NEW TOWN KOLKATA DEVELOPMENT AUTHORITY

(A Statutory Authority Under Government of West Bengal)
3, Major Arterial Road, New Town, Kolkata - 700 156

Memo. No. 2002 /NKDA/Engg-36/2010(XI) **Date: 02/06/2020**

NOTICE INVITING e-TENDER

Notice Inviting e-Tender No. WBNKDA/05/EE–I/NKDA/2020-21

Executive Engineer - I, New Town Kolkata Development Authority invites percentage rate tender from resourceful, reliable, bona-fide and experienced working contractors of KMDA, WBHIDCO, NKDA, PWD, PHED, Railways and other Govt. and semi Govt. organizations having experience in similar nature of work, and are requested to submit their offer for the work detailed below.
(Submission of Bid through online)

List of Schemes :-

Name of work	Estimated Amount (Rs.)	Earnest Money (Rs.)	Price of Tender documents (Rs.)	Period of completion
Landscape development of activity park opposite Neem Banani at Action Area - IIB, New Town, Kolkata	**Rs.3,82,29,628/- (Rupees Three crore eighty two lakh twenty nine lakh six hundred twenty eight only)**	**Rs.7,65,000/- (Rupees seven lakh sixty five thousand only)**	**Rs. 5,005.00 Each set to be paid only by the successful bidder during the time of agreement**	**12 months**

1. In the event of e-filling, intending bidder should download the tender documents from the website http://wbtenders.gov.indirectly with the help of Digital Signature Certificate. All the bidder shall have to submit earnest money & necessary earnest money will be deposited by the bidder through the following payment mode as finance dept. order no-3975-F (Y) dated 28th July 2016 (Annexure–A)

   i) Net Banking (any of the banks listed in the ICICI Bank payment gateway) in case of payment through ICICI payment gateway).

   ii) RTGS/NEFT through bank account in any bank. The EMD shall be deposited in favour of "New Town Kolkata Development Authority" payable at Kolkata.

2. Both Technical bid and Financial bid are to be submitted concurrently duly digitally signed in the website https://wbtenders.gov.in. The acceptance of lowest bid is not obligatory.

3. Tender documents may be downloaded from website and submission of Technical Bid and Financial Bid will be done as per Time Schedule stated in Sl. No. 15 of this NIeT.
4. The **FINANCIAL OFFER** of the prospective qualified tenderer(s) will be considered only if the **TECHNICAL BID** of the tenderer(s) is found qualified by competent authority of New Town Kolkata Development Authority. The decision of the competent authority of New Town Kolkata Development Authority will be final and absolute in this respect. The list of Qualified Bidders will be displayed in the website.
5. In term of Finance Department, Audit Branch, Govt. of West Bengal's Notification no.4374-F(Y) dated 13th July, 2017, the bidder has to uploaded valid 15-digit Goods and service Taxpayer Identification Number (GSTN) under GST Act, 2017, along with his bid. The bidder should note that bid submitted without GSTIN will be summarily rejected
6. In term of finance dept. Govt .of West Bengal **G.O. no-4608-F (Y)** dated 18th July 2018 when bid rate is 80% or less of Estimated Amount put to tender, the Bidder shall submit Additional Performance Security @ 10 % of the Tendered Amount from any Schedule Bank, before issuance of work order.

   The Additional performance security shall be submitted in the form of Bank Guarantee from any scheduled Bank before issuance of the work order. If the bidder fails to submit the additional performance security within seven working days from the date of issuance of Letter of Acceptance, his earnest money will be forfeited and other necessary action as per NIT like blacklisting of the contractor, etc. may be taken. The bank Guarantee shall have to be valid up to end of the contract period and shall be renewed accordingly, if required.

7. **Eligibility criteria for participation in thetender.**

   Working Contractors of KMDA, NKDA, WBHIDCO, PWD, PHED, Railways and other Govt. & semi Govt. organization having satisfactorily completed (as prime contractor).

   a) Similar nature of work of the minimum value of Rs.1,53,00,000/- (Rupees One crore Fifty Three Lakh only) during 5(five) years prior to the date of issue of the tender notice. Authentic documents in original, from the Engineer-in-charge of the work will have to be submitted in support of the above credential as non-statutory documents

   OR

   b) Intending tenderer may also produce credential of 02 (two) similar nature of completed work, each of minimum value of Rs.1,15,00,000/- (Rupees One crore fifteen lakh only) during 05(five) years prior to the date of issue of the tender notice.

   OR

   c) Intending tenderer may also produce credential of one single running work of similar nature which has been completed to the extent of 80% or more and value of which is not less than the estimated value. In case of running works, only those tenderers who will submit the certificate of satisfactory running work from the concerned Executive Engineer, or equivalent competent authority will be eligible for the tender. In the required certificate it should be clearly stated that the work is in progress satisfactorily and also that no penal action has been initiated against the executed agency, i.e, the tenderer.

   i) Payment certificate will not be treated as credential.

ii) Credential certificate issued by the Executive Engineer or equivalent or competent authority of a state/central Government, state/ central Government undertaking statutory/ Autonomous bodies constituted under the central/ state statue, on the executed value of completed/ running work will be taken as credential.

d) Intending Tenderer must be financially sound with a minimum average turnover of Rs.5 crore, (Rupees Five Crore Only) during the last three financial years and having a trade license,G.S.T Registration certificate and Profession Tax certificate.

e) Pan Card, Income Tax Return Acknowledgement Receipt for the last 03 (Three) Assessment years, P.T. Deposit Challan for the year 2019-2020.

ii) Registered Partnership Deed for Partnership Firms only along with Power of Attorney since executed under any Judicial Magistrate/First Class Magistrate is to be submitted. The company shall furnish the Article of Association and Memorandum as on-statutory documents.

iii) Joint Ventures/MOU will not be allowed.

iv) Sub-contracting will be allowed in the execution stage subject to acceptance of the financial and technical profile of the sub Vendor by the Executive Engineer - I of New Town Kolkata Development Authority.

v) Three consecutive years' Audit report to be submitted along with Tender documents.

8. Similar work means

i) Work involving landscaping in a park including construction of building with complete electrical work and installation of park furniture as well as children's play items.

OR

ii) Construction of building complete with plumbing, sanitation and Electrical Work together with surrounding landscaping

9. On-going payments for work may be allowed to the executing agency asper existing rules. Subject to deduction of security deposit, progressive payment may be made against the completed or partly completed item of works. Such interim payments, shall be made as running account bill (s), however, shall not constructed to mean that the respective items / components have finally been approved and accepted by NKDA and the contractor shall not be absolved of his responsibility to set right any deficiency of such paid items / components at his/ their own cost, for rectifying all defects which are subsequently being noted or found.

10. No claim for interest or compensation will be entertained in respect to any money or balance of payment which may be due or alleged to be due to the contractor owing to any dispute between the contractor and NKDA or in respect to any delay in making payment of progressive or final bill of the work, to the contractor.

Payment for the works done by the contractor will be based on recorded and accepted measurement at various stages of work. Acceptance of measurements put for payment to be invariably made by putting signature (with seal) of the contractor (or his/ their authorized representative). The contractor or his / their authorized representatives

are advised to take measurements jointly with the officials of NKDA. In case of failure on his/their part either to take measurement jointly and /or acceptance of the recorded measurement, within a reasonable time, measurement taken by the department shall be considered as final for making payment. Similar acceptance is also essential for level records and survey data, field books etc.

11. **No advance and secured advance will be allowed**. However Part payments may be allowed on delivery of materials, as decided by EIC.

12. **Idle labour, idle rent and hire charges etc.:**
No claim of any category and type, on this ground shall be entertained. The contractor and NKDA shall make every effort that such situation does not arise.

13. **Testing and Testing Equipments**: Testing of materials, to be used in work and the quality of finished work on quality control aspect, is to be undertaken by the contractor at their own cost, with facilities provided at site and / or through approved (by NKDA) Test Houses / Laboratories. All materials and workmanship shall be in accordance with the specifications laid down in the contract and also as per P.W.D.(Buildings& Road Scheduled) and IS Codes . The Engineer-in-Charge reserves the right to test, examine and measure the material / workmanship direct at the place of manufacture, fabrication or at the site of works or any suitable place. The contractor shall provide such assistance, instrument machine, labour and materials as the Engineer-in-Charge may require for examining, measuring and testing the works and quality, weight or quantity of materials used and shall supply samples for testing as may be selected and required by the Engineer-in-Charge without any extra cost. Beside this, he/they will carry out tests from outside Laboratory as per instruction of Engineer-in-Charge. The cost of all such tests would be borne by the agency.

    Should the Chief Engineer or his representative consider it necessary to satisfy himself/themselves as to quality of work, the contractor shall offer sample of work done as necessary, pull down reasonable part of the work required for inspection and testing. The contractor shall bear the cost of pulling down and shall make good the same at their own cost and to the full satisfaction of E-I-C without any claim for payment.

14. **Security Deposit:**

    Retention money towards performance Security amounting to 8% (eight percent) of the value of the work shall be deducted from the running account bill of the tenderer as per prevailing order. No interest will be paid on the money retained for Security Deposit.

15. Date and Time Schedule:

Sl. No.	Particulars	Date & Time
1	Date of uploading of N.I.e.T. & other Documents (online) (Publishing Date)	**02/06/2020**
2	Date and venue of pre bid meeting	**12/06/2020 at 3.00 P.M. Conference Hall of NKDA at 01, MAR, New Town, Kolkata - 700156**
3	Documents download start date (Online)	**02/06/2020 from 3.00P.M.**
4	Documents download end date (Online)	**30/06/2020 upto 10:00A.M.**
5	Bid submission start date (On line)	**02/06/2020 from 3.00P.M.**
6	Bid Submission closing (On line)	**30/06/2020 upto 10:00A.M.**
7	Bid opening date for Technical Proposals (Online)	**02/07/2020 at 10:00A.M.**
8	Date and venue of demonstration of prototype panel	Will be intimated in due course
9	Last date of uploading list for Technically qualified Bidder(online)	Will be intimated in due course
10	Date of opening of Financial Proposal(online)	Will be intimated in due course
11	Last date of intimation to the successful bidder	Will be intimated in due course

16. Earnest Money for the successful tenderer will be retained and converted as Initial Security deposit. The Balance security deposit @ 8% will be deducted from on-going bills to cover 10% of the total value of work done.
    a) The security deposit of the successful tenderer will be refunded after defect liability period as stipulated in relevant clause of the agreement to be made in WBF2911(ii).
17. The tenderers are bound by the terms & conditions of WBF 2911(ii) along with specification, notice for calling Tenders, Special terms & condition, Information to Bidders, Schedule of works etc, which forms a part and parcel of this contract.
18. Income Tax & G.S.T will be deducted as per Govt. orders issued from time to time and would be applicable on the date of making payment of the bills. Building & other construction workers cess @ 1.0% will be deducted from progressive bills in pursuance with G.O. no. 599A/ 4M – 28 / 06dated 27/09/2006.
19. The Bidder, at his own responsibility and risk is encouraged to visit and examine the site of works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for the work as mentioned in the Notice Inviting Tender, before submitting offer with full satisfaction. The cost of visiting the site, shall be at his own expenses.

20. The intending Bidders shall clearly understand that whatever may be the outcome of the present invitation of Bids, no cost of Bidding shall be reimbursable by the Department. New Town Kolkata Development Authority reserves the right to accept or reject any offer without assigning any reason whatsoever and is not liable for any reimbursement of any cost that might have been incurred by any Tenderer at any stage of Bidding.

21. Prospective applicants are advised to note carefully the minimum qualification criteria before tendering the bids.

22. **Conditional / Incomplete tender will not be accepted under any circumstances.**

23. **The intending tenderers are required to quote the rate *online. The rate should be inclusive of all components and taxes.***

24. Contractor shall have to comply with the provisions of (a) the contract labour (Regulation Abolition) Act. 1970 (b) Apprentice Act. 1961 and (c) minimum wages Act. 1948 and the notification (s) thereof or any other laws relating thereto and the rules made and order issued there under from time to time.

25. During scrutiny, if it comes to the notice of the tender inviting authority that the credential or any other paper found incorrect / manufactured / fabricated, that bidder would not be allowed to participate in the tender and that application will be rejected without any prejudice.

26. If there be any objection regarding prequalification of any Agency the same should be lodged on line to Executive Engineer I, New Town Kolkata Development Authority within 2 (*two*) days from the date of publication of list of qualified agencies and beyond the said time schedule no objection will be entertained

27. Before issuance of WORK ORDER, the Tender Inviting Authority may verify the credential and other documents of the lowest tenderer if found necessary. After verification if it is found that the documents submitted by the lowest tenderer is either manufactured or false in that case work order will not be issued in favour of the said Tenderer under any circumstances and his/their offer will be treated as cancelled.

28. If any discrepancy arises between two similar clauses on different notification, the clause superseding others will be solely as per the discretion of the Tender inviting authority

29. The successful Tendered whose tender is accepted shall make formal agreement in WBF 2911 (ii) along with bid documents in triplicate, within 7 (seven) days from the date of issue of work order by Executive Engineer II, New Town Kolkata Development Authority on payment of usual charges which is non-refundable under any circumstances and submit the same duly signed by him/them to this office. If the contractor fails to perform the formalities within the specified period the Tender is liable to be cancelled and the Earnest Money will be forfeited as per relevant clauses under memorandum of WBF 2911(ii).

30. Qualification criteria:

    The tender inviting and Accepting Authority will determine the eligibility of each bidder. The bidders shall have to meet all the minimum

criteria as stipulated in relevant clauses of this NIeT.

31. The eligibility of a bidder will be ascertained on the basis of the document(s) submitted in support of the minimum criteria. If any document submitted by a bidder is either manufactured or false, in such cases the eligibility of the bidder / tenderer will be rejected at any stage without any prejudice to take any penal action against him/them as may be deemed fit by the Tender Accepting Authority.

    AND

    The agency must have the capacity to engage laborers as directed by EIC.

32. The agency should supply the materials as per confirming to IS mark and specification laid down in schedule and also to be taken joint approval from EIC / his representatives & technical authorities of NKGSCCL before utilize in work.

33. **No. price preference and other concession as per order no. 1110F dated: 10/02/2006 will be allowed.**

34. Agencies are required to give a work programme preferably in the form of a bar- chart and to get it approved by the EIC (Engineer–in-Charge) before commencement of work and if progress of work abruptly differs from such work programme, the undersigned may terminate the work order at any point of time and penal action as per Tender Terms and conditions will be imposed.

35. Unless otherwise stipulated, all the works are to be done as per general conditions and general specifications of the latest edition of 'PWD (W.B) schedule of Rates for Building, Roads, and Sanitary Plumbing' works for the working area.

36. In case of any inadvertent typographical mistake in the specific price schedule of rates, the same will be treated to be so corrected as to confirm with the prevailing relevant schedule of rates and/or technically sanctioned estimate.

37. Intending tenderer should note that he may have to work simultaneously with other contractors already entrusted with other work or with contractors to be entrusted with other work in future in the same site. The contractor will have to work in close co-operation and harmony with all the contractors engaged in the project. Any claim for idle labour, for any reason whatsoever, will not be entertained under any circumstances.

38. NKDA will not be held responsible for making payment against any anticipated profit and/or compensation for any losses or price escalation whatsoever for the works as stated in the annexure of this NeIT. Rates should be quoted accordingly.

39. The address as furnished by the contractor shall be deemed as the postal address of this office. Any notice or instruction to be given to the contractor under the terms of contract shall be deemed to have been served if it has been delivered to his authorized agent (on the strength of authorization) or representative or sent by registered letter to his official address as furnished.

40. Arbitration clause of WBF 2911(ii) stands deleted.

41. New Town Kolkata Development Authority reserves the right to increase or decrease the quantum of work as stipulated in the schedule of work for which no change of rate will be allowed.

42. Participation in this tender deems that the applicant is fully agreeable to abide all terms and conditions as stated in this Notice Inviting e tender as well as WBF 2911(ii).

43. Mobilization advance, time / cost overrun and consequent cost escalation for any material, labour, etc. will not be allowed.

44. All materials are to be procured and supplied at site of work by the tendered /firm at his / their own cost from approved reputed dealer / manufacturer. Departmental materials will not be issued under any circumstances unless any such provision is made and accepted latter by both the parties. Department unless otherwise stated means New Town Kolkata Development Authority.

45. The offer shall remain valid for 180 days from the date of opening of the tender.

46. The project site is located in New Town Action Area IIB towards the North eastern part of New Town Kolkata. New Town is a planned neighborhood. The site is well connected by road through National Highway (NH) 12 that runs through Kolkata. The distance from the major city Kolkata is -40 km. The connectivity to the site from the major arterial road is within the proximity of 500m.The site is surrounded by mixed use and residential development. New Town Lake is at the proximity of 1.5 Km from the proposed site.

47. Brief Scope of work:

Execution of the following work as instructed by and to the satisfaction of the EIC at the project site New Town, Kolkata:

i) Inspection and detail survey of the site for preparation of working drawing.

ii) Preparation of working engineering drawing for the construction and installation for the implementation of the project.

iii) Preparation of surface for the project

iv) Supply of all required material at site in due time

v) Preparation of appropriate foundation for the boundary wall of the project site as directed by the EIC

vi) Construction and finishing of the Boundary wall to the satisfaction of the EIC.

vii)Preparation of appropriate footing/base for park furniture and play installations as per plan and as directed by the EIC.

viii) Construction of RCC frame structure and brick work including finishing and floor work for the toilet block, security kiosk and Entrance plaza with doors and windows as per plan.

ix) Laying of appropriate pathways as per plan and direction of the EIC

x) Electrical work for cabling, fitting and fixing of appropriate fittings, fixtures, switches and connectors including safety fixtures for outdoor illumination in the Park as per plan and as directed by the EIC.

xi) Plumbing and sanitation work for the toilet block as per plan and as directed by the EIC.

xii)Laying of appropriate drainage network for the park as per plan and as directed by the EIC

xiii) Electrical work for cabling, fitting and fixing of appropriate fittings,

fixtures, switches and connectors including safety fixtures for all the electrical installations in the toilet block and the security kiosk as well as the entrance plaza.

xiv) Construction of underground reservoir for drinking water from PHE connection

xv) Installation of pump for drinking water

xvi) Installation of overhead reservoir for drinking water with complete connection with inward and outward network of appropriate pipeline as per plan and as directed by the EIC

xvii) Installation of drinking water fountains as per plan with connection to drinking water network from the overhead reservoir.

xviii) Construction of septic tank and soak pit with connectivity to sanitation line

xix) Providing appropriate connection to nearest municipal water supply line, nearest point of municipal sewerage line, nearest point of Drainage Line and Nearest Point of Power Supply Mains.

xx) Construction of a timber deck with appropriate outdoor quality wood and appropriate foundation structure as per design and as directed by the EIC

xxi) Installation of appropriate railing structures as per plan and as directed by the EIC

xxii) Painting and finishing of all structure with appropriate painting.

xxiii) Preparation of soil for planting trees, shrubs and laying of lawns as per plan.

xxiv) Supply of saplings of specified variety and quantity and planting of trees, shrubs and laying of lawns as per plan.

xxv) Operation and maintenance of the park for three years post defect liability period of first one year.

48. Evaluation Method:

Evaluation of the bids will be made on the basis of submitted credentials The opinion of the tender inviting authority will be final on this matter.

49. Special Condition:

i) The selected agency is allowed to engage sub vendors for one or more part of the work provided the credentials of such sub vendors are to be pre-approved by the EIC.

ii) The selected agency shall remain solely responsible for the performance and/or non-performance of such sub vendors.

iii) The tender inviting authority may take action against the selected agency for non-performance or substandard performance of the sub vendors.

iv) The decision of the EIC will be final regarding approval of the credentials of the sub vendors and for assessment of performance of the sub vendors.

50. Enclosure:
    i) Location plan.
    ii) Proposed Design.
    iii) Approved make list.

Executive Engineer - I
New Town Kolkata Development Authority

Memo. No. 2002 /1(11) /NKDA/Engg-36/2010(XI) Date: 02/06/2020

Copy forwarded for information to:-

1. The Chief Executive Officer, New Town Kolkata Development Authority.
2. The Chief Engineer, New Town Kolkata Development Authority
3. Administrative Officer I & II New Town Kolkata Development Authority
4. Chief Finance officer, NKGSCCL
5. Chief Technical Officer, NKGSCCL
6. Technical Officer, NKGSCCL
7. The Finance Officer, New Town Kolkata Development Authority
8. Executive Engineer-II & ME New Town Kolkata Development Authority
9. The Estimator/ Sr. Accountant / Cashier, New Town Kolkata Development Authority.
10. Office Notice Board.
11. Official Website of New Town Kolkata Development Authority (www.nkdamar.org)

Executive Engineer - I
New Town Kolkata Development Authority

Proposed Site location for Activity Park

The site is located in New Town, Action Area IIB, located in North 24 Parganas district. Situated towards the North eastern part of New Town Kolkata. The site is well connected by road through National Highway (NH) 12 that runs through Kolkata. The distance from the major city Kolkata is 40 km. The connectivity to the site from the major arterial road is within the proximity of 500m.The site is surrounded by mixed use and residential development. New Town Lake is at the proximity of 1.5 Km from the proposed site.

Proposed Location of project site area at action area II B
Source: NKDA

Site images (At present)

Site images
Source: NKDA

Connectivity

The proposed site is well accessible through NH12 having 60m ROW and major arterial road “Aliah university road” towards east. The site is in close proximity to Eco Park and can be accessed through major Arterial road towards south west of the site. The project site majorly consists of mixed-use development with residential being predominant.

Connectivity Map

Source: NKDA

Proposed Design

Design Principles

Visual axis, framing the interest, texture of natural elements, human proportion and continuity are the primary principle that formulates the design and its inner expressions.

- **Visual axis**: Pathways are been conceptualized and oriented to help one to visually connect with individual point of interest. Which makes each 'turn' unique and expressive.

- **Framing the interest:** Visual axis has been framed with similar element to give the sense of continuations and notionally bind the entire site.

- **Texture of natural elements:** Retaining existing natural elements and designing the park with native plantations and elements keeps the natural texture and impression intact.

Design principles
Source: NKDA

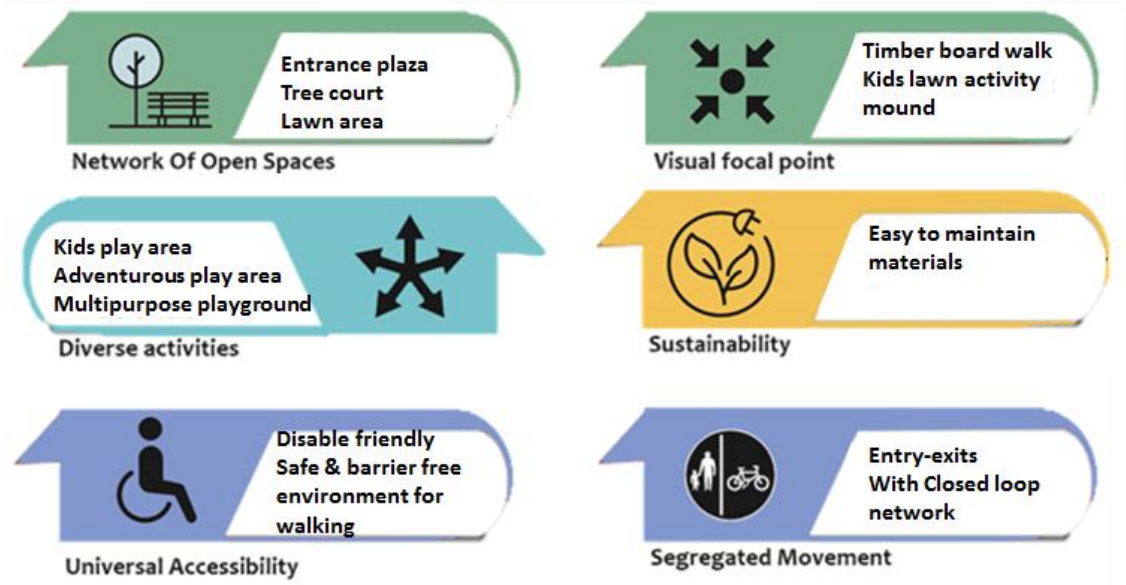
- **Proportion** refers to the size of parts of the design in relation to each other and to the design. Proportion in landscape design usually relates to people and their activities.

- **Continuity** refers to the repeated use of features like plants with identical shape, line, form, texture and/or colour.

- **Simplicity** refers to reduction of a design to its simplest, functional form, which avoids unnecessary cost and maintenance.

Design Strategy

A strategy is envisaged for the development of Activity Park that would seek to embrace the opportunities that exist within the park to transform it into a contemporary and highly functional place.



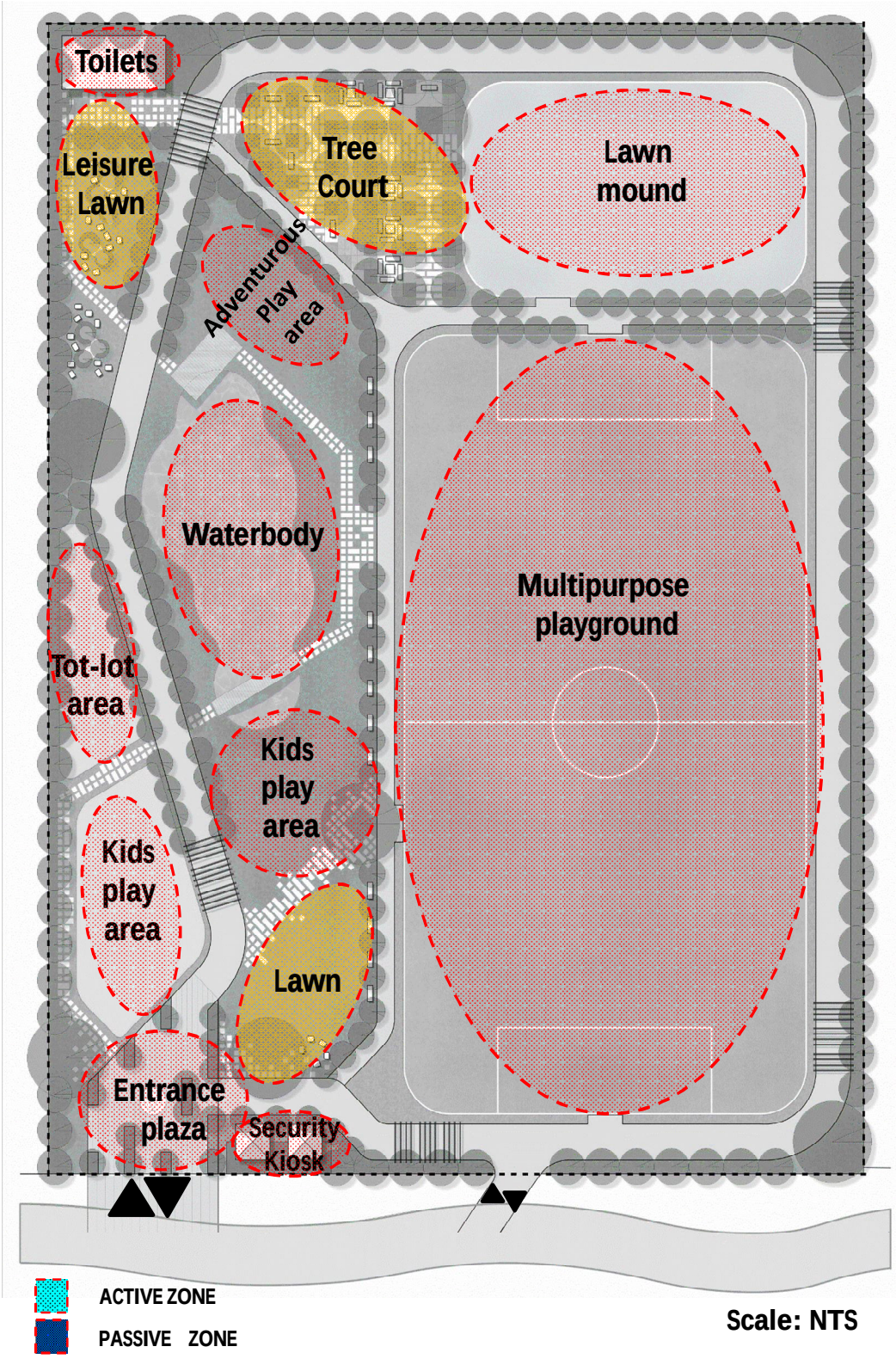
Design strategy for developing *Activity park*
Source:NKDA

Project Zoning

The zoning of the site is primarily based on Physical activities, Space allocation, Entry & Exit points and Connectivity to the site.

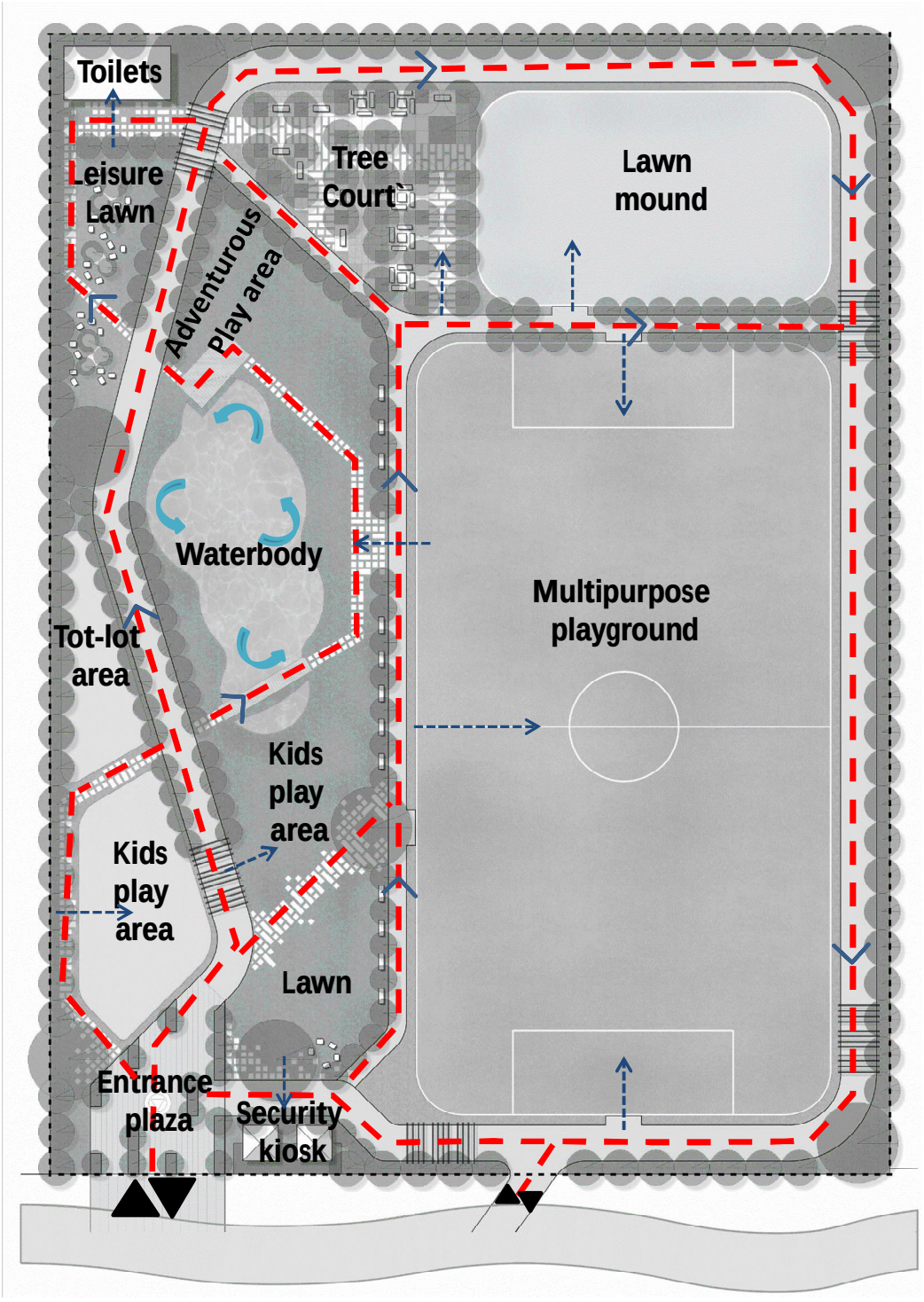
The following are the key features for the broad zoning:

- **Site access:** Single entry\exit for safety and vehicular control
- **Built area:** Duly considering green norms and standards and to minimize any conflict with the existing natural features the hardscape area is kept minimum (approx 20% of the total site area)
- **Active and passive zone:** Duly considering the nature of the proposed concept the active to passive area is proposed at the ratio of 70:30
- **Internal Circulation:** Connected pathway loops to all the proposed park activities by foot or by bicycle.
- **Water body:** Proposed in the centre of the park which will act as a leisure space with all pathways leading to the pond.



Proposed area zoning for *Activity* park

Circulation



Proposed Circulation pattern for Activity park

The park consists of entrance plaza which is used both for entry and exit the park and additional entry/exit is proposed adjacent to the main during any emergencies which is a controlled access point.
The circulation inside the park is carefully designed to cater kids, pedestrians and also specially abled person.
Every activity space in the park is connected by the access path to encourage the effective utilization of the activity space with uninterrupted movement.
The park is surrounded by dense trees on all four sides, which is proposed to act as physical barrier in place of concrete structure keeping in view of the proposed physical activities.

Proposed Components

A cohesive landscape comprises of various components to integrate, hardscape, softscape and play area as a beautiful and functional design. Aside from contributing to greener top cover, certain components are created to form a landscape design that goes in tune with nature. Such components for the proposed park are mentioned:

ACTIVE ZONE	PASSIVE ZONE	AMENITIES
Kids play area Tot Lot area Adventurous play area Multipurpose play ground Kids activity area lawn mound	Lawn area Tree court Leisure lawn	Entrance plaza Timber bridge Security kiosk Toilets Water body

- **Kids play area**

An area deigned and equipped with play equipment to enable children to play.

Source:https://commons.wikimedia.org/wiki/File:Jordan_Valley_Park,_Children%27s_Play_Area_(Hong_Kong).jpg

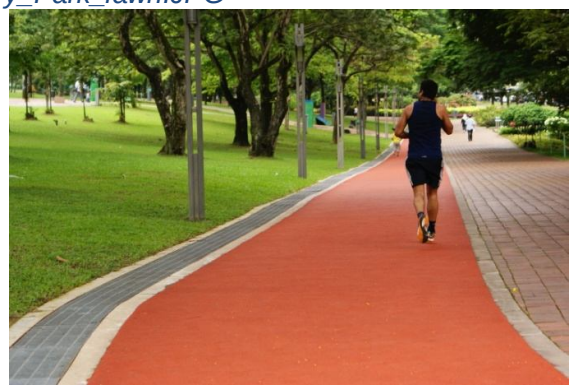
- **Lawn area**

An area where grass is grown as green carpet to enhance the landscape and can be used to take rest for the users.

Lawn area
Source:https://en.wikipedia.org/wiki/File:Hamby_Park_lawn.JPG

- **Jogging track:**

The connected jogging path looping around the site allows people to tread in the space with different focal points along the path.
Variety of colours and textures through planting and gardens offer visual interest along the way.



Jogging track
Source : https://in.pinterest.com/pin/41

- **Tree court:**

Tree courts contributes a very aesthetical avenue. All year round the court will have plenty to offer- spring flowers, summer shade, fall colour, fruit bearing trees and attractive branches for winter.

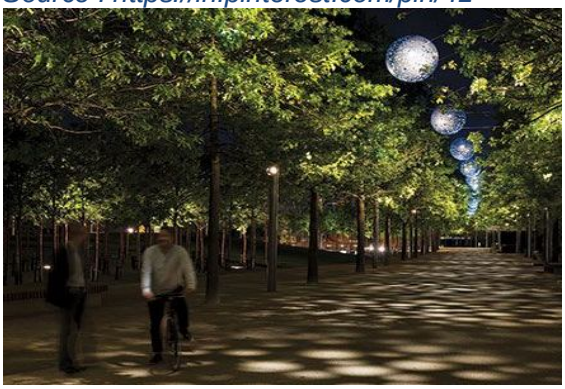


Figure 0-1:Tree court
Source: https://in.pinterest.com/pin/54

- **Timber deck:**

The timber deck acts as a pathway bridge which passes over the proposed water waterbody providing viewing areas around the waterbody to enjoy the flora and fauna

Figure 0-2:Timber deck
Source: http://medalertsystems.site/pond-deck/

- **Pergola**
  A pergola is an outdoor garden feature forming a shaded walkway, passageway, or sitting area.

Pergola
Source: http://www.landscapesrilanka.com/Pergolas.php

Space analysis

Master plan proposal carves the 67% for softscape and 29% for hardscape and 4 % for the waterbody.
Based on the area statements the area is allocated to the multipurpose ground is 33.5% to involve kids to play various games. The portion allocated for wellbeing is 26.3% which is passive landscaped area. 12% of the area is covered with pathways, around 8% of the area is allocated to kids play area. Area of 4.5% is allocated for tree court.

Sl.No.	Components	Area (in sq.m.)	Percentage Area
1	Multipurpose ground	3998.6	33.5
2	Lawn	768.38	6.4
3	Kids play area	322.6	2.7
4	Tot-Lot area	183.46	1.5
5	Water body	491.91	4.1
6	Adventurous play area	437.81	3.7
7	Tree court	535.41	4.5
8	Leisure lawn	179.13	1.5
9	Security Kiosk	27.76	0.2
10	Timber deck	52.23	0.4
11	Kids activity lawn	163.72	1.4
12	Passive landscape	3145.6	26.3
13	Toilet	27.76	0.2
14	Pathway	1450.5	12.1
15	Lawn mound	163.72	1.4
Total area		**11948**	100

Proposed area statement

Proposed Layout

- The proposed landscape aims to create opportunities for children for social interaction, individual contemplation within a safe and pedestrian friendly environment.
- The main entrance is proposed in accent paving where both entry and exit to the site is done.
- The site comprises various activity areas for children to engage themselves.
- Pleasing landscape enhancing the green cover and also can be used to take rest.

- A 4m and 2m wide jogging track is proposed to provide a closed pedestrian loop to provide access to various activities at the site.
- Multipurpose playground is proposed to accommodate children to play multiple games like cricket, football, kabaddi etc.,
- A variety of functional space like leisure lawn area, tree court, etc., has been planned to accommodate and facilitate to different groups.

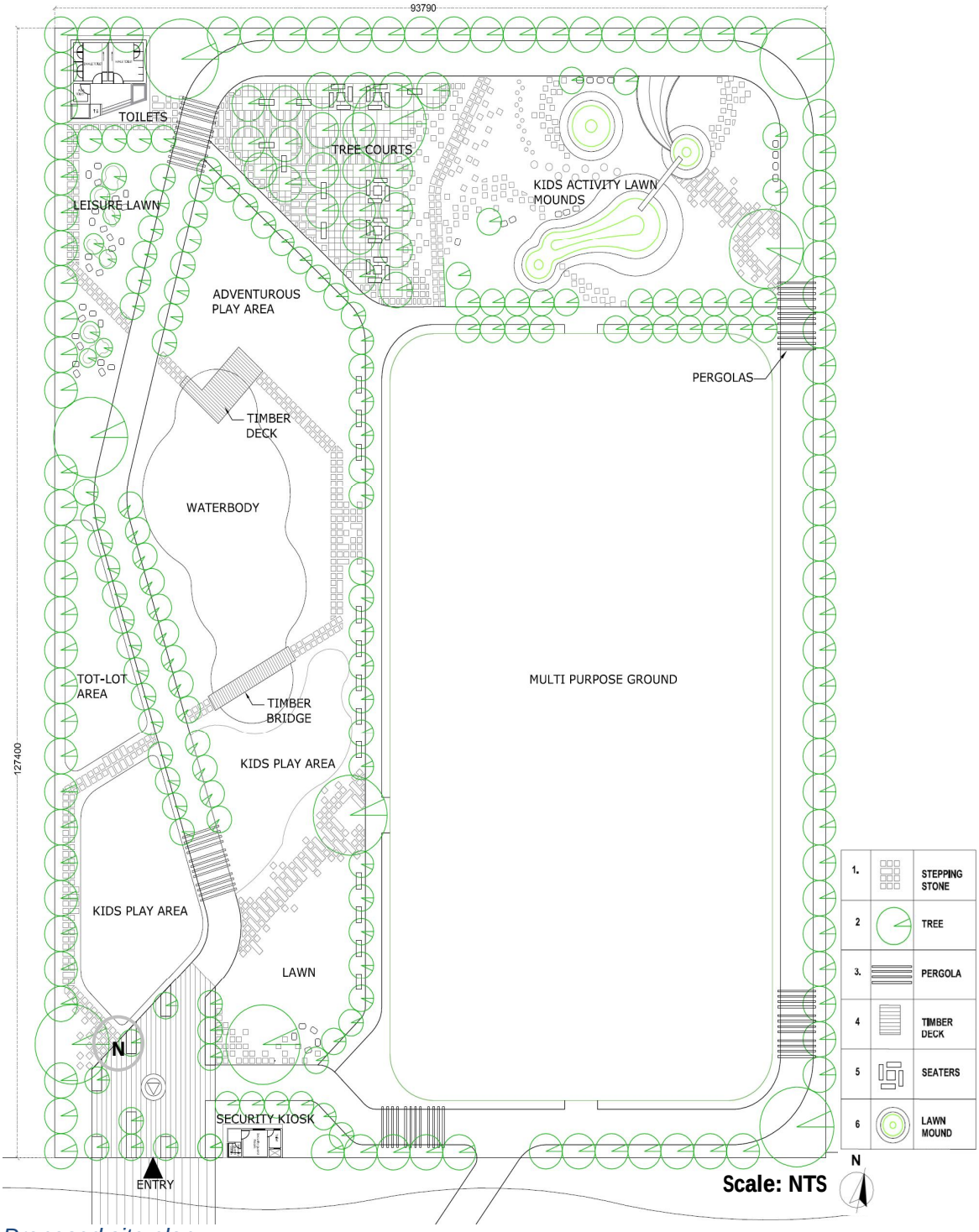
Proposed layout

Proposed park layout

LEGEND

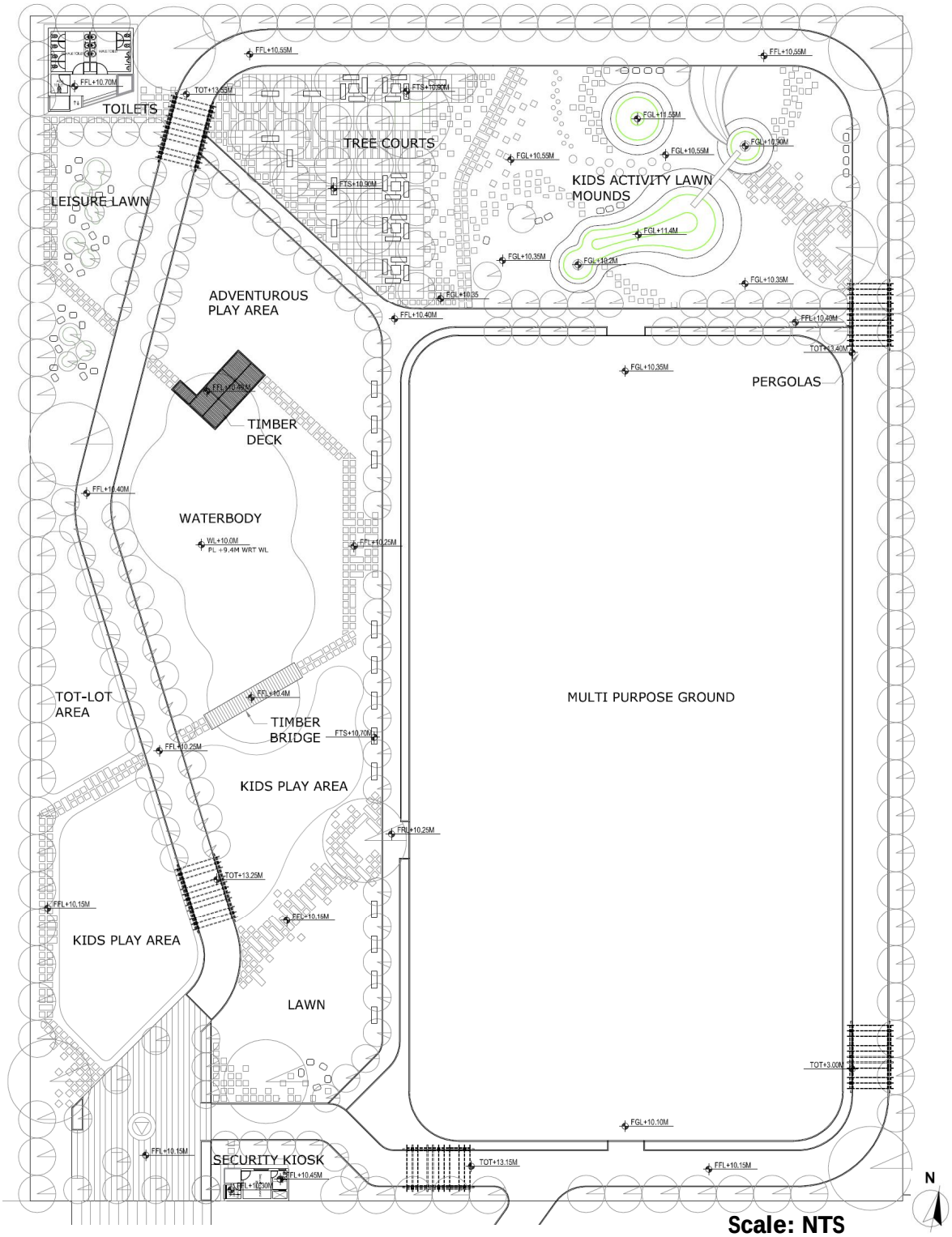
1.Entry plaza
2.Kids play area
3.Tot-Lot area
4.Lawn area
5.Water body
6.Timber bridge
7.Timber deck
8.Leisure Lawn
9.Public Convenience
10.Tree court
11.Kids activity lawn mound
12.Multipurose ground
13.Pergola
14.Adventurous play area
15.Security kiosk.

Site plan



Proposed site plan

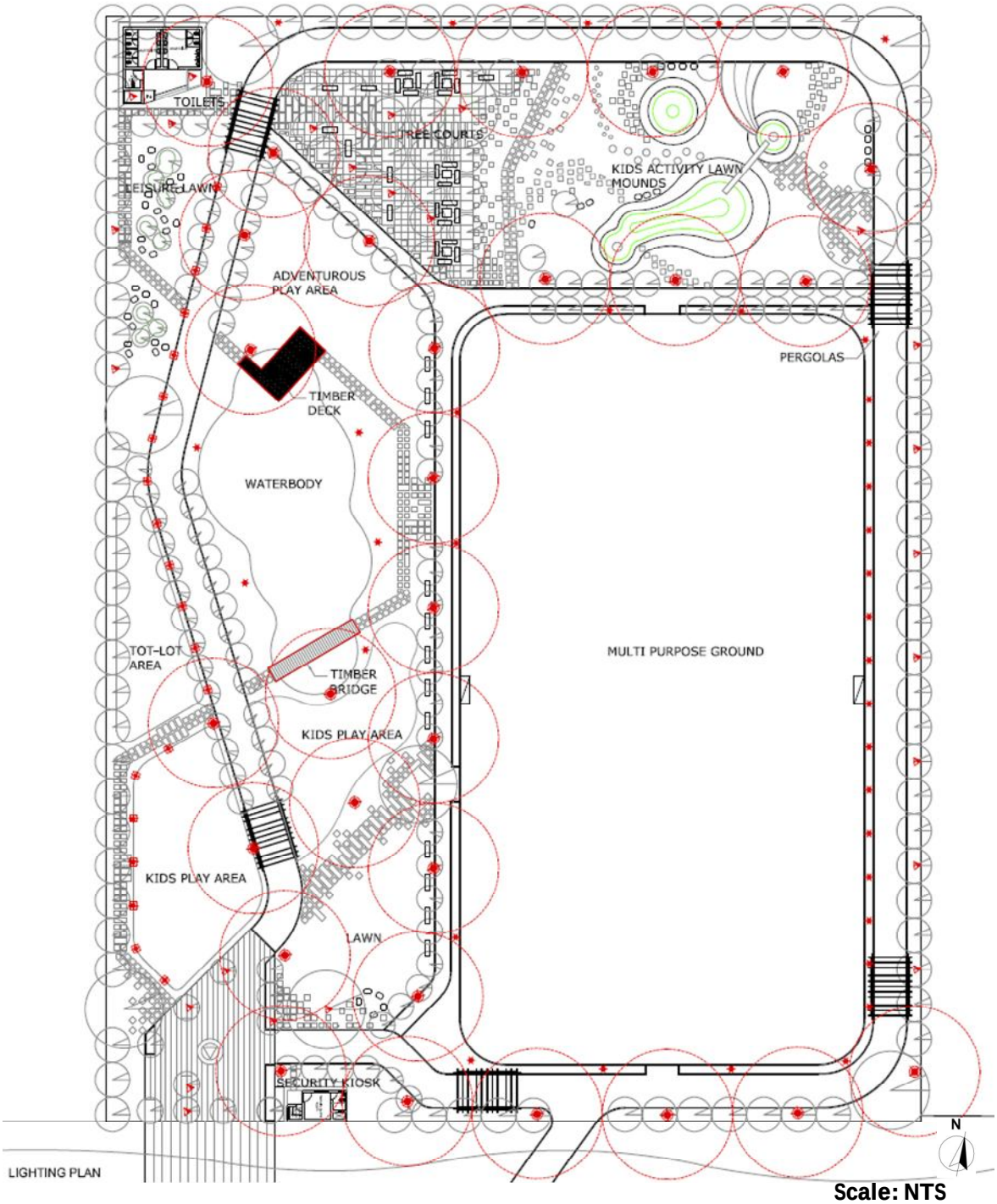
Grading Plan



Grading plan

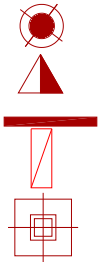
Lighting Plan

The intent of lighting design for Activity Park is proposed such that it strives for creating a serene and subtle ambience for the surrounding. It is designed to flow in sync with the proposed landscape material pallete for the site. Maximum number of lighting is proposed to reduce light pollution and allow the night fauna to habituate within the environment.



Proposed Lighting Plan

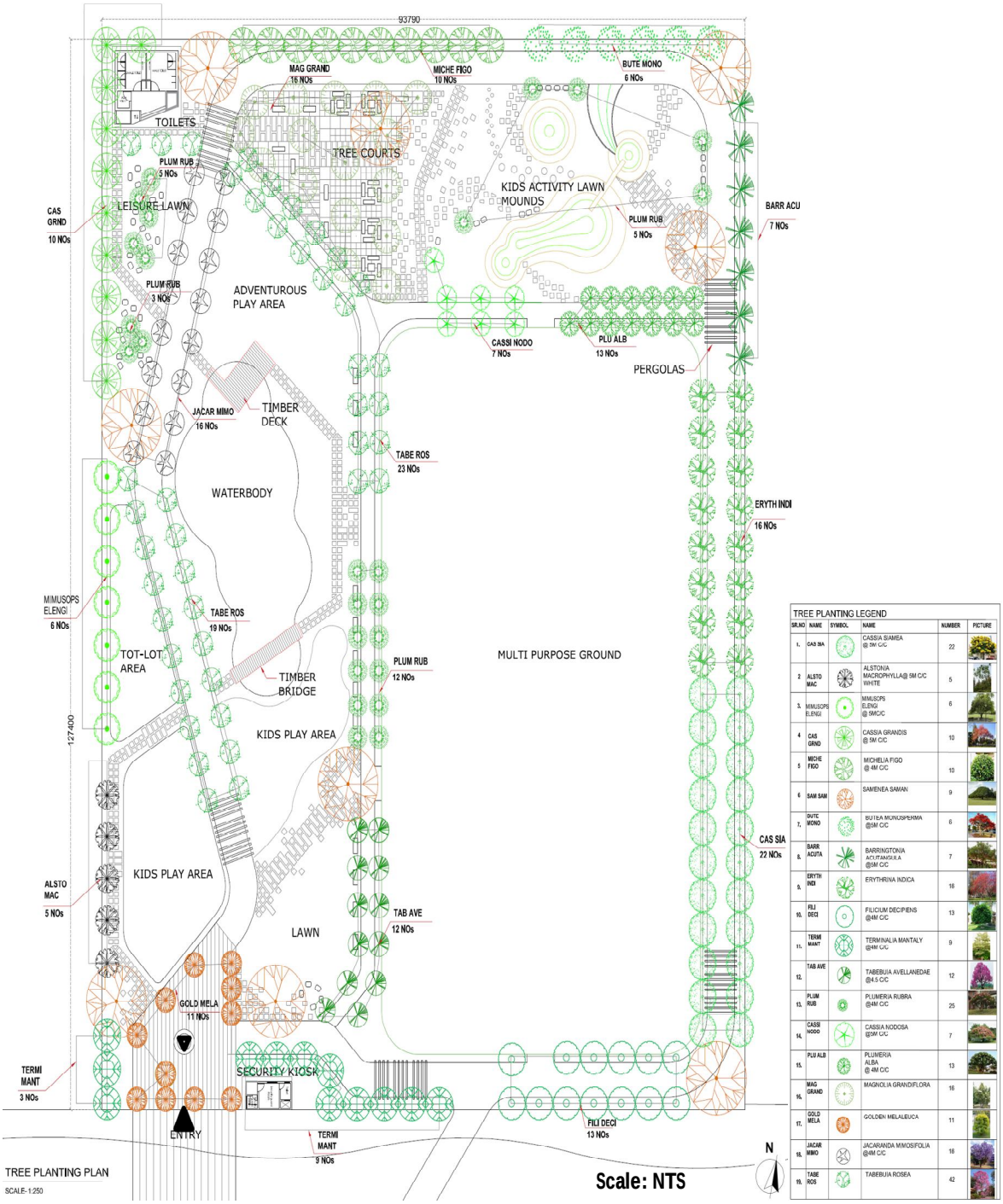
Lighting Legend

LIGHTING SYMBOL	TYPE OF LIGHTING
	KEO POST TOP TREE UPLIGHTS RECESSED LED LIGHT RECESSED LIGHTS FOR POSTS ON BOARDWALK FLOOD LIGHTS FOR THE MULTIPURPOSE COURT

Lighting legend

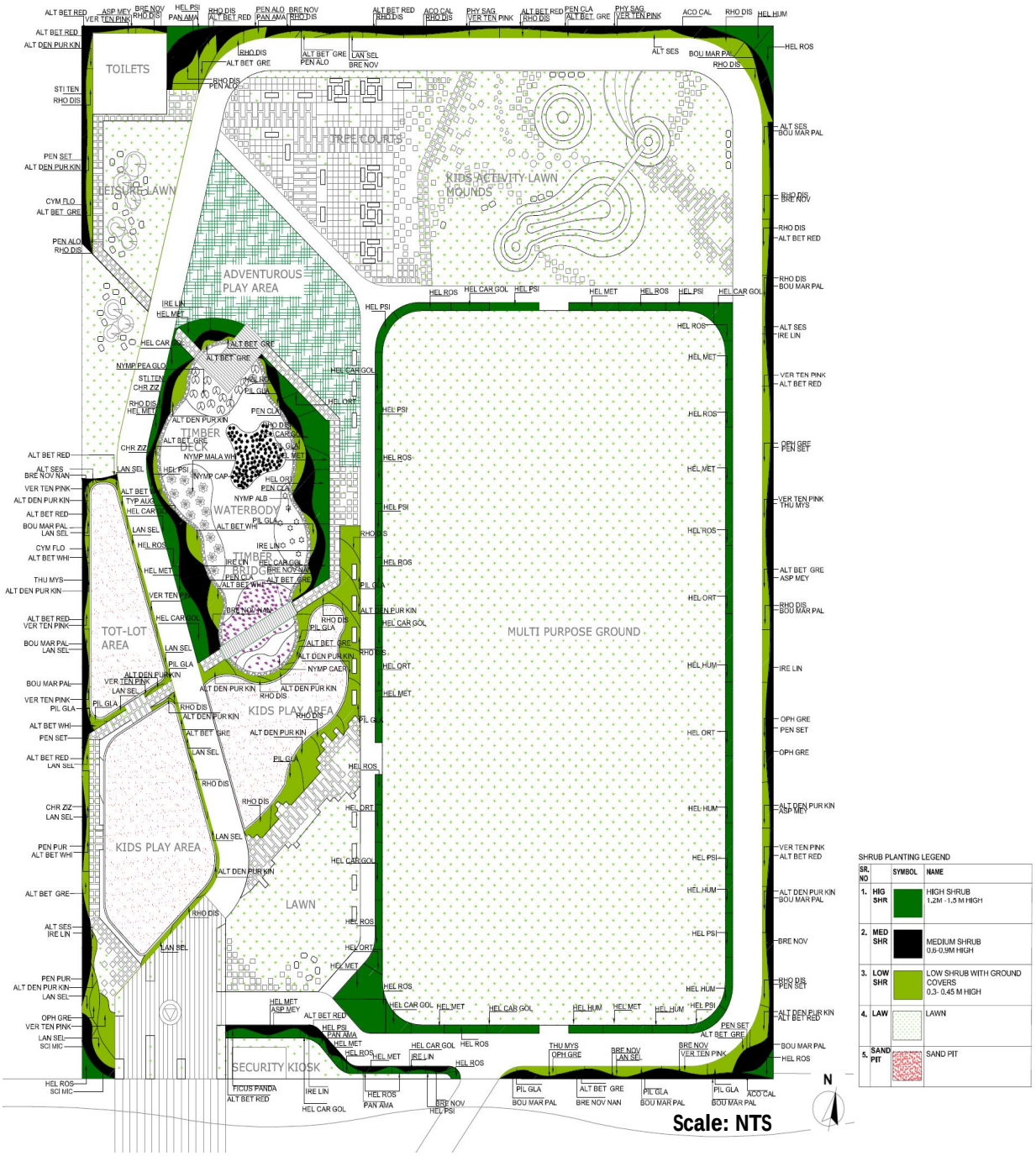
Reference images of proposed lighting fixtures
Source: http://www.atlantislighting.in

Tree planting Plan



Tree planting plan
Source: NKDA

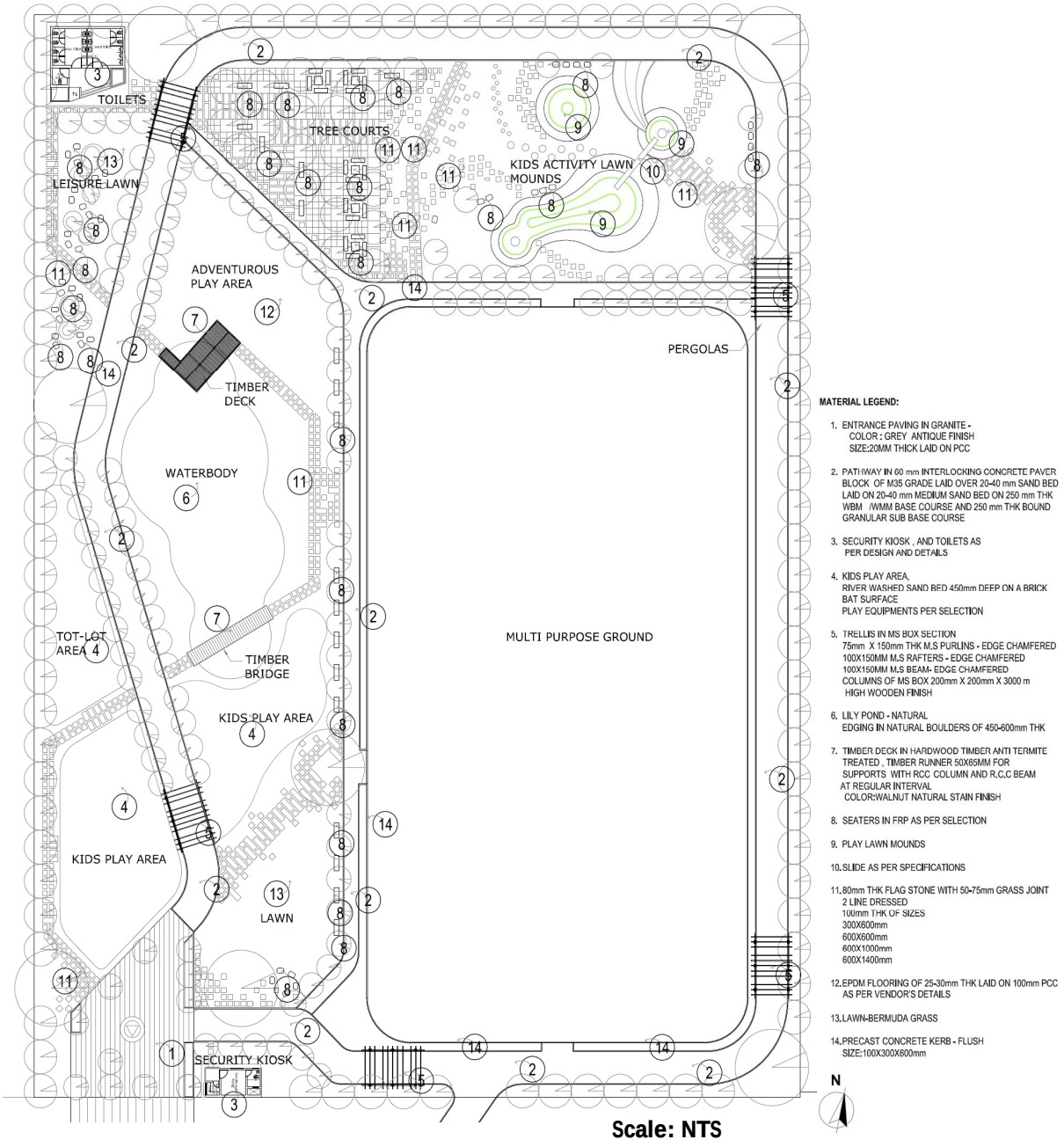
Shrub planting plan



Shrub planting plan
Source: NKDA

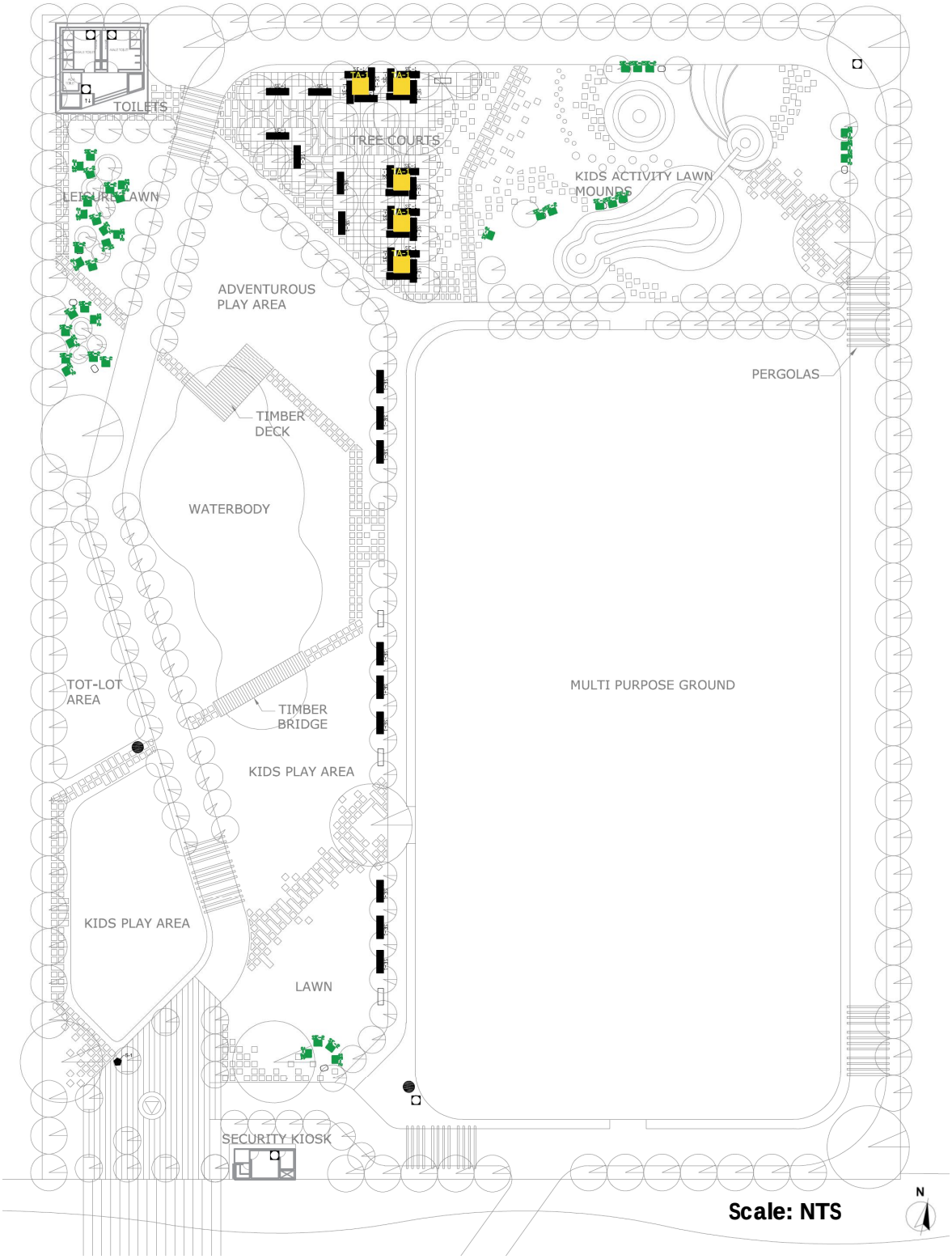
Material Plan

Landscape materials are selected to complement the simple and relaxed landscape character of the site, enhances its visual and ecologically sustainable qualities. The proposed material palette requires low maintenance, have a robust quality appropriate to the function and their intensity of usage is related to the precinct wherein they are located.



Material Plan
Source: NKDA

Furniture Plan



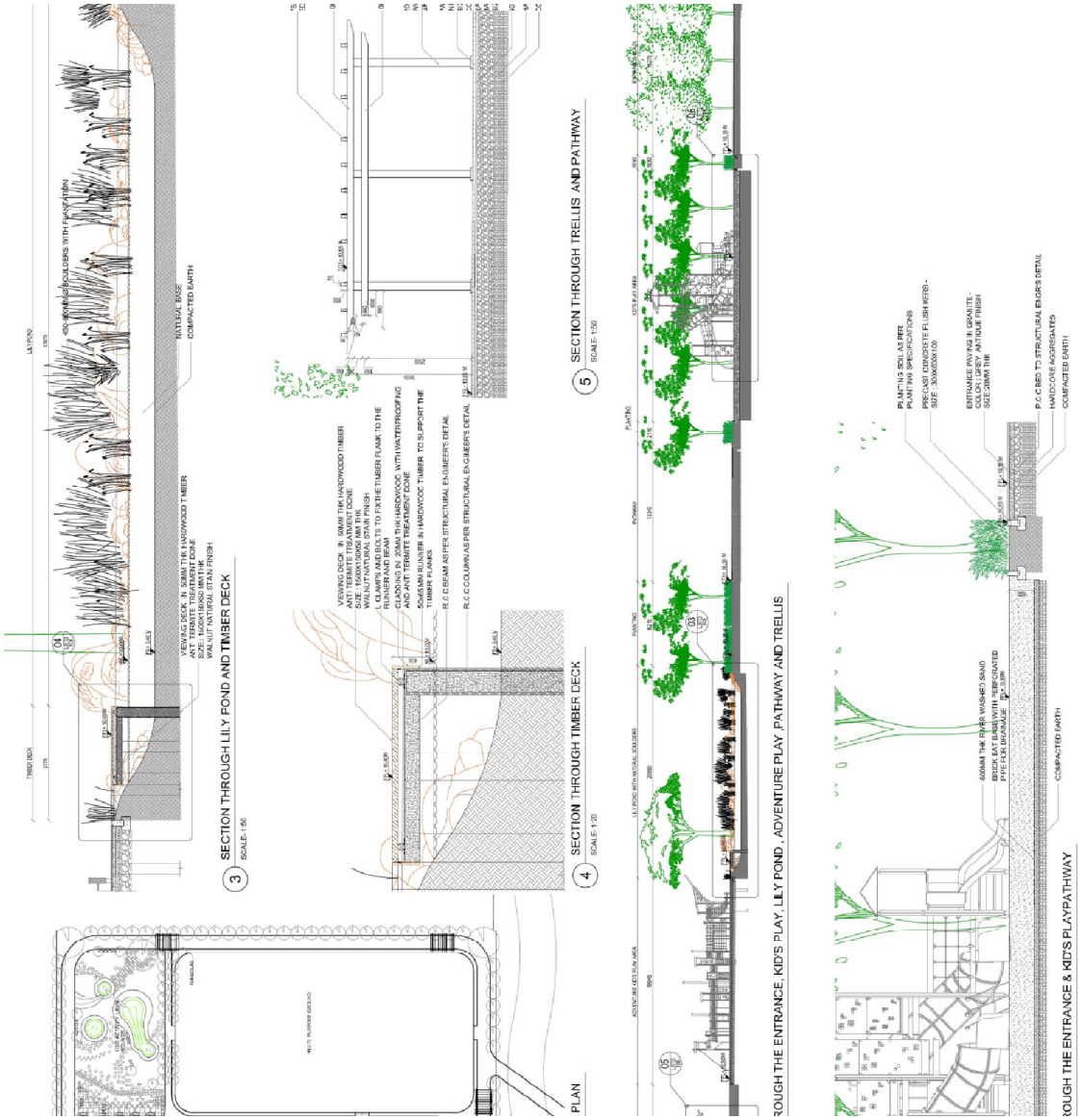
Proposed furniture plan
Source: NKDA

Legend

SYMBOL	DESCRIPTION	REFERENCE IMAGE
	DUSTBIN-TYPE-1	
	DRINKING WATER FOUNTAIN TYPE-1	
S-1	DRICTIONAL SIGNAGE	
SE-1	SEATER TYPE-1	
SE-2	SEATER TYPE-2	
TA-1	TABLE TYPE-1	

Furnishing legend

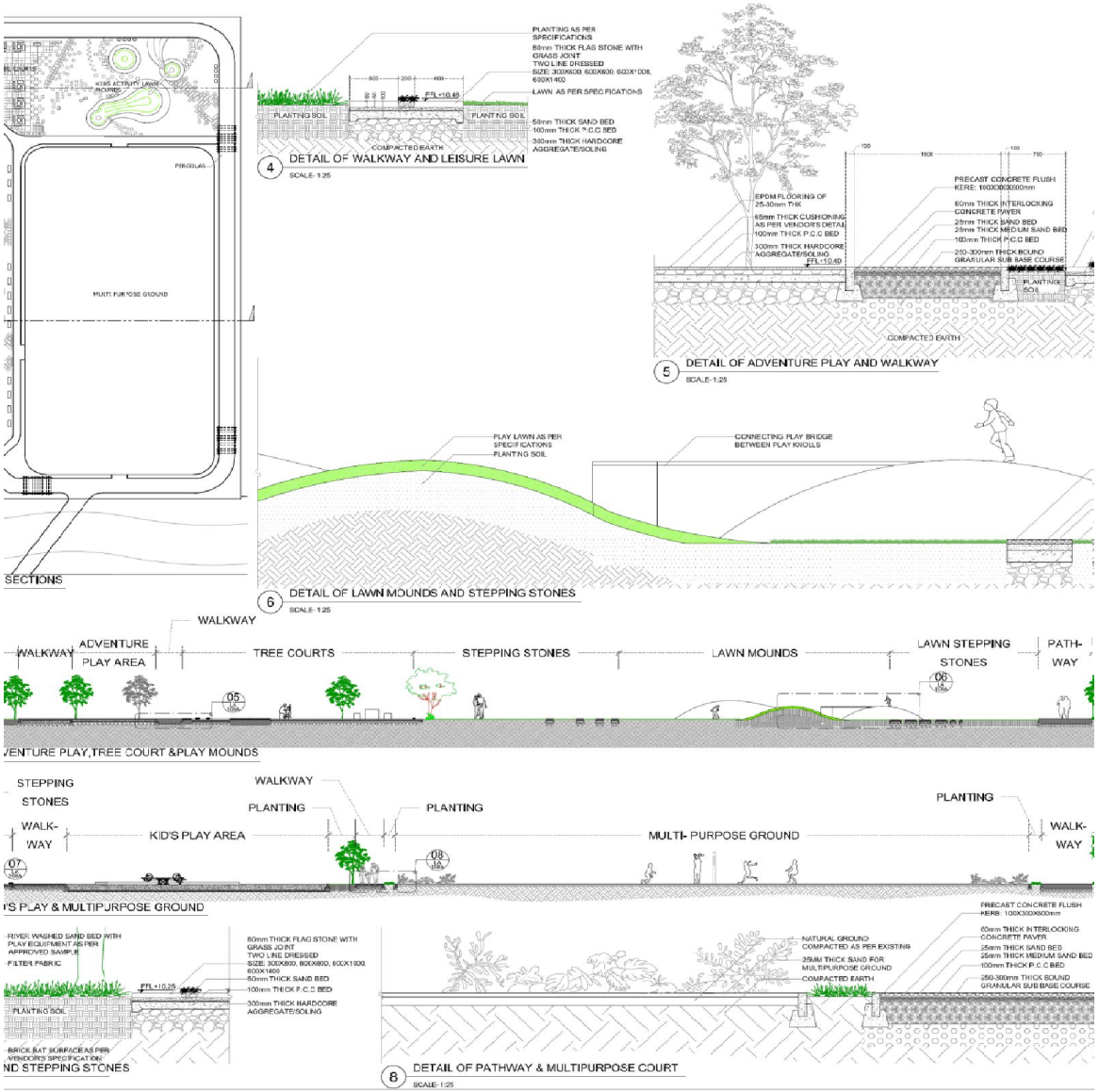
Landscape sections



Landscape section
Source: NKDA

Site section

Source: NKDA



Proposed Views

View of entry plaza

View of tree court and activities

View of iconic plant and vista towards it

View of Informal seating

View of water body, timber bridge and edge

View of children play/multipurpose ground and seating

Arial view of Kids play area and waterbody

Area Statement

Activity park		
Sl. no	**Description**	**Area (Sqm)**
1	Water Body	492
2	Hardscape	3400
3	SoftScape	8052
Total Site Area		**11948(2.95 Acres)**

Hardscape and softscape area statement

Structural

ntroduction:

The Scope of structures is to do the structural design of the Architectural/Landscape elements as per design intent. Some of the structures are Timber deck along the pond edges, the viewing deck projected in water body, security room, Boundary wall etc.
The structures are analysed for gravity loads and lateral loads induced by wind and seismic forces and designed for governing combinations of loads as per respective IS codes.

Design approach and structural system

Design Considerations

The structural design is based on below factors:

- Architectural and Landscape requirements
- Building service requirements (MEP)
- Serviceability Requirements (no damage, deformation or vibration which would cause functional difficulties to occupants or to structural members due to any of the loads and external forces)
- Intended use
- Structural Design and Integrity
- Natural hazards such as earthquake and high-speed winds
- Choice of construction material

Design Intent

The structural design is targeted to achieve following points considering above design considerations

- An optimal and simple structural system
- Optimal member sizes
- Ease of construction process
- Economical structure
- Satisfying the structural, services, architectural and serviceability requirements

Foundation system

The detailed reports and the recommendations of the geotechnical investigation agency regarding safe bearing capacity, types of foundations, ground water table and other related matters, shall be followed in the design of foundations for structure/ building after review or verification. In the absence of soil investigation, based on the data available, we have assumed the SBC of 50 KN/Sqm at 1.5m below the NGL. The same to be confirmed before actual execution.

Stability of structures

- The maximum deflection against earthquake is H/250
- The maximum deflection against wind is H/500

Material Specification

General

i) The construction materials shall be tested for their sound quality well in advance.

ii) Allowable stress for materials shall be calculated in accordance with the applicable standards for materials (IS)

Unit weight of materials

The self-weight of the various elements utilised in construction are computed based on the unit weight of materials as given in (IS: 875-1987 Part-I)

The self-weight of the various elements utilised in construction are computed based on the unit weight of materials as given in (IS: 875-1987 Part-I)

- Unit Weight of concrete - 25 KN/m^3
- Unit Weight of Aluminium - 28 KN/m^3
- Unit Weight of Aerated light weight Blocks - 10KN/m^3
- Common Burnt Clay Building Bricks - 20KN/m^3
- Unit Weight of Steel - 78.5 KN/m^3
- Unit Weight of floor finishes - 20 KN/m^3
- Landscape soil - As per actual

Material Properties

- **Aggregates:** The sizes of coarse aggregates will conform to IS 383.Nominal maximum size of coarse aggregate will be 20 mm, suitably graded as per the requirement of mix design. The fine aggregates will conform to the specifications of IS: 383.

- **Water:** Water used for construction shall comply with IS 456:2000.

- **Cement:** Ordinary Portland cement of grade 43 or higher confirming to IS 8112 and IS 12269.

- **Concrete:** The grades of concrete used will be in the range M: 20 to M: 30.

- **Reinforcement:** Steel Reinforcement Fe-500D confirming to IS: 1786-2008

- **Steel beams:** Standard sections with steel of Grade Fe490, conforming to IS: 2062-2006 will be used.

- **Hollow Sections:** Standard sections with steel of Grade YST 310

- **Plates:** Steel of grade Fe490, conforming to IS: 2062-2006

- **Bolts and Nuts**: All bolts and nuts shall conform to IS 1363: 2002 and IS 1364: 2002 as applicable and unless specified otherwise will be hexagonal. The nuts shall have the property class compatible to the property class of the bolt used and the same will show in the respective drawings.

- All connections made at site to be bolted and all connections made at shop to be bolted welded.

Nominal cover for reinforcement

From Durability requirement, exposure condition is considered as per IS Code requirements

Loadings

Super imposed dead load

- Wall load: The loads from the walls are calculated as per actual and assigned in the analysis. The density of materials is as per IS 875 (Part 1).
- Floor loads: In Landscape areas, the depth of filling is as per architectural/ landscape floor plan and structural loads are as per the material loads and finish along with the planting loads.

  - In toilet area, the wall loads are actual partition loads.
  - Floor Finish as per architectural drawings. (Load due to Tile, bedding mortar & screed.)
  - The load is as per the sunken depth and the type of fill provided. The filling considered is light weight fill.
- Live load or imposed load

  The floors are designed for the Imposed loads as per the IS: 875 (Part 2).
  In addition to the live loads, loads imposed by machinery, including the effect of dynamic characteristics are considered.
  The concentrated loads are considered to be applied in positions, which produce maximum stresses and where deflection is the main criteria.
- Wind loads

  The wind pressureis calculated based on provisions laid in IS: 875 (Part 3) – 2015.

Design parameters

The wind pressure is calculated based on provisions laid in IS: 875 (Part 3) – 2015.

- Basic Wind Speed = 50 m/sec
- Risk coefficient = As per IS: 875 (Part 3) – 2015
- Terrain category = As per IS: 875 (Part 3) – 2015
- Design wind speed Vz = Vb*K1*K2*K3
- Basic wind speed Vb = 50 m / sec
- Risk coefficient K1 = As per IS: 875 (Part 3) – 2015
  K2 = As per IS: 875 (Part 3) – 2015
- Topography factor K3 = As per IS: 875 (Part 3) – 2015
- Importance factor for Cyclonic region K4 = As per IS: 875 (Part 3) – 2015

- Seismic loads

  The loading due to earthquake is assessed based on the provisions of IS: 1893 (Part-1) : 2016 and ductile detailing as per IS 13920-2016

  Design parameters

  The loading due to earthquake is assessed based on the provisions of IS: 1893 (Part-1) : 2016 and ductile detailing as per IS 13920-2016.

  - Zone factor (Z) = 0.16 (Annex E, IS 1893 (Part-1) : 2016)
  - Importance factor (I) = As per IS 1893 (Part-1) : 2016
  - Response reduction factor (R) = As per IS 1893 (Part-1) : 2016
  - Type of the soil = As per Geotech Report
  - Damping value = As per IS 1893 (Part-1) : 2016
  - Seismic Zone = III

  Fundamental natural period & design base shear

  Fundamental Natural period, Ta = As per IS 1893 (Part 1): 2016

  Design horizontal shear coefficient, Ah = $\frac{Z}{2} * \frac{I}{R} * \frac{Sa}{g}$

- Temperature loads

  Temperature Loadsare considered in accordance with IS 875 (Part 5)
- Other loads

  The Earth pressure, surcharge loads and water pressures
- Design load combinations

  The Load combinations used are as per the IS code requirements. The envelope of load combinations of the member forces are considered for arriving the design forces.

Load Combination	**Limit state of Collapse**			**Limit state of Serviceability**		
	DL	LL	EL/ WL	DL	LL	EL/ WL
DL+ LL ± WL	1.2	1.2	1.2	1.0	0.8	0.8
DL ± WL	1.5 or 0.9[$]	--	1.5	1.0	--	1.0
DL + LL + EL	1.2	1.2	1.2	1.0	0.8	0.8
DL + EL	1.5 or 0.9$	--	1.5	1.0	--	1.0

Table 6-1: Load combinations

- Wind load and earthquake load are considered for both X & Y directions.

DL- Dead load
LL- Live load
WL- Wind load
EL- Earthquake load

Appropriate part of imposed load as specified in IS: 1893 (Part-1) : 2016, Table -10 will be considered to evaluate lateral force and the same will used in the combinations.

Design codes & standards

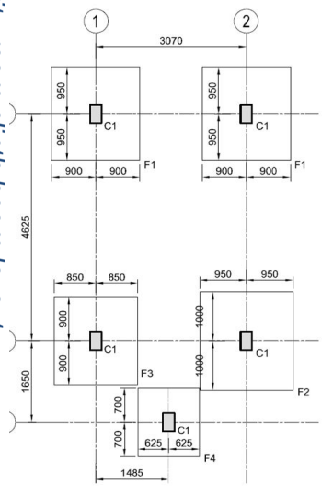
In the analysis, design and detailing of the building, the following relevant Indian Standard Codes are used.

SL.NO.	**CODE**	**DESCRIPTION**
1.	IS 875 (Part 1) : 1987	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Unit weights of buildings materials and stored material.
2.	IS 875 (Part 2) : 1987	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Imposed loads.
3.	IS 875 (Part 3) : 2015	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Wind loads.
4.	IS 875 (Part 4) : 1987	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Snow loads.
5.	IS 875 (Part 5) : 1987	Code of Practice for Design Loads (other than earthquake) for buildings and structures – Special loads and load combinations.

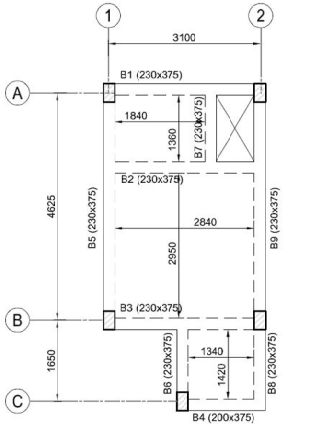
SL.NO.	CODE	DESCRIPTION
6.	IS 456 : 2000	Code of Practice for Plain and Reinforced Concrete.
7.	IS 1786 : 2008	Specification for High Strength Deformed Steel Bars and Wires for Concrete Reinforcement.
8.	IS 432 (Part 2) : 1982	Specification for Mild Steel and Medium Tensile Steel Bars and Hard Drawn Steel Wire for Concrete Reinforcement – Hard Drawn Steel Wire.
9.	IS 13920 : 2016	Ductile detailing of reinforced concrete structures subjected to seismic forces - Code of practice
10.	IS 1904 : 1986	Indian Standard Code of practice for design & construction foundations in Soil : General Requirements
11.	IS 2062 : 1999	Steel for General Structural Purposes. Specification.
12.	IS 1161 : 1998	Specification for Steel tubes for Structural Purposes.
13.	IS 800 : 2007	Code of Practice for General Construction in Steel.
14.	IS 1893 (Part 1) : 2016	Criteria for Earthquake Resistant Design of Structures.
15.	IS 4326 : 2013	Code of practice for earthquake resistant design and construction of buildings
16.	SP 16 : 1980	Design Aids for Reinforced Concrete to IS: 456- 1978
17.	SP 34 : 1987	Handbook on Concrete Reinforcement & detailing.

Design codes and standards

Security room plinth beam layout
Source:NKDA



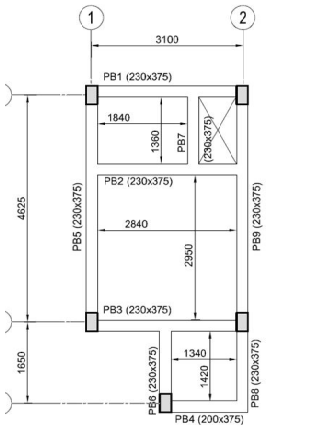
2 COLUMN LAYOUT PLAN
SCALE– 1:50



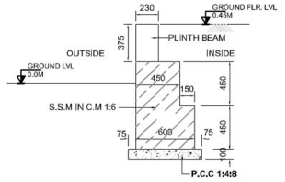
3 ROOF BEAM LAYOUT PLAN
SCALE– 1:50
ALL SLAB ARE 125mm THK

SCHEDULE OF COLUMN	
C1	230x375

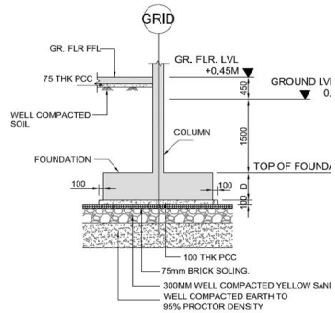
SCHEDULE OF FOOTING	
F1	1800 x 1900 x 450
F2	1900 x 2000 x 450
F3	1700 x 1800 x 450
F4	1250 x 1400 x 450



1 PLINTH BEAM LAYOUT PLAN
SCALE– 1:50

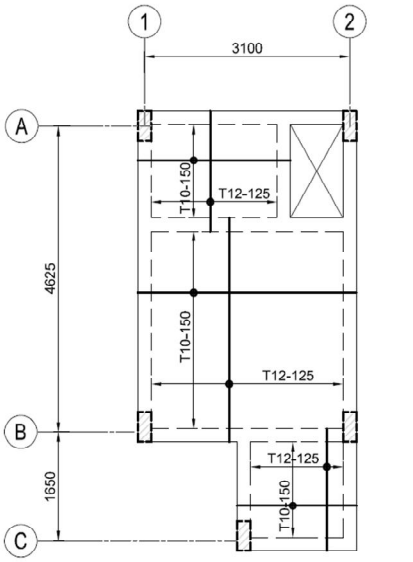


4 TYPICAL SSM MASONRY FOUNDATION FOR PERPHERY PLINTH BEAMS
SCALE– 1:25

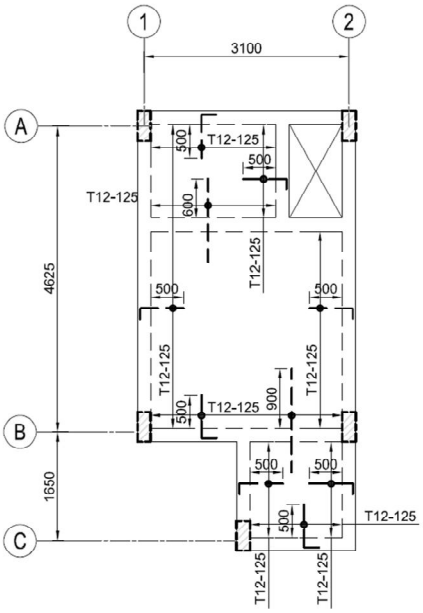


5 TYPICAL SECTION FOR FOUNDATION
1 : 50

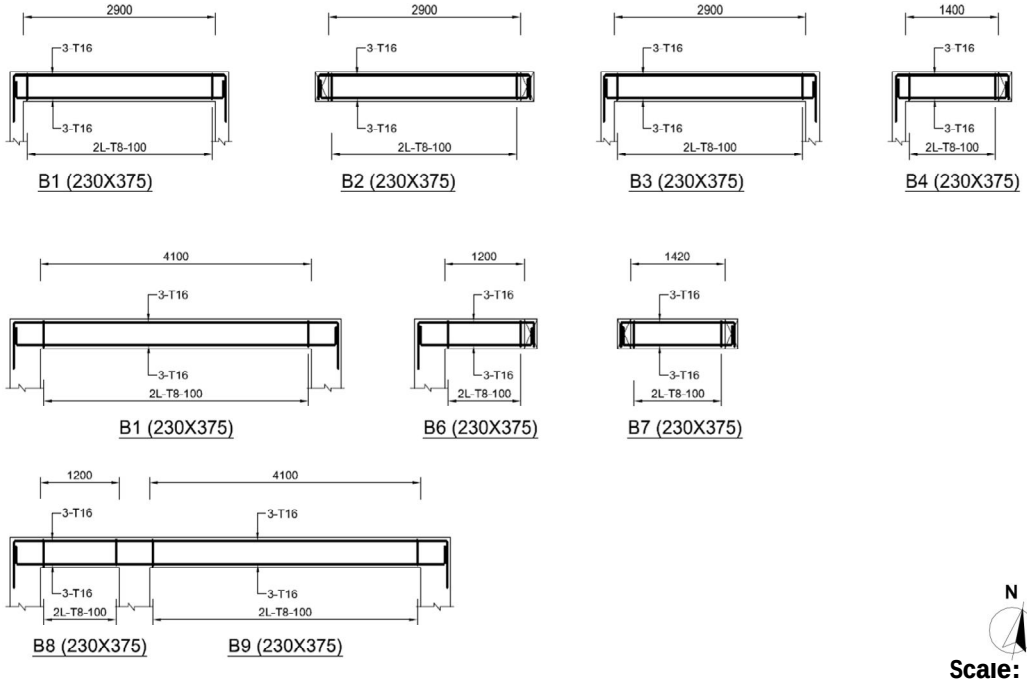
Scale: NTS



1 ROOF BEAM LAYOUT PLAN
SCALE– 1:50



1 ROOF BEAM LAYOUT PLAN
SCALE– 1:50

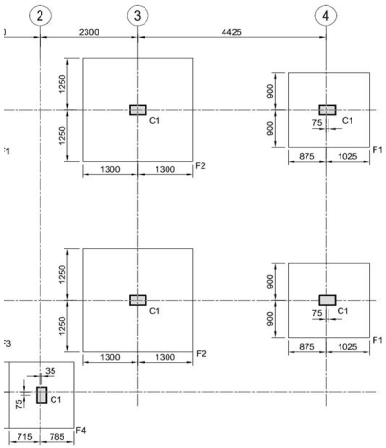


N

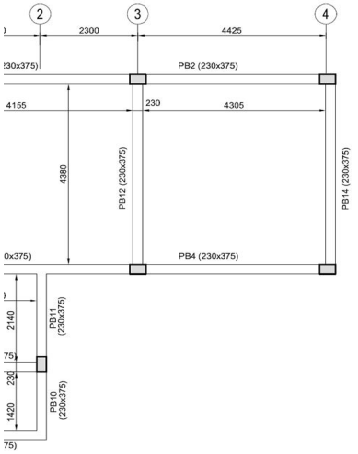
Scale: NTS

Security room column and slab details
Source: NKDA

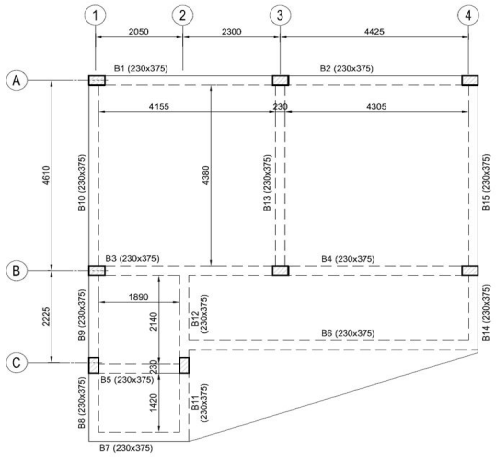
Toilet block column, plinth and slab details
Source: NKDA



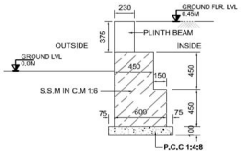
LAYOUT PLAN



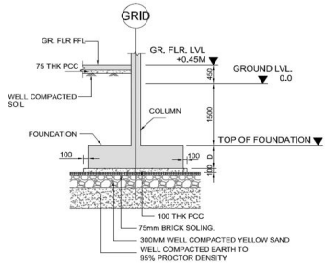
EAM LAYOUT PLAN



3 ROOF BEAM LAYOUT PLAN
SCALE– 1:50
ALL SLAB ARE 125mm THK.



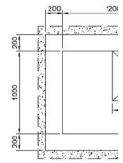
4 TYPICAL SSM MASONRY FOUNDATION FOR PERPHERY PLINTH BEAMS
SCALE– 1:25



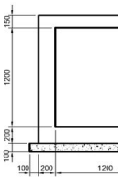
7 TYPICAL SECTION FOR FOUNDATION
1 : 50

SCHEDULE OF COLUMN	
C1	230x375

SCHEDULE OF FOOTING	
F1	1800 x 1900 x 450
F2	2600 x 2500 x 450
F3	2000 x 1900 x 450
F4	1500 x 1600 x 450



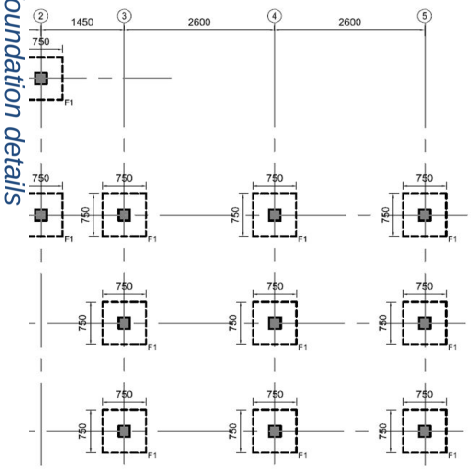
5 PLAN OF
SCALE– 1:25



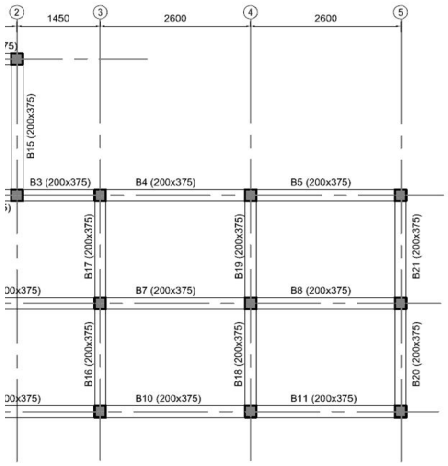
6 TYPICAL CROS
SCALE– 1:25

Timber deck foundation details

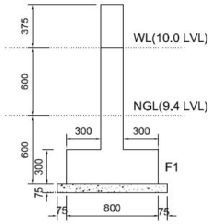
Source: NKDA



N LAYOUT



. TIMBER DECK GA PLAN



3 TYPICAL CROSS SECTION OF COLUMN

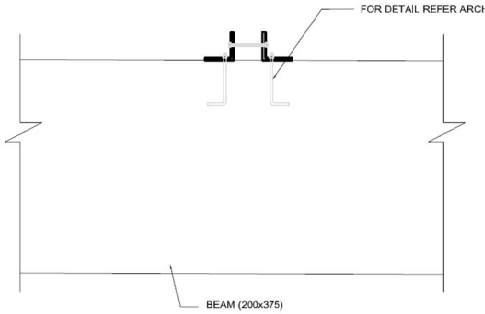
SCALE- 1:25

FOUND

Mark
F1

STEEL

Mark
C1

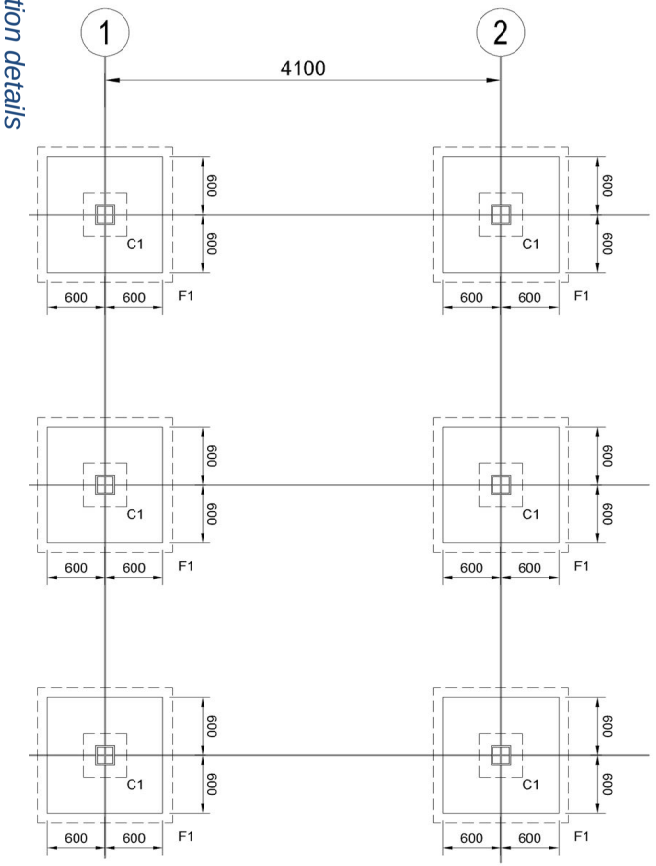


3 TYPICAL CONNECTION DETAIL

SCALE- 1:25

FOR CONNECTION DETAIL REFER ARCH. DRG NO PMU_NKGSCCL_CAP_LI_108

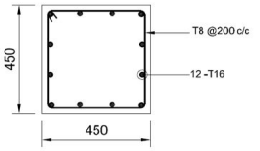
Trellis foundation details



1 COLUMN LAYOUT PLAN

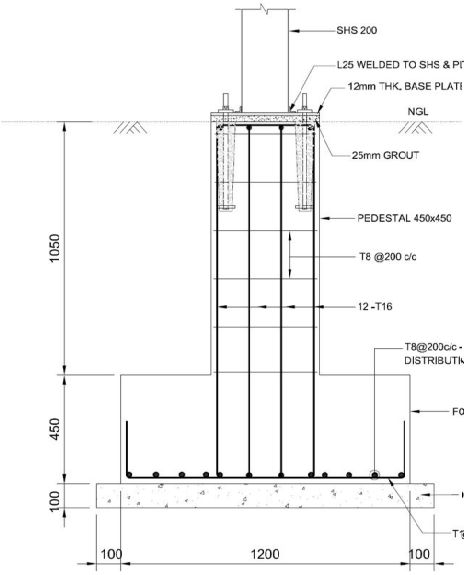
SCALE-1:50

C1 = SHS 200 BOX SECTION



2 TYP. DETAIL OF PEDESTA

SCALE-1:50



2 TYP. CROSS SECTION OF FOI

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NOTE :

1. SBC CONSIDERED IS 5 T/M², THE CONTRACTOR TO ENSURE THE SAME AT SITE BEFORE EXECUTION.

Sc

Electrical

Codes and standards

All electrical equipment's shall be designed, manufactured, tested and commissioned in compliance with the following codes and standards,

1. NBC- 2016 - National Building Code
2. IS - Indian Standards
3. IEEE - Institute of Electrical & Electronics Engineers
4. IEC - International Electro technical Commission
5. ASHRAE - American Society of Heating Refrigerating and Air conditioning Engineers
6. BEE - Bureau of Energy Efficiency
7. ECBC 2017 - Energy Conservation and Building Code
8. LEED - Leadership in Energy and Environmental Design
9. IE - Indian Electricity Rules
10. West Bengal Electricity Regulatory Commissions

Codes and standards

Scope of works

- **Providing Feeder pillars with Timer control for power distribution to all the external light fixtures in the park.**
- **Power distribution through suitable size armoured cables to all the light fixtures around the pond.**
- **Providing Lighting & power to the security room & toilets.**

Basis of design

- **All the Light fixtures are considered to be LED fixtures with IP-65/66 rating.**
- **The Main incoming Power supply to the development will be from the external WBERC power supply.**
- **DG set with set acoustic enclosure will be provided as a backup power during EB failure.**
- **The Power consumption for the development will be recorded from the Meter provided in the Main Distribution Board.**
- **The External lighting Distribution boards & the Main Distribution Board shall be provided in the security room.**
- **The External Lighting DB will be provided with Timer control for all the fixtures.**
- **Aluminum Armoured Cables buried in ground will be used for power distribution to all the external light fixtures.**

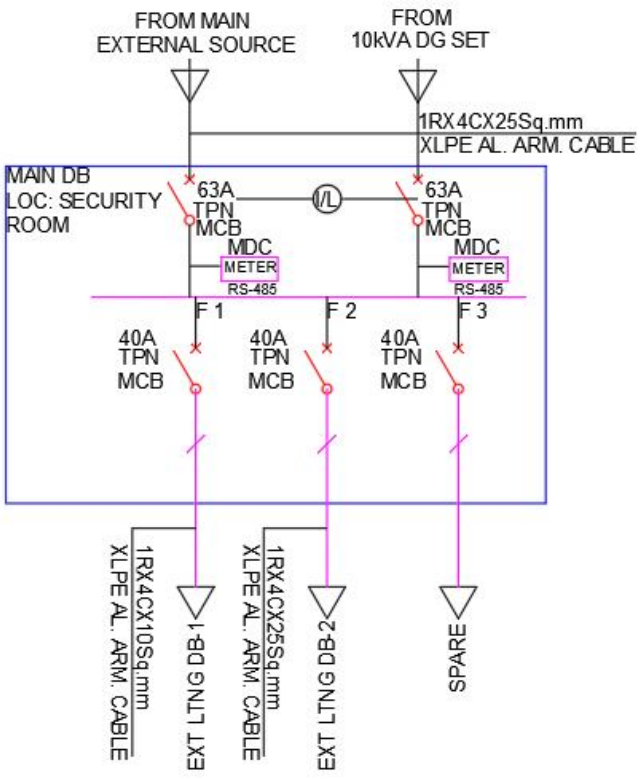
Power distribution scheme

- **The Incoming Power Supply to the Project will be 3Phase, 415V from the West Bengal Electricity Board. The point of power supply will be based on WBEB Feasibility report.**
- **The power from WBEB will be fed to the Main DB and the same will be provided with a LT Meter for recording the Power consumption for the project.**
- **To maintain continuity of power supply during power outages, it is essential to have emergency generation facility to cater to total demand. The emergency power back up generation is envisaged through adequately sized DG sets.**
- **The power from both EB & DG shall fed to the Main panel with auto changeover.**

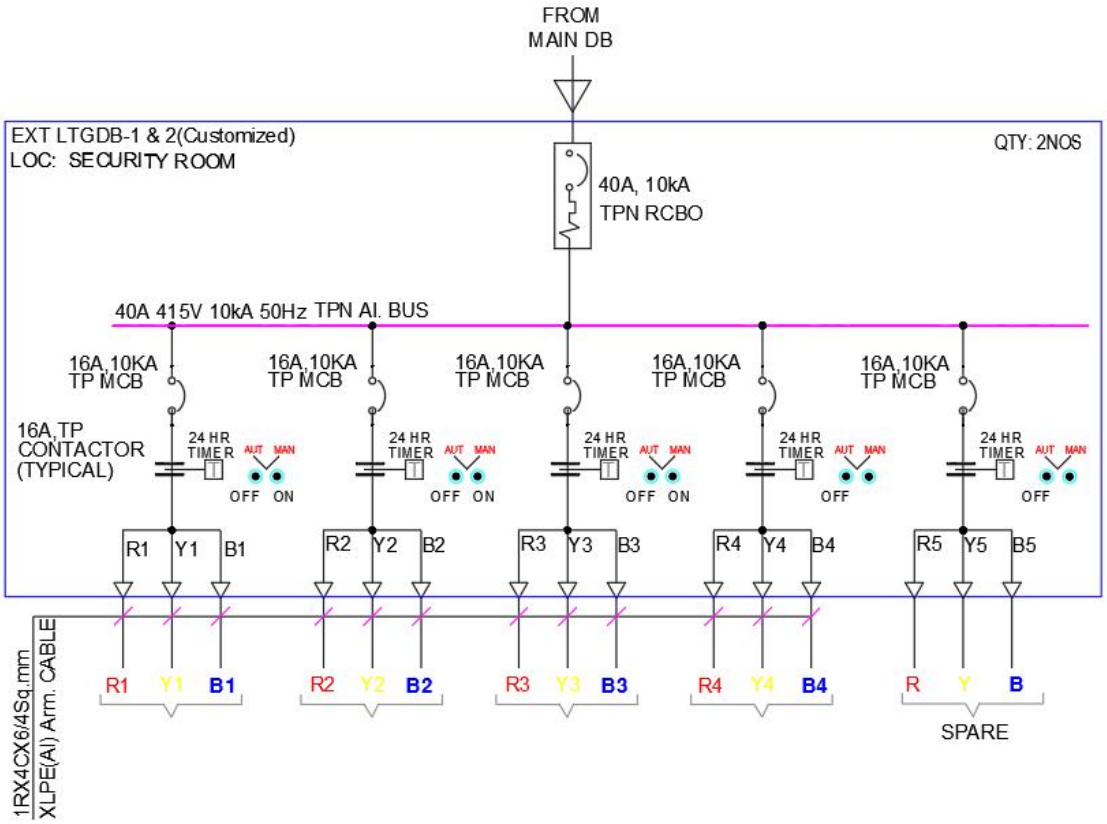
- **EB & DG Breakers will be provided with interlock such that any one feeder will operate at a time.**
- **However, there will be a time lag during EB to DG changeover for about 15-30Seconds.**
- **DG set will be with set acoustic enclosure and the noise levels shall comply to the local CPCB norms.**
- **Surge protectors will be installed in the distribution board/panel.**
- **The Meter will be provided with RS-485 port for any future integration to the Centralized network system.**
- **The power from the MAIN DB shall be distributed to the External Lighting Distribution Boards.**
- **The External Lighting DB's shall be provided with 24Hrs Astronomical Timers for light fixture control.**
- **The fixture Auto ON-OFF timings will be set as below,**

Sl. No	Description	Timings
1.0	Security Light fixtures	6PM – 6AM
2.0	Aesthetic based Light Fixtures	6PM – 10PM
3.0	Light Fixtures for Security room & Toilets	Switch control.

Auto ON-OFF time interval

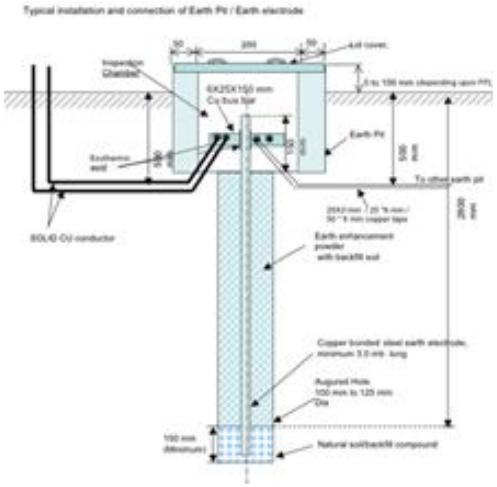


Main Distribution Board
Source: NKDA



Ext Lighting Main Distribution Bboard

- **Individual 3Phase feeders will be provided with separate Timer for respective light fixture control.**
- **Power from the External Lighting DB shall be distributed to the landscape light fixtures through Aluminum Armoured XLPE cables buried underground from Security room to each fixture. The distribution will be as per the DB details provided in the above image.**
- A maxium of 8-10 light fixtures will be looped for each phase.
- **1100V grade aluminium/ copper conductor, XLPE/PVC insulated, armoured and un-armoured cables complying with IS and IEC standards shall be used.**
- **Cables will be designed to a maximum voltage drop less than or equal to 5%.**
- **Cables above 6.0 mm² with XLPE insulation aluminium conductor and up to 6 mm² copper XLPE / PVC insulation cables.**
- **In case of failure of the Timer Option of Manual override shall be provided in the DB.**

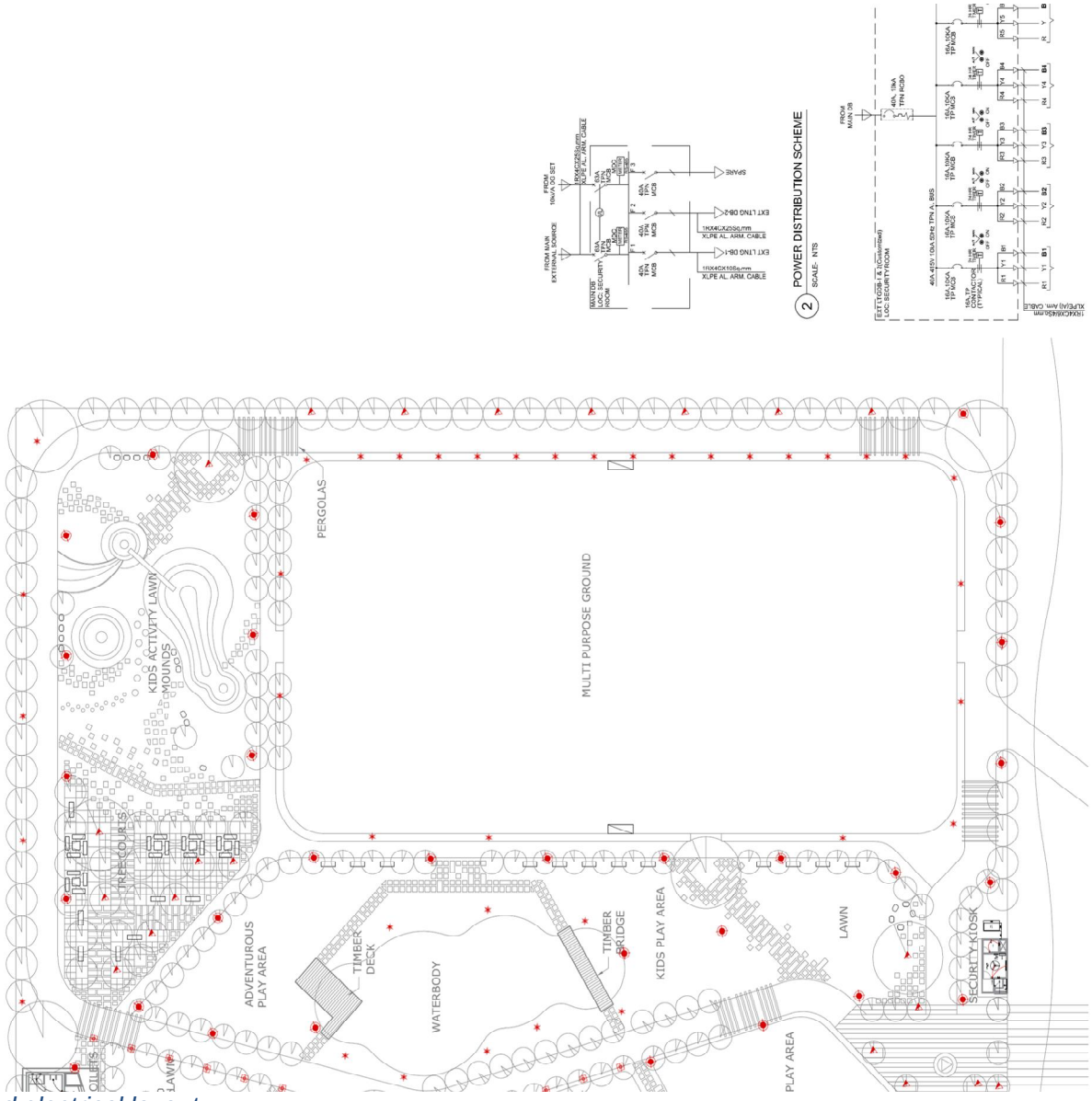


Maintenance free Earth Pit

1.1.1 Earthing

- **Earthing will be as per IS-3043.**
- **Maintenance free Earth pits with is proposed for the project.**
- **The number of earth pits is based on number of equipments and soil resistivity**
- **All noncurrent carrying parts of the electrical installations shall be earthed as per IS-3**

- **All pole light fixtures will be earthed through spiral earthing.**



Proposed electrical layout
Source:NKDA

Plumbing systems (water supply and drainage system)

Existing Data

Sl No.	Description	Data
1	Water Supply	Existing Municipal Water Supply Available
2	Sewerage	Existing Municipal Sewers Available
3	Storm Water	Existing Municipal Storm Water Drains / Manhole Available

Existing data

Reference Standards

National Building Code of India	**2016 Edition**
Codes & Design Guidelines :	
i. CPHEEO Manual	Design Data Book
ii. Handbook on water supply & drainage - SP 35	Design Data Book
iii. International Plumbing Code	2009 Edition
iv. Uniform Plumbing Code of India	2008 Edition
v. Energy Conservation Building Code	2007 Edition (Revised May 2008)
vi. DCPR Guidelines	2017 Edition

Reference standards

Storage of water

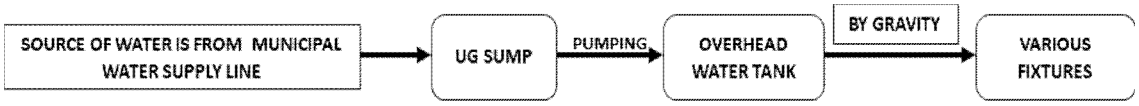
The Municipal Water is stored in the proposed underground sump and overhead tank.

Water consumption criteria

- Best quality sanitary fixtures and high efficiency low flow fittings are used.
- Metering at source of water is provided.

Water supply distribution – gravity system

Domestic Water distribution by Gravity system is envisaged for the toilet core. Collected water from the municipal water supply is stored in the underground sump and pumped to the overhead tank, which is then supplied to the fixtures by gravity. All inlets, outlets, washouts, vents, ball cocks, overflow control valves and all such other piping connections is provided for the overhead tank.



WATER SUPPLY SCHEME

Water supply distribution scheme

1.1.2 Sanitary fixtures

Sl No.	Fixtures	Type	Location
A) Sanitary Fixtures			
1	European Water Closet	Floor Mounted	Common Toilet
2	Urinals	Large Flat Back	Common Toilet
3	Wash Basin	Countertop	Common Toilet
B) CP Fittings			
1	EWC Flush	Exposed Cistern	Common Toilet
2	Urinal Flush	Urinal Flush Valve	Common Toilet
3	Wash Basin Taps	Pillar taps	Common Toilet
4	Health Faucet	With long flexible tube	Common Toilet

Sanitary Fixtures and CP Fittings List

Sewer design and self-cleansing velocity

- Sewers are designed to carry wastewater along with the suspended solids.
- Velocity of 0.75 m/sec to 1.2 m/sec at design peak flow.

Sewerage and sullage waste drainage system concept

- Soil and waste pipes are carried down in separate independently vented pipes. Two pipe drainage systems is adopted as per NBC 2016 standard.
- The sanitary and waste system is water tight and gas tight, designed to prevent escape of foul gas and odour from various fixtures.

- Soil pipes are of minimum 110mm diameter.
- Waste pipes are of minimum 75mm diameter.
- All Soil, Waste and Vent pipes are provided with cowls of the same material.
- Gravity system will be primarily adopted to transfer sewage.

Storm water drainage

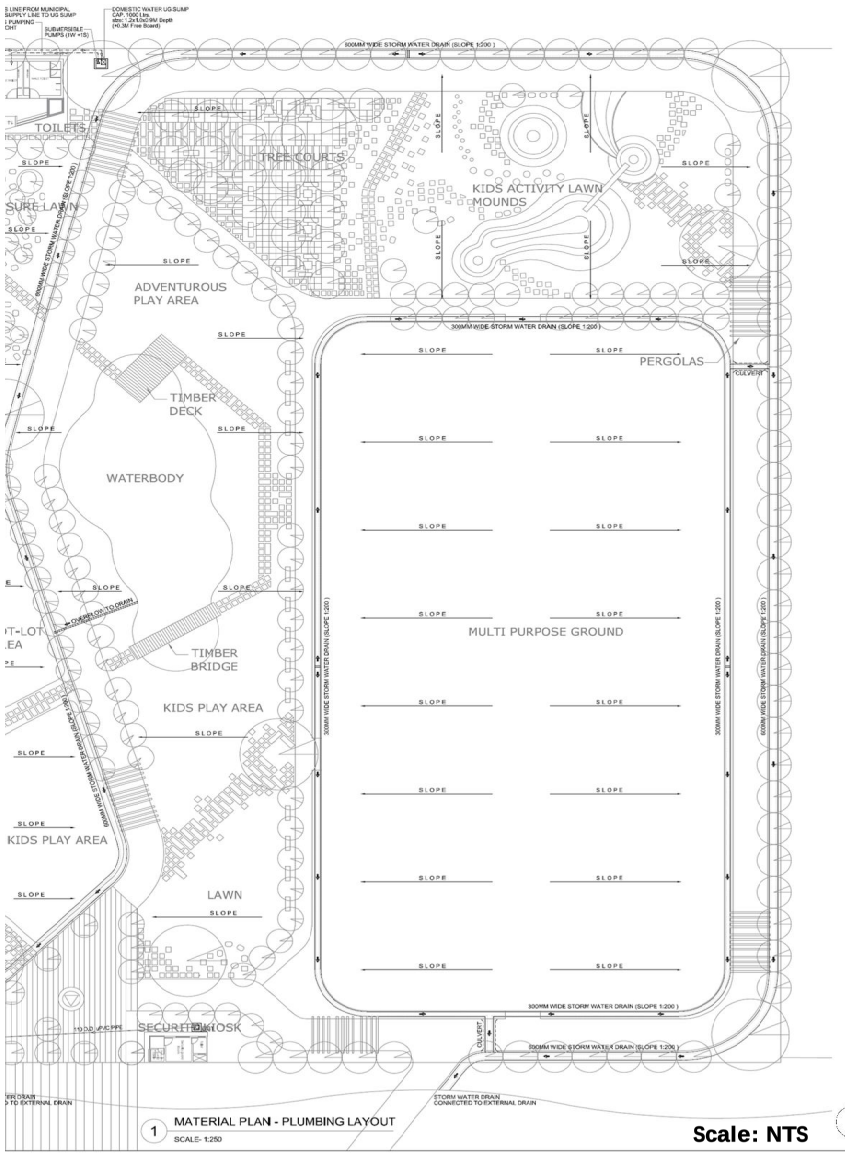
- Surface runoff shall be routed through the proposed storm water drain system and connected to the external municipal drainage system.
- Run-off from roof will be brought down through rain water down take pipes of suitable diameter and finally routed to the external storm water drain.

Materials used

- Internal – CPVC for Water Supply and uPVC Pipes for Sewerage & Rain water.
- External – PVC Schedule 80 for Water Supply, uPVC for Sewerage and Storm water

Proposed plumb

Source: NKDA

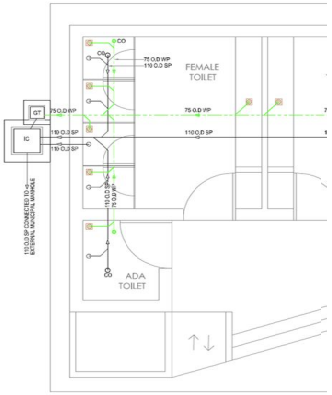


1 MATERIAL PLAN - PLUMBING LAYOUT

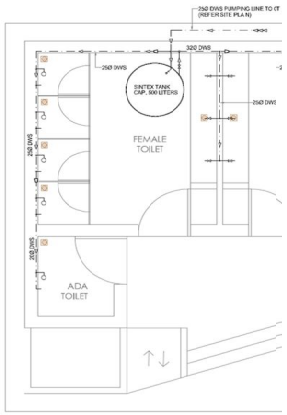
SCALE- 1:250

N

Scale: NTS



DRAINAGE LAYOUT



WATER SUPPLY LAYOU

APPROVED MAKE LIST
(Please follow the applicable items for the relevant tender)

Sl No.	Description of Item	Approved Make / Brand
	Civil works	
1	Reinforcement for conceret works	SAIL/TATA/RINL
2	Paint	Berger/ Asian Paints/ ICICI/ Nerolac
3	MS structural works	SAIL/ TISCO/ UTKARSH
4	Galvanised corrugated sheets	TATA/Esar/Jindal
5	Controlled cement concrete M25 Garde	
6	RMC M25 garde	Ultratech/LnT/FTC
7	Anti termite chemical	
8	Water proofing chemical /compound	Sika / Dr Fixit/ Fosroc
9	White cement	Ultratect/Birla/ACC
10	cement 53 grade	Ultratech, Ambuja, ACC
11	Conceret grass	NILITE Concrete, Pavers India, NIMCO or Equivalent
12	Interlocking pavers	Pavestone/Calstone/GK Pavers
13	Outdoor vitrified Pavers	H&R Johnson/Pavit/Ultra Pavers
15	Poly carbonate sheet	Bare Galvalume / Danpalon / GWX or Equivalent
16	Stainless steel	SAIL, TATA, RINL
17	Bitumen product	IOCL, HPCL, Shell, Shalimar Tar products
16	Aggregate, Stone chips, Sand and Road materials for Base and Sub-base	As per "SPECIFICATIONS FOR ROAD AND BRIDGE WORKS" 5th Revision April 2013, Issued by Ministry of Road Transport & Highway
17	Aluminium doors, windows & partition	Jindal, Indian Aluminium Sections or Equivalent.
	Flooring	
18	Ceramic tiles	HR Johnson, Kajaria,welspun
19	Virtified Tiles	HR Johnson, Kajaria, welspun
20	Glass moasic tiles	HR Johnson, Kajaria, welspun
21	Tactile tiles	HR Johnson, Kajaria, welspun
22	Laminated wood flooring	HR Johnson, Kajaria, welspun
23	Italian marble stone	
	PHE / Water supply	
24	Galvanized iron pipes	TATA, Jindal Hissar, JSW or equivalent
25	CPVC pipes	Supreme, Prince, Garware, Finolex, Astral, Kissan or Equivalent.
26	UPVC pipes	Supreme, Prince, Garware, Finolex, Astral, Kissan or Equivalent.
27	Sanitary fittings	Jaguar, Parry ware, Hindware, Cera
28	Sanitary ware	Hindustan, Parryware, Jaguar,Cera
	Interior works	
29	Ply wood	Century/ Green / Globe
30	Venner	Century/ Green / CityLam
31	Laminate	Century/ Green / CityLam
32	Glass	Modi, ASAHI, Saint Gobain, Hindustan
33	Fittings and accessories	Dorma/ Ozone/ Godrej
34	Out Door furniture	Experio

35	Play equipment	Bodyline/Kompan/Experio
	FIRE SAFETY ENGINEERING WORKS	
36	ISI (IS: 2590) marked Oblique type Stainless Steel Single Headed Hydrant Valve/ Landing with PVC Blank Cap & GI Chain.	GEI/ Seal Fire/ Safe Guard/ NewAge
37	Hose Reel & Accessories	Mitras/ Zenith Engineers/ Seal Fire/ GEI/ NewAge
38	Ball Valve	Zoloto/ Leader/ Itap.
39	CI Wafer type hand lever operated Butterfly Valve of Class # 150.	L&T-Audco/ Zoloto/ Koley/ Kartar.

40	4Way Fire Brigade Connector	GEI/ Seal Fire/ Safe Guard/ NewAge
41	MS Fire Hose Box	Zenith/ GEI/ Seal Fire/ Safe Guard/ NewAge
42	RRL Hose	BRG/ Safe Guard/ Seal Fire/ NewAge
43	Stainless Steel Branch Pipe with Jet Nozzle of 20mm Ø.	GEI/ Seal Fire/ Safe Guard/ NewAge
44	MS ERW Black Pipe	TATA/ Jindal/ Bansal
45	Electric Motor Driven Fire Pump	Pump - Kriloskar / CGL / Mather & Platt/ KSB Motor - Kriloskar/ Crompton/ CGL/ ABB
46	Composite Auto Pump Control Panel	
47	Pressure Switches (Model RT-116) including supply of 15NB GM/ SS Ball Valve.	Pressure Switch : Indfoss. Bal l Valve : Zoloto/ Leader/ Itap
48	Pressure Gauge	H.Guru/ Feibi/ Waree
49	CI Wafer type hand lever operated Butterfly Valve of Class # 150	L&T-Audco/ Zoloto/ Koley/ Kartar.
50	CI Double Flanged Gate Valve	Koley/ Kartar/ Subhas Engineering/ Kalpana
51	CI Double Flanged Basket-Type Foot Valve with Strainer with Stainless Steel mesh.	Koley/ Kartar/ Subhas Engineering/ Kalpana
52	Copper/ Aluminium Control/ Power Cable.	Mescab/ Polycab/ Finolex/ Glostar
53	Fire detection and alram system with pa system	Honeywell/ Apollo/ Simens/ Esser/ Morlay
54	Amplifier and switch circuit	Phillips/ Ahuja/ Bosch
55	Fire extinguisher	Fire Shield/ Deflame/ Minimax
	SIGNAGE	
56	Photoluminscent Signages	Autoglo/ Glo-Lite/ Prolite
	Electrical	
57	11 KV/ 415 V Outdoor Compact substation (CSS) generally as per IEC 1330 of area footprint 4000mmX 4000mm comprising of:	ABB, Kirloskar,Crompton Greaves, CS Electric,Power Line,AKTIF,
58	cast resin 200KVA dry type transformer as per IS 2016/ IS 11171 , 3 Phase 50 Hz, 11 KV/ 415 V Class F insulation solidly earthed complete with rollers, lifting lugs etc	ABB,BHEL,VoltAmp,Areva,OEM,Thoshiba

59	Ht switchgear, 2 way 11KV (250~350 A) VCB complete with operating mechanism, protection system, cable box etc	ABB,Seimens,Areva,Schneider
60	Lt 415 V 400 Amp, ACB incoming with all connections, accessories, fittings and auxiliary equipments	ABB,Seimens,Areva,Schneider,L&T
61	100 KVA outdoor-type water-cooled DG set in noise-dampener enclosure, with AMF panel compete with all accessories e.g. engine, alternator, fuel tank, SS exhaust system etc size 4000X 2500	Kirloskar,Cummins,Koel green,Mahindra Powerol,Super Nova
62	MCB & MCCB	ABB,GE,MDS,Schneider,L&T
63	Cables	Universal,Havells,KEC,KEI,Finolex
64	Cable Termination	UCIL Synchem,Yamuna cable,Compaq international,Rachem RPG,ASCON
65	Earthing electrode	Laxmi Power Solutions,Gmax electric,SG Power,Sabo systems,Saara India
66	The Outdoor Lighting panels/Junction Boxes shall conform to IS-8623/Latest IS/IEC/IEEE standards.	
67	Fans	Crompton Greaves, Bajaj, Havells, Usha,orient
68	Relays	ABB, seimens,Areva, schneider,Ashida
69	OUTDOOR LIGHTING	
70	Supply, installation, testing and Commissioning of of decoraive type Streetlight POLE 2 M height complete with loopbox connections & containg 1 no. 6Amp SP MCB including LED 11W lumiere	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells 3) Street Light poles confirm to latest IS/IEC/IEEE standards, for Street Tubular poles-IS-2713 standard
71	Supply, installation, testing and Commissioning of of high-mast 6M Streetlight POLE complete with loopbox connections & containg 1 no. 10Amp SP MCB including LED 70W X 3 lumiere	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells 3) Street Light poles confirm to latest IS/IEC/IEEE standards, for Street Tubular poles-IS-2713 standard
72	Supply, installation, testing and Commissioning of of outdoor type weatherproof JB for loop-in loop-out purpose to be fixed on lightpoles	The Lighting panels/Junction Boxes shall conform to IS- 8623/Latest IS/IEC/IEEE standards.
73	Supply, installation, testing and Commissioning of of outdoor type lighting bollards with 9W LED lumiere	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
74	Supply, installation, testing and Commissioning of of external wall-bracket 11W LED lumiere for building	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-

	illumination	Philips,Bajaj,Wipro,Havells
75	Supply, installation, testing and Commissioning of of Construction of spike earthing PIT with 20mm dia 2M lond MS rod for streetlight pole/ High-mast with 2 nos 8 SWG Gi wire complete all accessories etc as reqd	Earthing electrode-Laxmi Power Solutions,Gmax electric,SG Power,Sabo systems,Saara India,JMV LPS or its equivalent confirm to latest IS/IEC/IEEE standards
	ILLUMINATION/ LIGHTING FIXTURE	
76	Supply, installation, testing and Commissioning of of surface mounted downlighter with 11W LED lumiere complete with all accessories	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
77	Supply, installation, testing and Commissioning of of recessed downlighter with 11W LED lumiere complete with all accessories	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
78	Supply, installation, testing and Commissioning of of external bulkhead with 12KW lumiere complete with polycarbonate cover	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
79	Supply, installation, testing and Commissioning of of movable type 12W LED dowlighter spot on 1M track-circuits	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
80	Supply, installation, testing and Commissioning of of mirror light in toilets with 5W LED lumiere	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2) Luminaire-Philips,Bajaj,Wipro,Havells
81	Supply, installation, testing and Commissioning of of 600X600 sqMM recessed downlighter with mirror-optics and 18W X2 lumiere in workshop, conservation LAB & gift shop	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
82	Supply, installation, testing and Commissioning of of surface-mounted LED tubelight 20W	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2) Luminaire-Philips,Bajaj,Wipro,Havells
83	Supply, installation, testing and Commissioning of of indoor type LED ropelight with 5W lumiere per metre	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells
84	Supply, installation, testing and Commissioning of of indoor type Bracket Luminaire 30W LED (Karona Fort - KLIte)	1) MCB-ABB,Schneider,GE,L&T,MDS,Havells ,Legrand 2)Luminaire-Philips,Bajaj,Wipro,Havells

Executive Engineer - I
New Town Kolkata Development Authority