

SPORTS TRAINING COMPLEX
PURBACHAL NEW TOWN, DHAKA

By
MD INJAMUL HAQUE
11308015



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LIST OF CONTENT

Chapter 01: INTRODUCTION

1.1 Project Brief	1
1.2 Project Background	1
1.3 Objectives of the Project.....	2

Chapter 02: SPORT AND ITS INFLUENCES

2.1 Sports	3
2.2 Background of Sporting Activity in Bangladesh	3
2.3 Importance of Physical Activity	
2.3.1 <i>Physical well-being</i>	4
2.3.2 <i>Mental well-being</i>	6
2.4 Sports for Development	8
2.5 Sport in Bangladesh	
2.5.1 <i>Societal Issue</i>	9
2.5.2 <i>Economic Development</i>	10

Chapter 03: SITE AND CONTEXT ANALYSIS

3.1 Site Location	12
3.2 Climate	13
3.3 Site Context.....	14
3.4 Road Network	16
3.5 Zones and Amenities near the Site	19
3.6 Design Considerations	21
3.7 SWOT Analysis	23

Chapter 04: CASE STUDY

4.1 Singapore Sports Hub	25
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Chapter 05: PROGRAM DEVELOPMENT

5.1 Program Area	29
5.2 Program Flowchart.....	33
5.3 Field Specifications	
5.3.1 <i>Cricket</i>	34
5.3.2 <i>Football</i>	34
5.3.3 <i>Basketball</i>	35
5.3.4 <i>Volleyball</i>	35
5.3.5 <i>Tennis</i>	36

Chapter 06: DESIGN DEVELOPMENT

6.1 Design Considerations & Development	
6.1.1 <i>Preliminary Zoning</i>	37
6.1.2 <i>Public Corridor</i>	38
6.1.3 <i>Public Functions</i>	39
6.1.3 <i>Viewing Platforms</i>	39
6.2 Final Design	
6.2.1 <i>Master Plan</i>	40
6.2.2 <i>Roof Plan</i>	41
6.2.3 <i>Elevation & Section</i>	42
6.2.4 <i>Sectional Perspective</i>	43
6.2.5 <i>Urban Sections & Functions</i>	43

REFERENCE

LIST OF FIGURES

3.1 Site Location	12
3.2 Climate and Average Weather Conditions	13
3.3 Site Context.....	14
3.4.1 Road Network.....	16
3.4.2 Road Level differentiation.....	17
3.4.3 Traffic congestion in nodes	18
3.5.1 Proposed Zoning and Amenities	19
3.5.2 Distance from Site	20
3.6.1 Shadow Analysis	21
3.6.2 Natural Vista.....	22
4.1.1 Sports Hub, Singapore	25
4.1.2 Humanized Edge.....	27
4.1.3 Social Plinth	27
4.1.4 Humanizing Edge diagram	27
4.1.5 Axonometric Zoning	28
4.1.6 Roof Plan	28
5.3.1 Cricket Field & Pitch	34
5.3.2 Football Field & Goalpost.....	34
5.3.3 Basketball Court.....	35
5.3.4 Volleyball Court	35
5.3.5 Tennis Court.....	36
6.1.1 Preliminary Zoning	37
6.1.2.1 Public Corridor.....	38
6.1.2.2 Threshold	38
6.1.3 Public Functions.....	39
6.1.4 Viewing Platforms.....	39

ABSTRACT

The people of this nation were always avid lovers and supporters of sports. The nation bursts with exuberating energy and color whenever the FIFA or ICC World Cup occur. Football was vastly viewed and enjoyed by the people of this nation, reaching its heights in the 70s and 80s. Bangladesh has come under the limelight of world sporting news due to the nation's stellar performances in Cricket over the past several years. The country has a strong tradition of exhibiting games such as Boli khela, Lathi khela, Nouka Baich and Kabaddi, which is still evident in many rural areas. Football and Cricket are also popular among the rural folks of this country. Foreign sports such as Cricket, Football, Badminton, Hockey, Basketball, etc. are mostly played by the urban dwellers of Bangladesh.

Due to lack of proper organization and funding, the infrastructure and development of several of these sports have degraded over time. With the Bangladesh Cricket team bringing fame to our nation, it has overshadowed most other sports that our country participates in, be it the national or international level. The proposed Sports Training Complex in Purbachal New Town seeks to provide a neutral ground for flourishing athletes; and proper environment and space to hone their skills. It aims to house several sporting activities, with state of the art facilities and training grounds. Several playgrounds will be kept open to all, since an ever expanding Dhaka needs more urban playgrounds and greenery. Having lost many of its fields to illegal acquisition and encroachment, the proposed Sports Complex will breathe new life for the urban-scape, promoting sports within the younger community.

Purbachal, as a new township on the periphery of Dhaka, holds numerous possibilities; which is embodied by the proposed sports multiplex itself. The aim of this paper is to look into methods to propose; a compound which will emulate the spirit and energy of Bangladesh, embody the progression of technology and knowledge, provide feasible and sustainable ideas and solutions for a sporting complex. The Sports Training Complex will set its sights on further enhancing the reputation of Bangladesh in the sporting world, with its wide array of homegrown talent.

Keywords: Sports Complex, Bangladesh, Sport, Purbachal, Dhaka

CHAPTER 01: INTRODUCTION

1.1 Project Brief

Project Title:	Sports Training Complex, Purbachal
Site Location:	Sector-1, Purbachal New Town, Dhaka
Site Area:	46.4 acres (2,021,184square feet)
Client:	National Sports Council (NSC), Bangladesh

1.2 Project Background

Sports multiplexes and training academies have always helped bolster the strength of any sporting team; by bringing in and conditioning young athletes; preparing them for the big stage. Once mere playgrounds and fields, sports complexes have now evolved into large, spacious compounds with designated fields and facilities for various sports; housed under one roof.

The Sports Training Complex in Sector-1 of Purbachal New Town, is a proposed project to enhance the infrastructure and development of several popular sports, which the Bangladeshi youth participate in. It has also been integrated as a part of the Purbachal New Town master plan. The proposed complex is a wonderful initiative by the Ministry of Sports and Youth, for a city which has lost most of its playgrounds and open spaces to illegal encroachment. One of the main objectives of this sports complex is to promote athleticism and physical development within the younger generation; providing a safe environment for the young to play, hone their skills and abilities.

The complex will house training facilities and fields for major developing sports; along with a “Hall of Fame” which will house the achievements of these sports teams, trophies and memorabilia; state of the art physical conditioning centers. The complex will also facilitate training and other necessary sessions for the local youth and national level sports teams.

Under the administration of the NSC, currently there are 4 women's sports complexes and 1 men's complex excluding BKSP at Savar. The inclusion of this new state of the art facility will pave the way for another breeding ground of future homegrown stars in several sporting divisions; as BKSP has done over the past several years. The sports complex will cater to the ever-rising demand of playgrounds and green within the expanding urban landscape, lying at the heart of a new and expanding Dhaka.

1.3 Objectives of the Project

The Sports Complex to be built in Purbachal will aspire to accomplish the following objectives:

- a. Promote sports and athleticism, especially amongst the children and the youth.
- b. Allowing regular citizens to use the fields by renting them to accommodate small scale tournaments and matches.
- c. House several major state of the art sporting facilities, both indoor and outdoor.
- d. Build a cutting-edge physical conditioning and sports-science research facility.
- e. Accommodate trainees and athletes within the complex.
- f. The giant facility will help develop and sculpt the entrance to Purbachal.
- g. The complex will also promote an urban riverfront development along its edge with the Balu River.

CHAPTER 02: SPORT AND ITS INFLUENCES

2.1 Sports

Sports in general, refers to all formats of normally competitive physical activity, which aims to maintain or enhance physical ability through informal or organized participation. It also seeks to provide amusement and recreation to the participants, in many cases, also to the audience. It is usually recognized as activities which require physical proficiency or athleticism.

Sports exist in many several forms; from needing only two competitors, to those with near hundreds of contestants; competing as individuals or teaming up together. Sports are generally regulated by guidelines or rules, which help in ensuring just competition and allow reliable adjudication of the winning individual or side. (Sport Accord, n.d.)

Victory in sports, can be decided by physical deeds such as crossing a line first or scoring more points or goals than the opposition. Judges or referees who score based on sporting performance, including measures such as artistic impression or technical performance; may also determine the winners of a sporting event. Performances are often documented in organized sports. For popular sports, this data maybe extensively announced or used for reporting in sporting news. (ScienceDaily, n.d.)

For non-participants, sports is a huge provider of amusement and entertainment. Spectator sports draw huge crowds to sporting events, reaching a broader audience base by the aid of sports broadcasting.

2.2 Background of Sporting Activity in Bangladesh

Bangladeshi culture has several traditional sports such as Boli Khela, Kabaddi and Nouka Baich to name a few. Kabaddi is the national sport of Bangladesh, a contact sport, which has its roots of origin in India. Kabaddi was once used by the British Army for the purpose of entertainment and was even implemented to recruit soldiers from the colonized Asian communities.

Cricket in recent times, has gained mass popularity amongst the people of this nation. It is the most followed sport and has been on the rise in terms of popularity since Bangladesh won the ICC Trophy in 1997; permitting Bangladesh to participate in the ICC Cricket World Cup events from then on. Bangladesh has even managed to co-host the 2011 ICC World Cup (alongside India and Sri Lanka) and host the 2014 ICC T20 World Cup.

Football, Hockey, Tennis, Badminton, Volleyball, Handball, Carom, Wrestling, Weightlifting and even Chess are a few other popular sports in Bangladesh. In fact, Bangladesh once produced one of the world's best chess players, Niaz Murshed, who went on to become the first Grandmaster from South Asia, in 1987. However most of these sports are overshadowed by Cricket in Bangladesh. (Sport in Bangladesh, n.d.)

Most of the sportswomen and men enter competitive match ups at district levels and there are various sporting teams from the public sector, armed forces and university sectors. Due to the country's enthusiasm in sporting activities, several sporting clubs have been founded to cater to the country's athletes and the general audience. Abahani Krirachakra, Mohammedan Sporting Club, Arambagh Club, Brothers Union, Sheikh Russell, Kalabagan, Wari Sports Club, Victoria Sports Club and the Muktijoddha Sangshad are a few prominent sporting clubs. These clubs often host national and even international tournaments ranging in various sports. This is a core reason in most of these clubs trying to improve their infrastructure and facilities and maintain the best possible condition they are able to facilitate. (Sports in Bangladesh, n.d.)

2.3 Importance of Physical Activity

2.3.1 Physical well-being

Physical activity has always been correlated with better physiological functioning and lower risks of disease as per studies from controlled experimental trials and population based epidemiological studies (S.N. Blair, M.J. La Monte and M.Z. Nichaman, 2004). There is enough scientific proof to evaluate that physical activity has beneficial effects

on adiposity levels in people with regular body weight (W.L. Haskell, I.M. Lee, R.R. Pate, K.E. Powell et. al, 2007), on blood pressure in hypertensive youth (W.B. Strong, R.M. Malina, C.J. Blimkie et. al, 2005), on non-formal cardiovascular risk components and on many elements of mental and psychological health (D.E. Warburton, S. Charlesworth, A. Ivey et. al, 2010). Engaging in regular physical activity clearly has its benefits, which are spread throughout the lifetime of any being. Partaking in 30 minutes of at least average intensity physical activity for 5 days a week helps avoid and regulate over 20 chronic medical conditions such as type 2 diabetes, obesity, cancer, coronary heart disease, mental health problems and other muscle-skeletal related problems (World Health Organization, 2011).

On the contrary, spending greater amounts of time being inactive or sedentary may drastically increase the risk of few health issues, even among active people who participate in recommended levels of physical activity (U. Ekelund, S. Brage, K. Froberg, 2006). Being physically inactive is responsible for almost 6% of deaths globally – about 3.2 million deaths annually (World Health Organization, 2011). Advancements in physical activity, in adults, are more evident for high risk individuals; those who are obese or suffer from high blood pressure (D.E. Warburton, S. Charlesworth, A. Ivey et. al, 2010).

Orderly exercise forms strong protection versus the increased danger of cardiac infraction in connection with physical strain; the risk is estimated to be around only 2.5 times more than at rest for men who exercise regularly (M.A. Mittleman, M. Maclure, G.H. Tofler et. al, 1993). The risk of being affected by a heart attack during or in compliance with physical strain, in women, is very small when compared with the danger without physical exertion. This risk, however, seems to be eliminated with regular exercise (A. Alevizos, J. Lentzas, S. Kokkoris et. al, 2005).

Severe physical exercise in adolescents and children (mechanical loading on the skeleton) produces larger, stronger and more mineral dense bones. This effect is more pronounced if the exercise is started at an early age (P. Kannus, H. Haapasalo, M. Sankelo et. al, 1995). Minor improvements in bone density are observed if the exercise is started at an adult age. Studies have shown that trained individuals have a lower risk of hip fracture, while evidence is also being obtained showing that exercise at an

adult age minimizes other kinds of fractures connected to osteoporosis^a (M. Karlsson, 2002). It has also been observed that increased leisure time physical activity, such as structured school programs in the outdoors, is remarkably associated with lower depressive symptoms (over a period of 2 years) and escalates learning by improving cognitive processes, for example, memory functioning (F.J. Penedo and J.R. Dahn, 2005). To sum it all up, the connection between physical activity, health and fitness results shows a mutual relationship.

Seldom during adolescence, adopting a sedentary lifestyle often continues into adulthood and is a major concern for public health (American Academy of Pediatrics (AAP), 2007). Physical inactivity is often held as the sole culprit in the drastic escalation of obesity and other lifestyle related issues such as diabetes, hypertension, cancer and cardiovascular diseases over the past decades (M.S. Tremblay, J.D. Barnes and J.L. Copeland, 2005). Experts promote physical activity among adolescents and children to enhance health to instil behavioral patterns which will result in more active and healthy adult populations in the near future. This theory rests on two important assumptions; that these children and adolescents will inherit acute physiological and physical benefits, and, physical activity behaviors between child and adulthood are correlated, thus physically active children will be likelier to grow up into healthier adults than their inactive peers (J.F. Sallis and K. Patrick, 1994).

2.3.2 Mental well-being

Physical activity has also been effective in enhancing mental health, which is deemed as a major cause of disability throughout the world. WHO estimates that about 154 million people globally suffer from depression. Deteriorated mental health effects and is effected by severe conditions such as diabetes, cancer, cardiovascular diseases and HIV/AIDS (World Health Organization, n.d.). Concrete evidence on the benefits of mental health is less well documented compared to research for physical effects. However, the amount of evidence in this segment is increasing fast. Many clinical trials and studies have shown specific improvements, such as: reducing symptoms of

^a *Osteoporosis*. Abnormal loss of bony tissue resulting in fragile porous bones attributable to a lack of calcium

stress, anger, depression (B. Taylor, J.F. Sallis and R. Needle, 1985) and job fallout (S. Toker and M. Biron, 2012), improved mood (M. Babyak, J. Blumenthal and S. Herman, 2000), relieving anxiety and decreasing cognitive decline. In terms of treating mental depression, it has been suggested that physical activity may have effects comparable to that of Prozac^b or behavioral therapy (A.L. Dunn, M.H. Trivedi, J.B. Kampert et. al, 2005).

Most of the research regarding this aspect has focused on adults but there is proof that increased leisure time physical activity, such as structured school programs in the outdoors, is remarkably associated with lower depressive symptoms (over a period of 2 years) and escalates learning by improving cognitive processes, for example, memory functioning (F.J. Penedo and J.R. Dahn, 2005). Among older women, physical activity can help maintaining a balanced mental health; with one study based on women aged from 70-81 showing that women with the highest regulated physical activity quintile have a 20% lower danger of cognitive decline (J. Weuve, J.H. Kang, J.E. Mason et. al, 2004). These studies provide evidence that regular physical exercise or activity promotes better health, be it physical or mental.

As per epidemiological studies, exercise decreases the risk of Parkinson's disease. Regular physical activity has shown to reduce the neurological symptoms and improve the quality of life amongst patients suffering from Parkinson's disease. There is however, limited proof on the specific cognitive processes; thus further studies need to be carried out (A.C. Deslandes, 2014). The benefits of physical activity can be even greater if these activities take place outdoors in green spaces. UK mental-health charity MIND, for example, ran a small consensus on 'Green Exercise' (physical activity outdoors). They questioned people who were involved in walking, conservation, cycling and gardening (MIND, 2007). 90% of the study group felt the green exercise improved their physical health; but a greater proportion, 94% of them felt it improved their mental health.

^b *Prozac*. A selective serotonin reuptake inhibitors (SSRI) antidepressant. Prozac affects chemicals in the brain that may be unbalanced in people with depression, panic, anxiety, or obsessive-compulsive symptoms.

2.4 Sports for Development

The notion that sport can be beneficial to society has been established since the mid-nineteenth century, during which period in the United Kingdom “middle class reformers in the areas of education and urban welfare began to develop the idea that sport participation, appropriately directed, could be involved in the development of character, work discipline, teamwork, fair play and other socially approved characteristics” (P. Donnell and S. Darnell, 2007). In present time, this ideology is connected to development. Today, sport is held to be a medium that makes sure that the positive signs of modernization are equally divided and spread. The essence of this concept was present in Kofi Anan’s speech, “Sport can play a role in improving the lives of not only individuals but whole communities”, he even went further urging that, “Governments, development agencies and communities to think how sport can be included more systematically in plans to help children – particularly those who live in the midst of poverty, disease or conflict” (Olympic Aid 2002, n.d.).

During a round table conference in the 2004 Athens Summer Olympics, the concept “sport-for-development” had originated. At that forum, few governments and delegates from the United Nations took the implementation of “sport and physical activity into their domestic and international development strategies and programs” as a decree. (Sport for Development and Peace, 2008). Since then, the use of sport as an instrument to begin social change significantly expanded. In low-income countries (as deemed by the World Bank), this expansion was somewhat an effect of the fact that normal development policies had been unsuccessful in delivering the objectives (R. Levermore and A. Beacon, 2009). This led many development related practitioners to believe there was a requirement for alternative methods and strategies to accomplish long-term commitments and goals.

2.5 Sport in Bangladesh

2.5.1 Societal Issue

Participation in sports in Bangladesh is quite limited, which in turn has hampered the possibility of sport as a medium to attain social progress. The Ministry of Youth and Sports is present, at a government level but unfortunately juveniles in Bangladesh do not have enough accessibility towards sports for proper healthy growth and development. UNICEF in their article, pointed out that “sports equipment are expensive for the general population. In the urban and semi urban areas adequate sports ground is not always available” (UNICEF, n.d.). This segregation is even more prominent for girls than boys. Most young girls do not partake in sporting activities or physical education. There are few examples of girls taking part in primary or secondary school level sports. However, after graduating school or marriage, even these girls stop practicing sports. In the rural areas, girls are usually prevented from participating in any sort of sport, even from annual sports days (S. Stoffers, 2010). Since sport is so finite, there are a handful of ventures that seek to implement athletic engagement to boost progressive social transformation.

One such renowned project involved BRAC, a leading NGO from Bangladesh. BRAC arranged a girls’ cricket team in Cox’s Bazaar (a port city in the south-eastern region of Bangladesh). One of the main objectives of the campaign is to empower girls. “It was an impossible mission at the beginning. The idea of girls playing sport in public was readily rejected, especially by religious leaders who were initially opposed to such social change”, as quoted by a BRAC official. Despite all the setbacks and societal issues, BRAC patiently toiled away to win over community figureheads and “despite some heated debates, the ice eventually melted and the majority of parents, religious and community leaders agreed that girls too need to be engaged in outdoor sports activities to aid their physical and mental development.” The coordinator of the venture said, “it was not smooth sailing...we faced many obstacles and a lot of opposition, but in the end, the hardest part was selecting the final team members. We had so many enthusiastic girls interested in joining the cricket team, but ...we were forced to turn many down” (UNICEF, n.d.). This highlights one of the many recent success stories of how sport influenced societal transformation and development within Bangladesh.

2.5.2 Economic Development

The restrained sport participation in Bangladesh can be justified by its economic underdevelopment. As per many economic theories; government revenue and household income, both escalate with growth. Keeping in perspective with sport; when economic advancement takes place, individuals are more likely to have greater purchasing abilities (in this case sport equipment). Simultaneously, greater tax revenue received by the government lets them initiate expenditures which are sport supportive; such as delivering sport facilities and sport activities in schools. The opposite may also occur, where underdevelopment means low government revenue and household income. To summarize the effects of underdevelopment, low income countries cannot afford substantial progress in sport. The length to which any government will fund sport is controlled via the political process and thus varies as per the responsiveness of the nation to the general population's predispositions. Nonetheless, government revenue and household income, individually or in union – represent the key elements of sport association in a nation (J.R. Mandle, 2012).

Till date, the apparel and garment sectors have been the primary fuel for Bangladesh's economic improvement. The people who are employed in these sectors earn comparatively more than in different employment opportunities accessible to them, however compensation in the aforementioned sectors is quite low. The New York Times in July 2010 reported that Bangladesh "has the lowest garment wages in the world." This being the case along with the country's current economic spurt, though significant, has not raised the income levels enough to have a meaningful impact on either women empowerment or sport. Bangladesh needs a method of economic modernization over and beyond the dependency on textiles and garments, for sport participation to strengthen substantially and for women to become more empowered. The technological capability of this country has to improve beyond its present condition. A major setback in this case is the nation's poor performance in terms of its secondary education.

Attendance rate for male and female students in secondary education levels are only 46% and 53% respectively. This is below acceptable compared to the attendance rate for male and female students at 80% and 83% respectively, for primary school levels (World Bank, 2011). This data leads to the fact that a huge proportion of the

Bangladesh labor group is not well enough educated to partake in thriving global markets effectively. “Unless and until Bangladesh achieves rising productivity and technological change, made possible by increased levels of education attainment, the country will continue to reside near the bottom of global rankings of per capita income” (J.R. Mandle and J.D. Mandle, 2012). Based on this finding, gender equality and participation in major sports will also lie well below the rest of the globe.

CHAPTER 03: SITE AND CONTEXT ANALYSIS

3.1 Site Location

The site for the National Sports Complex is located adjacent to the bank of the Balu River, in Sector-1 of Purbachal New Town. The Dhaka-Purbachal Express Highway runs along the northern periphery of the site. The site is approximately 11 kilometers (30 minutes by vehicular transport) from Hazrat Shahjalal International Airport; and 7 kilometers (10 to 15 minutes by vehicular transport) from Bashundhara Residential Area.

The site has a convenient location in terms of accessibility as it is not too far from the Dhaka-Mymensingh Highway; and the Dhaka-Purbachal Express Highway connects this planned township with Narshingdi, Bhulta and Madhabdi, providing an alternative route for travelers from the South-East of Bangladesh using the Chittagong Highway.



Fig 3.1. Location of Site
Source: Google Earth
Edited by: Author

3.2 Climate

Prevailing Winds

Wind Frequency (hrs)
 Location: Dhaka, BGD (23.8°, 90.4°)
 Date: 1st Jan - 31st Dec
 Time: 00:00 - 24:00

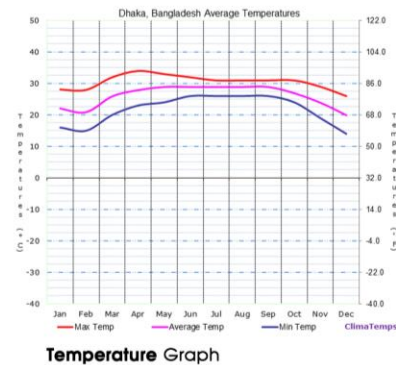
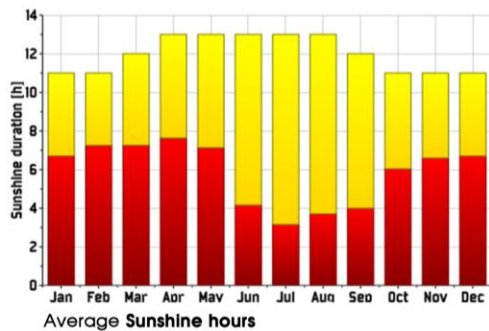
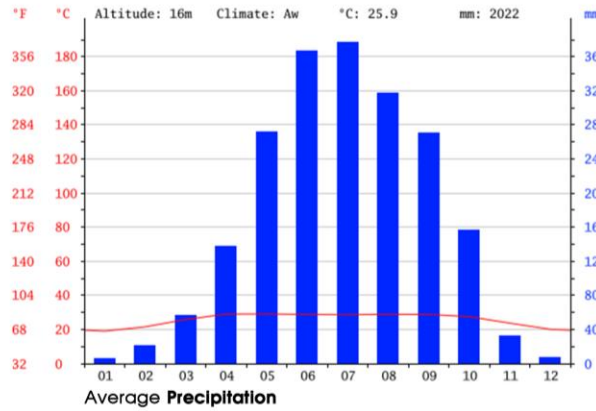
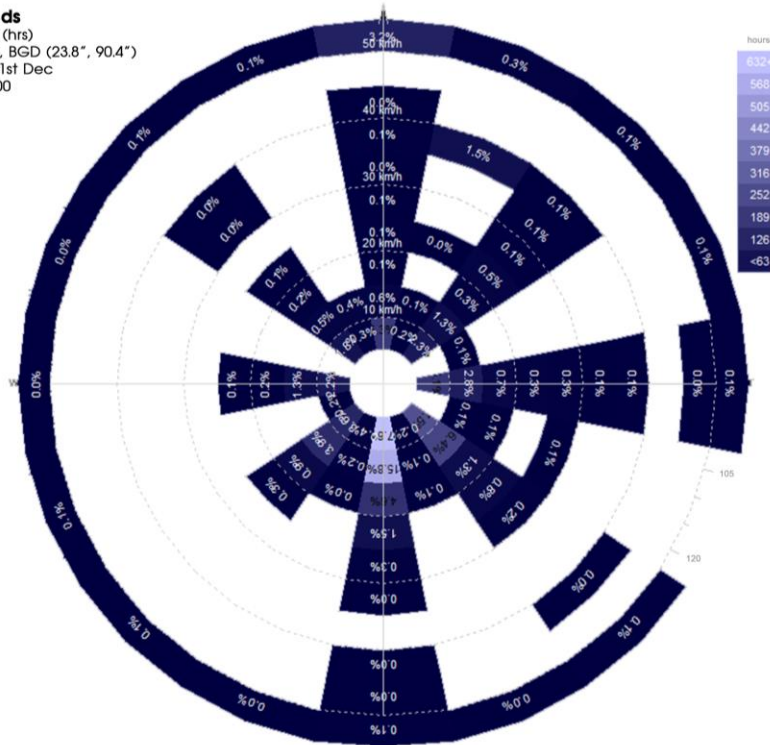


Fig 3.2. Climate and Average Weather conditions
 Source: www.weather-and-climate.com, www.dhaka.climatemps.com, Autodesk Ecotect

3.3 Site Context



Fig 3.3. Site Images
Source: Author

Currently, roughly about 20% of the site is inhabited by people who have built single-storied homesteads using tin, bamboo and other lightweight materials. Most of the site is generally used to graze cattle and goats by the inhabitants. The western peripheral edge of the site is used for small-scale gardening and cultivation of vegetables, shrubs and plants.

On the NE edge of the site, a bazaar has grown up and has been thriving ever since vendors set up informal shops and stalls. This causes people and consumers to flock towards the bazaar, causing vehicles to line up on the edges of the roads. Thus the narrower tertiary lane on the northern edge of the site has slower traffic flow.

To the west of the site lies the Balu River, which joins the Turag near Tongi and the Shitalakhya near Demra and Kaliganj. The Balu plays a vital role in providing local drainage and access for small steam-engine boats which are used in transporting dredged sand and other materials along the river. During the rainy season, the water level does not usually exceed more than 7-8 feet below road level near the periphery of the site.

The Balu contributes a large quantity of sewage and other contaminants to the Shitalakhya River, just upstream of the Saidabad intake. Sewage and industrial effluent from many locations along the Shitalakhya River also significantly load the river in the vicinity of the Saidabad intake (M.K. Hasa, M.A. Happy, N. Karimon et. al, 2014). This poses a threat to the ecology and oxygen content within the water of the Balu River.

3.4 Road Network

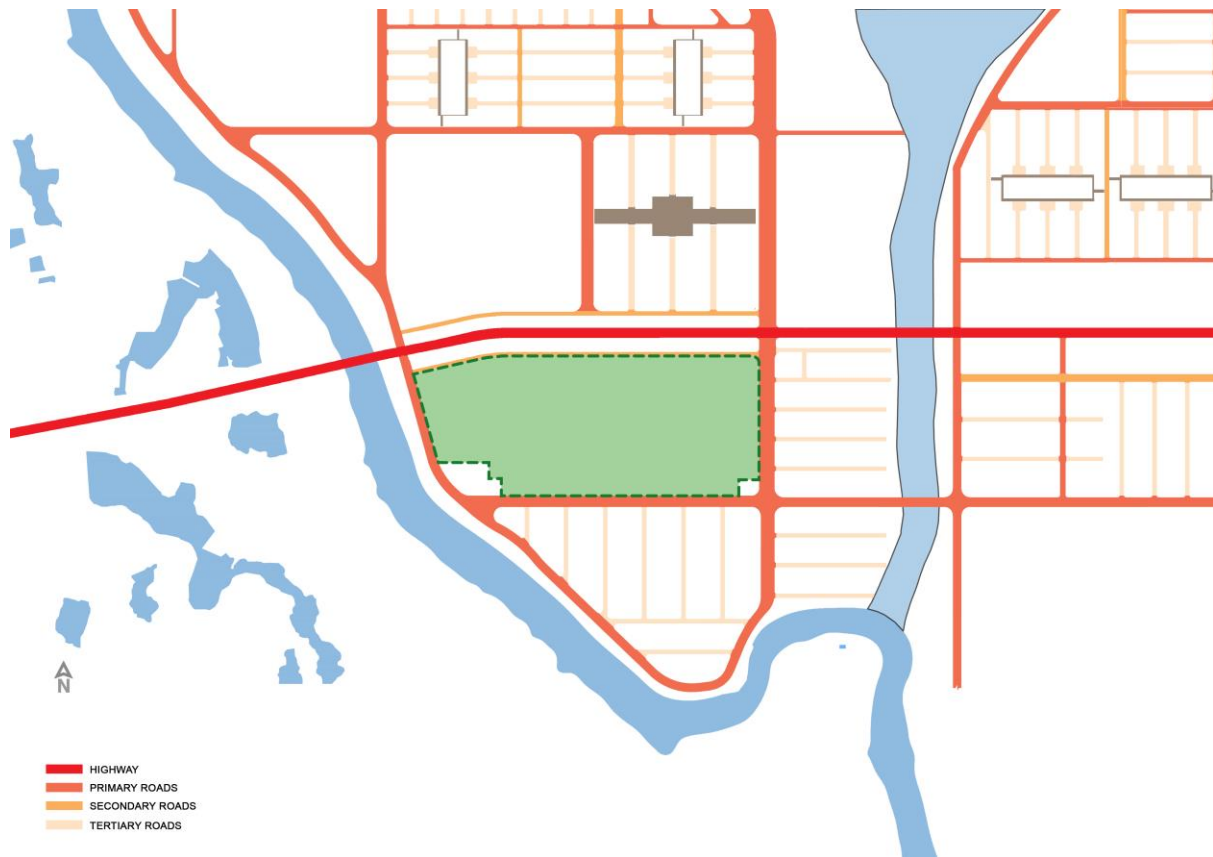


Fig 3.4.1. Road Network
Source: RAJUK
Edited by: Author

The site is surrounded by almost 40 feet wide primary roads on the east, south and west. Lying on its periphery on the north is a narrower road which is about 24 feet wide. The Dhaka-Purbachal Express Highway runs on the north of the site, which already partakes in immense traffic flow.

The node which is addressed on the next page, will be a major cause for concern when developing a vehicular flow on the periphery of the site. The major concern will be the several intersections which are formed due to the current road network layout. Several routes of traffic will intersect with one another, slowing down vehicular flow and causing congestion near a residential block.

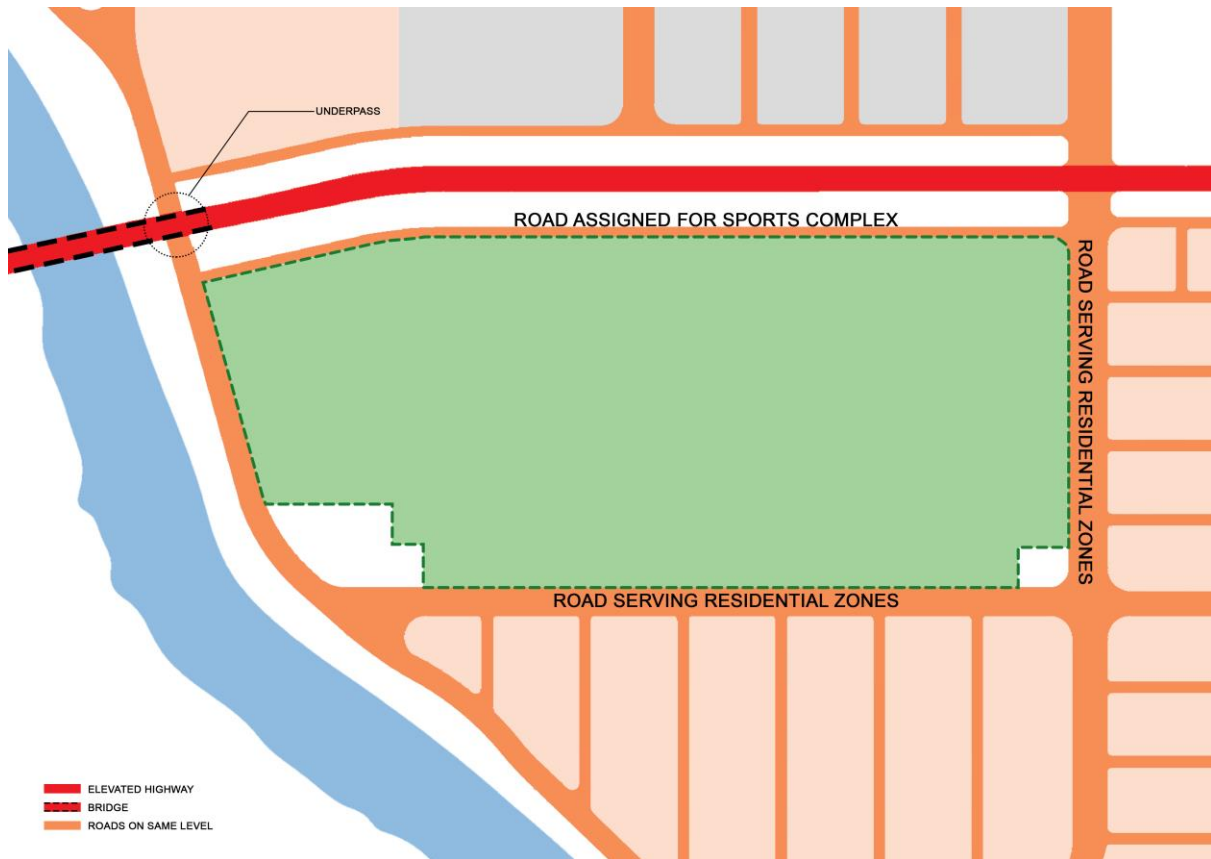


Fig 3.4.2. Road Level differentiation
 Source: RAJUK
 Edited by: Author

The Dhaka-Purbachal Express Highway is an elevated freeway (red), almost 4-5 feet above the level of the remaining roads (orange). While entering Purbachal, a bridge connects the highway over the Balu River. An underpass passes below this bridge connecting the adjacent northern sector with Sector-1.

The roads on the eastern and southern perimeter of the site are designed to serve the residential zones. The narrow road on the northern perimeter of the site is devised to serve the Sports Complex. A key aspect while planning a strategic location for the entry into the site will be to control traffic flow, ensuring that the traffic for the complex does not create added pressure on the roads serving the residential zones.

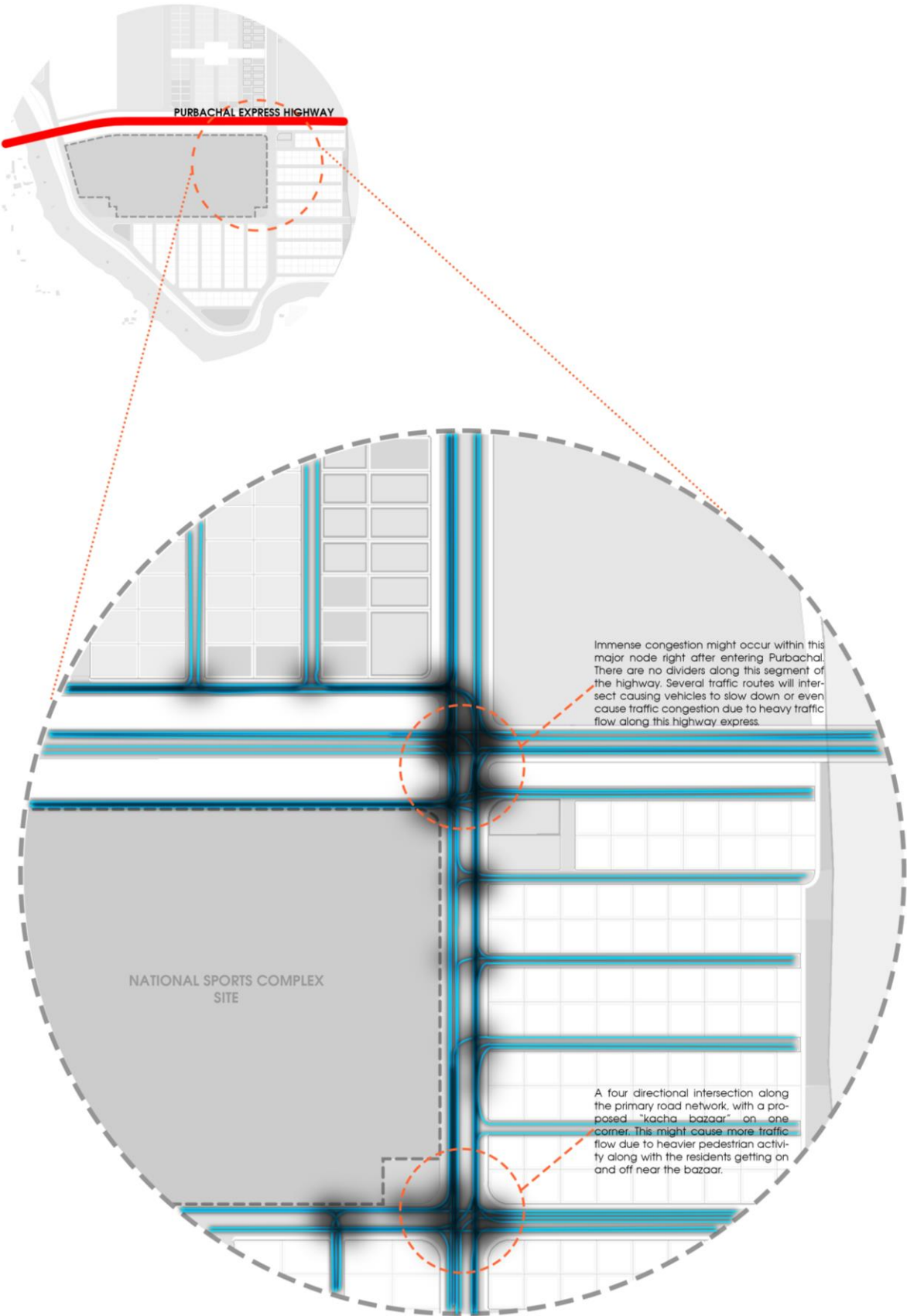


Fig 3.4.3. Traffic congestion in nodes
Source: Author

3.5 Zones and Amenities near the Site

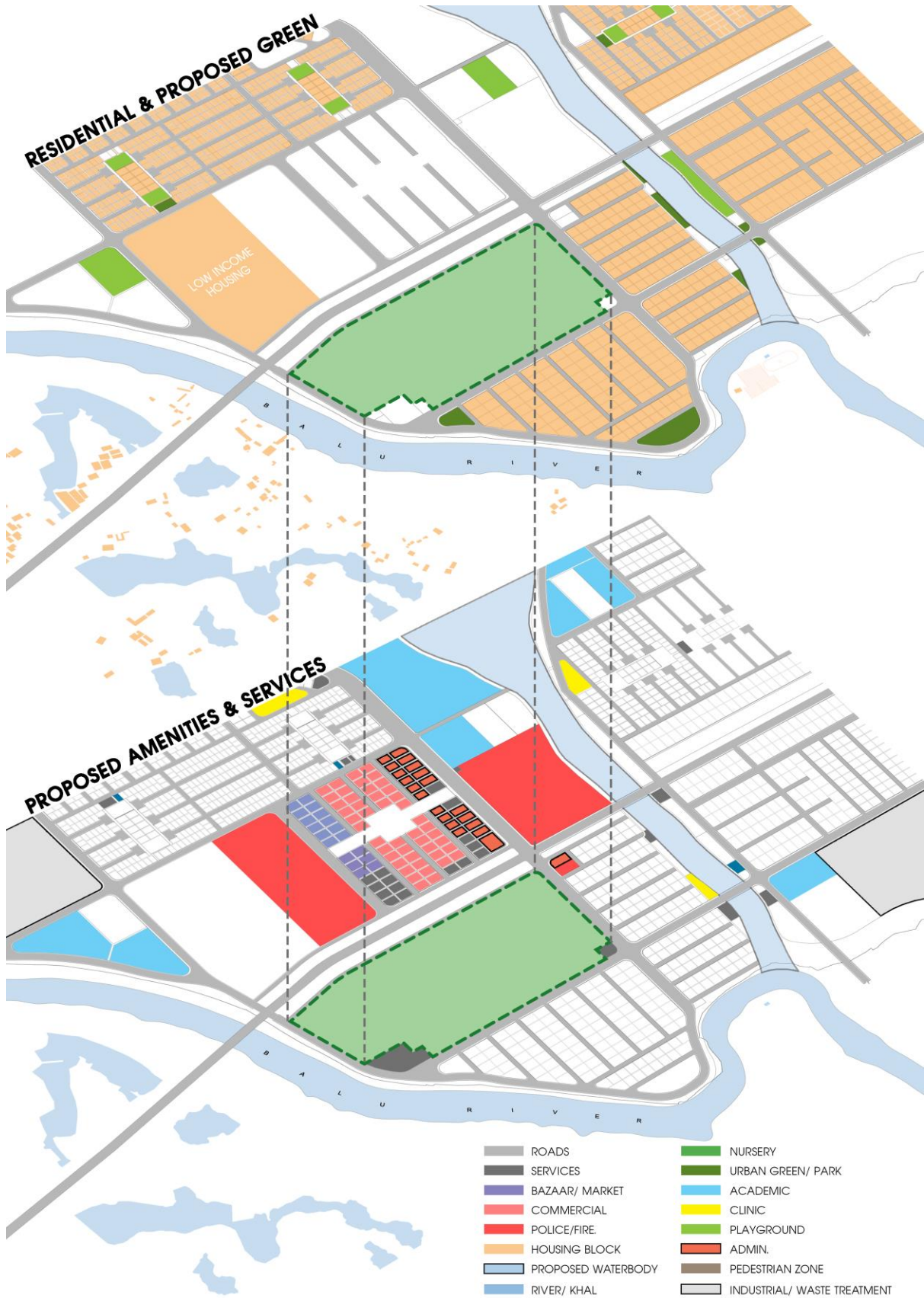


Fig 3.5.1. Proposed Zoning & Amenities

Source: RAJUK

Edited by: Author

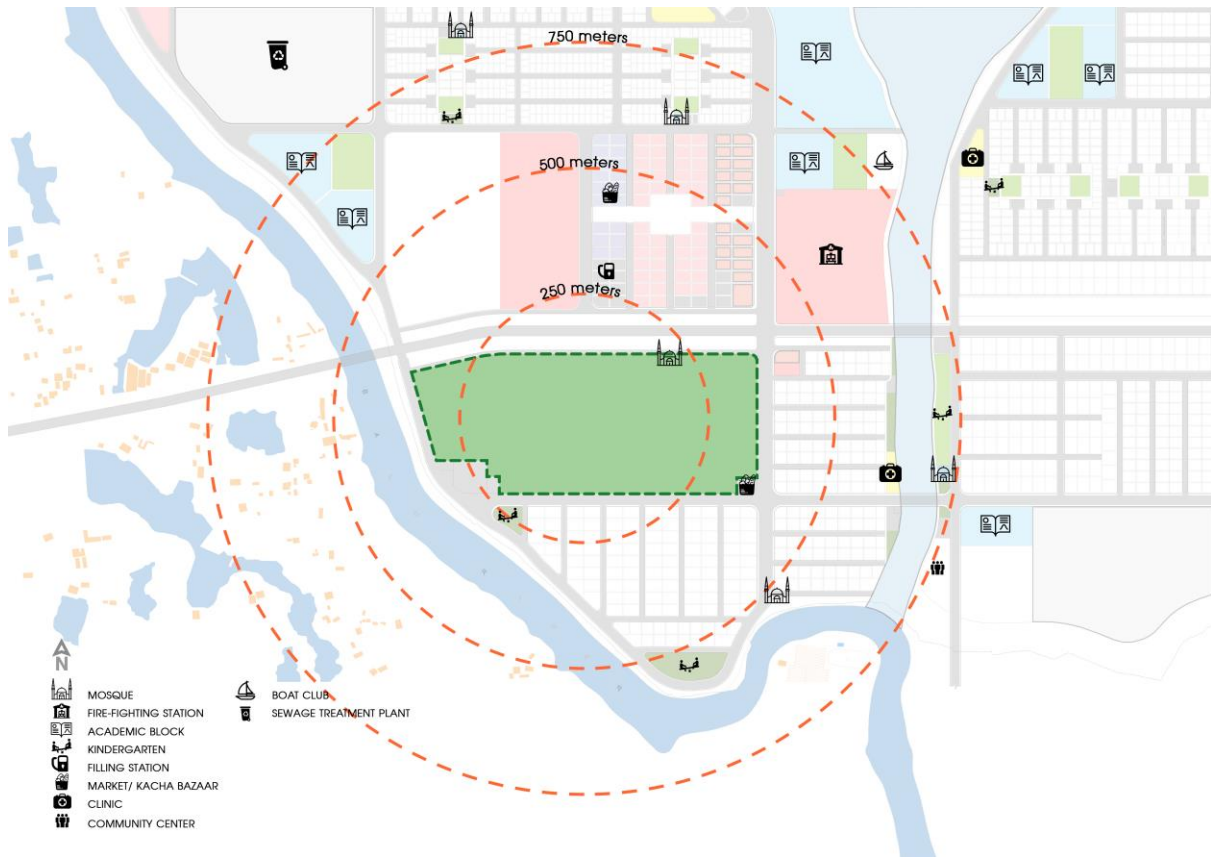


Fig 3.5.2. Distance from Site

Source: RAJUK

Edited by: Author

Radial distance of amenities and services near the site shows that almost all daily need based amenities are well within reach. The site is surrounded by residential blocks on the east and south. Low income housing blocks and the CBD of Sector-1 lie on the north of the site, which are proposed to house markets, kaacha bazaars, administration buildings and offices (both government and private).

3.6 Design Considerations



Fig 3.6.1. Shadow Analysis
Source: SketchUp and Shadow Analysis Tool

Built forms line all sides of the site except the west. The Low Income group block to the NW of the site will have low tiered housing buildings. Maximum heights for the buildings in the plots were evaluated using FAR to determine an approximate idea of how shadow from the nearby buildings might affect the site.

As it is quite evident from the diagram above, there will be minimal impact by the built forms near the site. Shadow will however fall on the eastern periphery of the site but for very short periods of time. The site will be free from any obstruction caused by shade-shadow.



Fig 3.6.2. Natural Vista
Source: Author

When all the previous observations are stacked; it is quite evident that the site has only one natural opening, through its western edge along the bank of the Balu River. The remaining three sides of the site are blocked by built form. When designing the Sports Complex, this could play a pivotal role as to how this vast opening maybe treated and if the residential zone on the east is to have a clear view of the river as well.

3.7 SWOT Analysis

Strength

- I. The site is easily accessible by vehicular transport from the Dhaka-Mymensingh Highway and by the Dhaka-Purbachal Highway through Kanchan.
- II. The site has roads ranging from 24 feet to almost 40 feet around its perimeter on all four sides.
- III. Necessary amenities and services are all well within the reach of the site, at a maximum of ten minutes walking distance.
- IV. The maximum height attainable by the buildings near the site as per BNBC, are 8 floored on the south and 11 floored to the east. This causes minimal shadow from these nearby buildings to be cast on the site.
- V. The 24 feet wide road on the northern edge of the site was planned to serve the Sports Complex.
- VI. Drainage lines border the perimeter of the site, this should prevent the adjacent roads from flooding during heavy downpours in the monsoon season.

Weakness

- I. The site is surrounded by residential zones on the east and south; the CBD, Central Police Line and a low income housing zone on the north. Thus providing only one large opening to the west.
- II. The narrow 24 feet wide road which was proposed to serve the Sports Complex site might get congested under heavy traffic flow, if residents use it for regular thoroughfare.
- III. Major nodes are present along the eastern perimeter of the site which might cause traffic flow to slow down, and even cause chaotic noise during peak hours.
- IV. The proposed bazaar on the south-eastern corner of the site might further slowdown regular vehicular flow.
- V. After completion of the project it still might take several years for the remaining urban layout of the township to be constructed within the vicinity of the site.

Opportunity

- I. The project has a scope of elevating the urban green within the fabric of this planned township.
- II. It has the opportunity of providing a state of the art sport facility within the thriving metropolis of Dhaka.
- III. Ease of access and the short distance makes this complex a prime target for future practice matches, even within the different age groups of the national team for various sports.
- IV. The Purbachal New Town project is a work still in progress. The development of this Sports Complex might have a greater influence, in shaping the residential zone's value and fabric.

Threat

- I. Lack of development in terms of remaining infrastructure within Purbachal poses a threat in terms of security.
- II. The development of this area, if not taken care of properly, can go seriously wrong.
- III. In future escalated levels of toxicity of the Balu River's water, may pose a threat to the eco system and landscape development along the edge of the site.

CHAPTER 04: CASE STUDY

4.1 Singapore Sports Hub

Architect: DP Architects

Location: Singapore Sports Hub, 397718

Area: 35 ha

Master Plan: DP Architects, Arup, AECOM

Architecture-Sport Venues: Arup Associates, DP Architects

Architecture-Office, Retail, Leisure: DP Architects

Engineering: Arup

Landscape: AECOM

Completion Year: 2014

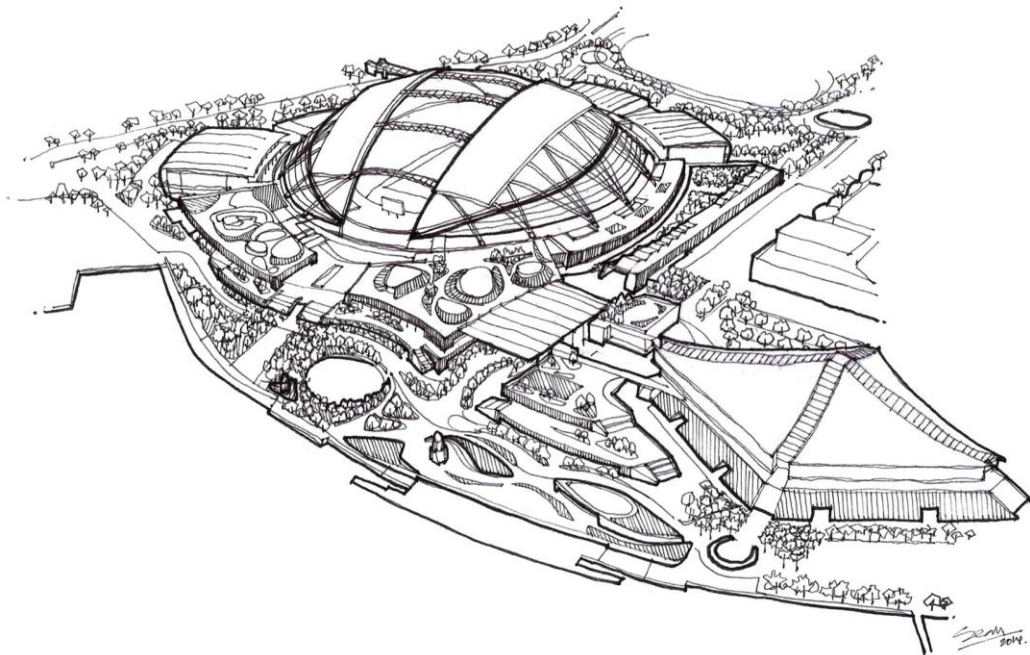


Fig 4.1.1. Sports Hub, Singapore
Source: DP Architects

The Sports Hub was a key project in Singapore Government's urban redevelopment and sports facilities master plan. The project is located on a waterfront site, providing a congregation of sports, leisure and retail spaces; connecting the expanding city center and public neighborhood. The complex offers exclusive venues for major

sporting events, as well as inclusive and welcoming public destinations. The hub is not only a premier sports destination but also encourages day to day public participation throughout the entire year.

The site's strategic location connects the local pedestrian, cycling tracks and Singapore's island-wide park connecting system with its broad walkway district. This master plan provides a series of joined public spaces, which are scaled for both major events and daily life use.

Pros:

- i. Connects the entire waterfront site with major pedestrian and cycling pathways.
- ii. Easy access with the MRT system and other transport options for crowd management and safety.
- iii. Addresses the tropical climate while designing public spaces with levels of comfort, stitching together the landscape, shade, shelter and lighting.
- iv. The project orientates the built forms and major public realms in a way to highlight the famous skyline of Singapore, creating spectacular views for the spectators and visitors.
- v. Promotes a "social plinth" which is staged over three connected tiers, creating a humanized edge.
- vi. Tiered spaces housing retail stores, sport venues, public green and rooftop spaces are designed for daily use.
- vii. Jogging track is open for all within the social plinth of the project.

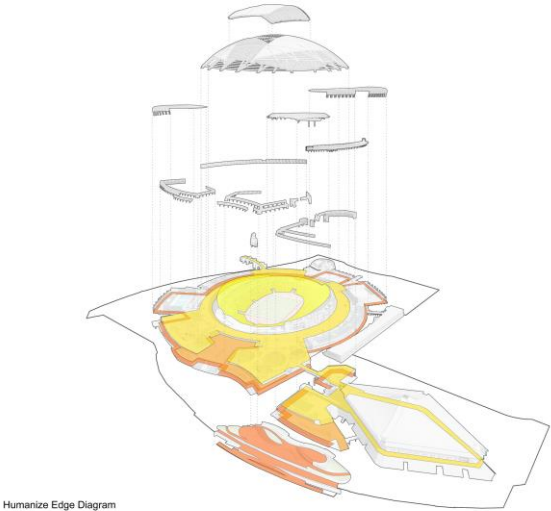


Figure 4.1.2. Humanized Edge
Source: DP Architects

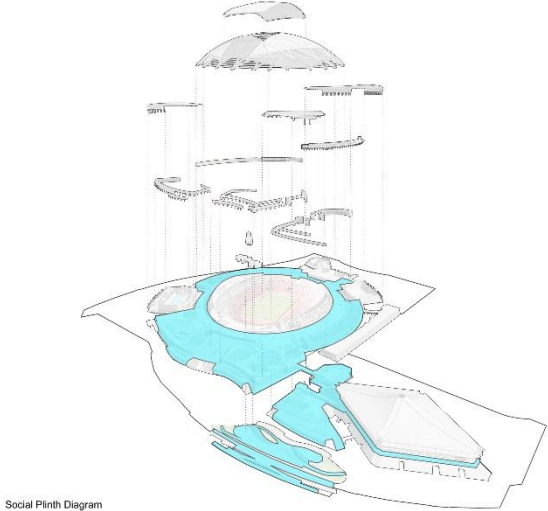


Figure 4.1.3. Social Plinth
Source: DP Architects

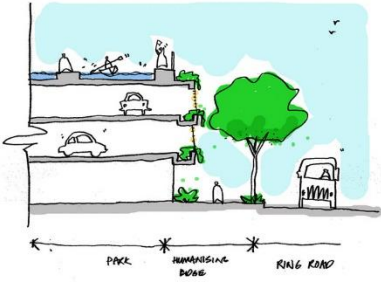
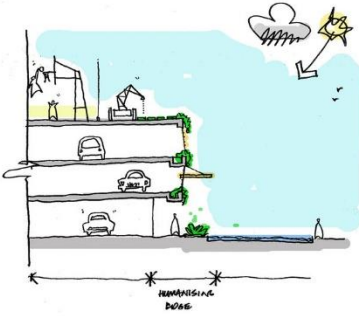
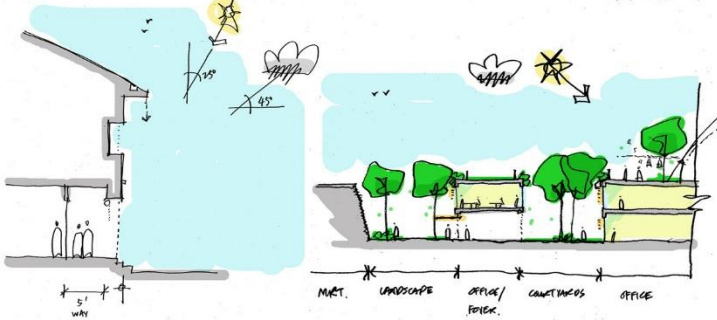
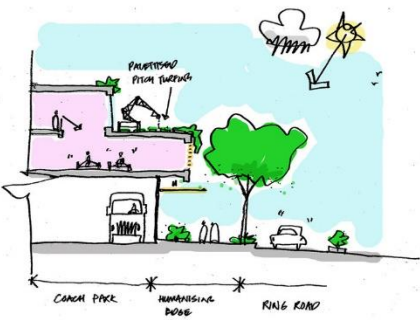


Figure 4.1.4. Humanizing Edge diagram
Source: DP Architects

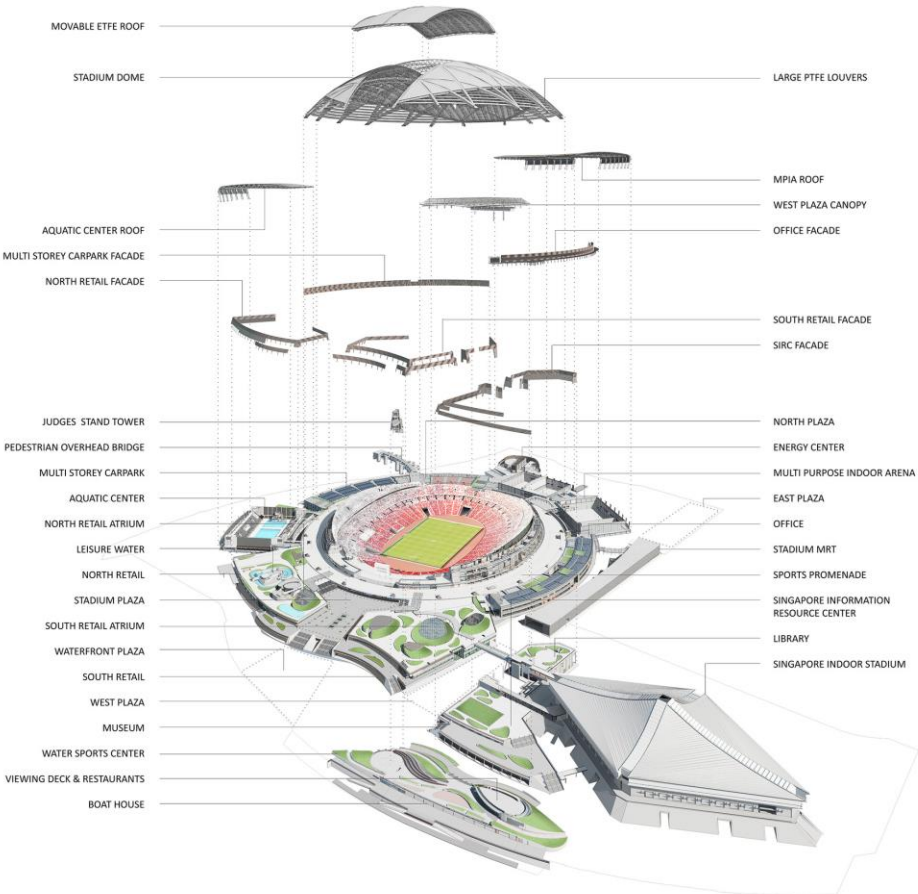


Figure 4.1.5. Axonometric Zoning
Source: DP Architects

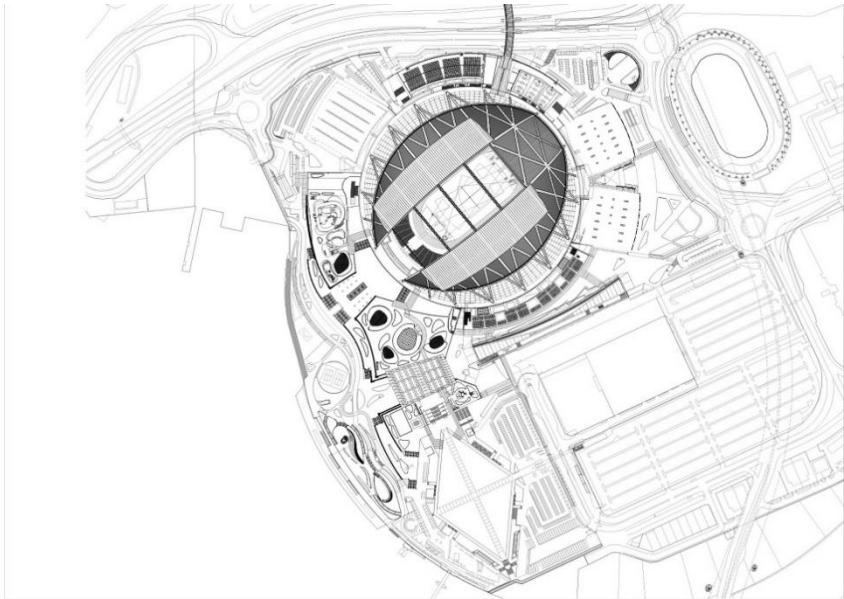


Figure 4.1.6. Roof Plan
Source: DP Architects

CHAPTER 05: PROGRAM DEVELOPMENT

The National Sports Complex will accommodate athletes from classes 4 to 9. Based on the sport related age group, students will be enrolled into the designated levels. The complex will accommodate facilities and training grounds for Cricket, Football, Tennis, Basketball and Volleyball. The complex will house approximately 220 students, both male and female; along with the coaching and teaching faculty, grounds men and other staff members.

The sport center will also be able to host training camps and sessions for national level teams of various age groups for their respective sports.

The indoor playing areas are usually unused after hours. During the program development phase, I planned on ensuring the neighboring residents could use the functions housed within this project. It also seemed a feasible option to open up the indoor playing arenas to spectators, people passing through the site could watch training or respective sporting events.

5.1 Program Area

Zone		Quantity	Area (sq. feet)	Total Area (sq. feet)
Entrance				3,978
	Lobby	1	3,000	3,000
	Receptionist	1	60	60
Administration				6,799
	Lobby/ Waiting Area	1	500	500
	Director's Office	2	360	720
	Sporting Head's Office	5	225	1,125
	General Office	15	60	900
	Conference Room	1	525	525
	Lunchroom	1	900	900
	Pantry	1	200	200
	Storage	1	200	200
	Restroom	1	160	160

Retail Space				14,400
	Shops	10	1,000	10,000
	Arcade	1	2,000	2,000
Multipurpose Hall				9,650
	Hall	1	6,000	6,000
	Stage	1	1,200	1,200
	Lobby	1	1,500	1,500
	Cloakroom	1	150	150
	Media Library	1	150	150
	Storage	1	300	300
	Restroom	1	350	350
Food Court				7,221
	Cafeteria	1	4,000	4,000
	Service	1	1,000	1,000
	Food Prep.			
	Dish Washing			
	Waste			
	Food Storage/ Freezer	1	300	300
	Hand-wash Area	6	4	24
	Restroom	1	231	231
Outdoor Sports Courts				16,400
	Tennis Court	2	7,200	14,400
	Gallery/Bleachers	4	500	2,000
Outdoor Fields				193,387
	Cricket Field	1	103,832	103,832
	Drainage/Runoff Area	1	1,732	1,732
	Scoreboard	2	32	64
	Players'/Technical Area	2	40	80
	Gallery/Bleachers	2	5,000	10,000
	Football Field	1	66,000	66,000
	Drainage/Runoff Area	1	1,599	1,599
	Players'/Technical Area	2	40	80
	Gallery/Bleachers	2	5,000	10,000
Ancillary Functions				4,290
	Indoor			
	Changing Room	6	200	1,200
	Restroom	6	75	450
	Shower	18	25	450
	Equipment Storage	6	200	1,200

Indoor Gymnasium		Sports		106,984	
	Tennis Court	2	7,200	14,400	
	Basketball Court	2	8,680	17,360	
	Volleyball Court	2	4,000	8,000	
	Cricket Practice Area				
	Nets	3	845	2,535	
	Open Practice	2	2,500	5,000	
	Football Practice Area	1	33,000	33,000	
	Gallery/Bleachers	4	500	2,000	
Gym & Pool Area				39,600	
	Lobby	1	250	250	
	Gym	1	4,320	4,320	
	Swimming Pool (50 m)	1	17,942	17,942	
	Swimming Pool (25 m)	1	12,100	12,100	
	Locker Room	1	840	840	
	Laundry Room	1	120	120	
	Shower	16	25	400	
	Washroom	1	302	302	
	Pool Maintenance	1	720	720	
	Gym Storage	1	200	200	
	Pool Equipment Storage	1	200	200	
Clinic & Rehabilitation				4,726	
	Rehabilitation Facility				
	Physiotherapist's Office	1	300	300	
	Office	1	100	100	
	Rehabilitation Facilities	1	1,600	1,600	
	Psych. Counselor	1	300	300	
	Assistant	1	60	60	
	Clinic				
	Doctor's Office	1	300	300	
	Office	1	225	225	
	Patient Ward	1	750	750	
Learning & Resource				18,220	
	Lecture Rooms + Audio				
	Visual	3	645	1,935	
	Library	1	11,000	11,000	
	IT Lab	1	540	540	
	Restroom	1	540	540	
Accommodation				62,933	
	Players' Dorm	110	220	24,200	
	Coaching Staff Dorm	10	220	2,200	
	Shower	25	25	625	
	Restroom	1	648	648	
	Students' Lounge (M)	2	4,000	8,000	

Students' Lounge (F)	1	2,000	2,000
Faculty Lounge	1	2,000	2,000
Computer Room	1	2,700	2,700
Indoor Games (Recreation)			
Table Tennis	4	180	720
Carom	8	20	160
Chess	8	16	128
Foosball	4	126	504
Staff Dorm	25	160	4,000
Shower	10	25	250
Restroom	1	275	275

Dining Hall			9,821
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Dining Hall	1	5,000	5,000
Service	1	2,000	2,000
Food Prep.			
Dish Washing			
Waste			
Food Storage/ Freezer	1	300	300
Hand-wash Area	6	4	24
Restroom	1	231	231

Services			2,405
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Elec. & Mech. Room	1	970	970
Generator Room	1	280	280
Air Conditioning Unit			as required
Warehouse	2	300	600

Parking			34,797
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Bus	2	540	1,080
Car	150	144	21,600
Motorcycle	50	21	1,050
Bicycle	75	15	1,125

Prayer Hall			20,605
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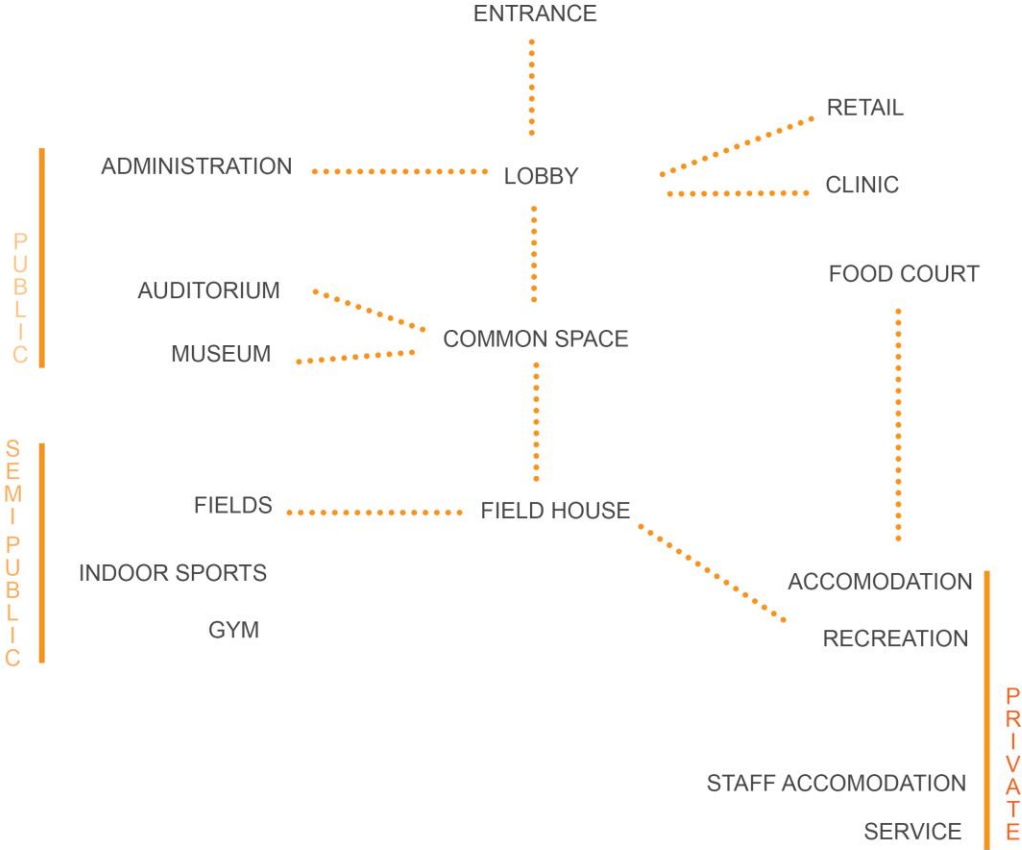
Prayer Space	1400	10	14,000
Ablution Area	12.75	30	383
Toilet	16	14	224
Storage	0.269	980	264
Shoe Rack	980	1	980
Imam's Office	1	100	100

Total Built Area			346,427
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Total Field Area			209,787
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TOTAL			556,214
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5.2 Program Flowchart



5.3 Field Specifications

5.3.1 Cricket

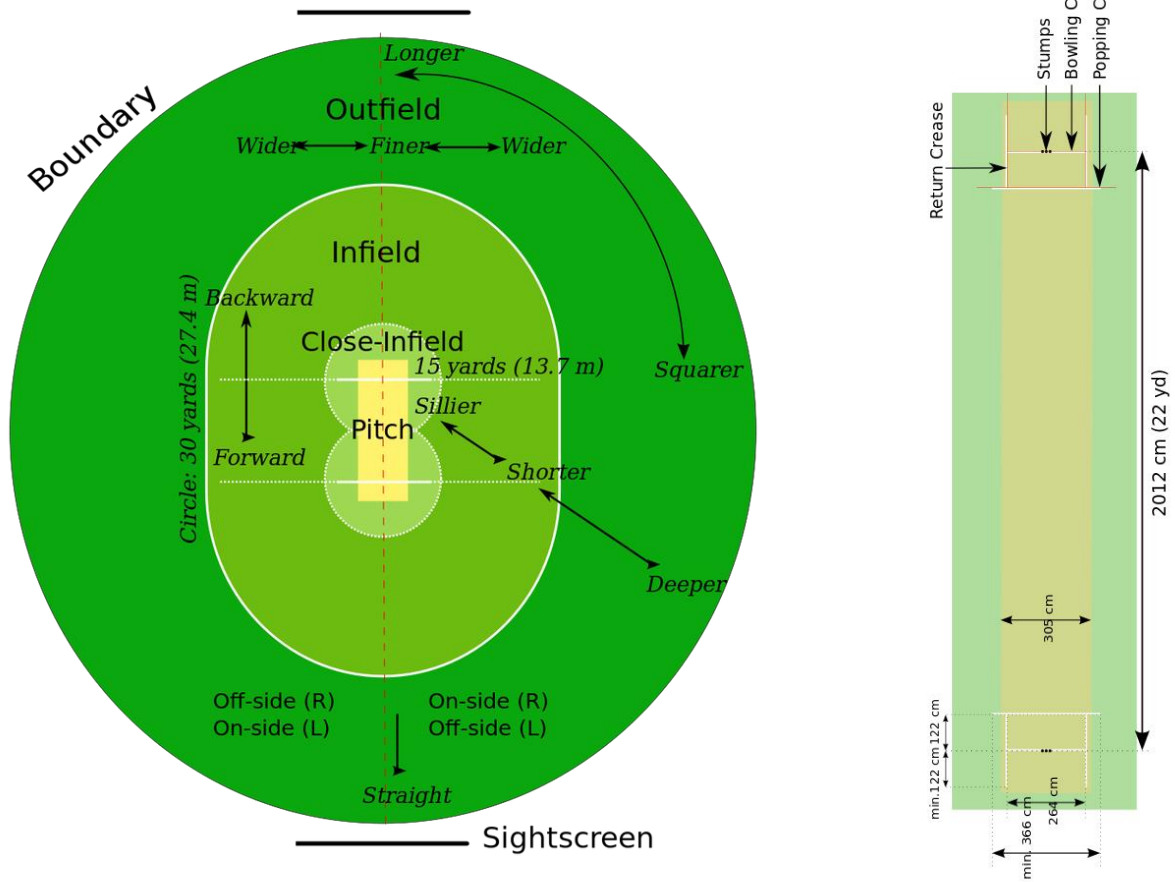


Figure 5.3.1. Cricket Field & Pitch
Source: International Cricket Council

5.3.2 Football

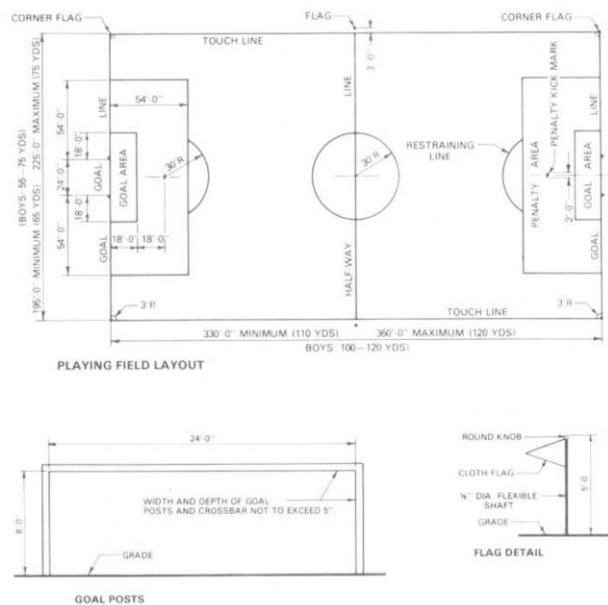


Figure 5.3.2. Football Field & Goalpost
Source: Time Savers Standard

5.3.3 Basketball

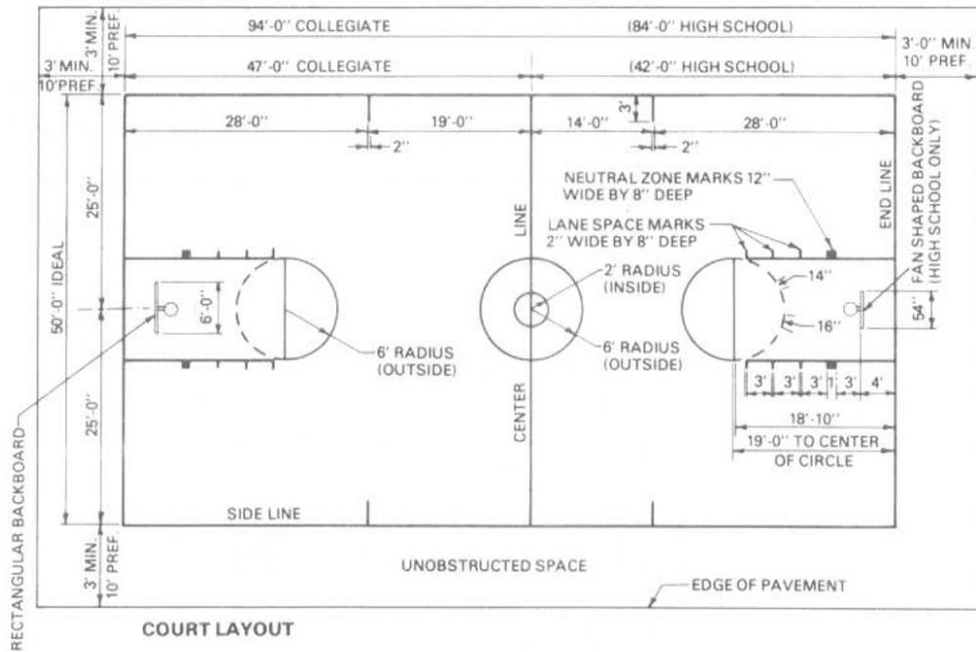


Figure 5.3.3. Basketball Court
Source: Time Savers Standard

5.3.4 Volleyball

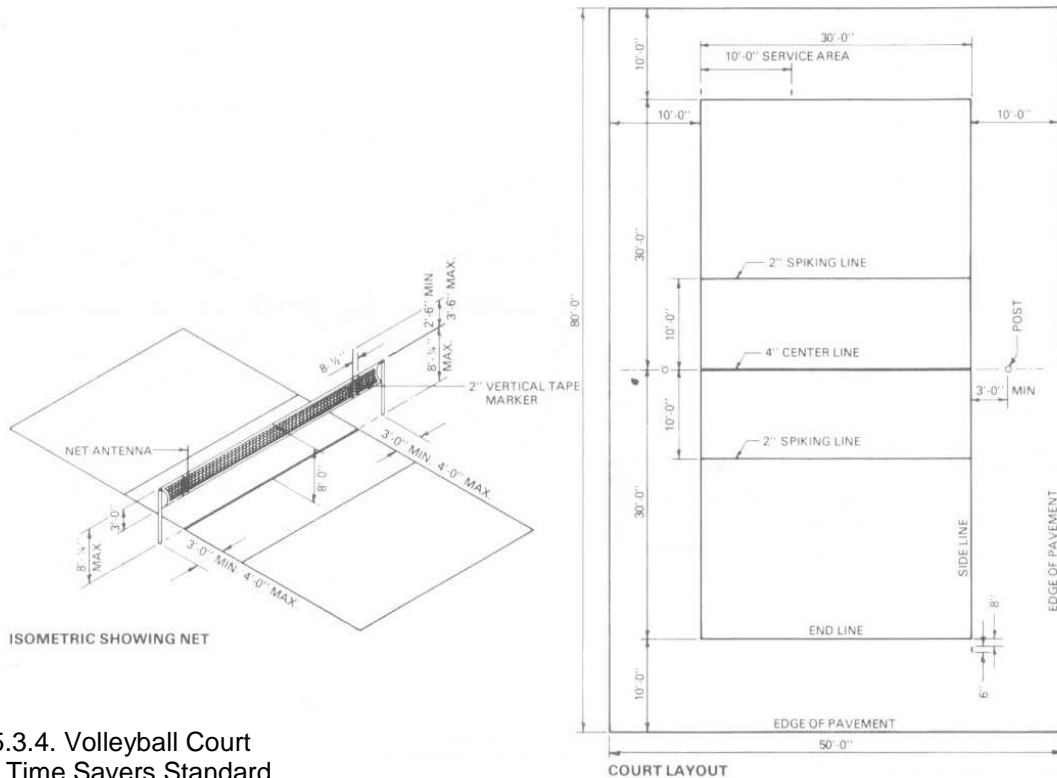


Figure 5.3.4. Volleyball Court
Source: Time Savers Standard

5.3.5 Tennis

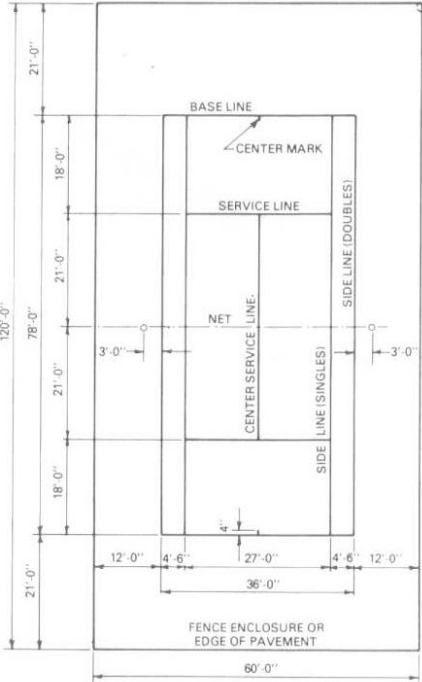
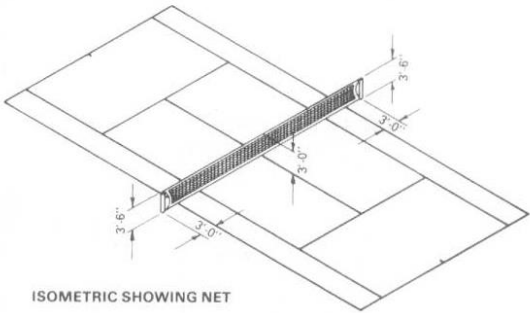


Figure 5.3.4.Tennis Court
Source: Time Savers Standard

CHAPTER 06: DESIGN DEVELOPMENT

Taking into the consideration the aforementioned context and given parameters of the project, the following diagrams help illustrate the decisions taken before progressing into the final stage of the design.

6.1 Design Considerations & Development

6.1.1 Preliminary Zoning

Since the given site was 46.4 acres, I opted to confine the built zone of the project housing the more conventional functions. I wanted to promote a recreational zone for the nearby residents of the area since open and green pockets within the designed Purbachal layout is few and far between. Hence I decided to free up the edges of the site which I thought would promote more human interaction and be more welcoming for the mass pedestrian.

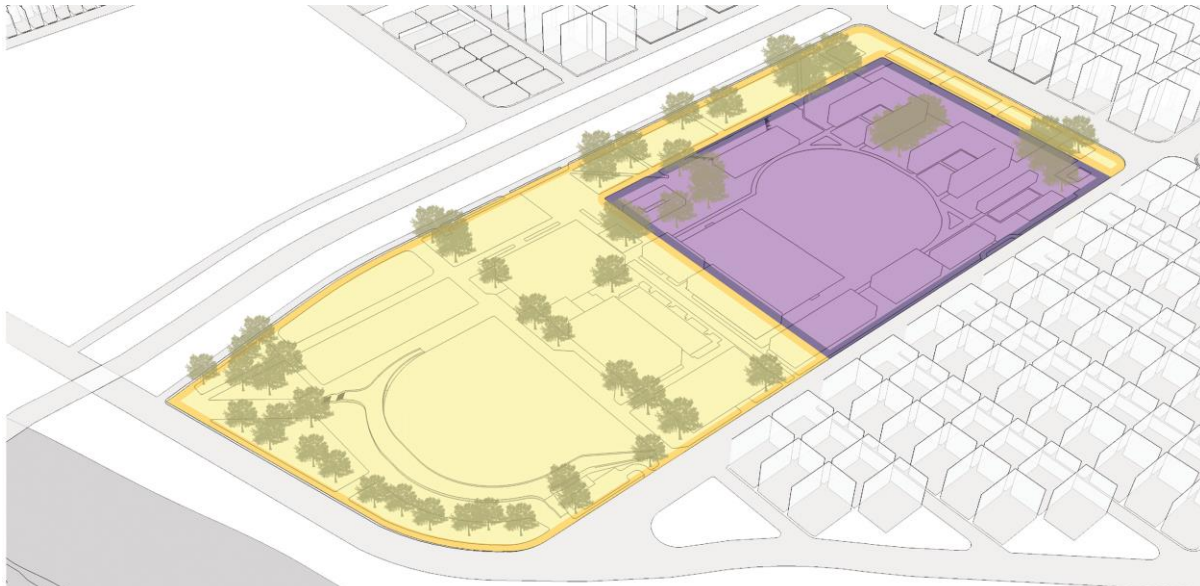


Figure 6.1.1. Preliminary Zoning
Source: Author

6.1.2 Public Corridor

The public functions which could be used by the locals at a certain point of the day were housed along a spine. The objective of this decision was to not only promote an ease of visibility and axis but also to form an urban street like vibe amidst a regimental pattern of housing and built area.

This street will be a threshold between the more private functions of the training complex, intended for the residential trainees and athletes; and the semi or public functions within the site.



Figure 6.1.2.1. Public Corridor
Source: Author

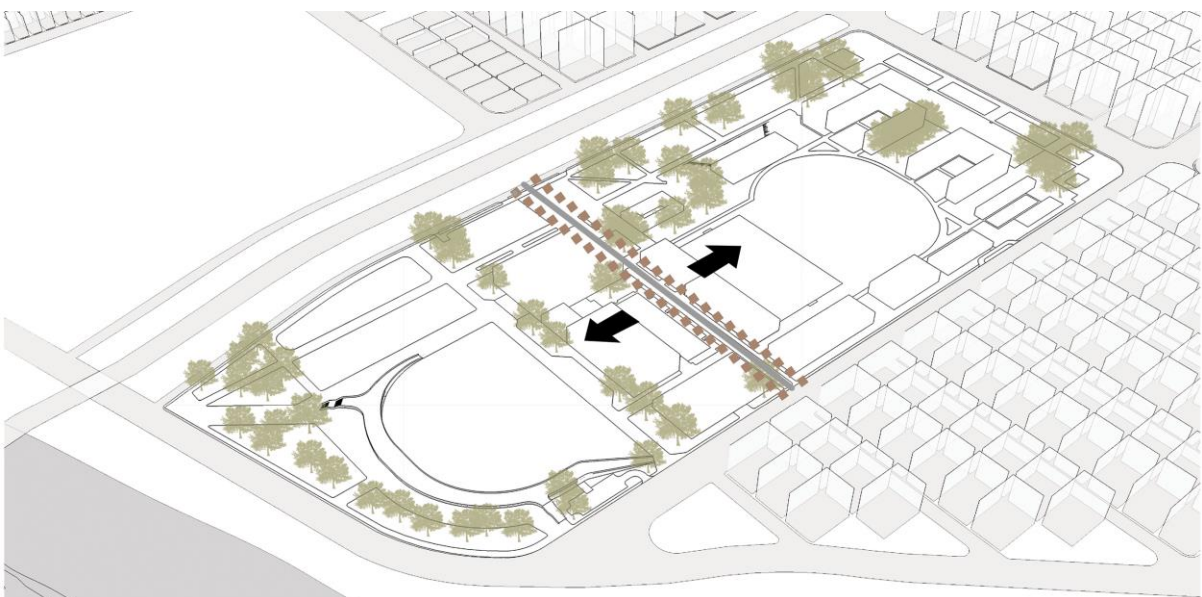


Figure 6.1.2.2. Threshold
Source: Author

6.1.3 Public Functions

The proposed public functions mainly constitute of walkways, landscaped parks, children's playgrounds and a skate-boarding rink for the locals to frequent.

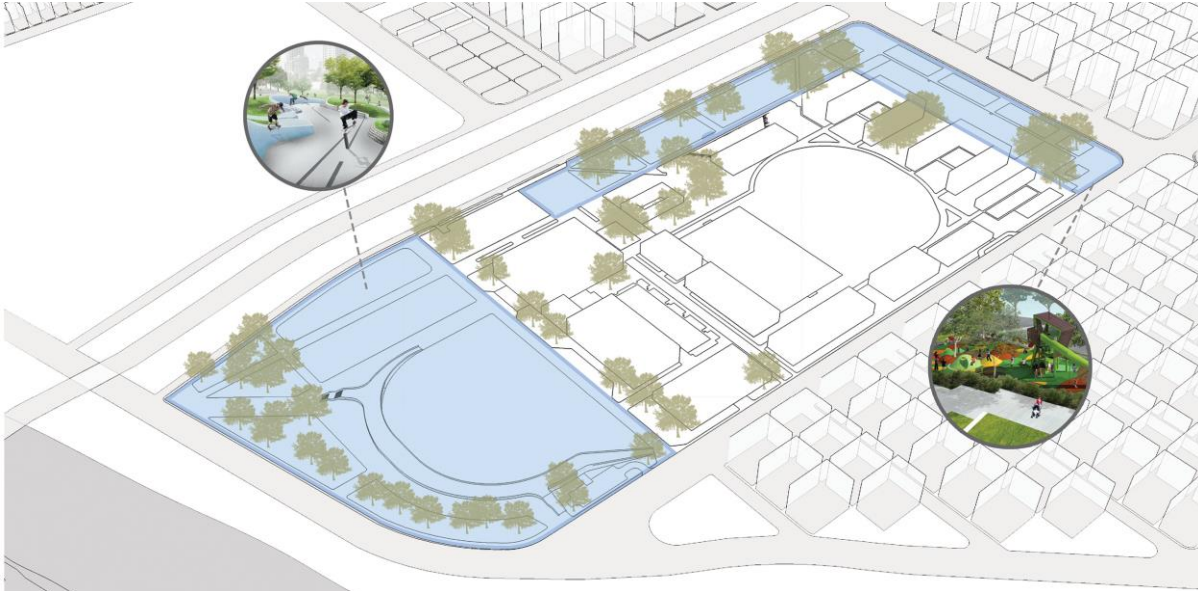


Figure 6.1.3. Public Functions
Source: Author

6.1.4 Viewing Platforms

I designed a raised walkway and elevated platform for trespassing locals to view the ongoing sporting affairs within the fields. The walkway also provides a better view of the Balu River from the site and houses food courts and shops under it.



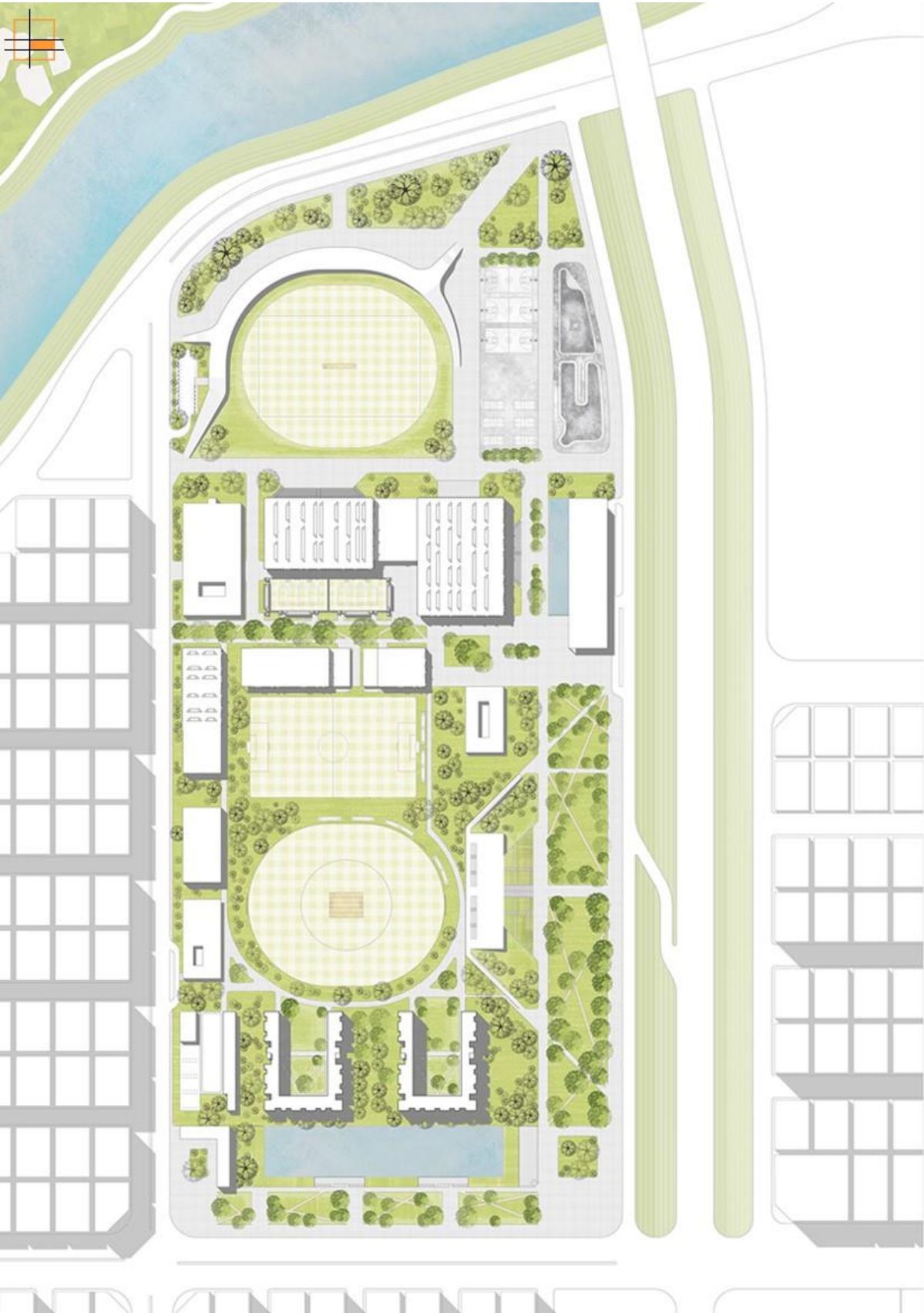
Figure 6.1.4. Viewing Platforms
Source: Author

6.2 Final Design

6.2.1 Master Plan



6.2.2 Roof Plan



6.2.3 Elevation & Section



West Elevation

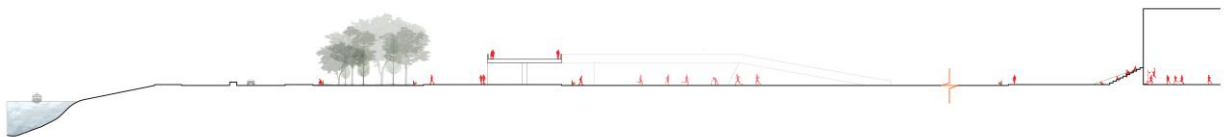


Section AA'

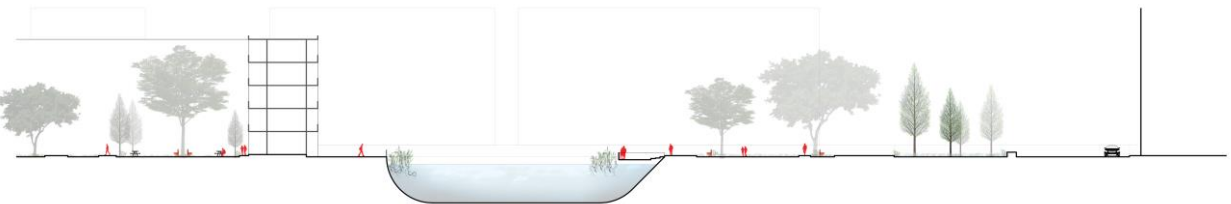
6.2.4 Sectional Perspective



6.2.5 Urban Sections & Functions



Section along River & Field



Section along Dormitory & Walkway



Section along Playground & Walkway



Section along Playground

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