 12 KLD for DG cooling.
18.	Estimated Population	1705 persons
19.	Required Green Area @ 30%	13618.6 m^2
	Proposed Green Area @ 32.32%	14678 m^2
20.	Cost of the project	121 Crores (Approx.)

***FAR = Floor Area Ratio**

POPULATION DENSITY

The Total population of the project will be 1705 persons. The detailed population breakup is given below in the following Table 2.

Table-2: Population Break up

S. No.	Particulars	Area (m^2) /Dwelling Unit	Rate	Total Population
A.	**Residential**			
1.	Main Units	169	5 PPU	**845**
2.	EWS	122	5 PPU	**610**
3.	Servant Rooms	17	2 PPU	**34**
4.	Visitors	--	@ 10 % of Residential Population	**149**
B.	**Convenient Shopping**			
1.	Commercial Population on Ground Floor	202.209	@ 3 m^2/person	**67**
	Fixed Population on Ground Floor(Shopkeepers)		@ 1/3rd of total commercial population	22
	Floating Population on Ground Floor(visitors)		@ 2/3rd of total commercial population	45
			Total	**1705**

PROJECT COST

The total estimated cost of the project is Rs. 121 crores (approx.) which includes the cost of the land as well as the developmental cost.

WATER REQUIREMENT

The water will be supplied through HUDA. Total water requirement for the project will be approximately 296 KLD, out of which 136 KLD is fresh water requirement and 160 KLD is recycled water. The daily water requirement calculation is given below in Table 3.

Table-3(a): Calculations for Daily Water Demand (Summer Season)

S.No.	Detail	Population /Area in sq. meter	Unit water requirement	Domestic Water Requirement	Flushing Water Requirement	Total Water Requirement	Domestic Waste water	Flushing Waste Water	Total Waste Water
1.	Residential Population	1489	135	134.01	67.005	201.015	107.208	67.005	174.213
2.	Visitors in residential area	149	15	1.341	0.894	2.235	1.0728	0.894	1.9668
3.	Convenient shopping fixed population	22	45	0.66	0.33	0.99	0.528	0.33	0.858
4.	Convenient shopping floating population	45	15	0.405	0.27	0.675	0.324	0.27	0.594
5.	Landscape	14678	5.4 L/sqm/day			79			
6.	DG sets	2250 KVA @0.9 l/KVA/hr for 6 hours working				12			
	Total Water Requirement			136.416	68.499	295.915	109.132	68.499	177.631
(A)	**Total Water Requirement**			**Say 136**	**Say 69**	**Say 296**	**Say 109**	**Say 69**	**Say 178**

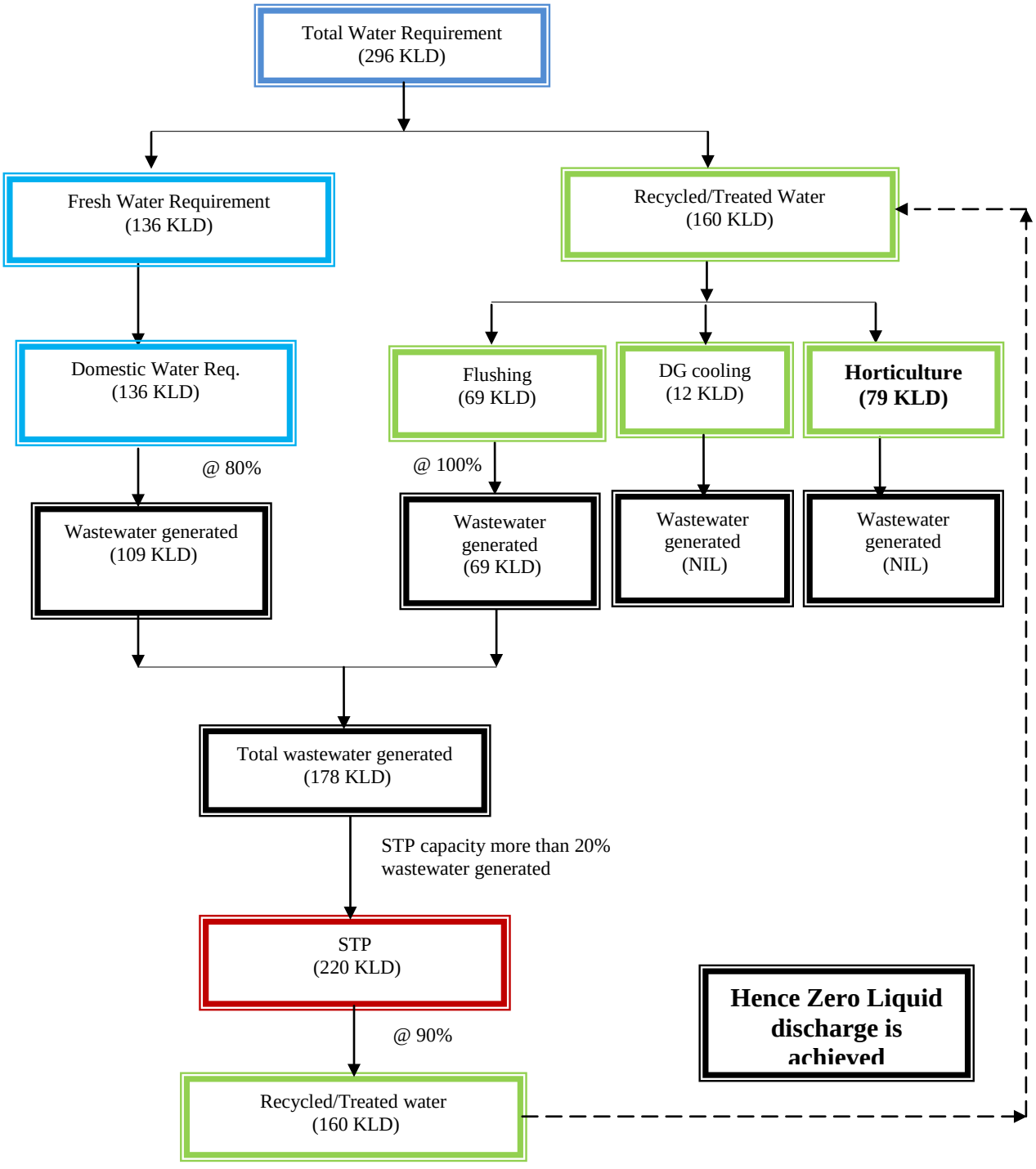


Figure-2 (a): Water Balance Diagram (Summer Season)

Table-3(b): Calculations for Daily Water Demand (Monsoon Season)

S.No.	Detail	Population /Area in sq. meter	Unit water requirement	Domestic Water Requirement	Flushing Water Requirement	Total Water Requirement	Domestic Waste water	Flushing Waste Water	Total Waste Water
1.	Residential Population	1489	135	134.01	67.005	201.015	107.208	67.005	174.213
2.	Visitors in residential area	149	15	1.341	0.894	2.235	1.0728	0.894	1.9668
3.	Convenient shopping fixed population	22	45	0.66	0.33	0.99	0.528	0.33	0.858
4.	Convenient shopping floating population	45	15	0.405	0.27	0.675	0.324	0.27	0.594
5.	Landscape	14678	1 L/sqm/day*			15			
6.	D.G. Cooling	2250 KVA @0.9 l/KVA/hr for 6 hours working				12			
	Total Water Requirement			136.416	68.499	231.915	109.132	68.499	177.631
(A)	**Total Water Requirement**			**Say 136**	**Say 69**	**Say 232**	**Say 109**	**Say 69**	**Say 178**

***Considering non rainy days in between during monsoon season**

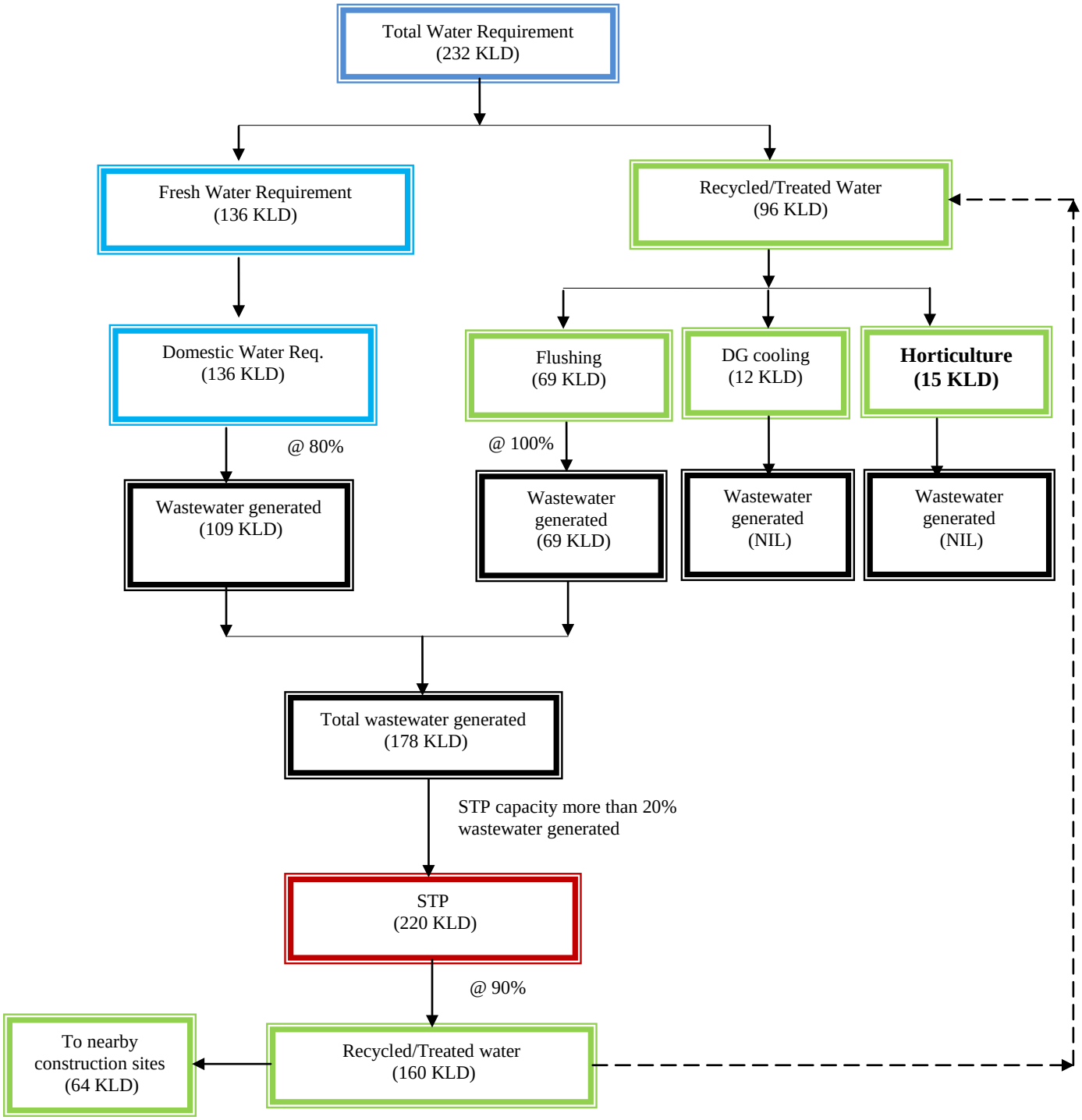


Figure-2 (b): Water Balance Diagram (Monsoon Season)

Table-3(c): Calculations for Daily Water Demand (Winter Season)

S.No.	Detail	Population /Area in sq. meter	Unit water requirement	Domestic Water Requirement	Flushing Water Requirement	Total Water Requirement	Domestic Waste water	Flushing Waste Water	Total Waste Water
1.	Residential Population	1489	135	134.01	67.005	201.015	107.208	67.005	174.213
2.	Visitors in residential area	149	15	1.341	0.894	2.235	1.0728	0.894	1.9668
3.	Convenient shopping fixed population	22	45	0.66	0.33	0.99	0.528	0.33	0.858
4.	Convenient shopping floating population	45	15	0.405	0.27	0.675	0.324	0.27	0.594
5.	Landscape	14678	3 L/sqm/day			44			
6.	D.G. cooling	2250 KVA @0.9 l/KVA/hr for 6 hours working				12			
	Total Water Requirement			136.416	68.499	260.915	109.132	68.499	177.631
(A)	**Total Water Requirement**			**Say 136**	**Say 69**	**Say 261**	**Say 109**	**Say 69**	**Say 178**

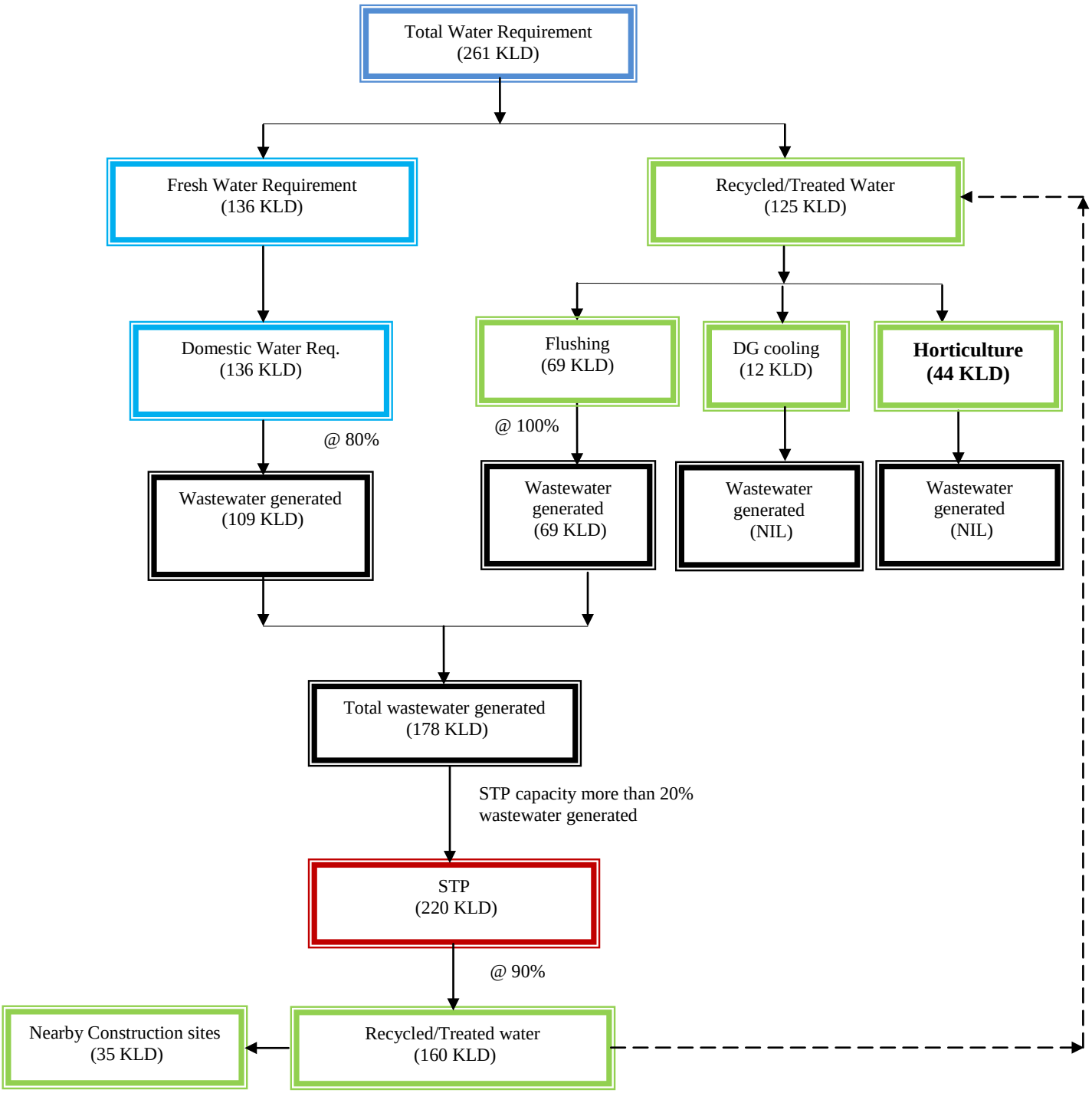


Figure-2 (c): Water Balance Diagram (Winter Season)

The wastewater will be treated in proposed Sewage Treatment Plant of 220 KLD capacity based on MBBR technology within the project premises. Approximately 160 KLD of recycled water will be obtained from proposed Sewage Treatment Plant which will be used for flushing, horticulture, DG cooling and excess treated water during monsoon and winter season will be supplied to nearby construction sites.

Table-4: Calculation of Wastewater Generation

Details	**Water (KLD)**
Water requirement for domestic purpose	136
Wastewater generated from domestic use (@ 80% of domestic water requirement)	**109**
Water requirement for Flushing Purpose	69
Wastewater generated from Flushing (@ 100% of flushing requirement)	**69**
Total Wastewater generated	109+69= **178**

SEWAGE TREATMENT TECHNOLOGY

Moving Bed Bioreactor Technology:

Sewerage System

An external sewage network shall collect the sewage from all units, and flow by gravity to the proposed sewage treatment plant.

Following are the benefits of providing the Sewage Treatment Plant in the present circumstances:

- Reduced net daily water requirements, source for Horticultural purposes by utilization of the treated waste water.
- Reduced dependence on the public utilities for water supply and sewerage systems.
- Sludge generated from the Sewage Treatment Plant shall be rich in organic content and an excellent fertilizer for horticultural purposes.

a. <u>Wastewater Details</u>

(a)	Daily load	:	178 KLD
(b)	Duration of flow to STP	:	24 hours
(c)	Temperature	:	Maximum 32^{o}C
(d)	pH	:	6.5 to 8.5
(e)	Colour	:	Mild
(f)	T.S.S. (mg/l)	:	150-300 mg/l

	(g)	BOD_5 (mg/l)	:	200-350 mg/l
	(h)	COD (mg/l)	:	400-600 mg/l
b.	**Final discharge characteristics**			
	(a)	Ph	:	6.5 to 7.5
	(b)	Oil & Grease	:	<10 mg/l
	(c)	B.O.D.	:	<10 mg/l
	(d)	C.O.D.	:	<60 mg/l
	(e)	Total Suspended Solids	:	<10 mg/l

c. Treatment Technology

The sewage will be first passed through a Bar Screen Chamber where any extraneous matter would get trapped. The influent would overflow by gravity to the Oil & Grease Chamber which is provided for safety so that the oil may not inhibit the biological growth in the MBBR reactors.

The sewage would then collected in an Equalization Tank where the variations in flow and characteristics are dampened, which otherwise can lead to operational problems and moreover it allows a constant flow rate downstream. Here the sewage is kept in mixed condition by means of coarse air bubble diffusion.

The Bio Reactor is based on the Fluidized Random Aerobic Reactor which combines the advantage of an Activated Sludge Plant with the Random distribution systems such as Biofilter with capacities that could be as low as $1/10^{th}$ of ASP and fractional power consumption, such a reactor is ideal for the efficient removal of BOD and organics from the wastewater.

The tanks are packed with RIGID PP-UV-sterilized Gas Fluted Media with liquid random distribution wherein air diffusers are placed to uniformly release air across the tanks.

Working Principle:

Bacteria grow rapidly in the Bio-Pac unit under properly engineered conditions. They consume organic chemical for their growth and remove them from the wastewater. The bacteria converts chemical into biological cells, which under proper growth conditions, form slims. The bacteria adhere to available surfaces and accumulate into what we call random biological film or fixed film. The high surface area-to-volume ratio of the units allows for accumulation of substantial concentration of bacteria in the relatively small

reactor units. Further, the accumulated bacteria which provides high rates of removal or organic chemicals are fixed in the system and do not need to be recycled back to the basin.
In the Bio Reactor system the water is constantly flowing through rigid PVC matrix to which the biological film attached. As the water flows past the biological film, bacteria in the film absorb organic chemicals as well as oxygen, nitrogen, phosphorus, and other trace nutrients required for their growth.
As the bacteria grow on the matrix and as more chemicals are added to the unit, the stationary biological film will continue to build in thickness. As the film becomes thicker the depth of penetration by diffusion of the absorbed material such as oxygen or other nutrients is not sufficient to reach the entire distance through the slime of the plastic media. At some point, the film will become sufficiently thick and portion of the film closest to the plastic media will not receive any food or nutrient, particularly oxygen. The inner layer of the film becomes anaerobic and the organisms lose their ability to adhere to the media surface. The shear forces of the water and / or air bubbles flowing through the matrix will ultimately become great enough to tear this portion of the biological film loose from the media. This process is called sloughing. The solids which slough from the media will flow out of the system with the sewages and are to be removed from the water through clarification in a settling module. The exposed portion of media surface will repeat the process of slime accumulation and sloughing.

In actual operation of the Bio Reactor units, biological film will be in a state of dynamic, continuous growth and sloughing. At any given time, portion of the media are always at some point between forming a new film sloughing.

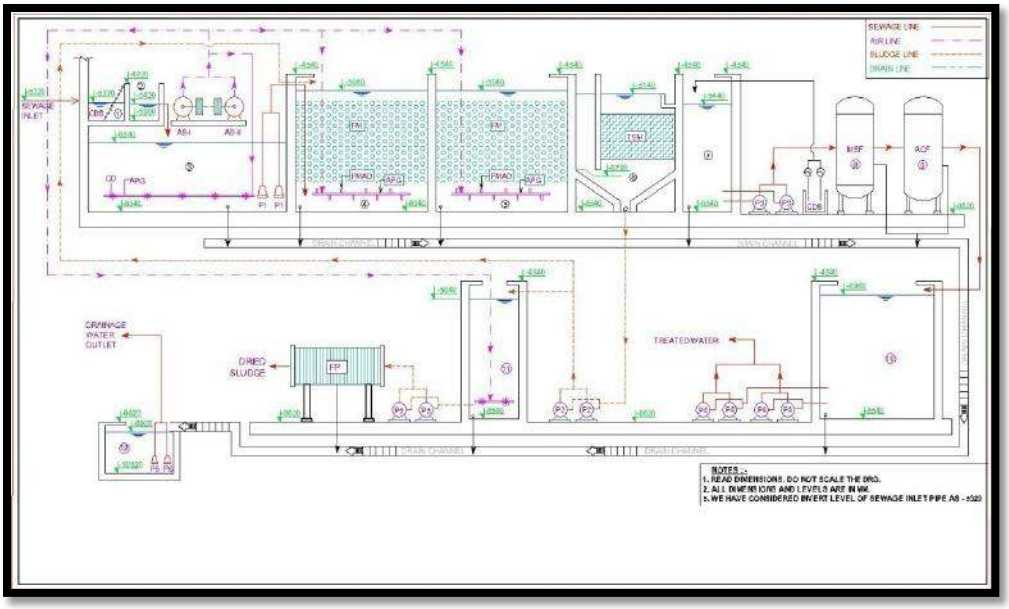


Figure-3: Process Flow Diagram of STP Technology

Sewage Quality:

The Sewage discharged from the Bio reactor system will contain sloughed biological solids, but would be relatively free of soluble organic chemicals. The quantity of biological solids in the sewage will depend substantially on the quantity of suspended solids and the concentration of soluble BOD entering system. It is therefore necessary to provide means of separating the biological mass from the sewage. Package unit contains tube settlers for sedimentation and 60 Gross fluted Rigid PVC fill media for the FAB units to treat the wastewater for discharge into the receiving waters and/or the sanitary sewers as per the local regulations. The media thickness changes with the design parameters/depth of the unit and can vary from 0.25 to 0.40 mm thickness.

1. Tube Settler: Here we are providing the Tube Settler along with the PVC media which will enhance the contact period and thereby the improved performance. The Tube settler will have a determined lope in the bottom to collect the suspended solids from the waste water. The sludge will be suited to the Sludge Drying Beds.

2. Pressure Sand Filter: Here the treated water coming from the TSS will be treated for the suspended impurity removal.

3**. Activated Carbon Filter:** Here the water coming from the ACF will be treated for colour removal, suspended impurity removal and the treated water shall be sent to the sewer.

4. Filter Press: A filter comprises a set of vertical, juxtaposed recessed plates, presses against each other by hydraulic jacks at one end of the set. The pressure applied to the joint face of each filtering plate must withstand the chamber internal pressure developed by the sludge pumping system. This vertical plate layout forms watertight filtration chambers allowing easy mechanization for the discharge of cakes. Filter clothes finely or tightly meshed are applied to the two grooved surfaces in this plat.

Primary Treatment: This is the first step of inlet waste mainly consist of removal of coarse particles, oil and grace and mixing co-agents in the water for removal of suspended solids through sedimentations. After this treatment scheme, the BOD, TSS, COD, and O&G level comes down to 20% of initial levels.

Secondary Treatment:

This is second step of waste water treatment. It mainly consist aerobic process of the Primary treated water, bacterial growth, EM dosing addition of oxygen and chemical which help in bacterial growth and lastly settlement of the biological waste as sludge. Normally it is found that the reduction level in TSS, BOD, O & G and COD after an efficient secondary treatment will be as under-

Tertiary Treatment:

This is the final stage of treatment where the Sewage after secondary treatment will be passed through (PSF) dual media filter and (ACF) activated carbon filter where sand, anthracite and activated carbon will be used as filtration media. After this UV disinfection is done. Once the above limits achieved thereafter the final outlet water will also confirms the Bio Assay test of 90% of fish survive.

Technical Specifications & Design for Sewage Treatment Plant of Capacity 220 KLD

S.No	DESCRIPTION			
1.0	Sewage generated	178	m^3 /day	
2.0	Sewage to be treated	178	m^3 /day	
	Say	**220**	**m^3 /day**	
3.0	BOD in influent	300	mg/l	
4.0	Total BOD load on plant	66	kg/day	
5.0	Suspended solid influent	450	mg/l	
6.0	SS load on plant	99	kg/day	
		Tertiary Treatment		
7.0	Desired effluent standard	Before	After	
8.0	BOD	300	<10	mg/l
9.0	SS	450	<10	mg/l
10.0	**Usage :-**			
	Gardening, Flushing, Road Washing			
11.0	**Plant Design :-**			
	Operating conditions			
	Hours of use	20	hrs	

	Av. Hourly flow	11.0	m^3 /hr	
11.1	**Equilization Tanks**			
	Total Nos Of Tank (1 Operational + 1 Emergency Use)	2		
	Total daily flow	220	m^3	
	Operating hours	20	hrs	
	Average flow	11.0	m3/hour	
	Retention period	8	hrs	
	BOD Reduction In the Tank	**5%**	**3.30**	**kg/day**
	BOD Value after 5% reduction of Inital Load	62.70	kg/day	
	Total Volume of tank required	88.00	m^3	
	Say	**90**	**m3**	
	Dimensions			
	Length	6	m	
	Breath	5	m	
	Height	3	m	
	Volume	**90**	**m3**	
11.2	**Reactor Tank**			
	Total daily flow	220	m^3	
	BOD to be removed	62.70	kg/day	
	Desired MLSS (3000-4000 mg/l) considered	3000	mg/l	
	Desired MLVSS (1000-1500mg/l) considered	1000	mg/l	
	F/M Ratio (Food to Micro Organism considered)	0.11		
	Total volume of tank required	41.80	m^3	
	Say	**45**	**m^3**	
	BOD value further 80% reduction	12.54	kg/day	

	Nos. of Tanks	1	No.	
	Volume per tank	**45**	**m³**	
	Dimensions			
	Length	3	m	
	Breath	5	m	
	Height	3	m	
	Volume	**45**	**m3**	
11.3	**Secondary Settlement Tank**			
	Nos. of Tank	1	nos	
	Total Flow Rate	220	m³/day	
	BOD to be removed	12.54	kg/day	
	BOD value after further reduction to 60%	5.02	kg/day	
	Voulme of the tank required	120.72	m³	
	Say	**120.00**	**m³**	
	Dimensions			
	Radius	1.50	m	
	Height	16.98	m	
	Say	**120.00**	**m³**	
11.4	**Sludge Holding Tank**			
	Nos. of Tank	**1**		
	Total Flow	220	m³/day	
	Inlet BOD	300	mg/l	
	Suspended Solid	450	mg/l	
	BOD to be Removed per day	66.00	kg/day	
	Excess sludge generation rate removed i.e 30% of total BOD to be removed per day	19.80	kg/day	

	Suspended solids to be removed from the effluent-Total daily flow x Suspended Solid to be removed from effluent.	99	kg/day	
	Total sludge to be removed	118.80	kg/day	
	Considering Sludge density as 6% thickening	0.06		
	Total Sludge to be removed per day-Total Sludge to be removed Percent of Thicken (Sludge Density)	7.13	Kg/day	
	Volume of tank for 05 days	35.64	m^3	
	Say	**36**	**m^3**	
	Length	3	m	
	Width	2	m	
	Water Depth	6	m	
	Say Volume	**36**	**m^3**	
11.5	**Clear Water Tank (CWT)**			
	Nos. of Tank	**1**		
	Total Flow Rate	220	m^3/day	
	Operating hours	20.0	hr	
	Average Flow	11.00	m^3/hr	
	Hydraulic retention Time	8	hr	
	Volume Required	**88.00**	**m^3**	
	Say	**90.00**	**m^3**	
	Length	6	m	
	Width	5	m	
	Water Depth	3	m	
	Volume	**90.00**	**m^3**	
11.6	**Final Effluent Tank**			
	Nos Of Tank	1		
	Total Flow Rate	220.0	m^3/day	

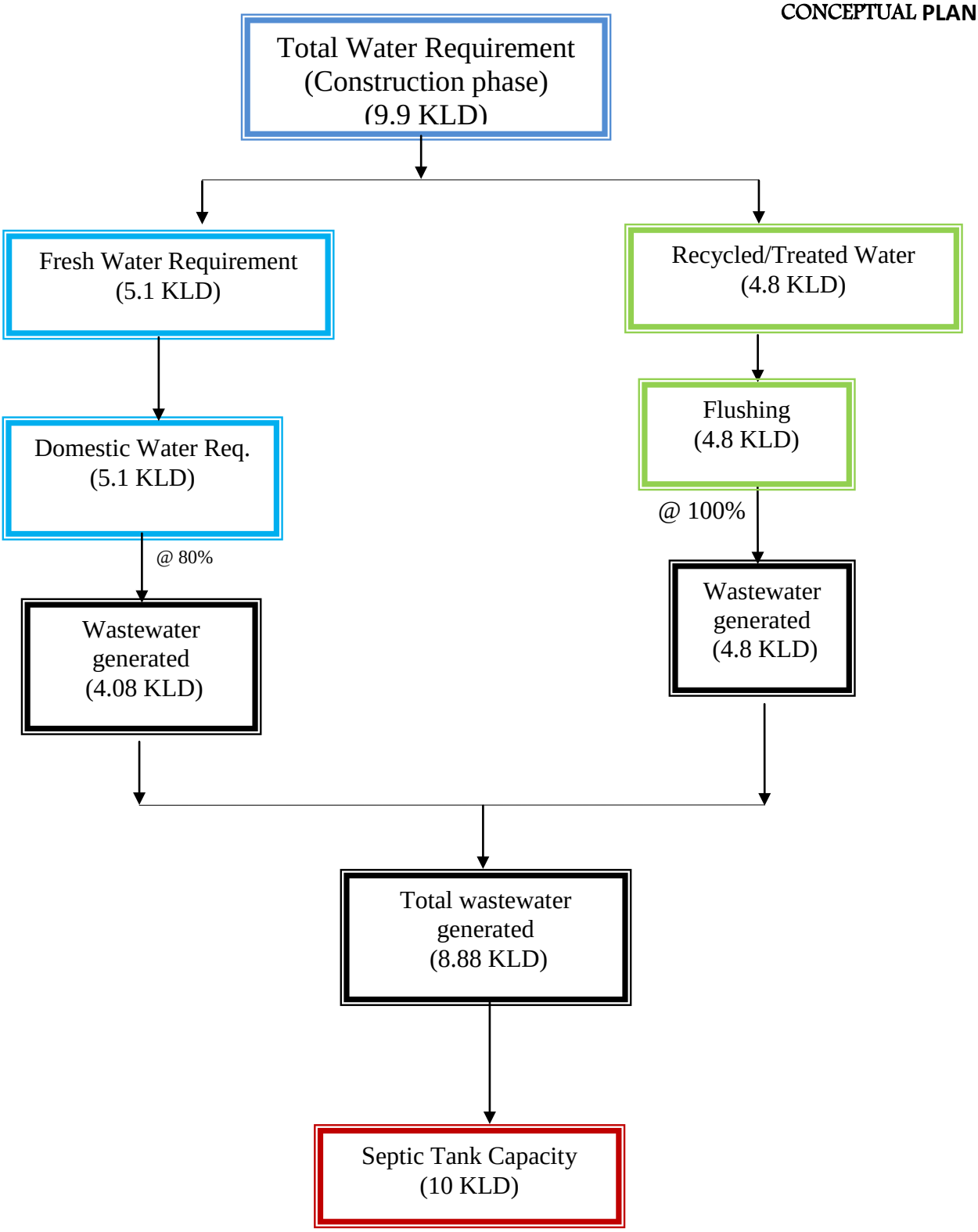
	Operating hours	20.0	hr	
	Average Flow	11.00	m^3/hr	
	Hydraulic rentention time	8	hr	
	Volume Required	88.00	m^3	
	Say	**90.00**	**m^3**	
	Length	6		
	Width	5		
	Water Depth	3		
	Volume	**90**	**m^3**	
12.0	**Air requirement for Aeration Tank as per the BOD Level**			
	Total Flow	220.0	m^3/day	
	BOD(In)	300	mg/l	
	BOD to be removed per day	62.70	kg/day	
	consider oxygen transfer rate 12%	0.12		
	21% oxygen content in atmospheric air	0.21		
	1.18 Density	1.18	m^3/hr	
	Total Oxygen required to remove BOD	147.60	mg/hr	
	SAY	**150**	**mg/hr**	
13.0	**Raw Sewerage Pump**			
	Flow	220.0	m^3/day	
	Operational Hours	8.0		
	Average Flow	27.5	m^3/hr	
	Provide (1 working+1 standby)	27.5	m^3/hr	
	Pump flow rate	458	LPM	
	Head	12	m	
14.0	**Sludge Disposal Pump**			

	Flow	220.0	m³/day	
	40% of total flow	88	m³/day	
	Operational hours	8		
	Average flow	11.00	m³/hr	
	Provide (1 working + 1 standby)	11.00	m³/hr	
	Pump flow rate	183.333	LPM	
	Head	14	m	
15.0	**Irrigation Water Lifting Pump**			
	Flow	220.0	m³/day	
	Operational hours	4		
	Average flow	55.00	m³/hr	
	Say	160	m³/hr	
	Provide (1 working + 1 standby)	160	m³/hr	
	Pump flow rate	2666.67	LPM	
	Head	14	m	
16.0	**Filter Feed Pump**			
	Flow	220.0	m³/day	
	Operational hours	6		
	Average flow	36.67	m³/hr	
	Say	36.67	m³/hr	
	Provide (1 working + 1 standby)	36.67	m³/hr	
	Pump flow rate	611.11	LPM	
	Head	6	m	
17.0	**Dual Media filter**			
	Flow	220.0	m³/day	
	Operational hours	6	hr	
	Capacity	36.67	m³/hr	
	Say	36.67	m³/hr	
	Filtration Rate	18	m³/hr	

	Dia of Vessel	1200	mm	
	Height of Straight	800	mm	
18.0	**Activated Carbon Filter**			
	Flow	220.0	m^3/day	
	Operational hours	6	hr	
	Capacity	36.67	m^3/hr	
	Say	36.67	m^3/hr	
	Filtration Rate	15	m^3/hr	
	Dia of Vessel	1200	mm	
	Height of Straight	800	mm	
19.0	**Ultra Filtration System**			
	Flow	220.0	m^3/day	
	Hourly Flow	13.75	m^3/day	
	Membrane Specification	0.1	Mm	
	Pressure of drop membrane	10	HP	
	Pump power requirement	15	HP	
	Pump Head	10	M	
	Operation Time	16	Hours	
	BOD removed after UF (60%) due to removal of colloidal BOD	2.0064	mg/l	

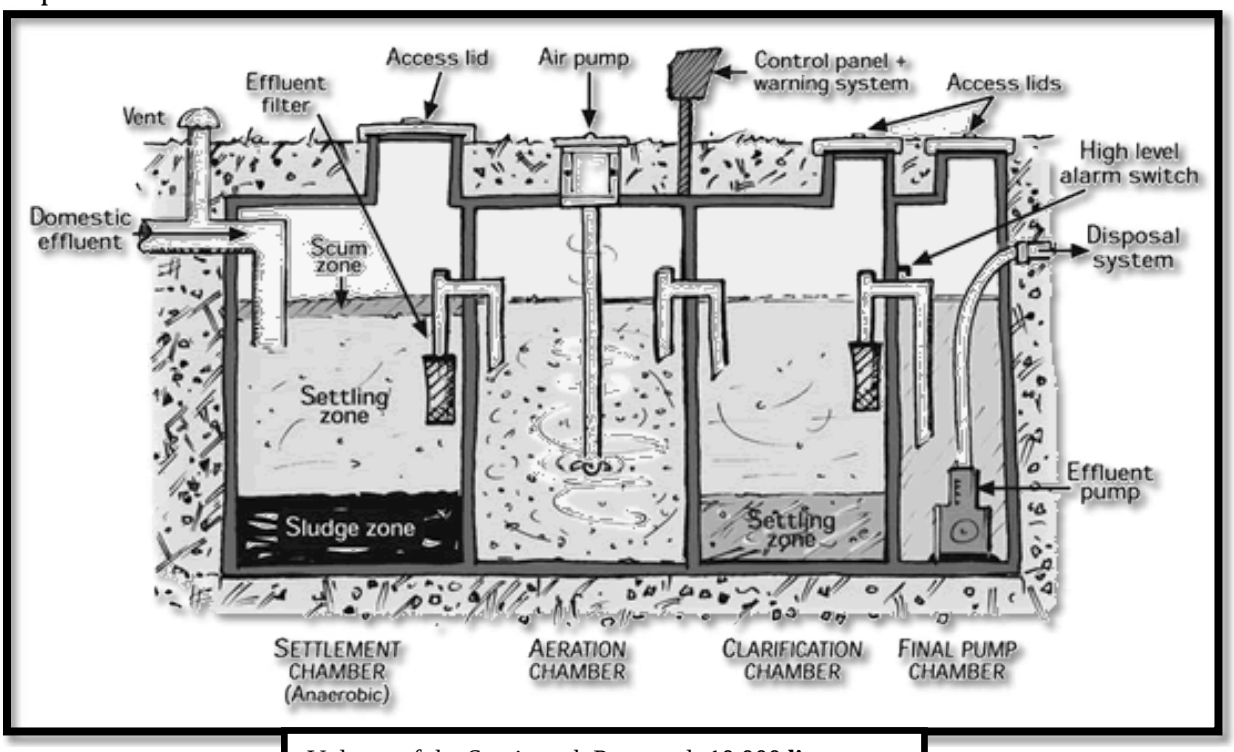
DAILY WATER DEMAND DURING CONSTRUCTION PHASE

S.No.	Detail	Population /Area in sq. meter	Unit water requirement	Domestic Water Requirement	Flushing Water Requirement	Total Water Requirement	Domestic Waste water	Flushing Waste Water	Total Waste Water
1.	Daytime Labour	100	45	1.5	3.0	4.5	1.2	3.0	4.2
2.	Full time Labour	40	135	3.6	1.8	5.4	2.88	1.8	4.68
	Total			**5.1**	**4.8**	**9.9**	**4.08**	**4.8**	**8.88**


Total Water Requirement
(Construction phase)
(9.9 KLD)
Fresh Water Requirement
(5.1 KLD)
Recycled/Treated Water
(4.8 KLD)
Domestic Water Req.
(5.1 KLD)
Flushing
(4.8 KLD)
@ 80%
@ 100%
Wastewater
generated
(4.08 KLD)
Wastewater
generated
(4.8 KLD)
Total wastewater
generated
(8.88 KLD)
Septic Tank Capacity
(10 KLD)

Septic Tanks

A septic tank is a key component of a septic system, a small-scale sewage treatment system common in areas that lack connection to main sewage pipes provided by local governments or private corporations. Other components, generally controlled by local governments, may include pumps, alarms, sand filters, and clarified liquid effluent disposal methods such as a septic drain field, ponds, natural stone fibre filter plants or peat moss beds.



Volume of the Septic tank Proposed=**10,000 litres**

The project proponent has proposed a septic tank of capacity **10,000 litres.**
The total retention time is **22 hours.**

Description

A septic tank consists of three concrete tanks of between 4000 and 12000 litres capacity.
One end of the first tank (**anaerobic settling chamber**) is connected to an inlet wastewater pipe and the outlet end of the tank is connected to **aeration chamber** .The relatively clear water passes to the **clarification tank** from which the clear effluent is disposed to the septic drain field with the help of an effluent pump.
Generally these pipe connections are made with a **T pipe**, allowing liquid to enter and exit without disturbing any crust on the surface. The design of the tank usually incorporates three chambers; each equipped with a **manhole cover**, and separated by a dividing wall with openings located about midway between the floor and roof of the tank.
The retention time (RT) of the septic tank is usually **1 to 3 days**. A longer retention time is chosen to minimize cleaning frequency (running costs). A shorter retention time is chosen to minimise tank size and initial cost. Larger tanks allow the sewage more time to digest

and thus reduce the load on the drainage system. Smaller tanks (< $6m^3$) need longer retention times due to increased turbulence (i.e. 2 or 3 days.)

Settlement Chamber

Wastewater enters the first chamber of the tank, allowing solids to settle and scum to float. The time taken by the wastewater is about 3 hrs after which the comparatively clear water (from the settling zone) enters to the aeration chamber. The retention time for this stage is taken as **5 hours**.

Aeration Chamber

The settled solids are aerobically digested, reducing the volume of solids. The liquid component flows through the dividing wall into the third chamber i.e. clarification chamber where further settlement takes place. The retention time for this stage is taken as **7 hours**.

Clarification Chamber

The excess liquid, now in a relatively clear condition, passes to the final pump chamber. The retention time for this stage is taken as **10 hours**.

Final Pump chamber

The liquid from the clarification Chamber, then drains from the outlet into the septic drain field, with the help of an **effluent pump**. The disposable site is also referred to as a leach field, drain field or seepage field, depending upon locality.

Maintenance

- Excessive disposal of cooking oils and grease can cause the inlet drains to block. Oils and grease are often difficult to degrade and can cause odour problems and difficulties with the periodic emptying.
- Flushing non-biodegradable waste items down the toilet such as cigarette butts, cotton buds/swabs etc can cause a septic tank to clog and fill rapidly. Therefore, these materials should not be disposed of in that manner; the same applies when the toilet is connected to a sanitary sewer instead of a septic tank.
- Using the toilet for disposal of food waste can cause a rapid overload of the system with solids and contribute to failure.
- Certain chemicals may damage the components of a septic tank or kill the bacteria needed in the septic tank for the system to operate properly, such as pesticides, herbicides, materials with high concentrations of bleach or caustic soda (lye) or any other inorganic materials such as paints or solvents.

The flushing of salted water into the septic system can lead to sodium binding in the drain field. The clay and fine silt particles bind together and effectively waterproof the leach field, rendering it ineffective.

STORM WATER MANAGEMENT PLAN DURING CONSTRUCTION PHASE

The Storm Water Pollution Prevention Plan includes a description of the measures to be used for erosion and sediment controls throughout the construction project. These controls include stabilization measures for disturbed areas and structural controls to divert runoff and remove sediment. Erosion and sediment controls are implemented during the construction period to prevent and/or control the loss of soil from the construction site into the receiving waters. Selection of the most appropriate erosion and sediment controls depends on a number of factors, but is most dependent on site conditions. The information collected in the site evaluation, design and assessment phases is used to select controls.

Some controls are:

Stabilization-Disturbed areas of the construction site that will not be redisturbed for 21 days or more must be stabilized by the 14th day after the last disturbance. Stabilization measures include the following: -

Temporary Seeding-Temporary seeding is the planting of fast-growing grasses to hold down the soils in disturbed areas so that they are less apt to be carried offsite by storm water runoff or wind.

Permanent seeding-Permanent seeding is the use of permanent vegetation (grass, trees, or shrubs) to stabilize the soil by holding soil particles in place. –

Mulching-Mulching is the placement of material such as hay, grass, woodchips, straw. or gravel on the soil surface to cover and hold in place disturbed soils. (Mulching often accompanies seeding.).

The pollution prevention plan includes structural practices to divert flows away from disturbed areas, to store flows, or to limit the discharge of pollutants from the site.

The following is a list of some of the practices which may be used.

• Structural control measures –

Earth Dike-An earth dike is a mound of stabilized soil which is constructed to divert runoff, Earth dikes may be used to either divert uncontaminated runoff away from disturbed areas or to divert contaminated runoff into a sediment basin or sediment trap.

Silt fence-A silt fence is a temporary measure consisting of posts with filter fabric stretched across the posts and sometimes with a wire support fence. The fence is installed along the downslope or sideslope perimeter of a disturbed area. Runoff passes through the openings in the fabric, while sediment is trapped on the uphill side. –

Sediment trap-A sediment trap is formed by excavating a pond or by placing an earthen embankment across a low area or drainage swale. It has an outlet or spillway made of large stones or aggregate. The trap retains the runoff long enough to allow the silt to settle out.

Sediment basin-A sediment basin is a settling pond with a controlled water release structure, e.g., a riser and pipe outlet with a gravel filter, which slows the release of runoff, the basin detains sediment-laden runoff from larger drainage areas long enough for most of the sediment to settle out.

Where it is attainable, a temporary or permanent sediment basin will be installed in any drainage location where more than 10 acres in the upstream drainage area are disturbed at one time. The sediment basin will provide at least 3,600 cubic feet of storage for every

acre of land which it drains (flows from upland areas that are undisturbed may be diverted around the basin). For drainage locations with 10 or fewer disturbed acres, sediment traps, filter fences, or equivalent measures will be installed along the downhill boundary of the construction site.

The Pollution Prevention Plan for project addresses the other potential pollutant sources that may exist on a construction site. These controls include proper disposal of construction site, waste disposal, compliance with applicable State or local waste disposal, sanitary sewer or septic system regulations, control of offsite vehicle tracking, and control of allowable non-storm water discharges, as explained in the following bullets:

• Ensure proper disposal of construction site waste materials.

• Treat or dispose of sanitary wastes that are generated onsite in accordance with State or local requirements. Contact the local government or State regulatory agency.

• Prevent offsite tracking of sediments and generation of dust. Stabilized construction entrances or vehicle washing racks should be installed at locations where vehicles leave site. Where dust may be a problem, implement dust control measures such as irrigation.

• Identify and prevent contamination of non-storm water discharges. Where non-storm water discharges allowed by the General Permit exist, they will be identified and steps will be taken to prevent contamination of these discharges.

Select Storm Water Management Controls:

Storm water management controls are constructed to prevent of control pollution of storm water .These controls include, but are not limited to, one or more of the following:

- Retention pond-A pond that holds runoff in a reservoir without release except by means of evaporation, infiltration, or emergency bypass.
- Detention pond-A pond that holds or detains runoff in a basin for a limited time releasing it slowly to allow most of the sediments to drop out.
- Infiltration measures-Measures that allow the percolation of water though the ground surface into subsurface soil. Specific measures include infiltration trenches, basins, and dry wells.
- Vegetated swales and natural depressions-Grass-lined ditches or depressions that transport runoff, filter sediments from the runoff, and enhance infiltration of the runoff. Selection of the most appropriate storm water management measures depends upon a number of factors associated with site conditions.

In addition to pollutant removal, the storm water management portion of the plan addresses velocity dissipation at discharge locations. Development usually means an increase in speed with which the site will drain because of the addition of paved areas, storm sewers, curbs, gutters, etc.. Velocity dissipation devices will be placed along the length of any outfall where the discharge from the developed area may erode the channel. The potential for erosion is primarily dependent upon the velocity of the storm water discharge and the type of material that lines the channel. One velocity dissipation device is riprap outlet protection, which is stone or riprap placed at the discharge point to reduce the speed of concentrated storm water flows.

Sequence of Major Activities

- Install downslope and sideslope perimeter controls before the land disturbing activity occurs.
- Do not disturb an area until it is necessary for construction to proceed.
- Cover or stabilize disturbed areas as soon as possible.
- Time construction activities to limit impact from seasonal climate changes or weather events. Delay construction of infiltration measures until the end of the construction project when upstream drainage areas have been stabilized.

Do not remove temporary perimeter controls until all upstream areas are finally stabilized.

RAIN WATER HARVESTING

The storm water disposal system for the premises shall be self-sufficient to avoid any collection/stagnation and flooding of water. Storm water drainage plan of the project is enclosed. The amount of storm water run-off depends upon many factors such as intensity and duration of precipitation, characteristics of the tributary area and the time required for such flow to reach the drains. The drains shall be located near the carriage way along either side of the roads. Taking the advantage of road camber, the rainfall run off from roads shall flow towards the drains. Storm water from various areas/shall be connected to adjacent drain by a pipe through catch basins. Therefore, it has been calculated to provide **11** rainwater harvesting pits at selected locations, which will catch the maximum run-off from the area.

1) Since the existing topography is congenial to surface disposal, a network of storm water pipe drains is planned adjacent to roads. All building roof water will be brought down through rain water pipes.
2) Proposed storm water system consists of pipe drain, catch basins and seepage pits at regular intervals for rain water harvesting and ground water recharging.
3) For basement parking, the rainwater from ramps will be collected in the basement storm water storage tank. This water will be pumped out to the nearest external storm water drain.
4) Peak Hourly rainfall of 45 mm/hr shall be considered for designing the storm water drainage system. Rain water harvesting has been catered to and designed as per the guideline of CGWA. At the bottom of the recharge well, a filter media is provided to avoid choking of the recharge bore. Design specifications of the rain water harvesting plan are as follows:
    - Catchments/roofs would be accessible for regular cleaning.

- The roof will have smooth, hard and dense surface which is less likely to be damaged allowing release of material into the water. Roof painting has been avoided since most paints contain toxic substances and may peel off.
- All gutter ends will be fitted with a wire mesh screen and a first flush device would be installed. Most of the debris carried by the water from the rooftop like leaves, plastic bags and paper pieces will get arrested by the mesh at the terrace outlet and to prevent contamination by ensuring that the runoff from the first 10-20 minutes of rainfall is flushed off.
- No sewage or wastewater would be admitted into the system.
- No wastewater from areas likely to have oil, grease, or other pollutants has been connected to the system.

Table-5: Rainwater Harvesting Calculation

S. No.	Type of Surface	Catchment's Area (m^2)	Runoff Coeff. [C]	Rainfall Intensity (I)	Discharge (Run Off) [Q=CIA] m^3/hr
1.	Rooftop Area	4543.008	0.9	45mm	183.99
2.	Green Area	14678	0.2	45mm	132.102
3.	Paved Area	9855.66	0.7	45mm	310.453
4.	Area under future development	16320.8953	0.2	45mm	146.88
	Total	**45397.5633**	**--**	**--**	**773.425 m^3**

Taking 20 minutes retention time, total volume of storm water = 773.425 x 0.33 = 255.23 say 255 m^3

Taking the effective diameter and depth of a Recharge pit 3.0 m and 3.3 m respectively,

Volume of a single Recharge pit ($\pi r^2 h$) = 3.14 × 1.5 × 1.5 × 3.3 = 23.31 m^3

Hence No. of pits required = 255 /23.31 = 10.93 Say 11 Pits

Total **11** no. of Rain Water Harvesting pits are being proposed for artificial rain water recharge within the project premises.

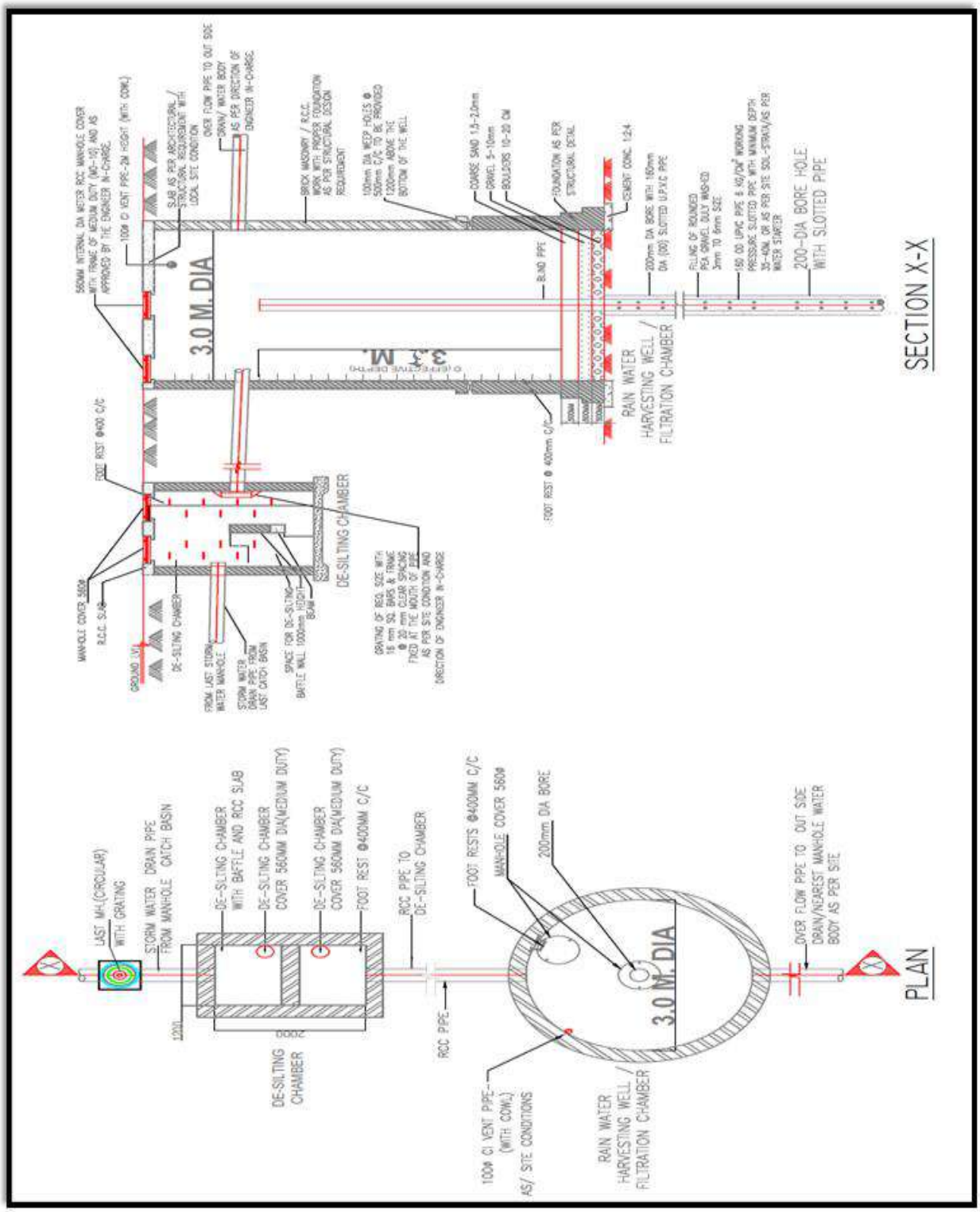


Figure-4: Typical Rain Water Harvesting Pit Design

VEHICLE PARKING FACILITIES

Adequate provision will be made for car/vehicle parking at the proposed project site. There shall also be adequate parking provisions for visitors so as not to disturb the traffic and allow smooth movement at the site.

Required Parking:

S. No.	Particulars	Rate of calculation	Proposed parking (ECS)
1.	Main Units	1.5 car per unit(169x1.5)	253.5
		Total	**254**
2.	Visitors	20% of total	51
		Grand Total	**305 ECS**

Proposed Parking:

S.No.	Particulars	Proposed parking (ECS)
1.	Stilt	14
2.	Covered surface parking	240
3.	Open Surface	84
	Total	**338**
	Upper basement	**129 two wheeler**
	Lower basement	**129 two wheeler**
	Total	**258 two wheeler**

Hence, adequate space for **338 ECS and 258 Two Wheelers parking bays** will be provided within the project premises.

POWER REQUIREMENT

The power supply shall be supplied by Dakshin Haryana Bijli Vitran Nigam (DHBVN). The connected load for the Group Housing Colony will be approx. 1853.825 KVA.

Details of D.G Sets: There is provision of 2 no. of DG sets having total capacity of 2250 KVA (i.e1x1500+1x750 KVA). The DG sets will be equipped with acoustic enclosure to minimize noise generation and adequate stack height for proper dispersion.

Stack height:

DG set Capacity for Power Backup During Power Failure (KVA)	Stack Height from tallest Roof Level(m)
1500	7.74
750	5.47

SOLID WASTE GENERATION

Solid waste would be generated both during the construction as well as during the operation phase. The solid waste expected to be generated during the construction phase will comprise of excavated materials, used bags, bricks, concrete, MS rods, tiles, wood etc. The following steps are proposed to be followed for the management of solid waste:

- Construction yards are proposed for storage of construction materials.
- The excavated material such as topsoil and stones will be stacked for reuse during later stages of construction
- Excavated top soil will be stored in temporary constructed soil bank and will be reused for landscaping of the proposed Group Housing Colony**.**
- Remaining soil shall be utilized for refilling / road work / rising of site level at locations/ selling to outside agency for construction of roads etc.

During the operation phase, waste will generate from service apartment, retail area, food court area and multiplex area. The solid waste generated from the project shall be mainly domestic waste and estimated **786 kg/day** approximately.

Table-7: Calculation of Solid Waste Generation

S. No.	Unit Type	Occupancy Type	Occupancy	Rate (kg/cap/day)	Solid waste generated(kg/d)
1.	**Convenient shopping**				
(a)	Fixed Population (Shopkeeper)	Mercantile	22	0.15	3.3
(b)	Floating Population (Visitors or Shoppers)		45	0.12	5.4
2.	**Residential Area**				
	Residential Population	Residential	1489	0.45	670.05
(a)	Visitors		149	0.15	22.35
3.	**Street Sweeping**		1705	0.05	85.25
	Total (1+2+3)	**--**	**--**		**786.35 say 786**

(*Source: For Waste Collection, Chapter 3, Table 3.6, Page no. 49, Central Public Health a& Environment Engineering Organization, Ministry of Urban Development, (Government of India, May 2000)*)

Following arrangements will be made at the site in accordance to Municipal Solid Wastes (Management and Handling) Rules, 2000 and amended Rules 2008.

1 Collection and Segregation of waste

1. Collection system will be provided for collection of domestic waste in colored bins.
2. Separate colored bins will be provided for dry recyclables and bio-degradable waste.
3. Adequate number of colored bins (Green and Blue bins for bio-degradable and non bio-degradable respectively) are proposed to be provided.
4. Litter bin will also be provided in open areas like parks etc.

2 Treatment of waste

Bio-Degradable wastes

1. OWC will be used for bio-degradable waste and the compost used as manure.
2. STP sludge is proposed to be used for horticulture as manure.
3. Horticultural Waste is proposed to be composted and will be used for gardening purposes.

Recyclable wastes

1. Grass Recycling – The cropped grass will be spread on the green area. It will act as manure after decomposition.
2. Recyclable wastes like paper, plastic etc. will be sold off to recyclers.

3. Hazardous wastes such as waste oil will be sold off to authorized recyclers. Buy back arrangement will be made for batteries.

3 Disposal

The Municipal Solid Waste Management will be conducted as per the guidelines of Municipal Solid Wastes (Management and Handling) Rules, 2000 and amended Rules, 2008. The inert non-recyclable wastes will be disposed through government approved agency for land filling. A solid waste management scheme is depicted in the following figure for the Group Housing Colony.

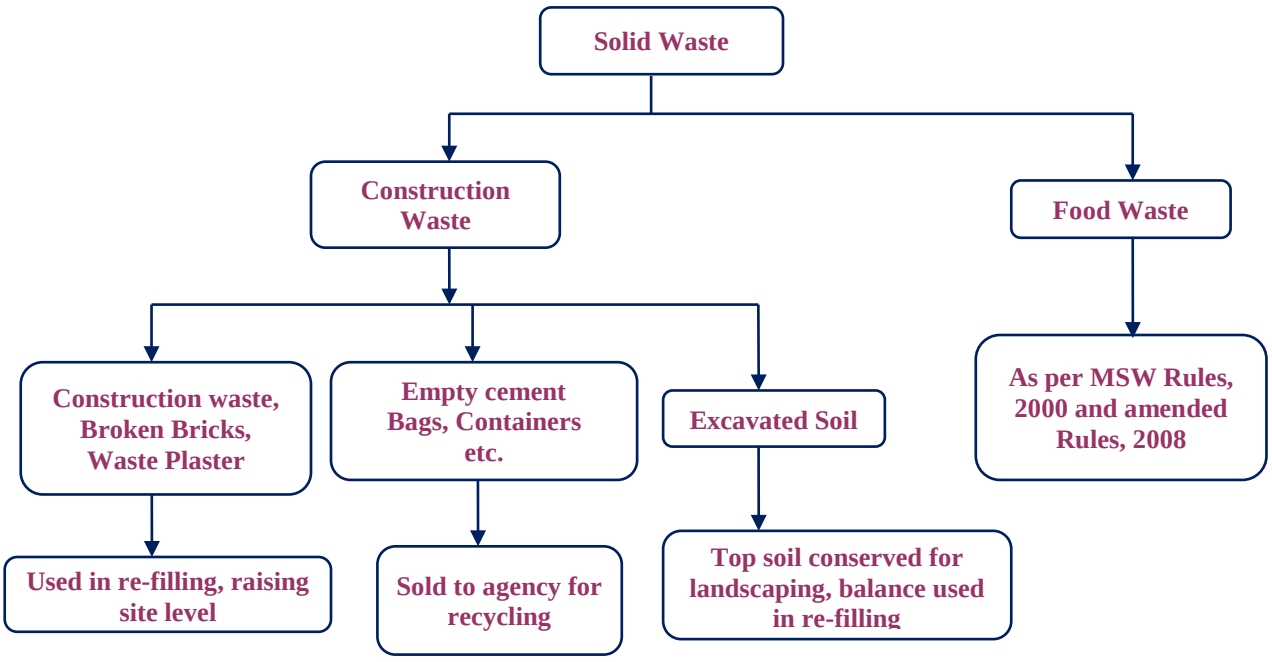


Figure-5: Solid Waste Management Scheme during Construction Phase

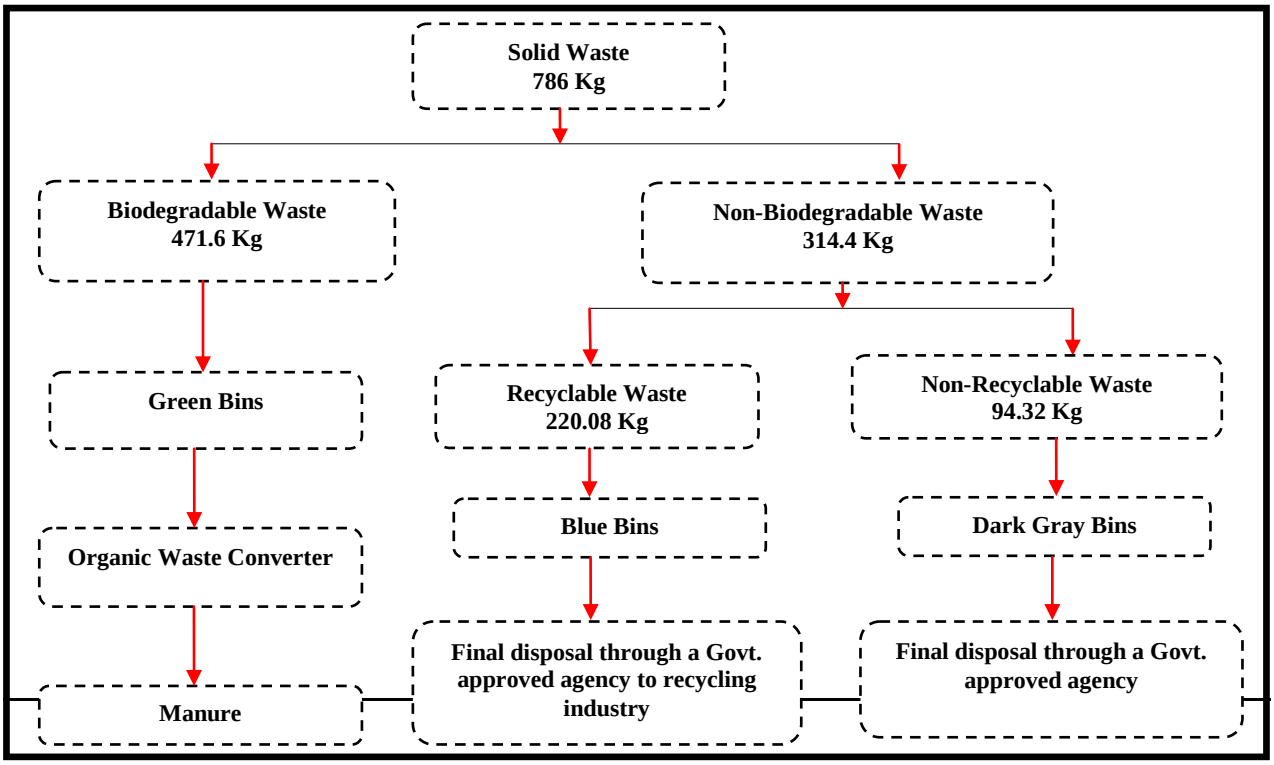


Figure-6: Solid Waste Management Scheme during Operation Phase

Organic waste management by automatic composting machine

- This is highly compact solution for organic and biodegradable/wet waste.
- Decentralized waste management solution aesthetically designed just take less than a single car park space for a 250 kg unit capable to treat wet waste generated from Dwelling Unit/houses.
- It reduces labour cost because of safe handling system, as no pathogens generated due to operations in high temperature thereby reducing health risks significantly.
- Very fast Waste to manure processing duration i.e. 1-3 days in comparison of traditional composting methods
- No transport cost as machine can operate at on site without any multi-step process by just provide input, plug and start operation

- Designed to keep rodents at bay so cleanest technology with negligible odour.
- Life span 25-30 years and AMC to ensure 24X7 days of uninterrupted operation
- Microbes present within incubator feed on the organic matter and convert in to compost.
- Moisture content and temperature automatically regulated using sensors at the bottom of the tank whenever organic waste is added
- Fully aerobic digestion is facilitated by the periodic and intermittent rotation of the mixing blades (no crushing/grinding) to maximize microbe activation
- The final decomposition is done by specialized thermophilic microbes which thrive in high temperature and high acidic or salty atmospheres.
- The final product in the form of compost can be used as manure in to landscape area management.
- The wet waste reduced in volume by 90 % and 100 kg waste converted in to 10-15 kg compost which can be removed in 10-15 days and expenditure to process per kg of waste is less than 01 INR
- The output compost from OWC can be mixed with soil in the ratio of 1:10 before using as manure
- Care to be taken to only moisten the waste and not make it dripping wet.
- Clear the compost once it reaches the red level because excess compost might spoil the mother by entering the motor assembled
- A buffer of 3-6 days on composting of pure garden waste necessarily to be taken due to direness of such waste in comparison of other food waste.

Technical Specification

Operation	Fully Automatic
Output	Organic Manure
Installation Requirements	Almost Plug and Play. Vent to be connected outdoors or storm water lines. No need of water inlet. Water may be required, only to clean the machine externals and any pilled waste.
Control Systems	PLC Based
Composting Tank	SS
Housing	M.S with Powder coating or SS panels as a variant

Input / Output	Door for waste input Separate door for getting out compost
Heater	Insulated oil heating chamber or Heating pads as a variant
Other Features	• Provided with waste overload function • Indicators for Power mode, heater & power saving mode • Stainless steel (SS304) shaft & mixing blades • Safety feature: Internal mixing blades automatically stop when hopper door is opened (in auto mode) • Can be run in auto mode or manual mode • Internal shaft turns and sends out compost, when the compost door is opened
Doors	Separate door for waste input & separate door for compost removal
Preferred Location for installation	Can be a garden, area adjacent to garden, car park, preferably with a connection to the drainage
Life of the Machine	Expected around 25 years
Capacity Available	1. 1250 Kg/day 2. 500 kg/day 3. 250 kg/day 4. 150 kg/day 5. 100 kg/day 6. 40 kg/day
Required Capacity	Ideally should be 20 % higher capacity of OWC to be selected as per estimated volume of wet/organic waste.
Proposed Capacity	20% more than OWC OWC=471.6 Kg/day Final OWC=471.6 +20% of 471.6=565.92 Kg/day **Total 2 nos. of Organic waste converter of capacity i.e. 500 Kg/day and 100Kg/day is proposed**.
500 kg/day (1batch=100Kg): Total No. of batches= 500/100=5 batches/day with each batch of 60 minutes duration. **100 kg/day (1batch=20Kg):** Total No. of batches= 100/20=5 batches/day with each batch of 60 minutes duration.	

1. Organic Waste

Organic waste, includes kitchen waste and garden waste generated from the dwelling units, will be treated by Organic waste compost machine on site. The compost is then used for landscaping on the site. The OWC machine will be placed at a designated area.

2. Type of Waste to be Treated

- Kitchen waste will be collected from units and lobbies of the Towers. This waste will be stored in garbage room which is located at the basement of the towers and further send to organic waste converter for treatment.

- Landscape waste is bio-degradable waste and will be composted in Organic waste converter. After post occupancy, horticulturist will collect garden waste and store in basement area, where organic waste converter is located. The treated organic waste will be used on site as manure for the landscape at the site.

3. Organic Waste Treatment System

OWC (Organic Waste Convertor) is an easy to use Decentralized Waste Management System to turn large amounts of organic waste such as kitchen waste, garden waste, food processing waste etc. into compost. The system is designed to eliminate odour and also to remove the problem of irritants such as flies and rats.
The OWC is a bio-mechanical Composting System which consists of the OWC machine, Curing System and a number of optional accessories for specific waste challenges. The machine takes organic waste and Bioculum as input and to create manure starter. In just one week of curing the processed waste is transformed into manure that can be used on site in gardens or agriculture.

4. Process Description of Organic Waste Converter

4.1 Organic waste collection

The organic waste from the kitchens in general contains food waste from the pre-cooking operation and post cooking remnant or excess food. Waste from garden containing prunings and small branches of the trees up to 2 cm diameter and/or bones, will be passed through the Shredder before it is placed into the container of the OWC.

4.2 Organic Waste Treatment

Organic waste fed into OWC is mixed, aerated & fluidized and crushed for 5 minutes. Then container of the OWC is opened and observations are noted. If the crushed material has more moisture content which can be seen by visual observation, then absorbing media is added into the container up to 20% of the weight of the waste depending on the moisture content in the waste. The odour control powder "Bioculum" is added at the dosage rate of 1 gm of Bioculum/kg of waste. Then the lid of the container is closed and again the OWC is operated for 5 minutes. After the completion of 5 minutes, the system will give audio-video indication by a beep--beep sound and indication of light. The lid is then opened and the processed material is observed. If it is turned to granular free flowing material, then lid is closed and the system is restarted. The bottom valve is opened for draining of the material. The raw compost is collected in the trolley/crates placed underneath of OWC System.

4.3 Curing of Raw Compost

For maturing and curing the raw compost, the material from the trolley is shifted in the crates which have perforation for aeration and then crates are placed in the curing system. Depending on the waste generation capacity, number of curing systems has to be proposed. Single Curing System has 100 kg/day capacity whereas Double Curing System has 200 kg/day capacity. After 10 days curing period, the compost from the tray can be used for application to the plants or any other mode of usage of manure in the agriculture.

Curing of raw compost in perforated crates



GREEN AREA

Total green area measures 14,678 m^2 i.e. 32.32 % of plot area which will be area under tree plantation within the residential and along the roads. Evergreen tall and ornamental trees and ornamental shrubs have been proposed to be planted inside the premises. Parks will also be developed by the management

Table-8: Green Area Calculation

S. No.	Description	Area (m^2)
1	Total Green Area Required @ 30% of the net plot area (45395.32 m^2)	13,618.6 m^2
2	Total Green area proposed @ 32.32 %	**14,678 m^2**
a.	Greenbelt Plantation Area @ 13.30%	**6,041 m^2**
b.	Avenue Plantation Area @ 2.94%	**1,337 m^2**
d.	Lawn Area @ 16.08%	**7,300 m^2**

Plantation and landscaping

Selection of the plant species would be done on the basis of their adaptability to the existing geographical conditions and the vegetation composition of the forest type of the region earlier found or currently observed.

Green Belt Development Plan

The plantation matrix adopted for the green belt development includes pit of 0.3 m × 0.3 m size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration.

Multi-layered plantation comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are for the green belt. In addition creepers will be planted along the boundary wall to enhance its insulation capacity.

Selection of Plant Species for Green Belt Development

The selection of plant species for the development depends on various factors such as climate, elevation and soil.

S. NO.	TREES		ORNAMENTAL SHRUBS	
	Botanical Name	**Common Name**	**Botanical Name**	**Common Name**
1.	*Cassia fistula*	Amaltas	*Delonix pulcherima*	Chhota Gulmohar
2.	*Delonix regia*	Gulmohar	*Plumeria alba*	Champa
3.	*Bauhinia purpurea*	Kachnar	*Largerstroemia indica*	Saoni
4.	*Grevillea robusta*	Silver Oak	*Nyctanthes arbortristis*	Harsingar
5.	Chorisia speciosa	Floss silk tree	*Cassia biflora*	Cassia
6.	*Jacaranda mimosifolia*	Neeli Gulmohar	*Nerium indicum*	Kaner
7.	*Largerstroemia flosreginae*	Indian Cork Tree	*Cassia augustifolia*	Senna
8.	*Tabebuia rosea*	Pink trumpet	*Cassia glauca*	Balloon Flower
9.	*Melia azadirachta*	White cedar	*Tabernaemontana divaricata*	Chandni
10.	*Polyalthia longifolia*	Ashok		
11.	*Azadirachta indica*	Neem		

DETAIL OF CONSTRUCTION MATERIALS

List of building materials being used at site:

1. Coarse sand
2. Fine sand
3. Stone aggregate
4. Stone for masonry work

5. Cement
6. Reinforcement steel
7. Pipe scaffolding (cup lock system)
8. Bricks
9. CLC fly ash blocks
10. Crazy (white marble) in grey cement
11. P.V.C. conduit
12. MDS, MCBs
13. PVC overhead water tanks
14. 2 1/2'' thick red color paver tiles
15. PPR (ISI marked)
16. PVC waste water lines
17. S.W. sewer line up to main sewer
18. PVC rain water down take
19. Stainless steel sink in kitchen
20. Joinery hardware- ISI marked

MATERIALS USED FOR CONSTRUCTION & THEIR U VALUES

S. No	Building Material Proposed with U & R Values	'R' Values (in Sq m. Deg C/ Watts)	'U' Values (in Watts/ Sq m. Deg C)	Solar Heat Gain Factor
1.	WALL Brick wall (230 mm thick), both side thick sand cement plaster (12-18mm) with insulation	3.60	0.27	0.45
2.	ROOF 200 mm RCC slab with mud phuska & clay tiles with 75 mm insulation	1.02	0.98	0.64

Source: ECBC, 2007

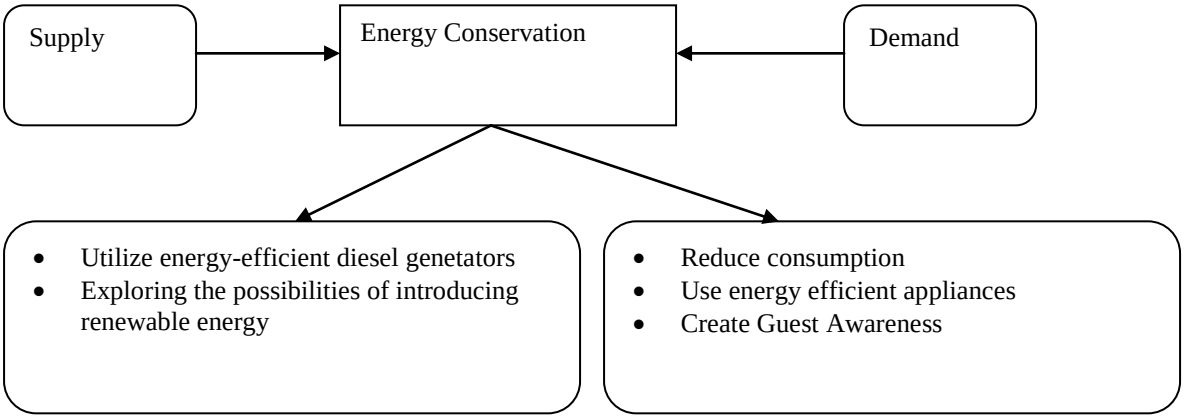
LIST OF MACHINERY USED DURING CONSTRUCTION

(i) Dumper
(ii) Concrete mixer with hopper
(iii) Excavator
(iv) Concrete Batching Plant

(v) Cranes
(vi) Road roller
(vii) Bulldozer
(viii) RMC Plant
(ix) Tower Cranes
(x) Hoist
(xi) Labor Lifts
(xii) Pile Boring Machines
(xiii) Concrete pressure pumps
(xiv) Mobile transit mixer

ENERGY CONSERVATION

Energy conservation program will be implemented through measures taken both on energy demand and supply.



Energy conservation will be one of the main focuses during the complex planning and operation stages. The conservation efforts would consist of the following:

❖ **Architectural design**

- Maximum utilization of solar light will be done.
- Maximize the use of natural lighting through design.
- The orientation of the buildings will be done in such a way that maximum daylight is available.
- The green areas will be spaced, so that a significant reduction in the temperature can take place.

❖ **Energy Saving Practices**

- Energy efficient lamps will be provided within the complex.

- Constant monitoring of energy consumption and defining targets for energy conservation.
- Adjusting the settings and illumination levels to ensure minimum energy used for desired comfort levels.

❖ **Behavioral Change on Consumption**

- Promoting resident awareness on energy conservation
- Training staff on methods of energy conservation and to be vigilant to such opportunities.

ENVIRONMENTAL MANAGEMENT SYSTEM AND MONITORING PLAN

For the effective and consistent functioning of the complex, an Environmental Management system (EMS) would be established at the site. The EMS would include the following:

❖ An Environmental management cell Environmental Monitoring
❖ Personnel Training
❖ Regular Environmental audits and Correction measures
❖ Documentation – standards operation procedures Environmental Management Plan and other records

ENVIRONMENTAL MANAGEMENT CELL

Apart from having an Environmental Management Plan, it is also to have a permanent organizational set up charged with the task of ensuring its effective implementation of mitigation measures and to conduct environmental monitoring.

Hierarchical Structure of Environmental Management Cell:

Normal activities of the EMP cell would be supervised by a dedicated person who will report to the site manager/coordinator of the Group Housing Colony. The hierarchical structure of suggested Environmental Management Cell is given in following Figure-7.

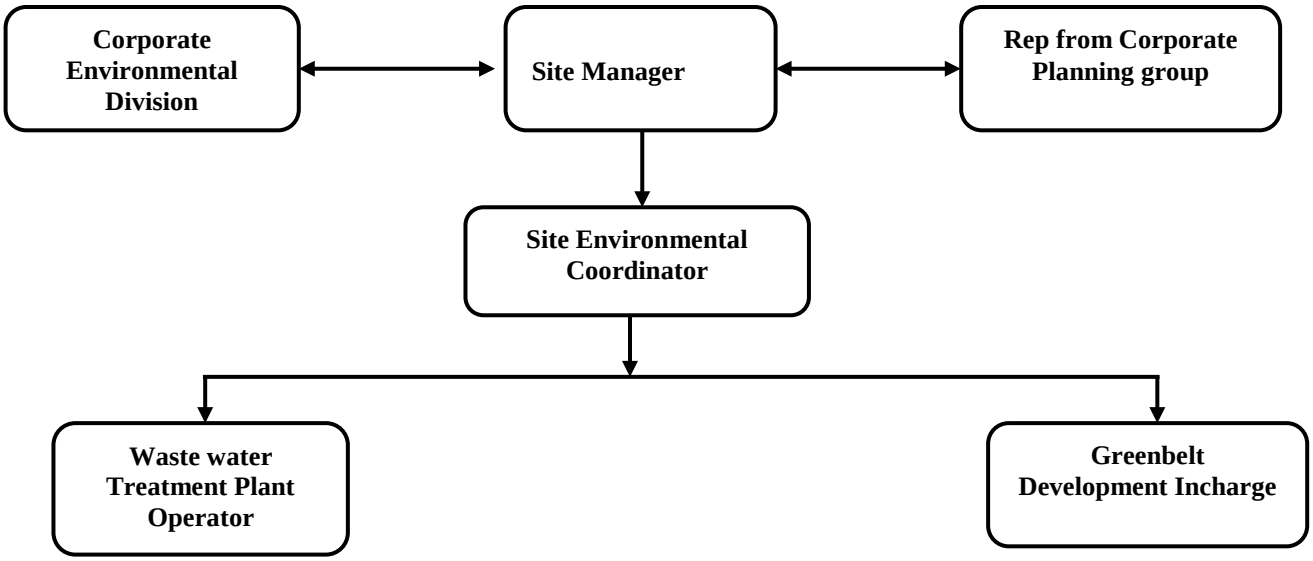


Figure-7: Environnent Management Cell Structure

ENVIRONMENTAL MONITORING

The purpose of environmental monitoring is to evaluate the effectiveness of implementation of Environmental Management Plan (EMP) by periodic monitoring. The important environmental parameters within the impact area are selected so that any adverse affects are detected and time action can be taken. The project proponent will monitor ambient air Quality, Ground Water Quality and Quantity, and Soil Quality in accordance with an approved monitoring schedule.

Table- 9: Suggested Monitoring Program for proposed Group Housing Colony

Monitoring	Frequency of Monitoring
Air & Stack: • Ambient Air Quality at appropriate location for $PM_{10,}$ $PM_{2.5}$, $SO_{2,}$ NO_x, HC • Stack emission for point sources PM, SO_2, NO_x, HC & CO	• Six monthly • Six monthly

Water & Wastewater: • Water Quality Monitoring for relevant parameters of IS – 10500 • Waste Water Quality (Treated & Untreated) for pH , TSS, Oil & Grease, • Waste water quality pH, TSS, oil & Grease. BOD, COD, MLSS, TKN & Phosphate.	• Six Monthly • Daily till stabilization of STP. • Weekly till one month then annually
Noise: - Day & Night level Noise Monitoring	• Six Monthly
Soil: • Soil Monitoring, Qualitative and quantitative testing/analysis to check the soil fertility, porosity, texture, water holding capacity etc.	• Six Monthly

Awareness and Training: Training and human resource development is an important link to achieve sustainable operation of the facility and environment management. For successful functioning of the project, relevant EMP would be communicated to:

Residents and Contractors: Residents must be made aware of the importance of waste segregation and disposal, water and energy conservation. The awareness can be provided by periodic Integrated Society meetings.

They would be informed of their duties.

Environmental Audits and Corrective Action Plans: To assess whether the implemented EMP is adequate, periodic environmental audits will be conducted by the project proponent's Environmental division. These audits will be followed by Correction Action Plan (CAP) to correct various issues identified during the audits.

ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan (EMP) would consist of all mitigation measures for each component of the environment due to the activities increased during the construction and operational phase of the project and these are discussed in later subsections.

The EMP is generally

- Prepared in accordance with the rules and requirements of the MoEF&CC and CPCB/ SPCB
- To ensure that the component of facilities are operated in accordance with the design

- A process that confirms proper operation through supervision and monitoring
- A system that addresses public complaints during construction and operation of the facilities and
- A plan that ensures remedial measures is implemented immediately.

The key benefits of the EMP are that it offers means of managing its environmental performance thereby allowing it to contribute to improved environmental quality. The other benefit includes cost control and improved relations with the stakeholders.

EMP includes four major elements:

- Commitment & Policy: The management will strive to provide and implement the Environmental Management Plan that incorporates all issues related to air, water, land and noise.
- Planning: This includes identification of environmental impacts, legal requirements and setting environmental objectives.
- Implementation: This comprises of resources available to the developers, accountability of contractors, training of operational staff associated with environmental control facilities and documentation of measures to be taken.
- Measurement & Evaluation: This includes monitoring, counteractive actions and record keeping.

It is suggested that as part of the EMP, a monitoring committee would be formed comprising of the site in-charge/coordinator, environmental group representative and project implementation team representative. The committee's role would be to ensure proper operation and management of the EMP including the regulatory compliance.

The components of the environmental management plan, potential impacts arising, out of the project and remediation measures are summarized below in Table-10.

Table-10: Summary of Potential Impacts and Remedial Measures

S. No.	Environmental components	Potential Impacts	Potential Source of Impact	Controls Through EMP & Design	Impact Evaluation	Remedial Measures
1.	Ground Water Quality	Ground Water Contamination	Construction Phase • Waste water generated from temporary labor tents.	• No surface accumulation will be allowed.	No significant impact as majority of labors would be locally deployed	
			Operation Phase • Discharge from the project	• Proponent will provide the STP to treat the discharge of Group Housing Colony.	No negative impact on ground water quality envisaged. Not significant.	
2.	Ground Water Quantity	Ground Water Depletion	Construction Phase • No use of ground water for construction	• STP treated water will be used for construction	No impact on ground water quantity is envisaged	
			Operation Phase • The source of water during operation phase is HUDA Supply.	• Rain water harvesting scheme. • Black and Grey water treatment and reuse. • Storm water	No significant impact on surface/ground water quantity envisaged.	In an unlikely event of non-availability of water supply, water will be brought using tankers.

				collection for water harvesting. • Percolation well to be introduced in landscape plan. • Awareness Campaign to reduce the water consumption		
3.	Surface Water Quality	Surface water contamination	Construction Phase • Surface runoff from site during construction activity.	• Silt traps and other measures such as additional on site diversion ditches will be constructed to control surface run-off during site development	No off-site impact envisaged as no surface water receiving body is present in the core zone.	
			Operation Phase • Discharge of domestic wastewater to STP.	• Domestic water will be treated in STP	No off-site impact envisaged	Excess of water will be used for irrigation purposes outside the project site after proper treatment. CPCB standards for usage of treated waste water for irrigation purposes will be followed.

4.	Air Quality	Dust Emissions	Construction Phase • All heavy construction activities	• Suitable control measures will be adopted for mitigating the $PM_{2.5}$ & PM_{10} level in the air as per air pollution control plan.	Not significant because dust generation will be temporary and will settle fast due to dust suppression techniques.	During construction phase the contractors are advised to facilitate masks for the labors. Water sprinklers will be used for suppression of dust during construction phase.
		Emissions of $PM_{2.5}$ & PM_{10}, SO_2, NO_x and CO	Construction Phase • Operation of construction equipment and vehicles during site development. • Running D.G. set (back up)	• Rapid on-site construction and improved maintenance of equipment	Not significant.	Regular monitoring of emissions and control measures will be taken to reduce the emission levels.
			Operation Phase • Power generation by DG Set during power failure • Emission from vehicular traffic	• Use of low sulphur diesel if available • Providing Footpath and pedestrian ways within the site for the residents • Green belt will be developed with	Not significant. DG set would be used as power back-up (approx 6 hours) No significant increase in	• Use of Personal Protective Equipment (PPE) like earmuffs and earplugs during construction activities. • Stack height of DG

			in use	specific species to help to reduce $PM_{2.5}$ & PM_{10} level • Use of equipment fitted with silencers • Proper maintenance of equipment	ambient air quality level is expected from the project's activities. There are no sensitive receptors located within the vicinity of site.	set above the tallest building as per CPCB standards
5.	Noise Environment					
			<u>Operation Phase</u> • Noise from vehicular movement • Noise from DG set operation	• Green Belt Development • Development of silence zones to check the traffic movement • Provision of noise shields near the heavy construction operations and acoustic enclosures for DG set. • Construction activity	No significant impact due to suitable width of Greenbelt.	

				will be limited to day time hours only • DG set rooms will be equipped with acoustic enclosures		
6.	Land Environment	Soil contamination	<u>Construction Phase</u> • Disposal of construction debris	Construction debris will be collected and suitably used on site as per the solid waste management plan for construction phase	No significant impact. Impact will be local, as waste generated will be reused for filling of low lying areas etc.	
			<u>Operation Phase</u> • Generation of municipal solid waste • Used oil generated from D.G. set	• It is that the solid waste generated will be managed as per MSW Rules, 2000 and amended Rules, 2008. • Collection, segregation, transportation and disposal will be done as per MSW	Since solid waste is handled by the authorized agency, waste dumping is not going to be allowed. Not significant.	

				Management Rules, 2000 and amended Rules, 2008 by the authorized agency • Used oil generated will be sold to authorized recyclers	Negligible impact.	
7.	Biological Environment (Flora and Fauna)	Displacement of Flora and Fauna on site	<u>Construction Phase</u> • Site Development during construction	• Important species of trees, if any, will be identified and marked and will be merged with landscape plan	The site has shrubs as vegetation	
			<u>Operation Phase</u> • Increase in green covered area	• Suitable green belts will be developed as per landscaping plan in and around the site using local flora	Beneficial impact.	
8.	Socio-Economic Environment		<u>Operation Phase</u> • Site operation	• Project will provide employment opportunities to the local people in terms of labor during construction and	Beneficial impact	

				service personnel (guards, securities, gardeners etc) during operations. • Providing quality-Integrated infrastructure.		
9.	Traffic Pattern	Increase of vehicular traffic	<u>Construction Phase</u> • Heavy Vehicular movement during construction	• Heavy Vehicular movement will be restricted to daytime only and adequate parking facility will be provided.	No negative impact.	
			<u>Operation Phase</u> • Traffic due to residents once the project is operational	• Vehicular movement will be regulated inside the project with adequate roads and parking lots in the colony.	No major significant impact as green belt will be developed which will help in minimizing the impact on environment.	

EMP FOR AIR ENVIRONMENT DURING CONSTRUCTION PHASE:

To mitigate the impacts of PM_{10} & $PM_{2.5}$ during the construction phase of the project, the following measures are recommended for implementation:

- A dust control plan
- Procedural changes to construction activities

Dust Control Plan

The most cost-effective dust suppressant is water because water is easily available on construction site. Water can be applied using water trucks, handled sprayers and automatic sprinkler systems. Furthermore, incoming loads could be covered to avoid loss of material in transport, especially if material is transported off-site.

Procedural Changes to Construction Activities

Idle time reduction: Construction equipment is commonly left idle while the operators are on break or waiting for the completion of another task. Emission from idle equipment tends to be high, since catalytic converters cools down, thus reducing the efficiency of hydrocarbon and carbon monoxide oxidation. Existing idle control technologies comprises of power saving mode, which automatically off the engine at preset time and reduces emissions, without intervention from the operators.

Improved Maintenance: Significant emission reductions can be achieved through regular equipment maintenance. Contractors will be asked to provide maintenance records for their fleet as part of the contract bid, and at regular intervals throughout the life of the contract. Incentive provisions will be established to encourage contractors to comply with regular maintenance requirements.

Reduction of On-Site Construction Time: Rapid on-site construction would reduce the duration of traffic interference and therefore, will reduce emissions from traffic delay.

EMP FOR AIR ENVIRONMENT DURING OPERATION PHASE:

To mitigate the impacts of pollutants from DG set and vehicular traffic during the operational phase of the Colony, following measures are recommended for implementation:

- DG set emission control measures
- Vehicular emission controls and alternatives
- Greenbelt development

Diesel Generator Set Emission Control Measures

Adequate stack height will be maintained to disperse the air pollutants generated from the operation of DG set to dilute the pollutants concentration within the immediate vicinity. Hence, no additional emission control measures have been suggested.

Vehicle Emission Controls and Alternatives

During construction, vehicles will be properly maintained to reduce emission. As it Group Housing Colony, vehicles will be generally having "PUC" certificate.

Footpaths and Pedestrian ways: Adequate footpaths and pedestrian ways would be provided at the site to encourage non-polluting methods of transportation.

Greenbelt Development

Increased vegetation in the form of greenbelt is one of the preferred methods to mitigate air and noise pollution. Plants serve as a sink for pollutants, act as a barrier to break the wind speed as well as allow the dust and other particulates to settle on the leaves. It also helps to reduce the noise level at large extent. Table given in green area indicates various species of the greenbelt that can be used to act as a barrier.

EMP FOR NOISE ENVIRONMENT DURING CONSTRUCTION PHASE:

To mitigate the impacts of noise from construction equipment during the construction phase on the site, the following measures are recommended for implementation.

Time of Operation: Noisy construction equipment would not be allowed to use.

Job Rotation and Hearing Protection: Workers employed in high noise areas will be employed on shift basis. Hearing protection such as earplugs/muffs will be provided to those working very close to the noise generating machinery.

EMP FOR NOISE ENVIRONMENT DURING OPERATION PHASE:

To mitigate the impacts of noise from diesel generator set during operational phase, the following measures are recommended:

- Adoption of Noise emission control technologies
- Greenbelt development

Noise Emission Control Technologies

It would be ensured that the manufacturer provides acoustic enclosure as an integral part along with the diesel generators set. Further, enclosure of the services area with 4 m high wall will reduce noise levels and ensure that noise is at a permissible limit for resident of the site and surrounding receptors.

EMP FOR ECOLOGICAL ENVIRONMENT DURING CONSTRUCTION PHASE:

Construction activity changes the natural environment. But Group Housing Colony also creates a built environment for its inhabitants. The project requires the implementation of following choices exclusively or in combination.

- Restriction of construction activities to defined project areas, which are ecologically sensitive
- Restrictions on location of temporary labor tents and offices for residents near the project area to avoid human induced secondary additional impacts on the flora and fauna species
- Cutting, uprooting, coppicing of trees or small trees if present in and around the project site for cooking, burning or heating purposes by the labors will be prohibited and suitable alternatives for this purpose will be made
- Along with the construction work, the peripheral green belt would be developed with suggested native plant species, as they will grow to a full-fledged covered at the time of completion.

EMP FOR ECOLOGICAL ENVIRONMENT DURING OPERATION PHASE:

Improvement of the current ecology of the project site will entail the following measures:

- Plantation and Landscaping
- Green Belt Development
- Park and Avenue Plantation

The section below summarizes the techniques to be applied to achieve the above objectives:

Plantation and landscaping

Selection of the plant species would be done on the basis of their adaptability to the existing geographical conditions and the vegetation composition of the forest type of the region earlier found or currently observed.

Green Belt Development Plan

The plantation matrix adopted for the green belt development includes pit of 0.3 m × 0.3 m size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration.

Multi-layered plantation comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are for the green belt. In addition creepers will be planted along the boundary wall to enhance its insulation capacity.

Selection of Plant Species for Green Belt Development

The selection of plant species for the development depends on various factors such as climate, elevation and soil. The plants would exhibit the following desirable characteristics in order to be selected for plantation

1. The species should be fast growing and providing optimum penetrability
2. The species should be wind-firm and deep rooted
3. The species should form a dense canopy
4. As far as possible, the species should be indigenous and locally available
5. Species tolerance to air pollutants like SO_2 and NO_x should be preferred
6. The species should be permeable to help create air turbulence and mixing within the belt
7. There should be no large gaps for the air to spill through
8. Trees with high foliage density, leaves with larger leaf area and hairy on both the surfaces
9. Ability to withstand conditions like inundation and drought
10. Soil improving plants (Nitrogen fixing rapidly decomposable leaf litter)
11. Attractive appearance with good flowering and fruit bearing
12. Bird and insect attracting tree species
13. Sustainable green cover with minimal maintenance.

Parks and Avenue Plantation

- Parks and gardens maintained for recreational and ornamental purposes will not only improve the quality of existing ecology at the project site but also will improve the aesthetic value.
- Avenue Plantation
    1. Trees with colonial canopy with attractive flowering
    2. Trees with branching at 7 feet and above
    3. Trees with medium spreading branches to avoid obstruction to the traffic
    4. Fruit trees to be avoided because children may obstruct traffic and general movement of public

EMP FOR SOCIO-ECONOMIC ENVIRONMENT:

The social management plan has been designed to take proactive steps and adopt best practices, which are sensitive to the socio-cultural setting of the region. The Social Management Plan Group Housing Colony focuses on the following components:

- **Income Generation Opportunity during Construction and Operation Phase**
  The project would provide employment opportunity during construction and operation phase. There would also be a wide economic impact in terms of generating opportunities for secondary occupation within and around the complex. The main principles considered for employment and income generation opportunities are out lined below:
  - Employment strategy will provide for preferential employment of local people
  - Conditions of employment would address issues like minimum wages and medical care for the workers. Contractors would be required to abide to employment priority towards locals and abide by the labor laws regarding standards on employee terms and conditions.

- **Improved Working Environment for Employees**
  The project would provide safe and improved working conditions for the workers employed at the facility during construction and operation phase. With the ambience and facilities provided, the complex will provide a new experience in living and recreations. Following measures would be taken to improve the working environment of the area:
  - Less use of chemicals and biological agents with hazard potential
  - Developing a proper interface between the work and the human resource through a system of skill improvement
  - Provision of facilities for nature care and recreation e.g. indoor games facilities
  - Measures to reduce the incidence of work related injuries, fatalities and diseases
  - Maintenance and beautifications of the complex and the surrounding road.

Reference No. - QCI/NABET/ENV/ACO/16/05/154 Annexure - I

Date – May 16, 2016

Name of organization: M/s Vardan Environet

Accreditation under NABET Scheme for EIA Consultant Organization

Scope of accreditation

Sl. No.	Sector No. as NABET Scheme	Name of Sector	Cat.
1	1	Mining (Open cast and Underground)	A
2	8	Metallurgical industries (ferrous & non ferrous)- both primary & secondary	A
3	16	Chemical Fertilizers	A
4	21	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	A
5	22	Distilleries	A
6	24	Pulp & paper industry excluding manufacturing of paper from wastepaper and manufacture of paper from ready pulp without bleaching	A
7	25	Sugar industry	B
8	34	Highways, Railways, transport terminals, mass rapid transport system	B
9	36	Common effluent treatment plants (CETPs)	B
10	37	Common municipal solid waste management facility (CMSWMF)	B
11	38	Building and large construction projects including shopping malls, multiplexes, commercial complexes, housing estates, hospitals, institutions	B
12	39	Townships and Area development Projects	B

14/05/16

(A.K Jha)
Senior Director

National Accreditation Board
for Education and Training
(Member of Pacific Accreditation Cooperation)

QCI/NABET/EIA/ACO/16/11/0206 15 November, 2016

Vardan Environet
D-142, Ground Floor, Sushant Lok-III,
Golf Course Ext. Road
Sec-57, Gurgaon -122001, Haryana
(Kind Attention: Mr. R.S Yadav)

Sub: Validity of Accreditation as EIA Consultant organisation- Vardan Environet, Gurgaon.

Dear Sir,

This has reference to the validity of accreditation of your organisation under QCI-NABET EIA Scheme.

As you are aware, the process of re-accreditation of **M/s Vardan Environet, Gurgaon** has already been initiated after submission of application on July 20, 2016. While the re-accreditation application is under process, the accreditation to **Vardan Environet, Gurgaon** is hereby extended by 6 months till May 07, 2017 or the re-accreditation date whichever is earlier.

The above extension is subject to the submission of required information documents related to re-accreditation to NABET on time.

You are requested, not to use this letter after expiry of the above stated date.

With best regards,

15/11/2016

A.K Jha
Senior Director | NABET

vatika
creating lasting value

Registered Office
Vatika Limited
Vatika Triangle, 4th Floor
Sushant Lok, Phase I, Block A
Mehrauli - Gurgaon Road
Gurgaon 122 002, Haryana
INDIA

T 91.124.417 777
F 91.124.417 700
E info@vatikagroup.com

www.vatikagroup.com

CERTIFIED TRUE COPY OF RESOLUTION PASSED BY THE BOARD OF DIRECTORS OF VATIKA LIMITED IN THEIR MEETING HELD ON APRIL 16, 2015 AT THE REGISTERED OFFICE OF THE COMPANY SITUATED AT 4TH FLOOR, VATIKA TRIANGLE MG ROAD, GURGAON-HARYANA 122002

AUTHORIZATION IN THE MATTERS RELATED TO LICENSES FOR VARIOUS REAL ESTATE PROJECTS OF THE COMPANY

"**RESOLVED THAT** in supersession to all earlier resolutions passed by the Board of Directors of the Company in this regard, Mr. Gautam Bhalla, Managing Director of the Company, or Mr. Ranbir Singh, Vice President-Licensing and Land Records or Mr. Virender Dhar, General Manager - Licensing and Land Records be and are hereby severally authorized, for and on behalf of the Company, to prepare, make, sign and submit routine communication(s), letter(s) and related paper(s) and to represent the Company before the offices of State Expert Appraisal Committee, State Environment Impact Assessment Authority, Ministry Of Environment and Forest, Haryana State Pollution Control Board, Forest Department Haryana, Central Ground Water Authority, Central Ground Water Board, Dakshin Haryana Bijli Vitran Nigam, Haryana Vidhyut Prasaran Nigam Limited, Haryana Urban Development Authority, Director Town and Country Planning, Mining and Geology Department, Municipal Corporation Gurgaon, Irrigation Department Haryana, Public Health Engineering Department, Police Commissioner Gurgaon, Chief Medical Officer Gurgaon and Government of Haryana, for the matters related to licenses of the various Real Estate projects of the Company.

RESOLVED FURTHER THAT Mr. Gautam Bhalla, Managing Director of the company, be and is hereby also authorized to further delegate the above said powers and authorize such person(s) for this purpose as may be considered appropriate by them from time to time to undertake all acts, deeds and things to carry out transactions in this regard, by way of Letter of Authority or Power of Attorney and / or any other instrument.

RESOLVED FURTHER THAT this authorization shall remain in force unless rescinded or modified by the Board of Directors."

Certified to be true
For Vatika Limited

Gaurav Arora

Gaurav Arora
Company Secretary

vatika
creating lasting value

Registered Office
Vatika Limited
Vatika Triangle, 4th Floor
Sushant Lok, Phase I, Block A
Mehrauli - Gurgaon Road
Gurgaon 122 002, Haryana
INDIA

T 91.124.4177 777
F 91.124.4177 700
E info@vatikagroup.com

www.vatikagroup.com

LIST OF DIRECTORS OF VATIKA LIMITED

(AS ON NOVEMBER 09, 2015)

S. No	Name of Director	Designation	DIN	Residential Address
1	Mr. Anil Bhalla	Whole Time Director	00005049	Farm No. 4, Hyde Park, Bandh Road, Sultanpur, Mehrauli, New Delhi-110030, India
2	Mr. Gautam Bhalla	Managing Director	00005043	Farm No. 4, Hyde Park, Bandh Road, Sultanpur, Mehrauli, New Delhi-110030, India
3	Mr. Gaurav Bhalla	Director	00005060	Farm No. 4, Hyde Park, Bandh Road, Sultanpur, Mehrauli, New Delhi-110030, India
4	Mr. Alok Sama	Director	01085830	28, Argyll Road, London - W8 7B G,United Kingdom
5	Mr. Som Krishna	Director	07194833	A603, BEAUMONDE, APPASAHEB MARATHE MARG,, PRABHADEVI, MUMBAI, 400025, Maharashtra, INDIA
6.	Ms. Deepa Sibbal	Director	07112357	84, Hemkunt Colony, First Floor, New Delhi, 110048
7.	Mr. Vineet Taing	Director-Independent	06712954	2/6, Jasmine Street, IRIS, Vatika City, Sector-49, Sohna Road, Gurgaon, 122101
8.	Mr. Manu Raj Singh	Director-Independent	06736570	H.No. 207, Heritage City, Block-18, Gurgaon, 122002

Certified to be true
For Vatika Limited

Gaurav Arora
Company Secretary
Membership no:F6350

vatika
creating lasting value

Corporate Office
Vatika Limited
Vatika Triangle, 7th Floor
Sushant Lok, Phase I, Block A
Mehrauli - Gurgaon Road
Gurgaon 122 002, Haryana
INDIA

T 91.124 4177 777
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E info@vatikagroup.com

www.vatikagroup.com

To
The Secretary
State Environment Impact Assessment Authority
Pryatan Bhawan Sector-2,
Panchkula, Haryana

Subject: Authorization Letter for consultant

Dear Sir,

Our company, M/s Vatika Limited having its Corporate Office at Vatika Triangle, Shushant Lok-1, Block A, Mehrauli Gurgaon Road, Gurgaon 122002 is going to construct a Group Housing Colony project being developed by M/s Vatika Limited on land measuring 11.218 acres located at Village Shikohpur, Sector-82 A, Gurgaon, Haryana.

We are appointing **M/s Vardan Environet**, having its registered office at **D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon, Haryana** as our environmental consultant and **Mr. SK Sharma** and **Mr. RS Yadav and Mr. Aman Sharma** are hereby authorized as the representatives for all matters related to this case from SEIAA and SEAC including submission of all documents and shortcomings to SEIAA, presentation before SEAC and collecting of final EC from SEIAA.

Thanking You

For **M/s Vatika Limited**

(Authorized Signatory)

Registered Office
Vatika Limited
Flat No. 631, A, 6th Floor

FORM LC-V
(See Rule 12)
HARYANA GOVERNMENT
TOWN AND COUNTRY PLANNING DEPARTMENT

LICENCE NO. 22. OF 2011

1. This Licence has been granted under the Haryana Development and Regulation of Urban Areas Act, 1975 & the Rules 1976, made there under to M/s Stanway Developers Pvt. Ltd, M/s Mandell Developers Pvt. Ltd. M/s Sahar Land and Housing Pvt. Ltd. Sh. Karan Singh S/o Sh. Harnarayan, Sh. Ram Mehar S/o Ram Parsad, Sh. Meer Singh S/o Sh. Kanhi, Sh. Jagmal S/o Sh. Hardev, C/o M/s Vatika Limited, 7th Floor, Vatika Triangle, Sushant Lok I, Block A , Gurgaon to develop a Residential Group Housing Colony on the land measuring 11.218 acre falling on the revenue estates of village Shikohpur, Sector-82 A, Tehsil and District Gurgaon.
2. The particular of the land wherein the aforesaid colony is to be set up are given in the Schedule annexed hereto and duly signed by the Director General, Town & Country Planning, Haryana.
3. The Licence is granted subject to the following conditions:
   a) That the Group Housing Colony is laid out to conform to the approved layout plan and development works are executed according to the designs and specifications shown in the approved plan.
   b) That the conditions of the agreements already executed are duly fulfilled and the provisions of Haryana Development and Regulation of Urban Areas Act, 1975 and the Rules 1976 made there under are duly complied with.
   c) That the demarcation plan of the colony area is submitted before starting the development works in the colony for the approval of zoning plan.
4. That the licencee shall construct the portion of service road forming part of licenced area at his own cost and will transfer the same free of cost to the Government along with area falling in Green belt.
5. That the portion of Sector/Master plan road which shall form part of the licenced area shall be transferred free of cost to the Government in accordance with the provisions of Section 3(3) (a) (iii) of the Haryana Development and Regulation of Urban Areas Act, 1975.
6. That licencee shall has no objection to the regularization of the boundaries of the licence through give and take with the land that HUDA is finally able to acquire in the interest of planned development and integration services. The decision of the competent authority shall be binding in this regard.
7. That the licencee shall not give any advertisement for sale of shops/flat/floor in colony before the approval of layout plan/building plans.
8. That licencee shall obtain approval/NOC from Competent Authority to fulfill the requirement of notification dated 14.09.2006 of Ministry of Environment & Forest, Govt. of India before starting the development works of the colony.
9. That the licencee will use only CFL fittings for internal as well as for campus lighting in the residential colony.
10. That licencee will convey the 'Ultimate Power Load requirement' of the project to the concerned Power Utility, with a copy to the Director with in two month period from date of grant of license to enable provision of site in license land for Transformers/Switching Stations/Electric Sub-stations as per the norms prescribed by the power utility in the zoning plan of the project.
11. That development /construction cost of 24m/18m/15m wide major internal roads is not included in the EDC rates and you shall pay the proportionate cost for acquisition of land along with the construction cost of the same as and when finalized and demanded by DGTCP, Haryana.
12. The licence is valid up to 23-3-2015.

(T.C.GUPTA, IAS)
Director General
Town & Country Planning
Haryana, Chandigarh.
Email: - tcphry @ gmail.com

Chandigarh the Dated: 24-3-2011.

Endst.No.5DP-V-2011/ LC-2409/ 3720 Dated: 25-3-11

A copy along with a copy of schedule of land is forwarded to the following for information and necessary action:-

1. M/s Stanway Developers Pvt. Ltd, M/s Mandell Developers Pvt. Ltd. M/s Sahar Land and Housing Pvt. Ltd. Sh. Karan Singh S/o Sh. Harnarayan, Sh. Ram Mehar S/o Ram Parsad, Sh. Meer Singh S/o Sh. Kanhi, Sh. Jagmal S/o Sh. Hardev, C/o M/s Vatika Limited, 7th Floor, Vatika Triangle, Sushant Lok I, Block A , Gurgaon along with a copy of agreement LC-IV and Bilateral agreement.
2. Chairman, Haryana State Pollution Control Board, Sector-6, Panchkula.
3. Chief Administrator, HUDA, Panchkula.
4. Chief Administrator, Housing Board Haryana, Sector 6, Panchkula along with copy of Agreements.
5. Managing Director, HVPN, Planning Directorate, Shakti Bhawan, Sector-6, Panchkula.
6. Joint Director, Environment Haryana-Cum-Secretary, SEAC, Pryatan Bhawan, Sector-2, Panchkula.
7. Addl. Director, Urban Estates, Haryana, Panchkula.
8. Administrator, HUDA, Gurgaon.
9. Chief Engineer, HUDA, Panchkula
10. Superintending Engineer, HUDA, Gurgaon along with a copy of agreement.
11. Senior Town Planner, M. Cell, Sector-8C, Chandigarh along with a copy of agreements.
12. Senior Town Planner (Enforcement) Haryana, Chandigarh.
13. Senior Town Planner, Gurgaon. He will ensure that the colonizer shall obtain approved/ NOC as per condition No.8 above before starting the Development works.
14. Land Acquisition Officer, Gurgaon.
15. District Town Planner, Gurgaon along with a copy of agreement.
16. Chief Accounts Officer, Monitoring Cell, along with a copy of agreements.
17. Accounts Officer 0/o Director, Town & Country Planning, Haryana, Chandigarh along with a copy of agreement.

(Vijay Kumar)
District Town Planner (HQ)
For Director General, Town and Country Planning,
Haryana Chandigarh.

TO BE READ WITH LICENCE NO. 22. OF 2011

1 **Detail of land owner by M/s Stanway Developers (P) Ltd. 1/2 Share, Karan Singh S/o Harnarayan 1/2 Share Distt. Gurgaon**

Village	Khasra No.	Area B	--	B	
Sikohpur	147	2	--	0	
	148	1	--	8	
	149	0	--	12	
	150	2	--	0	
	162	2	--	4	
	Total	**8**		**4**	**Or 5.125 Acres**

2 **M/s Mandell Developers Pvt. Ltd, 78/2420 Share M/s Stanway Developers Pvt. Ltd. 1812/2420 Share M/s Sahar Land & Housing Pvt. Ltd. 159/2420 Share Ram Mehar S/o Ramparsad 159/2420 Share, Meer Singh S/o Kanhi 106/2420 Share, Jagmal S/o Hardev 106/2420 Share,**

Village	Khasra No.	Area B	B	
Sikohpur	57	0	18	
	58/1	0	13	
	59/2	0	11	
	60	2	5	
	61	1	14	
	Total	**6**	**1**	**Or 3.781 Acres**

3 **M/s Mandell Developers Pvt. Ltd, 131/4145 Share M/s Stanway Developers Pvt. Ltd. 3219/4145Share M/s Sahar Land & Housing Pvt. Ltd. 172/4145 Share, Ram Mehar S/o Ramparsad 267/4145 Share, Meer Singh S/o Kanhi 178/4145 Share, Jagmal S/o Hardev 178/4145 Share,**

Village	Khasra No.	Area B	B	
Sikohpur	152	0	8	
	153	0	8	
	154	0	8	
	155	0	13	
	156	1	9	
	157min	0	8	
	Total	**3**	**14**	**Or 2.312 Acres**

Grand Total	**11.218 Acres**

Director General
Town & Country Planning
Haryana, Chandigarh

Regd.

DIRECTORATE OF TOWN & COUNTRY PLANNING, HARYANA

SCO No. 71-75, 2nd Floor, Sector -17 C, Chandigarh
Phone: 0172-2549349, Email: tcpharyana@gmail.com, www.tcpharyana.gov.in

Memo No: LC-2409/2015/ 3050 **Dated:** 15/10/15

To

Shiv Ganesh Buildtech Pvt. Ltd.,
C/o Vatika Ltd.,
7th Floor, Vatika Triangle,
Sushant Lok-I Block,
Gurgaon.

Subject: **Renewal of Licence No. 22 of 2011 dated 24.03.2011 granted for setting up of Group Housing Colony over an area measuring 11.218 acres in the revenue estate of village Sikhopur, Sector-82-A, Gurgaon Manesar Urban Complex –Shiv Ganesh Buildtech Pvt. Ltd. in collaboration with Vatika Ltd.**

Please refer your letter dated 12.05.2015 on the matter cited as subject above.

1. Licence No. 22 of 2011 dated 24.03.2011 granted vide Endst. No. 3720-36 dated 25.03.2011 for setting up of Group Housing Colony over an area measuring 11.218 acres in the revenue estate of village Sikhopur, Sector-82A, Gurgaon Manesar Urban Complex is hereby renewed upto 23.03.2017 on the terms and conditions laid down therein.
2. It is further clarified that this renewal will not tantamount to certification on your satisfactory performance entitling you for renewal of licence for further period and you will get the licences renewed upto the period till the final completion of the colony is granted.
3. You shall get the approval of zoning plan of the project within a period of one month from the date of issuance of renewal of licence and submit the building plans within one month from the date of approval of zoning plan.
4. You shall complete the construction of all the community buildings with the period of 4 years from the date of amendment of Section-3 of Act No. 8 of 1975 i.e. 03.04.2012, which may be extended for further 2 years with the permission of Director for the reasons to be recorded in writing.
5. You shall submit the service plan estimates for approval within a period of two months from the date of approval of building plans.
6. You shall made substantial progress in the development/construction work during the current validity period of the licence and shall submit progress report in the office of STP, Gurgaon.
7. You shall abide by the policy dated 16.08.2013 for allotment of EWS flats and get the offence compounded regarding non-allotment of EWS flats within the prescribed time frame.
8. The applicant shall get a NOC from the concerned authority before grant of occupation certificate and part completion/completion certificate to the effect that the electrical infrastructure laid at site conforms to the design and specification as approved by the public utility.

9. The Bank Guarantees on account of IDW is valid upto 23.02.2017. The applicant shall submit the revalidated Bank Guarantee, one month before its expiry.

(Arun Kumar Gupta, IAS),
Director General,
Town and Country Planning,
Haryana, Chandigarh.

Endst. No. LC-2409/2015/ **Dated :**

A copy is forwarded to the following for information and necessary action:-

i. Chief Administrator, HUDA, Panchkula.
ii. Chief Engineer, HUDA, Panchkula.
iii. Senior Town Planner, Gurgaon.
iv. District Town Planner, Gurgaon.
v. Chief Account Officer O/o DGTCP, Chandigarh.
vi. District Town Planner (HQ), PPS with a request to update the status on website.

(Babita Goyal)
Assistant Town Planner (HQ)
O/o Director General, Town & Country Planning
Haryana, Chandigarh.

ORDER

1. Whereas, Licence No. 22 of 2011 dated 24.03.2011 has been granted to Stanway Developers Pvt. Ltd. (changed to Shiv Ganesh Buildtech Pvt. Ltd.) and others in collaboration with Vatika Ltd. for setting up of Group Housing Colony over an area measuring 11.218 acres in the revenue estate of Village Sikhopur, Sector-82-A, Gurgaon Manesar Urban Complex under the provisions of the Haryana Development and Regulation of Urban Areas Act, 1975. As per terms & conditions of the licence and of the agreement executed on LC-IV, the licencee is required to comply with the provisions of the Haryana Development and Regulation of Urban Areas Act, 1975 and its Rules, 1976 thereof.

2. Accounts Division of the Directorate has conducted an audit and it has been noticed that the licencee had not complied with the provisions of Rule-24, 26(2), 27 & 28 of the Haryana Development and Regulation of Urban Areas Rules, 1976 upto 31.03.2015. The licencee vide letter dated 18.08.2015 submitted a request to compound the offence of earlier not complying with the provisions of Rule-24, 26(2), 27 & 28 of the Haryana Development and Regulation of Urban Areas Rules, 1976.

3. The Government vide Memo No. PH-68/2012/5138/2012-2TCP has prescribed the composition rates for compounding the offence of non compliance of Rule-24, 26(2), 27 & 28. As per these composition rates, the composition fee worked out to be ₹ 9,17,000/-. The licencee vide DD No. 068642 dated 18.08.2015 has deposited the composition fee of ₹ 9,17,000/-.

4. In view of above, in exercise of power conferred under Section 13(1) of the Haryana Development and Regulation of Urban Areas Act, 1975, I hereby order to compound the offence of earlier not complying with the provisions of Rule-24, 26(2), 27 & 28 of the Haryana Development and Regulation of Urban Areas Rules, 1976.

(Arun Kumar Gupta, IAS),
Director General,
Town and Country Planning,
Haryana, Chandigarh.

Endst. No. LC-2409/2015/ 30157- 30158 Dated: 15/10/15

A copy is forwarded to the following for information and necessary action:-

1. Chief Accounts Officer O/o Director General, Town and Country Planning, Haryana, Chandigarh.
2. Shiv Ganesh Buildtech Pvt. Ltd., C/o Vatika Ltd., 7th Floor, Vatika Triangle, Sushant Lok-I Block, Gurgaon.

(Babita Goyal)
Assistant Town Planner (HQ)
O/o Director General, Town & Country Planning,
Haryana, Chandigarh.

भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

e. Only use of oil fired or electric fired furnace is permissible, within 8 KM of the Aerodrome Reference Point.

f. The certificate is valid for a period of 5 years from the date of its issue. If the construction of structure/Chimney is not commenced within the period, a fresh 'NOC' from the Designated Officer of Airports Authority of India shall be obtained. However, if construction work has commenced, onetime revalidation request, for a period not exceeding 8 years from the date of issue of NOC in respect of building/structure and for a period not exceeding 12 years from the date of issue of NOC in respect of chimney, may be considered by AAI. The date of completion of the Structure should be intimated to this office.

g. No light or a combination of lights which by reason of its intensity, configuration or colour may cause confusion with the aeronautical ground lights of the Airport shall be installed at the site at any time, during or after the construction of the building. No activity shall be allowed which may affect the safe operations of flights

h. The applicant will not complain/claim compensation against aircraft noise, vibrations, damages etc. caused by aircraft operations at or in the vicinity of the airport.

i. Day markings & night lighting with secondary power supply shall be provided as per the guidelines specified in chapter 6 and appendix 6 of Civil Aviation Requirement Series 'B' Part I Section 4, available on DGCA India website: www.dgca.nic.in

j. The applicant is responsible to obtain all other statutory clearances from the concerned authorities including the approval of building plans. This NOC for height clearances is to ensure the safe and regular aircraft operations and shall not be used as document for any other purpose/claim whatsoever, including ownership of land etc.

k. This NOC has been issued w.r.t. the Civil Airports. Applicant needs to seek separate NOC from Defence, if the site lies within their jurisdiction.

l. In case of any discrepancy/interpretation of NOC letter, English version shall be valid.

m. In case of any dispute w.r.t site elevation and/or AGL height, top elevation in AMSL shall prevail.

06/10/16

जे. एस. सन्धू/J.S. SANDHU
महाप्रबन्धक (वायु यातायात प्रबन्धन), उत्तरी क्षेत्र
General Manager (ATM), NR

भारतीय विमानपत्तन प्राधिकरण/Airports Authority of India
प्रचालन कार्यालय, गुड़गाँव रोड़, नई दिल्ली
Operational Offices, Gurgaon Road, New Delhi-37

Chairman NOC Committee

Region Name: NORTH

Address: General Manager Airports Authority of India, Regional Headquarter, Northern Region, Operational Offices, Gurgaon Road, New Delhi-110037

Email ID: noc_nr@aai.aero

Contact No: 011-25653551

राजीव गांधी भवन
Rajiv Gandhi Bhawan

सफदरजंग हवाई अड्डा नई दिल्ली–110003
Safdarjung Airport, New Delhi-110003

दूरभाष : 24632950
Phone: 24632950

भारतीय विमानपत्तन प्राधिकरण
AIRPORTS AUTHORITY OF INDIA

No: AAI/RHQ/NR/ATM/NOC/2016/223/1134-37

Vatika Limited

Vatika Triangle, 4th Floor, Sushant Lok, Phase -I, Block A, Mehrauli-Gurgaon Road, Gurgaon, Haryana 122002

Date: 05-10-2016

Valid Upto: 04-10-2021

No Objection Certificate for Height Clearance

1. This NOC is issued by Airports Authority of India (AAI) in pursuance of responsibility conferred by and as per the provisions of Govt. of India (Ministry of Civil Aviation) order GSR751 (E) dated 30th Sep. 2015 for Safe and Regular Aircraft Operations.

2. This office has no objection to the construction of the proposed structure as per the following details:

NOC ID :	**PALM/NORTH/B/092116/172802**
Applicant Name*	**Virender Dhar**
Site Address*	**Residential Group Housing Colony, Village-Shikohpur, Sector-82 A, Gurgaon. Khasra No. 57, 58/1, 59/2, 60, 61, 147, 148, 149, 150, 152, 153, 154, 155, 156, 157min, 162,Village Shikohpur/Gurgaon,Delhi,Delhi**
Site Coordinates*	**76 57 37.402-28 23 11.513, 76 57 42.233-28 23 18.078, 76 57 43.753-28 23 10.552, 76 57 47.95-28 23 16.36,**
Site Elevation in mtrs AMSL as submitted by Applicant*	**237.19 M**
Permissible Top Elevation in mtrs Above Mean Sea Level(AMSL)	**373.69 M**

*As provided by applicant

3. This NOC is subject to the terms and conditions as given below:

a. Permissible Top elevation has been issued on the basis of Site coordinates and Site Elevation submitted by Applicant. AAI neither owns the responsibility nor authenticates the correctness of the site coordinates & site elevation provided by the applicant. If at any stage it is established that the actual data is different, this NOC will stand null and void and action will be taken as per law. The office in-charge of the concerned aerodrome may initiate action under the Aircraft (Demolition of Obstruction caused by Buildings and Trees etc.) Rules, 1994"

b. The Structure height (including any superstructure) shall be calculated by subtracting the Site elevation in AMSL from the Permissible Top Elevation in AMSL i.e. Maximum Structure Height = Permissible Top Elevation minus (-) Site Elevation.

c. The issue of the 'NOC' is further subject to the provisions of Section 9-A of the Indian Aircraft Act, 1934 and any notifications issued there under from time to time including the Aircraft (Demolition of Obstruction caused by Buildings and Trees etc.) Rules,1994.

d. No radio/TV Antenna, lighting arresters, staircase, Mumtee, Overhead water tank and attachments of fixtures of any kind shall project above the Permissible Top Elevation of 373.69 M, as indicated in para 2.

राजीव गांधी भवन
Rajiv Gandhi Bhawan

सफदरजंग हवाई अड्डा नई दिल्ली–110003
Safdarjung Airport, New Delhi-110003

दूरभाष : 24632950
Phone: 24632950

OFFICE OF THE EXECUTIVE ENGINEER, HUDA, DIV NO. III, GURGAON

To

M/s Vatika Ltd,
4th Floor Vatika Triangle, Sushant Lok-1,
Block-A, M.G. Road,
Gurgaon - 122002
Tel:- 0124-4177777

Memo No. 16535 **Dated:** 20/9/16

Sub:- **water supply assurance for Group Housing Project "Tranquil Height' on land measuring 11.218 Acres Vill. Shikohpur, Sec-82A of Gurgaon Manesar Complex 2031 M/s Vatika Ltd.**

Ref:- **Your application dated 30.08.2016.**

With reference to the cited subject the drinking water for labour is available at Boosting Station Sec-16 & Basai WTP, Gurgaon. You can take the drinking water from these plants.

The regular water supply of 126 KLD for domestic purpose and 15 KLD for labour drinking purpose will be given after completion of water supply line which will take one year or as per availability of clearance of land.

EXECUTIVE ENGINEER,
HUDA, DIV NO. III,
GURGAON

Assurance File

DHBVN

DAKSHIN HARYANA BIJLI VITRAN NIGAM
(A Government of Haryana Undertaking)
Office of the Head
Superintending Engineer 'OP' Circle
Mehrauli Road, Gurugram.
e-mail se.Gurugram@gmail.com

To:

M/s Vatika Ltd.
Vatika Triangle, 4th Floor,
Sushant Lok, Phase-I, Block-A,
Mehrauli- Gurugram Road,
Gurugram-122002.

Memo No. Ch. 137 / Drg.-PLC

Dated: 05/12/2016

Sub: **Assurance Certificate of DHBVN for Ultimate power load for Group Housing Project 'Tranquil Heights" being developed by Vatika Ltd. in the land measuring 11.218 Acress at village-Shikhopur, Sector-82A, Gurugram urban complex, Gurugram, Haryana. License No.22 of 2011(copy attached) by DTCP Haryana on dated 24/3/2011valid upto 23.3.2017.**

Reference your letter No.Vatika/Infra/NH 8/14/001 dated 28/11/2016.

It is hereby assured that the power requirement of tentative load 4045.50KW shall be considered from the nearest sub-station at the time of actual requirement as per DHBVN norms. However, the voltage level of the supply will be 33KV from Sector-58 to Sector-115, Gurugram.

Superintending Engineer
'OP' Circle DHBVN, Gurugram

C.C.to:-

The XEN 'OP' Divn. DHBVN, Manesar.

VATIKA LTD.
VARDAAN ENVIRONET
D 142
Sushant Lok-III
GURGAON

123

Affidavit

Indian-Non Judicial Stamp
Haryana Government

Date : 16/09/2016

Certificate No. G0P2016I4880

GRN No. 20730775

Stamp Duty Paid : ₹ 50
(Rs. Fifty Only)

Penalty : ₹ 0
(Rs. Zero Only)

Deponent

Name : Vatika Ltd
H.No/Floor : N Sector/Ward : N Landmark : N
City/Village : Gurgaon District : Gurgaon State : Haryana
Phone : 9871196528

NOTARY RAMESH YADAV GURGAON Reg.No. 3674 GOVT. OF INDIA

Purpose : stamppaperfornoconstructionaffidavit **to be submitted at Panchkula**

The authenticity of this document can be verified by scanning this QrCode Through smart phone or on the website https://egrashry.nic.in

AFFIDAVIT CUM UNDERTAKING

I, Mr. Virender Dhar of M/s Vatika Limited having its registered office at Vatika Triangle, Shushant Lok-1, Block A, Mehrauli Gurgaon Road, Gurgaon 122002 do hereby solemnly affirm, declare and undertake as under:

- That during construction and operational phase of our proposed Group Housing project (11.218 acres) at Village Shikohpur, Sector-82A, Gurgaon - appropriate safety measures will be taken to prevent any electrical hazards.
- That the company has not commenced any construction work at the project site, we shall commence work only after obtaining EC from state Govt. & the receipt of NOC's/ permission from the prescribed/ competent authorities of state and Centre Govt.
- That during the construction phase no groundwater will be used, and water requirement during the construction phase will be met from treated water confirming the IS standards for building and construction.
- That the purchased treated water from HUDA will be used for construction.
- That the operational phase will start only when the permission of water supply has been obtained from HUDA/any other agency.
- Till the time permission is obtained from HUDA, the water requirement shall be met from an authorized private water supplying agency.

- That ultra low sulphur diesel/ HSD (0.025%) will be used for D.G. sets in construction and operational phase of the said project.
- That proper welfare, safety, health medical plan, safety policy, occupational diseases mitigating measures will be provided during material handling for the workers during construction phase as well as to the staff during operational phase.
- That suitable norm of ECBC will be incorporated during the construction of building for thermal insulation.
- That the requisite clearance shall be obtained for height of the building from Airport Authority of India before the start of the project.
- That we hereby undertake that we will install our own modular STP during construction phase.
- That we hereby undertake use treated water will meet the effluent standards as per IS 456:2000 for reinforced concrete.

Date: 21/09/2016

Deponent

Place: Gurgaon

VERIFICATION - The contents of the above undertaking is true and correct to the best of my knowledge as per record & nothing has been concealed therein.

Date: 21/09/2016

Place: Gurgaon

Deponent

NOTARY RAMESH YADAV GURGAON Reg.No. 3674 GOVT. OF INDIA

ATTESTED
RAMESH YADAV
ADVOCATE & NOTARY
DISTT GURGAON (HARYANA, INDIA)

21 SEP 2016

प्रभागीय वन अधिकारी द्वारा स्पष्टीकरण पत्र
Clarification letter by
Concerned Divisional Forest Officer
हरियाणा सरकार / Government of Haryana

गैर-वन भूमि पर वन कानून उपयुक्तता के विषय में स्पष्टीकरण पत्र।
Clarification letter regarding applicability of forest laws on non forest land.

नाम Name "आधार" संख्या / UID No.	वाटीका लिमिटेड Vatika Limited -
संगठन का नाम Organisation Name	Vatika Limited
वर्तमान पता Current Address	Vatika Triangle, 4th Floor, Sushantlok
भूमि स्थान Land Location	Gurgaon,Gurgaon
भूमि मापन Land Measurements	11.218 (Acre)
रेक्ट नम्बर Rect Number	57,58/1,59/2,60,61,147,148,149,150,152,153,154,155,156,15 7/1,162
किला नम्बर Killa Number	57,58/1,59/2,60,61,147,148,149,150,152,153,154,155,156,15 7/1,162
प्रयोजन Purpose	Residential Group Housing Colony

जारी करने की तिथि / Date of Issuance: 25-11-2016
जारी करने का स्थान / Place of Issuance: Gurgaon
जारी करने वाला प्राधिकरण / Issuing Authority: Divisional Forest Officer

This is a Digitally Signed Certificate and does not require physical signature. The authenticity of this certificate can be verified from the verification link mentioned below:

https://mmis.haryanaeseva.gov.in/mobileapi/verify/forest_dept/clarification/VX6JRD9JDX/ss

प्रभागीय वन अधिकारी द्वारा स्पष्टीकरण पत्र
Clarification letter by
Concerned Divisional Forest Officer
हरियाणा सरकार / Government of Haryana

गैर-वन भूमि पर वन कानून उपयुक्तता के विषय में स्पष्टीकरण पत्र।
Clarification letter regarding applicability of forest laws on non forest land.
Applicant Vatika Limited located at village /city Gurgaon district Gurgaon
made a proposal to use this land for Residential Group Housing Colony. It is clear that:

a) As per records available above said land is not part of notified Reserved Forest, Protected Forest under Indian Forest Act, 1927 or any area closed under section 4 of Punjab Land Preservation Act, 1900.

b) It is clarified that by the Notification No. S.O.8/P.A 2/1900/S. 4/2013 dated 4th January, 2013, all Revenue Estate of Gurgaon is notified u/s 4 of PLPA 1900 and S.O.81/PA.2/1900/S.3/2012 u/s 3 of PLPA 1900. The area is however not recorded as forest in the Government record but felling of any tree is strictly prohibited without the permission of Divisional Forest Officer, Gurgaon.

c) If approach is required from Protected Forest by the user agency, the clearance/ regularization under Forest Conservation Act 1980 will be required. Without prior clearance from Forest Department, the use of Forest land for approach road is strictly prohibited. M/s Vatika Limited whose land is located at village/city, Gurgaon District Gurgaon must obtain clearance as applicable under Forest Conservation Act 1980.

d) As per the records available with the Forest Department, Gurgaon the area does not fall in areas where plantations were raised by the Forest Department under Aravalli project.

e) All other statutory clearances mandated under the Environment Protection Act. 198, as per the notification of Ministry of Environment and Forests, Government of India, dated 07-05-1992 or any other Act/ order shall be obtained as applicable by the project proponents from the concerned authorities.

f) The project proponent will not violate any Judicial Order/ direction issued by the Hon'ble Supreme Court/ High Courts.

g) It is clarified that the Hon'ble Supreme Court has issued various judgments dated 0.05.2002, 29.10.2002, 16.12.2002, 18.03.2004, 14.05.2008 etc. pertaining to Aravalli region in Haryana, which should be complied with.

h) It shall be the responsiblity of user agency/ applicant to get necessary clearances/ permissions under various Acts and Rules applicable if any, from the respective authorities/ Department.

i) As the area for which clarification is sought falls within the notified Eco-sensitive Zone of Sultanpur National Park, necessary permissions may be obtained from competant authority as per the notification no. S.O. 191 (E) dated 27.01.2010 issued by MOEF, Government of India.

It is subject to the following conditions:

1.clarification Is Hereby Issued.

Date: 25-11-2016
Place: Gurgaon

R Anand
(Divisional Forest Officer)

This is a Digitally Signed Certificate and does not require physical signature. The authenticity of this certificate can be verified from the verification link mentioned below:

https://mmis.haryanaeseva.gov.in/mobileapi/verify/forest_dept/clarification/VX6JRD9JDX/ss

OFFICE OF THE ADMINISTRATOR, HUDA, GURGAON

To

M/s. Vatika Limited.
Vatika Triangle, 7th Floor,
Sushant Lok, Phase-I, Block-A,
Mehrauli, Gurgaon.

Memo No. A-1/2016/NOC/ 16613 Dated 29/9/16

Sub : CONSENT FOR APPROVAL OF BUILDING PLANS BASED ON THE UNDERTAKING ON AFFIDAVIT TO USE THE HUDA SEWAGE TREATED WATER FOR CONSTRUCTION / SETTING UP GROUP HOUSING PROJECT ON LAND MEASURING 11.218 ACRES IN SECTOR-82-A, DISTT. – GURGAON (License No. 22 of 2011 dated 24.03.2011.)

Ref:- Your application dated 18.04.2016 on the subject cited above.

Keeping in view the undertaking given by you that you will not use underground water for construction purpose and treat HUDA/HSIIDC STP water by package units or any other alternative ways and means to make it suitable for construction purpose, you are hereby issued Consent for approval of building plan only and you will have to install package unit before the start of construction work at site.

The No Objection Certificate to use the sewage treated water will be issued after the installation of package unit at sites based on estimated water demand for construction purpose. The colonizer/firms will produce the HUDA/HSIIDC certified details of the actual consumed sewerage treated water during the construction of project, while applying for occupation certificate of the project.

This consent is issued only for approval of Building Plan purpose.

SUPERINTENDENT
For Administrator
HUDA, Gurgaon.

Endst. No. A-1/2016/NOC/ Dated.

A copy of the above is forwarded to the following for information and further necessary action:

1. The Director General Town & Country Planning, Sector-18, Chandigarh
2. The Chief Administrator, HUDA, Panchkula.
3. The Deputy Commissioner, Gurgaon
4. The Chief Engineer, HUDA, Panchkula.
5. The Senior Town Planner, Gurgaon.
6. The Superintending Engineer, HUDA, Circle-I & II, Gurgaon.
7. The Executive Engineer, HUDA, Division No. II, Gurgaon.

SUPERINTENDENT
For Administrator
HUDA, Gurgaon

क्रमांक नं० 2161 /ओ०के०/ दिनांक 6/12/16

रिपोर्ट पटवारी विक्तार पूर्वक है कि खसरा नम्बरान 57 (0-18-0) - 58 (0-13-0) - 59/2 (0-11-0) - 60 (2-5-0) - 61 (1-14-0) - 147 (2-0-0) - 148 (1-8-0) - 149 (0-12-0) - 150 (2-0-0) - 152 (0-8-0) 153 (0-8-0) - 155 (0-13-0) - 157/1 (0-8-0) - 162 (2-4-0) कुल रकबा (8-8-8) 17-19 मे मेरे द्वारा की गई सूचना व रिपोर्ट के अनुसार निम्नलिखित है

1) उपरोक्त खसरा नम्बरान जो वर्तमान कैफियत के अनुसार कुल कितना रकबा है।

2) उपरोक्त आराजी 7-5-1962 के पहले व बाद आबादी मे कितना पड़ती है।

3) उपरोक्त खसरा नम्बरान मे कोई गैर मु० पक्का/कच्चा/गैर मु० बीच/बंजर कदीम व रकबा नहीं रहा।

4) उपरोक्त नम्बरान मे कोई शामलात देह, पंचायत देह नगर निगम, नगर पालिका व (सरकारी) सेन्ट्रल गवर्मेन्ट की मलकीयत नहीं रही है

5) उपरोक्त आराजी पर अनुजोर राजस्व/सरकारी कब्जे मे कोई मुकदमा नहीं है व उपरोक्त आराजी हर प्रकार से साफ है

मूल रूप मे आवेदन पत्र क्रमांक नं० 7093/एस० डी०/दिनांक 21/9/16 की पालना मे रिपोर्ट मय्यान उपमण्डल अधिकारी (ना०) मानेसर मे आवश्यक कार्यवाही हेतु प्रेषित है

TEHSILDAR
MANESAR

1620



DAWN
DIGITAL



Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036
Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)
Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275
(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

Test Certificate

Sample Number:	VEL/TH/A/01	Report No.:	VEL/A/TH/1608/01
Name & Address of Party:	M/s Tranquil Heights, Group Housing Projects by Vatika, Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	08/08/2016
		Receipt Date:	03/08/2016

Sample Description : **Ambient Air Quality Monitoring**

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: RDS & FPS
Instrument Code	: VEL/RDS/01 & VEL/FPS/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 02/08/2016 to 03/08/2016
Time of Monitoring	: 10:00 AM to 10:00 AM
Ambient Temperature (°C)	: Min.24.70, Max.30.20
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS* Limit
1.	Particulate Matter ($PM_{2.5}$)	$PM_{2.5}$ sampler (Gravimetric)	63.45	µg/m³	60
2.	Particulate Matter (PM_{10})	IS: 5182 (P-23), 2006	112.30	µg/m³	100
3.	Nitrogen Dioxide (NO_2)	IS: 5182 (P-6), 1975 Reffirmed-1998	34.69	µg/m³	80
4.	Sulphur Dioxide (SO_2)	IS: 5182 (P-2), 2001	18.52	µg/m³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	0.89	mg/m³	4

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]16.11.2009

(Himanshu)

VARDAN ENVIRO LAB SAMASPUR SECTOR-51 GURGAON

NOTE: a)The results listed refer only to the tested samples & applicable parameters
b) Total liabilities of our lab will be restricted to the invoice amount only
c) The sample will be destroyed after retention time unless otherwise specified
d) This report is not to be reproduced wholly or in part and cannot be used as evidence in the court of law

Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036
Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)
Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275
(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

Test Certificate

Sample Number:	VEL/TH/A/02	Report No.:	VEL/A/TH/1608/02
Name & Address of Party:	M/s Tranquil Heights, Group Housing Projects by Vatika, Sector-82 A ,Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	15/08/2016
		Receipt Date:	10/08/2016

Sample Description : **Ambient Air Quality Monitoring**

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: RDS & FPS
Instrument Code	: VEL/RDS/02 & VEL/FPS/02
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 09/08/2016 to 10/08/2016
Time of Monitoring	: 10:15 AM to 10:15 AM
Ambient Temperature (ºC)	: Min.22.90, Max.31.00
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS* Limit
1.	Particulate Matter ($PM_{2.5}$)	$PM_{2.5}$ sampler (Gravimetric)	67.93	µg/m³	60
2.	Particulate Matter (PM_{10})	IS: 5182 (P-23), 2006	109.52	µg/m³	100
3.	Nitrogen Dioxide (NO_2)	IS: 5182 (P-6), 1975 Reffirmed-1998	32.61	µg/m³	80
4.	Sulphur Dioxide (SO_2)	IS: 5182 (P-2), 2001	17.50	µg/m³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	0.97	mg/m³	4

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]16.11.2009

(Himanshu)

VARDAN ENVIRO LAB SAMASPUR SECTOR-51 GURGAON

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Vardan EnviroLab

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Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)
Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275
(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

Test Certificate

Sample Number:	VEL/TH /A/03	Report No.:	VEL/A/TH/1608/03
Name & Address of Party:	M/s Tranquil Heights, Group Housing Projects by Vatika, Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/08/2016
		Receipt Date:	17/08/2016

Sample Description : **Ambient Air Quality Monitoring**

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: RDS & FPS
Instrument Code	: VEL/RDS/03 & VEL/FPS/03
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 16/08/2016 to 17/08/2016
Time of Monitoring	: 10:30 AM to 10:30 AM
Ambient Temperature (°C)	: Min.23.80, Max.28.60
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS* Limit
1.	Particulate Matter ($PM_{2.5}$)	$PM_{2.5}$ sampler (Gravimetric)	65.10	µg/m³	60
2.	Particulate Matter (PM_{10})	IS: 5182 (P-23), 2006	115.00	µg/m³	100
3.	Nitrogen Dioxide (NO_2)	IS: 5182 (P-6), 1975 Reffirmed-1998	30.58	µg/m³	80
4.	Sulphur Dioxide (SO_2)	IS: 5182 (P-2), 2001	18.20	µg/m³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	1.02	mg/m³	4

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]16.11.2009

(Himanshu)

VARDAN ENVIRO LAB SAMASPUR SECTOR-51 GURGAON

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Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036
Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)
Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275
(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

Test Certificate

Sample Number:	VEL/TH/A/04	Report No.:	VEL/A/TH/1608/04
Name & Address of Party:	M/s Tranquil Heights, Group Housing Projects by Vatika, Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	29/08/2016
		Receipt Date:	24/08/2016

Sample Description : **Ambient Air Quality Monitoring**

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: RDS & FPS
Instrument Code	: VEL/RDS/04 & VEL/FPS/04
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 23/08/2016 to 24/08/2016
Time of Monitoring	: 10:30 AM to 10:30 AM
Ambient Temperature (ºC)	: Min.20.90, Max.29.00
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No
Sampling & Analysis Protocol	: IS-5182
Parameter Required	: $PM_{2.5}$, PM_{10}, NO_2, SO_2, CO

TEST RESULTS

S. No.	Parameter	Protocol	Result	Unit	NAAQS* Limit
1.	Particulate Matter ($PM_{2.5}$)	$PM_{2.5}$ sampler (Gravimetric)	62.57	µg/m³	60
2.	Particulate Matter (PM_{10})	IS: 5182 (P-23), 2006	105.10	µg/m³	100
3.	Nitrogen Dioxide (NO_2)	IS: 5182 (P-6), 1975 Reffirmed-1998	36.25	µg/m³	80
4.	Sulphur Dioxide (SO_2)	IS: 5182 (P-2), 2001	20.87	µg/m³	80
5.	Carbon Monoxide (CO)	IS: 5182 (P-10), 1999	1.01	mg/m³	4

*NAAQS – National Ambient Air Quality Standards; Schedule-VII, [Rule 3 (3B)], [Part-II-sec.-3(i)]16.11.2009

(Himanshu)

VARDAN ENVIRO LAB SAMASPUR SECTOR-51 GURGAON

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Vardan EnviroLab

Regd. Off: D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon (Hr) Tel: 0124-4291036
Laboratory: Samaspur, Opposite Amity School, Sector-51, Gurgaon (Hr)
Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275
(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

Test Certificate

Sample Number:	VEL/ TH/W/ 801	Report No.:	VEL/ TH/1608/01
Name & Address of Party:	M/s Tranquil Heights, Group Housing Projects by Vatika, Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	08/08/2016
Sample Description:	Ground Water	Receipt Date:	03/08/2016
Sampling Location:	Project Site	Sampling Date:	03/08/2016
Sample Collected by	Vardan Enviro Lab Team	Sampling Type:	Grab
Sampling & Analysis Protocol	IS-10500-2012,APHA 22nd Edition 2012	Preservation:	Refrigerated
		Sampling Quantity:	2.0 Ltr
		Parameter Required:	As per Work Order

TEST RESULTS

S. No.	Parameter	Test-Method	Result	Unit	Limits of IS:10500 -2012	
					Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)
1.	pH (at 25 °C)	APHA 22nd Edition, 4500-H+ B	7.69	--	6.5 to 8.5	No Relaxation
2.	Colour	APHA 22nd Edition, 2120 B	BDL(DL 5Hazen)	Hazen	5	15
3.	Turbidity	APHA 22nd Edition, 2130 B	BDL (DL 1 NTU)	NTU	1	5
4.	Odour	APHA 22nd Edition, 2150 B	Agreeable	--	Agreeable	Agreeable
5.	Taste	APHA 22nd Edition, 2160 B	Agreeable	--	Agreeable	Agreeable
6.	Total Hardness as $CaCO_3$	APHA 22nd Edition, 2340 C	310.27	mg/l	200	600
7.	Calcium as Ca	APHA 22nd Edition, 3500 Ca B	84.33	mg/l	75	200
8.	Alkalinity as $CaCO_3$	APHA 22nd Edition, 2320 B	320.85	mg/l	200	600
9.	Chloride as Cl	APHA 22nd Edition, 4500-Cl- B	165.87	mg/l	250	1000
10.	Residual free Chlorine	APHA 22nd Edition, 4500 Cl- B	<0.05	mg/l	0.2	1
11.	Cyanide as CN	APHA 22nd Edition, 4500 CN- D	0.01	mg/l	0.05	No Relaxation
12.	Magnesium as Mg	APHA 22nd Edition, 2340 B	24.26	mg/l	30	100
13.	Total Dissolved Solids	APHA 22nd Edition, 2540 C	620.40	mg/l	500	2000
14.	Sulphate as SO_4	APHA 22nd Edition, 4500 E	41.32	mg/l	200	400
15.	Fluoride as F	APHA 22nd Edition, 4500-F D	0.86	mg/l	1.0	1.5
16.	Nitrate as NO_3	IS 3025 (P-34) 1988	5.87	mg/l	45	No Relaxation
17.	Iron as Fe	APHA 22nd Edition, 3500-Fe B	0.71	mg/l	0.3	No relaxation
18.	Aluminium as Al	APHA 22nd Edition, 3111 B	<0.02	mg/l	0.03	0.2
19.	Boron	APHA 22nd Edition, 4500B C	0.62	mg/l	0.5	1

Cont...

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Branch Off: J-3, Subhash Marg, C-Scheme, Jaipur (Rajasthan) Tel: 0141-4026275
(ISO 9001|ISO 14001|OHSAS 18001|MoEF & CC Recognized|NABL Accredited|HSPCB & RSPCB Approved)

Test Certificate

Sample No.: VEL/ TH /W/01			Report No.: VEL/ TH/1608/01			
S. No.	Parameter	Test Method	Result	Unit	Limits of IS:10500 -2012	
					Desirable limit (Max.)	Permissible limit in the Absence of Alternate Source (Max.)
20.	Phenolic Compounds	APHA 22nd Edition, 5530 C	<0.001	mg/l	0.001	0.002
21.	Anionic Detergents as MBAS	APHA 22nd Edition, 5540 C	<0.02	mg/l	0.2	1.0
22.	Chromium as Cr	APHA 22nd Edition, 3111 B	<0.01	mg/l	0.05	No Relaxation
23.	Zinc as Zn	APHA 22nd Edition, 3111 B	0.51	mg/l	5	15
24	Copper as Cu	APHA 22nd Edition, 3111 B	0.68	mg/l	0.05	1.5
25.	Manganese as Mn	APHA 22nd Edition, 3111 B	<0.10	mg/l	0.1	0.3
26.	Cadmium as Cd	APHA 22nd Edition, 3111 B	<0.001	mg/l	0.003	No Relaxation
27.	Lead as Pb	APHA 22nd Edition, 3111 B	<0.01	mg/l	0.01	No Relaxation
28.	Selenium as Se	APHA 22nd Edition, 3111 B	<0.01	mg/l	0.01	No Relaxation
29.	Arsenic as As	APHA 22nd Edition, 3111 B	<0.01	mg/l	0.01	No Relaxation
30.	Mercury as Hg	APHA 22nd Edition, 3111 B	<0.001	mg/l	0.001	No Relaxation
31.	Total Coliform	IS 1622,1981(Reaffirmed 2003)	Absent	(CFU/100ml)	-	10.00
32.	E. Coli	IS 1622,1981(Reaffirmed 2003)	Absent	(CFU/100ml)	Absent	Absent

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Test Certificate

Sample Number:	VEL/TH/S/01	Report No.:	VEL/S/TH/1608/01
Name & Address of Party:	M/s Tranquil Heights, Group Housing Projects by Vatika Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	08/08/2016
Sample Description:	SOIL	Receipt Date:	03/08/2016
Sampling Location:	Near Project Site	Sampling Date:	03/08/2016
Sample Collected by	Vardan Enviro Lab Team	Sampling Quantity:	2.0 Kg
Sampling & Analysis Protocol	IS -2720 & USDA	Packing Status:	Temp Sealed

S. No.	Parameter	Protocol	Results				Unit
			Depth 0-15 cm	Depth 15-30 cm	Depth 30-60 cm	Depth 60-100 cm	
1.	pH (at 25 °C)	IS : 2720 (P-26,1987)	8.41	8.26	8.48	8.57	--
2.	Conductivity	IS:14767-2000 Reaffirmed 2006	1.45	1.73	1.23	1.13	mS/cm
3.	Soil Texture	USDA Method, 1968	Silty Loam 78% Silt 17% Clay 5% Sand	Silty Loam 72% Silt 15% Clay 13% Sand	Silty Loam 65% Silt 10% Clay 25% Sand	Silty Loam 61% Silt 07% Clay 32% Sand	--
4.	Color	USDA Method, 1968	Yellowish Brown	Yellowish Brown	Yellowish Brown	Yellowish Brown	--
5.	Water holding capacity	USDA Method, 1968	35.62	35.21	36.84	36.55	%
6.	Bulk density	USDA Method, 1968	2.02	2.15	2.34	2.11	gm/cc
7.	Chloride as Cl	USDA Method, 1968	85.69	84.01	86.32	83.45	mg/kg
8.	Calcium as Ca	USDA Method, 1968	59.65	62.88	63.24	63.86	mg/kg
9.	Sodium as Na	USDA Method, 1968	42.15	43.08	42.70	43.81	mg/kg
10.	Potassium as K	USDA Method, 1968	192.12	190.33	193.58	190.66	kg/hec.
11.	Organic Matter	IS:2720 (P-22, 1972)	1.06	1.07	1.09	1.04	%
12.	Magnesium as Mg	USDA Method, 1968	27.42	27.66	27.33	26.91	mg/kg
13.	Available Nitrogen as N	IS:14684, 1999	189.32	189.43	189.66	189.07	kg./hec.
14.	Available Phosphorus	USDA, APHA-4500PC	23.84	23.70	23.85	23.22	kg./hec.
15.	Zinc as Zn	APHA-3030D, APHA-3111B	5.35	6.76	6.11	5.63	mg/kg
16.	Manganese as Mn	APHA-3030D, APHA-3111B	5.33	5.96	6.08	5.46	mg/kg
17.	Chromium as Cr	APHA-3030D, APHA-3111B	4.01	4.25	4.33	4.09	mg/kg
18.	Lead as Pb	APHA-3030D, APHA-3111B	2.96	2.06	2.54	2.48	mg/kg
19.	Cadmium as Cd	APHA-3030D, APHA-3111B	2.58	2.65	2.77	2.74	mg/kg
20.	Copper as Cu	APHA-3030D, APHA-3111B	5.25	5.11	4.84	4.87	mg/kg

Richa Dutta

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Test Certificate

Sample Number:	VEL/TH/AN/01	Report No.:	VEL/N/ TH /1608/01
Name & Address of Party:	M/s Tranquil Heights ,Group Housing Projects by Vatika Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	08/08/2016
		Receipt Date:	03/08/2016

Sample Description : AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 02/08/2016 to 03/08/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min.24.70, Max.30.20
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	CPCB Guidelines/ IS 9989	56.40	44.00	dB(A)
2.	L_{min}	CPCB Guidelines/ IS 9989	46.50	36.70	dB(A)
3.	L_{eq}	CPCB Guidelines/ IS 9989	51.32	39.21	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Himanshu)

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Test Certificate

Sample Number:	VEL/ TH /AN/02	Report No.:	VEL/N/ TH /1608/02
Name & Address of Party:	M/s Tranquil Heights ,Group Housing Projects by Vatika Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	15/08/2016
		Receipt Date:	10/08/2016

Sample Description : AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 09/08/2016 to 10/08/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min.22.90, Max.31.00
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	CPCB Guidelines/ IS 9989	54.40	43.70	dB(A)
2.	L_{min}	CPCB Guidelines/ IS 9989	45.90	37.40	dB(A)
3.	L_{eq}	CPCB Guidelines/ IS 9989	53.71	41.23	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Himanshu)

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Test Certificate

Sample Number:	VEL/ TH /AN/03	Report No.:	VEL/N/ TH /1608/03
Name & Address of Party:	M/s Tranquil Heights ,Group Housing Projects by Vatika Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	22/08/2016
		Receipt Date:	17/08/2016

Sample Description : AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 16/08/2016 to 17/08/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min.23.80, Max.28.60
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	CPCB Guidelines/ IS 9989	56.40	42.00	dB(A)
2.	L_{min}	CPCB Guidelines/ IS 9989	49.70	37.40	dB(A)
3.	L_{eq}	CPCB Guidelines/ IS 9989	51.23	39.66	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

(Himanshu)

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Test Certificate

Sample Number:	VEL/ TH /AN/04	Report No.:	VEL/N/ TH /1608/04
Name & Address of Party:	M/s Tranquil Heights ,Group Housing Projects by Vatika Sector-82 A, Gurgaon(HR)	Format No.:	5.10 F-01
		Party Reference No.:	NIL
		Reporting Date:	29/08/2016
		Receipt Date:	24/08/2016

Sample Description : AMBIENT NOISE LEVEL MONITORING

General Information:-

Sample collected by	: Vardan Enviro Lab Team
Sampling Location	: Project Site
Instrument Used	: Sound Level Meter
Instrument Code	: VEL/S/SLM/01
Instrument Calibration Status	: Calibrated
Meteorological condition during monitoring	: Clear Sky
Date of Monitoring	: 23/08/2016 to 24/08/2016
Time of Monitoring	: 06:00 AM to 06:00AM
Ambient Temperature (°C)	: Min.20.90, Max.29.00
Surrounding Activity	: Human & Vehicular Activities
Scope of Monitoring	: Regulatory Requirement
Control measure if Any	: No any
Sampling & Analysis Protocol	: CPCB Guidelines & IS-9989
Sampling Duration	: 24 Hours
Parameter Required	: As per Work Order

S. No.	Parameters	Protocol	Test Result dB (A)		Unit
			Day Time (6:00 am to 10:00 pm)	Night Time (10:00 pm to 06:00 am)	
1.	L_{max}	CPCB Guidelines/ IS 9989	49.20	44.30	dB(A)
2.	L_{min}	CPCB Guidelines/ IS 9989	44.60	36.50	dB(A)
3.	L_{eq}	CPCB Guidelines/ IS 9989	47.23	40.85	dB(A)
4.	CPCB Limits in dB(A) Leq (Residential Area)	-	55.00	45.00	dB(A)

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LIST OF APPLICABLE INDIAN STANDARDS FOR ELECTRIFICATION WORK

S.No.	STANDARDS	TITLE
(1)	IS:732 - 1989	Code of practice for electrical wiring installations.
(2)	IS: 4648 - 1968	Guide for electrical layout in residential buildings.
(3)	IS:8061 - 1976	Code of practice for design, installation and maintenance of service lines upto and including 650V
(4)	IS: 8884 - 1978	Code of practice for installation of electric bells and call system.
(5)	IS: 5578 - 1985	Guide for marking of insulated conductor.
(6)	IS: 11353- 1985	Guide for uniform system of marking and identification of conductors and apparatus terminals.
(7)	IS: 5728 - 1970	Guide for short-circuit calculations.
(8)	IS: 7752(Part-1)-1975	Guide for improvement of power factor in consumer installation: Low and medium supply voltages.
(9)	IS: 3646(Part-1)-1966	Code of practice for interior illumination: Principles for good lighting and aspects of design.
(10)	IS: 3646(Part-2)-1966	Code of practice for interior illumination: Schedule of illumination and glare index.
(11)	IS: 2672 - 1966	Code of practice for library lighting.
(12)	IS:10118(Part-1)-1982	Code of practice for selection, installation and maintenance of switchgear and control gear : General.
(13)	IS: 10118(Part-2)-1982	Code of practice for selection, installation and maintenance of switchgear and control gear.
(14)	IS: 10118(Part-3)-1982	Code of practice for selection, installation and maintenance of switchgear and control gear: Installation.
(15)	IS: 10118(Part-4)-1982	Code of practice for selection, installation and maintenance of switchgear and control gear: Maintenance.

(16)	IS : 2309 - 1989	Code of practice for the protection and allied structures against lightning.
(17)	IS: 3043 - 1987	Code of practice for earthing.
(18)	IS: 5216(Part-1)-1982	Guide for safety procedures and practices in electrical work: General.
(19)	IS:4237 - 1983	General requirements for switchgear and control gear for voltages not exceeding 1000 V AC or 1200 V DC
(20)	IS: 6875(Part-1)-1973	Control switches (switching devices for control and auxiliary circuits including contractor relays) for voltages upto and including 1000 V AC and 1200 DC : General requirements and tests.
(21)	IS:4064(Part-1)-1978	Air break switches, air break dis-connectors, air-break switch disconnectors and fuse-combination units for voltages not exceeding 1000 V AC or 1200 DC : General requirements.
(22)	IS: 8828 - 1978	Miniature air break circuit breakers for voltages not exceeding 1000 volt.
(23)	IS:13032 - 1991	Miniature circuit breaker boards for voltages upto and including 1000 volts AC.
(24)	IS:12640 - 1988	Residua current operated circuit breakers.
(25)	IS:2959 - 1985	Contactors for voltages not exceeding 1000 V AC or 1200 V DC.
(26)	IS:8623(Part-1)-1977	Factory built assemblies of switchgear and control gear for voltages upto and including 1000 V AC and 1200 V DC: General requirements.
(27)	IS:8623(Part-2)-1980	Factory assemblies of switchgear and control gear for voltages upto and including 1000 V AC and 1200 V DC : Particular requirements for busbar trunking system (busways).
(28)	IS:694 - 1990	PVC Insulated cables for working voltages upto and including 1100 V.

(29)	IS:1554(Part-1)-1988	PVC insulated (heavy duty) electric cables :For working voltages upto and including 1100 V.
(30)	IS:3961 (Part-5)-1968	Recommended current ratings for cables: PVC insulated light duty cables.
(31)	IS:9537(Part-1)-1980	Conduits for electrical installations :General requirements.
(32)	IS:9537(Part-2)-1981	Conduits for electrical installations Rigid steel conduits.
(33)	IS:3480 - 1966	Flexible steel conduits for electrical wiring.
(34)	IS:2667 - 1988	Fittings for rigid steel conduits for electrical wiring.
(35)	IS:3837 - 1976	Accessories for rigid steel conduits for electrical wiring.
(36)	IS: 5133(Part-1)-1969	Boxes for enclosure of electrical accessories :Steel and cast iron boxes.
(37)	IS: 371 - 1979	Ceiling roses.
(38)	IS: 3854 - 1988	Switches for domestic and similar purposes.
(39)	IS: 4615 - 1968	Switch socket outlets (non-interlocking type).
(40)	IS: 4160 - 1967	Interlocking switch socket outlet.
(41)	IS:1293 - 1988	Plugs and socket outlets of rated voltage upto and including 250 volts and rated current upto and including 16 amperes.

ELECTRICAL SAFETY MEASURES

- Lightning Protection to be done as per the IS Codes applicable.
- Safety parameters as indicated under Indian Electricity Rules 1956 and ECBC shall be complied. The following safety measurement are considered
- Earth resistivity test shall be carried out in accordance with IS Code of Practice for earthing IS 3043
- Specifications in respect of conductor material, their installation & jointing and providing earth electrode shall be as stipulated in "EARTHING" sections of Technical Specifications of this tender document.
- The lightning protection system shall use either copper or GI as stipulated in Bill of quantities as conducting material throughout. Galvanizing shall conform class – IV of IS 4736 : 1986. Longest possible unbroken lengths of conductors shall be used to eliminate or at least minimize mid run jointing.
- No work shall be undertaken on live installations, or on installations which could be energized unless one another person is present to immediately isolate the electric supply in case of any accident and to render first aid, if necessary.

CONSTRUCTION PROCESS

Design team

In the modern industrialized world, construction usually involves the translation of designs into reality. A formal design team may be assembled to plan the physical proceedings, and to integrate those proceedings with the other parts. The design usually consists of drawings and specifications, usually prepared by a design team including surveyors, civil engineers, cost engineers (or quantity surveyors), mechanical engineers, electrical engineers, structural engineers, fire protection engineers, planning consultants, architectural consultants, and archaeological consultants. The design team is most commonly employed by (i.e. in contract with) the property owner. Under this system, once the design is completed by the design team, a number of construction companies or construction management companies may then be asked to make a bid for the work, either based directly on the design, or on the basis of drawings and a bill of quantities provided by a quantity surveyor. Following evaluation of bids, the owner will typically award a contract to the most cost efficient bidder.

The modern trend in design is toward integration of previously separated specialties, especially among large firms. In the past, architects, interior designers, engineers, developers, construction managers, and general contractors were more likely to be entirely separate companies, even in the larger firms. Presently, a firm that is nominally an "architecture" or "construction management" firm may have experts from all related fields as employees, or to have an associated company that provides each necessary skill. Thus, each such firm may offer itself as "one-stop shopping" for a construction project, from beginning to end. This is designated as a "design Build" contract where the contractor is given a performance specification and must undertake the project from design to construction, while adhering to the performance specifications.

Several project structures can assist the owner in this integration, including design-build, partnering and construction management. In general, each of these project structures allows the owner to integrate the services of architects, interior designers, engineers and constructors throughout design and construction. In response, many companies are growing beyond traditional offerings of design or construction services alone and are placing more emphasis on establishing relationships with other necessary participants through the design-build process.

The increasing complexity of construction projects creates the need for design professionals trained in all phases of the project's life-cycle and develop an appreciation of the building as an advanced technological system requiring close integration of many sub-systems and their individual components, including sustainability. Building engineering is an emerging discipline that attempts to meet this new challenge.

Financial advisors

Construction projects can suffer from preventable financial problems. Underbids ask for too little money to complete the project. Cash flow problems exist when the present amount of funding cannot cover the current costs for labour and materials, and because they are a matter of having sufficient funds at a specific time, can arise even when the overall total is enough. Fraud is a problem in many fields, but is notoriously prevalent in the construction field. Financial planning for the project is intended to ensure that a solid plan with adequate safeguards and contingency plans are in place before the project is started and is required to ensure that the plan is properly executed over the life of the project.

Mortgage bankers, accountants, and cost engineers are likely participants in creating an overall plan for the financial management of the building construction project. The presence of the mortgage banker is highly likely, even in relatively small projects since the owner's equity in the property is the most obvious source of funding for a building project. Accountants act to study the expected monetary flow over the life of the project and to monitor the payouts throughout the process. Cost engineers and estimators apply expertise to relate the work and materials involved to a proper valuation. Cost overruns with government projects have occurred when the contractor was able to identify change orders or changes in the project resulting in large increases in cost, which are not subject to competition by other firm as they have already been eliminated from consideration after the initial bid.

Large projects can involve highly complex financial plans and often start with a conceptual estimate performed by a building estimator. As portions of a project are completed, they may be sold, supplanting one lender or owner for another, while the logistical requirements of having the right trades and materials available for each stage of the building construction project carries forward. In many English-speaking countries, but not the United States, projects typically use quantity surveyors.

Legal aspects

A construction project must fit into the legal framework governing the property. These include governmental regulations on the use of property, and obligations that are created in the process of construction.

The project must adhere to zoning and building code requirements. Constructing a project that fails to adhere to codes will not benefit the owner. Some legal requirements come from considerations, or the desire to prevent things that are indisputably bad – bridge collapses or explosions. Other legal requirements come from considerations, or things that are a matter of custom or expectation, such as isolating businesses to a business district and residences to a residential district. An attorney may seek changes or exemptions in the law governing the land where the building will be built, either by arguing that a rule is inapplicable (the bridge design will not collapse), or that the custom is no longer needed (acceptance of live-work spaces has grown in the community).

A construction project is a complex net of contracts and other legal obligations, each of which must be carefully considered. A contract is the exchange of a set of obligations between two or more parties, but it is not so simple a matter as trying to get the other side to agree to as much as possible in exchange for as little as possible. The time element in construction means that a delay costs money, and in cases of bottlenecks, the delay can be extremely expensive. Thus, the contracts must be designed to ensure that each side is capable of performing the obligations set out. Contracts that set out clear expectations and clear paths to accomplishing those expectations are far more likely to result in the project flowing smoothly, whereas poorly drafted contracts lead to confusion and collapse.

Legal advisors in the beginning of a construction project seek to identify ambiguities and other potential sources of trouble in the contract structure, and to present options for preventing problems. Throughout the process of the project, they work to avoid and resolve conflicts that arise. In each case, the lawyer facilitates an exchange of obligations that matches the reality of the project.

Interaction of expertise

Design, finance, and legal aspects overlap and interrelate. The design must be not only structurally sound and appropriate for the use and location, but must also be financially possible to build, and legal to use. The

financial structure must accommodate the need for building the design provided, and must pay amounts that are legally owed. The legal structure must integrate the design into the surrounding legal framework, and enforce the financial consequences of the construction process.

Procurement

Procurement describes the merging of activities undertaken by the client to obtain a building. There are many different methods of construction procurement; however the three most common types of procurement are:

1. Traditional (Design-bid-build)
2. Design and build
3. Management contracting

There is also a growing number of new forms of procurement that involve relationship contracting where the emphasis is on a co-operative relationship between the principal and contractor and other stakeholders within a construction project. New forms include partnering such as Public-Private Partnering (PPPs) aka private finance initiatives (PFIs) and alliances such as "pure" or "project" alliances and "impure" or "strategic" alliances. The focus on co-operation is to ameliorate the many problems that arise from the often highly competitive and adversarial practices within the construction industry.

Traditional

This is the most common method of construction procurement and is well established and recognized. In this arrangement, the architect or engineer acts as the project coordinator. His or her role is to design the works, prepare the specifications and produce construction drawings, administer the contract, tender the works, and manage the works from inception to completion. There are direct contractual links between the architect's client and the main contractor. Any subcontractor will have a direct contractual relationship with the main contractor.

Design and build

This approach has become more common in recent years and involves the client contracting a single entity to both provide a design and to build that design. In some cases, the Design and Build (D & B) package can also include finding the site, arranging funding and applying for all necessary statutory consents.

The owner produces a list of requirements for a project, giving an overall view of the project's goals. Several D&B contractors present different ideas about how to accomplish these goals. The owner selects the ideas he or she likes best and hires the appropriate contractor. Often, it is not just one contractor, but a consortium of several contractors working together. Once a contractor (or consortium/consortia) has been hired, they begin building the first phase of the project. As they build phase 1, they design phase 2. This is in contrast to a design-bid-build contract, where the project is completely designed by the owner, then bid on, then completed.

Management procurement systems

In this arrangement the client plays an active role in the procurement system by entering into separate contracts with the designer (architect or engineer), the construction manager, and individual trade contractors. The client takes on the contractual role, while the construction or project manager provides the

active role of managing the separate trade contracts, and ensuring that they all work smoothly and effectively together.

Management procurement systems are often used to speed up the procurement processes, allow the client greater flexibility in design variation throughout the contract, the ability to appoint individual work contractors, separate contractual responsibility on each individual throughout the contract, and to provide greater client control.

Authority having jurisdiction

In construction, the authority having jurisdiction (AHJ) is the governmental agency or sub-agency which regulates the construction process. In most cases, this is the municipality in which the building is located. However, construction performed for supra-municipal authorities are usually regulated directly by the owning authority, which becomes the AHJ.

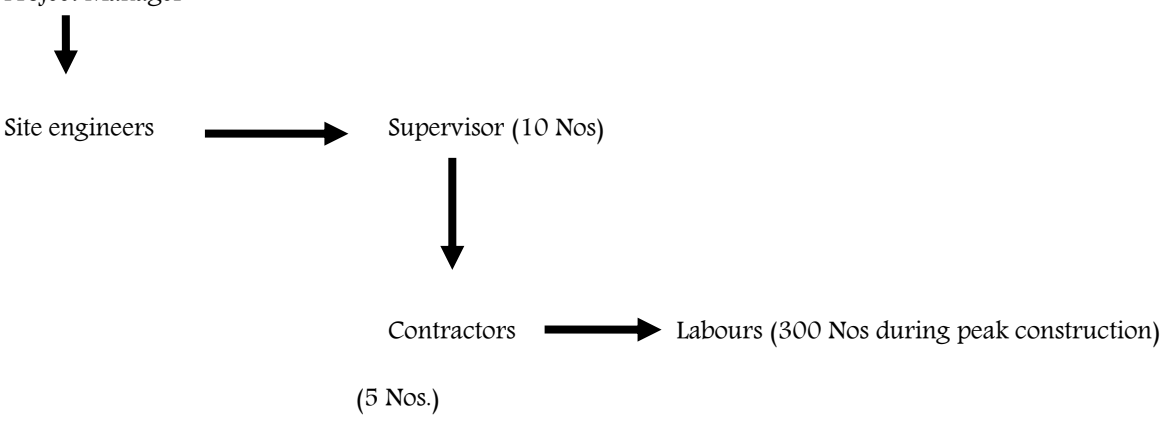
Before the foundation can be dug, contractors are typically required to verify and have existing utility lines marked, either by the utilities themselves or through a company specializing in such services. This lessens the likelihood of damage to the existing electrical, water, sewage, phone, and cable facilities, which could cause outages and potentially hazardous situations. During the construction of a building, the municipal building inspector inspects the building periodically to ensure that the construction adheres to the approved plans and the local building code. Once construction is complete and a final inspection has been passed, an occupancy permit may be issued.

An operating building must remain in compliance with the fire code. The fire code is enforced by the local fire department.

Changes made to a building that affect safety, including its use, expansion, structural integrity, and fire protection items, usually require approval of the AHJ for review concerning the building code.

List of Machinery & Main power required

Manpower – The peak work force requirement for the project will be about 500 nos. workers which will be hired locally. Temporary shelters at the site will be provided during the construction period. One project manager would be engaged with a team of skilled professional to look after the project.



List of Machinery used in Construction Phase

1. JCB
2. Tracks
3. Batching Plant
4. Concrete Bucket
5. Cement Silo
6. Builders Hoist
7. Wheel Barrow
8. Tower Crane

List of Equipment used in assessment of Air Pollution/Vibration/Noise on site

1. Respirable Dust Sampler
2. Noise Level Meter
3. Vibration Analyzer

HEALTH, SAFETY & OCCUPATION MEASURES

1. Measures shall be taken to identify the Electrical Environment Impacts (hazards) arising during the land preparation for use, building construction operation, and the entire cycle activities of the project and proper mitigation measures shall be adopted. All the standards, codes or legal requirements required to be adopted during the installation of electrical equipments,

2. All Fire and Explosion Hazards in the entire cycle activities of the project and all possible sources of fire hazards and fire mitigation measures shall be noted. All the standards, codes & legal requirements of line diagram for fire protection systems shall be fulfilled.

3. Environment Management Plan shall be prepared with Emergency Procedures (Emergency Plan) to deal with localized fire and electrical hazards and hazards due to natural calamities at the entire cycle of the activities of the project.

4. Provision of Health and Welfare Facilities has to be provided to the labour to be engaged in land preparation and building construction at the entire cycle activities of the project such as:
    a. Provision of drinking water from an approved source.
    b. Provision of latrines and urinals and accommodation as per the rules and their drainage and disposal treatment. Layout diagram of sewer system (drains, septic tanks, overhead water tanks and drainage gases ducting systems.
    c. Provision of medical and first aid treatment.
    d. Facilities for sitting, shelters, rest rooms and lunch rooms, crèches, canteen etc.
    e. Provision of Daily working hours, day shifts, night shifts.

5. Provision of mitigation measures regarding the Health and Safety has to be made to the workers employed or proposed to be employed in the entire cycle activities of the project (land preparation, construction & operation).

    a. Noise, vibrations, generated by lifting appliances, gears, earthmovers and transport.
    b. Fencing of moving parts of the transmission machinery.
    c. Restriction of lifting and excessive weight material.
    d. Framing of Health and Safety Policy, On Site Emergency Plan.
    e. Dangerous and harmful environment impact in the confined places (Excavation and underground work).
    f. Eyes and head protection.
    g. Dust, gases, fumes, corrosive substances, toxic gases and chemicals.
    h. Chemical safety date sheet of diesel solvent and paints.
    i. Vehicular traffic.
    j. Illumination of passages, ways, stairs, roads excavation and basement work.
    k. Means of communications, signals, warning, signboards and barricades at the construction site, demolition site, excavation and basement work.

6. Restrictions imposed and safe means adopted at height, demolition, excavation and basement work (Work on steep roof, installation of roofing brackets cads etc. crawling boards, ladders, and step ladders, scaffolds, catch platform hoarding, safety belts and nets).

CODES OF EARTHQUAKE

Following Codes and Standards specify for earthquake resistance building:

1. IS 1893:1984 Criteria for Earthquake Resistant Design of Structures
2. IS 1893(Part 1):2002 `Criteria for Earthquake Resistant Design of Structures: Part 1 General provisions and Buildings
3. IS 1893(Part 4):2005 `Criteria for Earthquake Resistant Design of Structures: Part 4 Industrial Structures Including Stack Like Structures
4. IS 4326:1993 Earthquake Resistant Design and Construction of Buildings - Code of Practice
5. IS 13827:1993 Improving Earthquake Resistance of Earthen Buildings – Guidelines
6. IS 13828:1993 Improving Earthquake Resistance of Low Strength Masonry Buildings – Guidelines
7. IS 13920:1993 Ductile Detailing of Reinforced Concrete Structures Subjected to Seismic Forces – Code of Practice
8. IS 13935:1993 Repair and Seismic Strengthening of Buildings – Guidelines
9. IS 6922:1973 Criteria for Safety and Design of Structures Subject to Underground Blasts
10. IS 4991:1968 Criteria for Blast Resistant Design of Structures for Explosions Above Ground
11. IS 4967:1968 Recommendations for Seismic Instrumentation for River Valley Projects

These standards endeavour to provide a guideline in designing and repairing of buildings under seismic forces**.**

MITIGATION MEASURES TO CONTROL THE GREEN HOUSE EFFECT, RADIATION EFFECT, OZONE DEPLETION EFFECT AND RADIATION EFFECT

Mitigation Measures to control the Green House Effect, Acid Rain Effects, Ozone depletion Effects & Radiation Effects are as follows:

Impacts	Mitigation Measures (During Construction)	Mitigation Measures (During Operation)
Green House Effect Acid Rain Effects Ozone depletion Effects Radiation Effects	Low sulphur diesel will be used for DG sets, fuel efficient machinery and equipments shall be used, efforts would be made to minimize metal cutting and welding at site by procuring finished items from factories, black top roads would be minimized and efforts would be made to use factory manufactured products for roads/ pavements. Efforts would be made to minimize the sewage conveyance time in the sewer lines. Landfill/ swamps/ wetland/ water ponds shall not be provided. The water bodies would be maintained and the water regularly cleaned/ re-circulated. Planned plantation, thereby specifically providing plantation which can contribute the carbon sink action would be done. Maintenance of vehicles engines and machineries. Proper protective measures shall be taken to avoid adverse human effects in the complex.	Plants in more number and big foliage of trees around the complex boundary as well at the pedestrian and driveway. Sulphur free diesel/petrol shall be used to run the vehicles to avoid air emissions as far as possible. Turn off computers, lights & other electronic equipments when not in use. To prevent acid rain, DG sets shall be provided scrubber to reduce air emissions, if necessary. PVC free products such as flooring, wall covering etc. shall be used to avoid Ozone depletion. Use of CFLs and other energy conservation measures shall be taken High energy efficiency equipments shall be used and max. use of renewable energy. CFC free/ low CFCs ACs and Fridge shall be used. Regular environmental monitoring shall be done of the site. Mobile Towers will not be allow to get installed at this complex to control radiation effects

RISK ASSESSMENT PLAN DURING CONSTRUCTION & OPERATION

Risk is a potential that a chosen action or activity will lead to a loss of human or property.

Risk assessment is a step for Risk Management. Risk assessment is determination of qualitative and quantitative value of risk related a situation or hazard.

Hazard is a situation that poses a level of threat to life health or environment.

1. HAZARD IDENTIFICATION

There may be following types of hazards:

1.1 Natural hazard:

Earthquake

Flooding

1.2 Manmade hazard:

Health Injuries

Fire & explosion

Electrical

Mechanical

Radiation

Thermal

Chemical

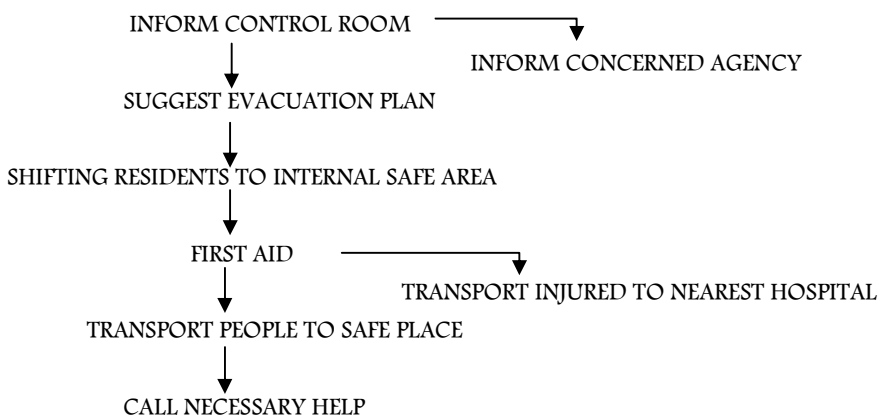
1. EVACUATION PLAN

Standard operating procedures will be formulated and maintained for all eventualities due to attack by armed intruders.

Evacuation plan includes the evacuation due to

- fire hazard in the colony
- Armed Intrusion
- Flood
- Earthquake

During any of the above mentioned hazards, the evacuation will be as follows:



Following mitigation measures shall be adopted during construction & operation phase for risk assessment:

During Construction Phase	During Operation Phase
• Safety mats would be provided at appropriate level and various shafts/ openings would be covered to prevent falls, slips, trips etc. • Necessary safety belts, helmets and eye-masks as required would be enforced at site • Adequate guardrails shall be provided to the staircases and common areas. • Adequate guardrails/ fences shall be provided around the water storage spaces to prevent drowning accidents. • Adequate protection/ fence would be provided around the excavated areas • The machinery and the equipments would be regularly tested and maintained with the specific emphasis against accidents failures • The deployed Safety officers would ensure that the personnel/ labour are kept at a safe distance from working machinery to avoid accidents/ injuries due to toxic gases/ chemical/ noise. • Moving parts of various parts of machineries/ equipments shall be properly guarded • Required fire extinguishers would be maintained at the construction site. • Arrangements for clean drinking water would be made. • Rest rooms and first aid facilities would be made available for the workers • Fire Protection system has been designed as per requirements of NFPA & National Building Code – 2005	• The project is located at Seismic Zone IV, structural designing will be done as per best structural engineering practices complying with all the applicable codes / standards. Also we have received the structural stability certificate. • Proper designing of drainage system for domestic as well as storm water shall be provided. • Rain water harvesting pits will have provision of storage for one hour peak rainfall. • Fire Protection system has been designed as per requirements of NFPA & National Building Code – 2005 • Proper Fire evacuation system shall be provided. • Safety parameters as indicated under Indian Electricity Rules 1956 and ECBC shall be complied. • Elevators shall be properly maintained with record book of maintenance. • Periodic replacement of critical components of elevator/ machines.

❖ **Energy Saving Practices**

- Energy efficient lamps will be provided within the complex.
- Constant monitoring of energy consumption and defining targets for energy conservation.
- Adjusting the settings and illumination levels to ensure minimum energy used for desired comfort levels.

❖ **Behavioral Change on Consumption**

- Promoting resident awareness on energy conservation
- Training staff on methods of energy conservation and to be vigilant to such opportunities.

WATER CONSERVATION MEASURES DURING CONSTRUCTION AND OPERATIONAL PHASE

The following measures will be adopted to reduce the water consumption during construction as well operation phase of the project.

During Construction Phase

- Leakage proof plumbing system
- Use of Ready Mix Concrete.
- Use of Curing Agent instead of curing water or recycling of curing water for onsite wheel washing.

During Operational Phase

- Leakage proof plumbing system.
- Installation of water meters to check leakage.
- Indigenous drought tolerant plant species in the landscape.
- Rain water harvesting by recharging the ground aquifer.
- Use of dual plumbing system, separate for toilet flushing and separate for potable use.
- Use of highly efficient STP and reusing treated water for landscape, Flushing and DG/HVAC cooling to the extent possible.
- Giving surplus treated wastewater from STP to other construction site for their use.
- Use of garden hydrants and drip irrigation technology.
- Use of low fixture, urinal, WC, tap etc.
- Using sensor based taps

FIRE FIGHTING CODES & STANDARDS

TITLE	IMPORTANT INDIAN STANDARDS FOR FIRE FIGHTING WORK
IS 1239-1968 (Part-I)	Specifications for mild steel tube, tubular and other steel pipe fittings.
IS 1239-1968 (Part-II)	Specifications for mild steel tube, tubular and other steel pipe fittings.
IS 1536-1976	Specification for centrifugally Cast (Spun) Iron pressure pipes with flanges for water, gas and sewage.
IS 1538 (Part 1 to 23)	Specification for Cast Iron fittings for pressure pipes for water, gas and sewage.
IS 1726-1960	Code for cast iron manhole frame and cover.
IS 3589-1981	Specification for electrically welded steel pipes for water, gas and sewage.
IS 4736-1986	Galvanizing G.I. Pipes
IS 636-1988	Non percolating flexible fire fighting delivery hose (third revision)
IS 694-1990	PVC insulated cables for working voltages upto and including 1.100 volts (third revision)
IS 778-1984	Copper alloy gate, globe and check valves for water works purposes (fourth revision) (Amendment 2)
IS 780-1984	Sluice valves for water works purposes (50 to 300 mm) size (sixth revision) (amendment 3)
IS 884-1985	Specification for first-aid hose-reel for fire fighting (for fixed installations) (first revision) (with amendment No.1)
IS 900-1992	Code of practice for installation and maintenance of induction motors (second revision)
IS 901-1988	Specification for couplings, double male and double female, instantaneous pattern for fire fighting (third revision)
IS 902-1992	Suction hose coupling for fire fighting of purposes (third revision)
IS 903-1984	Specification of fire hose delivery couplings branch pipe, nozzles and nozzle

	spanner (third revision) (Amendment 5)
IS 937-1981	Specification for washers for water fittings for fire fighting purposes (revised) (with amendment No, 1)
IS 1520-1980	Horizontal centrifugal pumps for clear cold, fresh water (second revision)
IS 1536-1976	Horizontally cast iron pressure pipes for water, gas & sewage (first revision) (with Amendments No. 1 to 4)
IS 1554-1988 Part I	PVC insulated (heavy duty) electric cables (working voltage upto and including 1100 volts (third revision)
IS 1554-1988 Part II	PVC insulated (heavy duty) electric cables (working voltage from 3.3 KV upto and including 11 KV (second revision)
IS 1648-1961	Code of practice for fire safety of buildings (General) Fire fighting equipment and its maintenance (with amendment No.1)
IS 3624-1987	Pressure and vacuum gauges (Second revision)
IS 4736-1968	Hot-dip zinc coatings on steel tubes (with Amendment No.1)
IS 5290-1983	Specification for landing valves (second revision) (with Amendments No.6)
IS 5312- 1984 Part I	Swing check type reflux (non return) valves Part I-single door pattern (with amendments nos. 1 & 2)
IS 5312- 1986 Part II	Swing check type reflux (non return) valves Part II-Multi door pattern (with amendments nos. 1 & 2)
IS 7285	Seamless cylinders for storage of gas at high pressure.
IS 2189-1962	Code of practice for Automatic Fire alarm system
IS 2195-1962	Specification for heat sensitive fire detectors
IS 732-1973	Code of practice for electrical wiring installation
	UL 168 Underwriters Laboratory specification for smoke detector.

LIST OF APPLICABLE STANDARDS FOR FIRE ALARM SYSTEM

(1) IS:2189 – 1962	Code of Practice for Automatic Fire Alarm System.
(2) IS:2195 – 1962	Specifications for Heat sensitive Fire Detectors.
(3) IS:732 – 1973	Code of practice for Electrical Wiring installation
(4) UL 168	Under writers laboratory specifications for smoke detectors.

Fire Protection measures

Fire Protection System has been designed as per requirements of National Building Code 2005.

Fire protection system consists of following pumps for the Complex.

- Sprinkler pump
- Hydrant Pump

Apart for the above, following are also proposed:

a) Wet riser and hydrant system with accessories.

b) Underground fire tank

c) Overhead fire tank

c) Landing valve, Fire hose cabinets at each level, branch pipe , landing valve & fireman's axe.

d) Fire Extinguishers at every landing valve.

e) Hand Held fire extinguishers

f) Automatic Detection and Alarm System

g) Portable Fire Extinguishers.

	CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Sheet No. i

FINAL REPORT ON:

GEOTECHNICAL INVESTIGATION FOR TRANQUIL HEIGHTS PROJECT (HSG020) SITE AT SECTOR-82A, VATIKA INDIA NEXT GURGAON, HARYANA

Submitted to:

M/s. Vatika Limited
Vatika Triangle, 4th Floor,
Sushant Lok, Phase-1, Block A
Mehrauli Gurgaon Road,
Gurgaon-122 002, Haryana

	CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Sheet No. ii

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1.0 INTRODUCTION

1.1 Project Description

M/s. Vatika Limited (*Vatika*) is planning to construct the proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana. M/s. Arcop Associates Private Limited is the project architect for the project. M/s. Planning and Design Bureau is the structural consultant for the project.

We understand the proposed group housing project will comprise of several multi-storied apartment buildings. The building blocks/towers will have G+8 to G+37 floors with penthouse and two basements. Non tower area around the towers will have two basements for parking and utilities.

M/s. Cengrs Geotechnica Pvt. Ltd. has been retained by *Vatika* vide their Work Order No. WO/VIN/TH/SEC-82A/HSG020/002 dated 18th April, 2014 for carrying out the geotechnical investigations at the project site. The scope of work includes drilling of fourteen (14) boreholes to 30-45 m depth. A layout plan showing the locations of our field investigations is illustrated on Fig. 1a.

1.2 Purposes of Study

The overall purposes of this study are to investigate the stratigraphy at the site, and to develop geotechnical recommendations for design and construction of foundations for the proposed project.

To accomplish these purposes, the study is being conducted in the following phases:

(i) drilling seven (7) boreholes to 30 m depth, seven (7) boreholes to 45 m depth, in order to evaluate the stratigraphy at the site, and to collect soil samples for laboratory testing;

(ii) testing selected soil samples in the laboratory to determine pertinent index and engineering properties; and

(iii) analyzing all field and laboratory data to develop geotechnical recommendations for foundations.

1.3 Test Locations

Details of the boreholes completed at the project site are tabulated below:

Structure	Test Designation	Survey Coordinates*		UTM Coordinates (43R)**, m		Borehole Termination Depth (RL)*, m
		Easting	Northing	Easting	Northing	
G+31+P	BH-1	9812.61	18738.52	692109.00	3141577.00	45.30 (RL 190.6)
	BH-2	9809.19	18782.45	692111.00	3141627.00	45.25 (RL 190.5)

Structure	Test Designation	Survey Coordinates*		UTM Coordinates (43R)**, m		Borehole Termination Depth (RL)*, m
		Easting	Northing	Easting	Northing	
G+37+P	BH-3	9806.11	18826.55	692108.00	3141678.00	45.15 (RL 190.5)
Slab D G+14	BH-4	9839.90	18836.95	692145.00	3141690.00	30.45 (RL 205.3)
	BH-5	9887.06	18872.66	692198.00	3141743.00	30.25 (RL 205.5)
Slab E G+14	BH-6	9934.15	18908.29	692245.00	3141773.00	30.30 (RL 205.5)
	BH-12	9994.81	18749.70	692285.00	3141573.00	30.42 (RL 206.3)
G+36+P	BH-7	10007.60	18860.19	692311.00	3141710.00	45.25 (RL 191.1)
	BH-8	9968.77	18848.11	692276.00	3141696.00	45.20 (RL 191.0)
Slab D G+8+P	BH-9	9941.05	18821.83	692244.00	3141667.00	30.35 (RL 205.9)
	BH-10	9901.54	18784.69	692204.00	3141627.00	30.40 (RL 205.6)
EWS	BH-11	9947.37	18731.91	692238.00	3141554.00	30.30 (RL 206.2)
G+33+P	BH-13	10034.66	18749.70	692320.00	3141520.00	45.36 (RL 196.9)
	BH-14	10038.23	18680.95	692317.00	3141474.00	45.30 (RL 198.0)

* Survey coordinates were provided by the client on site
** UTM coordinates taken on site using hand-held Garmin® GPS device

- A layout plan showing the locations of our field investigations is presented on Fig. 1a.
- The borehole locations were marked on the field using a Global Positioning System (GPS) by our Engineer. A satellite image indicating the locations (as recorded by GPS) is presented on Fig. 2.
- Reduced levels (RL) at the borehole locations have been interpreted from the survey drawings provided to us by the client vide emails dated 7th June 2014 (Refer to Fig. 1b). The average existing ground level (EGL) has been considered as RL 235.7 m for this report, unless mentioned otherwise.

2.0 FIELD INVESTIGATIONS

2.1 Soil Borings

The boreholes were progressed using a mechanised shell and auger drilling rig to the specified depth. The diameter of the borehole was 150 mm. Where caving of the borehole occurred, casing was used to keep the borehole stable. The work was in general accordance with IS: 1892-1979.

Standard Penetration Tests (SPT) was conducted in the boreholes at 1.5 m depth interval to 15 m depth and at 3 m depth interval below 15 m depth. The test was conducted by connecting a split spoon sampler to 'A' rods and driving it by 45 cm using a 63.5 kg hammer falling freely from a height of 75 cm. The tests were conducted in accordance with IS: 2131-1981.

The number of blows for each 15 cm of penetration of the split spoon sampler was recorded. The blows required to penetrate the initial 15 cm of the split spoon for seating the sampler is ignored due to the possible presence of loose materials or cuttings from the drilling operation. The cumulative number of blows required to penetrate the balance 30 cm of the 45 cm sampling interval is termed the SPT value or the 'N' value.

Where the split spoon sampler did not penetrate the initial 15 cm seating in a total of 100 blows, it is indicated "Ref" for an indicated amount of penetration. The 'N' values are presented on the soil profile for each borehole.

Disturbed samples were collected from the split spoon after conducting SPT. The samples were preserved in transparent polythene bags. Undisturbed soil samples were collected by attaching 75 mm diameter thin walled 'Shelby' tubes and driving the sampler by light-hammering using a 63.5 kg hammer in accordance with IS: 2132-1986. The tubes were sealed with wax at both ends. All samples were transported to our NABL accredited laboratory at Noida for further examination and testing.

2.2 Groundwater

Groundwater level was measured in the boreholes 24 hours after drilling and sampling was completed. The measured water levels are recorded on the individual soil profiles.

3.0 LABORATORY TESTS

The laboratory testing has been carried out in our NABL accredited laboratory. The quality procedures in our laboratory conform to ISO/IEC-17025-2005.

Laboratory tests were conducted on selected soil and groundwater samples to determine their physical and engineering properties. The testing procedures were in accordance with current applicable IS specifications.

The following tests were conducted on selected soil and groundwater samples recovered from the boreholes:

Laboratory Test	IS Code Referred
Bulk Density	By calculations
Natural moisture content	IS : 2720 (Part-2)-1973, RA-2010
Specific Gravity	IS : 2720 (Part-3)-1980, RA-2007
Grain size analysis	IS : 2720 (Part-4)-1985, RA-2010

Laboratory Test		IS Code Referred
Liquid Limit and Plastic Limit		IS : 2720 (Part-5)-1985, RA-2010
Unconsolidated undrained triaxial shear test		IS : 2720 (Part-11)-1993, RA-2007
Consolidated drained direct shear test		IS : 2720 (Part-13)-1986, RA-2010
Chemical Analysis of soil*	pH value	IS : 2720 (Part 26)-1987, RA-2007
	sulphates	IS : 2720 (Part-27)-1977, RA-2010
	chlorides	IS : 3025 (Part-32)-1988, RA-2009

* outside NABL Scope

All test results are presented on the individual soil profiles on Tables 1 to 3, as well as in the illustrations section of this report. Chemical test results are presented on Table 4. Engineering terms used to describe soils are explained on Table 5. A note on our NABL accreditation together with the uncertainty in laboratory measurements is presented on Table 6.

4.0 GENERAL SITE CONDITIONS

4.1 Site Details

The site is located at Sector-82A, Vatika India Next, Gurgaon, Haryana. The project site is fenced and measures 13.73 acres.

The site is almost level. The site is about 600 m West of Delhi-Ajmer Expressway (NH-8) and 400 m east of New Sector Road, Gurgaon. The borehole locations were marked on site by the client.

4.2 Regional Geology

The project site lies in Gurgaon, Haryana. Gurgaon is situated at the end of the Aravali mountain ranges, extending northeast in this area. It is also presumed that underneath the river alluvium, the Aravali might have extended as far upto the Himalayas which make Delhi susceptible to seismic events in the Himalayas.

The soils at the project site belong to the "Indo Gangatic Alluvium" [(1)] and river deposits of the Yamuna and its tributaries. The Pleistocene and Recent deposits of the Indo-Gangatic Basin are composed of gravels, sands, silts and clays with remain of animal and plants. The soils at the project site rest over rocks of Delhi Supergroup [(2)] (1650 Million years). Delhi Supergroup is a Proterozoic rock succession exposed in different parts of Delhi, Haryana, Rajasthan and Gujarat states of our country. Exposure of these rocks shows a NE to SW orientation from Delhi to Gujarat. Quartzite and Slate are the characteristic rocks of this Supergroup.

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(1) Krishnan, M.S. (1986), ***"Geology of India & Burma"***, CBS Publishers, New Delhi

(2) Ravinder Kumar (1988): "***Fundamentals of Historical Geology and Stratigraphy of India***", New Age International Ltd. Publishers, New Delhi

The quartzites are pinkish to grey in color, hard, compact, highly jointed / fractured and weathered. These occur with interbeds of mica schists and are intruded locally by pegmatites and quartz veins.

The geologic succession in Delhi and adjoining regions as given by GSI is as under follows:

Present and Sub-recent (Pleistocene)	Younger Alluvium	Khadar: Yamuna river bed sand and other sediment deposits in the stream bed
	Older Alluvium	Bhangar: Yellow and reddish soil comprising sandy silt / clayey silt with kankar beds, pockets and small ferruginuous/calcareous concretions (kankars)
---------- Unconformity ----------		
Post Delhi Intrusive		Quartz veins and Pegmatites
Delhi Super Group (Pre Cambrian)	Alwar Series	Quartzites, greyish, bluish and pinkish in colour, fine to coarse grained and thin inter beds of micaceous schists.
---------- Base Unknown ----------		

4.3 Site Stratigraphy

The soils at the site are alluvial in nature. The surficial soils consist of medium dense silty sand that extends to about 3-7 m depth (RL 232.7-228.7 m), underlain by low plastic, dense sandy silt stratum to about 12-14 m depth (RL 223.7-221.7 m). Below this, very dense silty sand / sandy silt is encountered to the maximum explored depth of 45 m (RL 191 m).

Field SPT values range from 9 to 15 to about 2-3 m depth and from 17 to 22 to about 5 m depth (RL 230.7 m). The field SPT values then range from 24 to 34 to 11 m depth (RL 224.7 m) and 43-69 to 18.5 m depth (RL 217.2 m) with some higher values. Below this, refusal (N>100) is encountered to the maximum explored depth of 45 m (RL 191.0 m).

A pictorial summary of site stratigraphy is presented in Fig. 3. Plots of field and corrected SPT values are presented on Figs. 4a to 4f.

4.4 Groundwater

Based on our measurements in the completed boreholes, groundwater was not met to the maximum explored depth of 45 m (RL 191.0 m) during the period of our field investigation (May, 2014). We anticipate that the groundwater level in this locality may be fairly deep.

5.0 CONCEPT OF FOUNDATION ANALYSIS

5.1 General

A suitable foundation for any structure should have an adequate factor of safety against exceeding the bearing capacity of the supporting soils. Also the vertical movements due to compression of the soils should be within tolerable limits for the structure. We consider that foundation designed in accordance with the recommendations given herein will satisfy these criteria.

5.2 Analysis of Open / Raft foundations

Bearing capacity analysis for open or raft foundations has been done in general accordance with IS:6403-1981.

The bearing capacity equation used is as follows:

$$q_{net\ safe} = \frac{1}{F}\left[cN_c\zeta_c\, d_c + q(N_q-1)\,\zeta_q d_q + 0.5\, B\,\gamma N_\gamma \zeta_\gamma\, d_\gamma R_w\right]$$

where:

$q_{net\ safe}$	=	safe net bearing capacity of soil based on the shear failure criterion.
q	=	overburden pressure
R_w	=	water table correction factor,
F	=	Factor of safety, taken as equal to 2.5 in accordance with IS:1904-1986.
$\zeta_c, \zeta_q, \zeta_\gamma$	=	Shape factors. For Strip footings, $\zeta_c = \zeta_q = \zeta_\gamma = 1$ For Square footing, $\zeta_c = 1.3$, $\zeta_q = 1.2$, $\zeta_\gamma = 0.6$
d_c, d_q, d_γ	=	Depth factors For $\phi \leq 10$, $d_c = 1 + 0.2 \tan(45 + \phi/2)\, D/B$, $d_q = d_\gamma = 1$ For $\phi > 10$, $d_q = d_\gamma = 1 + 0.1 \tan(45 + \phi/2)\, D/B$

For the soil conditions encountered at this site, a general shear failure condition has been used for analysis of foundations.

Appropriate values have been substituted into the bearing capacity equation given above to compute the safe net bearing capacity. The values have been checked to determine the settlement of the foundation under the safe bearing pressure. The allowable bearing pressure has been taken as the lower of the two values computed from the bearing capacity shear failure criterion as well as that computed from the tolerable settlement criterion.

Settlement analysis has been performed based on the SPT values in accordance with Clause 9.1.4 of IS 8009 (Part 1)-1976 Fig.9. The values has been cross checked by the sum of the elastic settlement as per clause 9.2.3 of IS 8009 (Part 1)-1976.

The elastic settlement has been computed using the following equation [Clause 9.2.3 of IS 8009 Part 1-1976][3].

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[3] Bowles, J.E. (1996), "***Foundation Analysis and Design***", International Edition, pp. 303-317.

$$S_i = \frac{qB'(1-\mu^2)}{E} I d_f d_r$$

where :

S_i	=	immediate (elastic) settlement
B	=	foundation width, $B' = B/2$
μ	=	Poisson's ratio
q	=	applied bearing pressure
E	=	modulus of elasticity
d_f	=	depth factor
d_r	=	rigidity factor
I	=	influence factor at corner of rectangular loaded area (B'xL')

5.3 Definition of Gross and Net Bearing Pressure

For the purposes of this report, the net allowable bearing pressure should be calculated as the difference between total load on the foundation and the weight of the soil overlying the foundation divided by the effective area of the foundation. The gross bearing pressure is the total pressure at the foundation level including overburden pressure and surcharge load.

The following equations may be used -

$q_{net} = [(P_s + W_f + W_s) / A_f] - S_v$

$q_{gross} = q_{net} + S_v = (P_s + W_f + W_s) / A_f$

where:

q_{net}	= net allowable bearing pressure
q_{gross}	= gross bearing pressure
Ps	= superimposed static load on foundation
Wf	= weight of foundation
Ws	= weight of soil overlying foundation
Af	= effective area of foundation
Sv	= overburden pressure at foundation level

It may please be noted that safe bearing pressures suggested in this report refer to **"net values".** The gross bearing pressure may be computed by adding the overburden pressure to the net bearing pressure. The advantage of this gross bearing pressure may be taken while designing the basement. Fill placed above EGL should be treated as a surcharge load.

6.0 LIQUEFACTION SUSCEPTIBILITY ASSESSMENT

Liquefaction is defined as the transformation of a granular material from a solid to a liquefied state as a consequence of increased pore-water pressure and reduced effective stress (Marcuson, 1978[4]). Increased pore pressure may be

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(4) Markuson, W.F. (III) (1978), "***Definition of terms related to liquefaction***", J. Geotech Engrg. Div,, ASCE, 104(9), 1197-1200.

induced by the tendency of granular materials to compact when subjected to cyclic shear deformation, such as in the event of an earthquake.

As per IS: 1893-2002, liquefaction is likely to occur in loose fine sand below water table.

The soils at the site consist of silty fine sand/ sandy silt to the final explored depth of 45 m (RL 191.0 m). Groundwater was not met at the time of our field investigation (May, 2014). Granular soils encountered at the site are dense to very dense in consistency.

In view of the above, we are of the opinion that the soils at site are not likely to liquefy in the event of an earthquake.

The site falls in earthquake Zone-IV as per IS: 1893-2002. The design should be done considering the earthquake parameters for Zone-IV.

7.0 FOUNDATION ANALYSIS AND RECOMMENDATIONS

7.1 Foundation Type and Depth

We understand that the proposed group housing project will comprise of multi-storied apartment buildings. The building blocks/towers will have G+8 to G+37 floors with penthouse and two basements. Non tower area around the towers will have two basements for parking and utilities.

The average ground level for analysis purpose is assumed at RL 235.7 m. Since 2 basements are planned, the foundation depth is likely to be at about 8-10 m below EGL (i.e., at about RL 227.7-225.7 m).

Open foundations including column, combined or strip footings may be provided in the extended basement areas, as well as below the smaller towers (Refer to Section 7.3.1). In case the structural loads at the foundation level are in excess of the net allowable bearing pressure for open foundations, consideration may be given to the provision of raft foundations (Refer to Section 7.3.2).

7.2 Design Parameters

The following table presents selected soil parameters used for the foundation analysis:

Depth, m		Soil Classification	SPT Value, N"	E,T/m^2	c, T/m^2	ϕ°, degree	γ, T/m^3
From	To						
0.0	5.0	Fine Sand	18	750	0	28	1.70
5.0	9.0	Fine sand	23	1500	0	29	1.80
9.0	11.0	Fine sand	35	2000	0	30	1.85
11.0	18.0	Fine sand	46	3000	0	31	1.95
18.0	35.0	Fine sand	62	4000	0	32	2.05
35.0	45.0	Fine sand	66	5500	0	33	2.10

where:

N”	=	Corrected SPT value
E	=	Stress-strain modulus
c	=	cohesion intercept
ϕ	=	angle of internal friction
γ	=	bulk density

7.3 Open / Raft Foundations for Tower & Non-Tower Areas

7.3.1 Recommendations for Open Foundations

Open foundations including column, combined or strip footings may be provided in the extended basement area, as well as below the smaller towers. Our recommended values of net allowable bearing pressures for open foundations of various sizes are as follows:

Foundation Size	Foundation Depth† (RL), m	Foundation Embedment Depth below lowest Basement Level, m	Recommended Net Allowable Bearing Pressure, T/m^2		Proposed Modulus of Subgrade Reaction (k), kN/m^3
			Total Settlement = 40 mm	Total Settlement = 50 mm	
Open Foundations (B ≤3 m)	8.0 (RL 227.7 m)	1.0	18.4	23.0	4600
	10.0 (RL 225.7 m)	1.5	21.6	27.0	5400
Open Foundations (3 < B < 6 m)	8.0 (RL 227.7 m)	1.0	16.0	20.0	4000
	10.0 (RL 225.7 m)	1.5	18.4	23.0	4600

The above values include a bearing capacity safety factor of 2.5. The appropriate net bearing pressures may be selected for the deflection/settlement as computed from soil-structure interaction.

In order to restrict the influence of adjacent footings on each other, the lateral edge-to-edge spacing between the foundations should at least be equal to “0.8B” where “B” is the width of the larger footing. In case this criterion cannot be satisfied, combined footings/ strip footings or raft foundations may be provided.

The suggested modulus of sub grade reaction (k) has been computed based on empirical relationships as given in published literature [(5)], and is applicable for a 3 m size square footing at the center of the loaded area.

[(5)] Bowles, J.E. (1996), **"*Foundation Analysis and Design Fifth Edition*",** The McGraw-Hill Companies Inc., pp. 503

7.3.2 Recommendations for Raft Foundations

The following table presents our recommended values of net and corresponding gross allowable bearing pressures for raft foundations supporting the proposed Residential Towers at the double basement level:

Structure	Foundation Size	Foundation Depth† (RL), m	Raft Thickness, m	Recommended Net Allowable Bearing Pressure, T/m^2		Corresponding Allowable Gross Bearing Pressure, T/m^2		Proposed Modulus of Subgrade Reaction (k), kN/m^3
				Total Settlement = 50 mm	Total Settlement = 75 mm	Total Settlement = 50 mm	Total Settlement = 75 mm	
Towers with double basements	Raft Foundations (B ≥ 6 m)	8.0 (RL 227.7 m)	1.0	37.0	55.5	51.3	59.6*	10200
		10.0 (RL 225.7 m)	1.5	39.0	58.5	57.0	69.5*	11400

† Depth below EGL or FGL whichever is deeper
*restricted to shear criterion

The above values include a bearing capacity safety factor of 2.5. The appropriate net bearing pressures may be selected for the deflection/settlement as computed from soil-structure interaction.

The suggested modulus of sub grade reaction (k) has been computed based on empirical relationships as given in published literature [6], and is applicable for minimum 6 m size square footing at the center of the loaded area.

7.4 Basement Design

The basement should be waterproofed effectively and should be designed to resist lateral earth pressure as well as hydrostatic pressure.

Groundwater was not encountered to the maximum explored depth of 45 m (RL 191.0 m). Therefore, hydrostatic uplift is not likely to occur. However, for the worst condition, a hydrostatic uplift equivalence to 1 m head of water may be considered in the design, to account for saturation of the soils due to seepage water from rains, pipe breakages, etc. The basement floor slab should be designed to resist the consequent uplift force with an adequate safety factor.

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[6] Bowles, J.E. (1996), **"*Foundation Analysis and Design Fifth Edition*",** The McGraw-Hill Companies Inc., pp. 503

We suggest the following values of coefficients of lateral earth pressure for design of basement retaining walls:

Depth, m		k_a	k_p	k_0
From	To			
0	4.0	0.35	2.88	0.52
4.0	10.0	0.33	3.00	0.50

where:

k_a = Co-efficient of active earth pressure
k_p = Co-efficient of passive earth pressure
k_0 = Co-efficient of earth pressure at rest

A suitable safety factor should be applied on the passive earth pressures in the design of the wall.

8.0 FOUNDATION CONSTRUCTION CONSIDERATIONS

8.1 Excavation

We propose the following side slopes for temporary open cut excavations for foundation construction.

Depth, m		Recommended Side Slopes not steeper than -	
From	To	Vertical : Horizontal	Angle with the Horizontal (in Degrees)
0.0	6.0	1 : 1.0~1.2	40~45
6.0	10.0	1 : 0.6~0.36	60~70

A 1.5 m wide horizontal berm should be provided at about every 3.0 m depth interval for stability purpose. If excessive sloughing or caving occurs, the slopes may be flattened further to ensure stability.

The engineer should monitor the excavation slopes. In case excessive sloughing or caving occurs, the slope may be flattened further to ensure stability. Heavy construction equipment should not be permitted to operate within 3.0 m distance of the edge of deep excavations.

If sufficient space is not available for sloped excavation, consideration may be given to provision of sheet piles / diaphragm walls or contiguous piles. Special care should be taken to ensure that adjacent structures beyond the excavation line are not affected by the deep excavation.

8.2 Foundation Level Preparation

The area shall be excavated up to the foundation level. All loose soils should be removed and the exposed foundation bearing surface should be compacted properly using rammers / rollers.

The surface should then be protected from disturbances due to construction activities so that the foundations may bear on the natural undisturbed ground. We recommend the placement of a 75 to 100 mm thick “blinding layer” of lean concrete to facilitate placement of reinforcing steel and to protect the soils from disturbance.

In case mechanical means like excavators are deployed for excavations, the excavations should be carried out up to 0.5 m above the proposed level. The last 0.5 m depth of excavation should be carried out manually, so that the founding soils are not disturbed / loosened.

8.3 Chemical Attack on Foundation Concrete

Results of chemical test on selected soil and groundwater samples are presented on Table 15.

The results indicate that the soils contain 0.12-0.14 sulphates and 0.04 percent chlorides. The pH value of soil is ranges from 7.8-7.9 indicating nearly neutral condition.

IS: 456-2000 recommends that precautions should be taken against chemical degradation of concrete if

- the sulphates content (SO_3) of the soils exceeds 0.2 percent, or
- the sulphates content (SO_3) of the groundwater exceeds 300 mg per litre.

Comparing the test results with the specified limits in IS 456-2000, the sulphate content of the soil is within the specified limit, whereas, the sulphate content of ground water are higher than the specified limits. Groundwater table is not encountered at the site to the final explored depth, and shall have no influence on the foundation concrete.

The strata at the site may be classified under **Class-I** category as described on IS-456-2000, indicating a **mild potential for corrosion**. We recommend the following as a good practice in order to limit the potential for chemical attack on foundation concrete:

1. Foundation concrete should contain minimum cement content of 280 kg/m^3 of cement. Ordinary Portland cement may be used.

2. Water cement ratio in foundation concrete should generally be in the range of 0.50 to 0.55.

3. A clear concrete cover over the reinforcement steel of at least 50 mm should be provided for all foundations.

4. Foundation concrete should be densified adequately using a vibrator so as to form a dense impervious mass.

8.4 Variability in Subsurface Conditions

Subsurface conditions encountered during construction may vary somewhat from the conditions encountered during the site investigation. In case significant variations are encountered during construction, we request to be notified so that our engineers may review the recommendations in this report in light of these variations.

9.0 SUMMARY OF PRINCIPAL FINDINGS AND RECOMMENDATIONS

M/s. Cengrs Geotechnica Pvt. Ltd. has conducted a geotechnical investigation for proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon for M/s. Vatika Limited.

The scope of work includes drilling of fourteen (14) boreholes to 30-45 m depth.

The following are our principal findings and recommendations:

1. **Site Stratigraphy:** The soils at the site are alluvial in nature. The surficial soils consist of medium dense silty sand that extends to about 3-7 m depth (RL 232.7-228.7 m), underlain by low plastic dense sandy silt to about 12-14 m depth (RL 223.7-221.7 m). Below this, very dense silty sand / sandy silt encountered to the maximum explored depth of 45 m (RL 191 m). *[Refer to Section 4.3].*

2. **Groundwater:** Groundwater was not met to the maximum explored depth of 45 m (RL 191.0 m) during the period of our field investigation (May, 2014). *[Refer to Section 4.4]*.

3. **Liquefaction:** Groundwater was not met the maximum explored depth of 45 m (RL 191.0 m) at the time of our field investigation (May, 2014). Granular soils encountered at the site are dense to very dense in consistency. Hence we are of the opinion that the soils at site are not likely to liquefy in the event of an earthquake. *[Refer to Section 5.0]*.

4. **Foundation Recommendations:** Our recommended foundation schemes for the various structures planned at the site are summarized below:

Structure	Recommended Alternative Foundation Schemes	Report Reference
Smaller Towers and Non Tower area / Extended double basement area	Open Foundations (Isolated or Strip Footings)	Section 7.3.1
High-Rise Towers	Raft Foundations	Section 7.3.2

	CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Sheet No. 14

10.0 **CLOSURE**

We appreciate the opportunity to perform this investigation for you and have pleasure in submitting this final report. Please contact us when we can be of further service to you.

for **CENGRS GEOTECHNICA PRIVATE LIMITED**

(RAVI SUNDARAM)
DIRECTOR

(SANJAY GUPTA)
MANAGING DIRECTOR

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077

Borehole Designation : BH : 1

Surface Elevation, m : RL (+) 235.97 m

Survey Coordinates : 9812.608E, 18738.519N

UTM Coordinates : 692109.00 mE, 3141577.00 mN

Table No. : 1a

Water Table Depth : Not Met

Termination Depth : 45.30 m

Boring Start : 21-May-14

Boring Finish : 23-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	235.97 235.47	0.00 0.50	DS1		Loose brown silty fine sand (SM)														
8	235.47 235.02	0.50 0.95	SPT1																
10	234.47 234.02	1.50 1.95	SPT2			0	74	23	3										
	233.72 233.42	2.25 2.55	UDS1		(2.0m) Medium dense brown sandy silt, low plastic (CL)					31.4	18.5	12.8		1.84	1.69	8.5			
11	232.97 232.52	3.00 3.45	SPT3		(3.0m) Medium dense brown silty fine sand (SM)														
14	231.47 231.02	4.50 4.95	SPT4			0	76	22	3										
	230.72 230.42	5.25 5.55	UDS2		(6.0m)									1.73	1.60	8.2	DS	0.0	31.7
15	229.97 229.52	6.00 6.45	SPT5		Medium dense to dense brown sandy silt, low plastic (CL) - medium dense, 6.0 to 9.0 m					24.6	16.2	8.4							
18	228.47 228.02	7.50 7.95	SPT6		- with traces of gravel, 7.5 to 8.0 m	1	46	49	5										
	227.72 227.42	8.25 8.55	UDS3		- with gravel, 8.0 to 9.0 m	11	25	58	5					1.93	1.78	8.4	UU	1.6	7.5
31	226.97 226.52	9.00 9.45	SPT7		- dense, 9.0 to 10.5 m								2.66						

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 1b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077
Borehole Designation : BH : 1
Surface Elevation, m : RL (+) 235.97 m
Survey Coordinates : 9812.608E, 18738.519N
UTM Coordinates : 692109.00 mE, 3141577.00 mN

Table No. : 1b
Water Table Depth : Not Met
Termination Depth : 45.30 m
Boring Start : 21-May-14
Boring Finish : 23-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
36	225.47 225.02	10.50 10.95	SPT8		Dense brown sandy silt, low plastic (CL)					27.6	19.1	8.5							
	224.72 224.42	11.25 11.55	UDS4											2.00	1.88	6.5			
					(12.0m)														
41	223.97 223.52	12.00 12.45	SPT9		Dense brown silty fine sand (SM) - with gravel, 12.0 to 13.5 m	9	55	33	3										
45	222.47 222.02	13.50 13.95	SPT10																
	221.72 221.42	14.25 14.55	UDS5											1.75	1.66	5.5	DS	0.0	33.9
					(15.0m)														
106	220.97 220.52	15.00 15.45	SPT11		Very dense brown fine sand (SP-SM)	0	95	6	0										
	218.72 218.42	17.25 17.55	UDS6											2.07	1.99	4.1			
103	217.97 217.52	18.00 18.45	SPT12																
					(20.0m)														
	215.72 215.42	20.25 20.55	DS2		Very dense brown silty fine sand (SM) - with traces of gravel, 20.0 to 21.0 m	2	57	38	4										
84	214.97 214.52	21.00 21.45	SPT13																
	212.72 212.42	23.25 23.55	DS3		(24.0m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 1c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077
Borehole Designation : BH : 1
Surface Elevation, m : RL (+) 235.97 m
Survey Coordinates : 9812.608E, 18738.519N
UTM Coordinates : 692109.00 mE, 3141577.00 mN

Table No. : 1c
Water Table Depth : Not Met
Termination Depth : 45.30 m
Boring Start : 21-May-14
Boring Finish : 23-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
88	211.97 211.52	24.00 24.45	SPT14		Dense to very dense brown sandy silt, low plastic (CL) - very dense, 24.0 to 27.0 m - with traces of gravel, 24.0 to 26.0 m	1	23	68	8	26.5	19.0	7.6							
	209.72 209.42	26.25 26.55	UDS7											2.06	1.79	15.3	UU	4.5	2.4
45	208.97 208.52	27.00 27.45	SPT15		- dense, 27.0 to 29.0 m					28.4	15.6	12.8							
	206.72 206.42	29.25 29.55	DS4		(29.0m) Very dense brown gravels (GP) (30.0m)	88	4	8	0										
105/ 20cm	205.97 205.62	30.00 30.35	SPT16		Very dense brown sandy silt, low plastic (CL)														
	203.72 203.42	32.25 32.55	DS5																
71	202.97 202.52	33.00 33.45	SPT17		- with traces of gravel, 33.0 to 35.0 m	2	36	56	6										
	200.72 200.42	35.25 35.55	DS6																
107	199.97 199.52	36.00 36.45	SPT18							26.6	15.8	10.9							
	197.72 197.42	38.25 38.55	DS7		(39.0m)														
103/ 22cm	196.97 196.60	39.00 39.37	SPT19		Very dense brown silty fine sand with gravel (SM)	5	68	22	4										

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 1d)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077

Borehole Designation : BH : 1

Surface Elevation, m : RL (+) 235.97 m

Survey Coordinates : 9812.608E, 18738.519N

UTM Coordinates : 692109.00 mE, 3141577.00 mN

Table No. : 1d

Water Table Depth : Not Met

Termination Depth : 45.30 m

Boring Start : 21-May-14

Boring Finish : 23-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	194.72 194.42	41.25 41.55	DS8		Very dense brown silty fine sand with gravel (SM)														
101/ 19cm	193.97 193.63	42.00 42.34	SPT20			0	69	28	3										
	191.72 191.42	44.25 44.55	DS9																
102/ 15cm	190.97 190.67	45.00 45.30	SPT21		(45.3m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077
Borehole Designation : BH : 2
Surface Elevation, m : RL (+) 235.76 m
Survey Coordinates : 9809.19E, 18782.454N
UTM Coordinates : 692111.00 mE, 3141627.00 mN

Table No. : 2a
Water Table Depth : Not Met
Termination Depth : 45.25 m
Boring Start : 19-May-14
Boring Finish : 21-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	235.76	0.00	DS1		Loose to medium dense brown silty fine sand (SM)														
	235.26	0.50			- loose, 0.0 to 1.5 m														
9	235.26	0.50	SPT1			0	66	29	5										
	234.81	0.95																	
11	234.26	1.50	SPT2		- medium dense, 1.5 to 6.0 m														
	233.81	1.95																	
	233.51	2.25	UDS1											1.69	1.57	7.6	DS	0.0	30.9
	233.21	2.55																	
16	232.76	3.00	SPT3		- with gravel, 3.0 to 6.0 m	6	48	40	6										
	232.31	3.45																	
18	231.26	4.50	SPT4																
	230.81	4.95																	
	230.51	5.25	UDS2											1.88	1.65	14.2			
	230.21	5.55			(6.0m)														
22	229.76	6.00	SPT5		Medium dense brown sandy silt, low plastic (CL)	2	43	49	6										
	229.31	6.45			- with traces of gravel, 6.0 to 7.5 m														
20	228.26	7.50	SPT6							27.9	16.9	11.0							
	227.81	7.95			(8.0m)														
	227.51	8.25	UDS3		Medium dense brown silty fine sand with traces of gravel	2	63	31	4					1.85	1.61	14.8	DS	0.0	31.7
	227.21	8.55			(SM)														
					(9.0m)														
39	226.76	9.00	SPT7		Dense brown sandy silt with gravel, low plastic (CL)	5	36	51	9										
	226.31	9.45																	

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 2b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077
Borehole Designation : BH : 2
Surface Elevation, m : RL (+) 235.76 m
Survey Coordinates : 9809.19E, 18782.454N
UTM Coordinates : 692111.00 mE, 3141627.00 mN

Table No. : 2b
Water Table Depth : Not Met
Termination Depth : 45.25 m
Boring Start : 19-May-14
Boring Finish : 21-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
45	225.26 224.81	10.50 10.95	SPT8		Dense brown sandy silt, low plastic (CL)					28.8	17.7	11.1							
	224.51 224.21	11.25 11.55	UDS4											2.00	1.74	15.3	UU	3.8	5.4
					(12.0m)														
55	223.76 223.31	12.00 12.45	SPT9		Very dense brown silty fine sand with traces of gravel (SM)	2	61	32	4										
68	222.26 221.81	13.50 13.95	SPT10																
	221.51 221.21	14.25 14.55	UDS5											2.03	1.70	19.7			
93	220.76 220.31	15.00 15.45	SPT11			4	72	21	4										
	218.51 218.21	17.25 17.55	UDS6											1.84	1.72	7.2	DS	0.0	34.3
103	217.76 217.31	18.00 18.45	SPT12			3	79	18	0										
	215.51 215.21	20.25 20.55	DS2																
101	214.76 214.31	21.00 21.45	SPT13																
	212.51 212.21	23.25 23.55	DS3		(24.0m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 2c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077
Borehole Designation : BH : 2
Surface Elevation, m : RL (+) 235.76 m
Survey Coordinates : 9809.19E, 18782.454N
UTM Coordinates : 692111.00 mE, 3141627.00 mN

Table No. : 2c
Water Table Depth : Not Met
Termination Depth : 45.25 m
Boring Start : 19-May-14
Boring Finish : 21-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
76	211.76 211.31	24.00 24.45	SPT14		Very dense brown sandy silt with traces of gravel, low plastic (CL)	2	28	60	11	28.6	17.4	11.1							
					(26.0m)														
	209.51 209.21	26.25 26.55	UDS7		Very dense brown silty fine sand with traces of gravel (SM)	2	60	33	5					2.06	1.74	18.2			
					(27.0m)														
105	208.76 208.31	27.00 27.45	SPT15		Very dense brown sandy silt, low plastic (CL)					28.0	17.6	10.4							
					(30.0m)														
	206.51 206.21	29.25 29.55	DS4		Very dense brown silty fine sand (SM)														
100/ 15cm	205.76 205.46	30.00 30.30	SPT16		- intermixed with gravel, 30.0 to 32.0 m	35	41	24	0										
	203.51 203.26	32.25 32.50	DS5																
88	202.76 202.31	33.00 33.45	SPT17																
	200.51 200.21	35.25 35.55	DS6		- with traces of gravel, 35.0 to 36.0 m	3	51	40	6										
					(36.0m)														
98	199.76 199.31	36.00 36.45	SPT18		Very dense brown sandy silt, low plastic (CL)					26.2	18.4	7.8							
	197.51 197.26	38.25 38.50	DS7																
89	196.76 196.31	39.00 39.45	SPT19																

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 2d)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+31+P

Job No. : 214077

Borehole Designation : BH : 2

Surface Elevation, m : RL (+) 235.76 m

Survey Coordinates : 9809.19E, 18782.454N

UTM Coordinates : 692111.00 mE, 3141627.00 mN

Table No. : 2d

Water Table Depth : Not Met

Termination Depth : 45.25 m

Boring Start : 19-May-14

Boring Finish : 21-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	194.51 194.21	41.25 41.55	DS8		Very dense brown sandy silt, low plastic (CL) (42.0m)														
105/ 20cm	193.76 193.41	42.00 42.35	SPT20		Very dense brown silty fine sand (SM)	0	75	20	5										
	191.51 191.21	44.25 44.55	DS9																
100/ 10cm	190.76 190.51	45.00 45.25	SPT21		(45.25m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+37+P

Job No. : 214077
Borehole Designation : BH : 3
Surface Elevation, m : RL (+) 235.69 m
Survey Coordinates : 9806.112E, 18826.546N
UTM Coordinates : 692108.00 mE, 3141678.00 mN

Table No. : 3a
Water Table Depth : Not Met
Termination Depth : 45.15 m
Boring Start : 17-May-14
Boring Finish : 18-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	235.69	0.00	DS1		Loose to medium dense brown silty fine sand (SM)														
	235.19	0.50			- loose, 0.0 to 1.5 m														
9	235.19	0.50	SPT1																
	234.74	0.95																	
13	234.19	1.50	SPT2		- medium dense, 1.5 to 6.0 m	4	60	31	5										
	233.74	1.95			- with traces of gravel, 1.5 to 4.5 m														
	233.44	2.25	UDS1											1.75	1.60	9.5			
	233.14	2.55																	
14	232.69	3.00	SPT3										2.62						
	232.24	3.45																	
16	231.19	4.50	SPT4		- with traces of gravel, 4.5 to 5.0 m	3	60	31	5										
	230.74	4.95																	
	230.44	5.25	UDS2											1.77	1.61	9.9	DS	0.0	32.1
	230.14	5.55			(6.0m)														
24	229.69	6.00	SPT5		Medium dense to very dense brown sandy silt, low plastic (CL)	2	45	45	8										
	229.24	6.45			- medium dense with traces of gravel, 6.0 to 7.5 m														
37	228.19	7.50	SPT6		- dense, 7.5 to 9.0 m					27.1	18.3	8.8							
	227.74	7.95																	
	227.44	8.25	UDS3											2.01	1.81	10.9			
	227.14	8.55																	
59	226.69	9.00	SPT7		- very dense, 9.0 to 10.5 m														
	226.24	9.45																	

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 3b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+37+P

Job No. : 214077
Borehole Designation : BH : 3
Surface Elevation, m : RL (+) 235.69 m
Survey Coordinates : 9806.112E, 18826.546N
UTM Coordinates : 692108.00 mE, 3141678.00 mN

Table No. : 3b
Water Table Depth : Not Met
Termination Depth : 45.15 m
Boring Start : 17-May-14
Boring Finish : 18-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
60	225.19 224.74	10.50 10.95	SPT8		Very dense brown sandy silt, low plastic (CL) (11.0m)					29.3	18.5	10.8							
	224.44 224.14	11.25 11.55	UDS4		Very dense brown fine sand (SP-SM)									1.79	1.68	6.8	DS	0.0	34.5
73	223.69 223.24	12.00 12.45	SPT9		- with gravel, 12.0 to 13.5 m	5	86	8	1										
92	222.19 221.74	13.50 13.95	SPT10																
	221.44 221.14	14.25 14.55	UDS5											2.06	1.75	17.4			
103	220.69 220.24	15.00 15.45	SPT11		- with gravel, 15.0 to 17.0 m	7	81	10	1										
	218.44 218.14	17.25 17.55	UDS6											1.87	1.74	7.3	DS	0.0	34.8
102	217.69 217.24	18.00 18.45	SPT12																
	215.44 215.14	20.25 20.55	DS2		Very dense brown silty fine sand (SM) (20.0m) - with traces of gravel, 20.0 to 21.0 m	1	75	20	4										
102/ 25cm	214.69 214.29	21.00 21.40	SPT13																
	212.44 212.14	23.25 23.55	DS3																

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 3c)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+37+P

Job No. : 214077
Borehole Designation : BH : 3
Surface Elevation, m : RL (+) 235.69 m
Survey Coordinates : 9806.112E, 18826.546N
UTM Coordinates : 692108.00 mE, 3141678.00 mN

Table No. : 3c
Water Table Depth : Not Met
Termination Depth : 45.15 m
Boring Start : 17-May-14
Boring Finish : 18-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
102/ 23cm	211.69 211.31	24.00 24.38	SPT14		Very dense brown silty fine sand (SM) - with traces of gravel, 24.0 to 26.0 m	1	72	23	5										
	209.44 209.14	26.25 26.55	DS4																
102/ 20cm	208.69 208.34	27.00 27.35	SPT15		(29.0m)														
	206.44 206.19	29.25 29.50	DS5		Very dense brown gravels (GP) (30.0m)	94	3	3	0										
104/ 20cm	205.69 205.34	30.00 30.35	SPT16		Very dense brown silty fine sand (SM)														
	203.44 203.19	32.25 32.50	DS6																
108/ 20cm	202.69 202.34	33.00 33.35	SPT17		- with traces of gravel, 33.0 to 35.0 m (35.0m)	4	55	34	8										
	200.69 200.19	35.00 35.50	DS7		Very dense brown sandy silt, low plastic (CL)														
101/ 20cm	199.69 199.34	36.00 36.35	SPT17		(38.0m)					29.0	18.4	10.6							
	197.44 197.19	38.25 38.50	DS8		Very dense brown silty fine sand (SM)														
103/ 27cm	196.69 196.27	39.00 39.42	SPT19		- with traces of gravel, 39.0 to 41.0 m	2	59	33	6										

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 3d)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+37+P

Job No. : 214077

Borehole Designation : BH : 3

Surface Elevation, m : RL (+) 235.69 m

Survey Coordinates : 9806.112E, 18826.546N

UTM Coordinates : 692108.00 mE, 3141678.00 mN

Table No. : 3d

Water Table Depth : Not Met

Termination Depth : 45.15 m

Boring Start : 17-May-14

Boring Finish : 18-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	194.44 194.19	41.25 41.50	DS9		Very dense brown silty fine sand (SM)														
100/ 15cm	193.69 193.39	42.00 42.30	SPT20		- with traces of gravel, 42.0 to 44.0 m	2	59	32	7										
	191.44 191.19	44.25 44.50	DS10																
Ref*/ 15cm	190.69 190.54	45.00 45.15	SPT21		(45.15m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+14

Job No. : 214077
Borehole Designation : BH : 4
Surface Elevation, m : RL (+) 235.80 m
Survey Coordinates : 9839.904E, 18836.955N
UTM Coordinates : 692145.00 mE, 3141690.00 mN

Table No. : 4a
Water Table Depth : Not Met
Termination Depth : 30.45 m
Boring Start : 16-May-14
Boring Finish : 17-May-14
Boring Method : Shell and Auger

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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	235.80	0.00	DS1		Medium dense brown silty fine sand (SM)														
	235.30	0.50																	
10	235.30	0.50	SPT1																
	234.85	0.95																	
16	234.30	1.50	SPT2			0	75	22	4										
	233.85	1.95																	
	233.55	2.25	UDS1											1.83	1.60	14.0			
	233.25	2.55																	
20	232.80	3.00	SPT3																
	232.35	3.45																	
					(4.5m)														
23	231.30	4.50	SPT4		Medium dense brown fine sand (SP-SM)	0	90	10	0										
	230.85	4.95																	
	230.55	5.25	UDS2											1.80	1.63	10.1	DS	0.0	33.2
	230.25	5.55																	
					(6.0m)														
28	229.80	6.00	SPT5		Medium dense to very dense brown sandy silt, low plastic (CL)					24.6	16.1	8.5							
	229.35	6.45			- medium dense, 6.0 to 7.5 m														
38	228.30	7.50	SPT6		- dense, 7.5 to 9.0 m														
	227.85	7.95																	
	227.55	8.25	UDS3											2.07	1.81	14.2			
	227.25	8.55																	
51	226.80	9.00	SPT7		- very dense with traces of gravel, 9.0 to 10.5 m	1	26	63	10										
	226.35	9.45																	

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 4b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+14

Job No. : 214077
Borehole Designation : BH : 4
Surface Elevation, m : RL (+) 235.80 m
Survey Coordinates : 9839.904E, 18836.955N
UTM Coordinates : 692145.00 mE, 3141690.00 mN

Table No. : 4b
Water Table Depth : Not Met
Termination Depth : 30.45 m
Boring Start : 16-May-14
Boring Finish : 17-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
50	225.30 224.85	10.50 10.95	SPT8		Very dense brown sandy silt, low plastic (CL) (11.0m)					29.1	15.9	13.1							
	224.55 224.25	11.25 11.55	UDS4		Dense to very dense brown silty fine sand (SM) - dense, 11.0 to 13.5 m									1.86	1.69	10.2	DS	0.0	34.2
43	223.80 223.35	12.00 12.45	SPT9			0	61	33	6										
55	222.30 221.85	13.50 13.95	SPT10		- very dense, 13.5 to 23.0 m														
	221.55 221.25	14.25 14.55	UDS5											1.83	1.72	6.3	DS	0.0	35.1
90	220.80 220.35	15.00 15.45	SPT11		- with traces of gravel, 15.0 to 20.0 m	1	73	22	4										
	218.55 218.25	17.25 17.55	UDS6											1.90	1.75	8.3	DS	0.0	35.3
98	217.80 217.35	18.00 18.45	SPT12			1	63	31	5										
	215.55 215.25	20.25 20.55	UDS7											2.09	1.84	13.7			
104/ 23cm	214.80 214.42	21.00 21.38	SPT13		(23.0m)														
	212.55 212.30	23.25 23.50	DS2		Very dense brown sandy silt, low plastic (CL)					24.4	15.8	8.6							

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 4c)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+14

Job No. : 214077

Borehole Designation : BH : 4

Surface Elevation, m : RL (+) 235.80 m

Survey Coordinates : 9839.904E, 18836.955N

UTM Coordinates : 692145.00 mE, 3141690.00 mN

Table No. : 4c

Water Table Depth : Not Met

Termination Depth : 30.45 m

Boring Start : 16-May-14

Boring Finish : 17-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
100/ 25cm	211.80 211.40	24.00 24.40	SPT14		Very dense brown sandy silt, low plastic (CL)	1	37	55	7										
					(26.0m)														
	209.55 209.30	26.25 26.50	DS3		Very dense brown silty fine sand (SM)														
66	208.80 208.35	27.00 27.45	SPT15																
	206.55 206.25	29.25 29.55	UDS8			0	56	37	7					2.05	1.74	18.1			
62	205.80 205.35	30.00 30.45	SPT16																
					(30.45m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+14

Job No. : 214077
Borehole Designation : BH : 5
Surface Elevation, m : RL (+) 235.70 m
Survey Coordinates : 9887.056E, 18872.661N
UTM Coordinates : 692198.00 mE, 3141743.00 mN

Table No. : 5a
Water Table Depth : Not Met
Termination Depth : 30.25 m
Boring Start : 14-May-14
Boring Finish : 15-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	235.70	0.00	DS1		Loose to medium dense brown silty fine sand (SM)														
	235.20	0.50			- loose, 0.0 to 1.5 m														
9	235.20	0.50	SPT1			0	63	34	2										
	234.75	0.95																	
13	234.20	1.50	SPT2		- medium dense, 1.5 to 7.5 m														
	233.75	1.95																	
	233.45	2.25	UDS1											1.63	1.55	4.9	DS	0.0	30.5
	233.15	2.55																	
14	232.70	3.00	SPT3			0	80	19	1										
	232.25	3.45																	
18	231.20	4.50	SPT4																
	230.75	4.95																	
	230.45	5.25	UDS2											1.88	1.66	13.3			
	230.15	5.55																	
27	229.70	6.00	SPT5		- with traces of gravel, 6.0 to 7.5 m	2	63	33	2										
	229.25	6.45			(7.5m)														
42	228.20	7.50	SPT6		Dense to very dense brown sandy silt, low plastic (CL)					22.3	14.8	7.4							
	227.75	7.95			- dense, 7.5 to 9.0 m														
	227.45	8.25	UDS3											1.97	1.67	18.1	UU	3.0	6.1
	227.15	8.55																	
60	226.70	9.00	SPT7		- very dense, 9.0 to 10.5 m														
	226.25	9.45																	

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 5b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+14

Job No. : 214077
Borehole Designation : BH : 5
Surface Elevation, m : RL (+) 235.70 m
Survey Coordinates : 9887.056E, 18872.661N
UTM Coordinates : 692198.00 mE, 3141743.00 mN

Table No. : 5b
Water Table Depth : Not Met
Termination Depth : 30.25 m
Boring Start : 14-May-14
Boring Finish : 15-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
50	225.20 224.75	10.50 10.95	SPT8		Very dense brown sandy silt, low plastic (CL) (11.25m)					28.9	20.3	8.6							
	224.45 224.15	11.25 11.55	UDS4		Dense to very dense brown silty fine sand (SM) - dense, 11.0 to 13.5 m									1.87	1.64	14.1	DS	0.0	33.6
48	223.70 223.25	12.00 12.45	SPT9		- with gravel, 12.0 to 13.5 m	13	50	35	2										
61	222.20 221.75	13.50 13.95	SPT10		- very dense, 13.5 to 24.0 m														
	221.45 221.15	14.25 14.55	UDS5											1.95	1.65	18.0			
102	220.70 220.25	15.00 15.45	SPT11		- with traces of gravel, 15.0 to 20.0 m	1	76	21	1										
	218.45 218.15	17.25 17.55	UDS6											2.03	1.81	12.1			
103	217.70 217.25	18.00 18.45	SPT12			3	66	29	2										
	215.45 215.15	20.25 20.55	DS2																
102/ 25cm	214.70 214.30	21.00 21.40	SPT13			0	63	34	3										
	212.45 212.20	23.25 23.50	DS3		(24.0m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 5c)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+14

Job No. : 214077

Borehole Designation : BH : 5

Surface Elevation, m : RL (+) 235.70 m

Survey Coordinates : 9887.056E, 18872.661N

UTM Coordinates : 692198.00 mE, 3141743.00 mN

Table No. : 5c

Water Table Depth : Not Met

Termination Depth : 30.25 m

Boring Start : 14-May-14

Boring Finish : 15-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
105	211.70 211.25	24.00 24.45	SPT14		Very dense brown sandy silt, low plastic (CL)					27.1	17.2	9.8							
	209.45 209.20	26.25 26.50	UDS9											2.11	1.84	14.4			
105/ 21cm	208.70 208.34	27.00 27.36	SPT15							31.2	17.1	14.0							
	206.45 206.20	29.25 29.50	DS4		(29.0m) Very dense brown gravels (GP)	90	4	6	0										
100/ 10cm	205.70 205.45	30.00 30.25	SPT16		(30.0m) Very dense brown silty fine sand (SM) (30.25m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab E G+14

Job No. : 214077
Borehole Designation : BH : 6
Surface Elevation, m : RL (+) 235.77 m
Survey Coordinates : 9934.155E, 18908.287N
UTM Coordinates : 692245.00 mE, 3141773.00 mN

Table No. : 6a
Water Table Depth : Not Met
Termination Depth : 30.30 m
Boring Start : 13-May-14
Boring Finish : 14-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	235.77 235.27	0.00 0.50	DS1		Medium dense brown silty fine sand (SM)														
12	235.27 234.82	0.50 0.95	SPT1																
15	234.27 233.82	1.50 1.95	SPT2			0	82	18	0										
	233.52 233.22	2.25 2.55	UDS1											1.73	1.58	9.7	DS	0.0	31.2
17	232.77 232.32	3.00 3.45	SPT3																
21	231.27 230.82	4.50 4.95	SPT4			0	79	20	1										
	230.52 230.22	5.25 5.55	UDS2		(6.0m)									1.89	1.72	9.7			
25	229.77 229.32	6.00 6.45	SPT5		Medium dense brown sandy silt, low plastic (CL) (7.5m)					23.3	15.3	8.0							
24	228.27 227.82	7.50 7.95	SPT6		Medium dense brown silty fine sand (SM)	0	73	26	2										
	227.52 227.22	8.25 8.55	UDS3											1.82	1.62	12.5	DS	0.0	32.8
30	226.77 226.32	9.00 9.45	SPT7		(10.5m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 6b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab E G+14

Job No. : 214077
Borehole Designation : BH : 6
Surface Elevation, m : RL (+) 235.77 m
Survey Coordinates : 9934.155E, 18908.287N
UTM Coordinates : 692245.00 mE, 3141773.00 mN

Table No. : 6b
Water Table Depth : Not Met
Termination Depth : 30.30 m
Boring Start : 13-May-14
Boring Finish : 14-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
32	225.27 224.82	10.50 10.95	SPT8		Dense to very dense brown sandy silt, low plastic (CL) - dense, 10.5 to 12.0 m - with traces of gravel, 10.5 to 11.0 m	4	34	57	5										
	224.52 224.22	11.25 11.55	UDS4											1.98	1.80	10.1			
106	223.77 223.32	12.00 12.45	SPT9		- very dense, 12.0 to 15.0 m														
67	222.27 221.82	13.50 13.95	SPT10		- with gravel, 13.5 to 14.0 m	7	41	47	4										
	221.52 221.22	14.25 14.55	UDS5											2.01	1.75	14.8	UU	4.9	6.4
34	220.77 220.32	15.00 15.45	SPT11		- dense, 15.0 to 18.0 m					26.8	14.6	12.1							
	218.52 218.22	17.25 17.55	UDS6											2.00	1.74	15.3			
60	217.77 217.32	18.00 18.45	SPT12		- very dense, 18.0 to 24.0 m														
	215.52 215.22	20.25 20.55	UDS7											2.02	1.79	12.8			
102	214.77 214.32	21.00 21.45	SPT13		- with gravel, 21.0 to 23.0 m	9	45	44	3										
	212.52 212.22	23.25 23.55	DS2		(24.0m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 6c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab E G+14

Job No. : 214077

Borehole Designation : BH : 6

Surface Elevation, m : RL (+) 235.77 m

Survey Coordinates : 9934.155E, 18908.287N

UTM Coordinates : 692245.00 mE, 3141773.00 mN

Table No. : 6c

Water Table Depth : Not Met

Termination Depth : 30.30 m

Boring Start : 13-May-14

Boring Finish : 14-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
106/ 25cm	211.77 211.37	24.00 24.40	SPT14		Very dense brown silty fine sand (SM) - with gravel, 24.0 to 26.0 m	19	41	37	3										
	209.52 209.22	26.25 26.55	DS3																
105/ 18cm	208.77 208.44	27.00 27.33	SPT15		(29.0m)														
	206.52 206.27	29.25 29.50	DS4		Very dense brown gravel intermixed with silty sand (GP-SM) (30.0m)	72	20	9	0										
100/ 15cm	205.77 205.47	30.00 30.30	SPT16		Very dense brown sandy silt with gravel, low plastic (CL) (30.30m)					21.9	14.4	7.5							

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 7
Surface Elevation, m : RL (+) 236.31 m
Survey Coordinates : 10007.6E, 18860.186N
UTM Coordinates : 692311.00 mE, 3141710.00 mN

Table No. : 7a
Water Table Depth : Not Met
Termination Depth : 45.25 m
Boring Start : 11-May-14
Boring Finish : 13-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	236.31 235.81	0.00 0.50	DS1		Medium dense brown silty fine sand (SM)														
11	235.81 235.36	0.50 0.95	SPT1																
13	234.81 234.36	1.50 1.95	SPT2			0	76	22	2										
	234.06 233.76	2.25 2.55	UDS1											1.84	1.73	6.6			
18	233.31 232.86	3.00 3.45	SPT3																
19	231.81 231.36	4.50 4.95	SPT4			0	77	22	2										
	231.06 230.76	5.25 5.55	UDS2											1.73	1.58	9.7	DS	0.0	31.5
24	230.31 229.86	6.00 6.45	SPT5																
22	228.81 228.36	7.50 7.95	SPT6		- with traces of gravel, 7.5 to 8.0 m	1	54	42	4										
	228.06 227.76	8.25 8.55	UDS3											1.77	1.60	10.6	DS	0.0	32.5
26	227.31 226.86	9.00 9.45	SPT7										2.63						

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 7b)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 7
Surface Elevation, m : RL (+) 236.31 m
Survey Coordinates : 10007.6E, 18860.186N
UTM Coordinates : 692311.00 mE, 3141710.00 mN

Table No. : 7b
Water Table Depth : Not Met
Termination Depth : 45.25 m
Boring Start : 11-May-14
Boring Finish : 13-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
34	225.81 225.36	10.50 10.95	SPT8		Dense brown silty fine sand with traces of gravel (SM)	1	52	43	4										
					(11.0m)														
	225.06 224.76	11.25 11.55	UDS4		Dense to very dense brown sandy silt, low plasltic (CL) - dense, 11.0 to 13.5 m									2.01	1.72	17.0			
43	224.31 223.86	12.00 12.45	SPT9							28.4	18.8	9.6							
65	222.81 222.36	13.50 13.95	SPT10		- very dense, 13.5 to 15.0 m														
	222.06 221.76	14.25 14.55	UDS5											2.03	1.76	15.4	UU	1.8	1.5
32	221.31 220.86	15.00 15.45	SPT11		- dense, 15.0 to 21.0 m - with gravel, 15.0 to 17.0 m	15	30	48	7										
	219.06 218.76	17.25 17.55	UDS6											2.02	1.70	18.8			
32	218.31 217.86	18.00 18.45	SPT12							30.5	19.5	11.0							
	216.06 215.76	20.25 20.55	UDS7																
103	215.31 214.86	21.00 21.45	SPT13		- very dense, 21.0 to 24.0 m														
	213.06 212.81	23.25 23.50	DS2																

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 7c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 7
Surface Elevation, m : RL (+) 236.31 m
Survey Coordinates : 10007.6E, 18860.186N
UTM Coordinates : 692311.00 mE, 3141710.00 mN

Table No. : 7c
Water Table Depth : Not Met
Termination Depth : 45.25 m
Boring Start : 11-May-14
Boring Finish : 13-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
101/ 28cm	212.31 211.88	24.00 24.43	SPT14		Very dense brown sandy silt, low plasltic (CL) (26.0m)					26.3	17.5	8.8							
	210.06 209.81	26.25 26.50	DS3		Very dense brown gravels (GP) (27.0m)	97	3	1	0										
106/ 27cm	209.31 208.89	27.00 27.42	SPT15		Very dense brown sandy silt with gravel, low plasltic (CL) (29.0m)														
	207.06 206.81	29.25 29.50	DS4		Very dense brown gravels (GP) (30.0m)	92	4	5	0										
102/ 20cm	206.31 205.96	30.00 30.35	SPT16		Very dense brown sandy silt, low plasltic (CL)														
	204.06 203.81	32.25 32.50	DS5																
100/ 15cm	203.31 203.01	33.00 33.30	SPT17		- with traces of gravel, 33.0 to 35.0 m	1	47	49	4										
	201.06 200.81	35.25 35.50	DS6																
103/ 25cm	200.31 199.91	36.00 36.40	SPT18																
	198.06 197.81	38.25 38.50	DS7																
100/ 15cm	197.31 197.01	39.00 39.30	SPT19		(41.0m)					28.6	17.8	10.8							

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 7d)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077

Borehole Designation : BH : 7

Surface Elevation, m : RL (+) 236.31 m

Survey Coordinates : 10007.6E, 18860.186N

UTM Coordinates : 692311.00 mE, 3141710.00 mN

Table No. : 7d

Water Table Depth : Not Met

Termination Depth : 45.25 m

Boring Start : 11-May-14

Boring Finish : 13-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	195.06 194.81	41.25 41.50	DS8		Very dense brown silty fine sand (SM)														
106/ 15cm	194.31 194.01	42.00 42.30	SPT20		- with traces of gravel, 42.0 to 44.0 m	2	73	23	2										
	192.06 191.81	44.25 44.50	DS9																
100/ 10cm	191.31 191.06	45.00 45.25	SPT21		(45.25m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 8
Surface Elevation, m : RL (+) 236.21 m
Survey Coordinates : 9968.767E, 18848.115N
UTM Coordinates : 692276.00 mE, 3141696.00 mN

Table No. : 8a
Water Table Depth : Not Met
Termination Depth : 45.20 m
Boring Start : 09-May-14
Boring Finish : 11-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	236.21 235.71	0.00 0.50	DS1		Medium dense brown silty fine sand (SM)														
11	235.71 235.26	0.50 0.95	SPT1																
13	234.71 234.26	1.50 1.95	SPT2			0	85	15	0										
	233.96 233.66	2.25 2.55	UDS1											1.77	1.66	6.1			
18	233.21 232.76	3.00 3.45	SPT3																
22	231.71 231.26	4.50 4.95	SPT4			0	86	14	0				2.64						
	230.96 230.66	5.25 5.55	UDS2											1.77	1.60	10.6	DS	0.0	30.8
24	230.21 229.76	6.00 6.45	SPT5																
26	228.71 228.26	7.50 7.95	SPT6		- with traces of gravel, 7.5 to 8.0 m	1	74	23	2										
	227.96 227.66	8.25 8.55	UDS3		(9.0m)									1.95	1.80	8.4			
71	227.21 226.76	9.00 9.45	SPT7		Very dense brown sandy silt, low plastic (CL)					29.2	20.3	8.9							

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 8b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 8
Surface Elevation, m : RL (+) 236.21 m
Survey Coordinates : 9968.767E, 18848.115N
UTM Coordinates : 692276.00 mE, 3141696.00 mN

Table No. : 8b
Water Table Depth : Not Met
Termination Depth : 45.20 m
Boring Start : 09-May-14
Boring Finish : 11-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
113	225.71 225.26	10.50 10.95	SPT8		Very dense brown sandy silt with gravel, low plastic (CL)	5	25	64	6										
					(11.0m)														
	224.96 224.66	11.25 11.55	UDS4		Very dense brown silty fine sand (SM)									1.77	1.63	8.6	DS	0.0	33.3
59	224.21 223.76	12.00 12.45	SPT9																
58	222.71 222.26	13.50 13.95	SPT10			0	65	32	3										
	221.96 221.66	14.25 14.55	UDS5											1.92	1.80	6.8			
90	221.21 220.76	15.00 15.45	SPT11			0	75	24	2										
					(17.0m)														
	218.96 218.66	17.25 17.55	UDS6		Very dense brown sandy silt with gravel, low plastic (CL)									1.93	1.76	9.3	UU	2.9	3.8
69	218.21 217.76	18.00 18.45	SPT12			5	25	68	2										
					(20.0m)														
	215.96 215.66	20.25 20.55	DS2		Very dense brown silty fine sand (SM)														
101/ 20cm	215.21 214.86	21.00 21.35	SPT13																
	212.96 212.66	23.25 23.55	DS3																

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 8c)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 8
Surface Elevation, m : RL (+) 236.21 m
Survey Coordinates : 9968.767E, 18848.115N
UTM Coordinates : 692276.00 mE, 3141696.00 mN

Table No. : 8c
Water Table Depth : Not Met
Termination Depth : 45.20 m
Boring Start : 09-May-14
Boring Finish : 11-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
105/ 22cm	212.21 211.84	24.00 24.37	SPT14		Very dense brown silty fine sand (SM) - with gravel, 24.0 to 26.0 m	9	45	41	5										
	209.96 209.66	26.25 26.55	DS4																
102	209.21 208.76	27.00 27.45	SPT15																
	206.96 206.66	29.25 29.55	DS5																
100/ 15cm	206.21 205.91	30.00 30.30	SPT16		- with traces of gravel, 30.0 to 32.0 m	1	54	42	3										
	203.96 203.71	32.25 32.50	DS6																
101/ 23cm	203.21 202.83	33.00 33.38	SPT17																
	200.96 200.71	35.25 35.50	DS7		(36.0m)														
84	200.21 199.76	36.00 36.45	SPT18		Very dense brown sandy silt, low plastic (CL)	0	40	56	4	30.7	21.4	9.3							
	197.96 197.71	38.25 38.50	DS8																
73	197.21 196.76	39.00 39.45	SPT19		(41.0m)					27.2	16.0	11.2							

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 8d)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+36+P

Job No. : 214077
Borehole Designation : BH : 8
Surface Elevation, m : RL (+) 236.21 m
Survey Coordinates : 9968.767E, 18848.115N
UTM Coordinates : 692276.00 mE, 3141696.00 mN

Table No. : 8d
Water Table Depth : Not Met
Termination Depth : 45.20 m
Boring Start : 09-May-14
Boring Finish : 11-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	194.96 194.71	41.25 41.50	DS9		Very dense brown silty fine sand (SM)														
101/ 7cm	194.21 193.99	42.00 42.22	SPT20			0	73	24	3										
	191.96 191.71	44.25 44.50	DS10																
100/ 5cm	191.21 191.01	45.00 45.20	SPT21		(45.20m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+8+P

Job No. : 214077
Borehole Designation : BH : 9
Surface Elevation, m : RL (+) 236.20 m
Survey Coordinates : 9941.047E, 18821.83N
UTM Coordinates : 692244.00 mE, 3141667.00 mN

Table No. : 9a
Water Table Depth : Not Met
Termination Depth : 30.35 m
Boring Start : 08-May-14
Boring Finish : 09-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	236.20 235.70	0.00 0.50	DS1		Medium dense brown silty fine sand (SM)														
12	235.70 235.25	0.50 0.95	SPT1																
15	234.70 234.25	1.50 1.95	SPT2			0	72	26	2										
	233.95 233.65	2.25 2.55	UDS1											1.81	1.71	5.5			
28	233.20 232.75	3.00 3.45	SPT3			0	65	33	2										
34	231.70 231.25	4.50 4.95	SPT4		(4.5m) Dense to very dense brown sandy silt, low plastic (CL) - dense, 4.5 to 9.0 m					25.1	17.6	7.4							
	230.95 230.65	5.25 5.55	UDS2											1.91	1.77	7.8	UU	1.4	8.6
36	230.20 229.75	6.00 6.45	SPT5		- with traces of gravel, 6.0 to 10.5 m	3	35	58	4										
41	228.70 228.25	7.50 7.95	SPT6																
	227.95 227.65	8.25 8.55	UDS3											1.88	1.71	9.9			
57	227.20 226.75	9.00 9.45	SPT7		- very dense, 9.0 to 10.5 m	1	44	51	4										

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 9b)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+8+P

Job No. : 214077
Borehole Designation : BH : 9
Surface Elevation, m : RL (+) 236.20 m
Survey Coordinates : 9941.047E, 18821.83N
UTM Coordinates : 692244.00 mE, 3141667.00 mN

Table No. : 9b
Water Table Depth : Not Met
Termination Depth : 30.35 m
Boring Start : 08-May-14
Boring Finish : 09-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
68	225.70 225.25	10.50 10.95	SPT8		Very dense brown sandy silt, low plastic (CL)					27.8	19.0	8.9							
	224.95 224.65	11.25 11.55	DS2																
70	224.20 223.75	12.00 12.45	SPT9																
66	222.70 222.25	13.50 13.95	SPT10		- with gravel, 13.5 to 14.0 m	13	37	46	4										
	221.95 221.65	14.25 14.55	UDS5		(14.0m) Dense brown silty fine sand (SM)									1.83	1.68	9.0	DS	0.0	34.5
40	221.20 220.75	15.00 15.45	SPT11		- with traces of gravel, 15.0 to 17.0 m	2	69	27	2										
	218.95 218.65	17.25 17.55	UDS6											1.99	1.74	14.6			
47	218.20 217.75	18.00 18.45	SPT12		- with traces of gravel, 18.0 to 20.0 m	3	63	33	2										
	215.95 215.65	20.25 20.55	DS3		(21.0m)														
80	215.20 214.75	21.00 21.45	SPT13		Very dense brown sandy silt, low plastic (CL)					29.5	20.9	8.6							
	212.95 212.65	23.25 23.55	DS4																

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 9c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+8+P

Job No. : 214077

Borehole Designation : BH : 9

Surface Elevation, m : RL (+) 236.20 m

Survey Coordinates : 9941.047E, 18821.83N

UTM Coordinates : 692244.00 mE, 3141667.00 mN

Table No. : 9c

Water Table Depth : Not Met

Termination Depth : 30.35 m

Boring Start : 08-May-14

Boring Finish : 09-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
113/ 25cm	212.20 211.80	24.00 24.40	SPT14		Very dense brown sandy silt, low plastic (CL) - with traces of gravel, 24.0 to 29.0 m	1	39	55	5										
	209.95 209.65	26.25 26.55	DS5																
106/ 20cm	209.20 208.85	27.00 27.35	SPT15			2	49	46	3										
	206.95 206.65	29.25 29.55	DS6																
102/ 20cm	206.20 205.85	30.00 30.35	SPT16		(30.35m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+8+P

Job No. : 214077
Borehole Designation : BH : 10
Surface Elevation, m : RL (+) 236.03 m
Survey Coordinates : 9901.54E, 18784.689N
UTM Coordinates : 692204.00 mE, 3141627.00 mN

Table No. : 10a
Water Table Depth : Not Met
Termination Depth : 30.40 m
Boring Start : 07-May-14
Boring Finish : 08-May-14
Boring Method : Shell and Auger

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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	236.03	0.00	DS1		Medium dense brown silty fine sand (SM)														
	235.53	0.50																	
11	235.53	0.50	SPT1																
	235.08	0.95																	
19	234.53	1.50	SPT2			0	68	30	3										
	234.08	1.95																	
	233.78	2.25	UDS1											1.71	1.58	8.4	DS	0.0	31.7
	233.48	2.55			(3.0m)														
22	233.03	3.00	SPT3		Medium dense brown sandy silt, low plastic (CL)	3	33	60	4	23.8	15.4	8.4							
	232.58	3.45			- with traces of gravel, 3.0 to 4.5 m														
30	231.53	4.50	SPT4										2.66						
	231.08	4.95																	
	230.78	5.25	UDS2											1.89	1.76	7.3			
	230.48	5.55																	
28	230.03	6.00	SPT5							29.3	20.3	9.0							
	229.58	6.45			(7.5m)														
31	228.53	7.50	SPT6		Dense brown silty fine sand (SM)	0	54	42	4										
	228.08	7.95																	
	227.78	8.25	UDS3											1.78	1.60	10.9	DS	0.0	32.8
	227.48	8.55																	
42	227.03	9.00	SPT7																
	226.58	9.45			(10.5m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 10b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+8+P

Job No. : 214077
Borehole Designation : BH : 10
Surface Elevation, m : RL (+) 236.03 m
Survey Coordinates : 9901.54E, 18784.689N
UTM Coordinates : 692204.00 mE, 3141627.00 mN

Table No. : 10b
Water Table Depth : Not Met
Termination Depth : 30.40 m
Boring Start : 07-May-14
Boring Finish : 08-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
26	225.53 225.08	10.50 10.95	SPT8		Medium dense to very dense brown sandy silt, low plastic (CL) - medium dense, 10.5 to 12.0 m - with gravel, 10.5 to 11.0 m	5	32	58	5										
	224.78 224.48	11.25 11.55	UDS4											1.99	1.86	6.8			
64	224.03 223.58	12.00 12.45	SPT9		- very dense, 12.0 to 14.0 m					24.8	16.6	8.3							
66	222.53 222.08	13.50 13.95	SPT10		(14.0m)														
	221.78 221.48	14.25 14.55	UDS5		Very dense brown silty fine sand (SM)									1.86	1.68	11.1	DS	0.0	34.6
87	221.03 220.58	15.00 15.45	SPT11			0	72	26	2										
	218.78 218.48	17.25 17.55	UDS6		(18.0m)									2.03	1.81	11.8			
95	218.03 217.58	18.00 18.45	SPT12		Very dense brown sandy silt, low plastic (CL)					30.3	20.4	9.9							
	215.78 215.48	20.25 20.55	UDS7		(21.0m)														
102	215.03 214.58	21.00 21.45	SPT13		Very dense brown silty fine sand (SM)	0	72	25	3										
	212.78 212.48	23.25 23.55	DS2																

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 10c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab D G+8+P

Job No. : 214077

Borehole Designation : BH : 10

Surface Elevation, m : RL (+) 236.03 m

Survey Coordinates : 9901.54E, 18784.689N

UTM Coordinates : 692204.00 mE, 3141627.00 mN

Table No. : 10c

Water Table Depth : Not Met

Termination Depth : 30.40 m

Boring Start : 07-May-14

Boring Finish : 08-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
104	212.03 211.58	24.00 24.45	SPT14		Very dense brown silty fine sand (SM)														
	209.78 209.48	26.25 26.55	DS3																
					(27.0m)														
103	209.03 208.58	27.00 27.45	SPT15		Very dense brown sandy silt, low plastic (CL) - with gravel, 27.0 to 29.0 m	5	44	47	4										
	206.78 206.48	29.25 29.55	DS4																
102/ 25cm	206.03 205.63	30.00 30.40	SPT16																
					(30.40m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : EWS

Job No. : 214077
Borehole Designation : BH : 11
Surface Elevation, m : RL (+) 236.51 m
Survey Coordinates : 9947.366E, 18731.91N
UTM Coordinates : 692238.00 mE, 3141554.00 mN

Table No. : 11a
Water Table Depth : Not Met
Termination Depth : 30.30 m
Boring Start : 24-May-14
Boring Finish : 26-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	236.51	0.00	DS1		Medium dense brown silty fine sand (SM)														
	236.01	0.50																	
12	236.01	0.50	SPT1			0	59	36	5										
	235.56	0.95			(1.5m)														
15	235.01	1.50	SPT2		Medium dense brown sandy silt, low plastic (CL)					25.7	14.4	11.3							
	234.56	1.95			(2.0m)														
	234.26	2.25	UDS1		Medium dense brown silty fine sand (SM)	0	79	21	0					1.72	1.60	6.9	DS	0.0	30.7
	233.96	2.55			(3.0m)														
16	233.51	3.00	SPT3		Medium dense brown sandy silt, low plastic (CL)					26.0	15.2	10.8							
	233.06	3.45			(4.5m)														
21	232.01	4.50	SPT4		Medium dense brown silty fine sand (SM)	0	65	28	6										
	231.56	4.95																	
	231.26	5.25	UDS2											1.94	1.71	13.0			
	230.96	5.55																	
25	230.51	6.00	SPT5																
	230.06	6.45			(7.5m)														
22	229.01	7.50	SPT6		Medium dense brown sandy silt, low plastic (CL)	2	43	47	8										
	228.56	7.95			- with traces of gravel, 7.5 to 8.0 m														
	228.26	8.25	UDS3											1.95	1.75	11.5	UU	1.5	4.6
	227.96	8.55																	
24	227.51	9.00	SPT7							30.2	17.1	13.1							
	227.06	9.45																	

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 11b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : EWS

Job No. : 214077
Borehole Designation : BH : 11
Surface Elevation, m : RL (+) 236.51 m
Survey Coordinates : 9947.366E, 18731.91N
UTM Coordinates : 692238.00 mE, 3141554.00 mN

Table No. : 11b
Water Table Depth : Not Met
Termination Depth : 30.30 m
Boring Start : 24-May-14
Boring Finish : 26-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
41	226.01 225.56	10.50 10.95	SPT8		Dense brown sandy silt, low plastic (CL) - with traces of gravel, 10.5 to 11.0 m	1	28	59	12										
	225.26 224.96	11.25 11.55	UDS4		(12.0m)									2.09	1.95	6.8			
51	224.51 224.06	12.00 12.45	SPT9		Dense to very dense brown silty fine sand (SM) - very dense, 12.0 to 13.5 m														
46	223.01 222.56	13.50 13.95	SPT10		- dense, 13.5 to 15.0 m - with traces of gravel, 13.5 to 14.0 m	2	61	31	6										
	222.26 221.96	14.25 14.55	UDS5											1.84	1.68	9.5	DS	0.0	34.5
101	221.51 221.06	15.00 15.45	SPT11		- very dense, 15.0 to 18.0 m														
	219.26 218.96	17.25 17.55	UDS6		(18.0m)									2.04	1.76	16.1			
83	218.51 218.06	18.00 18.45	SPT12		Very dense brown sandy silt with traces of gravel, low plastic (CL) (20.0m)	1	33	53	12										
	216.26 215.96	20.25 20.55	UDS7		Very dense brown fine sand (SP-SM)									1.87	1.72	8.7	DS	0.0	34.6
101/ 20cm	215.51 215.16	21.00 21.35	SPT13			0	89	12	0										
	213.26 212.96	23.25 23.55	DS2		(24.0m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 11c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : EWS

Job No. : 214077
Borehole Designation : BH : 11
Surface Elevation, m : RL (+) 236.51 m
Survey Coordinates : 9947.366E, 18731.91N
UTM Coordinates : 692238.00 mE, 3141554.00 mN

Table No. : 11c
Water Table Depth : Not Met
Termination Depth : 30.30 m
Boring Start : 24-May-14
Boring Finish : 26-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
100/ 25cm	212.51 212.11	24.00 24.40	SPT14		Dense to very dense brown sandy silt, low plastic (CL)					31.7	17.9	13.8							
	210.26 209.96	26.25 26.55	DS3																
41	209.51 209.06	27.00 27.45	SPT15		- with traces of gravel, 27.0 to 29.0 m	2	36	53	8	25.0	15.3	9.8							
	207.26 206.96	29.25 29.55	DS4											2.02	1.69	19.9			
103/ 15cm	206.51 206.21	30.00 30.30	SPT16		(30.3m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab E G+14

Job No. : 214077
Borehole Designation : BH : 12
Surface Elevation, m : RL (+) 236.74 m
Survey Coordinates : 9994.81E, 18749.698N
UTM Coordinates : 692285.00 mE, 3141573.00 mN

Table No. : 12a
Water Table Depth : Not Met
Termination Depth : 30.42 m
Boring Start : 26-May-14
Boring Finish : 28-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	236.74 236.24	0.00 0.50	DS1		Medium dense brown fine sand (SP-SM)														
10	236.24 235.79	0.50 0.95	SPT1			0	88	12	0										
11	235.24 234.79	1.50 1.95	SPT2																
	234.49 234.19	2.25 2.55	UDS1		(3.0m)									1.72	1.61	6.4			
15	233.74 233.29	3.00 3.45	SPT3		Medium dense brown sandy silt, low plastic (CL) (4.5m)					26.8	17.1	9.7							
19	232.24 231.79	4.50 4.95	SPT4		Medium dense brown silty fine sand (SM)	0	73	22	5										
	231.49 231.19	5.25 5.55	UDS2											1.81	1.61	12.8	DS	0.0	31.6
24	230.74 230.29	6.00 6.45	SPT5																
23	229.24 228.79	7.50 7.95	SPT6		- with traces of gravel, 7.5 to 8.0 m (8.0m)	1	52	39	8										
	228.49 228.19	8.25 8.55	UDS3		Medium dense brown sandy silt, low plastic (CL)									2.01	1.76	13.9	UU	1.3	3.5
26	227.74 227.29	9.00 9.45	SPT7																

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 12b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab E G+14

Job No. : 214077
Borehole Designation : BH : 12
Surface Elevation, m : RL (+) 236.74 m
Survey Coordinates : 9994.81E, 18749.698N
UTM Coordinates : 692285.00 mE, 3141573.00 mN

Table No. : 12b
Water Table Depth : Not Met
Termination Depth : 30.42 m
Boring Start : 26-May-14
Boring Finish : 28-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
40	226.24 225.79	10.50 10.95	SPT8		Dense to very dense brown sandy silt, low plastic (CL) - dense, 10.5 to 12.0 m - with gravel, 10.5 to 11.0 m	12	31	48	9										
	225.49 225.19	11.25 11.55	UDS4											2.09	1.81	15.4			
73	224.74 224.29	12.00 12.45	SPT9		- very dense, 12.0 to 15.0 m					28.3	17.2	11.1							
75	223.24 222.79	13.50 13.95	SPT10		- with traces of gravel, 13.5 to 14.0 m	2	41	48	9										
	222.49 222.19	14.25 14.55	UDS5		(15.0m)									2.07	1.82	13.6	UU	3.0	8.2
64	221.74 221.29	15.00 15.45	SPT11		Very dense brown silty fine sand with traces of gravel (SM) (17.0m)	4	51	39	6										
	219.49 219.19	17.25 17.55	UDS6		Very dense brown sandy silt, low plastic (CL)									2.09	1.81	15.7	UU	3.8	5.4
83	218.74 218.29	18.00 18.45	SPT12							25.9	17.3	8.5							
	216.49 216.19	20.25 20.55	UDS7											2.00	1.65	21.2			
102/ 23cm	215.74 215.36	21.00 21.38	SPT13		- with traces of gravel, 21.0 to 23.0 m	1	25	66	9										
	213.49 213.19	23.25 23.55	DS2		(24.0m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 12c)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : Slab E G+14

Job No. : 214077

Borehole Designation : BH : 12

Surface Elevation, m : RL (+) 236.74 m

Survey Coordinates : 9994.81E, 18749.698N

UTM Coordinates : 692285.00 mE, 3141573.00 mN

Table No. : 12c

Water Table Depth : Not Met

Termination Depth : 30.42 m

Boring Start : 26-May-14

Boring Finish : 28-May-14

Boring Method : Shell and Auger

Certificate No.T-1741
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N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
102/ 20cm	212.74 212.39	24.00 24.35	SPT14		Very dense brown fine sand with gravel (SP-SM) (26.0m)	16	75	10	0										
	210.49 210.19	26.25 26.55	DS3		Very dense brown gravels (GP) (27.0m)	91	2	7	0										
100/ 15cm	209.74 209.44	27.00 27.30	SPT15		Very dense brown sandy silt, low plastic (CL)					30.4	18.3	12.1							
	207.49 207.19	29.25 29.55	DS4																
104/ 27cm	206.74 206.32	30.00 30.42	SPT16		(30.42m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 13
Surface Elevation, m : RL (+) 242.28 m
Survey Coordinates : 10034.657E, 18749.698N
UTM Coordinates : 692320.00 mE, 3141520.00 mN

Table No. : 13a
Water Table Depth : Not Met
Termination Depth : 45.36 m
Boring Start : 28-May-14
Boring Finish : 30-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	242.28	0.00	DS1		Loose to medium dense brown fine sand (SP-SM)														
	241.78	0.50			- loose, 0.0 to 4.5 m														
7	241.78	0.50	SPT1																
	241.33	0.95																	
8	240.78	1.50	SPT2			0	88	12	0										
	240.33	1.95																	
	240.03	2.25	UDS1											1.74	1.60	8.3	DS	0.0	31.1
	239.73	2.55																	
9	239.28	3.00	SPT3																
	238.83	3.45																	
10	237.78	4.50	SPT4		- medium dense, 4.5 to 7.5 m	0	88	12	0										
	237.33	4.95																	
	237.03	5.25	DS2																
	236.73	5.55																	
10	236.28	6.00	SPT5																
	235.83	6.45																	
		(7.5m)																	
13	234.78	7.50	SPT6		Medium dense brown silty fine sand (SM)	0	62	33	5										
	234.33	7.95																	
	234.03	8.25	UDS3											1.97	1.73	13.9			
	233.73	8.55																	
21	233.28	9.00	SPT7										2.63						
	232.83	9.45																	

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 13b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 13
Surface Elevation, m : RL (+) 242.28 m
Survey Coordinates : 10034.657E, 18749.698N
UTM Coordinates : 692320.00 mE, 3141520.00 mN

Table No. : 13b
Water Table Depth : Not Met
Termination Depth : 45.36 m
Boring Start : 28-May-14
Boring Finish : 30-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
29	231.78 231.33	10.50 10.95	SPT8		Medium dense to dense brown silty fine sand (SM) - medium dense, 10.5 to 12.0 m - with traces of gravel, 10.5 to 11.0 m	2	59	35	5										
	231.03 230.73	11.25 11.55	UDS4			0	51	44	6					1.85	1.65	12.2	DS	0.0	33.1
42	230.28 229.83	12.00 12.45	SPT9		- dense, 12.0 to 13.5 m (13.5m)														
53	228.78 228.33	13.50 13.95	SPT10		Very dense brown sandy silt, low plastic (CL) - with traces of gravel, 13.5 to 14.0 m	4	44	47	5										
	228.03 227.73	14.25 14.55	UDS5											2.02	1.82	11.0			
80	227.28 226.83	15.00 15.45	SPT11							27.8	18.8	9.0							
	225.03 224.73	17.25 17.55	UDS6											1.93	1.72	12.5	UU	2.9	13.8
83	224.28 223.83	18.00 18.45	SPT12		- with traces of gravel, 18.0 to 20.0 m	3	47	44	6										
	222.03 221.73	20.25 20.55	UDS7											2.03	1.84	10.6			
63	221.28 220.83	21.00 21.45	SPT13		(23.0m)					25.6	15.0	10.6							
	219.03 218.73	23.25 23.55	UDS8		Very dense brown silty fine sand with traces of gravel (SM) (24.0m)	1	51	42	6					1.90	1.72	10.4	DS	0.0	35.7

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 13c)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 13
Surface Elevation, m : RL (+) 242.28 m
Survey Coordinates : 10034.657E, 18749.698N
UTM Coordinates : 692320.00 mE, 3141520.00 mN

Table No. : 13c
Water Table Depth : Not Met
Termination Depth : 45.36 m
Boring Start : 28-May-14
Boring Finish : 30-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
102	218.28 217.83	24.00 24.45	SPT14		Very dense brown sandy silt, low plastic (CL)					32.1	18.1	14.0							
	216.03 215.73	26.25 26.55	DS3		(27.0m)														
105/ 23cm	215.28 214.90	27.00 27.38	SPT15		Very dense brown silty fine sand (SM)	0	51	43	6										
	213.03 212.73	29.25 29.55	DS4		(30.0m)														
102/ 21cm	212.28 211.92	30.00 30.36	SPT16		Very dense brown sandy silt, low plastic (CL)					28.3	17.0	11.3							
	210.03 209.73	32.25 32.55	DS5																
102/ 19cm	209.28 208.94	33.00 33.34	SPT17		- with traces of gravel, 33.0 to 35.0 m	3	46	45	6										
	207.03 206.73	35.25 35.55	DS6																
104/ 15cm	206.28 205.98	36.00 36.30	SPT18		(38.0m)														
	204.03 203.73	38.25 38.55	DS7		Very dense brown gravels (GP)	89	2	9	0										
105/ 12cm	203.28 203.01	39.00 39.27	SPT19		(39.0m) Very dense brown sandy silt, low plastic (CL)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 13d)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 13
Surface Elevation, m : RL (+) 242.28 m
Survey Coordinates : 10034.657E, 18749.698N
UTM Coordinates : 692320.00 mE, 3141520.00 mN

Table No. : 13d
Water Table Depth : Not Met
Termination Depth : 45.36 m
Boring Start : 28-May-14
Boring Finish : 30-May-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	201.03	41.25	DS8		Very dense brown sandy silt, low plastic (CL)														
	200.73	41.55																	
99	200.28	42.00	SPT20							33.3	18.9	14.3							
	199.83	42.45																	
	198.03	44.25	DS9																
	197.73	44.55																	
102/ 21cm	197.28	45.00	SPT21																
	196.92	45.36			(45.36m)														

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 14
Surface Elevation, m : RL (+) 243.33 m
Survey Coordinates : 10038.229E, 18680.947N
UTM Coordinates : 692317.00 mE, 3141474.00 mN

Table No. : 14a
Water Table Depth : Not Met
Termination Depth : 45.30 m
Boring Start : 30-May-14
Boring Finish : 01-Jun-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (Kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	243.33 242.83	0.00 0.50	DS1		Loose brown fine sand (SP-SM)														
6	242.83 242.38	0.50 0.95	SPT1																
7	241.83 241.38	1.50 1.95	SPT2			0	91	9	0										
	241.08 240.78	2.25 2.55	UDS1											1.80	1.74	3.3			
9	240.33 239.88	3.00 3.45	SPT3		(4.5m)														
8	238.83 238.38	4.50 4.95	SPT4		Loose to medium dense brown silty fine sand (SM) - loose, 4.5 to 6.0 m	0	84	16	0										
	238.08 237.78	5.25 5.55	UDS2			0	86	14	0					1.73	1.63	6.2	DS	0.0	31.9
10	237.33 236.88	6.00 6.45	SPT5		- medium dense, 6.0 to 7.5 m (7.5m)								2.65						
18	235.83 235.38	7.50 7.95	SPT6		Medium dense brown sandy silt, low plastic (CL)					23.0	13.8	9.2							
	235.08 234.78	8.25 8.55	UDS3		(9.0m)									1.90	1.79	6.4			
24	234.33 233.88	9.00 9.45	SPT7		Medium dense brown silty fine sand (SM) (10.5m)	0	79	21	0										

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 14b)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 14
Surface Elevation, m : RL (+) 243.33 m
Survey Coordinates : 10038.229E, 18680.947N
UTM Coordinates : 692317.00 mE, 3141474.00 mN

Table No. : 14b
Water Table Depth : Not Met
Termination Depth : 45.30 m
Boring Start : 30-May-14
Boring Finish : 01-Jun-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
28	232.83 232.38	10.50 10.95	SPT8		Medium dense brown sandy silt, low plastic (CL) (11.0m)					21.0	13.6	7.4							
	232.08 231.78	11.25 11.55	UDS4		Medium dense brown silty fine sand (SM)	0	68	28	4					1.81	1.64	10.7	DS	0.0	32.9
28	231.33 230.88	12.00 12.45	SPT9		(13.5m)														
29	229.83 229.38	13.50 13.95	SPT10		Medium dense to very dense brown sandy silt, low plastic (CL) - medium dense, 13.5 to 15.0 m	1	48	43	8										
	229.08 228.78	14.25 14.55	UDS5		- with traces of gravel, 13.5 to 14.0 m									2.03	1.79	13.6			
57	228.33 227.88	15.00 15.45	SPT11		- very dense, 15.0 to 21.0 m					29.9	18.6	11.3							
	226.08 225.78	17.25 17.55	UDS6											1.93	1.70	13.5	UU	3.9	3.5
96	225.33 224.88	18.00 18.45	SPT12																
	223.08 222.78	20.25 20.55	UDS7		(21.0m)									2.04	1.75	16.7			
87	222.33 221.88	21.00 21.45	SPT13		Very dense brown silty fine sand with traces of gravel (SM)	1	66	29	4										
	220.08 219.78	23.25 23.55	UDS8		(24.0m)	4	47	43	6					2.01	1.73	16.1			

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

(Cont'd on Table No. 14c)

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077

Borehole Designation : BH : 14

Surface Elevation, m : RL (+) 243.33 m

Survey Coordinates : 10038.229E, 18680.947N

UTM Coordinates : 692317.00 mE, 3141474.00 mN

Table No. : 14c

Water Table Depth : Not Met

Termination Depth : 45.30 m

Boring Start : 30-May-14

Boring Finish : 01-Jun-14

Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
102	219.33 218.88	24.00 24.45	SPT14		Very dense brown sandy silt, low plastic (CL)					28.1	18.2	9.9							
	217.08 216.78	26.25 26.55	DS2																
105/ 20cm	216.33 215.98	27.00 27.35	SPT15																
	214.08 213.78	29.25 29.55	DS3		(29.0m) Very dense brown gravels (GP)	90	1	9	0										
89	213.33 212.88	30.00 30.45	SPT16		(30.0m) Very dense brown sandy silt, low plastic (CL)					29.3	17.7	11.5							
	211.08 210.78	32.25 32.55	DS4																
106	210.33 209.88	33.00 33.45	SPT17																
	208.08 207.78	35.25 35.55	DS5		(36.0m)														
105/ 28cm	207.33 206.90	36.00 36.43	SPT18		Very dense brown silty fine sand with traces of gravel (SM) (38.0m)	2	58	36	4										
	205.08 204.78	38.25 38.55	DS6		Very dense brown sandy silt, low plastic (CL)														
106/ 25cm	204.33 203.93	39.00 39.40	SPT19							29.5	18.4	11.1							

[1] Outside NABL scope

* 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

(Cont'd on Table No. 14d)

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

CENGRS GEOTECHNICA PVT. LTD.

SOIL PROFILE

Project : Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

Structure : G+33+P

Job No. : 214077
Borehole Designation : BH : 14
Surface Elevation, m : RL (+) 243.33 m
Survey Coordinates : 10038.229E, 18680.947N
UTM Coordinates : 692317.00 mE, 3141474.00 mN

Table No. : 14d
Water Table Depth : Not Met
Termination Depth : 45.30 m
Boring Start : 30-May-14
Boring Finish : 01-Jun-14
Boring Method : Shell and Auger

Certificate No.T-1741
An ISO 17025: 2005 Certified Laboratory

N-Value[1]	Reduced Level, m	Depth (m)	Sample No.	Symbol	SOIL DESCRIPTION	Grain Size Analysis: Gravel (%)	Sand (%)	Silt (%)	Clay (%)	Atterberg Limits: Liquid (%)	Plastic (%)	Plasticity Index (%)	Specific Gravity	Density and Moisture: Bulk Density (gms/cm^3)	Dry Density (gms/cm^3)	Moisture Content (%)	Shear Test: Type of Test[2]	Cohesion Intercept, 'c' (kg/cm^2)	Angle of Internal Friction, ϕ (degrees)
	202.08 201.78	41.25 41.55	DS7		Very dense brown sandy silt, low plastic (CL)														
93	201.33 200.88	42.00 42.45	SPT20		- with traces of gravel, 42.0 to 44.0 m	1	35	57	8										
	199.08 198.78	44.25 44.55	DS8																
106/ 15cm	198.33 198.03	45.00 45.30	SPT21		(45.3m)														

[1] Outside NABL scope * 'Ref' refers to refusal (N>100) within the first 15 cm of seating penetration.

[2] DS : Drained Direct Shear Test, UUT : Unconsolidated Undrained Triaxial Shear Test, UC : Unconfined Compression Test

	CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Table No. 15

SOIL-WATER EXTRACT :

Borehole No.	Depth, (m)	Sulphate Content (SO_3), %	Chloride Content, %	pH Value
1	9.00	0.12	0.04	7.8
13	9.00	0.14	0.04	7.9

REQUIREMENTS FOR CONCRETE EXPOSED TO SULPHATE ATTACK AS

PER IS : 456-2000, CLAUSES 8.2.2.4 AND 9.1.2, TABLE 4, PAGE-19

Class	Concentration of Sulphates, expressed as SO_3 In-Soil-Water Extract (Total) Percent	In Groundwater (mg/l)
1	Traces (<0.2)	Less than 300
2	0.2 to 0.5	300-1200
3	0.5 to 1.0	1200-2500
4	1.0 to 2.0	2500-5000
5	> 2.0	> 5000

CLASSIFICATION OF CHLORIDE CONDITIONS IN GROUNDWATER*

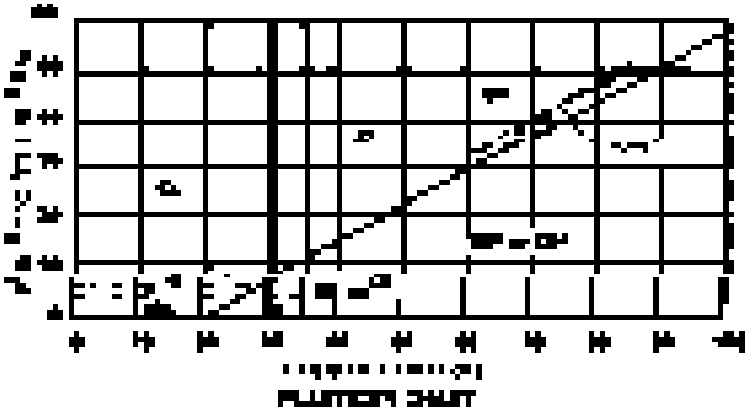
Classification	Chloride Limits	
	Temperate Climate	Tropical Climate
Negligible	0-2000 ppm	Not Applicable
Moderate	2000-10,000 ppm	0-2000 ppm
High	More than 10,000 ppm	2000-20,000 ppm
Very High	Generally not applicable	Only if considerably in excess of 20,000 ppm

*SOURCE : INSTITUTION OF CIVIL ENGINEERS, LONDON (1979)

CENGRS GEOTECHNICA PVT. LTD.	Job No.:214077	Table No. 16

PLASTICITY OF CLAY

Plasticity	Liquid Limit
Low Plastic	< 35
Medium Plastic	35 to 50
High Plastic	> 50



CONSISTENCY OF COHESIVE SOILS

Consistency	Cohesion Intercept, kg/sq.cm	SPT (N) Value
Very Soft	< 0.1	0 to 2
Soft	0.1 to 0.25	2 to 4
Firm/Medium	0.25 to 0.5	4 to 8
Stiff	0.5 to 1.0	8 to 15
Very Stiff	1.0 to 2.0	15 to 30
Hard	> 2.0	> 30

DENSITY CONDITION OF GRANULAR SOILS

Density Descriptor	SPT (N) Value	Static Cone Tip Resistance kg/sq.cm
Very Loose	0 to 4	< 20
Loose	4 to 10	20 to 40
Medium Dense	10 to 30	40 to 120
Dense	30 to 50	120 to 200
Very dense	> 50	> 200

DEGREE OF EXPANSION OF FINE GRAINED SOILS

Liquid Limit	Plasticity Index	Shrinkage Index	Free Swell Percent	Degree of Expansion	Degree of Severity
20 - 35	< 12	< 15	< 50	Low	Non-critical
35 - 50	12 - 23	15 -30	50 -100	Medium	Marginal
50 - 70	23 - 32	30 - 60	100 - 200	High	Critical
70 - 90	> 32	> 60	> 200	Very High	Severe

	CENGRS GEOTECHNICA PVT. LTD.	Job No.:214077	Table No. 17

NABL ACCREDITED LABORATORY

Our laboratory is accredited to **National Accreditation Board for Testing and Calibration Laboratories (NABL)**, New Delhi. The quality procedures in our laboratory conform to the International Standard **ISO/IEC: 17025-2005.**

The accreditation assures our clients of work quality in conformance with international norms and practices. It authorizes us to use the NABL logo on test results.

To maintain the necessary level of quality and reliability in all measurements on a continual basis, we indulge in the following:

- Use of calibrated equipment, regular maintenance and good housekeeping are a part of our work culture.
- Inter-laboratory comparison, proficiency testing and replicate testing, continuing education - ensure uniform quality of results.
- Internal Audit of quality procedures is done by our qualified ISO 17025 auditors to the requisite standards. NABL conducts external audit.

UNCERTAINTY

Every measurement entails an uncertainty. It is well known that no measuring instrument can determine the true value of any measurement. The cumulative effect of factors such as sensitivity of equipment, accuracy in calibration, human parameter determined from these measurements.

As a part of our commitment to our clients, we have worked out the uncertainty in the parameters reported by our laboratory. Although this does not form a part of our contract our contract agreement, we present below our statistical estimate of uncertainty of various parameters based on our most recent evaluation (Dec., 2013).

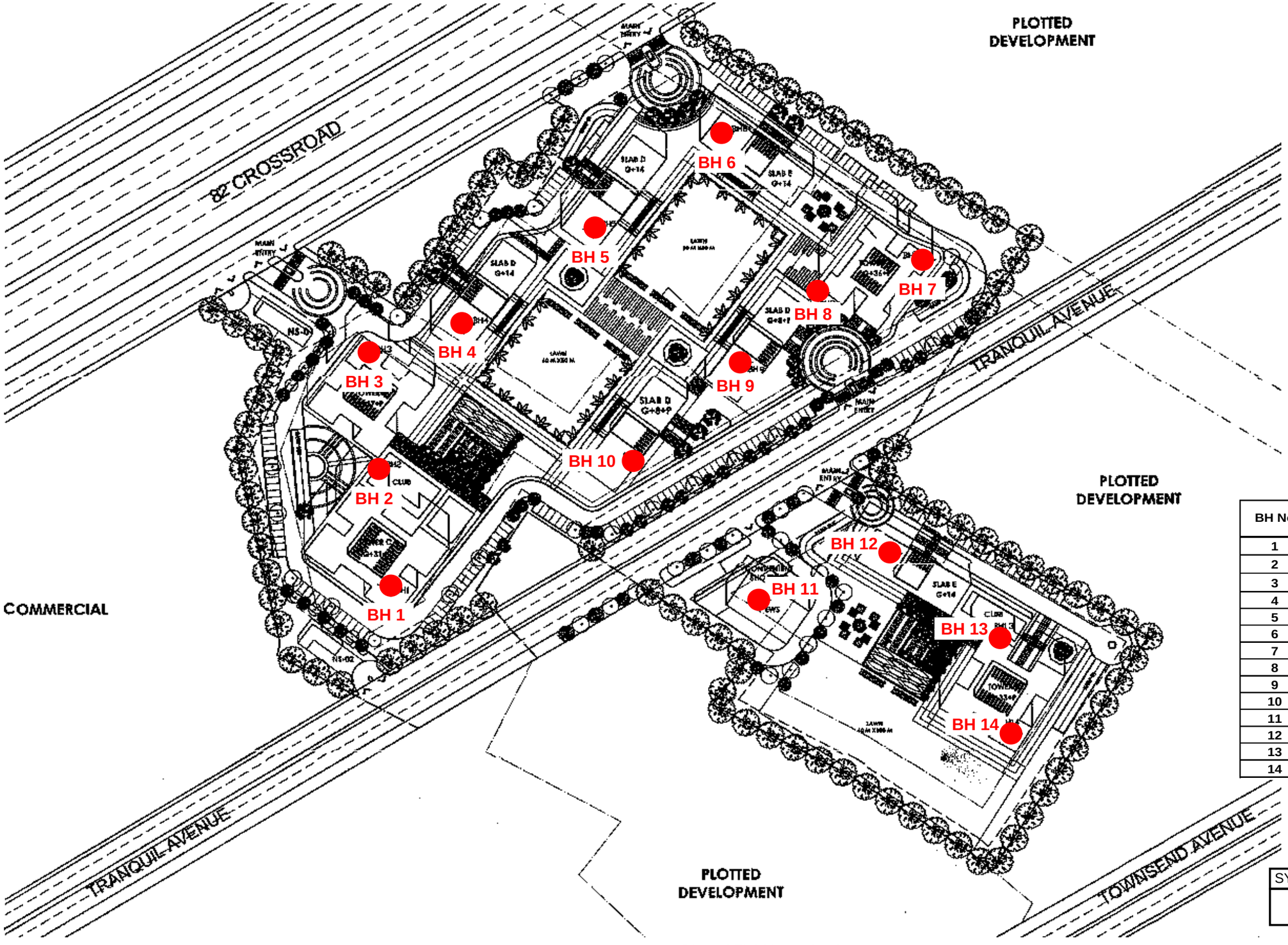
Test / Parameter		Uncertainty*	Test / Parameter		Uncertainty*	
Moisture Content		± 0.12 %	Free Swell Index, %		± 1.06 %	
Bulk & Dry Density		± 0.003 g/cc	Swell Pressure		± 0.43 %	
Specific Gravity		± 0.02	Consolidation	c_{c1}	± 0.0003	
Liquid Limit		± 0.16 %		c_{c2}	± 0.003	
Plastic Limit		± 0.13 %		m_v	± 0.0003 cm^2/kg	
Shrinkage Limit		± 0.26 %		p_c	± 0.15 kg/cm^2	
Unconfined Compression	c	± 0.009 kg/cm^2	CD Direct Shear Test	ϕ	± 0.57°	
UU Triaxial Test	c	± 0.55 %	Soil Gradation	Coarse grained soils	± 0.8% of particle size	
	ϕ	± 0.11 %		Fine grained soils	± 0.5% of particle size	
Std/Mod Proctor Compaction	MDD	± 0.03 g/cc	Coefficient of Permeability		± 9.18 % of value	
	OMC	± 0.12 %	Rock	Crushing Strength	± 0.80 % of value	
Laboratory CBR		± 0.61%		Point Load Strength Index	± 0.04 % of value	

* at 95 percent confidence level for coverage factor of 2

UNCERTAINTY IN LABORATORY MEASUREMENTS

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	CENGRS GEOTECHNICA PVT. LTD.	Job.No.: 214077	Fig No.: 1a



BH No.	Survey Coordinates	
	E	N
1	9812.608	18738.519
2	9809.190	18782.454
3	9806.112	18826.546
4	9839.904	18836.955
5	9887.056	18872.661
6	9934.155	18908.287
7	10007.600	18860.186
8	9968.767	18848.115
9	9941.047	18821.830
10	9901.540	18784.689
11	9947.366	18731.910
12	9994.810	18749.698
13	10034.657	18749.698
14	10038.229	18680.947

LEGEND

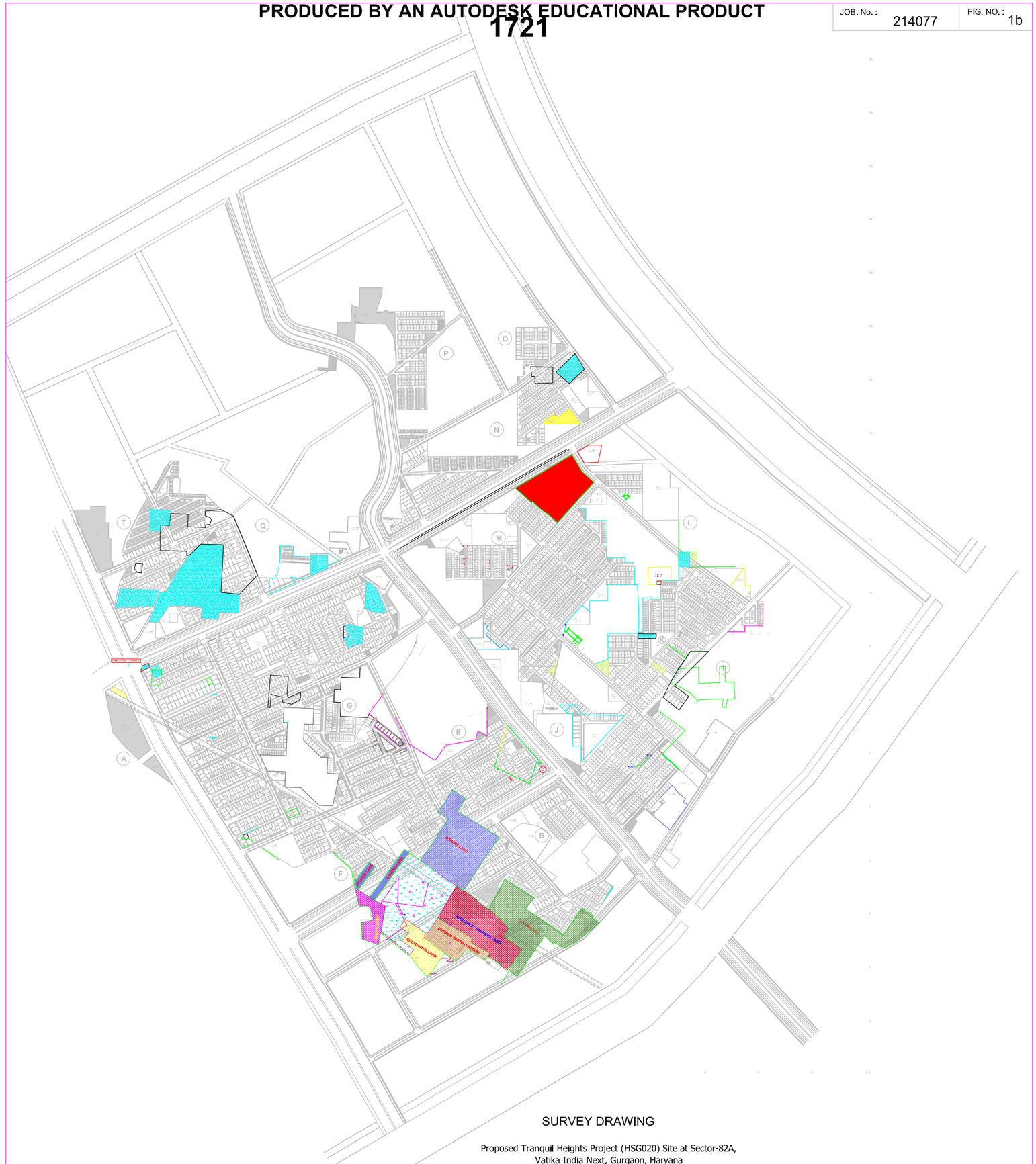
SYMBOL	TYPE OF TEST
●	Borehole **(BH)**

Plan of Field Investigation

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

JOB. No. :	FIG. NO. :
214077	1b



SURVEY DRAWING

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A,
Vatika India Next, Gurgaon, Haryana

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

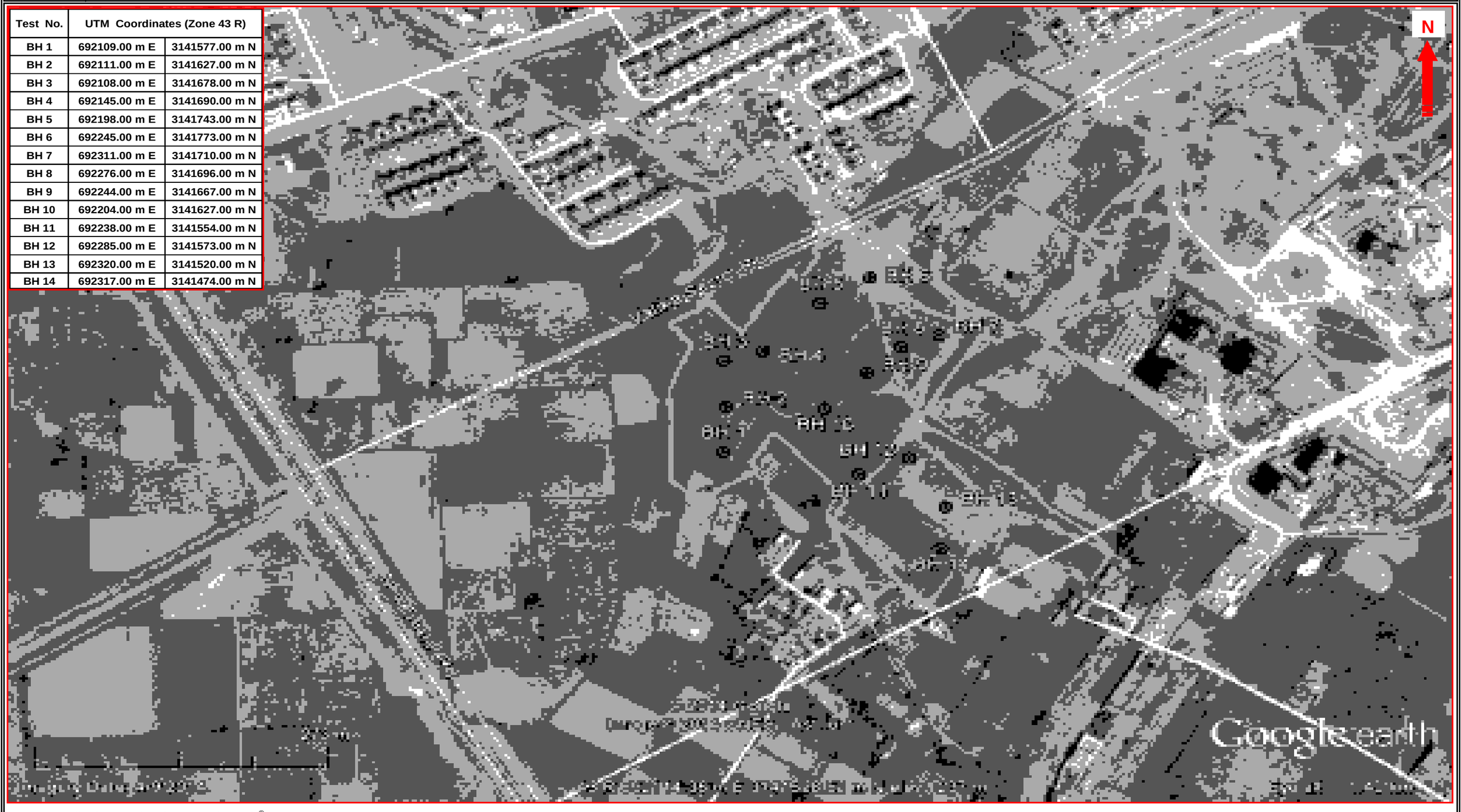
PRODUCED BY AN AUTODESK EDUCATIONAL PRODUCT

CENGRS GEOTECHNICA PVT. LTD.

Job.No.: 214077

Fig No.: 2

Test No.	UTM Coordinates (Zone 43 R)	
BH 1	692109.00 m E	3141577.00 m N
BH 2	692111.00 m E	3141627.00 m N
BH 3	692108.00 m E	3141678.00 m N
BH 4	692145.00 m E	3141690.00 m N
BH 5	692198.00 m E	3141743.00 m N
BH 6	692245.00 m E	3141773.00 m N
BH 7	692311.00 m E	3141710.00 m N
BH 8	692276.00 m E	3141696.00 m N
BH 9	692244.00 m E	3141667.00 m N
BH 10	692204.00 m E	3141627.00 m N
BH 11	692238.00 m E	3141554.00 m N
BH 12	692285.00 m E	3141573.00 m N
BH 13	692320.00 m E	3141520.00 m N
BH 14	692317.00 m E	3141474.00 m N



- Satellite image taken from Google Earth®
- Test Locations marked as per GPS coordinates taken on site using hand-held Garmin® device
- Accuracy of hand-held GPS device generally ranges from 4-6m, and varies depending on the availability of satellite connection at the site

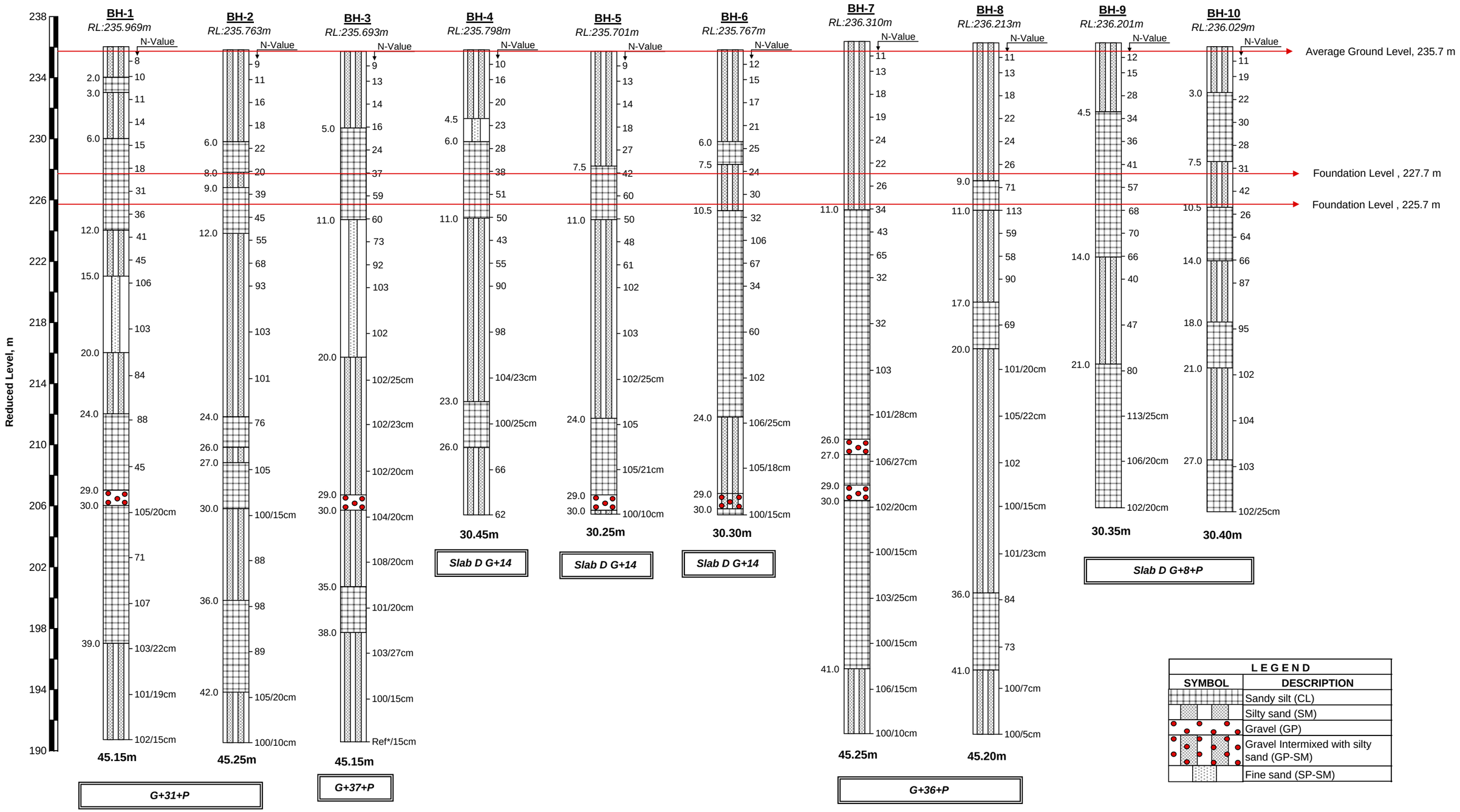
Satellite Image of Site and Test Locations

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.

Job.No.: 214077

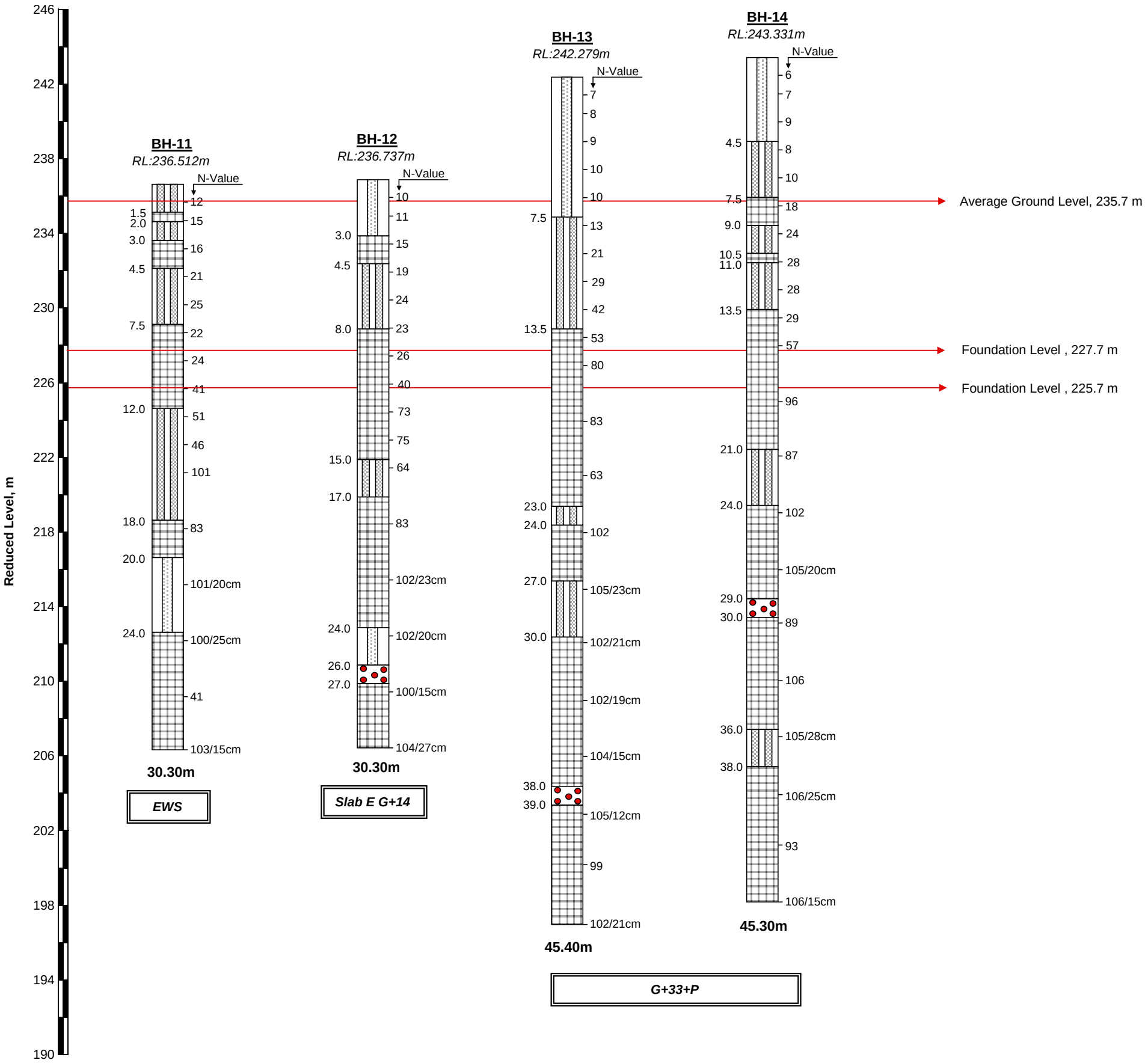
Fig No.: 3a



Summary of Borehole Profiles

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job.No.: 214077	Fig No.: 3b

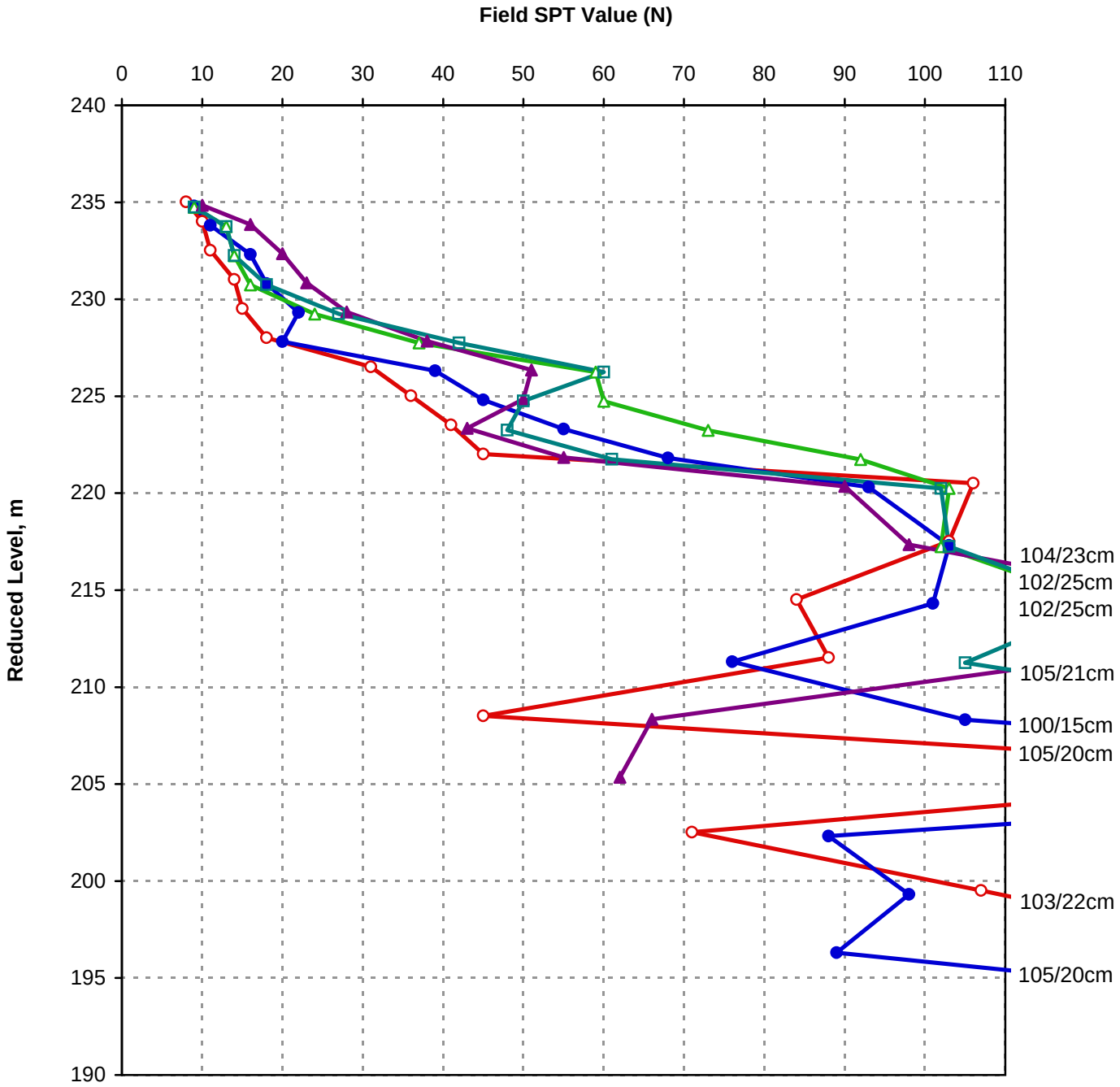


LEGEND	
SYMBOL	DESCRIPTION
	Sandy silt (CL)
	Silty sand (SM)
	Gravel (GP)
	Fine sand (SP-SM)

Summary of Borehole Profiles

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Fig No. 4a

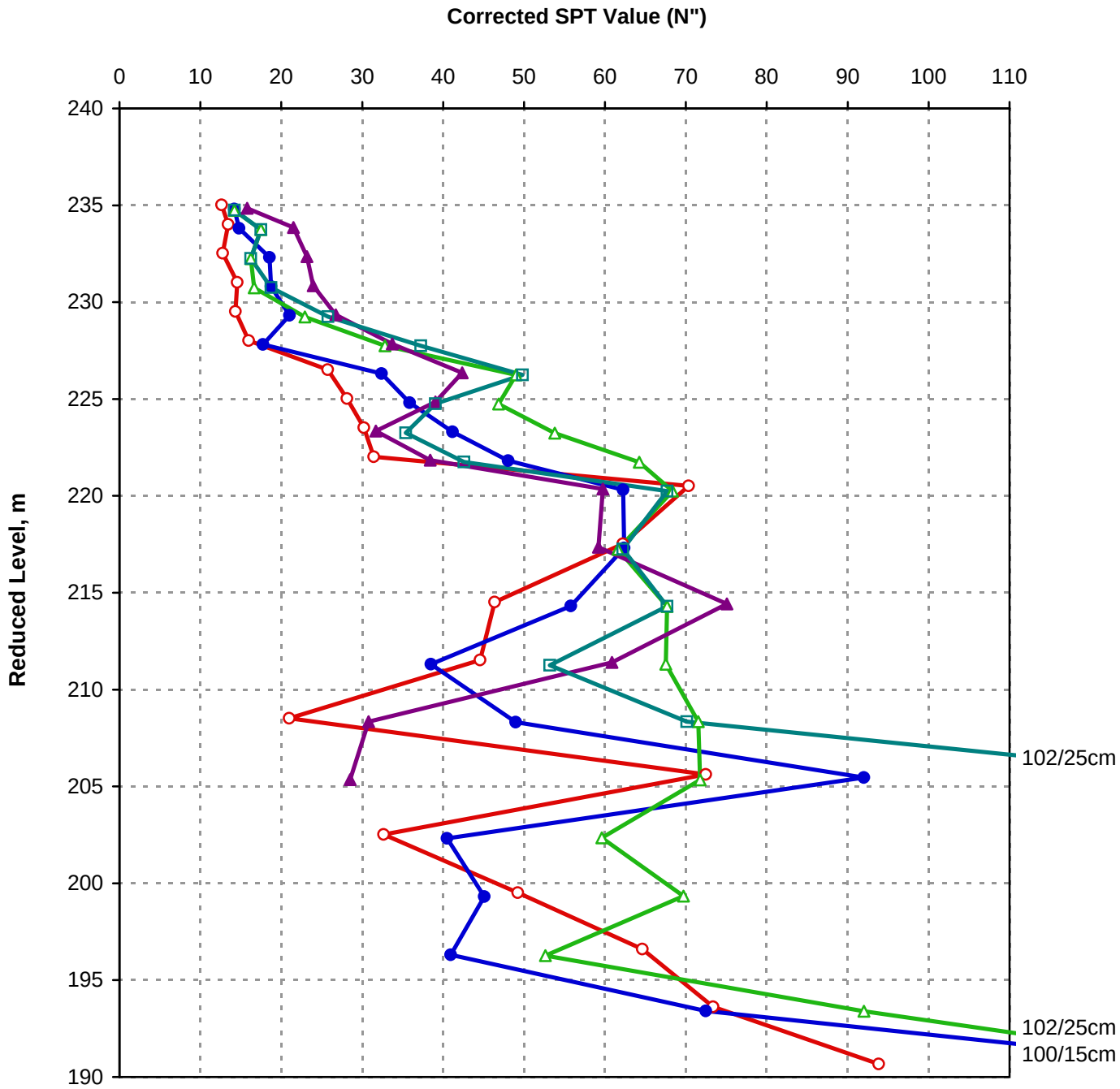


LEGEND			
Symbol	BH.No.	Reduced Level,m	Structure
	1	235.969	G+31+P
	2	235.763	
	3	235.693	G+37+P
	4	235.798	Slab D G+14
	5	235.701	

Standard Penetration Test Results (Field Values)

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Fig No. 4b

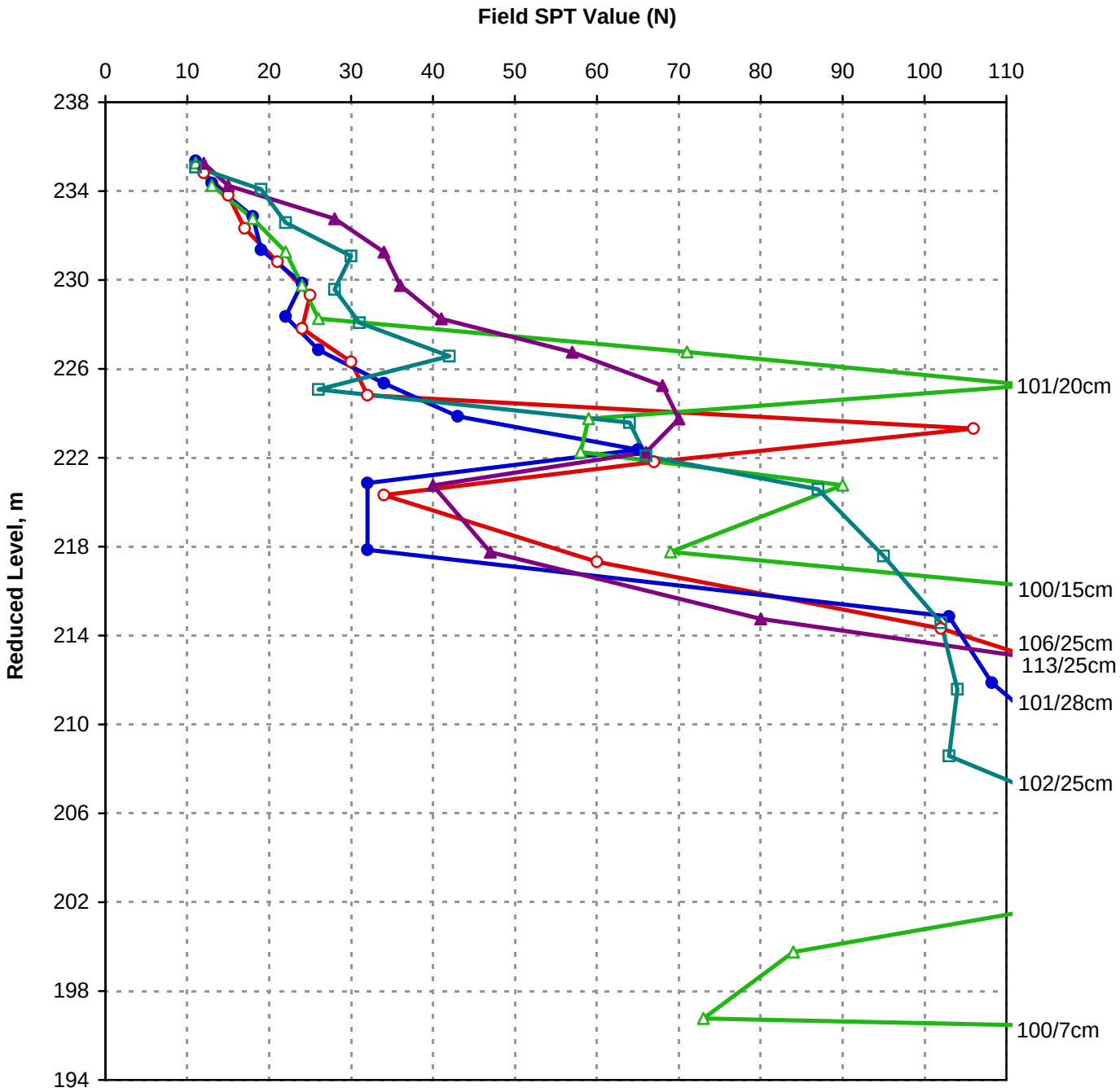


LEGEND			
Symbol	BH.No.	Reduced Level,m	Structure
	1	235.969	G+31+P
	2	235.763	
	3	235.693	G+37+P
	4	235.798	Slab D G+14
	5	235.701	

Standard Penetration Test Results (Corrected Values)

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Fig No. 4c

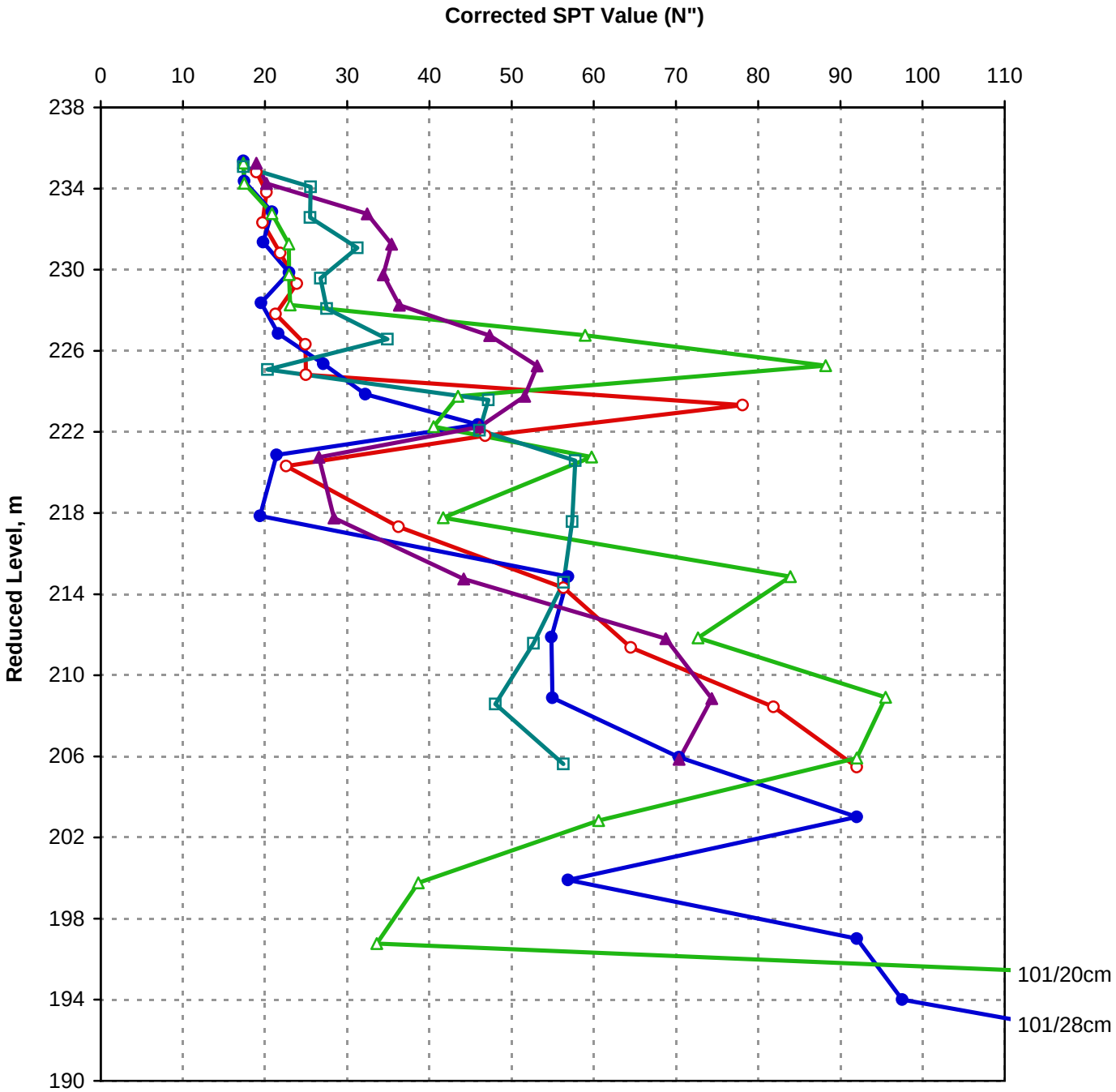


LEGEND			
Symbol	**BH.No.**	**Reduced Level,m**	**Structure**
	6	235.767	Slab E G+14
	7	236.310	G+36+P
	8	236.213	
	9	236.201	Slab D G+8+P
	10	236.029	

Standard Penetration Test Results (Field Values)

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Fig No. 4d

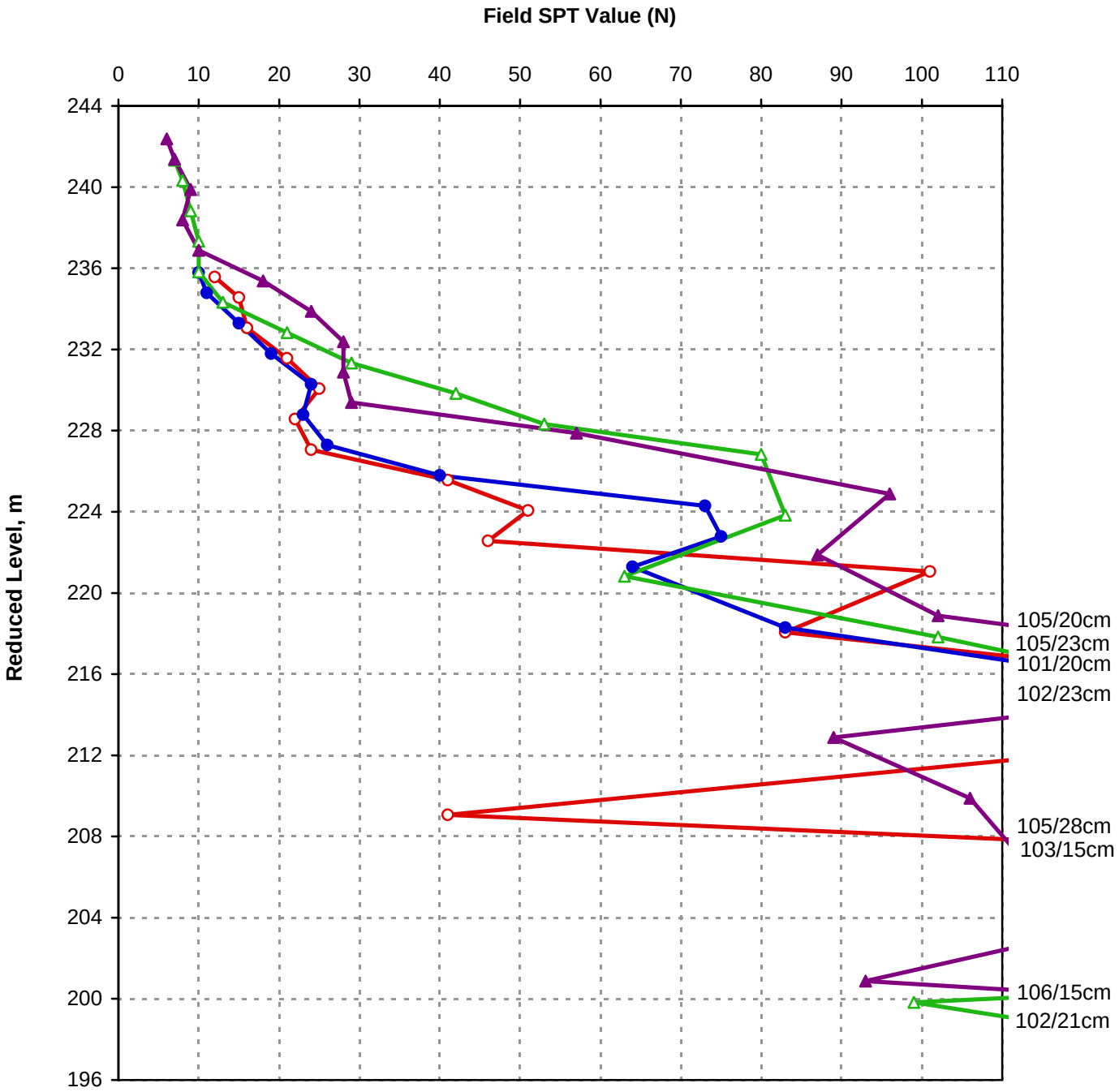


LEGEND			
Symbol	BH.No.	Reduced Level,m	Structure
	6	235.767	Slab E G+14
	7	236.310	G+36+P
	8	236.213	
	9	236.201	Slab D G+8+P
	10	236.029	

Standard Penetration Test Results (Corrected Values)

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Fig No. 4e

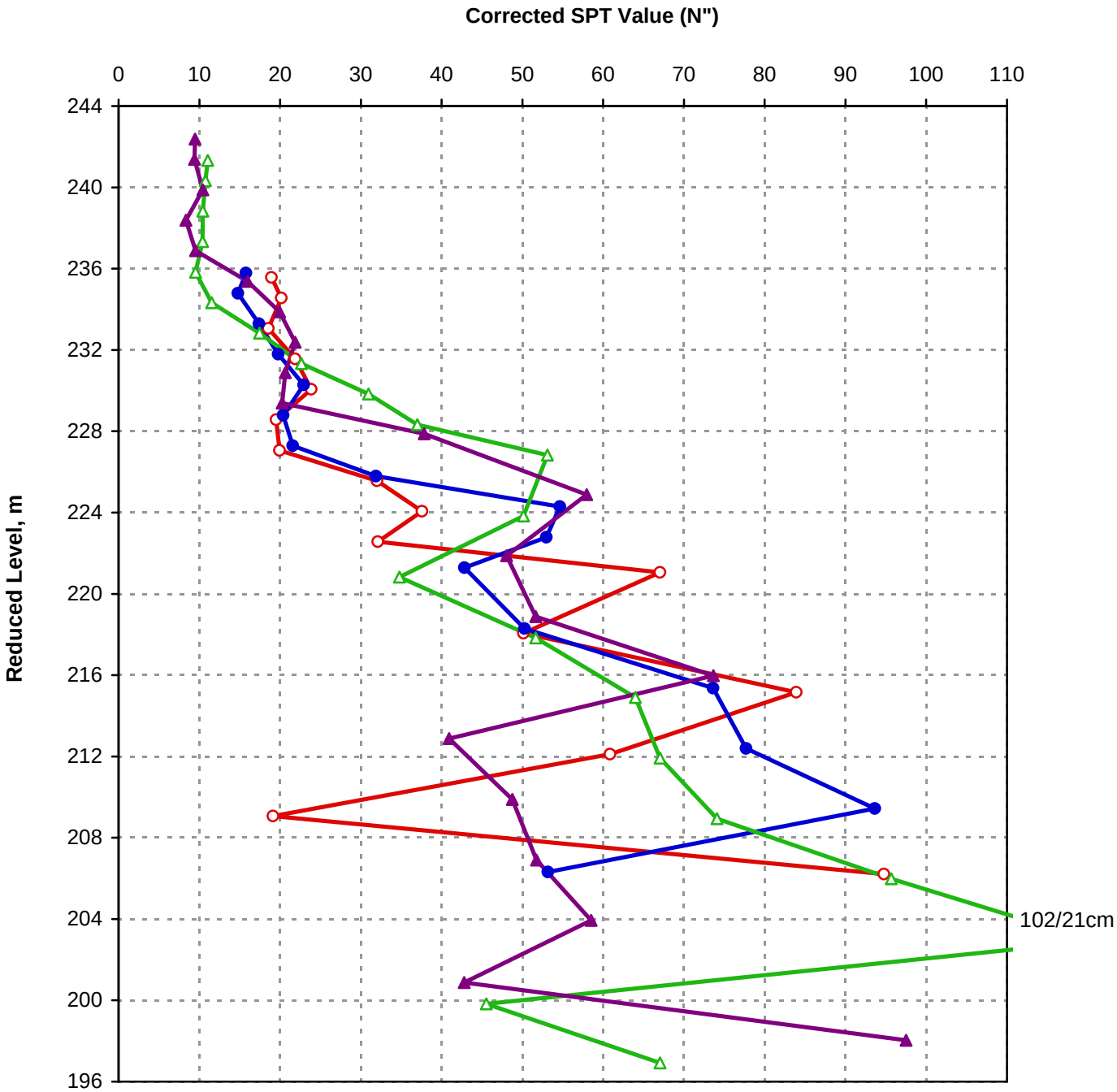


LEGEND			
Symbol	BH.No.	Reduced Level,m	Structure
○	11	236.512	EWS
●	12	236.737	Slab E G+14
△	13	242.279	G+33+P
▲	14	243.331	

Standard Penetration Test Results (Field Values)

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No. 214077	Fig No. 4f

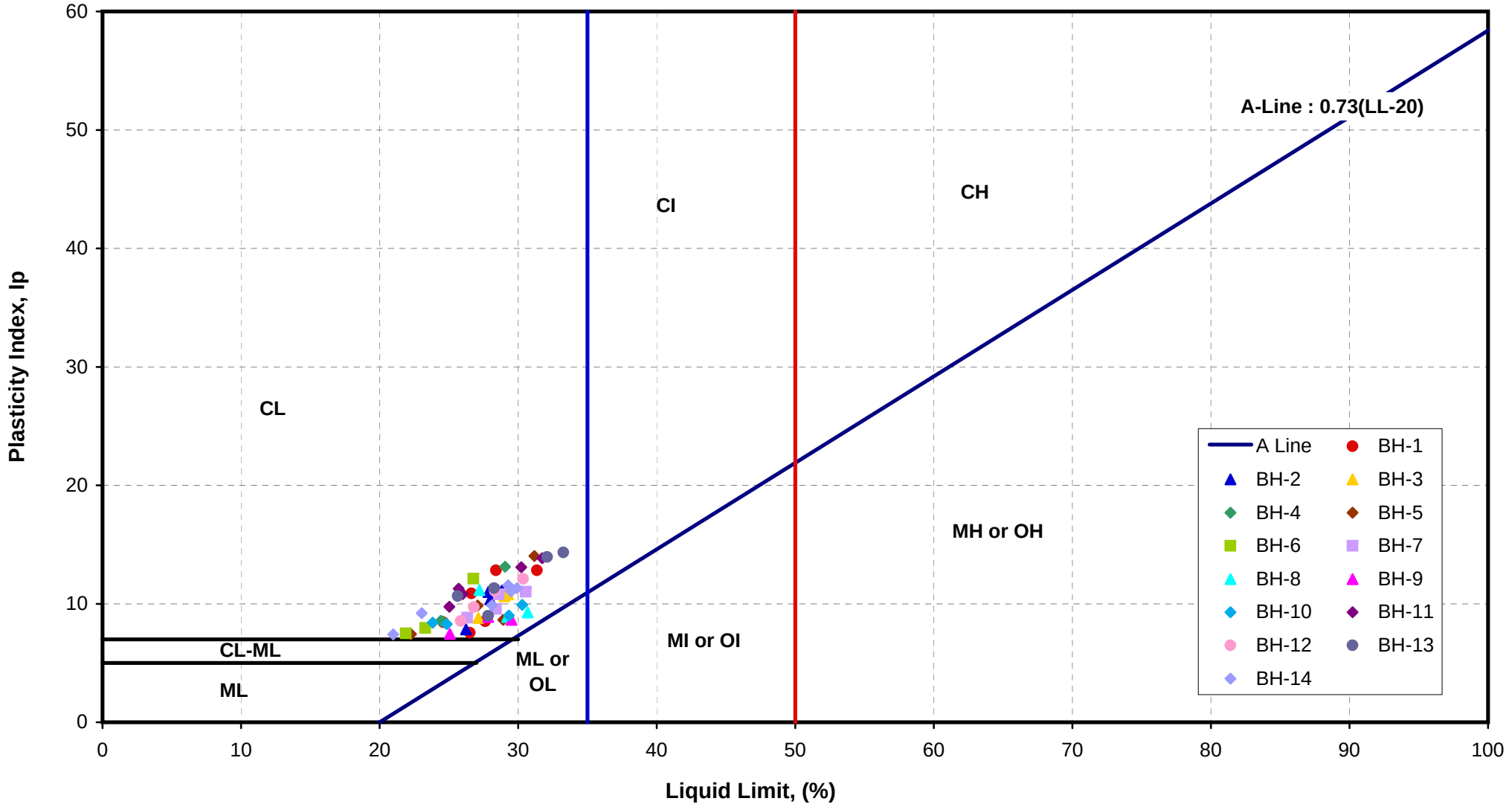


LEGEND			
Symbol	BH.No.	Reduced Level,m	Structure
	11	236.512	EWS
	12	236.737	Slab E G+14
	13	242.279	G+33+P
	14	243.331	

Standard Penetration Test Results (Corrected Values)

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

CENGRS GEOTECHNICA PVT. LTD.	Job No.: 214077	Fig No. 5



Plasticity Chart

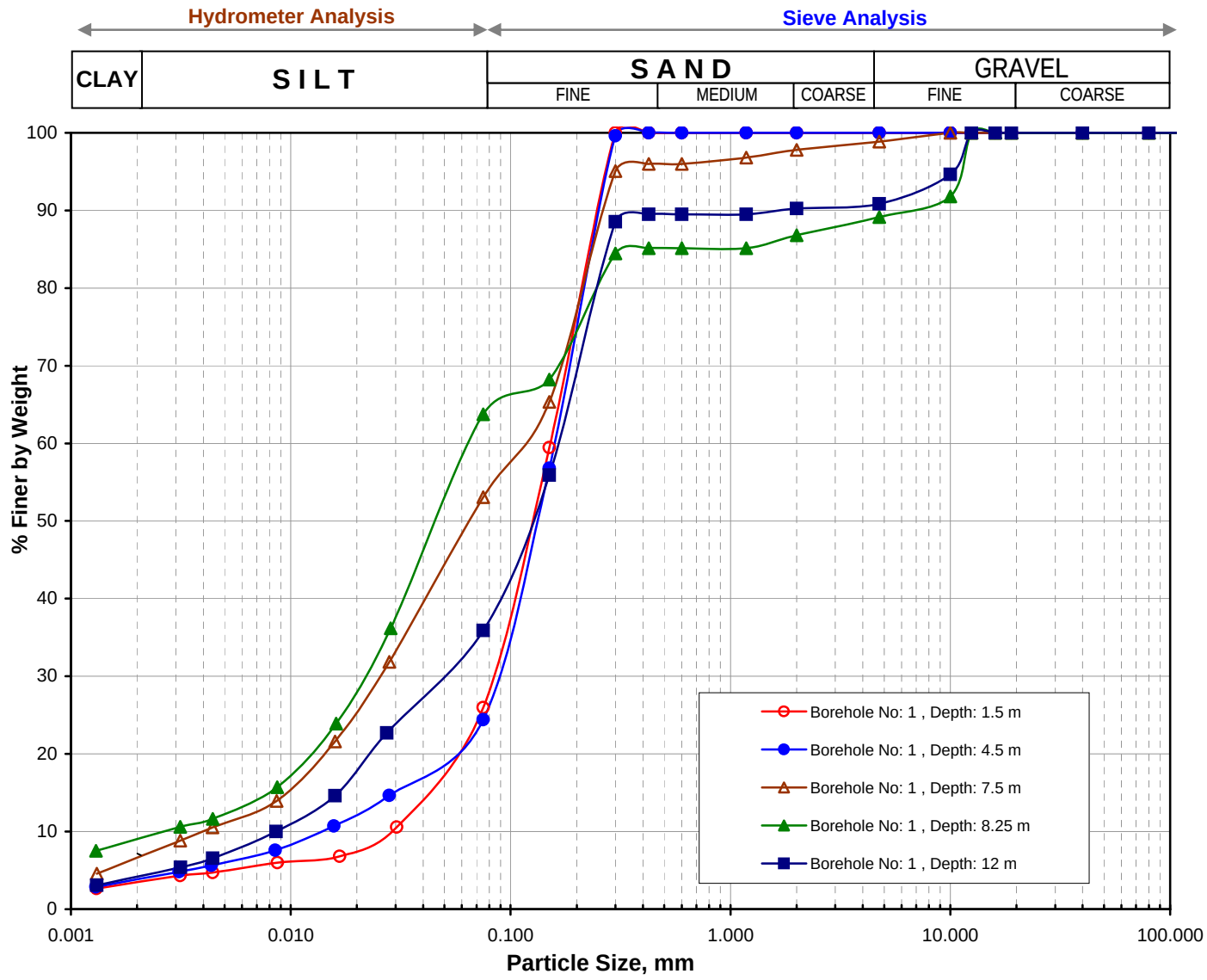
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 6	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-1	1.50	Silty fine sand (SM)	0	74	23	3	0.15	0.08	0.03	5.4	1.7
BH-1	4.50	Silty fine sand (SM)	0	76	22	3	0.16	0.09	0.01	11.5	3.4
BH-1	7.50	Sandy silt with traces of gravel (CL)	1	46	49	5	0.12	0.03	0.00	29.3	1.4
BH-1	8.25	Sandy silt with gravel (CL)	11	25	58	5	0.07	0.02	0.00	23.0	2.3
BH-1	12.00	Silty fine sand with gravel (SM)	9	55	33	3	0.17	0.05	0.01	18.8	1.9



Structure : G+31+P

Grain Size Analysis

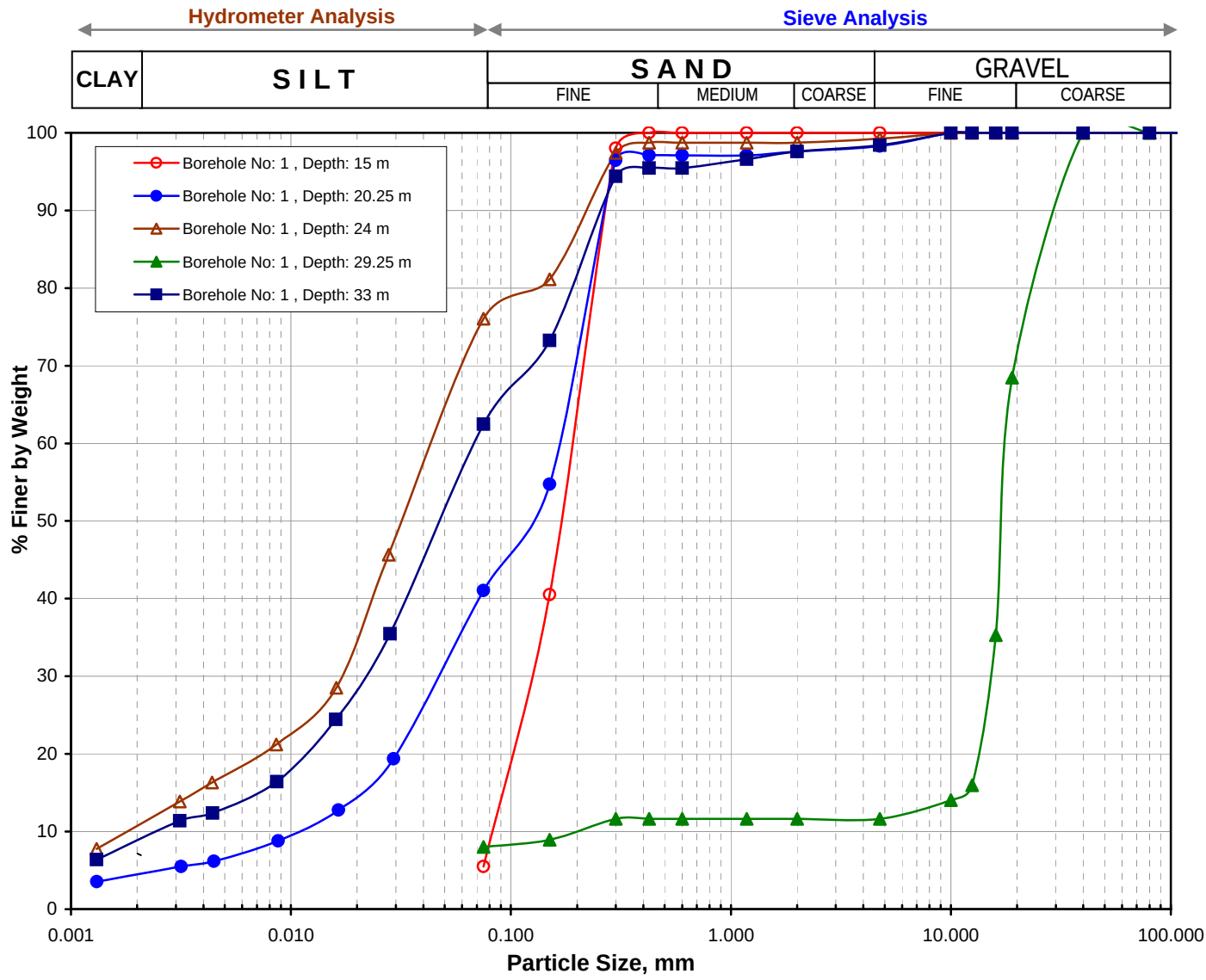
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 7	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-1	15.00	Fine sand (SP-SM)	0	95	6	0	0.20	0.13	0.09	2.4	1.0
BH-1	20.25	Silty fine sand with traces of gravel (SM)	2	57	38	4	0.17	0.05	0.01	15.4	1.5
BH-1	24.00	Sandy silt with traces of gravel (CL)	1	23	68	8	0.05	0.02	0.00	25.0	2.9
BH-1	29.25	Gravels (GP)	88	4	8	0	18.24	15.04	0.21	87.7	59.7
BH-1	33.00	Sandy silt with traces of gravel (CL)	2	36	56	6	0.07	0.02	0.00	23.7	2.3



Structure : G+31+P

Grain Size Analysis

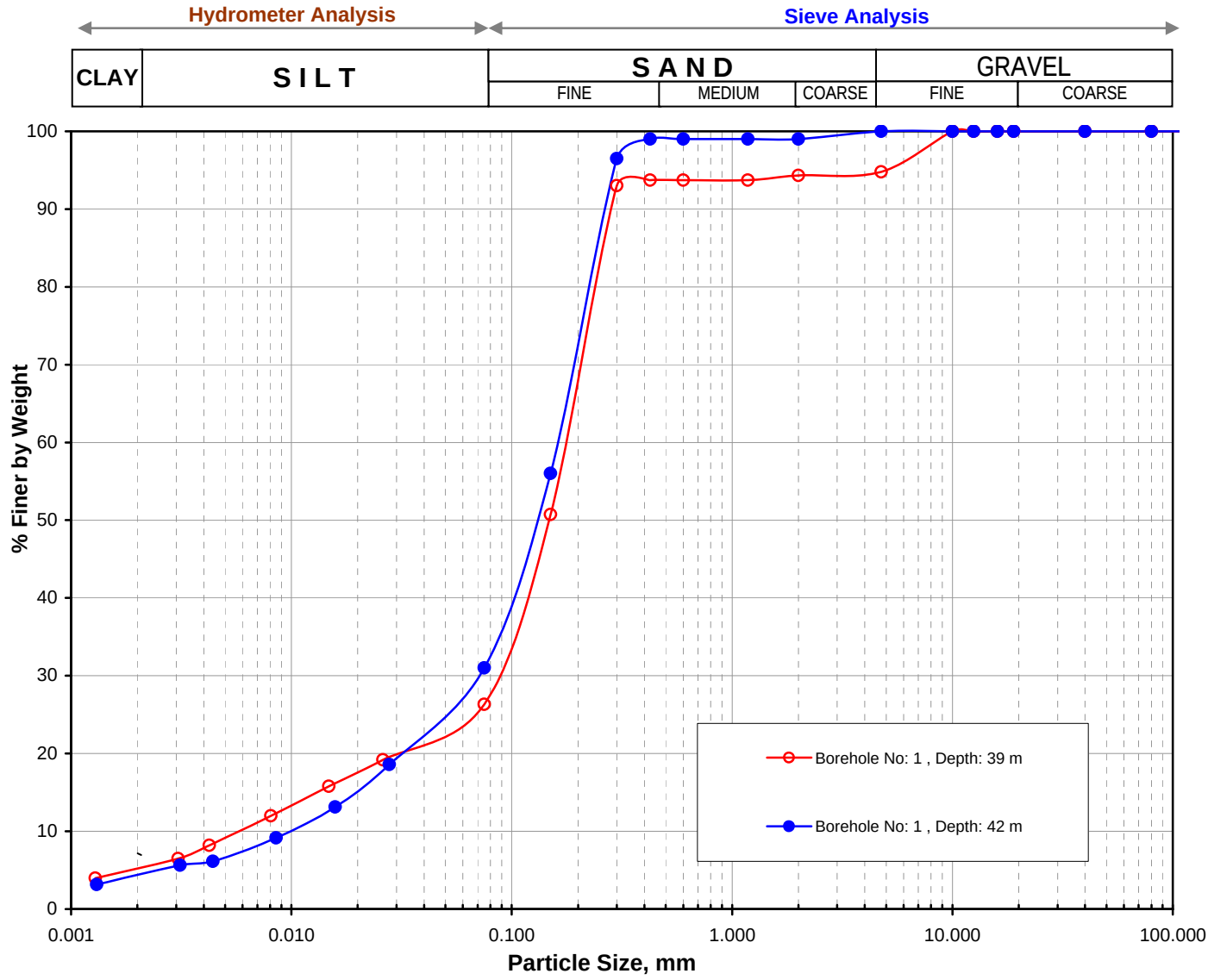
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 8	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-1	39.00	Silty fine sand with gravel (SM)	5	68	22	4	0.18	0.09	0.01	30.5	6.7
BH-1	42.00	Silty fine sand (SM)	0	69	28	3	0.17	0.07	0.01	16.5	3.1



Structure : G+31+P

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

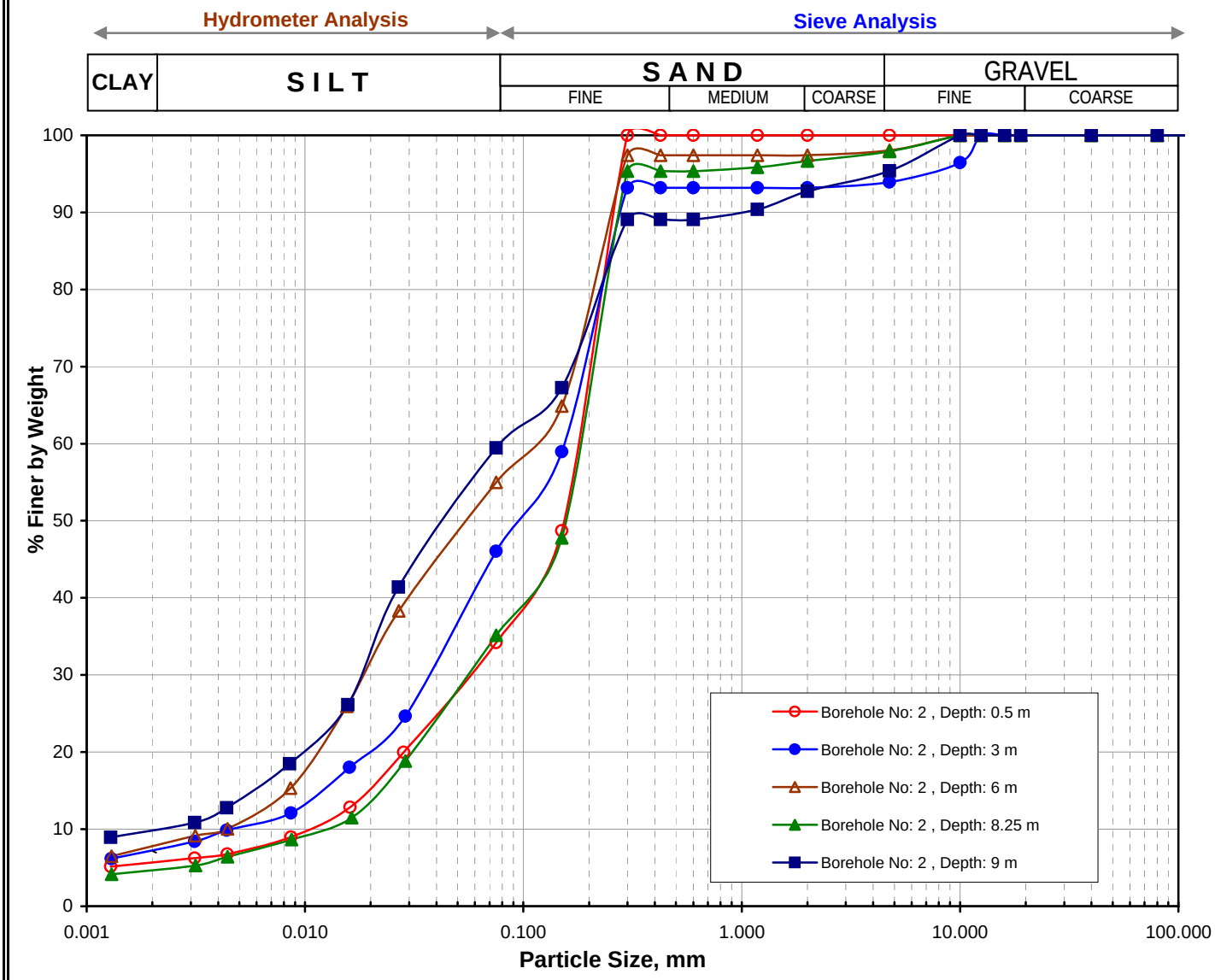
226

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 9	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-2	0.50	Silty fine sand (SM)	0	66	29	5	0.18	0.06	0.01	16.6	1.9
BH-2	3.00	Sandy silt with gravel (CL)	6	48	40	6	0.16	0.04	0.01	31.0	2.1
BH-2	6.00	Sandy silt with traces of gravel (CL)	2	43	49	6	0.11	0.02	0.00	28.3	0.8
BH-2	8.25	Silty fine sand with traces of gravel (SM)	2	63	31	4	0.19	0.06	0.01	15.7	1.6
BH-2	9.00	Sandy silt with gravel (CL)	5	36	51	9	0.08	0.02	0.00	40.0	2.3



Structure : G+31+P

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

237

LABORATORY: CENGRS GEOTECHNICA PVT. LTD.

An ISO /IEC: 17025-2005 accredited Laboratory

Job No.: 214077

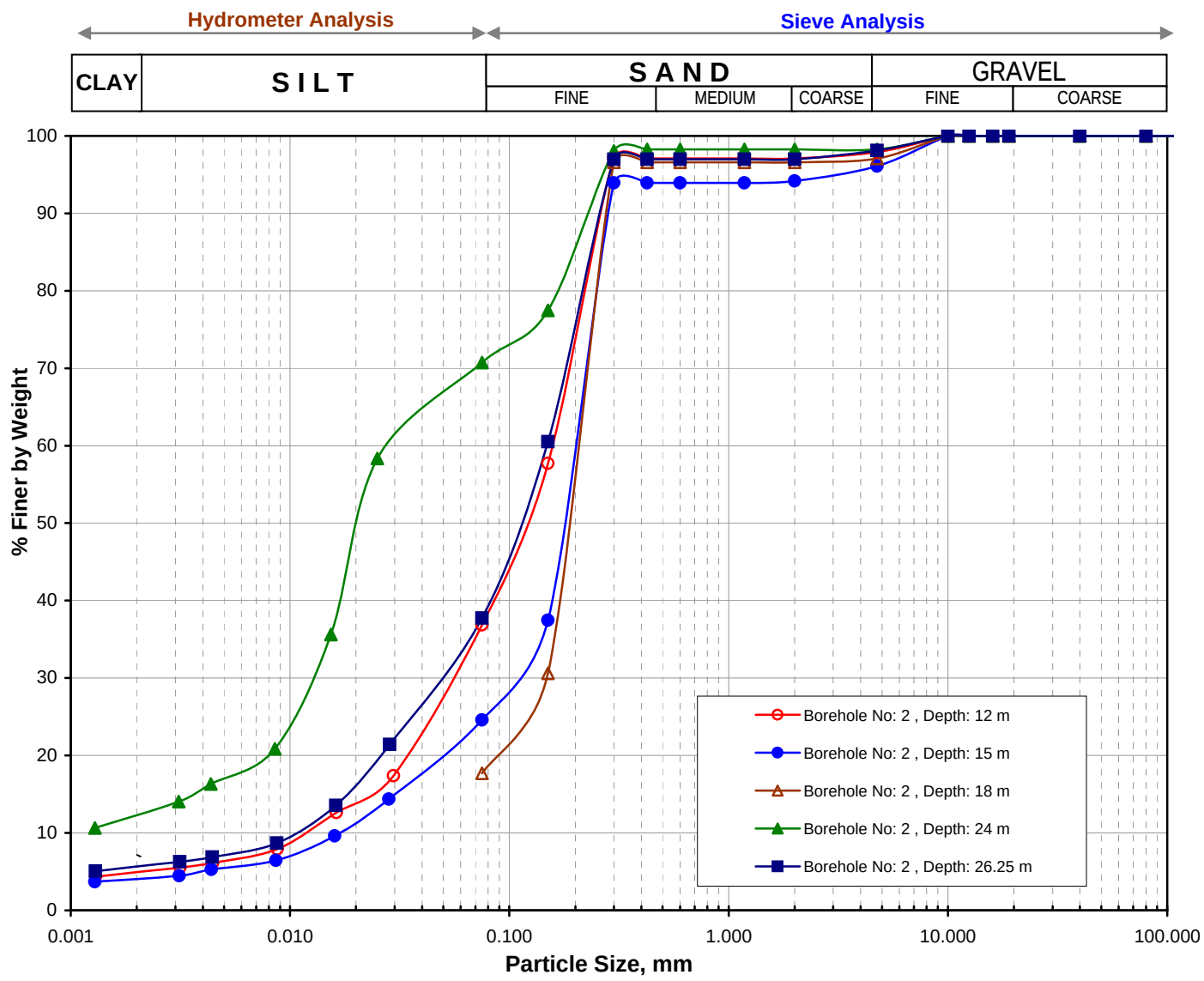
Fig. No. 10

Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-2	12.00	Silty fine sand with traces of gravel (SM)	2	61	32	4	0.16	0.06	0.01	13.3	1.8
BH-2	15.00	Silty fine sand with traces of gravel (SM)	4	72	21	4	0.21	0.11	0.02	12.4	3.2
BH-2	18.00	Silty fine sand with traces of gravel (SM)	3	79	18	0	0.22	0.15			
BH-2	24.00	Sandy silt with traces of gravel (CL)	2	28	60	11	0.03	0.01			
BH-2	26.25	Silty fine sand with traces of gravel (SM)	2	60	33	5	0.15	0.05	0.01	13.5	1.7



Structure : G+31+P

Grain Size Analysis

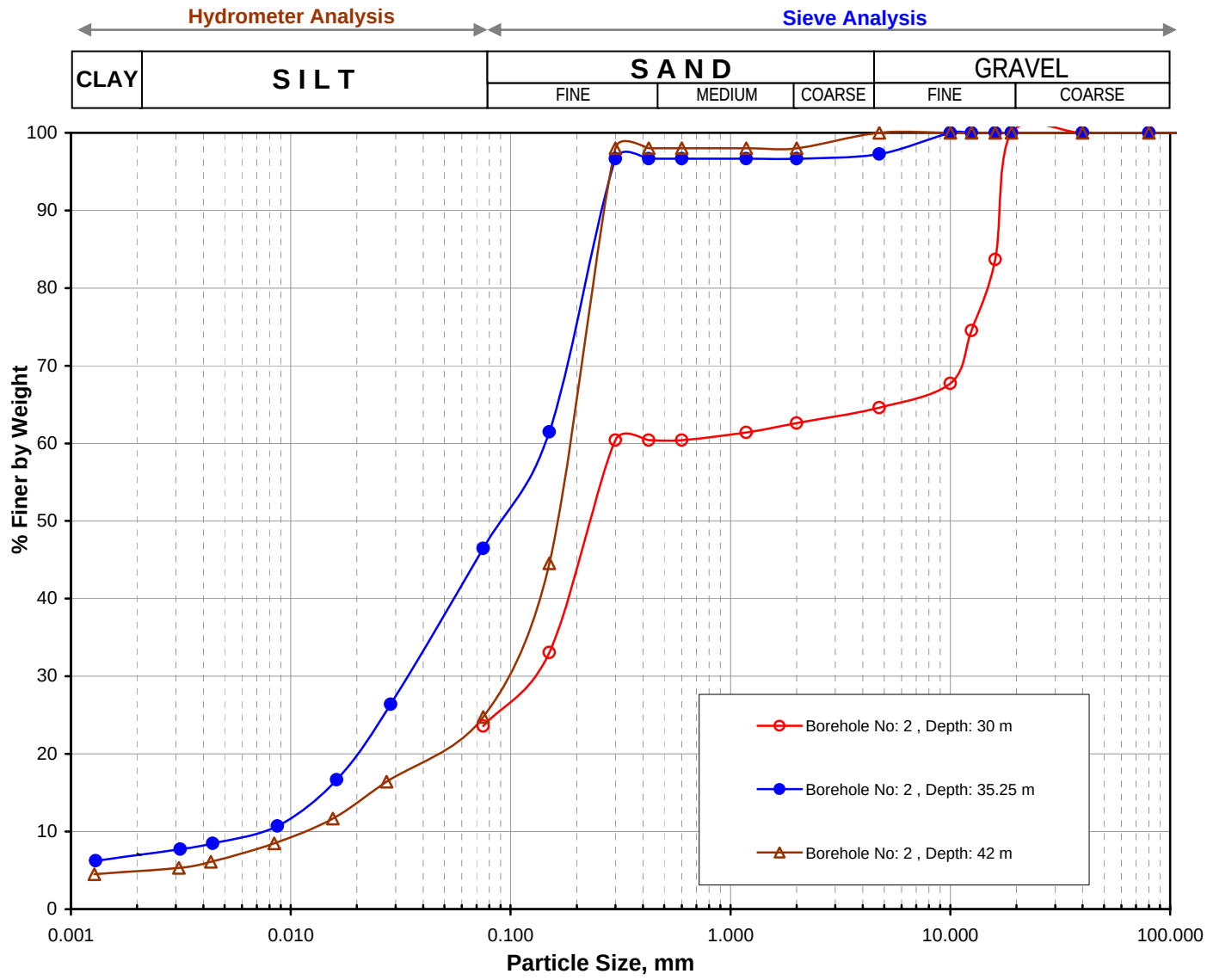
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 11	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-2	30.00	Silty fine sand intermixed with gravel (SM)	35	41	24	0	0.30	0.13			
BH-2	35.25	Silty fine sand with traces of gravel (SM)	3	51	40	6	0.14	0.04	0.01	20.4	1.4
BH-2	42.00	Silty fine sand (SM)	0	75	20	5	0.19	0.10	0.01	16.1	3.9



Structure : G+31+P

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

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LABORATORY: CENGRS GEOTECHNICA PVT. LTD.

An ISO /IEC: 17025-2005 accredited Laboratory

Job No.: 214077

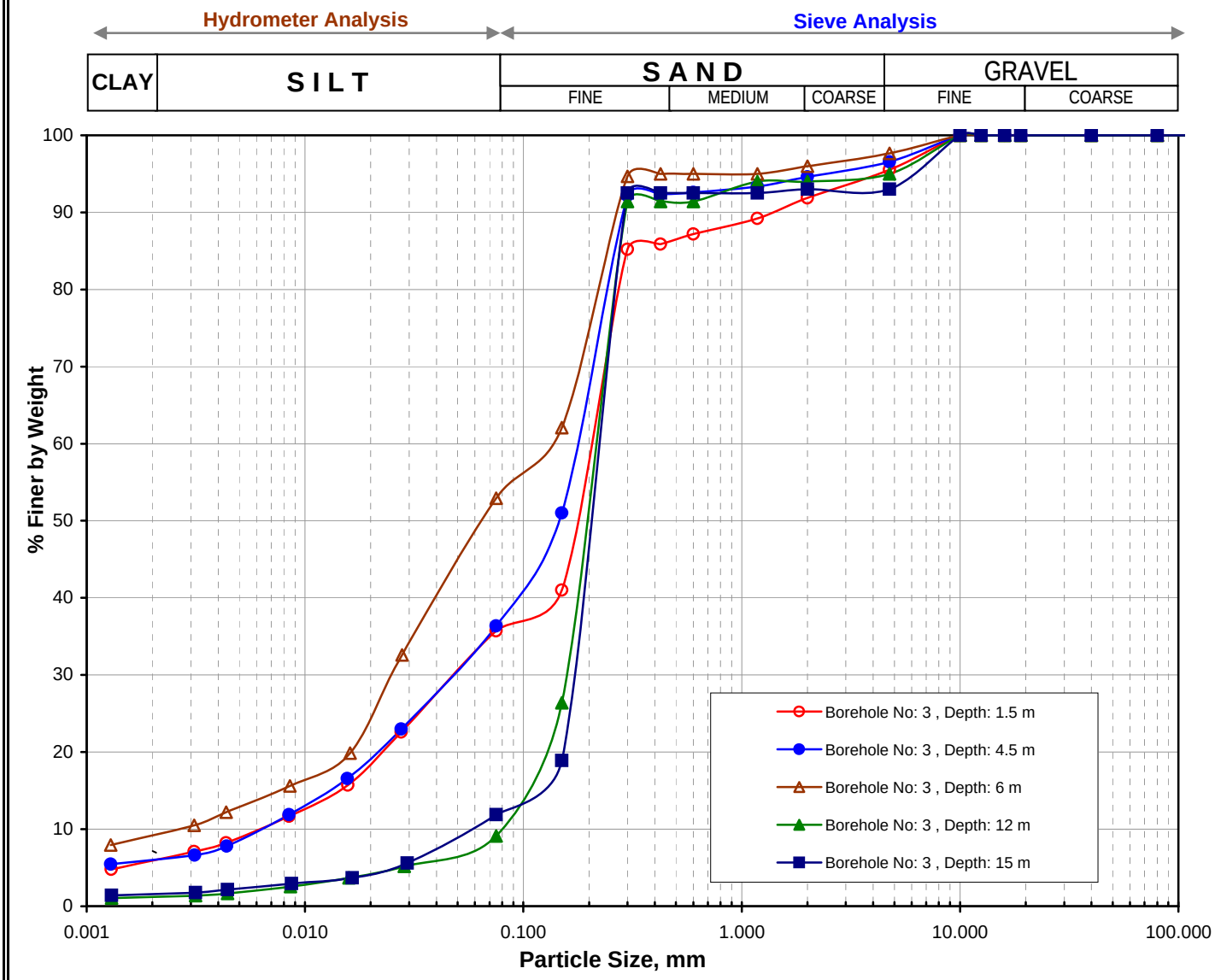
Fig. No. 12

Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-3	1.50	Silty fine sand with traces of gravel (SM)	4	60	31	5	0.21	0.05	0.01	35.7	2.3
BH-3	4.50	Silty fine sand with traces of gravel (SM)	3	60	31	5	0.18	0.05	0.01	26.1	2.2
BH-3	6.00	Sandy silt with traces of gravel (CL)	2	45	45	8	0.13	0.03	0.00	44.3	1.6
BH-3	12.00	Fine sand with gravel (SP-SM)	5	86	8	1	0.23	0.16	0.08	2.9	1.4
BH-3	15.00	Fine sand with gravel (SP-SM)	7	81	10	1	0.23	0.17	0.06	3.8	2.1



Structure : G+31+P

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

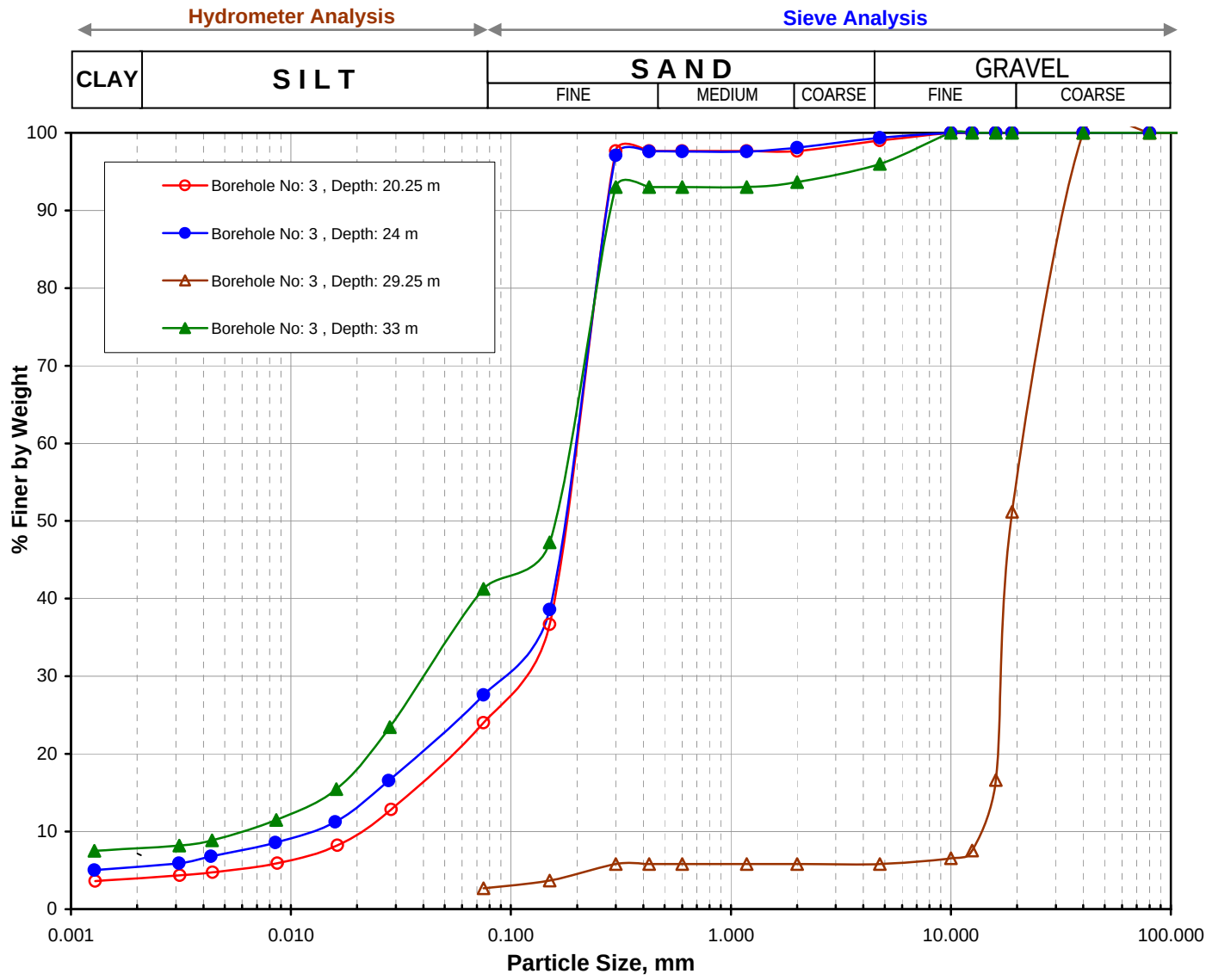
240

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 13	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-3	20.25	Silty fine sand with traces of gravel (SM)	1	75	20	4	0.21	0.11	0.02	9.9	2.8
BH-3	24.00	Silty fine sand with traces of gravel (SM)	1	72	23	5	0.21	0.09	0.01	17.1	3.4
BH-3	29.25	Gravels (GP)	94	3	3	0	22.79	17.16	13.44	1.7	1.0
BH-3	33.00	Silty fine sand with traces of gravel (SM)	4	55	34	8	0.19	0.05	0.01	32.0	1.8



Structure : G+31+P

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

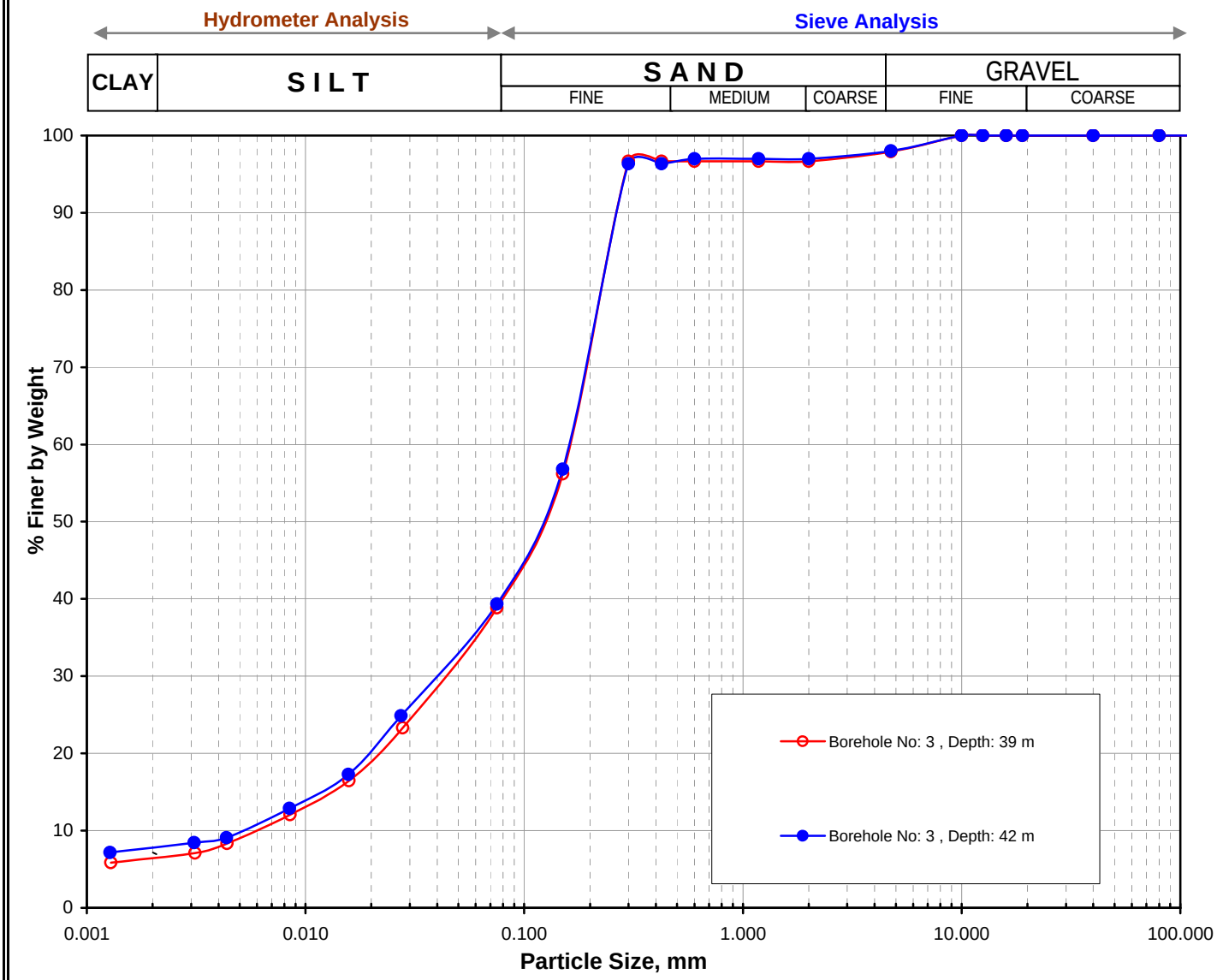
241

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 14	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-3	39.00	Silty fine sand with traces of gravel (SM)	2	59	33	6	0.16	0.05	0.01	27.3	2.3
BH-3	42.00	Silty fine sand with traces of gravel (SM)	2	59	32	7	0.16	0.04	0.01	32.4	2.4



Structure : G+31+P

Grain Size Analysis

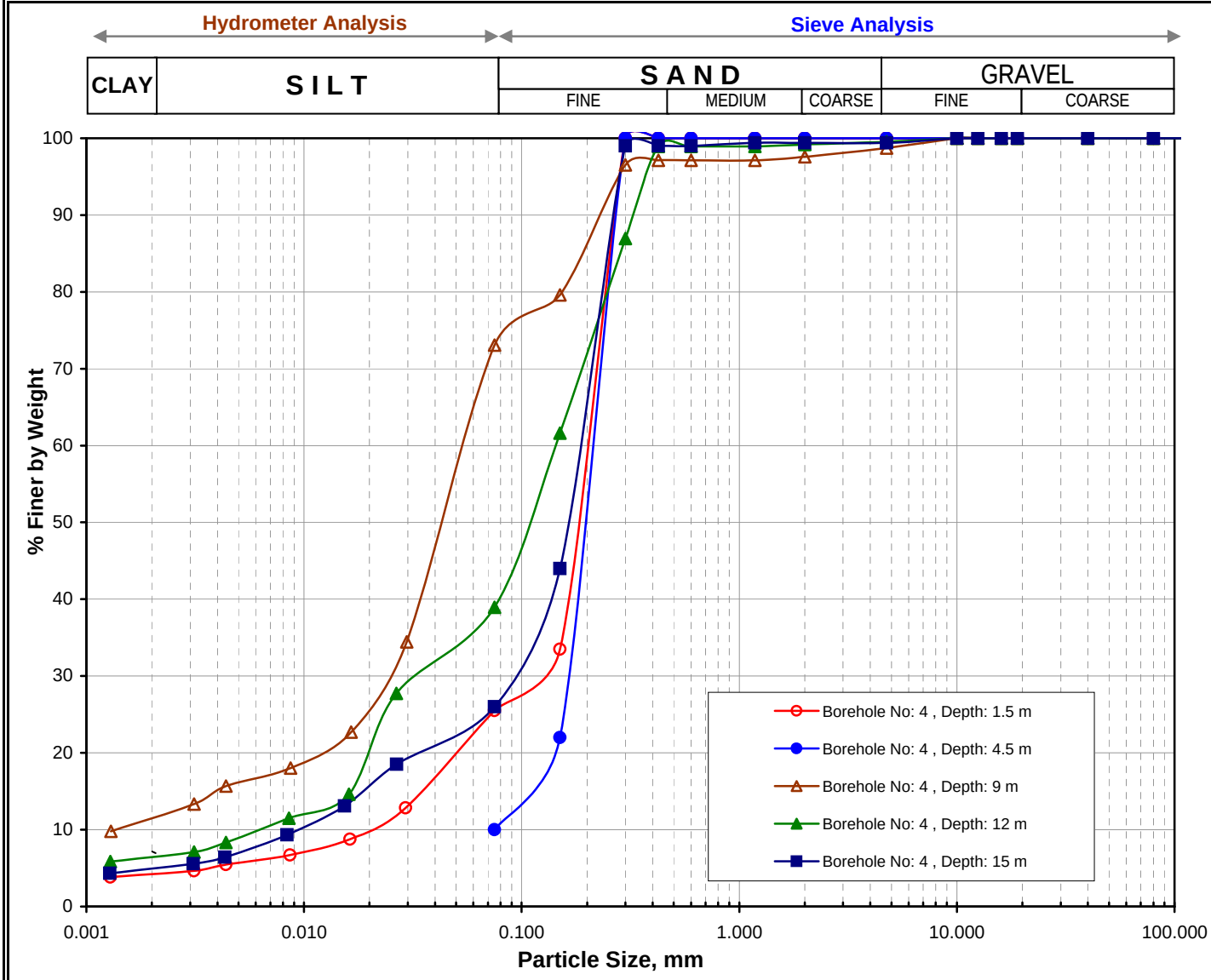
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 15	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-4	1.50	Silty fine sand (SM)	0	75	22	4	0.21	0.12	0.02	10.5	3.3
BH-4	4.50	Fine sand (SP-SM)	0	90	10	0	0.22	0.17			
BH-4	9.00	Sandy silt with traces of gravel (CL)	1	26	63	10	0.06	0.03	0.00	60.0	10.4
BH-4	12.00	Silty fine sand (SM)	0	61	33	6	0.15	0.04	0.01	20.7	1.3
BH-4	15.00	Silty fine sand with traces of gravel (SM)	1	73	22	4	0.19	0.09	0.01	19.4	4.4



Structure:Slab D G+14

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

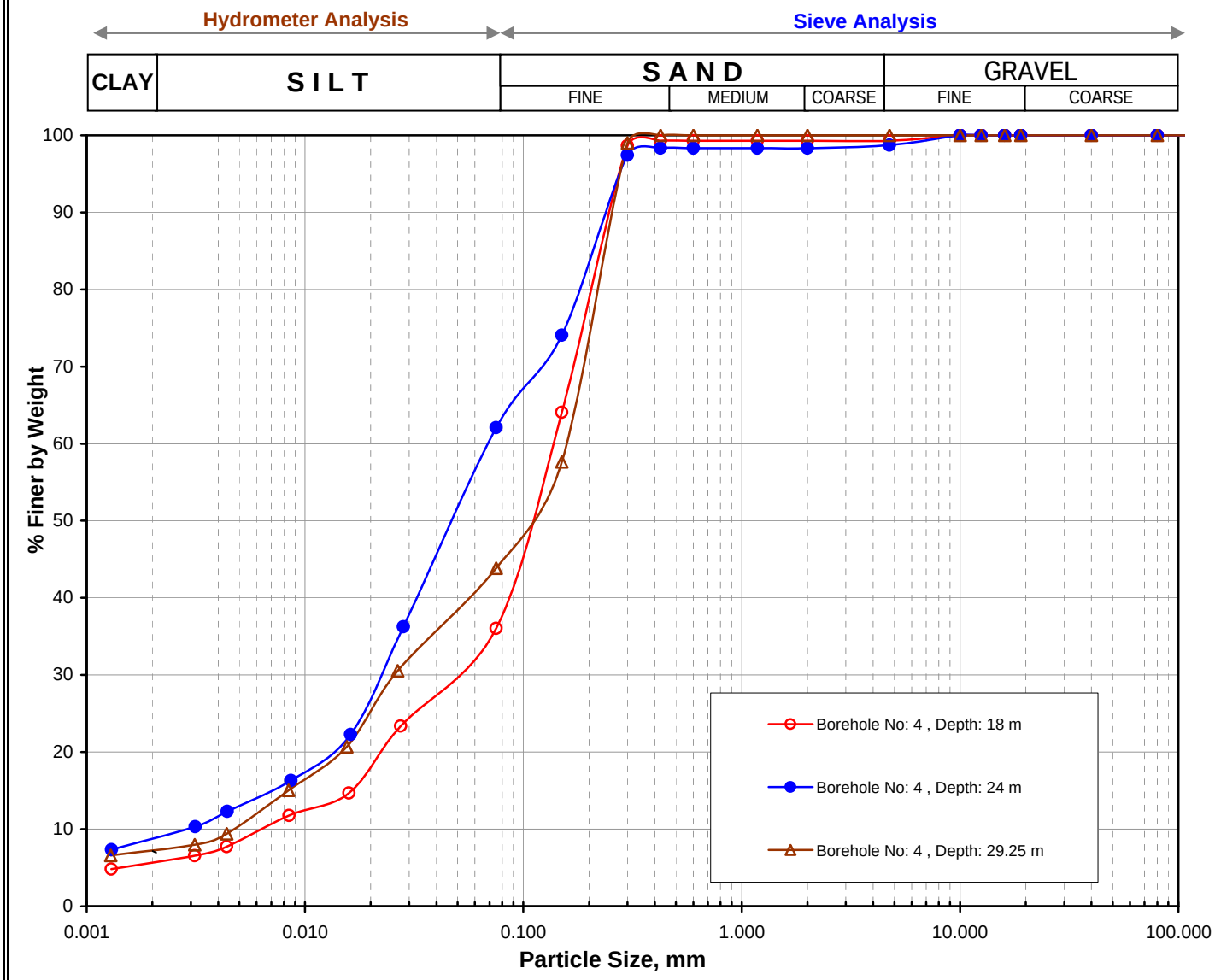
343

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 16	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-4	18.00	Silty fine sand with traces of gravel (SM)	1	63	31	5	0.14	0.05	0.01	19.9	2.8
BH-4	24.00	Sandy silt with traces of gravel (CL)	1	37	55	7	0.07	0.02	0.00	23.7	2.5
BH-4	29.25	Silty fine sand (SM)	0	56	37	7	0.16	0.03	0.01	31.8	0.9



Structure:Slab D G+14

Grain Size Analysis

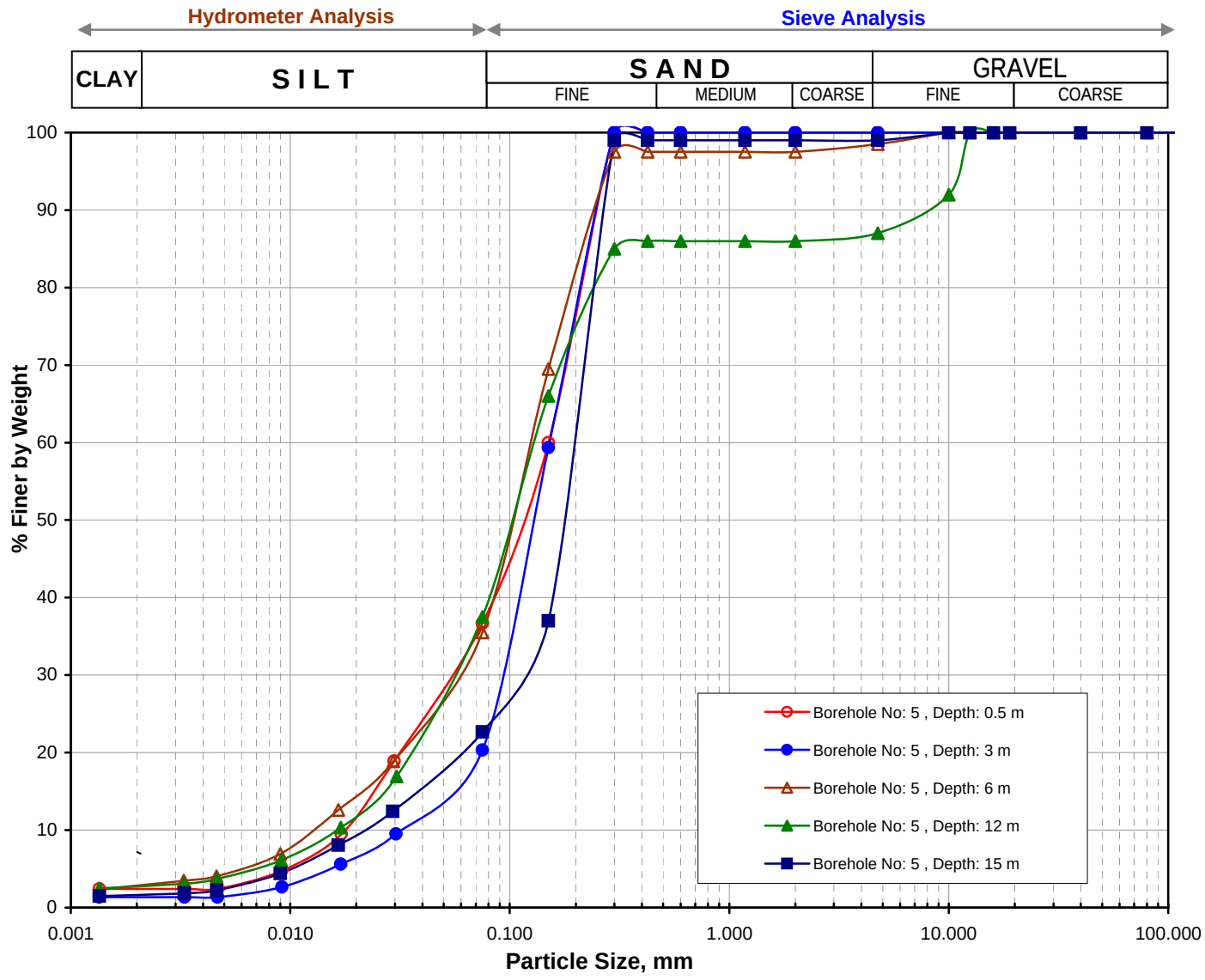
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 17	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-5	0.50	Silty fine sand (SM)	0	63	34	2	0.15	0.06	0.02	8.3	1.3
BH-5	3.00	Silty fine sand (SM)	0	80	19	1	0.15	0.09	0.03	4.8	1.8
BH-5	6.00	Silty fine sand with traces of gravel (SM)	2	63	33	2	0.13	0.06	0.01	9.9	2.2
BH-5	12.00	Silty fine sand with gravel (SM)	13	50	35	2	0.13	0.06	0.02	8.4	1.6
BH-5	15.00	Silty fine sand with traces of gravel (SM)	1	76	21	1	0.21	0.11	0.02	9.4	2.8



Structure : Slab D G+14

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

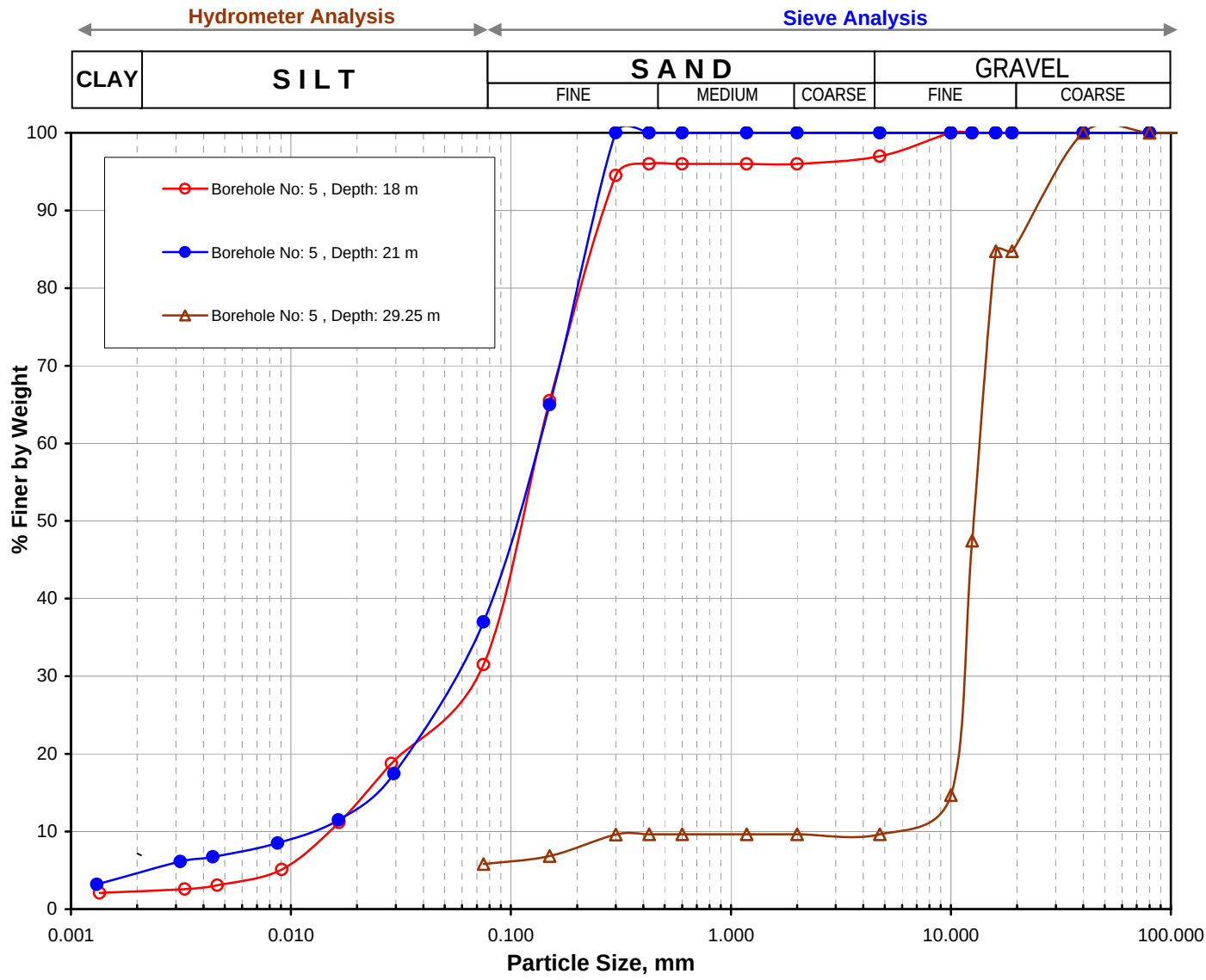
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LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 18	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-5	18.00	Silty fine sand with traces of gravel (SM)	3	66	29	2	0.14	0.07	0.02	9.2	2.4
BH-5	21.00	Silty fine sand (SM)	0	63	34	3	0.14	0.06	0.01	10.5	2.0
BH-5	29.25	Gravels (GP)	90	4	6	0	13.68	11.17	5.11	2.7	1.8



Structure : Slab D G+14

Grain Size Analysis

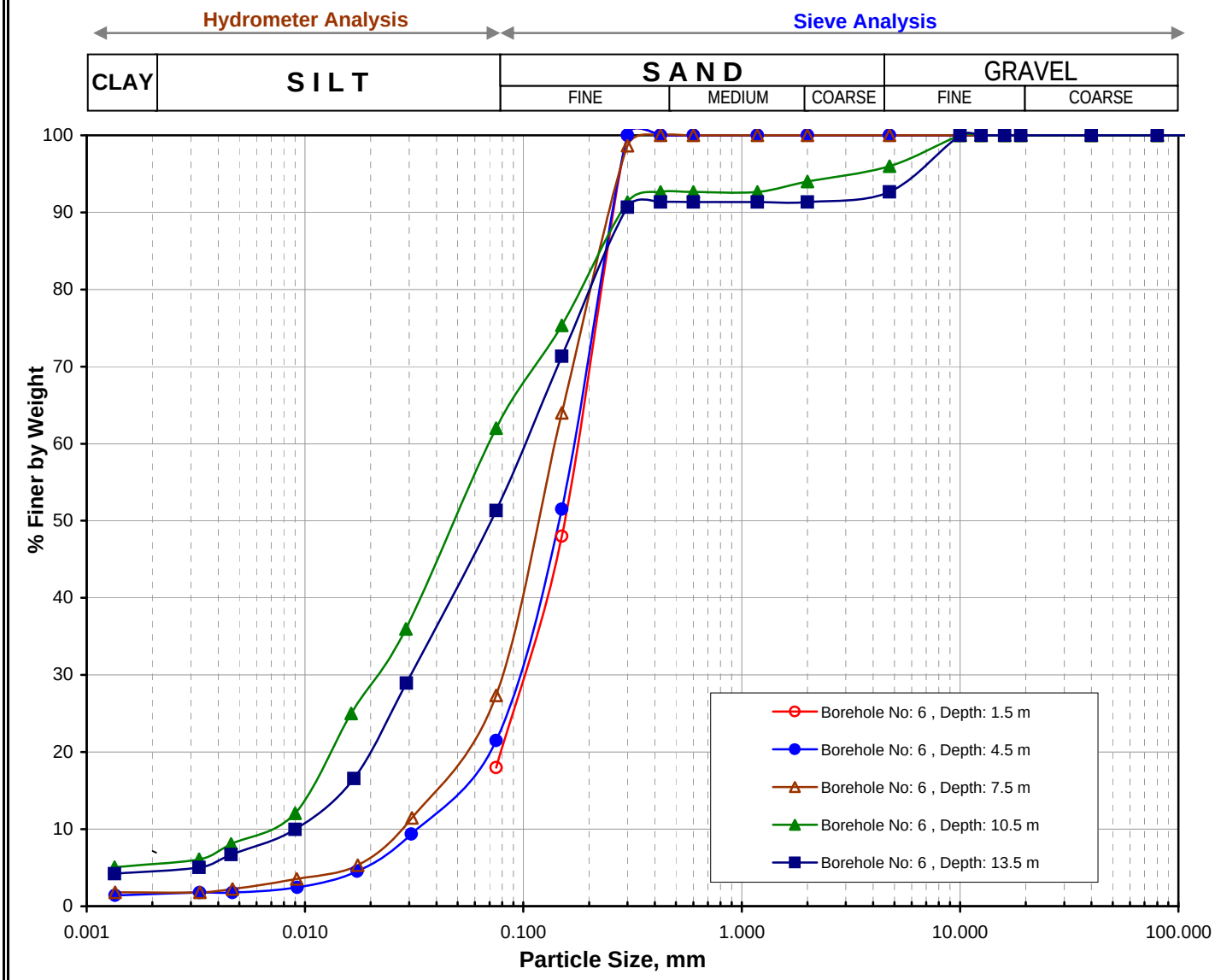
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 19	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-6	1.50	Silty fine sand (SM)	0	82	18	0	0.19	0.11			
BH-6	4.50	Silty fine sand (SM)	0	79	20	1	0.18	0.10	0.03	5.3	1.6
BH-6	7.50	Silty fine sand (SM)	0	73	26	2	0.14	0.08	0.03	5.1	1.6
BH-6	10.50	Sandy silt with traces of gravel (CL)	4	34	57	5	0.07	0.02	0.01	10.1	1.0
BH-6	13.50	Sandy silt with gravel (CL)	7	41	47	4	0.11	0.03	0.01	12.0	1.0



Structure : Slab D G+14

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

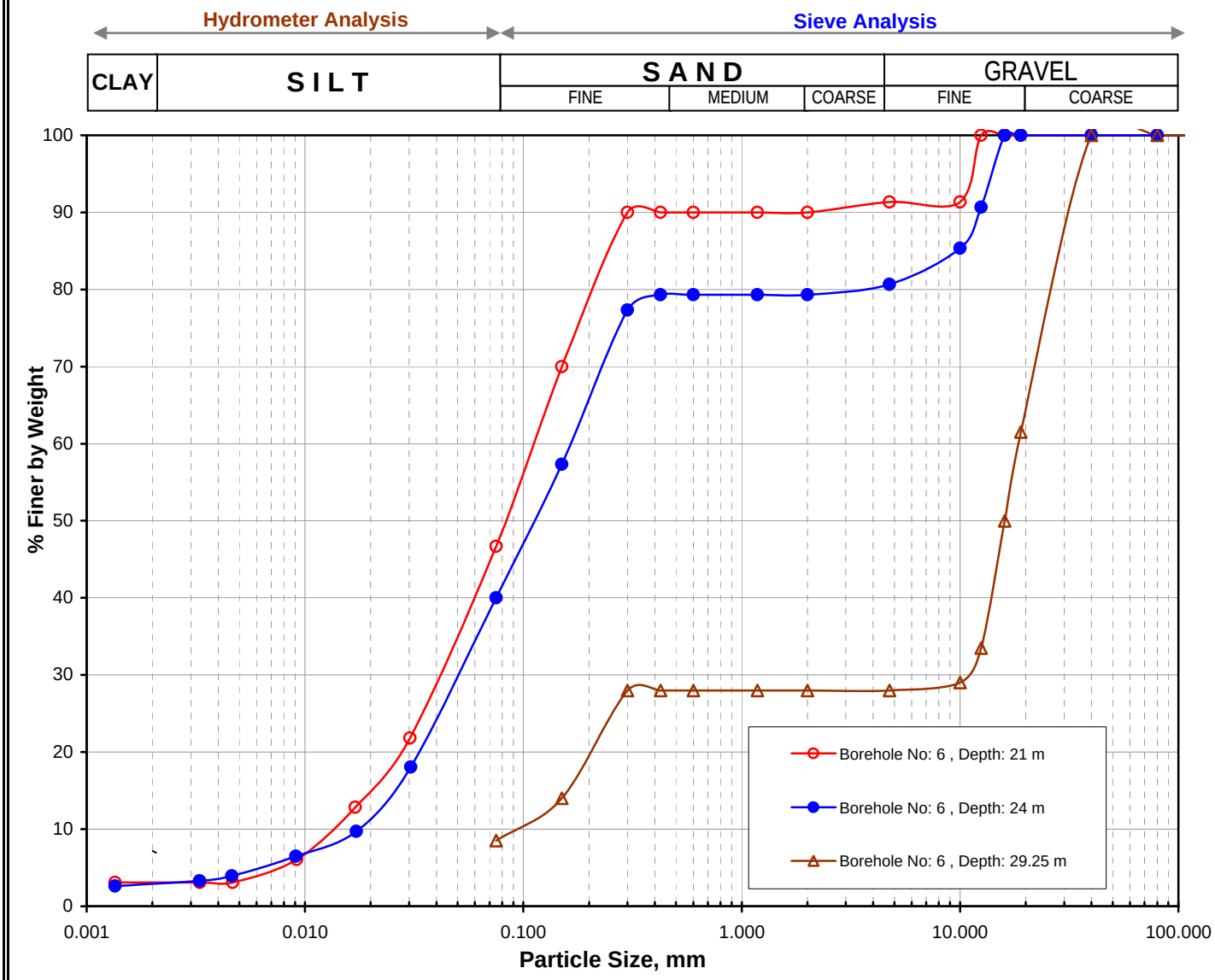
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LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 20	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-6	21.00	Sandy silt with gravel (CL)	9	45	44	3	0.12	0.05	0.01	8.4	1.2
BH-6	24.00	Silty fine sand with gravel (SM)	19	41	37	3	0.17	0.06	0.02	9.4	1.0
BH-6	29.25	Gravel intermixed with silty sand (GP-SM)	72	20	9	0	18.61	10.56	0.10	196	63.0



Structure : Slab D G+14

Grain Size Analysis

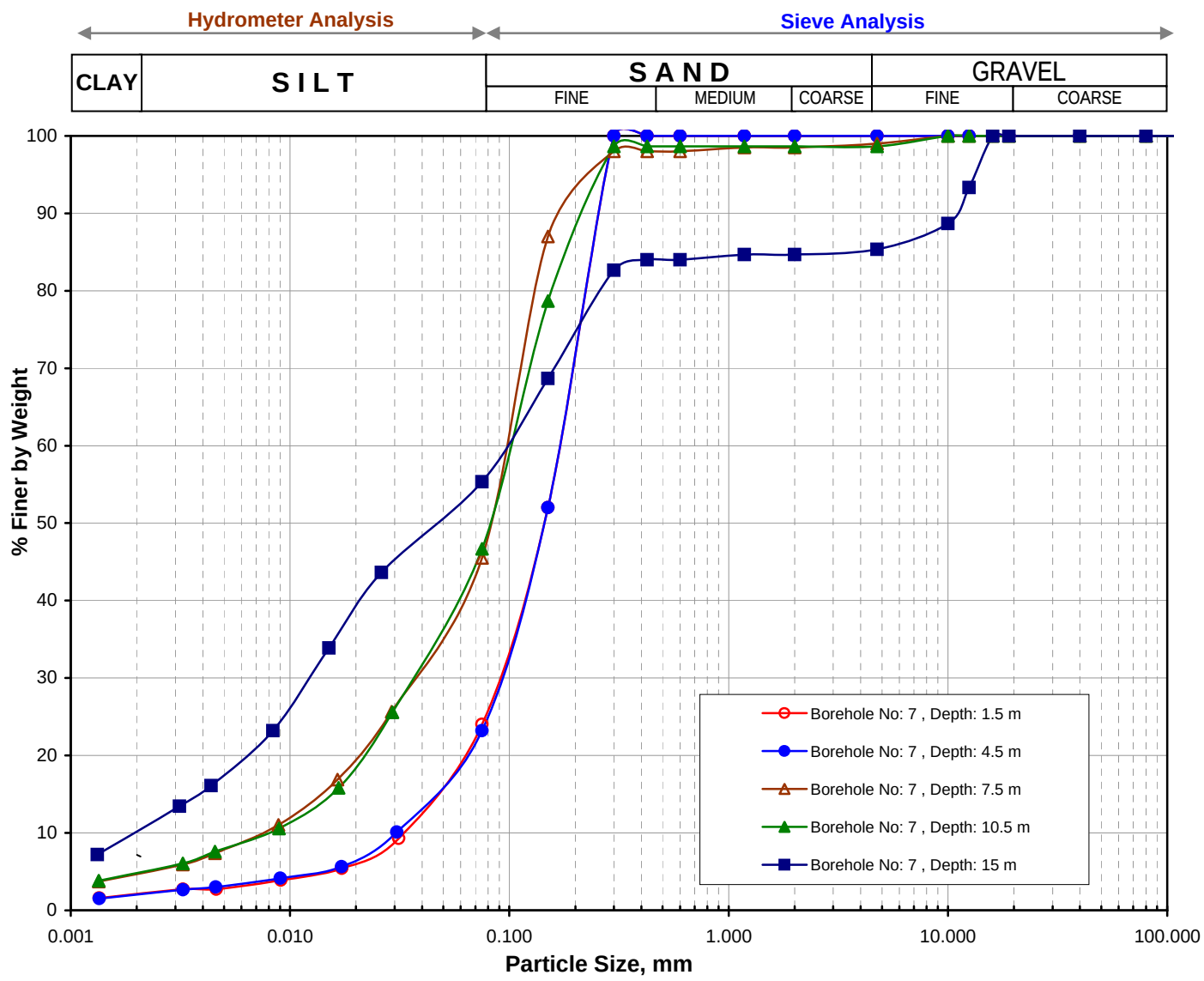
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 21	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-7	1.50	Silty fine sand (SM)	0	76	22	2	0.18	0.09	0.03	5.3	1.4
BH-7	4.50	Silty fine sand (SM)	0	77	22	2	0.18	0.09	0.03	5.8	1.7
BH-7	7.50	Silty fine sand with traces of gravel (SM)	1	54	42	4	0.10	0.04	0.01	12.6	1.9
BH-7	10.50	Silty fine sand with traces of gravel (SM)	1	52	43	4	0.11	0.04	0.01	13.3	1.8
BH-7	15.00	Sandy silt with gravel (CL)	15	30	48	7	0.10	0.01	0.00	50.5	0.8



Structure : G+36+P

Grain Size Analysis

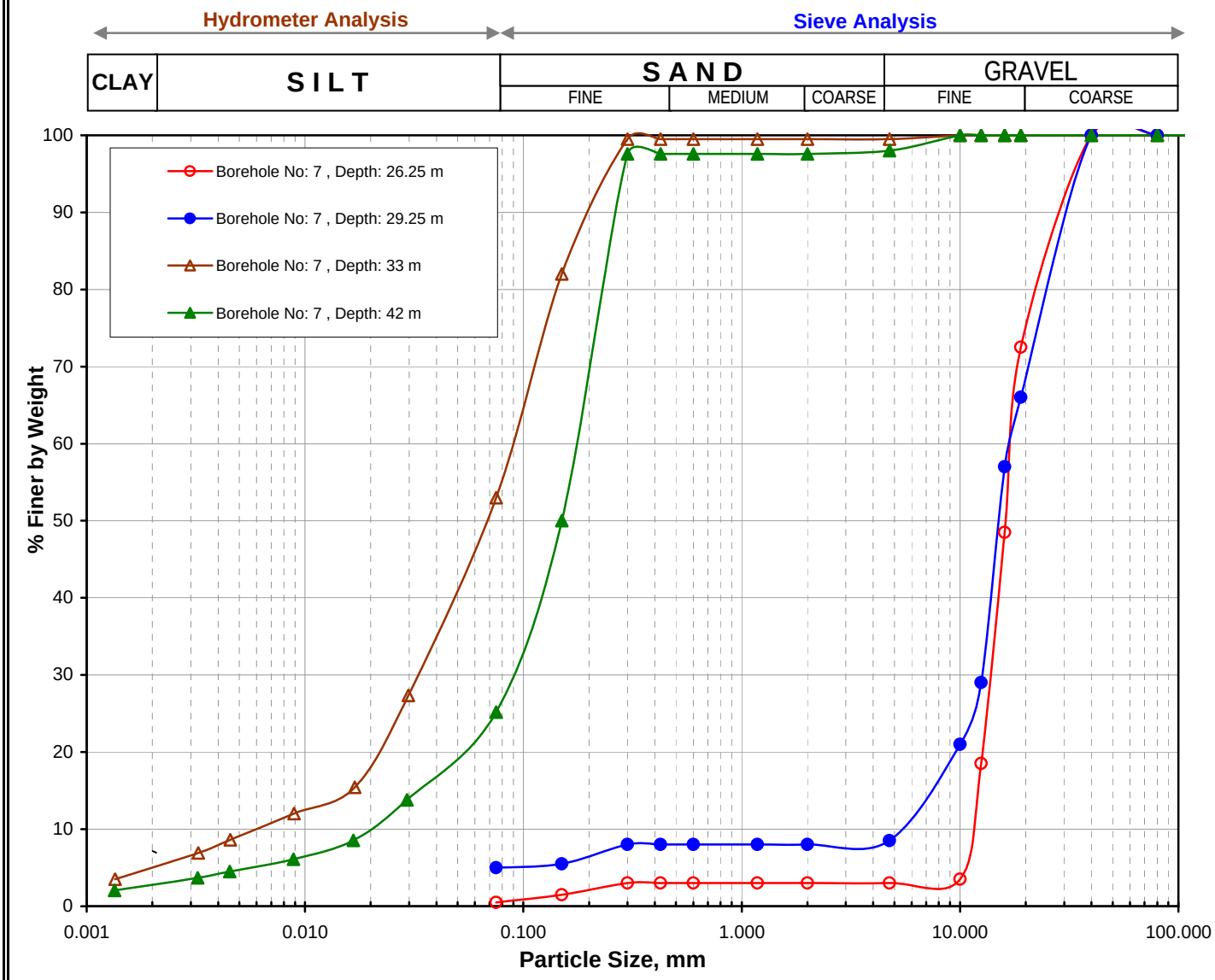
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 22	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	**Sample Depth, m**	**Sample Description**	**% Gravel**	**% Sand**	**% Silt**	**% Clay**	**D_{60}**	**D_{30}**	**D_{10}**	**C_u**	**C_c**
BH-7	26.25	Gravels (GP)	97	3	1	0	17.44	13.84	11.08	1.6	1.0
BH-7	29.25	Gravels (GP)	92	4	5	0	17.00	12.63	5.38	3.2	1.7
BH-7	33.00	Sandy silt with traces of gravel (CL)	1	47	49	4	0.09	0.03	0.01	15.5	2.1
BH-7	42.00	Silty fine sand with traces of gravel (SM)	2	73	23	2	0.18	0.09	0.02	9.1	2.2



Structure : G+36+P

Grain Size Analysis

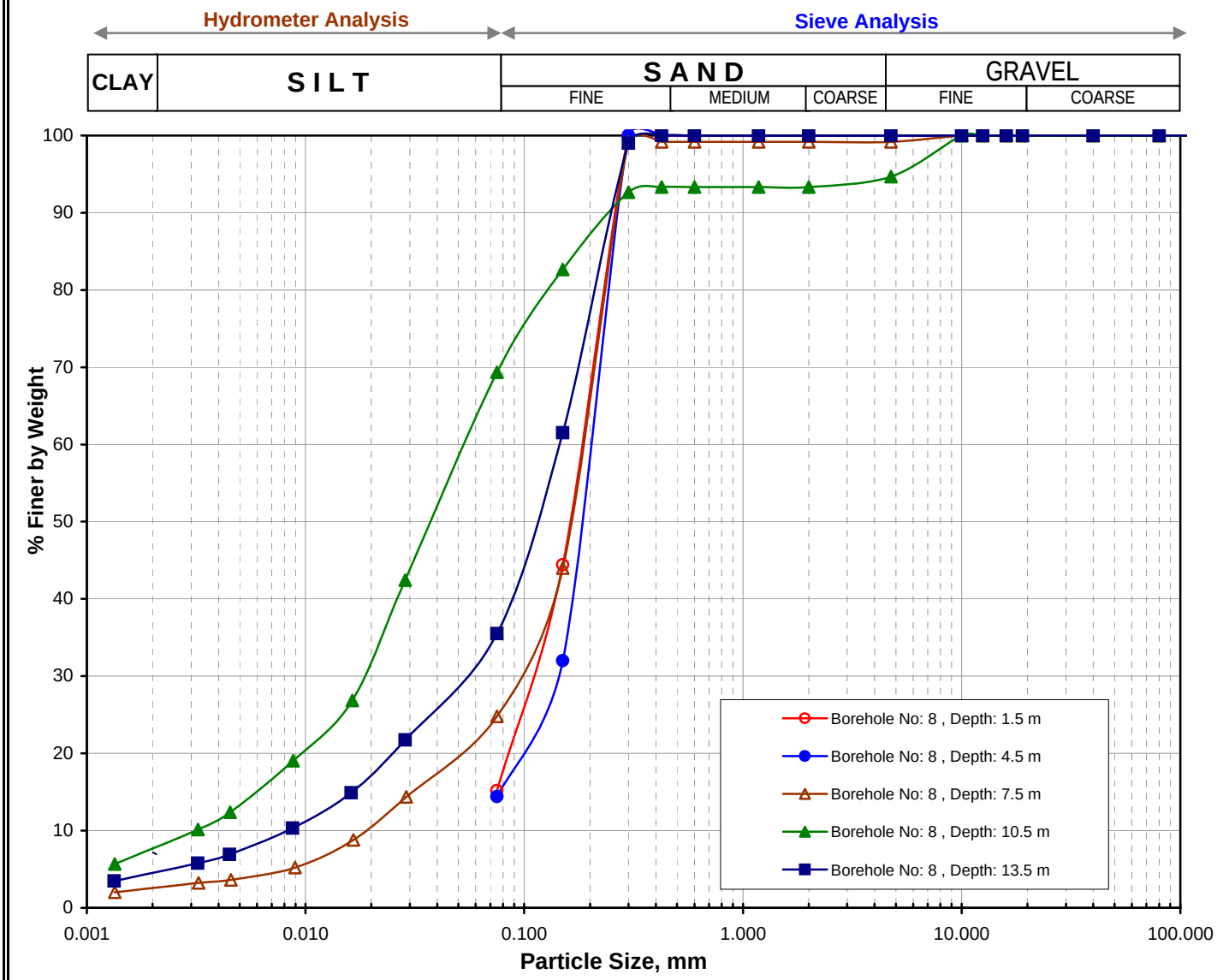
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 23	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-8	1.50	Silty fine sand (SM)	0	85	15	0	0.19	0.11			
BH-8	4.50	Silty fine sand (SM)	0	86	14	0	0.21	0.14			
BH-8	7.50	Silty fine sand with traces of gravel (SM)	1	74	23	2	0.19	0.10	0.02	10.2	2.5
BH-8	10.50	Sandy silt with gravel (CL)	5	25	64	6	0.06	0.02	0.00	19.7	2.0
BH-8	13.50	Silty fine sand (SM)	0	65	32	3	0.15	0.06	0.01	18.3	2.7



Structure : G+36+P

Grain Size Analysis

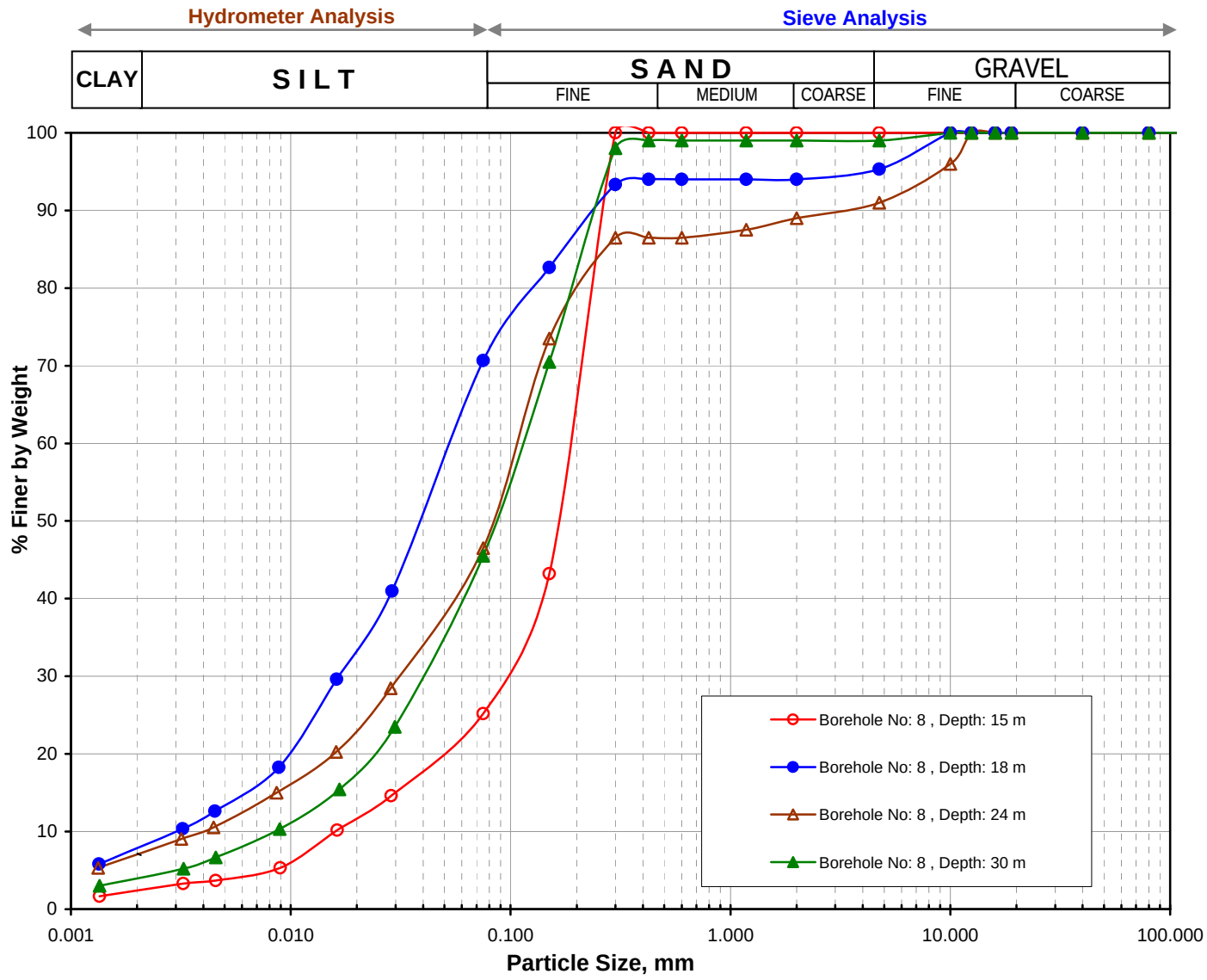
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 24	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-8	15.00	Silty fine sand (SM)	0	75	24	2	0.19	0.10	0.02	12.1	2.9
BH-8	18.00	Sandy silt with gravel (CL)	5	25	68	2	0.06	0.02	0.00	19.3	1.7
BH-8	24.00	Silty fine sand with gravel (SM)	9	45	41	5	0.11	0.03	0.00	28.3	2.3
BH-8	30.00	Silty fine sand with traces of gravel (SM)	1	54	42	3	0.12	0.04	0.01	13.2	1.7



Structure : G+36+P

Grain Size Analysis

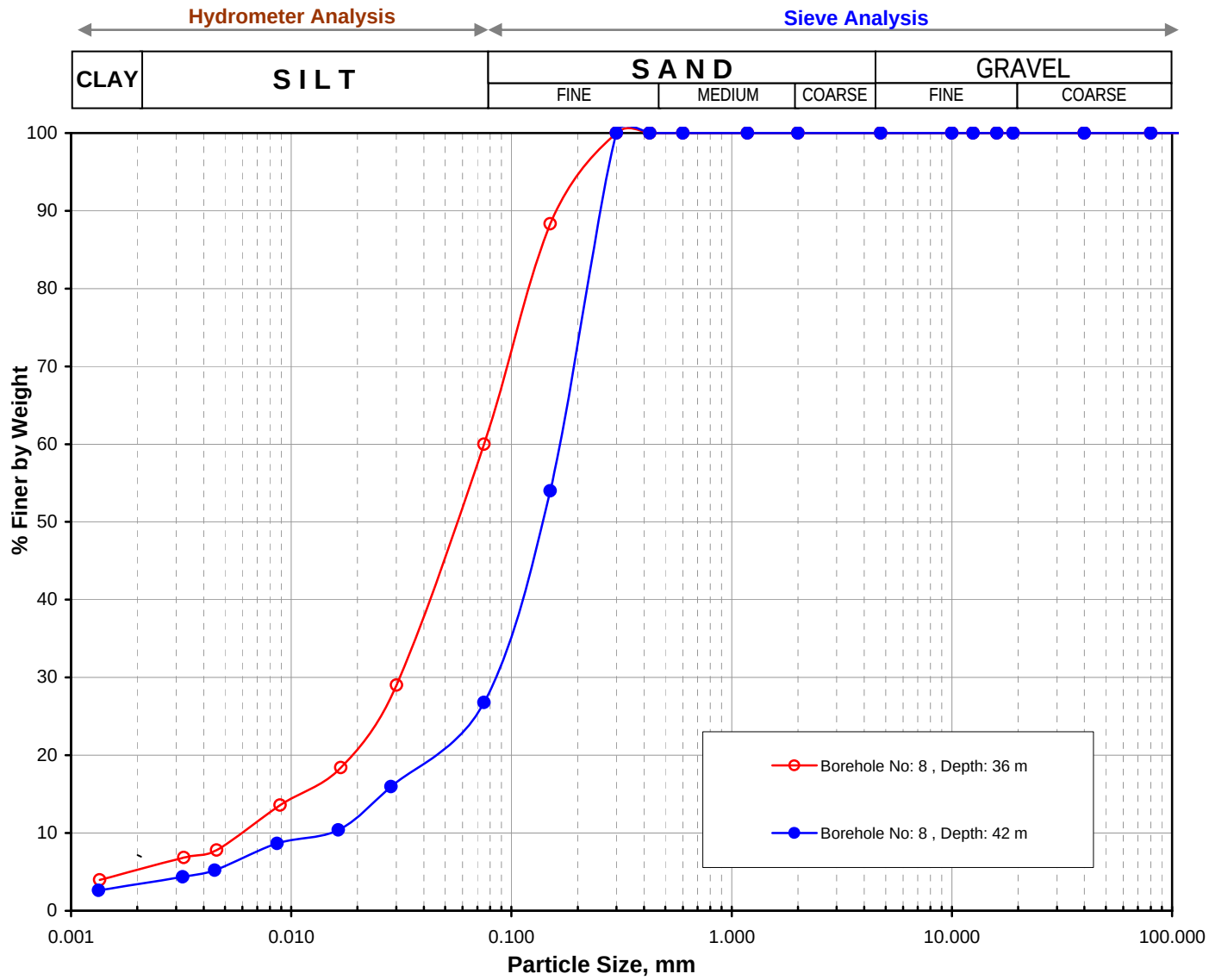
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 25	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-8	36.00	Sandy silt (CL)	0	40	56	4	0.08	0.03	0.01	12.5	2.3
BH-8	42.00	Silty fine sand (SM)	0	73	24	3	0.17	0.08	0.02	11.3	2.8



Structure : G+36+P

Grain Size Analysis

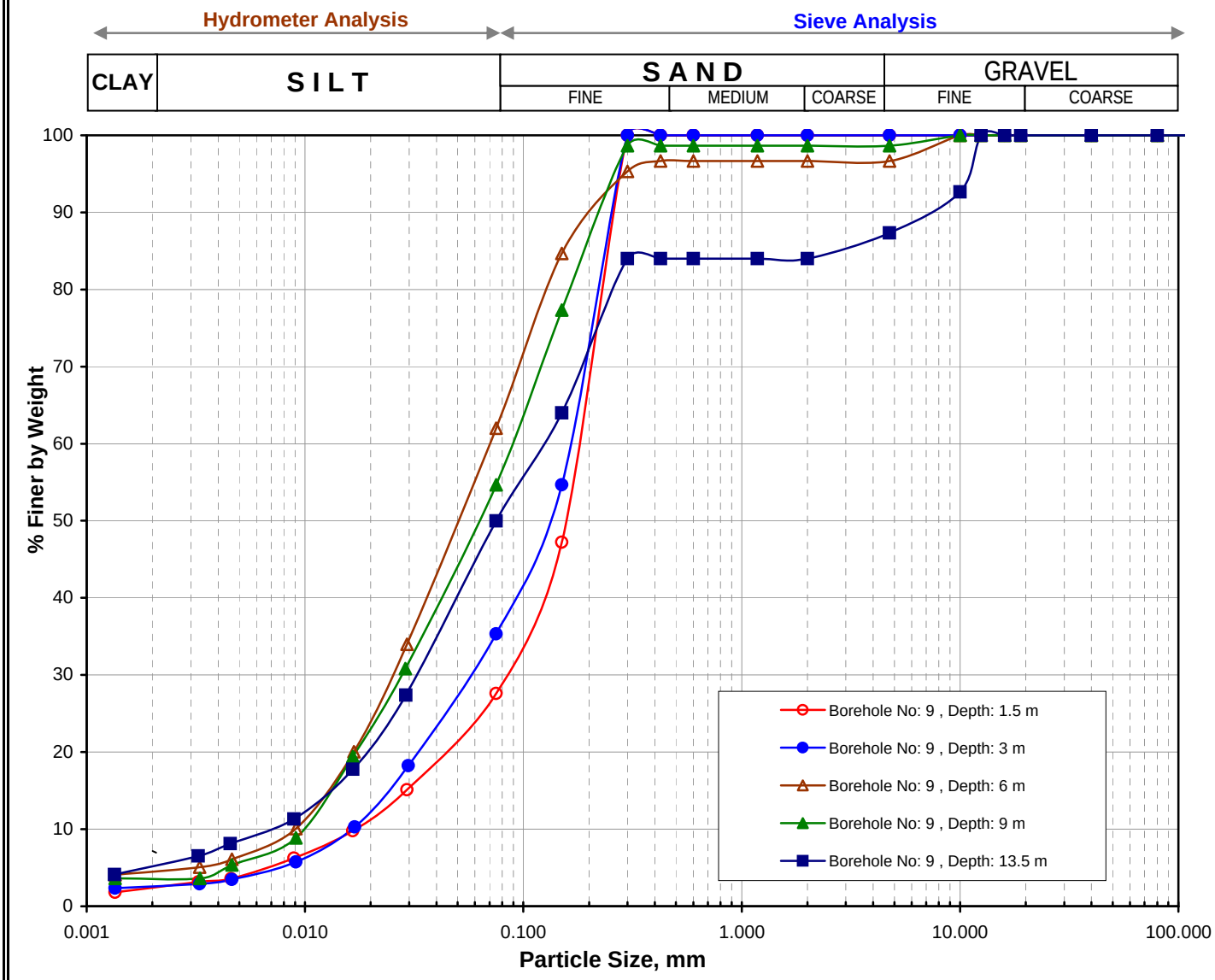
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 26	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-9	1.50	Silty fine sand (SM)	0	72	26	2	0.19	0.08	0.02	10.9	2.2
BH-9	3.00	Silty fine sand (SM)	0	65	33	2	0.17	0.06	0.02	10.5	1.4
BH-9	6.00	Sandy silt with traces of gravel (CL)	3	35	58	4	0.07	0.03	0.01	8.0	1.0
BH-9	9.00	Sandy silt with traces of gravel (CL)	1	44	51	4	0.09	0.03	0.01	9.3	0.8
BH-9	13.50	Sandy silt with gravel (CL)	13	37	46	4	0.13	0.03	0.01	18.4	1.3



Structure : Slab D G+8+P

Grain Size Analysis

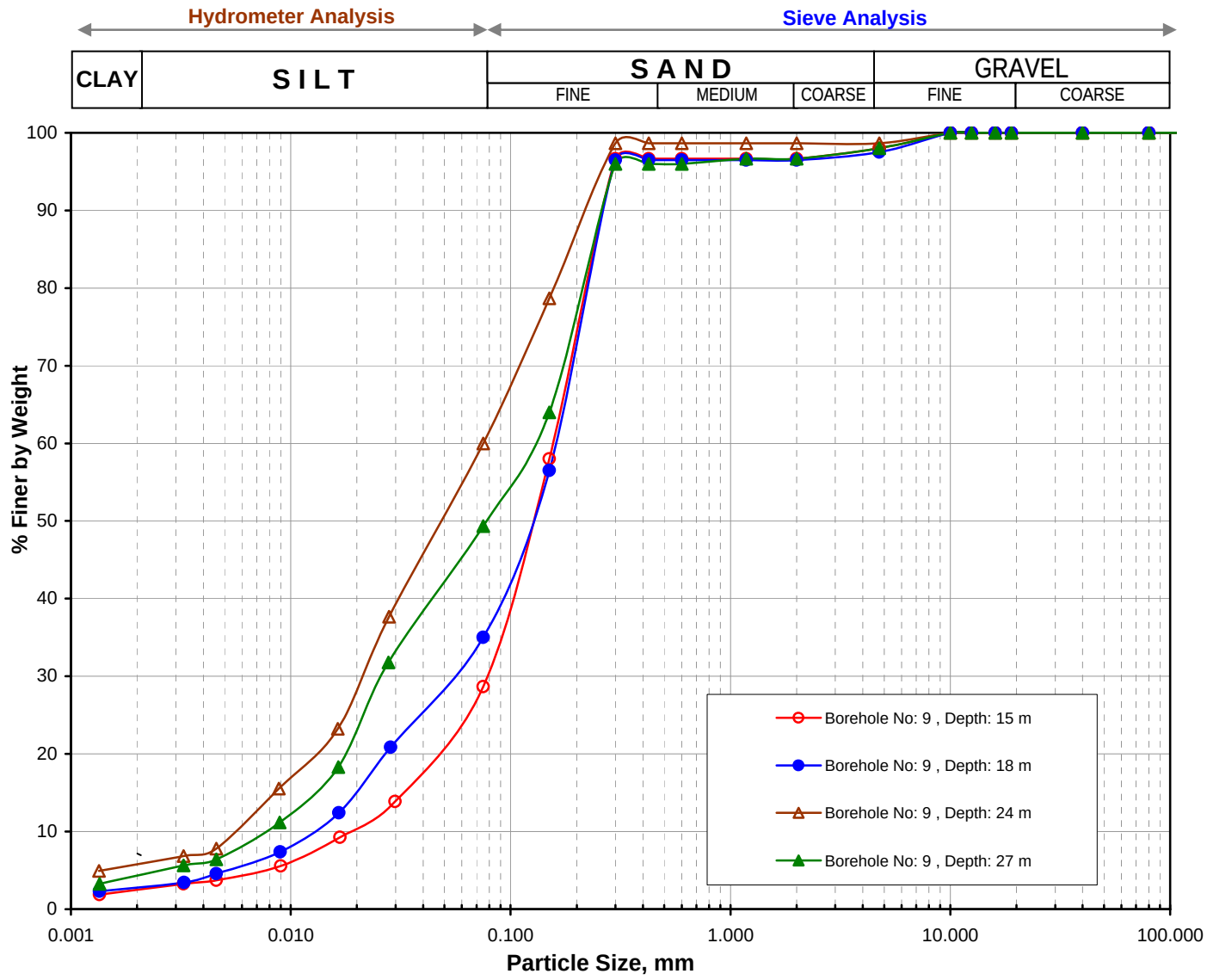
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 27	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-9	15.00	Silty fine sand with traces of gravel (SM)	2	69	27	2	0.16	0.08	0.02	8.3	2.0
BH-9	18.00	Silty fine sand with traces of gravel (SM)	3	63	33	2	0.16	0.06	0.01	12.5	1.6
BH-9	24.00	Sandy silt with traces of gravel (CL)	1	39	55	5	0.08	0.02	0.01	12.5	1.1
BH-9	27.00	Sandy silt with traces of gravel (CL)	2	49	46	3	0.13	0.03	0.01	16.3	0.7



Structure : Slab D G+8+P

Grain Size Analysis

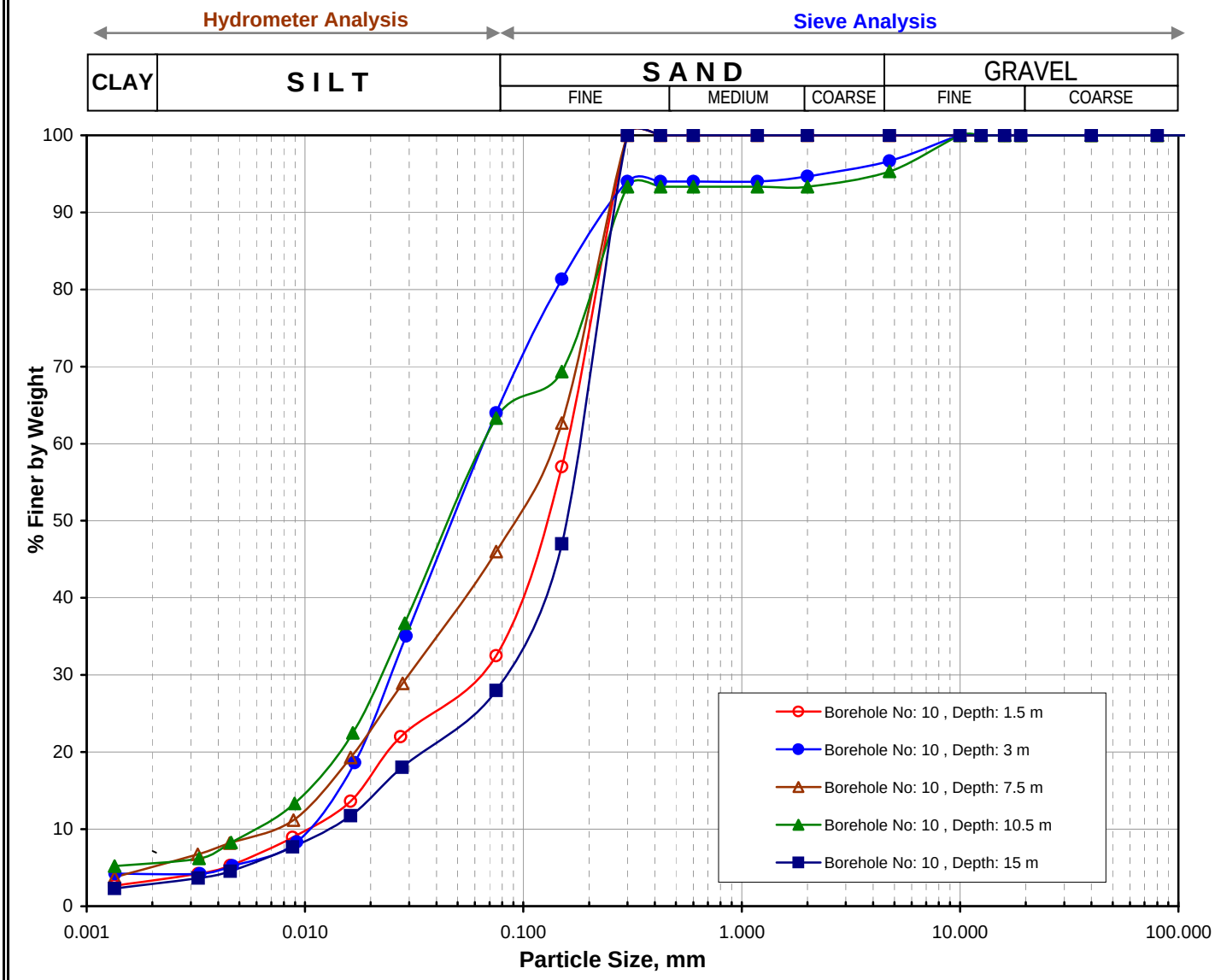
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 28	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-10	1.50	Silty fine sand (SM)	0	68	30	3	0.16	0.06	0.01	16.0	2.6
BH-10	3.00	Silty fine sand with traces of gravel (SM)	3	33	60	4	0.07	0.03	0.01	6.9	0.9
BH-10	7.50	Silty fine sand (SM)	0	54	42	4	0.14	0.03	0.01	19.7	1.0
BH-10	10.50	Sandy silt (CL)	5	32	58	5	0.07	0.02	0.01	11.5	1.3
BH-10	15.00	Silty fine sand (SM)	0	72	26	2	0.19	0.08	0.01	14.4	2.8



Structure : Slab D G+8+P

Grain Size Analysis

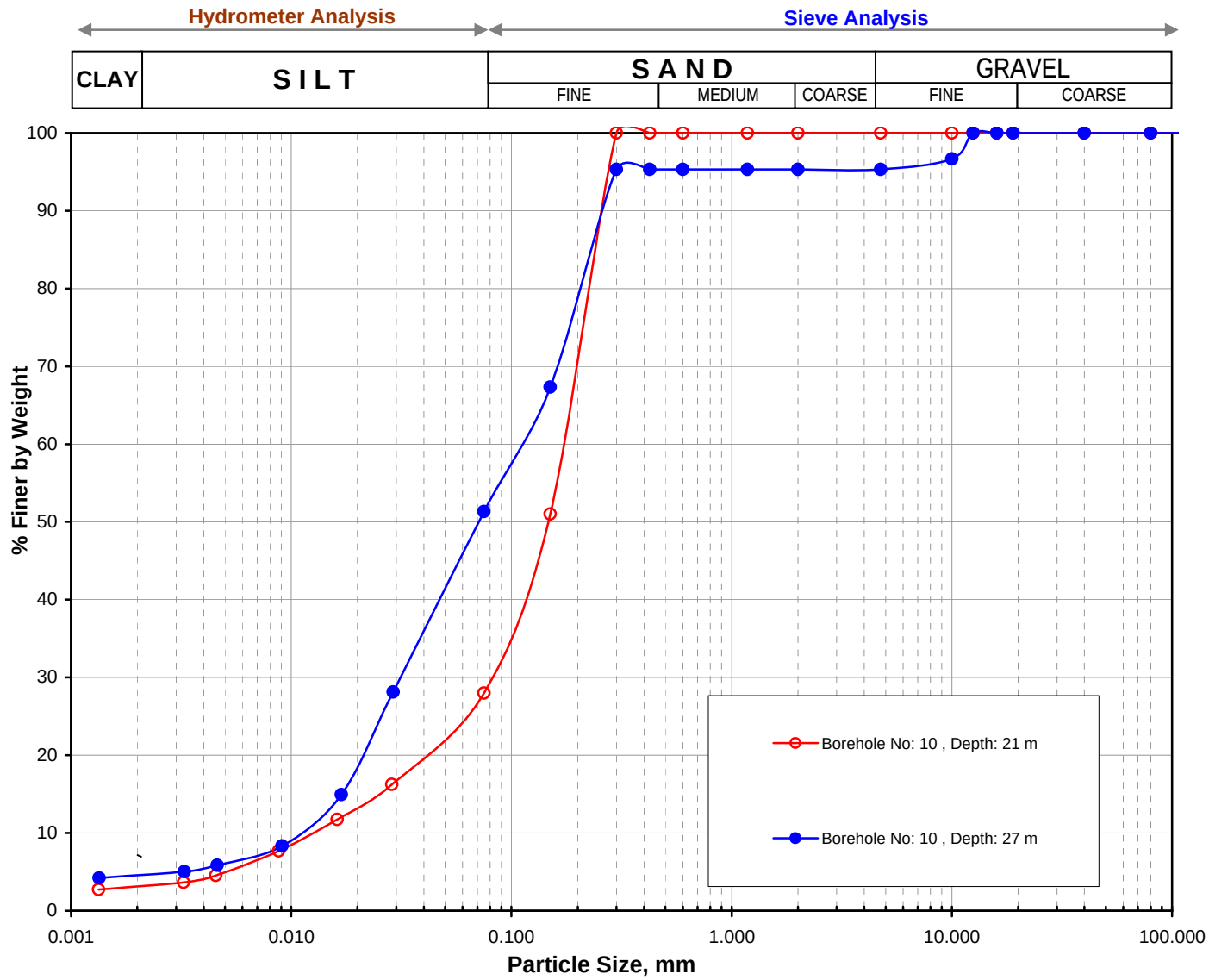
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 29	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-10	21.00	Silty fine sand (SM)	0	72	25	3	0.18	0.08	0.01	13.7	2.9
BH-10	27.00	Sandy silt with gravel (CL)	5	44	47	4	0.12	0.03	0.01	10.6	0.9



Structure : Slab D G+8+P

Grain Size Analysis

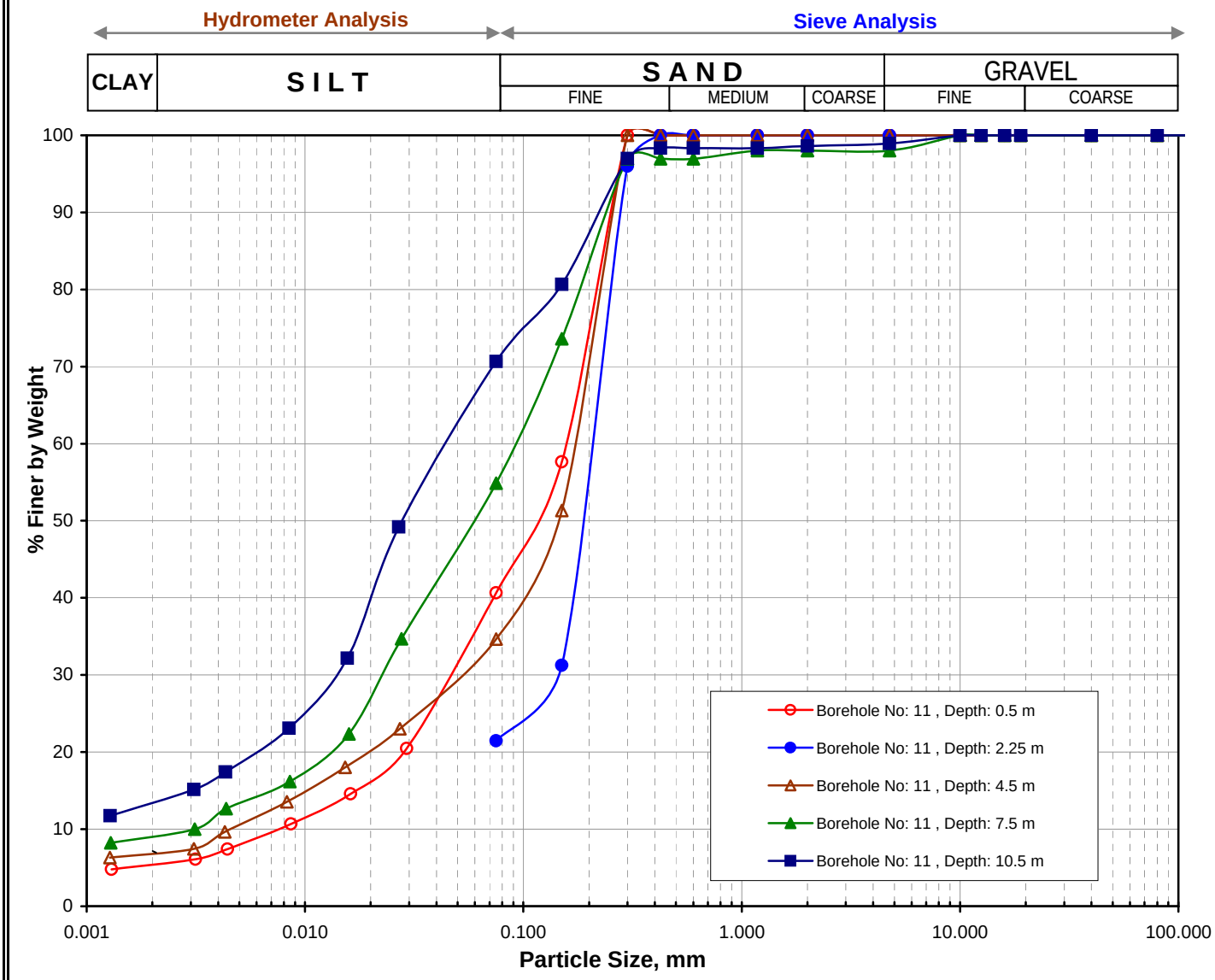
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 30	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-11	0.50	Silty fine sand (SM)	0	59	36	5	0.16	0.05	0.01	19.8	2.1
BH-11	2.25	Silty fine sand (SM)	0	79	21	0	0.22	0.14			
BH-11	4.50	Silty fine sand (SM)	0	65	28	6	0.18	0.06	0.01	35.4	3.5
BH-11	7.50	Sandy silt with traces of gravel (CL)	2	43	47	8	0.10	0.02	0.00	32.0	1.8
BH-11	10.50	Sandy silt with traces of gravel (CL)	1	28	59	12	0.05	0.01			



Structure: EWS

Grain Size Analysis

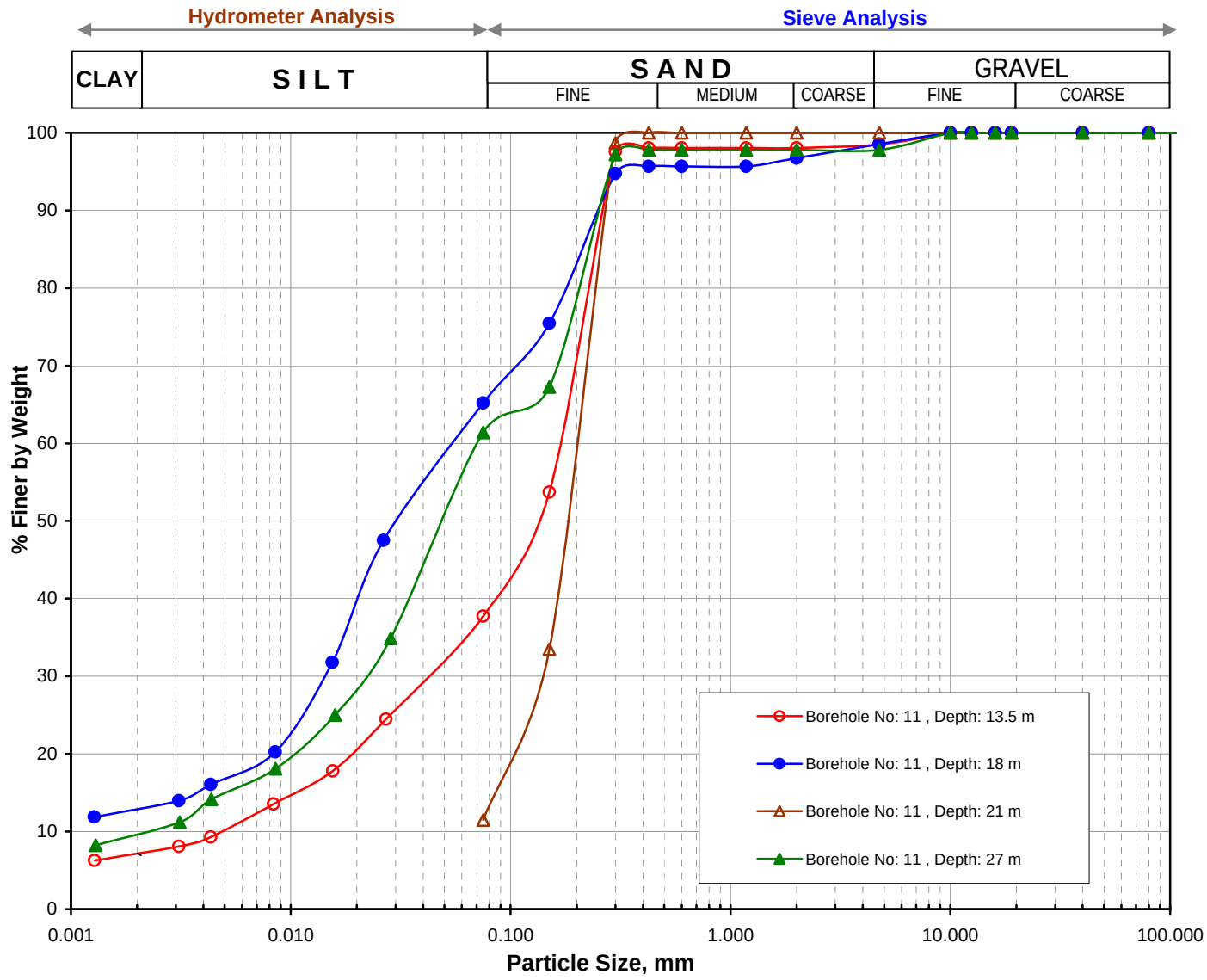
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 31	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-11	13.50	Silty fine sand with traces of gravel (SM)	2	61	31	6	0.17	0.05	0.01	34.4	2.6
BH-11	18.00	Sandy silt with traces of gravel (CL)	1	33	53	12	0.06	0.01			
BH-11	21.00	Fine sand (SP-SM)	0	89	12	0	0.21	0.14			
BH-11	27.00	Sandy silt with traces of gravel (CL)	2	36	53	8	0.07	0.02	0.00	36.5	3.3



Structure: EWS

Grain Size Analysis

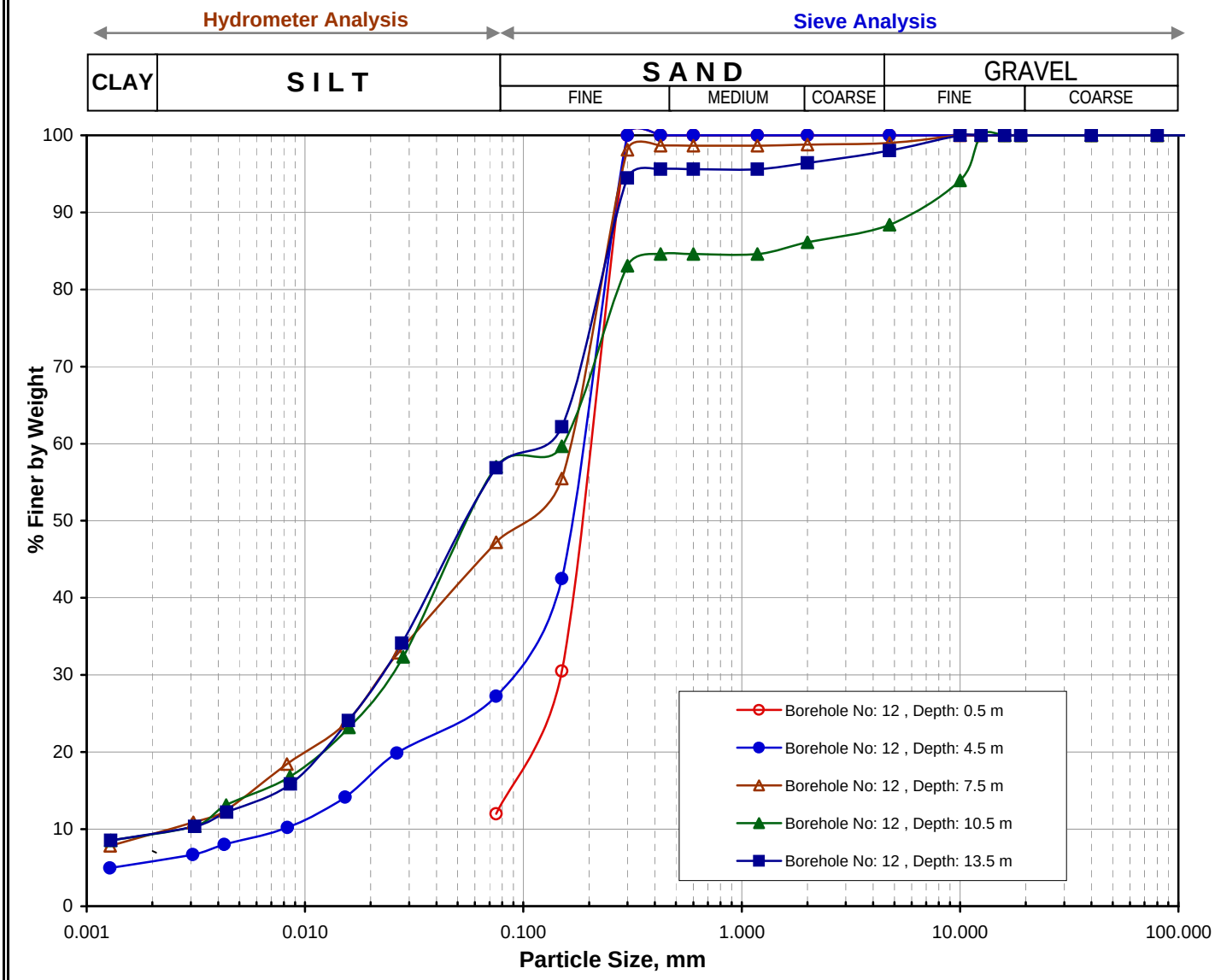
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 32	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-12	0.50	Fine sand (SP-SM)	0	88	12	0	0.21	0.15			
BH-12	4.50	Silty fine sand (SM)	0	73	22	5	0.20	0.09	0.01	24.5	5.1
BH-12	7.50	Silty fine sand with traces of gravel (SM)	1	52	39	8	0.17	0.02	0.00	55.3	1.1
BH-12	10.50	Sandy silt with gravel (CL)	12	31	48	9	0.15	0.03	0.00	50.7	1.4
BH-12	13.50	Sandy silt with traces of gravel (CL)	2	41	48	9	0.12	0.02	0.00	39.7	1.5



Structure : Slab E G+14

Grain Size Analysis

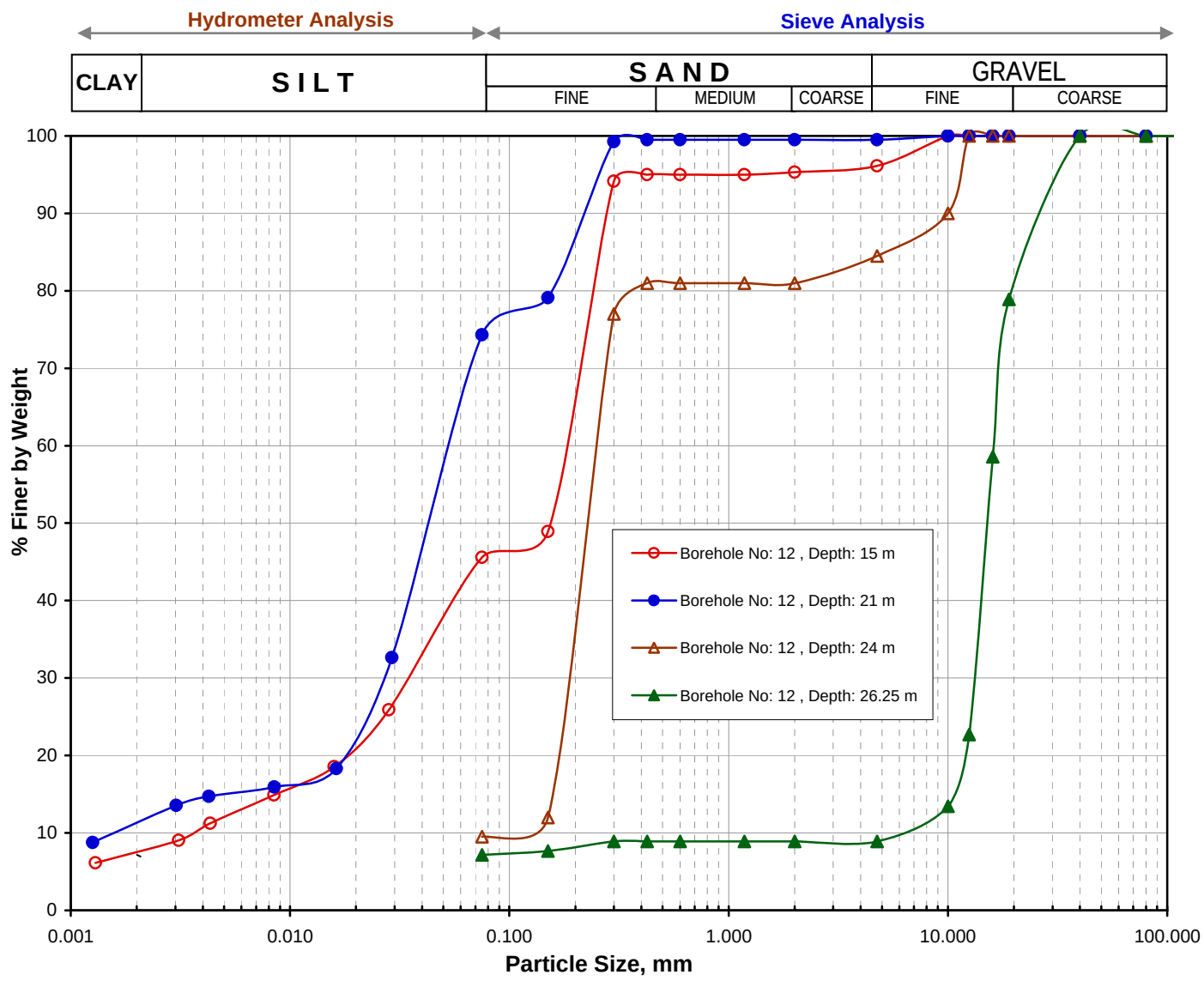
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 33	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-12	15.00	Silty fine sand with traces of gravel (SM)	4	51	39	6	0.19	0.04	0.00	46.8	1.9
BH-12	21.00	Sandy silt with traces of gravel (CL)	1	25	66	9	0.06	0.03	0.00	29.5	6.2
BH-12	24.00	Fine sand (SP-SM)	16	75	10	0	0.26	0.19	0.09	2.9	1.6
BH-12	26.25	Gravels (GP)	91	2	7	0	16.21	13.21	6.02	2.7	1.8



Structure : Slab E G+14

Grain Size Analysis

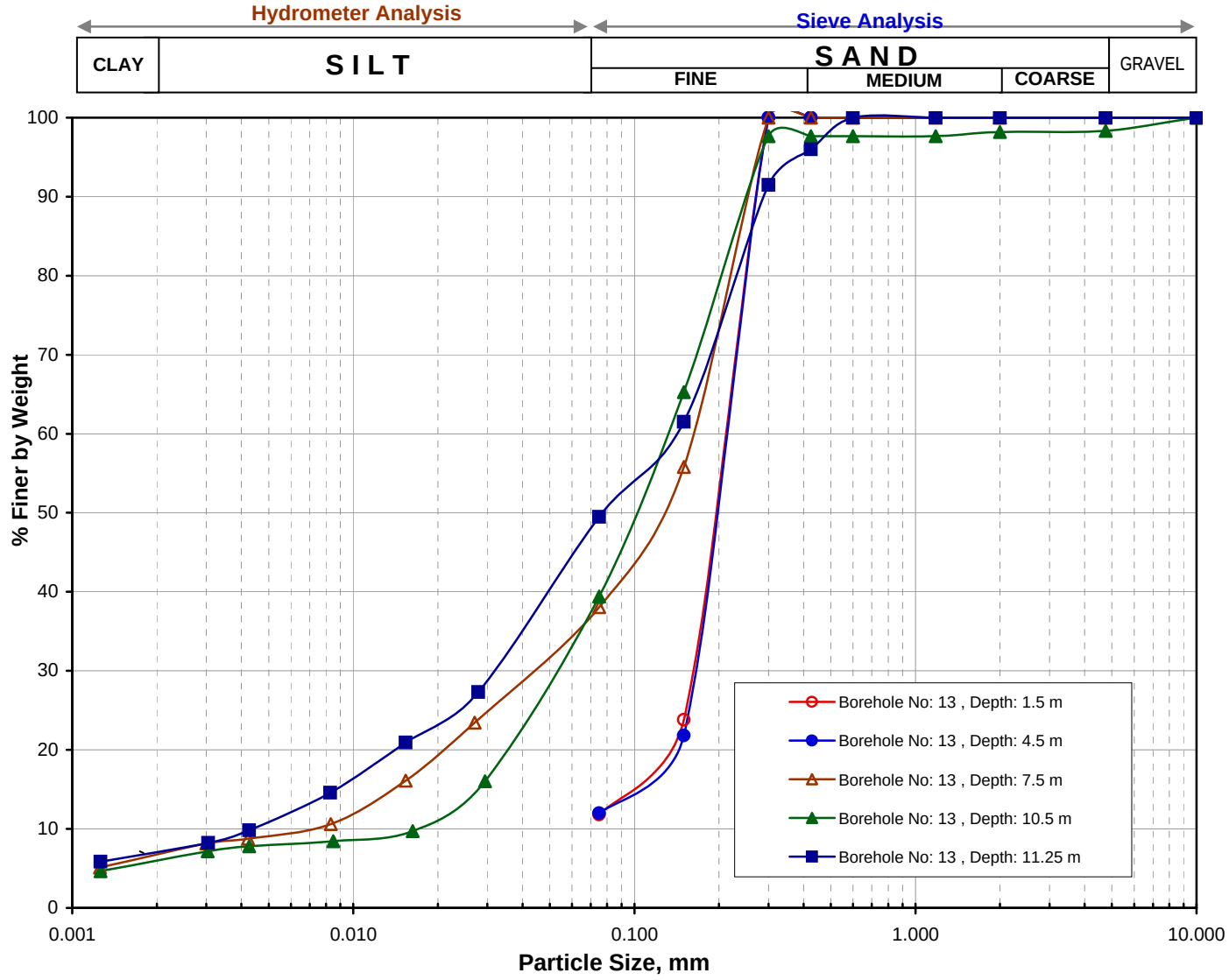
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 34	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-13	1.50	Fine sand (SP-SM)	0	88	12	0	0.22	0.16			
BH-13	4.50	Fine sand (SP-SM)	0	88	12	0	0.22	0.17			
BH-13	7.50	Silty fine sand (SM)	0	62	33	5	0.16	0.05	0.01	23.4	2.1
BH-13	10.50	Silty fine sand with traces of gravel (SM)	2	59	35	5	0.14	0.06	0.02	7.9	1.4
BH-13	11.25	Silty fine sand (SM)	0	51	44	6	0.14	0.03	0.00	35.3	2.1



Structure : G+33+P

Grain Size Analysis

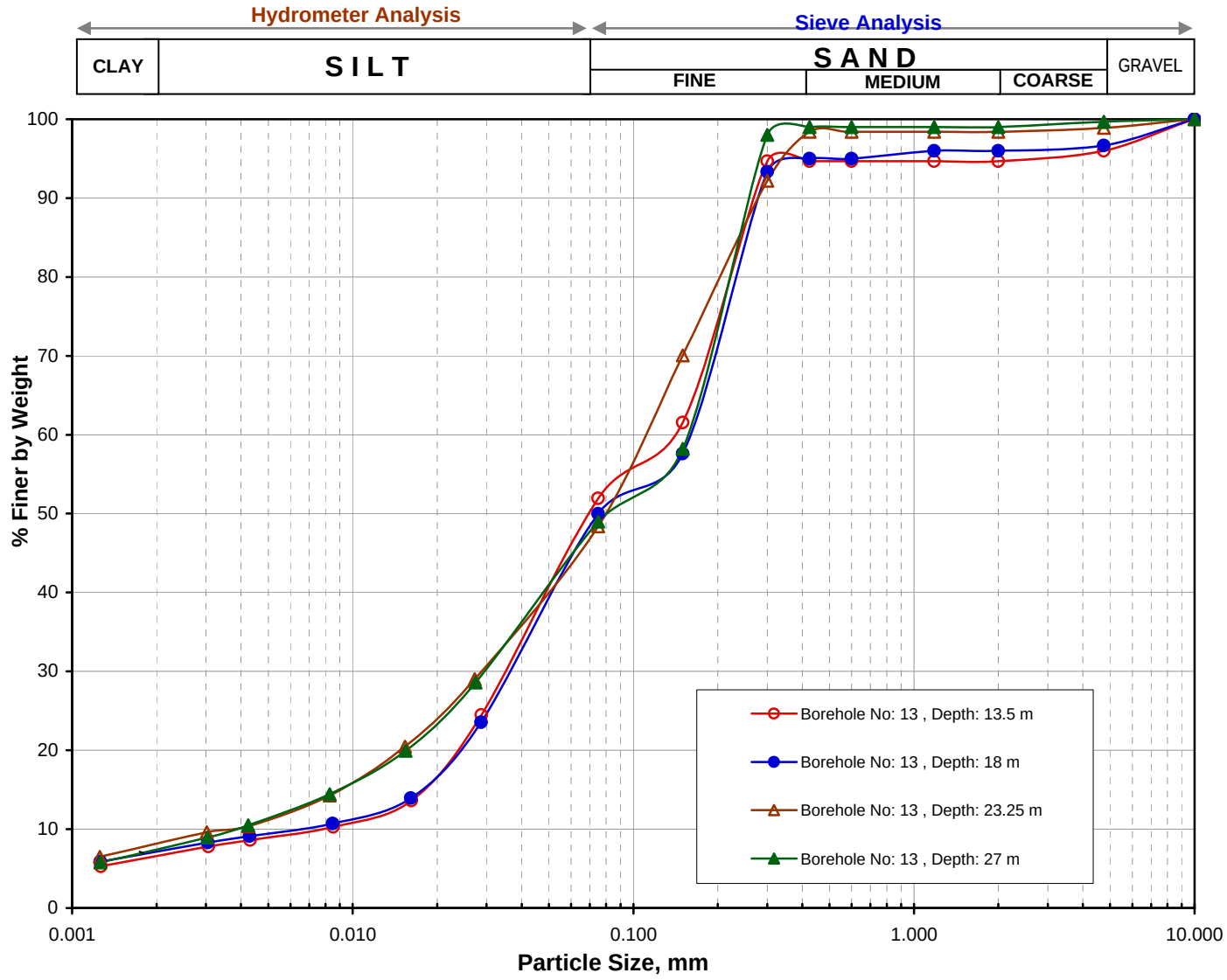
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 35	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS								
Borehole Number	**Sample Depth, m**	**Sample Description**	**% Gravel**	**% Sand**	**% Silt**	**% Clay**	**D_{60}**	**D_{30}**	**D_{10}**	**C_u**	**C_c**
BH-13	13.50	Sandy silt with traces of gravel (CL)	4	44	47	5	0.14	0.04	0.01	17.3	1.3
BH-13	18.00	Sandy silt with traces of gravel (CL)	3	47	44	6	0.16	0.04	0.01	22.9	1.4
BH-13	23.25	Silty fine sand with traces of gravel (SM)	1	51	42	6	0.12	0.03	0.00	28.8	2.0
BH-13	27.00	Silty fine sand (SM)	0	51	43	6	0.16	0.03	0.00	39.3	1.5



Structure : G+33+P

Grain Size Analysis

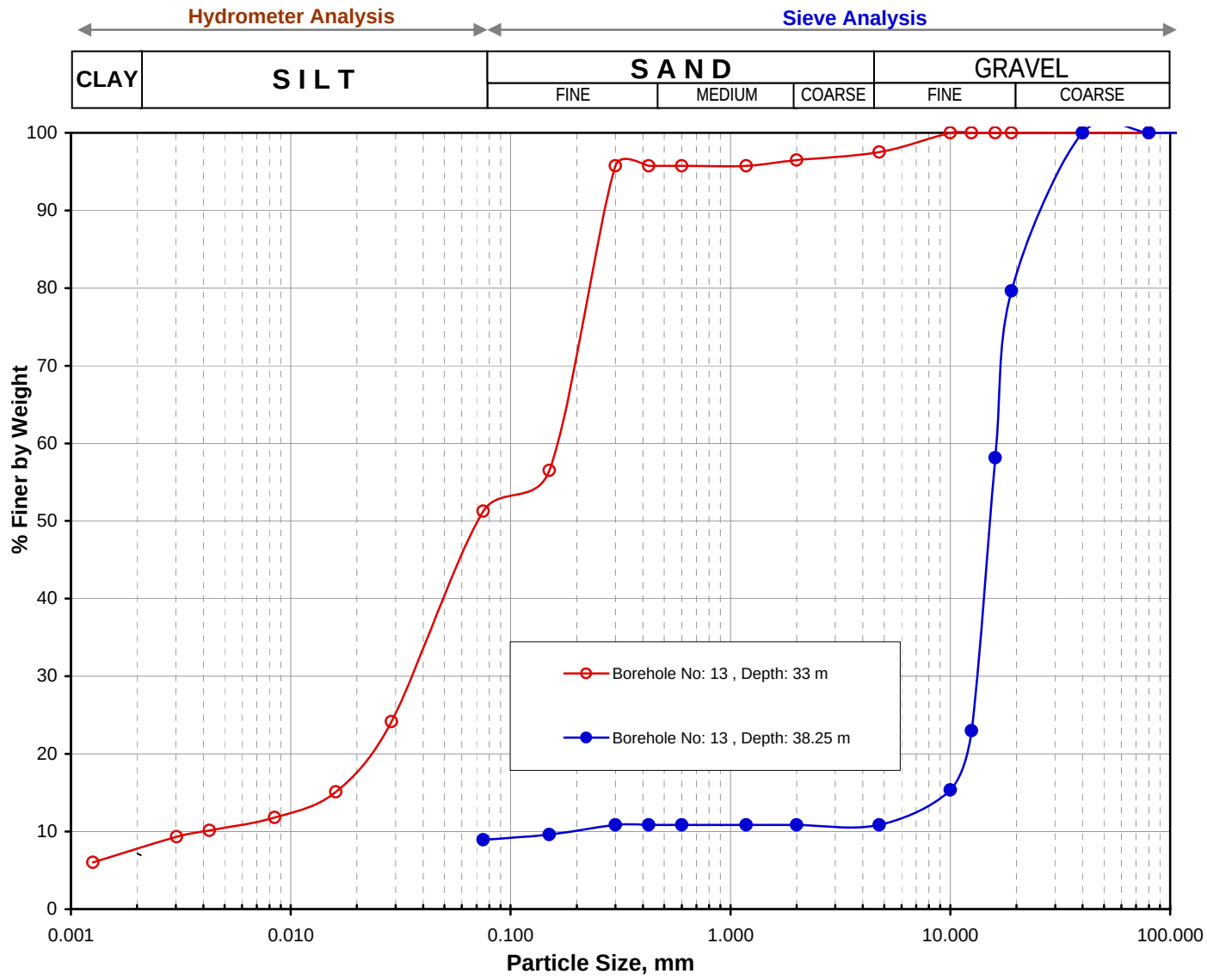
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 36	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	**Sample Depth, m**	**Sample Description**	**% Gravel**	**% Sand**	**% Silt**	**% Clay**	**D_{60}**	**D_{30}**	**D_{10}**	**C_u**	**C_c**
BH-13	33.00	Sandy silt with traces of gravel (CL)	3	46	45	6	0.16	0.04	0.00	40.8	2.3
BH-13	38.25	Gravels (GP)	89	2	9	0	16.26	13.20	0.20	82.1	54.1



Structure : G+33+P

Grain Size Analysis

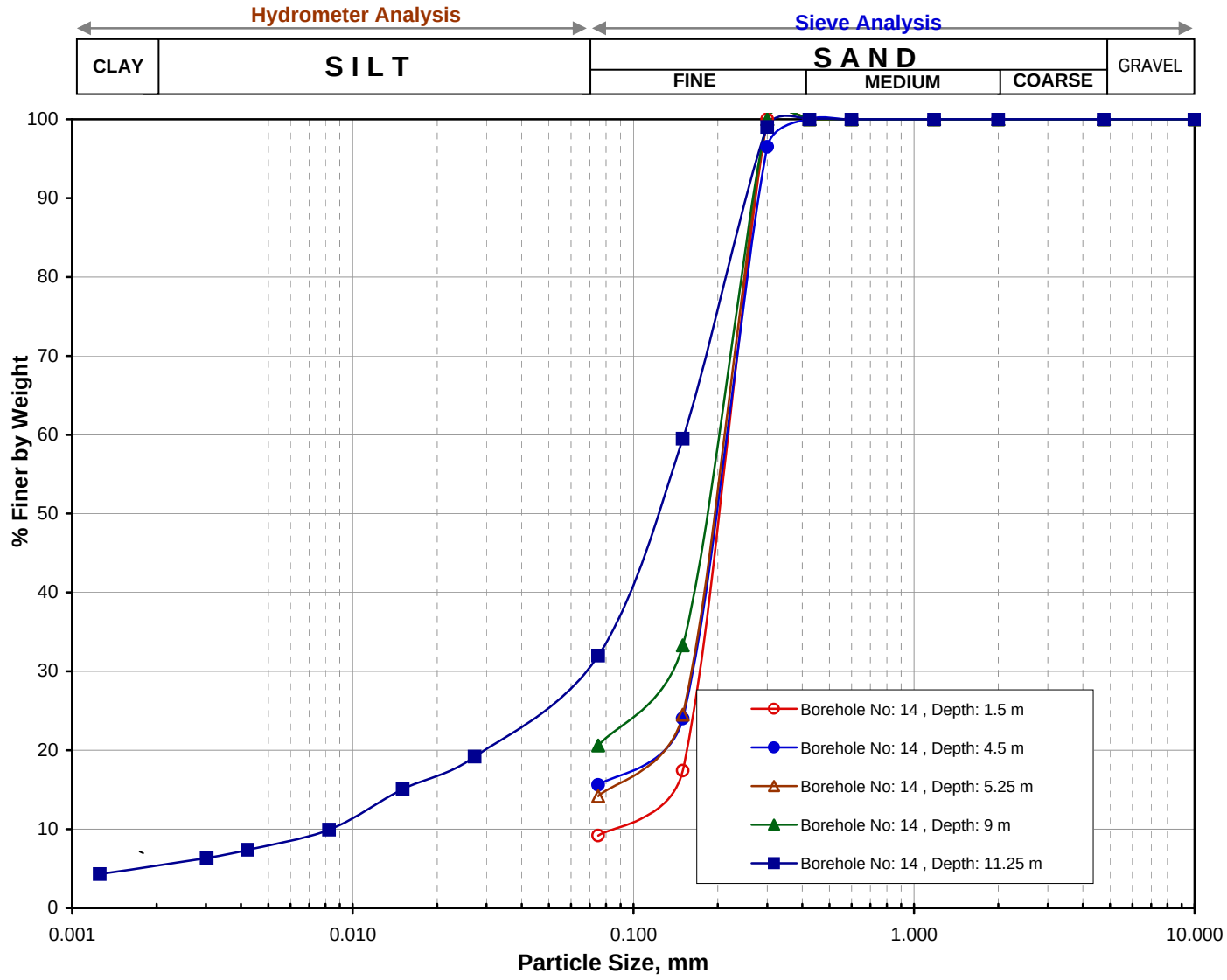
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 37	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-14	1.50	Fine sand (SP-SM)	0	91	9	0	0.23	0.17	0.08	2.8	1.6
BH-14	4.50	Silty fine sand (SM)	0	84	16	0	0.22	0.16			
BH-14	5.25	Silty fine sand (SM)	0	86	14	0	0.22	0.16			
BH-14	9.00	Silty fine sand (SM)	0	79	21	0	0.21	0.13			
BH-14	11.25	Silty fine sand (SM)	0	68	28	4	0.15	0.07	0.01	19.0	3.8



Structure : G+33+P

Grain Size Analysis

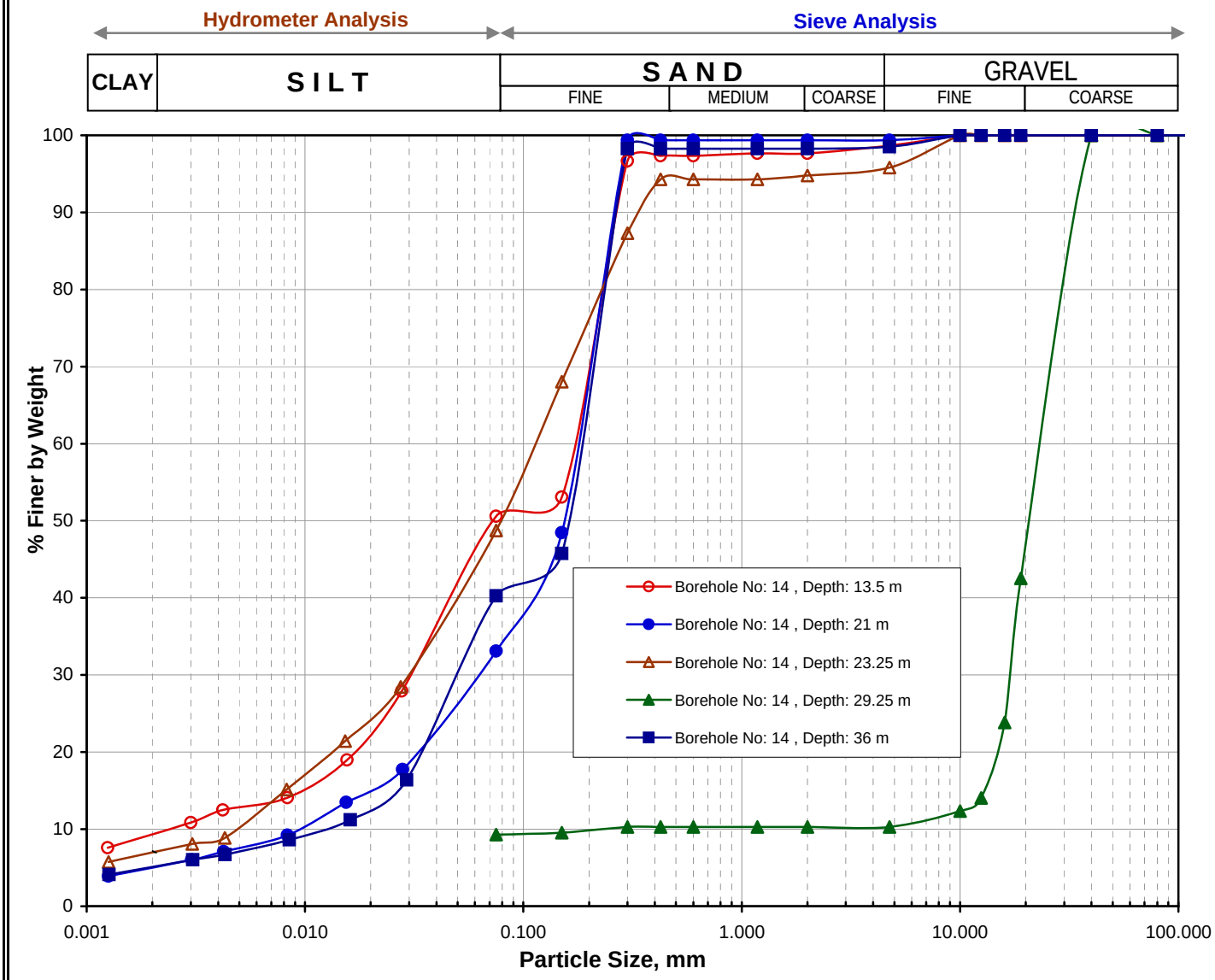
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 38	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	Sample Depth, m	Sample Description	% Gravel	% Sand	% Silt	% Clay	D_{60}	D_{30}	D_{10}	C_u	C_c
BH-14	13.50	Sandy silt with traces of gravel (CL)	1	48	43	8	0.17	0.03	0.00	58.0	2.0
BH-14	21.00	Silty fine sand with traces of gravel (SM)	1	66	29	4	0.18	0.07	0.01	18.4	2.4
BH-14	23.25	Silty fine sand with traces of gravel (SM)	4	47	43	6	0.12	0.03	0.01	23.8	1.6
BH-14	29.25	Gravels (GP)	90	1	9	0	25.38	16.99	0.24	106	47.4
BH-14	36.00	Silty fine sand with traces of gravel (SM)	2	58	36	4	0.19	0.06	0.01	14.7	1.2



Structure : G+33+P

Grain Size Analysis

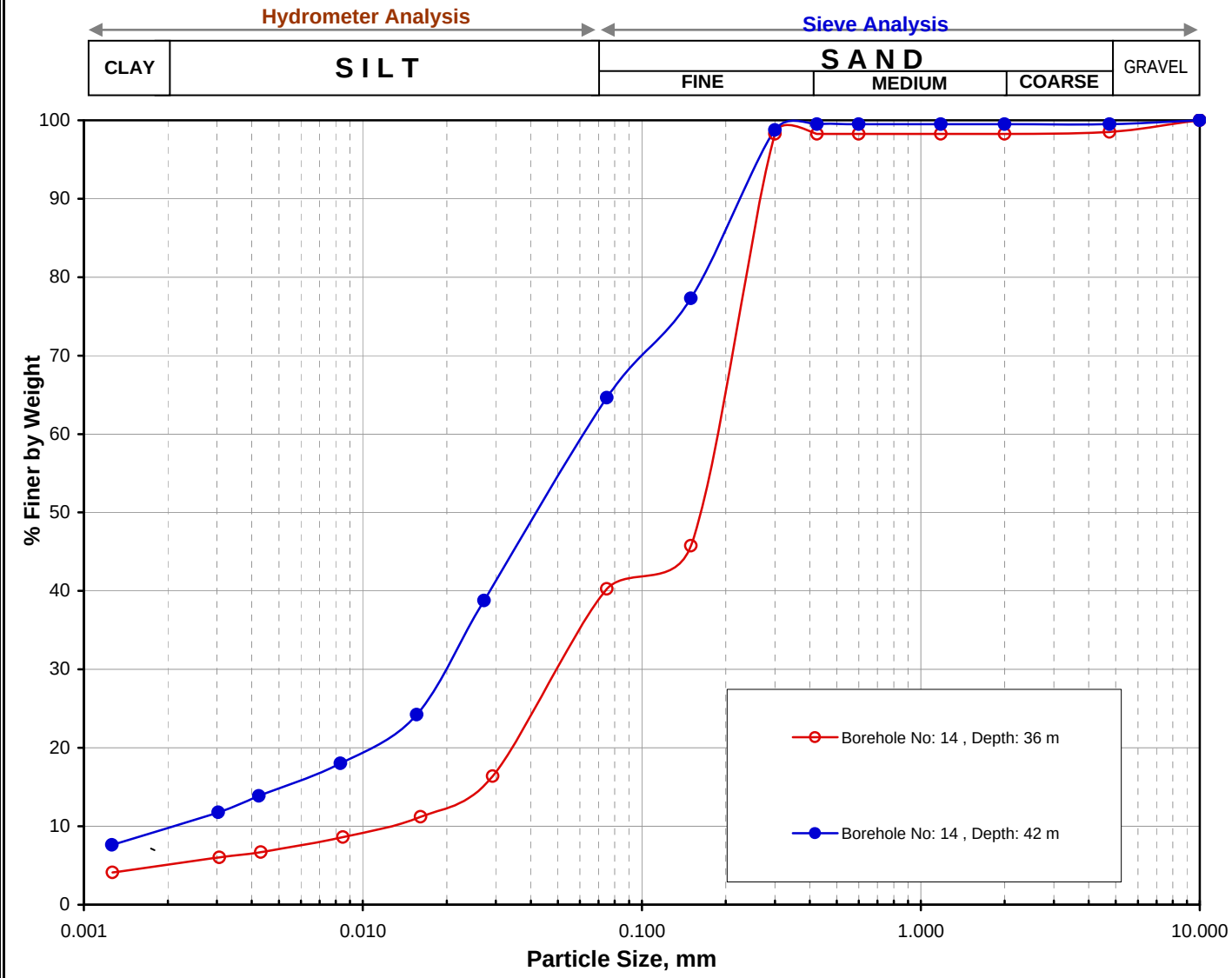
Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig. No. 39	Certificate No.T-1741

Grain Size Analysis

(IS : 2720 (Part 4) - 1985, RA-2010)

SAMPLE DETAILS			TEST RESULTS									
Borehole Number	**Sample Depth, m**	**Sample Description**	**% Gravel**	**% Sand**	**% Silt**	**% Clay**	**D_{60}**	**D_{30}**	**D_{10}**	**C_u**	**C_c**
BH-14	36.00	Silty fine sand with traces of gravel (SM)	2	58	36	4	0.19	0.06	0.01	14.7	1.2
BH-14	42.00	Sandy silt with traces of gravel (CL)	1	35	57	8	0.07	0.02	0.00	33.0	3.0



Structure : G+33+P

Grain Size Analysis

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 40	Certificate No.T-1741

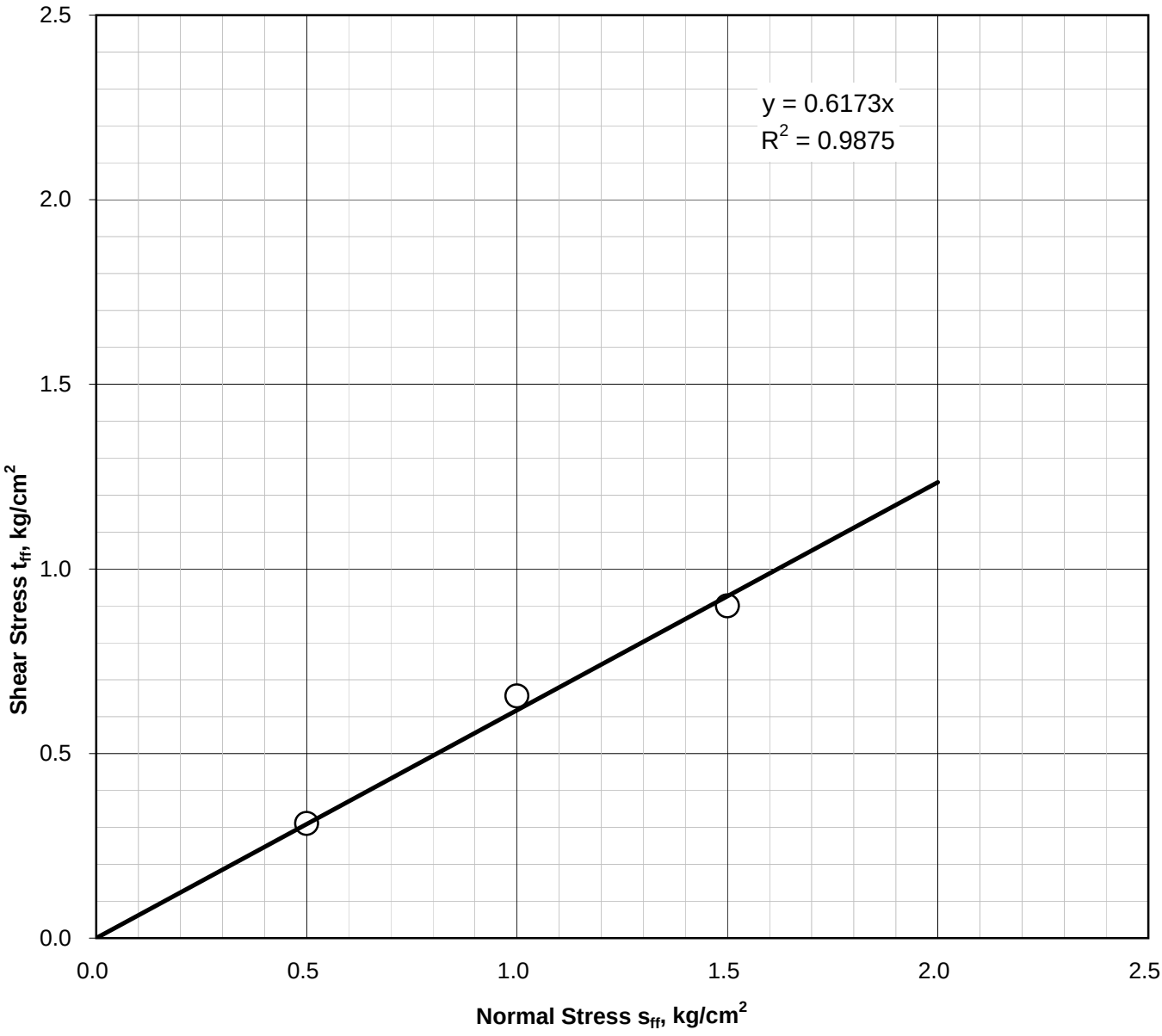
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 1	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.60
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.7



Coulomb Failure Envelope

Structure : G+31+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

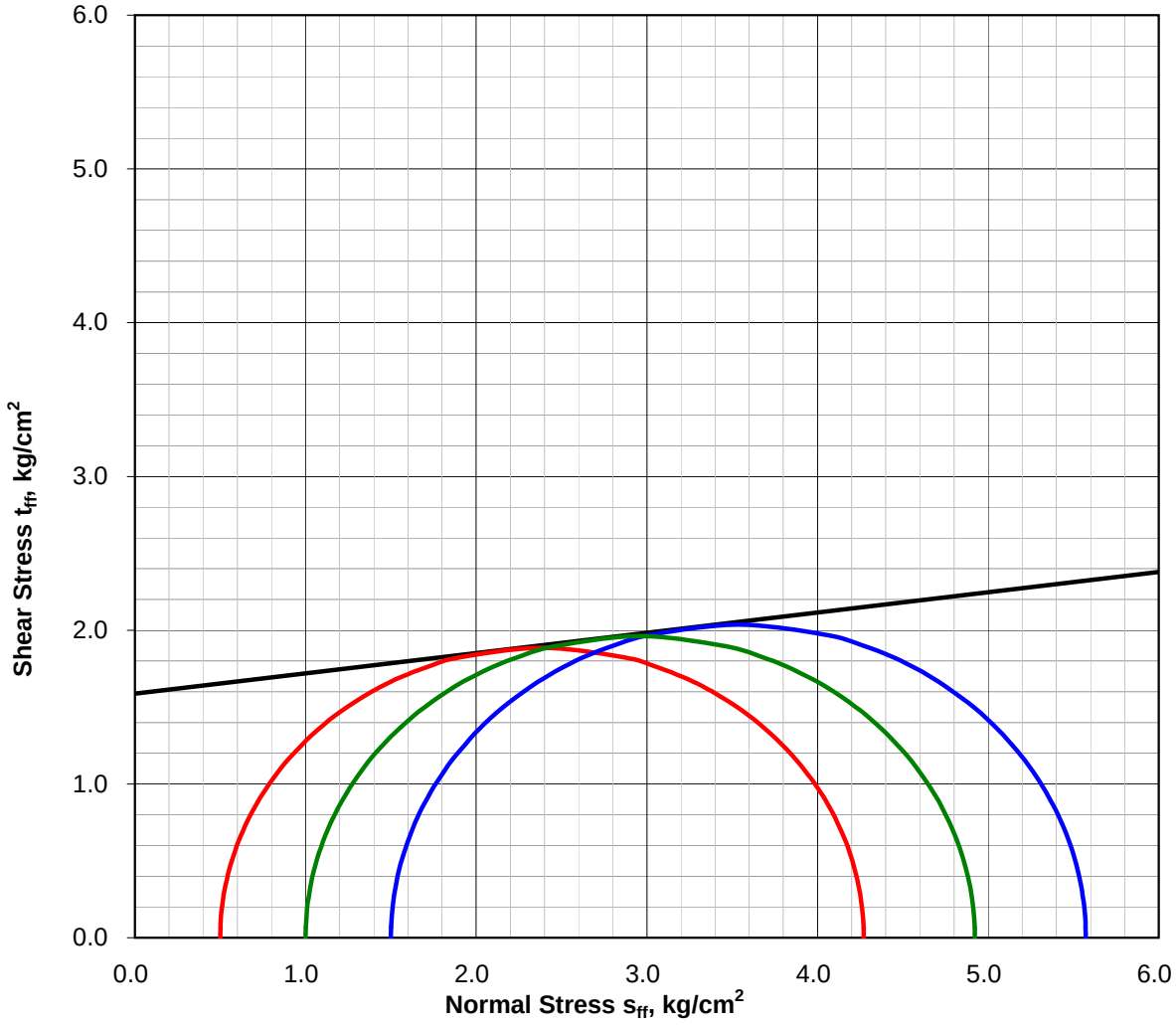
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 41	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 1	**Sample Depth: 8.25 m**	*Sample Description: Sandy silt with gravel*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	0.5	1.0	1.5
	Sample No.:	UDS3	UDS3	UDS3
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.83	1.83	1.83
	Dry Density (g/cc):	1.66	1.66	1.65
	Moisture Content (%):	10.7	10.1	10.8
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	3.77	3.92	4.07
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**1.60**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**7.5**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+31+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 42	Certificate No.T-1741

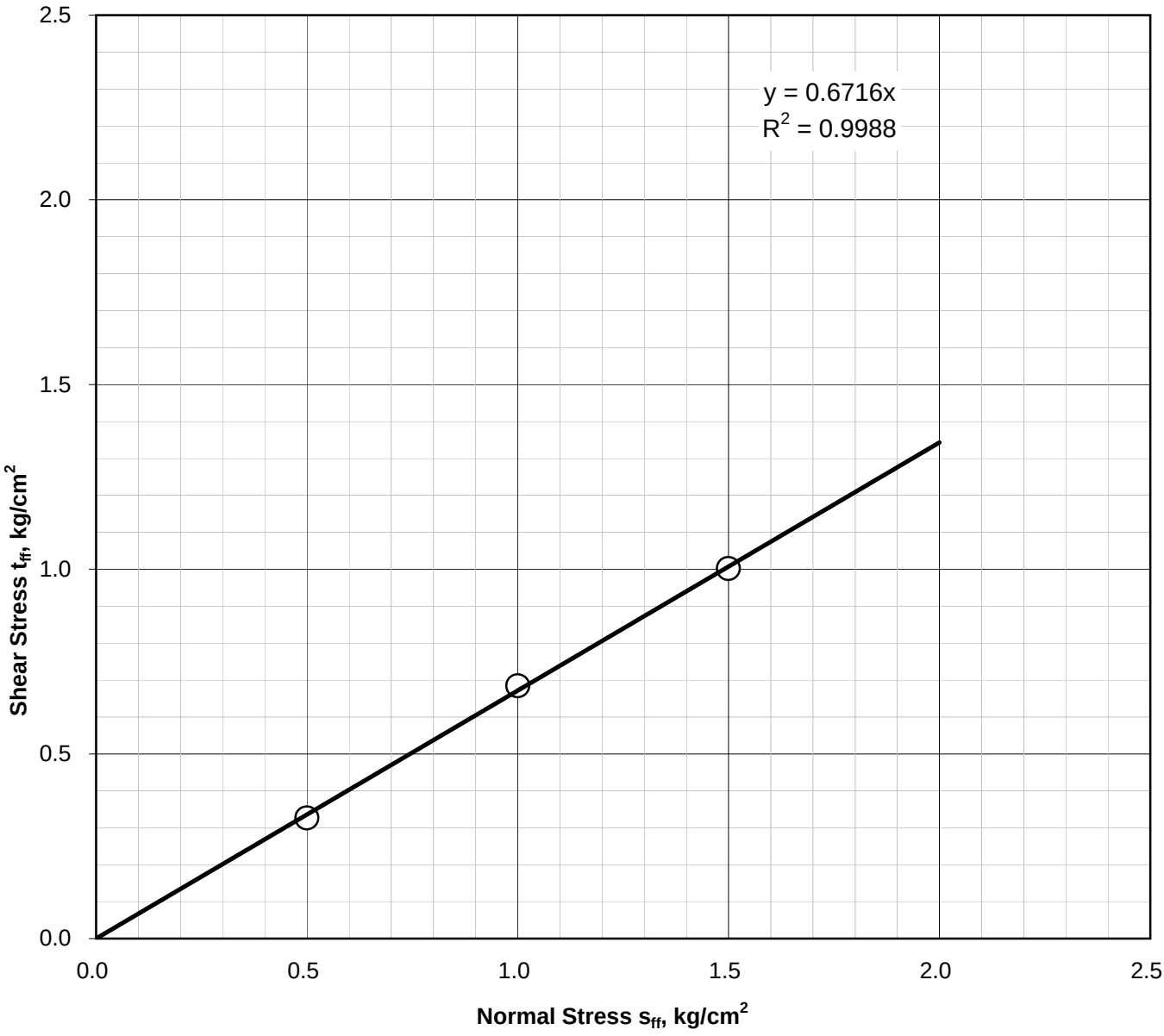
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 1	**Sample Depth: 14.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS5
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.66
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	33.9



Coulomb Failure Envelope

Structure : G+31+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

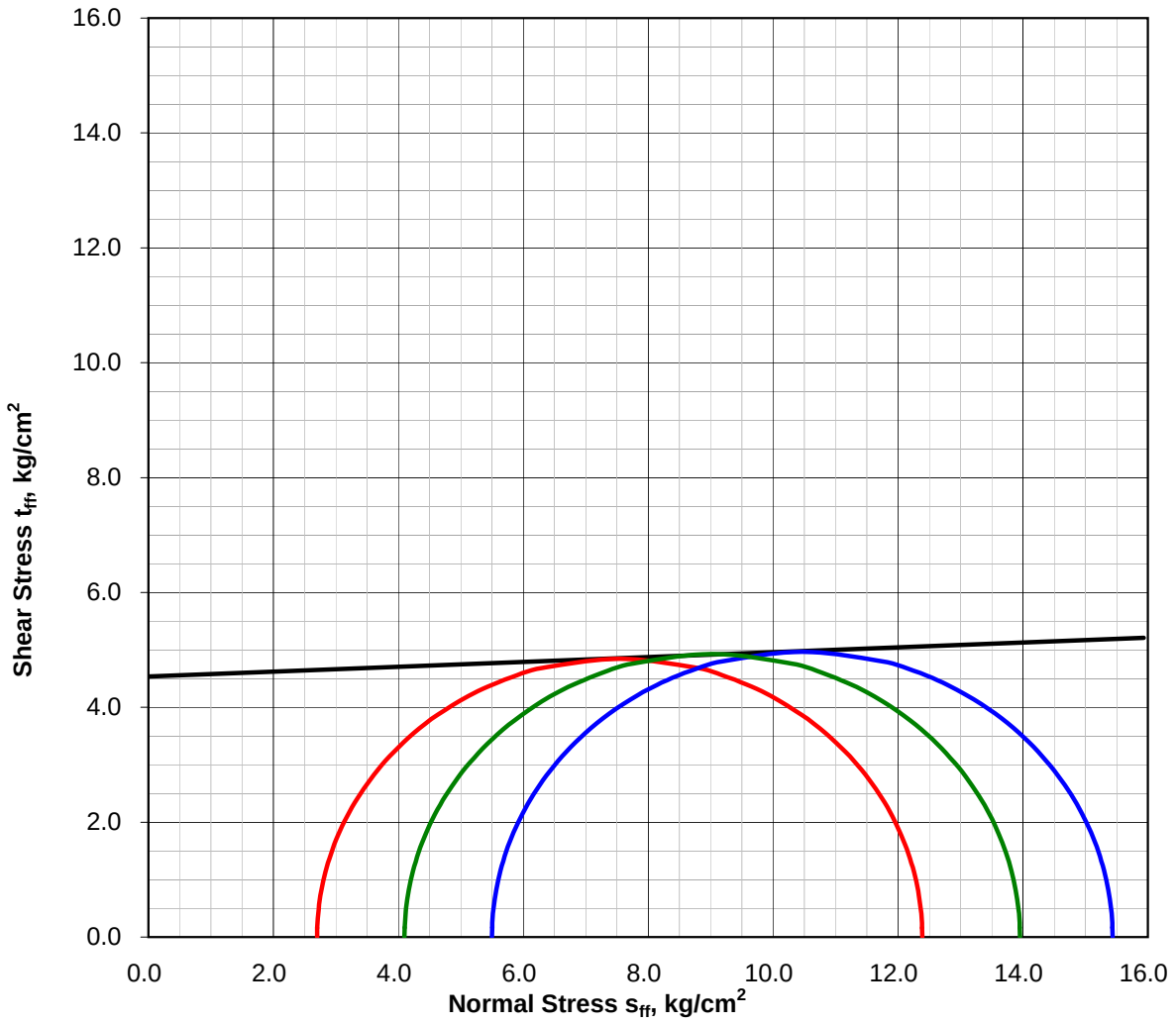
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 43	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 1	**Sample Depth: 26.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	2.7	4.1	5.5
	Sample No.:	UDS9	UDS9	UDS9
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.09	2.10	2.10
	Dry Density (g/cc):	1.85	1.86	1.86
	Moisture Content (%):	13.1	12.9	13.0
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	9.69	9.85	9.93
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**4.50**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**2.4**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+31+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 44	Certificate No.T-1741

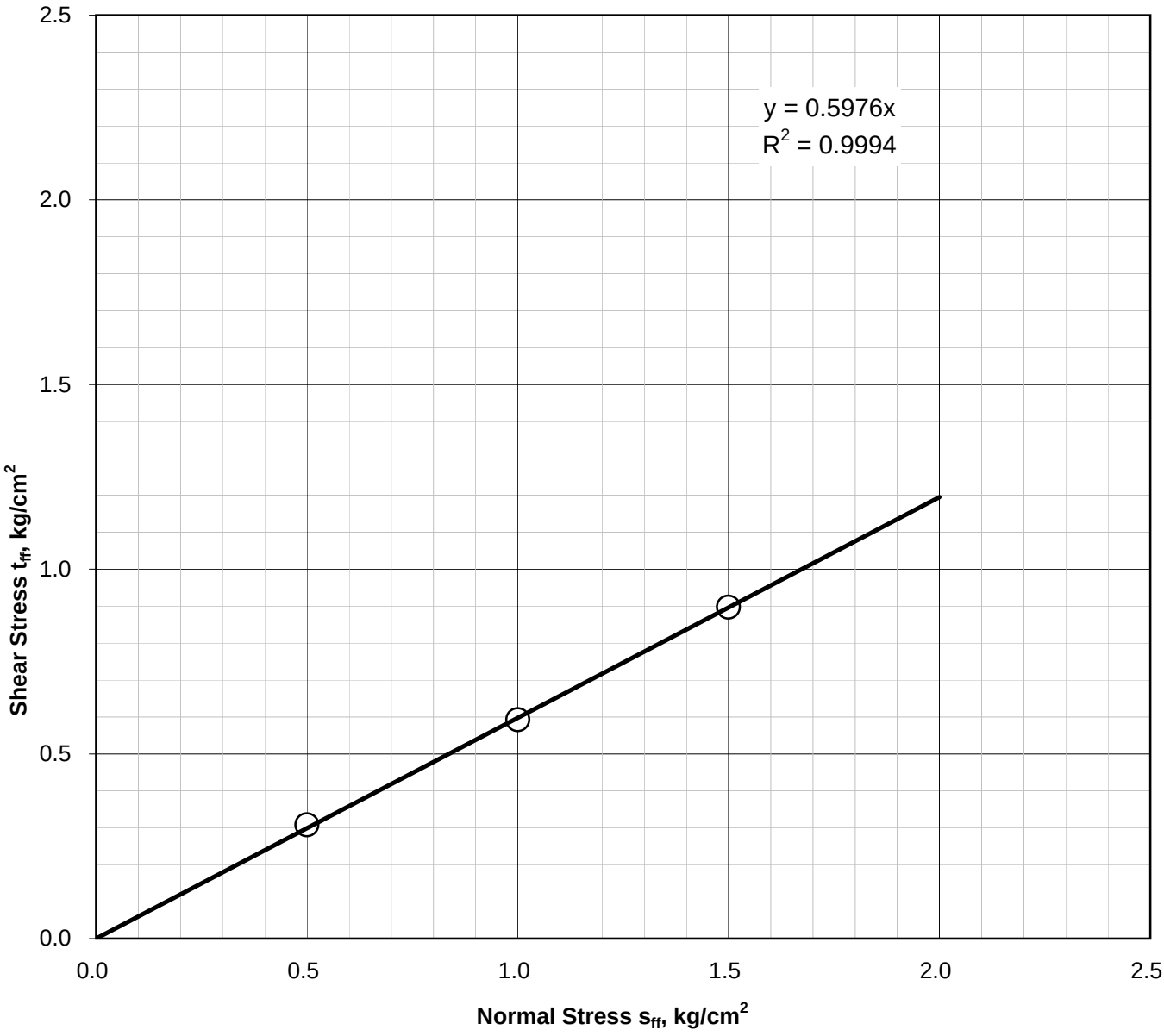
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 2	**Sample Depth: 2.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS1
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.57
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	30.9



Coulomb Failure Envelope

Structure : G+31+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

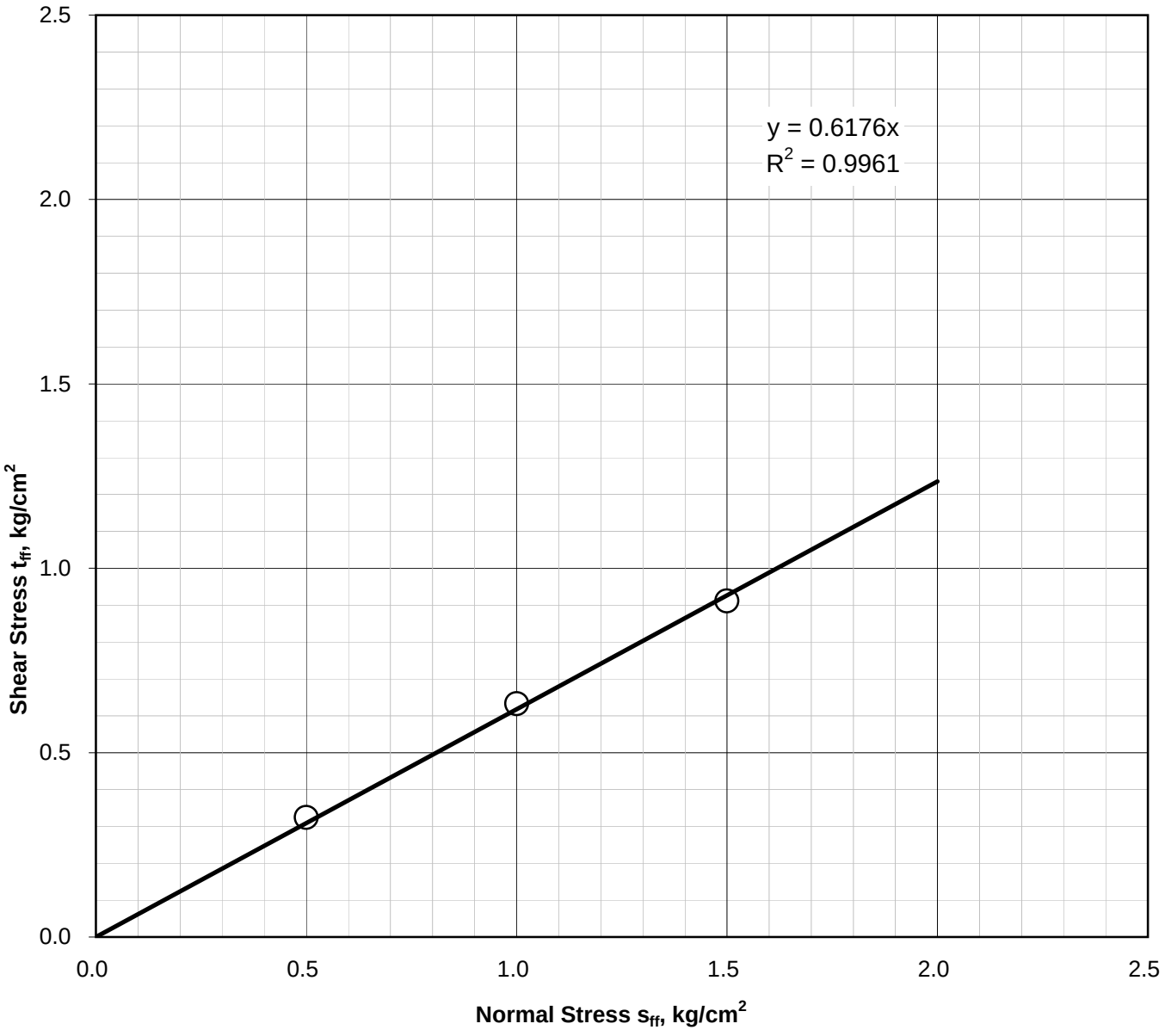
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 45	Certificate No.T-1741

Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 2	**Sample Depth: 8.25 m**	*Sample Description: Silty fine sand with traces of gravel*

SAMPLE DETAILS		TEST RESULTS	
Sample No.:	UDS3	Cohesion Intercept, c (kg/cm^2):	0.00
Type of Sample:	Remoulded	Angle of Internal Friction, ϕ (degrees):	31.7
Dry Density of Soil (g/cm^3):	1.61		
Moisture Content (%):	Saturated		



Coulomb Failure Envelope

Structure : G+31+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

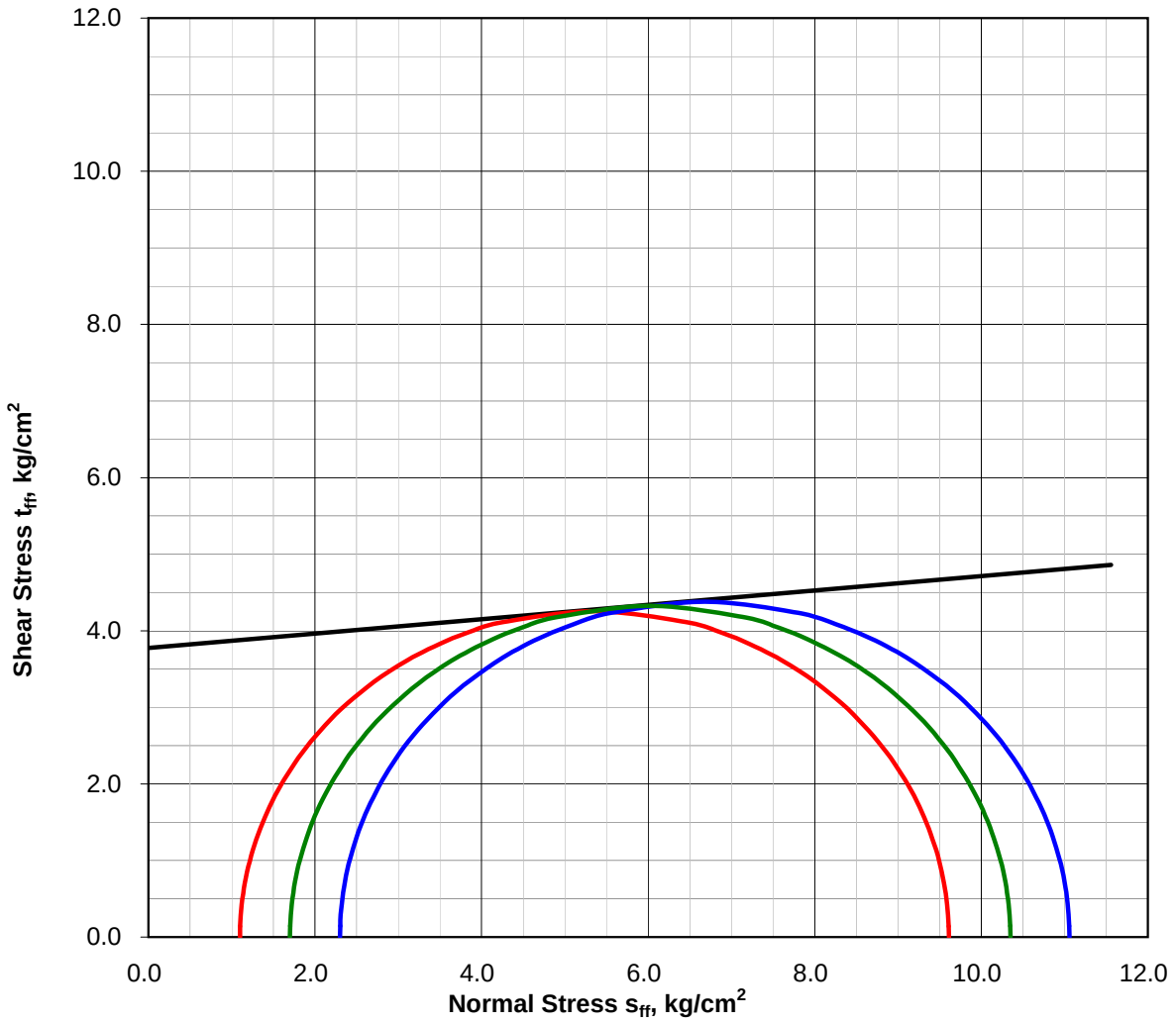
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 46	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 2	**Sample Depth: 11.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.1	1.7	2.3
	Sample No.:	UDS4	UDS4	UDS4
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.01	2.01	2.01
	Dry Density (g/cc):	1.76	1.76	1.76
	Moisture Content (%):	14.3	14.1	13.8
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	8.51	8.65	8.76
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**3.80**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**5.4**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+31+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 47	Certificate No.T-1741

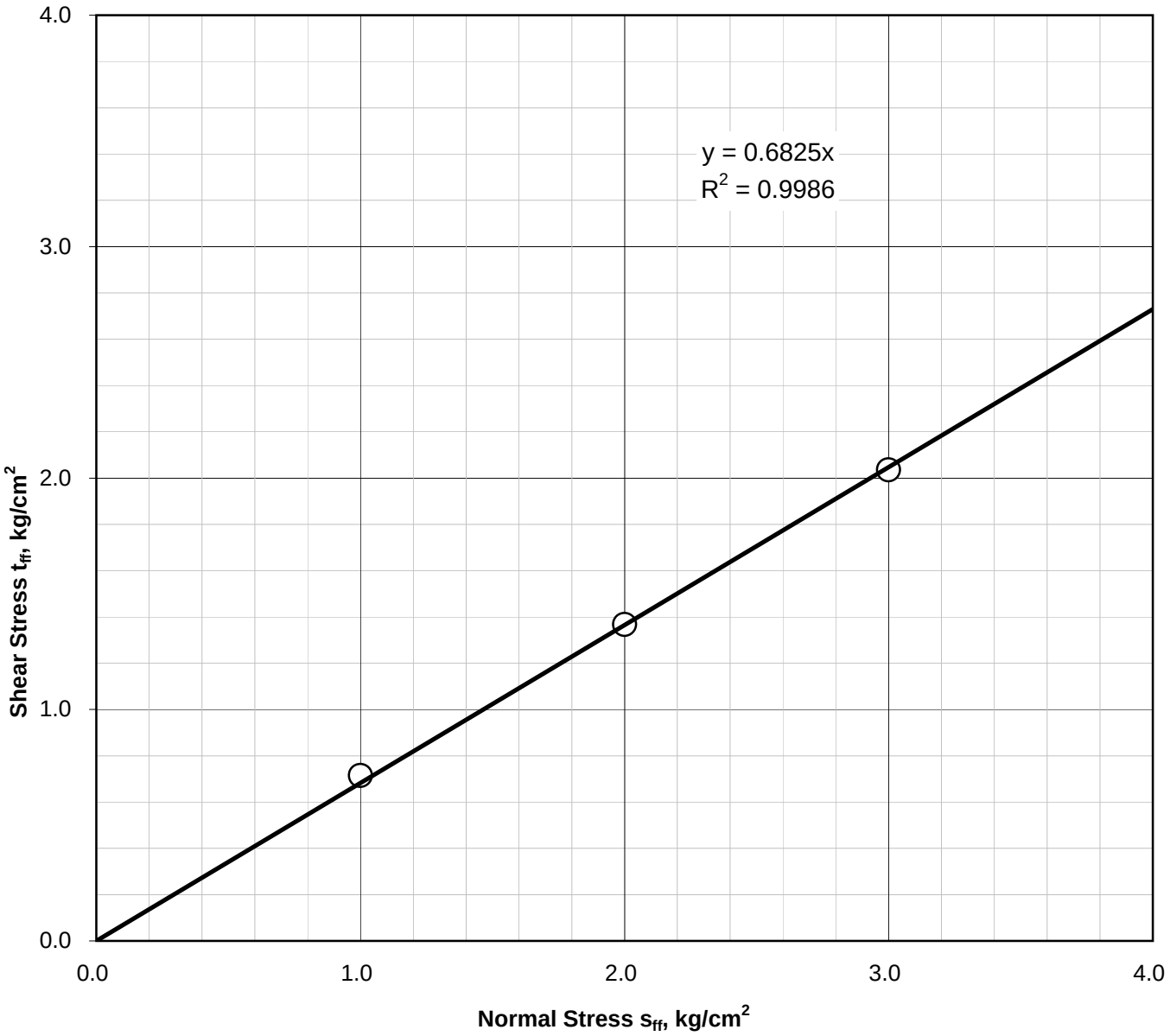
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 2	**Sample Depth: 17.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS6
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.72
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.3



Coulomb Failure Envelope

Structure : G+31+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 48	Certificate No.T-1741

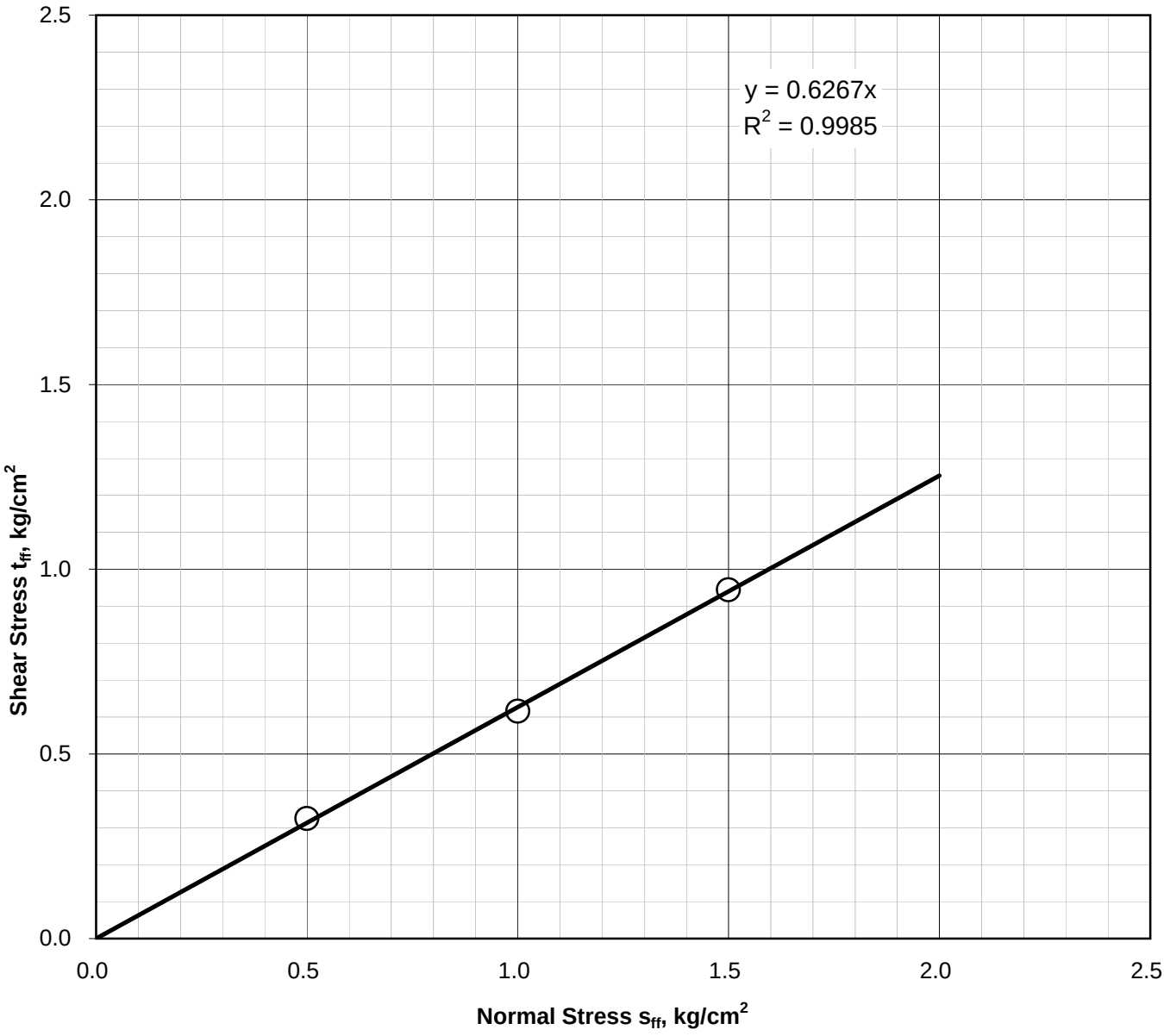
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 3	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.61
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	32.1



Coulomb Failure Envelope

Structure : G+37+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 49	Certificate No.T-1741

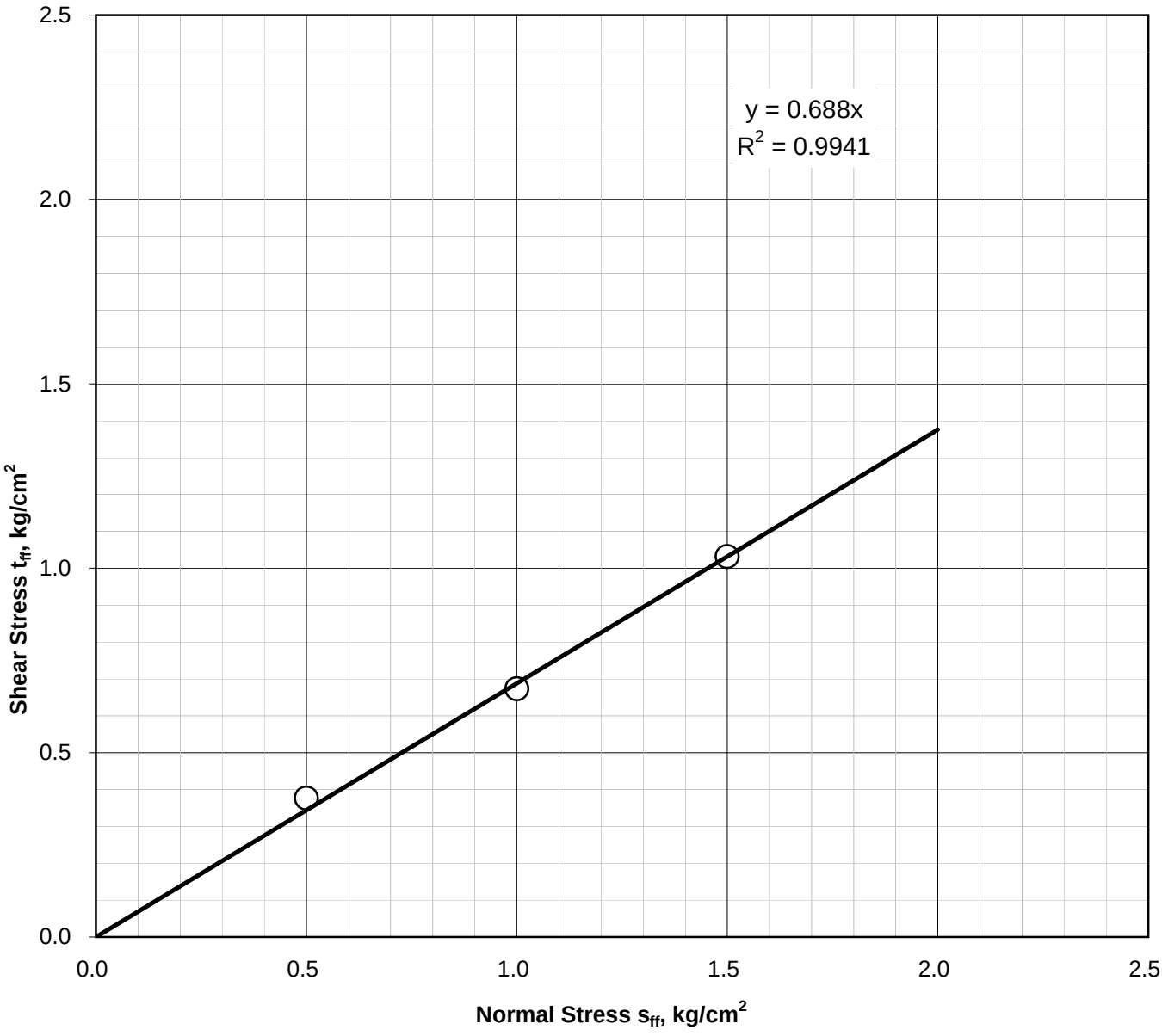
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 3	**Sample Depth: 11.25 m**	*Sample Description: Sity fine sand*

SAMPLE DETAILS	
Sample No.:	UDS4
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.68
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.5



Coulomb Failure Envelope

Structure : G+37+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 50	Certificate No.T-1741

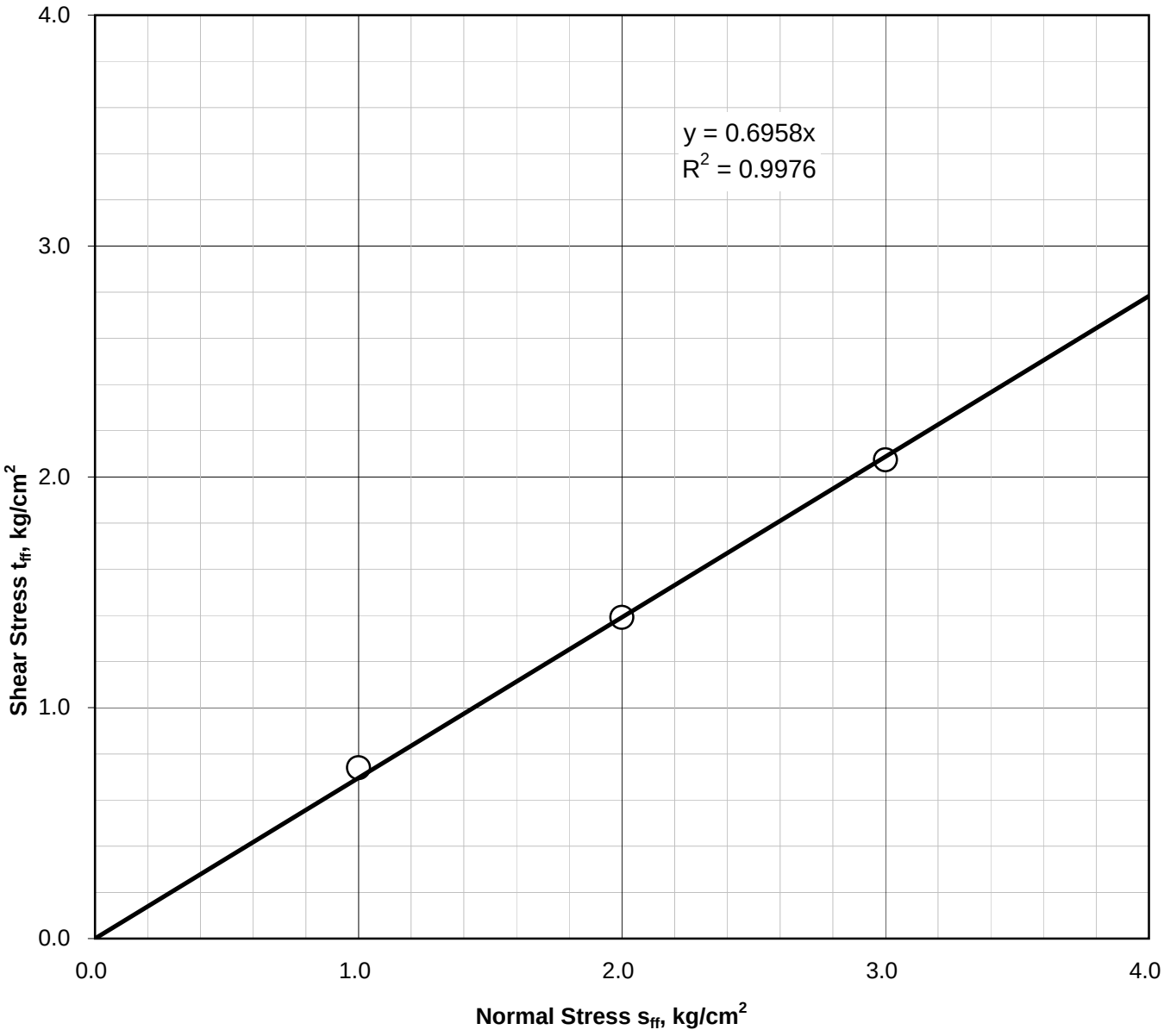
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 3	**Sample Depth: 17.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS6
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.74
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.8



Coulomb Failure Envelope

Structure : G+37+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 51	Certificate No.T-1741

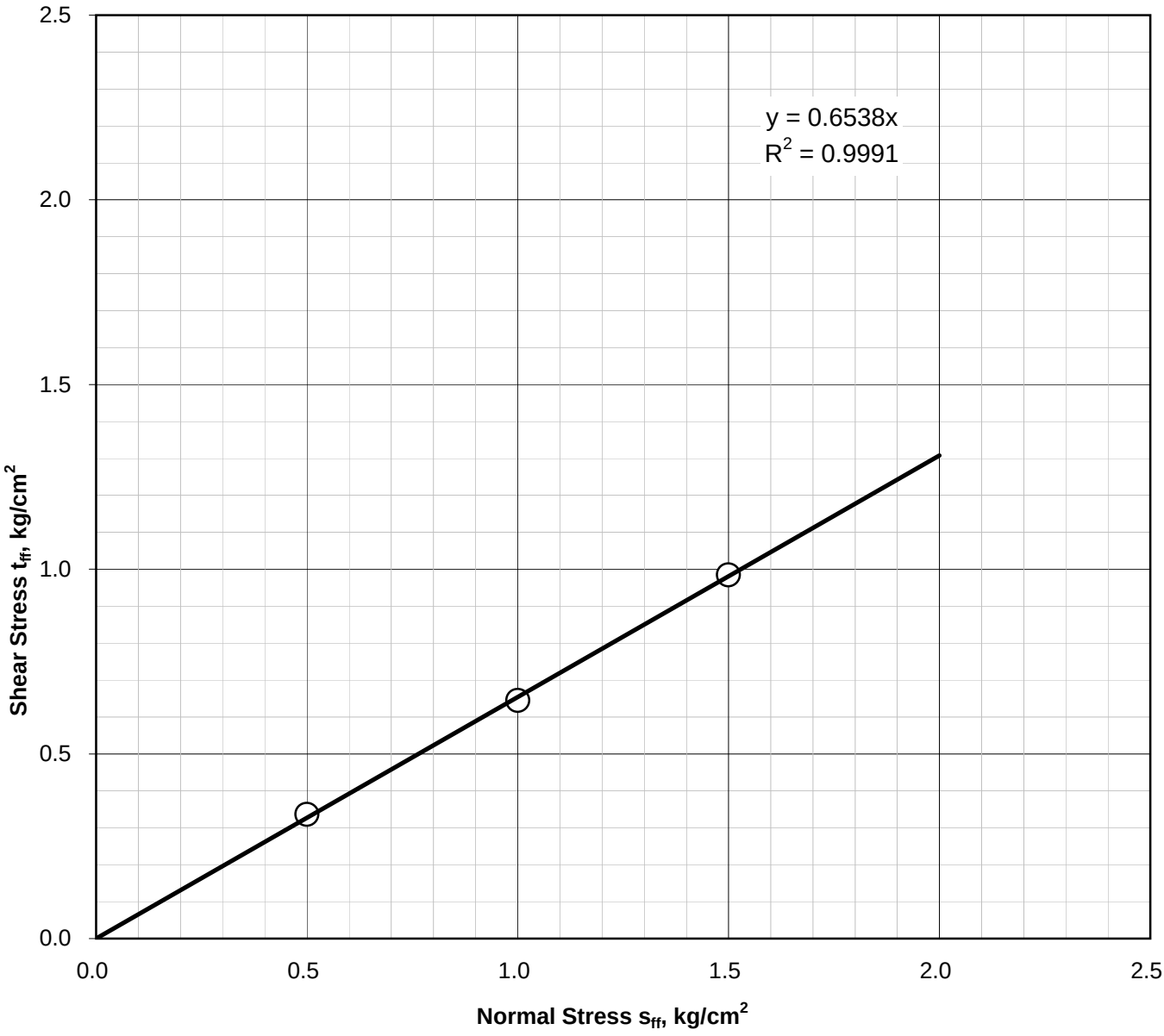
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 4	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.63
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	33.2



Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 52	Certificate No.T-1741

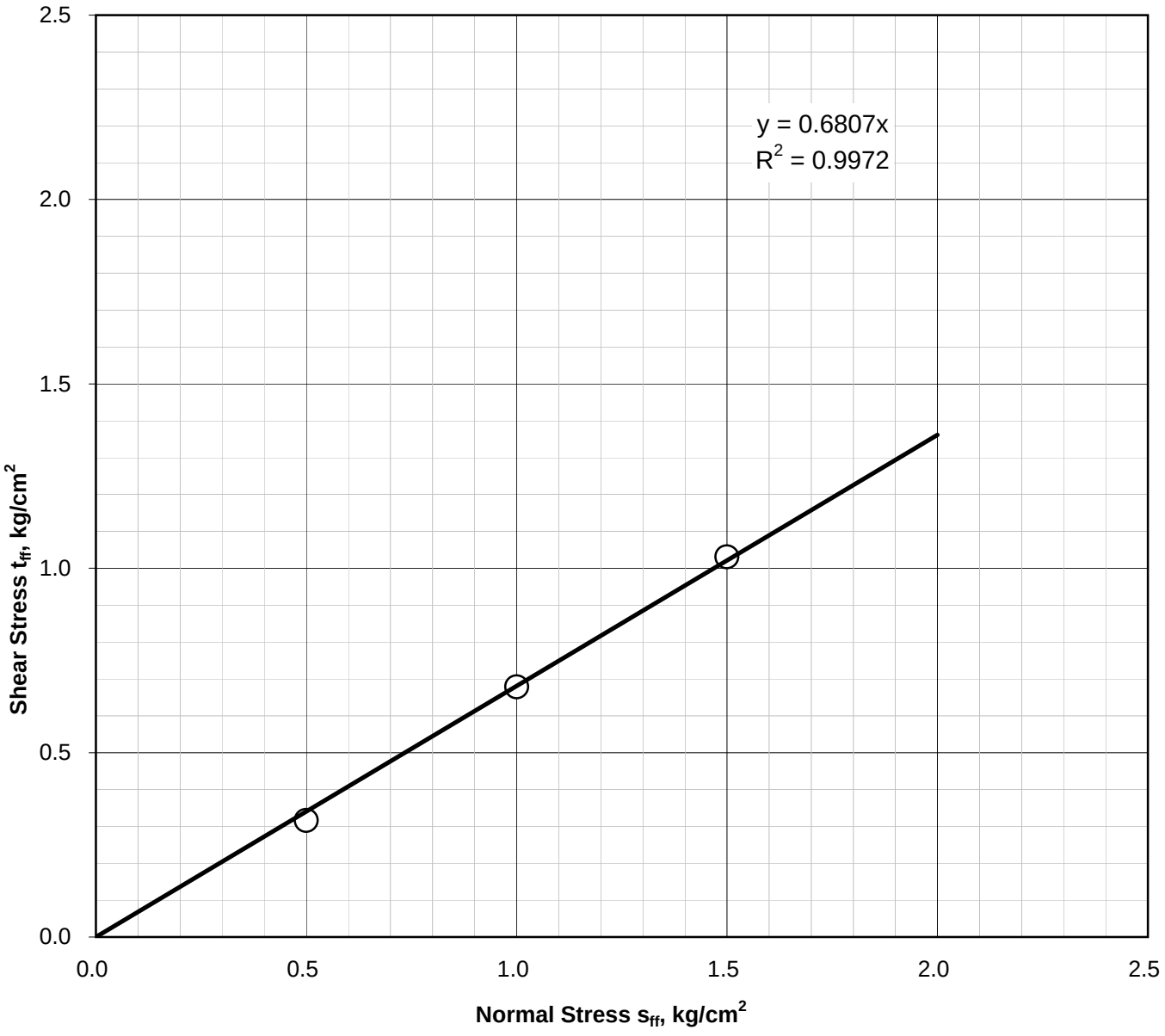
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 4	**Sample Depth: 11.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS4
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.69
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.2



Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 53	Certificate No.T-1741

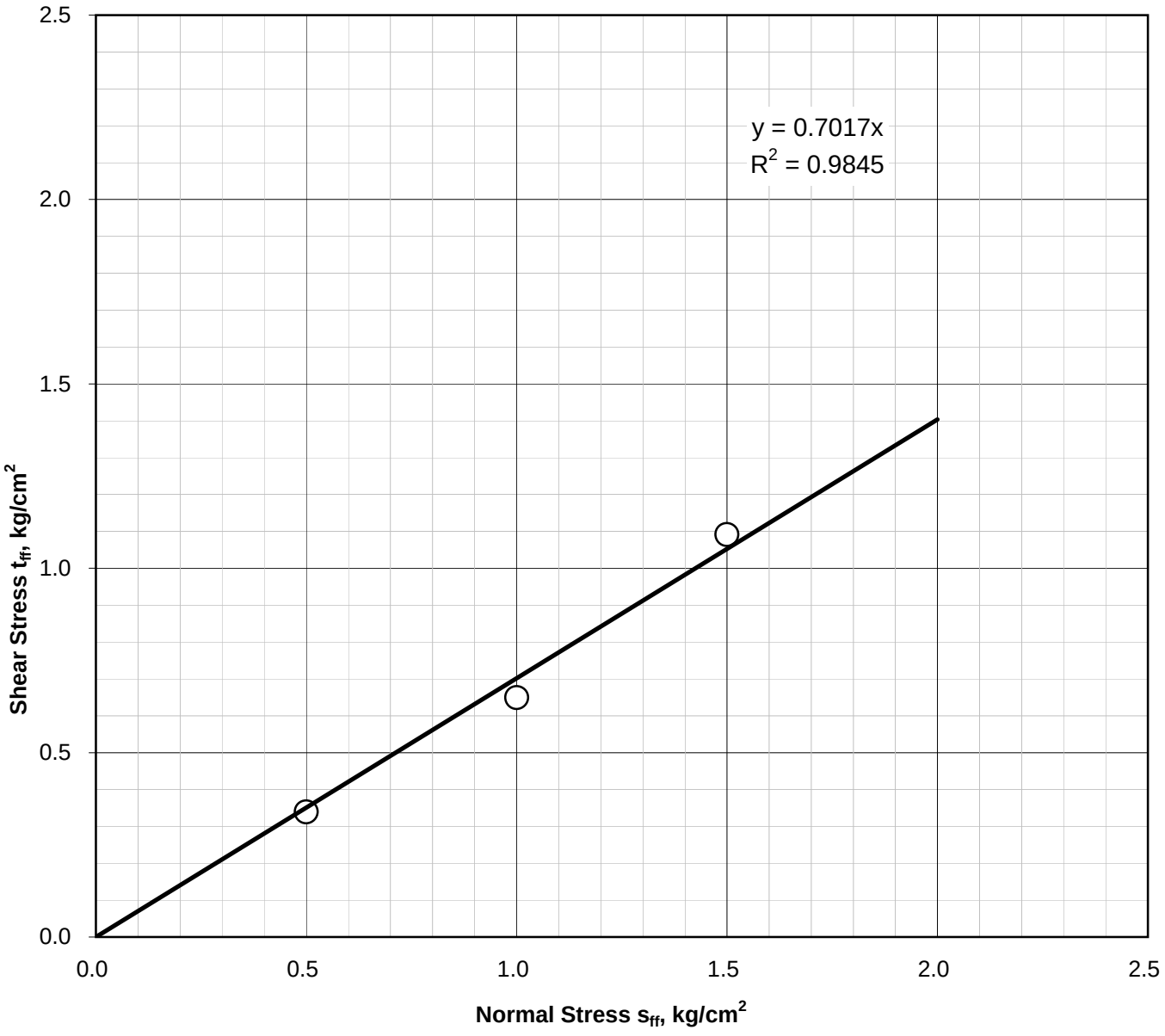
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 4	**Sample Depth: 14.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS5
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.72
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	35.1



Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 54	Certificate No.T-1741

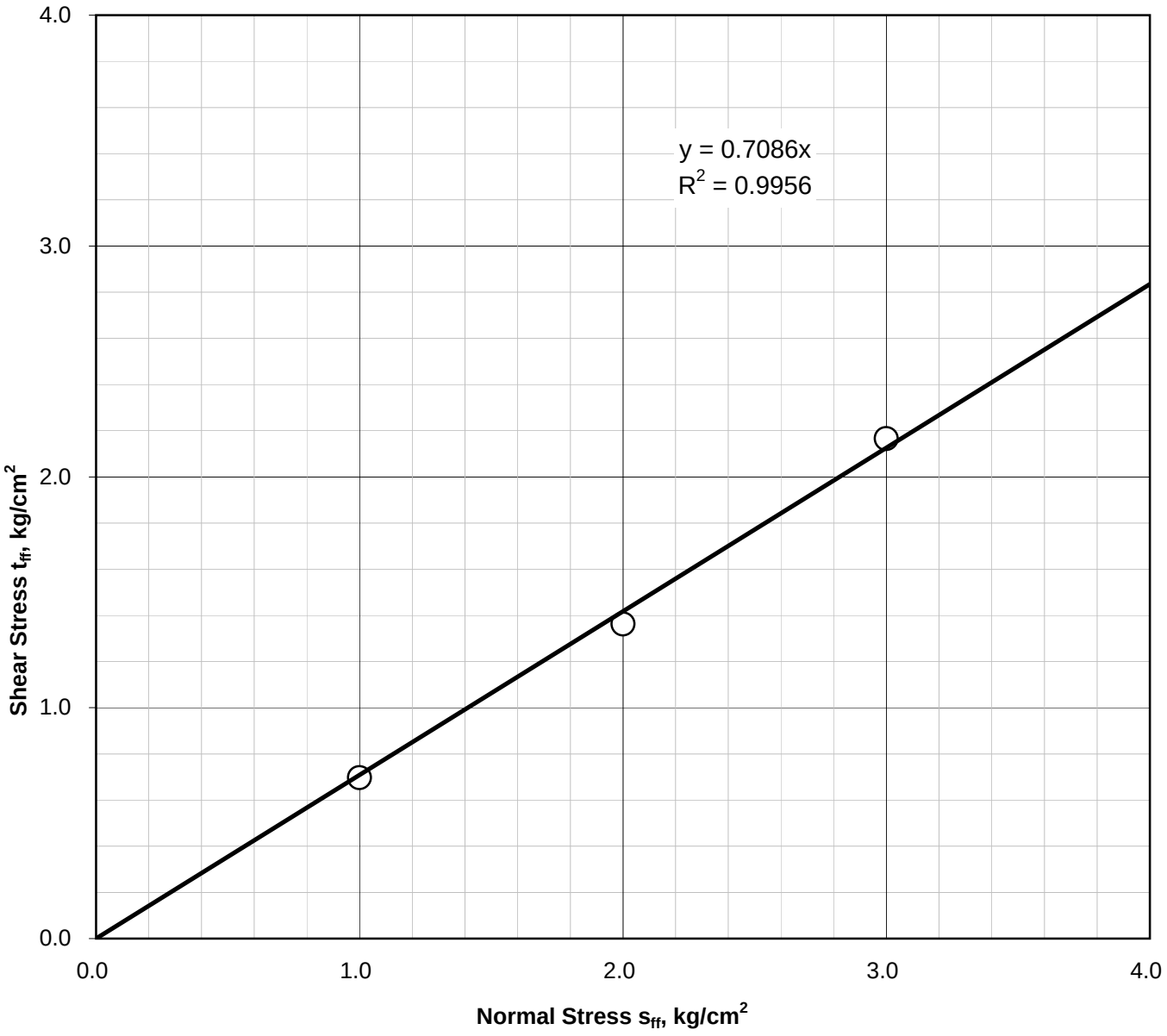
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 4	Sample Depth: 17.25 m	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS6
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.75
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	35.3



Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 55	Certificate No.T-1741

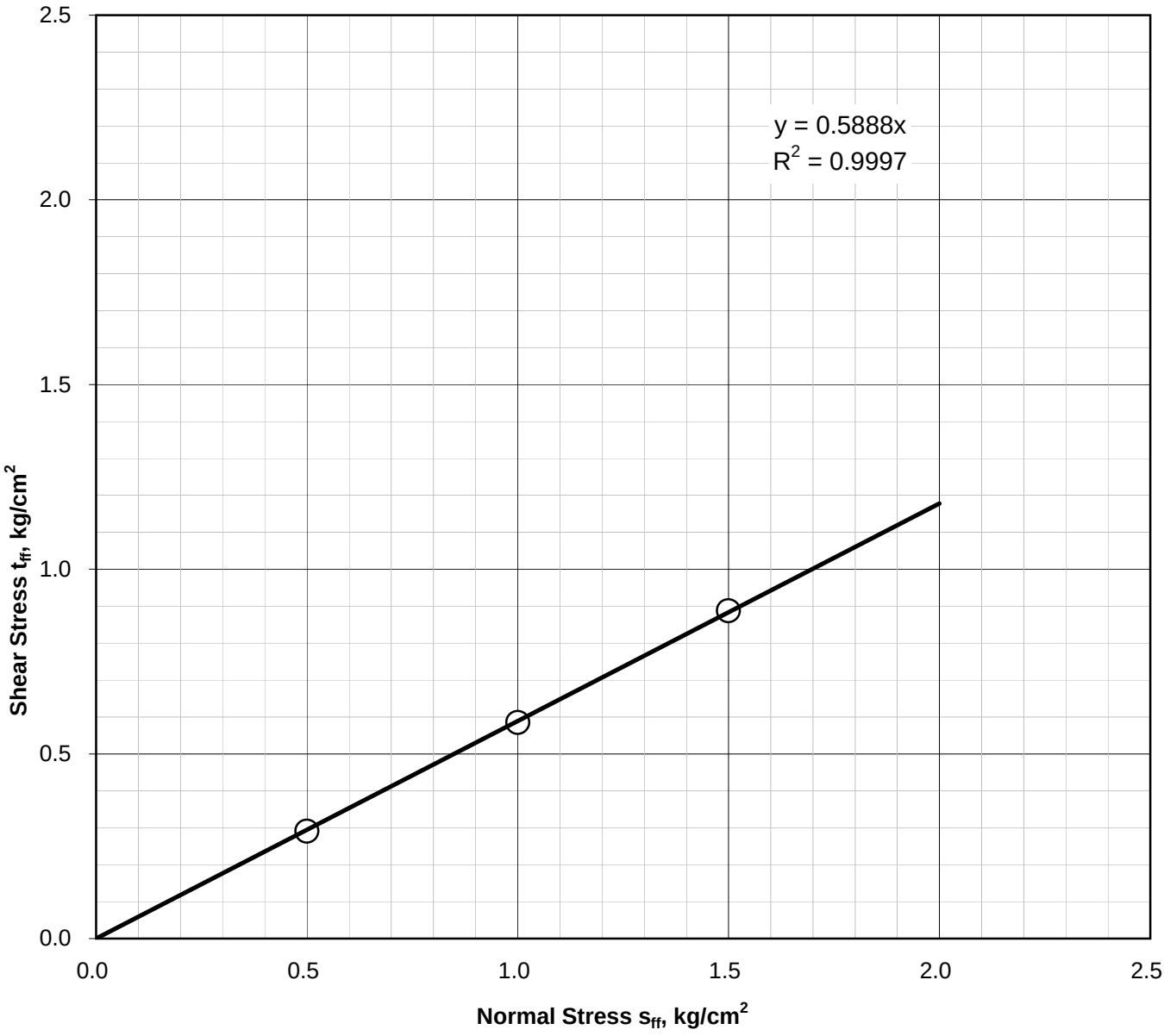
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 5	**Sample Depth: 2.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS1
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.55
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	30.5



Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

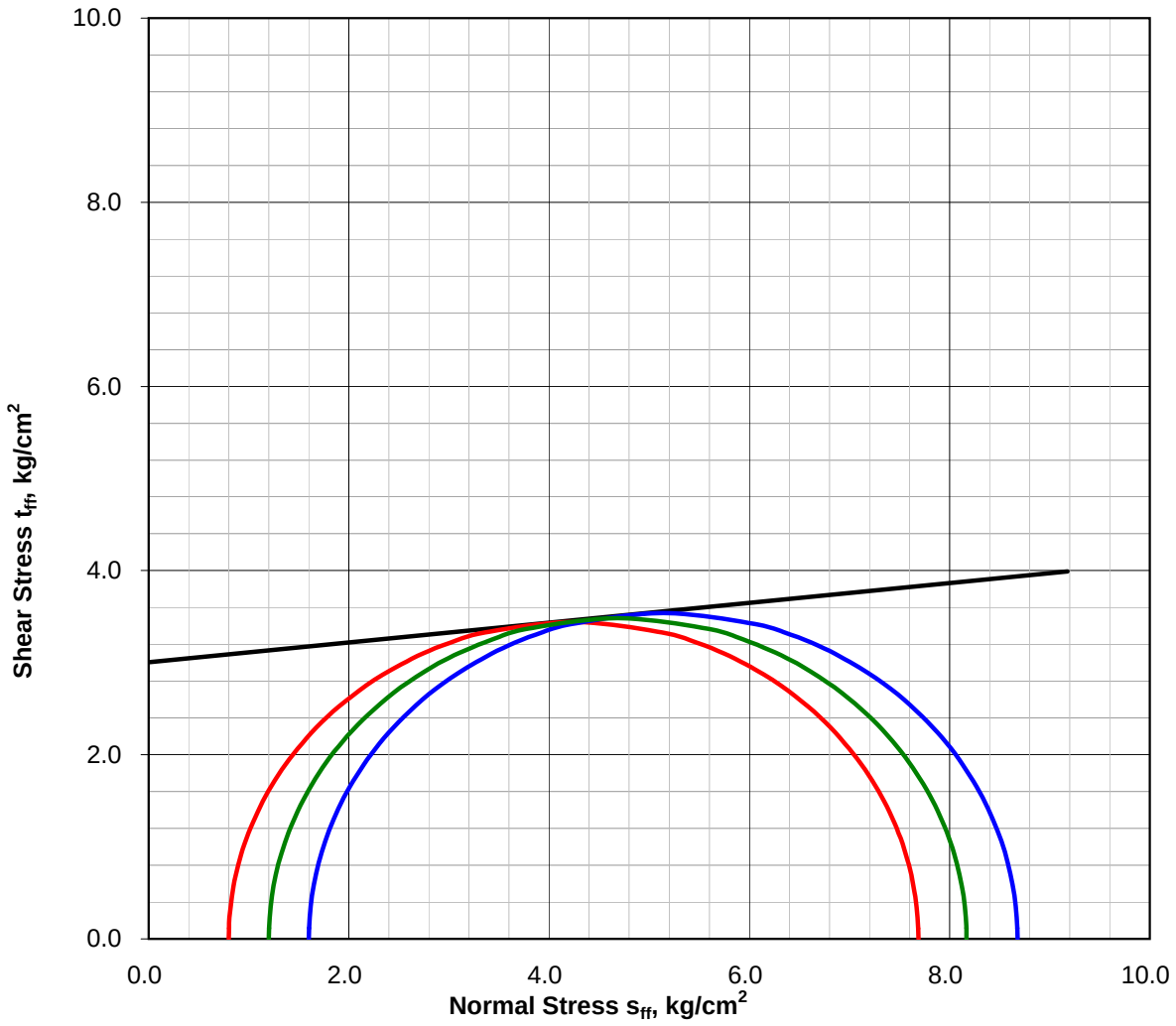
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 56	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 5	**Sample Depth: 8.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	0.8	1.2	1.6
	Sample No.:	UDS3	UDS3	UDS3
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.00	2.00	2.00
	Dry Density (g/cc):	1.73	1.73	1.73
	Moisture Content (%):	15.2	15.3	15.5
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	6.89	6.97	7.08
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**3.00**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**6.1**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 57	Certificate No.T-1741

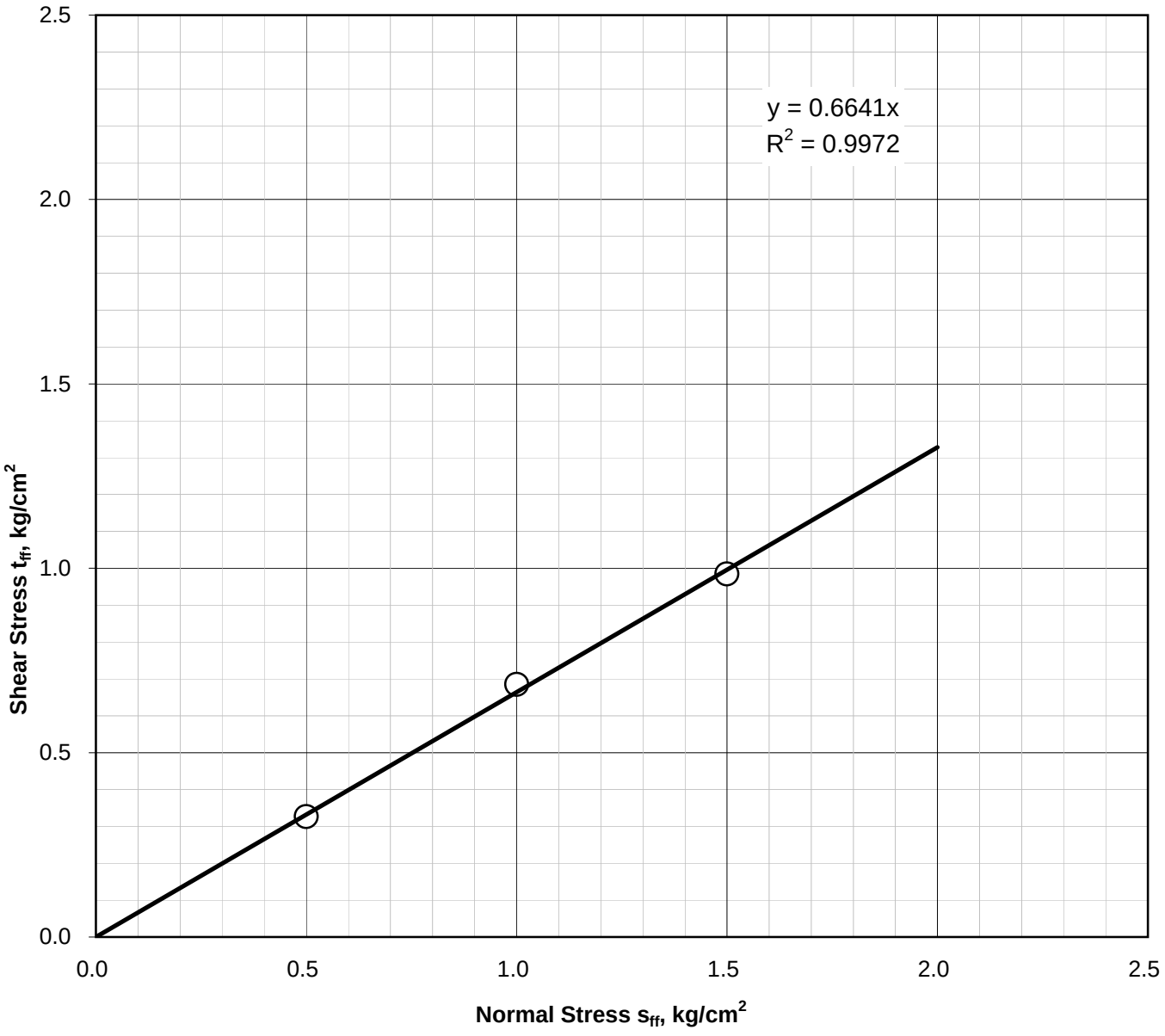
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 5	**Sample Depth: 11.25 m**	**Sample Description: Silty fine sand**

SAMPLE DETAILS	
Sample No.:	UDS4
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.64
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	33.6



Coulomb Failure Envelope

Structure : Slab D G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 58	Certificate No.T-1741

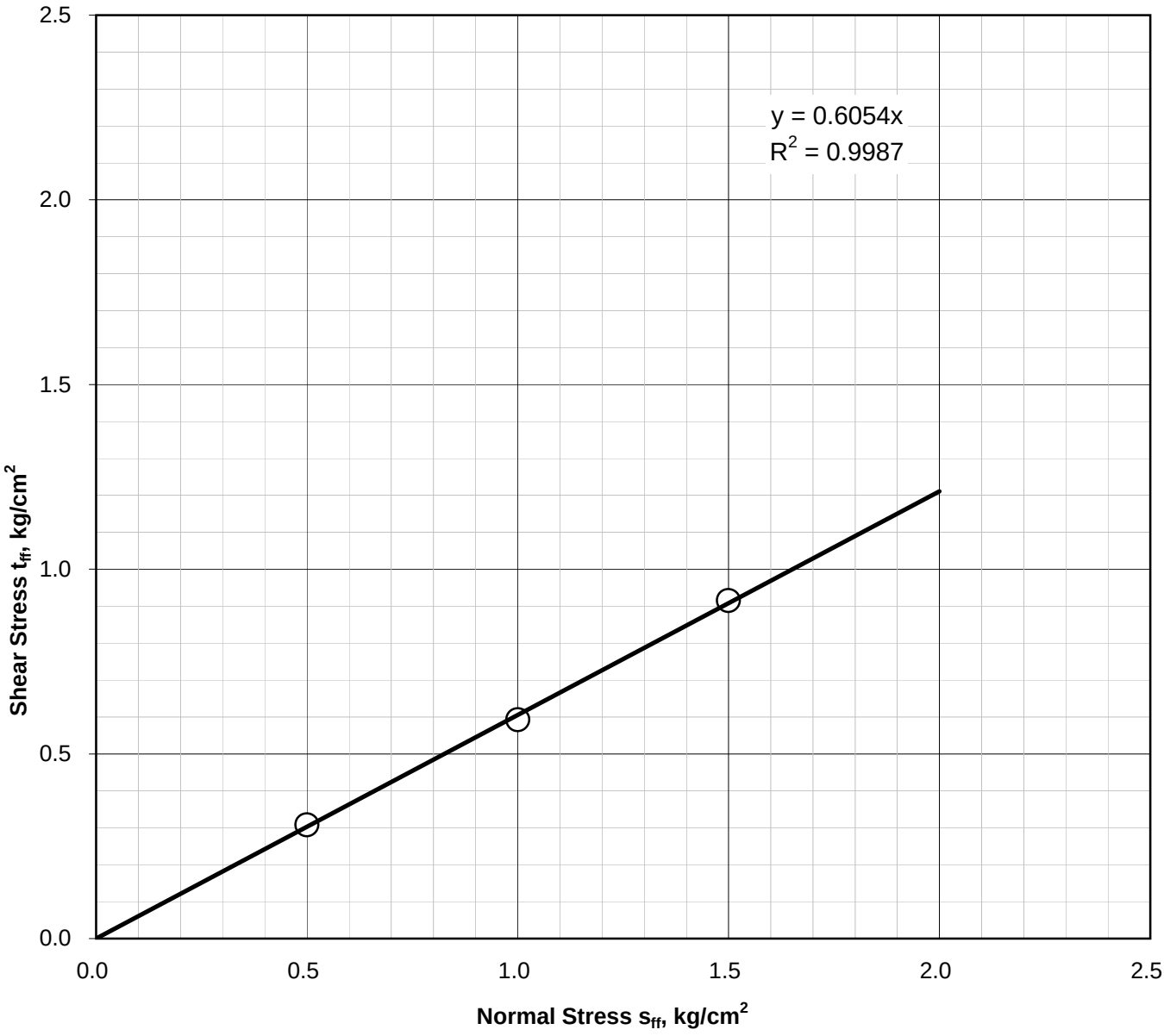
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 6	**Sample Depth: 2.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS1
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.58
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.2



Coulomb Failure Envelope

Structure : Slab E G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 59	Certificate No.T-1741

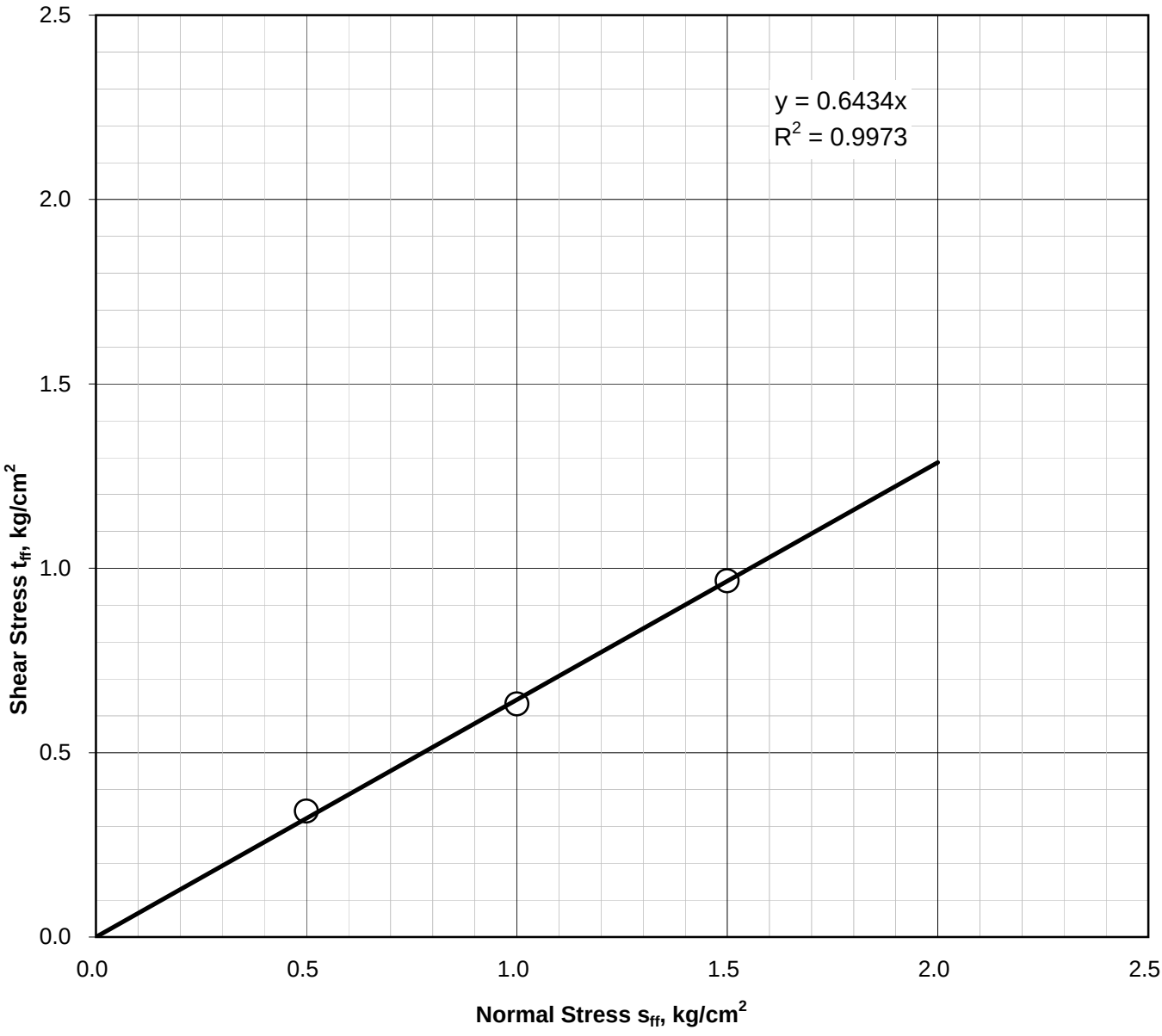
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 6	**Sample Depth: 8.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS3
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.62
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	32.8



Coulomb Failure Envelope

Structure : Slab E G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

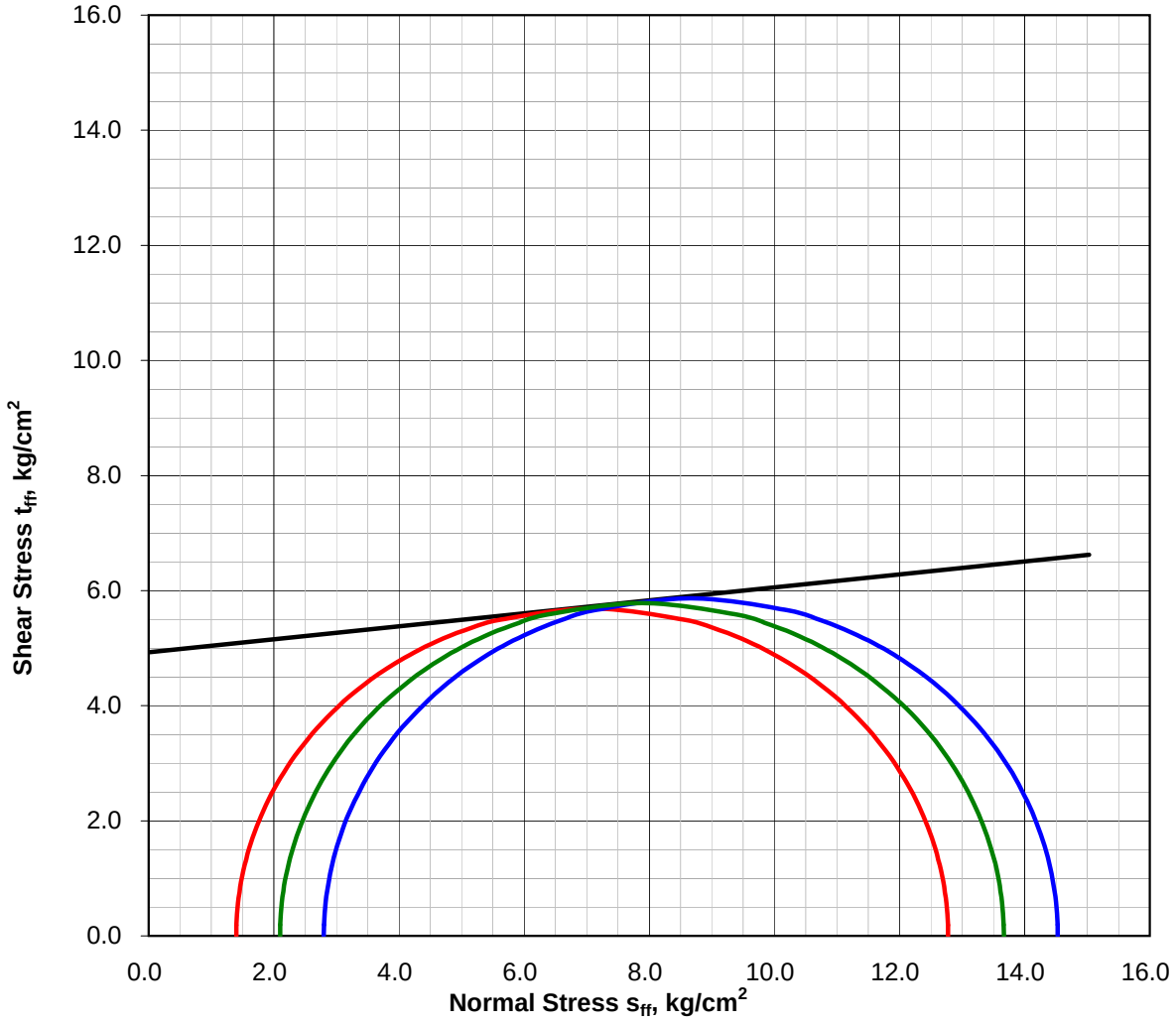
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 60	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 6	**Sample Depth: 14.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.4	2.1	2.8
	Sample No.:	UDS5	UDS5	UDS5
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.12	2.10	2.11
	Dry Density (g/cc):	1.90	1.88	1.89
	Moisture Content (%):	11.5	11.6	11.5
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	11.38	11.57	11.73
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**4.90**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**6.4**	**degrees**	



Mohr-Coulomb Failure Envelope

Location : Slab E G+14

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 61	Certificate No.T-1741

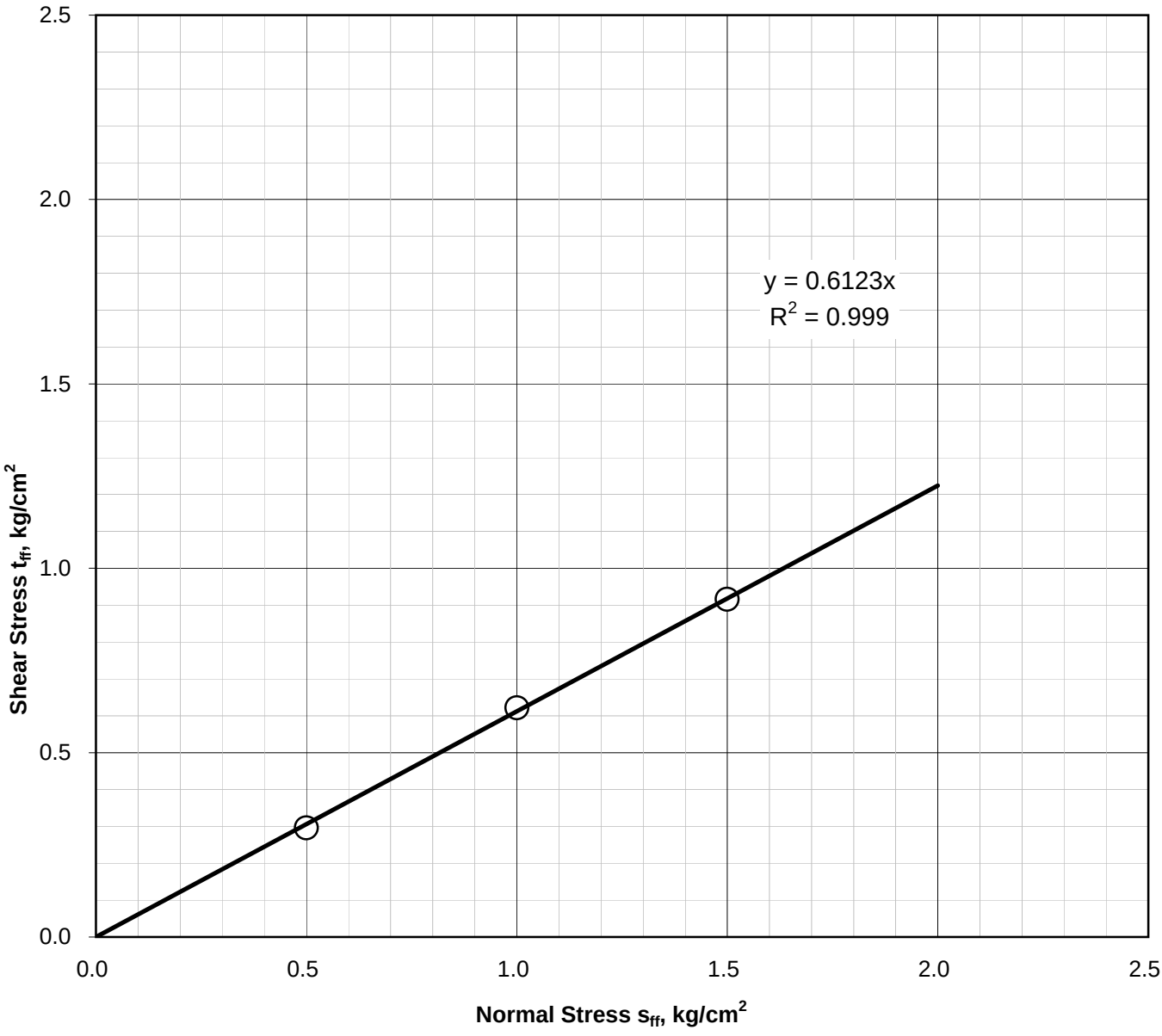
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 7	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.58
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.5



Coulomb Failure Envelope

Structure : G+36+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 62	Certificate No.T-1741

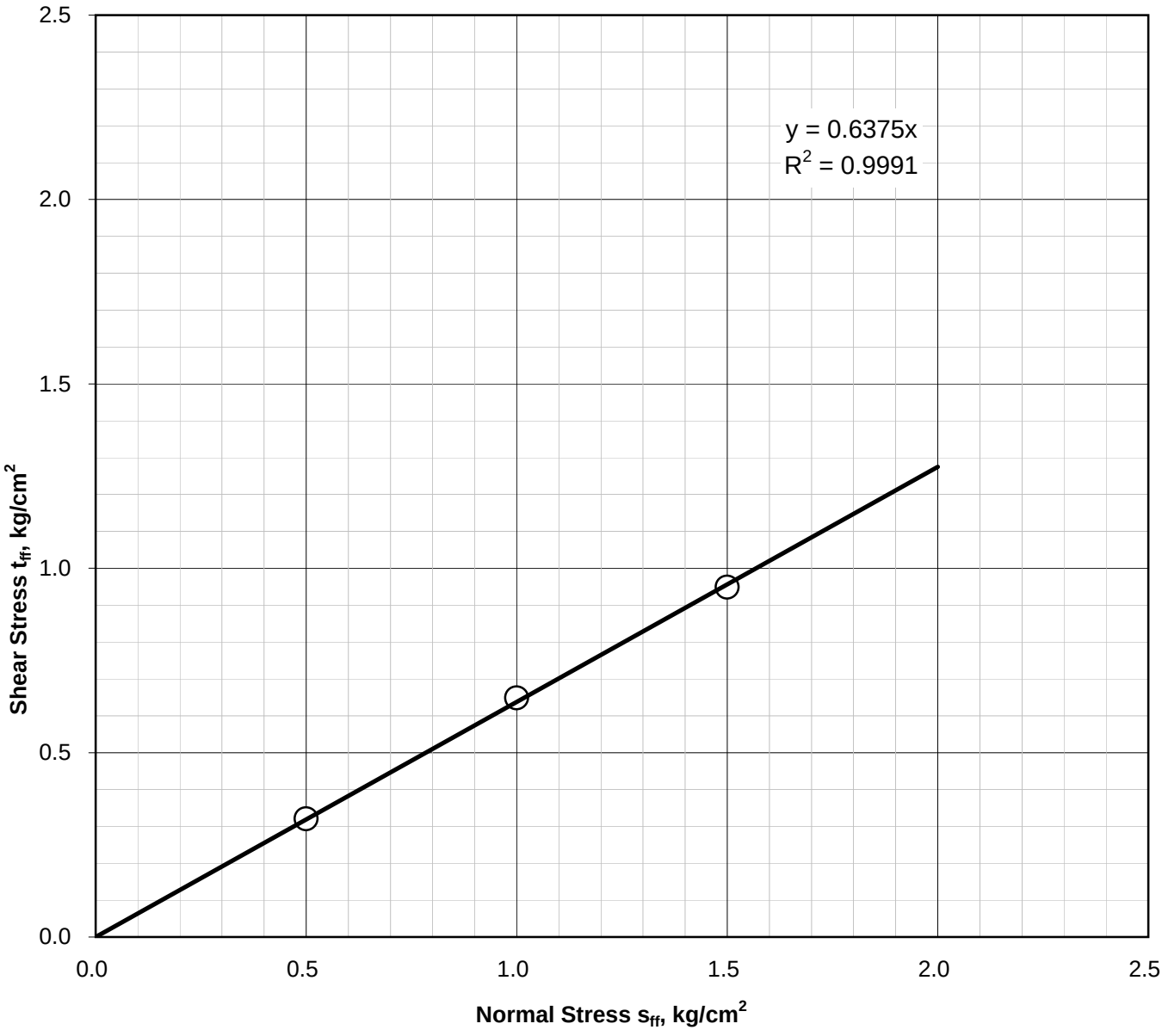
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 7	**Sample Depth: 8.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS3
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.60
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	32.5



Coulomb Failure Envelope

Structure : G+36+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

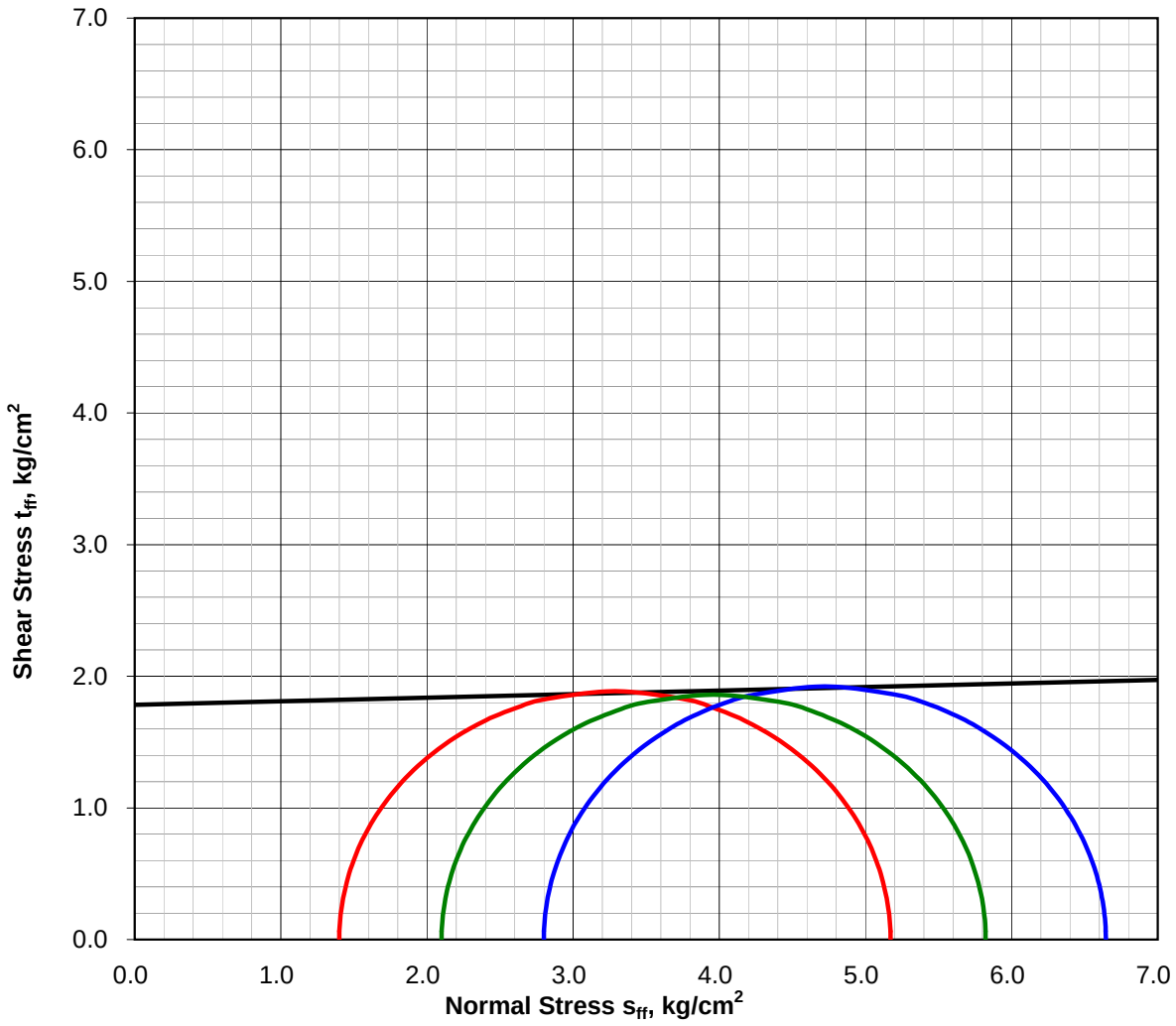
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 63	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 7	**Sample Depth: 14.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.4	2.1	2.8
	Sample No.:	UDS5	UDS5	UDS5
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.12	2.13	2.13
	Dry Density (g/cc):	1.84	1.85	1.85
	Moisture Content (%):	15.1	15.2	15.2
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	3.77	3.72	3.85
	Failure Strain, ε_f (%):	14.5	11.8	17.1
	Cohesion Intercept, c:	**1.80**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**1.5**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+36+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 64	Certificate No.T-1741

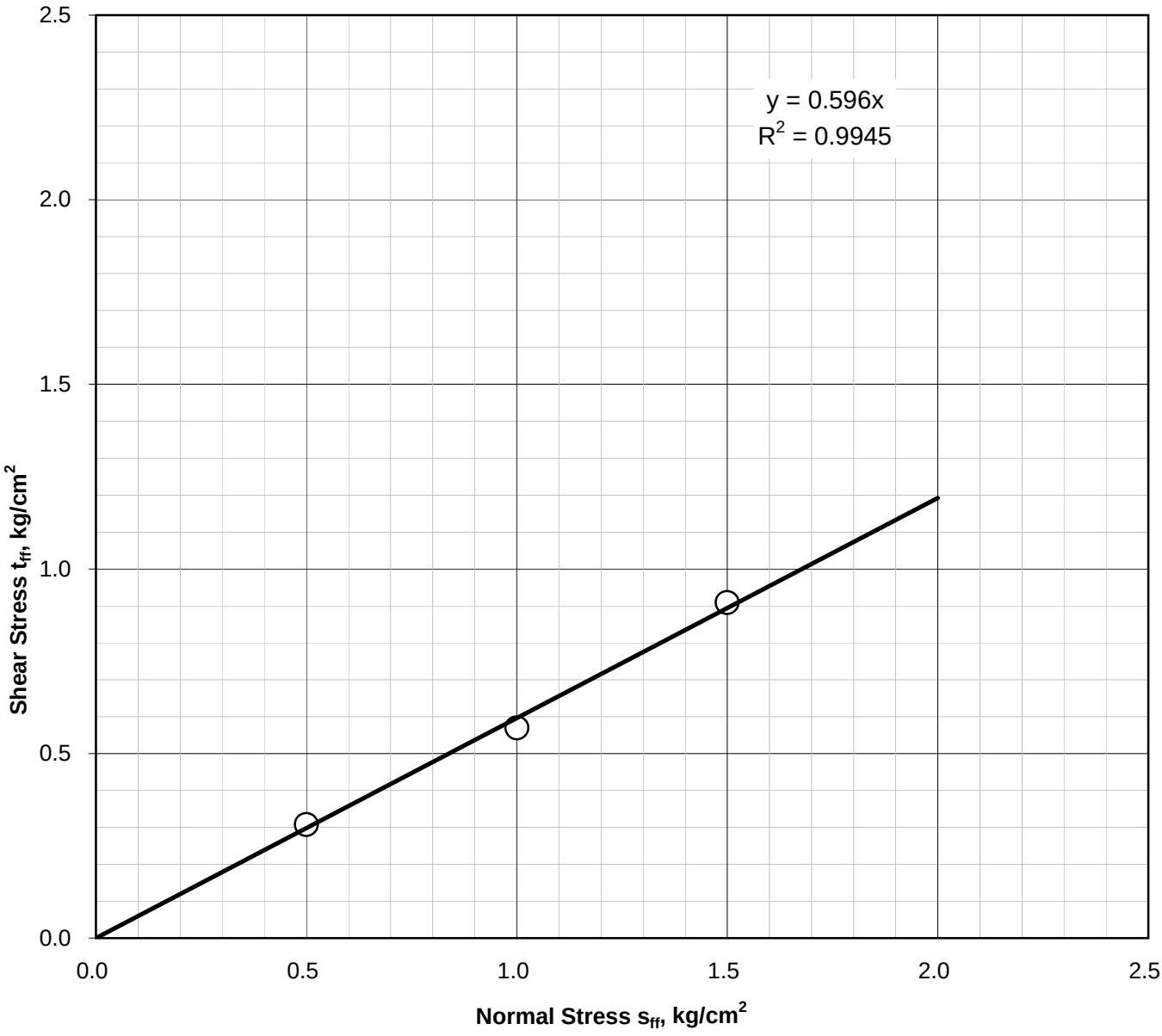
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 8	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.60
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	30.8



Coulomb Failure Envelope

Structure : G+36+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 65	Certificate No.T-1741

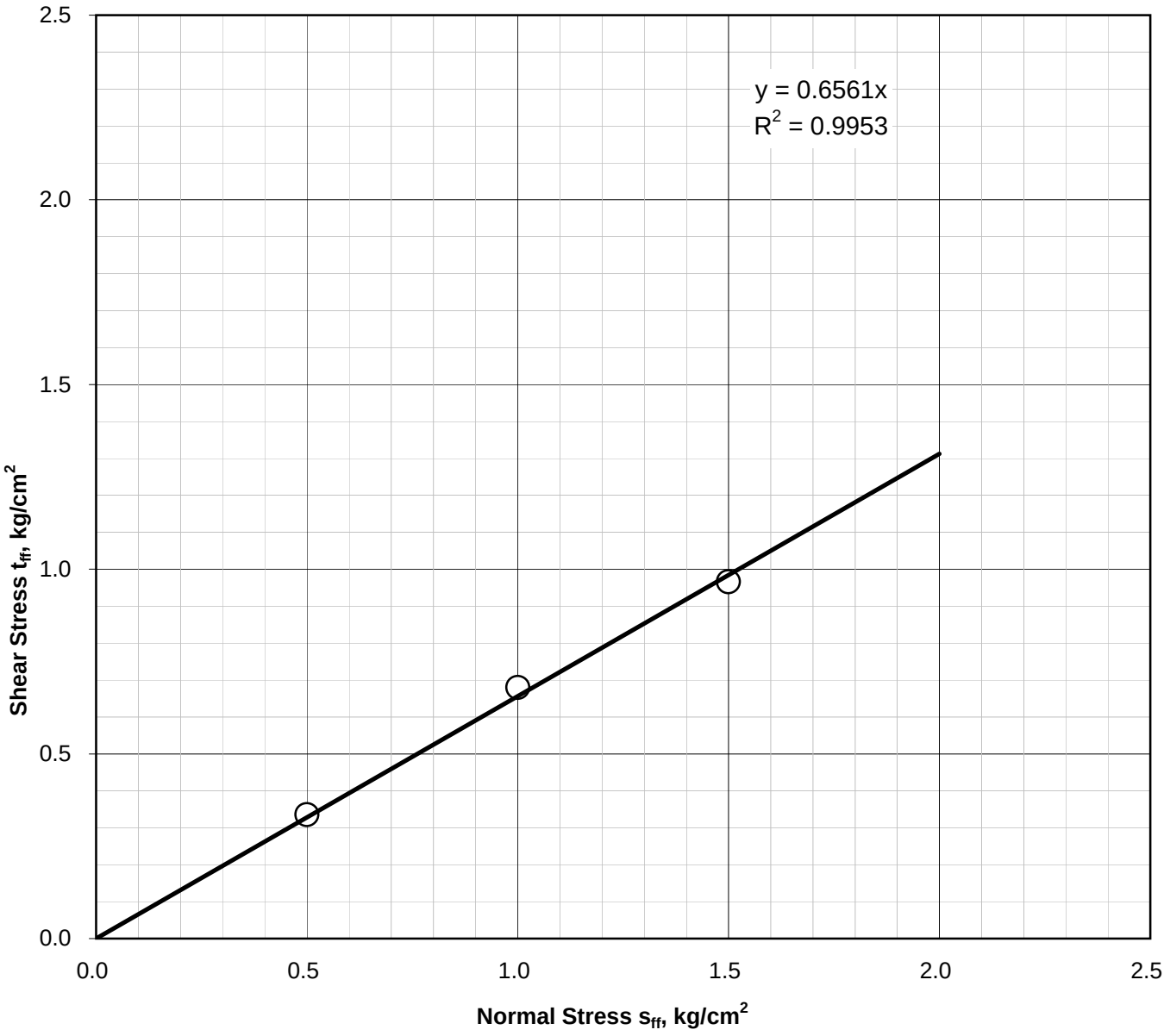
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 8	**Sample Depth: 11.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS4
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.63
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	33.3



Coulomb Failure Envelope

Structure : G+36+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

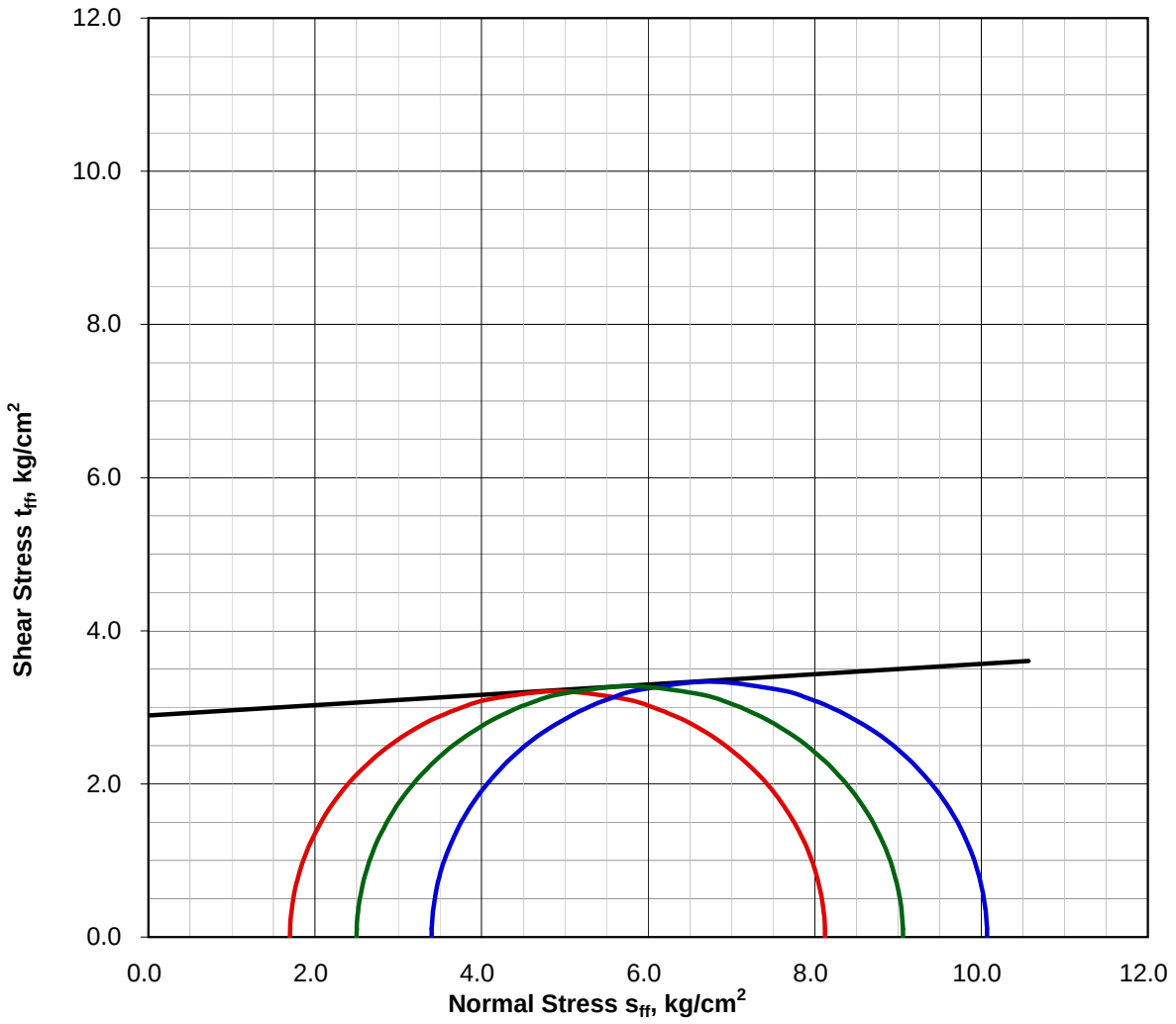
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 66	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 8	**Sample Depth: 17.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.7	2.5	3.4
	Sample No.:	UDS6	UDS6	UDS6
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.73	1.74	1.73
	Dry Density (g/cc):	1.62	1.62	1.63
	Moisture Content (%):	6.9	7.1	6.5
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	6.42	6.56	6.67
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**2.90**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**3.8**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+36+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

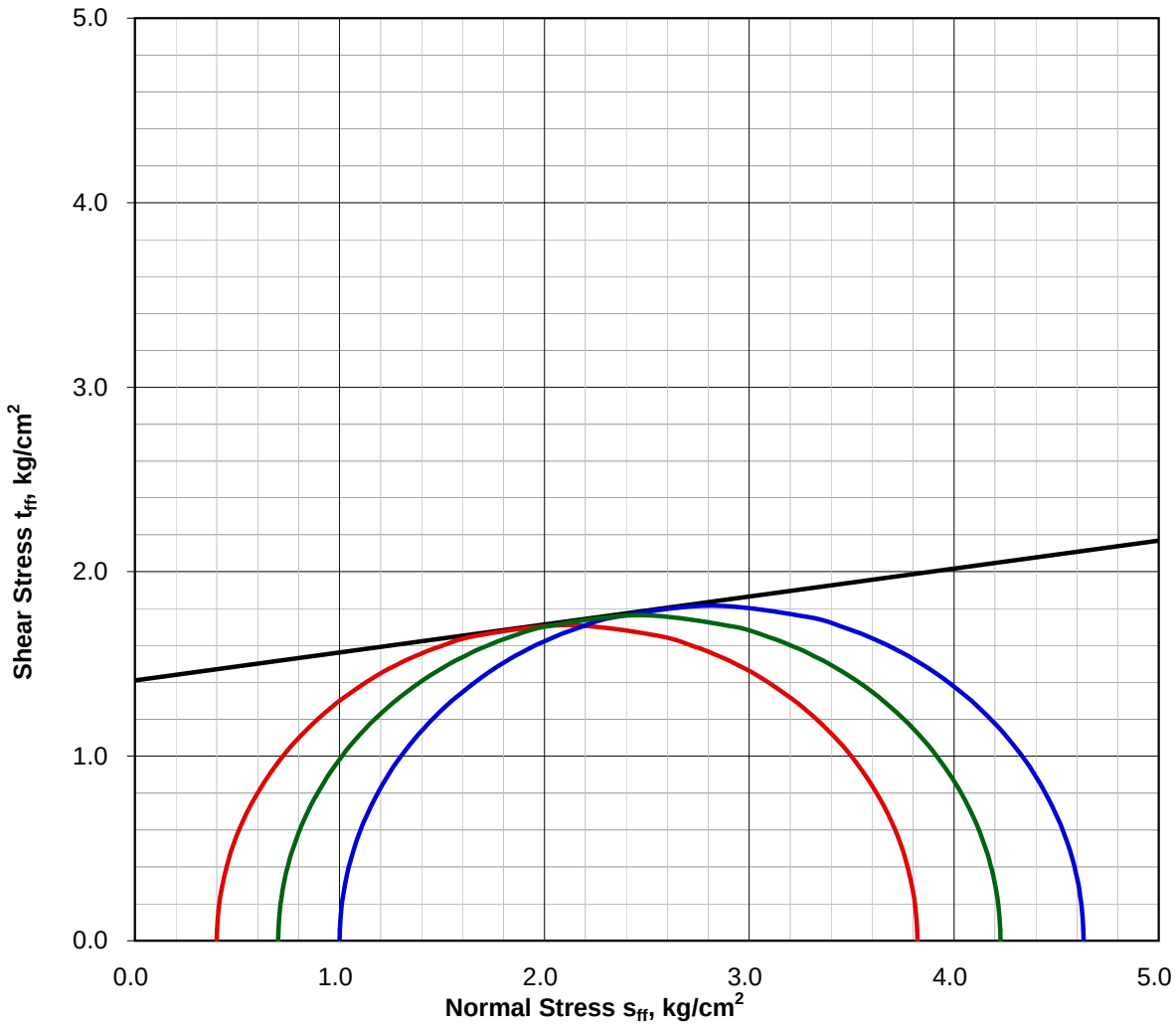
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 67	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 9	**Sample Depth: 5.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	0.4	0.7	1.0
	Sample No.:	UDS2	UDS2	UDS2
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.78	1.77	1.77
	Dry Density (g/cc):	1.62	1.62	1.61
	Moisture Content (%):	9.9	9.6	9.5
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	3.42	3.53	3.63
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**1.40**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**8.6**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : Slab D G+8+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 68	Certificate No.T-1741

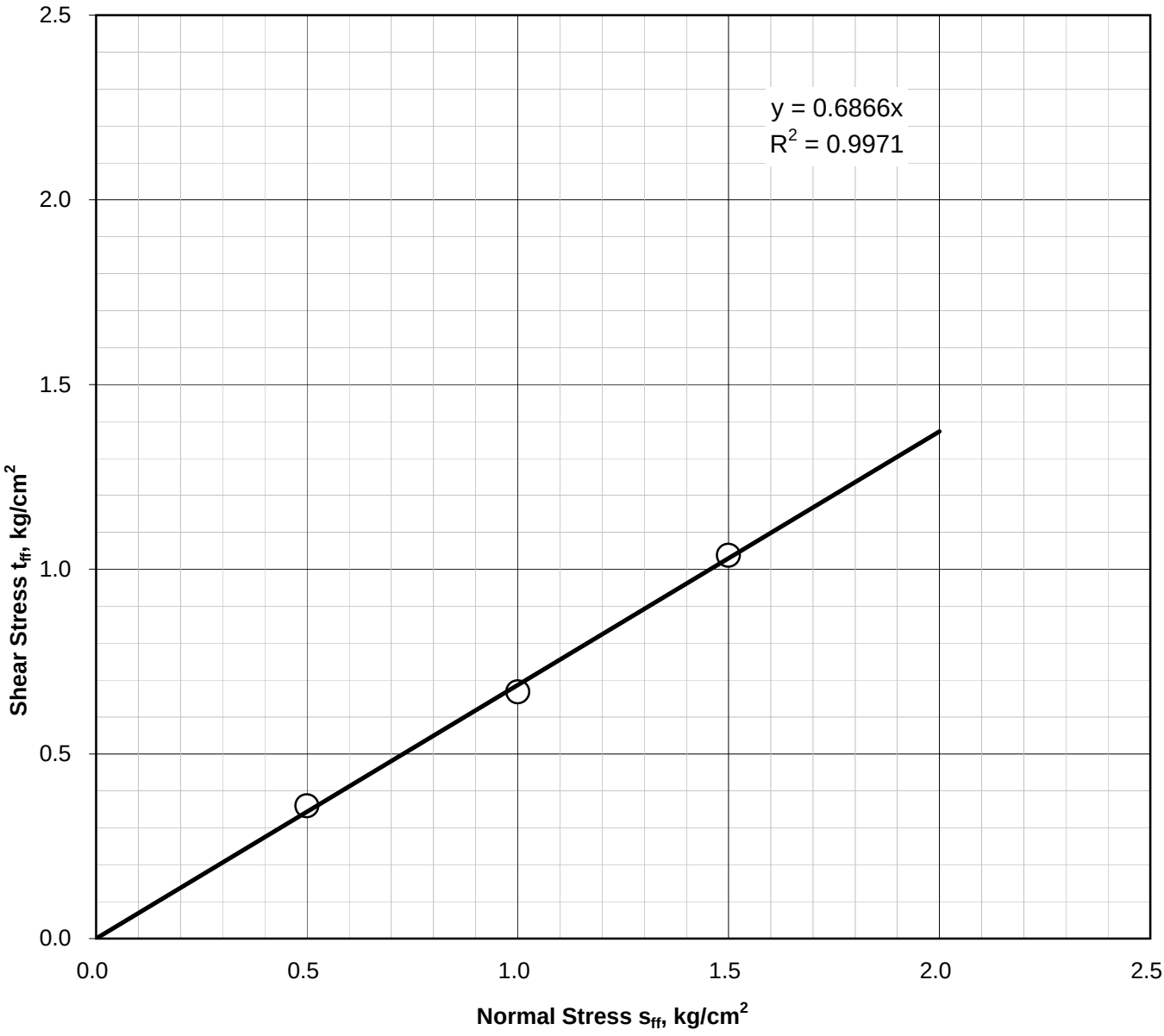
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 9	**Sample Depth: 14.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS5
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.68
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.5



Coulomb Failure Envelope

Structure : Slab D G+8+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 69	Certificate No.T-1741

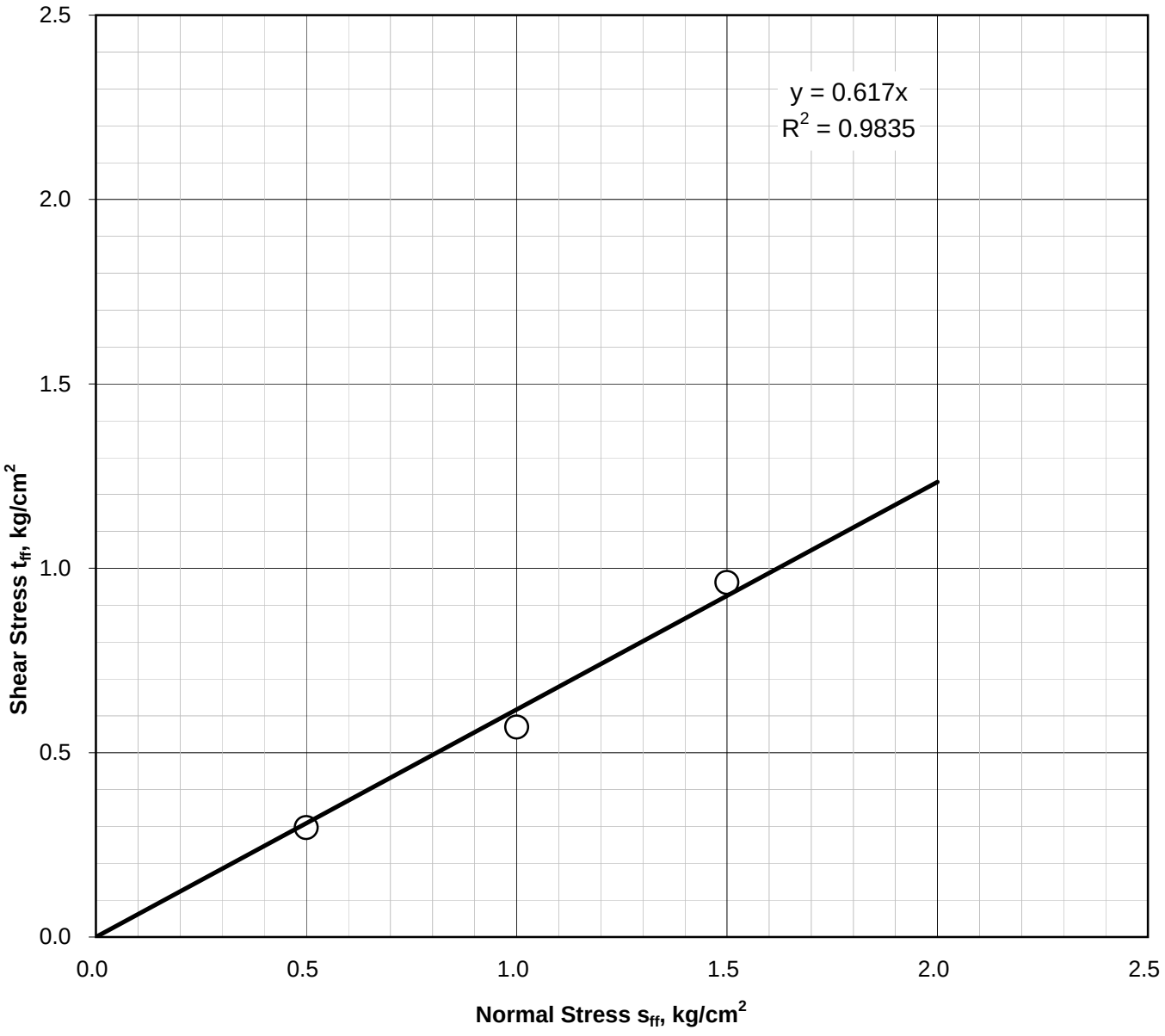
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 10	Sample Depth: 2.25 m	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS1
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.58
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.7



Coulomb Failure Envelope

Structure: Slab D G+8+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 70	Certificate No.T-1741

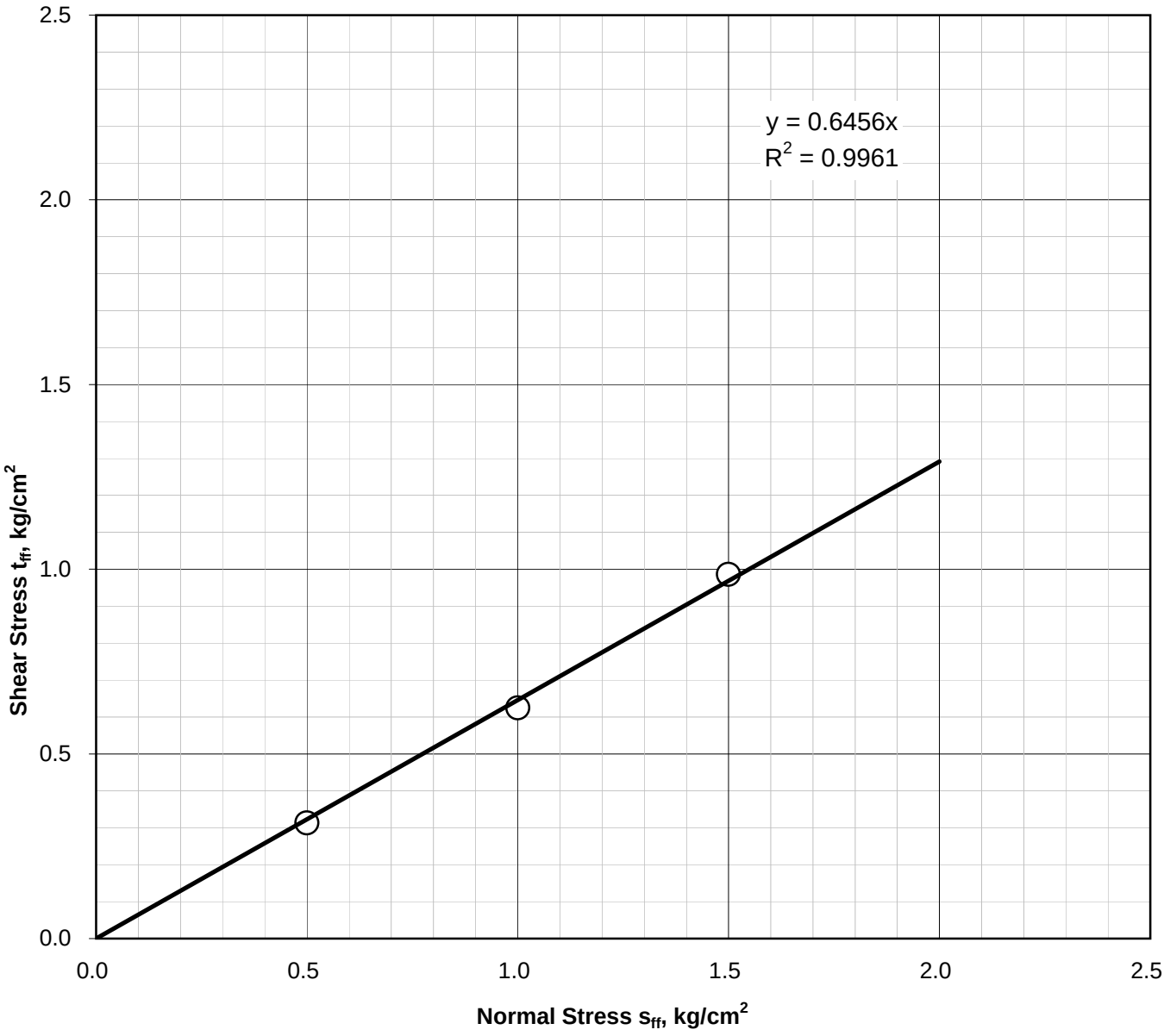
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 10	**Sample Depth: 8.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS3
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.60
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	32.8



Coulomb Failure Envelope

Structure : Slab D G+8+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 71	Certificate No.T-1741

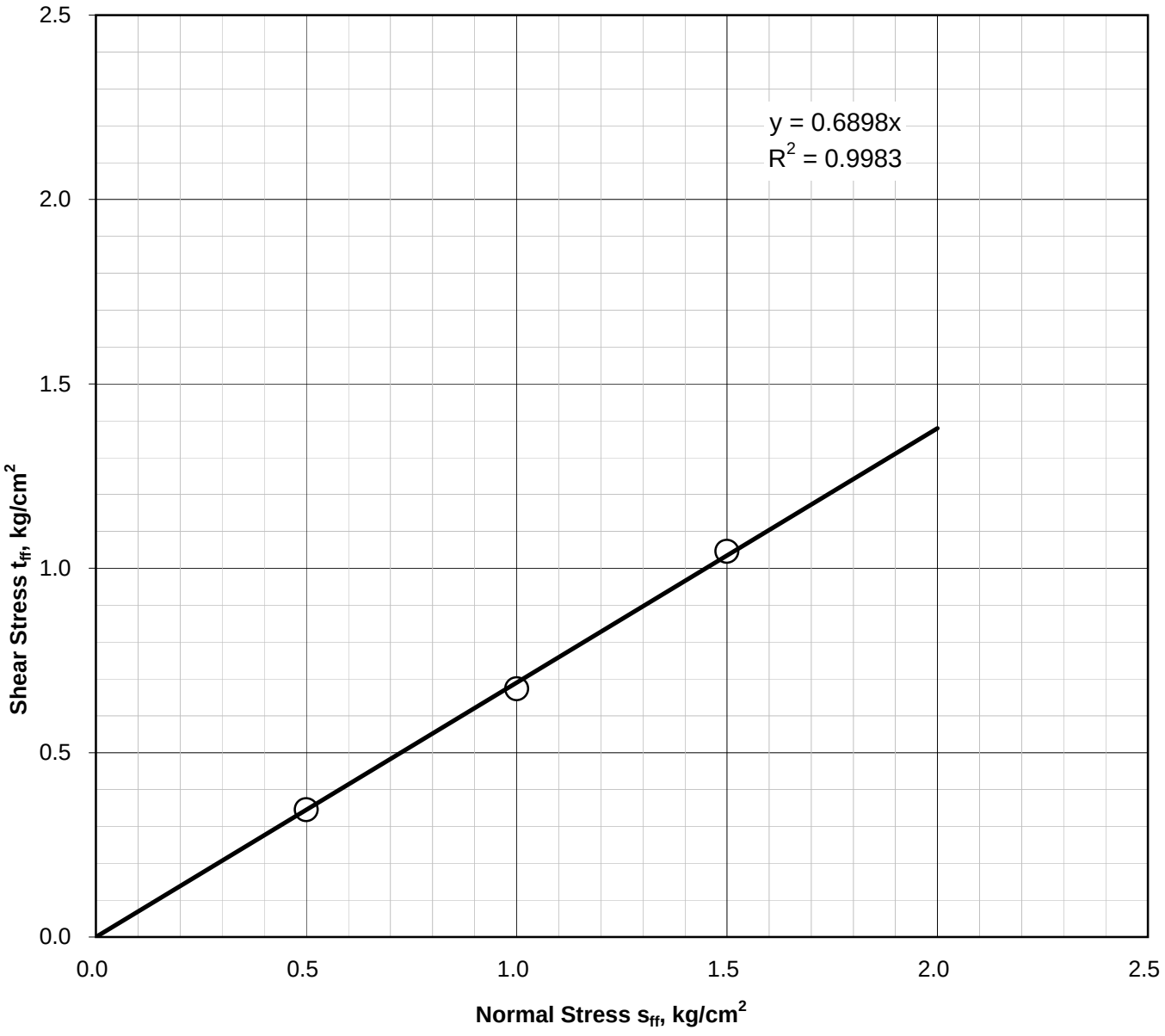
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 10	**Sample Depth: 14.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS5
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.68
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.6



Coulomb Failure Envelope

Structure : Slab D G+8+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 72	Certificate No.T-1741

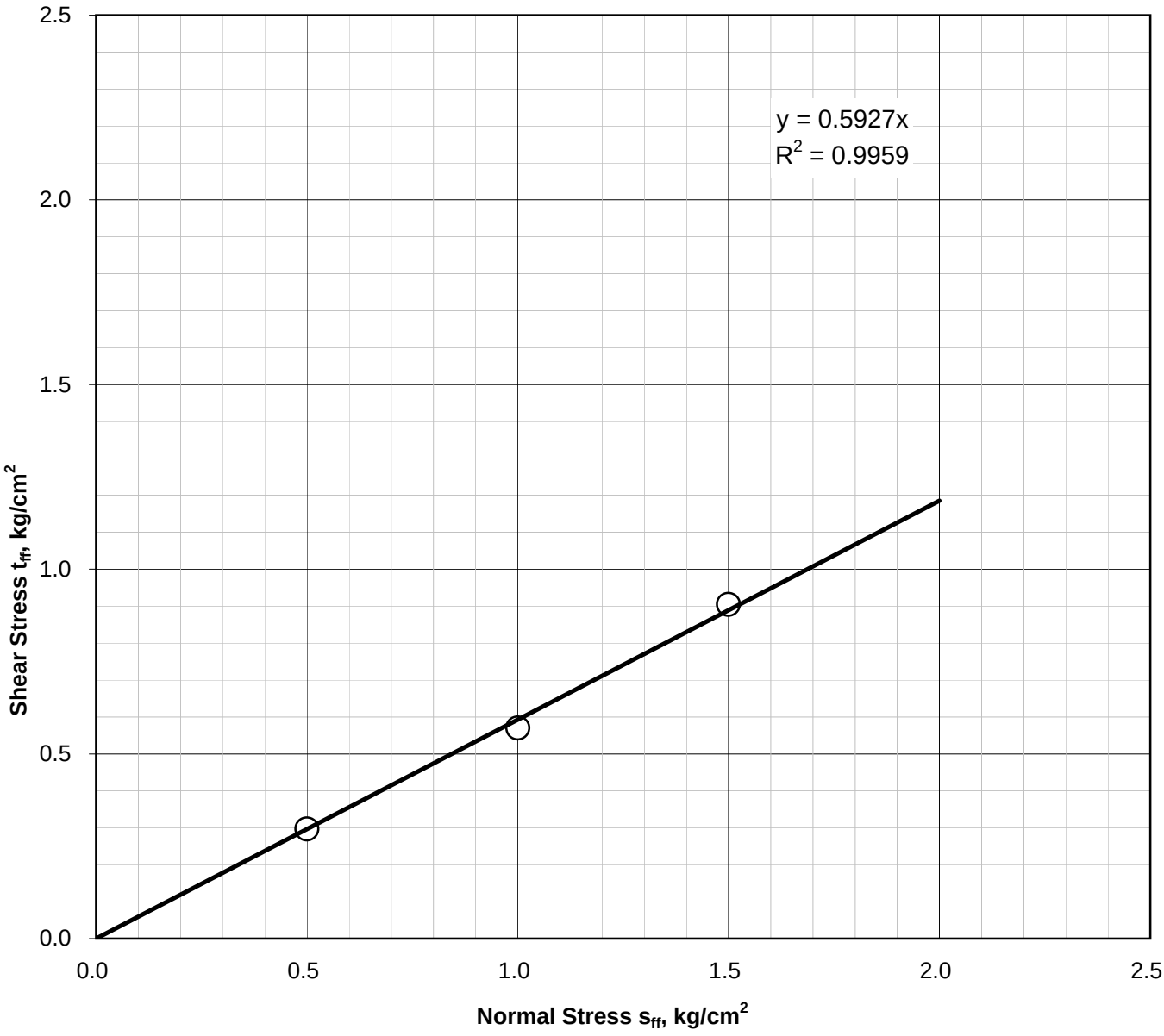
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 11	**Sample Depth: 2.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS1
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.60
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	30.7



Coulomb Failure Envelope

Structure : EWS

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

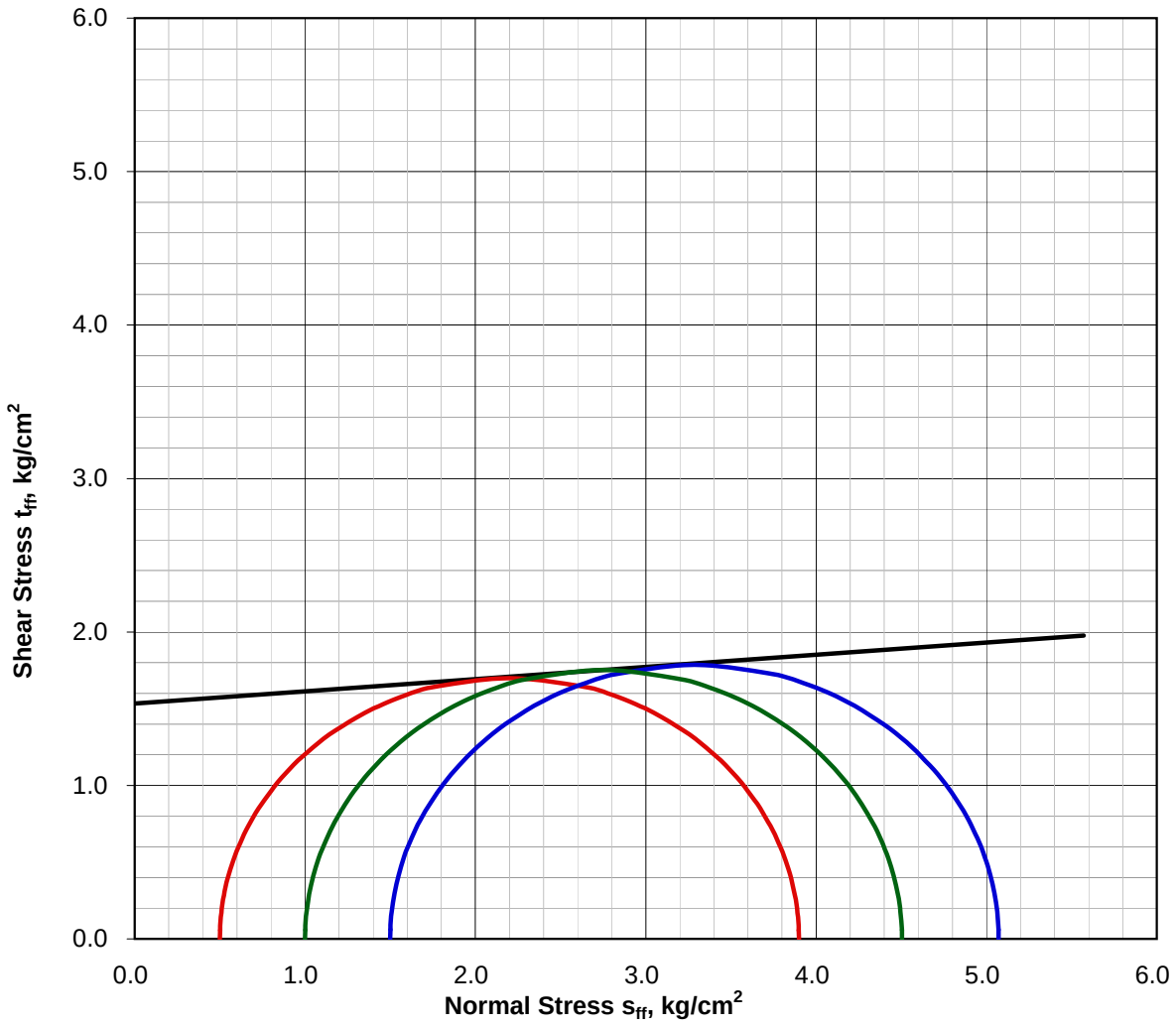
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 73	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 11	**Sample Depth: 8.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	0.5	1.0	1.5
	Sample No.:	UDS3	UDS3	UDS3
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.83	1.83	1.84
	Dry Density (g/cc):	1.66	1.66	1.66
	Moisture Content (%):	10.5	10.7	10.9
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	3.40	3.50	3.57
	Failure Strain, ε_f (%):	21.1	22.4	23.7
	Cohesion Intercept, c:	**1.50**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**4.6**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : EWS

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 74	Certificate No.T-1741

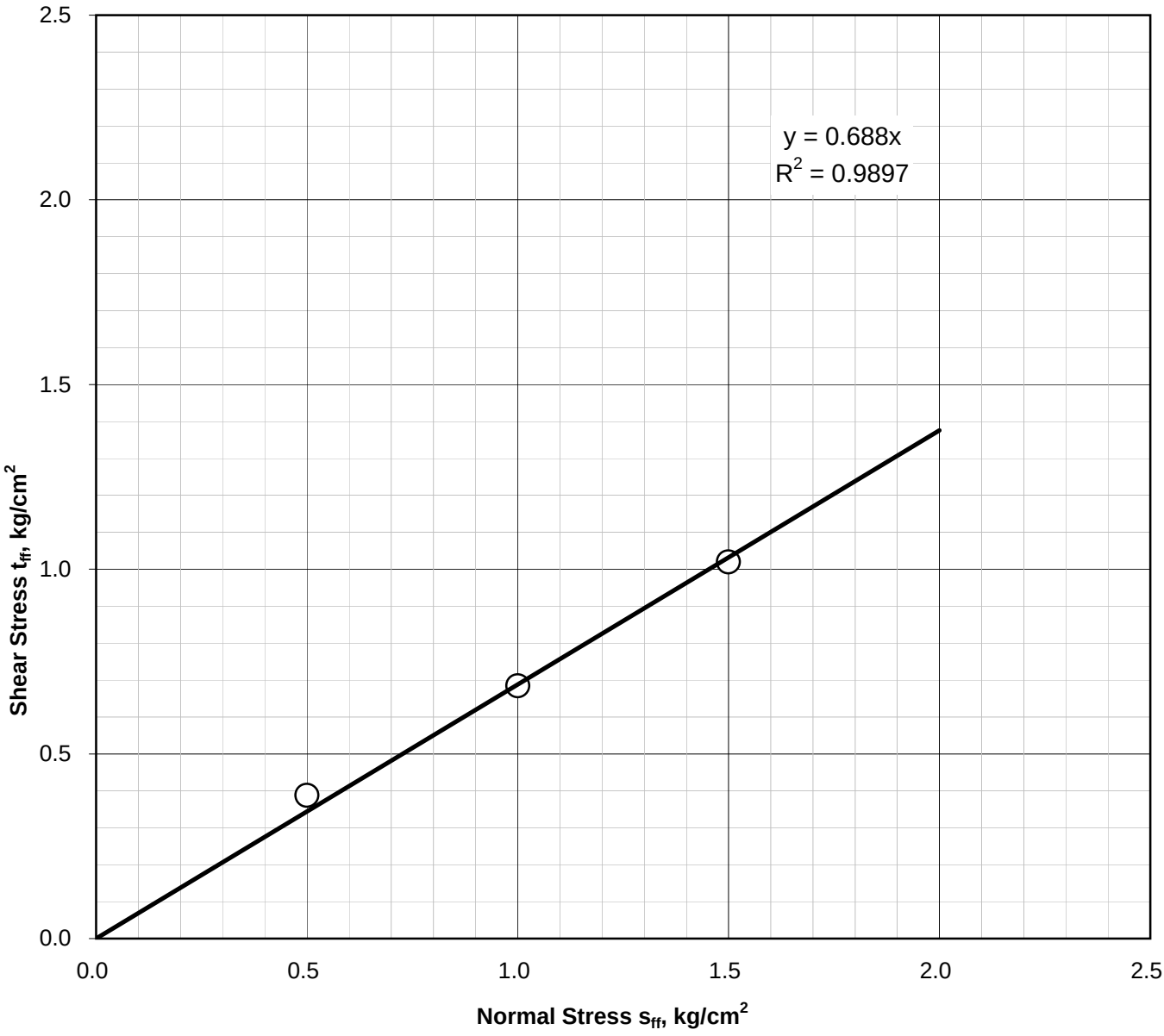
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 11	**Sample Depth: 14.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS5
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.68
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.5



Coulomb Failure Envelope

Structure: EWS

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 75	Certificate No.T-1741

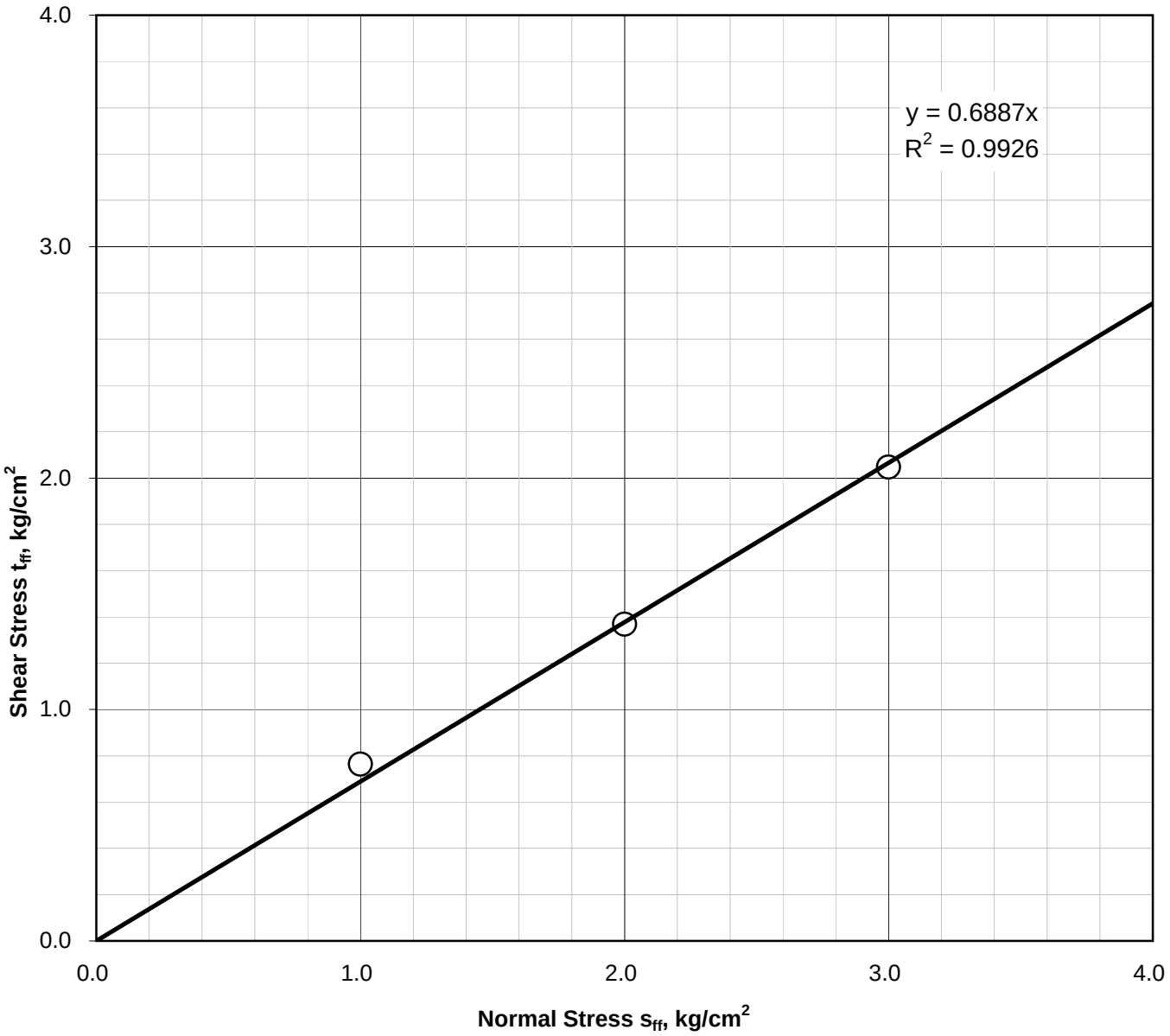
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 11	**Sample Depth: 20.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS7
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.72
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	34.6



Coulomb Failure Envelope

Structure : EWS

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 76	Certificate No.T-1741

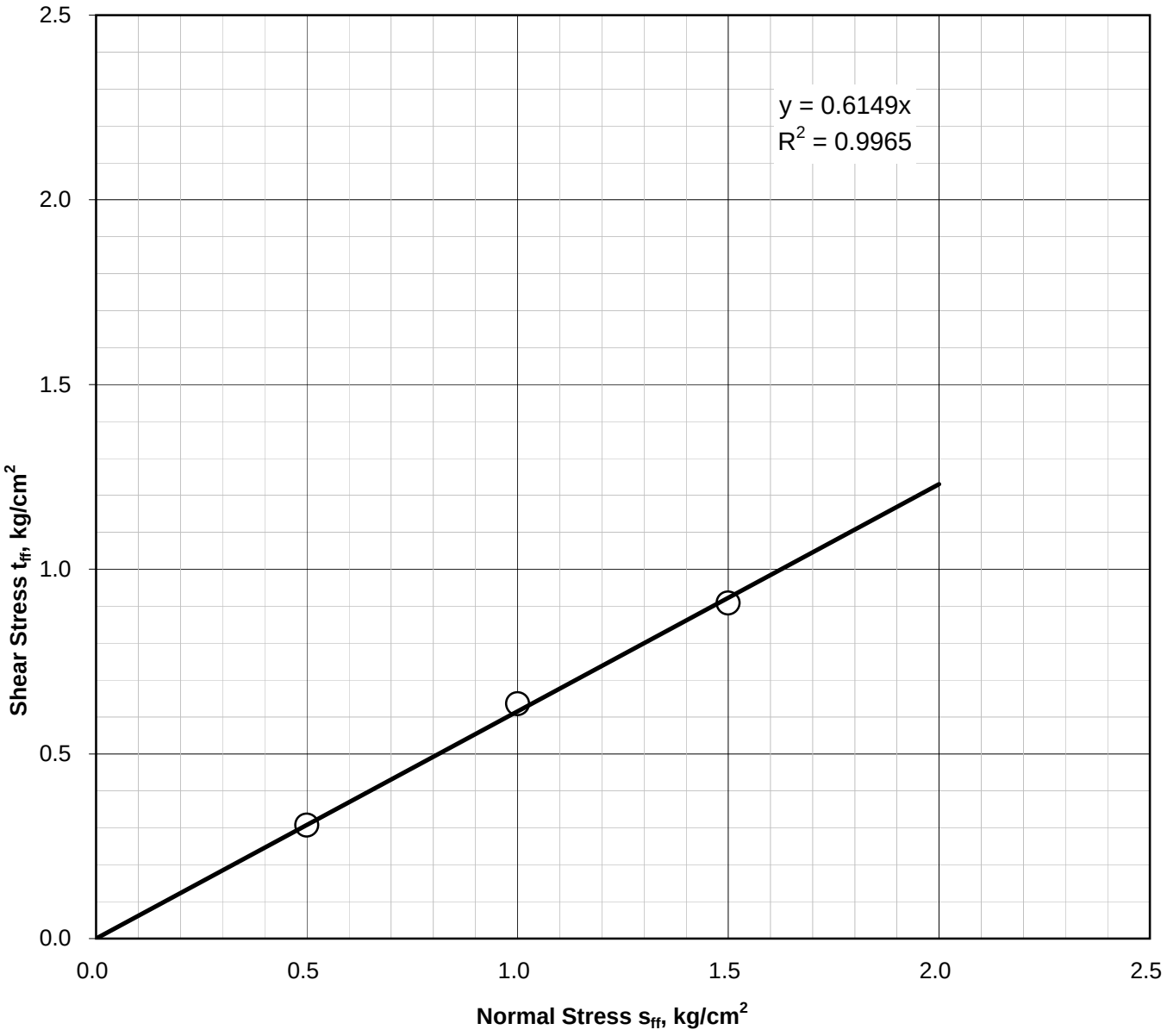
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 12	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.61
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.6



Coulomb Failure Envelope

Structure : Slab E G+14

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

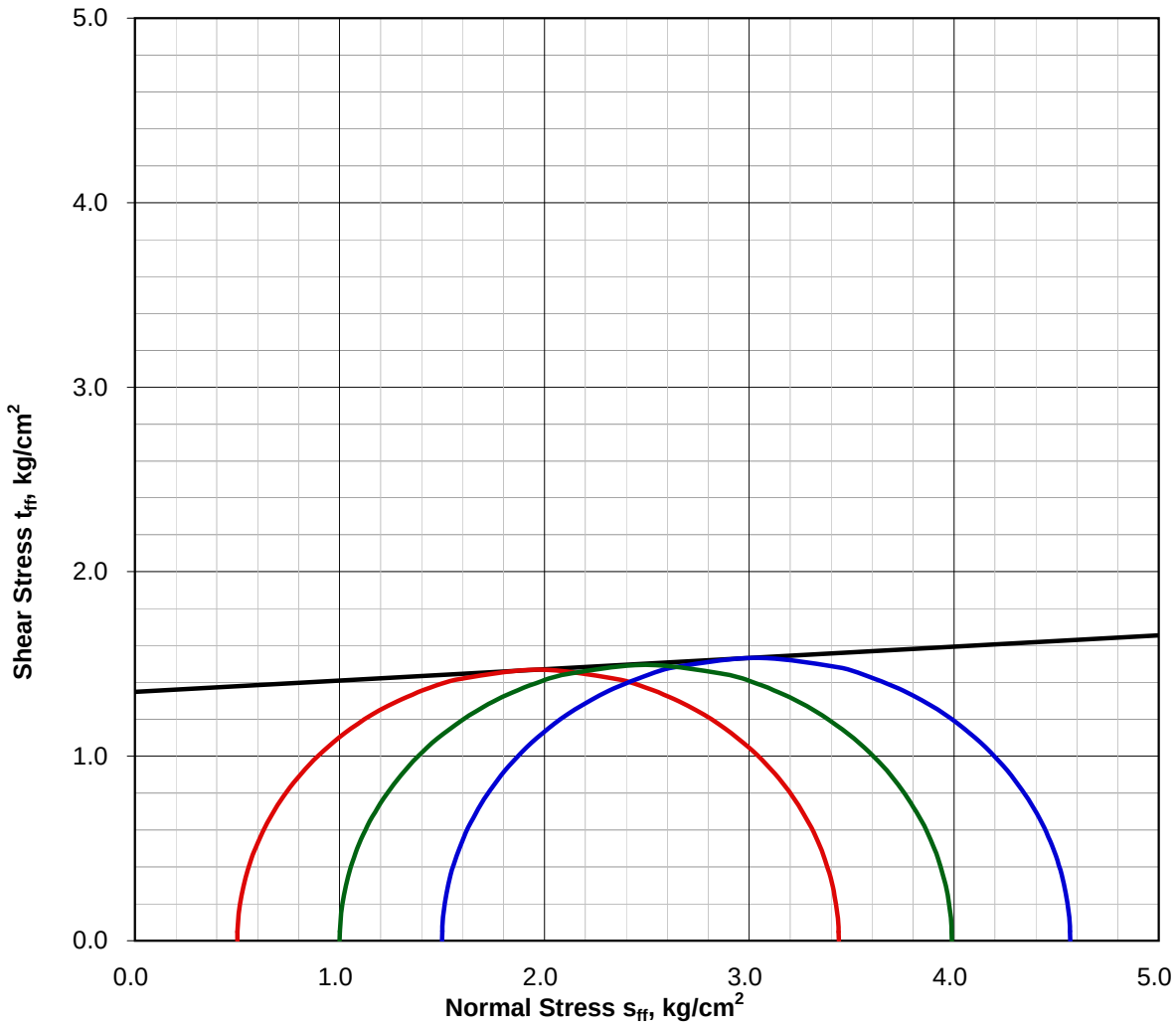
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 77	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 12	**Sample Depth: 8.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	0.5	1.0	1.5
	Sample No.:	UDS3	UDS3	UDS3
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.85	1.85	1.85
	Dry Density (g/cc):	1.64	1.64	1.64
	Moisture Content (%):	13.1	13.1	13.0
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	2.94	2.99	3.07
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**1.30**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**3.5**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : Slab E G+14

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

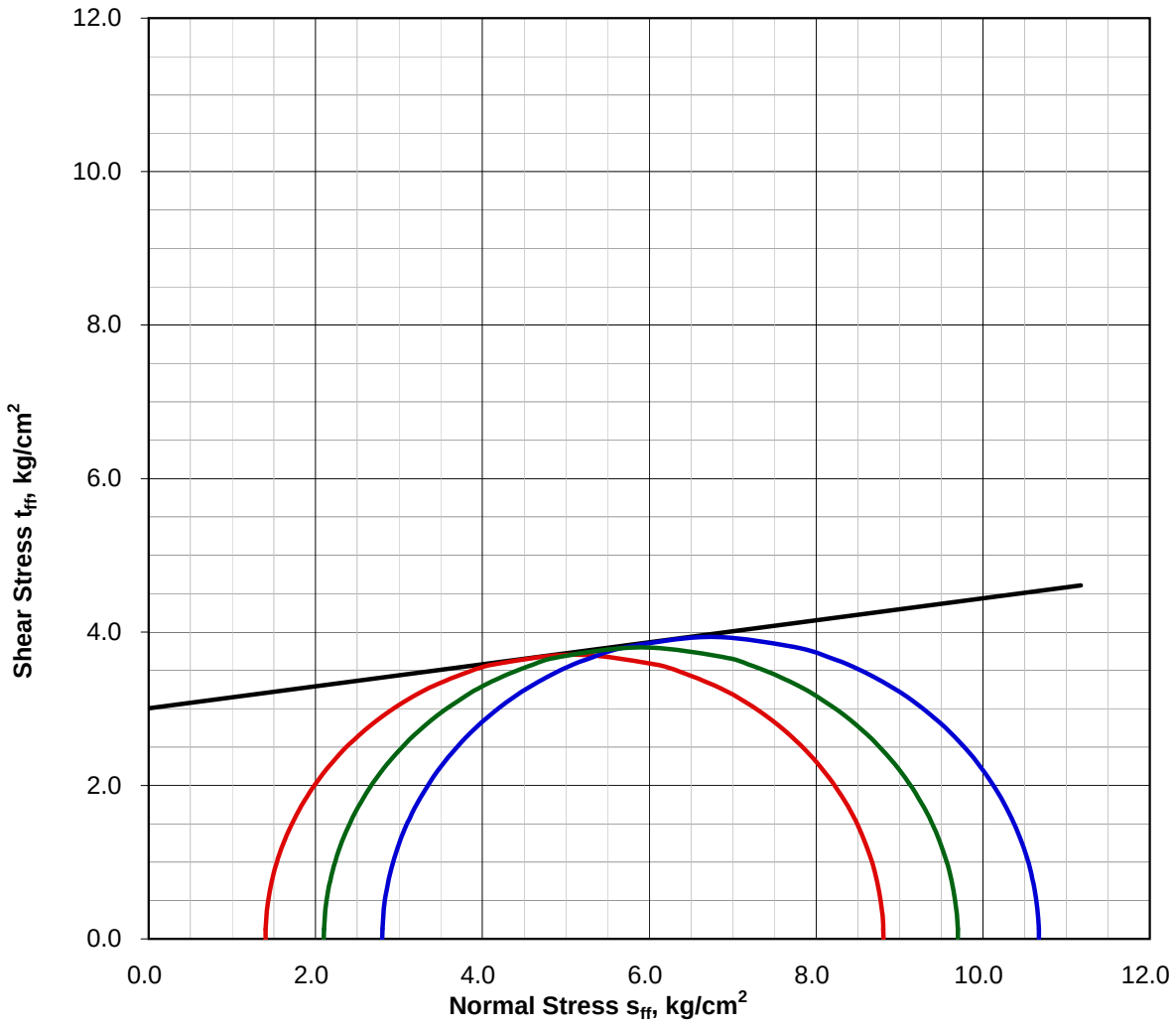
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 78	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 12	**Sample Depth: 14.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.4	2.1	2.8
	Sample No.:	UDS5	UDS5	UDS5
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.08	2.08	2.08
	Dry Density (g/cc):	1.84	1.84	1.84
	Moisture Content (%):	13.0	12.8	12.9
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	7.41	7.60	7.87
	Failure Strain, ε_f (%):	23.7	23.7	22.4
	Cohesion Intercept, c:	**3.00**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**8.2**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : Slab E G+14

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

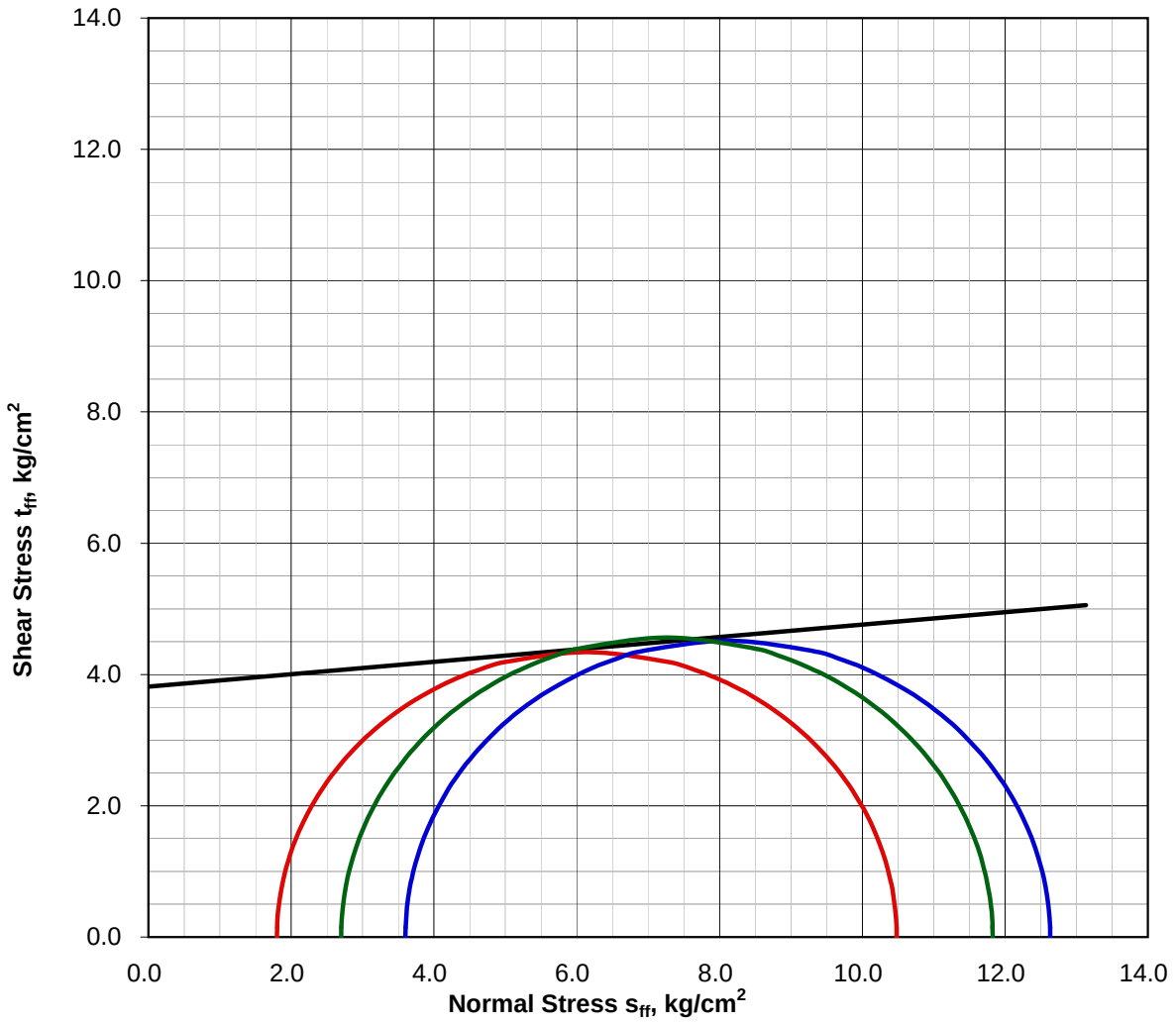
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 79	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 12	**Sample Depth: 17.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.8	2.7	3.6
	Sample No.:	UDS6	UDS6	UDS6
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	2.04	2.05	2.05
	Dry Density (g/cc):	1.78	1.79	1.78
	Moisture Content (%):	14.7	14.5	14.8
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	8.68	9.13	9.03
	Failure Strain, ε_f (%):	23.7	18.4	23.7
	Cohesion Intercept, c:	**3.80**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**5.4**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : Slab E G+14

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 80	Certificate No.T-1741

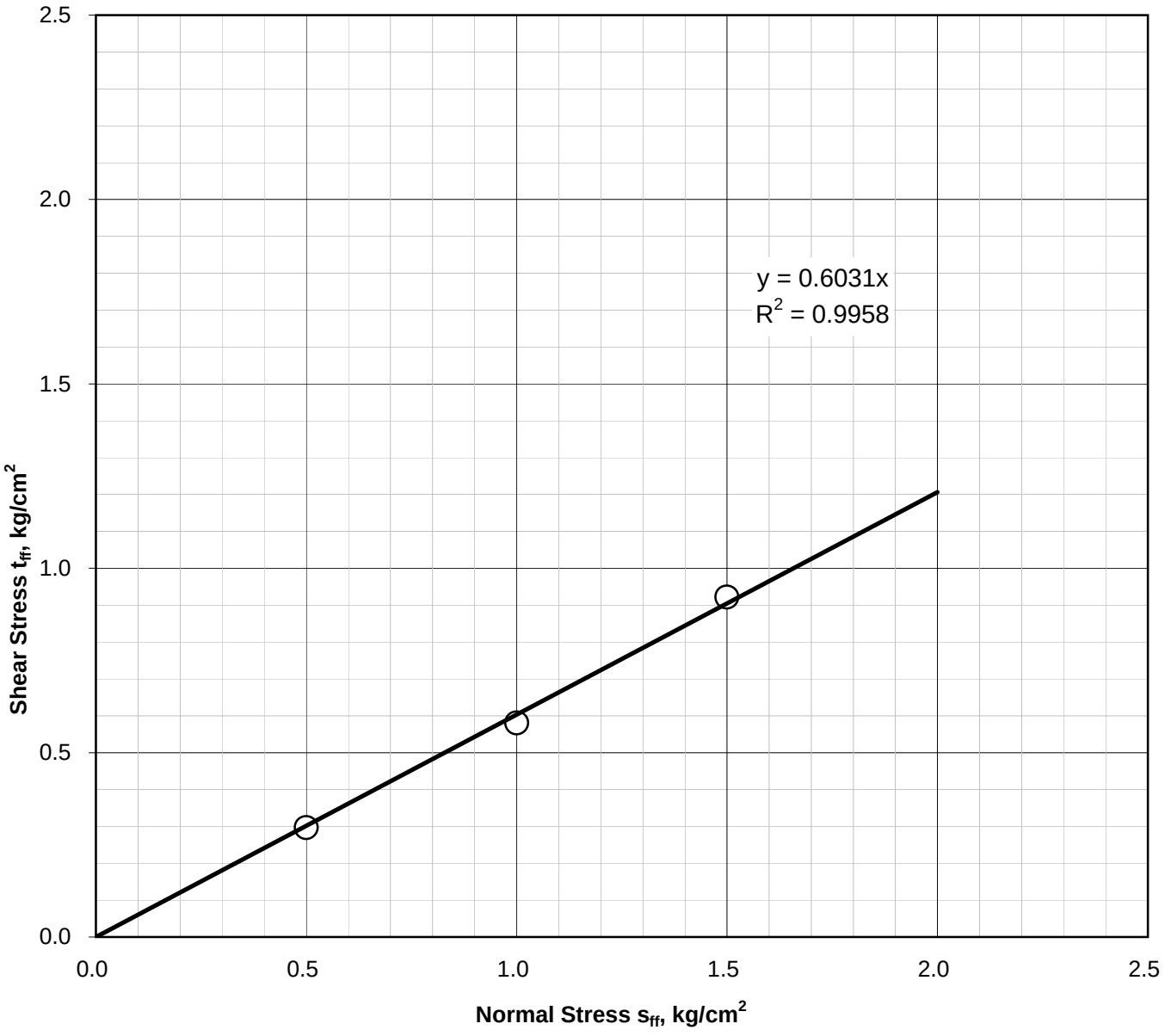
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 13	**Sample Depth: 2.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS1
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.60
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.1



Coulomb Failure Envelope

Structure: G+33+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 81	Certificate No.T-1741

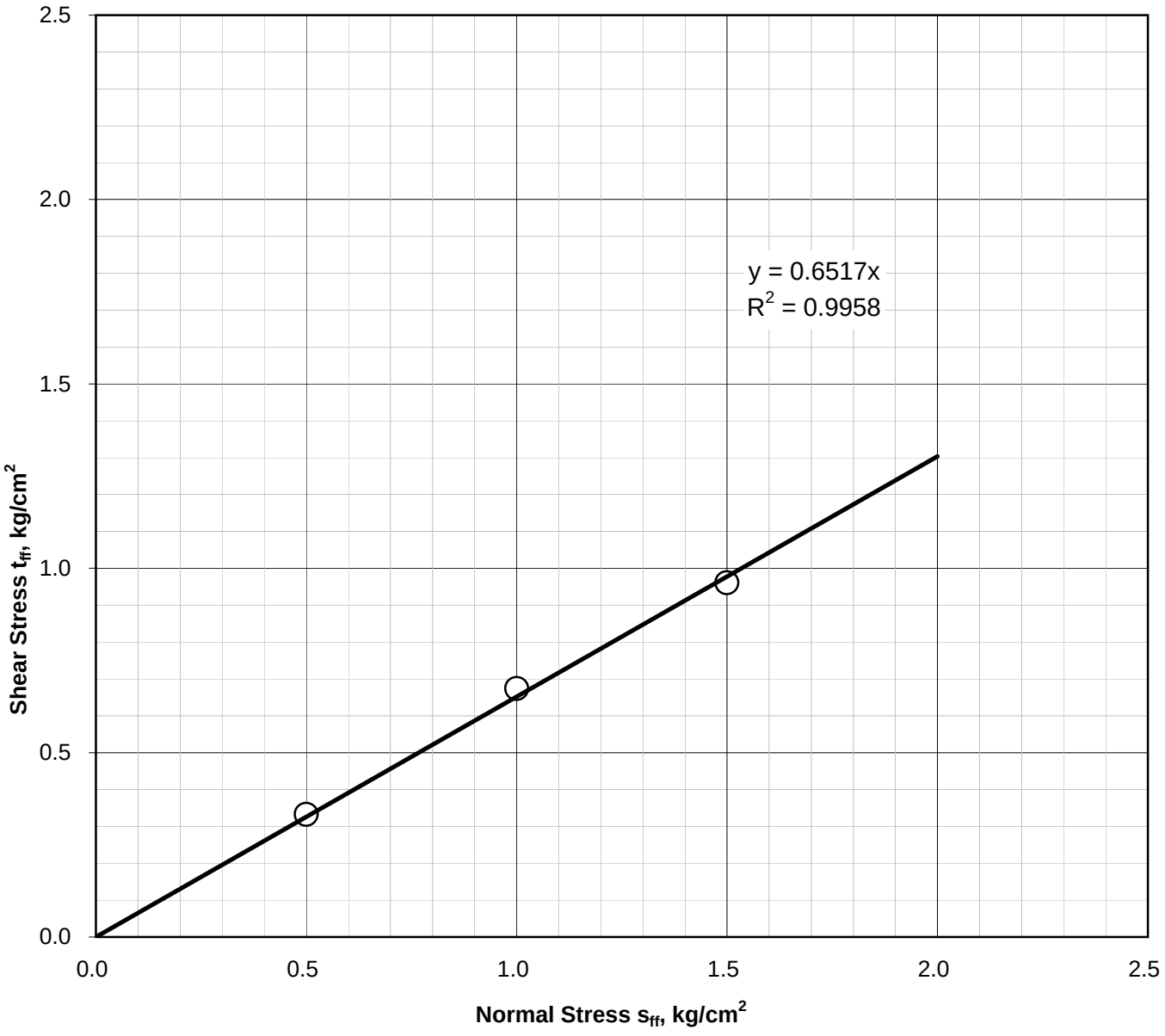
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 13	Sample Depth: 11.25 m	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS4
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.65
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	33.1



Coulomb Failure Envelope

Structure : G+33+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

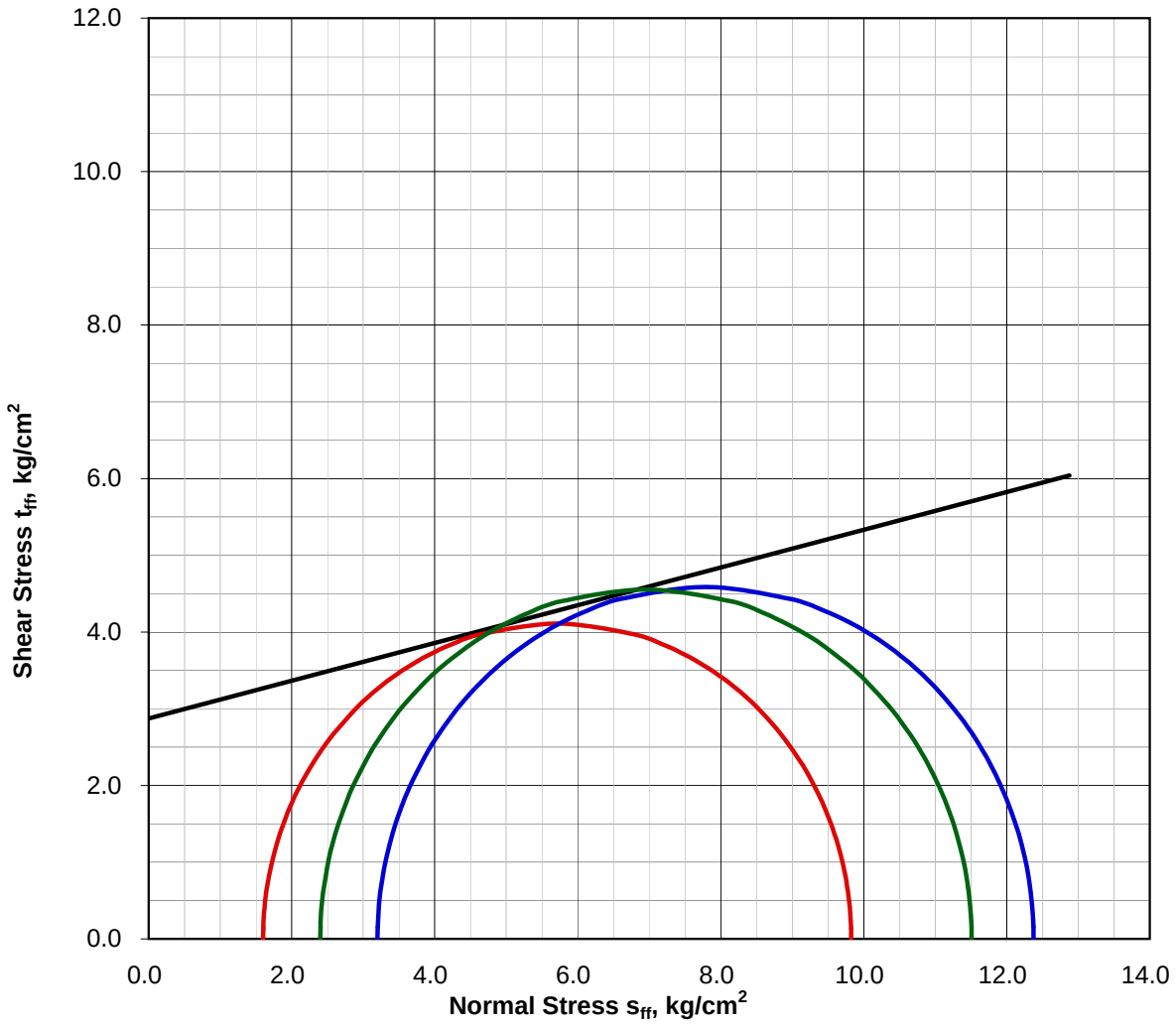
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 82	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 13	**Sample Depth: 17.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.6	2.4	3.2
	Sample No.:	UDS6	UDS6	UDS6
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.91	1.90	1.90
	Dry Density (g/cc):	1.71	1.70	1.70
	Moisture Content (%):	11.6	11.7	11.7
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	8.22	9.11	9.18
	Failure Strain, ε_f (%):	21.1	18.4	14.5
	Cohesion Intercept, c:	**2.90**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**13.8**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+33+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 83	Certificate No.T-1741

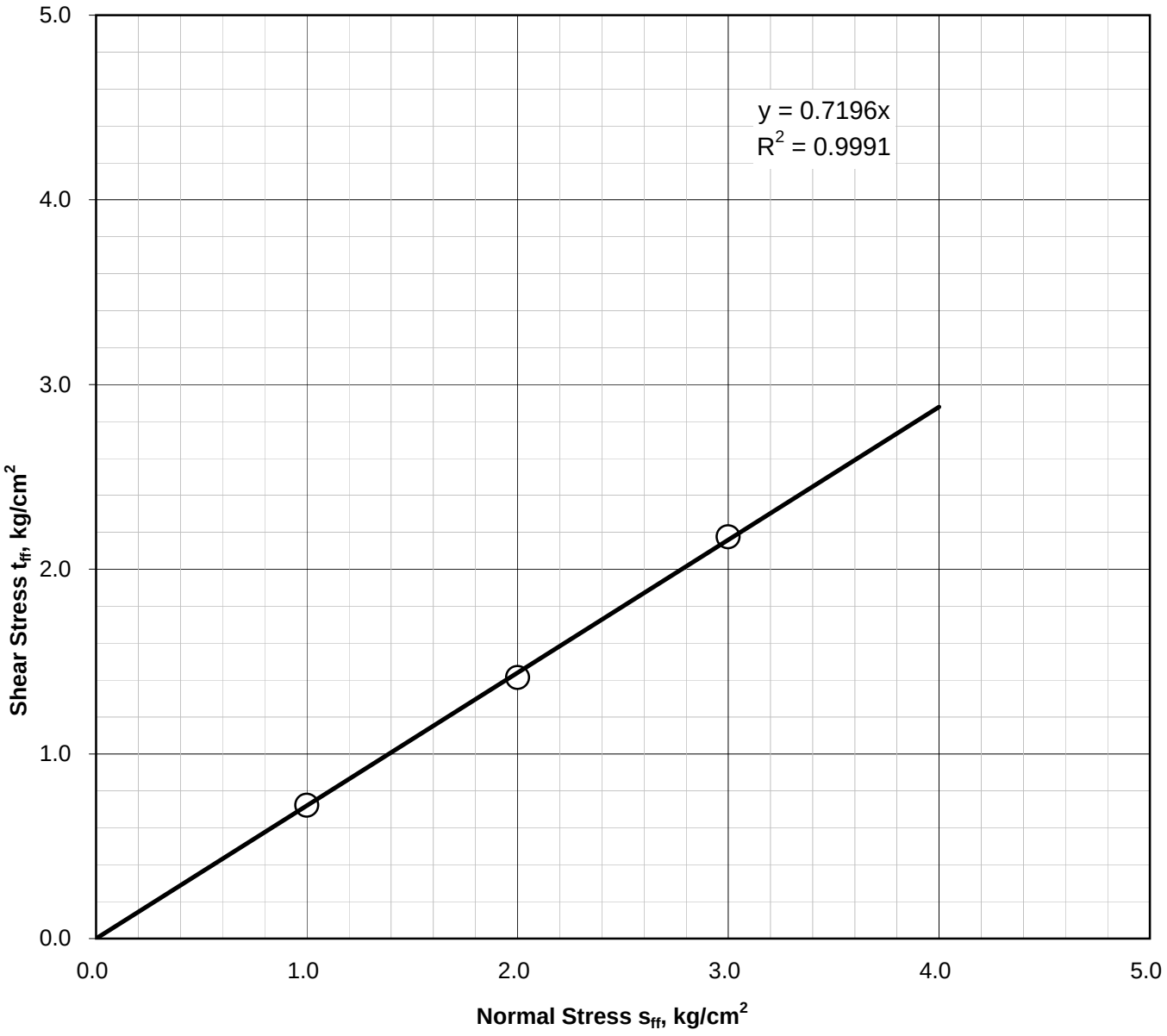
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 13	**Sample Depth: 23.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS9
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.72
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	35.7



Coulomb Failure Envelope

Structure: G+33+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 84	Certificate No.T-1741

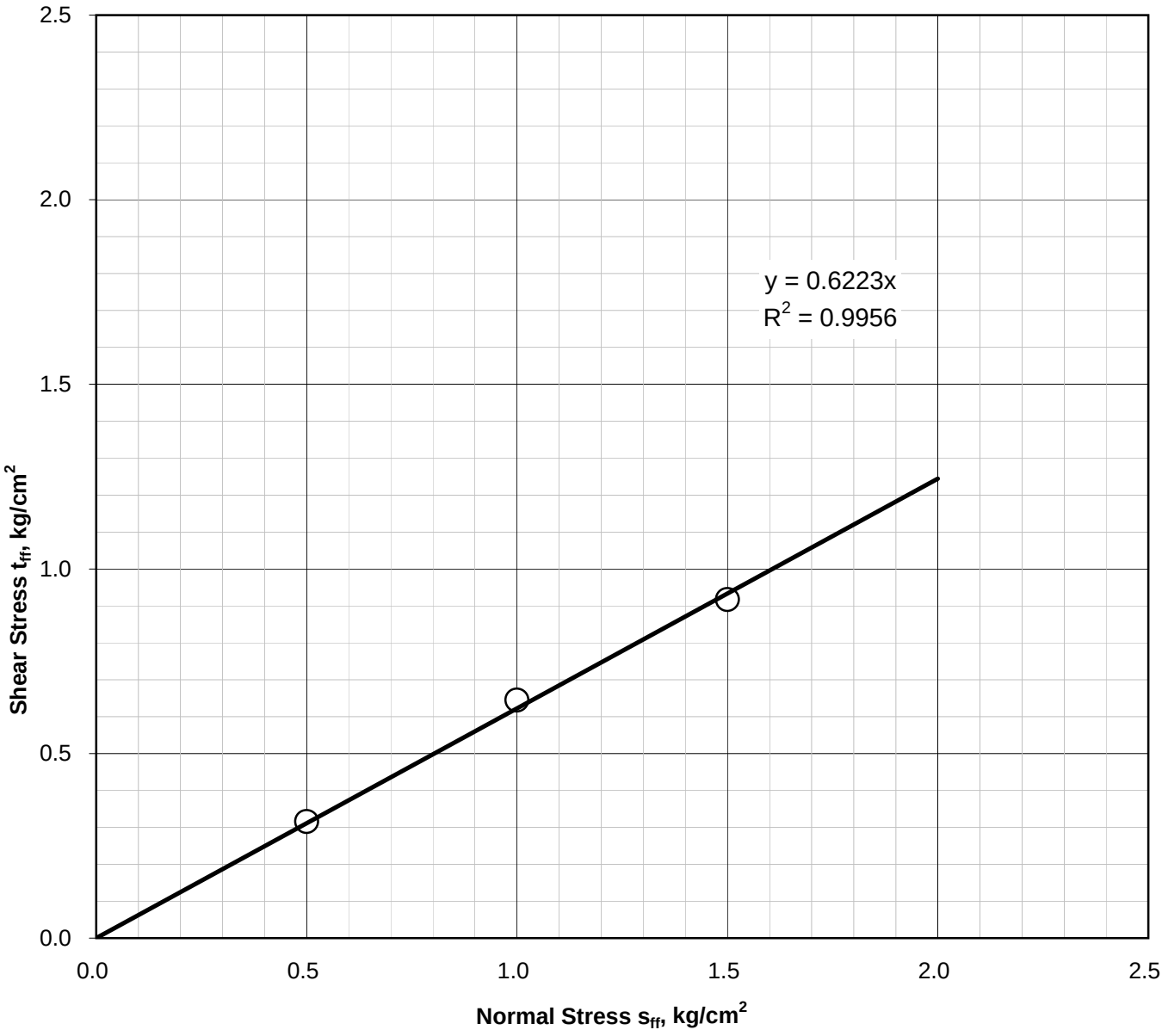
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 14	**Sample Depth: 5.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS2
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.63
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	31.9



Coulomb Failure Envelope

Structure : G+33+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 85	Certificate No.T-1741

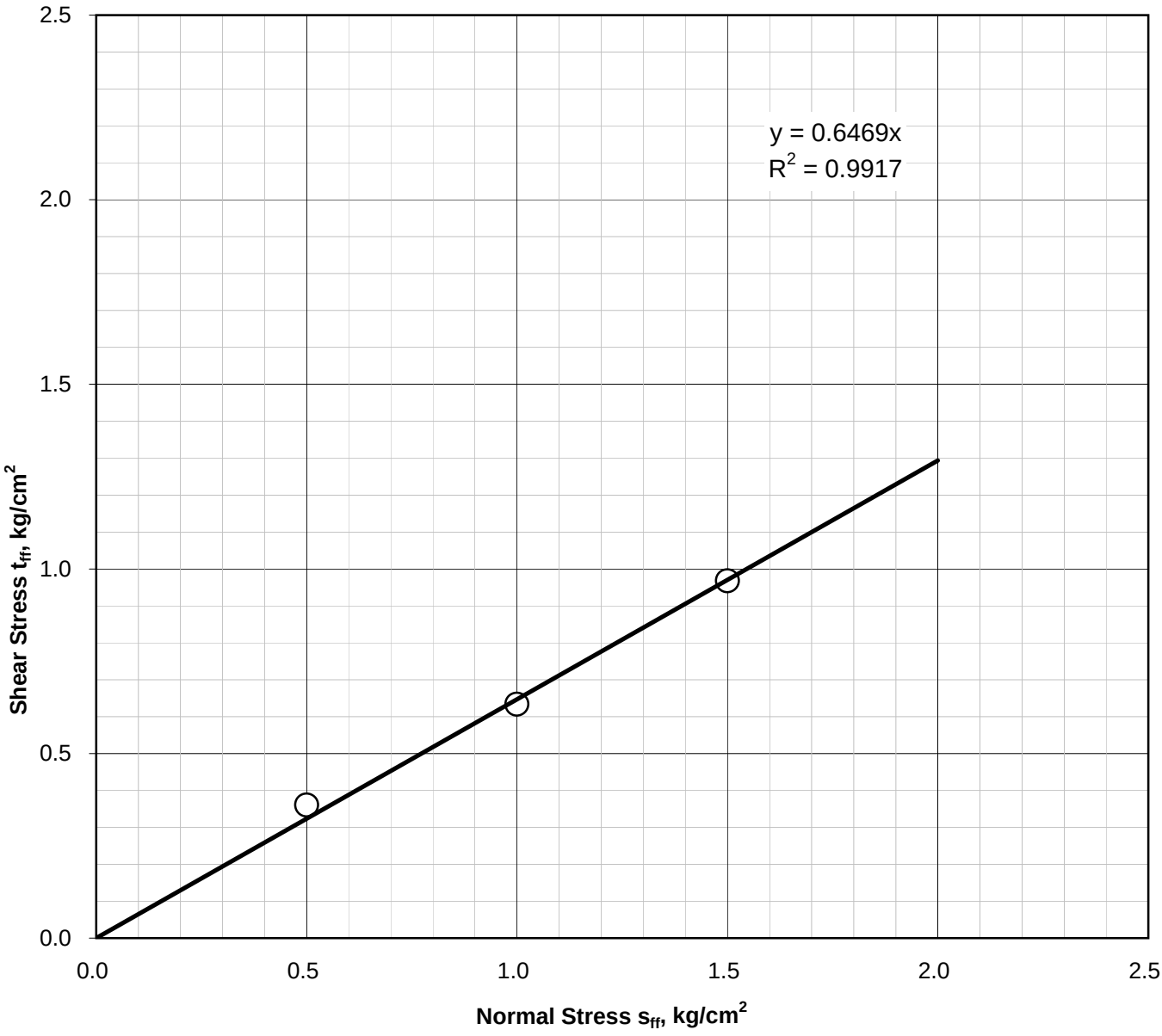
Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 14	**Sample Depth: 11.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS	
Sample No.:	UDS4
Type of Sample:	Remoulded
Dry Density of Soil (g/cm^3):	1.64
Moisture Content (%):	Saturated

TEST RESULTS	
Cohesion Intercept, c (kg/cm^2):	0.00
Angle of Internal Friction, ϕ (degrees):	32.9



Coulomb Failure Envelope

Structure : G+33+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

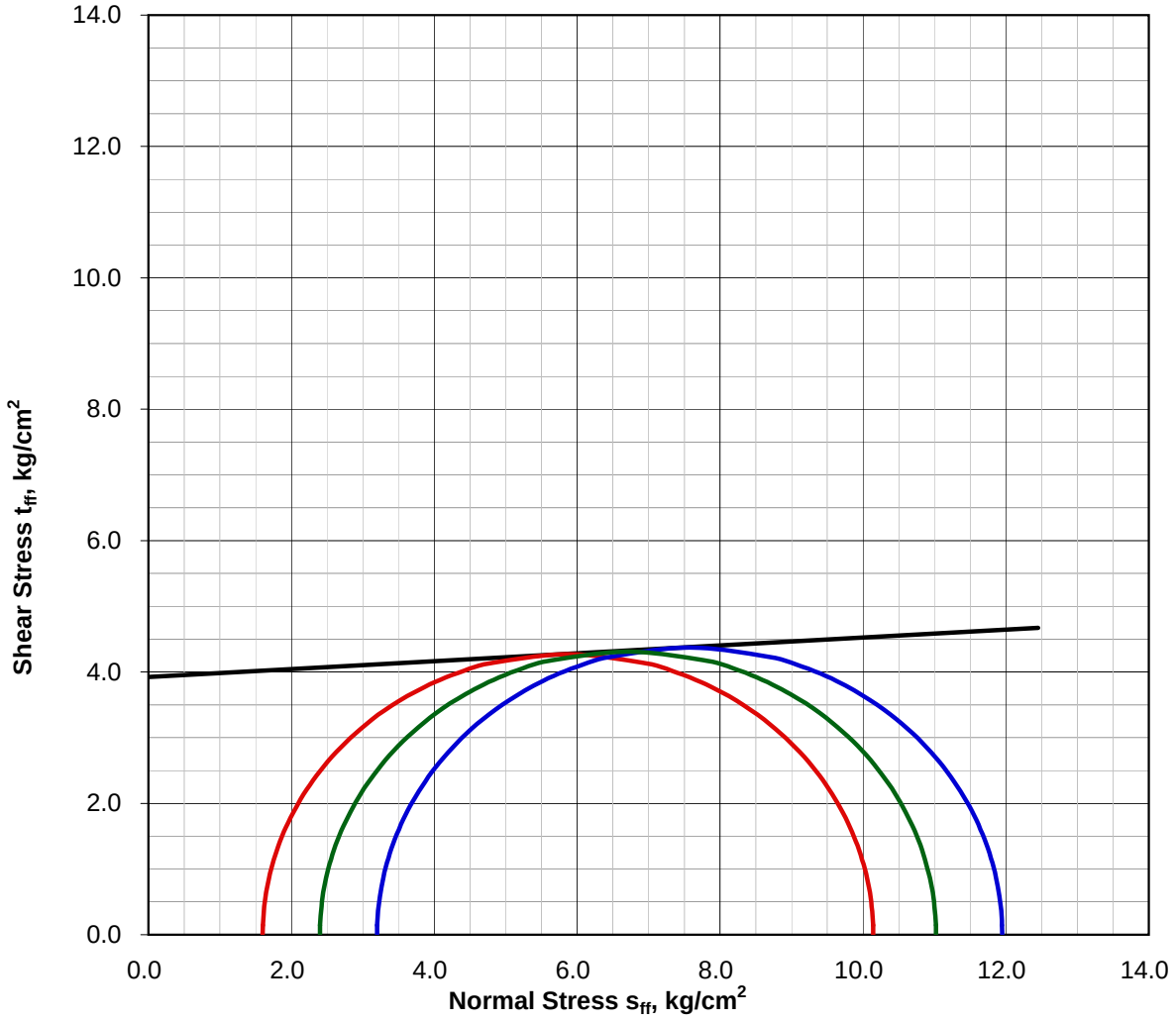
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 86	Certificate No.T-1741

Unconsolidated Undrained Triaxial Test on a Remoulded Soil Sample

(IS : 2720 (Part-11)-1993, RA-2007)

BH No.: 14	**Sample Depth: 17.25 m**	*Sample Description: Sandy silt*

SAMPLE DETAILS	Confining Pressure, σ_0 (kg/cm^2):	1.6	2.4	3.2
	Sample No.:	UDS5	UDS5	UDS5
	Sample Type:	Remoulded	Remoulded	Remoulded
	Initial diameter (cm):	3.8	3.8	3.8
	Initial Length (cm):	7.6	7.6	7.6
	Bulk Density (g/cc):	1.92	1.92	1.92
	Dry Density (g/cc):	1.71	1.71	1.70
	Moisture Content (%):	12.6	12.6	12.7
TEST RESULTS	Peak Deviator Stress, $(\sigma_3-\sigma_1)_f$ (kg/cm^2):	8.54	8.62	8.75
	Failure Strain, ε_f (%):	23.7	23.7	23.7
	Cohesion Intercept, c:	**3.90**	**kg/cm^2**	
	Angle of Internal Friction, ϕ:	**3.5**	**degrees**	



Mohr-Coulomb Failure Envelope

Structure : G+33+P

Shear Test Results

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

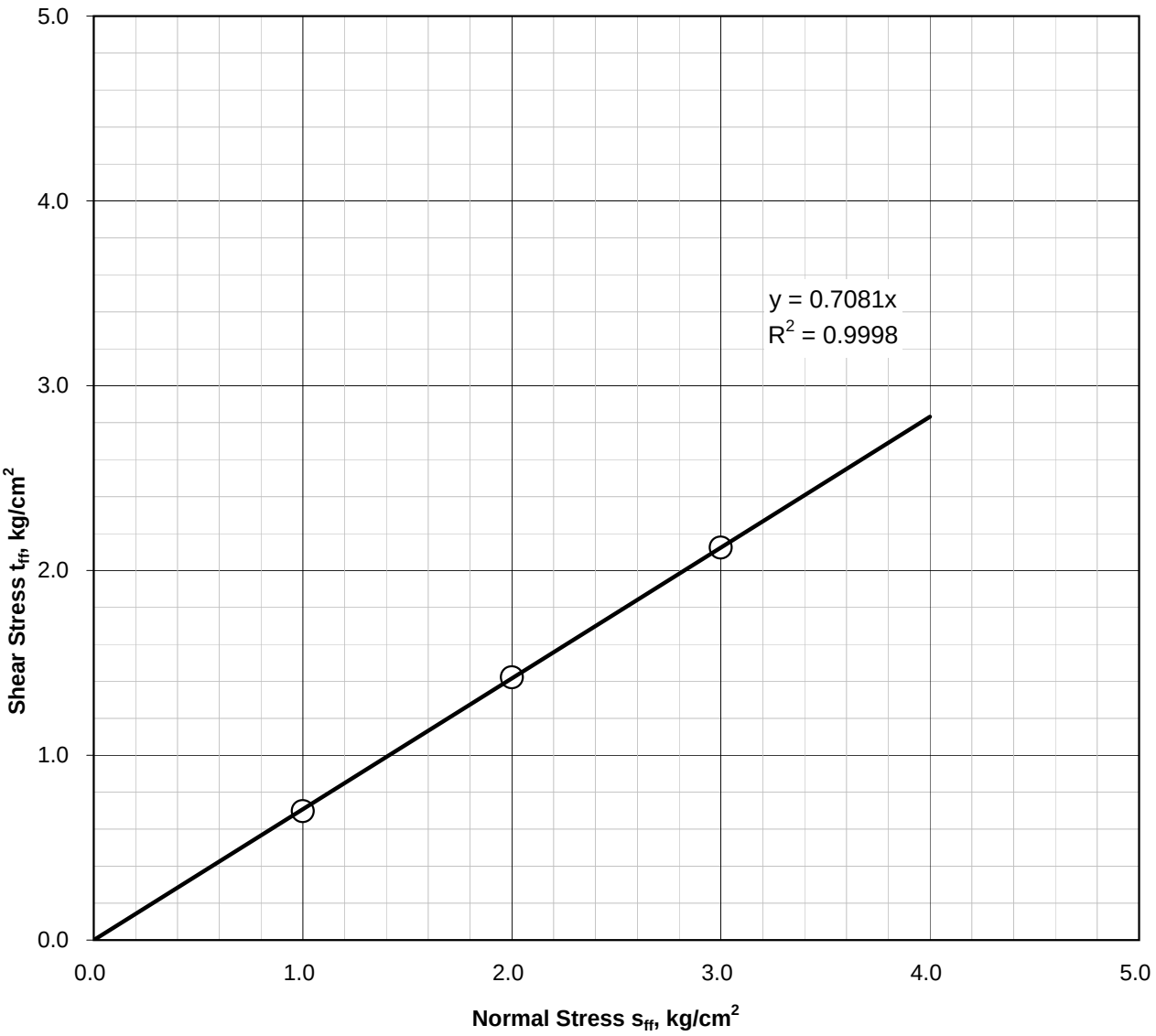
	LABORATORY: CENGRS GEOTECHNICA PVT. LTD. An ISO /IEC: 17025-2005 accredited Laboratory	Job No.: 214077	Fig No.: 87	Certificate No.T-1741

Drained Direct Shear Test on Soil

(IS : 2720 (Part-13)-1986, RA-2010)

BH No.: 14	**Sample Depth: 23.25 m**	*Sample Description: Silty fine sand*

SAMPLE DETAILS		TEST RESULTS	
Sample No.:	UDS8	Cohesion Intercept, c (kg/cm^2):	0.00
Type of Sample:	Remoulded	Angle of Internal Friction, ϕ (degrees):	35.3
Dry Density of Soil (g/cm^3):	1.73		
Moisture Content (%):	Saturated		



Coulomb Failure Envelope

Structure : G+33+P

Shear Test Result

Proposed Tranquil Heights Project (HSG020) Site at Sector-82A, Vatika India Next, Gurgaon, Haryana

TYPICAL CALCULATIONS

RAFT FOUNDATION

CENGRS GEOTECHNICA PVT. LTD

NEW DELHI

BEARING CAPACITY ANALYSIS FOR SHALLOW FOUNDATIONS

Analysis as per IS 6403-1981

Project : **Proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana**
Foundation Level=227.7 m

The bearing capacity equation is as follows :

$$q_{net\ safe} = (1/FS)\{cNc\zeta_c d_c + q(N_q-1)\zeta_q d_q + 0.5B\gamma N_\gamma \zeta_\gamma d_\gamma R_w\}$$

where:

$q_{net\ safe}$ = safe net bearing capacity
c = cohesion intercept
q = overburden pressure
B = Foundation width
γ = Bulk density of soil below founding level
R_w = Water table correction factor
FS = Factor of safety
N_c, N_q, N_γ = bearing capacity factors, which are a function of ϕ
d_c, d_q, d_γ = Depth factors
ζ_c, ζ_q, ζ_γ = Shape factors

Soil parameters :

c = 0.00 T/m^2 ϕ = 30.0 degrees GENERAL SHEAR FAILURE
c' = 0.00 T/m^2 ϕ' = 21.1 degrees LOCAL SHEAR FAILURE

General Shear Failure : N_c = 30.14 N_q = 18.40 N_γ = 22.40
Local Shear Failure : N_c' = 15.87 N_q' = 7.11 N_γ' = 6.24

Bulk Density Profile

Depth, m From	Depth, m To	γ T/m^3
0.0	7.0	Ignore
7.0	11.0	1.85
11.0	18.5	1.95
18.5	25.0	2.00
25.0	40.0	2.05

Factor of safety = 2.5 as per IS 1904-1986

Design Water Table depth = NOT MET
R_w factor: Constant value(**V**) for worst condition or calculate(**C**) based on WT Depth ? : V Rw = 0.60
Depth factor to be considered ? Y
For computation of Depth Factor, depth below GL to be ignored to account for loose soils,poorly compacted backfill above foundation, scour etc. = 7.0 m
FAILURE CRITERIA : **GENERAL SHEAR FAILURE**

Foundation Dimensions B, m	Foundation Dimensions L, m	FOUN-DATION SHAPE	Depth,m	R_w	Shape Factors ζ_c	Shape Factors ζ_q	Shape Factors ζ_γ	Depth factors (GSF) d_c	Depth factors (GSF) d_q	Depth factors (GSF) d_γ	Depth factors (LSF) d_c'	Depth factors (LSF) $d_{q'}$	Depth factors (LSF) d_γ'	$q_{net\ safe}$, T/m^2 GSF	$q_{net\ safe}$, T/m^2 LSF	Safe Net Bearing Capacity T/m^2	Gross Bearing Capacity (Safe) T/m^2
10.0	**10.0**	*Square*	**8.0**	0.60	1.30	1.20	0.80	1.04	1.02	1.02				57.7		**57.7**	59.6

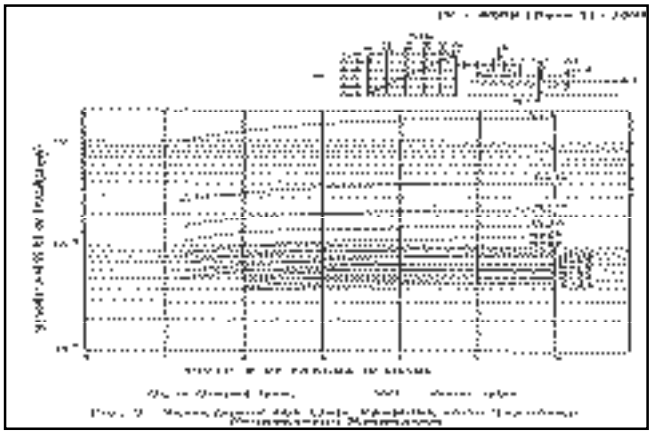
CENGRS GEOTECHNICA PVT. LTD

NEW DELHI

SETTLEMEMT ANALYSIS FOR SHALLOW FOUNDATIONS BASED ON N - VALUES

Analysis as per IS:8009(Part 1)-1976 , Clause 9.1.4

Project : **Proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana**
Foundation Level=227.7 m



Design Water Table Depth : NOT MET

R_w *factor* : Calculate (**C**) based on water table depth or Fixed Value(**V**) for worst condition : V Rw factor for design : 0.6

Fox's Depth Factor to be considered ? Y

Depth to be ignored in Depth Factor Computation for loose soils, poorly compacted backfill, scour, etc. 7.0 m

Foundation Width,m	Foundation Length,m	Foundation Depth,m	Shape	Design N-Value	Design Net Bearing Pressure, T/m^2	Settlement @ $1kg/cm^2$ (as read off from graph), mm	R_w	Fox's Depth Factor, d_f	Rigidity Factor, d_r	Computed Settlement, mm
6.0	6.0	8.0	Square	28.0	**37.0**	10.5	0.60	0.96	0.8	49.6

CENGRS GEOTECHNICA PVT. LTD
NEW DELHI

SETTLEMENT ANALYSIS FOR SHALLOW FOUNDATIONS

ELASTIC SETTLEMENT COMPUTED FROM THEORY OF ELASTICITY

Analysis as per IS : 8009 Part 1 - 1976, Clause 9.2

Project : **Proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana**
Foundation Level=227.7 m

Total settlement computed as equal to elastic/immediate settlement.
No consolidation settlement - analysis valid for granular soils,weathered rocks, hard clays & cohesive soils above water table

ELASTIC / IMMEDIATE SETTLEMENT

$$S_i = \frac{q\ B'\ (1 - \mu^2)\ I}{E}\ d_f\ d_r$$

Reference : *Foundation Analysis & Design by J.E.Bowles* fifth edition (1996)

where B = Foundation width $B' = B/2$ $L' = L/2$ μ = Poisson's Ratio

q = Applied Bearing Pressure E = Modulus of Elasticity

d_f = Fox's Depth factor d_r = Rigidity factor

I = Influence factor at corner of rectangular loaded area(B' x L'), computed from theory of elasticity using Steinbrenner's factors

Settlement at centre of footing of size B x L = 4 x Settlement at corner of area B' x L'

Poisson's Ratio : 0.33

Is Rigid Layer met ? N

Layer No.	Depth,m		Soil Classification	Modulus of Elasticity,T/m^2
	From	To		
1	0.0	5.0	Silty Sand	750
2	5.0	9.0	Sandy silt	1500
3	9.0	11.0	Silty Sand	2000
4	11.0	18.0	Silty Sand	3000
5	18.0	35.0	Silty Sand	4000
6	35.0	45.0	Silty Sand	5500

Fox's Depth Factor to be considered ? Y

Depth to be ignored in Depth Factor Computation for loose soils, poorly compacted backfill, scour etc. = 7.0 m

Foundation Width (B), m	Foundation Length (L), m	Embedment Depth (D), m	Applied Bearing Press. T/m^2	Rigidity Factor, d_r	Fox's Depth Factor	M = L'/B'	N = H/B'	Influence Factor I	**E**(weighted ave.) **T/m^2**	**Elastic Settlement mm**
6.0	6.0	8.0	**37.0**	0.80	0.96	1.00	10.00	0.506	3700	**41.6**

OPEN FOUNDATION

CENGRS GEOTECHNICA PVT. LTD

NEW DELHI

BEARING CAPACITY ANALYSIS FOR SHALLOW FOUNDATIONS

Analysis as per IS 6403-1981

Project : **Proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana**
Foundation Level=227.7 m

The bearing capacity equation is as follows :

$$q_{net\ safe} = (1/FS)\{cNc\zeta_c d_c + q(N_q-1)\zeta_q d_q + 0.5B\gamma N_\gamma \zeta_\gamma d_\gamma R_w\}$$

where:

$q_{net\ safe}$ = safe net bearing capacity
c = cohesion intercept
q = overburden pressure
B = Foundation width
γ = Bulk density of soil below founding level
R_w = Water table correction factor
FS = Factor of safety
N_c, N_q, N_γ = bearing capacity factors, which are a function of ϕ
d_c, d_q, d_γ = Depth factors
ζ_c, ζ_q, ζ_γ = Shape factors

Soil parameters :

c = 0.00 T/m² ϕ = 30.0 degrees GENERAL SHEAR FAILURE
c' = 0.00 T/m² ϕ' = 21.1 degrees LOCAL SHEAR FAILURE

General Shear Failure :	N_c =	30.14	N_q =	18.40	N_γ =	22.40
Local Shear Failure :	N_c' =	15.87	N_q' =	7.11	N_γ' =	6.24

Bulk Density Profile

Depth, m From	Depth, m To	γ T/m³
0.0	7.0	Ignore
7.0	11.0	1.85
11.0	18.5	1.95
18.5	25.0	2.00
25.0	40.0	2.05

Factor of safety = 2.5 as per IS 1904-1986

Design Water Table depth = NOT MET
R_w factor: Constant value(**V**) for worst condition or calculate(**C**) based on WT Depth ? : V Rw = 0.60
Depth factor to be considered ? Y
For computation of Depth Factor, depth below GL to be ignored to account for loose soils,poorly compacted backfill above foundation, scour etc. = 7.0 m
FAILURE CRITERIA : **GENERAL SHEAR FAILURE**

Foundation Dimensions B, m	Foundation Dimensions L, m	FOUN-DATION SHAPE	Depth,m	R_w	Shape Factors ζ_c	Shape Factors ζ_q	Shape Factors ζ_γ	Depth factors (GSF) d_c	Depth factors (GSF) d_q	Depth factors (GSF) d_γ	Depth factors (LSF) d_c'	Depth factors (LSF) $d_{q'}$	Depth factors (LSF) d_γ'	$q_{net\ safe}$, T/m² GSF	$q_{net\ safe}$, T/m² LSF	Safe Net Bearing Capacity T/m²	Gross Bearing Capacity (Safe) T/m²
3.0	**3.0**	*Square*	**8.0**	0.60	1.30	1.20	0.80	1.12	1.06	1.06				29.0		**29.0**	30.8
3.0	**3.0**	*Square*	**8.5**	0.60	1.30	1.20	0.80	1.17	1.09	1.09				38.3		**38.3**	41.1
4.0	**4.0**	*Square*	**8.0**	0.60	1.30	1.20	0.80	1.09	1.04	1.04				32.9		**32.9**	34.8
4.0	**4.0**	*Square*	**8.5**	0.60	1.30	1.20	0.80	1.13	1.07	1.07				42.0		**42.0**	44.8
5.0	**5.0**	*Square*	**8.0**	0.60	1.30	1.20	0.80	1.07	1.04	1.04				37.0		**37.0**	38.9
5.0	**5.0**	*Square*	**8.5**	0.60	1.30	1.20	0.80	1.10	1.05	1.05				45.9		**45.9**	48.7

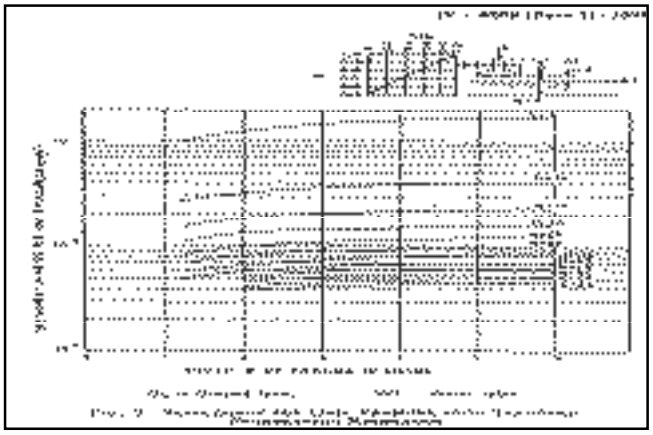
CENGRS GEOTECHNICA PVT. LTD

NEW DELHI

SETTLEMEMT ANALYSIS FOR SHALLOW FOUNDATIONS BASED ON N - VALUES

Analysis as per IS:8009(Part 1)-1976 , Clause 9.1.4

Project : **Proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana**
Foundation Level=227.7 m



Design Water Table Depth : NOT MET

R_w factor : Calculate (**C**) based on water table depth or Fixed Value(**V**) for worst condition : V Rw factor for design : 0.6

Fox's Depth Factor to be considered ? Y

Depth to be ignored in Depth Factor Computation for loose soils, poorly compacted backfill, scour, etc. 7.0 m

Foundation Width,m	Foundation Length,m	Foundation Depth,m	Shape	Design N-Value	Design Net Bearing Pressure, T/m^2	Settlement @ $1kg/cm^2$ (as read off from graph), mm	R_w	Fox's Depth Factor, d_f	Rigidity Factor, d_r	Computed Settlement, mm
3.0	3.0	8.0	Square	20.0	**23.0**	14.0	0.60	0.91	1.0	49.0
4.0	4.0	8.0	Square	20.0	**21.7**	14.7	0.60	0.94	1.0	50.0
5.0	5.0	8.0	Square	20.0	**20.5**	15.1	0.60	0.95	1.0	49.1
6.0	6.0	8.0	Square	20.0	**20.0**	15.4	0.60	0.96	1.0	49.3

CENGRS GEOTECHNICA PVT. LTD
NEW DELHI

SETTLEMENT ANALYSIS FOR SHALLOW FOUNDATIONS

ELASTIC SETTLEMENT COMPUTED FROM THEORY OF ELASTICITY

Analysis as per IS : 8009 Part 1 - 1976, Clause 9.2

Project : **Proposed Tranquil Heights Project (HSG020) at Sector-82A, Vatika India Next, Gurgaon, Haryana**
Foundation Level=227.7 m

Total settlement computed as equal to elastic/immediate settlement.
No consolidation settlement - analysis valid for granular soils,weathered rocks, hard clays & cohesive soils above water table

ELASTIC / IMMEDIATE SETTLEMENT

$$S_i = \frac{q\ B'\ (1 - \mu^2)\ I}{E}\ d_f\ d_r$$

Reference : *Foundation Analysis & Design by J.E.Bowles* fifth edition (1996)

where B = Foundation width $B' = B/2$ $L' = L/2$ μ = Poisson's Ratio
q = Applied Bearing Pressure E = Modulus of Elasticity
d_f = Fox's Depth factor d_r = Rigidity factor
I = Influence factor at corner of rectangular loaded area(B' x L'), computed from theory of elasticity using Steinbrenner's factors

Settlement at centre of footing of size B x L = 4 x Settlement at corner of area B' x L'

Poisson's Ratio : 0.33

Is Rigid Layer met ? N

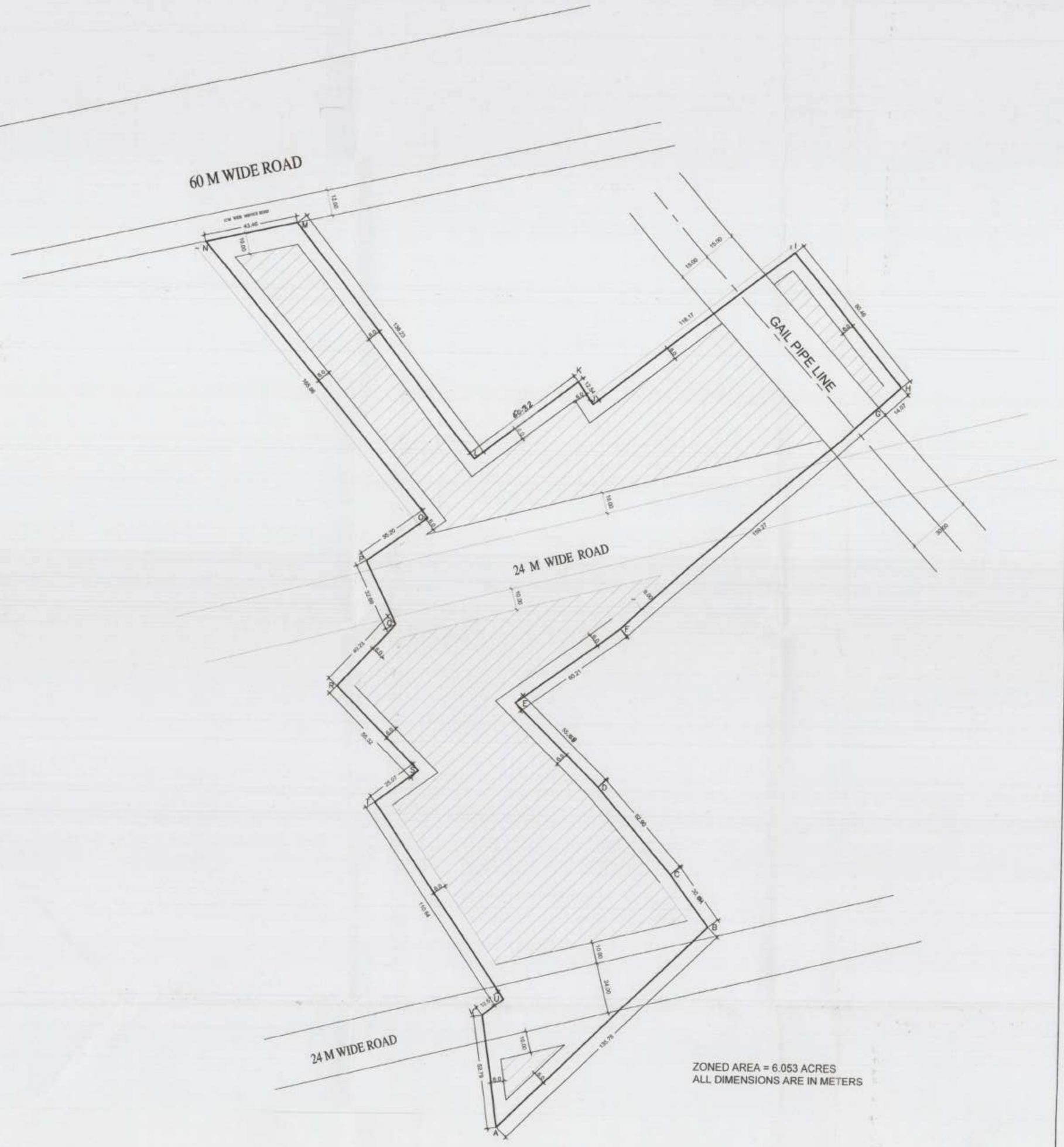
Layer No.	Depth,m		Soil Classification	Modulus of Elasticity,T/m^2
	From	To		
1	0.0	5.0	Silty Sand	750
2	5.0	11.0	Silty Sand	1500
3	11.0	18.5	Silty Sand	2000
4	18.5	25.0	Silty Sand	3000
5	25.0	35.0	Silty Sand	4000
6	35.0	40.0	Silty Sand	5500

Fox's Depth Factor to be considered ? Y

Depth to be ignored in Depth Factor Computation for loose soils, poorly compacted backfill, scour etc. = 7.0 m

Foundation Width (B), m	Foundation Length (L), m	Embedment Depth (D), m	Applied Bearing Press. T/m^2	Rigidity Factor, d_r	Fox's Depth Factor	M = L'/B'	N = H/B'	Influence Factor I	**E**(weighted ave.) **T/m^2**	**Elastic Settlement mm**
3.0	3.0	8.0	**23.0**	1.00	0.91	1.00	10.00	0.506	2200	**25.6**
4.0	4.0	8.0	**21.7**	1.00	0.94	1.00	10.00	0.506	2550	**28.7**
5.0	5.0	8.0	**20.5**	1.00	0.95	1.00	10.00	0.506	2840	**31.0**

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ZONING PLAN OF THE GROUP HOUSING COLONY MEASURING 11.218 ACRES (LICENCE NO. 22 OF 2011 DATED 24.03.2011) IN SECTOR-82A, GURGAON MANESAR URBAN COMPLEX BEING DEVELOPED BY STANWAY DEVELOPERS PVT. LTD. AND OTHERS IN COLLABORATION WITH VATIKA LTD.

FOR THE PURPOSE OF RULE 38(xiii) AND 48 (2) OF THE PUNJAB SCHEDULED ROADS AND CONTROLLED AREAS RESTRICTION OF UNREGULATED DEVELOPMENT RULES,1965.

1. SHAPE & SIZE OF SITE

The shape and size of the Group Housing Colony is in accordance with the demarcation plan shown as A to V as verified by DTP, Gurgaon vide endst. no. 3735 Dated 17.08.201.

2. TYPE OF BUILDING PERMITTED

The type of building permitted on this site shall be buildings designated in the form of flatted development for residential purpose or any ancillary or appurtenant building including community facilities, public amenities and public utility as may be prescribed and approved by the Director General, Town and Country Planning, Haryana.

3. GROUND COVERAGE AND FAR

a. Building shall only be permitted with in the portion of the site marked as ▨ build able zone and no where else.
b. The maximum coverage on ground floor shall be 35% and that on subsequent floors shall be 30% on the area of 11.218 acres.
c. The maximum FAR shall not exceed 175 on the area of 11.218 acres. However, it shall not include community buildings, which shall be as per the prescribed norms, the building plan of which shall have to be got approved from the Director General, Town and Country Planning, Haryana.

4. HEIGHT OF BUILDING

The height of the building block, subject to the provisions of the site coverage and FAR, shall be governed by the following:-

a. The maximum height of the buildings shall not be more than as allowed by National Airport Authority of India and shall not exceed 1.5 times (the width of the road abutting) plus the front open space.
b. If a building abuts on two or more streets of different widths, the buildings shall be deemed to face upon the street that has the greater width and the height of the buildings shall be regulated by the width of that street and may be continued to this height to a depth of 24M, along the narrow street.
c. Building/Structures which rise to 30 meters or more in height shall be constructed only if no objection certificate has been obtained from the National Airport Authority of India.
d. All building block(s) shall be constructed so as to maintain an interse distance not less the set back required for each building according to the table below:-

S.No.	HEIGHT OF BUILDING (in meters)	SET BACK / OPEN SPACE TO BE LEFT AROUND BUILDINGS.(in meters)
1.	10	3
2.	15	5
3.	18	6
4.	21	7
5.	24	8
6.	27	9
7.	30	10
8.	35	11
9.	40	12
10.	45	13
11.	50	14
12.	55 & above	16

e. If such interior or exterior open space is intended to be used for the benefit of more than one building belonging to the same owner, then the width of such open air space shall be the one specified for the tallest building as specified above.

5. SUB-DIVISION OF SITE

a. The site of the Group Housing Colony shall be governed by the Haryana Apartment Ownership Act-1983 and Rules framed thereunder.
b. The site shall not be further sub divided or fragmented in any manner whatsoever.

6. GATE POST AND BOUNDARY WALL

Such Boundary wall, railings or their combination, hedges or fences along with gates and gate posts shall be constructed as per design approved by DG,TCP, Haryana. In addition to the gate/gates an additional wicket gate not exceeding 1.25 meters width may be allowed in the front and side boundary wall provided that no main gate shall be allowed to open on the sector road/public open space.

7. DENSITY

a. The minimum density of the population provided in the colony shall be 100 PPA and the maximum be 300 PPA on the area of 11.218 acres.
b. For computing the density, the occupancy per main dwelling unit shall be taken as five persons and for service dwelling unit two persons per room or one person per 80 sq. feet of living area, whichever is more.

8. ACCOMMODATION FOR SERVICE POPULATION

Adequate accommodation shall be provided for domestic servants and other service population of EWS.The number of such dwelling units for domestic servants shall not be less then 10% of the number of main dwelling units and the carpet area of such a unit if attached to the main units shall not be less than 140 sq.ft. In addition 15% of the total number of dwelling units having a minimum area of 200 sq.ft shall be earmarked for E.W.S category.

9. PARKING

a. Parking space shall be provided @ 1.5 Equivalent Car Space for each dwelling unit. These parking spaces shall be allotted only to the flat holders and shall not be allotted, leased, sold or transferred in any manner to the third party. The area for parking per car shall be as under:-
   i) Basement. 35 sqm.
   ii) Stilts. 30 sqm.
   iii) Open. 25 sqm.
b. At least 75% of the equivalent car spaces shall be provided in the form of covered parking. Further minimum 5% of the total parking will be made available to the EWS category flats.
c. The covered parking in the basement or in the form of multi level parking above ground level shall not be counted towards FAR. However, in case of multi level parking above the ground level the foot print of separate parking building block shall be counted towards ground coverage. In case of provision of mechanical parking in the basement floor/upper stories, the floor to ceiling height of the basement / upper floor may be maximum of 4.5 meter. Other than the mechanical parking the floor to ceiling height in upper floor shall not be more than 2.4 mtr. below the hanging beam.

10. LIFTS AND RAMPS

i. In building having more than four storeys, lift with 100% standby generators alongwith automatic switchover is mandatory alongwith staircase of requisite width and number. At least one lift with minimum size of 1.80 M X 3.00 M shall be provided.
ii. In building upto four storeys, if lifts with 100% standby generators along with automatic switchover are not provided then ramps conforming to the requirement of clause D-3 of Annexure-D of Part 3 of National building Code-2005 shall be provided.

11. OPEN SPACES

While all the open spaces including those between the blocks and wings of buildings shall be developed, equipped and landscaped according to the plan approved by the DG,TCP, Haryana. At least 15% of the total site area shall be developed as organized open space i.e tot lots and play ground.

12. APPROVAL OF BUILDING PLANS

The building plans of the buildings to be constructed at site shall have to be got approved from the DG,TCP, Haryana under section 8(2) of the Punjab Scheduled Roads and Controlled Areas, Restriction of Unregulated Development Act No.41 of 1963, before starting the construction.

13. BUILDING BYE-LAWS

The construction of the building/buildings shall be governed by the building rules provided in part VII of the Punjab Scheduled Roads and Controlled Areas, Restriction of Unregulated Development Rules, 1965 and Indian Standard Code No. 4963- 1987 regarding provisions for Physically Handicapped Persons. The owner shall also follow the provisions of Section 46 of The Persons With Disabilities (Equal Opportunities, Protection of Rights and Full Participation) Act, 1995 which includes construction of ramps in public buildings, adaption of toilets for wheel chair user, Braille symbols and auditory signals in elevators or lifts and other relevant measures. On the points where such rules are silent and stipulate no condition or norm, the model building byelaw issued by the Indian Standard, and as given in the National Building Code of India shall be followed as may be approved by DG,TCP, Haryana.

14. CONVENIENT SHOPPING

0.5% of the area of 11.218 acres area shall be reserved to cater for essential convenient shopping with the following conditions.

a. The ground coverage of 100% with FAR of 100 will be permissible. However this will be a part of the permissible ground coverage and FAR of the Group Housing Colony.
b. The size of Kiosk/Shops shall not be more than 2.75 meter x 2.75 meter and 2.75 meter x 8.25 meter.
c. The height of Kiosk/Shops/Departmental Store shall not exceed 4.00 meter.

15. PROVISION OF COMMUNITY BUILDINGS

The community buildings shall be provided as per the composite norms in the Group Housing Colony.

16. BASEMENT

a. Four level basements within the building zone of the site, provided, it is flushes with the ground and is properly landscaped, may be allowed. The basement in addition to parking could be utilized for generator room, lift room, fire fighting pumps, water reservoir, electric sub-station, air-conditioning plants and toilets/ utilities; if they satisfy the public health requirements and for no other purposes. Area under stilts (only for parking) and basement shall not be counted towards FAR. Basement shall not be used for storage/commercial purposes but will be used only for Parking. It is further stipulated that no other partitions of basement will be permissible for uses other than specified above.
b. The clear width of the ramp leading to the basement shall be 4.00 meters with an adequate slope not steeper than 1:10. The entry and exit of the ramp in basement shall be separate preferably at opposite ends

17. APPROACH TO SITE

The vehicular approach to the site and parking lots shall be planned and provided giving due consideration to the junctions of and the junctions with the surrounding roads to the satisfaction of the DG,TCP, Haryana.

18. FIRE SAFETY MEASURES

a. The owner will ensure the provision of proper fire safety measures in the multi storey buildings conforming to the provisions of Punjab Scheduled Roads and Controlled Areas, Restriction of Unregulated Development Rules, 1965/ National Building Code of India and the same should be got certified from the competent authority.
b. Electric Sub Station / generator room if provided should be on solid ground near DG/LT. Control panel on ground floor or in upper basement and it should be located on outer periphery of the building, the same should be got approved from the competent authority.
c. To ensure the Fire Fighting Scheme shall be got approved from the Director. Urban Local Bodies, Haryana or any person authorized by the Director,Urban Local bodies, Haryana. These approvals shall be obtained prior to starting the construction work at site.

19. SOLAR WATER HEATING SYSTEM

The provision of solar water heating system shall be as per norms specified by HAREDA and shall be made operational in each building block before applying for an occupation certificate.

20. RAIN WATER HARVESTING SYSTEM

The rain water harvesting system shall be provided as per Central Ground Water Authority norms/Haryana Govt. notification as applicable.

21. The colonizer shall obtain the clearance/NOC as per the provisions of the Notification No. S.O. 1533(E) Dated 14.9.2006 issued by Ministry of Environment and Forest, Government of India before starting the construction/ execution of development works at site.

22. The coloniser/owner shall use only Light-Emitting Diode (LED) Lamps fittings for internal lighting as well as campus lighting.

23. That no separate zoning plan is approved for community sites earmarked within a Group Housing Colony. The community building/buildings shall be constructed by the coloniser/owner as per provision of The Haryana Development and Regulation of Urban Areas (Amendment and Validation) Act No. 4 of 2012, failing which the said site shall vest with the Government.

24. That you shall abide by the policies issued by the Department time to time regarding allotment of EWS flats .

25. SOLAR PHOTOVOLTAIC POWER PLANT:

The owner shall ensure the installation of solar photovoltaic power plant as per provision of Notification No. 22/ 52 / 2005-5 power dated 03.09.2014 of Haryana Government Renewable Energy De partment

DRG. NO. DG,TCP 5453 DATED:- 16-12-2015

(RAM AVTAR BASSI) AD (HQ)	(BALWANT SINGH) SD (HQ)	(BABITA GOYAL) ATP (HQ)	(S.K. SEHRAWAT) DTP (HQ)	(DEVENDRA NIMBOKAR) STP (E & V)	(DILBAG SINGH SIHAG) CTP (HR)	(ARUN KUMAR GUPTA, IAS) DG,TCP (HR)

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GURGAON - MANESAR

MASTER PLAN - 2031

M/S STANWAY DEVELOPERS PVT. LTD. AT GURGAON

LOCATION PLAN

1824

Faruknagar

Khaintawas

Dhonawas

Harirpur

To Rewari

To Patudi

Babra
Bakipur

97

98

Wazipur

Gari Harsuru
Railway Station

96

M-12

95

Dhorka

M-10

M-11

92

Moeka

94

S.E.Z.

To Delhi

M-9

M-13

93

Hayatpur

Harsaru

91

M-8

M-14

90

89

88

M-3A

M-15

87

86

Badha

37A

M-7

M-16

85

S.E.Z.

84

M-4

M-6

84

Udyog Vihar

81

82

M-5

83

81A

82A

M-3

6A

To Delhi

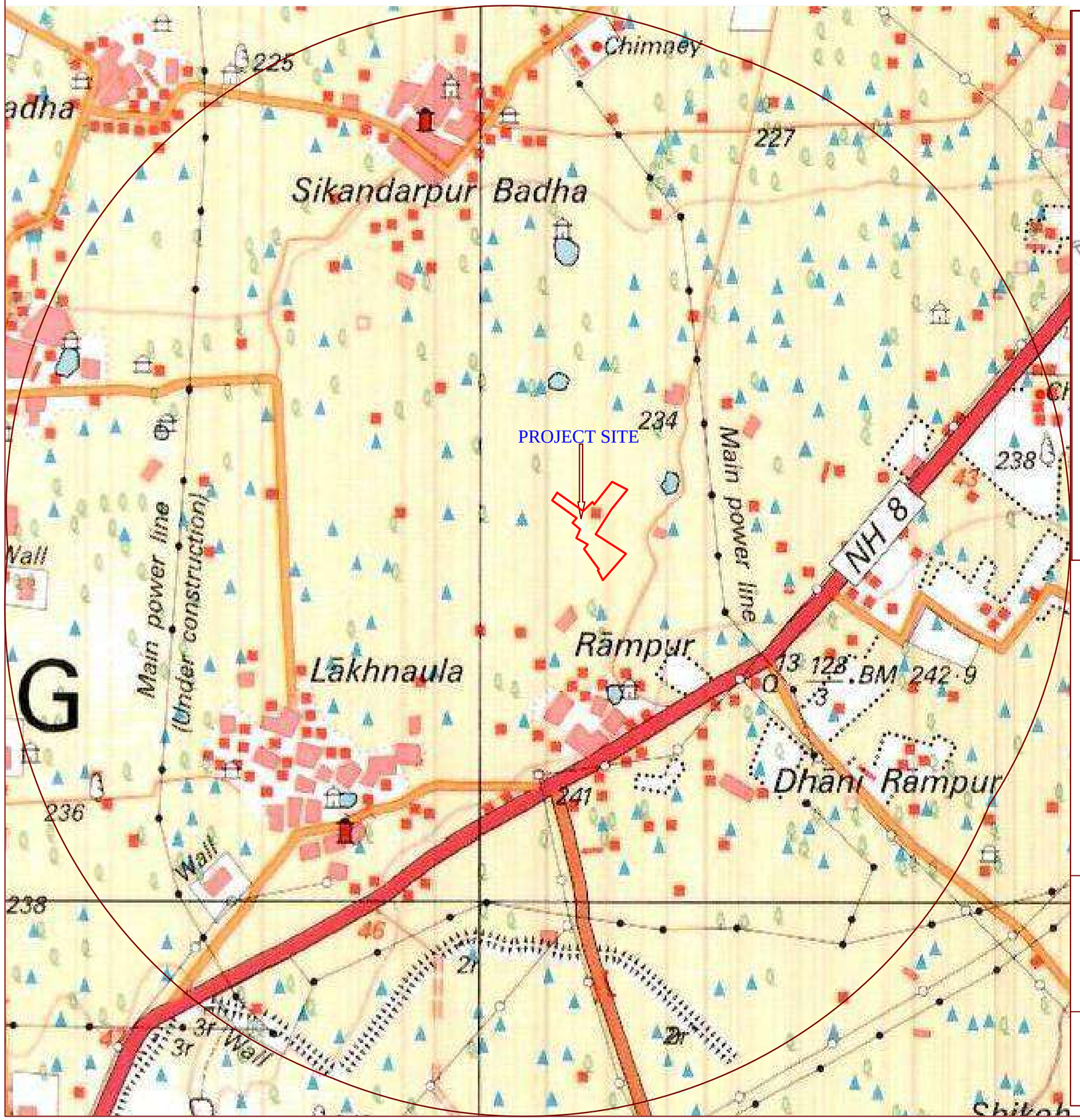
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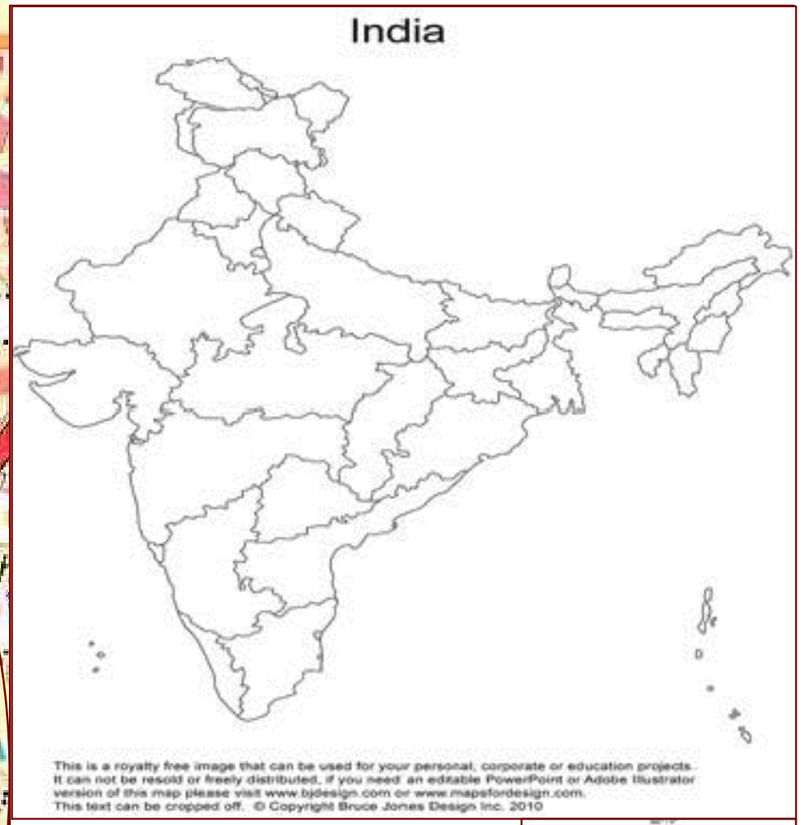
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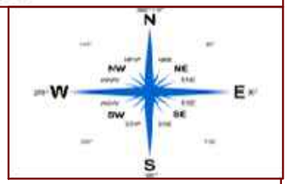
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TO JAIPUR

M/S STANWAY DEVELOPERS PVT.
LTD. AT GURGAON

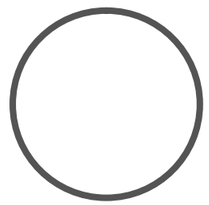








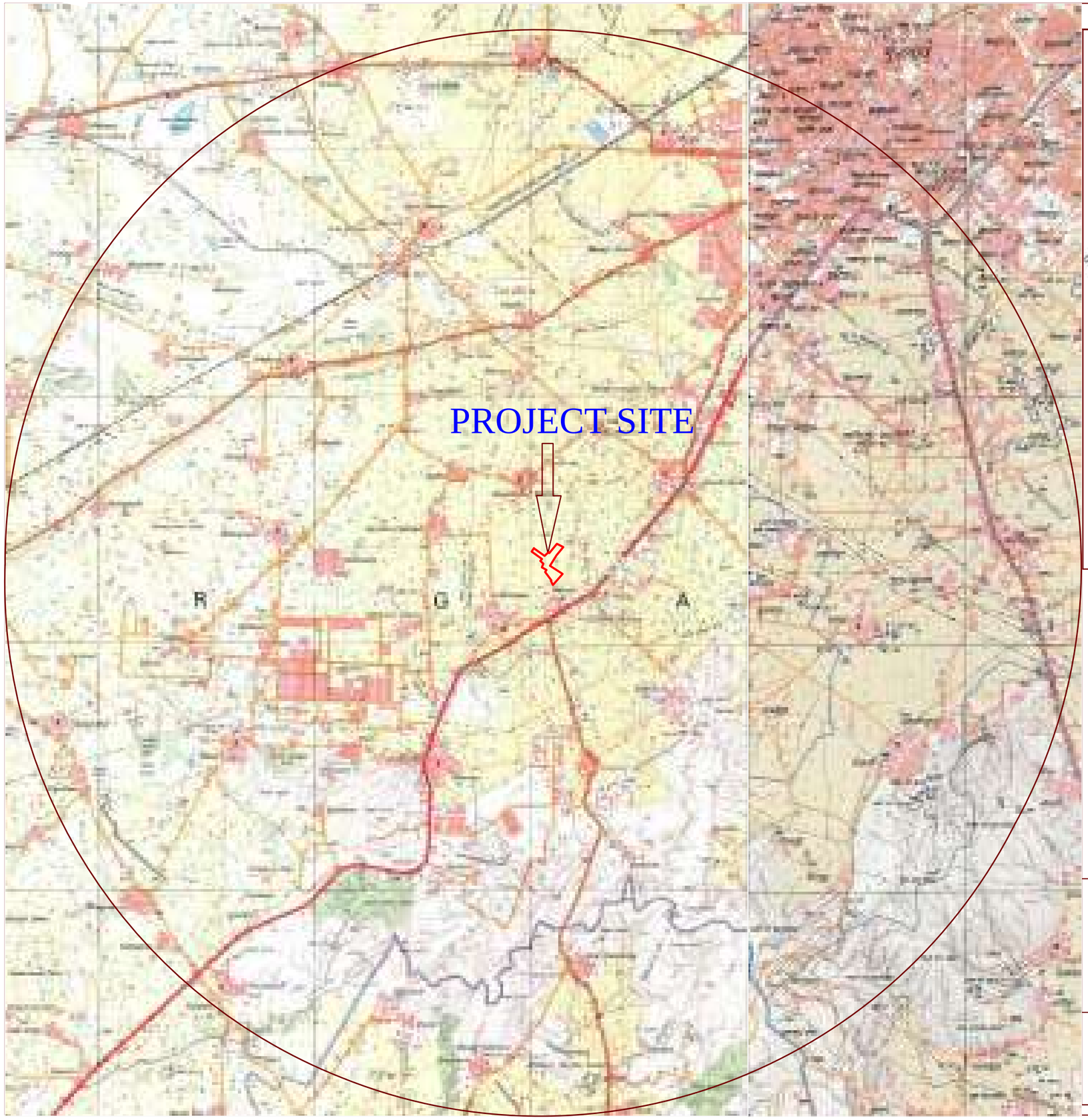
Project Site

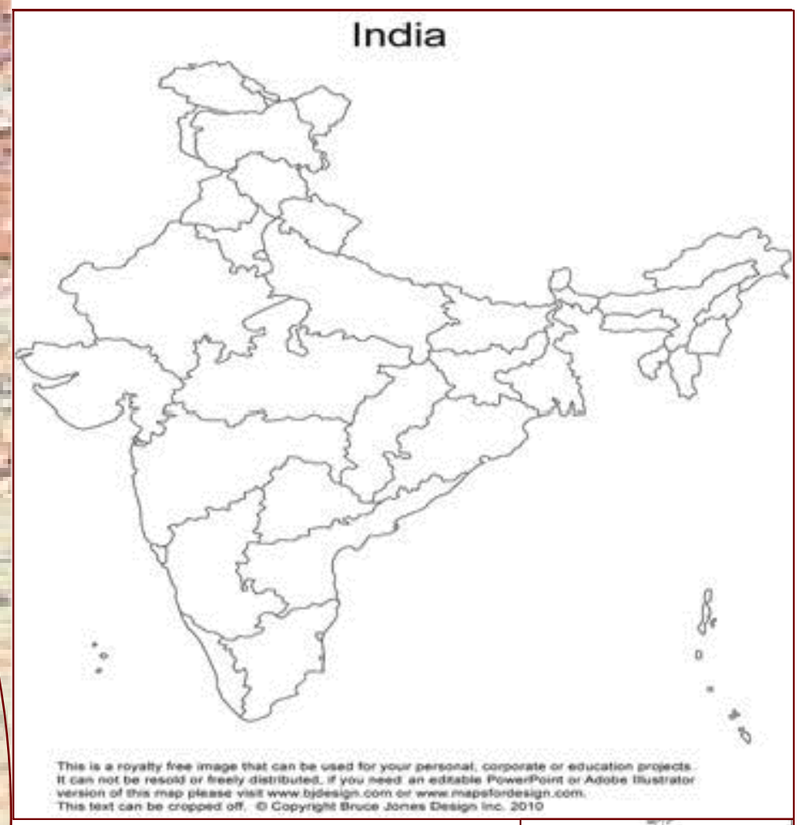


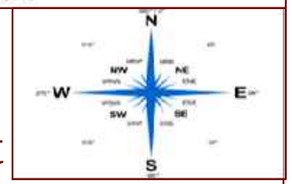
Buffer Boundary

GROUP HOUSING COLONY
AT SECTOR 82A,GURGAON MANESAR URBAN COMPLEX
DISTT. GURGAON
FOR- M/S STANWAY DEVELOPERS PVT. LTD.

2 KM BUFFER MAP

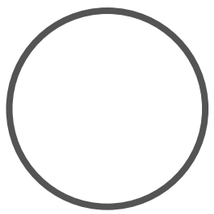








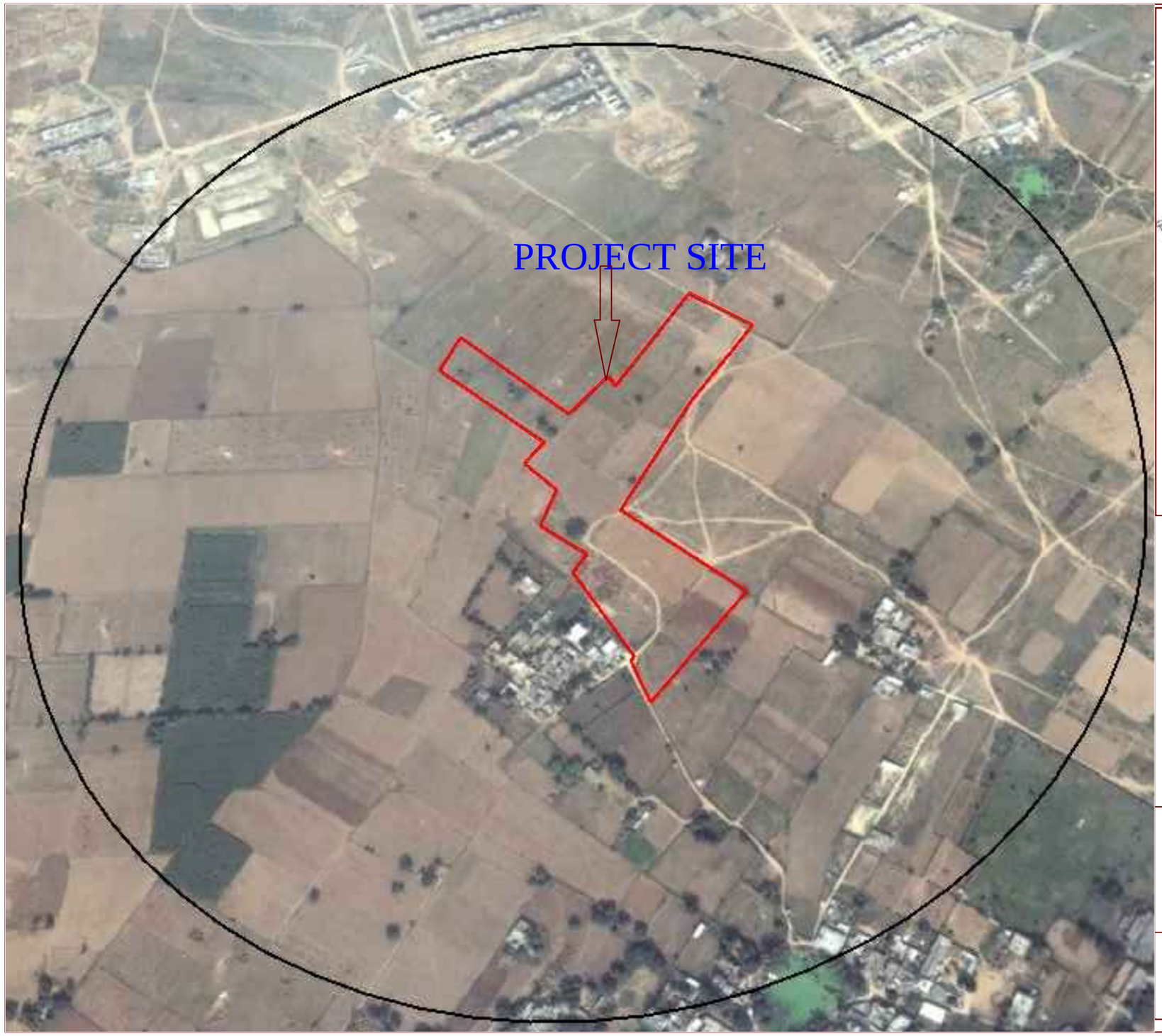
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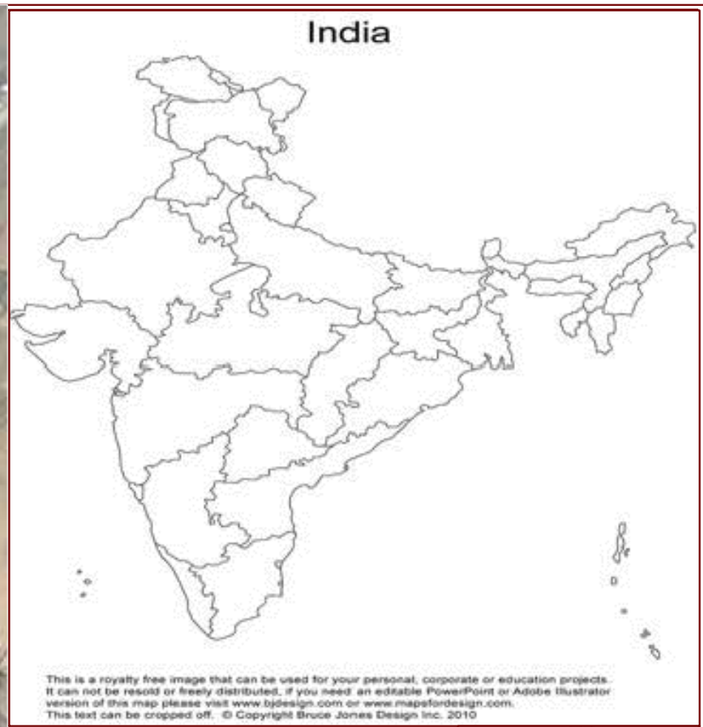


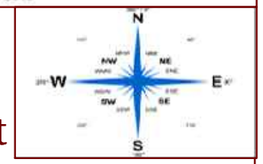
Buffer Boundary

GROUP HOUSING COLONY
AT SECTOR 82A,GURGAON MANESAR URBAN COMPLEX
DISTT. GURGAON
FOR- M/S STANWAY DEVELOPERS PVT. LTD.

10 KM BUFFER MAP

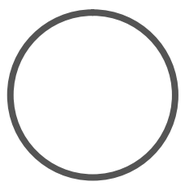








Project Site



Buffer Boundary

GROUP HOUSING COLONY
AT SECTOR 82A,GURGAON MANESAR URBAN COMPLEX
DISTT. GURGAON
FOR- M/S STANWAY DEVELOPERS PVT. LTD.

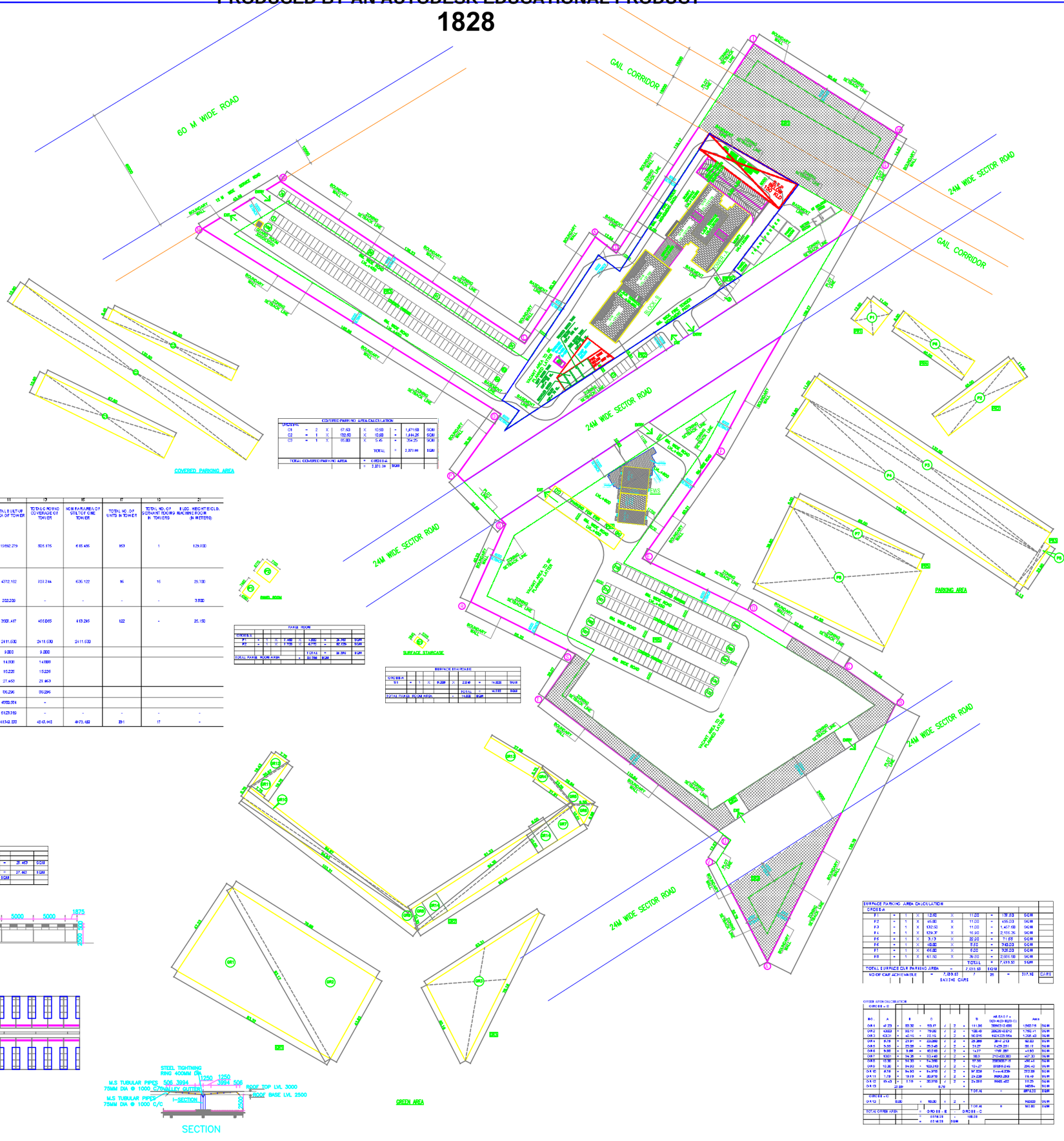
500 m Buffer Map

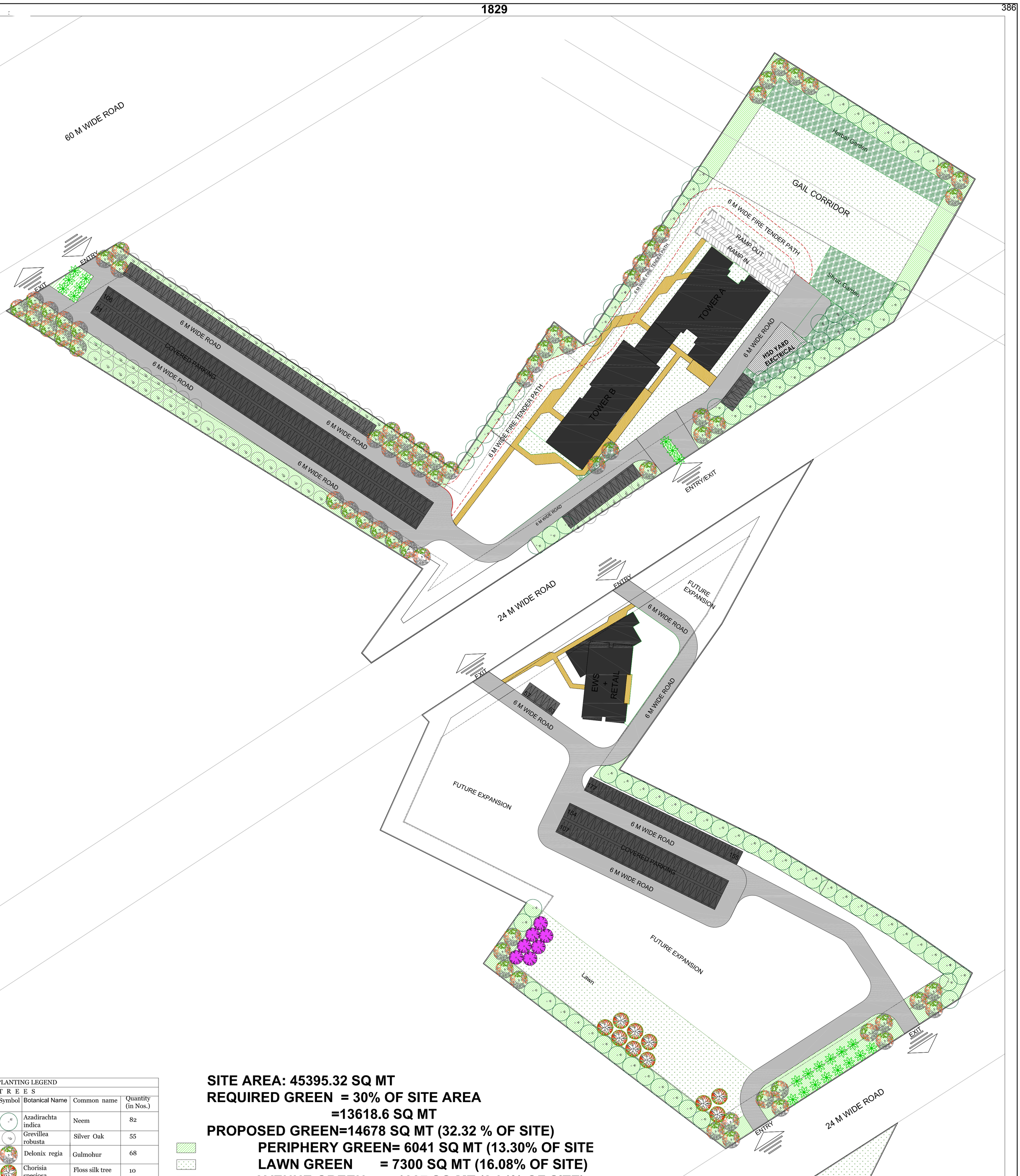
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1828

AREA STATEMENT					
LICENSED AREA OF SITE	11.218		ACRES		
AREA OF SITE AS PER ZONING	11.218	OR	46397.5633		SQM
PERMISSIBLE F.A.R. @175%	79445.729	SQM.			
PROPOSED F.A.R.	25919.296	SQM.	= 25919.296 / 46397.5633 X 100	=	57.094 %
PERMISSIBLE GROUND COVERAGE@35%	15886.147	SQM.			
PROPOSED GROUND COVERAGE	4540.069	SQM.	= 4540.069 / 46397.5633 X 100	=	10.007 %
PERMISSIBLE AREA OF CONVENIENT SHOPPING@0.5%			= 46397.5633 / 100 X 0.5	=	229.968 SQM.
PROPOSED FAR AREA OF CONVENIENT SHOPPING			= 202.289 / 46397.5633 X 100	=	0.446 %
PERMISSIBLE DENSITY	100 TO 200 PPA				
PROPOSED DENSITY			= 1123 / 11.218	=	100.107 PPA
REQUIRED EWS UNITS	15% OF TOTAL UNIT (MAIN+EWS)		= 291 / 100 X 15	=	43.65
			SAY		44 NOS.
PROPOSED EWS UNITS	122	NOS.	= 122 / 291 X 100	=	41.9 %
REQUIRED SERVANT ROOMS	10% MAIN UNITS		= 18 / 100 X 169	=	19.900
			SAY		17 NOS.
PROPOSED SERVANT ROOMS	17	NOS.	= 17 / 169 X 100	=	10.059 %
POPULATION CALCULATION					
MAIN UNITS	169	X	5	=	845
EWS	122	X	2	=	244
SERVANT ROOMS	17	X	2	=	34
TOTAL					1123
TOT-LOT AND GREEN AREA REQUIRED @ 15%			= 46397.5633 / 100 X 15	=	6809.634 SQM
TOT-LOT AND GREEN AREA PROVIDED	6816.200	SQM.	= 6816.200 / 46397.5633 X 100	=	15.014 %
CAR PARKING					
REQUIRED CAR PARKING FOR MAIN UNITS	2 CAR PER UNIT	169	x 2.0	=	338 CARS
PROPOSED CAR PARKING FOR MAIN UNITS				=	338 CARS
REQUIRED COVERED CAR PARKING	75%	OF	338	=	253.5 CARS
PROPOSED COVERED CAR PARKING				=	254 CARS
CAR PARKING TO BE MADE AVAILABLE TO EWS UNITS	5%	OF	338	=	16.9 CARS
PROPOSED CAR PARKING FOR EWS				=	17 CARS
CAR PARKING CAPACITY ON SURFACE	7,696.53	SQM	(@33.5 SQM.)	=	334.70 CARS
PROPOSED CAR PARKING ON OPEN SURFACE					94 CARS
PROPOSED CAR PARKING ON SURFACE COVERED PARKING				=	240 CARS
LIFT				=	14 NOS.
COVERED SURFACE PARKING				=	240 NOS.
OPEN SURFACE				=	84 NOS.
TOTAL				=	338 NOS.

1	2	3	4	5	6	9	10	11	13	15	17	19	21
TYPE	FLOOR	NO. OF FLOORS	AREA IN SQ.M. / ONE FLOOR	AREA IN SQ.M. OF ALL FLOORS (5+6)	TOTAL FAR OF TOWER	BUILTUP AREA OF ONE FLOOR	TOTAL BUILTUP AREA OF ALL FLOORS (9+10)	TOTAL BUILTUP AREA OF TOWER	TOTAL G. ROUND COVERAGE OF TOWER	NON FAR AREA OF 1 FLOOR ONE TOWER	TOTAL NO. OF UNITS IN TOWER	TOTAL NO. OF SERVANT ROOMS IN TOWERS	H. EG. HEIGHT INCLD. MACHINE ROOM (IN METERS)
TOWER – A	GROUND FLOOR	1	186321	186.721	69195.696	926.016	926.016	19592.279	926.175	615.495	153	1	129.100
	1ST TO 37TH FLOOR	37	481.635	18030.496		488.635	18030.496						
	38TH FLOOR (LOWER PENTHOUSE)	1	523.638	523.638		525.038	523.638						
	39TH FLOOR (MTR PENTHOUSE)	1	440.845	440.845		440.845	440.845						
	MUMTY & MACHINE ROOM	1	-	-		97.325	97.325						
TOWER – B	GROUND FLOOR	1	71.222	71.222		707.744	707.744						
	1ST TO 8TH FLOOR	8	449.809	3598.472	3659.694	449.809	3598.472	4272.102	707.744	635.122	96	16	29.700
	MUMTY & MACHINE ROOM	1	-	-		66.335	66.335						
CONVENIENT SHOPPING	GROUND FLOOR	1	202.289	202.289	202.289	202.289	202.289		-	-	-	-	9.800
EWS	GROUND FLOOR	1	62.823	62.823	3010.016	466.865	466.865	3058.447	466.865	418.295	122	-	26.100
	1ST TO 9TH FLOOR	9	319.662	2876.962		319.662	2876.962						
	10TH FLOOR	1	141.074	141.074		141.074	141.074						
	MUMTY & MACHINE ROOM	1	-	-		23.465	23.465						
COVERED PARKING	-	-	-	-	-	2411.630	2411.630	2411.630	2411.630	2411.630			
GUARD ROOM	-	-	-	-	-	9.000	9.000	9.000	9.000				
SURFACE STAIRCASE	-	-	-	-	-	14.000	14.000	14.000	14.000				
METER ROOM	-	-	-	-	-	15.225	15.225	15.225	15.225				
HT ISOLATOR ROOM	-	-	-	-	-	27.463	27.463	27.463	27.463				
PANEL ROOM	-	-	-	-	-	96.296	96.296	96.296	96.296				
UPPER BASEMENT	-	-	-	-	-	4892.504	4892.504	4892.504	-				
LOWER BASEMENT	-	-	-	-	-	6123.150	6123.150	6123.150	-	-	-	-	-
TOTAL	-	-	-	-	283.19.204	-	-	41342.120	42.03.445	4673.482	391	17	-





PLANTING LEGEND			
T R E E S			
Symbol	Botanical Name	Common name	Quantity (in Nos.)
	Azadirachta indica	Neem	82
	Grevillea robusta	Silver Oak	55
	Delonix regia	Gulmohur	68
	Chorisia speciosa	Floss silk tree	10
	Tabebuia rosea	Pink trumpet	07
	Melia azadirachta	White cedar	09
P A L M S			
	Roystonea regia	Royal palm	30

SITE AREA: 45395.32 SQ MT
REQUIRED GREEN = 30% OF SITE AREA
=13618.6 SQ MT
PROPOSED GREEN=14678 SQ MT (32.32 % OF SITE)
PERIPHERY GREEN= 6041 SQ MT (13.30% OF SITE
LAWN GREEN = 7300 SQ MT (16.08% OF SITE)
AVENUE GREEN = 1337 SQ MT (2.94% OF SITE)
ROAD AREA =6072.31 SQ MT
GROUND COVERAGE =2094.76 SQ MT
PAVED AREA = 672.60 SQ MT
SURFACE PARKING AREA= 3110.75 SQ MT

SOFTSCAPE			Suggestive list of Plants		
Symbol	Areas	Areas	Tree	Shrubs	Ground cover
	Green Belt Area	6041 Sqm = (1.49 Acres) 13.30 % OF TOTAL PLOT AREA	Grevellia robusta, Azadrachta indica Delonix regia, Roystonea regia	Duranta, Ficus panda Clerodendrum inerme	Zebrina pendula Wedelia trilobata Iresine herbitt
	Lawn Area	7300 Sqm = (1.80 Acres) 16.08 % OF TOTAL PLOT AREA	Tabebuia rosea Chorisia speciosa		Dianella variegata Syngonium podophyllum Rhoeo spathacea
	Avenue Plantation Area	1337 Sqm = (0.33 Acres) 2.94 % OF TOTAL PLOT AREA	Melia azadirachta Delonix regia	Galphimia glauca, Murraya exotica Tecoma stans, Hamelia patens Plumbago auriculata	Syngonium podophyllum Chlorophytum Ficua long island

PROJECT TITLE:

TRANQUIL HEIGHTS

AT SECTOR-82A, GURGAON

E.I.A PLAN

CLIENT:

Vatika Limited

ARCHITECT:

Arcop Associates (Pvt).Ltd.

LANDSCAPE CONSULTANT:

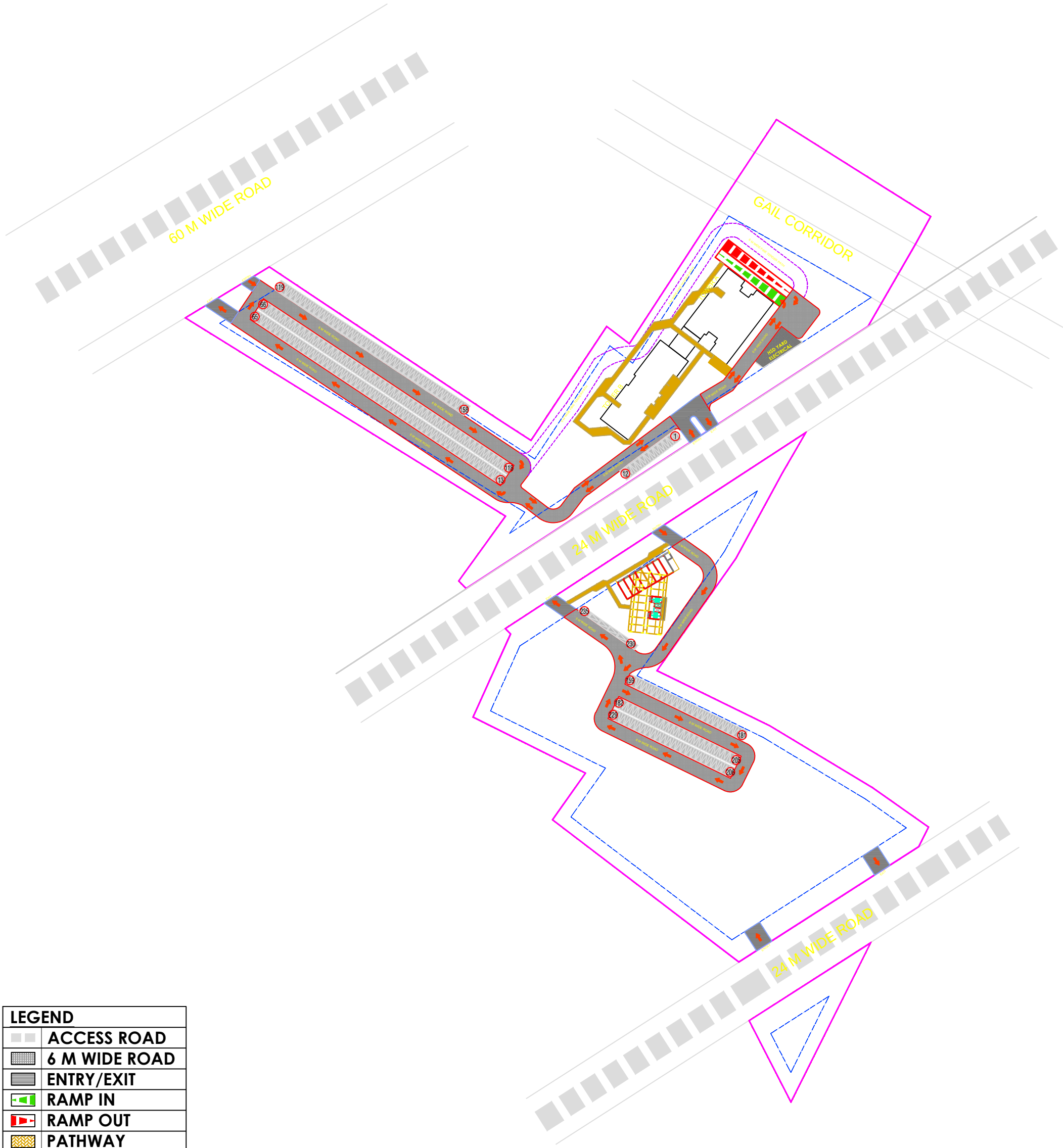
Satish Khanna Associates

NORTH

Scale 1:600

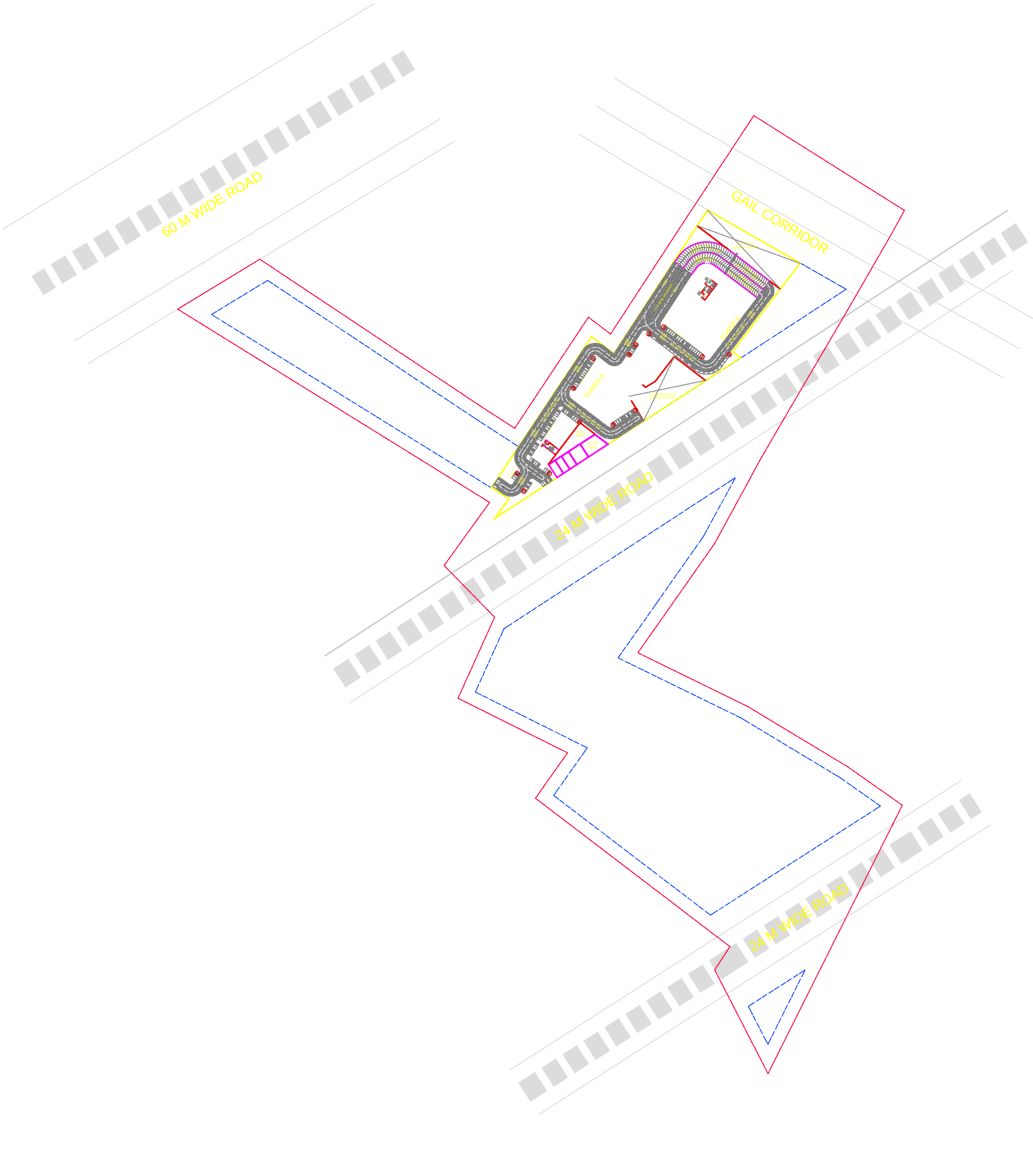
DATE: 07/06/2016

TRAFFIC CIRCULATION PLAN - GROUND FLOOR

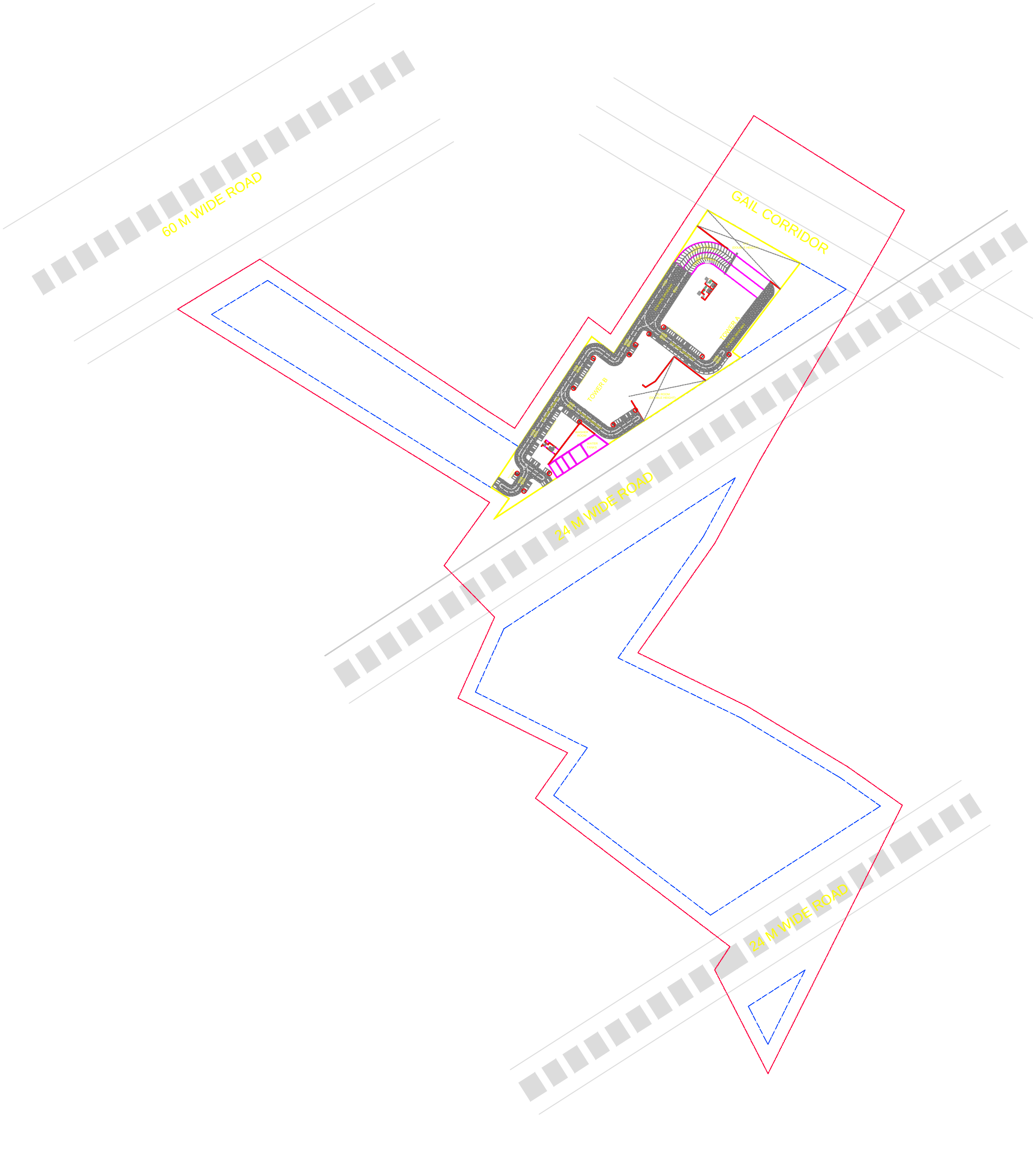


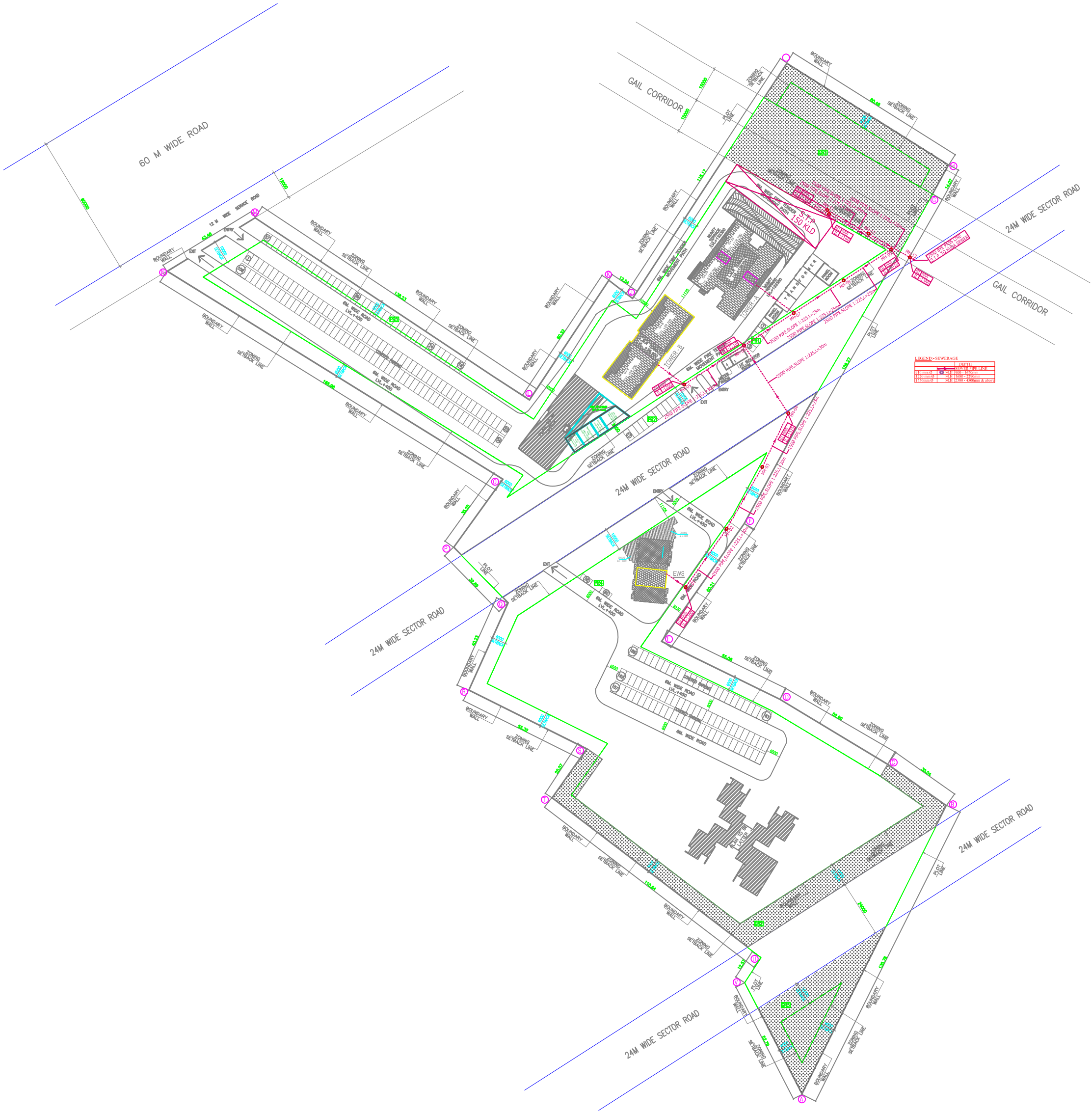
LEGEND	
	ACCESS ROAD
	6 M WIDE ROAD
	ENTRY/EXIT
	RAMP IN
	RAMP OUT
	PATHWAY
	PARKING (235)

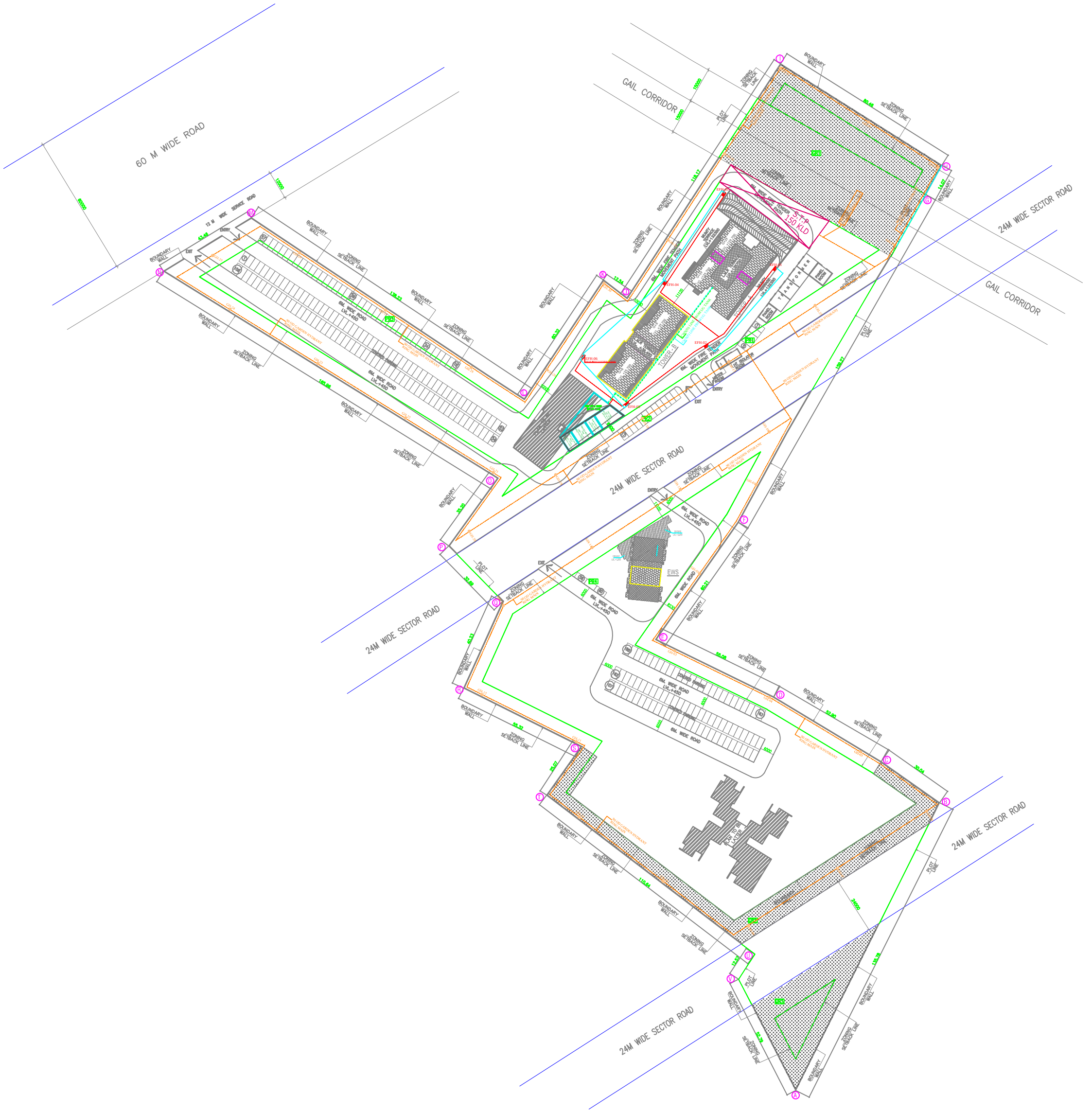
TRAFFIC CIRCULATION PLAN - UPPER BASEMENT PLAN (129 TWO WHEELER PARKING BAYS)

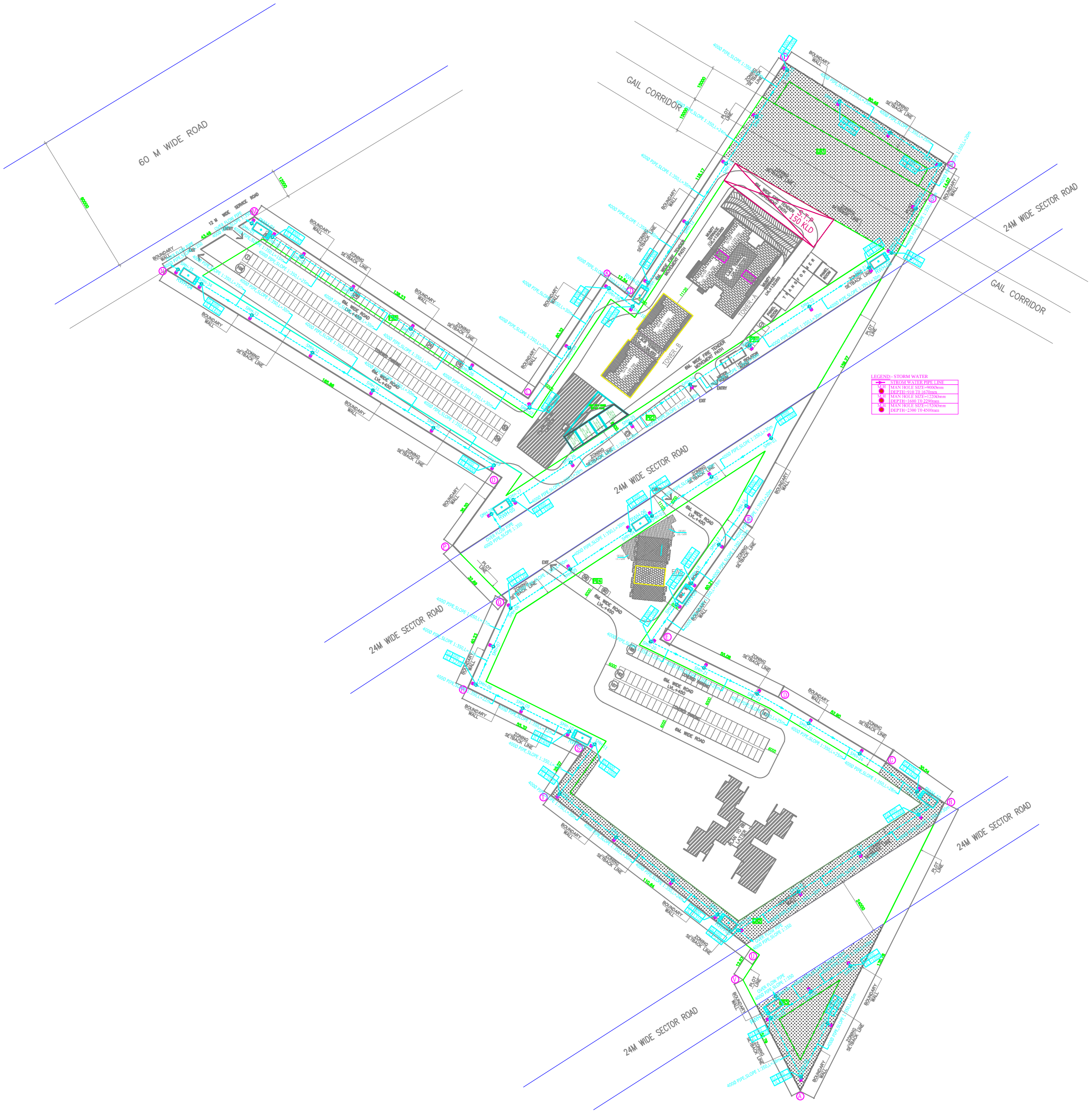


TRAFFIC CIRCULATION PLAN - LOWER BASEMENT PLAN (129 TWO WHEELER PARKING BAYS)




60 M WIDE ROAD
GAIL CORRIDOR
24M WIDE SECTOR ROAD
12 M WIDE SERVICE ROAD
6M. WIDE ROAD LVL+450
6M. WIDE FIRE TENDER MOVEMENT PATH
BOUNDARY WALL
ZONING SETBACK LINE
PLOT LINE
ENTRY
EXIT
TOWER - A
TOWER - B
TRANSFORMER
PANEL ROOM
EWS
STP 150 KLD
LEGEND - SEWERAGE
DEPTH
SEWER PIPE LINE
910 mm Ø
MH 900 - 1670mm
1220 mm Ø
MH 1680 - 2590mm
1550mm Ø
MH 2600 - 4500mm & above


60 M WIDE ROAD
GAIL CORRIDOR
24M WIDE SECTOR ROAD
BOUNDARY WALL
ZONING SETBACK LINE
PLOT LINE
6M. WIDE ROAD LVL.+450
6M. WIDE MOVEMENT PATH
12 M WIDE SERVICE ROAD
ENTRY
EXIT
STP 150 KLD
TRANSFORMER
WATER BODY
EWS
TOWER-B1
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TOWER-B1000


60 M WIDE ROAD
GAIL CORRIDOR
24M WIDE SECTOR ROAD
12 M WIDE SERVICE ROAD
6M. WIDE ROAD
BOUNDARY WALL
ZONING SETBACK LINE
PLOT LINE
TOWER-A
TOWER-B
STP 150 KLD
LEGEND:- STORM WATER
STROM WATER PIPE LINE
MH MAN HOLE SIZE=900mm DEPTH=910 TO 1670mm
MH MAN HOLE SIZE=1220mm DEPTH=1680 TO 2290mm
MH MAN HOLE SIZE=1520mm DEPTH=2300 TO 4500mm

Minutes of the 153rd Meeting of the State Expert Appraisal Committee, constituted for considering Environmental Clearance of Projects (B category) under Government of India Notification dated 14.09.2006, held on 07th June, 2017 under the Chairmanship of Sh. G.R. Goyat, Chairman, SEAC at Panchkula

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List of participants is annexed as ***Annexure-A*****.**

At the outset the Chairman, SEAC welcomed the Members of the SEAC and advised the Secretary to give brief background of this meeting. The minutes of the 152nd Meeting were discussed and approved with some modification as under:

In agenda Item No. 152.15 i.e. construction of Warehouse Project at Village Pathreri, Tehsil-Manesar, District-Gurgaon, Haryana by M/s JKS Infrastructure Pvt. Ltd. the following condition is added:

> **That PP will not store Chemicals in the warehouse and in case they store chemical they will be obtain fresh EC otherwise Environmental Clearance so granted shall become invalid."**

It was further informed that in this meeting 07 number projects are to be taken up for scoping, appraisal and grading as per the agenda circulated and 06 case are taken up as additional agenda items.

After preliminary discussion, the following projects were taken up on case-to-case basis:-

153.01 Environment Clearance for Group Housing Colony Project at Sector-82A, Gurgaon,Haryana by M/s Vatika Ltd.

The project was submitted to the SEIAA, Haryana on 27.12.2016. The project proponent submitted the case to the SEIAA as per check list approved by the SEIAA/SEAC.

The case was appraised in the 150th meeting of the SEAC held on 07.04.2017 and file forwarded to SEIAA for grant of Environmental Clearance to the project proponent.

This case was taken up by the SEIAA in its 102nd meeting held on 20.04.2017, wherein it was decided to refer back the case to SEAC on 15.05.2017 with the remarks that the SEAC should visit the site to check status of construction or violation of environmental norms if any and submit its recommendation on merits alongwith the inspection report within stipulated period.

Thereafter, the case was taken up in the 153rd meeting of the SEAC. It was decided to constitute a Sub-Committee for site visit:

The sub-committee will consist of the following**:**

1. Sh. Hitender Singh, Member (Coordinator)
2. Sh. A.K. Bhatia, Member

The sub-committee shall submit its report within 15 days from the issue of the letter by the Secretary SEAC.

153.02 Environment Clearance for construction of Commercial Complex Project at Village Badha, Sector-86, District Gurgaon, Haryana by M/s S.S. Group Pvt. Ltd.

Consultant : Vadan EnviroNet Pvt. Ltd.

The project was submitted to the SEIAA, Haryana on 16.11.2016. The project proponent submitted the case to the SEIAA as per check list approved by the SEIAA/SEAC. Thereafter, the case was taken up for appraisal in the 146th meeting of the SEAC held on 15.12.2016.

After detailed discussions, the following shortcomings were observed:

1. The PP should submit the assurance of the supply of the water during construction phase from safe area through tankers and permission from CGWA for using the ground water of the existing borewell including permission from HUDA for supply of water during Construction and Operation Phase with detailed clarification regarding availability of water in the area.

2. The PP should submit revised fresh water requirement as per MoEF norms and revised water body diagram by making it zero discharge.
3. The PP should submit revised green belt plan.
4. The PP should submit revised design of recharge plan according site specific condition and provide the maintenance plan of recharge pit and recharge bore.
5. The PP should submit affidavit for non handling over occupation before release of water.
6. The PP should submit contour values corresponding to survey of India sheet be supplied/marked on the site.
7. The PP should submit detail of quantity excavated and its disposal be explained/supplied.
8. The PP should submit revised CSR Plan.

The observations of146th meeting were conveyed to the project proponent vide letter No. 1706 dated 10.01.2017. The project proponent submitted the reply on 23.01.2017. Thereafter, the case was taken up in the 148th meeting of the SEAC held on 14.02.2017.

After detailed discussions, the following shortcomings were observed:

1. The PP should submit revised fresh water requirement as per MoEF norms and revised water balance diagram by making it zero discharge.
2. The PP should submit revised green belt plan.
3. The PP should submit revised design of recharge plan according site specific condition and provide the maintenance plan of recharge pit and recharge bore.
4. The PP should submit contour values corresponding to survey of India sheet and levels be supplied/marked on the site of the project.
5. The PP should submit detail of quantity excavated and its disposal be explained/supplied.
6. The PP should submit revised CSR Plan.

The observations of148th meeting were conveyed to the project proponent vide letter No. 1792 dated 01.03.2017. The project proponent submitted the reply on 14.03.2017. Thereafter, the case was taken up in the 150th meeting of the SEAC held on 07.04.2017.

After detailed discussions, the following shortcomings were observed:

1. The PP should submit revised fresh water requirement as per MoEF norms and revised water balance diagram by making it zero discharge.
2. The PP should submit revised green belt plan.
3. The PP should submit revised design of recharge plan according site specific condition and provide the maintenance plan of recharge pit and recharge bore.
4. The PP should submit contour values corresponding to survey of India sheet and levels be supplied/marked on the site of the project.
5. The PP should submit detail of quantity excavated and its disposal be explained/supplied.

The observations of 150th meeting were conveyed to the project proponent vide letter No. 1902 dated 17.04.2017. The project proponent submitted the reply on 15.05.2017. Thereafter, the case was taken up in the 153rd meeting of the SEAC held on 07.06.2017.

The Project Proponent requested for adjournment and the same was discussed in the meeting. The Committee acceded to the request and decided to issue 30 days notice to the PP.

153.03 Environmental Clearance for the proposed expansion of project "Residential Plotted Colony:, Sector-11 & 14, Village Sohna & Raipur, District Gurgaon by M/s Raheja Developers.

Project Proponent : Sh. Ashish Handa, Authorized Signatory

Consultant : Grass Roots Research and Creation India Pvt. Ltd.

The project proponent submitted the case for obtaining Environmental Clearance to the SEIAA, Haryana on 17.10.2014. The papers submitted were examined and certain shortcomings were noticed and conveyed to the PP vide letter No. 1762 dated 31.10.2014. The PP submitted reply to the shortcomings on 21.01.2015. The case could not be taken up in the SEAC as the term of SEIAA/SEAC was elapsed on 21.03.2015. Therefore, the case was transferred to Ministry of Environment and Forest, Government of India in the month of March, 2015. This case could not taken up by the MoEF and was again transferred to SEIAA on 31.08.2015 after the reconstitution of SEIAA/SEAC on 21.08.2015.

Thereafter the case was taken up for appraisal in the 120th meeting of the SEAC held on 06.11.2015. The case was not heard as the project proponent failed to circulate the documents (Form 1, Form 1A and Conceptual Plan) to all the Members well in time. The project proponent had undertaken to circulate the documents to all the Members well in time and requested for considering their case for appraisal in the next meeting of the SEAC. It was unanimously decided by the Committee that the case will be considered in the next meeting to be held on 19.11.2015. It was also made clear to the Project Proponent that no separate letter will be issued for attending the meeting of the SEAC. Thereafter the case was taken up for appraisal in the 121st meeting of the SEAC held on 19.11.2015.

After detailed discussions, the following shortcomings were concluded:

1. The PP should submit the assurance of the supply of the water during construction phase from safe area through tankers and permission from CGWA for using the ground water of the existing borewell including permission from HUDA for supply of water during operation Phase with detailed clarification from HUDA regarding availability of water in the area.
2. The PP should submit assurance from Electricity Department.
3. The PP should submit contour map of surrounding area.
4. The PP should submit 500 meter radius google image.
5. The PP should submit an affidavit by a Director of the Company giving latest status of construction and also submit an undertaking that they will use ultra low sulpher fuel in DG Sets.
6. The PP should submit detailed design calculations of STP alongwith dimension of each component and also submit unit wise reduction of BOD for STP.
7. The PP should submit disposal plan of MSW Biodegradable waste.
8. The PP should submit details of incremental pollution load alongwith mitigation measures.
9. The PP should submit layout plan of site with respect to sun path & optimized solar access & wind pattern.
10. The PP should submit surface parking plan along with details of parking space provided & traffic movement pattern.
11. The PP should submit site specific hydrological details along with recharge proposal, infiltration rate of recharge pit and Rain Water Harvesting structure maintenance plan.
12. The PP should submit revised design of recharge pit and de-siltation tank location of Rain Water Harvesting pits on the site plan. The earmarked space for STP should be away from the location of the rain water harvesting and the same should also be earmarked on the plan.
13. The PP should submit detailed green belt plan viz:
    (a) Width, length and area to be covered under the green belt;
    (b) Number of rows of trees to be planted; and
    (c) Tree species required to be planted and spacing to be maintained between them depending on the local climate and site conditions.

The observations of 121st meeting were conveyed to the project proponent vide letter No. 304 dated 01.12.2015. The PP submitted the reply to the observations raised in the 121st meeting vide letter dated 11.04.2016. Thereafter the case was taken up for appraisal in the 133rd meeting of the SEAC held on 06.05.2016. The Project Proponent requested for adjournment and the same was discussed in the meeting. The Committee acceded to the request and decided to issue 30 days notice to the PP.

The observations of 133rd meeting were conveyed to the project proponent vide letter No. 1046 dated 20.05.2016. The PP submitted the reply vide letter dated 15.06.2016. Thereafter, the case was taken up for appraisal in the 137th meeting of the SEAC held on 28.07.2016.

The Project Proponent requested for adjournment and the same was discussed in the meeting. The Committee acceded to the request and decided to issue 30 days notice to the PP. Accordingly the notice will be issued by the Secretary, SEAC to the Project Proponent.

The observations of 137th meeting were conveyed to the project proponent vide letter No. 1316 dated 09.08.2016. The project proponent submitted the request vide letter dated 10.08.2016 for taking up of their case.

The Terms of Reference were approved in the 140th meeting of the SEAC held on 09.09.2016 and conveyed to the project proponent vide letter No. 1451 dated 15.09.2016. The PP submitted the EIA Report on 15.05.2017. Thereafter, the case was taken up in the 153rd meeting of the SEAC held on 07.06.2017.

After detailed discussions, following observations were observed:

1. The PP should submit the assurance of the supply of the water during construction phase from safe area through tankers and permission from CGWA for using the ground water of the existing borewell including permission from HUDA for supply of water during operation Phase with detailed clarification from HUDA regarding availability of water in the area.
2. The PP should submit the revise fresh water requirement as per MoEF norms.
3. The PP should provide specific rain water harvesting plan as per site condition.
4. The PP should submit six months latest inspection report of MoEF.
5. The PP should marked the details of water bodies on site plan.
6. The PP should submit the action taken report of MoEF dated 28.09.2015.
7. The PP should submit details of incremental pollution load alongwith mitigation measures..
8. The PP should submit an affidavit by a Director of the Company giving latest status of construction and also submit an undertaking that they will use ultra low sulpher fuel in DG Sets.
9. The PP should submit detailed Solid Water Management plan.
10. The PP should submit undertaking for hydraulic ladder.
11. The PP should submit the hydraulic design of STP with dimension of each component.
12. The PP should explain with line diagrams of sewer, drainage system (septic tank, effluent treatment plant) and ducting system like natural or forced draft to be provided to avoid the accumulation of the hazardous sewer gases and underground explosion in the building construction phase and operation phase.
13. The PP should explain the detailed orientation plan of the site/building pertaining to wind rose and solar orientation to achieve better natural light and ventilation in terms of air changes per hour in all parts of the occupancy, kitchen, toilets, basement, DG set rooms and staircases etc.
14. The PP should submit the distance of kotla jheel from the site alongwith water bodies.
15. The area in between canal and road may be developed as a green belt under a CSR & other detail of CSR be submitted alongwith previous audited report.
16. The PP should submit the legible Aravali report.
17. The PP should submit detailed green belt plan viz:
    (a) Width, length and area to be covered under the green belt;
    (b) Number of rows of trees to be planted; and
    (c) Tree species required to be planted and spacing to be maintained between them depending on the local climate and site conditions.

The PP is advised to submit the required information as detailed above within 30 days and it was also made clear to the PP that his project will be considered as received only after the receipt of complete information. In case of non-receipt of information in time; the case shall be recommended for rejection/ filing.

153.04 Environmental Clerance for construction of Group Housing Project "Raheja Vanya" located at Village - Gopalpur and Dhankot, Sector-99A, Gurgaon Manesar urban Complex, Haryana by M/s Raheja Developers Ltd.

Project Proponent : Mr. Ashish Handa

Consultant : Grass Roots Research and Creation India Pvt. Ltd.

The project was submitted to the SEIAA, Haryana on 08.11.2015. The project proponent submitted the case to the SEIAA as per check list approved by the SEIAA/SEAC.

The Terms of Reference were approved in the 145th meeting of the SEAC held on 29.11.2016 and conveyed to the project proponent vide letter No. 1679 dated 08.12.2016. The PP submitted the EIA Report on 15.05.2017. Thereafter, the case was taken up in the 153rd meeting of the SEAC held on 07.06.2017.

1. The PP should submit the contour plan, master plan, car parking plan, traffic circulation plan, elevation section plan, perspective view plan and area demarcation plan as per the latest

definition given by MoEF-GOI along with the latest photographs and development in 500 meters of the project site.

2. The PP should submit an affidavit by a Director of the Company giving latest status of construction and also submit an undertaking that they will use ultra low sulpher fuel in DG Sets.
3. The PP should submit an affidavit that they will obtain permission from HUDA regarding water assurance before offer of possession.
4. The PP will submit detailed dual plumbing system for recycling the treated water.
5. The PP should submit undertaking for hydraulic ladder.
6. The PP should submit the hydraulic design of STP with dimension of each component.
7. The PP is required to submit the energy (power) balance plan qualitatively and quantitatively taking into account the various aspects like total energy required sources of energy inputs and outputs. Account for total energy saving incorporated to solar passive techniques in building design, enhanced building material specifications, use of designing energy efficient lighting techniques to minimized the load on conventional systems (heating, cooling, ventilation and lighting) use of renewal energy sources like solar water heaters and photovoltaic systems, by adopting various lighting/ power control systems and by using advance electrical system like power transformers, energy efficient motors and diesel generators, efficient effluent water treatment systems referred in NBC 2005 and MOEF GOI guidelines.
8. The PP should explain with line diagrams of sewer, drainage system (septic tank, effluent treatment plant) and ducting system like natural or forced draft to be provided to avoid the accumulation of the hazardous sewer gases and underground explosion in the building construction phase and operation phase.
9. The PP should explain the detailed orientation plan of the site/building pertaining to wind rose and solar orientation to achieve better natural light and ventilation in terms of air changes per hour in all parts of the occupancy, kitchen, toilets, basement, DG set rooms and staircases etc.
10. The PP should submit ground water site specific hydrological details along with recharge capacity of recharge pit base on field test and also submit rain water harvesting maintenance plan.
11. The PP should submit solar power generation as per MoEF & CC guidelines.
12. The PP should submit undertaking for solar power generation as per HAREDA guideline.
13. The PP should provide helipad and submit structure stability certificate from reputed institute.
14. The PP should submit detailed Solid Water Management plan.
15. The PP should submit the details of incremental air pollution.
16. The PP should submit the details of CSR Plan.
17. The PP should submit the details of water bodies.

The PP is advised to submit the required information as detailed above within 30 days and it was also made clear to the PP that his project will be considered as received only after the receipt of complete information. In case of non-receipt of information in time; the case shall be recommended for rejection/ filing.

153.05 Environmental Clearance for Group Housing Colony situated at Village Tikampur, Sector-103, District Gurgaon, Haryana by M/s Landmark Apartments Pvt. Ltd.

Project Proponent : Sh. Rajesh Grewal
Consultant : Perfect Enviro Solutions Pvt. Ltd.

The project was submitted to the SEIAA, Haryana on 18.08.2014. The papers submitted were examined by the Secretary, SEAC and certain shortcomings were noticed and conveyed to PP vide letter No.1582 dated 28.08.2014. Final Show Cause Notice was issued to the project proponent vide letter No. 1553 dated 20.10.2016. In response to the final show case notice, the project proponent vide their letter dated 16.05.2017 requested for taking up their case for appraisal. Thereafter, the case was taken up for appraisal in the 153rd meeting of the SEAC held on 07.06.2017.

After detailed discussions, following observations were observed:

1. The PP should submit an affidavit that they will obtain permission from HUDA regarding water assurance before offer of possession.
2. The PP should submit the revise water balance diagram.
3. The PP should submit undertaking for solar power generation as per HAREDA guideline.
4. The PP should submit level of site and surrounding w.r.t. Survey of India Sheet.
5. The PP should submit the NOC from fire department.
6. The PP should submit structure stability certificate from the reputed consultant/institution.

7. The PP should submit the revise design of rain water harvesting.
8. The PP should submit the CSR plan.
9. The PP should submit the detail of solid waste management plan.
10. The PP should submit the incremental air pollution.
11. The PP should submit the hydraulic design of STP with dimension of each component.

The PP is advised to submit the required information as detailed above within 30 days and it was also made clear to the PP that his project will be considered as received only after the receipt of complete information. In case of non-receipt of information in time; the case shall be recommended for rejection/ filing.

153.06 Environmental Clearance for construction of Residential Plotted Colony at Sector-29, 30, 32 & 33, Tehsil-Sohna, District-Gurgaon, Haryana by M/s St. Patricks Realty Pvt. Ltd.

Project Proponent : Sh. Surinder Kapoor

Consultant : Perfect Enviro Solutions Pvt. Ltd.

The project was submitted to the SEIAA, Haryana on 19.11.2015. The project proponent submitted the case to the SEIAA as per check list approved by the SEIAA/SEAC. The Terms of Reference were approved in the 126th meeting of the SEAC held on 28.01.2016 and conveyed to the project proponent vide letter No. 605 dated 10.02.2016 .

Further, the project proponent will submit the following at the time of appraisal:

1. The PP to submit the certified copy of report from Regional Director, MoEF regarding status of compliance of the conditions stipulated in the Environmental Clearance as contained in the MoEF circular dated 30.05.2012.
2. The PP to submit Status of compliance of the conditions and environmental safeguards stipulated in the earlier clearance letters.
3. The PP to submit Details of the court cases, if any, pending in any court of law against the project as well as any directions passed by the court relating to the project directly or indirectly.
4. The PP to submit Details of the notices, if any, given to the project under section 5 of the Environment (Protection) Act, 1986 and section 18 of the Air (Prevention and Control of Pollution) Act,1981.

The Project Proponent submitted the EIA/EMP vide letter dated 24.08.2016. Thereafter, the case was taken up for appraisal in the 140th meeting of the SEAC held on 09.09.2016.

In order to assess the correct position at site, Committee decided to constitute a Sub-Committee consisting of the following which will inspect the site to verify the status of construction of the project:

1. Sh. G.R. Goyat, Chairman
2. Sh. Hitender Singh, Member (Coordinator)
3. Sh. R.K. Sapra, Member

The site has since been visited and Sub-Committee had submitted its report on 30.03.2017. The report of the Sub-Committee was placed before the Committee in the 149th meeting of the SEAC held on 30.03.2017. The Sub-Committee report was read out to all the Members of the Committee and deliberated in detail. The Committee has accepted the report of the Sub-Committee in total.

The Committee after detailed discussion is of the unanimous view that the case may be placed for appraisal in the 151st meeting of the SEAC. Accordingly the notice will be issued by the Secretary, SEAC to the Project Proponent.

Thereafter, the case was taken up in the 151st meeting of the SEAC held on 02.05.2017.

After detailed discussions, the following shortcomings were concluded:

1. The PP should submit additional one month data and incremental air pollution as per latest data.
2. The PP should submit revised parking plan.
3. The PP should submit section plan.
4. The PP should submit fresh water requirement as per MoEF norms and water conservation plan.

5. The PP should submit fire department NOC.
6. The PP should submit an affidavit for demolishing of temporary structure (Astabal) before taking new construction.
7. The PP should submit undertaking for zero liquid discharge.
8. The PP should submit undertaking for solar energy.
9. The PP should submit details of water bodies such as drain, canal etc. alongwith level w.r.t. Survey of India sheet.
10. The PP should submit affidavit mentioning that they will not offer possession before getting the water supply from HUDA.
11. The PP should submit revise rain water harvesting plan as per CGWA norms.
12. The PP should submit detailed green belt plan viz:
    (a) Width, length and area to be covered under the green belt;
    (b) Number of rows of trees to be planted; and
    (c) Tree species required to be planted and spacing to be maintained between them depending on the local climate and site conditions.

The observations of 151st meeting were conveyed to the PP vide letter No. 1946 dated 11.05.2017. The PP submitted the reply on 23.05.2017. Thereafter, the case was taken up for appraisal in the 153rd meeting of the SEAC held on 07.06.2017.

During presentation, the Committee was informed that it is a proposed Residential Plotted Colony located at Sector- 29, 30, 32 & 33, Sohna, District Gurgaon, Haryana. The estimated cost of the project is Rs. 230 Crores. Total Plot area is 105.4083 Acres i.e. 4,26,566.3084 Sq. Meters & net plot areas is 3,65,716.6002 Sq. Meters. Total built up area will be approximately 2,43,038 Sq. Meters. Basement area of 15050 Sq. Meters has been proposed. The project will comprise of 430 no. of main plots, 158 no. of EWS plots, 197 no. of NPNL Plots, 3 no. of Nursery School, 2 no. of Primary School, 2 no. of Nursing Home & Community Centre. The maximum height of the building is approx. 15 meters. It was also informed that the green area development has been kept as 114770.33 Sq. Meters (31.38 % of net plot area). 87231.1 Sq. Meters of the total plot area would be earmarked for plantation in the form of shelter belt around the periphery of the project area and in the form of avenue line on either side of the roads. 27539.23 Sq. Meters of the total plot area under herbs/shrubs/climbers/lawns, parks. The total water requirement for the project will be 2279 KLD (i.e. 974 KLD of fresh water & 1305 KLD of recycled treated water). The waste water generation will be 1371 KLD which will be treated upto tertiary level in STP of 1700 KLD. The STP treated water will be used for flushing, gardening and other misc. purposes.

The Air quality data shows exceeding baseline in respect of PM_{10} which ranges from 90.4- 98.6 $\mu g/m^3$ and $PM_{2.5}$ parameters are within limits which ranges from 40.6- 44.1 $\mu g/m^3$ respectively. Incremental air pollution in respect of PM_{10} is 1.01 $\mu g/m^3$ & PM_{10} is 0.6 $\mu g/m^3$PP has submitted special mitigative measures for controlling air pollution for construction phase and operation phase which includes 5 meters high barricade wall at the periphery, broad leafy trees would be planted as green belt, trees with heavy foliage would be planted on both side of carriage way, ultra-low Sulphur Diesel (5 ppm) would be used as fuel in DG Sets, Stack height of DG sets of 3 x 320 KVA, 1 x 380 KVA, 4 x 500 KVA, 1 x 625 KVA & 1 x 750 KVA would be as per CPCB norms.

It was informed by the project proponent that the power requirement for the project will be 6149.02 KW. Parking requirement for the project as per Haryana Bye Laws is 516 ECS and the parking proposed for residential plot will be within the plots and for community center 157 ECS shall be provided in the Basement. There will be total solid waste generation of 6536 Kg/day. Out of this the bio-degradable waste 4575 Kg/day will be composted in 5 Nos. of Organic Waste Convertor provided within the project premises and the manure produced will be used for horticulture and green development. The

calculations of the same are in accordance with the prescribed norms. It was pointed out that the required water for the project will be provided through HUDA.

Detailed discussions were held about Solid Waste Management, rain water harvesting, fire fighting plan, noise and vibration plan, health and welfare of the laborers, electrical hazard plan, environment monitoring plan, energy conservation measures and environment management plan. There will be 63 numbers of rain water harvesting structures as approved by the Central Ground Water Authority (CGWA). The mitigation measures were found in order by the Committee.

After deliberations the Committee rated this project with **"Gold Rating"** and was of the unanimous view that this case for granting Environmental Clearance under EIA Notification dated 14.9.2006 issued by the Ministry of Environment and Forest, Government of India should be recommended to the SEIAA with the following stipulations:

PART A-
SPECIFIC CONDITIONS:-
Construction Phase:-

[1] "Consent for Establish" shall be obtained from Haryana State Pollution Control Board under Air and Water Act and a copy shall be submitted to the SEIAA, Haryana before the start of any construction work at site.

[2] A first aid room as proposed in the project report shall be provided both during construction and operational phase of the project.

[3] Adequate drinking water and sanitary facilities shall be provided for construction workers at the site. Provision should be made for mobile toilets. Open defecation by the laboures is strictly prohibited. The safe disposal of waste water and solid wastes generated during the construction phase should be ensured.

[4] All the topsoil excavated during construction activities shall be stored for use in horticulture/landscape development within the project site.

[5] The project proponent shall ensure that the building material required during construction phase is properly stored within the project area and disposal of construction waste should not create any adverse effect on the neighboring communities and should be disposed of after taking necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.

[6] Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water and any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approval of the Haryana State Pollution Control Board.

[7] The diesel generator sets to be used during construction phase shall be of ultra low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.

[8] The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of Explosives shall be taken.

[9] Ambient noise levels shall conform to the residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be taken to reduce ambient air pollution and noise level during construction phase, so as to conform to the stipulated residential standards of CPCB/MoEF.

[10] Fly ash shall be used as building material in the construction as per the provisions of Fly Ash Notification of September 1999 and as amended on 27th August 2003.

[11] Storm water control and its re-use as per CGWB and BIS standards for various applications should be ensured.

[12] Water demand during construction shall be reduced by use of pre-mixed concrete, curing agents and other best practices.

[13] In view of the severe constrains in water supply augmentation in the region and sustainability of water resources, the developer will submit the NOC from CGWA specifying water extraction quantities and assurance from HUDA/ utility provider indicating source of water supply and quantity of water with details of intended use of water – potable and non-potable. Assurance is required for both construction and operation stages separately. It shall be submitted to the SEIAA and RO, MOEF, Chandigarh before the start of construction.

[14] Roof must meet prescriptive requirement as per Energy Conservation Building Code by using appropriate thermal insulation material.

[15] Opaque wall must meet prescriptive requirement as per Energy Conservation Building Code which is proposed to be mandatory for all air conditioned spaces while it is desirable for non-air-conditioned spaces by use of appropriate thermal insulation material to fulfill requirement.

[16] The approval of the competent authority shall be obtained for structural safety of the building on account of earthquake, adequacy of fire fighting equipments, etc. as per National Building Code including protection measures from lightening etc. If any forest land is involved in the proposed site, clearance under Forest Conservation Act shall be obtained from the competent Authority.

[17] Overexploited groundwater and impending severe shortage of water supply in the region requires the developer to redraw the water and energy conservation plan. Developer shall reduce the overall footprint of the proposed development. Project proponent shall incorporate water efficiency /savings measures as well as water reuse/recycling within 3 months and before start of construction to the SEIAA, Haryana and RO, MOEF, GOI, Chandigarh.

[18] The Project Proponent as stated in the proposal shall construct total 63 rain water harvesting pits for recharging the ground water within the project premises. Rain water harvesting pits shall be designed to make provisions for silting chamber and removal of floating matter before entering harvesting pit. Maintenance budget and persons responsible for maintenance must be provided. Care shall also be taken that contaminated water do not enter any RWH pit.

[19] The project proponent shall provide for adequate fire safety measures and equipments as required by Haryana Fire Service Act, 2009 and instructions issued by the local Authority/ Directorate of fire from time to time. Further the project proponent shall take necessary permission regarding fire safety scheme/NOC from competent Authority as required.

[20] The Project Proponent shall obtain assurance from the DHBVN for supply of 6149.02 KW of power supply before the start of construction. In no case project will be operational solely on generators without any power supply from any external power utility.

[21] Detail calculation of power load and ultimate power load of the project shall be submitted to DHBVN under intimation to SEIAA Haryana before the start of construction. Provisions shall be made for electrical infrastructure in the project area.

[22] The Project Proponent shall not raise any construction in the natural land depression / Nallah/water course and shall ensure that the natural flow from the Nallah/water course is not obstructed.

[23] The Project Proponent shall keep the plinth level of the building blocks sufficiently above the level of the approach road to the Project. Levels of the other areas in the Projects shall also be kept suitably so as to avoid flooding.

[24] Construction shall be carried out so that density of population does not exceed norms approved by Director General Town and Country Department Haryana.

[25] The Project Proponent shall submit an affidavit with the declaration that ground water will not be used for construction and only treated water should be used for construction.

[26] The project proponent shall not cut any existing tree and project landscaping plan should be modified to include those trees in green area.

[27] The project proponent shall provide 3 meter high barricade around the project area, dust screen for every floor above the ground, proper sprinkling and covering of stored material to restrict dust and air pollution during construction.

[28] The project proponent shall construct a sedimentation basin in the lower level of the project site to trap pollutant and other wastes during rains.

[29] The project proponent shall provide proper rasta of proper width and proper strength for the project before the start of construction.

[30] The project proponent shall ensure that the U-value of the glass is less than 3.177 and maximum solar heat gain co-efficient is 0.25 for vertical fenestration.

[31] The project proponent shall adequately control construction dusts like silica dust, non-silica dust and wood dust. Such dusts shall not spread outside project premises. Project Proponent shall provide respiratory protective equipment to all construction workers.

[32] The project proponent shall develop complete civic infrastructure of the Group Housing colony including internal roads, green belt development, sewerage line, Rain Water recharge arrangements, Storm water drainage system, Solid waste management site and provision for treatment of bio-degradable waste, STP, water supply line, dual plumbing line, electric supply lines etc. and shall offer possession of the units/flats thereafter.

[33] The project proponent shall provide one refuge area till 24 meter and one till 39 meter each, as per National Building Code. The project proponent shall not convert any refuse area in the habitable space and it should not be sold out/commercialized.

[34] The project proponent shall provide fire control room and fire officer for building above 30 meter as per National Building Code.

[35] The project proponent shall obtain permission of Mines and Geology Department for excavation of soil before the start of construction.

[36] The project proponent shall seek specific prior approval from concerned local Authority/HUDA regarding provision of storm drainage and sewerage system including their integration with external services of HUDA/ Local authorities beside other required services before taking up any construction activity.

[37] The project proponent shall submit the copy of fire safety plan duly approved by Fire Department before the start of construction.

[38] The project proponent shall discharge excess of treated waste water/storm water in the public drainage system and shall seek permission of HUDA before the start of construction.

[39] The project proponent shall maintain the distance between STP and water supply line.

[40] The project proponent shall ensure that the stack height is 6 meter more than the highest tower.

[41] The project proponent shall ensure that structural stability to withstand earthquake of magnitude 8.5 on Richter scale.

Operational Phase:

[a] "Consent to Operate" shall be obtained from Haryana State Pollution Control Board under Air and Water Act and a copy shall be submitted to the SEIAA, Haryana.

[b] The Sewage Treatment Plant (STP) shall be installed for the treatment of the sewage to the prescribed standards including odour and treated effluent will be recycled to achieve zero exit discharge. The installation of STP shall be certified by an independent expert and a report in this regard shall be submitted to the SEIAA, Haryana before the project is commissioned for operation. Tertiary treatment of waste water is mandatory. The project proponent shall remove not only Ortho-Phosphorus but total Phosphorus to the extent of less than 2mg/liter. Similarly total Nitrogen level shall be less than 2mg/liter in tertiary treated waste water. Discharge of treated sewage shall conform to the norms and standards of CPCB/ HSPCB, whichever is environmentally better. Project Proponent shall implement such STP technology which does not require filter backwash. The project proponent shall essentially provide two numbers of STPs preferably equivalent to 50% of total capacity or as per the initial occupancy as the case may be.

[c] Separation of the grey and black water should be done by the use of dual plumbing line. Treatment of 100% grey water by decentralized treatment should be done ensuring that the re-circulated water should have BOD level less than 5 mg/litre and the recycled water will be used for flushing, gardening and DG set cooling etc. to achieve zero exit discharge.

[d] For disinfection of the treated wastewater ultra-violet radiation or ozonization process should be used.

[e] Diesel power generating sets proposed as source of back-up power for lifts, common area illumination and for domestic use should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The location of the DG sets shall be in the open as promised by the project proponent with appropriate stack height above the highest roof level of the project as per the CPCB norms. The diesel used for DG sets shall be ultra low sulphur diesel (35 ppm sulphur), instead of low sulphur diesel.

[f] Ambient Noise level should be controlled to ensure that it does not exceed the prescribed standards both within and at the boundary of the Proposed Affordable Group Housing Project.

[g] The project proponent as stated in the proposal should maintain at least 20.10% as green cover area for tree plantation especially all around the periphery of the project and on the road sides preferably with local species which can provide protection against noise and suspended particulate matter. The open spaces inside the project shall be preferably landscaped and covered with vegetation/grass, herbs & shrubs. Only locally available plant species shall be used.

[h] The project proponent shall strive to minimize water in irrigation of landscape by minimizing grass area, using native variety, xeriscaping and mulching, utilizing efficient irrigation system, scheduling irrigation only after checking evapo-transpiration data.

[i] Rain water harvesting for roof run-off and surface run-off, as per plan submitted should be implemented. Before recharging the surface run off, pre- treatment through sedimentation tanks must be done to remove suspended matter, oil and grease. The bore well for rainwater recharging shall be kept at least 5 mts. above the highest ground water table. Care shall be taken that contaminated water do not enter any RWH pit. The project proponent shall avoid Rain Water Harvesting of first 10 minutes of rain fall. Roof top of the building shall be without any toxic material or paint which can contaminate rain water. Wire mess and filters should be used wherever required.

[j] The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.

[k] A report on the energy conservation measures conforming to energy conservation norms finalized by Bureau of Energy Efficiency should be prepared incorporating details about building

materials & technology, R & U Factors etc and submitted to the SEIAA, Haryana in three months time.

[l] Energy conservation measures like installation of LED only for lighting the areas outside the building and inside the building should be integral part of the project design and should be in place before project commissioning. Use of solar panels must be adapted to the maximum energy conservation.

[m] The Project Proponent shall use zero ozone depleting potential material in insulation, refrigeration, air-conditioning and adhesive. Project Proponent shall also provide Halon free fire suppression system.

[n] The solid waste generated should be properly collected and segregated as per the requirement of the MSW Rules, 2016 and as amended from time to time. The bio-degradable waste should be treated by appropriate technology (proposed OWC) at the site ear-marked within the project area and dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.

[o] The provision of the solar water heating system shall be as per norms specified by HAREDA and shall be made operational in each building block.

[p] The traffic plan and the parking plan proposed by the Project Proponent should be adhered to meticulously with further scope of additional parking for future requirement. There should be no traffic congestion near the entry and exit points from the roads adjoining the proposed project site. Parking should be fully internalized and no public space should be used.

[q] The Project shall be operationalized only when HUDA/local authority will provide domestic water supply system in the area.

[r] Operation and maintenance of STP, solid waste management and electrical Infrastructure, pollution control measures shall be ensured even after the completion of project.

[s] Different type of wastes should be disposed off as per provisions of municipal solid waste, biomedical waste, hazardous waste, e-waste, batteries & plastic rules made under Environment Protection Act, 1986. Particularly E-waste and Battery waste shall be disposed of as per existing E-waste Management Rules 2011 and Batteries Management Rules 2001. The project proponent should maintain a collection center for E-waste and it shall be disposed of to only registered and authorized dismantler / recycler.

[t] Standards for discharge of environmental pollutants as enshrined in various schedules of rule 3 of Environment Protection Rule 1986 shall be strictly complied with.

[u] Water supply shall be metered among different users and different utilities.

[v] The project proponent shall ensure that the of DG sets is more than the highest tower and also ensure that the emission standards of noise and air are within the CPCB latest prescribed limits. Noise and Emission level of DG sets greater than 800 KVA shall be as per CPCB latest standards for high capacity DG sets.

[w] All electric supply exceeding 100 amp, 3 phase shall maintain the power factor between 0.98 lag to 1 at the point of connection.

[x] The project proponent shall not use fresh water for HVAC and DG cooling. Air based HVAC system should be adopted and only treated water shall be used by project proponent for cooling, if it is at all needed. The Project Proponent shall also use evaporative cooling technology and double stage cooling system for HVAC in order to reduce water consumption. Further temperature, relative humidity during summer and winter seasons should be kept at optimal level. Variable speed drive, best Co-efficient of Performance (CoP), as well as optimal Integrated Point Load Value and minimum outside fresh air supply may be resorted for conservation of power and water. Coil type cooling DG Sets shall be used for saving cooling water consumption for water cooled DG Sets.

[y] The project proponent shall ensure that the transformer is constructed with high quality grain oriented, low loss silicon steel and virgin electrolyte grade copper. The project proponent shall obtain manufacturer's certificate also for that.

[z] The project proponent shall ensure that exit velocity from the stack should be sufficiently high. Stack shall be designed in such a way that there is no stack down-wash under any meteorological conditions.

[aa] The project proponent shall provide water sprinkling system in the project area to suppress the dust in addition to the already suggested mitigation measures in the Air Environment Chapter of EMP.

[ab] The project proponent shall ensure proper Air Ventilation and light system in the basements area for comfortable living of human being and shall ensure that number of Air Changes per hour/(ACH) in basement never falls below 15. In case of emergency capacity for increasing ACH to the extent of 30 must be provided by the project proponent.

[ac] The project proponent shall ensure drinking/ domestic water supply as per prescribed standards till treated water supply is made available by HUDA.

[ad] The project proponent shall install solar panel for energy conservation.

PART-B. GENERAL CONDITIONS:

[i] The Project Proponent shall ensure the commitments made in Form-1, Form-1A, EIA/EMP and other documents submitted to the SEIAA for the protection of environment and proposed environmental safeguards are complied with in letter and spirit. In case of contradiction between two or more documents on any point, the most environmentally friendly commitment on the point shall be taken as commitment by project proponent.

[ii] The project proponent shall also submit six monthly reports on the status of compliance of the stipulated EC conditions including results of monitored data (both in hard copies as well as by e-mail) to the northern Regional Office of MoEF, the respective Zonal Office of CPCB, HSPCB and SEIAA Haryana.

[iii] STP outlet after stabilization and stack emission shall be monitored monthly. Other environmental parameters and green belt shall be monitored on quarterly basis. After every 3 (three) months, the project proponent shall conduct environmental audit and shall take corrective measure, if required, without delay.

[iv] The SEIAA, Haryana reserves the right to add additional safeguard measures subsequently, if found necessary. Environmental Clearance granted will be revoked if it is found that false information has been given for getting approval of this project. SEIAA reserves the right to revoke the clearance if conditions stipulated are not implemented to the satisfaction of SEIAA/MoEF.

[v] The Project proponent shall not violate any judicial orders/pronouncements issued by any Court/Tribunal.

[vi] All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972, Forest Act, 1927, PLPA 1900, etc. shall be obtained, as applicable by project proponents from the respective authorities prior to construction of the project.

[vii] The Project proponent should inform the public that the project has been accorded Environment Clearance by the SEIAA and copies of the clearance letter are available with the Haryana State Pollution Control Board & SEIAA. This should be advertised within 7 days from the date of issue of the clearance letter at least in two local newspapers that are widely circulated in the region and the copy of the same should be forwarded to SEIAA Haryana. A copy of Environment Clearance conditions shall also be put on project proponent's web site for public awareness.

[viii] Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the Project Proponent if it was found that construction of the project has been started before obtaining prior Environmental Clearance.

[ix] Any appeal against the this Environmental Clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010.

[x] The project proponent shall put in place Corporate Environment Policy as mentioned in MoEF, GoI OM No. J-11013/41/2006-IA II (I) dated 26.4.2012 within 3 months period. Latest Corporate Environment Policy should be submitted to SEIAA within 3 months of issuance of this letter.

[xi] The fund ear-marked for environment protection measures should be kept in separate account and should not be diverted for other purposes and year wise expenditure shall be reported to the SEIAA/RO MOEF GOI under rules prescribed for Environment Audit.

[xii] The project proponent shall ensure the compliance of Forest Department, Haryana Notification no. S.O.121/PA2/1900/S.4/97 dated 28.11.1997.

[xiii] The Project Proponent shall ensure that no vehicle during construction/operation phase enter the project premises without valid 'Pollution Under Control' certificate from competent Authority.

[xiv] The project proponent is responsible for compliance of all conditions in Environmental Clearance letter and project proponent can not absolve himself /herself of the responsibility by shifting it to any contractor engaged by project proponent.

[xv] The project proponent shall seek fresh Environmental clearance if at any stage there is change in the planning of the proposed project.

[xvi] Besides the developer/applicant, the responsibility to ensure the compliance of Environmental Safeguards/conditions imposed in the Environmental Clearance letter shall also lie on the licensee/licensees in whose name/names the license/CLU has been granted by the Town & Country Planning Department, Haryana.

[xvii] The proponent shall upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF, the respective Zonal Office of CPCB and the SPCB. The criteria pollutant levels namely; $PM_{2.5}$, PM_{10}, SO_X NO_X, Ozone, Lead, CO, Benzene, Ammonia, Benzopyrine, arsenic and Nickel. (Ambient levels as well as stack emissions) or critical

sectoral parameters, indicated for the project shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.

[xviii] The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the HSPCB Panchkula as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of the EC conditions and shall also be sent to the respective Regional Offices of MoEF by e-mail.

[xix] The project proponent shall conduct environment audit at every three months interval and thereafter corrected measures shall be taken without any delay. Details of environmental audit and corrective measures shall be submitted in the monitoring report.

[xx] Corporate Environment and Social Responsibility (CSER) shall be laid down by the project proponent (2% shall be earmarked) as per guidelines of MoEF, GoI Office Memorandum No. J-11013/41/2006-IA.II(I) dated 18.05.2012 and Ministry of Corporate Affairs, GoI Notification Dated 27.02.2014. A separate audit statement shall be submitted in the compliance. Environment related work proposed to be executed under this responsibility shall be undertaken simultaneously. The project proponent shall select and prepare the list of the work for implementation of CSER of its own choice and shall submit the same before the start of construction.

153.07 Environmental Clearance for proposed affordable group housing project at village Baighera, Sector 112, Gurgaon, Haryana by M/s Delurise Buildtech India Pvt. Ltd.

The project was submitted to the SEIAA, Haryana on 14.09.2016. The project proponent submitted the case to the SEIAA as per check list approved by the SEIAA/SEAC.

The case was taken up for appraisal in the 141st meeting of the SEAC held on 29.09.2016. During discussions, it was observed that the project proponent and consultant has submitted the incomplete application i.e. most of the columns are blank/not filled up and also not supplied the requisite documents to the Members. Earlier also the consultant had submitted incomplete applications for which he was warned. Inspite of the warning, he did not bother to submit the complete papers which clearly indicate that the consultant is not willing to comply the directions of the Committee, therefore this case was not heard. He tendered unconditional apology, and promised that he will not repeat such mistakes in future.

The observations of 141st meeting were conveyed to the PP vide letter No. 1504 dated 05.10.2016. The PP submitted the reply vide letter dated 10.11.2016. Thereafter the case was taken up in the 145th meeting of the SEAC held on 29.11.2016.

The observations of 145th meeting were conveyed to the PP vide letter No. 1683 dated 08.12.2016. The PP submitted vide letter dated 10.11.2016 requested for taking up of their case. Thereafter the case was taken up in the 153rd meeting of the SEAC held on 07.06.2017.

The Project Proponent requested for adjournment and the same was discussed in the meeting. The Committee acceded to the request and decided to issue 30 days notice to the PP.

153.08(S1) Environmental Clearance for the proposed Lalit Suri Education and Charitable Trust, Food Craft Complex, Badkhal Road, District Faridabad- M/s Lalit Suri Education and Charitable Trust (PN. 52)

1. Whereas application for Environmental Clearance was received by the SEIAA, Haryana on 05.08.2014 and the same was transferred to the SEAC, Haryana for the appraisal.
2. Whereas case was taken up in the 112th meeting of SEAC held on 19.09.2014 and observations were conveyed to you vide letter No. 1696 dated 26.09.2014.
3. No reply was received from the project proponent inspite of lapse of **TWO YEARS**.
4. Whereas final show cause notice was issued to the project proponent vide letter No. 1552 dated 20.10.2016.
5. Whereas PP has not submitted the reply so far inspite of issuing of Final Show Cause Notice.

6. As per MoEF guidelines No. J-11 013/5/2009-IA-II (Part) dated 30.10.2012, all projects where additional information desired has not been submitted even after 6 months of the Expert Appraisal Committee (EAC) meeting should be de-listed from the list of pending projects.

The matter was placed before the SEAC in its 153rd Meeting held on 07.06.2017 and it was unanimously decided that the case be sent to SEIAA for **de-listing** as the project proponent fails to comply the observations within a period of six months as per the directions of MoEF and SEIAA vide letter No. 244 dated 07.04.2016. It is further recommended that SEIAA may inform the concerned authorities for taking appropriate action as per law.

153.08(S2) Environmental Clearance for the proposed Group Housing Project (20.058 Acres), Sector-35, Village Mohammadpur Gurjar, Tehsil Sohna, District Gurgaon- M/s Faith Buildtech(PN. 11)

1. Whereas application for Environmental Clearance was received by the SEIAA, Haryana on 10.10.2014 and the same was transferred to the SEAC, Haryana for the appraisal.
2. Whereas case was taken up for the approval of Terms of Reference in the 115th meeting of SEAC held on 10.11.2014 and ToRs were conveyed to you vide letter No. 13 dated 11.12.2014. The PP submitted the EIA on 28.01.2015.
3. Whereas case was taken up for the appraisal in the 121st meeting of SEAC held on 18.11.2015 and the observations of 121st were conveyed to you vide letter No. 302 dated 01.12.2015.
4. No reply was received from the project proponent inspite of lapse of one year.
5. Whereas final show cause notice was issued to the project proponent vide letter No. 1550 dated 20.10.2016.
6. Whereas PP has not submitted the reply so far inspite of issuing of Final Show Cause Notice.
7. As per MoEF guidelines No. J-11 013/5/2009-IA-II (Part) dated 30.10.2012, all projects where additional information desired has not been submitted even after 6 months of the Expert Appraisal Committee (EAC) meeting should be de-listed from the list of pending projects.

The matter was placed before the SEAC in its 153rd Meeting held on 07.06.2017 and it was unanimously decided that the case be sent to SEIAA for **de-listing** as the project proponent fails to comply the observations within a period of six months as per the directions of MoEF and SEIAA vide letter No. 244 dated 07.04.2016. It is further recommended that SEIAA may inform the concerned authorities for taking appropriate action as per law.

153.08(S3) EC for the construction of proposed Group Housing project at Sector-70A, Gurgaon, Haryana.- M/s Pal Infrastructure and Developers Pvt. Ltd.(PN. 60)

1. Whereas application for Environmental Clearance was received by the SEIAA, Haryana on 13.04.2011 and the same was transferred to the SEAC, Haryana for the appraisal.
2. Show cause notice was issued to the PP vide letter No. 829 dated 27.11.2012. PP submitted the reply on 01.03.2013.
3. Whereas case was taken up in the 80th, 81st and 87th meetings of SEAC held on 30.04.2013, 10.05.2013 and 23.07.2013 respectively and case was sent to SEIAA for initiating legal action against the project proponent.
4. Whereas after taking the legal action against the PP, the case was taken up in the 111th meeting held on 08.09.2014. Observations of 111th meeting were conveyed to the PP vide letter No. 1629 dated 11.09.2014. PP submitted the reply on 24.09.2014.
5. Whereas case was taken up in the 114th meeting held on 27.10.2014. Observations of 114th meeting were conveyed to the PP vide letter No. 1806 dated 07.11.2014.
6. No reply was received from the project proponent inspite of lapse of **TWO YEARS**.
7. Whereas final show cause notice was issued to the project proponent vide letter No. 1554 dated 20.10.2016.
8. Whereas PP has not submitted the reply so far inspite of issuing of Final Show Cause Notice.
8. As per MoEF guidelines No. J-11 013/5/2009-IA-II (Part) dated 30.10.2012, all projects where additional information desired has not been submitted even after 6 months of the Expert Appraisal Committee (EAC) meeting should be de-listed from the list of pending projects.

The matter was placed before the SEAC in its 153rd Meeting held on 07.06.2017 and it was unanimously decided that the case be sent to SEIAA for **de-listing** as the project proponent fails to

comply the observations within a period of six months as per the directions of MoEF and SEIAA vide letter No. 244 dated 07.04.2016. It is further recommended that SEIAA may inform the concerned authorities for taking appropriate action as per law.

153.08(S4) Environmental Clearance for the proposed Group Housing Project (15.280 Acres), Sector-35, Village Mohammadpur Gurjar, Tehsil Sohna, District Gurgaon- by M/s Faith Buildtech Pvt. Ltd.(PN. 10).

1. Whereas application for Environmental Clearance was received by the SEIAA, Haryana on 10.10.2014 and the same was transferred to the SEAC, Haryana for the appraisal.
2. Whereas case was taken up for the approval of Terms of Reference in the 115th meeting of SEAC held on 10.11.2014 and ToRs were conveyed to you vide letter No. 14 dated 11.12.2014. The PP submitted the EIA on 28.01.2015.
3. Whereas case was taken up for the appraisal in the 121st meeting of SEAC held on 18.11.2015 and the observations of 121st were conveyed to you vide letter No. 301 dated 01.12.2015.
4. No reply was received from the project proponent inspite of lapse of one year.
5. Whereas final show cause notice was issued to the project proponent vide letter No. 1549 dated 20.10.2016.
6. Whereas PP has not submitted the reply so far inspite of issuing of Final Show Cause Notice.
7. As per MoEF guidelines No. J-11 013/5/2009-IA-II (Part) dated 30.10.2012, all projects where additional information desired has not been submitted even after 6 months of the Expert Appraisal Committee (EAC) meeting should be de-listed from the list of pending projects.

The matter was placed before the SEAC in its 153rd Meeting held on 07.06.2017 and it was unanimously decided that the case be sent to SEIAA for **de-listing** as the project proponent fails to comply the observations within a period of six months as per the directions of MoEF and SEIAA vide letter No. 244 dated 07.04.2016. It is further recommended that SEIAA may inform the concerned authorities for taking appropriate action as per law.

153.08(S5) Revised Environmental Clearance for the proposed expansion of Independent Floors/Plots in Residential Plotted Colony "Privana" DLF Garden City, Sector-76 & 77, Village Kherki Daula & Shikohpur, Gurgaon by M/s DLF Utilities Ltd.(PN 33)

1. Whereas application for Environmental Clearance was received by the SEIAA, Haryana on 08.12.2014 and the same was transferred to the SEAC, Haryana for the appraisal.
2. Whereas case was taken up for the approval of Terms of Reference in the 118th meeting of SEAC held on 19.02.2015 and ToRs were conveyed to you vide letter No. 2049 dated 10.03.2015. The PP submitted the EIA on 31.08.2015.
3. Whereas case was taken up for the appraisal in the 127th meeting of SEAC held on 15.02.2016 and the observations of 127th were conveyed to you vide letter No. 646 dated 24.02.2016.
4. No reply was received from the project proponent inspite of lapse of **EIGHT MONTHS**.
5. Whereas final show cause notice was issued to the project proponent vide letter No. 1551 dated 20.10.2016.
6. Whereas PP has not submitted the reply so far inspite of issuing of Final Show Cause Notice.
7. As per MoEF guidelines No. J-11 013/5/2009-IA-II (Part) dated 30.10.2012, all projects where additional information desired has not been submitted even after 6 months of the Expert Appraisal Committee (EAC) meeting should be de-listed from the list of pending projects.

The matter was placed before the SEAC in its 153rd Meeting held on 07.06.2017 and it was unanimously decided that the case be sent to SEIAA for **de-listing** as the project proponent fails to comply the observations within a period of six months as per the directions of MoEF and SEIAA vide letter No. 244 dated 07.04.2016. It is further recommended that SEIAA may inform the concerned authorities for taking appropriate action as per law.

153.08(S6) Environmental Clearance for construction of Commercial Colony at Sector-114, Gurgaon Manesar Urban Complex, Gurgaon, Haryana.by M/s KST Infrastructure Pvt. Ltd.

Project Proponent : Sh. Kuldeep Singh Tawar, Director
Consultant : Ind Tech House Consult

The project proponent submitted the case for obtaining Environmental Clearance to the SEIAA, Haryana on 19.01.2015 as per check list approved by the SEIAA/SEAC. The case could not be taken up in the SEAC as the term of SEIAA/SEAC was elapsed on 21.03.2015. Therefore, the case was transferred to

Ministry of Environment and Forest, Government of India in the month of March, 2015. This case could not be taken up by the MoEF and was again transferred to SEIAA on 31.08.2015 after the reconstitution of SEIAA/SEAC on 21.08.2015. Thereafter the case was taken up for appraisal in the 120th meeting of the SEAC held on 06.11.2015.

During discussion, it revealed that project proponent has started the construction work which amounts to violation of Environmental Protection Act, 1986 in compliance of EIA Notification dated 14.09.2006. Further in order to assess the correct position at site, Committee decided to constitute a Sub-Committee consisting of the following to inspect the site to verify and report the status of construction of the project:

1. Sh. G.R. Goyat, Chairman
2. Sh. A.K. Bhatia, Member (Coordinator)

The site has since been visited and Sub-Committee had submitted its report on 13.01.2016. The findings of the Sub-Committee are reproduced as under:-

INSPECTION REPORT DT 2.12.15 BY SUB-COMMITTEE, SEAC, HARYANA

Sub-Site inspection to verify status of construction for proposed commercial colony at sector 114, Gurgaon Manesar urban complex, Gurgaon by M/S KST Infrastructure Pvt Ltd.

Inspection

A sub-committee consisting 1. Sh G.R.Goyat,Chairman and Sh A.K.Bhatia member & coordinator was formed vide order no SECY/SEAC/2015/207 Dt 16.11.2015 to inspect the site to verify status of construction of above mentioned site. The subcommittee visited the site on 2.12.2015.

Following were present on behalf of PP-

1. Anshul jain, Accountant
2. Ajay Verma, Foreman

The sub-committee inspected the site on dt 2.12.15 in presence of the above mentioned two representatives of the PP and the matter was discussed with them about the status of site . The subcommittee was informed by them that they are not the technical persons and were unable to provide any details about the activity/construction taken place at the site so far. As there was no responsible representative from the PP or the consultant, the details of status of construction could not be measured. There was no active construction activity at the time of inspection, however it was observed that there is substantial excavation in the main project area in the past to facilitate the construction of building. Besides , sizable construction along the Bijgehra- Nazafgarh road at two corners in the project area was found. The constructed structure of brick walls with one of tin shed and other of RCC slabs was noticed on first floor level of about 100X40 feet each. At one of the locations the built up area was being used for commercial purpose.

In view of the above fact it is recommended for suitable action may be initiated for violation of EIA Notification 14.09.2006.

(A.K.Bhatia)
(Member Coordinator)

(G.R.Goyat)
(Chairman)

The report of the Sub-Committee was placed before the Committee in the 125th meeting of the SEAC held on 13.01.2016. The Sub-Committee report was read out to all the Members of the Committee and deliberated in detail. The Committee has accepted the report of the Sub-Committee in total.

As reported in the Sub-Committee report, the case under consideration was recommended to be prosecuted. The case was sent to the SEIAA on 01.02.2016.

The case was taken up by the SEIAA in its 88th meeting held on 29.02.2016 and SEIAA constituted a Sub-committee consisting of Sh. Hitender Singh, Member, SEAC and Sh. S.N. Mishra, Member, SEAC. The report of the Sub-Committee constituted by the SEIAA was placed before the SEIAA in its 94th meeting held on 11.08.2016.

Report of Sub-Committee of SEIAA

EC for construction of Commercial Colony at Sector-114, Guragon Manesar Urban Complex, Gurgaon.

SEIAA vide letter no. 211 – 212 dated 15-3-16 constituted a sub-committee of the following persons to inspect the above mentioned site.

1. Dr. S.N.Mishra (Member SEAC)
2. Ar. Hitender Singh (Member SEAC)

The sub-committee visited the site on 07/05/2016 & the following were present.

1. Sh. Kuldeep Singh (Director)
2. Sh. Digvijay Singh (Representative of PP)

Report

The members inspected the site & discussed the case entire case with the representatives of the Project Proponent & observed the following:

The site was vacant & there was no sign of any construction activity at all. Also there was no storage of any material like bricks, sand etc. at site.

However, the following was observed at site.

1) There was a temporary structure in the front.
2) On the right corner was a temporary shed where in a liquor vend was being run.
3) Some of the portion of the site was dug up.
Photographs Enclosed (Annexure – A)

The statements of the Project Proponent regarding the above discrepancies & the comments of the sub-committee is as follows,

Observation	Statement of Project Proponent	Comments
1) There was a temporary structure in the front.	The temporary structure was built for gowdown/office for site construction. This temporary structure was approved by the STP Gurgaon with the condition to dismantle the same before completion of the project. Approved plan of STP (Annexure – 2)	The temporary construction is not part of the main plan. The approved area is only 209sq.mt. & even this is partially built. & which will be dismantled when the main building is constructed.
2) On the right corner was a temporary shed where in a liquor vend was being run.	There is a temporary tin shed belonging to the farmers & this shall be dismantled before completion of the project. PP also informed that the developer has not purchased this land & has only an agreement with the farmers who are the owners of this land & that this tin shed/vend is in existence since many years.	An old temporary tin shed of size 10'x12' was observed on the right corner of the site. This is away from the main building.
3) Some of the portion of the site was dug up.	The PP informed that since the site was unattended, unknown persons excavated the earth in some portion. & that they had not initiated any construction.	Some portion of the site was excavated. There was no sign of any work in foundation. Nor was there any material stored at site.

The PP was asked to give his statement in the form of an affidavit which he has submitted & is enclosed as Annexure – 3.

Conclusion

In light of the explanation given by the PP regarding points 1 & 2, it may be safely construed that there is no violation.

Regarding point 3, in light of the affidavit by the PP, it cannot be conclusively ascertained that the digging/excavation was done by the PP.

Dr. S.N.Mishra
(Member SEAC)

Ar. Hitender Singh
(Member SEAC)

SEIAA decided to refer this case to SEAC for appraisal and recommendation on merit as per procedure prescribed in the Notification and time to time guidelines issued by MOEF & CC, GOI.

Thereafter, the case was taken in the 141st meeting of the SEAC held on 27.09.2016.

During discussion, the report of the Sub-Committee constituted by SEIAA was examined by the Committee. Earlier also the project site was inspected by the Sub-Committee constituted by the SEAC. In both the inspection reports, there is clear cut violation in terms of excavation done by the PP and construction of RCC Pakka structure by the PP as per Clause 6 of EIA Notification, 2006. Further there was a violation which was observed by both the Committees. As reported in the Sub-Committee reports, the case under consideration was recommended to be prosecuted.

The case was again taken up by the SEIAA in its 97th meeting held on 07.10.2016, wherein it was decided to refer back the case to SEAC with the advice to appraise the case on merits. Thereafter, the case was taken up in the 146th meeting of the SEAC held on 15.12.2016. During discussion, it was observed by the Committee that this case was earlier taken by the SEAC in its 125th meeting and 141st meeting and it was observed that there was a violation of EIA Notification, 2006 in terms of excavation and some RCC Pakka construction was done by the project proponent at the project site which was verified by the Sub-Committees constituted by the SEAC and SEIAA.

SEAC is of the view that so far no case of EIA violation for which prosecution action has been recommended in past has been considered for appraisal without initiating credible action.

However as per directions contained in the Office Memorandum No. J-11013/41/2006-1A.II(I) dated 12th December, 2012 and No. J-11013/41/2006-1A.II(I) dated 27th June, 2013 issued by MoEF, the case is recommended to the SEIAA with clear stipulations that prosecution proceedings be launched because of the violations incurred by the project proponent which has been proved through site visit reports**.** The process of Environment Clearance will follow in accordance with the directions contained in para 5(ii) which is reproduced as under:

> **"The State Government concerned will need to initiate credible action on the violation by invoking powers under Section 19 of the Environment (Protection) Act, 1986 for taking necessary legal action under Section 15 of the Act for the period for which the violation has taken place and evidence provided to MoEF of the credible action taken."**

The Committee after detailed discussion is of the unanimous view that the case be referred to the SEIAA for initiating further necessary action as per para 5(ii) above.

The case was forwarded to SEIAA on 10.01.2017. The State Environment Impact Assessment Authority(SEIAA) vide their note dated 25.01.2017 referred back the case to the SEAC with the directions to appraise the project immediately because case has already been delayed considerably causing huge inconvenience and loss to the project proponent. Thereafter, the case was taken up in the 147th meeting of the SEAC held on 31.01.2017.

The Committee after detailed discussion is of the unanimous view that the case may be placed in the 148th meeting of the SEAC to be held on 15.02.2017. Accordingly the notice will be issued by the Secretary, SEAC to the Project Proponent.

Thereafter, the case was taken up in the 148th meeting of the SEAC held on 15.02.2017.

During discussions, it was observed that the Chairman, SEIAA vide his note dated 25.01.2017 refer back this case to SEAC with the following direction:-

> ***"It is considered opinion of SEIAA that instant case should be appraised by the SEAC. The SEAC has to appraise the case first and SEIAA has to decide whether it is fit case for prosecution or not. The SEAC has no any powers to override the direction of SEIAA. Hence in view of above discussions, case is sent back to SEAC for apprising the case immediately because case has***

already been delayed considerably causing huge inconvenience and loss to the project proponent."

It is pertinent to mention here that the Hon'ble NGT in the matter of S.P. Muthuram V/s Union of India in O.A. No. 37 of 2015 & 213 of 2014 passed the following orders/directions vide order dated 7th July, 2015, which are reproduced as under:-

i. We hold and declare the Office Memoranda dated 12th December, 2012 and 27th June, 2013 as ultra vires the provisions of the Act of 1986 and the Notification of 2006. They suffer from the infirmity of lack of inherent jurisdiction and authority. Resultantly, we quash both these Office memoranda.

ii. Consequently, the above office Memoranda are held to be ineffective and we prohibit the MoEF and the SEIAA in the entire country from giving effect to these Office Memoranda in any manner, whatsoever.

Further, Hon'ble Supreme Court vide its order dated 22.01.2016 in the matter of Satilila Sehkari Awas Samiti Ltd V/s Union of India & Ors. etc. in civil appeal diary No. 37397 of 2015 has passed the following orders. Which is reproduced as under:-

"*We had by separate interim orders in these appeals unconditionally stayed order dated 7th July, 2015 and 1st September, 2015, passed by the National Green Tribunal. By the said two orders, the Tribunal had directed the appellants in Civil Appeals No. 7193-7194/2015, 9124-9125/2015, 13844-13845/2015, 7191-7192/2015, 9108/2015, 5618/2015 and 13842-13843/2015 to deposit 5% of the project value towards environmental compensation on a provisional basis. Learned senior counsel appearing for Y. Pondurai appellant in Civil Appeals No. 13842-13843 of 2015, M/s Ruby Manoharan Property Developers Pvt. Ltd. – appellant in Civil Appeals No. 13844-13845 of 2015 and M/s SSM Builders-appellant in Civil Appeals No. 9124-9125 of 2015 submit that the appellants in the said appeals have already deposited the amount directed by the Tribunal. Mr. Jaideep Gupta, learned senior counsel appearing for M/s Jones Foundations Pvt. Ltd. – appellant in Civil Appeal No. 9108 of 2015, submits that the appellant in that appeal has also deposited a part amount of Rs. 2,00,00,000/- out of a total of Rs. 7,00,00,000/-.*

Having heard learned counsel for the parties at some length, we are of the view that the orders passed by this court staying the operation of the impugned judgments and orders of the Tribunal, need to be modified so as to direct the appellants in the remaining appeals also to make the deposit in terms of the orders passed by the Tribunal. We accordingly modify our interim order passed in the appeals to the extent that the appellants in these appeals shall within four weeks from today deposit the amount in terms of the orders of the Tribunal, if not already deposited. We are, further, of the view that the committee appointed by the Tribunal in terms of direction contained in sub-paras '4' and '6' of para '163' ought to be allowed to undertake the exercise which the Tribunal had directed. The committee shall, therefore, be free to take up the assignment and complete the same as early as possible. A copy of the report which the committee may submit to the Tribunal shall also be submitted to this court.

Mr. Neeraj Kishan Kaul, learned Additional Solicitor General, appearing for the respondent-Union of India, submits that while the Government is in the process of reviewing the entire issue and issuing fresh notifications on the subject, it will have no difficulty in presenting to this Court a full picture about the status of environmental clearance issued to the appellants herein. He seeks four weeks time to do the needful. The compilation which the respondent – U.O.I. may file shall among others indicate the following:-

1. *Whether any environmental clearances have been issued to the appellants herein. If so when and under whose orders.*
2. *If clearances have been refused or the same are under process, the particulars of such cases shall also be indicated.*
3. *The compilation shall also set out the stage at which the construction undertaken by the appellants have releached at present.*

4. Copies of the verification/inspection reports, if any, on the basis of which the environmental clearances have been granted to any one of the appellants, shall also be filed.

Learned counsel appearing for some of the flat owners submits that while some of the appellants are claiming to have handed over possession of the flats, the fact of the matter is that not everyone who has booked a flat with the appellants has been put in possession. He submits that the appellants could be directed to file a separate affidavit indicating the particulars of those who have been put in possession of the flats by the appellants – builders concerned. We direct accordingly.

The needful shall be done on or before the next date of hearing.

Additional documents, if any, b also filed by the parties within three weeks from today.

Post on Friday, the 4th March, 2016."

In view of above decision of Hon'ble National Green Tribunal/ Hon'ble Supreme Court there is no procedure to appraise such cases of violation of EIA /Environment Protection Act. However, this case is being appraised on the repeated directions of the SEIAA. Therefore, case was taken up for appraisal and following shortcomings were observed which are as under:-

1. The PP should submit the clear location of the project site in google map.
2. The PP should submit the copy of collaboration agreement with the land owner.
3. The PP should clarify for the site as the same has been shown adjacent to the National Highway No. 8 but actually it is not show.
4. The PP for compliance with respect to compliance at Page No. 20 that the structure design will be vetted by government agency.
5. The PP should revise green area plan with detail calculation.
6. The PP should submit the levels of contour and should mark them on the site plan with respect to Survey of India sheet.
7. The PP should supply the details of construction waste which is stated to be 1616 MT.
8. The PP should clarify the details of pakka structure with RCC slab which is existing at site.
9. The PP should submit the water assurance.
10. The PP should submit fresh water requirement as per MOEF norms and revise water balance and water conservation plan.
11. The PP should submit detail hydrogeological condition and revise recharge plan accordingly. PP to also submit annual maintenance plan of recharge pit and show on layout plan.
12. The PP should submit the hydraulic design of STP alongwith design calculation.
13. The PP should submit the latest data of ambient air quality alongwith windrose diagram and GLC for 2.5 & 2.10.
14. The PP should submit the acknowledgement for electric supply from DHVPN.
15. The PP should submit permission from fire department.
16. The PP should submit revise municipal solid waste management.
17. The PP should submit the details of water body as shown in the project site.
18. The PP should submit an undertaking for ultra sulphur for DG set alongwith special mitigation measure for controlling air pollution.
19. The PP should submit an undertaking for solar energy generation as per HAREDA guidelines.
20. The PP should submit an affidavit for compliance of ECBC.
21. The PP should submit revise CSR Plan.
22. The PP should clarified the language of affidavit at page no. 144.
23. The PP should submit the detail calculation as well as hydraulic design of rain water harvesting.
24. The PP should submit revise surface parking plan and area details.
25. The PP should clarify with respect to the land which has been shown flat, whereas at site facts are otherwise as per report of the Sub-Committees.

The observations of 148th meeting were conveyed to the project proponent vide letter No. 1786 dated 01.03.2017. The PP submitted the reply vide letter dated 31.03.2017. Thereafter, the case was taken up in the 151st meeting of the SEAC held on 02.05.2017.

The project proponent requested for considering their case in the next meeting of the SEAC. It was unanimously decided by the Committee that this case will be considered in the next meeting to be held on 30.05.2017. It was also made clear to the Project Proponent that no separate letter will be issued for attending the meeting of the SEAC.

Thereafter, the case was taken up in the 152nd meeting of the SEAC held on 30.05.2017.

After detailed discussions, following shortcomings were observed:

1. The PP for compliance with respect to compliance at Page No. 20 that the structure design will be vetted by government agency.
2. The PP should revise green area plan with detail calculation.
3. The PP should submit the levels of contour and should mark them on the site plan with respect to Survey of India sheet.
4. The PP should submit the water assurance.
5. The PP should submit the hydraulic design of STP alongwith design calculation.
6. The PP should submit revise municipal solid waste management.
7. The PP should clarified the language of affidavit at page no. 144.
8. The PP should submit the detail calculation as well as hydraulic design of rain water harvesting.
9. The PP should submit revise surface parking plan and area details.
10. The PP should clarify with respect to the land which has been shown flat, whereas at site facts are otherwise as per report of the Sub-Committees.

The observations of 152nd meeting were conveyed to the project proponent vide letter No. 2009 dated 06.06.2017. The PP submitted the reply directly in the 153rd meeting of the SEAC held on 07.06.2017 and requested for finalization of the case. The Committee after detailed discussions taken the case as Additional Agenda Item.

In the meanwhile, the MoEF & CC has issued Notification No. S.O.804(E) dated 14th March, 2017 vide which that following procedure is to be followed in case of violation of EIA Notification, 2006.

> ***"In case the projects or activities requiring prior environmental clearance under Environment Impact Assessment Notification, 2006 from the concerned Regulatory Authority are brought for environmental clearance after starting the construction work, or have undertaken expansion, modernization, and change in product- mix without prior environmental clearance, these projects shall be treated as cases of violations and in such cases, even Category B projects which are granted Environmental Clearance by the State Environment Impact Assessment Authority constituted under sub-section (3) Section 3 of the Environment (Protection) Act, 1986 shall be appraised for grant of environmental clearance only by the Expert Appraisal Committee and environmental clearance will be granted at the Central Level."***

In view of orders of SEIAA, this case was appraised by SEAC in 151st Meeting held on 27.04.2017 and 25 observations were raised. The case was again taken up in 152nd and 153rd meetings strictly in view of orders of SEIAA and the PP has submitted the reply of the observations.

In view of above Notification issued by MoEF & CC, and reports of Sub-Committee, the SEAC is of unanimous view that this is a case of violation as already observed by SEAC in earlier meetings and SEAC is of the unanimous view that this case may be referred to SEIAA for taking appropriate action in the matter in terms of notification dated 14.03.2017.

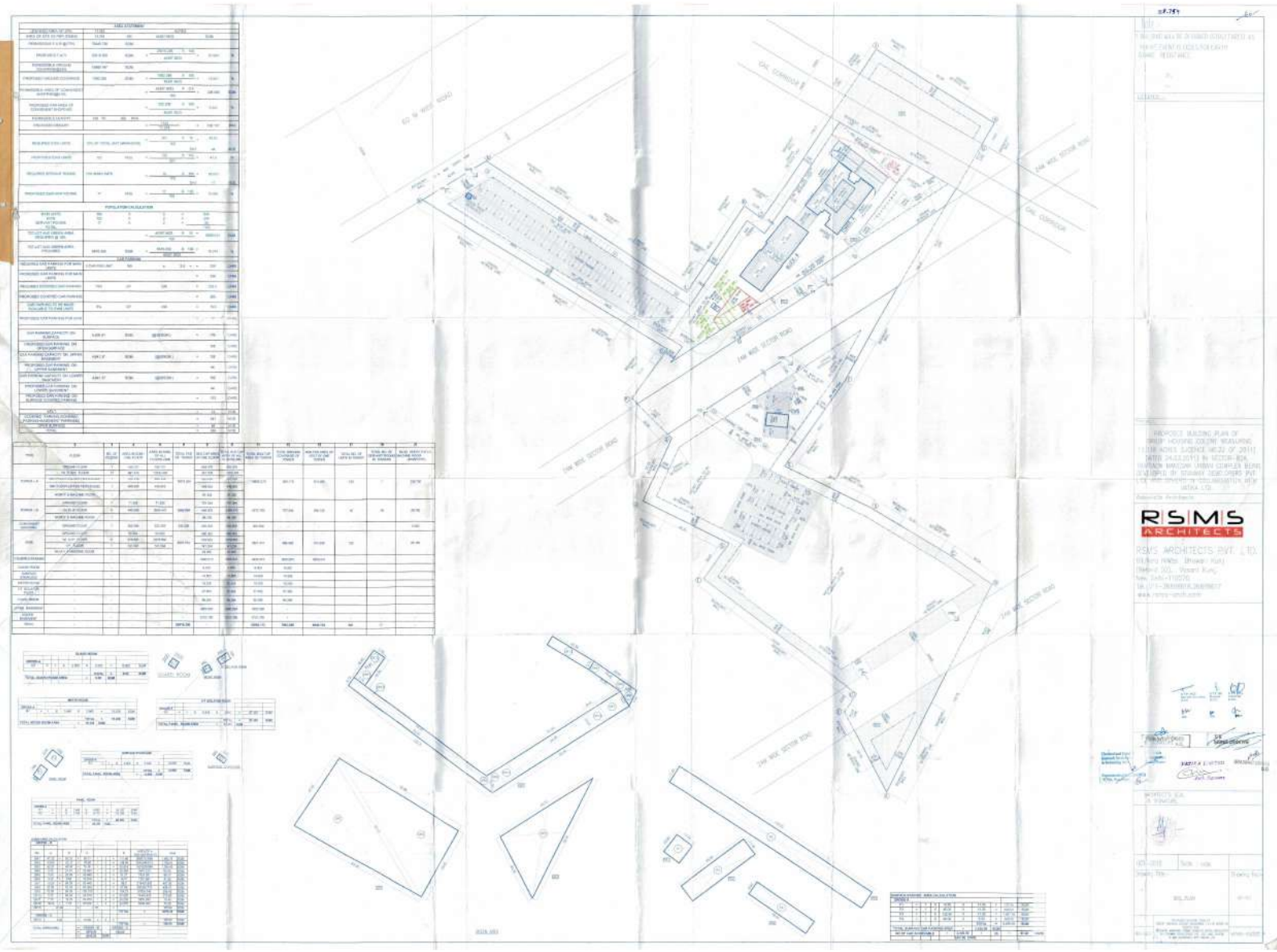
The meeting ended with the vote of thanks to the Chair.

Annexure-'A'

List of Participants

1.	Shri Raj Kumar Sapra, IFS (Retd.) House No. 601, Angel Apartment Society No. 12, Sector-24, Panchkula	Member
2.	Shri S.C. Mann, House No. 544, Sector-12-A, Panchkula Haryana	Member
3.	Shri A.K. Bhatia, House No. 679, Sector-8, Panchkula, Haryana	Member
4.	Shri Hitender Singh, Architect, Department of Architecture, Haryana	Member
5.	Dr. S.N. Mishra, House No. 220, First Floor, Sector-14, Rohtak, Haryana	Member
6.	Sh. S. Narayanan, IFS Member Secretary, Haryana State Pollution Control Board, Panchkula	Secretary

ANNEXURE P-3



BR-III
(See Code 4.2 (4))
Form of Sanction

From

Chief Town Planner, Haryana-cum- Chairman,
Building Plan Approval Committee
O/o Director, Town & Country Planning Department,
Haryana, Chandigarh.
SCO-71-75, Sector-17-C, Chandigarh.
Tele-Fax: 0172-2548475; Tel.: 0172-2549851,
E-mail: tcpharyana4@gmail.com
Website www.tcpharyana.gov.in

To

Stanway Developers Pvt. Ltd.& others,
C/o Vatika Limited,
Vatika Triangle, 7th Floor, Sushant Lok,
Phase-I, Block-A,
Gurugram.

Memo No. ZP-759/SD(BS)/2017/ 2993 Dated:- 16-02-2017

Subject: Approval of building plans of Group Housing Colony measuring 11.218 acres (Licence No. 22 of 2011 dated 24.03.2011) in Sector-82-A, Gurugram being developed by Stanway Developers Pvt. Ltd. others in collaboration with Vatika Ltd.

Reference your application dated 07.01.2016 & subsequent letter dated 19.12.2016 for permission to erect the building plans of Group Housing Scheme measuring 11.218 acres (Licence No. 22 of 2011 dated 24.03.2011) in Sector-82-A, Gurugram in accordance with the plans submitted with it.

Permission is hereby granted for the aforesaid construction subject to the provisions of the respective Acts and Haryana Building Code-2016 subject to the following amendments, terms and conditions::-

1. The plans are valid for a period of 2 years of the buildings less than 15.00 meters in height and 5 years for the multistoried buildings from the date of issuance of sanction, subject to validity of licenses granted for this scheme.
2. The structural responsibility of the construction shall be entirely of the owner/ supervising architect/ Engineer of the scheme.

Further that: -

a) The building shall be constructed in accordance to the Structure Design by Structure Engineer and certified by Proof Consultant on prescribed FORM BR-V(A2).
b) All material to be used for erection of building shall conform to I.S.I. and N.B.C. standards.
c) No walls/ceiling shall be constructed of easily inflammable material and staircases shall be built of the fire resisting material as per standard specification.

d) The roof slab of the basement external to the buildings if any shall be designed/ constructed to take the load of fire tender up to 45 tones.

3. FIRE SAFETY:

(i) The colonizer and the Supervising Architect of the project shall be entirely responsible for making provisions of fire safety and fire fighting measures and shall abide by all fire safety bye laws.

(ii) That you shall get approved the fire fighting scheme in accordance with the section 15 of The Haryana Fire Safety Act 2009 and directions issued by the Director, Haryana Fire Services, Haryana, before starting the construction work at site.

4. The provision of letter boxes for each dwelling unit shall be made at the ground floor of each building.

5. No addition and alteration in the building plans/ layout plan shall be made without the prior approval of DTCP. Further only figured dimensions shall be followed and in case of any variation in the plans, prior approval of DTCP shall be pre-requisite.

6. That you shall furnish the service plan/ estimate of this scheme in accordance with approved building plans.

7. Based on the actual estimated cost of internal development of the Group Housing Colony you shall furnish additional bank guarantee, if required.

8. The revenue Rasta if any passing through the site shall be kept unobstructed.

9. If any infringement of byelaws remains unnoticed, the Department reserves the right to amend the plan as and when any such infringement comes to its notice after giving an opportunity of being heard and the Department shall stand indemnified against any claim on this account.

10. The layout showing the electric installation shall have to be got approved from the competent authority before execution of work at site.

11. No person shall occupy or allow any other person to occupy any new building and before grant of occupation certificate, you shall apply for occupation certificate as per the provisions of Code 4.10 of the Haryana Building Code-2017 which shall be accompanied by certificates regarding completion of works described in the plans and it shall be accompanied by:

(i) DPC certificate issued by DTP.

(ii) Structural stability certificate duly signed by the recognized Architect & Structural Engineer.

(iii) A clearance from Fire Safety point of view from the competent authority.

12. The basements shall be used for parking and services as prescribed in the approved zoning plan and building plans. The parking lots proposed in the scheme shall be exclusively for the use of flat owners/residents of the group

housing scheme. The parking lot shall not be leased out /transferred to any person who is not a flat owners /residents of the group housing complex.

13. You shall comply with the conditions laid down in the Memo No. 133086 dated 16.12.2016 of Superintending Engineer (HQ), HUDA, Panchkula (copy enclosed).

14. GENERAL: -

(i) You shall abide the terms and conditions of the undertaking filed in this office in compliance of Order dated 16.07.2012 of the Hon'ble High Court and shall not extract groundwater for construction purposes.

(ii) That the coloniser/owner shall obtain the clearance/NOC as per the provisions of the Notification No. S.O. 1533 (E) Dated 14.9.2006 issued by Ministry of Environment and Forest, Government of India before starting the construction/execution of development works at site.

(iii) That the rain water harvesting system shall be provided as per Central Ground Water Authority norms/Haryana Govt. notification as applicable.

(iv) That the coloniser/owner shall use only Light-Emitting Diode lamps (LED) fitting for internal lighting as well as Campus lighting.

(v) That the coloniser/owner shall strictly comply with the directions issued vide Notification No. 19/6/2016-5P dated 31.03.2016 issued by Haryana Government Renewable Energy Department.

(vi) That coloniser/owner shall ensure the installation of Solar Power Plant as per provisions of Haryana Solar Power Policy, 2016 issued by Haryana Government Renewable Energy Department vide Notification No. 19/4/2016-5 Power dated 14.03.2016.

(vii) That the coloniser/owner shall ensure the installation of Solar Photovoltaic Power Plant as per the provisions of order No. 22/52/2005-5Power dated 21.03.2016 issued by Haryana Government Renewable Energy Department.

(viii) That you shall submit the scanned copy of the approved building plans of this scheme to this office from the issuance of this letter.

(ix) That you shall deposit the labour cess in future, time to time as per construction of work done at site.

(x) That if any, site for Electric Sub Station is required, same will be provided by you in the colony.

(xi) That you shall abide by the policies issued by the Department regarding allotment of EWS flats from time to time.

(xii) That provision of parking shall be made within the area earmarked /designated for parking in the colony and no vehicle shall be allowed to park outside the premises.

(xiii) That you shall follow provisions of section 46 of 'The Persons with Disabilities (Equal Opportunities, protection of Rights and full Participation)

Act, 1995' which includes construction of Ramps in public buildings, adaption of toilets for wheel chair users, Braille symbols and auditory signals in elevators or lifts and other relevant measures for Hospitals, Primary Health Centre and other medical care and rehabilitation units.

15. That you shall strictly comply with the directions of MOEF Guidelines, 2010 while raising construction and comply with the instructions of Director General, Town & Country Planning, Haryana, Chandigarh issued vide order dated 14.05.2015 and is also available on the Departmental Website www.tcpharyana.gov.in.

16. That the Service Plans/Estimates for electrical infrastructure shall be submitted to the concerned authority and submit the approval of the same to the Department before applying the completion certificate of the colony under Rule-16 of the Haryana Development and Regulation of Urban Areas Rules, 1976.

This sanction will be void abnitio, if any of the conditions mentioned above are not complied with.

DA/One set of Building Plans.

(S.K. Sehrawat)
District Town Planner (HQ),
Member Secretary,
For: Chief Town Planner, Haryana-cum- Chairman,
Building Plan Approval Committee.

Memo No. ZP-759/SD(BS)/2017/_____ Dated:-_____

A copy is forwarded to the following for information: -

1. Haryana State Pollution Control Board, Panchkula with the request that the compliance of the instructions issued by NGT shall be monitored and strict compliance to be ensured.
2. Administrator, HUDA, Gurugram.
3. Senior Town Planner, Gurugram.
4. Superintending Engineer (HQ) HUDA, Panchkula.
5. District Town Planner, Gurugram along with one set of building plans.
6. District Town Planner (Enf.), Gurugram.
7. Nodal Officer, Website Updation.

Encl: as above

(S.K. Sehrawat)
District Town Planner (HQ),
Member Secretary,
For: Chief Town Planner, Haryana-cum- Chairman,
Building Plan Approval Committee.

vatika®
creating lasting value

Registered Office
Vatika Limited
Vatika Triangle, 4th Floor
Sushant Lok, Phase I, Block A
Mehrauli - Gurgaon Road
Gurgaon 122 002, Haryana
INDIA

T 91.124.4177 777
F 91.124.4177 700
E info@vatikagroup.com

www.vatikagroup.com

August 24, 2017

WHOMSOEVER IT MAY CONCERN

We hereby certify as below the amount collected from customers and the 30% of the amount deposited into scheduled bank in respect of License No 22 of 2011 as per Rule - 27 and 28 of Haryana Development and Regulation of Urban Area Rules, 1976.

1 (a) Amount Collected from Customers till 31.03.2016 – Rs Nil
(b) 30% of the amount deposited into the Scheduled bank – Rs Nil
(c) Amount Spend for Internal development work and Construction work till 31.03.2016 – Rs 8,31,735/-
(Spend out of loan for general corporate purpose)

2. (a) Amount Collected from Customers till 31.03.2017 – Rs 135,40,49,008/-
(b) 30% of the amount deposited into the Scheduled bank – Rs 40,62,14,702/-
(c) Amount Spend for Internal development work and Construction work till 31.03.2017 – Rs 23,75,38,688/-

We also hereby certify that we are maintaining the account no. of 05720310004150 with HDFC Bank Limited having branch at First India Place, MG Road, Gurugram, Haryana towards IDW.

For Vatika Limited

Authorised Signatory

DIRECTORATE OF TOWN & COUNTRY PLANNING,
HARYANA, CHANDIGARH

Memo No. DTCP/Acctts/2017/ Dated:

To

Vatika Ltd,
Vatika Triangle, 7th Floor,
Sushant Lok, Phase-1,
Block- A, Mehrauli,
Gurgaon- 122002.

Subject: **Compliance Report of Rule 24, 26, 27 & 28 of Haryana Development and Regulation of Urban Area Rules, 1976 against License No. 22 of 2011 -Group Housing Colony, Acres- 11.218, Vatika Ltd.**

Please refer to the subject cited above.

Under Section 6 of Haryana Development & Regulation of Urban Areas Act, 1975, compliance of Rule 24, 26, 27 & 28 of Haryana Development & Regulation of Urban Areas Rules, 1976 pertaining **License No. 22 of 2011 -Group Housing Colony, Acres- 11.218, Vatika Ltd,** has been prepared on the basis of relevant record/undertakings, submitted by the licencee.

Encls: Compliance Report and relevant documents.

Chief Accounts Officer,
O/o Director Town & Country Planning,
Haryana, Chandigarh.

Endst. No. 4033 Dated: 6/9/2017

Copy forwarded to the following for information and further necessary action:-

1. DTP(HQ), Concerned.

Chief Accounts Officer,
O/o Director Town & Country Planning,
Haryana, Chandigarh

Report on requirements of documents under Rule 24,26,27 & 28 of the Haryana Development and Regulation of Urban Area Rules, 1976 and status of License No. 22 of 2011 - Vatika Limited. (LC-2409)

Type of colony/Area/Name of Urban area in which it is situated	**Type of colony** Group Housing Colony **Area** 11.218 Acres **Sector** 82 **Name of Urban area** Gurugram

Rule-24

Copies of advertisement for the sale of flat (Sec 24) along with register containing authenticated copies of Agreement entered between colonizer.

1.	Whether advertisement given in Newspaper	Yes
2.	Name of Newspaper	Hindustan Times
3.	Date of Publication	17.03.2017
4.	Date of approval of Building Plan	May be confirmed from Drawing Branch.
5.	Composition fee for delay in submission of copy of advertisement	10,000/-
6.	Remarks	

Rule 26(2)

Annual financial statements duly audited/ certified and signed by Chartered Accountant indicating the amount realized from each space holders, the expenditure incurred on Internal and External Development works separately of the colony/building etc. with detail thereof whether with the amount due from each space holders indicating their postal addresses.

Date of submission of Accounts Statement.	29.06.2017
Whether list of customers with postal address attached	Yes, but postal address are not given
Whether detail of expenditure incurred on EDW and IDW attached	Yes
Whether statement of accounts is audited, certified and signed by CA ***in terms of Rule 26(2)***	Signed by CA
Total receipt in upto 31.03.2016	-
Total receipt upto 31.03.2017	135.44 Cr.
Total expenditure upto 31.03.2016	26.45 Cr.
Total expenditure upto 31.03.2017	127.63 Cr.
Total expenditure incurred on IDW/Construction works in preceding year i.e 31.03.2016	0.08 Cr.
Total expenditure incurred on IDW/Construction works upto 31.03.2017.	23.75 Cr.
Whether compliance in order	-
Composition fee for delay in submission of statement for 2016-17	Nil

Rule-27

Detail of account number of schedule bank in which 30% of the amount released by him from the space holder deposited to meet out the cost of internal development work of the colony.

Rule-28

Copies of form AC account indicating the amount released from each space holders and the amount deposited during the proceeding month in the schedule Bank.

Rule 27		
Whether separate account intimated to deposit 30% amount ***in terms of Rule-27.***	Yes	
Date of intimation of Account No.	July, 2015	
Date of opening of Account No.	Not submitted.	
Account No.	5511464570	
Name of Bank with address	Kotak Mahindra Bank., JMD Regent Square, MG Road, Gurgaon	
Amount deposited upto 31.03.2017	40.62 Cr.	
Composition fee for delay in intimation of Account No. for 2016-17	Nil	
Rule-28		
Whether required statement in Form AC submitted on the 5th day of preceding month ***in terms of Rule-28.***	No	
Amount realized from plot/flat holder upto 31.03.2017	135.44 Cr.	
30% of amount realized from plot/flat holder upto 31.03.2017.	40.63 Cr.	
Total amount deposited in Bank upto 31.02.2016/expenditure incurred on IDW/Constt. Works *in terms of Rule-28*	**Deposited**	**Expenditure incurred**
	-	0.08 Cr.
Total amount deposited in Bank during the year 2016-17/expenditure incurred on IDW/Constt. Works *in terms of Rule-28*	40.62 Cr.	23.67 Cr.
Composition fee for delay in submission of statement in Form AC upto May 2017	14,000/-	

Total number of plot/flat in licensed colony.	NA			
Total number of commercial unit in licensed colony.	NA			
Total number of community sites in licensed colony	NA			
Total number of plot/flats sold	NA			
Total number of commercial units sold	NA			
Total number of community sites sold	NA			
Status of EDC	Rs. 1836.81 lakh (Under 12.04.12)			
Status of Enh-EDC	NA			
Status of IDC	Fully Paid			
Status of B.G on account of IDW	**Name of Bank**	**BG No.**	**Amount**	**Validity**
	SBOP	5079411BG0000579	1,45,81,250/-	23.05.2019
Status of B.G on account of EDC	**Name of Bank**	**BG No.**	**Amount**	**Validity**
	State Bank of Patiaala	5079411BG0000575	1,44,72,430/-	27.10.2017
		5079411BG0000576	2,00,00.000/-	27.10.2017
		5079411BG0000577	2,00,00.000/-	27.10.2017
Status of B.G on account of EDC under policy 12.04.2012	**Name of Bank**	**BG No.**	**Amount**	**Validity**
	SBOP	5073215BG0000290	3,14,00,000/-	07.10.2017
Status of additional B.G on account of IDW/SPE	NA			
Date of validity of License	23.03.2017			
Total composition fee for delay in submission of above said compliances for the year 2016-17.	Rs. 24,000/-			
Conclusion	The above report is based on the documents provided by the licencee and required composition fee has been charged/calculated for non compliance as per rules.			

Amit Kumar
SO

Kewal Krishan Kamboj
A.O. (HQ)

ENCLOSURE-2

vatika
creating lasting value

Registered Office
Vatika Limited
Vatika Triangle, 4th Floor
Sushant Lok, Phase I, Block A
Mehrauli - Gurgaon Road
Gurgaon 122 002, Haryana
INDIA

T 91.124.4177 777
F 91.124.4177 700
E info@vatikagroup.com

www.vatikagroup.com

Date: January 8, 2018

The Director General
Town & Country Planning, Haryana
Sector - 17,
Chandigarh

Subject: Exchange of Licensed area / partly license land from License no 113 of 2008 and 71 of 2010 plotted residential colony in sector 81-85 (LC-1143) to License No. 22 of 2011 dated 24.03.2011 for group housing project at Sector – 82 A Gurgaon being developed by Vatika Ltd.

Ref, : Policy dated 15.07.2015 for Re-organization of Boundaries of Licensed Colonies through exchange of land among licenses in Residential Sector.

Dear Sir,

We refer this to our application dated 13.10.2016 w.r.t re-organization of Boundaries / exchange of license land of License no 113 of 2008 and 71 of 2010 plotted residential colony in sector 81-85 (LC-1143) to License No. 22 of 2011 dated 24.03.2011 (LC-2409) for group housing project at Sector – 82 A Gurgaon under Policy dated 15.07.2015 for Re-organization of Boundaries of Licensed Colonies through exchange of land among licenses in Residential Sector.

We wish to submit that the department has granted us license bearing license no 113 of 2008, 71 of 2010, 62 of 2011, 76 of 2011 and 66 of 2014 for development of residential plotted colony measuring 477.206 acres in sector 81 to 85 Gurgaon. Accordingly the layout plan of the same was approved vide drg no. DGTCP 4691 dated 11.06.2014.

The department has also granted us license no 22 of 2011 for development of group housing project on land measuring 11.218 Acres in Sector – 82A Gurgaon which is adjacent to our residential plotted colony as mentioned above. Both the projects are being developed by Vatika Limited only.

For proper integration and regularization of boundaries of the said colony, we wish to exchange an area measuring 5.125 acres from our existing plotted colony on land measuring 477.206 acres (LC no. 1143) to our group housing colony (License no. 22 of 2011 dated 24.03.2011 (LC No. 2409). Copy of approved layout plan of the plotted colony duly highlighted, exchange plan alongwith revised land details are enclosed for your ready reference please.

We wish to inform that we have already paid scrutiny charges amounting to Rs. 8,00,000/- (Rupees Eight Lakh Only) vide our letter dated 24.11.2016 (Copy enclosed). However we will pay the balance the statutory charges applicable as per clause no 3 of the policy dated 15.07.2015 as and when demanded by the department.

DIRECTOR TOWN & COUNTRY PLANNING
Diary No.
Date 10/1/18
HARYANA CHANDIGARH

We hereby undertake;

i) That there is no change in the net planned area of licensed colonies from that approved earlier.

ii) That we not created any third party in respect of area being exchanged in the said colonies.

iii) That we will abide by the terms and conditions as prescribed for such purpose in the policy dated 15.07.2015.

It is requested that the permission for exchange of license land of License no 113 of 2008 and 71 of 2010 plotted residential colony in sector 81-85 (LC-1143) to License No. 22 of 2011 dated 24.03.2011 (LC-35353) for group housing project at Sector – 82 A Gurgaon may be granted us at the earliest.

Thanking You,

Your Sincerely
For Vatika Limited.

Virender Dhar
Gen. Manager (Planning & Coordination)
virendhar@vatikagroup.com

Encl: As stated above.

1869



AREA DETAILS EXCHANGE OF LICENSE LAND

TOTAL LICENSED AREA =11.218 ACRE

AREA EXCHANGED FROM 477.206 ACRE PLOTTED COLONY TO GROUP HOUSING PROJECT

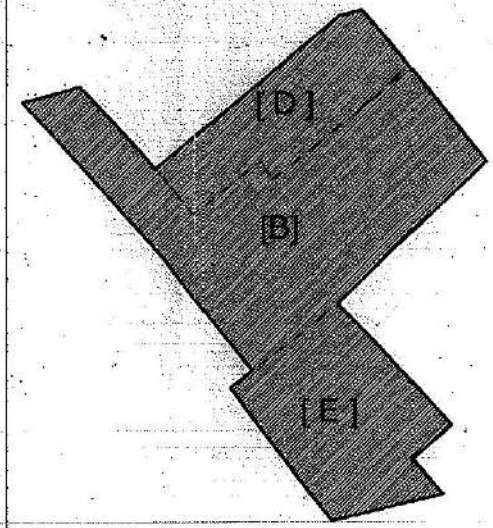
[D] + [E] =2.125 + 3.00 = **5.125**

AREA EXCHANGED FROM GROUP HOUSING TO PLOTTED COLONY PROJECT

[1]= **5.125**

PROPOSED SITE AFTER TABADLA WITH TOWNSHIP

[B] + [D] + [E] = 11.218 ACRES



LICENSE LAND EXCHANGE PLAN FOR GROUP HOUSING PROJECT 11.218 ACRE IN SECTOR 82-A, VILL-SHIKOHPUR GURGAON, HARYANA

DATE : 04-01-2017

1870

Details of Vatika India Next Revised Area (Group Housing 11.218 Acres) Sector - 82A

04.01.2018

1	187/247	M/s Stanway Developers Pvt. Ltd.1/2 Share,	147	2	0	0		2	0	0									
		Karan Singh S/oHarnarayan 1/2 Share	148	1	8	0		1	8	0									
			149	0	12	0		0	12	0									
			150	2	0	0		2	0	0									
			162	2	4	0		2	4	0									
			Total	8	4	0	5.125	8	4	0	5.125								
2	409/543 - 47	M/s Mandell Developers Pvt. Ltd.78/2420	57	0	18	0										0	18	0	
		Share,M/s Stanway Developers Pvt. Ltd.	58/1	0	13	0										0	13	0	
		1812/2420 Share,Sahar Land & Housing	58/2	0	11	0										0	11	0	
		Pvt. Ltd.159/2420 Share,Rammehar S/o	60	2	5	0										2	5	0	
		Rampersad 159/2420 Share,Meer Singh S/o	61	1	14	0										1	14	0	
		Kanhi 106/2420 Share,Jagmal S/o Hardev	Total	6	1	0	3.78									6	1	0	3.78
		106/2420 Share																	
3	209/279 - 91	M/s Mandell Developers Pvt. Ltd.131/4145	152	0	8	0										0	8	0	
		Share,M/s Stanway Developers Pvt. Ltd.	153	0	8	0										0	8	0	
		3219/4145 Share,Sahar Land & Housing	154	0	8	0										0	8	0	
		Pvt. Ltd.172/4145 Share,Rammehar S/o	155	0	13	0										0	13	0	
		Rampersad 267/4145 Share,Meer Singh S/o	156	1	9	0										1	9	0	
		Kanhi 178/4145 Share,Jagmal S/o Hardev	157/1	0	8	0										0	8	0	
		178/4145 Share	Total	3	14	0	2.31									3	14	0	2.31
4	409/543 - 47	M/s Sarvad Builders Pvt.Ltd.551/1360 Share	55									0	10	0		0	10	0	
		M/s Blossom Properties Pvt. Ltd.388/1360	56/2									2	4	0		2	4	0	
		Share,Sahar Land & Housing Pvt.Ltd.211/1360	58/2									0	7	0		0	7	0	
		Share,M/s Caspar Developers Pvt. Ltd.210/1360	59/1									0	7	0		0	7	0	
			Total									3	8	0	2.125	3	8	0	2.125
5	192/254	Pegasus Infrastructure Pvt. Ltd.	132 min									0	18	0		0	18	0	
			133									1	15	0		1	15	0	
			134									0	17	0		0	17	0	
			135 min									0	9	0		0	9	0	
			151									0	17	0		0	17	0	
			Total									4	16	0	3.00	4	16	0	3.00

Office of Senior Town Planner, Gurugram
DEPARTMENT OF TOWN & COUNTRY PLANNING, HARYANA
SECTOR-14, HUDA COMPLEX, 3RD FLOOR, GURUGRAM
TEL + FAX: 0124-2305872
E-mail: stp3.gurugram.tcp@gmail.com

Memo No. :STP(G)/2017/ 4784
Dated: 8/8/17

To

The Director,
Town & Country Planning, Haryana,
SCO No. 71-75, Sector-17C, Chandigarh

Subject: Migration of partly licensed land measuring 5.125 acres from Licence No. 113 of 2008 and 71 of 2010 granted for residential plotted colony in sector-81-85, Gurugram to Licence No. 22 of 2011 dated 24.03.2011 granted as independent Group Housing Project in Sector-82A, Gurugram – Vatika Limited.

Reference: District Town Planner (P), Gurgaon memo no. DTP(G)/2017/7722 dated 01.08.2017 & DTCP office memo no. LC-3535-JE(BR)-2017/2580 dated 09.02.2017.

The Circle office has examined the report received vide memo under reference and the comments are as under:-

1. As per report of DTP(P) Gurugram, the Department has granted licensed to Vatika Limited bearing licence no. 113 of 2008, 71 of 2010, 62 of 2011, 76 of 2011 and 66 of 2014 for development for residential plotted colony measuring 477.206 acres in Sector-81 to 85, Gurugram, the layout plan of same was approved vide drawing no. DGTCP 4691 dated 11.06.2014.
2. The Department has also granted licence No. 22 of 2011 for development of independent Group Housing Project on land measuring 11.218 acres in Sector-82A, Gurugram, which is adjacent to the applicant residential plotted colony as mentioned above. Both the projects are being developed by M/s Vatika Limited. The land proposed under migration is shown in red colour and Group Housing licence is shown in green colour on the copy of approved layout plan/sector plan (copy enclosed).
3. The applied land falls in khasra no. 132 min, 133, 134, 135, 151 (part of licence 113/2008 and khasra no. 55, 56 min, 58/2, 59/1 min (part of licence no. 71/2010, total area 5.125 acres land in Sector-82A of village Shikohpur, District Gurugram. The revenue documents have been checked by DTP office and total verified land comes out to be 5.125 acres having following ownership details is as under:-
   i) M/s Pagasus Infrastructure Pvt. Ltd. 3.375 acres).
   ii) M/s Sarwad Builders Pvt. Ltd. share M/s Blossom Properties Pvt. Ltd. (1.750 acres).

   However, the land ownership documents and the collaboration agreement may be examined in detail at the Directorate to ascertain the ownership of various applicants and the technical/financial capability for development of the colony.

4. The applicant land was part of the already licensed colony measuring 477.206 acres being developed by Vatika Ltd. The site is being migrated to independent Group Housing project measuring 11.218 acres adjacent to plotted colony to have better planning and integration of services. The existing Group Housing site is approachable from 12 m wide service road alongwith 60 m wide sector dividing road of sector 82 & 82A as well as 24 m wide internal circulation road.
5. No HT line passes through the site. However, GAIL pipe line passes through the site as shown on the approved layout plan of plotted colony.
6. As per proposed area for migration was part of plotted colony. The area measuring 5.125 acres include:-
   i) - 17 nos. of plots (category-I) for which status regarding 3rd party right may be ascertained at Directorate level.
   ii) 3059 sq m under 12 m /15 m internal road.
   iii) 8478 sq m under UD (undetermined use).
   iv) 2405 sq m under green and GAIL pipe line.
   v) No community site of plotted is affect.
7. As per report, the applied land has also been marked in red colour on approved site plan of Group Housing alongwith status of construction at the site of Group Housing. A present only tower-A of approved group housing site is under construction at site. The part applied for migration is contiguous to the already independent Group Housing licence. However, area norms regarding 20% of Group Housing Component, fact/situation may be verified at Directorate level.

Keeping in view the above facts, a decision in the case may be taken. One set of documents received from District Town Planner (P), Gurugram is sent herewith for necessary action please.

DA/As above.

Senior Town Planner
Gurugram Circle, Gurugram

Endst. No. STP (G)/2017/ Dated

A copy is forwarded to the District Town Planner (P), Gurugram w.r.t. his memo no. 7722 dated 01.08.201 for information & necessary action.

Senior Town Planner
Gurugram Circle, Gurugram

District Town Planner, Gurugram (Planning)
DEPARTMENT OF TOWN AND COUNTRY PLANNING
HUDA Office Complex, Sector-14, Gurugram, Tel No.: 0124-2320573
E-mail: dtp3.gurugram.tcp@gmail.com

Memo No: DTP(G)/2017/ 7722
Date..... 1/8/2017

To

Senior Town Planner,
Gurugram.

SUBJECT: MIGRATION OF PARTLY LICENSED LAND MEASURING 5.125 ACRES FROM LICENSE NO. 113 OF 2008 AND 71 OF 2010 GRANTED FOR RESIDENTIAL PLOTTED COLONY IN SECTOR 81-85, GURUGRAM TO LICENSE NO. 22 OF 2011 DATED 24.03.2011 GRANTED AS INDEPENDENT GROUP HOUSING PROJECT IN SECTOR 82A, GURUGRAM-VATIKA LIMITED.

Ref: DTCP office memo no. LC-3535-JE(BR)-2017/ 2580 dated 09.02.2017.

On the subject cited above, it is to inform that DTCP, Haryana, Chandigarh vide letter under reference has sought report on the application of Vatika limited for Migration partly licensed land measuring 5.125 acres from license no. 113 of 2008 and 71 of 2010 granted for residential plotted colony in sector 81-85, Gurugram to license no. 22 of 2011 dated 24.03.2011 for group housing project in sector 82A, Gurugram under re-organization of boundaries and in concurrence migration of license policy dated 15.07.2015 and 18.02.2016, respectively. The same has been examined & detailed comments with this office are as follows:-

The Department has granted licensed to Vatika Limited bearing license no. 113 of 2008, 71 of 2010, 62 of 2011, 76 of 2011 and 66 of 2014 for development of residential plotted colony measuring 477.206 acres in Sector 81 to 85, Gurugram, the layout plan of same was approved vide drawing no. DGTCP 4691 dated 11.06.2014.

The Department has also granted license no. 22 of 2011 for development of independent Group Housing project on land measuring 11.218 acres in Sector 82A, Gurugram, which is adjacent to the applicant residential plotted colony as mentioned above. Both the projects are being developed by M/s Vatika Limited. The land proposed under migration is shown in red colour and Group Housing license is shown in green colour on the approved layout plan/ sector plan (copy enclosed).

The applied land falls in khasra No. 132min, 133, 134, 135, 151 (part of license 113/2008 and khasra nos. 55, 56/2min, 58/2, 59/1 min (part of license no. 71/2010) total area 5.125 acres land in Sector 82A of village Shikohpur, District Gurugram. The revenue documents have been checked by this office and total verified land comes out to be 5.125 acres having following ownership details:-

1. M/s Pagassus Infrastrucutre Pvt Ltd (3.375 acres)
2. Sarwad Builders Pvt Ltd Share M/s Blossom Properties Pvt. Ltd. (1.750 acres)

However, the land ownership documents and the collaboration agreement may be examined in detail at the Directorate to ascertain the ownership of various applicants and the technical/financial capability for development of the colony.

The applicant land was part of the already licensed colony measuring 477.206 acres being developed by Vatika Limited. The site is being migrated to independent Group Housing Project measuring 11.218 acres adjacent to plotted colony to have better planning and integration of services. The existing Group Housing site is approachable from 12.0 mtr service road alongwith 60.0 mtr sector during road of sector 82 & 82A as well as 24.0 mtr internal circulation roads. As per field inspection No HT line passes through the site however, GAIL pipe line passes through the site, which has already been shown on the approved layout plan of plotted colony

As the proposed area for migration was part of plotted colony. The area measuring 5.125 acres include.

1. 17 nos of plots (Category-I) (for which status regarding 3rd party right may be ascertained at the level of HQ.
2. 5059.0 Sq mtr under 12.0 mtr /15 mtr internal roads.
3. 8478.0 Sq mtr under U.D (undetermined use).
4. 2405.0 Sq mtr under green and GAIL pipe line.
5. No community site of plotted colony is affected.

The applied land has also been marked in red colour on approved site plan of G.H. alongwith status of construction at the site of G.H. At present only tower A of approved group housing site is under construction at site. The part applied for migration is contiguous to the already independent Group Housing license. However, area norms regarding 20% of Group Housing component, facts /situation may be verified at the HQ.

The detailed report as above alongwith site marked on approved layout plan of the colony as well as sectoral plan and approved site plan of Group Housing and detailed site plan are hereby forwarded for your information and further necessary action please.

DA/As above.

District Town Planner,
Gurugram

Endst no. DTP(G)/ Dated :

A copy of the above along with Annexures are also forwarded to the Director, Town and Country Planning, Haryana, for information/ necessary action.

District Town Planner,
Gurugram

ANNEXURE P-6


2/2015
1985
2022
Vatika Tranquil Heights
Sector 82 A chalwala
Image © 2023 Maxar Technologies
Google Earth
1986


10/2015
1985
2022
Vatika Tranquil Heights
Sector 82 A charwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 12/31/2014 28°23'18.56" N 76°57'32.47" E elev 255 m eye alt 601 m


2/2016
1985
2022
Vatika Tranquil Heights
Sector 82 A chauwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 12/31/2015 28°23'18.54" N 76°57'32.50" E elev 255 m eye alt 601 m


3/2016
1985
2022
Vatika Tranquil Heights
Sector 82 A Chakwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 12/31/2015 28°23'18.57" N 76°57'32.44" E elev 255 m eye alt 601 m


4/2016
1985
2022
Vatika Tranquil Heights
Sector 82 A chalwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 4/17/2016 28°23'18.73" N 76°57'33.63" E elev 256 m eye alt 601 m


10/2016
1985
2022
Vatika Tranquil Heights
Sector 82 A chalwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 10/14/2016 28°23'18.82" N 76°57'32.95" E elev 255 m eye alt 601 m


11/2016
1985
2022
Vatika Tranquil Heights
Sector 82 A chalwala
Image © 2023 CNES / Airbus
Google Earth
1986
Imagery Date: 11/27/2016
eye alt 601 m


2/2017
1985
2022
Vatika Tranquil Heights
Sector 82 A chauwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 2/28/2017


8/2017
1985
2022
Vatika Tranquil Heights
Sector 82 A chauwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 8/15/2017 28°23'18.80"N 76°57'33.55"E elev 256 m eye alt 601 m


4/2018
1985
2022
Vatika Tranquil Heights
Sector 82 A Ghaiwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 4/25/2018 28°23'18.72" N 76°57'33.89" E elev 256 m eye alt 601 m


3/2019
1985
2022
Vatika Tranquil Heights
Sector 82 A chalwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 3/24/2019 28°23'18.75" N 76°57'33.49" E elev 256 m eye alt 601 m


4/2020
1985
2022
Vatika Tranquil Heights
Sector 82 A chauwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 4/13/2020 28°23'18.86" N 76°57'32.84" E elev 255 m eye alt 601 m


3/2021
1985
2022
Vatika Tranquil Heights
Sector 82 A chalwala
Image © 2023 Maxar Technologies
Google Earth
Imagery Date: 3/28/2021 28°23'18.85" N 76°57'34.13" E elev 256 m eye alt 601 m


3/2022
1985
2022
Vatika Tranquil Heights
Sector 82 A chakwala
Image © 2023 Maxar Technologies
Google Earth
1985
Imagery Date: 3/31/2022 28°23'14.16" N 76°57'40.63" E elev 257 m eye alt 601 m


Vatika Tranquil Heights
Sector 82 A chawala
Image © 2023 Maxar Technologies
Google Earth
Imagery Date: 11/24/2022 28°23'14.38" N 76°57'37.68" E elev 259 m eye alt 601 m

Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

Last updated: January 21 2021 1658 | Posts 213454 | Views Share

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August 2 2016, 11:48 AM #1461

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

SalvorHa...
Senior Member

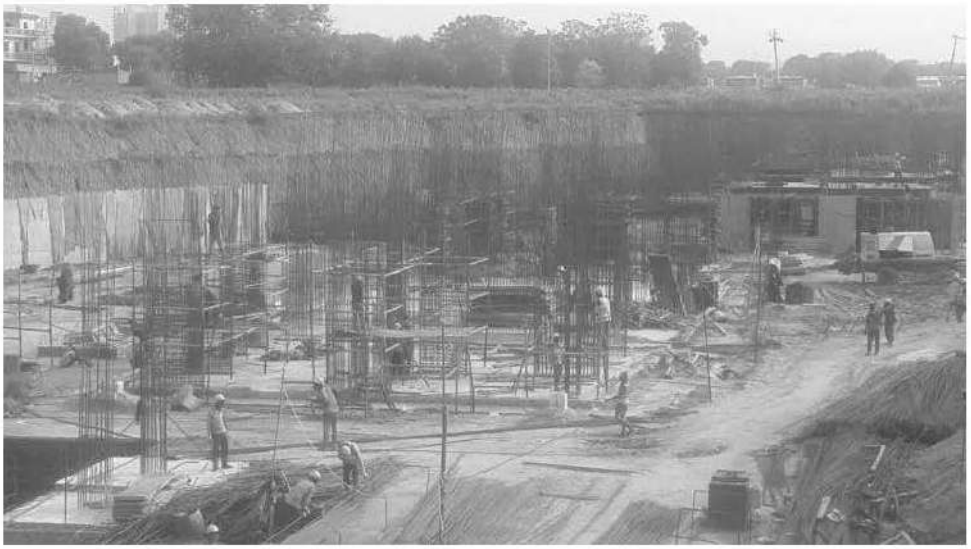
Join Date: Aug 2009
Posts: 843

Finally some action on the site











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anita.7943

Have any questions or thoughts about this?

Post Reply Start Discussion



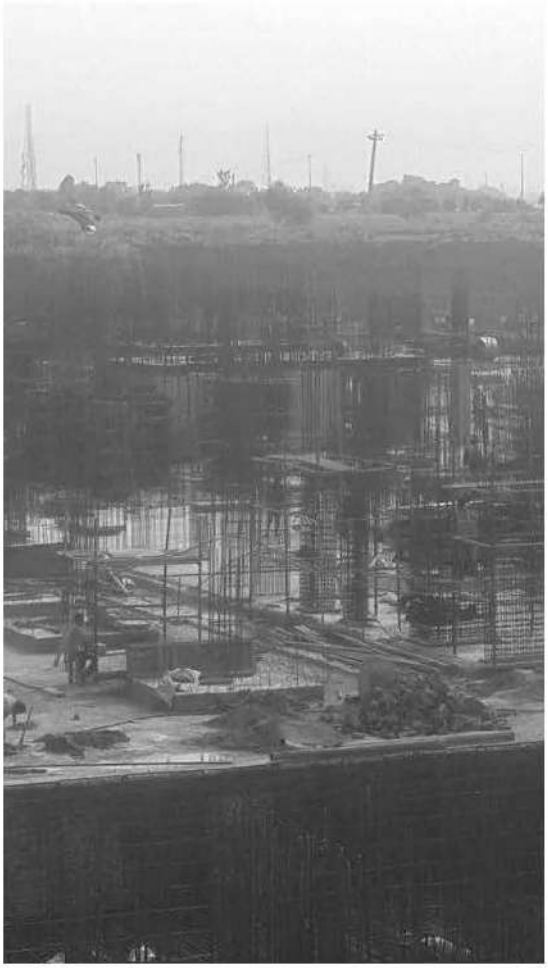




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anita.7943

Have any questions or thoughts about this? Post Reply Start Discussion



Like | Comment | Quote 1 | Flag

August 3 2016, 02:11 AM | #1462

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

Thanks @SalvorHardin;.
This is good news indeed. I am still awaiting for foundation demand for Tower E.

jitin0904
New Member

Join Date: Oct 2014
Posts: 35

Last edited August 3 2016, 09:26 AM. Reason: User tagging.

Like | Comment | Quote 0 | Flag

August 3 2016, 03:30 AM | #1463

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

Work is going on at good pace. The challenge is Vatika's attitude towards bank loan and also the high price that we booked at. I hope the quality will justify the price.

amitgup
Member

Join Date: Aug 2011
Posts: 488

Last edited August 3 2016, 09:25 AM. Reason: formatting

Like | Comment | Quote 0 | Flag

August 4 2016, 07:35 AM | #1464

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

Not sure if the problems of land issues with villagers been sorted out as yet which may be the real reason of Tower E not being commenced.

Join Date: Mar 2013
Posts: 78

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August 5 2016, 12:28 AM #1455

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

kumarhady
New Member

Join Date: Apr 2016
Posts: 2

Tower E has land issues and the reason for no construction. Despite several emails Vatika is not clearly advising the reason for delays for tower E and has been advising that all the towers will be handed over simultaneously. When I met the site engineers they advised that indeed there is issue for tower E which is being worked out. This is also the reason the banks are not approving the loan as even the portion of the land is disputed the banks will not approve the loan for the project.

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August 5 2016, 03:26 PM #1456

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

SalvoHa...
Senior Member

Join Date: Aug 2009
Posts: 843

> *Originally posted by* ***akdilip***
> *is this confirmed and sure pictures taken from the site of Tranquil height?*

Yes, by my brother in law who also has a unit in the project. Pictures are from Aug 2 2016

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August 5 2016, 02:17 AM #1457

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

SalvoHa...
Senior Member

Join Date: Aug 2009
Posts: 843

> *Originally posted by* ***akdilip***
> *Site status is updated by magicbricks on 6 April 2016, there is showed only just landscaping even nowhere piling work kicked off so without piling work how they can complete such big foundation work within short period of 3 months. Since piling work, itself takes 6 months to complete.*
>
> *http://www.**********/vatika-t...353031313633233*

No clue about piling work or any thing. I went their personally about 6-8 weeks back. and at that time the complete foundation was already dug. 3 days back, my brother in law went to check the progress and the pics taken that day are posted above. May be a good idea for you to go and visit yourself (or ask someone you trust to do the same) in case you are having a tough time believing it.

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August 6 2016, 01:44 PM #1458

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

SalvoHa...
Senior Member

Join Date: Aug 2009
Posts: 843

Vatika seems to have started advertising about this project as well. Attached is the newspaper insert from Vatika in HT south Delhi

Attached Files





Like | Comment | Quote | 0 | Flag

August 12 2016, 09:48 AM | #1459

Re : Tranquil Heights, Vatika Group, Sector 82A, Gurgaon

Vatika people have again uploaded the latest pics of other projects on their website, besides VTH. I don't know why they don't upload the pics of our project.

akhilm123
New Member

Join Date: Sep 2014
Posts: 13

Last edited August 12 2016, 11:27 AM.

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anita.7943

Have any questions or thoughts about this? Post Reply Start Discussion



Zeus19
New Member

Join Date: Jan 2014
Posts: 3

Dear Friends,

Unfortunately I am stuck in VTH project too. Vatika told me to get the loan approved through India Bulls as this is the only company doing that. Can somebody please guide me on this. Should we pay Vatika more or just sit and wait?

Thanks
Vishal

Last edited August 13 2016, 04:25 PM.

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Tags: Sector 82A Tranquil Heights Vatika Group

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Sanjay Seth
Chief Executive Officer

Registration No.
S/67831/2009,
Registration in India under societies registration act XXI of 1860

Registered Office
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November 7, 2017

Mr.Virender Dhar
GM-Planning & Coordination
Vatika Limited
4th Floor, Vatika Triangle
Sushant Lok, Phase I
Block, M. G. Road
Gurugram 122002, Haryana
Email : vatikagriha@vatikagroup.com
Mobile No.: 9810566938

Subject: GRIHA Pre-Certification for Tranquil Heights (Residential Group Housing Colony), Sector- 82A, Gurugram, Haryana

Dear Mr. Dhar,

It is my privilege to inform you that the Tranquil Heights (Residential Group Housing Colony), Sector- 82A, Gurugram, Haryana, has been awarded the "Three Star" GRIHA Pre-Certification.

The project is already registered for GRIHA Rating and we look forward to the process of rating to ensure that necessary compliances are duly verified by GRIHA Council on site during and after construction.

Kindly acknowledge the same.

With best regards,

Yours sincerely,

Sanjay Seth

Encl: Certificate and Report

Green Rating for Integrated Habitat Assessment

How to Interpret this Report

GRIHA	GRIHA (Green Rating for Integrated Habitat Assessment) is the National Rating System of India for green buildings. GRIHA has been conceived by TERI (The Energy and Resources Institute) and developed jointly with the Ministry of New and Renewable Energy, Government of India. GRIHA is a rating tool that helps people assess the performance of their building against certain nationally acceptable benchmarks. In accordance with the Office Memorandum dated 27th June 2011, by MoEF (Ministry of Environment and Forest), government of India, it has been decided that the proposals for obtaining environmental clearance in respect of Building and Construction Projects which have obtained Green Building rating (Pre-certification) under the rating programme of GRIHA by integrating high level of environmental norms into their building plans, shall get priority for their consideration, out of turn, by the Expert Appraisal Committee / State Level Expert Appraisal Committee, as the case may be.
Intent	**Residential Group Housing Colony (Tranquil Heights), Gurgaon** was evaluated according to the benchmarks and guidelines of GRIHA Pre - certification.
Project Information	Site area – 45,395 m² Built up area – 25919.21 m² Total number of buildings – 03: Tower-A, Block-B & EWS with convenient shopping profile. **Project Status – The construction for the project has already been initiated on site.**
GRIHA Mandates	The project is registered under GRIHA V-3. Compliance with GRIHA mandatory criteria must be demonstrated before a GRIHA Pre-certification is awarded. Non-compliance with mandatory criterion shall disqualify the project from attempting GRIHA Pre-certification.
GRIHA Points	GRIHA criteria have points assigned to them and projects intending to qualify have to comply with the benchmarks and guidelines and submit documentation in the prescribed format. A total of **98 points** are applicable to the project, of which the project has attempted **81 points.**
GRIHA Selectively Applicable criterion	Some criteria may not apply to a project due to technical constraints or due to insufficient environmental benefit on compliance. The project is pre-certified on the applicable points only.
Committed	The project has provided necessary commitment and documentation to support that the project will comply with **76 points out of 98.**
Denied	The project has been denied points in particular criterion due to non-compliance with the requirements of the criterion or due to incomplete submission of documents. **5 points have been denied out of 81 attempted points.**
GRIHA Rating	☆☆☆ **77.55% (76/98) – Three Star GRIHA Pre-certification** One Star Rating : 51 – 60 % ; Two Star Rating : 61 – 70 % ; Three Star Rating : 71 – 80 % ; Four Star Rating : 81 – 90 % ; Five Star Rating : 91 – 100 %

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1	1	1	-	**Criterion 1 – Site selection**

Partly Mandatory

The intent of criterion 1 is to select an appropriate site such that the development of a project should not cause damage to the natural surroundings of the site. To attempt a GRIHA rating, the selected site must conform to the development plan and the URDPFI guidelines. To achieve one point in criterion 1, the selected site must be within ½ km radius of an existing transportation service or within ½ km radius of 5 existing services as mentioned in the GRIHA Manual.

Commitment –
Project has submitted a construction approval letter from Town and Country Planning Department, Haryana to demonstrate compliance. Project has provided Google Earth image showing distance of basic amenities namely: Eureka early learning center, Sikohpur mode bus stop, Vatika town square mall comprising ICIC Bank/ ATM, Fresh fruits and vegetables shop, Patanjali store, etc. from the project site, **hence, 1 point is committed.**

2	2	1	1	**Criterion 2 - Preserve and protect landscape during construction**

Partly Mandatory

The intent of criterion 2 is to preserve and protect existing vegetation and soil on the site during construction. The project must demonstrate measures to prevent soil erosion, water run-off, protect existing trees and soil on site.

Commitment–
Proposed site management plan has been submitted confining construction activities to pre-designated areas. Narratives and photographs demonstrating proper staging and spill prevention plan are also provided; **hence 1 point has been committed.**

Non-Compliant–
Site management plan, has been submitted demarcating the area to which the construction activity shall be restricted. Narrative has been submitted stating that excavation work was done from the month of June 2015 to September 2015. As the excavation was done during monsoon season, **hence 1 point has been denied.**

Non-applicable–
According to the narrative and survey plan submitted, there were no existing trees inside the site boundary; **hence, 2 points are non-applicable.**

2	2	2	-	**Criterion 3 - Soil conservation (till post-construction)**

The intent of criterion 3 is to preserve the fertile top soil on site and re-use it for landscape purposes at a later stage. The minimum quantity of the top soil to be preserved shall be equivalent to the quantity of top soil required for landscaping on the site.

Commitment–
Narrative has been submitted stating that the top soil is preserved at the site by growing vegetation in order to prevent soil erosion as well as to maintain the fertility of the soil. Approximately, 1339.8 m^3 of top soil had been stored by the project team with proper measures to maintain its fertility. Supporting soil test report has been submitted which ascertains that the top soil was fertile. Also, a soil preservation area has been demarcated in the site management plan, **hence 2 points are committed.**

4	4	2	2	**Criterion 4 - Design to include existing site features**

To achieve points in criterion 4, the design of the building should complement the existing site conditions such that there is minimum disruption to natural site features. A detailed site analysis is required to ensure sustainable site development.

Commitment–
Site analysis report has been provided enlisting the following strategies adopted in the project:

- Architectural planning to reduce heat gain in summers, and
- Building Positioning for Day-lighting

Few other strategies are mentioned such as, marking the potential access points that do not burden the lower density or adjacent land use, use of photovoltaics, use of landscape elements as buffer zone, etc. However, these measures will be appraised in the subsequent criteria, and hence could not be counted as design features. **In view of the stated facts, 2 points have been committed out of 4 points.**

2	1	1	-	**Criterion 5 - Reduce hard paving on-site and/or provide shaded hard paved surfaces**

Partly Mandatory

As a mandatory requirement of criterion 5, the total surface parking must not exceed as permitted by the local bye-laws. To achieve 2 points (optional) in criterion 5, net paved area of the site under parking, roads, paths or any other use should not exceed 25% of the site area or net imperviousness of site cannot exceed the imperviousness factor as prescribed by National Building Code and 50% of paved area must have pervious paving /open grid pavements / grass pavers; or shaded by vegetative roof / pergola; or topped with a material with solar reflectance of 0.5 or higher.

Commitment–
Parking calculation and declaration have been provided stating that the total surface parking will not be more than permitted by the local bye-law.
As per the calculations submitted:
Total site area = 45,395 m^2
Total impervious area = 30,872 m^2
Percentage impervious factor = 68 %
Calculation has been submitted indicating that the imperviousness factor for the site is 68% which is within the limits of NBC, 2005 for high density residential areas; **hence, 1 point is committed.**

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Not Attempted–

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Calculation has not been submitted for shading/coating the hard paved areas on site with plantation, vegetated roof, pergolas, etc. or high SRI paints respectively, **hence, 1 point is not attempted.**

1	1	1	-	**Criterion 6 - Enhance outdoor lighting system efficiency**

Partly Mandatory

The intent of criterion 6 is to ensure reduction in energy consumption by outdoor lighting fixtures, to achieve 1 point in criterion 6, the project must ensure that luminous efficacy of external light sources used for outdoor lighting confirms to the minimum standards set by GRIHA and automatic controls must be installed for all outdoor lighting fixtures.

Commitment–
Narrative and declaration has been submitted indicating that 100% of the outdoor lighting fixtures will meet the efficacy requirements as per the GRIHA standards.
Narrative and declaration has been submitted stating that all outdoor lighting will be based on astronomical control; **hence, 1 point is awarded.**

3	3	3	-	**Criterion 7 - Plan utilities efficiently and optimize on-site circulation efficiency**

To achieve 3 points in criterion 7, transportation and service corridors on site should be minimized to avoid unnecessary cutting and trenching of land. All utilities must be aggregated and consolidated along previously disturbed areas or along new roads to ensure easy maintenance and minimum damage to the site. There is one point allocated to each clause.

Commitment–
Drawings have been submitted indicating that the transportation and service corridors have been minimized. All utility corridors have been consolidated along the transportation and service corridors and have been aggregated to reduce site disruption, **hence 3 points are committed.**

2	2	2	-	**Criterion 8 - Provide minimum level of sanitation/safety facilities for construction workers**

Mandatory

Project Management Consultant (PMC) must ensure health and safety of workers during construction, with effective provisions for the basic facilities such as sanitation, and clean drinking water, and safety of equipment or machinery. To achieve 2 points in criterion 8, compliance with National Building Code norms on construction safety and provision for health and sanitation facilities of construction workers is mandatory.

Commitment–
Narrative has been provided stating that following minimum levels of heath and sanitation have been provided for construction workers:

- Clean and hygienic living space
- Clean and hygienic drinking water

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- Hard helmets and safety harnesses
- Hard boots
- Masks and goggles where required
- Safety nets
- Safety drills

Hence, 2 points are committed.

2	2	2	-	**Criterion 9 - Reduce air pollution during construction**

Mandatory

Project Management Consultant (PMC) must adopt necessary measures to prevent air pollution (dust and smoke) in the vicinity of the site during construction. To achieve 2 points under criterion 9, PMC must demonstrate measures adopted for dust suppression, provision for wheel washing, provision of 3 m high barricading around the site and other necessary measures to control air pollution on site. Necessary documents must be submitted to support compliance.

Commitment–
A narrative with photographs has been submitted listing various strategies being adopted on site to prevent air pollution during construction, such as water sprinkling on unpaved roads, covering of fine aggregates, providing a wheel washing facility at vehicular entry/exit, 3 meter high site barricading, etc., **hence, 2 points are committed.**

3	3	3	-	**Criterion 10 - Reduce landscape water requirement**

To achieve 3 points in criterion 10, the project must demonstrate reduction in the annual water requirement for landscape purposes on site. The intent of the criterion is to minimize depletion of ground water resources and reduce the demand for municipal water. The project shall be awarded 1 – 3 points depending upon the total percentage reduction in water consumption from base case scenario, ranging from 30% to 50%, for landscape purpose on site.

Commitment–
According to landscape water requirement calculations, annual base case water consumption is 30,222.35 kL and annual design case water consumption is 10,324.73 kL. Thus the project has demonstrated reduction of 65.83 % in water consumption as against the GRIHA base case. Strategies like planting native species and using efficient irrigation systems have been proposed, **hence, 3 points are committed.**

2	2	2	-	**Criterion 11 - Reduce the water use by the building**

Partly Mandatory

To achieve 2 points in criterion 11, the project must demonstrate reduction in the annual water consumption in the building by using efficient fixtures and sensors. The project shall be awarded 1 – 2 points depending upon the total percentage reduction in water consumption from base case scenario, ranging from 25% to 50%, in the building.

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Commitment–
Narrative and calculations have been submitted for the buildings; however, the flow rates considered are incorrect. According to the revised calculation, of water reduction from base case is reflected considering the occupancy to be 1127.
Low flow fixtures have been proposed.

- Water Closet (Solids) – 4 Lpf
- Water Closet (Liquids) (Female)- 2 Lpf
- Water Closets (liquid) (male) – 2 Lpf
- Kitchen Faucet – 5.5 Lpf
- Lavatory Faucet – 5.5 Lpf
- Showers – 6.8 Lpf

Brochures of these proposed fixtures have not been submitted.

According to calculations for reducing the building water consuption, annual base case water consumption is 67,462.22 kL and annual design case water consumption is 33,319.76 kL. Thus the project has demonstrated reduction of 50.61 % in the water consumption as against the GRIHA base case; **hence, 2 points are committed.**

1	1	1	-	**Criterion 12 - Efficient water use during construction**

To achieve 1 point in criterion 12, the project must demonstrate measures adopted to minimize use of potable water during construction activity. To support compliance with criterion 12, the project must submit necessary documents and photographs taken during various stages of construction.

Commitment–
Narrative has been submitted that ponding technique and gunny bags will be used for curing of horizontal and vertical elements respectively, **hence, 1 point is committed.**

8	8	8	-	**Criterion 13 – Optimize building design to reduce conventional energy demand**

Mandatory

To achieve 8 points (6 mandatory and 2 optional) in criterion 13, the building design must be climate responsive, effective SHGC (Solar Heat Gain Coefficient) of the fenestration must confirm to the maximum SHGC requirement as prescribed by ECBC-2007, WWR (Window Wall Ratio) shall not exceed 60%, minimum 25% of living areas shall be day-lighted and artificial lighting levels in indoor spaces shall confirm to the benchmarks of National Building Code 2005. The project shall be awarded additional 1 - 2 points depending upon the total percentage of day-lighted zone in living areas, ranging from 50% to 75%.

Commitment–
Narrative and calculations have been provided stating the following:

- The project achieves WWR of 23.4% (weighted average)
- The project team has proposed to use glass with SHGC of 0.45.
- Daylight simulation has been provided indicating that 78% of the habitable areas are naturally day lit.

Narrative has been submitted stating that the project will meet artificial

lighting level as a mandatory requirement as per NBC, **hence, 8 points are committed.**

16	16	12	12	-	**Criterion 14 – Optimize energy performance of building within specified comfort limits**

Mandatory

The intent of the criterion is to optimize use of energy systems in building that maintain a specified indoor climate conducive to the functional requirements of the building. To achieve 16 points (8 mandatory and 8 optional) in criterion 14, the project must comply with all mandatory requirements of ECBC 2007 of BEE, Government of India (mandatory 6 points) and must achieve the benchmarked EPI (Energy Performance Index) as recommended by GRIHA (mandatory 2 points). In addition to the above, the project shall be awarded 2 – 8 points for every 10% reduction, to a maximum of 40% reduction, in EPI from the benchmarked value.

Commitment–
Narrative has been provided that ECBC compliances will be met.

- All transformers, motors and fans on site will be ECBC compliant.
- Thermal comfort conditions of all areas will be as per NBC to demonstrate compliance.
- VRV air-conditioning system is proposed in Tower A and Block B and evaporative cooling is proposed in EWS + Convenient shopping profile.
- Project team has proposed XPS in roof and wall assembly.

The following assumptions have been modeled in the design case in energy simulation.

- Glazing 'U' Value : 5.67 W/m²K
- Wall 'U' Value : 3.55 W/m²K
- Roof 'U' Value : 0.545 W/m²K
- WWR : 23.4%

Base case EPI – 76 kWh/m²/year
Design case EPI – 100 kWh/m²/year
EPI calculations have been provided stating the reduction to be 24%; **hence, 12 points are committed.**

6	6	3	3	0	**Criterion 15 – Utilization of flyash in building structure**

The intent of criterion 15 is to use industrial waste fly ash in the building structure in combination with cement. To achieve points in criterion 15, the project must demonstrate replacement of certain percentage of cement by fly ash in building structure (minimum 15% replacement, 1 point) building blocks of load bearing and non-load bearing walls (40% fly ash content, 2 points) and plaster / masonry mortar (minimum 15% replacement, 1 point). The project shall be awarded additional one point each for demonstrating replacement of more than 25% cement by fly ash in structural concrete and plaster / masonry mortar.

Commitment–
Concrete mix design reports have been submitted stating that, 22% of cement by weight is replaced in the structural concrete by fly ash, **hence 1 point is**

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					committed. ACC blocks with minimum 40% of fly ash content by volume of material have been proposed for all non-load bearing walls in the project; **hence, 2 point is committed.** **Not Attempted-** Project has not attempted to replace the cement with fly ash in plaster and masonry mortar; **hence, 2 points are not attempted.**
4	4	4	2	2	**Criterion 16 – Reduce volume and weight of construction by adopting efficient technologies (not based on the utilization of fly ash)** The intent of criterion 16 is to replace a part of energy-intensive materials with less energy-intensive materials and/or utilize low-energy / energy-efficient technologies to reduce the overall embodied energy of the building. To achieve 4 points in criterion 16, the project must demonstrate a minimum 5% reduction in the overall embodied energy for a 100% structural and/or infill wall system used in a building, meeting equivalent strength requirements. **Commitment–** Narrative and calculations have been submitted stating reduction in embodied energy in structural and non-structural application as compared to base-case. For the non-structural applications, 54.19% of reduction in embodied energy is demonstrated by use of AAC blocks for 100% of walling; **hence 2 points are committed.** **Non-Compliant–** For the structural applications, 18% of reduction in embodied energy is demonstrated by the project team, however, reference provided for calculating reduction in embodied energy for structural application is not considered in GRIHA rating, **hence 2 points are denied.**
4	4	4	4	-	**Criterion 17 – Use of low energy material in interiors** The intent of criterion 17 is to use low-energy materials/finishes/products in interiors, which minimize the use of wood as a natural resource. To achieve 4 points in criterion 17, the project must demonstrate use of minimum 70% of total quantity of material as low-energy material in sub assembly/internal partitions/false ceilings/in-built furniture; flooring; and doors/windows frames. **Commitment–** Narrative and calculation have been submitted stating that, project team would use minimum 70% of the total quantity of all interior finishes and products in the building to meet GRIHA benchmark for each of the following category mentioned below: • False ceiling / inbuilt furniture • Flooring • Door/ window units **Hence, 4 points are committed.**

8 8 4 4 - **Criterion 18 – Renewable energy utilization**

Mandatory

The intent of criterion 18 is to use renewable energy sources in buildings to reduce the use of conventional/fossil-fuel-based energy resources. To achieve points in criterion 18, the project must demonstrate installation of renewable energy system on site. The installed capacity of the system must be minimum 1% of the total connected load of internal artificial lighting and space conditioning. The project shall be awarded additional 1 – 4 points if the rated capacity of the proposed RE System meets annual energy requirements of equal to or more than 5% - 30% of internal lighting consumption.
Additional 2 points are awarded to the project for investing in off-site renewable energy equivalent to 100% of the project demand or by catering to 100% lighting demand by the onsite installed RE.

Commitment–
Following calculations have been submitted:

- Total load (internal lighting, external lighting and space conditioning) for the project is 1,739.35 kW.
- Total energy consumption for internal artificial lighting for the project is 5,71,272 kWh/year
- Proposed RE capacity at site – 40 kWp (which is more than 1% of total load hence meeting mandatory requirement)
- Total RE generation at site – 57,601kWh/year
- Percentage of total internal lighting load met by RE – 10 %

Hence, 4 points are committed.

3 3 0 0 - **Criterion 19 – Renewable-energy-based hot water system**

The intent of criterion 19 is to reduce dependency on conventional sources of energy to meet hot water demand of the site. To achieve 3 points in criterion 19, the project must demonstrate use of solar hot water heaters on site.

Not Attempted–
Based on the narratives submitted, the project team is not attempting this criterion; **hence 3 points are not attempted.**

2 2 2 - **Criterion 20 – Waste-water treatment**

The intent of criterion 20 is to provide a waste water treatment plant on site to promote re-use of waste water on site and reduce dependency on potable water.

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Commitment–
Narrative has been submitted stating that, sewage treatment plant of 110 kLD is proposed for the project in the site premises. However, the technology is not yet finalized but, the technical specification of the STP will be as per the CPCB norms, **hence, 2 points are committed.**

3 - **Criterion 21 – Water recycle and reuse (including rainwater)**

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The intent of criterion 21 is to utilize treated water and rainwater for various applications (including groundwater recharge) to reduce the load on both the municipal supplies as well as the sewerage system, and to improve the groundwater table. To achieve points under criterion 21, the project must demonstrate use of treated waste water and/or rainwater to meet certain percentage of annual water demand. The project shall be awarded 1 – 3 points to demonstrate minimum 25% - 75% annual water reuse. Additional 2 points shall be awarded to recharge surplus rainwater into the aquifer.

Commitment–
Calculation has been provided demonstrating that the project will meet 39.61 % of the total water demand with treated water. Total annual water demand of the project is 128.7kLD. Out of that, 51kLD of demand including irrigation and flushing is met through recycled water. Since, 39.61% of annual water demand is met through recycled water, **1 point is committed.**

Narrative and calculations have been submitted indicating that rainwater will be collected from different catchment areas and it would be recharged by 11 rainwater harvesting pits of volume of 98 m³ each, **hence, 2 points are committed.**

2	1	1	1	-	**Criterion 22 – Reduction in waste during construction**

The intent of criterion 22 is to ensure maximum recovery and safe disposal of wastes generated during construction, and to reduce the burden on landfill. To achieve 1 point in criterion 22, the project must demonstrate adoption of measures to segregate waste on-site into inert, chemical or hazardous wastes; reuse/recycle of segregated wastes; and safe disposal of inert waste.

Commitment–
Declaration has been provided that provisions for reducing waste during construction will be made, **hence, 1 point is committed.**

1	1	1	1	-	**Criterion 23 – Efficient waste segregation**

The intent of the criterion is to promote segregation of waste for efficient resource recovery. To achieve one point in criterion 23, multi coloured bins must be provided in the building to collect different categories of waste generated at source.

Commitment–
Narrative is submitted stating that, waste would be segregated at individual floor levels into biodegradable and non-biodegradable. Drawing is submitted demarking the locations of bins placed on all floors of buildings; **hence, 1 point is committed.**

1	1	1	1	-	**Criterion 24 – Storage and disposal of wastes**

The intent of criterion 24 is to prevent the mixing of segregated waste before processing or disposal. To achieve 1 point in criterion 24, a separate space must be allocated for collected waste before transferring it to the recycling/disposal stations.

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Commitment–
Narrative has been submitted stating that, waste will be segregated at individual floor level into biodegradable and non-biodegradable category. It will then be stored at the basement; **hence 1 point is committed.**

2	2	2	2	-

Criterion 25 – Resource recovery from waste

The intent of criterion 25 is to ensure that organic waste generated on site is treated or disposed properly. To support compliance, the project must demonstrate measures to treat organic waste on site.

Commitment–
Narrative has been submitted stating that, the biodegradable waste will be treated by electric composter of capacity of 1 ton which will be installed on site. The non-biodegradable waste is further proposed to be segregated into paper, plastic, card board, metal, glass and e-waste and sold off to local scrap dealers; **hence, 2 points are committed.**

Note: Project team should submit the details of collection, treatment and disposal of organic waste. If the OWC is not operational and maintained, the points will not be awarded during GRIHA rating.

3	3	3	3	-

Criterion 26 – Use of low VOC Paints/adhesives/sealants

The intent of criterion 26 is to select low-VOC paints, adhesives and sealants to ensure good indoor air quality. To achieve points in criterion 26 the project must demonstrate use of 100% low-VOC paints; use of 100% low-VOC paints adhesives and sealants; and use of composite wood products with no added urea formaldehyde.

Commitment –
Declaration has been submitted, stating that:

- 100% of internal paints shall be zero or low VOC.
- 100% of sealants and adhesive shall be water based.
- 100% of composite wood products will not have urea-formaldehyde resins.

Hence, 3 points are committed.

1	1	1	1	-

Criterion 27 – Minimize ozone depleting substances

Mandatory

The intent of criterion 27 is to eliminate or control the release of ozone-depleting substances (CFCs, HCFCs and Halon) into the atmosphere. To achieve points in criterion 27, the project must demonstrate use of 100% CFC and HCFC free insulation; CFC- free equipment for refrigeration and air conditioning; and halon-free fire suppression systems in the building.

Commitment–
Declaration has been provided that the following steps will be taken to demonstrate compliance :

- 100% zero ODP insulation shall be used
- HCFC (hydrochloro-florocarbon)/ and CFC (chlorofluorocarbon) free

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HVAC systems and refrigeration equipment shall be installed.
- Halon free fire suppression and extinguishing systems will be installed.

Hence, 1 point is committed.

2	2	2	-	**Criterion 28 – Ensure water quality**

Mandatory

The intent of criterion 28 is to ensure supply of good quality potable water for drinking/washing purposes and the quality of treated waste water confirms to IS standards. To achieve 2 points in criterion 28, the project must comply with requirements of criterion 28.

Commitment –
Declaration and narrative has been submitted indicating that source of potable water for operational phase will be municipal supply and shall be confirming to IS 10500-1991. STP treated water will be used for landscaping and flushing conforming to IS 11624-1986, **hence, 2 points are committed.**

2	2	2	-	**Criterion 29 – Acceptable outdoor and indoor noise levels**

The intent of the criterion is to enhance comfort by providing acceptable levels of outdoor and indoor noise levels. To achieve 2 points in criterion 29, outdoor noise level must confirm to acceptable limits set in Central Pollution Control Board – Environmental Standards and indoor noise level must confirm to acceptable limits set in National Building Code 2005.

Commitment–
Outdoor Noise Control
Noise audit report has been provided indicating that noise levels are in accordance to the CPCB limits. However, a noise audit report (post occupancy) will be required to demonstrate compliance during final rating, **hence, 1 point is committed.**

Interior noise control
Declaration has been provided that indoor noise levels shall meet the NBC norms. However, a noise audit report (post occupancy) will be required to demonstrate compliance during final rating, **hence 1 point is committed.**

1	1	1	-	**Criterion 30 – Tobacco smoke control**

Mandatory

The intent of criterion 30 is to ensure zero-exposure of the non-smoking occupants of a building to passive smoking. To achieve 1 point in criterion 30, the project must provide document to ensure company policy for ban/prohibition of smoking within the building premises. In case there is provision for smoking, separate smoking zones must be designed for both air-conditioned and non-air-conditioned buildings.

Commitment–
Narrative has been submitted mentioning that smoking will be prohibited in all common areas. Adequate signage with penalty clause will be installed at

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multiple locations; **hence, 1 point is committed.**

1	1	1	1	-	**Criterion 31 – Provide at least the minimum level of accessibility for person with disabilities**

The intent of criterion 31 is to ensure accessibility and usability of the building and its facilities by employees, visitors, and clients with disabilities. To achieve 1 point in criterion 31, the project must comply with planning and design guidelines as outlined in NBC 2005.

Commitment–
Declaration has been provided that all facilities would be provided as required by National Building Code (NBC) for physically challenged persons on site. Reserved parking, lift with audio and braille assistance, ramp and toilet details for physically challenged persons have been submitted, **hence, 1 point is committed.**

0	-	-	-	-	**Criterion 32 – Audit and validation**

Mandatory (to be evaluated post occupancy)

The intent of criterion 32 is to validate performance of the energy and environmental systems in the building as predicted during the design and development stages. There is no point allocation for criterion 32.

Audit must be conducted within 2 years of full occupancy of the building and data must be submitted for 12 months. If the audit data corresponds with the data and documents provided at the time of award of provisional rating, the Final GRIHA rating will be awarded to the project.

In case audit data does not correspond with the data and documents provided at the time of award of provisional rating, GRIHA Provisional Rating will be taken back from the project.

This point will be assessed during GRIHA rating.

2	2	2	2	-	**Criterion 33 – Operation and maintenance**

Mandatory

The intent of criterion 33 is to ascertain efficient functioning of the building's systems through regular monitoring of electrical and mechanical systems after commissioning and implementation of appropriate operation and maintenance programme. To achieve 2 points in criterion 33, the project must ensure regular monitoring of building's energy and water consumption by installing digital meters; provision of core facility/service management group responsible for O&M of building's systems; and provision of fully documented O&M manual/CD/Multimedia listing best practices for the building's systems.

Commitment –
Declaration has been submitted indicating that, metering and sub-metering will be provided for all required energy and water systems as per GRIHA. Narrative has been submitted indicating that, contractual tie ups for

Total	Applicable	Achieved	Credits	Deficit	Criteria
					maintaining all systems with their respective maintenance manual will be submitted during the rating stage, **hence 2 points are committed.**
4	-	-	-		**Criterion 34 – Bonus points** The intent of criterion 34 is to promote awareness/adoption of significant environmental issues that are innovative and contribute to sustainability of the project but not covered under the above 33 criteria of the rating system. The applied measures shall have adequate demonstrated impacts on the owner or the occupants of the building and to the community as a whole. The award of points in criterion 34 is subject to evaluator's discretion. To be applied during final rating.
100	98	81	76	5	**Score – 77.55 % (76/98)** **The project has been awarded Three Star GRIHA pre-certification.** Please note: 4 Points of criterion 34 are not considered in the total marks. They are bonus points.

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Review Committee Observations & Recommendations

1	**Transportation:** • It was identified by the committee that, the sector road which runs through the site may cause accessibility issues for occupants accessing the convenient shopping complex (near EWS block). To avoid this, an underpass can be provided for safe to and fro movement of occupants. **Clarification Provided:** *We agree with the suggestion of an underpass. However, the present regulations from Directorate of Town & Country Planning do not permit construction of an underpass to connect two sides of a project. Based on the recommendation by the GRIHA Council we will represent to the regulatory authority and seek their permission to construct the underpass. If Vatika receives the permission, we will construct the same.*
2	**Infrastructure & Services:** • Major service lines like electrical lines, sewer lines, etc. for the project are proposed to be provided below the sector road which cuts through the site. As respective depth of each service line for the sector is not shared, there might be conflicts in laying of these services at intersections. Infrastructure development work in future may cause hindrance in the maintenance work in long run. **Clarification Provided:** • *Please note that only sewer lines and electrical lines are proposed to cross the road which cuts through site. Fire line is not permitted to cross the road. Water supply line for municipal is proposed separately. Site runoff channels are also not proposed to cross the road, both part of the site is designed to self-sustain.* • *The depth of sewer line and electrical lines are considered as per the local government law. Also this road will only be developed by Vatika Group as it is falling under Vatika town square, there will not be any conflicts in laying of these services at intersections.*
3	**STP:** • STP of 110KLD is proposed for the project however, technology to be used is not yet finalised. It is thus suggested to the project team, that the feasibility of Root Zone Treatment or Soil Biotechnology can be investigated as the project has ample amount of unused area. • Sludge handling process was not clearly described so, it is advised to the project team that, they can opt for filter press / use any equivalent or better technology for sludge handling and disposal. **Clarification Provided:** • *The design capacity of the sewage treatment plant is 150 KLD (detailed calculations of water and wastewater attached separately). The plant is based on conventional suspended growth design philosophy, so as to deliver a consistent performance over a wide variation of temperature, is shock resistant and suitable to Indian conditions, in general. Primary, secondary and tertiary treatments are proposed in the plant so as to obtain a readily usable treated effluent to be reused in horticulture, flushing and other secondary washing purposes.* • *For Sludge handling and disposal, sludge handling tank, sludge feed pumps and sludge drying beds are proposed by which sludge would be collected and reused as manure in landscape.*
4	**Storm Water Management:** • Cross-section provided by project team for the grease trap and desilting chamber needs considerable revision. The current system will not trap the grease efficiently. Walls must allow percolation of water through weep holes in horizontal direction as well. • Correct pre and post monsoon water table values for the site must be identified and the bore depth for recharging the ground water should be at least 5 m above the post monsoon water table. • Peak hourly rainfall values instead of average monthly values for rainfall should be incorporated in the calculations while recharging the rain water, else peak daily values should be used if the rain water is stored onsite and reused. • Soil's percolation rate should be revised as per the soil test report and the same should be considered for calculations. • Runoff coefficient for the plantation on the podium should be revised and calculation should be

	resubmitted. **Clarification Provided:** • *Please note that the RWH pit section is revised and a T section is provided at the inlet of the water holding tank for better functionality of grease trap. The drawing showing the same is attached as RWH pit detail drawing at drawing folder.* • *Please note that the water table identified as per the Geotechnical Investigation report for Tranquil Heights (HSG020) site at sector 82A Vatika India Next Gurgaon by CENGRS GEOTECHNICA PVT. LTD is below 45 m. The data test is conducted on May 2014. In any case post monsoon water table would not increase by more than 5 meters raising the water table not more than 40 m from ground level. The snapshot of geotechnical Investigation report of Vatika is provided.* *However we have considered the water table 20 m below the ground level which is less than 45 m. The percolation pipe is kept less than 15 meters (20-5 = 15)* *This ensures that our percolation pipe will not only be at least 5 m above monsoon water table but way beyond that.* • *The calculation is revised based on the Peak hourly rainfall value as per the RWH manual, CPWD 2002 i.e. 90 mm per hour for Delhi.* • *As per the Geotechnical Investigation report for the Geotechnical Investigation report for Tranquil Heights (HSG020) site at sector 82A Vatika India Next Gurgaon by CENGRS GEOTECHNICA PVT. LTD, it is found that the nature of the soil is silty. As per Central Ground Water Board manual on artificial recharge of ground water page 30-31, the permeability of silt soil has to be considered 20 to 50 mm per hour. Here we have considered 20 mm per hour only for RWH calculation.* **Comments:** Most of the design related suggestions have been incorporated.
5	**Landscaping:** • Water demand calculation for landscaping area on the podium should be revised and calculations must be resubmitted. **Clarification Provided:** *Please note that there is no proposed tree on podium of this project.*
6	**Waste Management** • Organic waste composter and STP should be placed close by to facilitate easier maintenance & disposal of waste. • Allocate provision for collection of e-waste on the site along with contractual tie-up with an e-waste recycler. **Clarification Provided:** • *The suggestion has been noted and would be discussed in details with all the stakeholders of the project. Any change in the location of STP and organic waste composter would be reported to GRIHA during final certification.* • *Since this project would be a core and shell kind of building, it would be included in the building buyer agreement that all the e-waste would be collected by the facility management of Vatika team separately.* • *Apart from that there would be a different area designated for the storage of both kind of wastes in the segregation/ Garbage room located at basement.* • *There would also be a contractual tie-up with Vatika and a recycler who would be taking the waste from the segregation room for further recycling. It is a very advance stage to show the contractual tie-up with Vatika and recycler. The same would be submitted on final Certification.*
7	**Water Balance** • Project team must update the water balance chart considering realistic utilization loss factors under each heads of usage. **Comments:** *Response not provided*

List of abbreviations used

AAC	Autoclaved Aerated Concrete
BIS	Bureau of Indian Standards
CPCB	Central Pollution Control Board
DMRC	Delhi Metro Rail Corporation
ECBC	Energy Conservation Building Code
EPI	Energy Performance Index
HVAC	Heating, Ventilation and Air conditioning
kLD	Kilo liters per day
NBC	National Building Code
ODP	Ozone Depletion Potential
RE	Renewable Energy
SHGC	Solar Heat Gain Coefficient
SRR	Skylight to roof ratio
STP	Sewage Treatment Plant
URDPFI	Urban and Regional Development Plans Formulation and Implementation
VLT	Visible Light Transmittance
VOC	Volatile Organic Compound
WWR	Window to wall ratio
e-waste	Electronic Waste

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vatika
creating lasting value

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E info@vatikagroup.com

www.vatikagroup.com

To
The Secretary
State Environment Impact Assessment Authority
Pryatan Bhawan Sector-2,
Panchkula, Haryana

Subject: Authorization Letter for consultant

Dear Sir,

Our company, M/s Vatika Limited having its Corporate Office at Vatika Triangle, Shushant Lok-1, Block A, Mehrauli Gurgaon Road, Gurgaon 122002 is going to construct a Group Housing Colony project being developed by M/s Vatika Limited on land measuring 11.218 acres located at Village Shikohpur, Sector-82 A, Gurgaon, Haryana.

We are appointing **M/s Vardan Environet**, having its registered office at **D-142, Sushant Lok-III, Golf Course Extension Road, Sector-57, Gurgaon, Haryana** as our environmental consultant and **Mr. SK Sharma** and **Mr. RS Yadav and Mr. Aman Sharma** are hereby authorized as the representatives for all matters related to this case from SEIAA and SEAC including submission of all documents and shortcomings to SEIAA, presentation before SEAC and collecting of final EC from SEIAA.

Thanking You

For **M/s Vatika Limited**

(Authorized Signatory)

Registered Office
Vatika Limited

NGT notice to Centre, Haryana on construction in Gurgaon

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Press Trust of India

UPDATED: May 29, 2017 19:50 IST

New Delhi, May 29 (PTI) The National Green Tribunal today sought the response of the Centre and Haryana government on a plea seeking stay on construction activity by a developer in Gurugram on the ground that the work was being carried out without obtaining prior Environment Clearance (EC).

A bench headed by Justice Jawad Rahim issued notices to the Ministry of Environment and Forests, Haryana government, State Environment Impact Assessment Authority, state pollution control board, Haryana Urban Development Authority, Vatika Limited and others while seeking their reply in two weeks.

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The tribunal was hearing a plea filed by environment enthusiast Naresh Kumar Jindal and others claiming that Vatika Limited was carrying out construction activity in 477 acres at "Sector 81, 82, 82A, 83 and 85 at Gurgaon" without obtaining prior EC from State Environnent Assessment Authority under the EIA Notification, 2006.

The plea has sought a stay on the construction and operation on the project where there is no EC obtained by the developer till the final disposal of the case.


Rizwan, Shaheen thank Babar after he steps down from Pakistan captaincy

Can KCR



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The plea, filed by advocates Sanjay Upadhyay and Salik Shafique, said the project proponent was carrying out construction activities in an unscientific manner causing air pollution in Gurugram and extracting ground water illegally from borewells without obtaining requisite permissions and violating the environmental safeguards.

"The construction and expansion of the projects are in full swing and in some cases have also been completed in 477 acres without prior EC. That such projects for which the construction is under progress without requisite Environment Clearances are City Homes, Tranquil Heights, Sovereign Next, Town Square 03, Market Place 1, Maitri Kiran School, Serenity Avenue," the plea said. PTI PKS ARC

Published By: AtMigration

Published On: May 29, 2017

--- ENDS ---



Rizwan, Shaheen thank Babar after he steps down from Pakistan captaincy



Can KCR

DIRECTORATE OF TOWN & COUNTRY PLANNING,
HARYANA, CHANDIGARH

Memo No. DTCP/Acctts/2021/ Dated:

To

Vatika Ltd,
Vatika Triangle, 7th Floor,
Sushant Lok, Phase-1,
Block- A, Mehrauli,
Gurgaon- 122002.

Subject: **Compliance Report of Rule 24, 26, 27 & 28 of Haryana Development and Regulation of Urban Area Rules, 1976 against License No. 22 of 2011 - Group Housing Colony, Acres- 11.218, Vatika Ltd.**

Please refer to the subject cited above.

Under Section 6 of Haryana Development & Regulation of Urban Areas Act, 1975, compliance of Rule 24, 26, 27 & 28 of Haryana Development & Regulation of Urban Areas Rules, 1976 pertaining **License No. 22 of 2011 -Group Housing Colony, Acres- 11.218, Vatika Ltd**, has been prepared on the basis of relevant record, submitted by the colonizer.

Encls: Compliance Report.

Sd
Chief Accounts Officer,
O/o Director Town & Country Planning,
Haryana, Chandigarh.

Endst. No. 4858 Dated: 20/07/2021

Copy forwarded to the following for information and further necessary action:-

1. DTP(HQ), Concerned.

Chief Accounts Officer,
O/o Director Town & Country Planning,
Haryana, Chandigarh

Report on requirements of documents under Rule 24,26,27 & 28 of the Haryana Development and Regulation of Urban Area Rules, 1976 and status of License No. 22 of 2011 - Vatika Limited. (LC-2409)

Type of colony/Area/Name of Urban area in which it is situated	**Type of colony** Group Housing Colony **Area** 11.218 Acres **Sector** 82 **Name of Urban area** Gurugram

Rule-24

Copies of advertisement for the sale of flat (Sec 24) along with register containing authenticated copies of Agreement entered between colonizer.

1.	Whether advertisement given in Newspaper	Yes
2.	Name of Newspaper	Hindustan Times
3.	Date of Publication	17.03.2017
4.	Date of approval of Building Plan	May be confirmed from Drawing Branch.
5.	Composition fee for delay in submission of copy of advertisement	Nil
6.	Remarks	

Rule 26(2)

Annual financial statements duly audited/ certified and signed by Chartered Accountant indicating the amount realized from each space holders, the expenditure incurred on Internal and External Development works separately of the colony/building etc. with detail thereof whether with the amount due from each space holders indicating their postal addresses.

Date of submission of Accounts Statement.	29.06.2021
Whether list of customers with postal address attached	Yes
Whether detail of expenditure incurred on EDW and IDW attached	Yes
Whether statement of accounts is audited, certified and signed by CA *in terms of Rule 26(2)*	Signed by CA
Total receipt upto 31.03.2020 (difference refunded)	100.55 Cr.
Total receipt upto 31.03.2021	100.61 Cr.
Total expenditure upto 31.03.2020	277.26 Cr.
Total expenditure upto 31.03.2021	277.43 Cr.
Total expenditure incurred on IDW/Construction works in preceding year i.e 31.03.2020	49.49 Cr.
Total expenditure incurred on IDW/Construction works upto 31.03.2021	49.49 Cr.
Whether compliance in order	Yes
Composition fee for delay in submission of statement for 2020-21	Nil

CA

Rule-27

Detail of account number of schedule bank in which 30% of the amount released by him from the space holder deposited to meet out the cost of internal development work of the colony.

Rule-28

Copies of form AC account indicating the amount released from each space holders and the amount deposited during the proceeding month in the schedule Bank.

Rule 27		
Whether separate account intimated to deposit 30% amount *in terms of Rule-27.*	Yes	
Date of intimation of Account No.	July, 2015	
Date of opening of Account No.	Not submitted.	
Account No.	5511464570 (old) 05720310004150 (new)	
Name of Bank with address	Kotak Mahindra Bank., JMD Regent Square, MG Road, Gurgaon (old) HDFC Bank, Vatika Atrium, Block -A, Khashra No. 1741,42,43, Village-Wazirabad, Sector -53, Gurgaon (new)	
Amount deposited upto 31.03.2021	49.77 Cr.	
Composition fee for delay in intimation of Account No.	Nil	
Rule-28		
Whether required statement in Form AC submitted on the 5th day of preceding month *in terms of Rule-28.*	Yes	
Amount realized from plot/flat holder upto 31.03.2021	100.61 Cr.	
30% of amount realized from plot/flat holder upto 31.03.2021	30.18 Cr.	
Total amount deposited in Bank upto 31.02.2020/expenditure incurred on IDW/Constt. Works *in terms of Rule-28*	**Deposited** 49.57 Cr.	**Expenditure incurred** 49.44 Cr.
Total amount deposited in Bank upto 31.03.2021/expenditure incurred on IDW/Constt. Works *in terms of Rule-28*	49.77 Cr.	49.49 Cr.

	Composition fee for delay in submission of statement in Form AC upto March 2021	Nil		
Total number of plot/flat in licensed colony.	Not submitted			
Total number of commercial unit in licensed colony.	-do-			
Total number of community sites in licensed colony	-do-			
Total number of plot/flats sold	-do-			
Total number of commercial units sold	-do-			
Total number of community sites sold	-do-			
Status of EDC	Fully Paid			
Status of Enh-EDC	NA			
Status of IDC	Fully Paid			
Status of B.G on account of IDW	**Name of Bank**	**BG No.**	**Amount**	**Validity**
	SBI	5079411BG0000579 (New BG no. 0407917BG1000068)	14581250	23.08.2023
Status of B.G on account of EDC	-			
Status of additional B.G on account of IDW/SPE	NA			
Date of validity of License	23.03.2017			
Total composition fee for delay in submission of above said compliances upto 31.03.2021	Nil			
Conclusion	The above report is based on the documents provided by the licencee and required composition fee has been charged/calculated for delay in compliance as per rules.			

Barinder Kumar Rana
AO

Regional Office, Gurugram (S)
Haryana State Pollution Control Board
3rd Floor, HSIIDC Complex, IMT Manesar, Gurugram
Website – www.hspcb.gov.in, E-Mail - hspcbrogrs@gmail.com
Tele No. 0124-2290207, 0124-2290208

HSPCB/GRS/2022/ 959 **dated** 22/12/2022

To

Sh. Aashish Sardana

Flat 7E, BB-Block, Janakpuri, Delhi-110058

Email- aashish.sardana@gmail.com

Ph no. 8800780473

Sub.: Information regarding Demolition Carried out by Vatika Ltd., in its project Tranquil Heights, Sector-82A, Gurugram.

Ref.: -Your RTI letter received in this office 30.11.2022

With reference to the subject cited above, it is intimated that the desired information of your RTI application under RTI Act, 2005 is as below:-

Sr. No.	Reply
Point No. 1	No such type permission granted by State Pollution Control Board.
Point no. 2	Same as point no. 1
Point no. 3	No such type record available with this office.
Point no. 4 (a to e)	No such type record available with this office.
Point no. 5	The demolition activity was noticed during the visit of Joint Committee in the matter of OA no. 215 of 2022 titled as Aashish Sardhana Vs Vatika Ltd & Ars. The report of the same is available on the website of Hon'ble ~~National~~ NGT.

Also, if any other information/clarification required in this regards, the applicant can visit this office in any working day in office timings between 09:00 AM to 05:00 PM hours.

PIO-cum-Regional Officer
Gurgaon Region (S)

RTI Application u/s 6(1) of the RTI Act - 2005

Date: 30.11.2022

From:

Aashish Sardana
Flat 7E, BB-Block, Janakpuri, Delhi – 110058
Email: aashish.sardana@gmail.com, Phone: +91-8800780473
Aadhaar No.: 8470 1100 6731

To,

PIO / SPIO
State Pollution Control Board, Manesar Office,
Gurugram District, Haryana

Respected Sir/Maam,

Subject: **Information regarding Demolition Carried out by Vatika Ltd in its project Tranquil Heights, Sector 82A, Gurugram.**

As a concerned citizen I had approached NGT in March 2022, regarding illegalities on part of Vatika Ltd with regards to its project Tranquil Heights, in Sector 82A, Gurugram that was being built under TCP Licence 22 of 2011. Whereinafter as per directions of NGT the committee constituted to investigate, of which the Regional Officer of SPCB was a member, found that demolition was being carried at the project site. Copy of the Report enclosed here.

30/11/2022

Haryana State Pollution Control Board
IMT Manesar, Gurgaon

I therefore seek the following information with regards to the same demolition, which maybe supplied accompanied with certified copies of the documents where possible -

1. Kindly confirm whether prior approval of the State Pollution Control Board was sought for carrying out the aforementioned demolition activity or any intimation of the same was provided.
2. Where response to Query No. 1 is in affirmative, kindly provide copy of the application / intimation put-forth by the project Proponent Vatika Ltd for the demolition activity, alongwith the demolition plan.
3. Kindly provide the monitoring report of the State Pollution Control Board of the demolition activity.
4. With the regards to the aforementioned demolition - kindly provide the details of -
    a. recycling plan for the debris from the demolition including the names of contractors and company(s) engaged for the same by the project proponent / Vatika Ltd.
    b. the site where the non-recyclable debris was dumped by the project proponent / Vatika Ltd.
    c. the manpower and equipment employed for the demolition and quantum of debris generated, including the extent of the size of the project site and the depth of the construction/demolition carried out on it by the project proponent / Vatika Ltd.
    d. the site from which earth / soil has been excavated or planned to be excavated for covering up or restoring the project site by the project proponent / Vatika Ltd.
    e. the amount spent on the demolition activity by the project proponent / Vatika Ltd.

5. Any other information available in your office in any form available in your office with regards to the demolition activity that was / is being carried out at the aforementioned site.

I pray that the above information sought here be supplied expeditiously.

Kindly note that a Rs 10/- postal order is accompanied with this RTI Application.

Yours sincerely,

Aashish Sardana


Tranquil Dr
Exit Street View
TOWER A
TOWER B
TOWER C
TOWER D
TOWER E
© 2023 Google
Google Earth
Imagery Date: 4/2022


Tranquil Dr
Exit Street View
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Imagery Date: 4/2022

vatika
creating lasting value

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www.vatikagroup.com

CTP(27)

DIRECTOR TOWN & COUNTRY PLANNING HARYANA CHANDIGARH Diary No. 4925 Date 20/2/17

27-2-17 DTP(SKS)

February 20, 2017

To,

The Director General
Town & Country Planning, Haryana
Chandigarh.

Subject: **Request for renewal of license no, 22 of 2011 dated 24.03.2011 for Group Housing Colony on land measuring 11.218 Acres at Sector -82A, Gurgaon being developed by M/s Vatika Limited.(LC-2409)**

Dear Sir,

This has reference to the subject cited above.

You are requested to renew the aforesaid license for the Group Housing Colony on land measuring 11.218 Acres at Sector-82A, Gurgaon as there are some works still pending and require some more time for completion.

In this regard, enclosed herewith find application form LC-VI alongwith renewal fee of **Rs. 46,20,000/-** (Rupees Forty six lakh twenty thousand Only) bearing draft No 073214 dated 20.02.2017 in favour of 'Director, Town & Country Planning, Haryana' Payable at HDFC Bank, Chandigarh.

Enclosed herewith find license No. 22 of 2011 dated 24.03.2011 in original for your necessary action please.

This is for your kind consideration and we hope that our request will be granted to us as soon as possible so that we are able to complete the said project at the earliest.

Thanking You,

Yours Sincerely,
For M/s Vatika Limited

Virender Dhar
G.M. (Planning & Co-ordination)
Mob - 9810566938
Email – virendhar@vatikagroup.com

Encl: As stated above

Gmail Dharmender Singh <dharmendersingh.law@gmail.com>

Fwd: Copy of Reply with documents in MA No. 28/2023

1 message

Uday Bedi <uday.bedi@outlook.com> 9 December 2023 at 11:55
To: Dharmender Singh <dharmendersingh.law@gmail.com>

Get Outlook for iOS

From: Aashish Sardana <aashish.sardana@gmail.com>
Sent: Thursday, December 7, 2023 12:37:55 AM
To: Dinesh Parashar <dineshparashar2@gmail.com>
Cc: Uday Bedi <uday.bedi@outlook.com>; gautambhalla@vatikagroup.com <gautambhalla@vatikagroup.com>; Anita Sardana <anita.k.sardana@gmail.com>
Subject: Re: Copy of Reply with documents in MA No. 28/2023

Dear Sir(s),

Please find in the GOOGLE drive link (size 44 MB), the advance copy of rejoinder to your 'Reply dated 06.10.2023 in MA 28/2023 - OA 215/2022' titled as **Aashish Sardana vs Vatika Ltd & Anr.**

Also provided is a compressed version of the above document as attachment here.

Thanks & Regards
Aashish Sardana

8800780473

rejoinder aashish sardana F.pdf

On Fri, Oct 6, 2023 at 4:30 PM Dinesh Parashar <dineshparashar2@gmail.com> wrote:

> Dear Sir,
>
> We, the undersigned, are representing M/s Vatika Ltd.
>
> Please find attached the advance copy of reply of your Misc. application No. 28/2023 titled as Aashish Sardana Vs Vatika Ltd. & Anr.
>
> Thanks & Regards
>
> --
> Parashar & Associates
> Dinesh Parashar, Advocate
> 9811705506

rejoinder aashish sardana F -compressed.pdf
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