



DESIGN PACKAGE

Using Alternate Building Materials & Technologies



BUILDING MATERIALS & TECHNOLOGY PROMOTION COUNCIL
Ministry of Housing & Urban Poverty Alleviation, Government of India

WEST ZONE

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West Zone



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With the demographic growth and massive urbanization, the housing and infrastructure demand pose a major challenge. Housing activity has received a phenomenal thrust in the last decade, with quantum jump in large scale housing projects. This is also linked with major increase in Housing Finance supply. However, the housing needs of Weaker Sections, Low Income Group and Middle Income Groups continue to face difficulties with the steep increase in construction costs due to rise in input costs for steel, cement, joinery and other building materials including labour costs.

Therefore, there is an imperative need to find ways by which housing can be made within the affordable reach of the various stakeholder groups. Affordable housing, within the socio-economic context, would need major technological interventions such as using appropriate and cost effective technologies so that the cost of construction can be brought down. At the same time, the alternate options should also lead to safe, durable, strong, functional, acceptable housing. There are many time tested and proven technological options, which may help in bringing the construction cost down from 15 to 20%. However, there is a major gap between the availability of the technology options and the accessibility of the same in the housing delivery process.

An equally important concern is the lack of awareness about these technology options at the level of Public and private construction agencies, practicing professionals, artisans dealing with house construction and from the general public. At the same time, there have been many initiatives to propagate and apply some of these technology options in the field through the work of BMTPC, Padmashree Laurie Baker & few likeminded professionals, NGOs, Building Centres and few educational institutions. In view of the fact that the general awareness has not been raised to the desired level to make an impact, these technologies have not got into mainstream practice.

The Government through National Urban Housing and Habitat Policy, 2007 aims to promote cost effective building materials and technologies with a view to bring down the cost of EWS/LIG houses. It is pertinent

to mention here that disaster resistant technology and achieving Green Rating for buildings are mandatory and therefore, adoption of alternate, environment friendly, energy efficient technologies has become need of the hour. In the context of the massive housing initiatives from the Government of India, State Governments under various programmes as well as shortage of housing in affordable sector, an urgent need is now felt around the country to rejuvenate the efforts for propagation and dissemination of cost effective options and introduce appropriate technical interventions so as to close the gap between availability of technology and application of the same increasingly in mass housing initiatives.

As a process to help mainstream the time proven technologies, BMTPC undertook initiative of development of Design Packages on alternate house building technologies for various regions of the country having different geo-climatic condition and topography. The design package includes a cluster of 60 houses having carpet area of 25 sqm. each with two habitable rooms, kitchen & toilet, a primary school, a community centre & shops/kiosks with on-site infrastructure development and are customized to the local needs and includes regional specific appropriate technologies. The most important aspect is that this effort is not for demonstration but for mass level application of the cost effective technologies which are based on local materials, time tested and being financially viable with respect to conventional technologies.

The Design Package envisages to facilitate wide spread dissemination and adoption of proven cost effective and sustainable building materials and construction technologies as an alternate to the conventional, in a manner and by a strategy that will promote knowledge, confidence and create enabling environment for the large scale adoption of such materials and technologies in different geo-climatic regions of the country, thus making housing cost effective, accessible and sustainable.

Specific emphasis has been laid in selecting the proven and cost effective technologies for developing the Design Packages which are

appropriate in the context of the selected zones of the country. In preparation of design package, apart from economy; regional context, disaster resistant features, gender context, disable friendly features, etc. has also been considered. The Design Packages also attempt to compare the cost of construction with conventional technology so as to clearly show the advantages of using cost effective technologies. Further, the Design Packages also provide detailed quantities of materials, actual Rate analysis of cost effective technologies, etc. so as to provide all the basic information to help in adopting the packages directly.

So far, BMTPC has developed Design Packages using Alternate Building Materials & Technologies for West/Central Zone, South Zone, North Zone (Plain), North-East Zone, East Zone and North Zone (Hilly). The Design Package for West Zone is being presented here.

The Design Package for West Zone has been developed in close association with Society for Environment Protection (SEP), Ahmedabad. I place on record my gratitude and deep appreciation for Mr. Dipan Shah and his team in SEP for doing such commendable work. I am also thankful to Shri A.R. Santhakumar, Former Dean (Civil Engineering), Anna University and Former Emeritus Professor, IIT, Madras, for structural proof checking of the Design Package. The efforts of my Council's officers Mr. J.K.Prasad, Chief (BM), Mr. S.K. Gupta, Dy.Chief(TDE&IC), Mr. Dalip Kumar, Sr.Field Officer (DC&E) and Ms. Veena Sachdev, Architect to bring the document to printable form are laudable.

I sincerely hope that the Design Package will be helpful to various stakeholders in the construction sector in designing a project using cost effective and alternate building materials & technologies and would go a long way in mainstreaming these alternate technologies into conventional construction practices.

19th Day of September, 2012
New Delhi

Dr. Shailesh Kr. Agrawal
Executive Director, BMTPC

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Executive Summary

Building Materials and Technology Promotion Council (BMTPC) intended to develop a design package which is customized to the local needs and includes regional specific appropriate technologies. The package which include a cluster of 60 houses of about 25 sq. m each, school, community hall and commercial spaces specifically designed so as to include cost effective technology in the same. The most important aspect of the project was that it is not been considered as a demonstration project but does include only those technologies which are local and are proven over time. Also, the technology should compete by being financially feasibility with respect to conventional technologies.

It was decided that once such regional packages are developed, they can be pre-approved by the Ministry and then could be marketed to respective state government. This will be a big leap in main streaming of cost effective technologies.

It was found during study that alternative technology may save 20-30% of construction cost due to material and workmanship. Apart from that there are multiple indirect benefit like less wastage of material, embodied energy benefits, insulation properties and aesthetics etc.

Design

- Design consideration is based on region specific weather, locally available material and all minute details to save cost.
- Physically disabled friendly design
- Low cost material and technology
- Green technologies such as rain water harvesting
- Maximum open spaces and optimum amenities
- According to DCR, NBC and other applicable standards
- Design of residential units for 60 families
- Design of school for approx. 160 students
- Design of community hall for approx. 150 persons
- Design for 4 shops
- Module based planning for ease in construction
- Layer wise detailed design for rat trap bond
- Additional play ground, stage, sitting arrangements, trees, parking for township

- Design is developed as grid-block pattern to reduce construction cost, compact design
- School is equipped with library, Office, separate toilet block, staff room
- School is placed in such a way that community open space can be utilized as school ground.
- Community center is equipped with doctor health cabins, large halls, 4 shops, storage space and separate toilets
- Shops are placed on road frontage and have separate entrance.

Technology

- Rat trap bond as walling material saves at least 20% cost than conventional English bond wall
- Filler slab as roofing material saves at least 25% cost than conventional concrete slabs
- Open space vs. built-up area ratio is higher than 15% to have higher insulation, light and air intake and it will further decrease electrical consumption
- Precast RCC joist frames than wooden frames, Steel shutters + plywood doors save at least 40% comparing to conventional flush doors
- Rain water harvesting to re-use of collected roof and ground water
- Additional 5000 liters water tank per block for fire safety
- PVC tanks instead of concrete over head tanks to reduce cost as well as load on the foundation
- Brick masonry load bearing structure instead of concrete
- Fly-ash bricks considered instead of red clay bricks giving higher strength.
- Exposed plumbing and electrical design consideration for less maintenance cost in future and ease in installation
- Flooring would be IPS floor to save cost, less maintenance and good finishes.
- Lime pozzolona plaster instead of double coat mala and sand faced plaster for interior and exterior respectively
- White wash with color pigments instead of distemper painting

- Wall mounted toilet fixtures to avoid sunk slab and filling to reduce cost.
- Additional 75mm partition to have storage spaces in residential units
- Platform provision in Kitchen

Costing

- Overall saving of approximately 14-34% in total construction cost comparing to conventional technologies, AHD SOR and quotation of market rates.
- Rain water harvesting, embodied energy benefits will be high for end users in monetary terms

Cost saving due to alternative technology	
Foundation	30%
Walling	25%
Roofing	25%
Door and window	30%
Flooring	25%
Finishing	50%

Percentage cost efficiency comparing to market rates is given as below.

Description	Alt. Tech.	Ahd Sor 2011-12	Conv. Tech.	Quotation 1	Quotation 2
Residential	1,17,45,703	1,38,42,124	1,50,99,840	1,80,90,455	1,79,95,055
Community	16,07,612	18,73,347	19,17,466	21,74,659	23,18,021
School	18,73,266	20,29,421	20,40,741	26,32,611	26,40,701
Total Cost	1,52,26,581	1,77,44,891	1,90,58,047	2,28,97,724	2,29,53,777
% Saving		14	20	34	34
Miscellaneous	9,93,911.66				
Total Project Cost	1,62,20,493	1,87,38,803	2,00,51,959	2,38,91,635.96	2,39,47,688.44



In last two to three decades, cost effective appropriate technologies have cross the borders of laboratory and research organizations and have reached real construction sites. Many experimental and demonstrative projects have been constructed across the country proving the strength and feasibility of these technologies. Realizing the fact, Ministry of Housing and Urban Poverty Alleviation when formulated National Urban Housing and Habitat policy 2007 for realizing the goal of affordable housing for all; greater emphasis was given on the use of cost effective technology.

A number of cost effective appropriate materials and technologies have been developed, standardized and are being used in the field with success over the years. Many of them have even proved themselves in the test of time. BIS has also included many of these technologies under their umbrella and are working towards covering the remaining so that minimum standardization is achieved and a standard specification for the same is evolved.

Housing, next to food and clothing is the most important need of a human being. Besides giving shelter from natural calamities and man-made hazards, the house reflects his socio-economic status in society. For most families, housing is perhaps a major goal of family saving effort. It must be durable, as it is an outcome of a long drawn process of saving and aspiration. It must at least respond to some extent, to the changing family needs and at times of a family emergency or need, be utilized as an economic asset in the market.

Housing is a bundle of goods and services. It is not the product of uni-sectoral efforts. Housing production includes a multitude of tasks like land acquisition, development, laying infrastructure, site planning and architectural design on pre-conceived concepts of affordable densities, to provide for shelter, social and physical infrastructure, project finance and finally construction and delivery of the same.

It is within this context that a need was felt to look at ways of optimizing shelter cost. The usual practice involved in this area till the recent past by architects has been:

1. Reduce area of the house to the minimum possible level

2. Reduce the finishing specification of flooring, external and internal walls, fittings etc.

The cost of shelter can be broken up as building element costs as shown in table below. These are indicative and based on single storied structure with a particular set of specifications.

Cost break up of a shelter	
Foundation	10%
Walling	30%
Roofing	25%
Door and window	15%
Flooring	10%
Finishing	10%

It is apparent that there are several other ways of optimizing shelter cost such as:

- By optimal architectural design in the form of cluster layout, cluster and unit plan, to achieve maximum sharing of walls and common areas;
- By optimal unit design with respect to optimized shape of rooms, minimizing circulation and maximizing shared walls;
- By using alternative, cost effective construction systems for building elements like foundation, wall, roof, opening, door, window, flooring and finishing;
- By adopting green technologies in terms of natural lighting, rain water harvesting etc.

Yet; there is lot to be done to actually transfer these time tested, proven technology into the real field. As a one more process so as to help main stream the time proven technologies, Building Materials and Technology Promotion Council (BMTPC) intended to develop a design package which is customized to the local needs and includes regional specific appropriate technologies. The package which include a cluster of 60 houses about 25 sq. m

each, school, community hall and commercial spaces specifically designed so as to include cost effective technology in the same. The most important aspect of the project was that it is not been considered as a demonstration project but does include only those technologies which are local and have are proven over time. Also, the technology should compete by being financially feasibility with respect to conventional technologies.

It was decided that once such regional packages are developed, they can be pre-approved by the Ministry and then could be marketed to respective state government. This will be a big leap in main streaming of cost effective technologies.

In the present document, the design details of Gujarat are presented.

While developing the present design package a specific care has been taken so as to choose only those Cost effective technologies which are appropriate in context and are proven over time. While developing the entire design package, apart from economy, regional context, disaster resistant features, gender context, disable friendly features, etc is also been considered. The document also attempts to compare the cost of construction with conventional technology so as to clearly reflect the advantages of using cost effective technologies.

Further as a part of to the document, detail quantities, quotations, actual Rate analysis of cost effective technologies, etc are also included so as to impart all the basic information to the prospective client so as to adopt the package directly.

It will be important to mention here that, though the document is developed with specific focus to Gujarat, the technology selected are generic to western region and hence it has potential to be adoptable for Maharashtra, Rajasthan and Madhya Pradesh. It's needless to say that any such adaptation will require revisiting the cost and also may require minor adaptation to design viz. a via. Climate and local context.



Region and base assumptions

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a. Brief description of the region

According to BMTPC “Alternate house building technologies” scheme, the design proposals are invited from following regions. And this document contains design proposal for western region.

Zone	Region
North Eastern Zone	Assam, Manipur, Meghalaya, Nagaland, Tripura, Arunachal Pradesh, Mizoram, Sikkim
North Zone (Hilly)	Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Western U.P
North Zone (Plain)	Punjab, Haryana, Union Territory of Chandigarh, National Capital Region Delhi
West Zone	Rajasthan, Gujarat, Maharashtra & Madhya Pradesh
East Zone	West Bengal, Bihar, Orissa & Eastern U.P
South Zone	A.P., Karnataka, Tamil Nadu, Kerala, Goa and U.T. of Daman & Diu, Dadra & Nagar Haveli, Andaman & Nicobar Island, Lakshadweep, Pondicherry

West zone comprises three neighboring states,

Rajasthan: Population over 58 million, generally dry and hot weather

Gujarat : Population over 54 million, generally dry and hot weather

Maharashtra : Population over 110 million, generally wet and hot weather

Madhya Pradesh: Population over 70 million, generally dry and composite weather

The design parameters in terms of geo climatic data, hazard proneness are discussed in following sections.

Map showing western region of India – as indicated



Gujarat is situated on the west coast of India between 20°6' N to 24°42' N latitude and 68°10'E to 74°28'E longitude. Gujarat stands bordered by Pakistan and Rajasthan in the north east, Madhya Pradesh in the east, and Maharashtra and the Union territories of Diu, Daman, Dadra and Nagar Haveli in the south. The Arabian Sea borders the state both to the west and the south west. Gujarat is largely flat with highlands towards its eastern part. It can be divided into four broad regions: Kutch and Saurashtra peninsulas, Northern Gujarat Plains and Southern Gujarat coast.

Gujarat has a diverse ecosystem ranging from deserts, scrublands, grasslands, deciduous forests, and wetlands to mangroves, coral reefs, estuaries, and gulfs. Average rainfall is about 93.2 cm. The climate of the state is tropical, however, the same is considerably moderated due to the long coast line. Summers have min 25 degrees to 45 degrees temperature and winter are ranging approximate from 15 to 35 degrees.

The rainfall received in the state varies from region to region, and on the basis of rainfall received, the state has been divided into 8 Agro-climatic zones, as shown below :

Agro Climatic Zones of Gujarat

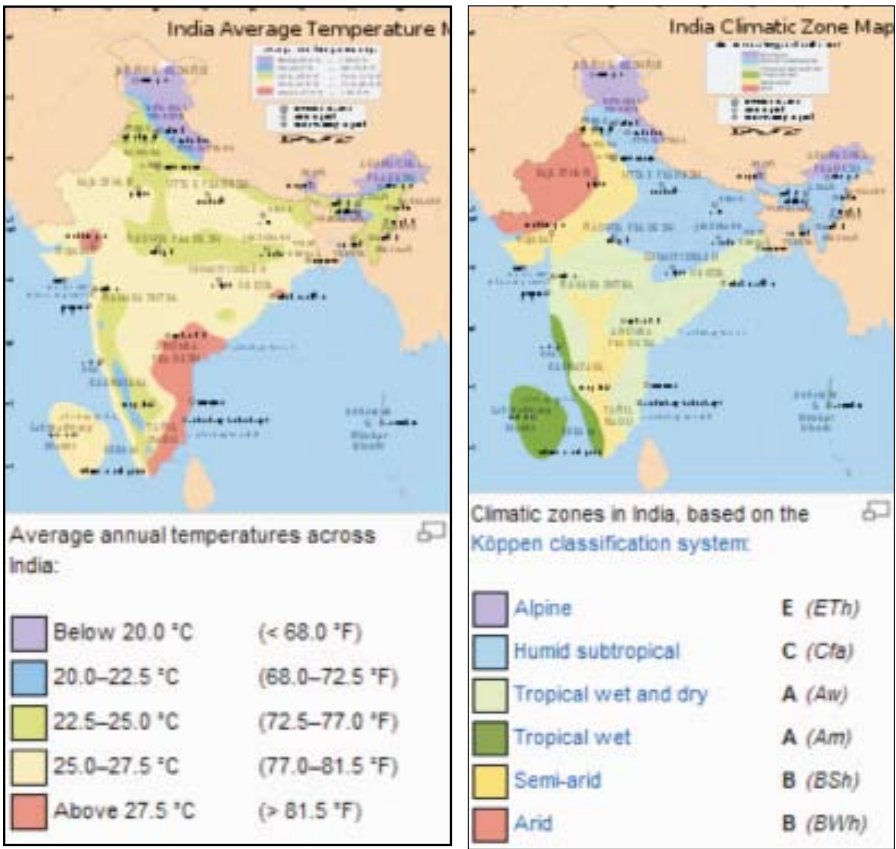
Zone	Name of Zone	Area in "00" ha.	% to total area
A.	Heavy rainfall zone of South	6,300.70	3.43
	(Avg annual rainfall 1500mm)	2,748.90	1.5
	A-I : Sub-Zone hilly areas		
	A-II : Sub-Zone plain areas		
	SUB TOTAL :	6,049.60	4.93
B.	Moderate to heavy rainfall zone of South Gujarat	10,290.80	5.61
	(Average annual rainfall 1000-1500 mm)		
C.	Moderate zone of Central Gujarat (Avg annual rainfall 800-1000 mm)	22,312.10	12.15
D.	Dry zone of North Gujarat	22,986.90	12.53
	(Average annual rainfall 625-875 mm)		
E.	Arid Zone of North-west Gujarat	57,462.80	31.32
	(Average annual rainfall 250-500mm)		
F.	Arid cum dry zone of North Saurashtra	34,966.90	19.06
	(Average annual rainfall 400-700 mm)		
G.	South Saurashtra zone	16,747.40	9.14
	(Average annual rainfall 750-1000 mm)		
H.	Bhal and coastal areas zone	9,679.00	5.27
	(Average annual rainfall 625-1000 mm)		

Source: <http://gujenvfor.gswan.gov.in/forests/state-profile.htm>

The state currently has 26 districts (231 talukas, 18,618 villages, 242 towns).

The population of the Gujarat State was 50,671,017 as per the 2001 census data. Its official and primary language is Gujarati. About 37.36 per cent population of Gujarat resides in urban areas.

b. Geo-climatic conditions



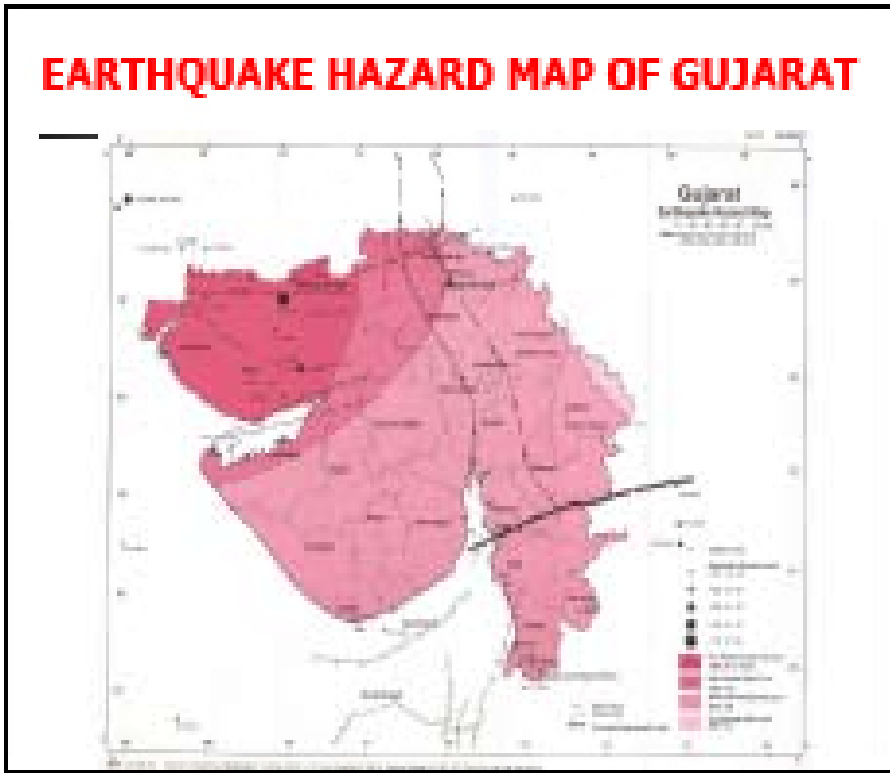
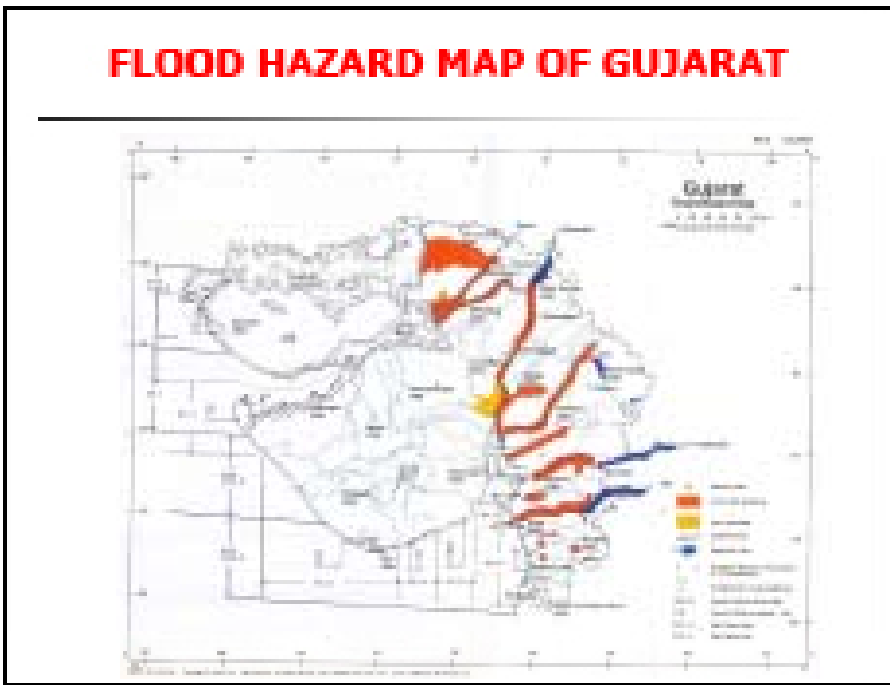
Average temperature in western zone is 20°C minimum. Central part of Gujarat is most hottest part in the region, where average temperature is above 27.5°C. Central and eastern Madhya Pradesh has semi arid (Köppen climate classification system) weather, which has semi humid and temperature is 22.5°C to 25°C. Rajasthan and rest Gujarat have arid weather, which is generally hotter and dry climate.

Summers are generally hotter in the region, while winter is moderately cool. Monsoon is generally average, ranging with 700 mm to 1000 mm.

c. Hazard Proneness of the region

Gujarat is prone to Earthquake, cyclones, floods and droughts. It can be clearly seen from the maps presented below:

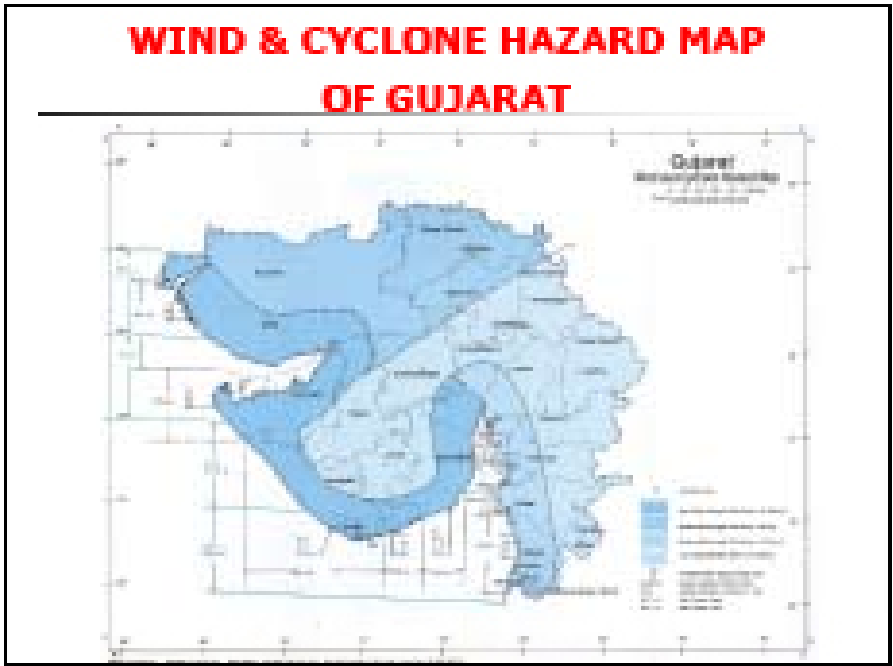
- About 30 cyclones originating the Bay of Bengal and the Arabian Sea have struck the Gujarat coast and have caused major



Source:
http://www.nidm.gov.in/amcd_presentations/groupa_theme1/arya.pdf

damage to the settlements and infrastructure over the last 120 years. (GSDMA/TARU, 2005)

- Two cyclonic storm seasons are experienced in Gujarat; May to June (advancing southwestern monsoon) and September to November (retreating monsoon).



Source:
http://www.nidm.gov.in/amcd_presentations/groupa_theme1/arya.pdf

- The maximum wind speed class of >55m/sec has been observed along the Saurashtra coast, specifically in Porbandar, Jamnagar and Junagadh districts, which are exposed to the highest intensity of cyclonic and storm impact. The cyclone map of the state is shown below:

d. Conventional material and technology used in the region

Systems which rely on a small range of mass produced items with specific pre-determined properties. Construction is based on modern civil engineering practice. The product is not always contextual, but requires comparatively lesser maintenance and has long life durability.

Foundations	- Cement replaces lime for mortar and lean concrete in vernacular system and 1:4:8 mix use for the lean concrete base for load bearing structures - Concrete 1:2:4 (M15) for column footings and base with appropriate plinth beam for frame structures. - Under reamed piles for black cotton soil
Walls	230 mm thick brick work in 1:6 cement mortar for load bearing walls using the English or Flemish bond. 115 mm thick brick work in 1:4 cement mortar for non-load bearing walls 75 mm thick brick work for partition walls

	225 mm thick for non- load bearing cavity walls with the net cavity of 75 mm in between frames structures 350 mm thick random rubble masonry wall in 1:6 cement mortar
Roofs	Corrugated galvanized iron sheets on steel or timbre frame work
Roof/ intermediate slab	- Reinforced concrete slabs - Reinforced cement concrete slabs and beams for frame structures
Spanning elements for openings	- RCC lintels - RCC lintels cum chajja
Door cum window frames	- Frames of teak wood, deodar, sal and cham woods - Mild steel sections - Pressed steel section - Extruded aluminum sections
Door panels	- Flush door panels with commercial or decorative veneer - Aluminum sections as styles with plywood or glass inserts - Teak wood, deodar, sal and nail styles with ply wood or glass inserts.

e. Alternate material and technology used in the region

A middle of the road approach which acknowledges local skills and materials on one end of the scale, rationalizes its use to suit specific needs and adopts a rational engineering practice which is within the realm of sound design. It leads to cost-effective solutions which may also climatically more suitable.

Materials

Improvement of Mud

During post earthquake reconstruction, mud houses are most effective since they are environmental friendly, cool in summer and warm in winter. Mud is only a material available everywhere in abundance free of cost and is being used as building material from centuries. But such types of houses are temporary in nature, prone to erosion by heavy rains. The disadvantages of mud can be overcome by suitable improvement in design and construction techniques.

Stabilization

The strength of mud is improved by adding cement, lime, bitumen or fibers and it also becomes resistant to water, its main enemy.

Cement stabilized mud blocks, using 3 to 10% cement by weight molded in mechanical machines are better than adobe mud bricks.

Non-erodible mud plaster

Central Building Research Institute, India has developed an economical but effective process to protect mud walls by applying non-erodible mud plaster. Non-erodible mud is prepared by mixing bitumen cutback (Bitumen & Kerosene oil mixture) with a specified mud plaster. Soil should consist of clay 20-25%, sand 40-45% and remaining part may be silt, peat, loam etc, but it should be free from organic matter.

Bitumen of 80/100 grade penetration and kerosene oil are mixed in the proportion of 5:1 (by weight) for preparing cutback. 64 kg of cutback is required for one cubic meter of soil. Non-erodible mud plastered walls are resistant to water erosion.

Terra-cotta skin to mud walls

Center for Science for Villages, Wardha, India has developed technique of providing potter made tile lining to mud-walls protecting them from rain and moisture. In place of potter made tiles, Kiln-fired brick or tiles may also be used to protect mud walls from rains. These tiles/bricks can be fixed with mud mortar & pointed with cement mortar.

Improved Thatch Roof

An effective treatment for rendering the thatch roof fire resistant and water repellent has been evolved by Central Building Research Institute. It involves plastering of thatch layers by the specified mud plasters. Top & bottom of the thatch roof is plastered with non-erodible mud plaster, which makes it durable & fire resistant too.

Flyash-sand Lime Bricks

These are produced from flyash and sand and lime used as binder. These bricks are cheap, and have good crushing strength.

Clay Flyash Burnt Bricks

These are produced from flyash and clay and are stronger than conventional clay bricks. These consume less energy, provide better thermal insulation and solve the problem of disposal of waste material flyash & thus are environmental friendly.

Flyash Based Light Weight Aerated Concrete Walling and Roofing Blocks

A process of mixing flyash, quick lime/cement and gypsum, foaming agents such as aluminum powder, produces these. These are cheap and lightweight blocks mostly used for non-load bearing partition walls.

Cement Bonded Fiber Roofing Sheets

Cement bonded fiber roofing sheets are made by profitably utilizing coir waste coconut pith, wood wool etc., in combination with cement as binder for production of corrugated or plain roofing sheets. These sheets require less cement and so they are cheaper than other roofing sheets available in the market.

Clay Red Mud Burnt Bricks

These are produced from alumina red mud or bauxite, an industrial waste of aluminum producing plants in combination with clay.

Gypsum Based Ceiling Tiles, Panel Blocks and Door/Window Shutters

There are manufactured from calcined gypsum obtained by processing phosphor-gypsum an industrial waste of fertilizer plants. The panels are strong, lightweight, resistant to fire and works as a thermal insulators and cost of the product is cheaper.

Precast Stone Blocks

These are of larger size than brick and are manufactured by using waste stone pieces of various sizes with lean concrete of 1:3:6 mix.

Precast Hollow Concrete Blocks

These are manufactured by using lean concrete mixes through block making machines. The cavity in blocks provide better thermal protection and these also do not need external or internal plastering.

Precast RCC Door and Window Frames

These are cheaper, stronger fire resistant, termite resistant and sustain temperature & humidity.

Precast Plank and Joist Flooring/Roofing

These are precast RC planks, supported over precast RCC joists. Cost saving is up to 20% and time saving in construction is up to 12%.

Hollow-Pan System

The hollow-pan system can be used only in six standard pre fabricated components and they are

- Wall
- Roofing/floors
- Door/window
- Collar units
- Parapet units
- Partially precast beams

Overall cost of hollow pan system is less and speed of construction is more. A flat can be constructed in 1.5 days time. They are useful for post earthquake reconstruction phase. One crane is required to lay the prefabricated panels at respective positions.

Rice Husk as Building Material

India alone produces about 20 million tones of rice husk annually. Rice husk ash has been found to be a useful building material. It can be mixed with cement up to 20% without affecting strength and thus cost of construction can be reduced and problem of disposal of this ash can also be solved by using it.

Ferro cement

Ferro-cement is a thin walled versatile high strength cement based composite material made of cement mortar reinforced with one or more layers of wire mesh closely bound together to create a stiff structure unit with high performance. The desired compressive strength of ferro-cement is generally 25 N/mm^2 at 28 days & mix ratio recommended is 1:2 to 1:2.5 ;(cement: coarse sand) and water/cement ratio should be 0.4 by weight. It can be used in the construction of pre cast toilet units, water tanks cycle sheds.

Technology

Building Component	Alternative Systems
Foundations	• Random rubble masonry in mud mortar placed in excavation over thick sand bed. Rubble pointing above ground level in stabilized cement mortar. • Use of lean cement concrete mix 1:8:16 for base with brick masonry in 1:6 cement mortar footings.

Building Component	Alternative Systems
	• Use of lean cement concrete mix as above for base and over burned bricks masonry in cement lime mortar (1:2:12) footings. • Arch foundations in place of spread foundations
Walls	• 220 mm thick modular brick work in 1:6 cement mortar • 230 mm thick brick work in 1:6 cement mortar using bricks from black cotton and inferior soil stabilized with fly-ash. • 230 mm thick rat-trap bond brick work in 1:2:12 cement lime mortar. • 190 mm thick CBRI bond brickwork in 1:6 cement mortar • 150 mm thick waffle wall in brickwork in 1:4 cement mortar. • 200 mm thick reconstituted stone block masonry in 1:6 cement mortar. • 200 mm thick hollow concrete block masonry in cement mortar. • 200 mm thick solid concrete masonry in 1:6 cement mortar. Block having decorative veneer of stone chips, marble chips or stone pieces used for external wall • 230 mm thick compressed mud blocks masonry in mud mortar. • 230 mm thick stabilized mud blocks masonry (4% cement or lime) in stabilized mud mortar. • Sand lime brick walls in 1:6 cement mortar. • 200 mm FAL-G sand block with 1:6 cement mortar.
Roofs	• Nubian domes and vaults in brick or stabilized mud block with appropriate mortar. • Upgraded thatch roof on appropriate frame work. • Pre-cast RCC "L" panel • Frame work of timber and steel, replaced by steel tubes or secondary timber.

Building Component	Alternative Systems
	• Covering material like corrugated coir cement sheet, corrugated asphaltic sheets, improved burnt country tiles or micro concrete tiles on appropriate frame work. • Burnt clay tube roofing in vault form.
Roof/ intermediate slab	• Precast RCC cored units in M15 concrete. • Precast RCC channel units in M15 concrete • Precast Waffle units in M15 concrete • Partly precast RCC planks and joist in M15 concrete. • Partly precast RCC joist and brick panels • Partly precast RCC in hollow concrete blocks • Thin RCC ribbed slabs • Clay joist and block • Ferro cement channels • Brick or Mangalore tiles filler slab • Brick funicular shell on edge beam • Bamboo reinforced concrete • Brick funicular shells with RCC edge beams • Sand stone slabs on RCC joists • Brick jack arched over RCC joist
Spanning elements for openings	• Brick arches : Flat, semi circular and segmented • Precast thin lintel and lintel cum chajja • Brick arch with sand stone chajja • Ferro cement chajjas
Door cum window frames	• Precast RCC frames with wood insert • Resin bonded saw dust frame • Poly vinyl chloride frame • Fiber reinforced plastic frame • Pivoted arrangement for doors and windows • Wood pieces embedded in walls as frames
Door panels	• Plantation timber styles with particle board inserts.

Building Component	Alternative Systems
	- Medium density fiber board doors. - Cement bonded particle board - Plantation timber style with rice husk board inserts - Red mud polymer panel doors. - Ferro cement doors - Poly vinyl chloride doors panels.

f. Space planning and product mix assumptions

- ✓ Building Type: Housing-60 dwelling units
School -1 no.
Community Centre- 1 no.
Shops/kiosks - 4 no.
- Structure: Single Storey or G+3/multi-storied
- Space: Two habitable rooms, kitchen and bathroom
- Area: 25 sq.mt. Minimum carpet area
- Cluster Design / Master Planning: Roads / Water supply / Drainage / Rain water harvesting / Renewable energy resources/ common green areas
- Green Building / Sustainable Features to be implemented complying to the Green Building norms
- Cost effective by minimum 15% than conventional cost
- ✓ Design Basis & Assumptions based on experience and Codal requirements:
1. Location of the site: Ruban (areas between the rural and urban development). We are assuming towns in the vicinity of the big cities which are been taken as one of the focus of developed by the government.
 2. The site location will be selected in the TP scheme so as to get benefits of the existing municipality drainage lines and water supply. Assuming the connection for water supply and discharge of waster will be supported by municipal lines.
 3. G+2 load bearing structures, optimizing the horizontal vs. vertical development as single storey development would require more land and hence high cost.
 4. Alternative building materials and technologies to be incorporated which are proven viable and feasible.

Various alternative technologies for building envelope to be incorporate i.e. Filler slab and rat-trap bond masonry as structural elements and FC can be used for non structural elements.

5. Sustainable design features to be incorporated along with Universal design / design for differently abled / children friendly design / Gender friendly spaces / Disaster resistant features will be incorporated.
6. 60 nos. of Dwelling Units: Assuming 4.5 members per family hence total population 270.
7. Assuming two children per family hence school serving for 120 students minimum is required.
8. School and Community Centre will be operated only during the day time.
9. Use of natural light & ventilation is the priority.
10. Rain water harvesting to be done at cluster level as appropriate.
11. Design basis and assumption will be based NBC 2005. A detail note on the NBC 2005 requirements is given in the following section.

✓ Area Break-up:

Sr. No.	DEVELOPABLE AREA				
1	Dwellings	60 units	26.67 sq.mt./ unit	Total Ground cover- age Area = 791.06 sq.mt.	Carpet area derived as actual
2	Education- al Unit	4 Class- rooms	@ 1.1 sq.m per student for 30 students x 4	342.45 sq.mt. BUA Total Plot Area = 510.37 sq.mt.	As per SSA rules – School de- velopment Planning
4	Commu- nity Centre & Kiosks	1 unit	300 sq.mt./ unit	318.39 sq.mt BUA	
Sr. No.	Amenities / Infrastructure				
5	Roads			480 sq.mt.	11 % of total Plot Area
6	Common Area			809.78 sq.mt.	19 % of total Plot Area

g. Engineering design assumptions

Technologies adopted:

a. Foundation:

Normally in Gujarat, the SBC ranges from 15-18 which suggests that the soil typology is good for any type of foundations to be adopted i.e. Load-bearing, Frame or Composite structure.

b. Walling:

i. Rat trap bond:

Rat trap bond is an alternate brick bonding system for English and Flemish bond. This is economical, strong and aesthetic. It can help save 25% of the total number of bricks and 40% of mortar. It is simple to build and has better insulation properties.

In addition, these are structurally stable and if laterally reinforced by header courses at plinth, sill, lintel and below the roof slabs can mitigate disasters well. Also, these may be reinforced with vertical steel bars at corners to stiffen the system and connect the foundations, walls and roofs together as a monolithic unit. The walls have 25% less dead-weight and hence the foundations, depending on the bearing capacity of the soil, can conveniently be redesigned to save bricks, steel once again. Besides, the rat-trap walling system provides an added advantage of insulation. The interiors remain cooler in summer and warmer in winters, which is also so very necessary for the Gujarat's climate. These also have an aesthetically pleasing look and plastering could be avoided.

c. Roofing:

Light weight, inexpensive materials such as low grade angalore tiles, bricks, coconut shells, glass bottles etc. is used as filler materials in filler slabs to replace the redundant concrete intension zone.

These materials are laid in the grids of steel reinforcement rods (8mm dia), and concreting is done over them. The concrete mix used is M20. The grid size depends upon the design, span, and the material used. For Mangalore tiles (size 23cm by 40cm), the grid size is 33cm by 50cm. The slab thickness is 10 centimeters.

This technique saves a lot of energy extensive concrete. Roofs and intermediate floors account for 20-25% of the

total cost of the house. This roofing costs 30-35% less than conventionally used concrete roofing. Thus a considerable amount is saved in terms of materials, energy and cost. This technique also reduces the unwanted dead load of roofing. Compared to other roofing systems, it is thermally comfortable and has no health hazards. Galvanized iron and asbestos cement sheet roofs dissipate too much heat and are difficult to live under.

Rejected Mangalore roof tiles (Vth quality) are used

as fillers as they are cheaply available. Most of the time in Rural context when people upgrade from sloping roof to flat RCC roof, the mangalore tiles from sloping roof can be reused easily and will have zero cost implication.

The use of less of concrete (20%) and less of steel (30%) is owing to the fact that the dead load of the slab is considerably reduced. This also results in less of load getting transferred to the load-bearing walls and the

foundations. Apart from this, the air gap in between the tiles makes it a good heat insulator and the ceiling looks attractive as well. The slab is designed as a ribbed slab as per IS 456:2000 [clause 30.5] according to which (1) Rib width should not be less than 65 mm (here rib width is 100mm) (2) Depth of rib should not be greater than four times the rib width (here depth is 100 mm)



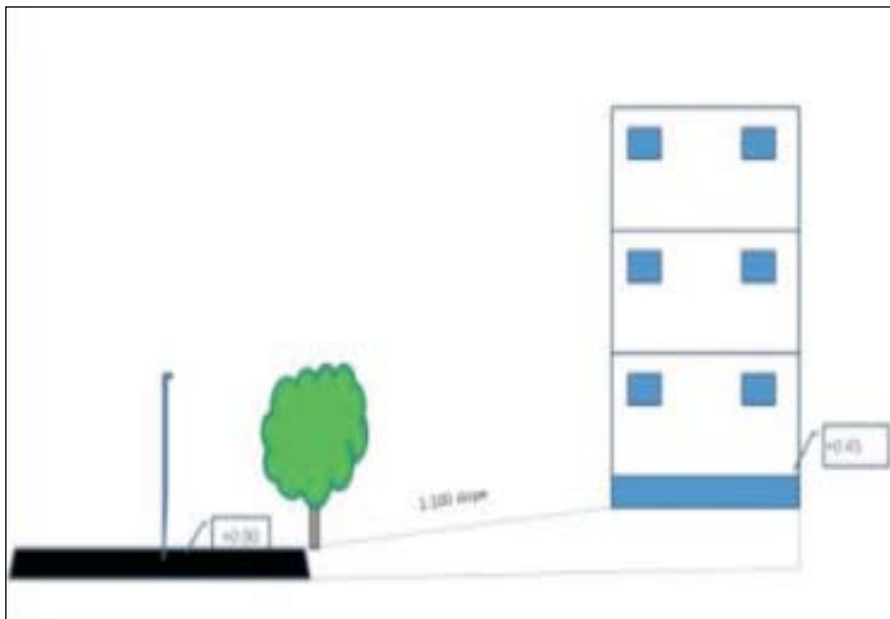
a. Site level physical assumptions and justifications

Shape

Shape of the plot is assumed as rectangular to have smaller axis on east-west side, which would help to reduce heat gain. Also, to have proper utilization of space which would not be there in irregular shape plot layout.

Levels

Road level is considered as +0.00 level as shown in figure below. Building plinth level is +0.45 and ground between both is considered to be 1:100 slope to allow excess rain water flow towards road.

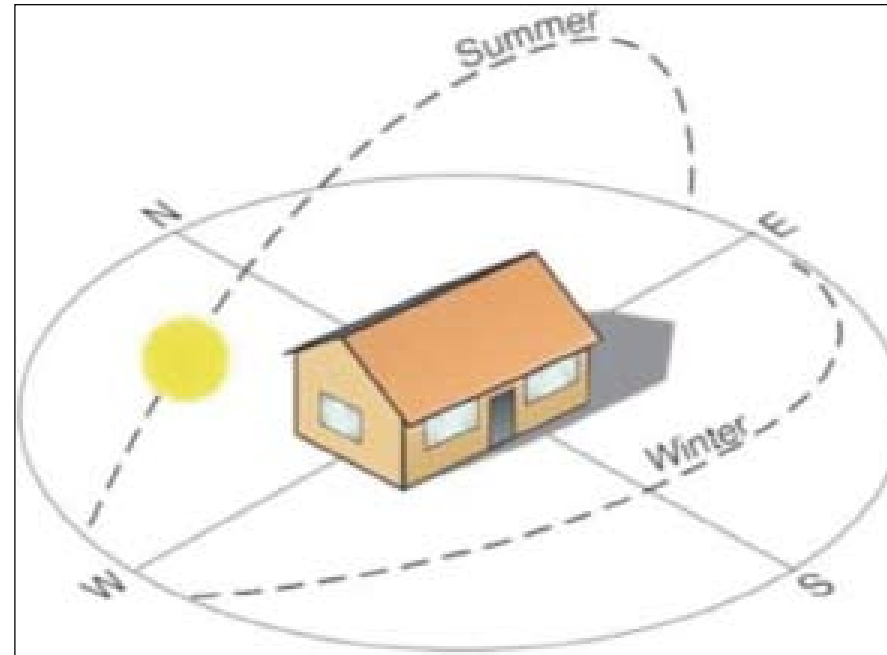


Orientation

Orientation of buildings is kept north south as possible due to the fact that the sun is lower in the sky in Winter than in Summer allows to capture free heat in Winter and reject the heat in Summer as shown in following diagram.

Roads

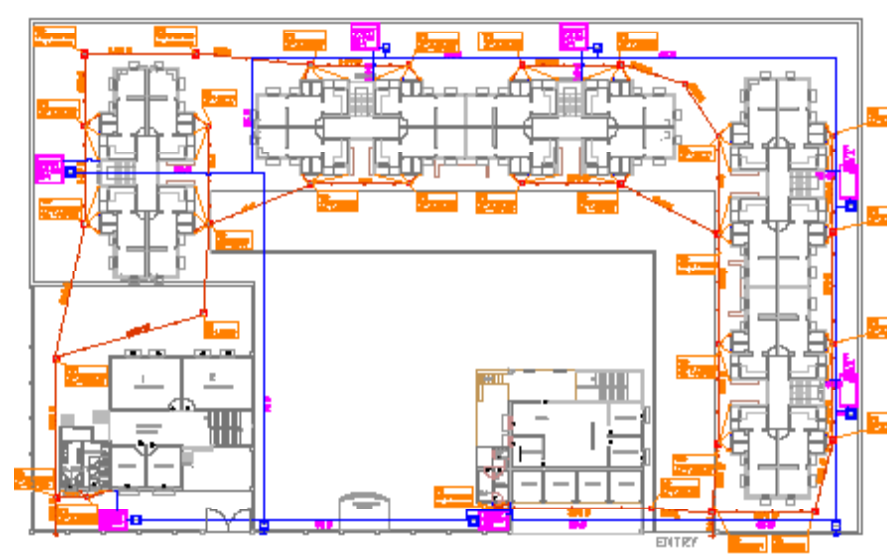
Internal road is kept as 6.00 mts. width for vehicular and pedestrian circulation. The width is kept considering fire vehicle movement provision.



Water and drainage

Water and drainage inputs and outputs are as shown below.

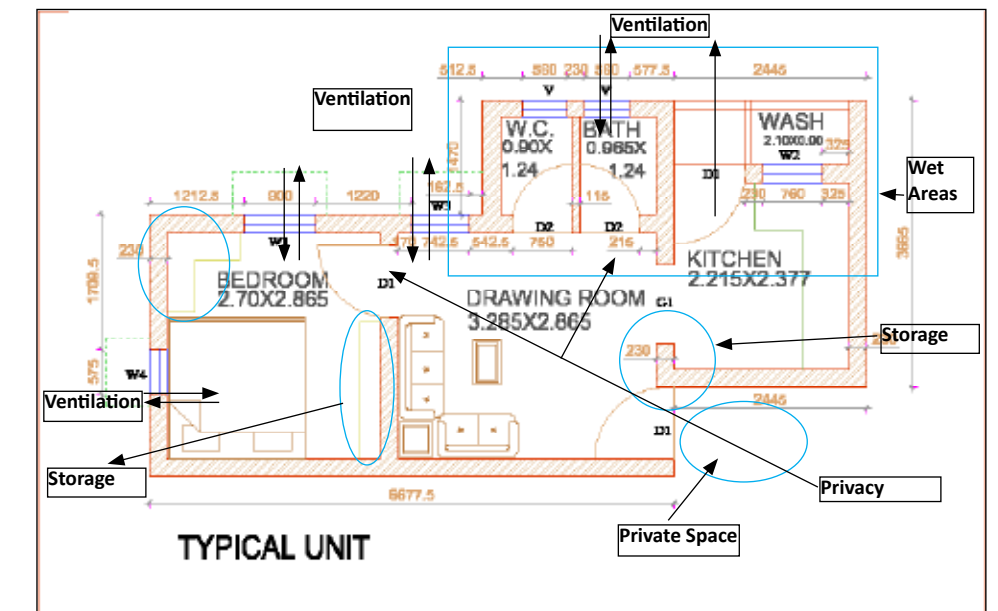
Water – the design is considered as a loop covering entire site. Two municipal connections would require which would supply water to all 7 water tanks of the township. Both connections would be taken from road side.



Drainage – it is also considered in loop system. Two outputs are given on road side which would further connect to municipal sewer.

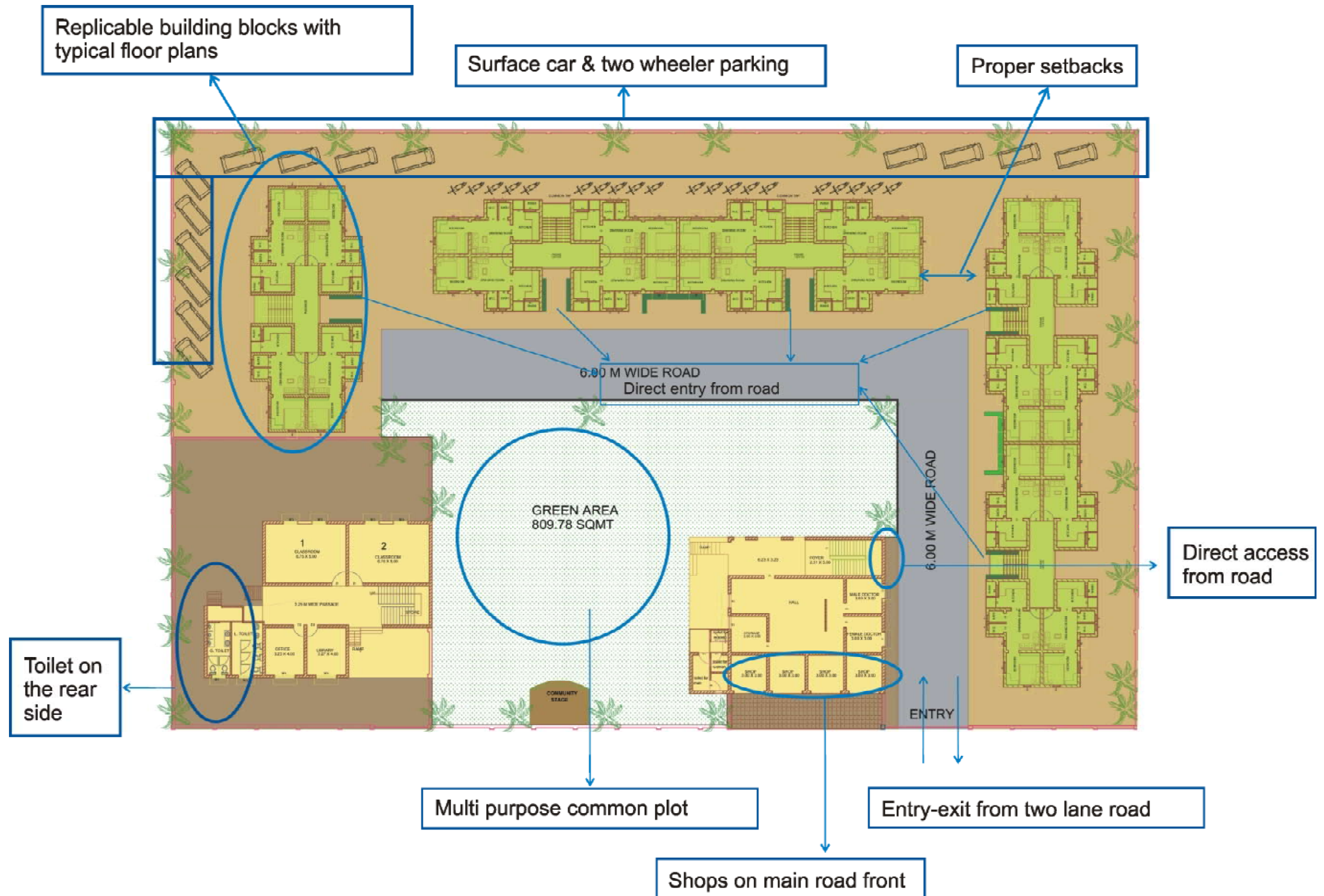
b. Architectural design and justification

Unit explanation



The unit has around 25 sq.mt of carpet area with two habitable rooms, separate kitchen, bath and wash. Kitchen platform is provided and a storage space.

Site plan explanation



c. Cost saving measures in design

- Unit cluster

Four unit cluster has been designed to save cost by providing common walls and common interaction spaces. This cluster is replicated to form other blocks of the township. Block B and C are eight unit clusters. It will further save cost in construction.

- Typical design

All floor level plans are typical and replicable due to common cluster design. It is to save cost of building units, formwork and typical spans of slabs.

A stair case is provided for 12 units cluster, common terrace to all units in block are some of the cost saving measures in the design.

- Built up area and carpet area conversion

Calculation for Carpet area (sq. mt)

Drawing room – 9.07

Kitchen – 5.14

Bed room – 7.48

Wash – 1.89

Bath – 2.40

Total carpet area is **25.98** sq.mt

Built up area is **33.93** sq.mt

Super built up area is **38.56** sq.mt

Total carpet against super built up loading is **33%**.

- Local materials and technology

The entire design package is developed on basis of cost effective technologies as much as possible. The building height is optimized and restricted to G+ 2 structures to avoid cost implication of more floors. Cavity in walls as rat trap bond would decrease the cost by 30% in masonry related works. All slabs would be having filler materials in terms of hollow concrete blocks or Mangalore tiles to decrease the cost. Foundations are lighter and with optimized depth.

d. Energy saving measure in design

- Walling/Roofing System:

The walls having cavity throughout the section will serve the purpose of insulating the building during the early and later hours of the day. Roof having mixed type material use will act as a thermal barrier and will resist heat penetration in the building. Horizontal chajjas to shade the openings will obstruct direct sunlight. In all, these parameters will majorly cut the heat

gains through the building envelope. Providing proper shading to the building walls through appropriate trees and landscaping elements will result in no requirement of cooling, hence the major component of energy consumption is eliminated.

- Door/window opening

The openings are of appropriate size placed in the north direction wherever possible resulting in appropriate lighting required for living with minimum heat gains. Also minimum opening on the south side are planned. It was considered that maximum Openings should be placed on the east and west side to get light and cross ventilation. The opening sizes are restricted upto 40% of the total gross opaque area to have optimized intake of light vs. the heat gains through opening. Hence sufficient natural light is harvested reducing the demand on artificial lighting.

- Rain water harvesting

Rain water harvesting and percolation from the whole site area is proposed in order to keep recharging the water aquifer. This will keep the water table level constant and the depth of the withdrawal of water is maintained hence the expense of withdrawing the water from a greater depth is avoided.

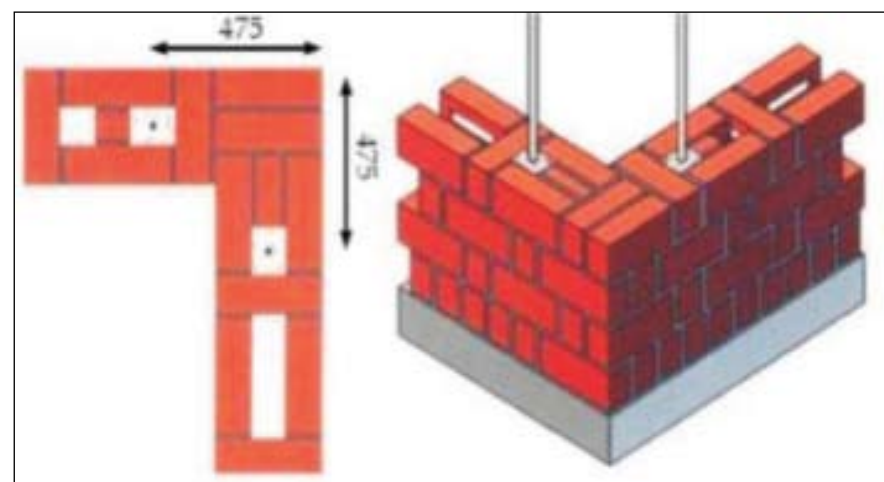
e. Hazard resistance measures in design

- Fire – extra water tank per block

Extra water tank of 5000 liters is provided to each block as per NBC code. It is to meet additional water demand whenever fire accidents occur.

The buildings are designed for zone III region for Earthquake. Additional provisions of corner reinforcement is introduced as per the requirement including continuous lintels. Corner reinforcement in Rat Trap Bond masonry

In brick masonry, two reinforcements are provided instead on one (as shown in figure) for corner reinforcement. This will strengthen the wall against dynamic load of earthquake.



Continuous Lintel band

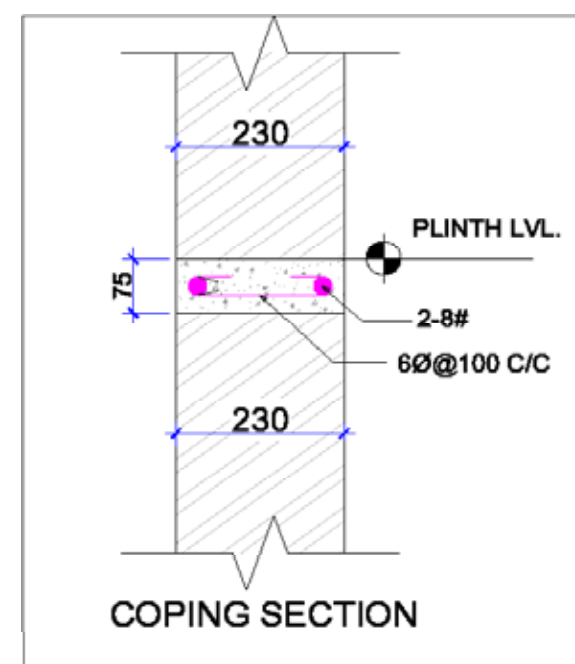
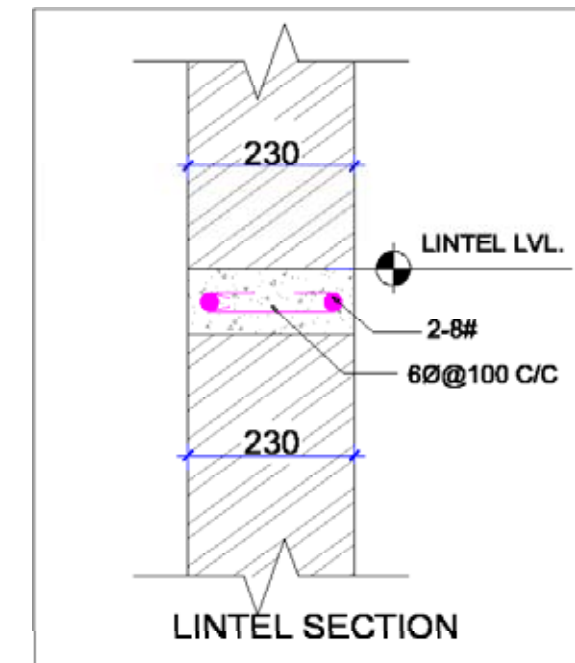
Lintel band is kept continuous for all floor, to have additional structural safety.

Coping

Coping is provided to have structural safety against earthquake and also to avoid termite and moisture from soil. It is kept 0.45 mts up from ground level.

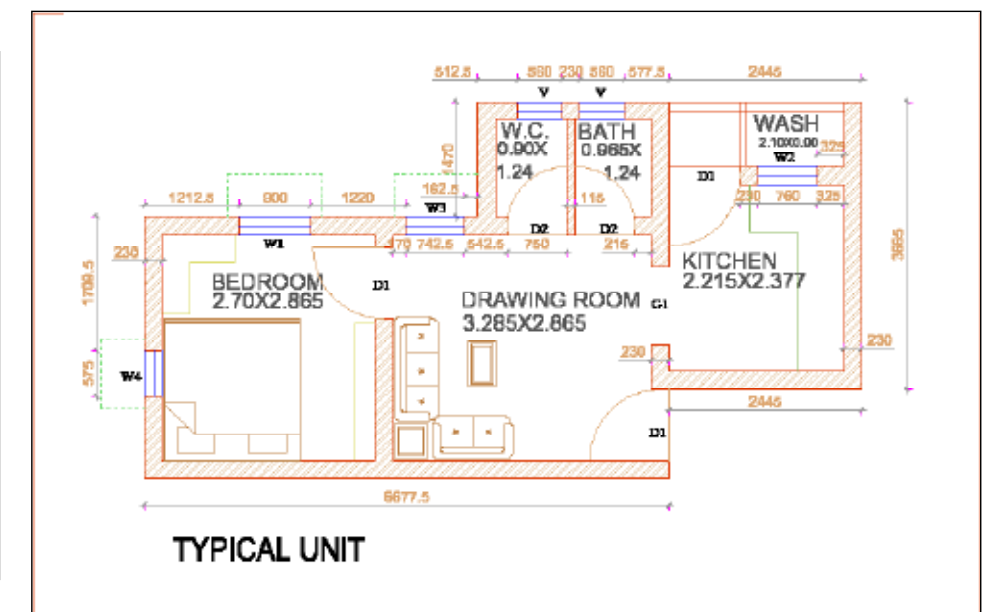
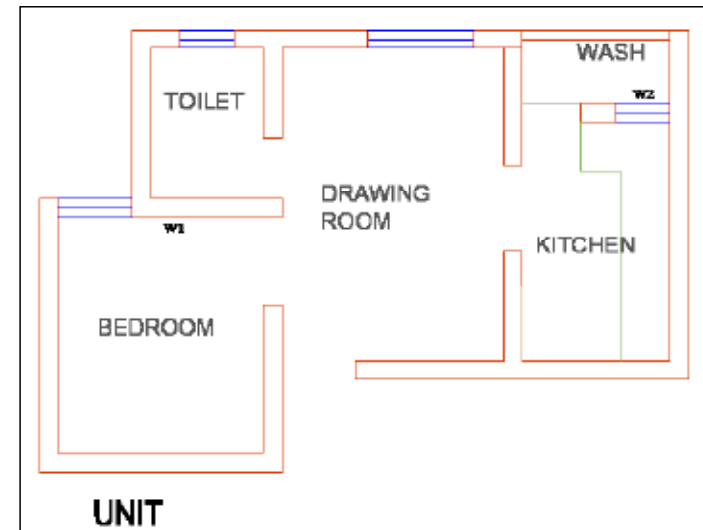
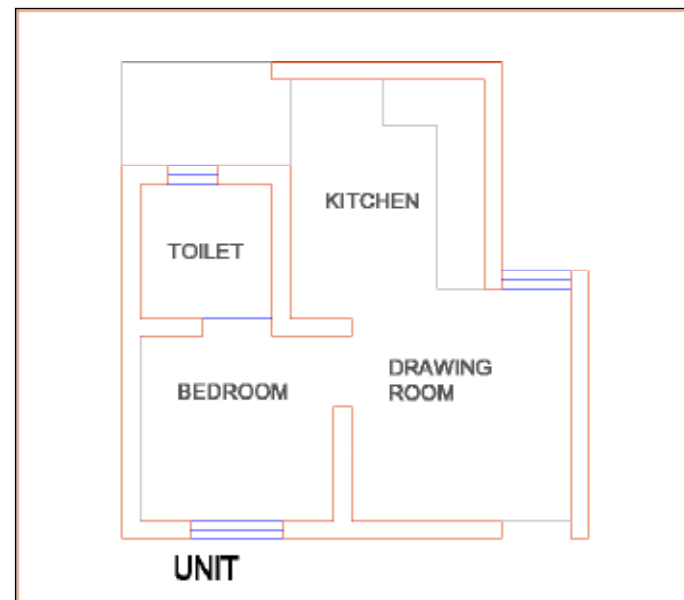
Typical design beam

The overall design is kept simple with repetitive plans and typical floor layouts. Only 3 beams are kept to support slabs.

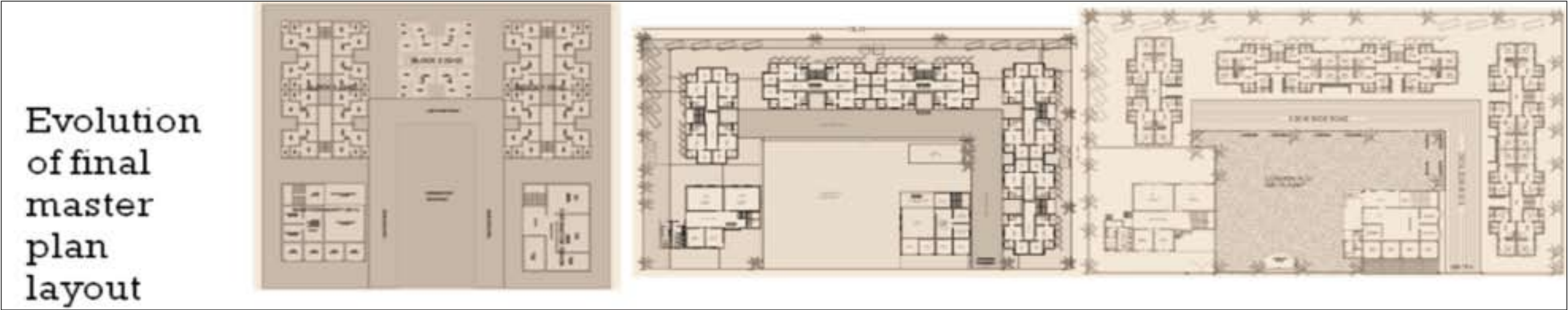


f. Design Evolution

Evolution of final unit layout



Parameters	Option -1	Option-2	Option-3
Area (sq.mt)	26.70	25.87	26.67
Orientation	Good	Good	Good
Cross ventilation	Less	Less	High
Compatibility in cluster formation	Less	Less	High
Compliant to NBC code	Yes	Yes	Yes
Storage spaces	Less	Less	Optimum
Ease in services	Less	High	High
Separate bath	No	No	Yes
Dimensions according to RTB	No	No	Yes

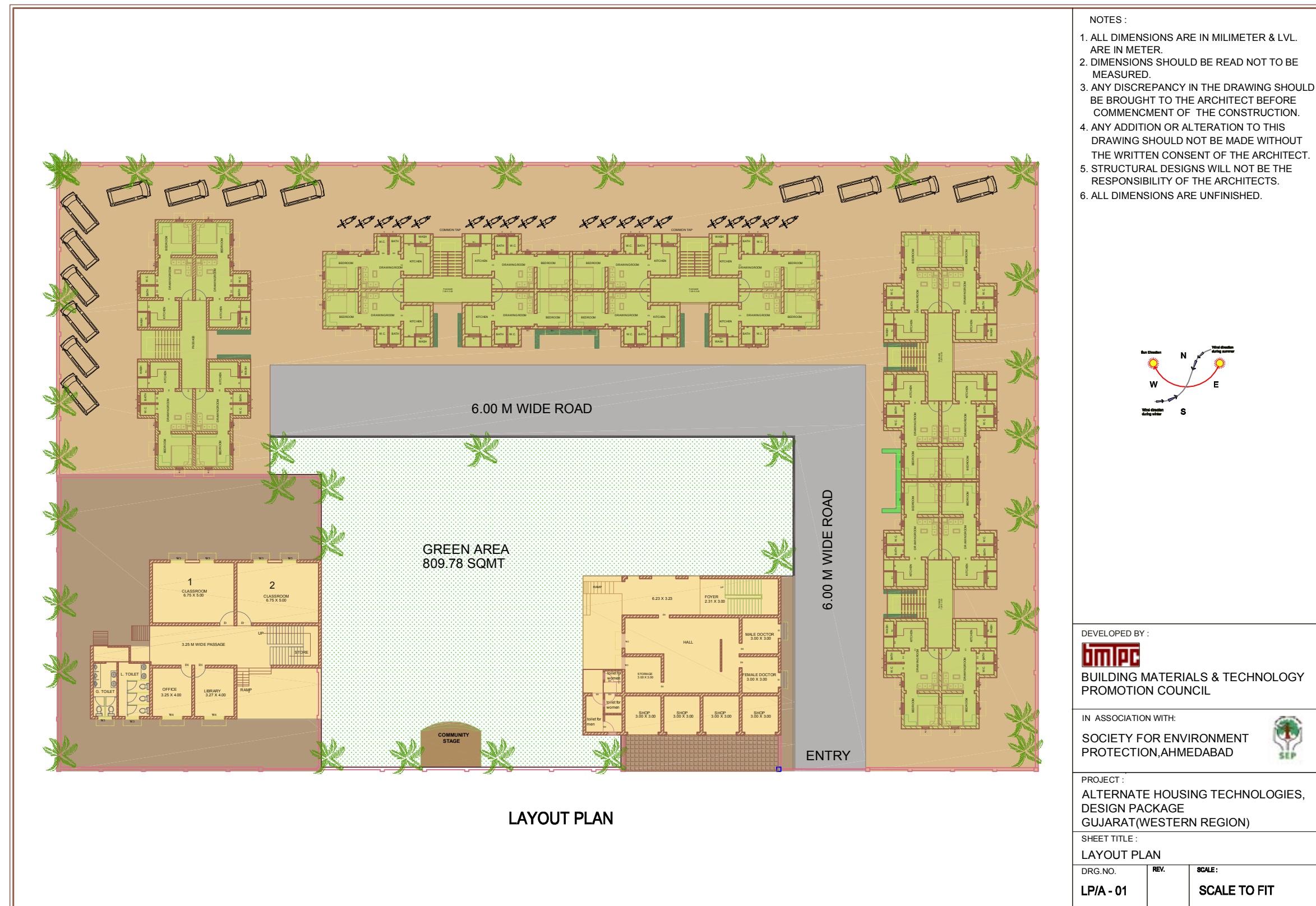


Parameters	Option -1	Option-2	Option-3
Area (sq.mt)	2721	3839	4084
BU area (sq.mt)	3046	2971	3034
Sun movement	Properly considered	Properly considered	Properly considered
Open spaces	Less	Maximum	Maximum
Parking space	Less	Less	Maximum
Road area	High	Optimum	Optimum
Amenities	Less	Optimum	Optimum
Ease in services	Yes	Yes	Yes
DCR	Yes	Yes	Yes
BU/open ratio	1.11	0.77	0.75
frontage	Less	Maximum	Maximum



Master plan and design layout

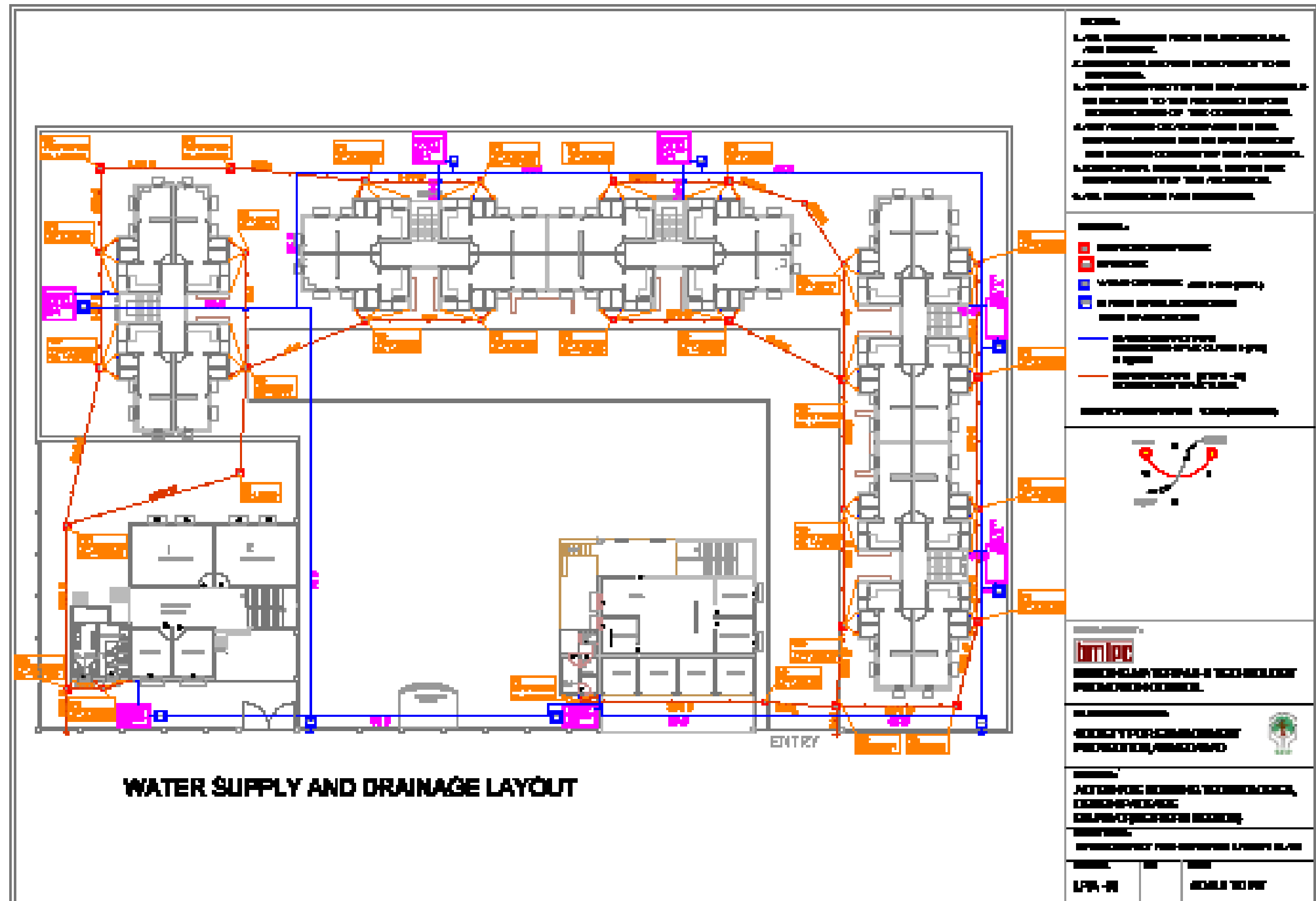
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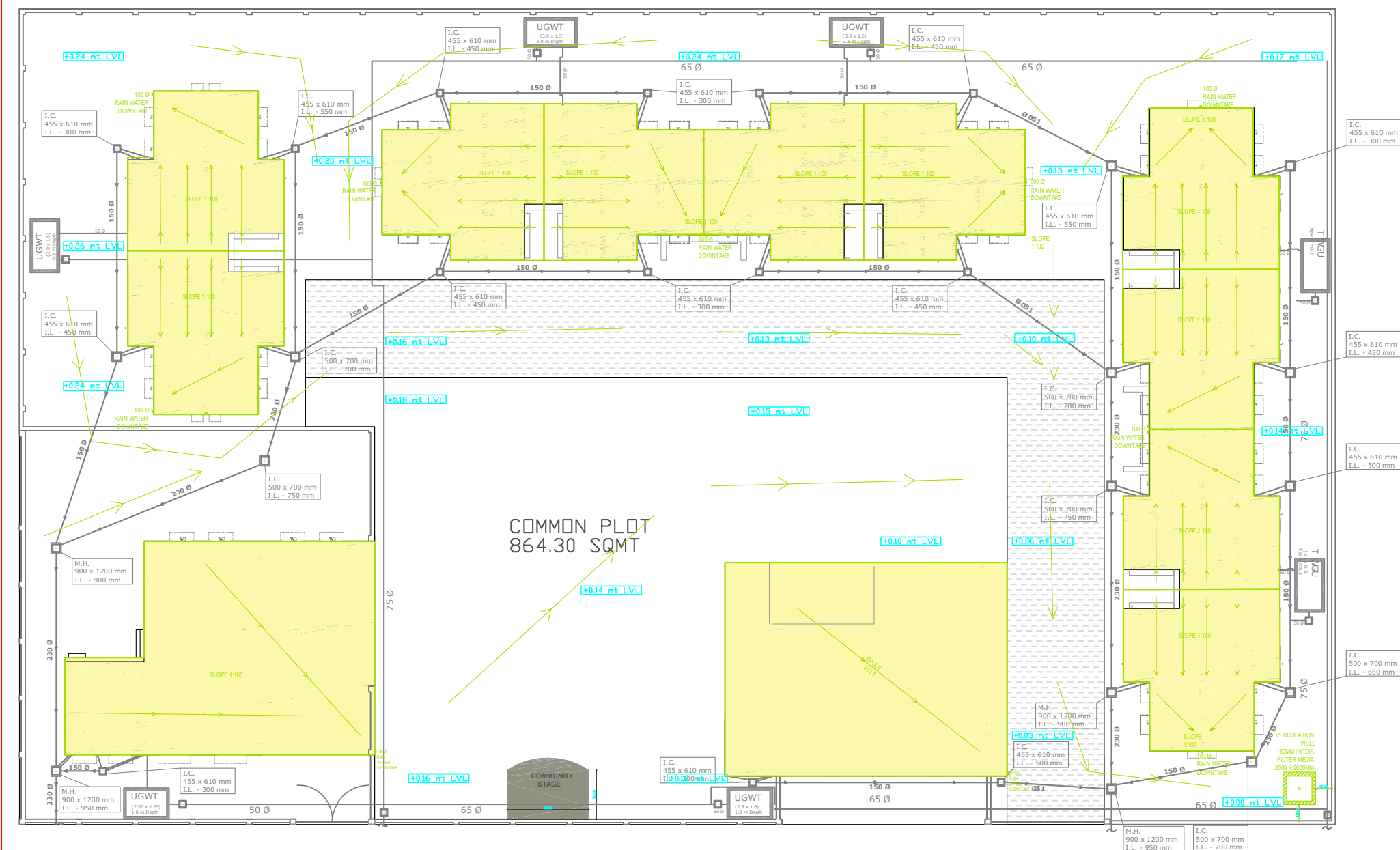
Drawing Showing Building location plan



Drawing showing water supply and drainage layout



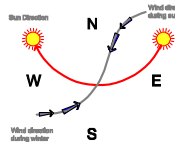
Drawing showing rain water harvesting layout



- NOTES :
- 1. ALL DIMENSIONS ARE IN MILIMETER & LVL. ARE IN METER.
 - 2. DIMENSIONS SHOULD BE READ NOT TO BE MEASURED.
 - 3. ANY DISCREPANCY IN THE DRAWING SHOULD BE BROUGHT TO THE ARCHITECT BEFORE COMMENCMENT OF THE CONSTRUCTION.
 - 4. ANY ADDITION OR ALTERATION TO THIS DRAWING SHOULD NOT BE MADE WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT.
 - 5. STRUCTURAL DESIGNS WILL NOT BE THE RESPONSIBILITY OF THE ARCHITECTS.
 - 6. ALL DIMENSIONS ARE UNFINISHED.

- LEGENDS :
- INSPECTION CHAMBER
 - MANHOLE
 - VALVE CHAMBER 450 x 600 (TYP.)
 - WATER MAINS CONNECTION WITH WATER METER
 - WATER SUPPLY PIPE IS:4985:2000 uPVC CLASS 3 (PN) 6 kgf/cm
 - DRAINAGE PIPE (TYPE - B) IS:13592:1992 uPVC S.W.R.

SLOPE FOR DRAINAGE 1:100 (MINIMUM)



REVISIONS			
NO.	DATE	PARTICULARS	CHKD

DEVELOPED BY :
bmtpc
BUILDING MATERIALS & TECHNOLOGY
PROMOTION COUNCIL

IN ASSOCIATION WITH:
SOCIETY FOR ENVIRONMENT
PROTECTION, AHMEDABAD

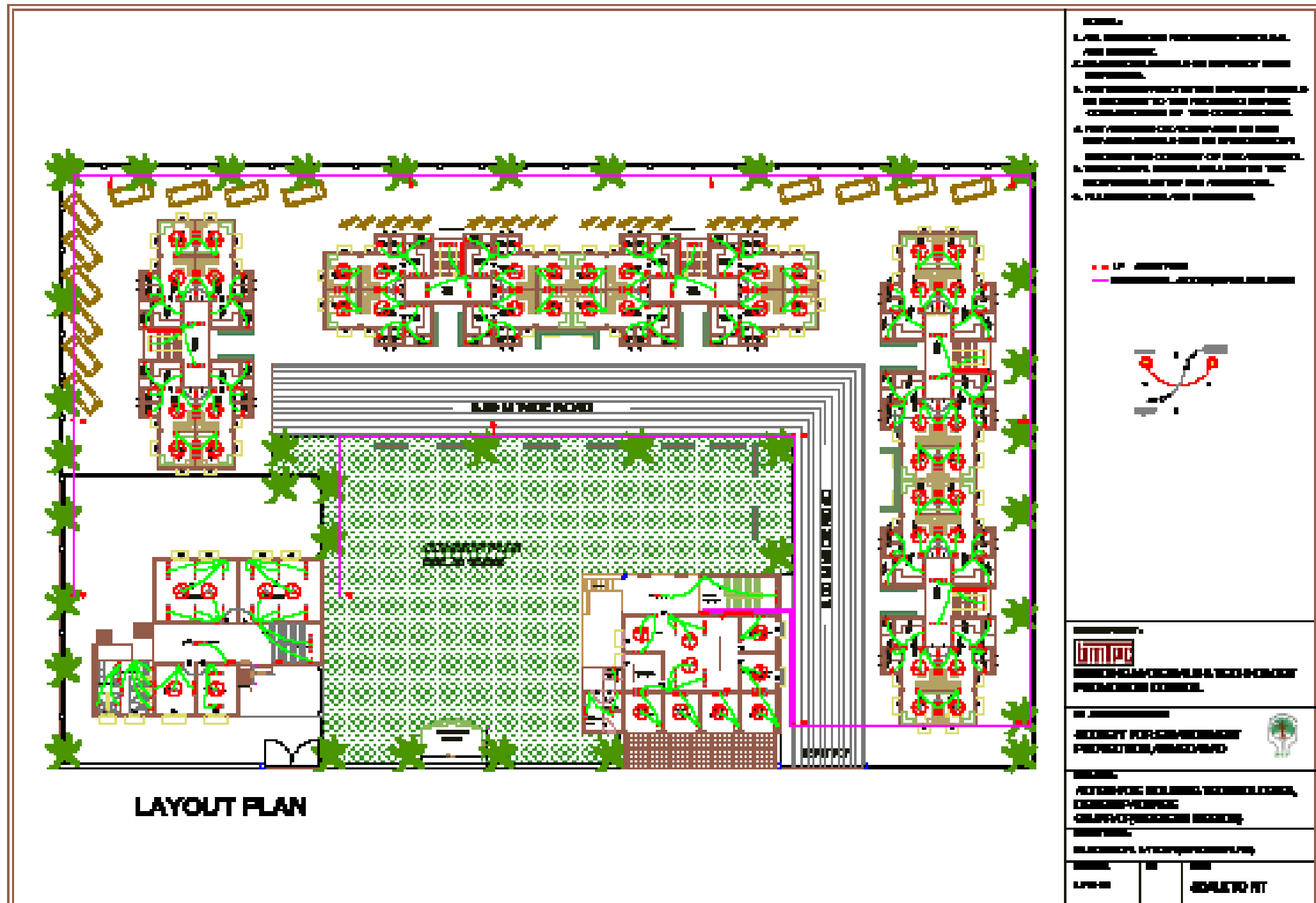


PROJECT :
ALTERNATE HOUSING TECHNOLOGIES,
DESIGN PACKAGE
GUJARAT (WESTERN REGION)

SHEET TITLE :
RAIN WATER HARVESTING LAYOUT PLAN

DRG.NO.	REV.	SCALE:
LP/A -04		SCALE TO FIT

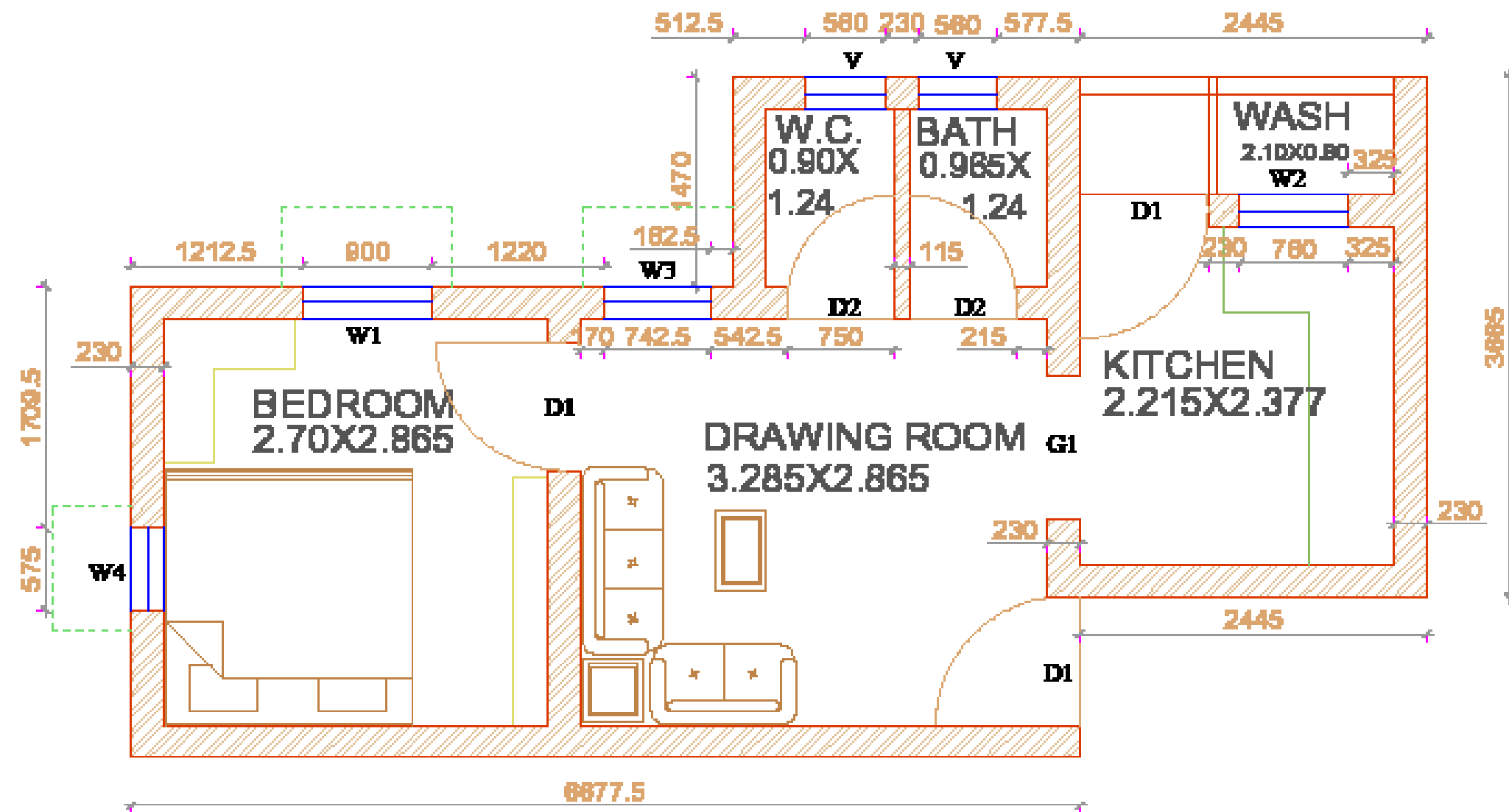
Drawing showing electrical distribution layout





a. Residential Unit plan

Residential unit plan



TYPICAL UNIT

Residential unit cluster

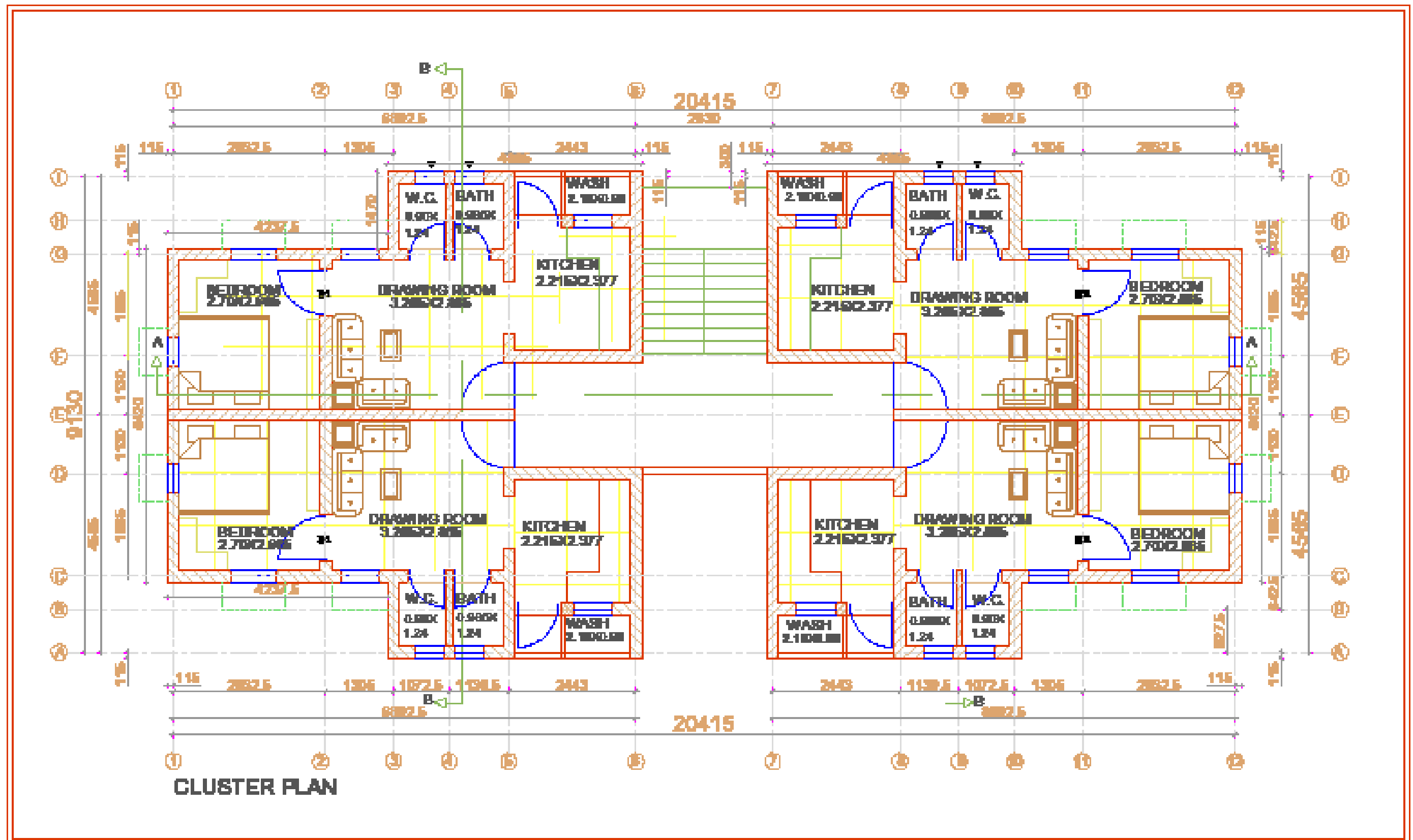


Image showing Residential block 3-D Elevation

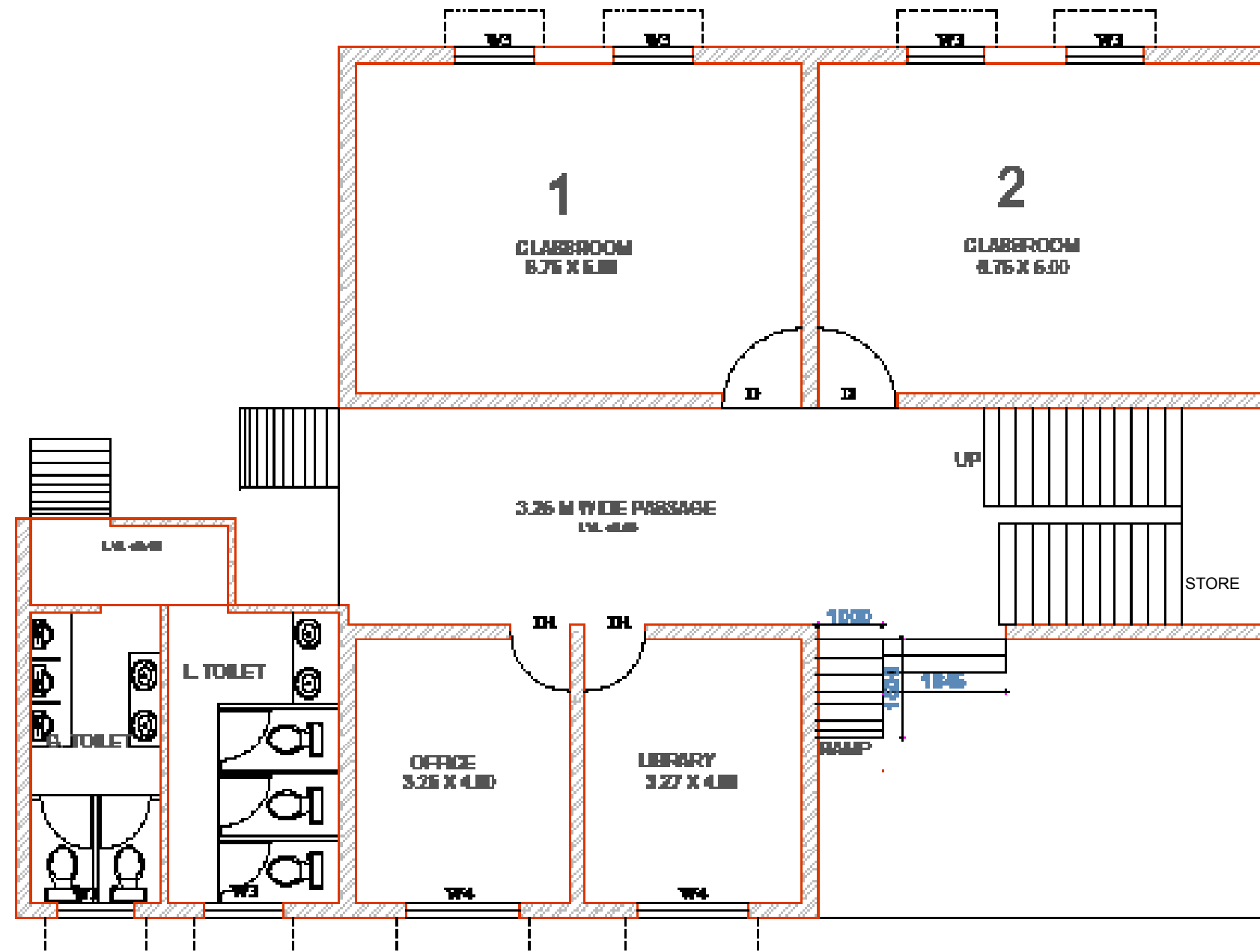


Image showing 3-D bird eye view of residential unit



b. School

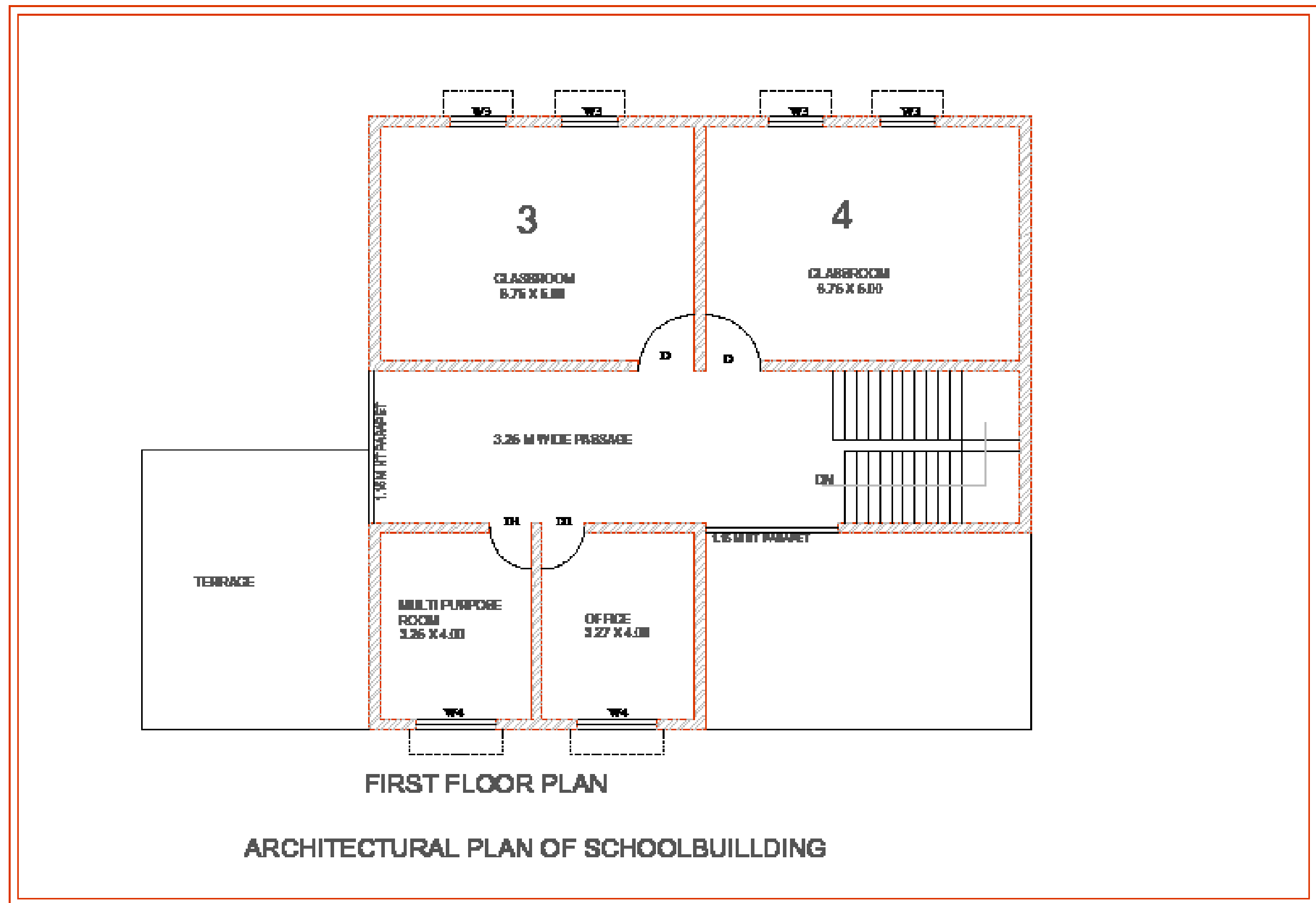
Drawing showing Detailed Architectural plan of school building – Ground floor



GROUND FLOOR PLAN

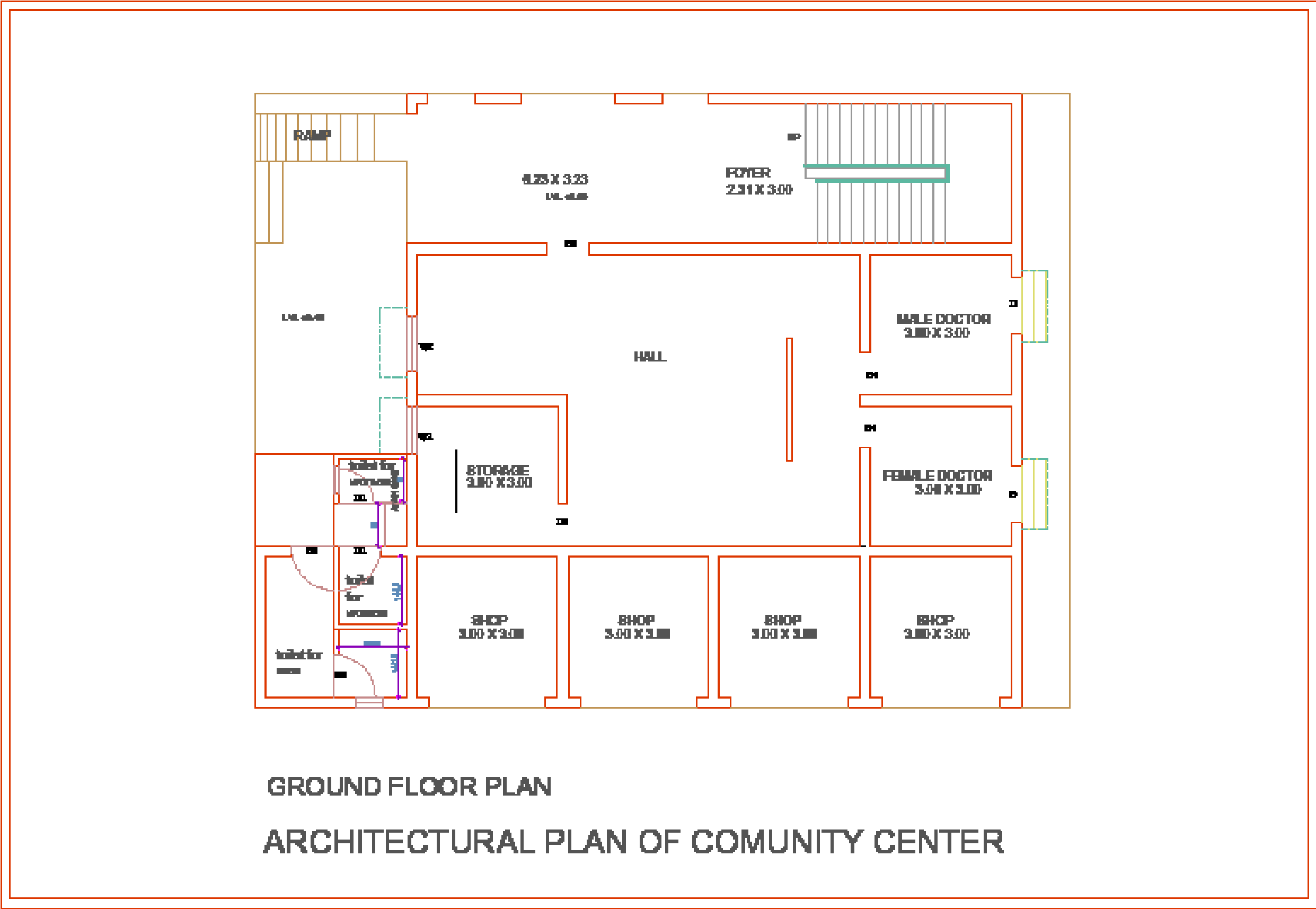
ARCHITECTURAL PLAN OF SCHOOLBUILDING

Drawing showing Detailed Architectural plan for School building – First floor

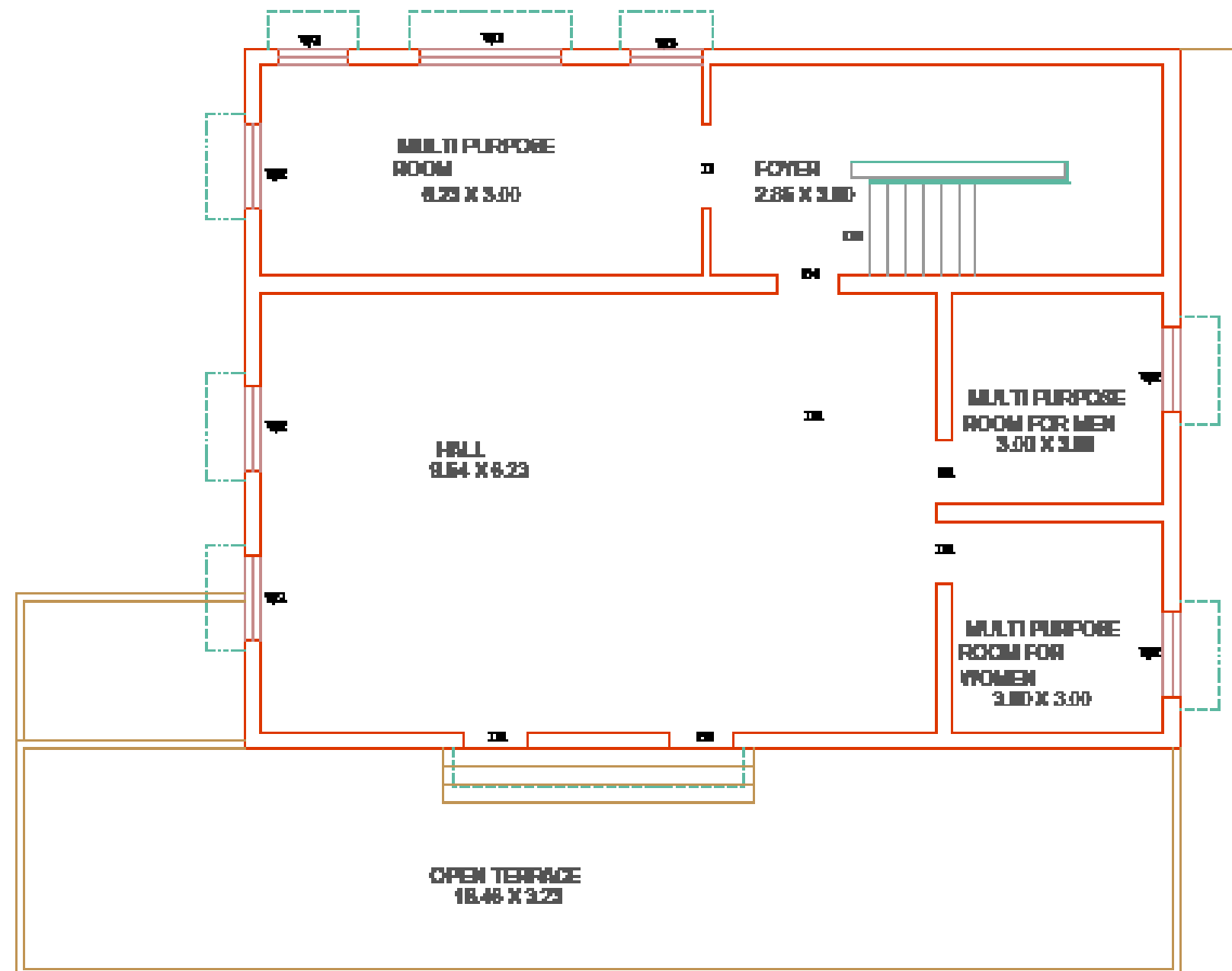


c. Community Centre & Kiosks

Drawing showing Detailed plan for Community center – ground floor



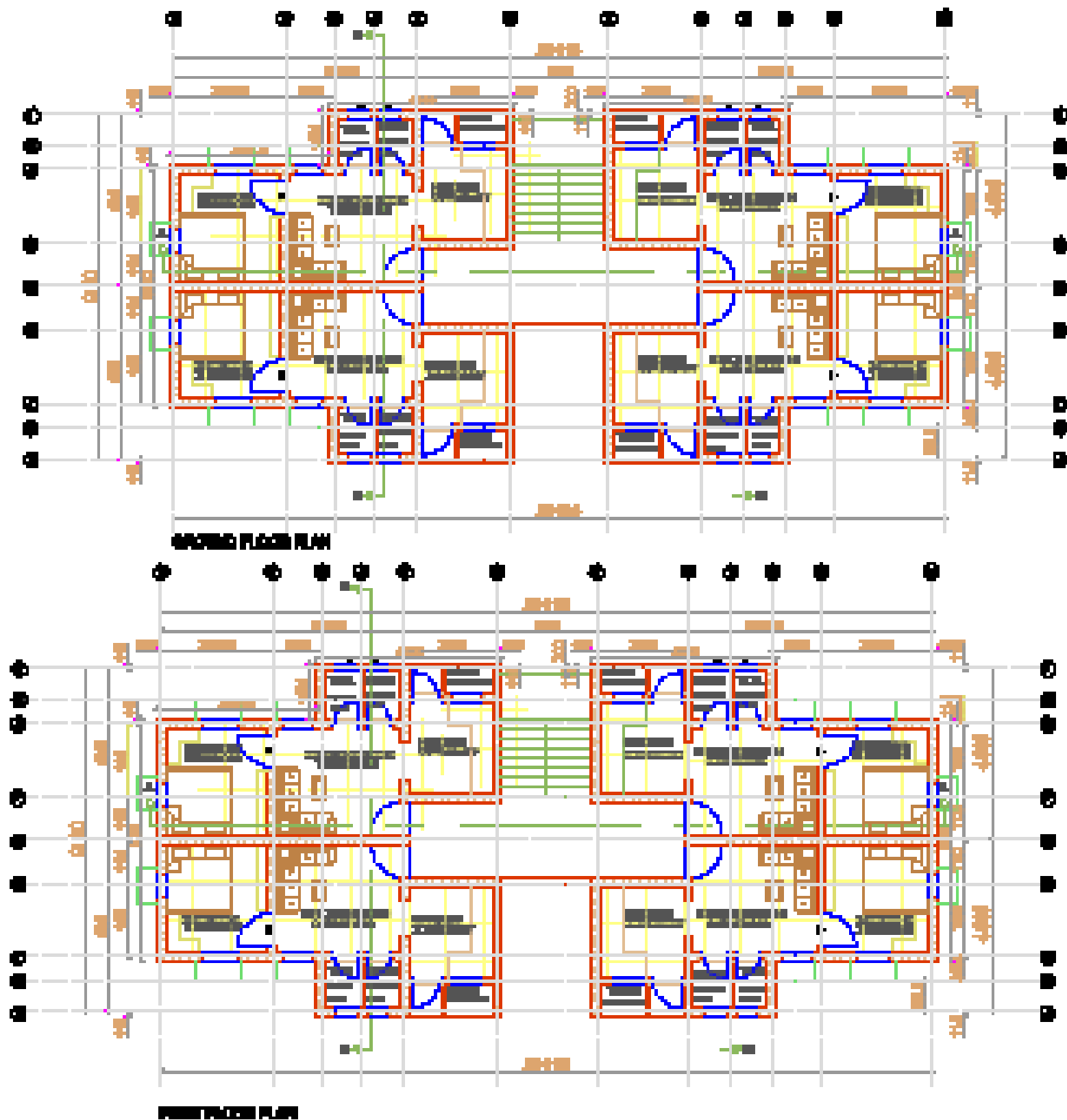
Drawing showing detailed Block floor plan of Community center – First floor



FIRST FLOOR PLAN

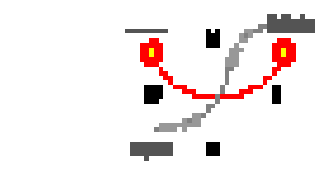
ARCHITECTURAL PLAN OF COMUNITY CENTER

Drawing showing architectural plans of residential buildings



NOTES:
1. ALL DIMENSIONS ARE INDICATED IN L.M.
AND IN M.M.
2. DIMENSIONS INDICATED IN PARENTHESES
SHOULD BE USED TO THE EXTENT OF THE
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DIMENSIONS OF CONSTRUCTION			
NO.	DESCRIPTION	UNIT	QUANTITY
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2	1000	MM	10
3	1000	MM	10
4	1000	MM	10
5	1000	MM	10
6	1000	MM	10
7	1000	MM	10
8	1000	MM	10
9	1000	MM	10
10	1000	MM	10



DESIGNED BY:
bmtpc
BANGALORE MATRICKS TECHNOLOGY
PROMOTION COLLEGE

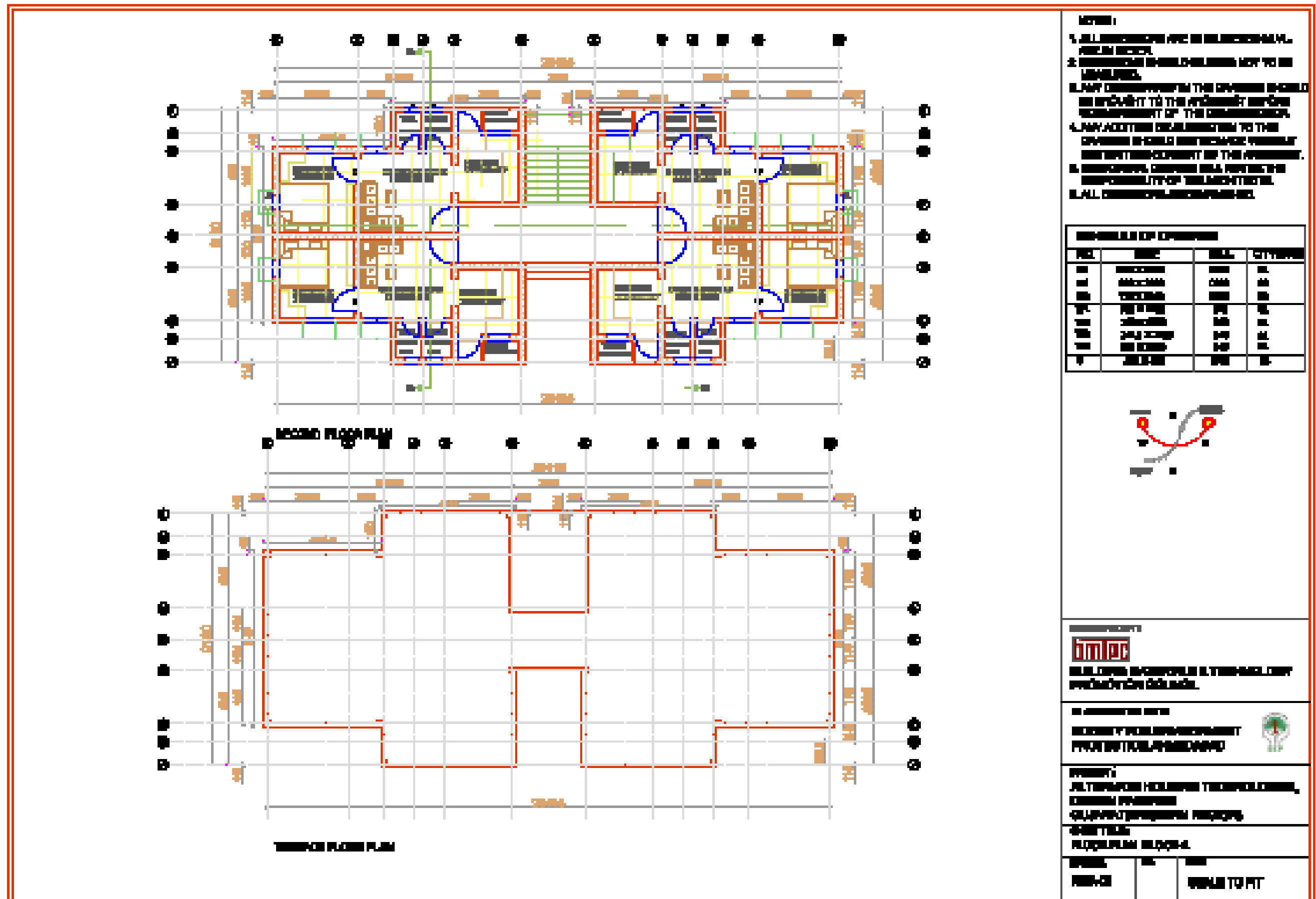
IN ASSOCIATION WITH:
**SOCIETY FOR ENVIRONMENT
PROTECTION, BANGALORE**

PROJECT:
ALTERNATE BUILDING TECHNOLOGIES,
COMMON FREEDOM
COLLEGE (BANGALORE)

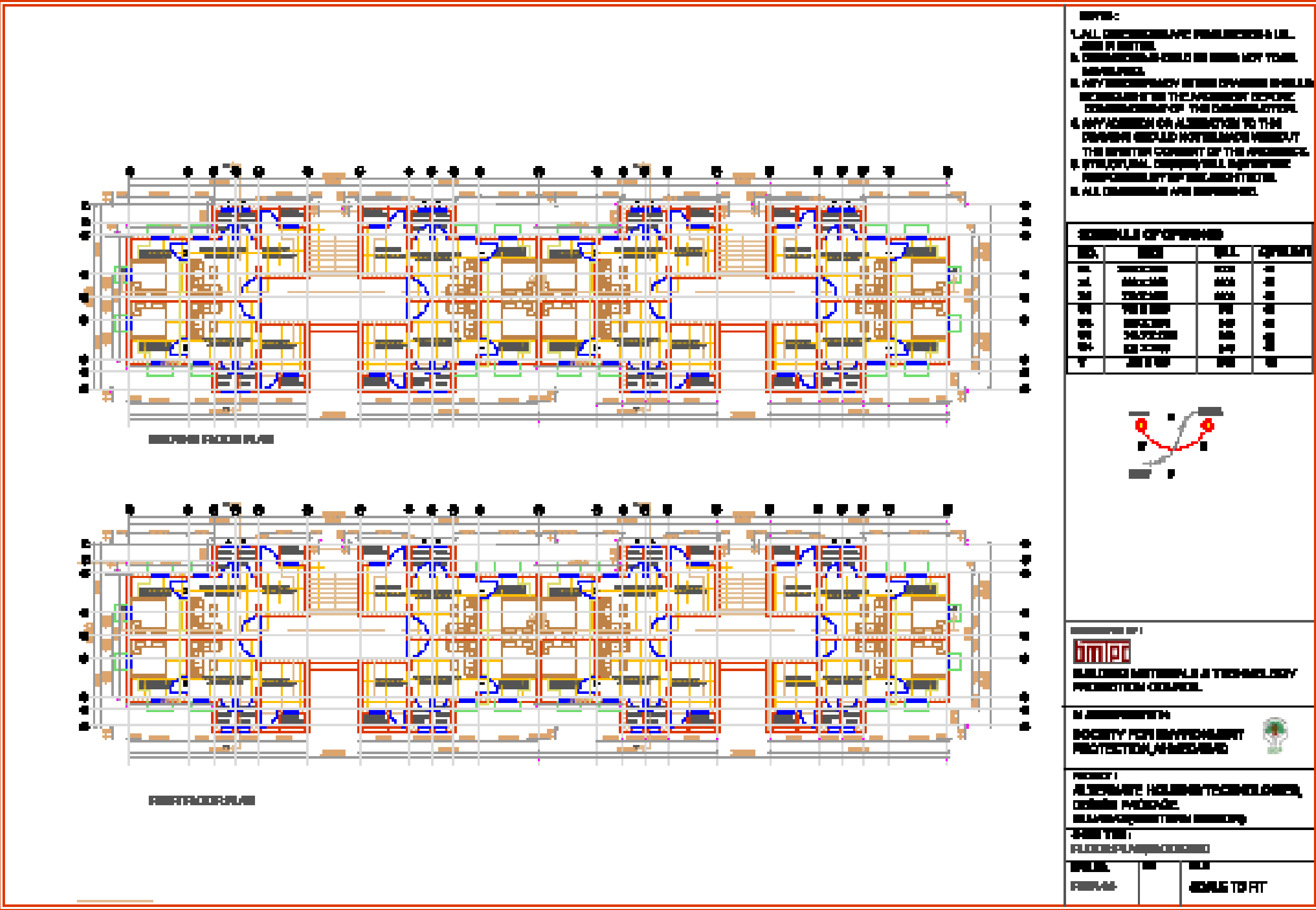
REVISION:
FLOOR PLAN BLOCK-A

NO.	REV.	DATE
1	1	10/10/2020

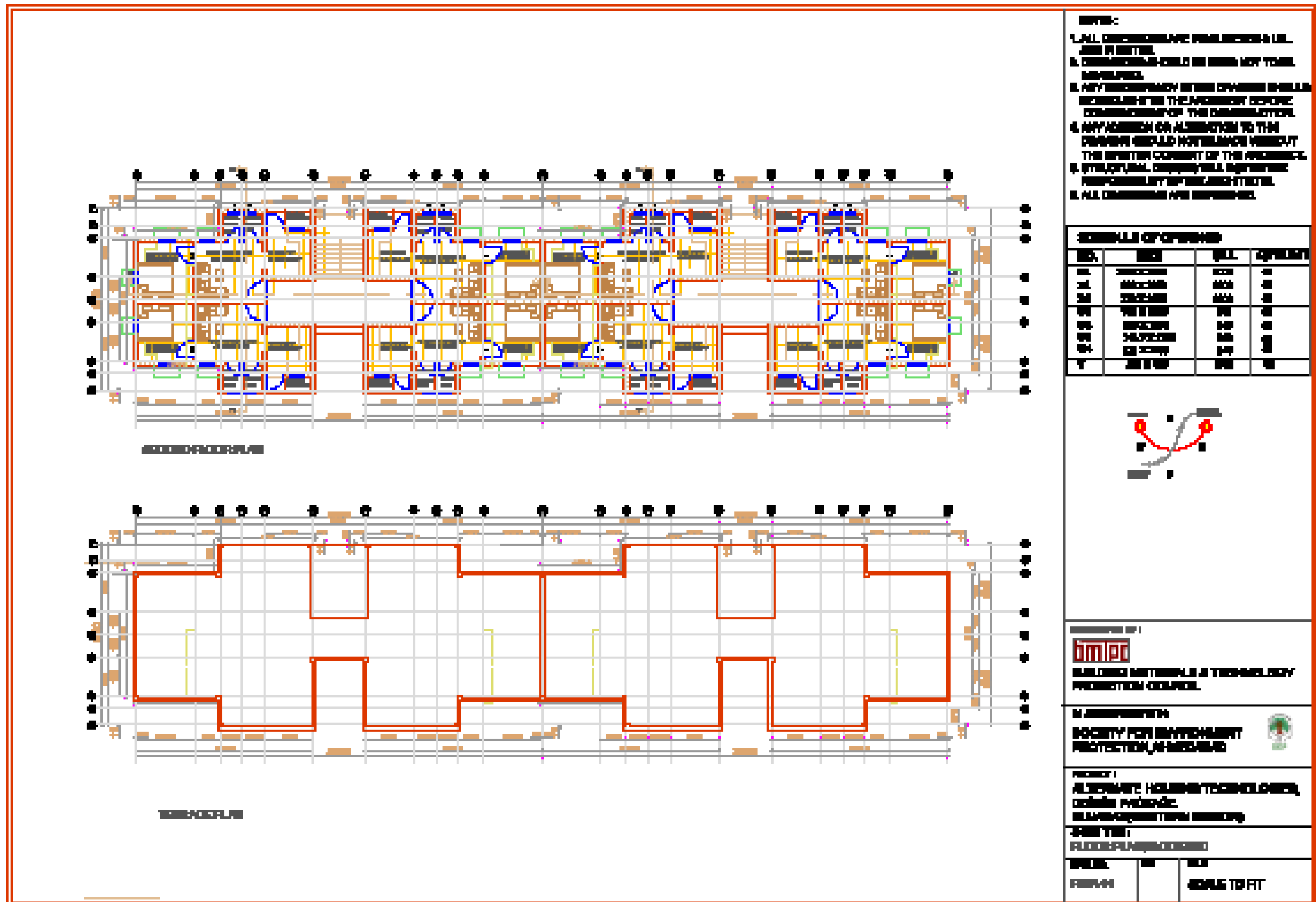
Drawing showing architectural plans of residential buildings



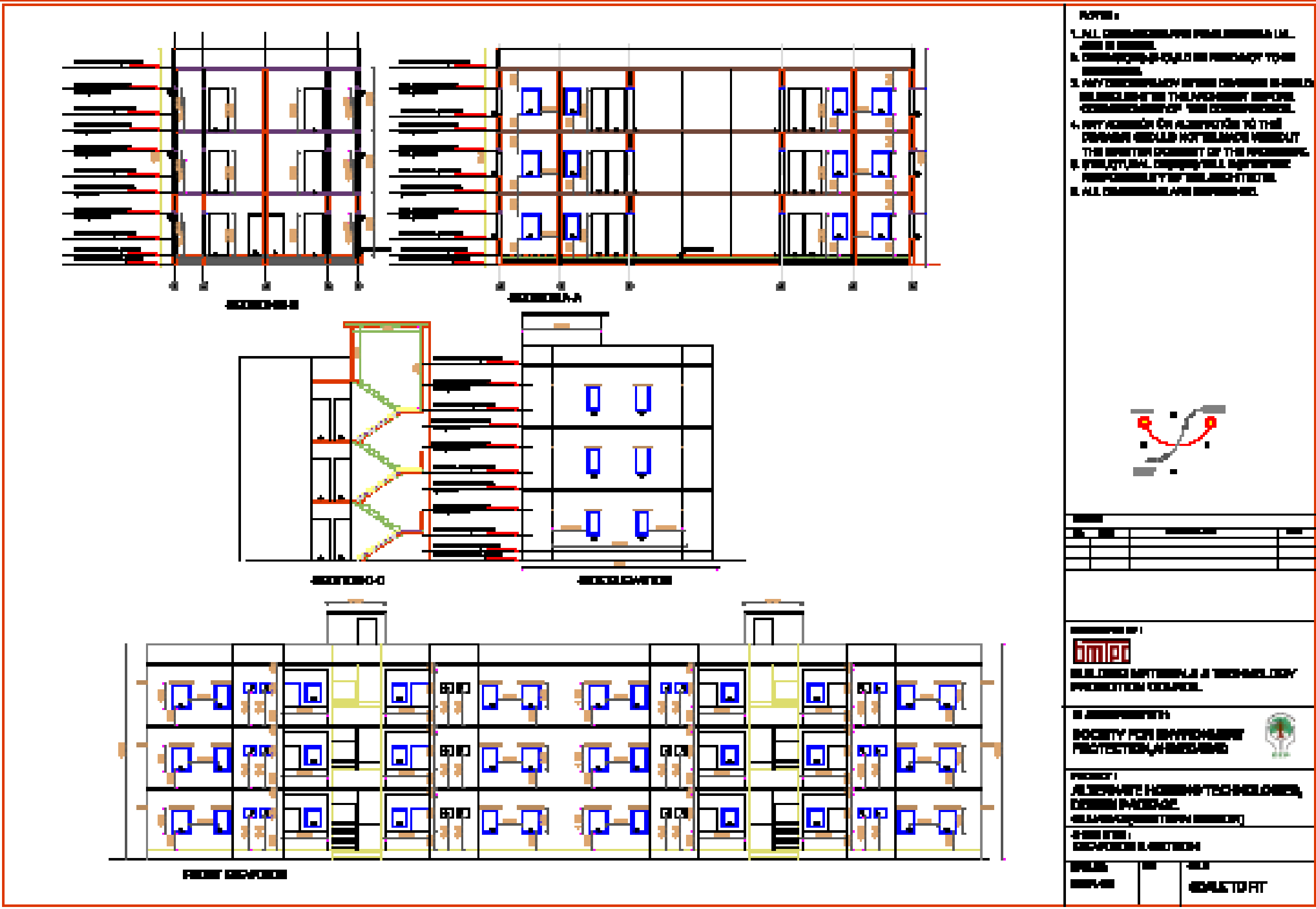
Drawing showing architectural plans of residential buildings



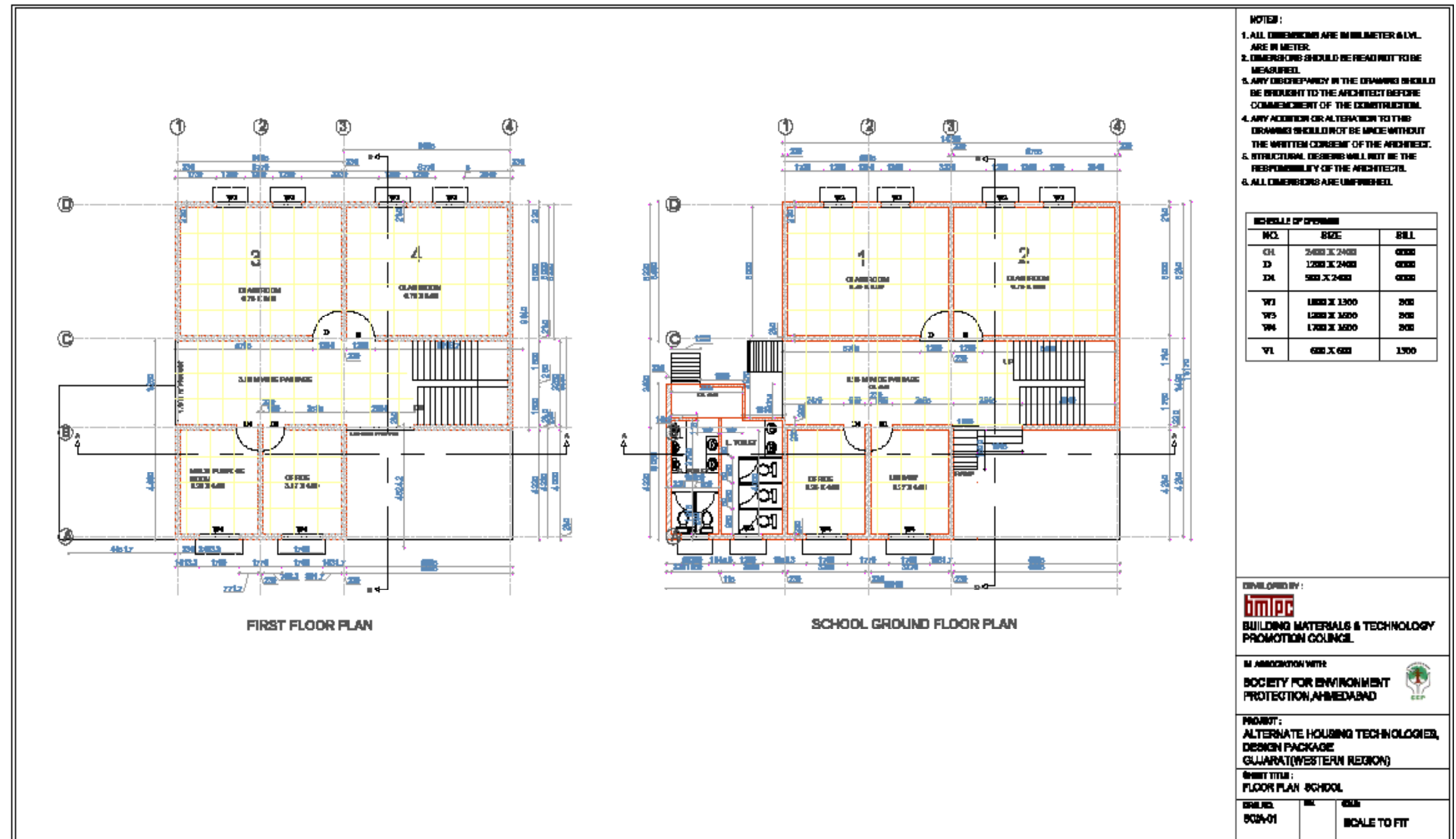
Drawing showing architectural plans of residential buildings



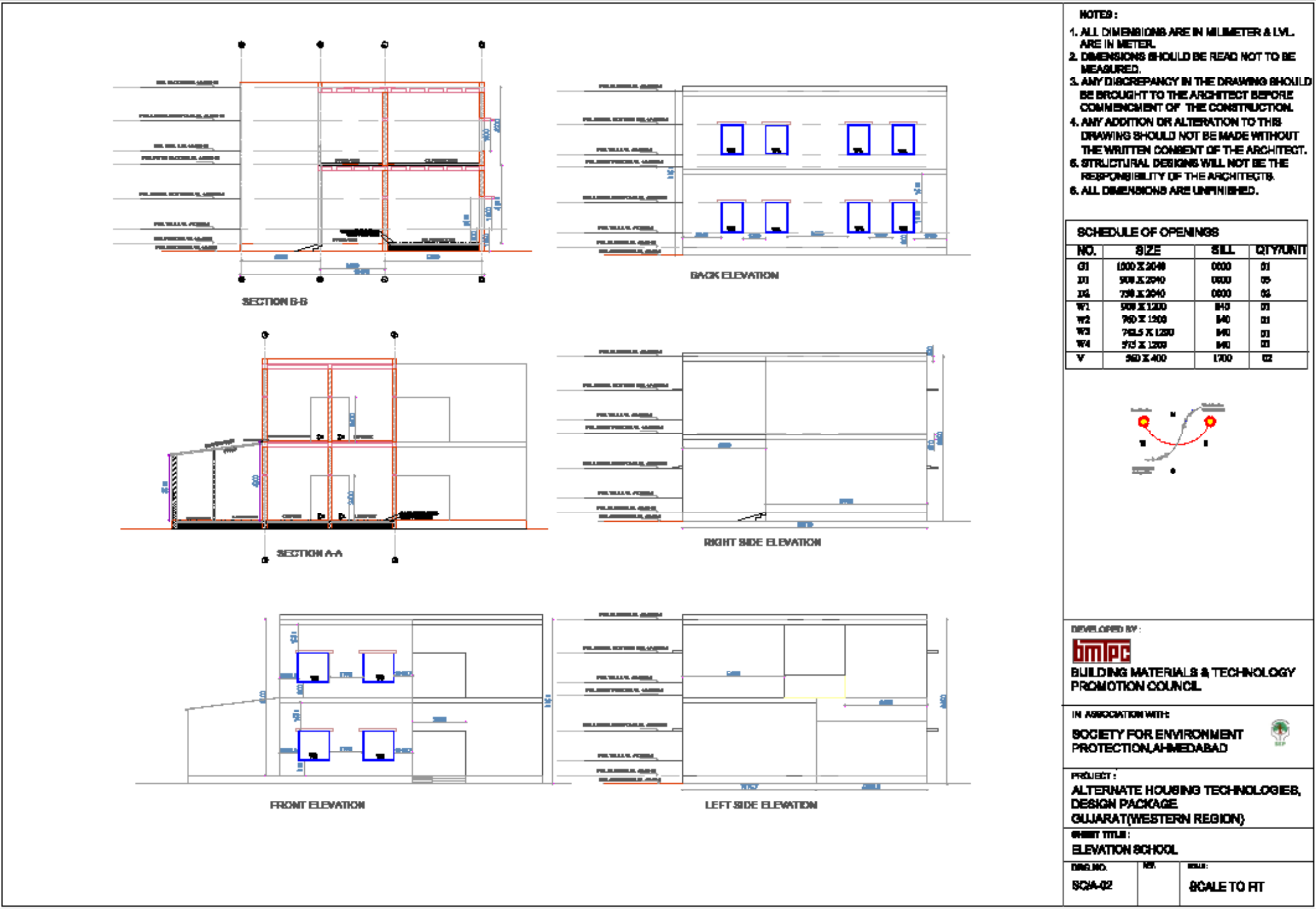
Drawing showing architectural plans of residential buildings – Elevation and Section



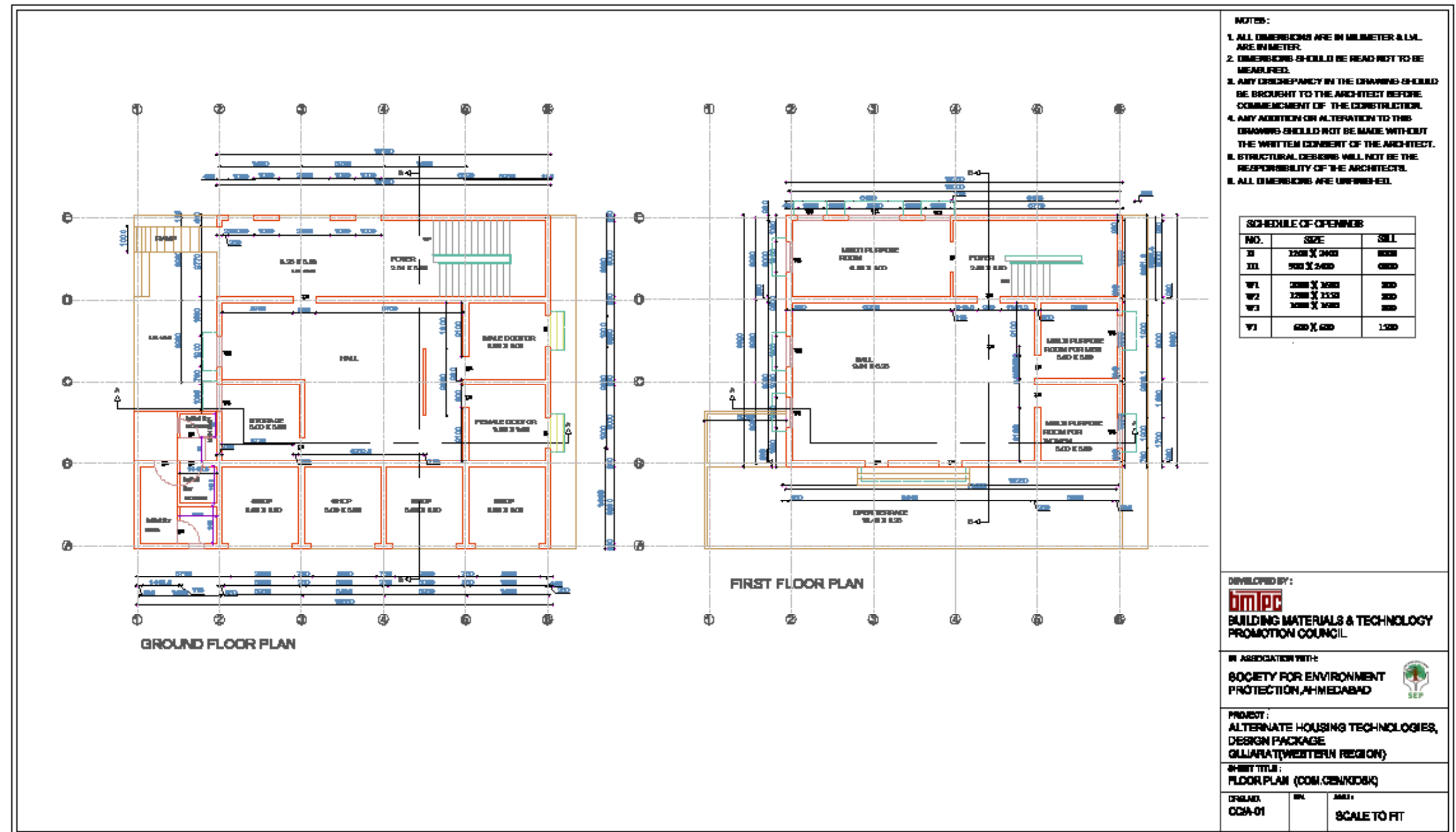
Drawing showing architectural plans of School



Drawing showing Detailed Elevation and Section of School.

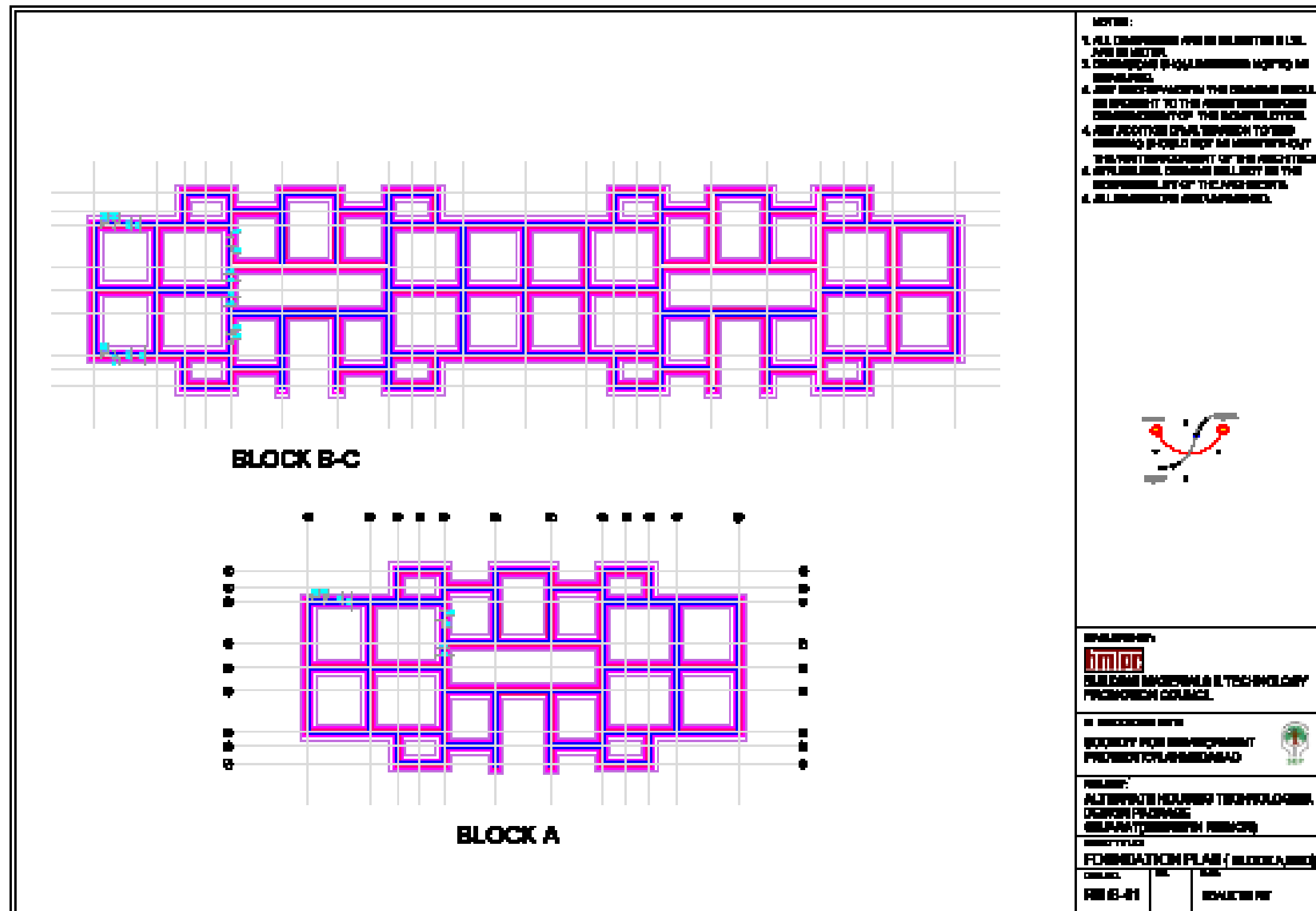


Drawing showing Plan of Community center and kiosk building

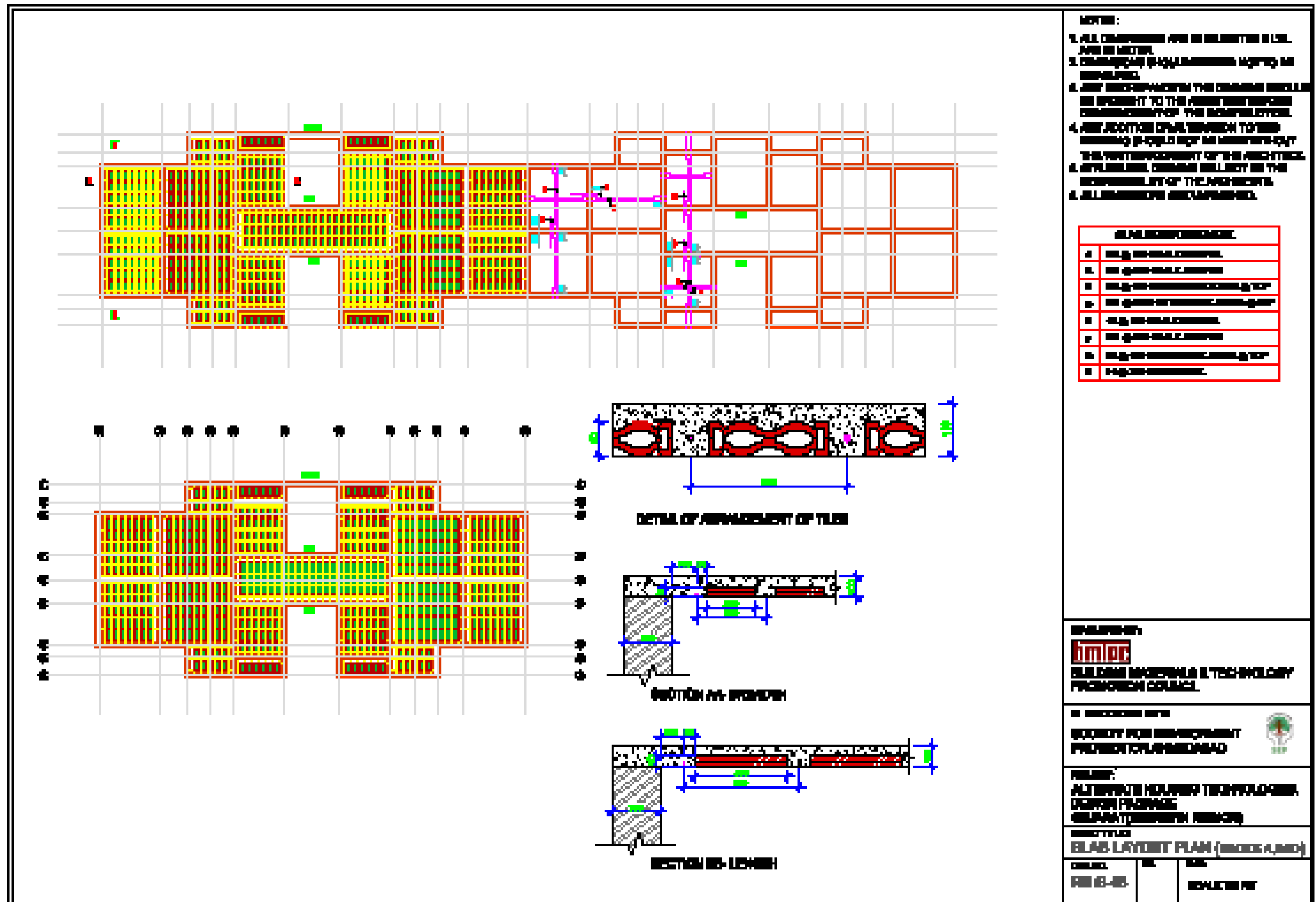




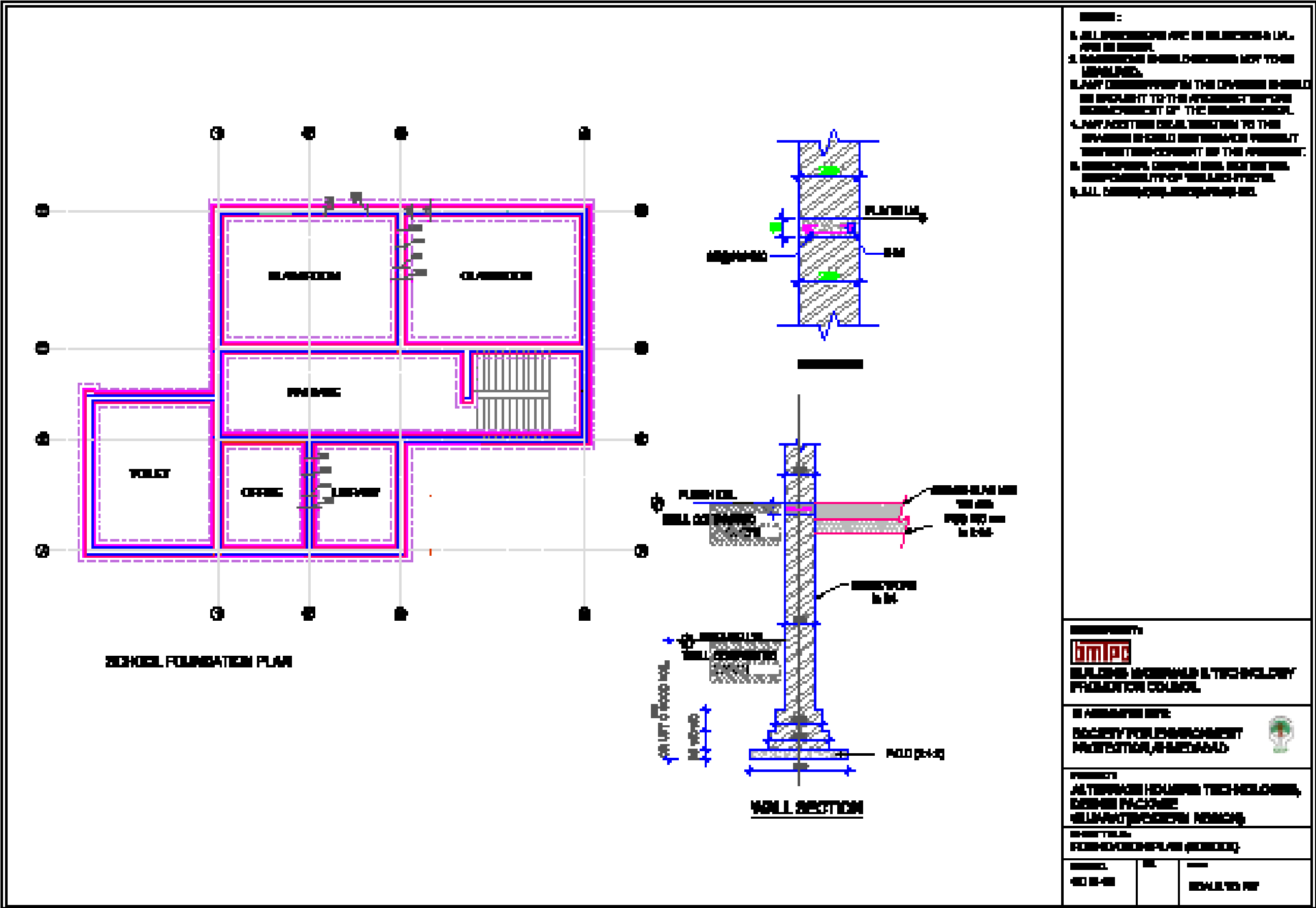
Drawing showing Detailed Block A, B, C Foundation Plan for Residential Building



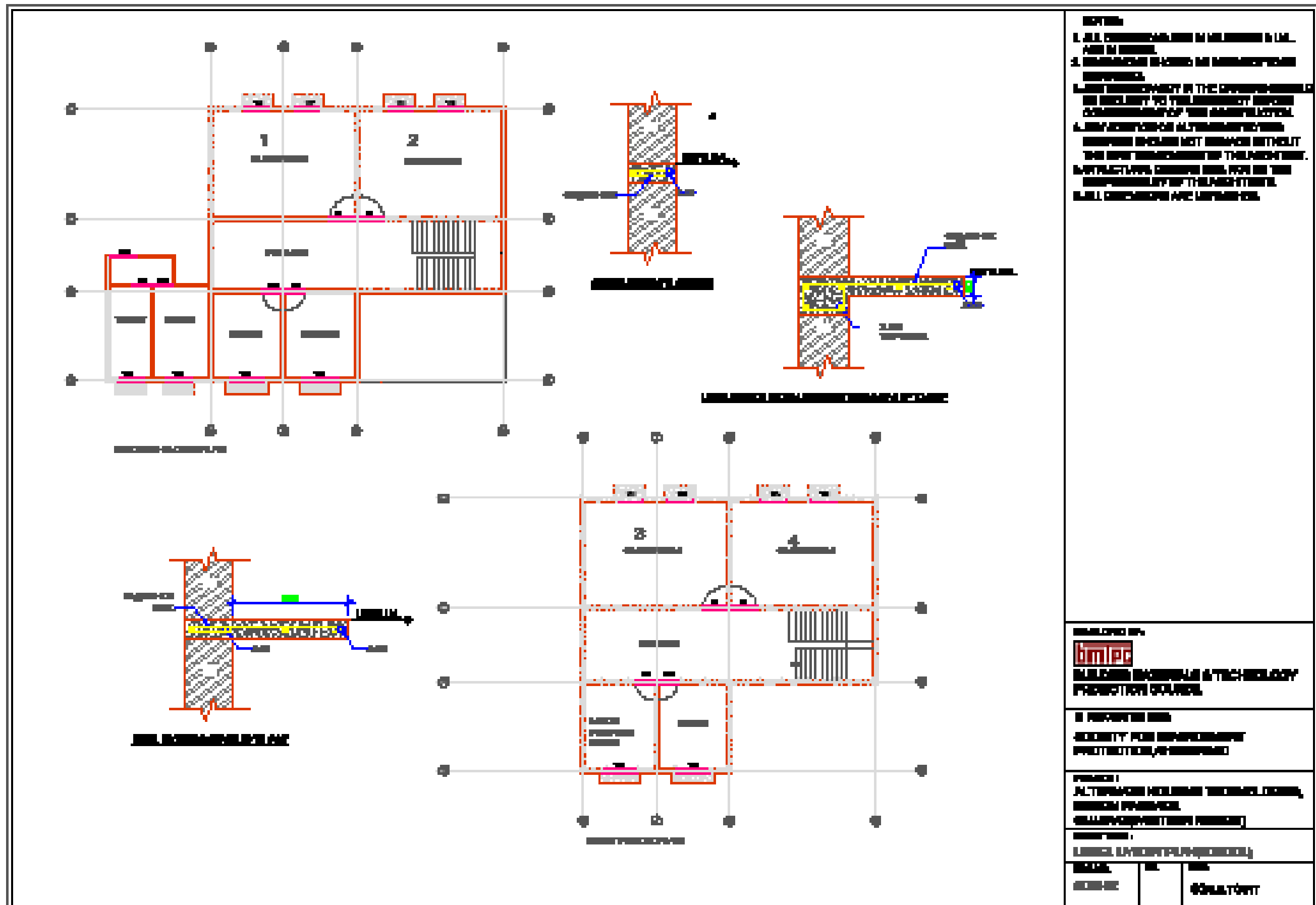
Drawing showing Structural details of roof level plan for residential building



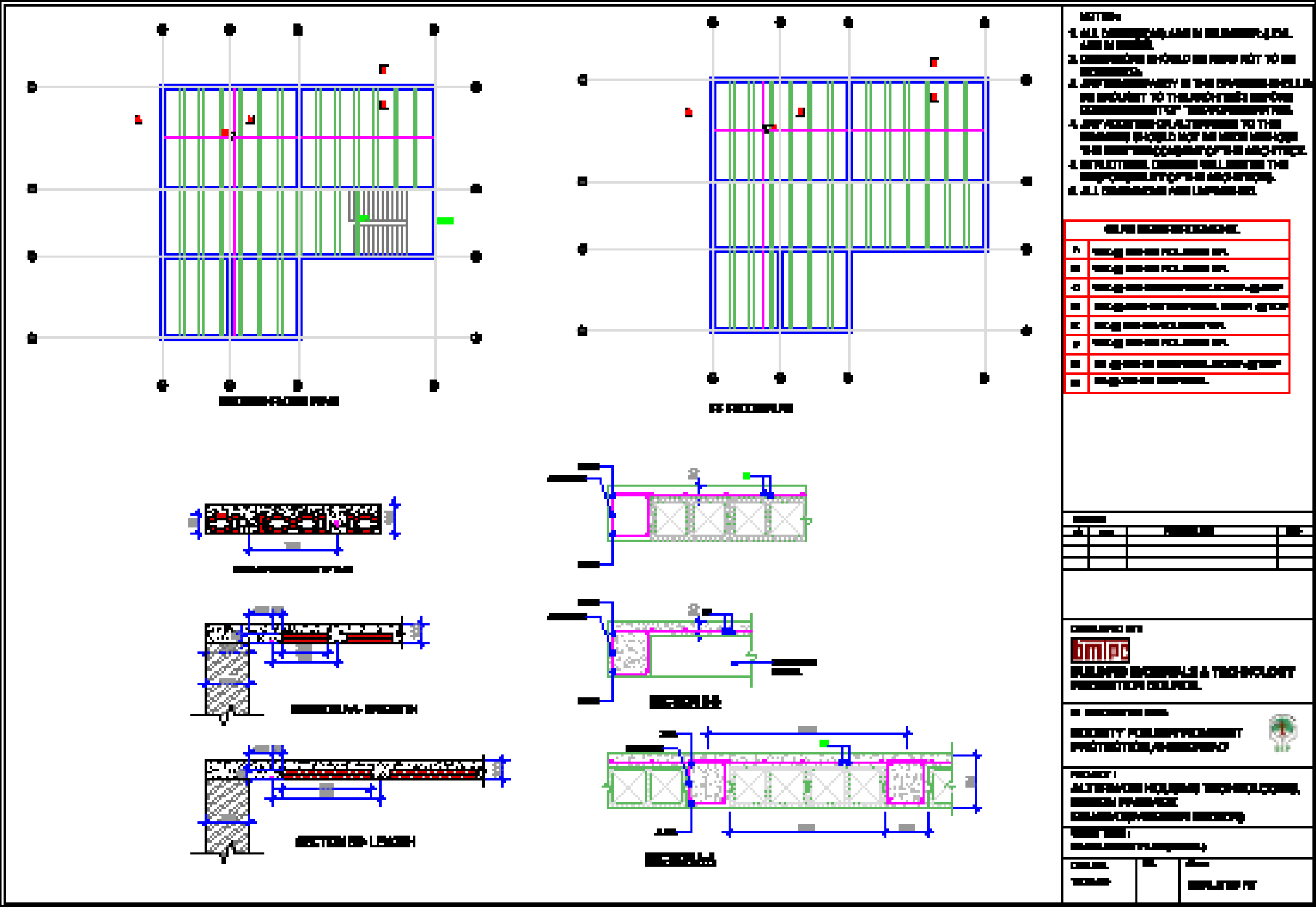
Drawing showing Structural details of foundation for school Building



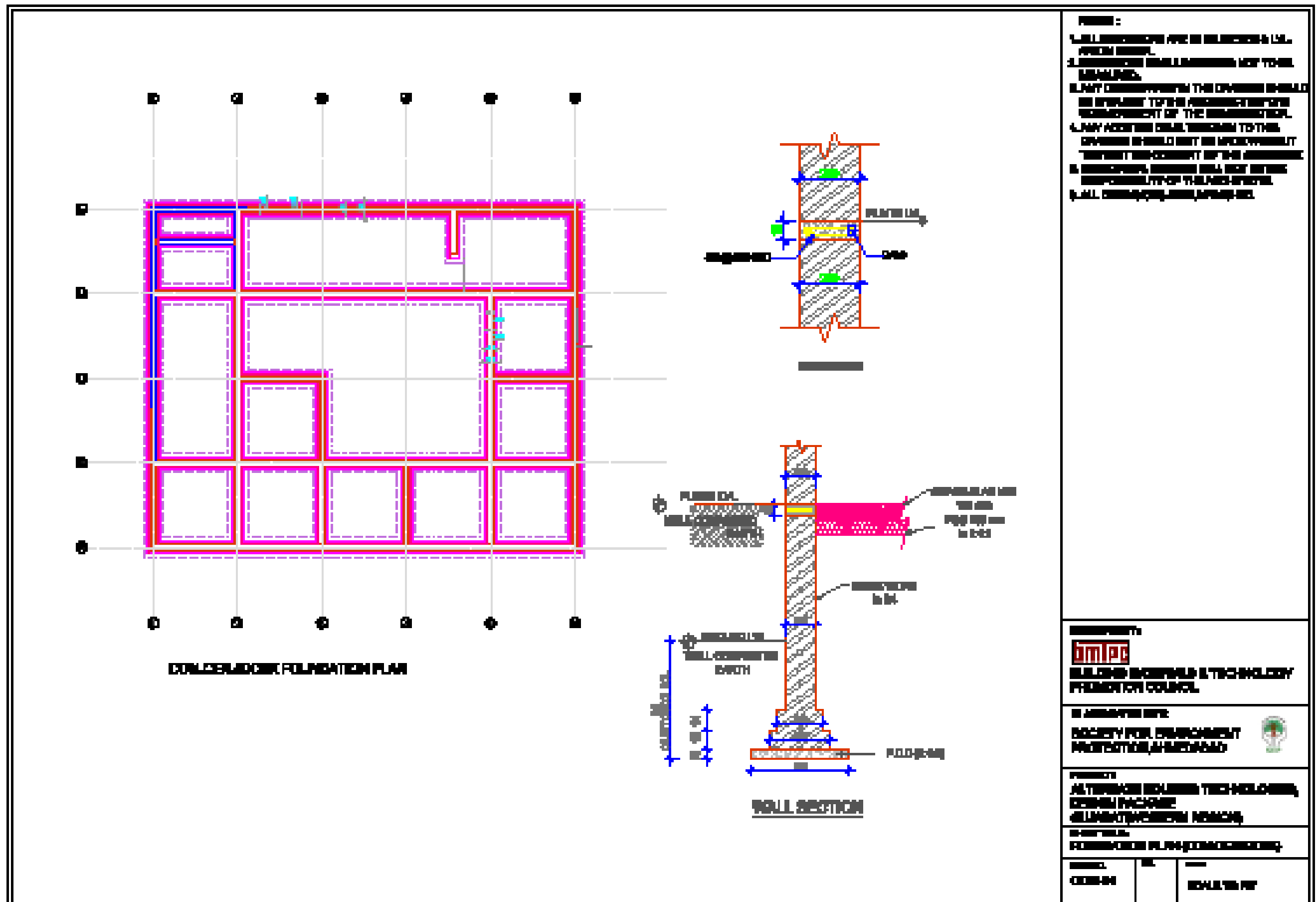
Drawing showing Structural details of lintel level plan for school building



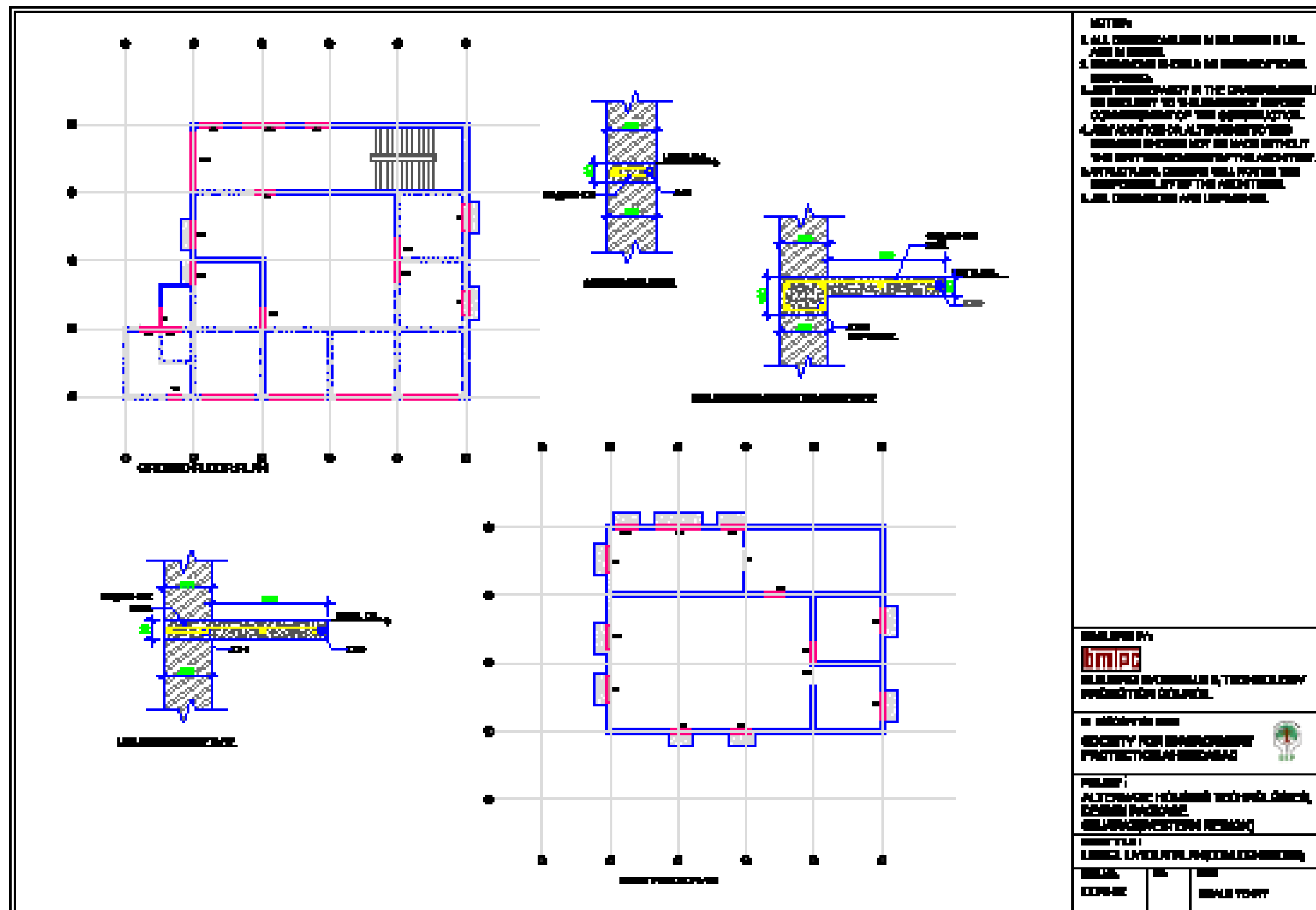
Drawing showing Structural details of Filler slab for School.



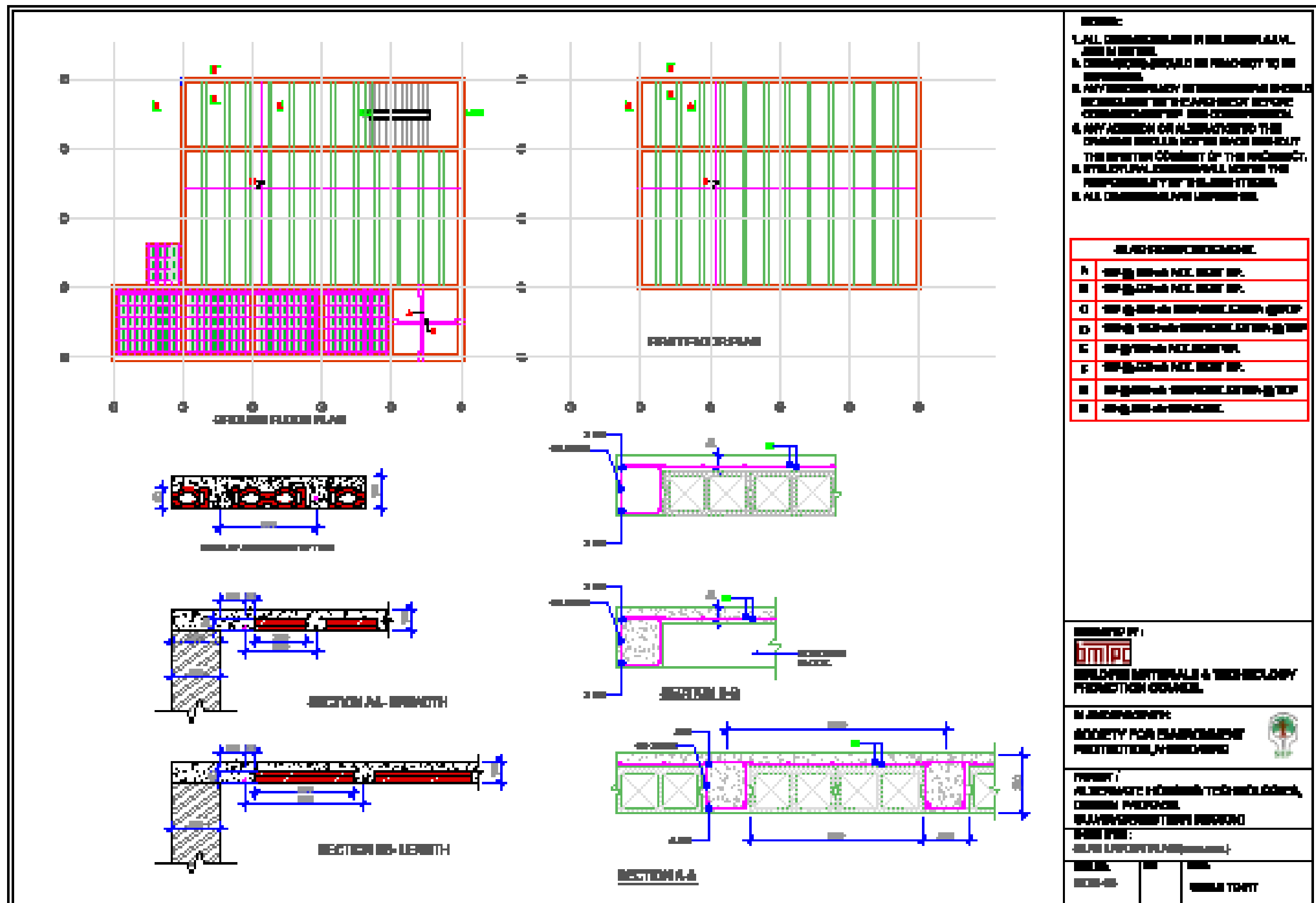
Drawing showing Structural details of foundation for Community center and Kiosk



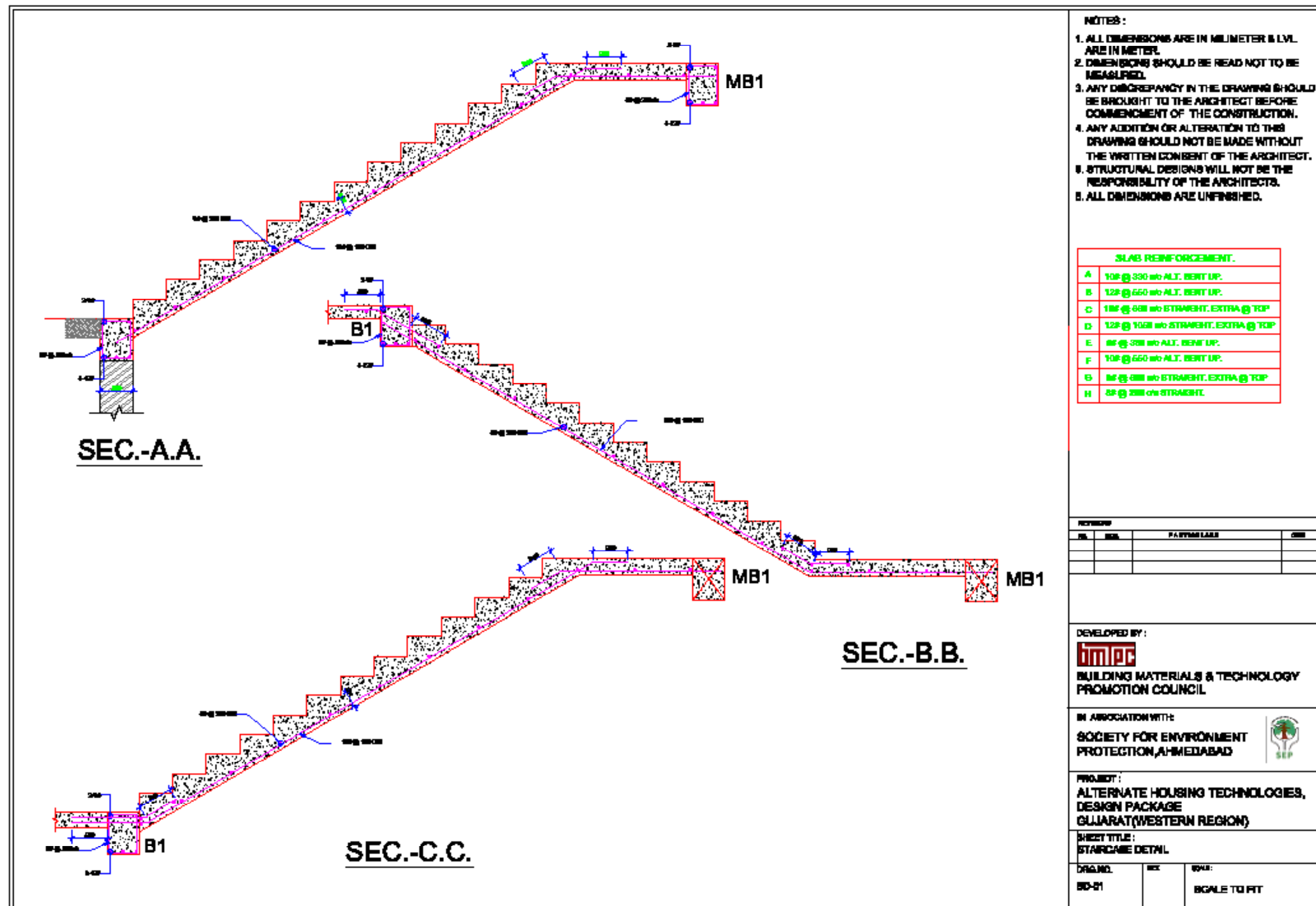
Drawing showing Structural details of lintel level plan for Community Centre & Kiosk



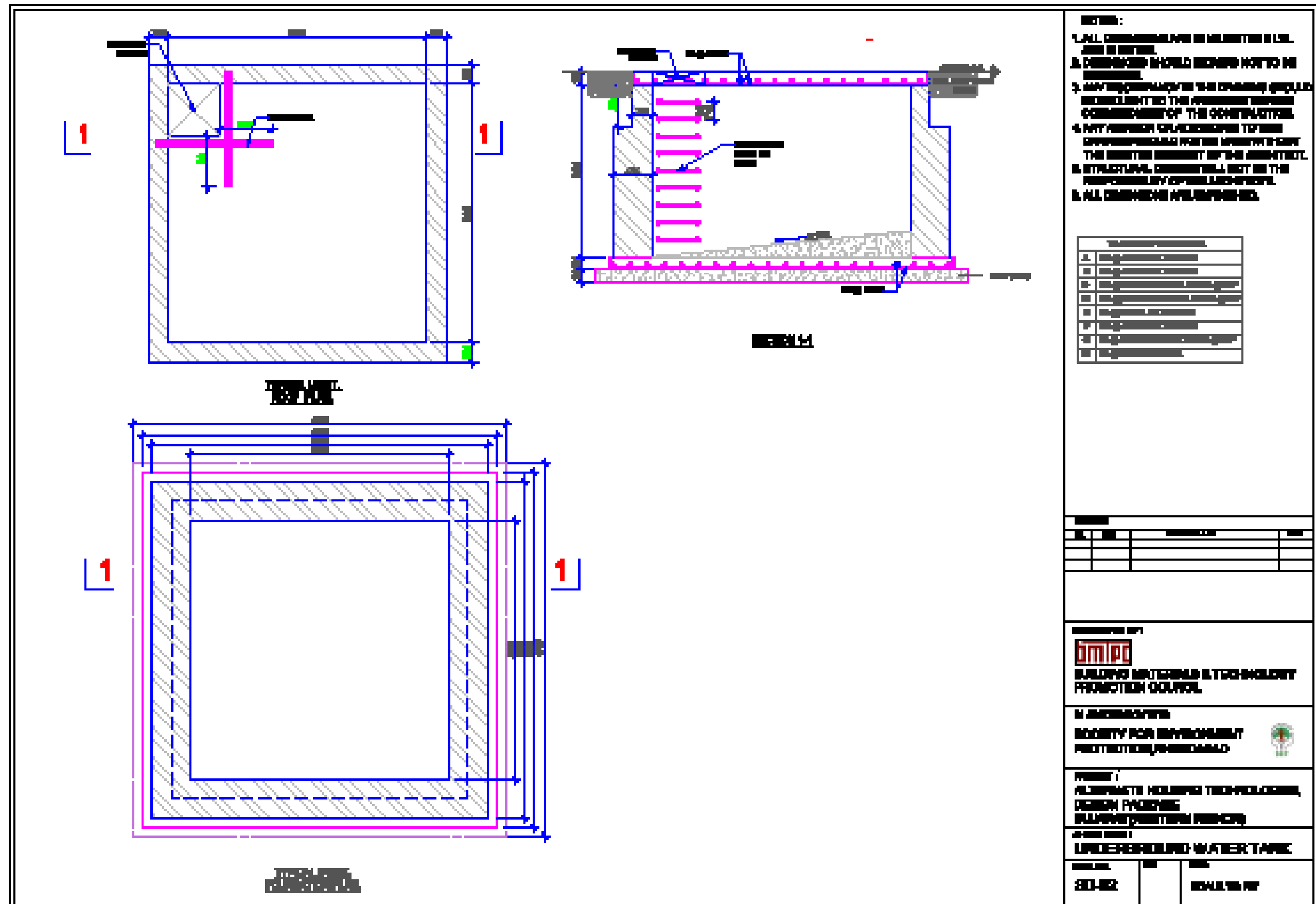
Drawing showing Structural details of roof level plan of Community Centre & Kiosk



Drawing showing Structural details of staircase



Drawing showing structural details of underground water tank.





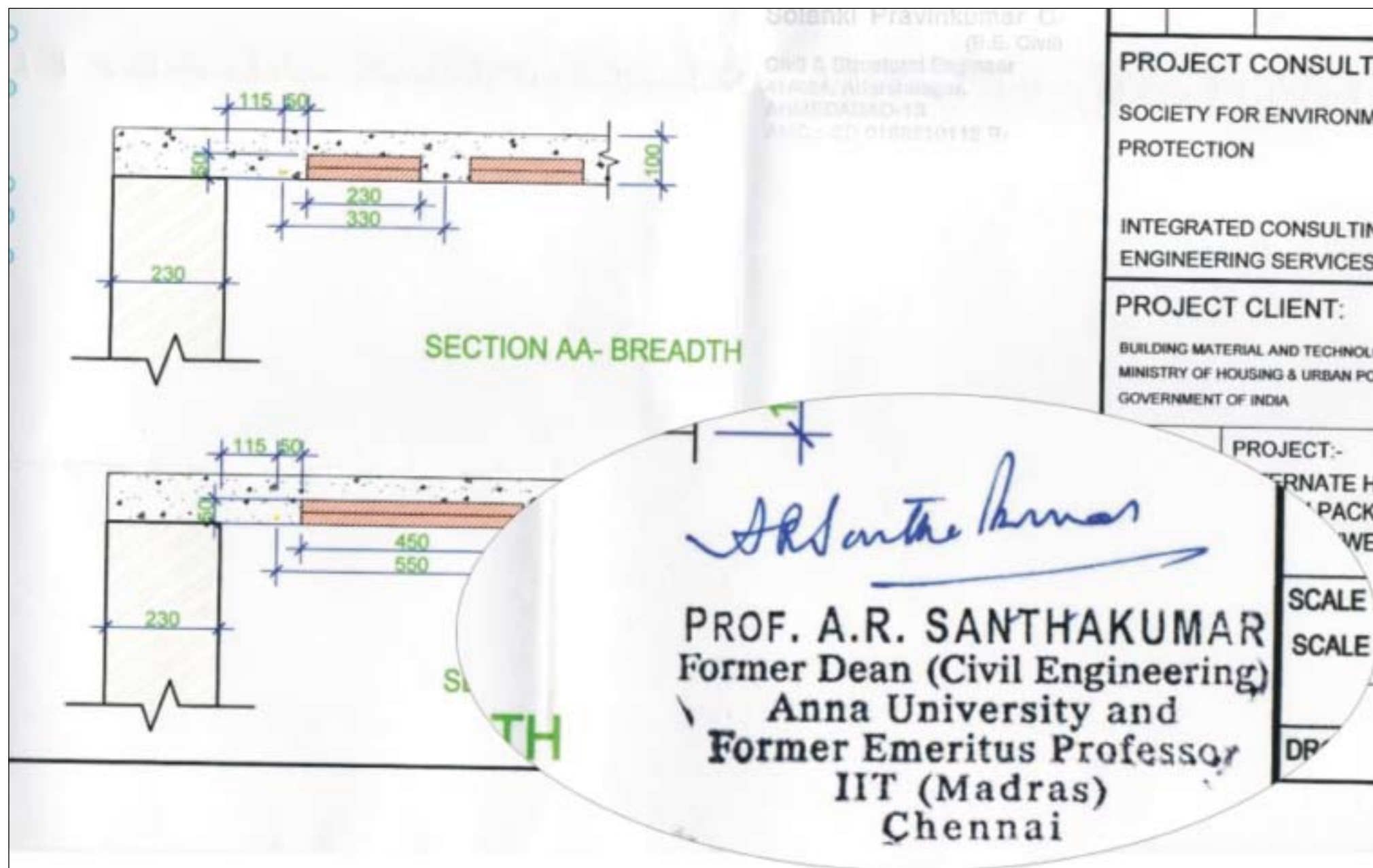
Proof Checking

7

While working on the structural design of the various structures, we had taken utmost care and precautions to ensure conformity with available codal framework where ever possible. Still to ensure safety, a third party proof checking process was carried out.

All the structural drawings of the project were proof checked by Dr. A. R. Santhakumar (Prof. Emeritus – IIT, Madras). Dr. A. R. Santhakumar; is one of the authorities on the subject. He is one of the few persons in the country who has worked on validation of Filler slab and Rat-trap bond technologies.

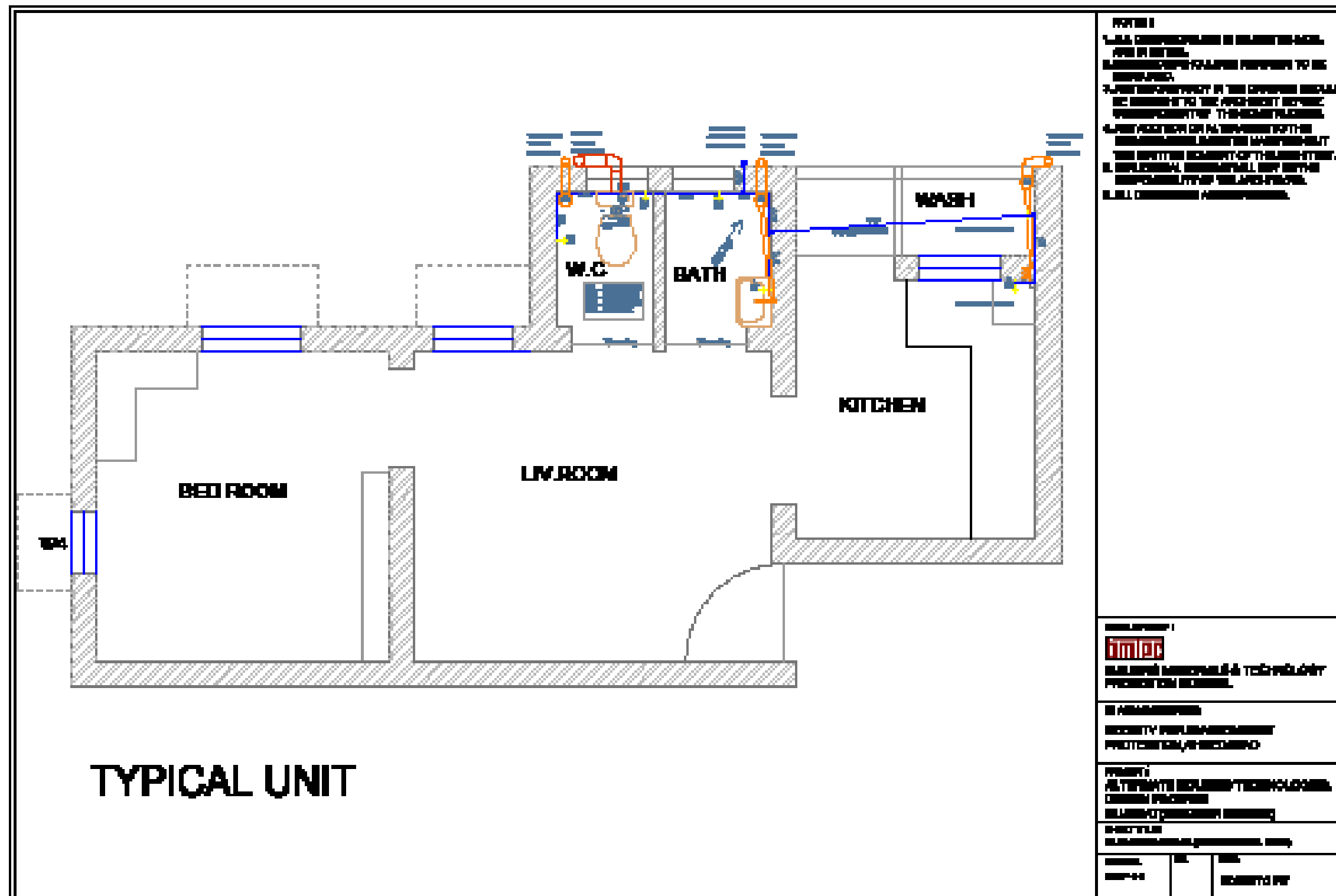
This was an additional step taken by BMTPC so as to help build the confidence of respective state government in the present design package and also ensure highest level of structural safety.



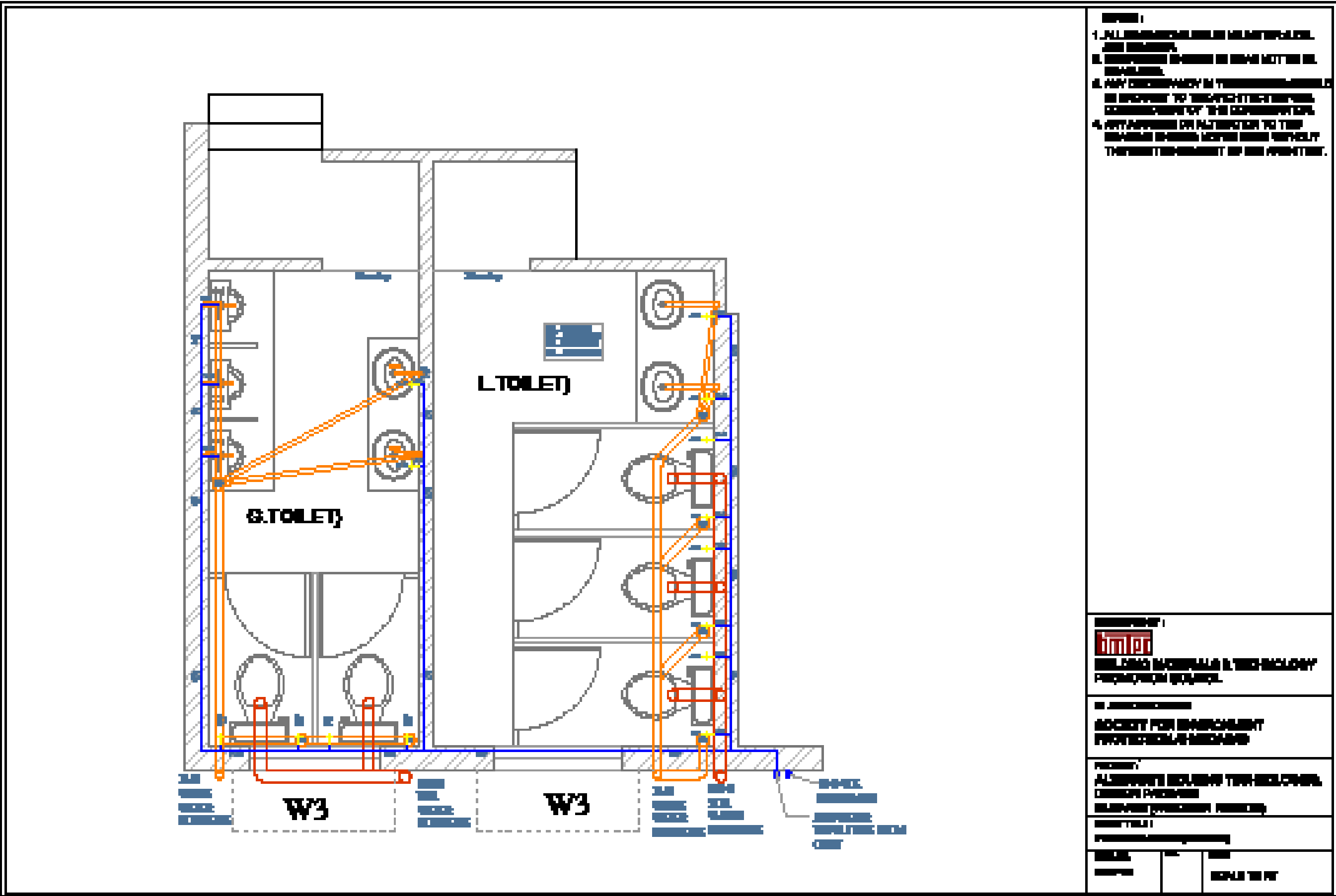
Scanned copy of the proof checked drawings by Dr. A. R. Santhakumar



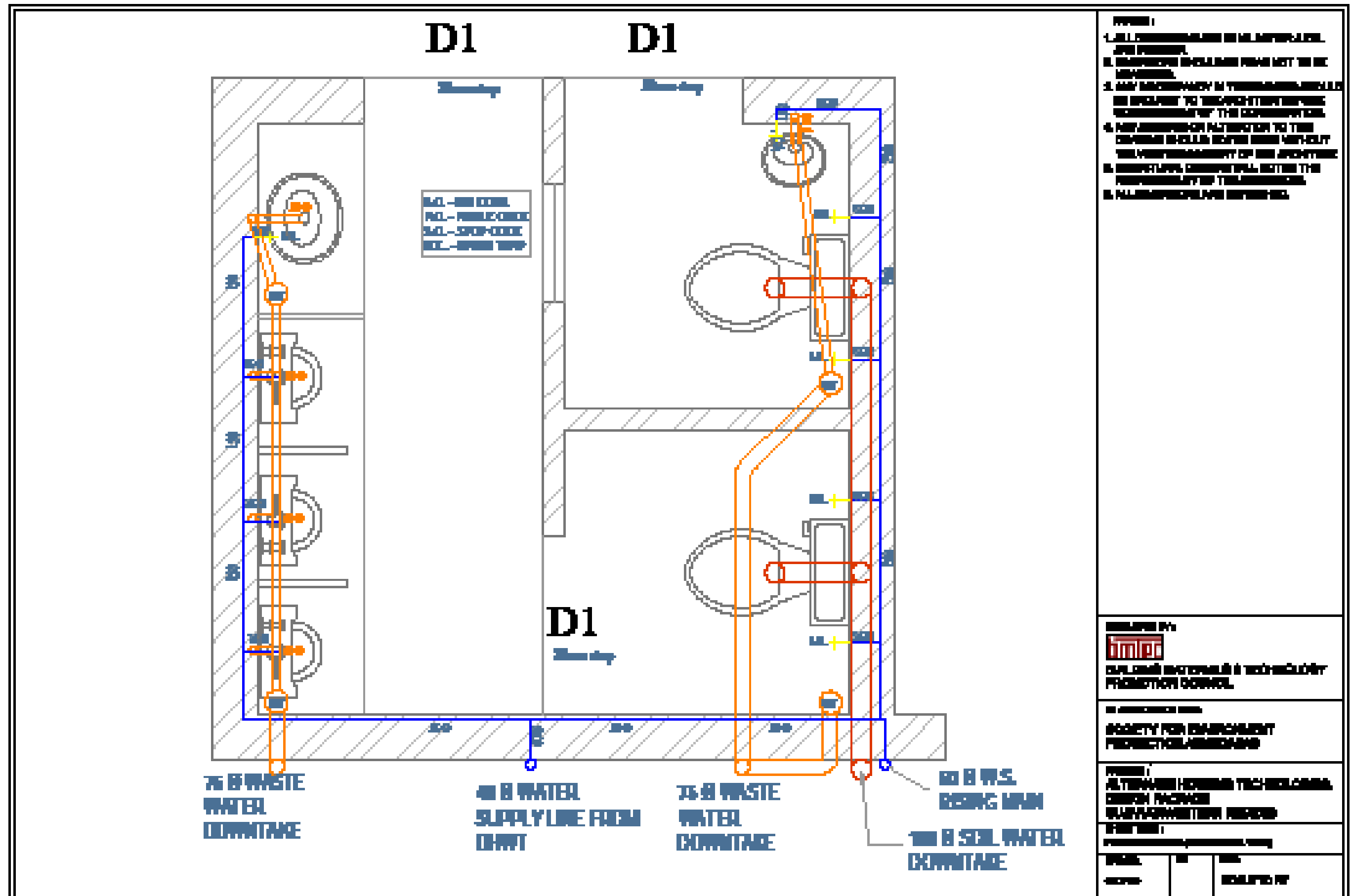
Drawing showing Plumbing details of Toilet and bath room in residential unit.



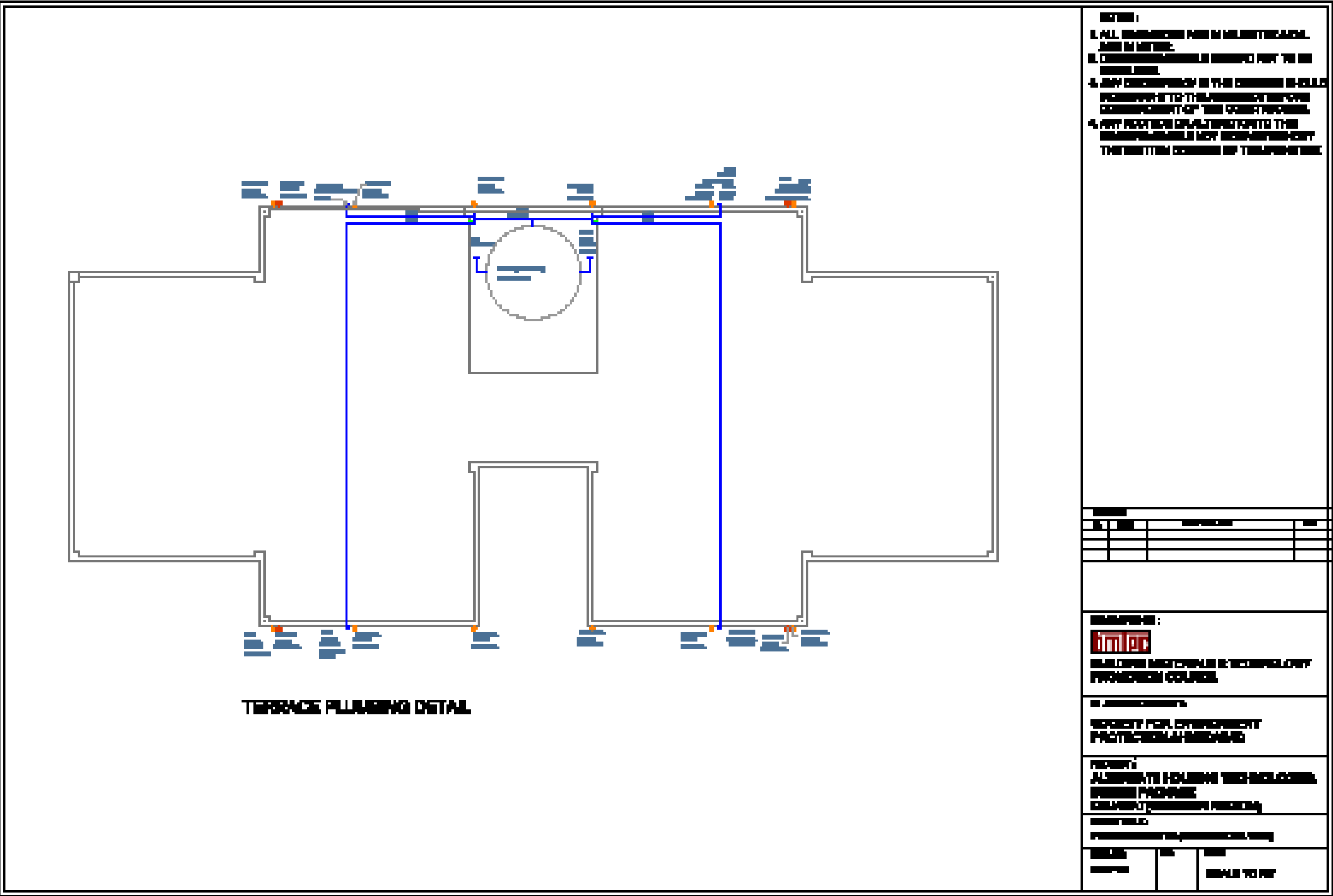
Drawing showing Plumbing details of Toilet block – School



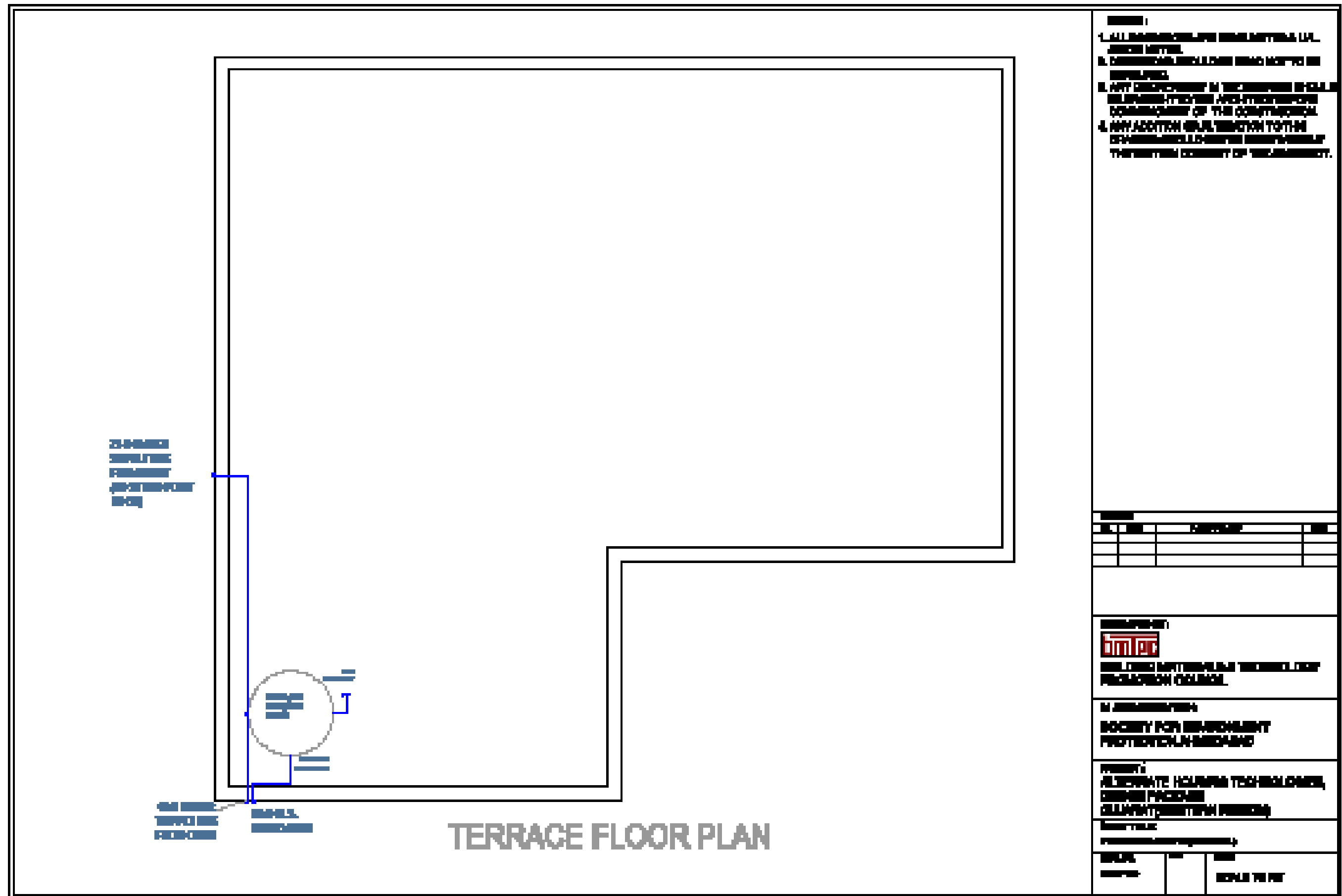
Drawing showing Plumbing details of Toilet block-Community Centre



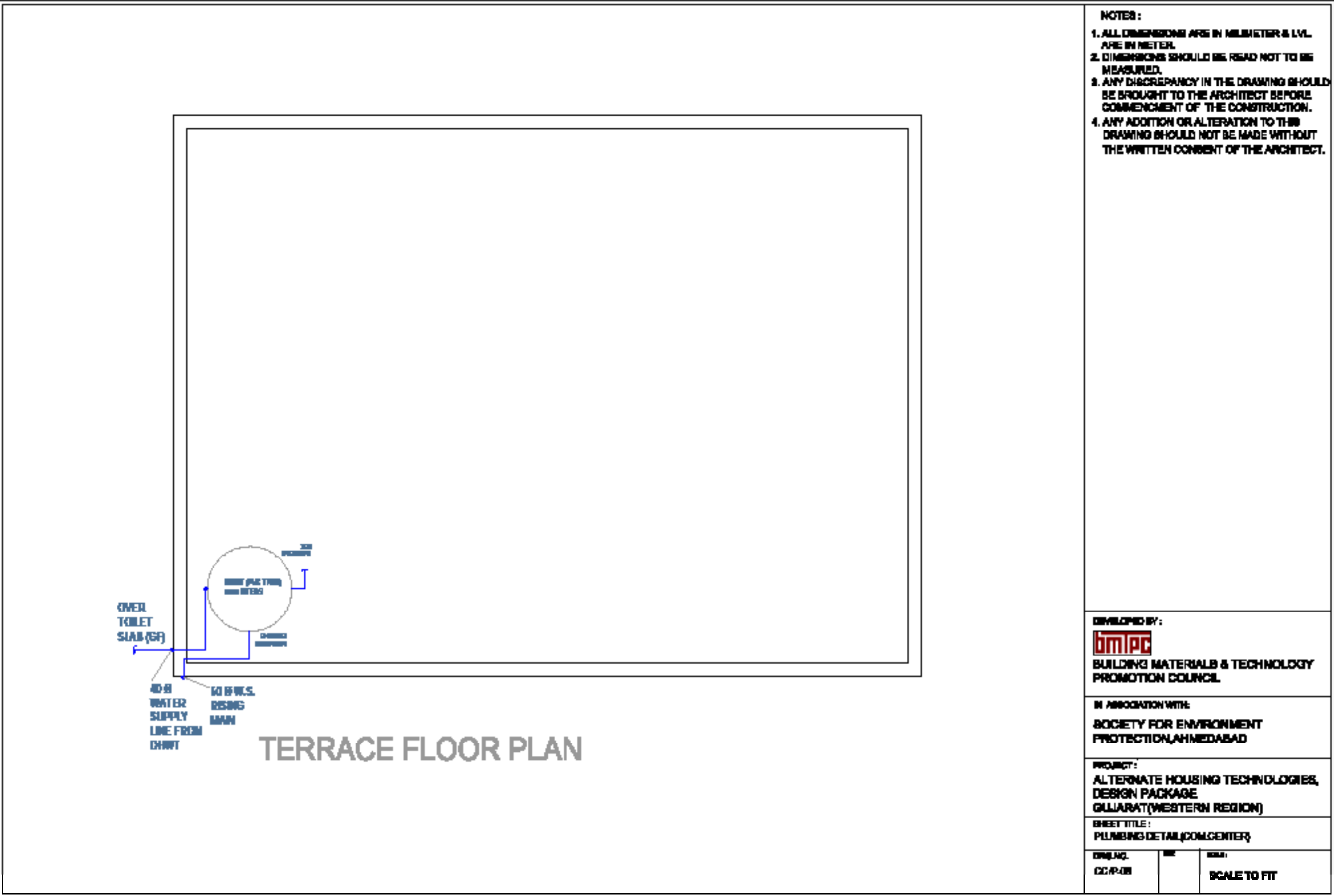
Drawing showing Plumbing details of Terrace - Residential



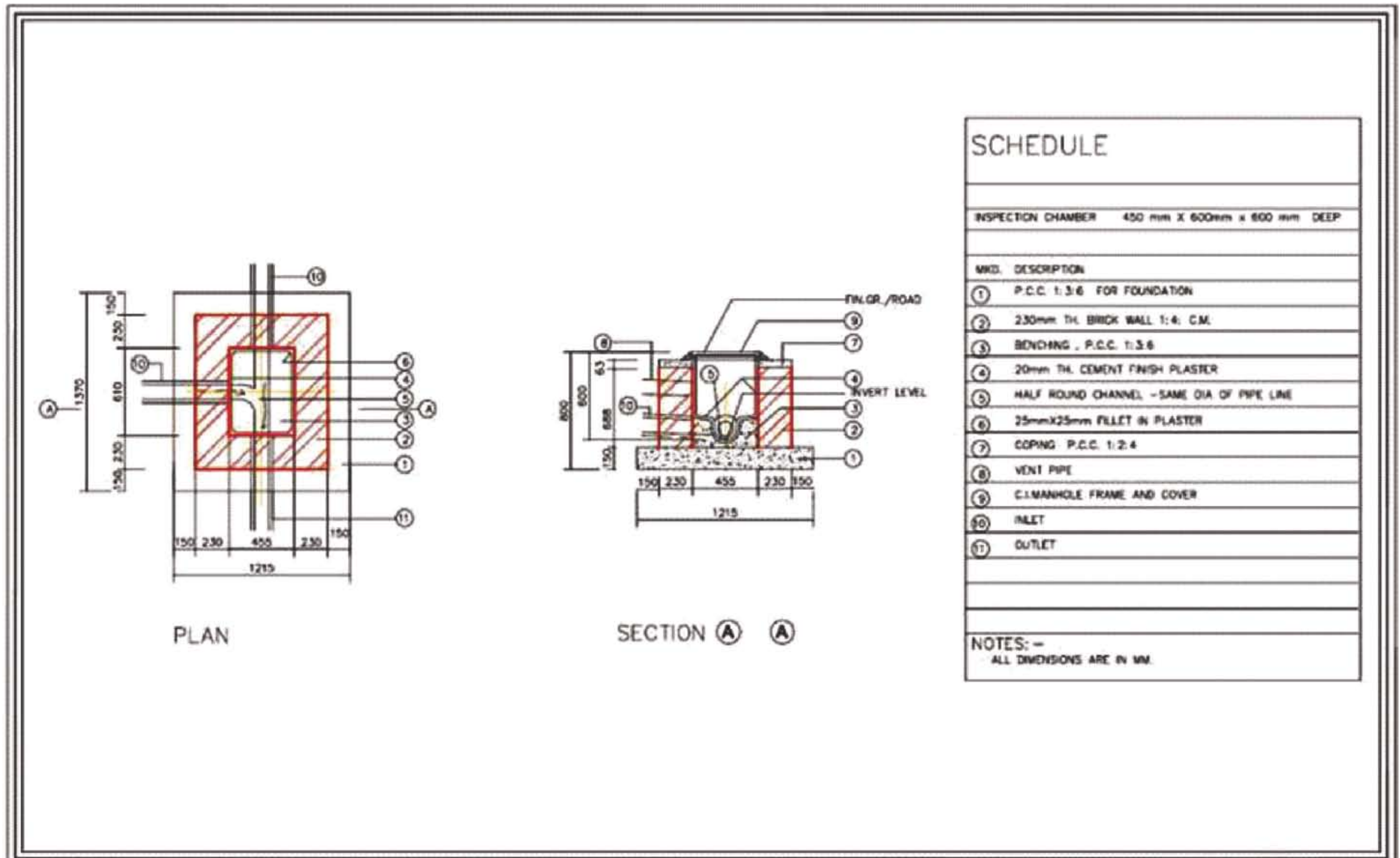
Drawing showing Plumbing details of Terrace – School



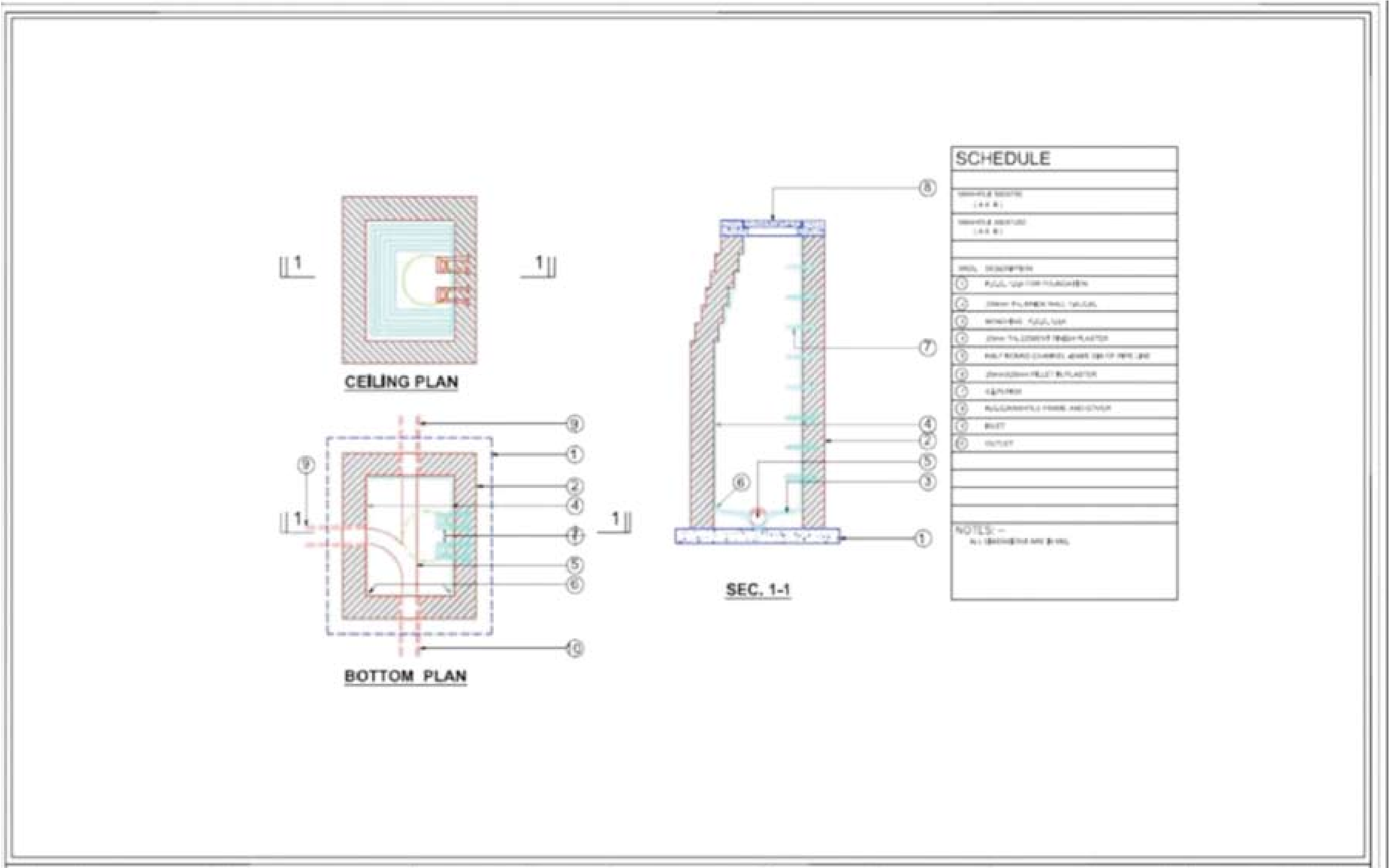
Drawing showing Plumbing details of Terrace-Community Centre



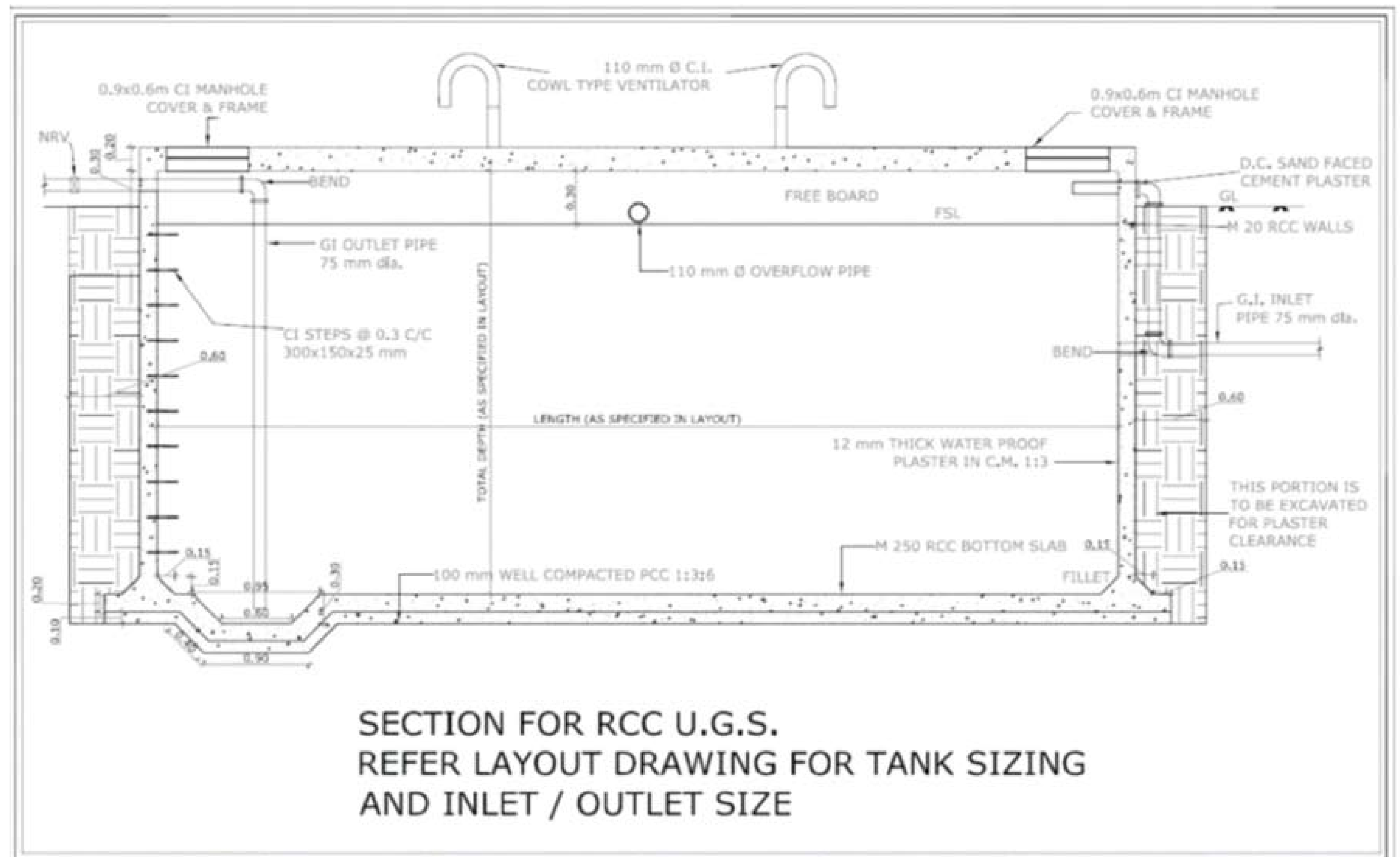
Drawing showing Plumbing details of Inspection chamber



Drawing showing Plumbing details of Manhole



Drawing showing Plumbing details of Under ground water tank



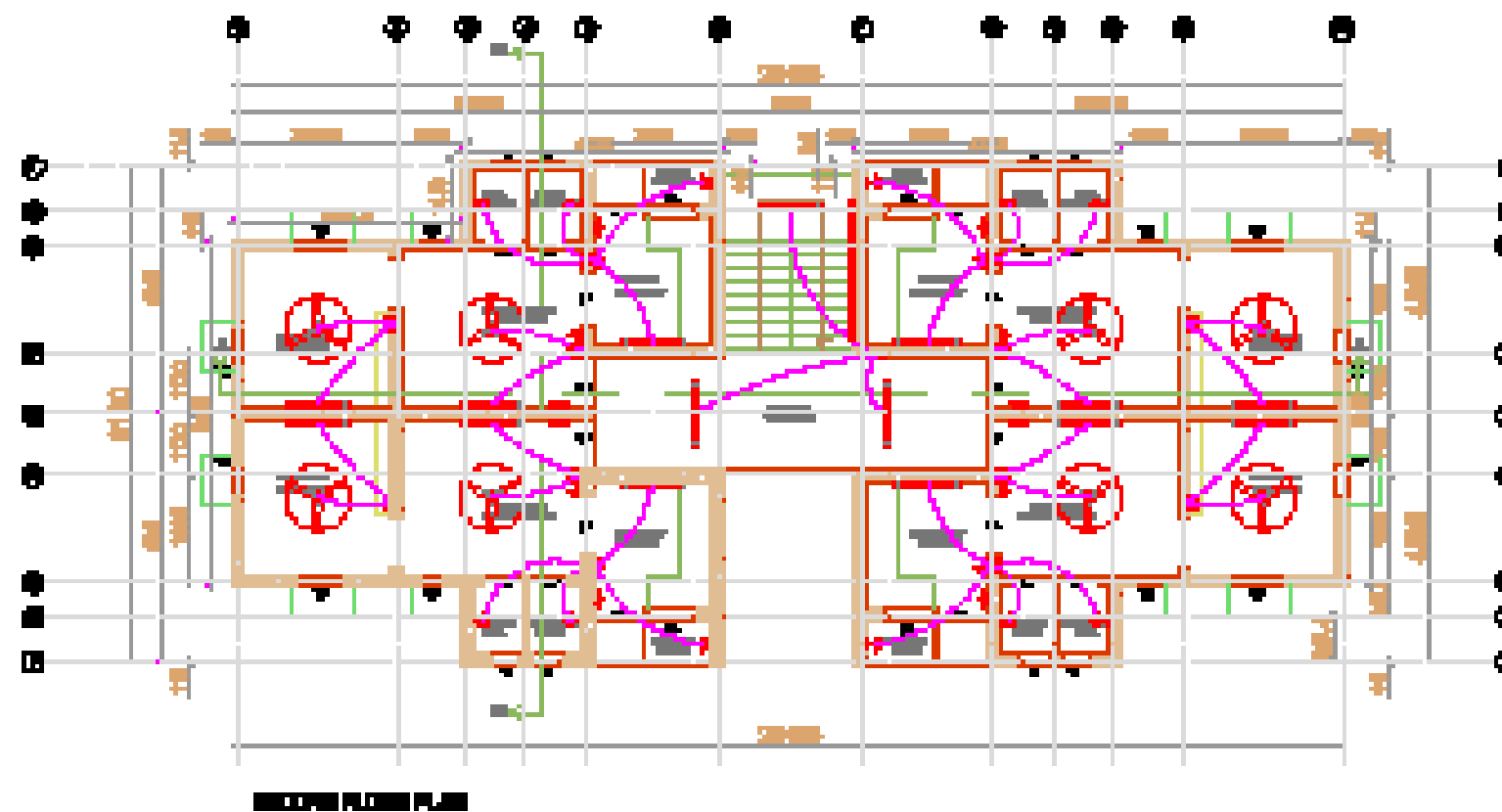
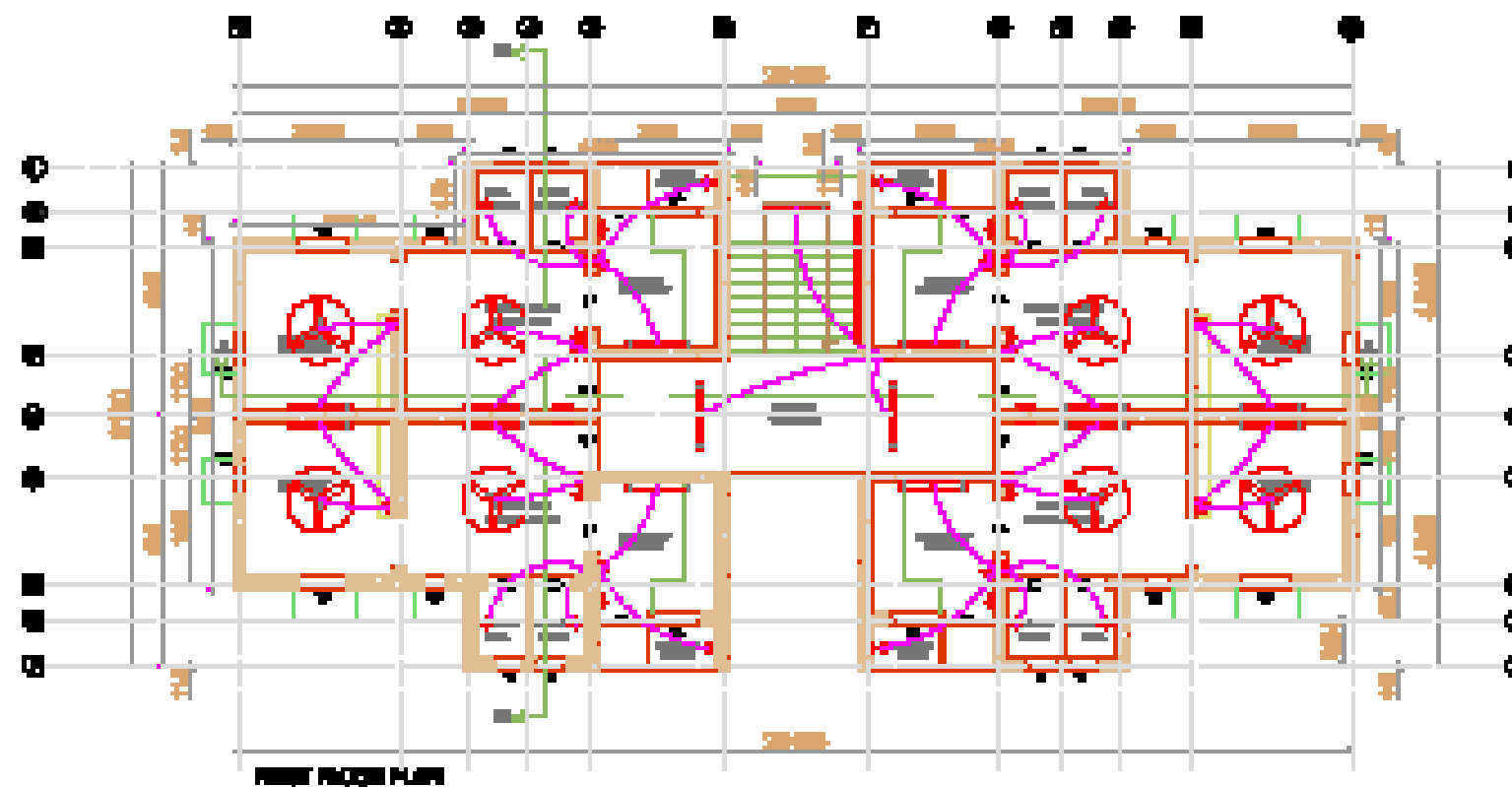
ELECTRICAL FLOOR PLAN

LEGEND

P	POWER POINT
T	TRANSFORMER
EL	ELECTRIC LIGHT
SW	SWITCH
F	FUSES
PP	POWER POINT
CB	CIRCUIT BREAKER

SCALE: 1/8" = 1'-0"

Drawing showing Electrical plan of Residential area



- NOTES :**
1. ALL DIMENSIONS ARE IN MILLIMETERS UNLESS OTHERWISE SPECIFIED.
 2. CONCRETE WALLS ARE 200MM THICK UNLESS OTHERWISE SPECIFIED.
 3. ALL DIMENSIONS IN THIS DRAWING SHOULD BE CHECKED BY THE ARCHITECT BEFORE CONSTRUCTION OF THE BUILDING.
 4. ANY ALTERATION OR ADDITION TO THIS DRAWING SHOULD BE IN WRITING AND SIGNED BY THE ARCHITECT.
 5. THE ARCHITECT SHALL BE RESPONSIBLE FOR THE DESIGN OF THE BUILDING.
 6. ALL DIMENSIONS ARE IN METERS.

LEGEND	
	SWITCH
	WALL WITH ROOF
	DOOR
	WALL
	SWITCH BOARD
	WALL WITH ROOF
	DOOR
	WALL
	SWITCH BOARD

PROJECT :

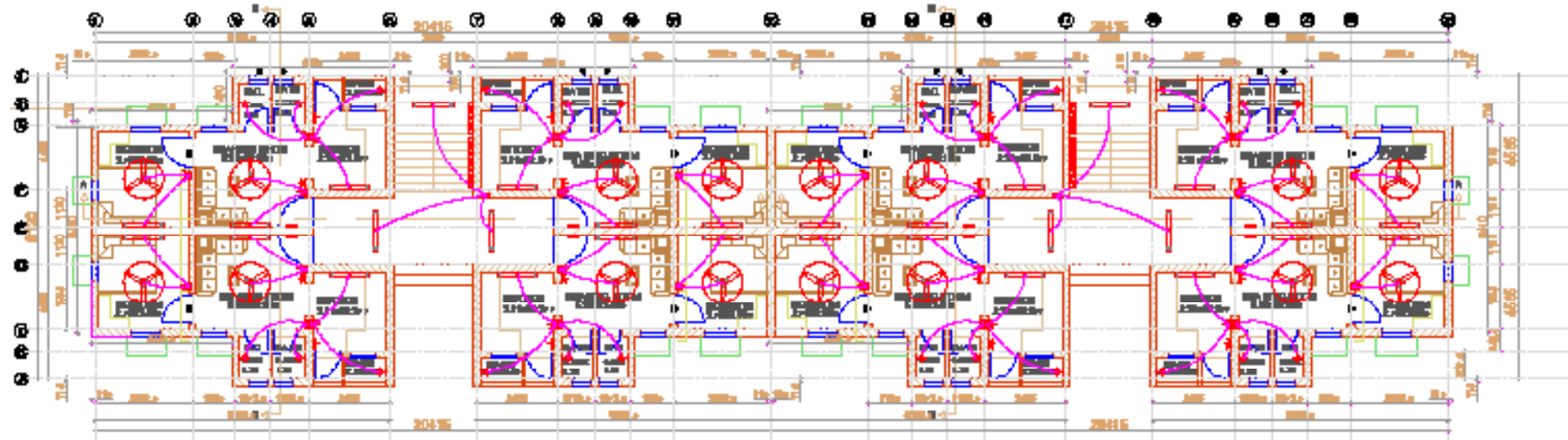
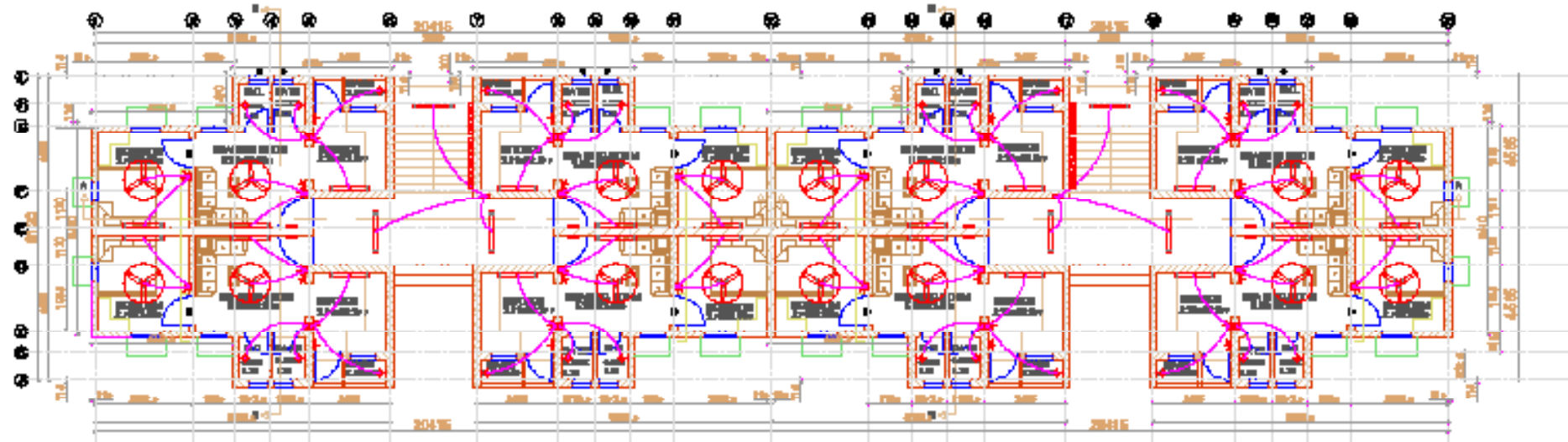
 BUILDING MATERIALS & TECHNOLOGY
 PROMOTION COUNCIL

REPORT NO. :
 REPORT FOR ENVIRONMENT
 PROTECTION & DESIGN

PROJECT :
 ALTERNATE BUILDING TECHNOLOGIES,
 DESIGN PROPOSAL
 (SUBMITTING WITH PROPOSAL)
PROJECT :
 ELECTRICAL FLOOR PLAN BLOCK-A

DATE :	BY :	SCALE :
15-11-2023		SCALE TO FIT

Drawing showing Electrical plan of Residential area



NOTES :

1. ALL DIMENSIONS ARE IN MILLIMETER & LVL ARE IN METER.
2. DIMENSIONS SHOULD BE READ NOT TO BE MEASURED.
3. ANY DISCREPANCY IN THE DRAWING SHOULD BE BROUGHT TO THE ARCHITECT BEFORE COMMENCEMENT OF THE CONSTRUCTION.
4. ANY ADDITION OR ALTERATION TO THIS DRAWING SHOULD NOT BE MADE WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT.
5. STRUCTURAL DESIGNS WILL NOT BE THE RESPONSIBILITY OF THE ARCHITECTS.
6. ALL DIMENSIONS ARE UNFINISHED.

LEGEND

	F	FAN POINT
	T	SINGLE TUBE LIGHT POINT OR NORMAL BRACKET LIGHT POINT
	SB	SWITCH BOARD
	P	IN PLUG POINT WITH IN SWITCH
	PP	IN PLUG POINT WITH IN SWITCH
	DB	DISTRIBUTION BOARD
		METER BOARD

DEVELOPED BY :



BUILDING MATERIALS & TECHNOLOGY
PROMOTION COUNCIL

IN ASSOCIATION WITH:

SOCIETY FOR ENVIRONMENT
PROTECTION, AHMEDABAD

PROJECT :

ALTERNATE HOUSING TECHNOLOGIES,
DESIGN PACKAGE
GUJARAT (WESTERN REGION)

SHEET TITLE :

ELECTRICAL FLOOR PLAN (BLOCK-BMC)

DRG. NO.:

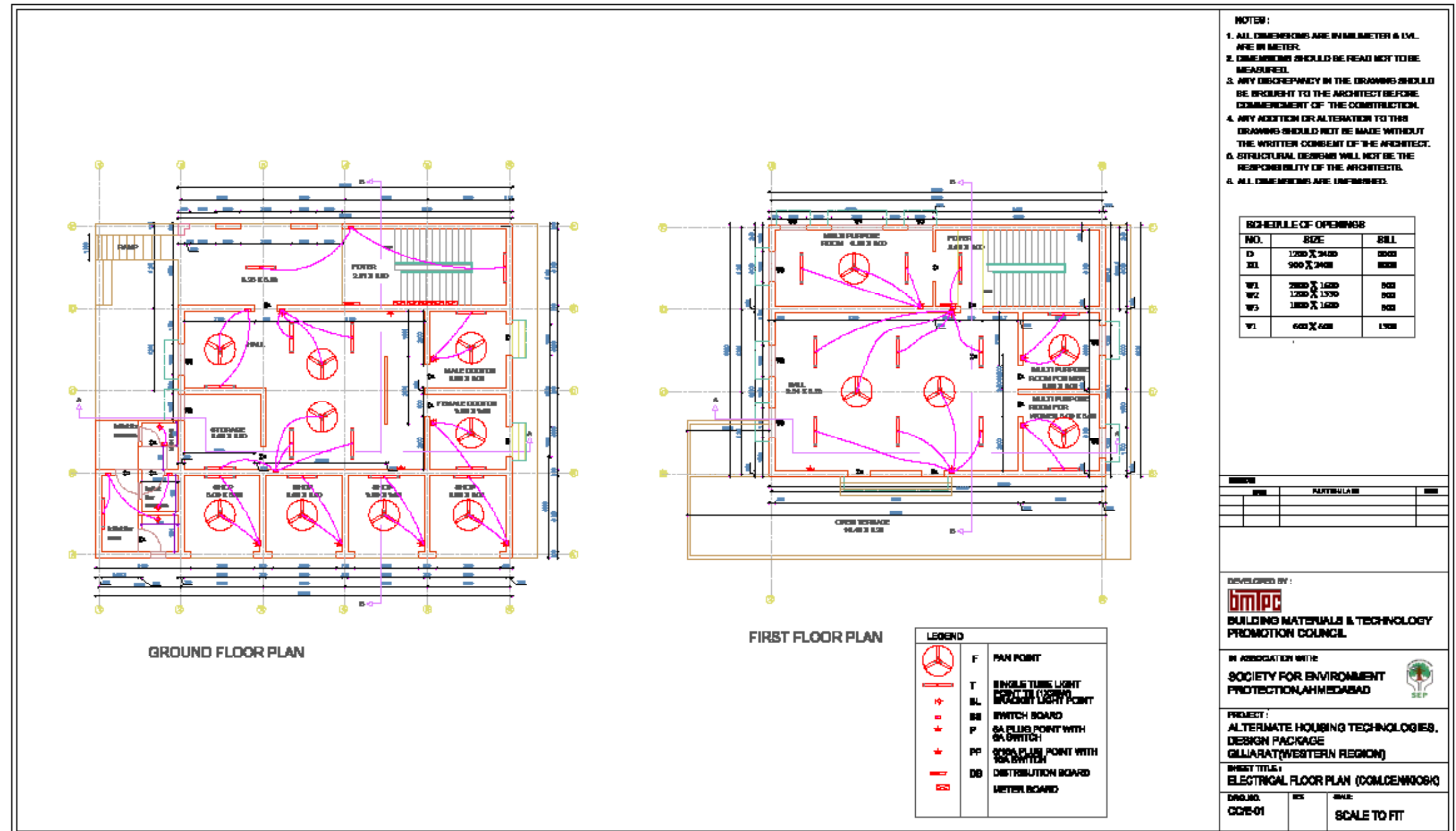
RLME-03

REV.:

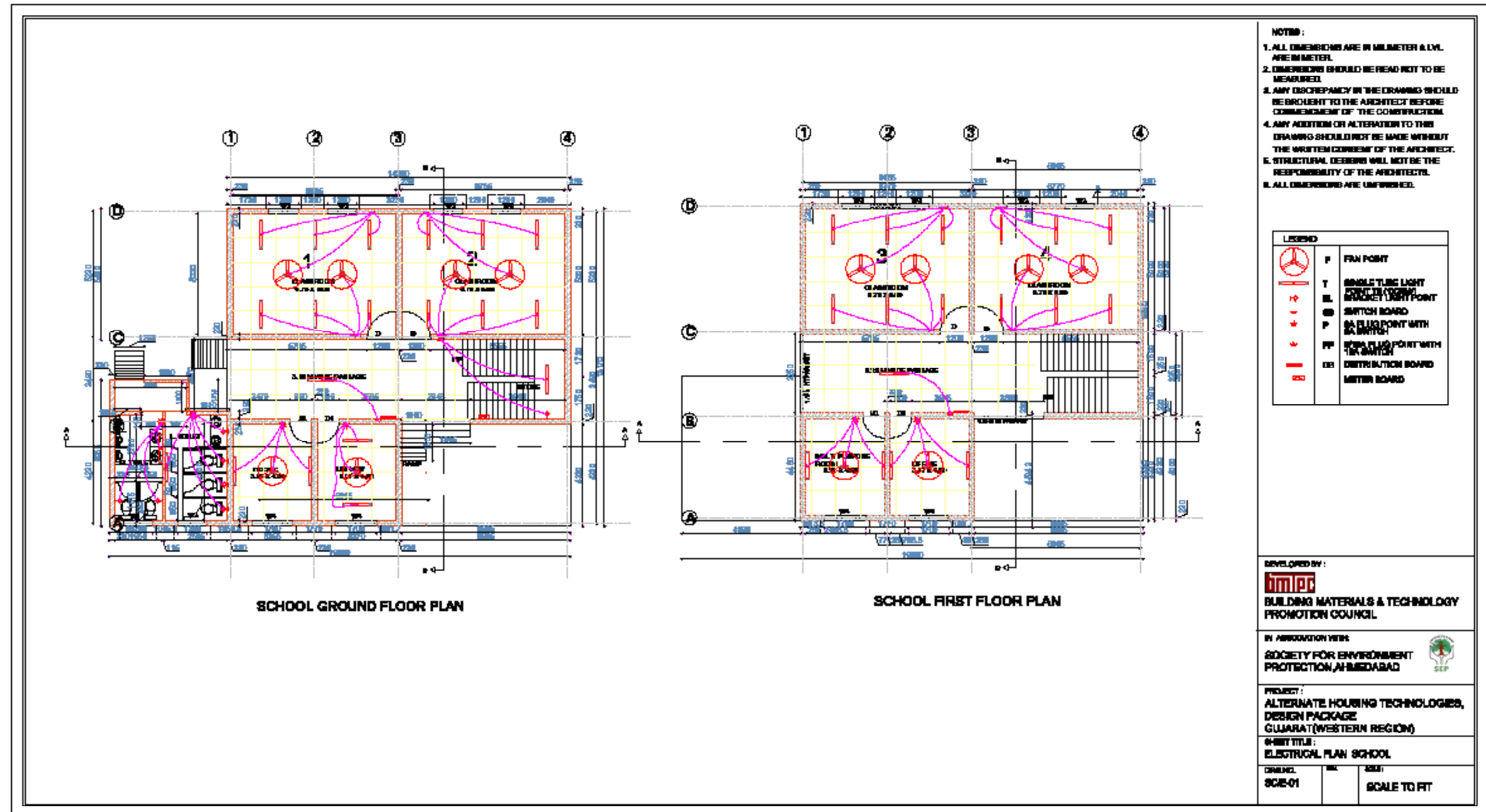
SCALE:

SCALE TO FIT

Drawing showing Electrical plan of Community Centre



Drawing showing Electrical plan of School





a. Structural design

Followings are the assumptions and parameters which constitute the preliminary structural design note for the load bearing masonry buildings.

Load path

The box system utilizes walls which support vertical loads and also resist seismic forces. This system also has horizontal resisting elements, such as floors acting as diaphragms, which transmit the seismic forces to the walls. The walls oriented parallel to the direction of the load resist the reactions from the diaphragm as well as inertia forces from the mass of the wall itself. From the walls the horizontal load gets transmitted to the masonry box at foundation level through the plinth bands.

Soil Pressure

All parts of the building are tied together in such a manner that the building acts as one unit. Plinth band, lintel bands are used for this in brick masonry construction.

Openings in load bearing walls are staggered and reinforced all around.

Soil Pressure	The SBC is assumed as 150 kN/m ² in the absence of soil investigation report. The same shall be verified at the detail design stage for deviation in the SBC value, if any, for foundation design.
The typical calculation of bearing pressure at foundation level is as below:	

Bearing pressure	0.129 N/mm ²
Stress on wall	129 kN/m ² , which is less than assumed SBC of 150 kN/m ² , hence OK.
The consideration for effective and gross area of the wall taken as 0.85, the typical calculation of stress on walls is as below:	
Pressure on walls	Is 0.6 65 N/mm ² , which is OK for masonry having brick units with crushing strength of 70 kg/cm ²
Compliance to IS 4326:1993	
To impart the box action in the buildings, following compliance has been adopted. All the residential buildings fall in the category D and all the community buildings fall in the category E.	

Structural Design Assumptions

Strengthening arrangements:

	Z	I	Sa/G	R	$A_h = (ZI/2)^2 (S_a G/R)$	Category	Strengthening Arrangements	a	b	c	d	e	f	g	h
								mortar	lintel band	roof & gable band	vert steel @ corner/junction	vert steel @ joints	bracing in plan @ the lvl of roof	plinth band	Dowel bars @ all lvl @ corner/junction
Residential buildings	0.14	1.00	2.50	2.50	0.08	D	Storey 1&2 (a to g)	HQ=1:4 OR 1:1.5 Brick unit 75 kg/cm ²	75mm thick, 2-10HYSD, links 6mm dia@150mm c/c	-	12HYSD	12HYSD	-	same as lintel band	NOT REQUIRED
							Storey 3&4 (a to h)				12HYSD and 16HYSD	12HYSD and 16HYSD			8diaHYSD, U-bar, 900 mm long
Community buildings	0.14	1.50	2.50	2.50	0.12	E	Storey 1to 3 (a to h) Storey 4 not allowed	HQ=1:4 OR 1:1.5 Brick unit 75 kg/cm ²	75mm thick, 2-12HYSD, links 6mm dia@150mm c/c	-	16HYSD	16HYSD	-	same as lintel band	8diaHYSD, U-bar, 900 mm long

Size and position of openings in bearing walls:

	Z	I	Sa/G	R	$A_h = (ZI/2)^2 (S_a G/R)$	Category	Strengthening Arrangements	Distance from the inside corner of outside wall (mm)	Opening percentage	Pier width between consecutive openings (mm)	Vertical distance between two openings (mm)	Width of opening of ventilator			
Residential buildings	0.14	1.00	2.50	2.50	0.08	D	Storey 1&2 (a to g)	450	42%	560	600	900			
							Storey 3&4 (a to h)		53%						
Community buildings	0.14	1.50	2.50	2.50	0.12	E	Storey 1to 3 (a to h) Storey 4 not allowed	450	42% & 53%	560	600	900			

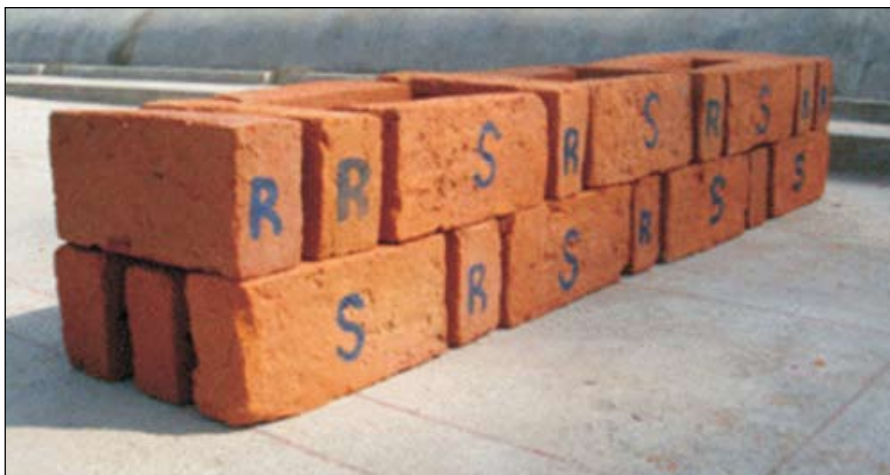
b. Technologies

The construction technologies for the project are selected considering the quantum of materials used in a particular technology, the cost of construction and the skill levels required for constructing the same. The technologies proposed are tested, proven, experienced and established.

Considering the project requirements and the basis of design, load bearing structural system is selected for G+ 2 stories. The foundation system proposed is conventional step footing with two offsets of 350mm and 450mm considering the dead load of the structure. The walling system proposed is Rat-trap bond of 230mm thickness as it uses less quantity of material and is cost efficient. The roofing system proposed is Filler slab which will have mangalore tiles as the filler material. By proposing the rat-trap bond and filler slab we have also reduced the dead load of the structure.

Walling System: Rat-trap Bond

A "Rat-Trap Bond" is a type of wall brick masonry bond in which bricks are laid on edge such that the shinner and rowlock are visible on the face of masonry. This gives the wall with an internal cavity bridged by the rowlock. Each alternate course begins with two Rowlocks (R), followed by a Shiner. The intermediate course begins with a Shiner (S), succeeded by a Rowlock. For walls without corners, such as in the case of non-load bearing walls between columns in framed structure, both methods are correct and can be applied according to the preferences of the masons. However, for walls with corners method (b) must be applied.



Advantages & Savings:

For 1 m³ brick wall a total of 550 bricks are required for English bond masonry wall. For a RTB masonry wall per m³ a total of 360 bricks are used.

By adopting this method of bonding, it is possible to use approx. 35 % less bricks and 50 % less cement mortar; this reduces the cost of a 9" wall by 30 %.

It is a cavity wall construction with added advantage of thermal comfort. The interiors remain cooler in summer and warmer in winters.

By adopting rat-trap bond, one can create aesthetically pleasing wall surface and plastering can be avoided.

All concrete work such as pillars, sill bands, window and tie beams can be concealed and hence only brick masonry work is exposed.

The walls have approx. 20% less dead weight and hence the foundations, depending on the bearing capacity of the soil, can suitably be redesigned to save bricks, steel and cement.

Compressive strength of the wall is equal when normal burnt clay bricks are used that any other brick bond. Rat-Trap bond masonry is considered to be stronger than flat bricks due to the production process.

Vertical wiring and plumbing can easily be made during the wall construction and even after since the cavities allow inserting the fittings.

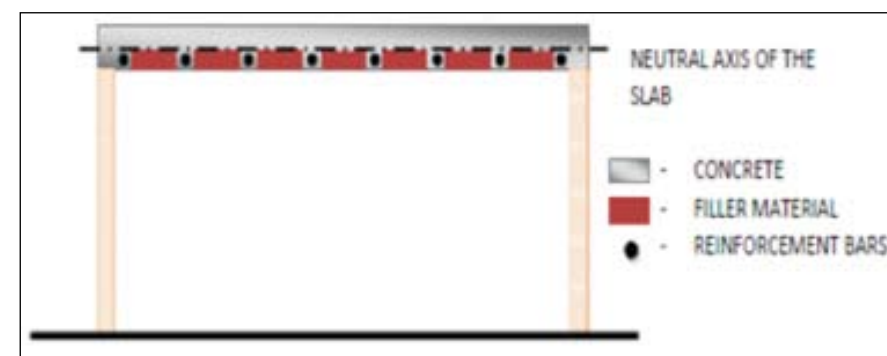
For horizontal installation of fittings, planning must be made before constructing the walls.

Rat-trap bond is a modular masonry system which can reduce wastage of bricks by un-necessary cutting.

Roofing System: Filler Slab

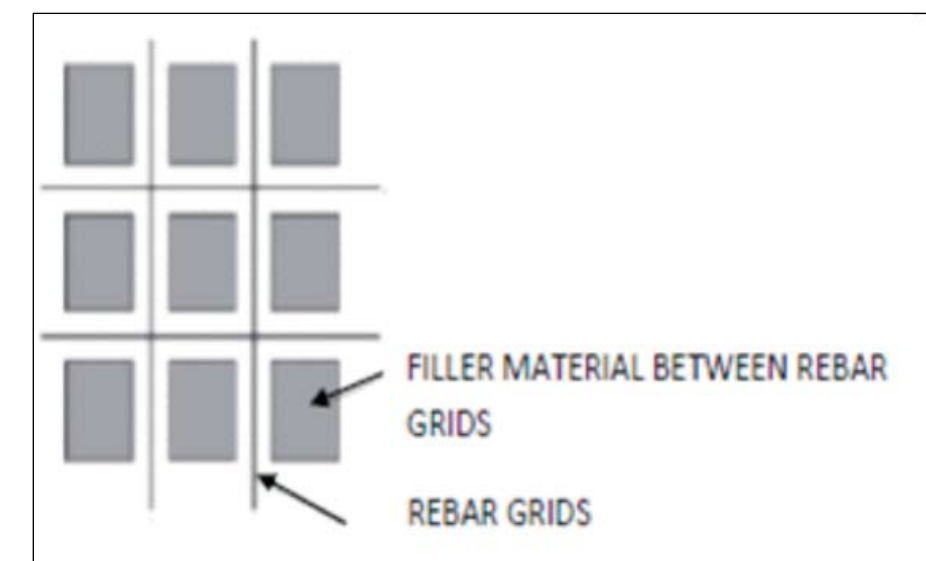
Filler slabs are basically solid reinforced concrete slabs, in which some percentage of concrete in tension zone of the slab is replaced with cheaper and light weight material (wrt. conventional concrete) known as Filler materials.

The technology is principally based on the concept that for a simply-supported slab, concrete below the neutral axis takes no tension and hence can be considered as an unnecessary waste; which can be



replaced by Filler material/s, within the slab. These filler materials are so placed as not to compromise the structural strength and durability, which eventually results in replacing unwanted and non-functional tension concrete, thus resulting in economy. RCC Filler Slab are safe, sound and provide aesthetically pleasing pattern ceilings and also need no plaster.

Light weight, inexpensive materials such as low grade Mangalore tiles, Bricks, Hollow Concrete blocks, Stabilized Mud blocks/ Hollow Mud blocks, Clay pots, Coconut shells etc. are used as filler materials in filler slabs to replace the redundant concrete in tension zone. These materials are laid in the grids of steel reinforcement rods and concreting is done over them.



Advantages:

Filler slabs replace unwanted and non-functional tension concrete and also reduces quantity of steel required.

The concrete quantity required for the slab is reduced by 15-20%, the steel quantity required is lesser by 10-25%.

Considerably less amount of dead load getting transferred to the building foundation thus results in overall economy of the building.

Filler slabs are safe, sound and provide aesthetically pleasing pattern ceilings and also need no plaster.

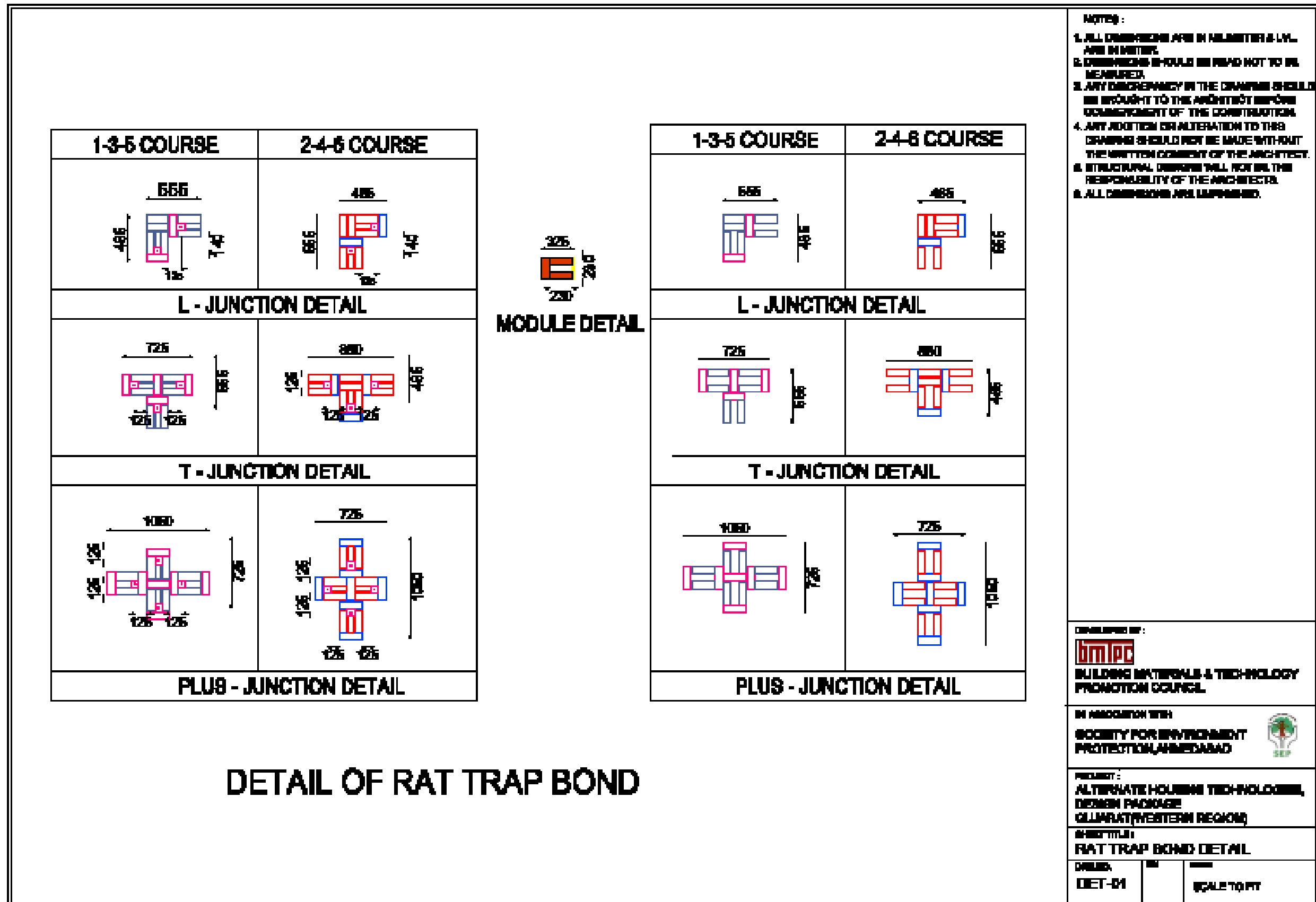
Uses locally available materials

Promotes recycling and reusing the materials hence reducing the use of virgin materials

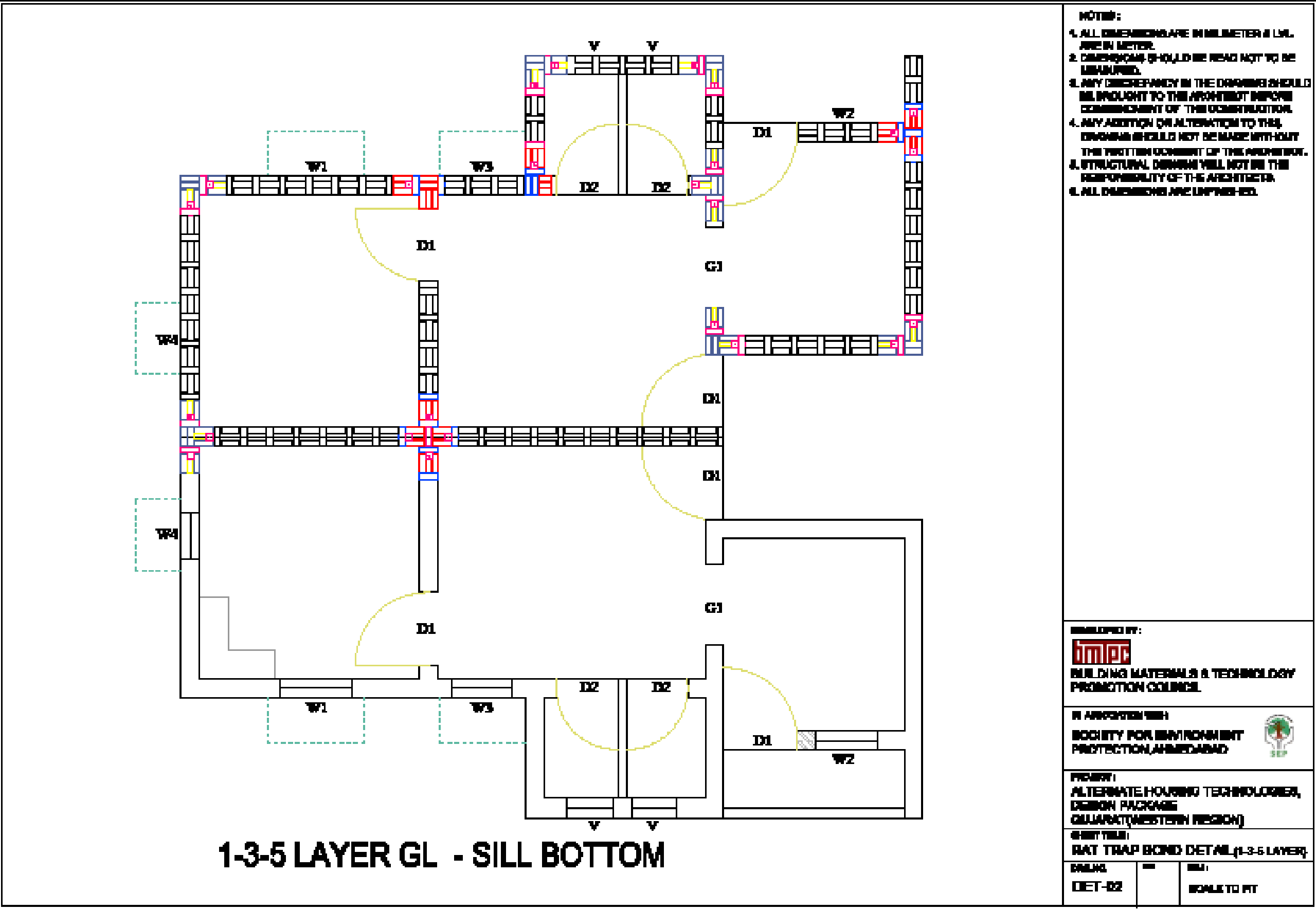
Provides better insulation to the indoor environment and avoids the requirement of cooling to some extent.

c. Rat trap bond Module Details:

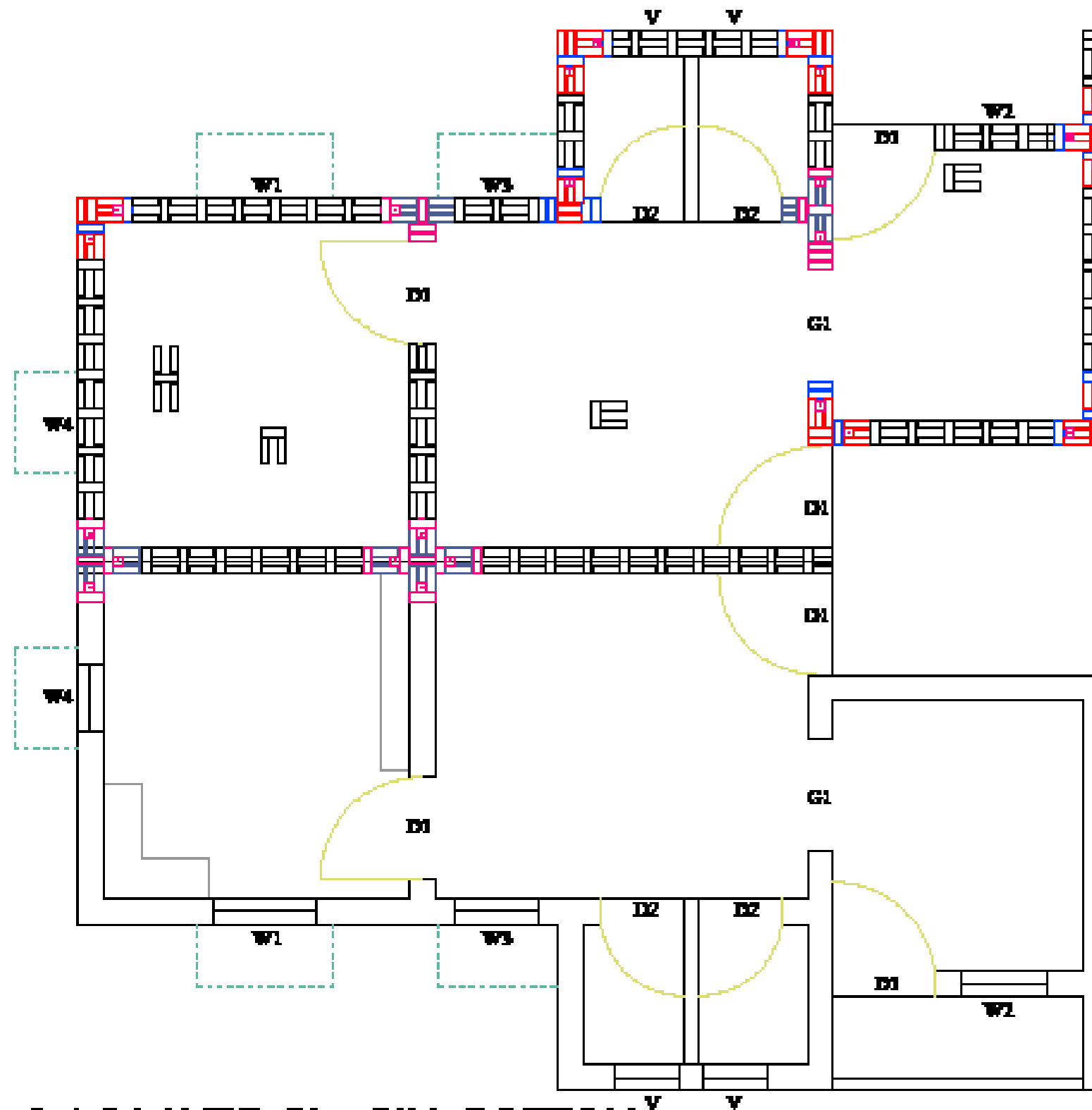
Corner & Junction Details



Rat trap bond 1-3-5 layer till sill bottom



Rat trap bond 1-3-5 layer from sill to lintel



2-4-6 LAYER GL - SILL BOTTOM

NOTES:

1. ALL DIMENSIONS ARE IN MILLIMETER & LVL ARE IN METER.
2. DIMENSIONS SHOULD BE READ NOT TO BE MISLEADING.
3. ANY DISCREPANCY IN THE DRAWING SHOULD BE BROUGHT TO THE ARCHITECT BEFORE COMMENCEMENT OF THE CONSTRUCTION.
4. ANY ADDITION OR ALTERATION TO THE DRAWING SHOULD NOT BE MADE WITHOUT THE WRITTEN CONSENT OF THE ARCHITECT.
5. STRUCTURAL DRAWING WILL NOT BE THE RESPONSIBILITY OF THE ARCHITECT.
6. ALL DIMENSIONS ARE UNFINISHED.

DEVELOPED BY:

**BUILDING MATERIALS & TECHNOLOGY
PROMOTION COUNCIL**

IN ASSOCIATION WITH:

**SOCIETY FOR ENVIRONMENT
PROTECTION, AHMEDABAD**

**PROJECT:**

**ALTERNATE HOUSING TECHNOLOGIES,
DESIGN PACKAGE
GUJARAT (WESTERN REGION)**

SHEET TITLE:

RAT TRAP BOND DETAIL (2-4-6 LAYER)

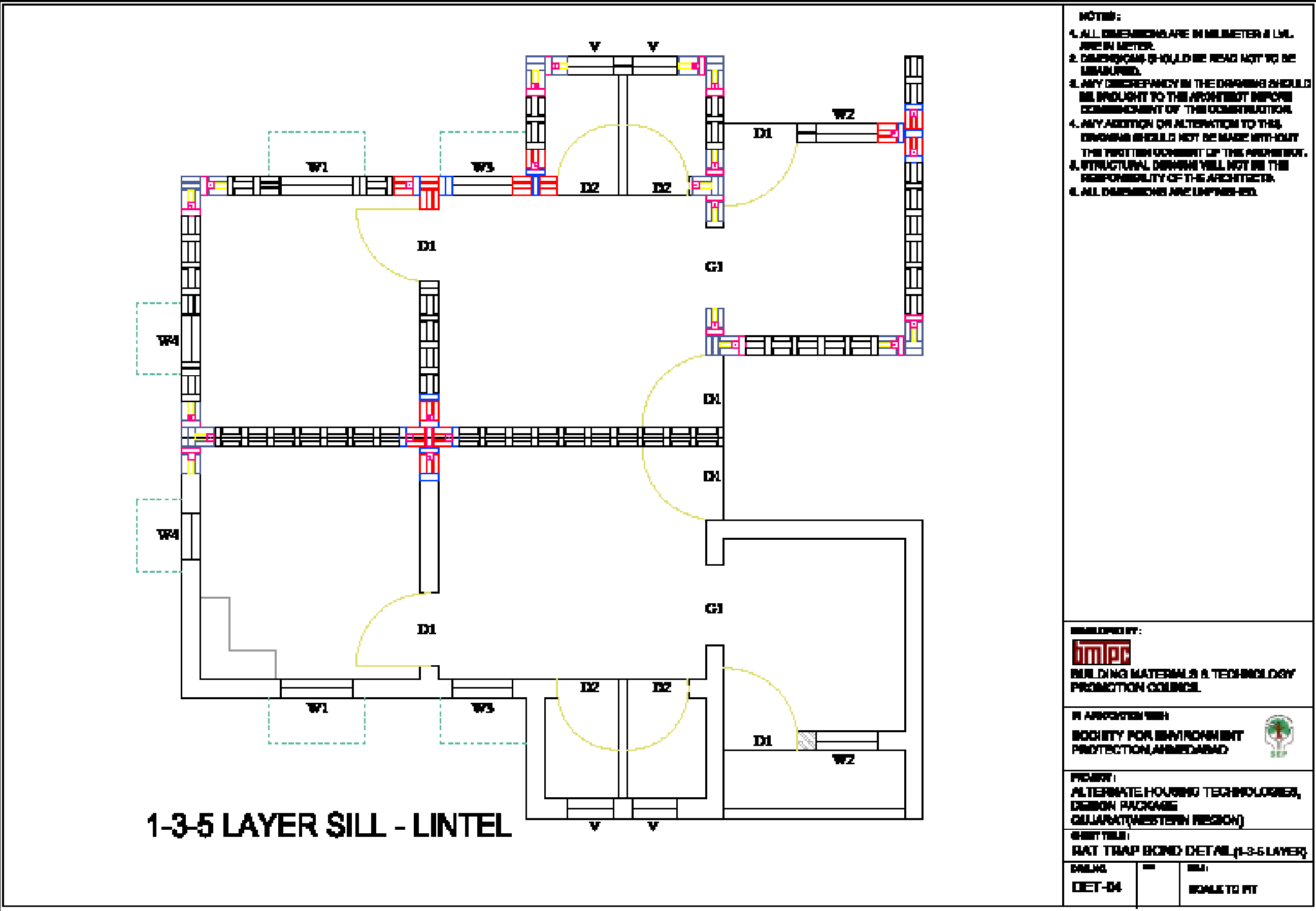
DRAWING

DET-03

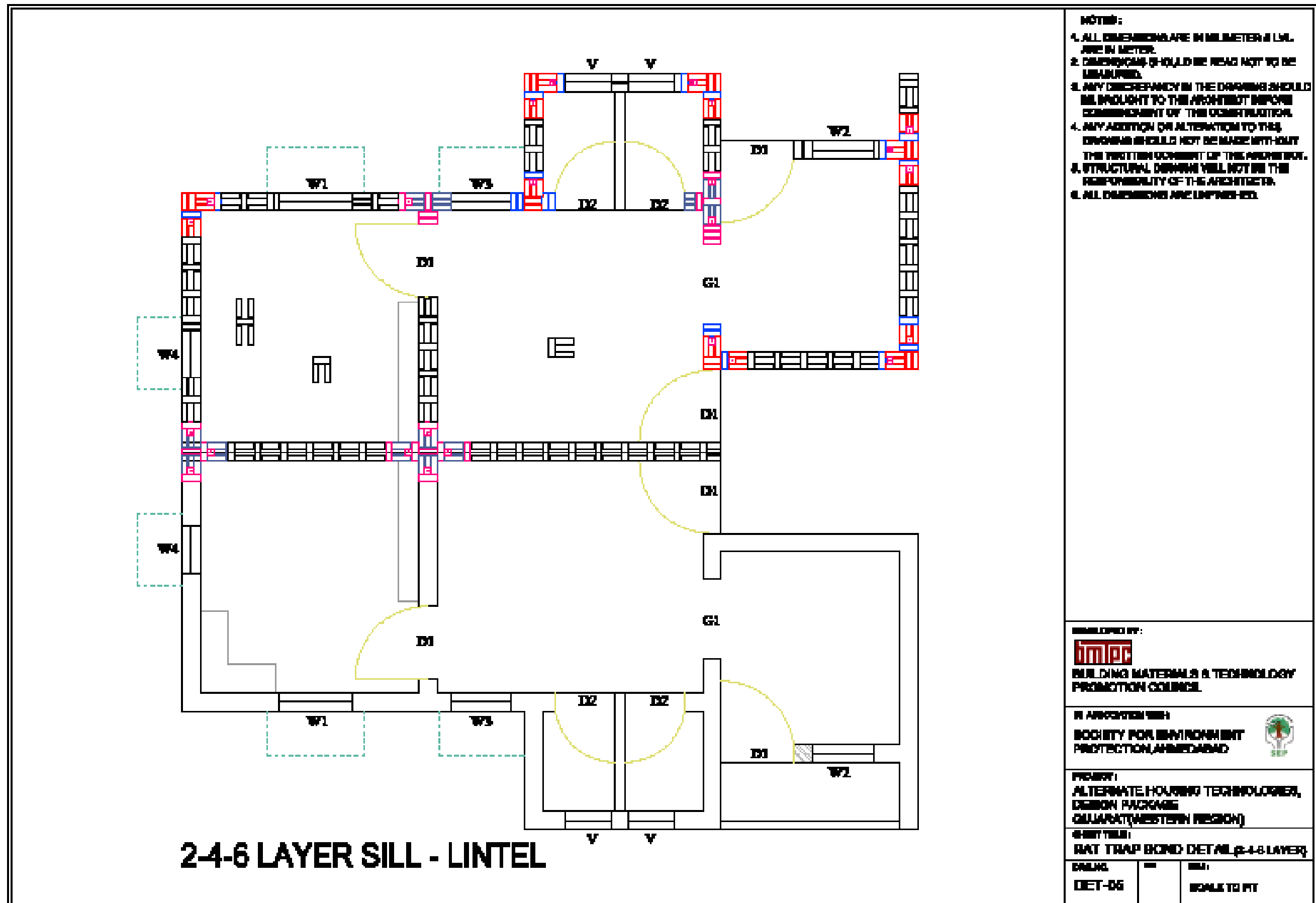
DATE:

SCALE TO FIT

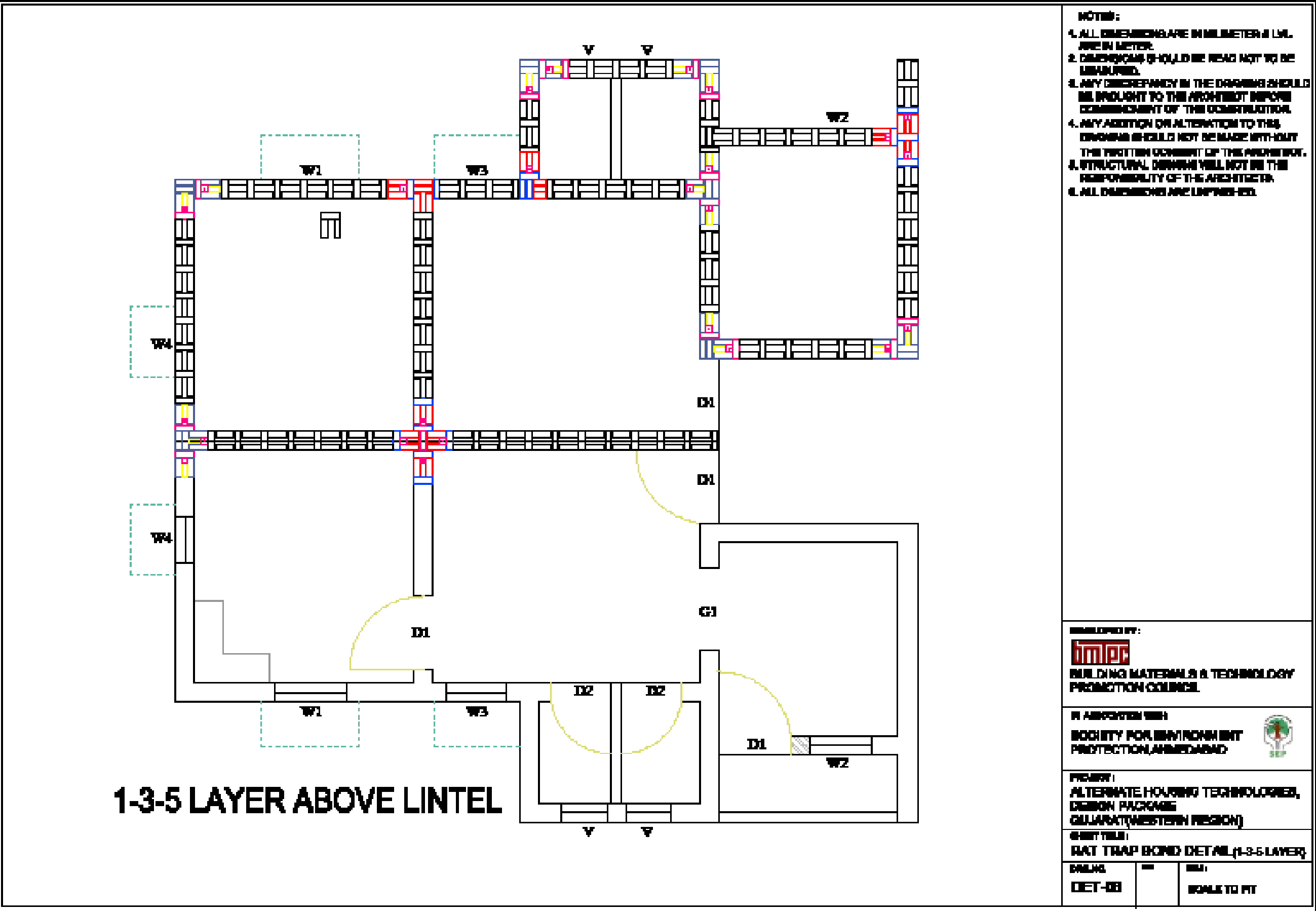
Rat trap bond 1-3-5 layer from sill to lintel



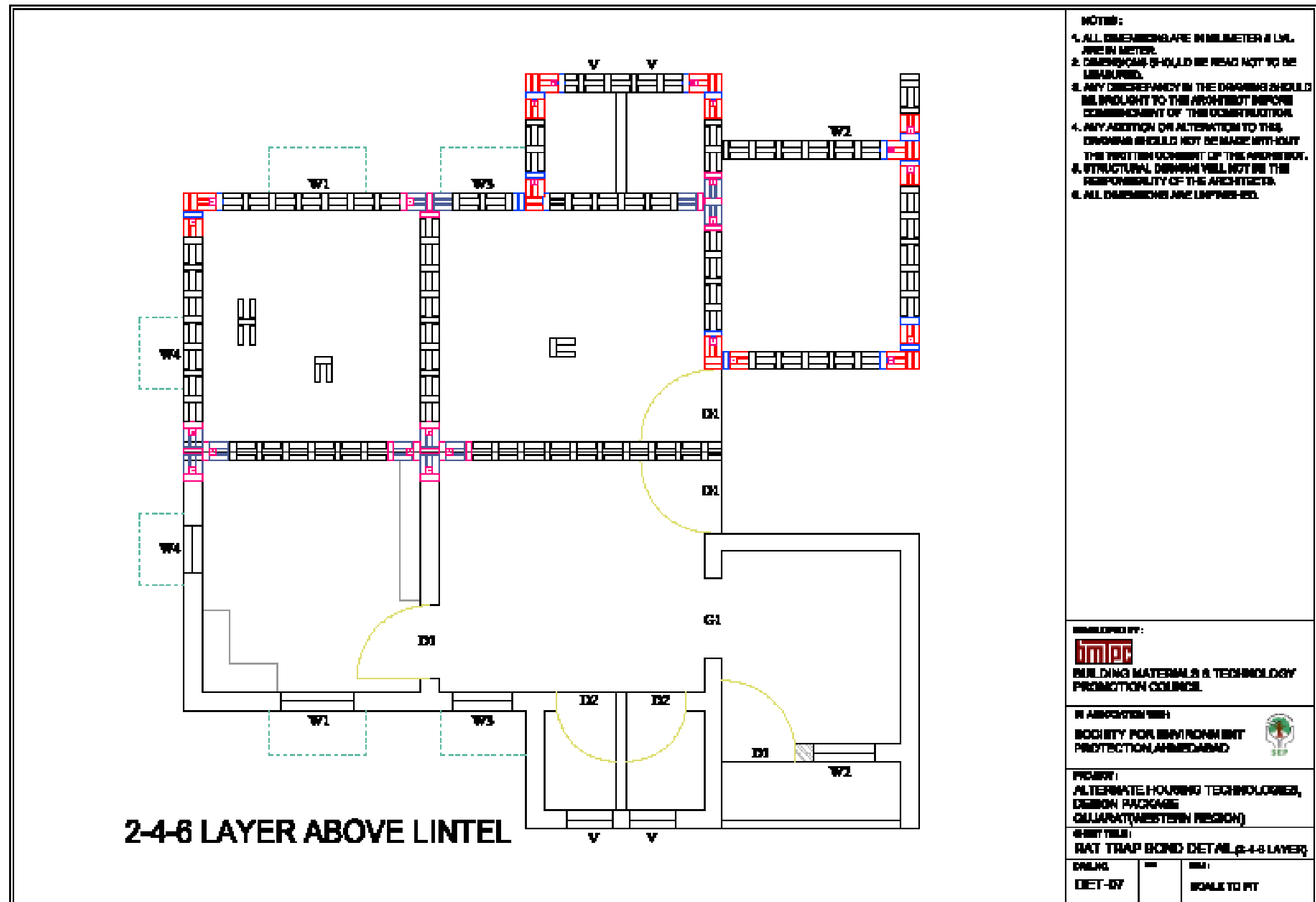
Rat trap bond 2-4-6 layer from sill to lintel



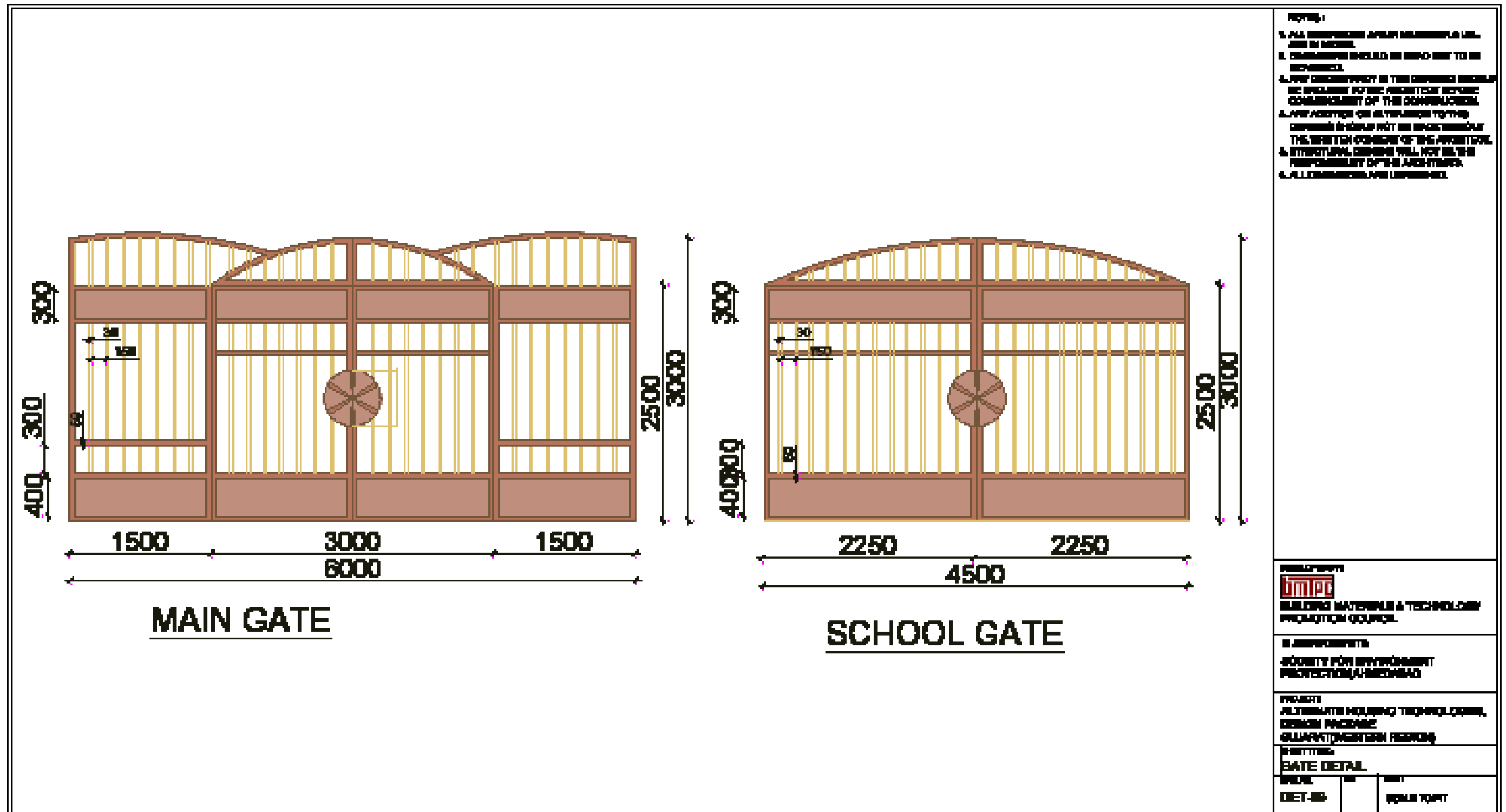
Rat trap bond 1-3-5 layers above lintel



Rat trap bond 2-4-6 layers above lintel



Gate Details



e. Training

The above chapters describe the cost comparisons between the alternative technologies and the same construction technologies are compared with the conventional technologies that are used in the same zones, thus we get a saving in cost as well as we use less resources and materials for the project.

Looking at these technologies that are adopted for the project, many points and construction procedures have to be kept in mind by the engineer-in-charge and the masons so that there are no compromises in the quality of construction. Thus it is essential for the masons who lie at the end of the project breakdown matrix who actually construct the structures and bring life into them, to understand the alternative technologies adopted for the project.

Thus these consequences lead to training the masons and the engineers on site with technical and practical know-how's about the alternative technologies i.e. Rat trap bond instead of conventional masonry, RCC filler slab instead of conventional RCC solid slab etc.

The training module for different technologies used for the present project proposal, need a minimum period of 5 days training module

which consists of technical as well as practical sessions with masons and engineers and the schedule for the training is as below, which covers all the technical and practical queries with constructing procedures involved and constructing model samples of the alternative technologies.

Days	Sessions	DESCRIPTION
RAT TRAP BOND		
Day 1	Morning	Technology know-how + Technical session
	Afternoon	Earthquake resistance introduction
	Evening	Practical session – Rat tap bond
Day 2	Morning	Detailed Technical session + Earthquake resistance detailed
	Afternoon	Quantities and rate analysis + Earthquake resistance detailed
	Evening	Practical session – Rat tap bond + Earth-quake resistance
FILLER SLAB TECHNOLOGY		
Day 3	Morning	Technology know-how Technical session (filler slab + manglore tiles)

Days	Sessions	DESCRIPTION
	Afternoon	Practical session – Filler slab (manglore tiles)
	Evening	Practical session – Filler slab (manglore tiles)
Day 4	Morning	Detailed Technical session + Earthquake resistance (concrete block- filler)
	Afternoon	Quantities and rate analysis (filler slab + manglore tiles) (concrete block- filler)
	Evening	Quantities and rate analysis (filler slab + manglore tiles) (concrete block- filler)
Day 5	Morning	Practical session – Filler slab (filler slab + manglore tiles) (concrete block- filler)
	Afternoon	Practical session – Filler slab (filler slab + manglore tiles) (concrete block- filler)
	Evening	Practical session – Filler slab (filler slab + manglore tiles) (concrete block- filler) Ending session + doubts.



a. Rain water harvesting

Need

Nature replenishes the ground water resources annually through rainfall; by way of infiltration through soil layers. Due to urbanization, the soil surface exposed to natural recharge gets reduced. Therefore, natural recharge is diminishing, resulting in drying of wells. Ground water source has the benefit of availability where water is needed and during emergencies and scarcity period, the public at large should take measure to improve the ground water recharge by rain water harvesting to maintain the reliable and sustainable ground water resource for supplementary domestic and industrial needs by ground water balance use.

Rain water Harvesting Aims and Objectives & Scope:

Rainwater harvesting may be defined as process of augmenting the natural infiltration of rainwater or surface run off into the ground by some artificial methods. The methods existing are recharge through pits, trenches, bore wells shafts by directly diverting runoff water into existing or disused wells or conserving the rain water by artificial storing and using the same for human use. The choice and effectiveness of any particular method is governed by local hydrological and soil conditions and ultimate use of water.

Methods of Rainwater Harvesting in Urban Cities

Broadly the rain water can be harvested by two methods

- Store the rainwater in containers above or above grounds or below grounds and reuse the water;
- Recharge into soil for withdrawal later by ground water recharging basis.

From the terraces/paved and unpaved ground areas the water is directed to a specified location by providing slope and is directed into the ground water through percolation wells.

Design Basis:

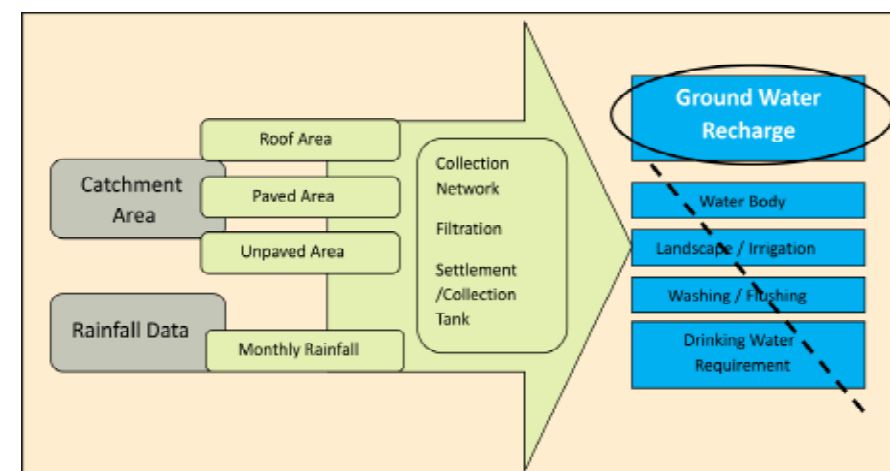
Rainfall data of past thirty years is considered. The calculations are done for Maximum Rainfall/Day (414.8mm) and Average Annual Rainfall (700mm).

Source: Indian Meteorological Department (IMD)

System & Design

Rain water harvesting system proposed will have four elements:

- Catchment area
- Conduits
- Settlement Tank & Filtration
- Recharge facility



Process Diagram & Proposed Option: Ground Water Recharge

The rainwater harvesting system proposed for the project collects rain water from the paved & unpaved surfaces on site and percolates it to the aquifer. Considering the bylaws requirement and project nature the basic action have been suggested.

Catchment Area:

The catchment is the area or surface, which receives rainfall directly. It can be any surface such as paved area like a terrace or courtyard of building or an unpaved area, like Lawn or open ground. Temporary structures like sloping sheds can also act as catchment. Run-off factor determines the quantity of water which will be available from the catchment. The catchment area is divided into three parts viz. the roof area, the paved area and the unpaved area.

Default Values considered for the design:

Surface Type	Runoff Coefficients
Paved Area (cemented)	0.85
Roofs, Conventional	0.95
Turf, Grass surface Avg. (1-3% slope)	0.35

Table: Surface type & Run-off Coefficient

Conduits:

Conduits or the pipes carry rainwater from the catchment or roof tops to harvesting/storage system. The conduits may be of any materials like PVC, asbestos or galvanized or locally available metal like earthen pipes or bamboos which have been used in North-Eastern States of India.

Maintenance Tips for Rainwater harvesting structures

- Always keep the surroundings of the tank clean and hygienic
- Remove Algae from the roof tiles and asbestos sheets before the monsoon
- Drain the tank completely and clean from inside thoroughly before the monsoon.
- Clean the water channels (gutters) often during rainy season and definitely before the first monsoon rain.
- Change the filter media every rainy season.
- Cover all inlet and outlet pipes with closely knit nylon net or fine cloth or cap during non-rainy season to avoid entry of insects, worms and mosquitoes.
- Heavy loads should not be applied on the lid; particularly many people should not stand on the lid.
- Water should not be allowed to stagnate in the collection pit.
- The filter materials shall be washed thoroughly before replacing in the filter bucket

Rainwater Harvesting - Catchment Calculation

Storm Water Runoff Quantity

Sr. No.	Catchment Area	Surface type	Run-off Coefficient	Area (sq.m.)	Impervious Area (Sq. m)	Average Annual Rainfall (mm)	Storm water quantity (cu.m./annum)
1	Hard scape						
1.1	Road	Cemented	0.95	460.17	437.16	700.00	306.01
2	Soft scape						
2.1	Landscaped Area	Turf	0.35	852.42	298.35	700.00	208.84
3	Unpaved Ground						
3.1	Housing	Earth	0.35	1207.67	422.69	700.00	295.88
3.2	School	Earth	0.35	279.37	97.78	700.00	68.45
4	Roof Top						
4.1	Community Centre	Cemented tiles	0.95	152.06	144.45	700.00	101.12
4.2	Housing	Cemented tiles	0.95	771.24	732.68	700.00	512.88
4.3	School	Cemented tiles	0.95	184.85	175.61	700.00	122.93
Total				3907.79	2308.72		1616.10
Considering the effective rainfall season of 30 days (on higher side for Guj.)						53.87	cu.m./day
						53870.07	ltrs./24hrs.
						2244.59	ltrs./hr

Storm Water Runoff Rate

Sr. No.	Catchment Area	Surface type	Run-off Coefficient	Area (sq.m.)	Impervious Area (Sq. m)	Peak Rainfall (mm/hr)	Peak Discharge Rate (cu.m./24hr)
1	Hard scape						
1.1	Road	Cemented	0.95	460.17	437.16	50.00	21.86
2	Soft scape						
2.1	Landscaped Area	Turf	0.35	852.42	298.35	50.00	14.92
3	Unpaved Ground						
3.1	Housing	Earth	0.35	1207.67	422.69	50.00	21.13
3.2	School	Earth	0.35	279.37	97.78	50.00	4.89

Sr. No.	Catchment Area	Surface type	Run-off Coefficient	Area (sq.m.)	Impervious Area (Sq. m)	Peak Rainfall (mm/hr)	Peak Discharge Rate (cu.m./24hr)
4	Roof Top						
4.1	Community Centre	Cemented tiles	0.95	152.06	144.45	50.00	7.22
4.2	Housing	Cemented tiles	0.95	771.24	732.68	50.00	36.63
4.3	School	Cemented tiles	0.95	184.85	175.61	50.00	8.78
	Total			3907.79	2308.72		115.44
The runoff rate considering the peak rainfall 'for the total site area including the Roof Top and Ground Surface discharge							
						115.44	cu.m./24hrs.
						115435.86	ltrs./24hrs.
					2	4809.83	ltrs./hr
Note:							
	Taking average of (1) & (2) for the design capacity i.e.				3	5932.12	ltrs./hr
Requirement of percolation well as per the development norms							
					4	1 well / 4000sq.mt.	
Percolation Well Diameter & Capacity							
	6" Diameter	10000	lits/hr				
	8" Diameter	20000	lits/hr				
	10" Diameter	30000	lits/hr				
One 6" dia percolation well is required considering the design values of (3) and (4).							

b. Embodied Energy in Buildings

The process of construction of buildings consumes huge amount of energy depending upon its geographic location, design, type of construction and materials used, which in turn produces large volume of GHG. Estimates suggest that about 20-25% of the total energy demand is due to manufacturing materials required in the building sector, while another 15 percent goes into the running needs of the building.

In India, because of its vast differences – in residential habits of rural and urban, climatic zones, income group's requirements, construction practices, availability of variety of building materials etc. have led to different housing patterns, which influence energy consumption considerably.

Objective

Selection of materials and technologies for the building construction should satisfy the felt needs of the user as well as the development needs of the society, without causing any adverse impact on environment.

There is a great concern and emphasis in reducing the greenhouse gases emission into the atmosphere in order to control adverse environmental impacts. Minimizing the consumption of the conventional materials by using cost effective energy efficient materials, methods and techniques can result in a large amount of energy savings as well as reduction of CO2 emission.

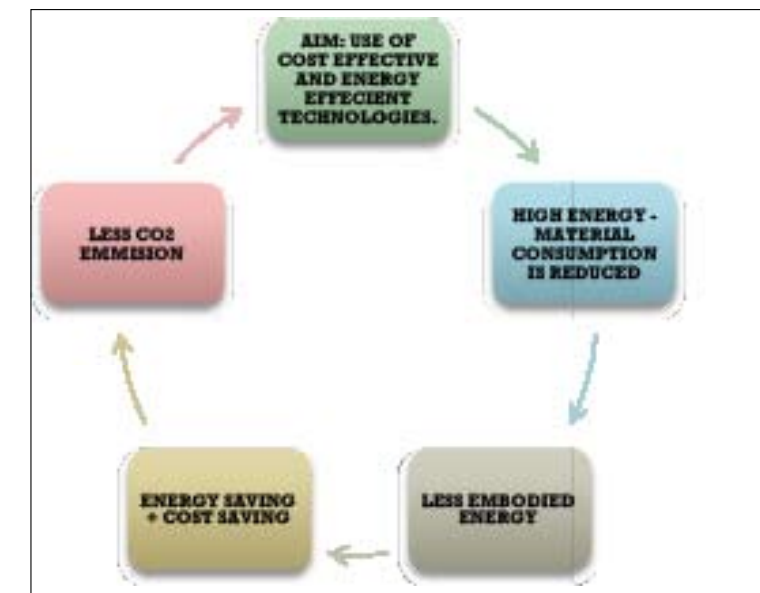
Definition

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

Embodied energy can be the equivalent of many years of operational energy.

It was thought until recently that the embodied energy content of a building was small compared to the energy used in operating the building over its life. This is not always the case. Operational energy consumption depends on the occupants. Embodied energy is not occupant dependent; the energy is built into the materials. Embodied energy content is incurred once whereas operational energy accumulates over time and can be influenced throughout the life of the building, so it is essential to promote low cost, low energy and medium energy materials for energy efficiency in building construction. However, these materials should also be durable, require less maintenance and should be recyclable. It may be noted that materials such as aluminum and steel although being very effective in use commonly to save cost and achieve durability but they are highly energy consuming and have a very great impact on the present CO2 emissions done by the construction Industry.

WHAT THE STUDY AIMS AT..??



In this study, comparison of EMBODIED ENERGY is showed between the following technologies which are selected for the project proposal and conventional technologies adopted for construction of a similar buildings with the conventional ones which are:

Figure 1: OBJECTIVE OF THE STUDY

- Filler slab (Mangalore tiles as Filler material) vs Conventional RCC slab.
- Filler slab (Concrete blocks as Filler material) vs Conventional RCC slab.
- Rat Trap Bond Brick work vs Conventional Solid brickwork.

1. Filler slab (Mangalore tiles as Filler material) vs Conventional RCC slab.

FOR RESIDENTIAL FILLER SLAB (Mangalore tile filler material)

No.	Material	Embodied energy (MJ)	REFER-ENCES	Unit	Type of energy	Conventional RCC slab		Filler slab		when Mangalore tiles are reused
						Quantity consumed	Total embodied energy (MJ)	Quantity consumed	Total embodied energy (MJ)	Total embodied energy (MJ)
1	Concrete (m ³)					268.55		56.19		
a	Cement (kg)	5.85	*1	1 kg	Coal+electricity+deisel	113505.17	664005.25	71243.03	416771.70	416771.70
b	Coarse aggregates (m ³)	108	*1	1 m ³	Coal+electricity+deisel	257.16	27773.14	161.41	17432.18	17432.18
c	Fine aggregates (m ³)	87.5	*1	1 m ³	Diesel	128.58	11250.69	80.70	7061.65	7061.65
2	Reinforcing Steel (kg)	42	*1	1 kg	Coal+electricity+deisel	5649.78	237290.58	4708.15	197742.15	197742.15
3	Mangalore tiles (nos)	5	*1	1 tile	Firewood/coal* +diesel	0.00	0.00	5465.18	27325.92	0.00
TOTAL EMBODIED ENERGY (MJ) =						940319.66		666333.59		639007.67
EMBODIED ENERGY / sq.m						437.69		310.16		297.44
DIFFERENCE CONVENTIONAL vs FILLER SLAB (MJ) =								273986.07		301311.99

***Note: Firewood is a renewable resource. However, demand for this fuel can outpace its ability to regenerate on local and regional level.**

***1 = Embodied Energy in Buildings - Prof. B.V. Venkatarama Reddy**

The above table shows the consumption of different materials of RCC slab construction which are

- Filler slab: The filler slab quantities taken into analysis are the same as per the present project and the material consumption is only for the residential units Block A, Block B and Block C (G+2)
- Conventional slab: The conventional slab is assumed to be of 125 mm depth slab with conventionally adds up the reinforcement and the concrete to the slab quantities and is higher as compared to filler slab by 15-20%.

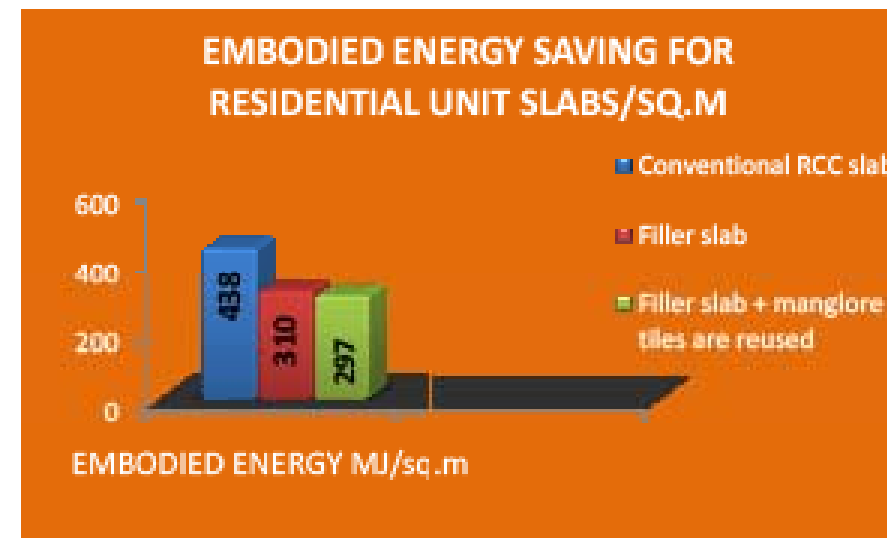


Figure 3: EMB. ENE. COMPARISION - RESIDENTIAL FILLER SLAB

The analysis results show that by adapting filler slab as a roofing technology for the project a difference of 273986 MJ of energy is found due low consumption of high energy materials. Additionally energy upto 301311 MJ can be saved if the Mangalore tiles used for the filler slab construction are not a virgin material but a reused material.

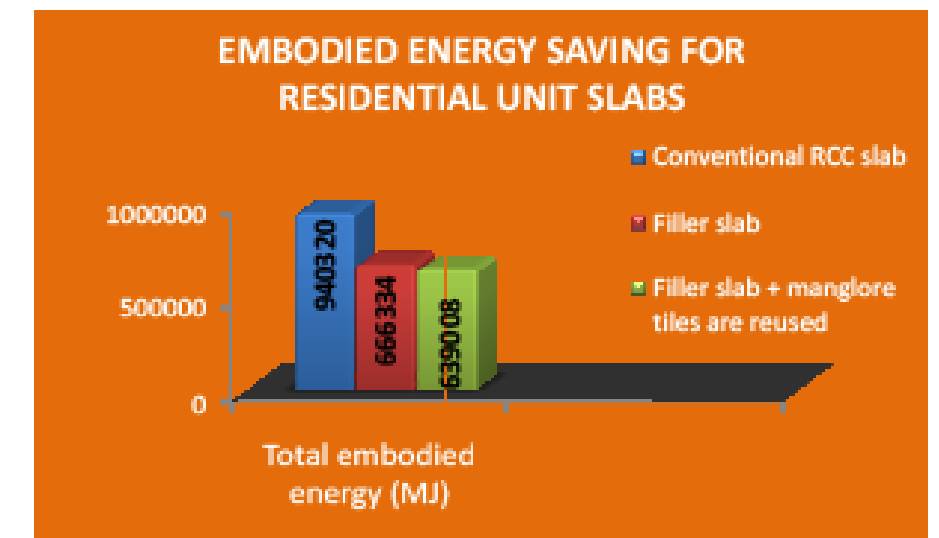


Figure 2: EMB. ENE. COMPARISION

Similarly when the embodied energy is compared in per sq.m of the slab area, a difference of 128 MJ/sq.m is found to be saved. Additionally if the filler material is a reused material, 140 MJ/sq.m of energy can be further saved.

CALCULATIONS FOR MATERIAL QUANTITIES

MATERIALS	PER M3	UNIT	TOTAL QUANTITY	TOTAL QUANTITY
CEMENT	8.45	bags	1424.86	2270.10
SAND	0.48	cu.m	80.70	128.58
AGGREGATES	0.96	cu.m	161.41	257.16
REBARS		kgs	4708.15	5649.78
MANGLORE TILES		nos	78	nos/assumed quantity
			5465.18	nos

The quantities of individual materials are worked out from the final project quantities and are subject to be changed in case of change in design.

FILLER SLAB WITH MANGLORE TILES

TOTAL SLAB AREA	10.24	sq.m
TOTAL CONCRETE m3/sq.m	0.08	cu.m/sq.m
TOTAL SQ.M AREA RESIDENTIAL UNITS	716.12	sq.m
TOTAL CONCRETE FILLER SLAB =	56.19	cu.m
TOTAL CONCRETE FILLER SLAB =	168.56	cu.m
TOTAL CONCRETE CONVENTIONAL SLAB =	268.55	cu.m

2. Filler slab (Concrete blocks as Filler material) vs Conventional RCC slab.

FOR SCHOOL + COMMUNITY CENTRE + KIOSK FILLER SLAB

No.	Material	Embodied energy (MJ)	Unit	Type of energy	Conventional building		Filler slab technology	
					Quantity consumed	Total embodied energy (MJ)	Quantity consumed	Total embodied energy (MJ)
1	Concrete (m³)				70.62		48.54	
a	Cement (kg)	5.85	1 kg	Coal + electricity + diesel	29848.92	174616.19	20515.76	120017.20
b	Coarse aggregates (m³)	108	1 m³	Coal + electricity + diesel	67.63	7303.62	46.48	5019.92
c	Fine aggregates (m³)	87.5	1 m³	Diesel	33.81	2958.64	23.24	2033.53
2	Reinforcing Steel (kg)	42	1 kg	Coal + electricity + diesel	4569.73	191928.47	3973.67	166894.32
3	Concrete blocks (nos)	1.32	1 block	Firewood/coal* + diesel	0	0	1470	1940.4
TOTAL EMBODIED ENERGY (MJ) =					376806.92		295905.37	
PER sq/m EMBODIED ENERGY FOR SCHOOL					1255.688208		986.0882846	
DIFFERENCE (MJ) =					80901.54			
per sq/m EMBODIED ENERGY FOR COMMUNITY BUILDING - CONCRETE BLOCK + FILLER SLAB					1255.69		986.09	
TOTAL sq.m AREA - KIOSK					249.15			
TOTAL EMBODIED ENERGY CONCRETE BLOCK FILLER SLAB (MJ) =					312854.717		245683.8961	
DIFFERENCE (MJ) =							67170.82084	
per sq/m EMBODIED ENERGY FOR COMMUNITY BUILDING - MANGLORE TILE FILLER SLAB					437.69		310.16	

No.	Material	Embodied energy (MJ)	Unit	Type of energy	Conventional building		Filler slab technology	
					Quantity consumed	Total embodied energy (MJ)	Quantity consumed	Total embodied energy (MJ)
TOTAL sq.m - KIOSK					45.50			
TOTAL EMBODIED ENERGY MANGLORE TILE FILLER SLAB (MJ) =					19914.98		14112.24	
DIFFERENCE (MJ) =					5802.74			
TOTAL EMBODIED ENERGY (MJ) =					332769.70		259796.14	
PER sq/m EMBODIED ENERGY FOR KIOSK					1129.37		881.71	
DIFFERENCE (MJ) =					72973.56			
Note: Firewood is a renewable resource. However, demand for this fuel can outpace its ability to regenerate on local and regional level.								

The above table shows the consumption of different materials of RCC slab construction which are

- Filler slab: The filler slab quantities taken into analysis are the same as per the present project and the material consumption is for the School building & Community centre slabs
- Conventional slab: The conventional slab is assumed to be of 150 mm depth and with beams running 1 m c/c, which conventionally adds up the reinforcement and the concrete to the slab quantities and is higher as compared to filler slab by 15-20%.

CALCULATIONS FOR MATERIAL QUANTITIES

TOTAL SLAB AREA GF	77.530	sq.m
TOTAL CONCRETE m3/sq.m	0.162	cu.m/ sq.m
TOTAL SQ.M AREA	142.68	sq.m
TOTAL CONCRETE FILLER SLAB GF =	23.08	cu.m
TOTAL SQ.M AREA FF	157.40	sq.m
TOTAL CONCRETE FILLER SLAB FF =	25.46	cu.m
TOTAL CONCRETE FILLER SLAB =	48.54	cu.m

MATERIAL CALCULATIONS			FILLER SLAB	CONVENTIONAL SLAB
MATERIALS	PER M3	UNIT	TOTAL QUANTITY	TOTAL QUANTITY
CEMENT	8.45	bags	410.32	596.98
SAND	0.48	cu.m	23.24	33.81
AGGREGATES	0.96	cu.m	46.48	67.63
REBARS		kgs	3973.67	4569.73

TOTAL CONCRETE CONVENTIONAL SLAB =		70.62	cu.m
CONVENTIONAL SLAB			
beams			
a	l	185.57	m
b	b	0.23	m
c	h	0.30	m
beam concrete		12.80	cu.m
slab concrete			
a	GF	21.40	34.21
b	FF	23.61	36.41
			70.62

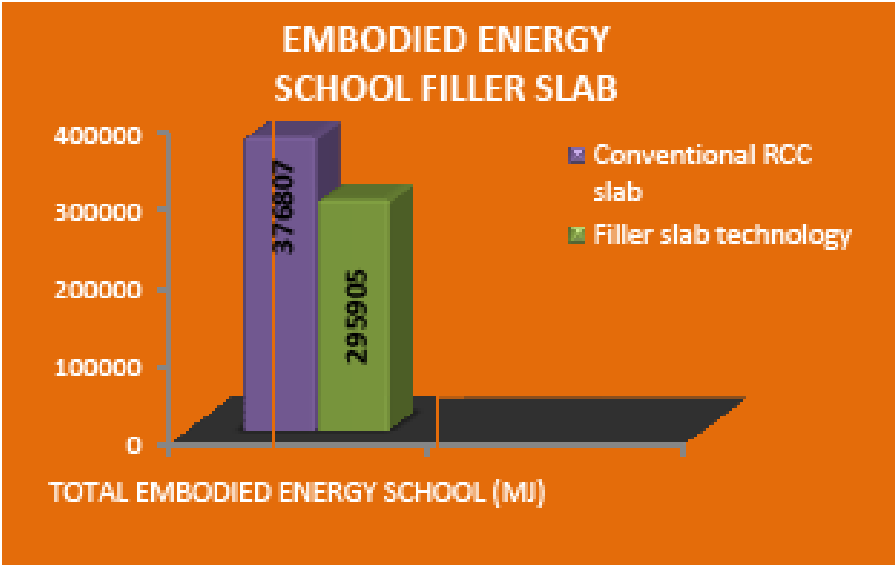


Figure 4: EMB. ENE. COMPARISONSCHOOL FILLER SLAB

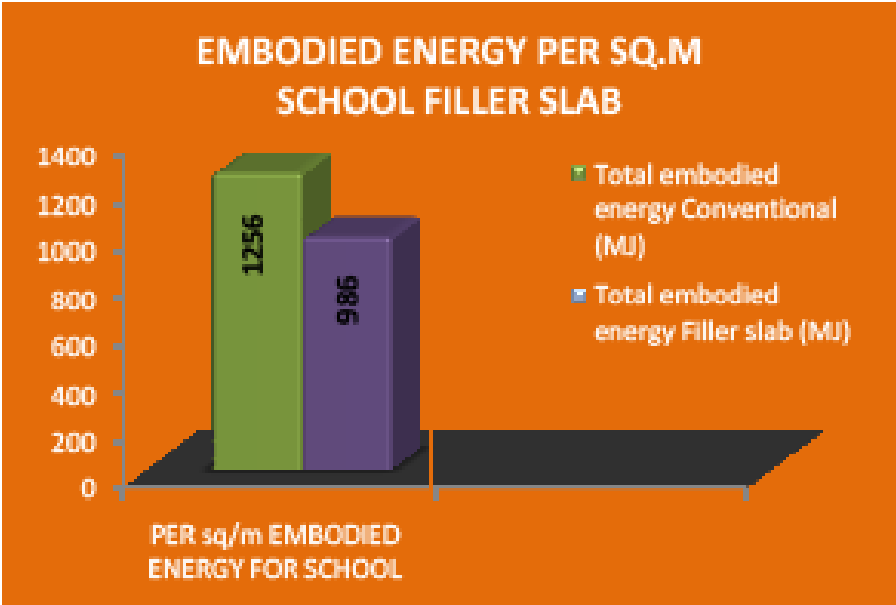


Figure 5: EMB. ENE. COMPARISION

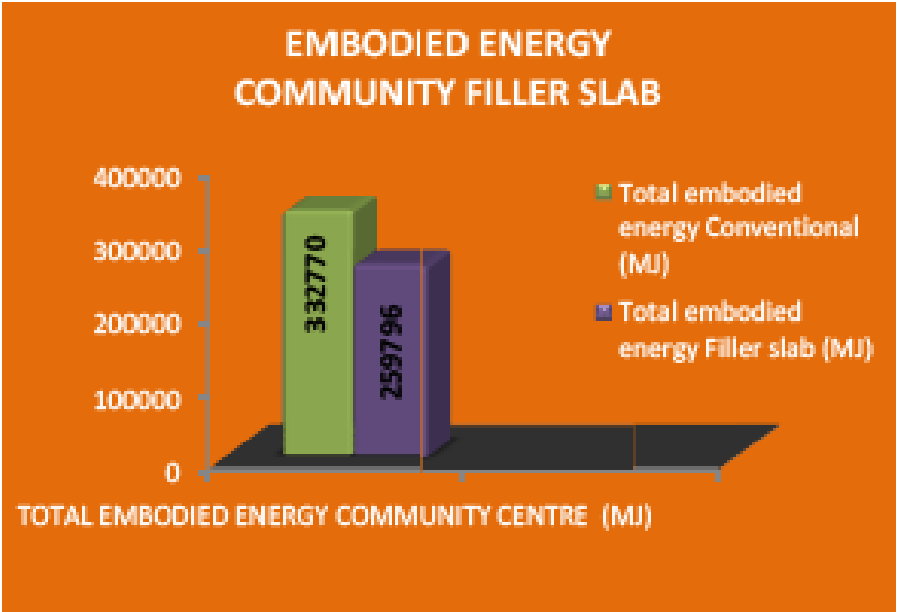


Figure 6: EMB. ENE. COMPARISION

The analysis results show that by adapting filler slab (concrete block as a filler material) as a roofing technology for the project a difference of 80901 MJ of energy is found due low consumption of high energy materials.

Similarly when the embodied energy is compared in per sq.m of the slab area, a difference of 270 MJ/sq.m is found to be saved.



Figure 7: EMB. ENE. COMPARISION COMMUNITY FILLER SLAB

The analysis results show that by adapting filler slab (concrete block as a filler material) as a roofing technology for the project a difference of 72974 MJ of energy is found due low consumption of high energy materials.

Similarly when the embodied energy is compared in per sq.m of the slab area, a difference of 247 MJ/sq.m is found to be saved.

3) Rat Trap Bond Brick work vs Conventional Solid brickwork.

FOR RESIDENTIAL BRICK WORK - RAT TRAP BOND

No.	Material	Embodied energy (MJ)	Unit	Type of energy	Conventional Brickwork		Rat Trap Bond- Brickwork	
					Quantity consumed	Total embodied energy Conventional BW (MJ)	Quantity consumed	Total embodied energy Rat Trap BW (MJ)
1	Brick masonry Mortar							
a	Cement (kg)	5.85	1 kg	Coal+electricity + Deisel	91002.95	532367.26	45838.30	268154.04
b	Fine aggregates (m ³)	87.5	1 m ³	Coal+electricity + Deisel	277.29	24263.25	127.41	11148.15
2	Corner Reinforcement							
a	Rebars	42	1 kg	Coal+electricity + Deisel	3103.90	130363.86	3103.90	130363.86
b	Cement (kg)	5.85	1 kg	Coal+electricity + Deisel	7334.12	42904.61	7334.12	42904.61
c	Fine aggregates (m3)	87.5	1 m ³	Coal+electricity + Deisel	8.31	726.96	8.31	726.96
d	Coarse aggregates (m3)	108.00	1 m ³		16.62	1794.56	16.62	1794.56
3	Bricks (nos)							
	2.5 = Fly ash bricks	4.5	1 brick	Firewood/coal	466383.79	2098727.05	398038.21	995095.53
TOTAL EMBODIED ENERGY (MJ) =						2831147.56		1450187.72
EMBODIED ENERGY/cu.m						2618.61		1341.32
DIFFERENCE (MJ) =							1380959.84	
Note: Firewood is a renewable resource. However, demand for this fuel can outpace its ability to regenerate on local and regional level.								

The above table shows the consumption of different materials in the Rat Trap bond brick masonry and conventional English bond.

- Rat Trap bond masonry: This technology is well known as brick on edge technology which gives a cavity wall with a cavity of 80 mm in between two bricks. For structural safety purpose, 2 nos of corner reinforcements (12 dia upto GF & 10 dia upto Terrace) are also taken into account for calculating the embodied energy.

- Conventional brick masonry: The conventional masonry which is adopted for construction of buildings is taken into account for calculating the Embodied Energy.

FOR CASE STUDY WALL	*RATE ANALYSIS ASSUMED QUANTITIES	CONVENTIONAL BRICKWORK	RESIDENTIAL QUANTITY			
			ALTERNATE	CONVENTIONAL	CORNER REBARS	TOTAL
Area	16.680	16.680	1081.162	1081.162	17.352	
Volume	3.836	3.836				
bricks	1412.400	1655	398038.2131	466383.7886		
Mortar	0.560	1.12	157.682483	315.1071719		
Cement	3.253	6.46	916.7659563	1820.059025		146.68
Sand	0.452	0.98	127.4074463	277.2943113		8.31
rebar's			3103.90			
Aggregates						16.62
*Note: Reffer Rate analysis of Rat Trap Bond for quantities and assumptions						

MATERIAL	FOR 0.8 M3	PER M3	UNIT	TOTAL QUANTITY = 17.35 m3
CEMENT	6.763	8.45	bags	146.68
SAND	0.383	0.48	cu.m	8.31
AGGREGATES	0.766	0.96	cu.m	16.62

BRICK WORK - RESIDENTIAL UNITS (BLOCK A, BLOCK B, BLOCK C)					
TOTAL BRICK WORK =	1081.162	cu.m	343.29	347.48	390.39
TOTAL BRICK WORK =	4700.706	sq.m	GF	FF	SF

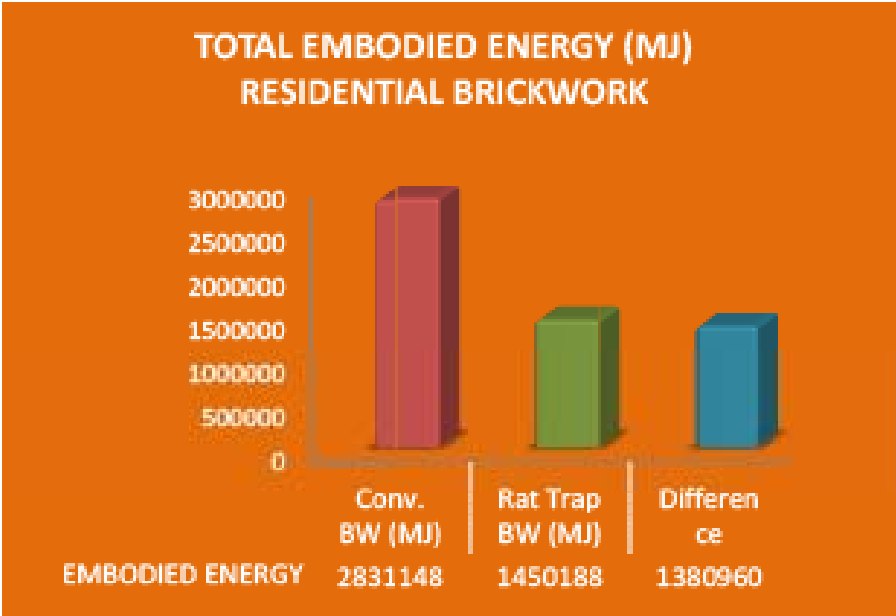
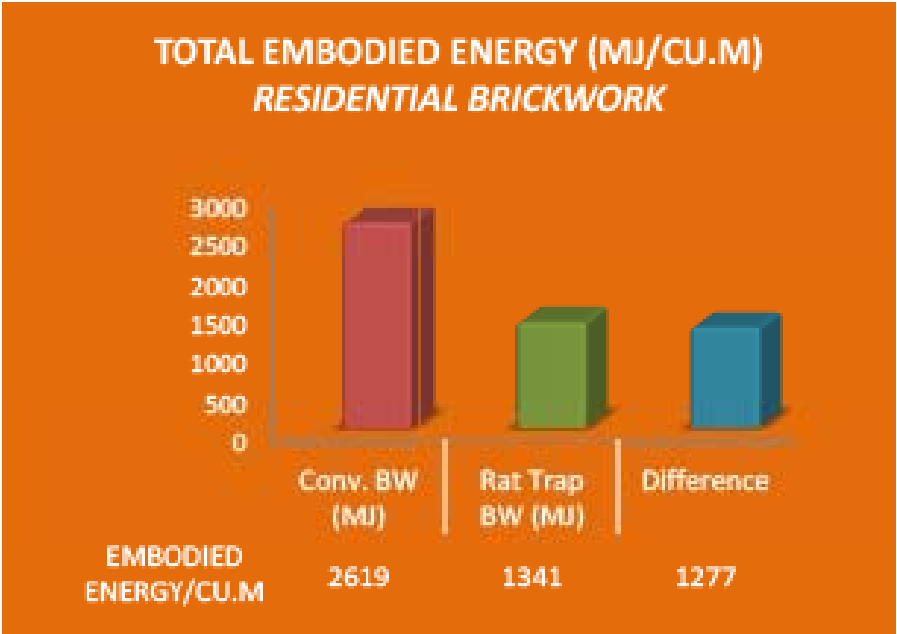


Figure 8: EMB. ENE. / cu.m BRICKWORK - RESIDENTIAL



The analysis results show that by adapting Rat Trap bond instead of conventional brickwork as a walling technology for the project a difference of 1380960 MJ of energy is found due less consumption of high energy materials.

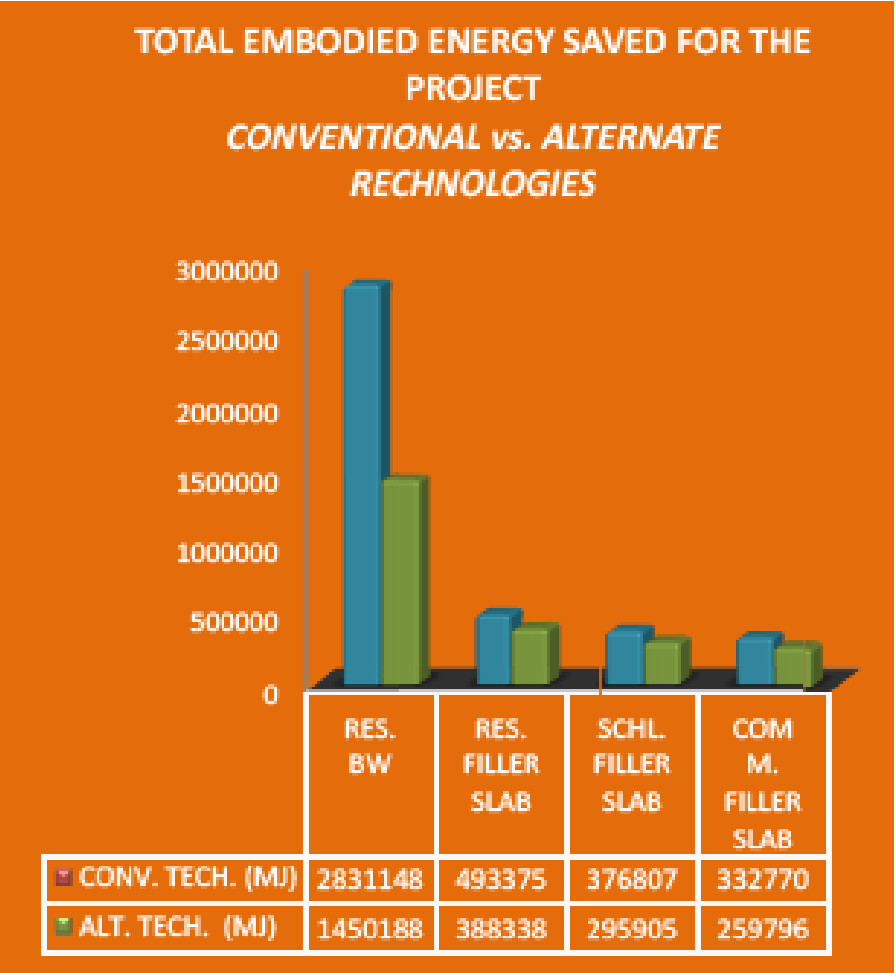


Figure 9: TOTAL EMBODIED ENERGY COMPARISION FOR THE PROJECT

Similarly when the embodied energy is compared in per cu.m of the brickwork, a difference of 1277 MJ/cu.m is found to be saved.

3) TOTAL EMBODIED ENERGY SAVING FOR THE PROJECT

The above chart shows total embodied energy saving for the project for all the components vs the conventional technologies. The technologies are as per described earlier.

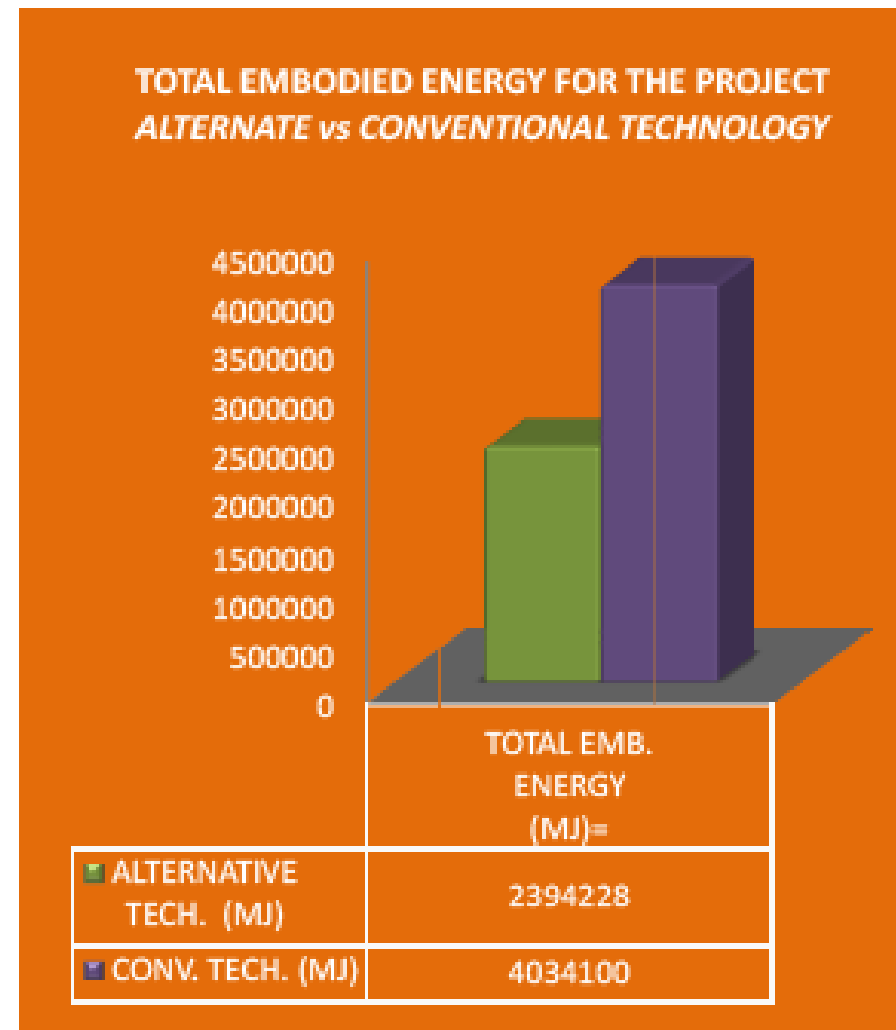


Figure 10: TOTAL EMBODIED ENERGY FOR THE PROJECT

The above chart shows the total embodied energy saving for the project which gives a difference of 957785 MJ of saving for the whole project. Further this total embodied energy is compared to energy released by fuels used in the day to day chores.

The adjoining chart shows the fuel consumption equivalent to the energy saved by using alternate technologies for the project.

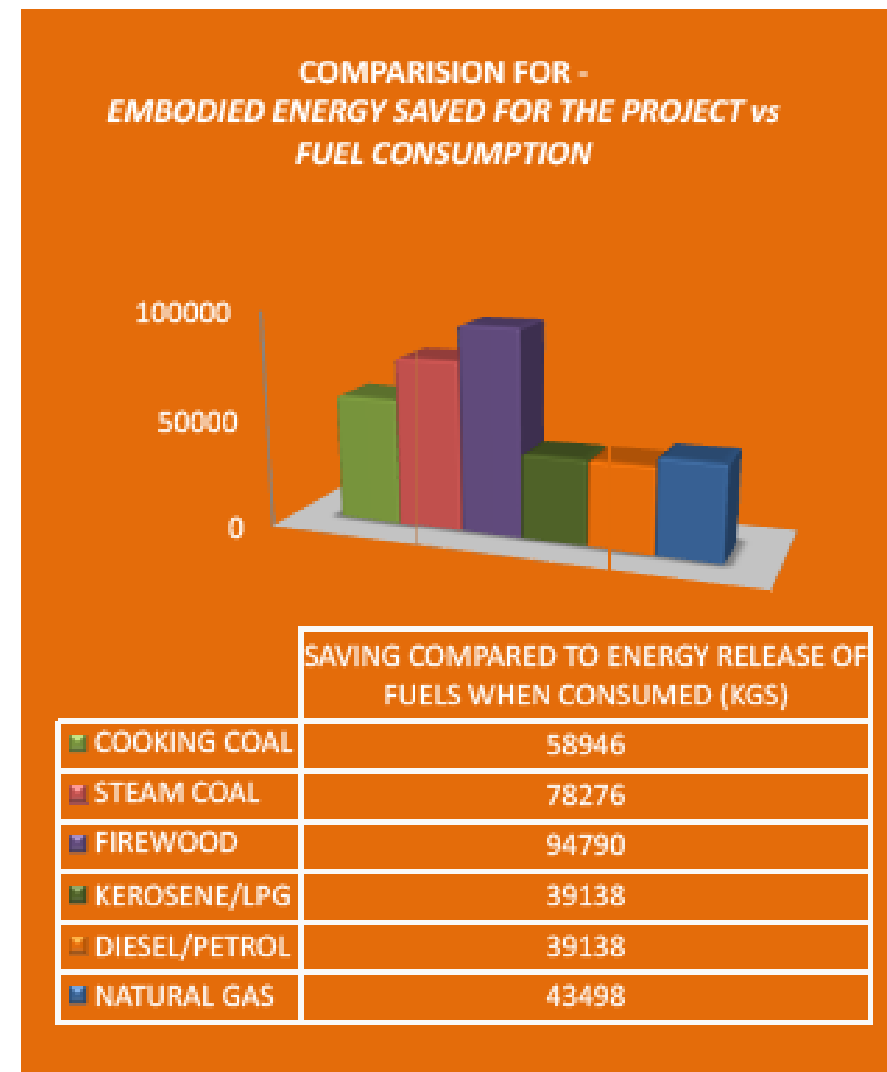


Figure 11: EMBODIED ENERGY COMPARED TO FUEL CONSUMPTION

So it can be broadly analyzed that by implementing the cost effective technologies for the project, we have saved 34 tones of cooking coal or 55.3 tones of firewood or 22.8 tones petrol, diesel, LPG etc.

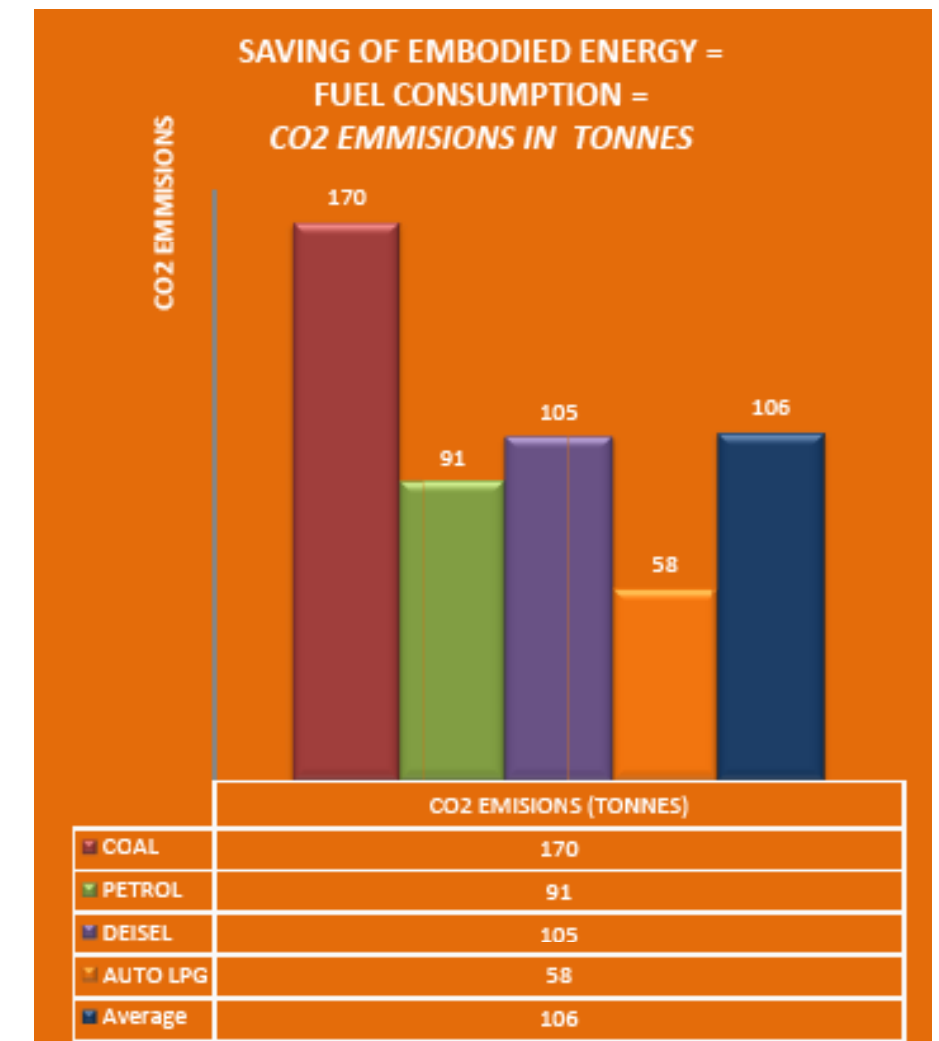


Figure 12: FUEL CONSUMPTION SAVED COMPARED TO RESPECTIVE CO² EMISSIONS

The adjoining chart shows the CO2 emissions of the fuels saved by implementing COST EFFECTIVE ENERGY EFFICIENT TECHNOLOGIES for the project.

So it can be broadly analyzed that by implementing the cost effective technologies for the project, we have saved 170 tones of CO2 produced from coal or 91 tones of CO2 from petrol or 105 tones of CO2 produced from diesel or 58 tones of CO2 produced from LPG or if we take an average of the CO2 saving it will be of the order of 106 tones of saving.



The basic objective of the project was to promote the use of Alternate construction technologies into the construction industry. It is clearly seen and proven fact that the use of these alternate technologies bring down the construction cost by 20-30%, which is the need of the hour in today's scenario where construction costs are increasing by leaps and bounds and the rising materials prices, which makes an ordinary person impossible to afford a house.

This chapter gives the basic idea to different personnel's related to the building and construction industry such as primarily the user, government agencies and private sector contractors that alternate technologies not only save the cost but also give added advantages as described in earlier chapters of the document. The basic ideology of the cost comparison can be seen in the figure. The cost comparisons for the project are done with respect to 3 different costs. The comparisons are done between Alternative technologies used for the project design and conventionally used construction technologies in the geographical area of Gujarat. Load bearing walls are replaced by Rat trap bond instead of Solid load bearing walls (230 mm thick), conventionally used RCC slab is replaced by Filler slabs and conventionally used cement plaster is replaced by lime pozzolona plaster.

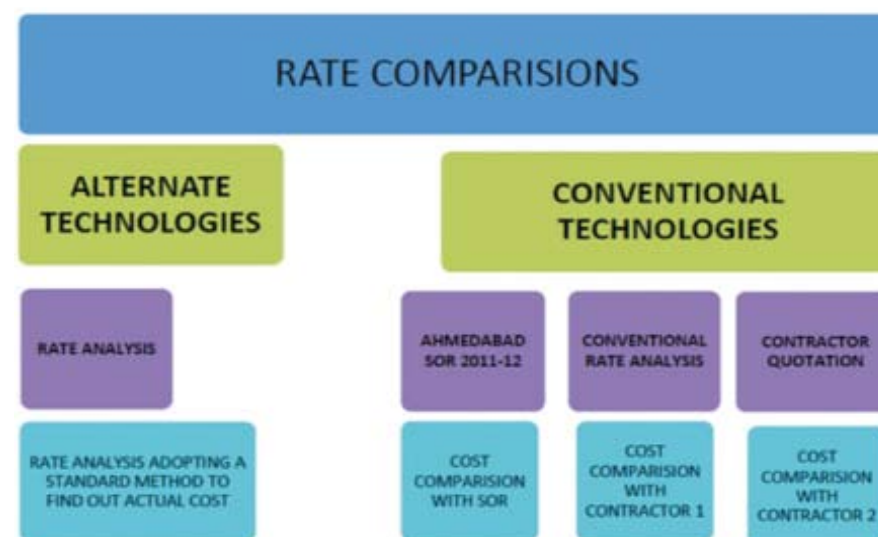


Figure 13: FUEL CONSUMPTION ENERGY COMPARED TO RESPECTIVE CO₂ EMISSIONS

The cost comparisons are as follows:

1. Alternate technologies vs. Ahmedabad SOR 2011-12. (Conventional technologies as per the SOR)
2. Alternate technologies vs. Contractor 1 quoted rate for

Conventional technologies. This also indicates the present market rates of the conventional items.

3. Alternate technologies vs. Contractor 2 quoted rate for Conventional technologies. This also indicates the present market rates of the conventional items.

Rate comparison was done to check whether the rates arrived at for the project was actually cost effective or not. The study shows that there is actually a reduction in cost by **14-30%** using these alternate technologies. The image shows the logic behind the comparison. For the alternate technologies adopted for the project, rate analysis was done for all the BOQ items and these costs were compared to AMD SOR 2011-12, and 2 nos. of quotations which were received as a bid for the project from two different contractors. This exercise of rate comparison was done for all the three buildings for their civil construction items and electrical items namely, Residential Unit Clusters (3nos-60 units), Community center building including Kiosk, and for the School building. Following pages highlights the comparison findings. Refer subsequent Chapters for all details and supporting data.

The table on next page shows the summary of the detailed bill of quantities for the project and their comparative percentage cost savings. It is clearly seen from the exercise that a minimum saving of 14% to a saving of 34% can be achieved.

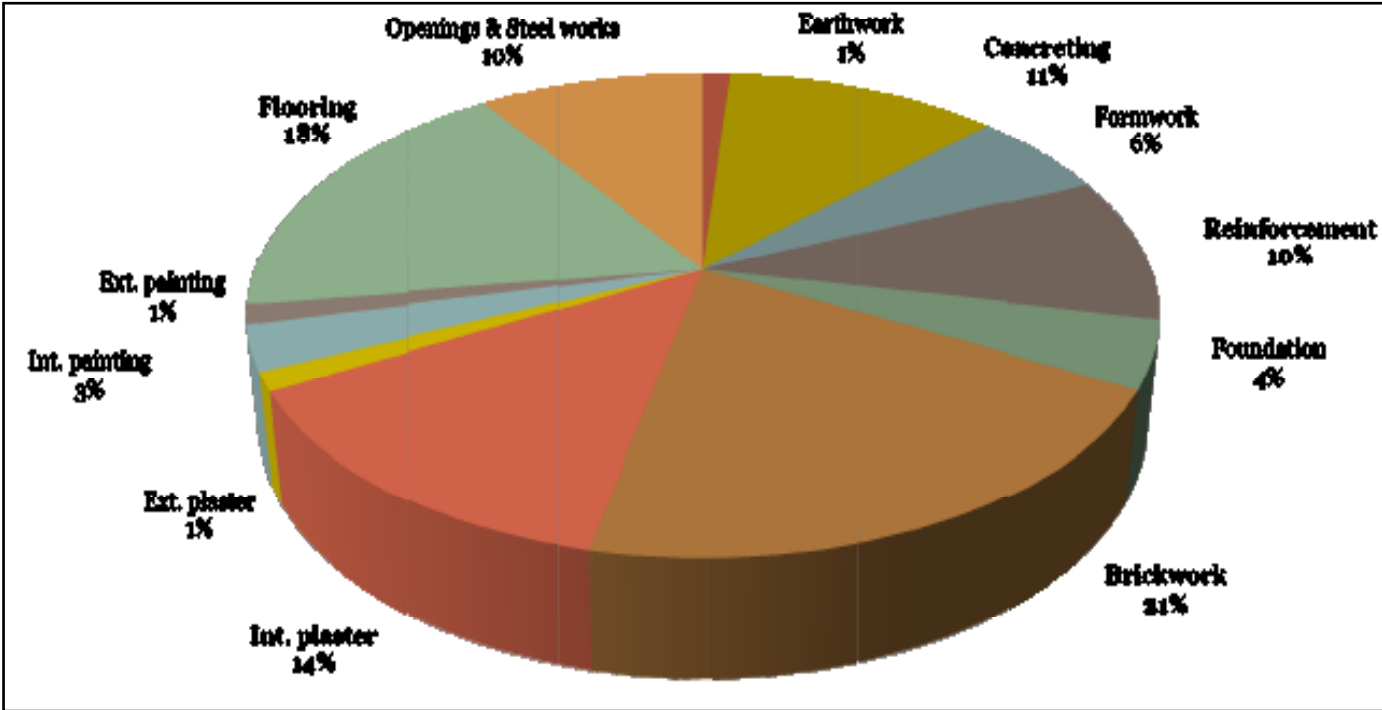
DESCRIPTION	ALT. TECH.	AHD SOR 2011-12	CONV. TECH. RA	QUOTATION 1	QUOTATION 2
RESIDENTIAL	1,17,45,703	1,38,42,124	1,50,99,840	1,80,90,455	1,79,95,055
DIFFERENCE		20,96,421	33,54,138	63,44,752	62,49,352
% SAVING		15	22	35	35
COMMUNITY	16,07,612	18,73,347	19,17,466	21,74,659	23,18,021
DIFFERENCE		2,65,735	3,09,854	5,67,047	7,10,409
% SAVING		14	16	26	31
SCHOOL	18,73,266	20,29,421	20,40,741	26,32,611	26,40,701
DIFFERENCE		1,56,154	1,67,474	7,59,344	7,67,434
% SAVING		8	8	29	29
TOTAL COST	1,52,26,581	1,77,44,891	1,90,58,047	2,28,97,724	2,29,53,777
DIFFERENCE		25,18,310	38,31,466	76,71,143	77,27,196
% SAVING		14	20	34	34
Miscellaneous	9,93,911.66	NA	NA	NA	NA
TOTAL PROJECT COST					1,62,20,493

This table clearly shows that a considerable saving can be achieved by adopting Alternate technologies vs. the Conventional technologies.

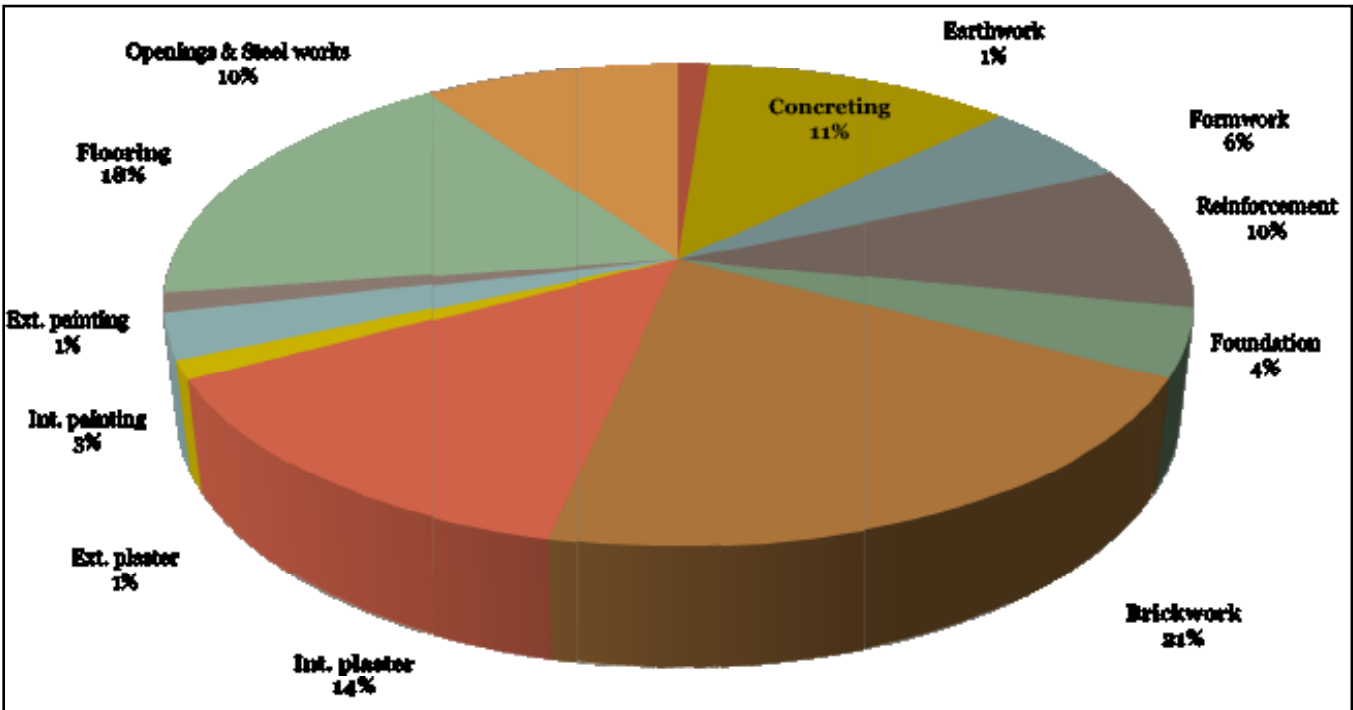
Note : Detail costing and other supporting data for the table is taken from Chapter 15 of the report

The following charts below show the cost breakup of the 3 different project components of the township design namely Residential cluster, Community center and school building.

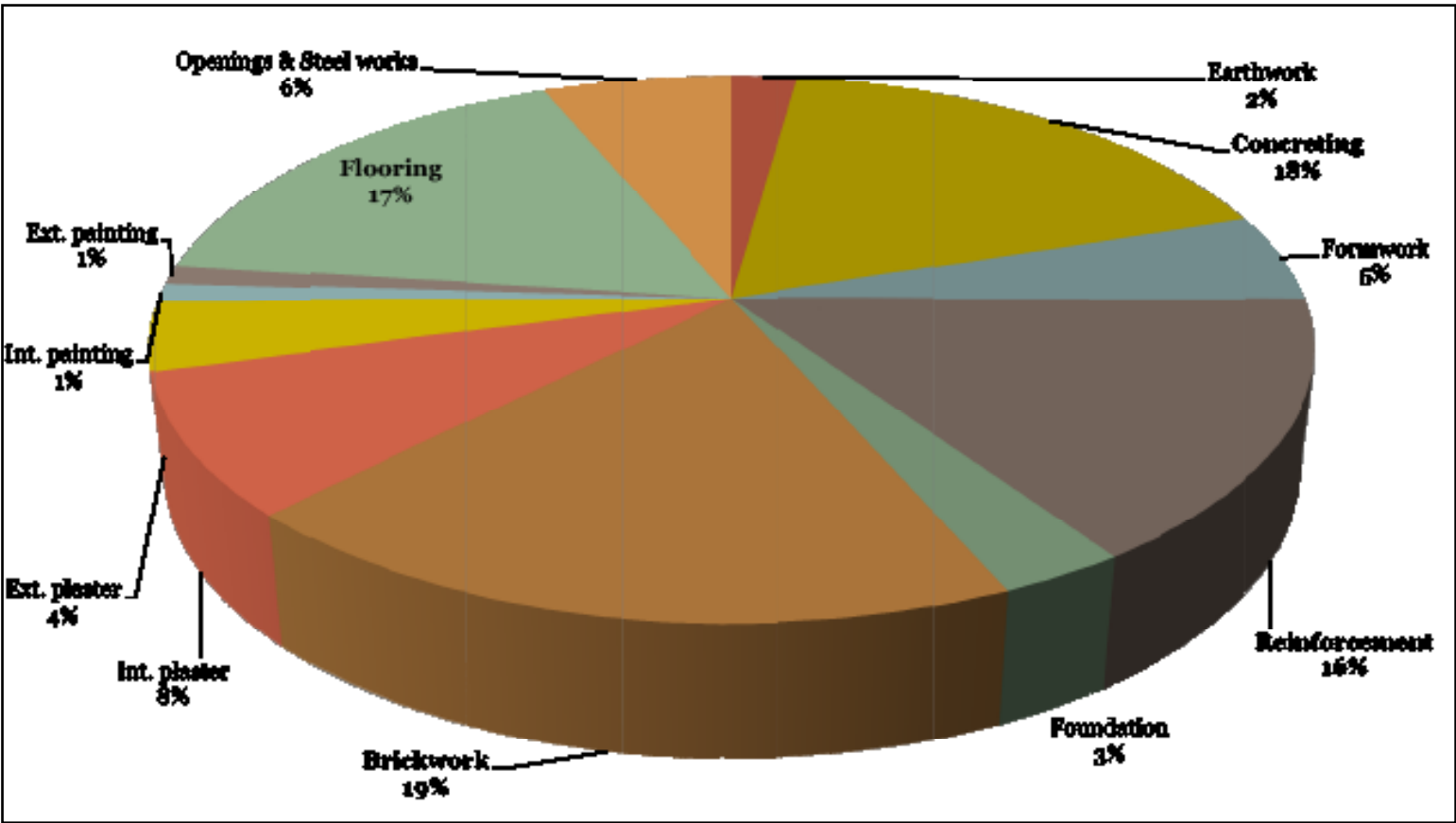
Residential Cost Breakup: Estimated Cost = INR 11,745,703



Community Center Cost Breakup: Estimated Cost = INR 1,607,612



School Building Cost Breakup: INR 1,873,266





It was found during study that alternative technology may save 20-30% of construction cost due to material and workmanship. Apart from that there are multiple indirect benefit like less wastage of material, embodied energy benefits, insulation properties and aesthetics etc.

Design

- Design consideration is based on region specific weather, locally available material and all minute details to save cost.
- Physically disabled friendly design
- Low cost material and technology
- Green technologies such as rain water harvesting
- Maximum open spaces and optimum amenities
- According to DCR, NBC and other applicable standards
- Design for 60 families residential units
- Design for approx. 160 students school
- Design for approx. 150 persons community hall
- Design for 4 shops
- Module based planning for ease in construction
- Layer wise detailed design for rat trap bond
- Additional play ground, stage, sitting arrangements, trees, parking for township
- Design is developed as grid-block pattern to reduce construction cost, compact design

- School is equipped with library, Office, separate toilet block, staff room
- Community center is equipped with doctor health cabins, large halls, 4 shops, storage space and separate toilets
- Shops are placed on road frontage and have separate entrance.
- School is placed in such a way that community open space can be utilized as school ground.

Technology

- Rat trap bond as walling material saves at least 20% cost than conventional English bond wall
- Filler slab as roofing material saves at least 25% cost than conventional concrete slabs
- Open space vs. built-up area ratio is higher than 15% to have higher insulation, light and air intake and it will further decrease electrical consumption
- Precast RCC joist frames than wooden frames, Steel shutters + plywood doors save at least 40% comparing to conventional flush doors
- Rain water harvesting to re-use of collected roof and ground water
- Additional 5000 liters water per block for fire safety
- PVC tanks instead of concrete over head tanks to reduce cost as well as load on the foundation

- Brick masonry load bearing structure instead of concrete
- Fly-ash bricks considered instead of red clay bricks giving higher strength 35 Kg/cm²
- Exposed plumbing and electrical design consideration for less maintenance cost in future and ease in installation
- Flooring would be IPS floor to save cost, less maintenance and good finishes.
- Lime pozzolona plaster instead of double coat mala and sand faced plaster for interior and exterior respectively
- White wash with color pigments instead of distemper painting
- Wall mounted toilet fixtures to avoid sunk slab and filling to reduce cost.
- Additional 75mm partition to have storage spaces in residential units
- Platform provision in Kitchen

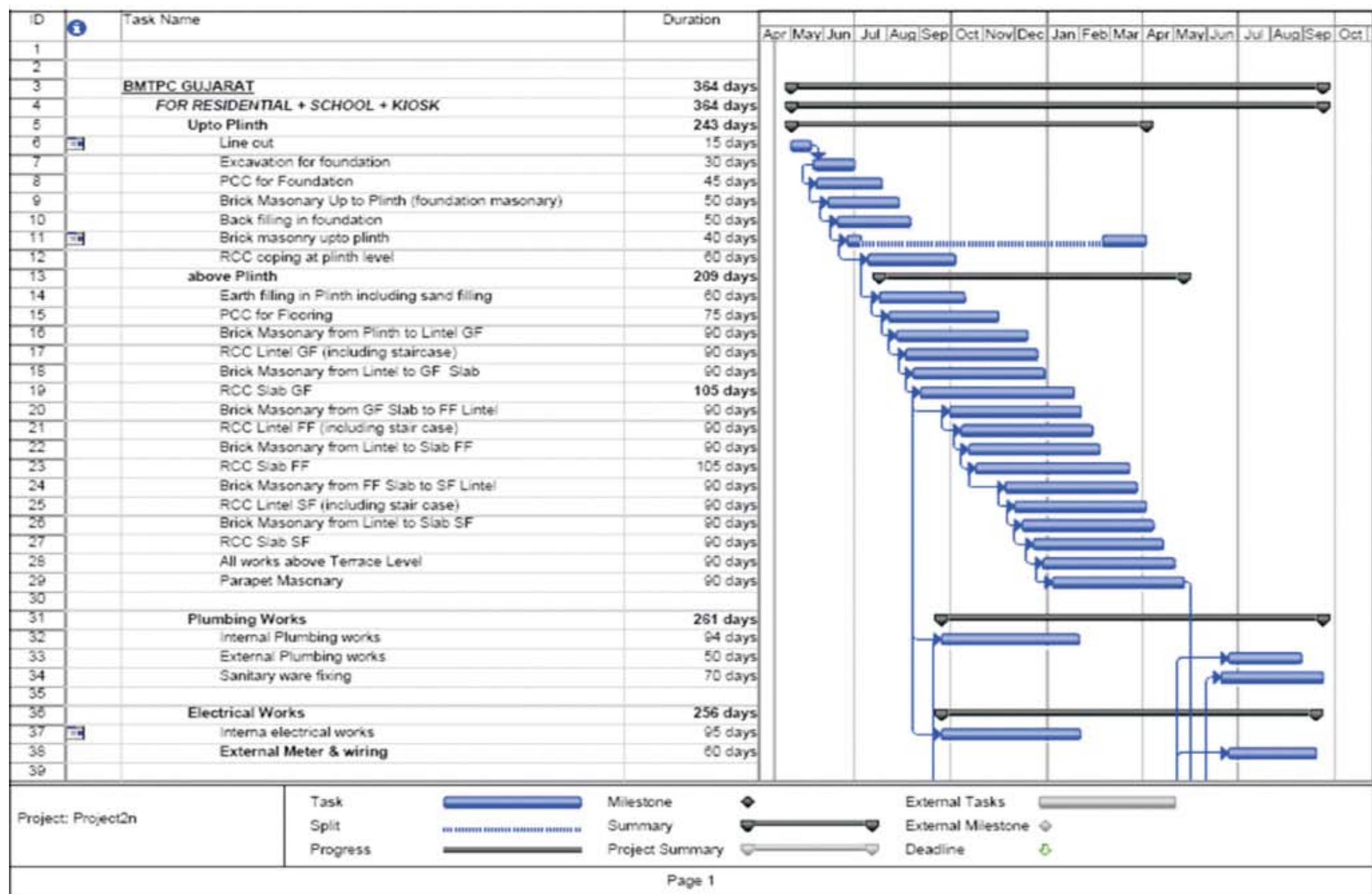
Costing

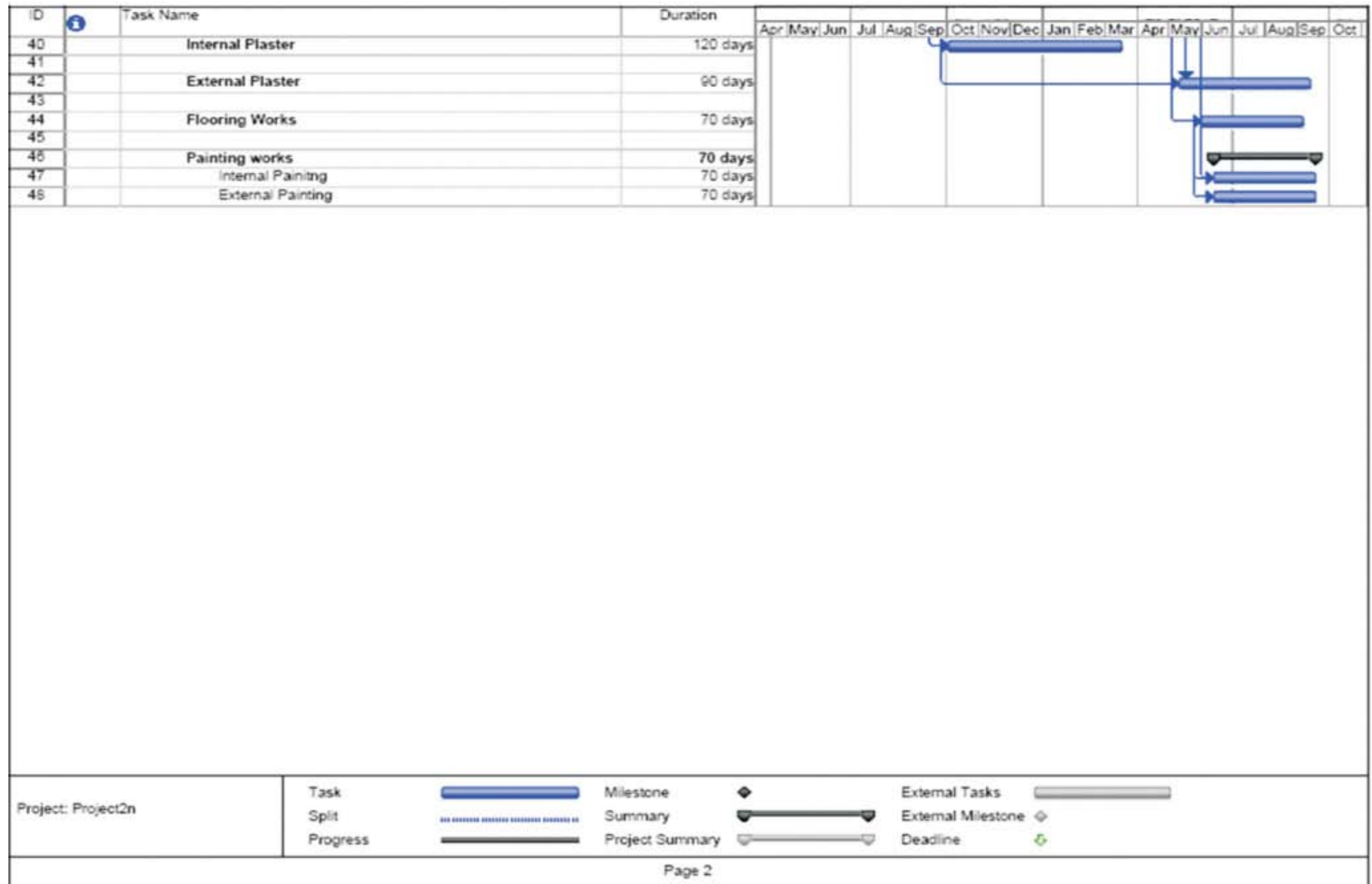
- Overall saving of approximately 14-34% in total construction cost comparing to conventional technologies, AHD SOR and quotation of market rates.
- Rain water harvesting, embodied energy benefits will be high for end users in monetary terms.



Project
Schedule

14





**A. BOQ of Residential Units:**

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
1	EARTH WORK AND EXCAVATION					
	ALTERNATIVE TECHNOLOGIES					
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	437.00	70.38	30755.83	
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	240.49	37.67	9060.20	
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	159.06	287.64	45752.42	
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	793.93	65.00	51605.13	
2	CONCRETING					
A	BED WORKS					
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m	35.43	2271	80465.00	
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	63.63	2271	144496.16	
B	R.C.C. WORKS					
2.03	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for grade slab below GF flooring etc. complete excluding reinforcement and formwork	cu.m	79.11	3677	290862.42	
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m	17.21	3677	63268.82	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
2.05	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at GF level	sq.m	716.12	287.82	206112.74	
2.06	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	17.21	3745	64439.82	
2.07	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at FF level	sq.m	716.12	291.50	208751.38	
2.08	Providing and laying in line and level RCC LINTEL at SF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	17.21	3813	65610.81	
2.09	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at SF level	sq.m	716.12	295.19	211390.02	
2.10	Providing and laying in line and level RCC LINTEL for STAIR CABIN at TERRACE level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	1.58	3881	6141.61	
2.11	Providing and laying RCC slab for terrace cabin with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) at TERRACE level excluding formwork, deshuttering and including curing etc complete.	cu.m	6.93	3881	26891.63	
C	FORM WORK					
2.12	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m	98.68	227.62	22462.14	
2.13	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	98.68	247.01	24375.32	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
2.14	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	638.20	273.81	174742.42	
2.15	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	98.68	273.17	26957.19	
2.16	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	638.20	294.41	187890.04	
2.17	Providing and erecting formwork for SECOND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	98.68	280.06	27637.55	
2.18	Providing and erecting formwork for SECOND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	638.20	315.01	201037.66	
2.19	Providing and erecting formwork for TERRACE CABIN SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	54.45	335.61	18273.88	
D	REINFORCEMENT WORKS					
2.20	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	kgs	1218.69	65.03	79254.36	
2.21	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs	349.51	65.03	22729.80	
2.22	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs	490.44	65.03	31894.46	
2.23	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs	4708.15	65.03	306182.53	
2.24	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs	490.44	65.93	32334.38	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
2.25	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	kgs	4708.15	65.93	310405.73	
2.26	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF LINTEL BAND	kgs	490.44	66.83	32774.31	
2.27	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF SLAB	kgs	4708.15	66.83	314628.94	
2.28	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin LINTEL BAND	kgs	127.75	67.72	8651.36	
2.29	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin SLAB	kgs	20.93	67.72	1417.45	
3	BRICK WORK					
3.01	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	cu.m	196.51	2688.46	528303.09	
3.02	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) above ground level upto grade slab bottom including curing etc complete	cu.m	54.70	2688.46	147053.93	
3.03	Providing and laying brickwork 230 mm thick in Rat-Trap bond using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. above Ground level	cu.m	343.29	1981.95	680375.50	
3.04	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on First floor	cu.m	347.48	2021.99	702603.33	
3.05	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on Second floor	cu.m	347.48	2062.03	716516.49	
3.06	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. at TERRACE level	cu.m	42.91	2102.07	90206.39	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
3.07	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt Fly Ash having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	sq.m	50.67	236	11935.85	
3.08	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	sq.m	50.67	244	12360.06	
3.09	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on SF level	sq.m	50.67	252	12784.26	
3.10	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. at TERRACE level	sq.m	263.34	261	68646.53	
4	PLASTER WORKS					
A	INTERIOR PLASTER					
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m	3043.87	139.88	425777.15	
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of GF level upto a height of 3 mts	sq.m	1015.28	86.08	87394.87	
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	sq.m	2959.11	146.87	434616.32	
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of FF level upto a height of 3 mts	sq.m	1015.28	90.38	91764.62	
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on SF level upto a height of 3 mts	sq.m	2959.11	151.28	447654.81	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of SF level upto a height of 3 mts	sq.m	1015.28	94.90	96352.85	
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on TERRACE level upto a height of 3 mts	sq.m	291.22	155.81	45377.50	
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of terrace level upto a height of 3 mts	sq.m	48.15	99.64	4798.07	
B	EXTERIOR PLASTER					
4.09	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto GF slab level	sq.m	206.61	161.4	33346.55	
4.10	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto FF slab level	sq.m	179.89	169.47	30486.23	
4.11	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto SF slab level	sq.m	179.89	177.94	32010.54	
4.12	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto terrace slab level	sq.m	346.90	186.84	64815.12	
5	PAINTING WORKS					
A	INTERIOR PAINTING					
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	sq.m	3043.87	32	97403.98	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
5.02	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	sq.m	1015.28	32	32488.80	
5.03	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	sq.m	2959.11	36	106527.96	
5.04	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	sq.m	1015.28	36	36549.90	
5.05	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on SF level	sq.m	2959.11	40	118364.40	
5.06	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on ceiling surfaces on SF level	sq.m	1015.28	40	40611.00	
5.07	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on TERRACE level	sq.m	291.22	43	12522.46	
5.08	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on ceiling surfaces on Terrace level	sq.m	346.90	43	14916.72	
A	EXTERIOR PAINTING					
5.09	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on GF level	sq.m	206.61	43	8884.15	
5.10	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on FF level	sq.m	179.89	46	8275.01	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
5.11	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on SF level	sq.m	179.89	50	8994.58	
5.12	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on TERRACE level	sq.m	346.90	55	19079.53	
6	FLOORING WORKS					
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m	474.42	559.13	265260.05	
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	sq.m	474.42	604.17	286628.67	
6.03	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on SF level	sq.m	474.42	649.21	307997.30	
6.04	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m	707.50	1023.43	724076.73	
6.05	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on GF level 0.6 m wide of kota stone 2.04 sq.m	nos.	20.00	2781.23	55624.55	
6.06	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on FF level 0.6 m wide of kota stone 2.04 sq.m	nos.	20.00	2906.81	58136.15	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
6.07	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on SF level 0.6 m wide of kota stone 2.04 sq.m	nos.	20.00	3032.39	60647.75	
6.08	Providing and laying polished Kota stone slab (Polished, Green color) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	nos.	5.00	6302.73	31513.67	
6.09	Providing and laying polished Kota stone slab (Polished, Green color) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at FF	nos.	5.00	6464.19	32320.97	
6.10	Providing and laying polished Kota stone slab (Polished, Green color) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at SF	nos.	5.00	6625.65	33128.27	
6.11	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at GF level for wash	sq.m	37.80	677.84	25622.35	
6.12	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at FF level for wash	sq.m	37.80	680.32	25716.20	
6.13	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey white slurry including rubbing and polishing etc. at SF level for wash	sq.m	37.80	682.81	25810.06	
6.14	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 30 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on GF	sq.m	52.00	462.74	24062.61	
6.15	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 30 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on FF	sq.m	52.00	465.03	24181.52	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
6.16	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 30 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on SF	sq.m	52.00	467.32	24300.44	
6.17	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing, polishing, filling up the joints etc complete at G.F. LEVEL	rmt	40.29	45.48	1832.35	
6.18	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at F.F. LEVEL	rmt	40.29	46.95	1891.37	
6.19	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	rmt	40.29	48.41	1950.40	
7	DOOR WINDOW SHUTTER					
7.01	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level					
	D1	nos	110	1401.09	154119.9	
	D2	nos	61	1401.09	85466.49	
7.02	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on FF level					
	D1	nos	110	1401.09	154119.9	
	D2	nos	61	1401.09	85466.49	
7.03	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on SF level					
	D1	nos	110	1401.09	154119.9	
	D2	nos	61	1401.09	85466.49	
7.04	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on terrace level					
	D1	nos	9	1401.09	12861.99	

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE ₹	AMOUNT ₹	REMARKS
7.05	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level					
	W1	sq.m	21.60	1839.45	39732.09	
	W2	sq.m	18.24	1839.45	33551.54	
	W3	sq.m	10.69	1839.45	19667.39	
	W4	sq.m	13.80	2079.05	28690.86	
	V	sq.m	4.80	2631.23	12629.92	
7.06	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level					
	W1	sq.m	21.60	1839.45	39732.09	
	W2	sq.m	18.24	1839.45	33551.54	
	W3	sq.m	10.69	1839.45	19667.39	
	W4	sq.m	13.80	2079.05	28690.86	
	V	sq.m	4.80	2631.23	12629.92	
7.07	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at SF level					
	W1	sq.m	21.60	1839.45	39732.09	
	W2	sq.m	18.24	1839.45	33551.54	
	W3	sq.m	10.69	1839.45	19667.39	
	W4	sq.m	13.80	2079.05	28690.86	
	V	sq.m	4.80	2631.23	12629.92	
TOTAL =					11,745,703	

B. BOQ School Building:

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
1	EARTH WORK AND EXCAVATION					
	ALTERNATIVE TECHNOLOGIES					
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	66.83	70.38	4703.27	
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	38.45	37.67	1448.71	
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	74.41	287.64	21402.42	
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	241.28	65.00	15683.20	
2	CONCRETING					
A	BED WORKS					
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m	17.97	2271	40811.28	
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	13.23	2271	30041.57	
B	R.C.C. WORKS					
2.03	Providing and laying RCC M20 grade slab at ground level of 100 mm thickness including finishing the surface, curing etc complete	cu.m	9.38	3591	33700.71	
2.04	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	cu.m	1.63	3677	5981.96	
2.05	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m	1.09	3677	4025.90	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
2.06	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at GF level	sq.m	142.68	764.83	109125.25	
2.07	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	1.09	3745	4100.41	
2.08	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at FF level	sq.m	157.40	773.18	121698.72	
C	FORM WORK					
2.09	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m	25.29	227.62	5757.31	
2.1	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	30.35	247.01	7497.22	
2.11	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	140.56	247.01	34718.97	
2.12	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	24.83	273.17	6782.30	
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	154.02	273.17	42073.31	
D	REINFORCEMENT WORKS					
2.14	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	kgs	225.94	65.03	14693.66	
2.15	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs	132.25	65.03	8600.76	
2.16	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs	167.55	65.03	10896.41	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
2.17	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs	1889.38	65.03	122870.82	
2.18	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs	159.41	65.03	10366.65	
2.19	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	kgs	2084.30	65.03	135547.15	
3	BRICK WORK					
3.01	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth including curing etc complete	cu.m	22.80	2688.46	61308.34	
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m	38.91	2688.46	104610.27	
3.03	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at FF level	cu.m	43.28	2688.46	116363.10	
3.04	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at TERRACE level	cu.m	3.71	2688.46	9983.82s	
3.05	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	sq.m	18.55	472.36	8760.96	
3.06	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	sq.m	13.87	481.68	6680.42	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
4	PLASTER WORKS					
A	INTERIOR PLASTER					
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m	523.63	139.88	73244.93	
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on GF	sq.m	145.92	86.08	12561.14	
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	sq.m	443.75	146.87	65174.92	
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on FF	sq.m	138.49	90.384	12517.28	
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on terrace level upto a height of 3 mts	sq.m	15.87	154.2177	2447.43	
B	EXTERIOR PLASTER					
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m	242.65	161.4	39163.73	
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	sq.m	215.56	169.47	36531.68	
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on terrace level upto a height of 3 mts	sq.m	31.20	177.94	5552.16	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
5	PAINTING WORKS					
A	INTERIOR PAINTING					
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	sq.m	523.63	32	16756.06	
5.02	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING surfaces on GF level	sq.m	145.92	32	4669.57	
5.03	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	sq.m	443.75	36	15974.90	
5.04	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING surfaces on FF level	sq.m	138.49	36	4985.64	
5.05	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on terrace level	sq.m	15.87	36	571.32	
A	EXTERIOR PAINTING					
5.06	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on GF level	sq.m	242.65	43	10433.95	
5.07	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on FF level	sq.m	215.56	46	9915.96	
5.08	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on terrace level	sq.m	31.20	50	1560.09	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
6	FLOORING WORKS					
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m	133.56	559.13	74677.51	
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	sq.m	127.51	604.17	77038.08	
6.03	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m	151.16	1023.43	154701.68	
6.04	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	sq.m	12.68	796.46	10099.07	
6.05	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	r.m	52.90	48.41	2561.07	
6.06	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	r.m	10.35	114.63	1186.73	
6.07	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	sq.m	23.88	671.55	16036.59	
7	DOOR WINDOW SHUTTER					
7.01	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level					
	D1 900X 2400	sq.m	4.32	1401.09	6052.70	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
	D 1200X 2400	sq.m	5.76	1401.09	8070.27	
7.02	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level					
	D1 900X 2400	sq.m	4.32	1401.09	6052.70	
	D 1200X 2400	sq.m	5.76	1401.09	8070.27	
7.03	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level					
	W3 1200X1600	sq.m	7.68	1839.45	14126.97	
	W4 1700 x 1600	sq.m	5.44	2544.31	13841.07	
7.04	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level					
	W3 1200X1600	sq.m	7.68	1839.45	14126.97	
	W4 1700 x 1600	sq.m	5.44	2544.31	13841.07	
7.05	Providing and laying collapsible door hung from the top by supporting wheels fitted in steel hangers of substantial design, including wheels of low friction type, the rail upon which the supporting wheels run shall be a flat bar of steel at least 75mm x 16mm in section, on which a steel runner bar 16mmx16mm in section fixed by rivets at 225mm centers to carry grooved supporting wheels and all fixtures and details of frame shall be as per IS 3614 (Part-I)					
	SCHOOL ENTRY	sq.m	7.80	2691.07	20990.31	
	TOILET SIDE ENTRY	sq.m	6.83	2691.07	18374.60	
7.06	Providing and erecting M.S. railing with vertical supports as square sections 10x10 mm and handrail of pipe of dia 50 mm etc complete	rmt	7.49	150.00	1123.50	
TOTAL =					1873266	

C. Community centre and Kiosk

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
1	EARTH WORK AND EXCAVATION					
	ALTERNATIVE TECHNOLOGIES					
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	77.24	70.38	5436.26	
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	39.08	37.67	1472.37	
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	59.72	287.64	17178.14	
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	257.30	65.00	16724.50	
2	CONCRETING					
A	BED WORKS					
2.01	Providing and laying PCC in foundation and plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	6.44	2271	14618.36	
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	12.74	2271	28932.54	
B	R.C.C. WORKS					
2.03	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	cu.m	1.27	3677	4660.29	
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m	0.72	3677	2649.30	
2.05	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at GF level	sq.m	116.30	773.18	89920.83	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
2.06	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at GF level for shops	sq.m	45.50	287.82	13095.46	
2.07	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	0.86	3677	3179.16	
2.08	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at FF level	sq.m	131.24	773.18	101472.30	
C	FORM WORK					
2.09	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m	16.05	227.62	3652.62	
2.10	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	24.89	247.01	6148.42	
2.11	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	158.34	273.81	43355.61	
2.12	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	13.01	273.17	3553.20	
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	110.75	294.41	32605.64	
D	REINFORCEMENT WORKS					
2.14	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	kgs	272.9466667	65.03	17750.40	
2.15	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs	286.69	65.03	18643.99	
2.16	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs	227.35	65.03	14785.26	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
2.17	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs	1896.68	65.03	123345.79	
2.18	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs	244.52	65.93	16121.42	
2.19	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	kgs	1665.26	65.93	109790.75	
3	BRICK WORK					
3.01	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	cu.m	18.26	3000.00	54782.50	
3.02	Providing and laying brick work using Fly Ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at GF level	cu.m	42.05	3000.00	126153.74	
3.03	Providing and laying brick work using Fly Ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at FF level	cu.m	33.96	3500.00	118843.60	
3.04	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at terrace level	cu.m	3.13	3346.00	10477.06	
3.05	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. above GF level	sq.m	16.17	472.36	7638.06	
3.06	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	sq.m	6.12	482	2947.88	
4	PLASTER WORKS					
A	INTERIOR PLASTER					
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on GF	sq.m	568.98	139.88	79589.50	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of GF	sq.m	149.44	86.08	12864.14	
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on FF	sq.m	234.96	146.874	17310.57	
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of FF	sq.m	117.86	90.384	1205.54	
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on terrace	sq.m	13.34	151.2802	2017.78	
B	EXTERIOR PLASTER					
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level	sq.m	226.67	161.4	36585.09	
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level	sq.m	183.06	169.47	31023.18	
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on TERRACE level	sq.m	26.39	177.94	4696.11	
5	PAINTING WORKS					
A	INTERIOR PAINTING					
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	sq.m	523.63	32	16756.06	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
5.02	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING on GF level	sq.m	149.44	32	4782.21	
5.03	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	sq.m	234.96	36	4242.96	
5.04	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING surfaces on FF level	sq.m	117.86	36	480.17	
5.05	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on terrace level	sq.m	13.34	40	533.52	
A	EXTERIOR PAINTING					
5.06	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on GF level	sq.m	217.10	40	8683.85	
5.07	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on FF level	sq.m	198.66	44	8741.18	
5.08	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on TERRACE level	sq.m	20.56	50	1028.00	
6	FLOORING WORKS					
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m	193.44	559.13	108158.27	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	sq.m	110.77	604.17	66924.23	
6.03	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m	120.87	1023.43	123701.98	
6.04	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	sq.m	11.73	671.55	7877.27	
6.05	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF					
		sq.m	12.45	796.46	9915.89	
6.06	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at G.F. LEVEL	r.m	133.67	45.48	6079.75	
6.07	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at F.F. LEVEL	r.m	88.04	46.95	4133.33	
6.08	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	r.m	44.46	48.41	2152.46	
6.09	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	sq.m	20.86	114.63	2391.51	
7	DOOR WINDOW & GATES					
7.01	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level					

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
	D1	sq.m	19.44	1401.09	27237.17	
7.02	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level					
	D1	sq.m	6.48	1401.09	9079.06	
7.03	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level					
	W2 1200 x 1600	sq.m	3.84	1839.45	7063.48	
7.04	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level					
	W2 1200 x 1600	sq.m	7.68	1839.45	14126.97	
	W3 1000 x 1600	sq.m	6.40	1839.45	11772.47	
	W1 2000 x 1600	sq.m	3.20	2544.31	8141.80	
7.05	Providing and laying Rolling shutters 20 gauge for shops with Galvanized guide channels, suspension shaft, pulley wheels, locking chips, "U" clamps, gears, counter balancing roller spring, helical spring and flat spring conforming to IS 6248 specifications for metal rolling shutters, including painting them with two coats of zinc rich primer. They shall be finished with approved colour and shade prior to handing over (2500X2100)	sq.m	21	1399.35	29386.44	
7.06	Providing and laying steel railing for staircase including 75 dia pipe as top rail and 12 mm square sections as vertical members 150 c/c and 16 mm flats as bottom members etc including cost of two coats of red oxide and painting to give a thorough finish	rmt	7.49	150	1123.50	
TOTAL =					16,07,612	

D. BOQ of Miscellaneous items (Infrastructure and beautification)

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
1	EARTH WORK AND EXCAVATION					
	ALTERNATIVE TECHNOLOGIES					
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	3.05	70.38	214.72	
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	2.04	37.67	76.97	
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	5.45	287.64	1567.05	
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	15.58	65.00	1012.38	
2	CONCRETING					
A	BED WORKS					
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m	2.05	2271	4655.67	
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	0.32	2271	715.38	
3	BRICK WORK					
3.01	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth including curing etc complete	cu.m	1.90	2616.37	4982.83	
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m	2.87	2735.08	7852.47	
3.03	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	sq.m	15.20	472.36	7179.87	
4	PLASTER WORKS					
A	INTERIOR PLASTER					
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m	13.19	139.88	1844.74	

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
5	PAINTING WORKS					
A	INTERIOR PAINTING					
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	sq.m	18.93	32	605.71	
6	FLOORING WORKS					
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m	15.58	559.13	8708.46	
7	ROAD WORKS					
7.01	Providing and constructing 6 m wide road as per drawing with sub base layer of WMM (WMM= 100mm thk. with aggregates size of 10, 20, 40mm+ dust with 20 and 40 mm, 60% of total proportion of WMM and 10mm+dust comprises of 40% of WMM) and a base course of DBM (DBM=125 mm) and the top finishing layer of Bituminous course (BC=50 mm thk.) including compaction layers and laying the road as per site levels in drawing etc complete	kms	0.08	5581395.35	446511.63	
8	COMPOUND WALL & SITTINGS					
8.01	Providing and erecting Pre-cast R.C.C plank and joist compound wall as per drawing, with joist placed at 1.535 m c/c dimensions (web thk. 35 mm width 30 mm and of total width 90 mm) 1.5 m height and plank dimension (length: 1.5m and width 0.3m and of thk. 30mm) etc. complete	rmt	262.97	1279.20	336391.22	
8.02	Providing and constructing benches of (2.76m x 0.35m) with brick masonry of 230 mm above ground level and 350 mm brick masonry below ground level of bricks 50 kg/cm ² and PCC of 75 mm thk. Having offset of 100 mm on both the sides including base of kota stone on top of brick masonry of 25 mm thk. etc. complete(rate is on the sq.m of kota stone used)	sq.m	28.01	995.66	27892.55	
8.03	Providing and erecting steel main gate and school gate as per drawing including painting with two coats of red oxide and painting it with two coats of black enamel paint etc complete	sq.m	31.5	2000	63000.00	
8.04	Providing and laying Grass pavers (M20 grade, 270x270 mm) 80 mm thick as per the layout plan, of approved brand and quality and laid down in consultation with the Engineer-in-charge including providing necessary slopes etc complete	sq.m	150	430.4	64560.00	
8.05	Providing and laying Solid pavers (M20 grade) 60 mm thick as per the layout plan, of approved brand and quality and laid down in consultation with the Engineer-in-charge including providing necessary slopes etc complete	sq.m	50	322.8	16140.00	
TOTAL =					993911.66	

E. BOQ of Plumbing Work (Total for Residential block, school, kiosk and main network)

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1	PLUMBING WORKS				
1.1	Providing, fixing and testing, heavy quality ISI marked gun metal or brass full way wheel valve, with screwed/flanged ends with EPDM WASHER, factory tested at 20 kg/m2., on uPVC/GI/HDPE lines of the following nominal bore (NB) size:				
	75MM dia	2.00	3,900.00	Nos.	7800
	65MM dia	2.00	3,276.00	Nos.	6552
	50MM dia	5.00	2,730.00	Nos.	13650
	40MM dia	22.00	1,950.00	Nos.	42900
	32MM dia	2.00	1,716.00	Nos.	3432
1.2	Providing, fixing and testing, heavy quality gun metal or brass non-return swing type valve, with screwed/flanged ends, factory tested at 20 kg/cm2., of the following nominal bore (NB) size:				
	50MM dia.	7.00	3,120.00	Nos.	21840
1.3	Providing and fixing gun metal foot valve with the required accessories, of approved make, as approved or its equivalent of the following nominal bore size:				
	50MM dia	7.00	1,560.00	Nos.	10920
1.4	Providing and fixing Water Meter of Pricol or equivalent make as approved and directed by the Consultants.				
	40 mm size	2.00	6,240.00	Nos.	12480
	50 mm size	5.00	3,900.00	Nos.	19500
1.5	Providing and fixing R.O.SYTEM of Power H2O- CW 939-A brand including supply and fixing of CP jaquar continental -059 Angle valve & copper pipe inlet connection from GI outlet pipe, including fixing electrical accessories supplied/ listed by manufacture with all necessary fittings complete.	1.00	19,500.00	Nos.	19500
1.6	Supplying and fixing, PVC water tanks of the following capacities such as Sintex or equivalent, on terraces, lofts, in bathrooms, etc., at all heights including all accessories such as inlet, outlet, over flow, drain pipe sleeves of the specified size, with necessary neoprene gaskets/packing/ washers, GI washers and check nuts etc., all complete, as directed.				
	Upto 10000 litres.	35,000.00	6.50	Ltr.	227500
1.7	Supplying and fixing electronic water level control, to start and stop the pump automatically at the present water level, of an approved make. The unit is to be supplied with 3 sets of stainless steel electrodes and wiring between the main unit and electrodes as directed.	7.00	3,510.00	Nos.	24570
1.8	Charges for taking connections from the mains.	2.00	7,800.00	Lumpsum	15600

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.9	Providing and fixing uPVC IS:4985:2000 PVC Class 3 (PN) 6 Kgf/cm ² of approved make; open, complete, including making airtight joints, with necessary specials, couplers, elbow, equal tees, tail piece, adapter (both male and female), reducer (single stage, double stage and triple stage), end cap, fabricated bend, etc., in proper line and level (with necessary support like clamps, clips, brick masonry pedestals and battens, if necessary) to wall, ceiling and floor, approved quality, and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor etc., complete of the following (outer diameter) OD size:				
	75MM dia	40.00	470.00	Rmt	18800
	65MM dia	170.00	420.00	Rmt	71400
	50MM dia	110.00	410.00	Rmt	45100
	40MM dia	374.00	330.00	Rmt	123420
	32MM dia	60.00	325.00	Rmt	19500
	25MM dia	186.00	300.00	Rmt	55800
	15MM dia	170.00	290.00	Rmt	49300
1.10	Providing and fixing CPVC pipe conform code ASTM with screwed sockets, joints, and necessary fittings such as elbows, bends, reducers, threaded connection, tees etc, including making/ drilling holes in walls/ slabs and remaking good the damages in original conditions. Make Flow guard, Prince, Aashirwad or equivalent (SDR 11)				
	Internal Dia. 15 mm	115.00	120.00	Rmt	13800
1.11	Providing and fixing white glazed vitreous chinaware Orissa pattern WC with back/front inlet with 1 no. white glazed vitreous chinaware 'P' or 'S' trap with or without vent horn as under:				
	1) size 530 mm x 450 mm	68.00	1,599.00	Nos.	108732
1.12	Providing and fixing Ivory glazed vitreous chinaware wash basin of with single or double hole for pillar-tap comprising of: a) Ivory glazed vitreous chinaware washbasin, with supporting 15 mm GI pipe or heavy quality CI brackets. b) 1 no. 40 or 32mm CP cast brass bottle-trap with extension piece to wall, wall flange with rubber adopter for waste connection and one waste coupling. c) 2 no. heavy quality CP brass angular stopcock with wall CP flange, 15mm size. d) 2 no. 15mm NB heavy quality CP-brass inlet connection with unions at end. The supporting bracket shall be painted with 3 coats of approved paint of approved shade in following etc complete size:				
	1) Size 510 mm x 400 mm	66.00	1,170.00	Nos.	77220
1.13	Providing and fixing a stainless steel sink with waste coupling of Nirali make or equivalent as approved by architect , single bowl of size not more than 610 x 460mm and depth 200mm, comprising of: a) stainless steel sink supported on MS or CI brackets or in platform. b) 1 no. 40 or 32mm CP cast brass bottle-trap of Jaquar make Allied series Cat. No. 769 with extension piece to wall, wall flange with rubber adopter for waste connection with 40 mm 6 kg /sq.cm rigid PVC waste water etc complete. rate shall be inclusive for keeping the Sink in as it is condition up till the handing over.	60.00	6,630.00	Nos.	397800

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.14	Providing and fixing screw down brass chromium plated heavy quality bib-tap as approved by architect, on water supply pipe lines with a flange, as approved by the architects etc., complete.	190.00	936.00	Nos.	177840
1.15	Providing and fixing brass chromium plated heavy quality wash basin pillar cock long neck with aerator of as approved by architect , on water supply pipelines of 15mm dia with extension piece with a flange, as approved by the Consultants etc., complete.	66.00	819.00	Nos.	54054
1.16	Providing and fixing best Indian make mirror of specified size like Triveni, I.A.G or equivalent silvered locally, with plain edge as required, with 12mm thick marine plywood backing of ISI 710 with CP brass caps, etc., complete. Teakwood best quality seasoned Ghana teak beading size 20mm x 32mm with semi gloss finish using PU polish, shall be done as drawings etc. complete as directed.	4.00	624.00	Sq.m.	2496
1.17	Providing and fixing a heavy quality CP brass stopcock, male or female end, of 25mm dia on water supply pipe lines as approved by the Consultants etc., complete.	60.00	507.00	Nos.	30420
1.18	Providing and fixing a 15 mm dia inlet shower arm 190 mm with flange with shower rose of as approved by the consultants etc completes.	60.00	1,170.00	Nos.	70200
1.19	Providing and fixing a vitreous chinaware white urinal of approved make (low flow) as approved by Consultants, comprising of: a) CP brass heavy quality spreaders, 1 for each urinal. b) 32mm NB waste coupling of , 1 for each urinal c) 40 mm 6 kg /sq cm rigid PVC waste pipe with bottle trap of J, and d) angle valve of - 1 no. for each urinal d) Necessary connecting CP brass pipe upto spreader along with necessary connection CI urinal concealed brackets 2 no & open bracket -1 no; etc complete .in size mentioned under:				
	white earthenware large flat back type size 635 mm x 395 mm x 420 mm	5.00	2,730.00	Nos.	13650
1.20	Providing and fixing the first quality white glazed vitreous chinaware squatting urinal of required size, 600mm x 350mm, of approved make, as approved or equivalent.	1.00	3,510.00	Nos.	3510
1.21	Providing and fixing a CP brass exposed or concealed heavy duty flush valve with a regulator etc., complete in following size:				
	1) 25mm dia,	68.00	624.00	Nos.	42432
1.22	Providing and fixing a cast iron Nahni trap of self-cleansing design with a water seal not less than 50mm, with or without vent, including setting the trap in 1:2:4 CC, etc., complete. The Nahni trap shall be with 75mm dia. outlet.	68.00	507.00	Nos.	34476
1.23	Providing and fixing in position a PVC grating, 150mm x 150mm or 150mm dia in size, generally conforming to the drawings and fixed on the inlet pipe.	68.00	156.00	Nos.	10608
1.24	Providing and fixing an approved SWR quality, heavy duty, uPVC BTYPE pipes. (open/concealed laid) with necessary specials, bends, such as 'Y' junction, 'T' junction (both single and double), including plugs, shoes, cowls, flange compression type fittings,, in proper line and level with necessary support like GI Coated MS brackets/ GI coated MS fabricated clamps, clips, Hilti fischer anchor fasteners, RCC or brick pedestals or battens, if necessary, to wall, ceiling and floor, open, complete jointing with rubberizing and airtight joints, with 'T' shaped rubber ring,, etc., and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor, etc. complete of the following .PCC for encasing the pipe in sunk slab and excavation shall be paid in respective tender item				

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	2) 110mm,	230.00	400.00	Rmt	92000
	4) 75mm.	200.00	250.00	Rmt	50000
	6) 40 mm.	300.00	117.00	Rmt	35100
1.25	Providing and fixing an approved SWR quality, heavy duty, uPVC 'P' trap or 'S' trap with 150 x 150 mm or 150 mm dia.stain less steel -316 grating or heavy quality brass chromium plated hinged jail of chilly or equivalent. Including cutting the floor and making them good with surrounding M15 CC, masonry supports, MS brackets etc. testing, etc., complete having 110 mm inlet and 110 mm outlet with vertical extension piece up to floor.	68.00	1,170.00	Nos.	79560
1.26	Providing and laying salt-glazed stoneware pipes (to the line, level and slopes) and jointing with stiff mixture of CM 1:1, depth upto 1.5 m., including testing of pipes and joints, etc., complete.				
	1) 230 mm dia	75.00	351.00	Rmt	26325
	1) 150 mm dia	170.00	234.00	Rmt	39780
1.27	Providing and fixing a salt-glazed stoneware gully trap, class 'A' of 230 mm dia inlet and 150 mm outlet with CI grating at the top embedded & making gala in M15 concrete etc., complete. (Excluding cost of Chamber and CI cover with frame)	45.00	1,170.00	Nos.	52650
1.28	Constructing masonry for underground Inspection chamber and bends with bricks having crushing strength not less than 35kg/cm2 in cm 1.5 C.I. Cover with frame (light duty) 455mm x 610mm internal dimensions total weight of cover with frame to be not less than 38kg (wt. of cover 23kg. and wt. of frame 15kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand :4 grade stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete				
	Inside dimensions 455 mm x 610 mm and 450mm deep for single pipe lines	6.00	2,176.00	Nos.	13056
	Inside dimensions 500mm x 700 mm and 450mm deep for pipe lines with one or two inlets	12.00	2,639.00	Nos.	31668
1.29	Extra over items 24.44 for every additional depth of 0.1 m or part thereof beyond 450 mm depth for brick masonry chamber.				
	For 455 mm x 610 mm size	2.00	148.00	Nos.	296
	For 500mm x 700 mm size	10.00	161.00	Nos.	1610
1.30	Construction manhole with R.C.C. top slab in 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] foundation concrete 1:3:6 mix [1 cement : 3 coarse sand : 6 brick bets 40-50 mm size] inside plastering 15mm thick with cement mortar 1:5 [1 cement : 5 coarse sand] and finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] finished smooth complete including curing and testing.				

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	Inside size 900mm x 1200 mm and upto 1.50m deep including C.I. cover with frame size 650mm diameter total weight of cover and frame to be not less than 128 kgs.[wt. of cover 64 kg. and wt. frame 64 kg.] 'with 230 mm thick wall of brick masonry using bricks having crushing strength not less then 35kg/sq.cm in cement mortar 1:5 [1 cement : 5 coarse sand]	10.00	15,131.00	Nos.	151310
1.31	Providing and fixing cast iron manhole frame and cover, having weight not less than 35 kg., of circular dimensions, including carting to site of work, fixing in CC and finishing with 3 coats of anti-corrosive paint, etc. complete as directed by E-I-C	10.00	830.00	Nos.	8300
1.32	Providing and fixing, CI cowl, of 100 mm. dia., on ventilating pipe, as per drawing, etc. complete.	7.00	479.00	Nos.	3353
1.33	Providing and fixing, CI steps in manhole, water tank, septic tank, etc., of size 500 mm. x 150 mm. x 22.5 mm. and painting with 3 coats of anti-corrosive paint, etc. complete.	27.00	167.00	Nos.	4509
1.34	Providing , laying, [to level or slopes] and jointing reinforced concrete non-pressure pipes I.S. class NP2 of the following diameter with collar joints including testing of joints complete.				
	250 mm	14.00	375.00	Rmt	5250
	300 mm	12.00	446.00	Rmt	5352
Total of BOQ Items					2,446,921

E-1 BOQ of Plumbing work (Residential Unit)

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1	PLUMBING WORKS				
1.1	Providing, fixing and testing, heavy quality ISI marked gun metal or brass full way wheel valve, with screwed/flanged ends with EPDM WASHER, factory tested at 20 kg/m2., on uPVC/GI/HDPE lines of the following nominal bore (NB) size:				
	75MM dia		3,900.00	Nos.	0
	65MM dia		3,276.00	Nos.	0
	50MM dia		2,730.00	Nos.	0
	40MM dia	20	1,950.00	Nos.	39000
	32MM dia	2	1,716.00	Nos.	3432
1.2	Providing, fixing and testing, heavy quality gun metal or brass non-return swing type valve, with screwed/flanged ends, factory tested at 20 kg/cm2., of the following nominal bore (NB) size:				
	50MM dia.	5	3,120.00	Nos.	15600
1.3	Providing and fixing gun metal foot valve with the required accessories, of approved make, as approved or its equivalent of the following nominal bore size:				
	50MM dia	5	1,560.00	Nos.	7800
1.4	Providing and fixing Water Meter of Pricol or equivalent make as approved and directed by the Consultants.				
	40 mm size		6,240.00	Nos.	0
	50 mm size	5	3,900.00	Nos.	19500
1.5	Providing and fixing R.O.SYTEM of Power H2O- CW 939-A brand including supply and fixing of CP jaquar continental -059 Angle valve & copper pipe inlet connection from GI outlet pipe, including fixing electrical accessories supplied/ listed by manufacture with all necessary fittings complete.		19,500.00	Nos.	0
1.6	Supplying and fixing, PVC water tanks of the following capacities such as Sintex or equivalent, on terraces, lofts, in bathrooms, etc., at all heights including all accessories such as inlet, outlet, over flow, drain pipe sleeves of the specified size, with necessary neoprene gaskets/packing/ washers, GI washers and check nuts etc., all complete, as directed.				
	Upto 10000 litres.	25000	6.50	Ltr.	162500
1.7	Supplying and fixing electronic water level control, to start and stop the pump automatically at the present water level, of an approved make. The unit is to be supplied with 3 sets of stainless steel electrodes and wiring between the main unit and electrodes as directed.		3,510.00	Nos.	0
1.8	Charges for taking connections from the mains.		7,800.00	Lumpsum	0

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.9	Providing and fixing uPVC IS:4985:2000 PVC Class 3 (PN) 6 Kgf/cm ² of approved make; open, complete, including making airtight joints, with necessary specials, couplers, elbow, equal tees, tail piece, adapter (both male and female), reducer (single stage, double stage and triple stage), end cap, fabricated bend, etc., in proper line and level (with necessary support like clamps, clips, brick masonry pedestals and battens, if necessary) to wall, ceiling and floor, approved quality, and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor etc., complete of the following (outer diameter) OD size:				
	75MM dia		470.00	Rmt	0
	65MM dia		420.00	Rmt	0
	50MM dia	60	410.00	Rmt	24600
	40MM dia	310	330.00	Rmt	102300
	32MM dia	60	325.00	Rmt	19500
	25MM dia	156	300.00	Rmt	46800
	15MM dia	150	290.00	Rmt	43500
1.10	Providing and fixing CPVC pipe conform code ASTM with screwed sockets, joints, and necessary fittings such as elbows, bends, reducers, threaded connection, tees etc, including making/ drilling holes in walls/ slabs and remaking good the damages in original conditions. Make Flow guard, Prince, Aashirwad or equivalent (SDR 11)				
	Internal Dia. 15 mm	115	120.00	Rmt	13800
1.11	Providing and fixing white glazed vitreous chinaware Orissa pattern WC with back/ front inlet with 1 no. white glazed vitreous chinaware 'P' or 'S' trap with or without vent horn as under:				
	1) size 530 mm x 450 mm	60	1,599.00	Nos.	95940
1.12	Providing and fixing Ivory glazed vitreous chinaware wash basin of with single or double hole for pillar-tap comprising of: a) Ivory glazed vitreous chinaware washbasin, with supporting 15 mm GI pipe or heavy quality CI brackets. b) 1 no. 40 or 32mm CP cast brass bottle-trap with extension piece to wall, wall flange with rubber adopter for waste connection and one waste coupling. c) 2 no. heavy quality CP brass angular stopcock with wall CP flange, 15mm size. d) 2 no. 15mm NB heavy quality CP-brass inlet connection with unions at end. The supporting bracket shall be painted with 3 coats of approved paint of approved shade in following etc complete size:				
	1) Size 510 mm x 400 mm	60	1,170.00	Nos.	70200
1.13	Providing and fixing a stainless steel sink with waste coupling of Nirali make or equivalent as approved by architect , single bowl of size not more than 610 x 460mm and depth 200mm, comprising of: a) stainless steel sink supported on MS or CI brackets or in platform. b) 1 no. 40 or 32mm CP cast brass bottle-trap of Jaquar make Allied series Cat. No. 769 with extension piece to wall, wall flange with rubber adopter for waste connection with 40 mm 6 kg /sq.cm rigid PVC waste water etc complete. rate shall be inclusive for keeping the Sink in as it is condition up till the handing over.	60	6,630.00	Nos.	397800

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.14	Providing and fixing screw down brass chromium plated heavy quality bib-tap as approved by architect, on water supply pipe lines with a flange, as approved by the architects etc., complete.	180	936.00	Nos.	168480
1.15	Providing and fixing brass chromium plated heavy quality wash basin pillar cock long neck with aerator of as approved by architect , on water supply pipelines of 15mm dia with extension piece with a flange, as approved by the Consultants etc., complete.	60	819.00	Nos.	49140
1.16	Providing and fixing best Indian make mirror of specified size like Triveni, I.A.G or equivalent silvered locally, with plain edge as required, with 12mm thick marine plywood backing of ISI 710 with CP brass caps, etc., complete. Teakwood best quality seasoned Ghana teak beading size 20mm x 32mm with semi gloss finish using PU polish, shall be done as drawings etc. complete as directed.		624.00	Sq.m.	0
1.17	Providing and fixing a heavy quality CP brass stopcock, male or female end, of 25mm dia on water supply pipe lines as approved by the Consultants etc., complete.	60	507.00	Nos.	30420
1.18	Providing and fixing a 15 mm dia inlet shower arm 190 mm with flange with shower rose of as approved by the consultants etc completes.	60	1,170.00	Nos.	70200
1.19	Providing and fixing a vitreous chinaware white urinal of approved make (low flow) as approved by Consultants, comprising of: a) CP brass heavy quality spreaders, 1 for each urinal. b) 32mm NB waste coupling of , 1 for each urinal c) 40 mm 6 kg /sq cm rigid PVC waste pipe with bottle trap of J, and d) angle valve of - 1 no. for each urinal d) Necessary connecting CP brass pipe upto spreader along with necessary connection CI urinal concealed brackets 2 no & open bracket -1 no; etc complete .in size mentioned under:				
	white earthenware large flat back type size 635 mm x 395 mm x 420 mm		2,730.00	Nos.	0
1.20	Providing and fixing the first quality white glazed vitreous chinaware squatting urinal of required size, 600mm x 350mm, of approved make, as approved or equivalent.		3,510.00	Nos.	0
1.21	Providing and fixing a CP brass exposed or concealed heavy duty flush valve with a regulator etc., complete in following size:				
	1) 25mm dia,	60	624.00	Nos.	37440
1.22	Providing and fixing a cast iron Nahni trap of self-cleansing design with a water seal not less than 50mm, with or without vent, including setting the trap in 1:2:4 CC, etc., complete. The Nahni trap shall be with 75mm dia. outlet.	60	507.00	Nos.	30420
1.23	Providing and fixing in position a PVC grating, 150mm x 150mm or 150mm dia in size, generally conforming to the drawings and fixed on the inlet pipe.	60	156.00	Nos.	9360
1.24	Providing and fixing an approved SWR quality, heavy duty, uPVC BTYPE pipes. (open/concealed laid) with necessary specials, bends, such as 'Y' junction, 'T' junction (both single and double), including plugs, shoes, cowls, flange compression type fittings,, in proper line and level with necessary support like GI Coated MS brackets/ GI coated MS fabricated clamps, clips, Hilti fischer anchor fasteners, RCC or brick pedestals or battens, if necessary, to wall, ceiling and floor, open, complete jointing with rubberizing and airtight joints, with 'T' shaped rubber ring, etc., and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor, etc. complete of the following. PCC for encasing the pipe in sunk slab and excavation shall be paid in respective tender item				

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	2) 110mm,	190	400.00	Rmt	76000
	4) 75mm.	180	250.00	Rmt	45000
	6) 40 mm.	270	117.00	Rmt	31590
1.25	Providing and fixing an approved SWR quality, heavy duty, uPVC 'P' trap or 'S' trap with 150 x 150 mm or 150 mm dia.stain less steel -316 grating or heavy quality brass chromium plated hinged jail of chilly or equivalent. Including cutting the floor and making them good with surrounding M15 CC, masonry supports, MS brackets etc. testing, etc., complete having 110 mm inlet and 110 mm outlet with vertical extension piece up to floor.	60	1,170.00	Nos.	70200
1.26	Providing and laying salt-glazed stoneware pipes (to the line, level and slopes) and jointing with stiff mixture of CM 1:1, depth upto 1.5 m., including testing of pipes and joints, etc., complete.				
	1) 230 mm dia		351.00	Rmt	0
	1) 150 mm dia		234.00	Rmt	0
1.27	Providing and fixing a salt-glazed stoneware gully trap, class 'A' of 230 mm dia inlet and 150 mm outlet with CI grating at the top embedded & making gala in M15 concrete etc., complete. (Excluding cost of Chamber and CI cover with frame)		1,170.00	Nos.	0
1.28	Constructing masonry for underground Inspection chamber and bends with bricks having crushing strength not less than 35kg/cm ² in cm 1.5 C.I. Cover with frame (light duty) 455mm x 610mm internal dimensions total weight of cover with frame to be not less than 38kg (wt. of cover 23kg. and wt. of frame 15kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand :4 grade stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete				
	Inside dimensions 455 mm x 610 mm and 450mm deep for single pipe lines		2,176.00	Nos.	0
	Inside dimensions 500mm x 700 mm and 450mm deep for pipe lines with one or two inlets		2,639.00	Nos.	0
1.29	Extra over items 24.44 for every additional depth of 0.1 m or part thereof beyond 450 mm depth for brick masonry chamber.				
	For 455 mm x 610 mm size		148.00	Nos.	0
	For 500mm x 700 mm size		161.00	Nos.	0
1.30	Construction manhole with R.C.C. top slab in 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] foundation concrete 1:3:6 mix [1 cement : 3 coarse sand : 6 brick bets 40-50 mm size] inside plastering 15mm thick with cement mortar 1:5 [1 cement : 5 coarse sand] and finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] finished smooth complete including curing and testing.				
	Inside size 900mm x 1200 mm and upto 1.50m deep including C.I. cover with frame size 650mm diameter total weight of cover and frame to be not less than 128 kgs.[wt. of cover 64 kg. and wt. frame 64 kg.] 'with 230 mm thick wall of brick masonry using bricks having crushing strength not less then 35kg/sq.cm in cement mortar 1:5 [1 cement : 5 coarse sand]		15,131.00	Nos.	0

ITEM NO		ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	1.31	Providing and fixing cast iron manhole frame and cover, having weight not less than 35 kg., of circular dimensions, including carting to site of work, fixing in CC and finishing with 3 coats of anti-corrosive paint, etc. complete as directed by E-I-C		830.00	Nos.	0
	1.32	Providing and fixing, CI cowl, of 100 mm. dia., on ventilating pipe, as per drawing, etc. complete.		479.00	Nos.	0
	1.33	Providing and fixing, CI steps in manhole, water tank, septic tank, etc., of size 500 mm. x 150 mm. x 22.5 mm. and painting with 3 coats of anti-corrosive paint, etc. complete.		167.00	Nos.	0
	1.34	Providing , laying, [to level or slopes] and jointing reinforced concrete non-pressure pipes I.S. class NP2 of the following diameter with collar joints including testing of joints complete.				
		250 mm		375.00	Rmt	0
		300 mm		446.00	Rmt	0
Total of BOQ Items						1680522

E-2 BOQ of Plumbing work (School)

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1	PLUMBING WORKS				
1.1	Providing, fixing and testing, heavy quality ISI marked gun metal or brass full way wheel valve, with screwed/flanged ends with EPDM WASHER, factory tested at 20 kg/m2., on uPVC/GI/HDPE lines of the following nominal bore (NB) size:				
	75MM dia		3,900.00	Nos.	0
	65MM dia		3,276.00	Nos.	0
	50MM dia		2,730.00	Nos.	0
	40MM dia	1	1,950.00	Nos.	1950
	32MM dia		1,716.00	Nos.	0
1.2	Providing, fixing and testing, heavy quality gun metal or brass non-return swing type valve, with screwed/flanged ends, factory tested at 20 kg/cm2., of the following nominal bore (NB) size:				
	50MM dia.	1	3,120.00	Nos.	3120
1.3	Providing and fixing gun metal foot valve with the required accessories, of approved make, as approved or its equivalent of the following nominal bore size:				
	50MM dia	1	1,560.00	Nos.	1560
1.4	Providing and fixing Water Meter of Pricol or equivalent make as approved and directed by the Consultants.				
	40 mm size	1	6,240.00	Nos.	6240
	50 mm size		3,900.00	Nos.	0
1.5	Providing and fixing R.O.SYTEM of Power H2O- CW 939-A brand including supply and fixing of CP jaquar continental -059 Angle valve & copper pipe inlet connection from GI outlet pipe, including fixing electrical accessories supplied/ listed by manufacture with all necessary fittings complete.	1	19,500.00	Nos.	19500
1.6	Supplying and fixing, PVC water tanks of the following capacities such as Sintex or equivalent, on terraces, lofts, in bathrooms, etc., at all heights including all accessories such as inlet, outlet, over flow, drain pipe sleeves of the specified size, with necessary neoprene gaskets/packing/ washers, GI washers and check nuts etc., all complete, as directed.				
	Upto 10000 litres.	5000	6.50	Ltr.	32500
1.7	Supplying and fixing electronic water level control, to start and stop the pump automatically at the present water level, of an approved make. The unit is to be supplied with 3 sets of stainless steel electrodes and wiring between the main unit and electrodes as directed.		3,510.00	Nos.	0
1.8	Charges for taking connections from the mains.		7,800.00	Lumpsum	0
1.9	Providing and fixing uPVC IS:4985:2000 PVC Class 3 (PN) 6 Kgf/cm2 of approved make; open, complete, including making airtight joints, with necessary specials, couplers, elbow, equal tees, tail piece, adapter (both male and female), reducer (single stage, double stage and triple stage), end cap, fabricated bend, etc., in proper line and level (with necessary support like clamps, clips, brick masonry pedestals and battens, if necessary) to wall, ceiling and floor, approved quality, and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor etc., complete of the following (outer diameter) OD size:				

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	75MM dia		470.00	Rmt	0
	65MM dia		420.00	Rmt	0
	50MM dia		410.00	Rmt	0
	40MM dia	35	330.00	Rmt	11550
	32MM dia		325.00	Rmt	0
	25MM dia	15	300.00	Rmt	4500
	15MM dia	10	290.00	Rmt	2900
1.10	Providing and fixing CPVC pipe conform code ASTM with screwed sockets, joints, and necessary fittings such as elbows, bends, reducers, threaded connection, tees etc, including making/ drilling holes in walls/ slabs and remaking good the damages in original conditions. Make Flow guard, Prince, Aashirwad or equivalent (SDR 11)				
	Internal Dia. 15 mm		120.00	Rmt	0
1.11	Providing and fixing white glazed vitreous chinaware Orissa pattern WC with back/ front inlet with 1 no. white glazed vitreous chinaware 'P' or 'S' trap with or without vent horn as under:				
	1) size 530 mm x 450 mm	6	1,599.00	Nos.	9594
1.12	Providing and fixing Ivory glazed vitreous chinaware wash basin of with single or double hole for pillar-tap comprising of: a) Ivory glazed vitreous chinaware washbasin, with supporting 15 mm GI pipe or heavy quality CI brackets. b) 1 no. 40 or 32mm CP cast brass bottle-trap with extension piece to wall, wall flange with rubber adopter for waste connection and one waste coupling. c) 2 no. heavy quality CP brass angular stopcock with wall CP flange, 15mm size. d) 2 no. 15mm NB heavy quality CP-brass inlet connection with unions at end. The supporting bracket shall be painted with 3 coats of approved paint of approved shade in following etc complete size:				
	1) Size 510 mm x 400 mm	4	1,170.00	Nos.	4680
1.13	Providing and fixing a stainless steel sink with waste coupling of Nirali make or equivalent as approved by architect , single bowl of size not more than 610 x 460mm and depth 200mm, comprising of: a) stainless steel sink supported on MS or CI brackets or in platform. b) 1 no. 40 or 32mm CP cast brass bottle-trap of Jaquar make Allied series Cat. No. 769 with extension piece to wall, wall flange with rubber adopter for waste connection with 40 mm 6 kg /sq.cm rigid PVC waste water etc complete. rate shall be inclusive for keeping the Sink in as it is condition up till the handing over.		6,630.00	Nos.	0
1.14	Providing and fixing screw down brass chromium plated heavy quality bib-tap as approved by architect, on water supply pipe lines with a flange, as approved by the architects etc., complete.	8	936.00	Nos.	7488
1.15	Providing and fixing brass chromium plated heavy quality wash basin pillar cock long neck with aerator of as approved by architect , on water supply pipelines of 15mm dia with extension piece with a flange, as approved by the Consultants etc., complete.	4	819.00	Nos.	3276

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.16	Providing and fixing best Indian make mirror of specified size like Triveni, I.A.G or equivalent silvered locally, with plain edge as required, with 12mm thick marine plywood backing of ISI 710 with CP brass caps, etc., complete. Teakwood best quality seasoned Ghana teak beading size 20mm x 32mm with semi gloss finish using PU polish, shall be done as drawings etc. complete as directed.	2	624.00	Sq.m.	1248
1.17	Providing and fixing a heavy quality CP brass stopcock, male or female end, of 25mm dia on water supply pipe lines as approved by the Consultants etc., complete.		507.00	Nos.	0
1.18	Providing and fixing a 15 mm dia inlet shower arm 190 mm with flange with shower rose of as approved by the consultants etc completes.		1,170.00	Nos.	0
1.19	Providing and fixing a vitreous chinaware white urinal of approved make (low flow) as approved by Consultants, comprising of: a) CP brass heavy quality spreaders, 1 for each urinal. b) 32mm NB waste coupling of , 1 for each urinal c) 40 mm 6 kg /sq cm rigid PVC waste pipe with bottle trap of J, and d) angle valve of - 1 no. for each urinal d) Necessary connecting CP brass pipe upto spreader along with necessary connection CI urinal concealed brackets 2 no & open bracket -1 no; etc complete .in size mentioned under:				
	white earthenware large flat back type size 635 mm x 395 mm x 420 mm	3	2,730.00	Nos.	8190
1.20	Providing and fixing the first quality white glazed vitreous chinaware squatting urinal of required size, 600mm x 350mm, of approved make, as approved or equivalent.	1	3,510.00	Nos.	3510
1.21	Providing and fixing a CP brass exposed or concealed heavy duty flush valve with a regulator etc., complete in following size:				
	1) 25mm dia,	6	624.00	Nos.	3744
1.22	Providing and fixing a cast iron Nahni trap of self-cleansing design with a water seal not less than 50mm, with or without vent, including setting the trap in 1:2:4 CC, etc., complete. The Nahni trap shall be with 75mm dia. outlet.	6	507.00	Nos.	3042
1.23	Providing and fixing in position a PVC grating, 150mm x 150mm or 150mm dia in size, generally conforming to the drawings and fixed on the inlet pipe.	6	156.00	Nos.	936
1.24	Providing and fixing an approved SWR quality, heavy duty, uPVC BTYPE pipes. (open/concealed laid) with necessary specials, bends, such as 'Y' junction, 'T' junction (both single and double), including plugs, shoes, cowls, flange compression type fittings,, in proper line and level with necessary support like GI Coated MS brackets/ GI coated MS fabricated clamps, clips, Hilti fischer anchor fasteners ,RCC or brick pedestals or battens, if necessary, to wall, ceiling and floor, open, complete jointing with rubberizing and airtight joints, with 'T' shaped rubber ring, , etc., and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor, etc. complete of the following .PCC for encasing the pipe in sunk slab and excavation shall be paid in respective tender item				
	2) 110mm,	20	400.00	Rmt	8000
	4) 75mm.	10	250.00	Rmt	2500
	6) 40 mm.	15	117.00	Rmt	1755

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.25	Providing and fixing an approved SWR quality, heavy duty, uPVC 'P' trap or 'S' trap with 150 x 150 mm or 150 mm dia.stain less steel -316 grating or heavy quality brass chromium plated hinged jail of chilly or equivalent. Including cutting the floor and making them good with surrounding M15 CC, masonry supports, MS brackets etc. testing, etc., complete having 110 mm inlet and 110 mm outlet with vertical extension piece up to floor.	6	1,170.00	Nos.	7020
1.26	Providing and laying salt-glazed stoneware pipes (to the line, level and slopes) and jointing with stiff mixture of CM 1:1, depth upto 1.5 m., including testing of pipes and joints, etc., complete.				
	1) 230 mm dia		351.00	Rmt	0
	1) 150 mm dia		234.00	Rmt	0
1.27	Providing and fixing a salt-glazed stoneware gully trap, class 'A' of 230 mm dia inlet and 150 mm outlet with CI grating at the top embedded & making gala in M15 concrete etc., complete. (Excluding cost of Chamber and CI cover with frame)		1,170.00	Nos.	0
1.28	Constructing masonry for underground Inspection chamber and bends with bricks having crushing strength not less than 35kg/cm ² in cm 1.5 C.I. Cover with frame (light duty) 455mm x 610mm internal dimensions total weight of cover with frame to be not less than 38kg (wt. of cover 23kg. and wt. of frame 15kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand :4 grade stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete				
	Inside dimensions 455 mm x 610 mm and 450mm deep for single pipe lines		2,176.00	Nos.	0
	Inside dimensions 500mm x 700 mm and 450mm deep for pipe lines with one or two inlets		2,639.00	Nos.	0
1.29	Extra over items 24.44 for every additional depth of 0.1 m or part thereof beyond 450 mm depth for brick masonry chamber.				
	For 455 mm x 610 mm size		148.00	Nos.	0
	For 500mm x 700 mm size		161.00	Nos.	0
1.30	Construction manhole with R.C.C. top slab in 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] foundation concrete 1:3:6 mix [1 cement : 3 coarse sand : 6 brick bats 40-50 mm size] inside plastering 15mm thick with cement mortar 1:5 [1 cement : 5 coarse sand] and finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] finished smooth complete including curing and testing.				
	Inside size 900mm x 1200 mm and upto 1.50m deep including C.I. cover with frame size 650mm diameter total weight of cover and frame to be not less than 128 kgs.[wt. of cover 64 kg. and wt. frame 64 kg.] 'with 230 mm thick wall of brick masonry using bricks having crushing strength not less then 35kg/sq.cm in cement mortar 1:5 [1 cement : 5 coarse sand]		15,131.00	Nos.	0
1.31	Providing and fixing cast iron manhole frame and cover, having weight not less than 35 kg., of circular dimensions, including carting to site of work, fixing in CC and finishing with 3 coats of anti-corrosive paint, etc. complete as directed by E-I-C		830.00	Nos.	0

ITEM NO		ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	1.32	Providing and fixing, CI cowl, of 100 mm. dia., on ventilating pipe, as per drawing, etc. complete.		479.00	Nos.	0
	1.33	Providing and fixing, CI steps in manhole, water tank, septic tank, etc., of size 500 mm. x 150 mm. x 22.5 mm. and painting with 3 coats of anti-corrosive paint, etc. complete.		167.00	Nos.	0
	1.34	Providing , laying, [to level or slopes] and jointing reinforced concrete non-pressure pipes I.S. class NP2 of the following diameter with collar joints including testing of joints complete.				
		250 mm		375.00	Rmt	0
		300 mm		446.00	Rmt	0
Total of BOQ Items						148803

E-3 BOQ of Plumbing work (Kiosk)

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1	PLUMBING WORKS				
1.1	Providing, fixing and testing, heavy quality ISI marked gun metal or brass full way wheel valve, with screwed/flanged ends with EPDM WASHER, factory tested at 20 kg/m2., on uPVC/GI/HDPE lines of the following nominal bore (NB) size:				
	75MM dia		3,900.00	Nos.	0
	65MM dia		3,276.00	Nos.	0
	50MM dia		2,730.00	Nos.	0
	40MM dia	1	1,950.00	Nos.	1950
	32MM dia		1,716.00	Nos.	0
1.2	Providing, fixing and testing, heavy quality gun metal or brass non-return swing type valve, with screwed/flanged ends, factory tested at 20 kg/cm2., of the following nominal bore (NB) size:				
	50MM dia.	1	3,120.00	Nos.	3120
1.3	Providing and fixing gun metal foot valve with the required accessories, of approved make, as approved or its equivalent of the following nominal bore size:				
	50MM dia	1	1,560.00	Nos.	1560
1.4	Providing and fixing Water Meter of Pricol or equivalent make as approved and directed by the Consultants.				
	40 mm size	1	6,240.00	Nos.	6240
	50 mm size		3,900.00	Nos.	0
1.5	Providing and fixing R.O.SYTEM of Power H2O- CW 939-A brand including supply and fixing of CP jaquar continental -059 Angle valve & copper pipe inlet connection from GI outlet pipe, including fixing electrical accessories supplied/ listed by manufacture with all necessary fittings complete.		19,500.00	Nos.	0
1.6	Supplying and fixing, PVC water tanks of the following capacities such as Sintex or equivalent, on terraces, lofts, in bathrooms, etc., at all heights including all accessories such as inlet, outlet, over flow, drain pipe sleeves of the specified size, with necessary neoprene gaskets/packing/ washers, GI washers and check nuts etc., all complete, as directed.				
	Upto 10000 litres.	5000	6.50	Ltr.	32500
1.7	Supplying and fixing electronic water level control, to start and stop the pump automatically at the present water level, of an approved make. The unit is to be supplied with 3 sets of stainless steel electrodes and wiring between the main unit and electrodes as directed.		3,510.00	Nos.	0
1.8	Charges for taking connections from the mains.		7,800.00	Lumpsum	0

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.9	Providing and fixing uPVC IS:4985:2000 PVC Class 3 (PN) 6 Kgf/cm ² of approved make; open, complete, including making airtight joints, with necessary specials, couplers, elbow, equal tees, tail piece, adapter (both male and female), reducer (single stage, double stage and triple stage), end cap, fabricated bend, etc., in proper line and level (with necessary support like clamps, clips, brick masonry pedestals and battens, if necessary) to wall, ceiling and floor, approved quality, and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor etc., complete of the following (outer diameter) OD size:				
	75MM dia		470.00	Rmt	0
	65MM dia		420.00	Rmt	0
	50MM dia		410.00	Rmt	0
	40MM dia	29	330.00	Rmt	9570
	32MM dia		325.00	Rmt	0
	25MM dia	15	300.00	Rmt	4500
	15MM dia	10	290.00	Rmt	2900
1.10	Providing and fixing CPVC pipe conform code ASTM with screwed sockets, joints, and necessary fittings such as elbows, bends, reducers, threaded connection, tees etc, including making/ drilling holes in walls/ slabs and remaking good the damages in original conditions. Make Flow guard, Prince, Aashirwad or equivalent (SDR 11)				
	Internal Dia. 15 mm		120.00	Rmt	0
1.11	Providing and fixing white glazed vitreous chinaware Orissa pattern WC with back/ front inlet with 1 no. white glazed vitreous chinaware 'P' or 'S' trap with or without vent horn as under:				
	1) size 530 mm x 450 mm	2	1,599.00	Nos.	3198
1.12	Providing and fixing Ivory glazed vitreous chinaware wash basin of with single or double hole for pillar-tap comprising of: a) Ivory glazed vitreous chinaware washbasin, with supporting 15 mm GI pipe or heavy quality CI brackets. b) 1 no. 40 or 32mm CP cast brass bottle-trap with extension piece to wall, wall flange with rubber adopter for waste connection and one waste coupling. c) 2 no. heavy quality CP brass angular stopcock with wall CP flange, 15mm size. d) 2 no. 15mm NB heavy quality CP-brass inlet connection with unions at end. The supporting bracket shall be painted with 3 coats of approved paint of approved shade in following etc complete size:				
	1) Size 510 mm x 400 mm	2	1,170.00	Nos.	2340
1.13	Providing and fixing a stainless steel sink with waste coupling of Nirali make or equivalent as approved by architect , single bowl of size not more than 610 x 460mm and depth 200mm, comprising of: a) stainless steel sink supported on MS or CI brackets or in platform. b) 1 no. 40 or 32mm CP cast brass bottle-trap of Jaquar make Allied series Cat. No. 769 with extension piece to wall, wall flange with rubber adopter for waste connection with 40 mm 6 kg /sq.cm rigid PVC waste water etc complete. rate shall be inclusive for keeping the Sink in as it is condition up till the handing over.		6,630.00	Nos.	0

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.14	Providing and fixing screw down brass chromium plated heavy quality bib-tap as approved by architect, on water supply pipe lines with a flange, as approved by the architects etc., complete.	2	936.00	Nos.	1872
1.15	Providing and fixing brass chromium plated heavy quality wash basin pillar cock long neck with aerator of as approved by architect , on water supply pipelines of 15mm dia with extension piece with a flange, as approved by the Consultants etc., complete.	2	819.00	Nos.	1638
1.16	Providing and fixing best Indian make mirror of specified size like Triveni, I.A.G or equivalent silvered locally, with plain edge as required, with 12mm thick marine plywood backing of ISI 710 with CP brass caps, etc., complete. Teakwood best quality seasoned Ghana teak beading size 20mm x 32mm with semi gloss finish using PU polish, shall be done as drawings etc. complete as directed.	2	624.00	Sq.m.	1248
1.17	Providing and fixing a heavy quality CP brass stopcock, male or female end, of 25mm dia on water supply pipe lines as approved by the Consultants etc., complete.		507.00	Nos.	0
1.18	Providing and fixing a 15 mm dia inlet shower arm 190 mm with flange with shower rose of as approved by the consultants etc completes.		1,170.00	Nos.	0
1.19	Providing and fixing a vitreous chinaware white urinal of approved make (low flow) as approved by Consultants, comprising of: a) CP brass heavy quality spreaders, 1 for each urinal. b) 32mm NB waste coupling of , 1 for each urinal c) 40 mm 6 kg /sq cm rigid PVC waste pipe with bottle trap of J, and d) angle valve of - 1 no. for each urinal d) Necessary connecting CP brass pipe upto spreader along with necessary connection CI urinal concealed brackets 2 no & open bracket -1 no; etc complete .in size mentioned under:				
	white earthenware large flat back type size 635 mm x 395 mm x 420 mm	2	2,730.00	Nos.	5460
1.20	Providing and fixing the first quality white glazed vitreous chinaware squatting urinal of required size, 600mm x 350mm, of approved make, as approved or equivalent.		3,510.00	Nos.	0
1.21	Providing and fixing a CP brass exposed or concealed heavy duty flush valve with a regulator etc., complete in following size:				
	1) 25mm dia,	2	624.00	Nos.	1248
1.22	Providing and fixing a cast iron Nahni trap of self-cleansing design with a water seal not less than 50mm, with or without vent, including setting the trap in 1:2:4 CC, etc., complete. The Nahni trap shall be with 75mm dia. outlet.	2	507.00	Nos.	1014
1.23	Providing and fixing in position a PVC grating, 150mm x 150mm or 150mm dia in size, generally conforming to the drawings and fixed on the inlet pipe.	2	156.00	Nos.	312
1.24	Providing and fixing an approved SWR quality, heavy duty, uPVC BTYPE pipes. (open/concealed laid) with necessary specials, bends, such as 'Y' junction, 'T' junction (both single and double), including plugs, shoes, cowls, flange compression type fittings,, in proper line and level with necessary support like GI Coated MS brackets/ GI coated MS fabricated clamps, clips, Hilti fischer anchor fasteners, RCC or brick pedestals or battens, if necessary, to wall, ceiling and floor, open, complete jointing with rubberizing and airtight joints, with 'T' shaped rubber ring,, etc., and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor, etc. complete of the following .PCC for encasing the pipe in sunk slab and excavation shall be paid in respective tender item				

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	2) 110mm,	20	400.00	Rmt	8000
	4) 75mm.	10	250.00	Rmt	2500
	6) 40 mm.	15	117.00	Rmt	1755
1.25	Providing and fixing an approved SWR quality, heavy duty, uPVC 'P' trap or 'S' trap with 150 x 150 mm or 150 mm dia.stain less steel -316 grating or heavy quality brass chromium plated hinged jail of chilly or equivalent. Including cutting the floor and making them good with surrounding M15 CC, masonry supports, MS brackets etc. testing, etc., complete having 110 mm inlet and 110 mm outlet with vertical extension piece up to floor.	2	1,170.00	Nos.	2340
1.26	Providing and laying salt-glazed stoneware pipes (to the line, level and slopes) and jointing with stiff mixture of CM 1:1, depth upto 1.5 m., including testing of pipes and joints, etc., complete.				
	1) 230 mm dia		351.00	Rmt	0
	1) 150 mm dia		234.00	Rmt	0
1.27	Providing and fixing a salt-glazed stoneware gully trap, class 'A' of 230 mm dia inlet and 150 mm outlet with CI grating at the top embedded & making gala in M15 concrete etc., complete. (Excluding cost of Chamber and CI cover with frame)		1,170.00	Nos.	0
1.28	Constructing masonry for underground Inspection chamber and bends with bricks having crushing strength not less than 35kg/cm ² in cm 1.5 C.I. Cover with frame (light duty) 455mm x 610mm internal dimensions total weight of cover with frame to be not less than 38kg (wt. of cover 23kg. and wt. of frame 15kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand :4 grade stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete				
	Inside dimensions 455 mm x 610 mm and 450mm deep for single pipe lines		2,176.00	Nos.	0
	Inside dimensions 500mm x 700 mm and 450mm deep for pipe lines with one or two inlets		2,639.00	Nos.	0
1.29	Extra over items 24.44 for every additional depth of 0.1 m or part thereof beyond 450 mm depth for brick masonry chamber.				
	For 455 mm x 610 mm size		148.00	Nos.	0
	For 500mm x 700 mm size		161.00	Nos.	0
1.30	Construction manhole with R.C.C. top slab in 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] foundation concrete 1:3:6 mix [1 cement : 3 coarse sand : 6 brick bets 40-50 mm size] inside plastering 15mm thick with cement mortar 1:5 [1 cement : 5 coarse sand] and finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] finished smooth complete including curing and testing.				
	Inside size 900mm x 1200 mm and upto 1.50m deep including C.I. cover with frame size 650mm diameter total weight of cover and frame to be not less than 128 kgs.[wt. of cover 64 kg. and wt. frame 64 kg.] 'with 230 mm thick wall of brick masonry using bricks having crushing strength not less then 35kg/sq.cm in cement mortar 1:5 [1 cement : 5 coarse sand]		830.00	Nos.	0

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.31	Providing and fixing cast iron manhole frame and cover, having weight not less than 35 kg., of circular dimensions, including carting to site of work, fixing in CC and finishing with 3 coats of anti-corrosive paint, etc. complete as directed by E-I-C		479.00	Nos.	0
1.32	Providing and fixing, CI cowl, of 100 mm. dia., on ventilating pipe, as per drawing, etc. complete.		167.00	Nos.	0
1.33	Providing and fixing, CI steps in manhole, water tank, septic tank, etc., of size 500 mm. x 150 mm. x 22.5 mm. and painting with 3 coats of anti-corrosive paint, etc. complete.				
1.34	Providing , laying, [to level or slopes] and jointing reinforced concrete non-pres- sure pipes I.S. class NP2 of the following diameter with collar joints including test- ing of joints complete.		375.00	Rmt	0
	250 mm		446.00	Rmt	0
	300 mm	12.00	446.00	Rmt	5352
Total of BOQ Items					95265

E-4 E-4 BOQ of Plumbing work (Main Network)

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1	PLUMBING WORKS				
1.1	Providing, fixing and testing, heavy quality ISI marked gun metal or brass full way wheel valve, with screwed/flanged ends with EPDM WASHER, factory tested at 20 kg/m2., on uPVC/GI/HDPE lines of the following nominal bore (NB) size:				
	75MM dia	2	3,900.00	Nos.	7800
	65MM dia	2	3,276.00	Nos.	6552
	50MM dia	5	2,730.00	Nos.	13650
	40MM dia		1,950.00	Nos.	0
	32MM dia		1,716.00	Nos.	0
1.2	Providing, fixing and testing, heavy quality gun metal or brass non-return swing type valve, with screwed/flanged ends, factory tested at 20 kg/cm2., of the following nominal bore (NB) size:				
	50MM dia.		3,120.00	Nos.	0
1.3	Providing and fixing gun metal foot valve with the required accessories, of approved make, as approved or its equivalent of the following nominal bore size:				
	50MM dia		1,560.00	Nos.	0
1.4	Providing and fixing Water Meter of Pricol or equivalent make as approved and directed by the Consultants.				
	40 mm size		6,240.00	Nos.	0
	50 mm size		3,900.00	Nos.	0
1.5	Providing and fixing R.O.SYTEM of Power H2O- CW 939-A brand including supply and fixing of CP jaquar continental -059 Angle valve & copper pipe inlet connection from GI outlet pipe, including fixing electrical accessories supplied/ listed by manufacture with all necessary fittings complete.		19,500.00	Nos.	0
1.6	Supplying and fixing, PVC water tanks of the following capacities such as Sintex or equivalent, on terraces, lofts, in bathrooms, etc., at all heights including all accessories such as inlet, outlet, over flow, drain pipe sleeves of the specified size, with necessary neoprene gaskets/packing/ washers, GI washers and check nuts etc., all complete, as directed.				
	Upto 10000 litres.		6.50	Ltr.	0
1.7	Supplying and fixing electronic water level control, to start and stop the pump automatically at the present water level, of an approved make. The unit is to be supplied with 3 sets of stainless steel electrodes and wiring between the main unit and electrodes as directed.	7	3,510.00	Nos.	24570
1.8	Charges for taking connections from the mains.	2	7,800.00	Lumpsum	15600

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.9	Providing and fixing uPVC IS:4985:2000 PVC Class 3 (PN) 6 Kgf/cm ² of approved make; open, complete, including making airtight joints, with necessary specials, couplers, elbow, equal tees, tail piece, adapter (both male and female), reducer (single stage, double stage and triple stage), end cap, fabricated bend, etc., in proper line and level (with necessary support like clamps, clips, brick masonry pedestals and battens, if necessary) to wall, ceiling and floor, approved quality, and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor etc., complete of the following (outer diameter) OD size:				
	75MM dia	40	470.00	Rmt	18800
	65MM dia	170	420.00	Rmt	71400
	50MM dia	50	410.00	Rmt	20500
	40MM dia		330.00	Rmt	0
	32MM dia		325.00	Rmt	0
	25MM dia		300.00	Rmt	0
	15MM dia		290.00	Rmt	0
1.10	Providing and fixing CPVC pipe conform code ASTM with screwed sockets, joints, and necessary fittings such as elbows, bends, reducers, threaded connection, tees etc, including making/ drilling holes in walls/ slabs and remaking good the damages in original conditions. Make Flow guard, Prince, Aashirwad or equivalent (SDR 11)				
	Internal Dia. 15 mm		120.00	Rmt	0
1.11	Providing and fixing white glazed vitreous chinaware Orissa pattern WC with back/ front inlet with 1 no. white glazed vitreous chinaware 'P' or 'S' trap with or without vent horn as under:				
	1) size 530 mm x 450 mm		1,599.00	Nos.	0
1.12	Providing and fixing Ivory glazed vitreous chinaware wash basin of with single or double hole for pillar-tap comprising of: a) Ivory glazed vitreous chinaware washbasin, with supporting 15 mm GI pipe or heavy quality CI brackets. b) 1 no. 40 or 32mm CP cast brass bottle-trap with extension piece to wall, wall flange with rubber adopter for waste connection and one waste coupling. c) 2 no. heavy quality CP brass angular stopcock with wall CP flange, 15mm size. d) 2 no. 15mm NB heavy quality CP-brass inlet connection with unions at end. The supporting bracket shall be painted with 3 coats of approved paint of approved shade in following etc complete size:				
	1) Size 510 mm x 400 mm		1,170.00	Nos.	0
1.13	Providing and fixing a stainless steel sink with waste coupling of Nirali make or equivalent as approved by architect , single bowl of size not more than 610 x 460mm and depth 200mm, comprising of: a) stainless steel sink supported on MS or CI brackets or in platform. b) 1 no. 40 or 32mm CP cast brass bottle-trap of Jaquar make Allied series Cat. No. 769 with extension piece to wall, wall flange with rubber adopter for waste connection with 40 mm 6 kg /sq.cm rigid PVC waste water etc complete. rate shall be inclusive for keeping the Sink in as it is condition up till the handing over.		6,630.00	Nos.	0

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
1.14	Providing and fixing screw down brass chromium plated heavy quality bib-tap as approved by architect, on water supply pipe lines with a flange, as approved by the architects etc., complete.		936.00	Nos.	0
1.15	Providing and fixing brass chromium plated heavy quality wash basin pillar cock long neck with aerator of as approved by architect , on water supply pipelines of 15mm dia with extension piece with a flange, as approved by the Consultants etc., complete.		819.00	Nos.	0
1.16	Providing and fixing best Indian make mirror of specified size like Triveni, I.A.G or equivalent silvered locally, with plain edge as required, with 12mm thick marine plywood backing of ISI 710 with CP brass caps, etc., complete. Teakwood best quality seasoned Ghana teak beading size 20mm x 32mm with semi gloss finish using PU polish, shall be done as drawings etc. complete as directed.		624.00	Sq.m.	0
1.17	Providing and fixing a heavy quality CP brass stopcock, male or female end, of 25mm dia on water supply pipe lines as approved by the Consultants etc., complete.		507.00	Nos.	0
1.18	Providing and fixing a 15 mm dia inlet shower arm 190 mm with flange with shower rose of as approved by the consultants etc completes.		1,170.00	Nos.	0
1.19	Providing and fixing a vitreous chinaware white urinal of approved make (low flow) as approved by Consultants, comprising of: a) CP brass heavy quality spreaders, 1 for each urinal. b) 32mm NB waste coupling of , 1 for each urinal c) 40 mm 6 kg /sq cm rigid PVC waste pipe with bottle trap of J, and d) angle valve of - 1 no. for each urinal d) Necessary connecting CP brass pipe upto spreader along with necessary connection CI urinal concealed brackets 2 no & open bracket -1 no; etc complete .in size mentioned under:				
	white earthenware large flat back type size 635 mm x 395 mm x 420 mm		2,730.00	Nos.	0
1.20	Providing and fixing the first quality white glazed vitreous chinaware squatting urinal of required size, 600mm x 350mm, of approved make, as approved or equivalent.		3,510.00	Nos.	0
1.21	Providing and fixing a CP brass exposed or concealed heavy duty flush valve with a regulator etc., complete in following size:				
	1) 25mm dia,		624.00	Nos.	0
1.22	Providing and fixing a cast iron Nahni trap of self-cleansing design with a water seal not less than 50mm, with or without vent, including setting the trap in 1:2:4 CC, etc., complete. The Nahni trap shall be with 75mm dia. outlet.		507.00	Nos.	0
1.23	Providing and fixing in position a PVC grating, 150mm x 150mm or 150mm dia in size, generally conforming to the drawings and fixed on the inlet pipe.		156.00	Nos.	0
1.24	Providing and fixing an approved SWR quality, heavy duty, uPVC BTYPE pipes. (open/concealed laid) with necessary specials, bends, such as 'Y' junction, 'T' junction (both single and double), including plugs, shoes, cowls, flange compression type fittings,, in proper line and level with necessary support like GI Coated MS brackets/ GI coated MS fabricated clamps, clips, Hilti fischer anchor fasteners ,RCC or brick pedestals or battens, if necessary, to wall, ceiling and floor, open, complete jointing with rubberizing and airtight joints, with 'T' shaped rubber ring, , etc., and lubricant or jointing material, including testing, cutting, making good the wall, ceiling and floor, etc. complete of the following .PCC for encasing the pipe in sunk slab and excavation shall be paid in respective tender item				

ITEM NO	ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	2) 110mm,		400.00	Rmt	0
	4) 75mm.		250.00	Rmt	0
	6) 40 mm.		117.00	Rmt	0
1.25	Providing and fixing an approved SWR quality, heavy duty, uPVC 'P' trap or 'S' trap with 150 x 150 mm or 150 mm dia.stain less steel -316 grating or heavy quality brass chromium plated hinged jail of chilly or equivalent. Including cutting the floor and making them good with surrounding M15 CC, masonry supports, MS brackets etc. testing, etc., complete having 110 mm inlet and 110 mm outlet with vertical extension piece up to floor.		1,170.00	Nos.	0
1.26	Providing and laying salt-glazed stoneware pipes (to the line, level and slopes) and jointing with stiff mixture of CM 1:1, depth upto 1.5 m., including testing of pipes and joints, etc., complete.				
	1) 230 mm dia	75	351.00	Rmt	26325
	1) 150 mm dia	170	234.00	Rmt	39780
1.27	Providing and fixing a salt-glazed stoneware gully trap, class 'A' of 230 mm dia inlet and 150 mm outlet with CI grating at the top embedded & making gala in M15 concrete etc., complete. (Excluding cost of Chamber and CI cover with frame)	45	1,170.00	Nos.	52650
1.28	Constructing masonry for underground Inspection chamber and bends with bricks having crushing strength not less than 35kg/cm ² in cm 1.5 C.I. Cover with frame (light duty) 455mm x 610mm internal dimensions total weight of cover with frame to be not less than 38kg (wt. of cover 23kg. and wt. of frame 15kg) R.C.C. top slab with 1:2:4 mix (1 cement :2 coarse sand :4 grade stone aggregate 20mm size) foundation concrete 1:5:10 inside plaster 15mm thick with cement mortar 1:3 finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete				
	Inside dimensions 455 mm x 610 mm and 450mm deep for single pipe lines	6.00	2,176.00	Nos.	13056
	Inside dimensions 500mm x 700 mm and 450mm deep for pipe lines with one or two inlets	12.00	2,639.00	Nos.	31668
1.29	Extra over items 24.44 for every additional depth of 0.1 m or part thereof beyond 450 mm depth for brick masonry chamber.				
	For 455 mm x 610 mm size	2.00	148.00	Nos.	296
	For 500mm x 700 mm size	10.00	161.00	Nos.	1610
1.30	Construction manhole with R.C.C. top slab in 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] foundation concrete 1:3:6 mix [1 cement : 3 coarse sand : 6 brick bats 40-50 mm size] inside plastering 15mm thick with cement mortar 1:5 [1 cement : 5 coarse sand] and finished with a floating coat of neat cement and making channels in cement concrete 1:2:4 mix [1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size] finished smooth complete including curing and testing.				
	Inside size 900mm x 1200 mm and upto 1.50m deep including C.I. cover with frame size 650mm diameter total weight of cover and frame to be not less than 128 kgs.[wt. of cover 64 kg. and wt. frame 64 kg.] 'with 230 mm thick wall of brick masonry using bricks having crushing strength not less then 35kg/sq.cm in cement mortar 1:5 [1 cement : 5 coarse sand]	10.00	830.00	Nos.	8300

ITEM NO		ITEM DESCRIPTION	QUANTITY	RATE	UNIT	AMOUNT
	1.31	Providing and fixing cast iron manhole frame and cover, having weight not less than 35 kg., of circular dimensions, including carting to site of work, fixing in CC and finishing with 3 coats of anti-corrosive paint, etc. complete as directed by E-I-C	7.00	479.00	Nos.	3353
	1.32	Providing and fixing, CI cowl, of 100 mm. dia., on ventilating pipe, as per drawing, etc. complete.	27.00	167.00	Nos.	4509
	1.33	Providing and fixing, CI steps in manhole, water tank, septic tank, etc., of size 500 mm. x 150 mm. x 22.5 mm. and painting with 3 coats of anti-corrosive paint, etc. complete.				
	1.34	Providing , laying, [to level or slopes] and jointing reinforced concrete non-pres- sure pipes I.S. class NP2 of the following diameter with collar joints including test- ing of joints complete.	14.00	375.00	Rmt	5250
		250 mm	12.00	446.00	Rmt	5352
		300 mm	12.00	446.00	Rmt	5352
Total of BOQ Items						522331

E. Electrical BOQ

RESIDENTIAL UNITS - BOQ

SR.NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
1	Point wiring for Light / Fan /Bell / Primary				
	point with 2-1.0 sq. mm & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected, complete with				
	6A Tissino Type ISI marked flush type				
	switch /bell push and accessories erected				
	on polished wooden block / Metal / PVC				
	Box covered with 3 mm thick laminated				
	sheet.				
	(a) For open Wiring.	Pt.	91	150.00	13650.00
	SOR-1-1-1.				
2	Point wiring for independent PLUG with				
	2-1.0 sq.mm & earth wire of 1.0 sq.mm				
	(green) both are of ISI marked FR PVC				
	insulated multistrand copper wires, in				
	existing pipe duly erected complete with				
	Insulated multistrand copper wires, in				
	ISI marked 3 Pin 6A socket and 6A tissino				
	type switch erected with earth continuity				
	connection erected on polished wooden				
	block / Metal / PVC box covered with 3 mm				
	thick laminated sheet.				
	(a) For open Wiring.	Pt.	12	173.00	2076.00
	SOR-1-1-2.				
3	Point wiring for looped PLUG with tissino				
	type single pole ISI marked 6 A. Switch				
	and 6 A Socket erected with necessary				
	connections erected on polished wooden				
	block / Metal / PVC Box covered with 3				
	mm thick laminated sheet for open /				
	concealed wiring.	Pt.	37	35.00	1295.00
	SOR-1-1-3.				

SR.NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
4	Point wiring for Two Way Controlled Light				
	Point with 2-1.0 sq. mm. & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected complete with				
	6A. Tissino Type ISI marked accessories				
	with earth continuity erected on polished				
	wooden block / Metal/ PVC box covered				
	with 3 mm thick laminated sheet.				
	(a) For open Wiring.	Pt.	3	156.00	468.00
	SOR-1-1-5.				
5	Providing following type of Modular Type				
	Accessories mounted on PVC / Metallic				
	box covered with appropriate front plate				
	modules erected with necessary connection.				
	As desire by Engineer in charge.				
	(10) 16 Amp. Sp One way switch				
	Cat-II	Nos	12	160.00	1920.00
	(11) 6/16 Amp. Universal Socket				
	Cat-II	Nos	12	180.00	2160.00
	SOR-1-2-6.				
6	Providing and erecting 1.5 mm thick FIA				
	approved and ISI mark (embossed) RIGID				
	PVC PIPES of following size complete				
	erected with necessary PVC fittings and				
	Junction boxes fixed with adhesive solution				
	and Clamps with following type of erection.				
	(1) For Open execution with clamps				
	erecting on wall / ceiling of following sizes of				
	Diameter.				
	b) 25 mm	Mtr.	354	32.00	11328.00
	(2) For erection concealed in wall / slab				
	along with continuous fish wire to draw				

SR.NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	mains, laid in approved manner with				
	Plastering by cement mortar & finishing the				
	surface to match the wall / ceiling.				
	b) 25 mm	Mtr.	293	32.00	9363.20
	SOR-1-4-2.				
7	Mains with 1.1 KV grade FRPVC insulated				
	ISI marked stranded Copper conductor				
	wire in existing pipe erected with 1.5 sq. mm				
	copper conductor FR PVC insulated				
	stranded wire of green colour for earth.				
	continuity of following size.				
	c) 2 Wire 2.5 sq. mm	Mtr.	420	31.00	13020.00
	SOR-1-5-1.				
8	Approved make C.F.L. Lamp Retrofit				
	9/11 Watt.				
	Cat-III	Nos	24	121.00	2904.00
	SOR-2-6-1.				
9	Fancy bracket with decorative cylindrical				
	shape and with chromium plated or anodized				
	bracket, one light with brass batten holder to				
	be erected on polished wooden block or on				
	3mm laminated sheet (Wooden block or				
	laminated sheet is incorporated in point				
	wiring)	Nos	24	94.00	2256.00
	SOR-2-8-1.				
10	Supplying and erecting approved make tube				
	fitting with One No.T-5 tube 28 W with				
	Electronic Ballast with THD less than				
	10 & built with adoptors, GI / PVC housing &				
	mirror effect reflector, suitable to work on				
	120V - 300 V, A.C. Supply with connector.				
	Make of fitting & tube may be differed.				
	SOR-2-9-7.				
	Cat-III	Nos.	46	825.00	37950.00

SR.NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
11	Approved make Power Saving 50 Watt Ceiling Fan with condenser 230 volt A.C.				
	50 Cys 1200 mm sweep complete having 3 blades with alluminium blades with, canopy 7 30 cms down rod erected with 24/0.2 flat 3 Core flexible wire with earthing (Orient, Crompton, Anchor, Bajaj)	Nos	24	1573.00	37752.00
	(Add Rs. 80/- Extra for Resistant type Fan Regulator)				
	SOR-5-1-6.				
12	Mains with 1.1 KV grade FR PVC insulated ISI marked stranded Copper conductor wire in existing pipe erected with 2.5 sq. mm copper conductor FR PVC insulated stranded wire of green colour for earth continuity of following size.				
	SOR-1-5-2.				
	a) 2 wire 4 sq. mm.	Mtr.	143	49.00	7007.00
13	Miniature circuit breaker Single Pole 6 A to 32 A suitable to operate on 240 V A. C. system and having overload and short circuit tripping elements and breaking capacity 10 KA to be erected in existing M. S. Box confirming to IS 8828/1996 with ISI mark.				
	SOR-3-10-1.				
	Cat-III	Nos	78	137.00	10686.00
14	Providing and erecting Sheet Steel powder coated MCB distribution board - Flush / surface mounted fitted with busbar, neutral link, earth bar and DIN rail, confirming to IS:13032 and BS-5486-1986 without MCB to house appropriate nos. of MCB's (The DBs				

SR.NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	should be used of same company of MCB				
	to be used)				
	SOR-3-11-5.				
	F) Single Phase 8 way SS Double door.	Nos	13	759.00	9867.00
15	Approved make ELCBs / RCCBs conforming				
	to IS:12640 and having sensitivity of 30 m A				
	and Short Circuit with stand capacity of 6KA				
	and suitable for operation on single phase				
	240 V having characteristic of quick action &				
	tripping with all advance feature & do not				
	incorporate any electronic component for				
	following Max. rating.				
	SOR-3-12-1.				
	(II) 40 Amps. DP				
	Cat-III	Nos	13	2007.00	26091.00
16	Providing and erecting HOT Deep				
	Galvanized Strip iron wire 8 to 16 S.W.G.	Kg.	14.59	58.00	845.99
	SOR-3-15-5.				
17	Supplying & erecting earth pit of minimum				
	bore dia.150 mm size approved make safe				
	Earthing Electrode consisting Pipe-in-Pipe				
	Technology as per IS 3043-1987 made of				
	corrosion free G.I.Pipes having Outer pipe				
	dia of 50 mm having 80-200 Micron				
	galvanizing, Inner pipe dia of 25 mm having				
	200-250 Micron galvanizing, connection				
	terminal dia of 12 mm with constant ohmic				
	value surrounded by highly conductive				
	compound with high charge dissipation				
	suitable for following type of applications.				
	a) For Electrical installation up to 11 KV				
	in normal soil.				
	Length of Pipe: 2.00 mtrs.				
	Back filling Compound : 1 no. bag of 25 Kg.	Nos.	1	6900.00	6900.00
	SOR-3-15-9.				

SR.NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
18	Providing Approved make Double Pole Cast Iron Clad Switch & rewirable Fuse 240 V / 250 V confirming to I.S.S. (b) 32A Cat-III SOR-3-1-2.	Nos	14	449.00	6286.00
19	Erection & connection charges for 16A/ 32A DP as following with duly painted red oxide. (b). On polished wooden block. SOR-3-1-3.	Nos	14	34.00	476.00
20	Providing and erecting open well type horizontal mono block pump set with cast iron body having following specification. B) 1. H.P. Single Phase open well motor pump set suitable for 145 LPM discharge @ 25 Mtr head, suitable for 32 mm dia. Delivery pipe with control panel and 10 mtr. Long 3 x 1.5 Sq. mtr. Submersible flat copper cable. Cat-II SOR-9-4-1.	Nos	1	6613.00	6613.00
21	Liasioning work to getting 230 V, 1-Phase, 3 wire power from SEB as per estimated service. Motive power service Lighting power service	Nos. Nos.	1 13	1500.00 1000.00	1500.00 13000.00
	TOTAL				225414.19
	TOTAL				225414.19
	ADD CONTEGENCY @ 5%	5%			11270.71
	TOTAL				236684.90
	ADD WORK CHARGE	2%			4733.70
	GRAND TOTAL				241418.60
	SAY				241419.00
	Note: For Liquid level controller additional cost - 3000/- for each Apartment				

ELECTRICAL FIXTURE DETAILS – RESIDENTIAL UNITS													
SR	DISCRIPTION	1*28 W T-5	BRACKET LIGHT	FAN	5A PLG ONB	5A PLG SEP	15A PLG	2.5 SQMM MAINS	COND 25MM	10A SP SWITCH	10A T/W SWITCH	16A SP SWITCH	5A PLUG
1	PASSAGE	2						5.0	3.5	6	2		
2	STAIR	1						2.5	1.8	3		1	
3	APARTMENT 1							0.0	0.0	0			
4	LIVING ROOM	1		1	1	1		11.0	7.7	9	4		2
5	BED ROOM	1		1	1			8.0	5.6	9	3		1
6	KITCHEN	1			1		1	8.5	6.0	3	2	1	1
7	BATH		1					2.5	1.8	3	1		
8	WASH		1					2.5	1.8	3	1		
9	APARTMENT 2							0.0	0.0	0			
10	LIVING ROOM	1		1	1	1		11.0	7.7	9	4		2
11	BED ROOM	1		1	1			8.0	5.6	9	3		1
12	KITCHEN	1			1		1	8.5	6.0	3	2	1	1
13	BATH		1					2.5	1.8	3	1		
14	WASH		1					2.5	1.8	3	1		
15	APARTMENT 3							0.0	0.0	0			
16	LIVING ROOM	1		1	1	1		11.0	7.7	9	4		2
17	BED ROOM	1		1	1			8.0	5.6	9	3		1
18	KITCHEN	1			1		1	8.5	6.0	3	2	1	1
19	BATH		1					2.5	1.8	3	1		
20	WASH		1					2.5	1.8	3	1		
21	APARTMENT 4							0.0	0.0	0			
22	LIVING ROOM	1		1	1	1		11.0	7.7	9	4		2
23	BED ROOM	1		1	1			8.0	5.6	9	3		1
24	KITCHEN	1			1		1	8.5	6.0	3	2	1	1
25	BATH		1					2.5	1.8	3	1		
26	WASH		1					2.5	1.8	3	1		
								0.0	0.0	0			
	TOTAL FOR GROUND FLOOR	15	8	8	12	4	4	137.5	96.3	117	46	1	16
	TERRACE	1			1			5.5	3.9	3	2		1
	GRAND TOTAL for One Block	46	24	24	37	12	12	418	293	354	140	3	49

LOAD CALCULATION – RESIDENTIAL UNITS					
SR	PARTICULAR	LIGHTING	POWER PLUG	EQUIPMENT	TOTAL
1	FLAT 1	0.22	0.30		0.52
2	FLAT 2	0.22	0.30		0.52
3	FLAT 3	0.22	0.30		0.52
4	FLAT 4	0.22	0.30		0.52
5	FLAT 5	0.22	0.30		0.52
6	FLAT 6	0.22	0.30		0.52
7	FLAT 7	0.22	0.30		0.52
8	FLAT 8	0.22	0.30		0.52
9	FLAT 9	0.22	0.30		0.52
10	FLAT 10	0.22	0.30		0.52
11	FLAT 11	0.22	0.30		0.52
12	FLAT 12	0.22	0.30		0.52
13	COMMON	0.28	0.05		0.33
14	MOTOR PUMP 1 HP			0.75	0.75
	SURVICE REQUIRED (each)			KW	0.90

SCHOOL BOQ

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
1	Point wiring for Light / Fan /Bell / Primary				
	point with 2-1.0 sq. mm & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected, complete with				
	6A Tissino Type ISI marked flush type				
	switch /bell push and accessories erected				
	on polished wooden block / Metal / PVC				
	Box covered with 3 mm thick laminated				
	sheet.				
	(a) For open Wiring.	Pt.	55	150.00	8250.00
	SOR-1-1-1.				
2	Point wiring for looped PLUG with tissino				
	type single pole ISI marked 6 A. Switch				
	and 6 A Socket erected with necessary				
	connections erected on polished wooden				
	block / Metal / PVC Box covered with 3				
	mm thick laminated sheet for open /				
	concealed wiring.	Pt.	6	35.00	210.00
	SOR-1-1-3.				
	Point wiring for Two Way Controlled Light				
	Point with 2-1.0 sq. mm. & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected complete with				
	6A. Tissino Type ISI marked accessories				
	with earth continuity erected on polished				
	wooden block / Metal/ PVC box covered				
	with 3 mm thick laminated sheet.				
	(a) For open Wiring.	Pt.	1	156.00	156.00
	SOR-1-1-5.				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
4	Providing and erecting 1.5 mm thick FIA approved and ISI mark (embossed) RIGID PVC PIPES of following size complete erected with necessary PVC fittings and Junction boxes fixed with adhesive solution and Clamps with following type of erection.				
	(1) For Open execution with clamps erecting on wall / ceiling of following sizes of Diameter.				
	b) 25 mm	Mtr.	204	32.00	6528.00
	(2) For erection concealed in wall / slab along with continuous fish wire to draw mains, laid in approved manner with Plastering by cement mortar & finishing the surface to match the wall / ceiling.				
	SOR-1-4-2.				
	b) 25 mm	Mtr.	111	32.00	3539.20
5	Mains with 1.1 KV grade FRPVC insulated ISI marked stranded Copper conductor wire in existing pipe erected with 1.5 sq. mm copper conductor FR PVC insulated stranded wire of green colour for earth. continuity of following size.				
	SOR-1-5-1.				
	c) 2 Wire 2.5 sq. mm	Mtr.	160	31.00	4960.00
6	Approved make C.F.L. Lamp Retrofit 9/11 Watt.				
	Cat-III	Nos	7	121.00	847.00
	SOR-2-6-1.				
7	Fancy bracket with decorative cylindrical shape and with chromium plated or anodized bracket, one light with brass batten holder to be erected on polished wooden block or on				

Design Package Using Alternate Building Materials & Technologies, West Zone

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	3mm laminated sheet (Wooden block or laminated sheet is incorporated in point wiring)	Nos	7	94.00	658.00
	SOR-2-8-1.				
8	Supplying and erecting approved make tube fitting with One No.T-5 tube 28 W with Electronic Ballast with THD less than 10 & built with adoptors, GI / PVC housing & mirror effect reflector, suitable to work on 120V - 300 V, A.C. Supply with connector. Make of fitting & tube may be differed.				
	SOR-2-9-7.				
	Cat-III	Nos.	37	825.00	30525.00
9	Approved make Power Saving 50 Watt Ceiling Fan with condenser 230 volt A.C. 50 Cys 1200 mm sweep complete having 3 blades with alluminium blades with, canopy 7 30 cms down rod erected with 24/0.2 flat 3 Core flexible wire with earthing (Havells, Orient, Crompton, Anchor, Bajaj)	Nos	12	1573.00	18876.00
	(Add Rs. 80/- Extra for Resistant type Fan Regulator)				
	SOR-5-1-6.				
10	Mains with 1.1 KV grade FR PVC insulated ISI marked stranded Copper conductor wire in existing pipe erected with 2.5 sq. mm copper conductor FR PVC insulated stranded wire of green colour for earth continuity of following size.				
	SOR-1-5-2.				
	a) 2 wire 4 sq. mm.	Mtr.	15	49.00	735.00
	b) 2 wire 6 sq. mm.	Mtr.	20	66.00	1320.00

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
11	Miniature circuit breaker Single Pole 6 A to				
	32 A suitable to operate on 240 V A. C.				
	system and having overload and short				
	circuit tripping elements and breaking				
	capacity 10 KA to be erected in existing				
	M. S. Box confirming to IS 8828/1996 with				
	ISI mark.				
	SOR-3-10-1.				
	Cat-III	Nos	12	137.00	1644.00
12	Providing and erecting Sheet Steel powder				
	coated MCB distribution board - Flush /				
	surface mounted fitted with busbar, neutral				
	link, earth bar and DIN rail, confirming to				
	IS:13032 and BS-5486-1986 without MCB to				
	house appropriate nos. of MCB's (The DBs				
	should be used of same company of MCB				
	to be used)				
	SOR-3-11-5.				
13	F) Single Phase 8 way SS Double door.	Nos	2	759.00	1518.00
	Approved make ELCBs / RCCBs conforming				
	to IS:12640 and having sensitivity of 30 m A				
	and Short Circuit with stand capacity of 6KA				
	and suitable for operation on single phase				
	240 V having characteristic of quick action &				
	tripping with all advance feature & do not				
	incorporate any electronic component for				
	following Max. rating.				
14	SOR-3-12-1.				
	(II) 40 Amps. DP				
	Cat-III	Nos	2	2007.00	4014.00
	Providing and erecting HOT Deep				
	Galvanised Strip iron wire 8 to 16 S.W.G.	Kg.	3.57	58.00	207.06
	SOR-3-15-5.				

Design Package Using Alternate Building Materials & Technologies, West Zone

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
15	Supplying & erecting earth pit of minimum				
	bore dia.150 mm size approved make safe				
	Earthing Electrode consisting Pipe-in-Pipe				
	Technology as per IS 3043-1987 made of				
	corrosion free G.I.Pipes having Outer pipe				
	dia of 50 mm having 80-200 Micron				
	galvanizing, Inner pipe dia of 25 mm having				
	200-250 Micron galvanizing, connection				
	terminal dia of 12 mm with constant ohmic				
	value surrounded by highly conductive				
	compound with high charge dissipation				
	Suitable for following type of applications.				
	a) For Electrical installation up to 11 KV				
	in normal soil.				
	Length of Pipe : 2.00 mtrs.				
	Back filling Compound : 1 no. bag of 25 Kg.	Nos.	1	6900.00	6900.00
	SOR-3-15-9.				
16	Providing Approved make Double Pole				
	Cast Iron Clad Switch & rewirable Fuse				
	240 V / 250 V confirming to I.S.S.				
	(b) 32A				
	Cat-III	Nos	2	449.00	898.00
	SOR-3-1-2.				
17	Erection & connection charges for 16A/				
	32A DP as following with duly painted red oxide.				
	(b). On polished wooden block.	Nos	2	34.00	68.00
	SOR-3-1-3.				
18	Providing and erecting open well type				
	horizontal mono block pump set with cast				
	iron body having following specification.				
	A) 0.5 H.P. Single phase open well motor				
	pump set having discharge of 75 LPM @				
	15 Mtr. Head suitable for 32 mm dia.				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	delivery pipe with control panel and 10 Mtr.				
	long 3 x 1.5 Sq. mtr. Submersible flat copper.				
	Cat-II	Nos	2	5463.00	10926.00
	SOR-9-4-1.				
19	Liasioning work to getting 230 V, 1-Phase, 3 wire power from SEB as per estimated service.				
	Motive Power service	Nos.	1	1500.00	1500.00
	Lighting Power service	Nos.	1	2500.00	2500.00
	TOTAL				106779.26
	TOTAL				106779.26
	ADD CONTENGENCY @ 5%	5%			5338.96
	TOTAL				112118.22
	ADD WORK CHARGE	2%			2242.36
	GRAND TOTAL				114360.59
	SAY				114361.00
	Note:				
	For Liquid level controller additional cost - 3000/-				

FIXTURE DETAILS – SCHOOL BUILDING											
SR	DISCRIPTION	1*28 W T-5	BRACKET LIGHT	FAN	5A PLG ONB	2.5 SQMM MAINS	COND 25MM		10A SP SWITCH	10A T/W SWITCH	5A PLUG
	GROUND FLOOR										
1	OFFICE	2		1	1	10.5	7.4	12	4		1
2	LIBRARY	2		1	1	10.5	7.4	12	4		1
3	GEN. TOILET	1	2		1	10.5	7.4	9	4		1
4	LAD. TOILET	1	4		1	15.5	10.9	15	6		1
5	PASSAGE	1				2.5	1.8	3	1		
6	STAIR	1				2.5	1.8	3		1	
7	STORE		1			2.5	1.8	3	1		
8	CLASS ROOM 1	6		2		20.0	14.0	30	8		
9	CLASS ROOM 2	6		2		20.0	14.0	30	8		
						0.0	0.0	0			
	FIRST FLOOR					0.0	0.0	0			
1	PASSAGE	1				2.5	1.8	3	1		
2	CLASS ROOM 3	6		2		20.0	14.0	30	8		
3	CLASS ROOM 4	6		2		20.0	14.0	30	8		
4	MULTI PURPOSE ROOM	2		1	1	10.5	7.4	12	4		1
5	OFFICE	2		1	1	10.5	7.4	12	4		1
	TOTAL	37	7	12	6	158	110.6	204	61	1	6

LOAD CALCULATION					
SR	PARTICULAR	LIGHTING	POWER PLUG	EQUIPMENT	TOTAL
1	GROUND FLOOR	0.956	0.20		1.16
2	FIRST FLOOR	0.834	0.10		0.93
	TOTAL CONNECTED LOAD			KW	2.09
	LOAD FACTOR				0.70
	RUNNING LOAD			KW	1.46
	SURVICE REQUIRED			KW	1.50

COMMUNITY CENTRE BOQ

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
1	Point wiring for Light / Fan /Bell / Primary				
	point with 2-1.0 sq. mm & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected, complete with				
	6A Tissino Type ISI marked flush type				
	switch /bell push and accessories erected				
	on polished wooden block / Metal / PVC				
	Box covered with 3 mm thick laminated				
	sheet.				
	(a) For open Wiring.	Pt.	30	150.00	4500.00
	SOR-1-1-1.				
2	Point wiring for independent PLUG with				
	2-1.0 sq.mm & earth wire of 1.0 sq.mm				
	(green) both are of ISI marked FR PVC				
	insulated multistrand copper wires, in				
	existing pipe duly erected complete with				
	Insulated multistrand copper wires, in				
	ISI marked 3 Pin 6A socket and 6A tissino				
	type switch erected with earth continuity				
	connection erected on polished wooden				
	block / Metal / PVC box covered with 3 mm				
	thick laminated sheet.				
	(a) For open Wiring.	Pt.	1	173.00	173.00
	SOR-1-1-2.				
3	Point wiring for looped PLUG with tissino				
	type single pole ISI marked 6 A. Switch				
	and 6 A Socket erected with necessary				
	connections erected on polished wooden				
	block / Metal / PVC Box covered with 3				
	mm thick laminated sheet for open /				
	concealed wiring.	Pt.	8	35.00	280.00
	SOR-1-1-3.				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
4	Point wiring for Two Way Controlled Light				
	Point with 2-1.0 sq. mm. & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected complete with				
	6A. Tissino Type ISI marked accessories				
	with earth continuity erected on polished				
	wooden block / Metal/ PVC box covered				
	with 3 mm thick laminated sheet.				
	(a) For open Wiring.	Pt.	1	156.00	156.00
	SOR-1-1-5.				
5	Providing following type of Modular Type				
	Accessories mounted on PVC / Metallic				
	box covered with appropriate front plate				
	modules erected with necessary connection.				
	As desire by Engineer in charge.				
	SOR-1-2-6.				
	(10) 16 Amp. Sp One way switch				
	Cat-II	Nos	2	160.00	320.00
	(11) 6/16 Amp. Universal Socket				
	Cat-II	Nos	2	180.00	360.00
6	Providing and erecting 1.5 mm thick FIA				
	approved and ISI mark (embossed) RIGID				
	PVC PIPES of following size complete				
	erected with necessary PVC fittings and				
	Junction boxes fixed with adhesive solution				
	and Clamps with following type of erection.				
	(1) For Open execution with clamps				
	erecting on wall / ceiling of following sizes of				
	Diameter..				
	b) 25 mm	Mtr.	117	32.00	3744.00
	(2) For erection concealed in wall / slab				
	along with continuous fish wire to draw				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	mains, laid in approved manner with				
	Plastering by cement mortar & finishing the				
	surface to match the wall / ceiling.				
	SOR-1-4-2.				
	b) 25 mm	Mtr.	77	32.00	2475.20
7	Mains with 1.1 KV grade FRPVC insulated				
	ISI marked stranded Copper conductor				
	wire in existing pipe erected with 1.5 sq. mm				
	copper conductor FR PVC insulated				
	stranded wire of green colour for earth.				
	continuity of following size.				
	SOR-1-5-1.				
	c) 2 Wire 2.5 sq. mm	Mtr.	120	31.00	3720.00
8	Supplying and erecting approved make tube				
	fitting with One No.T-5 tube 28 W with				
	Electronic Ballast with THD less than				
	10 & built with adoptors, GI / PVC housing &				
	mirror effect reflector, suitable to work on				
	120V - 300 V, A.C. Supply with connector.				
	Make of fitting & tube may be differed.				
	SOR-2-9-7.				
	Cat-III	Nos.	21	825.00	17325.00
9	Approved make Power Saving 50 Watt				
	Ceiling Fan with condenser 230 volt A.C.				
	50 Cys 1200 mm sweep complete having				
	3 blades with alluminium blades with,				
	canopy 7 30 cms down rod erected with				
	24/0.2 flat 3 Core flexible wire with earthing				
	(Orient, Crompton, Anchor, Bajaj)	Nos	8	1573.00	12584.00
	(Add Rs. 80/- Extra for Resistant type				
	Fan Regulator)				
	SOR-5-1-6.				
10	Mains with 1.1 KV grade FR PVC insulated				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	ISI marked stranded Copper conductor				
	wire in existing pipe erected with 2.5 sq. mm				
	copper conductor FR PVC insulated				
	stranded wire of green colour for earth				
	continuity of following size.				
	SOR-1-5-2.				
	a) 2 wire 4 sq. mm.	Mtr.	15	49.00	735.00
	b) 2 wire 6 sq. mm.	Mtr.	20	66.00	1320.00
11	Miniature circuit breaker Single Pole 6 A to				
	32 A suitable to operate on 240 V A. C.				
	system and having overload and short				
	circuit tripping elements and breaking				
	capacity 10 KA to be erected in existing				
	M. S. Box confirming to IS 8828/1996 with				
	ISI mark.				
	SOR-3-10-1.				
	Cat-III	Nos	12	137.00	1644.00
12	Providing and erecting Sheet Steel powder				
	coated MCB distribution board - Flush /				
	surface mounted fitted with busbar, neutral				
	link, earth bar and DIN rail, confirming to				
	IS:13032 and BS-5486-1986 without MCB to				
	house appropriate nos. of MCB's (The DBs				
	should be used of same company of MCB				
	to be used)				
	SOR-3-11-5.				
	F) Single Phase 8 way SS Double door.	Nos	2	759.00	1518.00
13	Approved make ELCBs / RCCBs conforming				
	to IS:12640 and having sensitivity of 30 m A				
	and Short Circuit with stand capacity of 6KA				
	and suitable for operation on single phase				
	240 V having characteristic of quick action &				
	tripping with all advance feature & do not				

Design Package Using Alternate Building Materials & Technologies, West Zone

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	incorporate any electronic component for				
	following Max. rating.				
	SOR-3-12-1.				
	(II) 40 Amps. DP				
	Cat-III	Nos	2	2007.00	4014.00
14	Providing and erecting HOT Deep				
	Galvanized Strip iron wire 8 to 16 S.W.G.	Kg.	3.57	58.00	207.06
	SOR-3-15-5.				
15	Supplying & erecting earth pit of minimum				
	bore dia.150 mm size approved make safe				
	Earthing Electrode consisting Pipe-in-Pipe				
	Technology as per IS 3043-1987 made of				
	corrosion free G.I.Pipes having Outer pipe				
	dia of 50 mm having 80-200 Micron				
	galvanizing, Inner pipe dia of 25 mm having				
	200-250 Micron galvanizing, connection				
	terminal dia of 12 mm with constant ohmic				
	value surrounded by highly conductive				
	compound with high charge dissipation				
	suitable for following type of applications.				
	a) For Electrical installation up to 11 KV				
	in normal soil.				
	Length of Pipe : 2.00 mtrs.				
	Back filling Compound : 1 no. bag of 25 Kg.	Nos.	1	6900.00	6900.00
	SOR-3-15-9.				
16	Providing Approved make Double Pole				
	Cast Iron Clad Switch & rewirable Fuse				
	240 V / 250 V confirming to I.S.S.				
	(b) 32A				
	Cat-III	Nos	2	449.00	898.00
	SOR-3-1-2.				
17	Erection & connection charges for 16A/				
	32A DP as following with duly painted red oxide.				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	(b). On polished wooden block.	Nos	2	34.00	68.00
	SOR-3-1-3.				
18	Providing and erecting open well type				
	horizontal mono block pump set with cast				
	iron body having following specification.				
	A) 0.5 H.P. Single phase open well motor				
	pump set having discharge of 75 LPM @				
	15 Mtr. Head suitable for 32 mm dia.				
	delivery pipe with control panel and 10 Mtr.				
	long 3 x 1.5 Sq. mtr. Submersible flat copper.				
	Cat-II	Nos	2	5463.00	10926.00
	SOR-9-4-1.				
19	Liasioning work to getting 230 V, 1-Phase, 3 wire power from SEB as per estimated service.				
	Motive Power service	Nos.	1	1500.00	1500.00
	Lighting Power service	Nos.	1	3500.00	3500.00
	TOTAL				78867.26
	TOTAL				78867.26
	ADD CONTENGECY @ 5%	5%			3943.36
	TOTAL				82810.62
	ADD WORK CHARGE	2%			1656.21
	GRAND TOTAL				84466.84
	SAY				84467.00
	Note:				
	For Liquid level controller additional cost - 3000/-				

FIXTURE DETAILS – COMMUNITY CENTER													
SR	DISCRIPTION	1*28 W T-5	BRACKET LIGHT	FAN	5A PLG ONB	5A PLG SEP	15A PLG	2.5 SQMM MAINS	COND 25MM	10A SP SWITCH	10A T/W SWITCH	16A SP SWITCH	5A PLUG
	GROUND FLOOR												
1	HALL	5		3	1	1	1	29.0	20.3	33	10	1	2
2	TOILET BLOCK	1	2					7.5	5.3	9	3		
3	MALE DOCTOR	1		1	1			8.0	5.6	9	3		1
4	FEMALE DOCTOR	1		1	1			8.0	5.6	9	3		1
5	FOYER	1						2.5	1.8	3	1		
6	STAIR	1						2.5	1.8	3	1		
	FIRST FLOOR												
1	HALL	6		2	2		1	29.0	20.3	30	10	1	2
2	FOYER	1						2.5	1.8	3	1		0
3	MULTI PURPOSE ROOM	2		1	1			10.5	7.4	12	4		1
4	MULTI PURPOSE ROOM FOR MEN	1			1			5.5	3.9	3	2		1
5	MULTI PURPOSE ROOM FOR WOMEN	1			1			5.5	3.9	3	2		1
	TOTAL	21	2	8	8	1	2	110.5	77.4	117	39	1	9

LOAD CALCULATION					
SR	PARTICULAR	LIGHTING	POWER PLUG	EQUIPMENT	TOTAL
1	GROUND FLOOR	0.58	0.30		0.88
2	FIRST FLOOR	0.47	0.35		0.82
3	EXTERNAL LIGHTING	1.80			1.80
	TOTAL CONNECTED LOAD			KW	3.50
	LOAD FACTOR				0.70
	RUNNING LOAD			KW	2.45
	SURVICE REQUIRED			KW	3.00

SHOPS/KIOSK BOQ

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
1	Point wiring for Light / Fan /Bell / Primary				
	point with 2-1.0 sq. mm & earth wire of 1.0				
	sq. mm (green) both are of ISI marked FR				
	PVC insulated multistrand copper wires, in				
	existing pipe duly erected, complete with				
	6A Tissino Type ISI marked flush type				
	switch /bell push and accessories erected				
	on polished wooden block / Metal / PVC				
	Box covered with 3 mm thick laminated				
	sheet.				
	(a) For open Wiring.	Pt.	8	150.00	1200.00
	SOR-1-1-1.				
2	Point wiring for looped PLUG with tissino				
	type single pole ISI marked 6 A. Switch				
	and 6 A Socket erected with necessary				
	connections erected on polished wooden				
	block / Metal / PVC Box covered with 3				
	mm thick laminated sheet for open /				
	concealed wiring.	Pt.	4	35.00	140.00
	SOR-1-1-3.				
	Providing and erecting 1.5 mm thick FIA				
	approved and ISI mark (embossed) RIGID				
3	PVC PIPES of following size complete				
	erected with necessary PVC fittings and				
	Junction boxes fixed with adhesive solution				
	and Clamps with following type of erection.				
	(1) For Open execution with clamps				
	erecting on wall / ceiling of following sizes of				
	Diameter..				
	b) 25 mm	Mtr.	36	32.00	1152.00
	(2) For erection concealed in wall / slab				
	along with continuous fish wire to draw				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
	mains, laid in approved manner with				
	Plastering by cement mortar & finishing the				
	surface to match the wall / ceiling.				
	SOR-1-4-2.				
	b) 25 mm	Mtr.	22	32.00	716.80
4	Mains with 1.1 KV grade FRPVC insulated				
	ISI marked stranded Copper conductor				
	wire in existing pipe erected with 1.5 sq. mm				
	copper conductor FR PVC insulated				
	stranded wire of green colour for earth.				
	continuity of following size.				
	SOR-1-5-1.				
	c) 2 Wire 2.5 sq. mm	Mtr.	40	31.00	1240.00
5	Supplying and erecting approved make tube				
	fitting with One No.T-5 tube 28 W with				
	Electronic Ballast with THD less than				
	10 & built with adoptors, GI / PVC housing &				
	mirror effect reflector, suitable to work on				
	120V - 300 V, A.C. Supply with connector.				
	Make of fitting & tube may be differed.				
	SOR-2-9-7.				
	Cat-III	Nos.	4	825.00	3300.00
6	Approved make Power Saving 50 Watt				
	Ceiling Fan with condenser 230 volt A.C.				
	50 Cys 1200 mm sweep complete having				
	3 blades with alluminium blades with,				
	canopy 7 30 cms down rod erected with				
	24/0.2 flat 3 Core flexible wire with earthing				
	(Havells, Orient, Crompton, Anchor, Bajaj)	Nos	4	1573.00	6292.00
	(Add Rs. 80/- Extra for Resistant type				
	Fan Regulator)				
	SOR-5-1-6.				

Design Package Using Alternate Building Materials & Technologies, West Zone

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Quantity		
7	Mains with 1.1 KV grade FR PVC insulated				
	ISI marked stranded Copper conductor				
	wire in existing pipe erected with 2.5 sq. mm				
	copper conductor FR PVC insulated				
	stranded wire of green colour for earth				
	continuity of following size.				
	SOR-1-5-2.				
	a) 2 wire 4 sq. mm.	Mtr.	42	49.00	2058.00
8	Providing Approved make Double Pole				
	Cast Iron Clad Switch & rewirable Fuse				
	240 V / 250 V confirming to I.S.S.				
	(b) 32A				
	Cat-III	Nos	4	449.00	1796.00
	SOR-3-1-2.				
9	Erection & connection charges for 16A/				
	32A DP as following with duly painted red oxide.				
	(b). On polished wooden block.	Nos	4	34.00	136.00
	SOR-3-1-3.				
10	Liasioning work to getting 230 V, 1-Phase, 3 wire power from	Nos.	4	1000.00	4000.00
	SEB as per estimated service.				
	TOTAL				22030.80
	TOTAL				22030.80
	ADD CONTENGECY @ 5%	5%			1101.54
	TOTAL				23132.34
	ADD WORK CHARGE	2%			462.65
	GRAND TOTAL				23594.99
	SAY				23595.00

FIXTURE DETAILS – SHOPS/KIOSK									
SR	DISCRIPTION	1*28 W T-5	FAN	5A PLG ONB	2.5 SQMM MAINS	COND 25MM		10A SP SWITCH	5A PLUG
1	SHOP 1	1	1	1	8.0	5.6	9	3	1
2	SHOP 2	1	1	1	8.0	5.6	9	3	1
4	SHOP 3	1	1	1	8.0	5.6	9	3	1
5	SHOP 4	1	1	1	8.0	5.6	9	3	1
					0.0	0.0	0		
	TOTAL	4	4	4	32	22.4	36	12	4

LOAD CALCULATION					
SR	PARTICULAR	LIGHTING	POWER PLUG	EQUIPMENT	TOTAL
1	SHOP 1	0.083	0.05		0.13
2	SHOP 2	0.083	0.05		0.13
3	SHOP 3	0.083	0.05		0.13
4	SHOP 4	0.083	0.05		0.13
	SURVICE PER SHOP			KW	0.50

EXTERNAL ELECTRICAL BOQ

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Qty		
1	Providing and erecting XLPE(IS:7098)(I)-88				
	ISI marked armoured cable multistrand				
	Copper Conductor for 1.1 KV to be laid				
	on wall with necessary clamps or in existing				
	cable trench / pipe at road crossing or floor				
	of following size of cables.				
	SOR-4-4-2.				
	a) 3 Core 4 Sq.mm.	Mtr.	325	121.00	39325.00
2	Providing and fixing heavy duty flange type				
	brass cable gland with rubber ring for PVC				
	insulated armoured cable complete with out				
	going tails, insulating tape etc. for following				
	size of cables. SOR-4-6-1				
	c) 2 to 4 Core 6 Sq.mm	Nos	24	29.00	696.00
3	Soldieries crimping type Copper lugs				
	conforming to IS suitable for cable of				
	following size evenly crimped with high				
	pressure tool & connected to switchgear				
	terminals with brass / cadmium plated nut				
	bolts in as approved manner.				
	SOR-4-7-2.				
	A) 2.5 to 6 Sq. mm.	Nos	96	6.00	576.00
4	Galvanized iron pipe post " B " class 88.9				
	mm O D 6 Mtr. Long duly painted with two				
	coats of alluminium paint complete with				
	metallic base plate of 300 mm x 300 mm x				
	4 mm thick to be erected as compound light				
	pole with approx weight 47 Kg.	Nos.	12	2324.00	27888.00
	SOR-6-1-2.				
5	C.I. pole base Suitable for 90 mm dia				
	base of pole with M.S. door having two				
	hinges welded on M.S. flat 25 x 3 mm which				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Qty		
	is fitted on C.I. base by bolts welded inside				
	the pole base erected with one coat of				
	Red oxide and two coat of Alluminium paint				
	and covering the gap between pole and pole				
	base with suitable clamp as per SOR				
	drawing or sample.	Nos.	12	2208.00	26496.00
	SOR-6-2-1.				
6	Providing cement concrete foundation				
	including excavation for the pole with 45 x45				
	x 100 cms deep in 1:3:6 cement concrete				
	(20 to 25 mm stone metal) with 45 cms x				
	45 cms (or 45 cms dia) x 45 cms high				
	cement concrete plinth with necessary				
	curing and finishing in approved manner.				
	(for 4 & 6 mtr pole)	Nos.	12	449.00	5388.00
	SOR-6-3-4.				
7	Supplying Water tight M.S. box of size				
	20 x 15 x 15 cms to erected suitable kitkat				
	fuse / MCB to be erected on polished				
	wooden board inside the box with hinged /				
	sliding door with rubber rings and erected				
	on pole with suitable pole clamp, all duly				
	painted with one coat of red oxide and two				
	coats of paints. (Cost of Fuse / MCB shall				
	be taken extra)	Nos.	12	115.00	1380.00
	SOR-6-4-1.				
8	Providing Single Arm Bracket consisting of				
	Light Class G.I. pipe of 4.2 cms outside dia				
	complete with suitable M.s.sleeve tubing of				
	approximate 30 cms. Length suitable for				
	76.5 mm / 80 mm or require size pole top				
	having 5 Nos. fasteners for fixing the brackets				
	and having spread of 1 mtr. Length with				

SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Qty		
	suitable rise as per site condition & suitable				
	welded stiffner reducer and nipple with				
	check nut complete painted with one coat				
	of Red oxide and two coats of Alluminium				
	paint suitable for side entry.	Nos.	12	368.00	4416.00
	SOR-6-5-5.				
9	“B” class Galvanized iron pipe 38/40 mm				
	dia. Meter having smooth finished bore of				
	the pipe on both ends erected on the face of				
	the wall with clamps, nuts and bolts for				
	laying of cable along the pole / wall shaping				
	the pipe as per site requirement to ease				
	cable entry.	Mtr.	24	150.00	3600.00
	SOR-6-5-9.				
10	Supplying & erecting approved make HPSV				
	public lighting laminar as per Keselec’Z’				
	range or approved make comprising an				
	injection molded Aluminium body 2 side				
	reflection or a single piece deep drawn				
	reflector in high purity polished & anodized				
	Aluminium, with polystyrene acrylo nitrite				
	protective cover & a clear acrylic protector.				
	The control gear mounted in the body on to				
	removable mounting plate. Suitable for				
	vertical mounting directly on 76mm dia. Pole				
	top with prismatic or reinforced glass				
	Protector. SOR-2-13-3				
	C). Suitable for 150 W SVL	Nos.	12	4620.00	55440.00
11	Approved make High Pressure sodium				
	vapour lamp, Tubular / Elliptical type 150W.				
	230/240/250V erected, if required.				
	Cat-III	Nos.	12	600.00	7200.00
	SOR-2-4-1.				

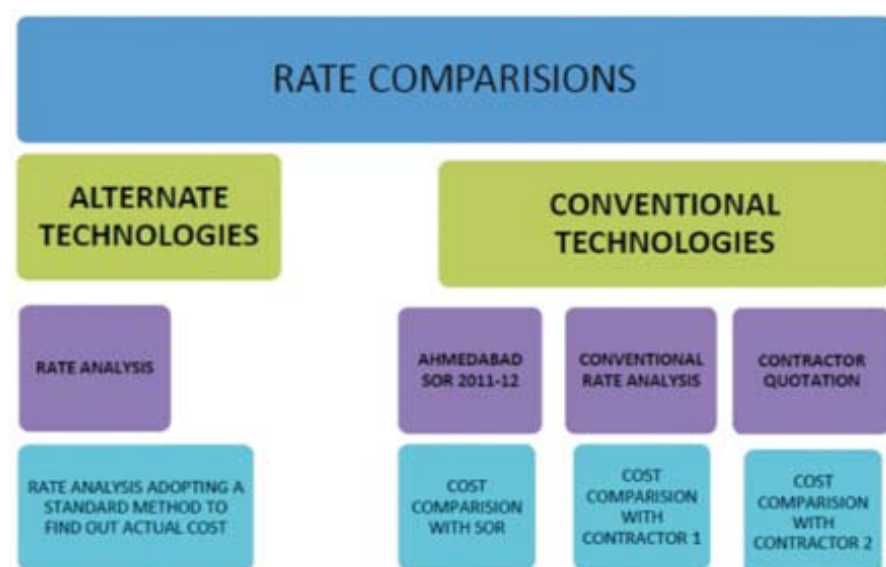
SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Qty		
12	Miniature circuit breaker Single Pole 6 A to 32 A suitable to operate on 240 V A. C. system and having overload and short circuit tripping elements and breaking capacity 10 KA to be erected in existing M. S. Box conforming to IS 8828/1996 with ISI mark.				
	Cat-III	Nos.	12	137.00	1644.00
	SOR-3-10-1.				
13	Mains with 1.1 KV grade FRPVC insulated ISI marked stranded Copper conductor wire in existing pipe erected with 1.5 sq. mm copper conductor FR PVC insulated stranded wire of green colour for earth. continuity of following size.				
	c) 2 Wire 2.5 sq. mm	Nos.	72	31.00	2232.00
	SOR-1-5-1.				
14	Pipe type earthing having 150 cms. Long and 2.5 cms dia. Galvised iron pipe with coupling and butch burried in specially prepared earth pit complete with necessary 8SWG earth wire	Nos.	12	31.00	372.00
	SOR-3-15-6.				
15	Making trench in Hard murum / Tar Road of suitable width of 90 cms deep for laying cable or locating the fault all over the run and back filling the same and making the surface proper.				
	A) Upto 25 Sq. mm. Cable.	Mtr.	290	35.00	10150.00
	SOR-4-5-2.				
16	Covering of cable with second class bricks laid cover the cable crosswise & also on				

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SR. NO.	Item Description	Unit	Estimated	Estimated Rate	Estimate
			Qty		
	both sides with covering of 7.5 cms layer of				
	sand above & below cable (Cable shall be				
	laid in 0.9 mtr deep & 0.4 mtr wide trench)				
	Where there are more than one cable in the				
	trench on either side of the cable, 5 cms.				
	over lapping the bricks shall be provided.	Mtr.	290	69.00	20010.00
	SOR-4-5-3.				
	TOTAL				206813.00
	TOTAL				206813.00
	ADD CONTENGECY @ 5%	5%			10340.65
	TOTAL				217153.65
	ADD WORK CHARGE	2%			4343.07
	GRAND TOTAL				221496.72
	SAY				221497.00



The basic objective of the project was to promote the use of Alternate construction technologies into the construction industry. It is clearly seen and proven fact that the use of these alternate technologies bring down the construction cost by 20-30%, which is the need of the hour in today's scenario where construction costs are increasing by leaps and bounds and the rising materials prices, which makes an ordinary person impossible to afford a house.



This chapter gives the basic idea to different personnel's related to the building and construction industry such as primarily the user, government agencies and private sector contractors that alternate technologies not only save the cost but also give added advantages as described in vol. 1 of the document. The basic ideology of the cost comparison can be seen in the figure. The cost comparisons for the project are done with respect to 3 different costs. The comparisons are done between Alternative technologies used for the project design and conventionally used construction technologies in the geographical area of Gujarat. Load bearing walls are replaced by Rat trap bond instead of Solid load bearing walls (230 mm thick), conventionally used RCC slab is replaced by Filler slabs and conventionally used cement plaster is replaced by lime pozzolona plaster.

The cost comparisons are as follows:

1. Alternate technologies vs. Ahmedabad SOR 2011-12. (Conventional technologies as per the SOR)

2. Alternate technologies vs. Contractor 1 quoted rate for Conventional technologies. This also indicates the present market rates of the conventional items.
3. Alternate technologies vs. Contractor 2 quoted rate for Conventional technologies. This also indicates the present market rates of the conventional items.

Rate comparison was done to check whether the rates arrived at for the project were actually cost effective or not. The study shows that there is actually a reduction in cost by **14-30%** using these alternate technologies. The image shows the logic behind the comparison. For the alternate technologies adopted for the project, rate analysis

was done for all the BOQ items and these costs were compared to AMD SOR 2011-12, and 2 nos. of quotations which were received as a bid for the project from two different contractors. This exercise of rate comparison was done for all the three buildings for their civil construction items and electrical items namely, Residential Unit Clusters (3nos-60 units), Community center building including Kiosk, and for the School building.

The table below shows the summary of the detailed bill of quantities for the project and their comparative percentage cost savings. It is clearly seen from the exercise that a minimum saving of 14% to a saving of 34% can be achieved.

DESCRIPTION	ALT. TECH.	AHD SOR 2011-12	CONV. TECH. RA	QUOTATION 1	QUOTATION 2
RESIDENTIAL	1,17,45,703	1,38,42,124	1,50,99,840	1,80,90,455	1,79,95,055
DIFFERENCE		20,96,421	33,54,138	63,44,752	62,49,352
% SAVING		15	22	35	35
COMMUNITY	16,07,612	18,73,347	19,17,466	21,74,659	23,18,021
DIFFERENCE		2,65,735	3,09,854	5,67,047	7,10,409
% SAVING		14	16	26	31
SCHOOL	18,73,266	20,29,421	20,40,741	26,32,611	26,40,701
DIFFERENCE		1,56,154	1,67,474	7,59,344	7,67,434
% SAVING		8	8	29	29
TOTAL COST	1,52,26,581	1,77,44,891	1,90,58,047	2,28,97,724	2,29,53,777
DIFFERENCE		25,18,310	38,31,466	76,71,143	77,27,196
% SAVING		14	20	34	34
Miscellaneous	9,93,911.66	NA	NA	NA	NA
TOTAL PROJECT COST					1,62,20,493

This table clearly shows that a considerable saving can be achieved by adopting Alternate technologies vs. the Conventional technologies.

This summary table below shows the cost saving achieved for replacing the conventional technologies with alternate technologies for different components that are walling, roofing and finishing. It is seen from the comparison that Rat trap bond compared to solid walls can save your walling construction cost from 22-35%, Roofing option of filler slabs can save from 21% to 33% as compared to conventional RCC solid slabs, and replacing cement plaster by lime pozzolona plaster can bring you a saving in the finishing cost from 15% to 30%.

DESCRIPTION	BOQ COST	vs. AHD SOR 2011-12	vs. RATE ANALYSIS	vs. QUOTATION 1	vs. QUOTATION 2
1.00	RESIDENTIAL BUILDING (A,B,C - BLOCKS)				
BRICKWORK	21,89,702	28,29,822	30,67,058	36,21,008	45,45,593
% SAVING		23	29	40	52
SLABS	6,26,254	9,48,501	8,04,544	13,21,650	15,91,988
% SAVING		34	22	53	61
A	SCHOOL BUILDING				
SLABS	2,30,824	3,31,213	2,78,517	3,39,430	3,98,710
% SAVING		30	17	32	42
B	COMMUNITY BUILDING				
SLABS	2,05,032	3,03,354	2,57,318	3,89,352	4,42,842
% SAVING		32	20	47	54
2.00	CONCRETE TOTAL SAVINGS				
TOTAL ROOFING	10,62,110	15,83,068	13,40,379	20,50,432	24,33,539
% SAVING		33	21	48	56
3.00	LIME POZZOLONA PLASTER				
PLASTER COST	22,26,880	25,77,013	27,87,443	48,10,001	38,44,604
% SAVING		14	20	54	42

Residential BOQ.

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
1	EARTH WORK AND EXCAVATION											
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	437.00	70	60.00	26220	175.00	76474	120.00	52440	30756
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	240.49	38	39.00	9379	53.00	12746	60.00	14429	9060
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	159.06	288	306.00	48673	335.00	53286	400.00	63625	45752
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	793.93	65	84.00	66690	80.00	63514	95.00	75423	51605
A	BED WORKS											
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m	35.43	2271	2297.00	81384	2500.00	88577	3500.00	124007	80465
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	63.63	2271	2297.00	146147	2500.00	159063	3500.00	222688	144496

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
B	R.C.C. WORKS											
2.03	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for grade slab below GF flooring etc. complete excluding reinforcement and formwork	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for grade slab below GF flooring etc. complete excluding reinforcement and formwork	cu.m	79.11	3677	4415.00	349253	4500.00	355977	5000	395530	290862
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m	17.21	3677	4415.00	75970	4700.00	80874	5500	94640	63269
2.05	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at GF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At GF level	sq.m	716.12	288	4415.00	316167	4000.00	400500	5000	500625	206113
2.06	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	17.21	3745	4415.00	75970	5000.00	86036	5600	96361	64440

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
2.07	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at FF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At FF level	sq.m	716.12	292	4415.00	316167	4400.00	440550	5400	540675	208751
2.08	Providing and laying in line and level RCC LINTEL at SF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	Providing and laying in line and level RCC LINTEL at SF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	17.21	3813	4415.00	75970	5500.00	94640	5800	99802	65611
2.09	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and excluding formwork, deshuttering and including curing at SF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At SF level	sq.m	716.12	295	4415.00	316167	4800.00	480600	5500	550688	211390
2.10	Providing and laying in line and level RCC LINTEL for STAIR CABIN at TERRACE level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	Providing and laying in line and level RCC LINTEL for STAIR CABIN at TERRACE level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	1.58	3881	4451.00	7044	6000.00	9495	5800	9178	6142

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
2.11	Providing and laying RCC slab for terrace cabin with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) at TERRACE level excluding formwork, deshuttering and including curing etc complete.	Providing and laying RCC slab for terrace cabin with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) at TERRACE level excluding formwork, deshuttering and including curing etc complete.	cu.m	6.93	3881	4451.00	30841	5200.00	36031	5700	39495	26892
C	FORM WORK											
2.12	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m	98.68	228	218.30	21543	500	49342	450	44408	22462
2.13	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	98.68	247	218.30	21543	550	54276	450	44408	24375
2.14	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	638.20	274	218.30	139319	370	236134	450	287190	174742
2.15	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	98.68	273	218.30	21543	580	57236	465	45888	26957
2.16	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	638.20	294	218.30	139319	420	268044	465	296763	187890

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
2.17	Providing and erecting formwork for SECOND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for SECOND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	98.68	280	218.30	21543	620	61184	485	47861	27638
2.18	Providing and erecting formwork for SECOND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for SECOND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	638.20	315	218.30	139319	470	299954	485	309527	201038
2.19	Providing and erecting formwork for TERRACE CABIN SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for TERRACE CABIN SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	54.45	336	218.30	11886	520	28314	500	27225	18274
D	REINFORCEMENT WORKS											
2.20	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	kgs	1218.69	65	45.30	55207	51	62153	60	73121	79254
2.21	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs	349.51	65	45.30	15833	51.00	17825	60.00	20971	22730
2.22	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs	490.44	65	45.30	22217	55.00	26974	60.00	29426	31894

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
2.23	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs	4708.15	65	45.30	213279	52.00	244824	60.00	282489	306183
2.24	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. for FF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. for FF LINTEL BAND	kgs	490.44	66	45.30	22217	57.00	27955	68.00	33350	32334
2.25	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	kgs	4708.15	66	45.30	213279	59.00	277781	68.00	320154	310406
2.26	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF LINTEL BAND	kgs	490.44	67	45.30	22217	56.00	27465	68.00	33350	32774
2.27	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF SLAB	kgs	4708.15	67	46.00	216575	55.00	258948	70.00	329570	314629

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
2.28	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin LINTEL BAND	kgs	127.75	68	46.00	5876	59.00	7537	70.00	8942	8651
2.29	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin SLAB	kgs	20.93	68	46.00	963	57.00	1193	70.00	1465	1417
3	BRICK WORK											
3.01	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	cu.m	196.51	2688	2524.00	495985	2300.00	451967	4000.00	786030	528303
3.02	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) above ground level upto grade slab bottom including curing etc complete	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) above ground level upto grade slab bottom including curing etc complete	cu.m	54.70	2688	2524.00	138058	2300.00	125806	4000.00	218793	147054
3.03	Providing and laying brickwork 230 mm thick in Rat-Trap bond using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. above Ground level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m	343.29	1982	2608.00	895291	3000.00	1029859	4100.00	1407474	680376

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
3.04	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on First floor	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at FF level	cu.m	347.48	2022	2608.00	906232	3500.00	1216185	4200.00	1459422	702603
3.05	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on Second floor	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at SF level	cu.m	347.48	2062	2634.00	915266	3500.00	1216185	4300.00	1494170	716516
3.06	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. at TERRACE level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at TERRACE level	cu.m	42.91	2102	2634.00	113033	3700.00	158779	4300.00	184527	90206
3.07	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt Fly Ash having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt Fly Ash having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	sq.m	50.67	236	367.00	18596	225	11401	520	26348	11936
3.09	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on SF level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on SF level	sq.m	50.67	252	370.50	18773	325	16468	540	27362	12784

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
3.10	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. at TERRACE level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. at TERRACE level	sq.m	263.34	261	370.50	97567	340	89536	550	144837	68647
4	PLASTER WORKS											
A	INTERIOR PLASTER											
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	3043.87	140	147.60	449276	269.00	818802	220.00	669652	425777
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of GF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on ceiling surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	1015.28	86	154.60	156962	280.00	284277	225.00	228437	87395
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	2959.11	147	147.60	436765	290.00	858142	230.00	680595	434616

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of FF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on ceiling surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	1015.28	90	154.60	156962	300.00	304583	230.00	233513	91765
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on SF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on SF	sq.m	2959.11	151	157.20	465172	320.00	946915	240.00	710186	447655
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of SF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on ceiling surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on SF	sq.m	1015.28	95	164.20	166708	330.00	335041	240.00	243666	96353
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on TERRACE level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on TERRACE	sq.m	291.22	156	175.10	50993	330.00	96103	250.00	72805	45378

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of terrace level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:4 mortar, finishing course 8 mm thick in cement mortar 1:2) on ceiling surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on TERRACE	sq.m	48.15	100	182.10	8768	330.00	15890	250.00	12038	4798
B	EXTERIOR PLASTER											
4.09	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto GF slab level	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:2) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	206.61	161	179.00	36983	270.00	55784	280.00	57850	33347
4.10	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto FF slab level	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:2) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	179.89	169	179.00	32201	300.00	53967	280.00	50370	30486
4.11	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto SF slab level	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:2) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on SF	sq.m	179.89	178	179.00	32201	330.00	59364	290.00	52169	32011

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
4.12	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto terrace slab level	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:2) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on TERRACE	sq.m	346.90	187	194.00	67299	350.00	121415	290.00	100601	64815
5	PAINTING WORKS											
A	INTERIOR PAINTING											
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in GF	sq.m	3043.87	32	51.90	157977	150.00	456581	60.00	182632	97404
5.02	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in GF on ceiling	sq.m	1015.28	32	55.40	56246	170.00	172597	65.00	65993	32489
5.03	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in FF	sq.m	2959.11	36	51.90	153578	170.00	503049	65.00	192342	106528

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
5.04	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in FF on ceiling	sq.m	1015.28	36	55.40	56246	170.00	172597	65.00	65993	36550
5.05	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on SF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in SF	sq.m	2959.11	40	56.90	168373	190.00	562231	70.00	207138	118364
5.06	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on ceiling surfaces on SF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in SF	sq.m	1015.28	40	60.40	61323	190.00	192902	70.00	71069	40611
5.07	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on TERRACE level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in TERRACE	sq.m	291.22	43	56.90	16570	210.00	61156	60.00	17473	12522

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
5.08	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on ceiling surfaces on Terrace level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in TERRACE	sq.m	346.90	43	60.40	20953	210.00	72849	60.00	20814	14917
B	EXTERIOR PAINTING											
5.09	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on GF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto GF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	206.61	43	56.90	11756	175.00	36156	70.00	14463	8884
5.10	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on FF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto FF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	179.89	46	56.90	10236	195.00	35079	70.00	12592	8275

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
5.11	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on SF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt including necessary scaffolding smooth upto SF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	179.89	50	56.90	10236	220.00	39576	70.00	12592	8995
5.12	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on TERRACE level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto TERRACE CABIN slab level in exteriors.	sq.m	346.90	55	66.90	23208	245.00	84991	70.00	24283	19080
6	FLOORING WORKS											
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate bys, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	Providing and laying mosaic TILES of 300 x 300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at GF level	sq.m	474.42	559	812.00	385225	600.00	284649	675.00	320230	265260

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate bys, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	Providing and laying mosaic TILES of 300x300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at FF level	sq.m	474.42	604	812.00	385225	620.00	294137	675.00	320230	286629
6.03	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate bys, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on SF level	Providing and laying mosaic TILES of 300x300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at SF level	sq.m	474.42	649	812.00	385225	645.00	305998	675.00	320230	307997
6.04	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 60 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m	707.50	1023	1023.43	724077	720.00	509400	750.00	530625	724077

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
6.05	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on GF level 0.6 m wide of kota stone 2.04 sq.m	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on GF level 0.6 m wide of kota stone 2.04 sq.m	nos.	20.00	2781	3297.00	65940	3300.00	66000	3200	64000	55625
6.06	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on FF level 0.6 m wide of kota stone 2.04 sq.m	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on FF level 0.6 m wide of kota stone 2.04 sq.m	nos.	20.00	2907	3297.00	65940	3564.00	71280	3424	68480	58136
6.07	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on SF level 0.6 m wide of kota stone 2.04 sq.m	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on SF level 0.6 m wide of kota stone 2.04 sq.m	nos.	20.00	3032	3297.00	65940	3849.12	76982	3663.68	73274	60648
6.08	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	nos.	5.00	6303	980.00	41160	6000.00	30000	6500	32500	31514

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
6.09	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at FF	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at FF	nos.	5.00	6464	980.00	41160	6300.00	31500	6955	34775	32321
6.10	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, at SF	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, at SF	nos.	5.00	6626	980.00	41160	6615.00	33075	6955	34775	33128
6.11	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at GF level for wash	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at GF level for wash	sq.m	37.80	678	980.00	41160	700	26460	750	28350	25622
6.12	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at FF level for wash	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at FF level for wash	sq.m	37.80	680	980.00	41160	749	28312	750	28350	25716
6.13	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey white slurry including rubbing and polishing etc. at SF level for wash	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey white slurry including rubbing and polishing etc. at SF level for wash	sq.m	37.80	683	980.00	41160	801.43	30294	787.5	29768	25810

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
6.14	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 10 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on GF	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 10 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on GF	sq.m	52.00	463	824.00	42848	450	23400	470	24440	24063
6.15	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 10 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on FF	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 10 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on FF	sq.m	52.00	465	824.00	42848	472.5	24570	493.5	25662	24182
6.16	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 10 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on SF	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 10 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on SF	sq.m	52.00	467	824.00	42848	496.125	25799	518.175	26945	24300
6.17	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at G.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at G.F. LEVEL	rmt	40.29	45	71.00	2860	45.48	1832	45.48	1832	1832
6.18	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at F.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at F.F. LEVEL	rmt	40.29	47	71.00	2860	46.95	1891	46.95	1891	1891

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	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
6.19	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	rmt	40.29	48	71.00	2860	48.41	1950	48.41	1950	1950
7	DOOR WINDOW SHUTTER											
7.01	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level										
	D1		nos	110	1401	2340.86	257495	1401.09	154120	1401.09	154120	154110
	D2		nos	61	1401	2340.86	142793	1401.09	85467	1401.09	85467	85461
7.02	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on FF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on FF level										
	D1		nos	110	1401	2340.86	257495	1401.09	154120	1401.09	154120	154110
	D2		nos	61	1401	2340.86	142793	1401.09	85467	1401.09	85467	85461
7.03	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on SF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on SF level										
	D1		nos	110	1401	2340.86	257495	1401.09	154120	1401.09	154120	154110
	D2		nos	61	1401	2340.86	142793	1401.09	85467	1401.09	85467	85461

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
7.04	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on terrace level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete on terrace level										
	D1		nos	9.18	1401	2340.86	21489	1401.09	12862	1401.09	12862	12862
7.05	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level										
	W1	sliding	sq.m	21.60	1839	2340.86	50563	1839.45	39732	1839.45	39732	39732
	W2	openable	sq.m	18.24	1839	2340.86	42697	1839.45	33552	1839.45	33552	33552
	W3	openable	sq.m	10.69	1839	2340.86	25028	1839.45	19667	1839.45	19667	19667
	W4		sq.m	13.80	2079	2340.86	32304	2079.05	28691	2079.05	28691	28691
	V	closed	sq.m	4.80	2631	2340.86	11236	2631.23	12630	2631.23	12630	12630
7.06	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level										
	W1	sliding	sq.m	21.60	1839	2340.86	50563	1839.4487	39732	1839.4487	39732	39732
	W2	openable	sq.m	18.24	1839	2340.86	42697	1839.4487	33552	1839.4487	33552	33552
	W3	openable	sq.m	10.69	1839	2340.86	25028	1839.4487	19667	1839.4487	19667	19667
	W4		sq.m	13.80	2079	2340.86	32304	2079.05	28691	2079.05	28691	28691
	V	closed	sq.m	4.80	2631	2340.86	11236	2631.2324	12630	2631.2324	12630	12630

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA - DESIGN	AHMEDABAD SOR 2011-12		CONTRACTOR 1		CONTRACTOR 2		RA – DESIGN
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES			RATE	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	AMOUNT
7.07	Providingandapplying precast RCC frames for windows of size 4” x 2.5” and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at SF level	Providingandapplying precast RCC frames for windows of size 4” x 2.5” and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at SF level										
	W1	sliding	sq.m	21.60	1839	2340.86	50563	1839.4487	39732	1839.4487	39732	39732
	W2	openable	sq.m	18.24	1839	2340.86	42697	1839.4487	33552	1839.4487	33552	33552
	W3	openable	sq.m	10.69	1839	2340.86	25028	1839.4487	19667	1839.4487	19667	19667
	W4		sq.m	13.80	2079	2340.86	32304	2079.05		2079.05	28691	28691
	V	closed	sq.m	4.80	2631	2340.86	11236	2631.2324	12630	2631.2324	12630	12630
TOTAL =						13842124		18090455		17995055		11745403

Community Center BOQ

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
1	EARTH WORK AND EXCAVATION													
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	77	70	60	4634	70	5436	175	13517	120	9269	5436
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	39	38	39	1524	38	1472	53	2071	60	2345	1472
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	60	288	306	18275	288	17178	335	20007	400	23889	17178
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	257	65	84	21613	65	16725	80	20584	95	24444	16725
2	CONCRETING													
A	BED WORKS													
2.01	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	6	2271	2297	14785	2271	14618	2500	16092	3500	22529	14618
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	13	2271	2297	29265	2271	28935	2500	31851	3500	44592	28935

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
B	R.C.C. WORKS													
2.03	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	cu.m	1	3677	4415	5596	3677	4660	4500	5704	5000	6337	4660
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m	1	3677	4415	3181	3677	2649	4700	3387	5500	3963	2649
2.05	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at GF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At GF level	sq.m	116	765	4415	128366	3745	108886	5000	145375	5500	159913	17790
2.06	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at GF level for shops	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, deshuttering and including curing at GF level for shops	sq.m	45	288	4415	30132	3745	25559	4500	30712	5400	36854	13095

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
2.07	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	1	3677	4415	3817	3677	3179	3745	3238	5500	4756	3179
2.08	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at FF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At FF level	sq.m	131	773	4415	144856	3745	122873	6500	213265	7500	246075	101472
C	FORM WORK													
2.09	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m	16	228	218	3503	228	3653	500	8024	450	7221	3653
2.10	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	25	247	218	5434	247	6148	550	13690	450	11201	6148
2.11	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	158	274	218	34567	274	43356	370	58588	450	71255	43356
2.12	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	13	273	218	2839	273	3553	580	7544	465	6048	3553

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	111	294	218	24177	294	32606	420	46515	465	51498	32606
D	REINFORCEMENT WORKS													
2.14	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	kgs	273	65	45	12364	65	17750	51	13920	60	16377	17750
2.15	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs	287	65	45	12987	65	18644	51	14621	60	17201	18644
2.16	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. for GF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs	227	65	45	10299	65	14785	55	12504	60	13641	14785
2.17	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs	1897	65	45	85920	65	123346	52	98627	60	113801	123346
2.18	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs	245	66	45	11077	66	16121	57	13938	68	16628	16121

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
2.19	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	kgs	1665	66	45	75436	66	109791	59	98250	68	113238	109791
3	BRICK WORK													
3.01	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	cu.m	18	3000	2524	46090	3000	54782	2700	49304	4000	73043	54782
3.02	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at GF level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m	42	3000	2608	109670	3000	126154	2700	113538	4000	168205	126154
3.03	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at FF level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at FF level	cu.m	34	3500	2608	88555	3500	118844	3000	101866	4300	146008	118844
3.04	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at SF level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at SF level	cu.m	3	3346	2634	8248	3346	10477	3500	10959	4300	13464	10477

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
3.05	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffoldings etc. above GF level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffoldings etc. above GF level	sq.m	16	472	367	5934	472	7638	236	3816	520	8408	7638
3.06	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffoldings etc. on FF level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffoldings etc. on FF level	sq.m	6	482	371	2267	482	2948	275	1683	530	3244	2948
4	PLASTER WORKS													
A	INTERIOR PLASTER													
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level including curing and scaffolding, etc. complete on BRICKWORK on GF	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	569	140	148	83982	148	83982	269	153057	220	125177	79589
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of GF	Providing and applying 12 mm thick PLASTER in single coat (1:4 mortar, where 1 is cement and 4 is sand) on concrete surfaces in true line and level finished even and smooth including curing, scaffolding, etc. for ceilings and chajjas GF	sq.m	149	86	155	23104	155	23104	269	40200	340	50811	12864

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on FF	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	235	147	148	34680	148	34680	290	34179	230	27108	17311
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of FF	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	118	90	155	18221	155	18221	290	3868	230	3068	1206
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on terrace	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on TERRACE	sq.m	13	151	148	1969	157	2097	300	4001	240	3201	2018
B	EXTERIOR PLASTER													
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:1) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	227	161	179	40575	179	40575	290	65735	230	52135	36585

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even on FF level	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:1) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	183	169	179	32768	179	32768	300	54918	230	42104	31023
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. on TERRACE level	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:1) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on TERRACE	sq.m	26	178	179	4724	179	4724	320	8445	240	6334	4696
5	PAINTING WORKS													
A	INTERIOR PAINTING													
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in GF	sq.m	524	32	52	27176	52	27176	150	78544	60	31418	16756
5.02	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING on GF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in GF	sq.m	149	32	55	8279	55	8279	150	22417	60	8967	4782

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
5.03	White washing with lime on decorated wall surfaces (one coat) to give an even shade includingthoroughlybrooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in FF	sq.m	235	36	52	12195	52	12195	170	20036	70	8250	4243
5.04	White washing with lime on decorated wall surfaces (one coat) to give an even shade includingthoroughlybrooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING surfaces on FF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in FF	sq.m	118	36	55	6529	52	6117	170	2267	80	1067	480
5.05	White washing with lime on decorated wall surfaces (one coat) to give an even shade includingthoroughlybrooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on terrace level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in terrace	sq.m	13	40	57	759	90	1200	180	2401	85	1134	534
B	EXTERIOR PAINTING													
5.06	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly broom- ing the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on GF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirts and remains of powdered ma- terial & mortar drops, including necessary scaffolding smooth upto GF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	217	40	57	12353	94	20300	175	37992	150	32564	8684

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
5.07	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly broom-ing the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on FF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto FF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	199	44	57	11304	98	19376	195	38739	150	29799	8741
5.08	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly broom-ing the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on TERRACE level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto TERRACE CABIN slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	21	50	57	1170	106	2171	205	4215	200	4112	1028
6	FLOORING WORKS													
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	Providing and laying mosaic TILES of 300 x 300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at GF level	sq.m	193	559	812	157073	812	157073	600	116064	675	130572	108158

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate bys, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	Providing and laying mosaic TILES of 300 x 300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at FF level	sq.m	111	604	812	89945	812	89945	620	68677	675	74770	66924
6.03	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 60 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m	121	1023	1023	123702	1023	123702	720	87026	750	90653	123702
6.04	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	sq.m	12	672	980	11495	672	7877	672	7877	672	7877	7877

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
6.05	Providing and laying polished Kotastoneslab(Polished,Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	Providing and laying polished Kotastoneslab(Polished,Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	sq.m	12	796	980	12201	796	9916	714	8893	821	10227	9916
6.06	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing, polishing, filling up the joints etc complete at G.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at G.F. LEVEL	r.m	134	45	71	9491	71	9491	45	6080	45	6080	6080
6.07	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at F.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at F.F. LEVEL	r.m	88	47	71	6251	71	6251	47	4133	47	4133	4133
6.08	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing ,polishing, filling up the joints etc complete at S.F. LEVEL	r.m	44	48	71	3157	71	3157	48	2152	48	2152	2152
6.09	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	sq.m	21	115	824	17192	115	2392	115	2392	115	2392	2392

ITEM NO	ITEM DESCRIPTION	CONVENTIONAL TECHNOLOGIES	UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES					RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
7	DOOR WINDOW & GATES													
7.01	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level												
	D1		sq.m	19	1401	2341	45506	1401	27237	2116	41143	2116	41143	27237
7.02	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level												
	D1		sq.m	6	1401	2341	15169	1401	9079	2222	14400	2116	13714	9079
7.03	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level												
	W2 1200 x 1600		sq.m	4	1839	2341	8989	1839	7063	1839	7063	1839	7063	7063
7.04	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level												
	W2 1200 x 1600		sq.m	8	1839	2341	17978	1839	14127	1839	14127	1839	14127	14127
	W3 1000 x 1600		sq.m	6	1839	2341	14982	1839	11772	1839	11772	1839	11772	11772
	W1 2000 x 1600		sq.m	3	2544	2341	7491	2544	8142	2544	8142	2544	8142	8142

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RA- DESIGN RATE	AHMEDABAD SOR		ACTUAL RATE ANALYSIS		CONTRACTOR 1		CONTRACTOR 2		RA- DESIGN AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
7.05	Providing and laying Rolling shutters 20 gauge for shops with Galvanized guide channels, suspension shaft, pulley wheels, locking chips, “U” clamps, gears, counter balancing roller spring, helical spring and flat spring conforming to IS 6248 specifications for metal rolling shutters, including painting them with two coats of zinc rich primer. They shall be finished with approved colour and shade prior to handing over (2500X2100)	Providing and laying Rolling shutters 20 gauge for shops with Galvanized guide channels, suspension shaft, pulley wheels, locking chips, “U” clamps, gears, counter balancing roller spring, helical spring and flat spring conforming to IS 6248 specifications for metal rolling shutters, including painting them with two coats of zinc rich primer. They shall be finished with approved colour and shade prior to handing over.	sq.m	21	1399	3162	66402	1399	29386	1399	29386	1399	29386	29386
7.06	Providing and laying steel railing for staircase including 75 dia pipe as top rail and 12 mm square sections as vertical members 150 c/c and 16 mm flats as bottom members etc including cost of two coats of red oxide and painting to give a thorough finish	Providing and laying steel railing for staircase including 75 dia pipe as top rail and 12 mm square sections as vertical members 150 c/c and 16 mm flats as bottom members etc including cost of two coats of red oxide and painting to give a thorough finish	rmt	7	150	150	1124	150	1124	150	1124	150	1124	1124
TOTAL =						1873347		1917466		2174659		2318021		1607612

School Building BOQ:

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
1	EARTH WORK AND EXCAVATION											
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m	67	70	60	4010	175	11695	120	8019	4703
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m	38	38	39	1500	53	2038	60	2307	1449
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m	74	288	306	22769	335	24927	400	29763	21402
1.04	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	Providing and laying pre-construction ANTI-TERMITE TREATMENT as per specifications with 10 years guarantee, in the bottom surface and the sides of the excavation in the soil with plinth beams and under floor	sq.m	241	65	84	20268	80	19302	95	22922	15683
2	CONCRETING											
A	BED WORKS											
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m	18	2271	2297	41277	2500	44925	3500	62896	40811
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m	13	2271	2297	30385	2500	33070	3500	46298	30042

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
B	R.C.C. WORKS											
2.03	Providing and laying RCC M20 grade slab at ground level of 100 mm thickness including finishing the surface, curing etc complete	Providing and laying RCC M20 grade slab at ground level of 100 mm thickness including finishing the surface, curing etc complete	cu.m	9	3591	4415	41430	4500	42228	5500	51612	33701
2.04	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	cu.m	2	3677	4415	7183	4700	7647	5500	8948	5982
2.05	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m	1	3677	4415	4834	4000	4380	5000	5475	4026
2.06	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at GF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At GF level	sq.m	143	765	4415	157483	4000	142680	5000	178350	109125
2.07	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m	1	3745	4415	4834	5000	5475	5600	6132	4100

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
2.08	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at FF level	Providing and laying RCC slab with Concrete grade M20, (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates), level excluding formwork, deshuttering and including curing etc complete. At FF level	sq.m	157	773	4415	173730	5000	196750	5600	220360	121699
C	FORM WORK											
2.09	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m	25	228	218	5522	500	12647	450	11382	5757
2.1	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	30	247	218	6626	550	16694	450	13659	7497
2.11	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	141	247	218	30684	370	52007	450	63252	34719
2.12	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m	25	273	218	5420	580	14400	465	11545	6782
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m	154	273	218	33623	420	64688	465	71619	42073

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
D	REINFORCEMENT WORKS											
2.14	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	Providing and laying Mild steel reinforcement for all RCC works as per structural drawing at Ground level including cutting, bending, binding with GI wire etc. complete at GF level	kgs	226	65	45	10235	60	13557	65	14686	14694
2.15	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs	132	65	45	5991	60	7935	65	8596	8601
2.16	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs	168	65	45	7590	60	10053	65	10891	10896
2.17	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs	1889	65	45	85589	60	113363	65	122809	122871
2.18	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs	159	65	45	7221	65	10361	70	11159	10367
2.19	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF SLAB	kgs	2084	65	45	94419	65	135479	70	145901	135547

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
3	BRICK WORK											
3.01	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth including curing etc complete	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth including curing etc complete	cu.m	23	2688	2524	57558	3500	79814	4000	91216	61308
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m	39	2688	2608	101479	3500	136188	4000	155643	104610
3.03	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at FF level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at FF level	cu.m	43	2688	2608	112880	4000	173130	4500	194771	116363
3.04	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at TERRACE level	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at TERRACE level	cu.m	4	2688	2634	9782	4200	15597	4500	16711	9984
3.05	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	sq.m	19	472	367	6807	225	4173	520	9645	8761

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
3.06	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using common burnt clay bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	sq.m	14	482	371	5138	325	4507	540	7489	6680
4	PLASTER WORKS											
A	INTERIOR PLASTER											
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	524	140	148	77287	269	140856	220	115198	73245
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on GF	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	146	86	155	22560	280	40859	225	32833	12561
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	444	147	148	65497	290	128687	230	102062	65175

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on FF	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	138	90	155	21411	290	40162	230	31853	12517
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. on terrace level upto a height of 3 mts	Providing and applying 20 mm thick PLASTER in Double coat mala (base course 12 mm 1:6 mortar, finishing course 4 mm thick in cement mortar 1:4) on brick wall surfaces in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	16	154	148	2342	269	4269	220	3491	2447
B	EXTERIOR PLASTER											
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:1) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on GF	sq.m	243	161	179	43434	270	65516	280	67942	39164
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:1) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	216	169	179	38586	300	64669	280	60358	36532

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on terrace level upto a height of 3 mts	Providing and applying 20 mm thick SANDFACE PLASTER in Double coat mala (base course 12 mm of CM 1:3 mortar, 8 mm finishing course in CM 1:1) in true line and level finished even and smooth including curing, scaffolding, etc. upto 3 m height on FF	sq.m	31	178	179	5585	330	10297	290	9049	5552
5	PAINTING WORKS											
A	INTERIOR PAINTING											
5.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in GF	sq.m	524	32	52	27176	150	78544	60	31418	16756
5.02	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING surfaces on GF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in GF ON Ceiling	sq.m	146	32	55	8084	150	21889	65	9485	4670
5.03	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on FF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in FF	sq.m	444	36	52	23030	170	75437	70	31062	15975

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
5.04	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on CEILING surfaces on FF level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in FF on ceiling	sq.m	138	36	55	7672	180	24928	80	11079	4986
5.05	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on terrace level	Providing and applying two coats of oil bound distemper of approved quality on wall surfaces and apply putty if necessary after thoroughly brushing the surface free from mortar drops after removing foreign matter also including preparing the surface even and smooth in terrace	sq.m	16	36	57	903	200	3174	90	1428	571
A	EXTERIOR PAINTING											
5.06	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on GF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto GF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	243	43	57	13807	170	41251	90	21839	10434
5.07	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on FF level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto FF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	216	46	57	12266	170	36646	100	21556	9916

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
5.08	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on EXTERNAL surfaces on terrace level	Providing and finishing walls with two coats of emulsion paint of approved brand and quality with an even shade, after brushing; brooming the prior surface to remove all dirt and remains of powdered material & mortar drops, including necessary scaffolding smooth upto FF slab level in exteriors. (including 2 coats of oil bound distemper)	sq.m	31	50	57	1775	190	5928	130	4056	1560
6	FLOORING WORKS											
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	Providing and laying mosaic TILES of 300 x 300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at GF level	sq.m	134	559	812	108451	600	80136	675	90153	74678
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	Providing and laying mosaic TILES of 300 x 300 mm size, for flooring on a bed of cement mortar 1:3 (where 1 part is cement and 3 parts is sand), finished with flush pointing in white cement at FF level	sq.m	128	604	812	103538	620	79056	675	86069	77038

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
6.03	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 60 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m	151	1023	1023	154702	900	136044	1000	151160	154702
6.04	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	sq.m	13	796	980	12426	796	10099	796	10099	10099
6.05	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing, polishing, filling up the joints etc complete at S.F. LEVEL	Providing and laying ceramic skirting of 75 mm over a base of 20 mm thick cement mortar 1:6 (1 cement : 6 coarse sand) including cutting, finishing, polishing, filling up the joints etc complete at S.F. LEVEL	r.m	53	48	71	3756	48	2561	48	2561	2561
6.06	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	r.m	10	115	71	735	115	1187	115	1187	1187

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
6.07	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	sq.m	24	672	980	23402	672	16037	672	16037	16037
7	DOOR WINDOW SHUTTER											
7.01	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level										
	D1 900X 2400		sq.m	4	1401	2341	10113	1401	6053	1401	6053	6053
	D 1200X 2400		sq.m	6	1401	2341	13483	1401	8070	1401	8070	8070
7.02	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level	Providing and applying precast RCC frames for doors of size 5" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level										
	D1 900X 2400		sq.m	4	1401	2341	10113	1401	6053	1401	6053	6053
	D 1200X 2400		nos	6	1401	2341	13483	1401	8070	1401	8070	8070
7.03	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level										

ITEM NO	ITEM DESCRIPTION		UNIT	QUANTITY	RATE	AHD - SOR		CONTRACTOR 1		CONTRACTOR 2		AMOUNT
	ALTERNATIVE TECHNOLOGIES	CONVENTIONAL TECHNOLOGIES				RATE	AMOUNT	RATE	AMOUNT	RATE	AMOUNT	
	W3 1200X1600		sq.m	8	1839	2341	17978	1839	14127	1839	14127	14127
	W4 1700 x 1600		sq.m	5	2544	2341	12734	2544	13841	2544	13841	13841
7.04	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at FF level										
	W3 1200X1600		sq.m	8	1839	2341	17978	1839	14127	1839	14127	14127
	W4 1700 x 1600		sq.m	5	2544	2341	12734	2544	13841	2544	13841	13841
7.05	Providing and laying collapsible door hung from the top by supporting wheels fitted in steel hangers of substantial design, including wheels of low friction type, the rail upon which the supporting wheels run shall be a flat bar of steel atleast 75mmx16mm in section, on which a steel runner bar 16mmx16mm in section fixed by rivets at 225mm center to carry grooved supporting wheels and all fixtures and details of frame shall be as per IS 3614 (Part-I)	Providing and laying collapsible door hung from the top by supporting wheels fitted in steel hangers of substantial design, including wheels of low friction type, the rail upon which the supporting wheels run shall be a flat bar of steel atleast 75mmx16mm in section, on which a steel runner bar 16mmx16mm in section fixed by rivets at 225mm center to carry grooved supporting wheels and all fixtures and details of frame shall be as per IS 3614 (Part-I)										
	SCHOOL ENTRY		sq.m	8	2691	3412	26614	2691	20990	2691	20990	20990
	TOILET SIDE ENTRY		sq.m	7	2691	2691	18375	2691	18375	2691	18375	18375
7.06	Providing and erecting M.S. railing with vertical supports as square sections 10x10 mm and handrail of pipe of dia 50 mm etc complete	Providing and erecting M.S. railing with vertical supports as square sections 10x10 mm and handrail of pipe of dia 50 mm etc complete	rmt	7	150	150	1124	150	1124	150	1124	1124
TOTAL =						2029421		2632611		2640701		1873266



Rate
Analysis

17

EARTHWORK AND EXCAVATION:

Item no.	Item Description	Unit	Quantity	Rate	Amount
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m		70.38	
	for 10 cu.m				
A	Materials				
B	Labour				
	Skilled				
	Unskilled	nos	4.00	150.00	600.00
	Total of A + B				600.00
C	Water and Electricity (2% of A + B)				0.00
D	Tools and equipments (2% of A + B)				12.00
E	Scaffolding (2% of A + B)				0.00
F	Overheads & Profits (15% of A+B+C+D+F)				91.80
	TOTAL COST OF 10 cu.m of EXCAVATION =				703.80
	TOTAL COST OF per cu.m of EXCAVATION =				70.38

Item no.	Item Description	Unit	Quantity	Rate	Amount
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m		37.67	
	for 10 cu.m				
A	Materials				
B	Labour				
	Skilled				
	Unskilled	nos	2.10	150.00	315.00
	Total of A + B				315.00
C	Water and Electricity (2% of A + B)				6.30
D	Tools and equipments (2% of A + B)				6.30
E	Scaffolding (2% of A + B)				0.00
F	Overheads & Profits (15% of A+B+C+D+F)				49.14
	TOTAL COST OF 10 cu.m of BACKFILLING =				376.74
	TOTAL COST OF per cu.m of BACKFILLING =				37.67

Item no.	Item Description	Unit	Quantity	Rate	Amount
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m		287.64	
	for 10 cu.m				
A	Materials				
	Morrum sand 10 cu.m + 10 % wastage	cu.m	11	190	2090
B	Labour				
	Skilled				
	Unskilled	nos	2.10	150.00	315.00
	Total of A + B				2405.0
C	Water and Electricity (2% of A + B)				48.10
D	Tools and equipments (2% of A + B)				48.10
E	Scaffolding (2% of A + B)				0.00
F	Overheads & Profits (15% of A+B+C+D+F)				375.18
TOTAL COST OF 10 cu.m of BACKFILLING =					2876.3
TOTAL COST OF per cu.m of BACKFILLING =					287.64

RCC WORKS

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 4 parts is fine aggregates, 8 parts is aggregates) including curing ramming etc.			2271		
	For 10 cu.m					
A	Materials					
	Cement	bags	34.14	225.00	7682.53	
	Sand	cu.m	5.14	230.00	1183.26	
	Aggregates	cu.m	10.29	650.00	6688.00	
B	Labour					
	Skilled	nos	1.00	250.00	250.00	
	Unskilled	nos	13.30	150.00	1995.00	
	Bhishti	nos	7.00	150.00	1050.00	
	Vibrator	nos	0.70	200.00	140.00	
	Total of A + B				18988.79	
C	Water & Elec. (2% of A + B)				379.78	
D	TEP (2% of A + B)				379.78	
	Total A+B+C+D				19748.34	
E	Over heads & Profits (15% of A+B+C+D)				2962.25	
	Therefore total cost in Rs 10 cu.m of PCC=				22710.59	
	THEREFORE UNIT COST OF PCC =				2271	/cu.m

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork			3677		
	For 10 cu.m					
A	Materials					
	Cement	bags	80.34	225.00	18076.25	
	Sand	cu.m	4.56	230.00	1048.80	
	Aggregates	cu.m	9.12	650.00	5928.00	
B	Labour*					
	Skilled	nos	2.00	300.00	600.00	
	Unskilled	nos	25.00	150.00	3750.00	
	Bhishti	nos	8.00	150.00	1200.00	
	Vibrator	nos	0.70	200.00	140.00	
	Total of A + B				30743.05	
C	Water & Elec. (2% of A + B)				614.86	
D	TEP (2% of A + B)				614.86	
	Total A+B+C+D				31972.78	
E	Over heads & Profits (15% of A+B+C+D)				4795.92	
	Therefore total cost in Rs 10 cu.m of PCC=				36768.69	
	THEREFORE UNIT COST OF PCC =				3677	/cu.m

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

Sr. No	Item description	Unit	Quantity	Rate	Amount
2.05	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with MANGLORE TILES 230 x 450 x 25 mm as a filler material and the same tiles placed one over the other as per drawing and sides blocked with cement mortar excluding formwork, reinforcement, deshuttering and including curing at GF level			287.82	
1	CONCRETE	m ³	0.80		
A1	For concrete & manglore tiles				
	slab size = 3 x 3.7 m, M20 grade				
	Manglore tiles	nos.	78	6.00	468.76
	Cement	bags	6.76	225.00	1521.60
	Sand	m ³	0.38	230.00	88.10
	Aggregates	m ³	0.77	650.00	497.95
B1	Labour*				
	Skilled		0.24	300.00	72.29
	Unskilled		0.84	150.00	126.50
	Bhisthi		0.67	150.00	101.20
	Compaction		0.05	200.00	9.45
	Total of A1 + B1				2417.09
C1	Water and Electricity (2% of A1 + B1)				48.34
D1	Tools and equipments (2% of A1 + B1)				48.34
E1	Scaffolding (2% of A1 + B1)				48.34
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				384.32
	TOTAL COST OF 0.8 m³CONCRETE				2946.43
	Therefore unit cost of concrete slab (Rs.) =				3668.45
	Therefore cost per square meter of SLAB				287.82

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

Sr. No	Item description	Unit	Quantity	Rate	Amount
2.06	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at FF level (Concrete block filler slab – School and Community center slabs)	sq.m		773.18	
1	CONCRETE	m³	12.54		
A1	For concrete & MANGLORE TILES				
	slab size = 5.23 x 14.20 m, M20 grade				
	concrete blocks	nos.	735	14.00	10290.00
	Cement	bags	106.01	225.00	23852.44
	Sand	m ³	6.00	230.00	1381.03
	Aggregates	m ³	12.01	650.00	7805.83
B1	Labour*				
	Skilled		4.14	300.00	1241.53
	Unskilled		14.48	150.00	2172.68
	Bhisthi		11.59	150.00	1738.14
	Compaction		0.81	200.00	162.23
	Add 10% labour				531.46
	Total of A1 + B1				49175.34
C1	Water and Electricity (2% of A1 + B1)				983.51
D1	Tools and equipments (2% of A1 + B1)				983.51
E1	Scaffolding (2% of A1 + B1)				983.51
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				7818.88
	TOTAL COST CONCRETE				59944.74
	Therefore unit cost of concrete (Rs.) =				773.18

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

\$ Item number 2.06 for Community Center and school concrete filler slab.

Item no.	Item Description	Unit	Quantity	Rate	Amount
2.12	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m		227.62	
	for 3.6 sq.m				
A1	Materials				
	Ply (15 reps)	sq.m	3.96	500.00	131.84
	Wooden battens (20 reps)	cu.m	0.10	28000.00	138.43
	Props (20 reps)	nos	31.96	80.00	127.84
	nails+binding wire	kgs	1.00	58.00	58.00
	Releasing agents	lts	0.67	32.00	21.52
B1	Labour				
	Skilled	nos	0.46	300.00	138.35
	Unskilled	nos	0.46	150.00	69.17
	Total of A1 + B1				685.14
C1	Water and Electricity (2% of A1 + B1)				13.70
D1	Tools and equipments (2% of A1 + B1)				13.70
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				106.88
Total cost of 3.6 sq.m =					819.42
Total UNIT cost =					227.62

Design Package Using Alternate Building Materials & Technologies, West Zone

Item no.	Item Description	Unit	Quantity	Rate	Amount
2.13	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m		247.01	
	for 3.6 sq.m				
A1	Materials				
	Ply (15 reps)	sq.m	4.75	500.00	158.20
	Wooden battens (20 reps)	cu.m	0.12	28000.00	166.11
	Props (20 reps)	nos	31.96	80.00	127.84
	nails+binding wire	kgs	1.00	58.00	58.00
	Releasing agents	lts	0.81	32.00	25.82
B1	Labour				
	Skilled	nos	0.46	300.00	138.35
	Unskilled	nos	0.46	150.00	69.17
	Total of A1 + B1				743.49
C1	Water and Electricity (2% of A1 + B1)				14.87
D1	Tools and equipments (2% of A1 + B1)				14.87
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				115.98
Total cost of 3.6 sq.m =					889.22
Total UNIT cost =					247.01

*Labour cost increases by 10% for each floor. Hence, RA for other floors are not included.

Sr. No	Item description	Unit	Quantity	Rate	Amount
2.14	Providing and erecting FORM WORK of steel plates as bottom and 12 mm ply as sides including deshuttering etc. Also removal of the same, complete For GF slab	sq.m		273.81	
A1	Materials				
	Stuttering plates (35 rep.)	nos.	17.80	400.00	203.43
	Wooden battens (15 rep.)	m ³	0.14	20000.00	190.85
	Ply (10 rep.)	sq.m	1.58	690.00	108.69
	Props (15 rep.)	nos.	18.00	80.00	96.00
	Nails	kg	0.16	55.00	8.80
	Binding wire	kg	0.16	58.00	9.28
	Shuttering oil	lit	0.16	32.00	5.12
B1	Labour				
	Skilled	nos.	2.57	300.00	771.91
	Unskilled	nos.	2.24	500.00	1118.71
	Total of A1 + B1				2512.79
C1	Water and Electricity (2% of A1 + B1)				50.26
D1	Tools and equipments (2% of A1 + B1)				50.26
E1	Scaffolding (2% of A1 + B1)				50.26
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				399.53
	Total cost(Rs)				3063.09
	Therefore unit cost of formwork =				273.81

*Labour cost increases by 10% for each floor. Hence, RA for other floors are not included.

Item no.	Item Description	Unit	Quantity	Rate	Amount
2.21	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs		65.03	
	For 100 KG				
A	For concrete				
	Reinforcement	kgs	102.00	45.00	4590.00
	Binding wire	kgs	1.50	65.00	97.50
B	Labour				
	Skilled	nos	1.50	300.00	450.00
	Unskilled	nos	2.00	150.00	300.00
	Total of A + B				5437.50
C	Water and Electricity (2% of A + B)				108.75
D	Tools and equipments (2% of A + B)				108.75
E	Scaffolding (2% of A + B)				0.00
F	Overheads & Profits (15% of A+B+C+D+F)				848.25
TOTAL COST OF 100 kg of rebar cutting and fixing =					6503.25
TOTAL COST OF per kg of rebar cutting and fixing =					65.03

Item no.	Item Description	Unit	Quantity	Rate	Amount
2.22	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs		65.03	
	For 100 KG				
A	For concrete				
	Reinforcement	kgs	102.00	45.00	4590.00
	Binding wire	kgs	1.50	65.00	97.50
B	Labour				
	Skilled	nos	1.50	300.00	450.00
	Unskilled	nos	2.00	150.00	300.00
	Total of A + B				5437.50
C	Water and Electricity (2% of A + B)				108.75
D	Tools and equipments (2% of A + B)				108.75
E	Scaffolding (2% of A + B)				0.00
F	Overheads & Profits (15% of A+B+C+D+F)				848.25
	TOTAL COST OF 100 kg of rebar cutting and fixing =				6503.25
	TOTAL COST OF per kg of rebar cutting and fixing =				65.03

Item no.	Item Description	Unit	Quantity	Rate	Amount
2.23	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF SLAB	kgs		65.03	
	For 100 KG				
A	For concrete				
	Reinforcement	kgs	102.00	45.00	4590.00
	Binding wire	kgs	1.50	65.00	97.50
B	Labour				
	Skilled	nos	1.50	300.00	450.00
	Unskilled	nos	2.00	150.00	300.00
	Total of A + B				5437.50
C	Water and Electricity (2% of A + B)				108.75
D	Tools and equipments (2% of A + B)				108.75
E	Scaffolding (2% of A + B)				0.00
F	Overheads & Profits (15% of A+B+C+D+F)				848.25
TOTAL COST OF 100 kg of rebar cutting and fixing =					6503.25
TOTAL COST OF per kg of rebar cutting and fixing =					65.03

BRICKWORK

ITEM NO	DESCRIPTION	UNIT	Q	R	A	
3.03	Providing and laying brickwork in Rat-Trap bond using FLYASH bricks having 7.0 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc.					
A	Materials					
	Bricks	nos	1252.90	3.00	3758.70	
	Cement	bags	2.93	225.00	659.89	
	Sand	cu.m	0.40	230.00	92.51	
B	Labour					
	Skilled	nos	1.60	300.00	479.66	
	Unskilled	nos	1.79	150.00	268.04	
	Bhishti	nos	0.38	150.00	56.43	
	Total of A + B				5315.23	
C	Water & Elec. (2% of A + B)				106.30	
D	TEP (2% of A + B)				106.30	
	Total A+B+C+D				5527.84	
E	Over heads & Profits (15% of A+B+C+D)				829.18	
	Therefore total cost in Rs for 2.16 cu.m of RAT TRAP BOND =				6357.02	
	THEREFORE UNIT COST =				675	/sq.m

Design Package Using Alternate Building Materials & Technologies, West Zone

ITEM NO	DESCRIPTION	UNIT	Q	R	A	
3.03	Providing and laying brickwork in Rat-Trap bond using FLYASH bricks having 7.0 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc.			2688		
	for 10 cu.m					
A	Materials					
	Bricks	nos	4314	3.00	12941.18	
	Cement	bags	16.83	225.00	3787.71	
	Sand	cu.m	2.56	230.00	589.90	
B	Labour					
	Skilled	nos	8.20	300.00	2460.00	
	Unskilled	nos	16.00	150.00	2400.00	
	Bhishti	nos	2.00	150.00	300.00	
	Total of A + B				22478.79	
C	Water & Elec. (2% of A + B)				449.58	
D	TEP (2% of A + B)				449.58	
	Total A+B+C+D				23377.94	
E	Over heads & Profits (15% of A+B+C+D)				3506.69	
	Therefore total cost in Rs 10 cu.m of brickwork =				26884.63	
	THEREFORE UNIT COST =				2688	/cu.m
	THEREFORE UNIT COST / sq.m				2858.547	/sq.m

FLOORING WORKS

Item no.	Item Description	Unit	Quantity	Rate	Amount
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m		559.13	
	For 100 sq.m				
A1	For concrete				
	Cement	bags	25.99	225.00	5848.20
	Sand	m ³	2.01	230.00	461.47
	Aggregates	m ³	4.01	650.00	2608.32
B1	Labour*				
	Skilled	nos	17.00	300.00	5100.00
	Unskilled	nos	133.00	150.00	19950.00
	Bhisthi	nos	70.00	150.00	10500.00
	Compaction	nos	7.00	200.00	1400.00
	Total of A1 + B1				45867.99
C1	Water and Electricity (2% of A1 + B1)				917.36
D1	Tools and equipments (2% of A1 + B1)				917.36
E1	Scaffolding (2% of A1 + B1)				917.36
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				7293.01
TOTAL COST OF 100 sq.m of CONCRETE					55913.08
Therefore unit cost of concrete (Rs.) =					559.13

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

Item no.	Item Description	Unit	Quantity	Rate	Amount
6.05	Providing and laying kota stone kitchen platform as per drawings on brickwork 75 mm thick including plastering the walls by cement mortar 1:4, kota stone polished on one side including curing, etc., complete as directed on GF level	nos.		2781.23	
	FOR 1 KITCHEN PLATFORM				
A1	For concrete				
	Cement	bags	0.64	225.00	143.27
	Sand	m ³	0.10	230.00	22.17
	Kota stone	sq.m	2.04	450.00	918.00
	Bricks	nos.	48.00	4.00	192.00
B1	Labour*				
	Skilled	nos	1.50	300.00	450.00
	Unskilled	nos	4.00	150.00	600.00
	Total of A1 + B1				2325.44
C1	Water and Electricity (2% of A1 + B1)				46.51
D1	Tools and equipments (2% of A1 + B1)				46.51
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				362.77
TOTAL COST OF KITCHEN PLATFORM =					2781.23

*Labour cost increases by 10% for each floor. Hence, RA for other floors are not included.

Item no.	Item Description	Unit	Quantity	Rate	Amount
6.09	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at FF	nos.		6690.24	
	FOR GF to FF (one storey height)				
A1	For concrete				
	Cement	bags	1.79	225.00	401.69
	Sand	m ³	0.27	230.00	62.15
	Kota stone	sq.m	8.40	450.00	3780.00
B1	Labour*				
	Skilled	nos	2.50	300.00	750.00
	Unskilled	nos	4.00	150.00	600.00
	Total of A1 + B1				5593.85
C1	Water and Electricity (2% of A1 + B1)				111.88
D1	Tools and equipments (2% of A1 + B1)				111.88
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				872.64
TOTAL COST PER ITEM =					6690.24
TOTAL COST /SQ.M =					796.46

*Labour cost increases by 10% for each floor. Hence, RA for other floors are not included.

Item no.	Item Description	Unit	Quantity	Rate	Amount
6.11	Providing and laying polished kota stone (25 mm) over 40 mm thick base of cement mortar 1:6 (where is part is cement, 6 parts is coarse sand) laid over and jointed with grey cement slurry including rubbing and polishing etc. at GF level for wash	Nos.		677.84	
	FOR 100 SQ.M				
A1	Materials				
	Cement	bags	26.51	225.00	5965.16
	Sand	m ³	6.02	230.00	1384.42
	Kota stone	sq.m	105.00	450.00	47250.00
B1	Labour*				
	Skilled	nos	4.00	300.00	1200.00
	Unskilled	nos	5.84	150.00	876.00
	Total of A1 + B1				56675.58
C1	Water and Electricity (2% of A1 + B1)				1133.51
D1	Tools and equipments (2% of A1 + B1)				1133.51
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				8841.39
Total cost of 100 sq.m =					67783.99

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

ITEM NO	ITEM DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	REMARKS
6.14	Providing and laying glazed tile flooring in toilet of tile size (150 x 150 mm) over a base of 30 mm cement mortar 1:3 for toilet flooring including flushing the tiles with white cement slurry including cleaning the surface to give an even finish etc complete on GF	sq.m			462.74	
	For 100 sq.m					
A	Materials					
	Mosaic	sq.m	105.00	269.11	28256.19	
	Cement	bags	30.12	225.00	6775.92	
	Sand	cu.m	3.40	230.00	782.72	
	White cement	kgs	15.00	18.00	270.00	
B	Labour					
	Skilled	nos	4.00	250.00	1000.00	
	Unskilled	nos	5.84	150.00	876.00	
	Total of A + B				37960.82	
C	Water & Elec. (2% of A + B)				759.22	
D	TEP (2% of A + B)				759.22	
E	Scaffolding (2% of A + B)				759.22	
	Total A+B+C+D				40238.47	
E	Over heads & Profits (15% of A+B+C+D)				6035.77	
	Therefore total cost in Rs 100 sq.m =				46274.24	
	THEREFORE UNIT COST for GF =				462.74	sq.m

*Labour cost increases by 10% for each floor. Hence, RA for other floors are not included.

DOOR WINDOW SHUTTERS

Item no.	Item Description	Unit	Quantity	Rate	Amount
7.01	Providing and applying 25 mm Panel shutter for doors including 35 X 50 mm wood frame and including fixing necessary hardware such as hinges, aldrops, including fixing in position on GF level			2863.87	
	FOR 60 doors (D1,D2)				
A1	Materials				
	Wood	cu.m	0.66	40000.00	26253.00
	25 thick ply	sq.m	103.09	699.68	72126.91
	Hardware	LS	60.00	300.00	18000.00
B1	Labour*				
	Skilled	nos	79.57	300.00	23869.99
	Unskilled	nos	22.82	150.00	3422.54
	Total of A1 + B1				143672.44
C1	Water and Electricity (2% of A1 + B1)				2873.45
D1	Tools and equipments (2% of A1 + B1)				2873.45
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				22412.90
TOTAL COST OF 60 doors =					171832.23
TOTAL COST OF per door =					2863.87
TOTAL COST OF per sq.m =					1515.28

*Labour cost increases by 10% for each floor. Hence, RA for other floors are not included.

Item no.	Item Description	Unit	Quantity	Rate	Amount
7.05	Providing and applying precast RCC frames for windows of size 4" x 2.5" and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	sq.m		1839.45	
	FOR 10 windows (W1, W2, W3)				
A1	Materials				
	Concrete frame	nos.	10	350	3500
	STEEL	kg	80.025	50	4001.25
	12 thick ply	sq.m	2.30	650.00	1493.57813
	Glass	sq.m	2.30	650.00	1493.57813
	Hinges	LS	60.00	50.00	3000
	Screws	kg	0.20	60.00	12
	Handle	nos.	20.00	50.00	1000
	tower bolt	nos.	20.00	60.00	1200
	fevicol + nails	LS		100.00	100.00
B1	Labour*				
	Skilled	nos	1.62	300.00	486.00
	Unskilled	nos	2.16	150.00	324.00
	Total of A1 + B1				16610.41
C1	Water and Electricity (2% of A1 + B1)				332.21
D1	Tools and equipments (2% of A1 + B1)				332.21
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				2591.22
TOTAL COST OF 10 w/d =					19866.05
TOTAL COST OF per w/d =					1986.60
TOTAL COST OF per sq.m =					1839.45

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

Item no.	Item Description	Unit	Quantity	Rate	Amount
7.05	Providing and applying precast RCC frames for windows of size 4” x 2.5” and shutter of ISA 20x20 as per drawing including fixing of builders hardware (tower bolt, hinges, stopper) etc complete at GF level	sq.m		2079.05	
	FOR 10 windows (W4)				
A1	Materials				
	Concrete frame	nos.	10	350	3500
	STEEL	kg	41.00	50	2050.32
	12 thick ply	sq.m	3.23	650.00	2102.34
	Glass	sq.m	3.23	650.00	2102.34
	Hinges	LS	30.00	50.00	1500
	Screws	kg	0.20	60.00	12
	Handle	nos.	1.00	50.00	50
	tower bolt	nos.	1.00	60.00	60
	fevicol + nails	LS		100.00	100.00
B1	Labour*				
	Skilled	nos	1.04	300.00	310.50
	Unskilled	nos	1.38	150.00	207.00
	Total of A1 + B1				11994.51
C1	Water and Electricity (2% of A1 + B1)				239.89
D1	Tools and equipments (2% of A1 + B1)				239.89
E1	Scaffolding (2% of A1 + B1)				0.00
F1	Overheads & Profits (15% of A1+B1+C1+D1+F1)				1871.14
TOTAL COST OF 10 w/d =					14345.43
TOTAL COST OF per w/d =					1434.54
TOTAL COST OF per sq.m =					2079

*Labour cost increases by 10% for each floor. Hence, RA for other floors is not included.

COMPOUND WALL & SITTING

Item no.	Item Description	Unit	Quantity	Rate	Amount	REMARKS
8.01	Providing and erecting Pre-cast R.C.C plank and joist compound wall as per drawing, with joist placed at 1.535 m c/c dimensions (web thk. 35 mm width 30 mm and of total width 90 mm) 1.5 m height and plank dimension (length: 1.5m and width 0.3m and of thk. 30mm) etc. complete				1280	
	for 1.r.m					
A	Materials					
	Concrete- for Joist	cum	0.00945	3500.00	33.08	
	Concrete- for Plank	cu.m	0.0135	3500.00	47.25	
	Steel	kgs	4.239	65.00	275.54	
B	Labour					
	Skilled	nos	1.30	250.00	325.00	
	Unskilled	nos	1.30	150.00	195.00	
	Bhishti	nos	1.30	150.00	195.00	
	Total of A + B				1070.86	
C	Water & Elec. (2% of A + B)				21.42	
D	TEP (2% of A + B)				21.42	
	Total A+B+C+D				1113.69	
E	Over heads & Profits (15% of A+B+C+D)				167.05	
	Therefore total cost in Rs./sq.m=				1280.75	
THEREFORE UNIT COST COMPOUND WALL PER RM =					1280	/rm

COMPOUND WALL & SITTING

Item no.	Item Description	Unit	Quantity	Rate	Amount	REMARKS
8.02	Providing and constructing benches of (2.76m x 0.35m) with brick masonry of 230 mm above ground level and 350 mm brick masonry below ground level of bricks 50 kg/cm ² and PCC of 75 mm thk. Having offset of 100 mm on both the sides including base of kotastone on top of brick masonry of 25 mm thk. etc. complete				996	
	for 1.r.m					
	For 10 cu.m					
A	Materials					
	Cement	bags	0.33	225.00	74.97	
	Sand	cu.m	0.08	230.00	17.32	
	Bricks	nos.	118.22	4.00	472.87	
	Kotastone	sq.m	0.97	650.00	627.90	
B	Labour					
	Skilled	nos	9.90	250.00	2475.00	
	Unskilled	nos	19.40	150.00	2910.00	
	Bhishti	nos	2.10	150.00	315.00	
	Total of A + B				6893.06	
C	Water & Elec. (2% of A + B)				137.86	
D	TEP (2% of A + B)				137.86	
	Total A+B+C+D				7168.79	
E	Over heads & Profits (15% of A+B+C+D)				1075.32	
	Therefore total cost in Rs./sq.m=				8244.10	
THEREFORE UNIT COST BENCH PER SQ. M =					996	/cu.m

Note: The estimate and rate analysis are based on prevailing market rate for the year 2011 for Gujarat.

**RESIDENTIAL UNITS****EARTHWORK AND EXCAVATION**

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of use-ful materials, and lead upto 30 mts etc. complete	cu.m					437.00	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		4	6.19	0.8	0.90	17.83	c/c
	Grid line 2							
	btwn C-G		4	5.39	0.8	0.90	15.52	in/in
	Grid line 3							
	btwn A-C		4	0.67	0.8	0.90	1.93	in/c
	Grid line 3							
	btwn G-I		4	0.67	0.8	0.90	1.93	c/c
	Grid line 5							
	btwn A-I		4	9.13	0.8	0.90	26.29	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.8	0.90	10.22	o/c
	Grid line 6							
	btwn E-G		4	3.55	0.8	0.90	10.22	c/c
	TOTAL =						83.95	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	3.77	0.80	0.90	21.69	c/c
	Grid line A							
	btwn 3-5		4	2.17	0.80	0.90	6.25	c/c
	Grid line B							
	btwn 5-6		8	1.64	0.80	0.90	9.46	in/in
	Grid line C							
	btwn 1-4		8	6.05	0.80	0.90	34.84	c/in
	Grid line D							
	btwn 5-6		8	1.64	0.80	0.90	9.46	in/in
	Grid line E							
	btwn 1-2		4	2.13	0.80	0.90	6.13	in/in
	Grid line E							
	btwn 2-5		4	2.72	0.80	0.90	7.82	in/in
	TOTAL =						95.66	
TOTAL 8 UNITS =							175.16	
TOTAL 4 UNITS=							86.68	
TOTAL 20 UNITS =							437.00	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	H	Q	REMARKS
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m				159.06	
	BEDROOM		20.00	7.74	0.25	38.70	
	DRAWING		20.00	9.41	0.25	47.06	
	KITCHEN		20.00	5.27	0.25	26.33	
	BATH		20.00	2.46	0.25	12.28	
	WASH		20.00	1.32	0.25	6.62	
	STAIR CABIN		5.00	7.68	0.25	9.60	
	PASSAGE		5.00	14.79	0.25	18.49	
	TOTAL =					159.0625	
TOTAL FILLING 20 UNITS (cu.m) =						159.06	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	H	Q	REMARKS	
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m					13.05	
A	HORIZONTAL							
	Grid line 1							
	btwn A-F		2	7.02	0.8	0.08	0.8424	out/out
	Grid line 2							
	btwn A-B		2	5.42	0.8	0.08	0.6504	in/in
	Grid line 3							
	btwn A-B		2	1.60	0.8	0.08	0.192	out/c
	Grid line 3							
	btwn F-G		2	1.60	0.8	0.08	0.192	out/c
	Grid line 4							
	btwn A-G		2	10.22	0.8	0.08	1.2264	c/c
	Grid line 5							
	btwn A-C		2	4.38	0.8	0.08	0.5256	out/out
	Grid line 5							
	btwn E-G		2	4.38	0.8	0.08	0.5256	out/out
	Grid line 6							
	btwn A-C		2	4.38	0.8	0.08	0.5256	out/out
	Grid line 6							
	btwn E-G		2	4.38	0.8	0.08	0.5256	out/out
	Grid line 7							
	btwn A-G		2	10.22	0.8	0.08	1.2264	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	H	Q	REMARKS	
	Grid line 8							
	btwn A-B		2	1.60	0.8	0.08	0.192	out/c
	Grid line 8							
	btwn F-G		2	1.60	0.8	0.08	0.192	out/c
	Grid line 9							
	btwn A-B		2	5.42	0.8	0.08	0.6504	in/in
	Grid line 10							
	btwn A-F		1	7.02	0.8	0.08	0.4212	out/out
	TOTAL =						7.88	
B	VERTICAL							
	Grid line A							
	btwn 3-4		8	1.18	0.80	0.08	0.57	c/c
	Grid line B							
	btwn 1-4		8	6.21	0.80	0.08	2.98	in/in
	Grid line C							
	btwn 4-5		8	1.53	0.80	0.08	0.73	in/in
	Grid line D							
	btwn 1-2		4	2.04	0.80	0.08	0.49	in/in
	Grid line D							
	btwn 2-4		4	2.58	0.80	0.08	0.62	in/in
	TOTAL =						5.38	
	TOTAL 8 UNITS (cu.m) =						5.38	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =							0.4212
	TOTAL 4 UNITS (cu.m) =						2.27	
	TOTAL 20 UNITS (cu.m) =						11.35	

RCC WORKS

PCC works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m					35.43	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		4	6.19	0.8	0.08	1.49	c/c
	Grid line 2							
	btwn C-G		4	5.39	0.8	0.08	1.29	in/in
	Grid line 3							
	btwn A-C		4	0.67	0.8	0.08	0.16	in/c
	Grid line 3							
	btwn G-I		4	0.67	0.8	0.08	0.16	c/c
	Grid line 5							
	btwn A-I		4	9.13	0.8	0.08	2.19	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.8	0.08	0.85	o/c
	Grid line 6							
	btwn E-G		4	3.55	0.8	0.08	0.85	c/c
	TOTAL =							7.00

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	3.77	0.80	0.08	1.81	c/c
	Grid line A							
	btwn 3-5		4	2.17	0.80	0.08	0.52	c/c
	Grid line B							
	btwn 5-6		4	1.64	0.80	0.08	0.39	in/in
	Grid line C							
	btwn 1-4		8	6.05	0.80	0.08	2.90	c/in
	Grid line D							
	btwn 5-6		8	1.64	0.80	0.08	0.79	in/in
	Grid line E							
	btwn 1-2		4	2.13	0.80	0.08	0.51	in/in
	Grid line E							
	btwn 2-5		4	2.72	0.80	0.08	0.65	in/in
	TOTAL =						7.58	
TOTAL 8 UNITS =							14.20	
TOTAL 4 UNITS =							7.03	
TOTAL 20 UNITS =							35.43	

Lintel works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m					17.21	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		3	6.19	0.23	0.09	0.38	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	0.09	0.49	in/in
	Grid line 3							
	btwn A-C		4	1.355	0.23	0.09	0.11	in/c
	Grid line 3							
	btwn G-I		4	1.355	0.23	0.09	0.11	c/c
	Grid line 5							
	btwn A-I		4	9.129	0.23	0.09	0.76	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	0.09	0.29	o/c
	Grid line 6							
	btwn A-D		4	3.55	0.23	0.09	0.29	c/c
	Grid line 6							
	btwn A-D		8	1.469	0.115	0.09	0.12	c/c
	TOTAL =							2.57

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	4.335	0.23	0.09	0.72	c/c
	Grid line A							
	btwn 3-5		4	2.4	0.23	0.09	0.20	c/c
	Grid line B							
	btwn 5-6		8	2.213	0.23	0.09	0.37	in/in
	Grid line C							
	btwn 1-4		8	6.334	0.23	0.09	1.05	c/in
	Grid line D							
	btwn 5-6		8	2.213	0.23	0.09	0.37	in/in
	Grid line E							
	btwn 1-2		4	2.7	0.23	0.09	0.22	in/in
	Grid line E							
	btwn 2-5		4	3.287	0.23	0.09	0.27	in/in
	TOTAL =						3.19	
	TOTAL 8 UNITS =						5.67	
	TOTAL 4 UNITS =						2.78	
	TOTAL 20 UNITS =						14.11	
	OVERHANGINGS							
	Windows							
	W4		20.00		0.48	0.09	0.86	
	W1		20.00		0.66	0.09	1.19	
	W3		20.00		0.58	0.09	1.04	
	TOTAL =						3.09	
	TOTAL LINTEL 20 UNITS (cu.m) =						17.21	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.06	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m					17.21	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		3	6.19	0.23	0.09	0.38	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	0.09	0.49	in/in
	Grid line 3							
	btwn A-C		4	1.355	0.23	0.09	0.11	in/c
	Grid line 3							
	btwn G-I		4	1.355	0.23	0.09	0.11	c/c
	Grid line 5							
	btwn A-I		4	9.129	0.23	0.09	0.76	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	0.09	0.29	o/c
	Grid line 6							
	btwn A-D		4	3.55	0.23	0.09	0.29	c/c
	Grid line 6							
	btwn A-D		8	1.469	0.115	0.09	0.12	c/c
	TOTAL =							2.57

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	4.335	0.23	0.09	0.72	c/c
	Grid line A							
	btwn 3-5		4	2.4	0.23	0.09	0.20	c/c
	Grid line B							
	btwn 5-6		8	2.213	0.23	0.09	0.37	in/in
	Grid line C							
	btwn 1-4		8	6.334	0.23	0.09	1.05	c/in
	Grid line D							
	btwn 5-6		8	2.213	0.23	0.09	0.37	in/in
	Grid line E							
	btwn 1-2		4	2.7	0.23	0.09	0.22	in/in
	Grid line E							
	btwn 2-5		4	3.287	0.23	0.09	0.27	in/in
	TOTAL =						3.19	
	TOTAL 8 UNITS =						5.67	
	TOTAL 4 UNITS =						2.78	
	TOTAL 20 UNITS =						14.11	
	OVERHANGINGS							
	Windows							
	W4		20.00		0.48	0.09	0.86	
	W1		20.00		0.66	0.09	1.19	
	W3		20.00		0.58	0.09	1.04	
	TOTAL =						3.09	
	TOTAL LINTEL 20 UNITS (cu.m) =						17.21	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.08	Providing and laying in line and level RCC LINTEL at SF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m					17.21	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		3	6.19	0.23	0.09	0.38	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	0.09	0.49	in/in
	Grid line 3							
	btwn A-C		4	1.355	0.23	0.09	0.11	in/c
	Grid line 3							
	btwn G-I		4	1.355	0.23	0.09	0.11	c/c
	Grid line 5							
	btwn A-I		4	9.129	0.23	0.09	0.76	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	0.09	0.29	o/c
	Grid line 6							
	btwn A-D		4	3.55	0.23	0.09	0.29	c/c
	Grid line 6							
	btwn A-D		8	1.469	0.115	0.09	0.12	c/c
	TOTAL =							2.57

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	4.335	0.23	0.09	0.72	c/c
	Grid line A							
	btwn 3-5		4	2.4	0.23	0.09	0.20	c/c
	Grid line B							
	btwn 5-6		8	2.213	0.23	0.09	0.37	in/in
	Grid line C							
	btwn 1-4		8	6.334	0.23	0.09	1.05	c/in
	Grid line D							
	btwn 5-6		8	2.213	0.23	0.09	0.37	in/in
	Grid line E							
	btwn 1-2		4	2.7	0.23	0.09	0.22	in/in
	Grid line E							
	btwn 2-5		4	3.287	0.23	0.09	0.27	in/in
	TOTAL =						3.19	
	TOTAL 8 UNITS =						5.67	
	TOTAL 4 UNITS =						2.78	
	TOTAL 20 UNITS =						14.11	
	OVERHANGINGS							
	Windows							
	W4		20.00		0.48	0.09	0.86	
	W1		20.00		0.66	0.09	1.19	
	W3		20.00		0.58	0.09	1.04	
	TOTAL =						3.09	
	TOTAL LINTEL 20 UNITS (cu.m) =						17.21	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.10	Providing and laying in line and level RCC LINTEL for STAIR CABIN at TERACE level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m					1.58	
	TERRACE							
	CABIN		5	12.42	0.23	0.09	1.29	out/out
	Openings		5	1.2	0.55	0.09	0.30	
	TOTAL =						1.58	
	TOTAL LINTEL ON WALLS 20 UNITS (cu.m) =						1.58	

RCC slabs

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	HEIGHT	QUANTITY	REMARKS
3.01	Providing and laying filler slab roof for GF slab with Concrete grade M20, HYSD Fe450 steel bars and MANGLORE TILES 230 x 450 x 25 mm the same tiles placed one over the other and sides blocked with cement mortar including formwork, deshuttering and curing	sq.m				716.12	
	for 8 UNITS						
	Total floor Area =			285.50		285.50	
	TOTAL =					285.50	
	for 4 UNITS						
	Total floor Area =			145.12		145.12	
	TOTAL 3 BLOCKS 20 UNITS =					716.12	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	HEIGHT	QUANTITY	REMARKS
3.02	Providing and laying filler slab roof for FF slab with Concrete grade M20, HYSD Fe450 steel bars and MANGLORE TILES 230 x 450 x 25 mm the same tiles placed one over the other and sides blocked with cement mortar including formwork, deshuttering and curing	sq.m				716.12	
	for 8 UNITS						
	Total floor Area =			285.50		285.50	
	TOTAL =					285.50	
	for 4 UNITS						
	Total floor Area =			145.12		145.12	
	TOTAL 3 BLOCKS 20 UNITS =					716.12	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	HEIGHT	QUANTITY	REMARKS
3.03	Providing and laying filler slab roof for SF slab with Concrete grade M20, HYSD Fe450 steel bars and MANGLORE TILES 230 x 450 x 25 mm the same tiles placed one over the other and sides blocked with cement mortar including formwork, deshuttering and curing	sq.m				716.12	
	for 8 UNITS						
	Total floor Area =			285.50		285.50	
	TOTAL =					285.50	
	for 4 UNITS						
	Total floor Area =			145.12		145.12	
	TOTAL 3 BLOCKS 20 UNITS =					716.12	

Formwork

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.12	Providing and erecting formwork for GROUND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m				98.68	
A	HORIZONTAL						
	Grid line 1						
	btwn B-F		2	6.45	0.09	1.16	out/out
	Grid line 2						
	btwn B-F		2	5.99	0.09	1.08	in/in
	Grid line 3						
	btwn A-B		2	1.49	0.09	0.27	out/c
	Grid line 3						
	btwn F-G		2	1.49	0.09	0.27	out/c
	Grid line 4						
	btwn A-G		2	9.42	0.09	1.70	c/c
	Grid line 5						
	btwn A-C		2	3.81	0.09	0.69	out/out
	Grid line 5						
	btwn E-G		2	3.81	0.09	0.69	out/out
	Grid line 6						
	btwn A-C		2	3.81	0.09	0.69	out/out
	Grid line 6						
	btwn E-G		2	3.81	0.09	0.69	out/out
	Grid line 7						
	btwn A-G		2	9.42	0.09	1.70	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
	Grid line 8						
	btwn A-B		2	1.49	0.09	0.27	out/c
	Grid line 8						
	btwn F-G		2	1.49	0.09	0.27	out/c
	Grid line 9						
	btwn A-B		2	5.99	0.09	1.08	in/in
	Grid line 10						
	btwn A-F		1	6.45	0.09	0.58	out/out
	TOTAL =					11.1015	
B	VERTICAL						
	Grid line A						
	btwn 3-4		8	1.98	0.09	1.43	c/c
	Grid line B						
	btwn 1-4		8	5.83	0.09	4.20	in/in
	Grid line C						
	btwn 4-5		8	2.10	0.09	1.51	in/in
	Grid line D						
	btwn 1-2		4	2.58	0.09	0.93	in/in
	Grid line D						
	btwn 2-4		4	3.02	0.09	1.09	in/in
	TOTAL =					9.1512	
						20.2527	
	TOTAL LINTEL 8 UNITS - formwork (sq.m) =					40.50	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =						1.29
	TOTAL LINTEL 4 UNITS - formwork (sq.m)=					17.67	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.14	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m				98.68	
A	HORIZONTAL						
	Grid line 1						
	btwn B-F		2	6.45	0.09	1.16	out/out
	Grid line 2						
	btwn B-F		2	5.99	0.09	1.08	in/in
	Grid line 3						
	btwn A-B		2	1.49	0.09	0.27	out/c
	Grid line 3						
	btwn F-G		2	1.49	0.09	0.27	out/c
	Grid line 4						
	btwn A-G		2	9.42	0.09	1.70	c/c
	Grid line 5						
	btwn A-C		2	3.81	0.09	0.69	out/out
	Grid line 5						
	btwn E-G		2	3.81	0.09	0.69	out/out
	Grid line 6						
	btwn A-C		2	3.81	0.09	0.69	out/out
	Grid line 6						
	btwn E-G		2	3.81	0.09	0.69	out/out
	Grid line 7						
	btwn A-G		2	9.42	0.09	1.70	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
	Grid line 8						
	btwn A-B		2	1.49	0.09	0.27	out/c
	Grid line 8						
	btwn F-G		2	1.49	0.09	0.27	out/c
	Grid line 9						
	btwn A-B		2	5.99	0.09	1.08	in/in
	Grid line 10						
	btwn A-F		1	6.45	0.09	0.58	out/out
	TOTAL =					11.1015	
B	VERTICAL						
	Grid line A						
	btwn 3-4		8	1.98	0.09	1.43	c/c
	Grid line B						
	btwn 1-4		8	5.83	0.09	4.20	in/in
	Grid line C						
	btwn 4-5		8	2.10	0.09	1.51	in/in
	Grid line D						
	btwn 1-2		4	2.58	0.09	0.93	in/in
	Grid line D						
	btwn 2-4		4	3.02	0.09	1.09	in/in
	TOTAL =					9.1512	
	TOTAL LINTEL 8 UNITS - formwork (sq.m) =					40.50	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =						1.29
	TOTAL LINTEL 4 UNITS - formwork (sq.m)=					17.67	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.16	Providing and erecting formwork for SECOND FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m				98.68	
	HORIZONTAL						
	Grid line 1						
	btwn B-F		2	6.45	0.09	1.16	out/out
	Grid line 2						
	btwn B-F		2	5.99	0.09	1.08	in/in
	Grid line 3						
	btwn A-B		2	1.49	0.09	0.27	out/c
	Grid line 3						
	btwn F-G		2	1.49	0.09	0.27	out/c
	Grid line 4						
	btwn A-G		2	9.42	0.09	1.70	c/c
	Grid line 5						
	btwn A-C		2	3.81	0.09	0.69	out/out
	Grid line 5						
	btwn E-G		2	3.81	0.09	0.69	out/out
	Grid line 6						
	btwn A-C		2	3.81	0.09	0.69	out/out
	Grid line 6						
	btwn E-G		2	3.81	0.09	0.69	out/out
	Grid line 7						
	btwn A-G		2	9.42	0.09	1.70	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
	Grid line 8						
	btwn A-B		2	1.49	0.09	0.27	out/c
	Grid line 8						
	btwn F-G		2	1.49	0.09	0.27	out/c
	Grid line 9						
	btwn A-B		2	5.99	0.09	1.08	in/in
	Grid line 10						
	btwn A-F		1	6.45	0.09	0.58	out/out
	TOTAL =					11.1015	
B	VERTICAL						
	Grid line A						
	btwn 3-4		8	1.98	0.09	1.43	c/c
	Grid line B						
	btwn 1-4		8	5.83	0.09	4.20	in/in
	Grid line C						
	btwn 4-5		8	2.10	0.09	1.51	in/in
	Grid line D						
	btwn 1-2		4	2.58	0.09	0.93	in/in
	Grid line D						
	btwn 2-4		4	3.02	0.09	1.09	in/in
	TOTAL =					9.1512	
						20.2527	
	TOTAL LINTEL 8 UNITS -formwork (sq.m) =					40.50	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =						1.29
	TOTAL LINTEL 4 UNITS - formwork (sq.m)=					17.67	

Design Package Using Alternate Building Materials & Technologies, West Zone

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.13	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				638.20	
FOR 8 UNITS (sq.m) =							
	Drawing room		8.00	9.07		72.56	
	Bed room		8.00	7.50		60.00	
	Kitchen + Wash		8.00	5.11		40.88	
			8.00	1.89		15.12	
	Bath room		8.00	2.39		19.12	
	Passage		2.00	14.33		28.66	
	Sides		1.00	189.38	0.10	18.94	
TOTAL =						255.28	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA		QUANTITY	REMARKS
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				638.20	
FOR 8 UNITS (sq.m) =							
	Drawing room		8.00	9.07		72.56	
	Bed room		8.00	7.50		60.00	
	Kitchen + Wash		8.00	5.11		40.88	
			8.00	1.89		15.12	
	Bath room		8.00	2.39		19.12	
	Passage		2.00	14.33		28.66	
	Sides		1.00	189.38	0.10	18.94	
TOTAL =						255.28	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA		QUANTITY	REMARKS
2.17	Providing and erecting formwork for SECOND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				638.20	
FOR 8 UNITS (sq.m) =							
	Drawing room		8.00	9.07		72.56	
	Bed room		8.00	7.50		60.00	
	Kitchen + Wash		8.00	5.11		40.88	
			8.00	1.89		15.12	
	Bath room		8.00	2.39		19.12	
	Passage		2.00	14.33		28.66	
	Sides		1.00	189.38	0.10	18.94	
TOTAL =						255.28	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA		Q	REMARKS
2.19	Providing and erecting formwork for TERRACE CABIN SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				54.45	
	Terrace		5.00	10.89		54.45	
TOTAL =						54.45	
TOTAL FLOORING 3 BLOCKS (sq.m) =						54.45	

Reinforcement works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.20	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs					1229.96	
A	HORIZONTAL							
	Grid line 1							
	btwn A-F		4	6.45			25.8	out/out
	Grid line 2							
	btwn B-F		4	5.99			23.96	in/in
	Grid line 3							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 3							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 4							
	btwn A-I		4	9.42			37.68	c/c
	Grid line 5							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 5							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 6							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 6							
	btwn E-G		4	3.81			15.24	out/out

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line 7							
	btwn A-G		4	9.42			37.68	c/c
	Grid line 8							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 8							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 9							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 10							
	btwn A-F		2	6.45			12.9	out/out
	TOTAL =						246.7	
B	VERTICAL							
	Grid line A							
	btwn 3-4		16	1.98			31.68	c/c
	Grid line B							
	btwn 1-4		16	5.83			93.28	in/in
	Grid line C							
	btwn 4-5		16	2.10			33.60	in/in
	Grid line D							
	btwn 1-2		8	2.60			20.80	in/in

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line D							
	btwn 2-4		8	3.15			25.20	in/in
	TOTAL =						204.56	
	TOTAL REINFORCEMENT 8 UNIT (m) =						451.26	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =							12.9
	TOTAL REINFORCEMENT 4 UNIT (m) =						212.73	
	TOTAL REINFORCEMENT length 20 UNITS (m) =						1115.25	
	Add 2% extra for bends						22.31	
							2275.11	
	8 mm BAR	kg/m	0.39				896.04	
	REINFORCEMENT DIA (8 mm) =						896.04	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		5576.3	0.27			1477.706	
	6 mm DIA						29.55413	
	TOAL WIGHT =	kg/m	0.22				1507.26	
	REINFORCEMENT DIA (6 mm) =						333.92	
	TOTAL REINFORCEMENT DIA =						1229.96	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.21	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs					921.58	
A	HORIZONTAL							
	Grid line 1							
	btwn A-F		4	6.45			25.8	out/out
	Grid line 2							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 3							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 3							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 4							
	btwn A-I		4	9.42			37.68	c/c
	Grid line 5							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 5							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 6							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 6							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 7							
	btwn A-G		4	9.42			37.68	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line 8							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 8							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 9							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 10							
	btwn A-F		2	6.45	0.23		12.9	out/out
	TOTAL =						246.7	
B	VERTICAL							
	Grid line A							
	btwn 3-4		16	1.98			31.68	c/c
	Grid line B							
	btwn 1-4		16	5.83			93.28	in/in
	Grid line C							
	btwn 4-5		16	2.10			33.60	in/in
	Grid line D							
	btwn 1-2		8	2.60			20.80	in/in
	Grid line D							
	btwn 2-4		8	3.15			25.20	in/in
	TOTAL =						204.56	
	TOTAL REINFORCEMENT 8 UNIT (m) =						451.26	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =							12.9
	TOTAL REINFORCEMENT 4 UNIT (m) =						212.73	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	TOTAL REINFORCEMENT length 20 UNITS RTB (m) =						1115.25	
	Add 2% extra for bends						22.31	
							1137.56	
	8 mm BAR	kg/m	0.39				448.02	
	REINFORCEMENT DIA (8 mm) =						448.02	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		5576.3				1339.376	
	DEDUCTION IN NOS DUE TO LINTELS		522	0.27				
	6 mm DIA						26.78753	
	TOAL WIGHT =	kg/m	0.22				1366.164	
	REINFORCEMENT DIA (6 mm) =						300.56	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		522	0.825			430.65	
	8 mm DIA			0.39			8.613	
	TOAL WIGHT =	kg/m	0.39				439.263	
	REINFORCEMENT DIA (8 mm) =						173.00	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.23	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs					921.58	
A	HORIZONTAL							
	Grid line 1							
	btwn A-F		4	6.45			25.8	out/out
	Grid line 2							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 3							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 3							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 4							
	btwn A-I		4	9.42			37.68	c/c
	Grid line 5							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 5							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 6							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 6							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 7							
	btwn A-G		4	9.42			37.68	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line 8							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 8							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 9							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 10							
	btwn A-F		2	6.45	0.23		12.9	out/out
	TOTAL =						246.7	
B	VERTICAL							
	Grid line A							
	btwn 3-4		16	1.98			31.68	c/c
	Grid line B							
	btwn 1-4		16	5.83			93.28	in/in
	Grid line C							
	btwn 4-5		16	2.10			33.60	in/in
	Grid line D							
	btwn 1-2		8	2.60			20.80	in/in
	Grid line D							
	btwn 2-4		8	3.15			25.20	in/in
	TOTAL =						204.56	
	TOTAL REINFORCEMENT 8 UNIT (m) =						451.26	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =							12.9
	TOTAL REINFORCEMENT 4 UNIT (m) =						212.73	
	TOTAL REINFORCEMENT length 20 UNITS RTB (m) =						1115.25	
	Add 2% extra for bends						22.31	
							1137.56	
	8 mm BAR	kg/m	0.39				448.02	
	REINFORCEMENT DIA (8 mm) =						448.02	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		5576.3				1339.376	
	DEDUCTION IN NOS DUE TO LINTELS		522	0.27				
	6 mm DIA						26.78753	
	TOAL WIGHT =	kg/m	0.22				1366.164	
	REINFORCEMENT DIA (6 mm) =						300.56	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		522	0.825			430.65	
	8 mm DIA			0.39			8.613	
	TOAL WIGHT =	kg/m	0.39				439.263	
	REINFORCEMENT DIA (8 mm) =						173.00	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.25	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for SF LINTEL BAND	kgs					921.58	
A	HORIZONTAL							
	Grid line 1							
	btwn A-F		4	6.45			25.8	out/out
	Grid line 2							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 3							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 3							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 4							
	btwn A-I		4	9.42			37.68	c/c
	Grid line 5							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 5							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 6							
	btwn A-C		4	3.81			15.24	out/out
	Grid line 6							
	btwn E-G		4	3.81			15.24	out/out
	Grid line 7							
	btwn A-G		4	9.42			37.68	c/c

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line 8							
	btwn A-B		4	1.49			5.94	out/c
	Grid line 8							
	btwn F-G		4	1.49			5.94	out/c
	Grid line 9							
	btwn A-B		4	5.99			23.96	in/in
	Grid line 10							
	btwn A-F		2	6.45	0.23		12.9	out/out
	TOTAL =						246.7	
B	VERTICAL							
	Grid line A							
	btwn 3-4		16	1.98			31.68	c/c
	Grid line B							
	btwn 1-4		16	5.83			93.28	in/in
	Grid line C							
	btwn 4-5		16	2.10			33.60	in/in
	Grid line D							
	btwn 1-2		8	2.60			20.80	in/in
	Grid line D							
	btwn 2-4		8	3.15			25.20	in/in
	TOTAL =						204.56	
	TOTAL REINFORCEMENT 8 UNIT (m) =						451.26	
	FOR 4 UNIT CLUSTER, DEDUCTION OF COMMOM WALL =							12.9
	TOTAL REINFORCEMENT 4 UNIT (m) =						212.73	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	TOTAL REINFORCEMENT length 20 UNITS RTB (m) =						1115.25	
	Add 2% extra for bends						22.31	
							1137.56	
	8 mm BAR	kg/m	0.39				448.02	
	REINFORCEMENT DIA (8 mm) =						448.02	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		5576.3				1339.376	
	DEDUCTION IN NOS DUE TO LINTELS		522	0.27				
	6 mm DIA						26.78753	
	TOAL WIGHT =	kg/m	0.22				1366.164	
	REINFORCEMENT DIA (6 mm) =						300.56	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		522	0.825			430.65	
	8 mm DIA			0.39			8.613	
	TOAL WIGHT =	kg/m	0.39				439.263	
	REINFORCEMENT DIA (8 mm) =						173.00	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.27	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the re-bar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for TERRACE level cabin LINTEL BAND	kgs					177.15	
A								
	CABIN WALL LENGTH		5	12.42			124.20	
	TOTAL =						248.4	
	TOTAL REINFORCEMENT length 20 UNITS RTB (m) =						248.40	
	Add 1% extra for bends						2.48	
							250.88	
	8 mm BAR	kg/m	0.39					
	REINFORCEMENT DIA (8 mm) =						98.81	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		1254.4	0.27			332.4213	
	DEDUCTION IN NOS DUE TO LINTELS							
	6 mm DIA						6.648426	
	TOAL WIGHT =	kg/m	0.22				339.0697	
	REINFORCEMENT DIA (6 mm) =						74.60	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		11.3	0.825			9.3225	
	8 mm DIA			0.39			0.18645	
	TOAL WIGHT =	kg/m	0.39				9.50895	
	REINFORCEMENT DIA (8 mm) =						3.75	

Brick Masonry

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.01	Providing and laying brick work using conventional bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	cu.m					196.51	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		4	6.19	0.23	0.53	2.99	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	0.53	2.88	in/in
	Grid line 3							
	btwn A-C		4	1.36	0.23	0.53	0.65	in/c
	Grid line 3							
	btwn G-I		4	1.36	0.23	0.53	0.65	c/c
	Grid line 5							
	btwn A-I		4	9.13	0.23	0.53	4.41	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	0.53	1.71	o/c
	Grid line 6							
	btwn E-G		4	3.55	0.23	0.53	1.71	c/c
	TOTAL =						15.02	
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	4.34	0.23	0.53	4.19	c/c
	Grid line B							
	btwn 3-5		4	2.40	0.23	0.53	1.16	c/c
	Grid line B							

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	btwn 5-6		8	2.21	0.23	0.53	2.14	in/in
	Grid line C							
	btwn 1-4		8	6.33	0.23	0.53	6.12	c/in
	Grid line D							
	btwn 5-6		8	2.21	0.23	0.53	2.14	in/in
	Grid line E							
	btwn 1-2		4	2.70	0.23	0.53	1.30	in/in
	Grid line E							
	btwn 2-5		4	3.29	0.23	0.53	1.59	in/in
	TOTAL =						18.63	
TOTAL BRICK MASONRY 8 UNITS =							32.90	
TOTAL BRICK MASONRY 4 UNITS =							16.24	
TOTAL BRICK MASONRY 20 UNITS =							82.05	
	ADDITIONS FOR TOTAL BRICK MASONRY							
						350	34.02	
						460	45.01	
						PCC	35.43	
	TOTAL BRICK MASONRY BELOW GROUND						196.51	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.03	Providing and laying brickwork 230 mm thick in Rat-Trap bond using Fly Ash bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. above Ground level	cu.m					343.29	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		4	6.19	0.23	3.08	17.54	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	3.08	16.89	in/in
	Grid line 3							
	btwn A-C		4	1.355	0.23	3.08	3.84	in/c
	Grid line 3							
	btwn G-I		4	1.355	0.23	3.08	3.84	c/c
	Grid line 5							
	btwn A-I		4	9.129	0.23	3.08	25.87	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	3.08	10.06	o/c
	Grid line 6							
	btwn E-G		4	3.55	0.23	3.08	10.06	c/c
	TOTAL =						88.09	
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	2.122	0.23	3.08	12.03	c/c
	Grid line B							
	btwn 5-6		8	2.213	0.23	3.08	12.54	in/in
	Grid line C							
	btwn 1-4		8	6.334	0.23	3.08	35.90	c/in
	Grid line D							
	btwn 5-6		8	2.213	0.23	3.08	12.54	in/in
	Grid line E							
	btwn 1-2		4	2.7	0.23	3.08	7.65	in/in
	Grid line E							
	btwn 2-5		4	3.287	0.23	3.08	9.31	in/in
	TOTAL =						89.97	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	TOTAL BRICK MASONRY 8 UNITS =						173.68	
	TOTAL BRICK MASONRY 4 UNITS =						80.26	
	TOTAL BRICK MASONRY 20 UNITS =						427.62	
	DEDUCTIONS =						84.33	
	TOTAL BRICK MASONRY 20 UNITS =						343.29	
C	DEDUCTIONS							
1	OPENINGS							
	Doors							
	Drawing room 1		20.00	0.90	0.23	2.10	8.69	
	Bedroom 1		20.00	0.90	0.23	2.10	8.69	
	Toilet		20.00	0.90	0.23	2.10	8.69	
	Kitchen 1		20.00	1.00	0.23	2.10	9.66	
	Kitchen 2		20.00	0.90	0.23	2.10	8.69	
	Windows							
	W3		20.00	0.74	0.23	1.20	4.10	
	W1		20.00	0.90	0.23	1.20	4.97	
	W4		20.00	0.58	0.23	1.20	3.17	
	V		40.00	0.56	0.23	0.40	2.06	
	W2		40.00	0.76	0.23	1.20	8.39	
	TOTAL =						67.13	
3	LINTELS							
	GF						17.21	
	TOTAL DEDUCTIONS =						84.33	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.04	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on First floor	cu.m					347.48	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		4	6.19	0.23	3.08	17.54	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	3.08	16.89	in/in
	Grid line 3							
	btwn A-C		4	1.355	0.23	3.08	3.84	in/c
	Grid line 3							
	btwn G-I		4	1.355	0.23	3.08	3.84	c/c
	Grid line 5							
	btwn A-I		4	9.129	0.23	3.08	25.87	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	3.08	10.06	o/c
	Grid line 6							
	btwn E-G		4	3.55	0.23	3.08	10.06	c/c
	TOTAL =						88.09	
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	2.122	0.23	3.08	12.03	c/c
	Grid line B							
	btwn 5-6		8	2.213	0.23	3.08	12.54	in/in
	Grid line C							
	btwn 1-4		8	6.334	0.23	3.08	35.90	c/in
	Grid line D							
	btwn 5-6		8	2.213	0.23	3.08	12.54	in/in
	Grid line E							
	btwn 1-2		4	2.7	0.23	3.08	7.65	in/in
	Grid line E							
	btwn 2-5		4	3.287	0.23	3.08	9.31	in/in
	TOTAL =						89.97	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	TOTAL BRICK MASONRY 8 UNITS =						173.68	
	TOTAL BRICK MASONRY 4 UNITS =						80.26	
	TOTAL BRICK MASONRY 20 UNITS =						427.62	
	DEDUCTIONS =						80.14	
	TOTAL BRICK MASONRY 20 UNITS =						347.48	
C	DEDUCTIONS							
1	OPENINGS							
	Doors							
	Drawing room 1		20.00	0.90	0.23	2.10	8.69	
	Bedroom 1		20.00	0.90	0.23	2.10	8.69	
	Toilet		20.00	0.90	0.23	2.10	8.69	
	Kitchen 1		20.00	1.00	0.23	2.10	9.66	
	Kitchen 2		20.00	0.90	0.23	2.10	8.69	
	Windows							
	W3		20.00	0.74	0.23	1.20	4.10	
	W1		20.00	0.90	0.23	1.20	4.97	
	W4		20.00	0.58	0.23	1.20	3.17	
	V		40.00	0.56	0.23	0.40	2.06	
	W2		20.00	0.76	0.23	1.20	4.20	
	TOTAL =						62.93	
3	LINTELS							
	GF						17.21	
	TOTAL DEDUCTIONS =						80.14	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.05	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/.mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on Second floor	cu.m					347.48	
A	HORIZONTAL							
	Grid line 1							
	btwn C-G		4	6.19	0.23	3.08	17.54	c/c
	Grid line 2							
	btwn C-G		4	5.96	0.23	3.08	16.89	in/in
	Grid line 3							
	btwn A-C		4	1.355	0.23	3.08	3.84	in/c
	Grid line 3							
	btwn G-I		4	1.355	0.23	3.08	3.84	c/c
	Grid line 5							
	btwn A-I		4	9.129	0.23	3.08	25.87	c/c
	Grid line 6							
	btwn F-I		4	3.55	0.23	3.08	10.06	o/c
	Grid line 6							
	btwn E-G		4	3.55	0.23	3.08	10.06	c/c
	TOTAL =							88.09
B	VERTICAL							
	Grid line A							
	btwn 3-5		8	2.122	0.23	3.08	12.03	c/c
	Grid line B							
	btwn 5-6		8	2.213	0.23	3.08	12.54	in/in
	Grid line C							
	btwn 1-4		8	6.334	0.23	3.08	35.90	c/in
	Grid line D							
	btwn 5-6		8	2.213	0.23	3.08	12.54	in/in
	Grid line E							
	btwn 1-2		4	2.7	0.23	3.08	7.65	in/in
	Grid line E							
	btwn 2-5		4	3.287	0.23	3.08	9.31	in/in
	TOTAL =							89.97

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	TOTAL BRICK MASONRY 8 UNITS =						173.68	
	TOTAL BRICK MASONRY 4 UNITS =						80.26	
	TOTAL BRICK MASONRY 20 UNITS =						427.62	
	DEDUCTIONS =						80.14	
	TOTAL BRICK MASONRY 20 UNITS =						347.48	
C	DEDUCTIONS							
1	OPENINGS							
	Doors							
	Drawing room 1		20.00	0.90	0.23	2.10	8.69	
	Bedroom 1		20.00	0.90	0.23	2.10	8.69	
	Toilet		20.00	0.90	0.23	2.10	8.69	
	Kitchen 1		20.00	1.00	0.23	2.10	9.66	
	Kitchen 2		20.00	0.90	0.23	2.10	8.69	
	Windows							
	W3		20.00	0.74	0.23	1.20	4.10	
	W1		20.00	0.90	0.23	1.20	4.97	
	W4		20.00	0.58	0.23	1.20	3.17	
	V		40.00	0.56	0.23	0.40	2.06	
	W2		20.00	0.76	0.23	1.20	4.20	
	TOTAL =						62.93	
3	LINTELS							
	GF						17.21	
	TOTAL DEDUCTIONS =						80.14	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.06	Providing and laying brickwork 230 mm thick in Rat-Trap bond using common burnt clay bricks having 5 N/.mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. at TERRACE level	cu.m					42.91	
1	CABIN WALL							
			5	12.42	0.23	3.08	43.99164	
	230x230 columns							
			50	0.23	0.23	0.9	2.3805	
2	DEDUCTION							
	FOR OPENINGS							
	DOOR		5	0.9	0.23	2.1	2.1735	
	LINTEL						1.29	
							3.46	
TOTAL BRICK MASONRTY TERRACE CABIN (cu.m) =							42.91	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.07	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL by brick on edge bond, using common burnt clay bricks having 5 N/mm² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on GF level	sq.m					50.67	
A	Wash area		20.00	2.22	0.08	0.90	39.87	
B	Staircase mid landing parapet		5.00	2.40	0.08	0.90	10.80	
							50.67	
TOTAL BRICK MASONRY 20 UNITS (sq.m) =							50.67	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.08	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL by brick on edge bond, using common burnt clay bricks having 5 N/mm² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	sq.m					50.67	
A	Wash area		20.00	2.22	0.08	0.90	39.87	
B	Staircase mid landing parapet		5.00	2.40	0.08	0.90	10.80	
							50.67	
TOTAL BRICK MASONRY 20 UNITS (sq.m) =							50.67	

Design Package Using Alternate Building Materials & Technologies, West Zone

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.09	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL by brick on edge bond, using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	sq.m					50.67	
A	Wash area		20.00	2.22	0.08	0.90	39.87	
B	Staircase mid landing parapet		5.00	2.40	0.08	0.90	10.80	
							50.67	
TOTAL BRICK MASONRY 20 UNITS (sq.m) =							50.67	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.10	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL by brick on edge bond, using common burnt clay bricks having 5 N/mm ² strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on TERRACE level	sq.m					263.34	
1	PARAPET WALL							
	block A		1	63.56		0.9	57.204	
	block B		2	57.26		0.9	103.068	
	block C		2	57.26		0.9	103.068	
TOTAL BRICK MASONRTY RTB (sq.m) =							263.34	

Plaster works

Internal plaster

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m				3043.87	
INTERIOR PLASTER							
A	BEDROOM INTERIOR						
			20.00	11.13	3.08	685.61	
B	DRAWING ROOM INTERIOR						
			20.00	13.22	3.08	814.35	
C	BATH INTERIOR						
			20.00	9.61	3.08	591.91	
D	KITCHEN INTERIOR						
			20.00	10.10	3.08	622.16	
E	WASH INTERIOR						
			20.00	3.87	3.08	238.39	
			20.00	2.22	0.90	39.87	
F	PASSAGE WALL ADJACENT TO ENTRY						
			10.00	10.29	3.08	316.78	
	TOTAL PLASTER INTERIOR (sq.m) =					3309.07	
G	DEDUCTIONS						
1	OPENINGS						
	Doors						
	Drawing room 1		20.00	0.90	2.10	37.80	
	Bedroom 1		20.00	0.90	2.10	37.80	
	Toilet		20.00	0.90	2.10	37.80	
	Kitchen 1		20.00	0.90	2.10	37.80	
	Kitchen 2		20.00	0.90	2.10	37.80	
	Windows						
	W1		20.00	0.90	1.20	21.60	
	W2		20.00	0.76	1.20	18.24	
	W3		20.00	0.74	1.20	17.76	
	W4		20.00	0.58	1.20	13.80	
	V		20.00	0.60	0.40	4.80	
	TOTAL DEDUCTIONS =					265.2	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					3043.87	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of GF	sq.m				1015.28	
INTERIOR PLASTER							
A	BEDROOM						
			20.00	7.74		154.80	
B	DRAWING ROOM INTERIOR						
			20.00	9.41		188.20	
C	BATH INTERIOR						
			20.00	2.46		49.10	
D	KITCHEN INTERIOR						
			20.00	5.27		105.32	
E	WASH INTERIOR		20.00	18.33		366.58	
F	PASSAGE WALL ADJACENT TO ENTRY						
			8.00	14.79		118.32	
	TOTAL PLASTER INTERIOR (sq.m) =					982.32	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					982.32	
	Add staircase plaster						
	waste slab		10	2.33	1.22	28.43	
	steps		10	2.33	0.13	3.03	
			80		0.01875	1.5	
						32.96	
	TOTAL PLASTERING QUANTITY 20 UNITS GROUND FLOOR (sq.m) =					1015.28	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	sq.m				2959.11	
INTERIOR PLASTER							
A	BEDROOM INTERIOR						
			20.00	11.13	3.00	667.80	
B	DRAWING ROOM INTERIOR						
			20.00	13.22	3.00	793.20	
C	BATH INTERIOR						
			20.00	9.61	3.00	576.54	
D	KITCHEN INTERIOR						
			20.00	10.10	3.00	606.00	
E	WASH INTERIOR						
			20.00	3.87	3.00	232.20	
			20.00	2.22	0.90	39.87	
F	PASSAGE WALL ADJACENT TO ENTRY						
			10.00	10.29	3.00	308.70	
	TOTAL PLASTER INTERIOR (sq.m) =					3224.31	
G	DEDUCTIONS						
1	OPENINGS						
	Doors						
	Drawing room 1		20.00	0.90	2.10	37.80	
	Bedroom 1		20.00	0.90	2.10	37.80	
	Toilet		20.00	0.90	2.10	37.80	
	Kitchen 1		20.00	0.90	2.10	37.80	
	Kitchen 2		20.00	0.90	2.10	37.80	
	Windows						
	W1		20.00	0.90	1.20	21.60	
	W2		20.00	0.76	1.20	18.24	
	W3		20.00	0.74	1.20	17.76	
	W4		20.00	0.58	1.20	13.80	
	V		20.00	0.60	0.40	4.80	
	TOTAL DEDUCTIONS =					265.2	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					2959.11	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of FF level upto a height of 3 mts	sq.m				1015.28	
INTERIOR PLASTER							
A	BEDROOM						
			20.00	7.74		154.80	
B	DRAWING ROOM INTERIOR						
			20.00	9.41		188.20	
C	BATH INTERIOR						
			20.00	2.46		49.10	
D	KITCHEN INTERIOR						
			20.00	5.27		105.32	
E	WASH INTERIOR		20.00	18.33		366.58	
F	PASSAGE WALL ADJACENT TO ENTRY						
			8.00	14.79		118.32	
	TOTAL PLASTER INTERIOR (sq.m) =					982.32	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					982.32	
	Add staircase plaster						
	waste slab		10	2.33	1.22	28.43	
	steps		10	2.33	0.13	3.03	
			80		0.01875	1.5	
						32.96	
	TOTAL PLASTERING QUANTITY 20 UNITS GROUND FLOOR (sq.m) =					1015.28	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on SF level upto a height of 3 mts	sq.m				2959.11	
INTERIOR PLASTER							
A	BEDROOM INTERIOR						
			20.00	11.13	3.00	667.80	
B	DRAWING ROOM INTERIOR						
			20.00	13.22	3.00	793.20	
C	BATH INTERIOR						
			20.00	9.61	3.00	576.54	
D	KITCHEN INTERIOR						
			20.00	10.10	3.00	606.00	
E	WASH INTERIOR						
			20.00	3.87	3.00	232.20	
			20.00	2.22	0.90	39.87	
F	PASSAGE WALL ADJACENT TO ENTRY						
			10.00	10.29	3.00	308.70	
	TOTAL PLASTER INTERIOR (sq.m) =					3224.31	
G	DEDUCTIONS						
1	OPENINGS						
	Doors						
	Drawing room 1		20.00	0.90	2.10	37.80	
	Bedroom 1		20.00	0.90	2.10	37.80	
	Toilet		20.00	0.90	2.10	37.80	
	Kitchen 1		20.00	0.90	2.10	37.80	
	Kitchen 2		20.00	0.90	2.10	37.80	
	Windows						
	W1		20.00	0.90	1.20	21.60	
	W2		20.00	0.76	1.20	18.24	
	W3		20.00	0.74	1.20	17.76	
	W4		20.00	0.58	1.20	13.80	
	V		20.00	0.60	0.40	4.80	
	TOTAL DEDUCTIONS =					265.2	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					2959.11	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of SF level upto a height of 3 mts	sq.m				1015.28	
INTERIOR PLASTER							
A	BEDROOM						
			20.00	7.74		154.80	
B	DRAWING ROOM INTERIOR						
			20.00	9.41		188.20	
C	BATH INTERIOR						
			20.00	2.46		49.10	
D	KITCHEN INTERIOR						
			20.00	5.27		105.32	
E	WASH INTERIOR		20.00	18.33		366.58	
F	PASSAGE WALL ADJACENT TO ENTRY						
			8.00	14.79		118.32	
	TOTAL PLASTER INTERIOR (sq.m) =					982.32	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					982.32	
	Add staircase plaster						
	waste slab		10	2.33	1.22	28.43	
	steps		10	2.33	0.13	3.03	
			80		0.01875	1.5	
						32.96	
	TOTAL PLASTERING QUANTITY 20 UNITS GROUND FLOOR (sq.m) =					1015.28	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on TERRACE level upto a height of 3 mts	sq.m				291.22	
INTERIOR PLASTER							
	parapet length =		1.00	183.30	0.90	164.97	
	CABIN WALL		5.00	11.50	2.36	135.70	
	Deductions		5.00	0.90	2.10	9.45	
TOTAL INTERNAL PLASTERING CABIN (sq.m) =						291.22	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of TERRACE level upto a height of 3 mts	sq.m				48.15	
	INTERIOR PLASTER						
A	CABIN						
			5.00	9.63		48.15	
	TOTAL PLASTER INTERIOR (sq.m) =					48.15	
	TOTAL PLASTERING QUANTITY 20 UNITS (sq.m) =					48.15	

Exterior Plaster

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.09	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto GF slab level	sq.m				206.61	
EXTERIOR PLASTER							
	wall on Grid line 5		1.00	22.72	3.63	82.47	
	wash		10.00	2.22	0.90	19.94	
	landing		10.00	2.40	0.90	21.60	
	entry wall		10.00	3.67	3.63	133.04	
	TOTAL					257.05	
	Deductions						
	W1		20.00	0.90	1.20	21.60	
	W3		20.00	0.74	1.30	19.24	
	V		40.00	0.60	0.40	9.60	
	TOTAL					50.44	
	TOTAL EXTERIOR PLASTER QUANTITY UPTO GF SLAB BOTTOM (sq.m) =					206.61	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.10	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto FF slab level	sq.m				179.89	
EXTERIOR PLASTER							
	wall on Grid line 5		1.00	22.72	3.18	72.25	
	wash		10.00	2.22	0.90	19.94	
	landing		10.00	2.40	0.90	21.60	
	entry wall		10.00	3.67	3.18	116.55	
	TOTAL					230.33	
	Deductions						
	W1		20.00	0.90	1.20	21.60	
	W3		20.00	0.74	1.30	19.24	
	V		40.00	0.60	0.40	9.60	
	TOTAL					50.44	
	TOTAL EXTERIOR PLASTER QUANTITY UPTO GF SLAB BOTTOM (sq.m) =					179.89	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.11	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto SF slab level	sq.m				179.89	
EXTERIOR PLASTER							
	wall on Grid line 5		1.00	22.72	3.18	72.25	
	wash		10.00	2.22	0.90	19.94	
	landing		10.00	2.40	0.90	21.60	
	entry wall		10.00	3.67	3.18	116.55	
	TOTAL					230.33	
	Deductions						
	W1		20.00	0.90	1.20	21.60	
	W3		20.00	0.74	1.30	19.24	
	V		40.00	0.60	0.40	9.60	
	TOTAL					50.44	
	TOTAL EXTERIOR PLASTER QUANTITY UPTO GF SLAB BOTTOM (sq.m) =					179.89	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.12	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete upto terrace slab level	sq.m				346.90	
EXTERIOR PLASTER 8 UNITS							
	Cabin		5.00	13.05	2.53	165.08	
	Parapet walls		1.00	202.02	0.90	181.82	
	TOTAL EXTERIOR PLASTER QUANTITY UPTO GF SLAB BOTTOM (sq.m) =					346.90	

Painting and Finishing

The quantities of painting the internal and external surfaces are same as plastering quantities.

Flooring works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate strips, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m			474.42	
FLOORING FOR 8 UNITS (sq.m) =						
	Drawing room		8.00	9.32	74.54	
	Bed room		8.00	7.43	59.44	
	Kitchen		8.00	3.39	27.12	
	Passage		2.00	14.33	28.66	
TOTAL =					189.77	
FLOORING FOR 4 UNITS (sq.m) =						
	Drawing room		4.00	9.32	37.27	
	Bed room		4.00	7.43	29.72	
	Kitchen		4.00	3.39	13.56	
	Passage		1.00	14.33	14.33	
TOTAL =					94.88	
TOTAL FLOORING 20 UNITS GF (sq.m) =					474.42	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	Q	REMARKS
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate strips, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	sq.m			474.42	
FLOORING FOR 8 UNITS (sq.m) =						
	Drawing room		8.00	9.32	74.54	
	Bed room		8.00	7.43	59.44	
	Kitchen		8.00	3.39	27.12	
	Passage		2.00	14.33	28.66	
TOTAL =					189.77	
FLOORING FOR 4 UNITS (sq.m) =						
	Drawing room		4.00	9.32	37.27	
	Bed room		4.00	7.43	29.72	
	Kitchen		4.00	3.39	13.56	
	Passage		1.00	14.33	14.33	
TOTAL =					94.88	
TOTAL FLOORING 20 UNITS FF (sq.m) =					474.42	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	Q	REMARKS
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate strips, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on SF level	sq.m			474.42	
FLOORING FOR 8 UNITS (sq.m) =						
	Drawing room		8.00	9.32	74.54	
	Bed room		8.00	7.43	59.44	
	Kitchen		8.00	3.39	27.12	
	Passage		2.00	14.33	28.66	
TOTAL =					189.77	
FLOORING FOR 4 UNITS (sq.m) =						
	Drawing room		4.00	9.32	37.27	
	Bed room		4.00	7.43	29.72	
	Kitchen		4.00	3.39	13.56	
	Passage		1.00	14.33	14.33	
TOTAL =					94.88	
TOTAL FLOORING 20 UNITS SF (sq.m) =					474.42	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA		Q	REMARKS
6.04	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on TERRACE level	sq.m				732.20	
FLOORING FOR 8 UNITS (sq.m) =							
	Terrace		2.00	146.44		292.88	
TOTAL =						292.88	
FLOORING FOR 4 UNITS (sq.m) =							
	Terrace		1.00	146.44		146.44	
TOTAL =						146.44	
TOTAL FLOORING 3 BLOCKS (sq.m) =						732.20	

COMMUNITY CENTER QUANTITIES.

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m					77.24	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	3.23	0.8	0.90	2.3256	C/C
	Grid line 2							
	btwn A-E		1	11.725	0.8	0.90	8.442	in/in
	Grid line 3							
	btwn A-B		1	2.43	0.8	0.90	1.7496	c/c
	Grid line 4							
	btwn A-B		1	2.43	0.8	0.90	1.7496	c/in
	Grid line 5							
	btwn A-B		1	2.43	0.8	0.90	1.7496	c/in
	Grid line 6							
	btwn A-B		1	2.43	0.8	0.90	1.7496	out/out
	Grid line 6							
	btwn B-E		1	9.69	0.8	0.90	6.9768	c/c
	TOTAL =						24.7428	
B	VERTICAL							
	Grid line A							
	btwn 1-6		1	16.15	0.80	0.90	11.63	c/c
	Grid line B							
	btwn 1-6		1	16.15	0.80	0.90	11.63	c/o
	Grid line C							
	btwn 2-3		1	2.715	0.80	0.90	1.95	in/in
	Grid line C							
	btwn 5-6		1	2.43	0.80	0.90	1.75	o/in
	Grid line D							
	btwn 2-6		1	12.12	0.80	0.90	8.73	in/in
	Grid line E							
	btwn 2-6		1	12.92	0.80	0.90	9.30	c/c
	Plinth wall outside toilet GF		1	10.43	0.80	0.90	7.51	total wall
	TOTAL =						52.4988	
	TOTAL BRICK MASONRY KIOSK =						77.24	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering.	cu.m					39.08	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	3.23	0.8	0.90	2.3256	c/c
	Grid line 2							
	btwn A-E		1	11.73	0.8	0.90	8.442	in/in
	Grid line 3							
	btwn A-B		1	2.43	0.8	0.90	1.7496	c/c
	Grid line 4							
	btwn A-B		1	2.43	0.8	0.90	1.7496	c/in
	Grid line 5							
	btwn A-B		1	2.43	0.8	0.90	1.7496	c/in
	Grid line 6							
	btwn A-B		1	2.43	0.8	0.90	1.7496	out/out
	Grid line 6							
	btwn B-E		1	9.69	0.8	0.90	6.9768	c/c
	TOTAL =						24.7428	
B	VERTICAL							
	Grid line A							
	btwn 1-6		1	16.15	0.80	0.90	11.63	c/c
	Grid line B							
	btwn 1-6		1	16.15	0.80	0.90	11.63	c/o
	Grid line C							
	btwn 2-3		1	2.72	0.80	0.90	1.95	in/in
	Grid line C							

Design Package Using Alternate Building Materials & Technologies, West Zone

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	btwn 5-6		1	2.43	0.80	0.90	1.75	o/in
	Grid line D							
	btwn 2-6		1	12.12	0.80	0.90	8.73	in/in
	Grid line E							
	btwn 2-6		1	12.92	0.80	0.90	9.30	c/c
	Plinth wall outside toilet GF		1	10.43	0.80	0.90	7.51	total wall
	TOTAL =						52.4988	
	TOTAL BRICK MASONRY KIOSK =						77.24	
	DEDUCTIONS							
	230 WALL						18.26	
	350 WALL						5.84	
	460 WALL						7.62	
	PCC						6.44	
	TOTAL BACKFILLING KIOSK =						39.08	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.03	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m					59.72	
	Shops		4.00		9.00	0.38	13.50	
	Toilets		1.00		9.00	0.38	3.38	
	Hall		1.00		75.55	0.38	28.33	
	Passage		1.00		38.71	0.38	14.52	
							59.72	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
TOTAL PLINTH KIOSK =							59.72	

RCC Works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.01	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m					6.44	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	3.23	0.8	0.08	0.1938	c/c
	Grid line 2							
	btwn A-E		1	11.725	0.8	0.08	0.7035	in/in
	Grid line 3							
	btwn A-B		1	2.43	0.8	0.08	0.1458	c/c
	Grid line 4							
	btwn A-B		1	2.43	0.8	0.08	0.1458	c/in
	Grid line 5							
	btwn A-B		1	2.43	0.8	0.08	0.1458	c/in
	Grid line 6							
	btwn A-B		1	2.43	0.8	0.08	0.1458	out/out
	Grid line 6							
	btwn B-E		1	9.69	0.8	0.08	0.5814	c/c
	TOTAL =						2.0619	
B	VERTICAL							
	Grid line A							
	btwn 1-6		1	16.15	0.80	0.08	0.97	c/c
	Grid line B							
	btwn 1-6		1	16.15	0.80	0.08	0.97	c/o
	Grid line C							
	btwn 2-3		1	2.715	0.80	0.08	0.16	in/in
	Grid line C							
	btwn 5-6		1	2.43	0.80	0.08	0.15	o/in
	Grid line D							

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	btwn 2-6		1	12.12	0.80	0.08	0.73	in/in
	Grid line E							
	btwn 2-6		1	12.92	0.80	0.08	0.78	c/c
	Plinth wall outside toilet GF		1	10.43	0.80	0.08	0.63	total wall
	TOTAL =						4.3749	
	TOTAL BRICK MASONRY KIOSK =						6.44	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	0					12.74	
	SPACES							
	Shops		4.00		9.00	0.08	2.88	
	Toilets		1.00		9.00	0.08	0.72	
	Storage		1.00		9.00	0.08	0.72	
	male doctor's cabin		1.00		9.00	0.08	0.72	
	female doctor's cabin		1.00		9.00	0.08	0.72	
	Hall		1.00		48.55	0.08	3.88	
	Passage		1.00		38.71	0.08	3.10	
							12.74	
	TOTAL PLINTH KIOSK =						12.74	

Concrete works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.03	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	cu.m					0.72	
A	HORIZONTAL							
	Grid line 2							
	btwn B-E		1	9.69	0.23	0.08	0.1671525	c/c
	Grid line 6							
	btwn B-E		1	9.69	0.23	0.08	0.1671525	c/c
	TOTAL =						0.334305	
B	VERTICAL							
	Grid line B							
	btwn 2-6		1	13.00	0.23	0.08	0.22	c/o

Grid line C								
btwn 5-6		1	3.00	0.23	0.08	0.05	o/in	
Grid line D								
btwn 2-6		1	12.77	0.23	0.08	0.22	in/in	
Grid line E								
btwn 2-6		1	13.00	0.23	0.08	0.22	c/c	
TOTAL =							0.72	
TOTAL KIOSK =							0.72	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.04	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m					1.27	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	3.23	0.23	0.09	0.066861	C/C
	Grid line 2							
	btwn A-B		1	3.00	0.23	0.09	0.0621	c/in
	Grid line 2							
	btwn B-E		1	9.58	0.23	0.09	0.1982025	c/c
	Grid line 3							
	btwn A-B		1	3.00	0.23	0.09	0.0621	c/in
	Grid line 4							
	btwn A-B		1	3.00	0.23	0.09	0.0621	c/in
	Grid line 5							
	btwn A-B		1	3.00	0.23	0.09	0.0621	c/in
	Grid line 6							
	btwn A-B		1	3.00	0.23	0.09	0.0621	out/out
	Grid line 6							
	btwn B-E		1	9.69	0.23	0.09	0.200583	c/c
	TOTAL =							0.776147

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-6		1	16.23	0.23	0.09	0.34	c/c
	Grid line B							
	btwn 1-6		1	16.23	0.23	0.09	0.34	c/o
	Grid line C							
	btwn 5-6		1	3.00	0.23	0.09	0.06	o/in
	Grid line D							
	btwn 2-6		1	12.77	0.23	0.09	0.26	in/in
	Grid line E							
	btwn 2-6		1	13.00	0.23	0.09	0.27	c/c
	TOTAL =						1.267461	
	TOTAL =						1.27	
2.07	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete.	cu.m					0.86	
A	HORIZONTAL							
	Grid line 2							
	btwn B-E		1	9.69	0.23	0.09	0.200583	c/c
	Grid line 6							
	btwn B-E		1	9.69	0.23	0.09	0.200583	c/c
	TOTAL =						0.401166	
B	VERTICAL							
	Grid line B							
	btwn 2-6		1	13.00	0.23	0.09	0.27	c/o
	Grid line C							

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	btwn 5-6		1	3.00	0.23	0.09	0.06	o/in
	Grid line D							
	btwn 2-6		1	12.77	0.23	0.09	0.26	in/in
	Grid line E							
	btwn 2-6		1	13.00	0.23	0.09	0.27	c/c
	TOTAL =						0.865	
TOTAL =							0.86	
CONCRETE QUANTITY FOR FILLER SLABS								
	slab area =		77.53	sq.m				
	Concrete							
1	beams	230 wide						
		l	38.4	m				
		b	0.23	m				
		h	0.2	m				
		nos	1					
		Volume	1.77	cu.m				
2	beams	540 wide						
		l	38.4	m				
		b	0.54	m				
		h	0.2	m				
		nos	1					
		Volume	4.15	cu.m				
3	beams	200 wide						
		l	5	m				
		b	0.2	m				
		h	0.2	m				
		nos	6					
		Volume	1.20	cu.m				
4	topping/screed concrete							
		Area	77.53	sq.m				
		h	0.07	m				

		Volume =	5.4271	cu.m		
	THEREFORE TOTAL CONCRETE =			12.54	cu.m	
	FOR AREA =			77.53		
	PER SQ.M CONCRETE =			0.161753		
	TOTAL SLAB AREA GF			117.91	19.07228	
	TOTAL SLAB AREA FF			131.24	21.22845	

Formwork

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
2.11	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m			158.34	
KIOSK						
	Shops					
	bottom		4.00		9.57	38.28
	sides		4.00	2.50	0.27	2.70
	Toilet					
	bottom		1.00		4.32	4.32
			1.00		2.08	2.08
			1.00		2.08	2.08
	sides		1.00	10.40	0.27	2.81
	GF HALL					
	bottom		1.00		78.86	78.86
	sides		2.00	6.46	0.27	3.49
	BELOW MULTI PURPOSE ROOMS		1.00		20.24	20.24
			1.00	12.92	0.27	3.49
TOTAL =					158.34	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m			110.75	
KIOSK						
	GF HALL					
	bottom		1.00		79.55	79.55
	BELOW MULTI PURPOSE ROOMS		1.00		18.69	18.69
	Foyer		1.00		21.12	
	SIDES		1.00	46.33	0.27	12.51
TOTAL =					110.75	

Reinforcement works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.15	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs					286.69	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		2	3.23			6.46	C/C
	Grid line 2							
	btwn A-B		2	9.85			19.7	in/in
	Grid line 2							
	btwn B-C		2	3.15			6.3	c/c
	Grid line 3							
	btwn A-B		2	13.00			26	c/in
	Grid line 4							
	btwn A-B		2	9.85			19.7	c/in
	Grid line 5							
	btwn A-B		2	9.85			19.7	c/in
	Grid line 6							
	btwn A-B		2	9.85			19.7	out/out
	Grid line 6							
	btwn B-E		2	9.85			19.7	c/c
	TOTAL =						137.26	
B	VERTICAL							
	Grid line A							
	btwn 1-6		2	16.23			32.46	c/c
	Grid line B							
	btwn 1-6		2	16.35			32.69	c/o
	Grid line C							
	btwn 5-6		2	3.00			6.00	o/in
	Grid line D							
	btwn 2-6		2	12.77			25.54	in/in
	Grid line E							
	btwn 2-6		2	13.00			26.00	c/c
	TOTAL =						122.69	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
TOTAL LENGTH =							259.95	
	Add 2% extra for bends						5.20	
							530.30	
	8 mm BAR	kg/m	0.39				208.86	
REINFORCEMENT DIA (8 mm) =							208.86	
STIRRUPS								
	TOTAL RINGS/STIRRUPS		1299.8	0.27			344.4338	
	6 mm DIA						6.888675	
	TOAL WIGHT =	kg/m	0.22				351.3224	
REINFORCEMENT DIA (6 mm) =							77.83	
TOTAL REINFORCEMENT =							286.69	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.16	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs					227.35	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		2	3.23			6.46	C/C
	Grid line 2							
	btwn A-E		2	9.85			19.7	in/in
	Grid line 3							
	btwn B-C		2	3.15			6.3	c/c
	Grid line 3							
	btwn A-B		2	3.00			6	c/in
	Grid line 4							
	btwn A-B		2	3.00			6	c/in
	Grid line 5							
	btwn A-B		2	3.00			6	c/in
	Grid line 6							
	btwn A-B		2	3.00			6	out/out
	Grid line 6							
	btwn B-E		2	9.85			19.7	c/c
TOTAL =							76.16	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-6		2	16.23			32.46	c/c
	Grid line B							
	btwn 1-6		2	16.35			32.69	c/o
	Grid line C							
	btwn 5-6		2	3.00			6.00	o/in
	Grid line D							
	btwn 2-6		2	12.77			25.54	in/in
	Grid line E							
	btwn 2-6		2	13.00			26.00	c/c
	TOTAL =						122.69	
	TOTAL LENGTH =						198.85	
	Add 2% extra for bends						3.98	
							405.65	
	8 mm BAR	kg/m	0.39				159.77	
	REINFORCEMENT DIA (8 mm) =						159.77	
	STIRRUPS 6 mm							
	TOTAL RINGS/STIRRUPS		994.25				255.5263	
	Rebar 6 mm link, 100 mm c/c Nos =		30.00					
			964.25	0.27				
	2% Wastage						5.110525	
	TOAL WIGHT =	kg/m	0.22				260.6368	
	REINFORCEMENT DIA (6 mm) =						57.74	
	TOTAL REINFORCEMENT =						217.51	
	STIRRUPS 8 mm							
	TOTAL RINGS/STIRRUPS		30.00	0.825			24.75	
	2% Wastage			0.39			0.495	
	TOAL WIGHT =	kg/m	0.39				25.245	
	REINFORCEMENT DIA (8 mm) =						9.85	
								227.35

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.18	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs					244.52	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		2	3.23			6.46	C/C
	Grid line 2							
	btwn A-E		2	9.85			19.7	in/in
	Grid line 3							
	btwn B-C		2	3.15			6.3	c/c
	Grid line 3							
	btwn A-B		2	3.00			6	c/in
	Grid line 4							
	btwn A-B		2	3.00			6	c/in
	Grid line 5							
	btwn A-B		2	3.00			6	c/in
	Grid line 6							
	btwn A-B		2	3.00			6	out/out
	Grid line 6							
	btwn B-E		2	9.85			19.7	c/c
	TOTAL =						76.16	
B	VERTICAL							
	Grid line A							
	btwn 1-6		2	16.23			32.46	c/c
	Grid line B							
	btwn 1-6		2	16.35			32.69	c/o
	Grid line C							
	btwn 5-6		2	3.00			6.00	o/in
	Grid line D							
	btwn 2-6		2	12.77			25.54	in/in

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line E							
	btwn 2-6		2	13.00			26.00	c/c
	TOTAL =						122.69	
	TOTAL LENGTH =						198.85	
	Add 2% extra for bends						3.98	
							405.65	
	8 mm BAR	kg/m	0.39				159.77	
	REINFORCEMENT DIA (8 mm) =						159.77	
	STIRRUPS 6 mm							
	TOTAL RINGS/STIRRUPS		994.25				238.5663	
	Rebar 6 mm link, 100 mm c/c Nos =		94.00					
			900.25	0.27				
	2% Wastage						4.771325	
	TOAL WIGHT =	kg/m	0.22				243.3376	
	REINFORCEMENT DIA (6 mm) =						53.91	
	TOTAL REINFORCEMENT =						213.67	
	STIRRUPS 8 mm							
	TOTAL RINGS/STIRRUPS		94.00	0.825			77.55	
	2% Wastage			0.39			1.551	
	TOAL WIGHT =	kg/m	0.39				79.101	
	REINFORCEMENT DIA (8 mm) =						30.85	
							244.52	

Brickwork

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.01	Providing and laying brick work using Fly ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) below ground level upto 1.5 m depth and upto coping bottom including curing etc complete	sq.m					31.72	
	THEREFORE TOTAL BRICK WORK BELOW GL =							
		230 WALL					18.26	
		350 WALL					5.84	
		460 WALL					7.62	
							31.72	cu.m

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.02	Providing and laying brick work using Fly Ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at GF level	cu.m					41.50	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	3.23	0.23	2.78	2.0615475	C/C
	Grid line 2							
	btwn A-B		1	3.00	0.23	3.38	2.32875	c/in
	Grid line 2							
	btwn B-E		1	9.58	0.23	3.93	8.6548425	c/c
	Grid line 3							
	btwn A-B		1	3.00	0.23	3.00	2.07	c/in
	Grid line 3							
	btwn B-C		1	6.23	0	3.93	0	c/in
	Grid line 4							
	btwn A-B		1	3.00	0.23	3.00	2.07	c/in
	Grid line 5							
	btwn A-B		1	3.00	0.23	3.00	2.07	c/in
	Grid line 5							
	btwn B-D		1	6.23	0.23	3.93	5.631297	c/in
	Grid line 6							
	btwn A-B		1	3.00	0.23	3.00	2.07	out/out
	Grid line 6							
	btwn B-E		1	9.69	0.23	3.93	8.758791	c/c
	TOTAL =						35.71523	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-6		1	16.15	0.23	3.00	11.14	c/c
	Grid line B							
	btwn 1-2		1	3.12	0.23	3.93	2.82	c/c
	Grid line B							
	btwn 2-6		1	16.15	0.23	3.93	14.60	c/o
	Grid line C							
	btwn 5-6		1	3.00	0.23	3.93	2.71	o/in
	Grid line D							
	btwn 2-6		1	12.69	0.23	3.93	11.47	in/in
	Grid line E							
	btwn 2-6		1	12.92	0.23	3.93	11.68	c/c
	TOTAL =						54.41771	
	TOTAL BRICK MASONRY KIOSK =						54.42	
B	DEDUCTIONS FOR OPENINGS							
1	DOORS							
	Shops		4	2.5	0.23	2.1	4.83	
	Toilet							
	male		1	0.9	0.23	2.1	0.4347	
	female		1	0.9	0.23	2.1	0.4347	
	DOCTOR room							
	male		1	0.9	0.23	2.35	0.48645	
	female		1	0.9	0.23	2.35	0.48645	
	STORAGE							
	HALL ENTRY OPENING							
			2	1.00	0.23	2.35	1.081	
			1	2.00	0.23	2.35	1.081	
			1	2.77	0.23	2.35	1.50	
	HALL MAIN ENTRY		1	0.9	0.23	2.35	0.48645	
2	WINDOWS							
	HALL		2	1.2	0.23	1.5	0.828	
	OPENING DEDUCTIONS TOTAL =						11.646	
3	LINTEL						1.27	
	TOTAL						41.50	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.03	Providing and laying brick work using Fly Ash bricks having a crushing strength of 70 kg/sq.cm in cement mortar of 1:4 (where 1 part is cement, 4 parts is sand) including curing etc complete at FF level	cu.m					34.10	
A	HORIZONTAL							
	Grid line 2							
	btwn B-E		1	9.69	0.23	3.93	8.758791	c/c
	Grid line 5							
	btwn B-D		1	6.23	0.23	3.93	5.631297	c/c
	Grid line 6							
	btwn B-E		1	9.69	0.23	3.93	8.758791	c/c
	TOTAL =						23.14888	
B	VERTICAL							
	Grid line B							
	btwn 2-6		1	13.00	0.23	3.93	11.75	c/o
	Grid line C							
	btwn 5-6		1	3.00	0.23	3.93	2.71	o/in
	Grid line D							
	btwn 2-6		1	12.77	0.23	3.93	11.54	in/in
	Grid line E							
	btwn 2-6		1	13.00	0.23	3.93	11.75	c/c
	TOTAL =						37.7559	
	TOTAL BRICK MASONRY KIOSK =						37.76	
B	DEDUCTIONS FOR OPENINGS							
1	DOORS							
	Multipurpose room		1	1.2	0.23	2.35	0.6486	
	Male multi purpose		1	0.9	0.23	2.35	0.48645	
	female multi purpose		1	0.9	0.23	2.35	0.48645	
	HALL MAIN ENTRY		1	0.9	0.23	2.35	0.48645	
2	WINDOWS							
	HALL		2	1.2	0.23	1.5	0.828	
	OPENING DEDUCTIONS TOTAL =						2.936	
3	LINTEL						0.72	
	TOTAL						34.10	

Design Package Using Alternate Building Materials & Technologies, West Zone

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.04	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at terrace level	cu.m					3.13	
A	HORIZONTAL							
	Parapet wall							
			1	45.38	0.23	0.30	3.13122	c/c
TOTAL BRICK MASONRY =							3.13	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
3.05	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. above GF level	Sq.m				16.17	
A	Toilet partition		1.00	4.67	3.00	14.01	
	Deduct D1		1.00	0.90	2.40	2.16	
						16.17	
TOTAL BRICK MASONRY (sq.m) =						16.17	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
3.06	Providing and laying brickwork 115 mm thick BRICK MASONRY PARTITION WALL, using Fly Ash bricks having 5 N/mm2 strength, in 1:4 mortar (where 1 part is cement & 4 parts is sand) including raking out the joints, curing, scaffolding etc. on FF level	cu.m				6.12	
A	MP Room		1.00	3.00	3.00	9.00	
	door D		1.00	1.2	2.4	2.88	
						6.12	
TOTAL BRICK MASONRY (sq.m) =						6.12	

Plaster works**Internal Plaster**

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on GF					568.98	
	INTERIOR PLASTER FOR KIOSK						
A	shops		4.00	12.46	3.00	149.52	
B	Storage		1.00	12.43	3.93	48.85	
C	Doctor cabin		2.00	12.92	3.93	101.55	
D	HALL		1.00	31.38	3.93	123.32	
E	Hall Passage - entry		1.00	33.22	3.93	130.55	
G	Toilet						
	mens		1.00	13.54	3.00	40.62	
	womens		1.00	6.23	3.00	18.69	
	TOTAL PLASTER INTERIOR (sq.m) =						613.11
H	DEDUCTIONS						
1	DOORS						
	Shops		4	2.5	2.1	21	
	Toilet						
	male		1	0.9	2.1	1.89	
	female		1	0.9	2.1	1.89	
	DOCTOR room						
	male		1	0.9	2.35	2.115	
	female		1	0.9	2.35	2.115	
	STORAGE						
	HALL ENTRY OPENING		2	1.00	2.35	4.7	
			1	2.00	2.35	4.7	
	HALL MAIN ENTRY		1	0.9	2.35	2.115	
2	WINDOWS						
	HALL		2	1.2	1.5	3.6	
	OPENING DEDUCTIONS TOTAL =						44.125
	TOTAL PLASTERING QUANTITY GROUND FLOOR (sq.m) =						568.98

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.02	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of GF					149.44	
	INTERIOR PLASTER FOR KIOSK						
	CEILING PLASTER						
	shops		4.00		9.57	38.28	
	hall		1.00		78.86	78.86	
	PASSAGE		1.00		24.87	24.87	
	Staircase						
			1.00	3.57	1.50	5.36	
			1.00	1.39	1.50	2.08	
	TOTAL PLASTER INTERIOR (sq.m) =					149.44	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.04	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on ceiling of FF					117.86	
	INTERIOR PLASTER FOR KIOSK						
	Ceiling Plaster						
	hall		1.00		79.55	79.55	
	PASSAGE		1.00		38.31	38.31	
	TOTAL PLASTER INTERIOR (sq.m) =					117.86	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.05	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on terrace	sq.m				13.34	
	parapet plaster		1.00	44.46	0.30	13.34	
						13.34	
	TOTAL INTERNAL PLASTERING CABIN (sq.m) =					13.34	

Exterior plaster

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	sq.m				226.67	
	EXTERIOR PLASTER						
	L. Toilet		1.00	9.92	3.10	30.75	
	Shops		1.00	13.14	3.10	40.73	
	Doctor side façade		1.00	13.15	4.65	61.15	
	Entry façade		1.00	13.15	4.65	61.15	
	east façade		1.00	9.69	4.65	45.06	
	TOTAL						238.84
	Deductions						
1	DOORS						
	Shops		4	2.5	2.1	4.83	
	Toilet						
	male		1	0.9	2.1	0.4347	
	female		1	0.9	2.1	0.4347	
	DOCTOR room						
	male		1	0.9	2.35	0.48645	
	female		1	0.9	2.35	0.48645	
	STORAGE						
	HALL ENTRY OPENING						
			2	1.00	2.35	1.081	
			1	2.00	2.35	1.081	
			1	2.77	3.93	2.50	
2	WINDOWS						
	HALL		2	1.2	1.5	0.828	
	OPENING DEDUCTIONS TOTAL =						12.166
	THEREFORE EXTERIOR PLASTER GF =						226.67

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level	sq.m				183.06	
	EXT PLASTER						
	EXT KIOSK PLASTER		1.00	46.30	4.20	194.46	
	TOTAL					194.46	
	Deductions						
	Multi purpose room		3	1.2	1.5	5.40	
			2	1	1.5	3.00	
			1	2	1.5	3.00	
	OPENING DEDUCTIONS TOTAL =					11.400	
	THEREFORE EXTERIOR PLASTER GF =					183.06	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.08	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on TERRACE level	sq.m				26.39	
	TERRACE						
	Parapet walls		1.00	46.30	0.57	26.39	
	TOTAL EXTERIOR PLASTER (sq.m) =					26.39	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 20 mm thick on interior concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on BRICKWORK on FF					234.96	
	INTERIOR PLASTER FOR KIOSK						
A	Hall		1.00	31.54	3.93	123.95	
B	Hall Passage - entry		1.00	33.22	3.93	130.55	
	TOTAL PLASTER INTERIOR (sq.m) =					254.51	
C	DEDUCTIONS						
1	Doors						
	MP room						
	male		1	0.9	2.35	2.115	
	female		1	0.9	2.35	2.115	
	HALL MAIN ENTRY		1	0.9	2.35	2.115	
2	WINDOWS						
	W1		1	2	1.5	3	
	W2		4	1.2	1.5	7.2	
	W3		2	1	1.5	3	
	OPENING DEDUCTIONS TOTAL =					19.545	
	TOTAL PLASTERING QUANTITY GROUND FLOOR (sq.m) =					234.96	

Painting and Finishing works

The quantities of internal and external painting are same as corresponding interior and exterior plastering quantities.

Flooring works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m			193.44	
KIOSK FLOORING						
	Toilet		1.00	6.71	6.71	
			1.00	2.28	2.28	
	Shops		4.00	9.57	38.28	
	Hall		1.00	57.78	57.78	
	Doctors		2.00	9.20	18.40	
	Passage		1.00	38.70	38.70	
	Exterior Passage II to toilet area plinth		1.00	31.29	31.29	
TOTAL =					193.44	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	sq.m			110.77	
KIOSK FLOORING						
	Hall		1.00	59.43	59.43	
	MP room		2.00	9.20	18.40	
	Passage		1.00	32.94	32.94	
TOTAL =					110.77	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.03	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m			120.80	
KIOSK FLOORING						
	terrace		1.00	120.80	120.80	
TOTAL =					120.80	

SR NO	ITEM DESCRIPTION	UNIT	LENGTH	HEIGHT	QUANTITY	REMARKS
6.09	Providing and laying tiles 6mm thick (150 mm x 150 mm) in dado on 10 mm thick cement mortar 1:3 (1:cement 3 sand) and jointed with white cement slurry including cutting, finishing, filling up joints etc at ground floor	sq.m			20.86	
KIOSK FLOORING						
	TOLITES FOR MEN		12.42	0.90	11.17	
	TOLITES FOR WOMEN		5.10	1.90	9.69	
TOTAL =					20.86	

SCHOOL BUILDING QUANTITIES

Earthwork and Excavation

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m					66.83	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		1	12.94	0.8	0.90	9.3168	c/c
	Grid line 2							
	btwn A-D		1	4.23	0.8	0.90	3.0456	c/c
	Grid line 2							
	btwn C-D		1	5.23	0.8	0.90	3.7656	in/in
	Grid line 3							
	btwn B-C		1	3.08	0.8	0.90	2.2176	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.8	0.90	3.7656	c/in
	TOILET WALL		1	4.49	0.8	0.90	3.2328	out/c
	TOTAL =						25.344	
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.80	0.90	5.03	c/c
	Grid line B							
	btwn 1-2		1	13.97	0.80	0.90	10.06	c/c
	staircase- store		1	4.23	0.80	0.90	3.05	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.80	0.90	10.06	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.80	0.90	10.06	o/in
	TOILET		1	4.49	0.80	0.90	3.23	
	TOTAL =						41.4828	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
TOTAL EXCAVATION							66.83	
	DEDUCTIONS							
	230						11.39	
	350						4.96	
	460						6.46	
	PCC						5.57	
							28.37	
TOTAL BACKFILLING							38.45	
	PLINTH FILLING							
	OFFICE				13.08	0.45	5.886	
	LIBRARY				13.08	0.45	5.886	
	CLASS 1				33.84	0.45	15.228	
	CLASS 2				33.84	0.45	15.228	
	PASSAGE				44.65	0.45	20.0925	
	TOILET				26.86	0.45	12.087	
TOTAL PLINTH FILLING							74.41	

RCC works

PCC works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m					17.97	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		1	12.94	0.8	0.08	0.7764	C/C
	Grid line 2							
	btwn A-D		1	4.23	0.8	0.08	0.2538	C/C
	Grid line 2							
	btwn C-D		1	5.23	0.8	0.08	0.3138	in/in
	Grid line 3							
	btwn B-C		1	3.08	0.8	0.08	0.1848	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.8	0.08	0.3138	c/in
	TOILET WALL		1	4.49	0.8	0.08	0.2694	OUT/C
	TOTAL =						2.112	
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.80	0.08	0.42	c/c
	Grid line B							
	btwn 1-2		1	13.97	0.80	0.08	0.84	c/c
	staircase- store		1	4.23	0.80	0.08	0.25	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.80	0.08	0.84	o/in

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Grid line D							
	btwn 1-3		1	13.97	0.80	0.08	0.84	o/in
	TOILET		1	4.49	0.80	0.08	0.27	
	TOTAL =						3.4569	
	TOTAL =						5.57	
	PLINTH FILLING							
	OFFICE				13.08	0.075	0.981	
	LIBRARY				13.08	0.075	0.981	
	CLASS 1				33.84	0.075	2.538	
	CLASS 2				33.84	0.075	2.538	
	PASSAGE				44.65	0.075	3.34875	
	TOILET				26.86	0.075	2.0145	
	TOTAL BELOW GF						12.40	
	TOTAL PCC						17.97	

Concrete works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.04	Providing and laying in line and level RCC 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) for RCC coping band etc. complete excluding reinforcement and formwork	cu.m					1.63	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		1	12.94	0.23	0.08	0.223215	C/C
	Grid line 2							
	btwn A-D		1	4.23	0.23	0.08	0.0729675	C/C
	Grid line 2							
	btwn C-D		1	5.00	0.23	0.08	0.08625	in/in
	Grid line 3							
	btwn B-C		1	3.37	0.23	0.08	0.0580463	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.23	0.08	0.0902175	c/in
	TOILET WALL		1	5.88	0.23	0.08	0.1014128	OUT/C
	TOTAL =						0.632109	
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.23	0.08	0.12	c/c
	Grid line B							
	btwn 1-2		1	13.97	0.23	0.08	0.24	c/c
	staircase- store		1	4.00	0.23	0.08	0.07	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.23	0.08	0.24	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.23	0.08	0.24	o/in
	TOILET		1	4.78	0.23	0.08	0.08	
	TOTAL =						0.994808	
TOTAL =							1.63	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	H	QUANTITY	REMARKS
2.03	Providing and laying RCC M20 grade slab at ground level of 100 mm thickness including finishing the surface, curing etc complete	sq.m				9.38	
SCHOOL GF							
	OFFICE		1.00	13.08	0.10	1.31	
	LIBRARY		1.00	13.08	0.10	1.31	
	CLASS 1		1.00	33.84	0.10	3.38	
	CLASS 2		1.00	33.84	0.10	3.38	
TOTAL =						9.38	
TOTAL FLOORING GF (sq.m) =						9.38	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.05	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	cu.m					1.09	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	4.23	0.23	0.09	0.087561	C/C
	Grid line 1							
	btwn C-D		1	5.23	0.23	0.09	0.108261	C/C
	Grid line 2							
	btwn A-B		1	4.23	0.23	0.09	0.087561	C/C
	Grid line 2							
	btwn C-D		1	5.00	0.23	0.09	0.1035	in/in
	Grid line 3							
	btwn B-C		1	3.37	0.23	0.09	0.0696555	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.23	0.09	0.108261	c/in
TOTAL =							0.5648	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.23	0.09	0.14	c/c
	Grid line B							
	btwn 1-2		1	13.97	0.23	0.09	0.29	c/c
	staircase- store		1	4.00	0.23	0.09	0.08	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.23	0.09	0.29	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.23	0.09	0.29	o/in
	TOTAL =						1.094927	
	TOTAL LINTEL SCHOOL =						1.09	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.07	Providing and laying in line and level RCC LINTEL at FF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete	cu.m					1.09	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	4.23	0.23	0.09	0.087561	C/C
	Grid line 1							
	btwn C-D		1	5.23	0.23	0.09	0.108261	C/C
	Grid line 2							
	btwn A-B		1	4.23	0.23	0.09	0.087561	C/C
	Grid line 2							
	btwn C-D		1	5.00	0.23	0.09	0.1035	in/in
	Grid line 3							
	btwn B-C		1	3.37	0.23	0.09	0.0696555	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.23	0.09	0.108261	c/in
	TOTAL =						0.5648	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.23	0.09	0.14	c/c
	Grid line B							
	btwn 1-2		1	13.97	0.23	0.09	0.29	c/c
	staircase- store		1	4.00	0.23	0.09	0.08	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.23	0.09	0.29	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.23	0.09	0.29	o/in
	TOTAL =						1.094927	
	TOTAL LINTEL SCHOOL =						1.09	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	HEIGHT	QUANTITY	REMARKS
2.06	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at GF level	sq.m				142.68	
	for 8 UNITS						
	Total floor Area =			142.68		142.68	
	TOTAL =					142.68	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	HEIGHT	QUANTITY	REMARKS
2.08	Providing and laying filler slab roof with Concrete grade M20, and reinforcement as per design with concrete blocks as filler material laid as per the structural detail excluding formwork, deshuttering and including curing at FF level	cu.m				157.40	
	for 8 UNITS						
	Total floor Area =			157.40		157.40	
	TOTAL =					157.40	

Formwork

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.09	Providing and erecting formwork for COPING, of ordinary timber planking, upto a depth of 1.5 m below plinth, including shuttering oil, deshuttering the same etc. complete	sq.m				25.29	
A	INSIDE BUILDING						
	OFFICE		1	14.54	0.08	1.09	out/out
	LIBRARY		1	14.54	0.08	1.09	in/in
	CLASS 1		1	23.53	0.08	1.76	out/c
	CLASS 2		1	23.53	0.08	1.76	out/c
	PASSAGE		1	34.43	0.08	2.58	in/in
	TOILET		1	14.6	0.08	1.10	out/out
			1	10.65	0.08	0.80	out/out
	TOTAL =					10.1865	
B	OUTSIDE THE BUILDING						
	toilet		1	54.73	0.08	4.10	c/c
			1	10.88	0.08	0.82	in/in
	TOTAL =					4.92075	
						15.10725	
	TOTAL COPING formwork (sq.m) =					25.29	
	TOTAL =					25.29	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.10	Providing and laying in line and level RCC LINTEL at GF level in cement concrete (M20) 1:1.5:3 (where 1 part is cement, 1.5 parts is sand and 3 parts is aggregates) etc. excluding reinforcement and formwork, including curing compaction etc. complete excluding reinforcement and formwork	sq.m				30.35	
A	INSIDE BUILDING						
	OFFICE		1	14.54	0.09	1.31	out/out
	LIBRARY		1	14.54	0.09	1.31	in/in
	CLASS 1		1	23.53	0.09	2.12	out/c
	CLASS 2		1	23.53	0.09	2.12	out/c
	PASSAGE		1	34.43	0.09	3.10	in/in
	TOILET		1	14.6	0.09	1.31	out/out
			1	10.65	0.09	0.96	out/out
	TOTAL =					12.2238	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
B	OUTSIDE THE BUILDING						
	EXTERIOR		1	54.73	0.09	4.93	c/c
	TOILET		1	10.88	0.09	0.98	in/in
	TOTAL =					5.9049	
						18.1287	
TOTAL COPING formwork (sq.m) =						30.3525	
TOTAL =						30.35	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
2.12	Providing and erecting formwork for FIRST FLOOR LINTEL, of ordinary timber planking, including applying shuttering oil, deshuttering the same etc. complete	sq.m				24.83	
A	INSIDE BUILDING						
	OFFICE		1	14.54	0.09	1.31	out/out
	LIBRARY		1	14.54	0.09	1.31	in/in
	CLASS 1		1	23.53	0.09	2.12	out/c
	CLASS 2		1	23.53	0.09	2.12	out/c
	PASSAGE		1	34.43	0.09	3.10	in/in
	TOTAL =					9.95	
B	OUTSIDE THE BUILDING						
	EXTERIOR		1	54.73	0.09	4.93	c/c
	TOTAL =					4.9257	
						14.877	
TOTAL COPING formwork (sq.m) =						24.83	
TOTAL =						24.83	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA		QUANTITY	REMARKS
2.11	Providing and erecting formwork for GROUND FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				140.56	
SCHOOL GF							
	BOTTOM						
	OFFICE		1.00	13.08		13.08	
	LIBRARY		1.00	13.08		13.08	
	CLASS 1		1.00	33.84		33.84	
	CLASS 2		1.00	33.84		33.84	
	PASSAGE		1.00	31.94		31.94	
	SIDES						
	Beam		1.00	54.74	0.27	14.78	
TOTAL =						140.56	
TOTAL F/W (sq.m) =						140.56	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA		QUANTITY	REMARKS	
2.13	Providing and erecting formwork for FIRST FLOOR SLAB, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				154.02		
SCHOOL FF								
	BOTTOM							
	OFFICE		1.00	13.08		13.08		
	LIBRARY		1.00	13.08		13.08		
	CLASS 1		1.00	33.84		33.84		
	CLASS 2		1.00	33.84		33.84		
	PASSAGE		1.00	45.40		45.40		
	SIDES							
	Beam		1.00	54.74	0.27	14.78		
TOTAL =						154.02		
TOTAL F/W (sq.m) =						154.02		

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
2.11	Providing and erecting formwork for GF staircase, of ordinary timber planking as sides and steel shutter plates as bottom, including applying shuttering oil, deshuttering the same etc. complete	sq.m				16.48	
A	Waste slab bottom						
	1st flight		1.00	3.57	1.50	5.36	
	2nd flight		1.00	1.39	1.50	2.08	
B	Landing						
	bottom					4.87	
	sides		1.00	3.71	0.24	0.89	
			1.00	3.25	0.12	0.39	
			2.00	0.24	0.23	0.11	
C	Sides						
	Risers		40.00	0.25	0.15	1.50	
	Waste slab		2.00	3.57	0.13	0.93	
			2.00	1.39	0.13	0.36	
	TOTAL =					16.48	

Reinforcement works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.15	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for COPING	kgs					132.25	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		2	12.94			25.88	c/c
	Grid line 2							
	btwn A-B		2	4.23			8.46	c/c
	Grid line 2							
	btwn C-D		2	5.00			10	in/in
	Grid line 3							
	btwn B-C		2	3.37			6.73	c/in
	Grid line 3							
	btwn C-D		2	5.23			10.46	c/in
	Toilet wall		2	5.88			11.758	out/c
	TOTAL =						73.288	
B	VERTICAL							
	Grid line A							
	btwn 1-2		2	6.99			13.97	c/c
	Grid line B							
	btwn 1-3		2	13.97			27.94	c/c
	staircase- store		2	4.00			8.00	c/o
	Grid line C							
	btwn 1-3		2	13.97			27.94	o/in
	Grid line D							
	btwn 1-3		2	13.97			27.94	o/in
	Toilet wall		2	4.78			9.55	
	TOTAL =						115.34	
Total length =							188.63	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Add 2% extra =						3.77	
	Total length 8 mm bars =						192.40	
	8 mm BAR	kg/m	0.39				75.78	
	REINFORCEMENT DIA (8 mm) =						75.78	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		943.14	0.27			249.9321	
	6 mm DIA						4.998642	
	TOAL WIGHT =	kg/m	0.22				254.9307	
	REINFORCEMENT DIA (6 mm) =						56.48	
	TOTAL REINFORCEMENT =						132.25	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.16	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for GF LINTEL BAND	kgs					167.55	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		2	12.94			25.88	C/C
	Grid line 2							
	btwn A-B		2	4.23			8.46	C/C
	Grid line 2							
	btwn C-D		2	5.00			10	in/in
	Grid line 3							
	btwn B-C		2	3.37			6.73	c/in
	Grid line 3							
	btwn C-D		2	5.23			10.46	c/in
	Toilet wall		2	5.88			11.758	OUT/C
	TOTAL =						73.288	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-2		2	6.99			13.97	c/c
	Grid line B							
	btwn 1-3		2	13.97			27.94	c/c
	staircase- store		2	4.00			8.00	c/o
	Grid line C							
	btwn 1-3		2	13.97			27.94	o/in
	Grid line D							
	btwn 1-3		2	13.97			27.94	o/in
	Toilet wall		2	4.78			9.55	
	TOTAL =						115.34	
	Total length =						188.63	
	Add 2% extra =						3.77	
	Total length8 mm bars =						192.40	
	8 mm BAR	kg/m	0.39				75.78	
	REINFORCEMENT DIA (8 mm) =						75.78	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		943.14				215.4821	
	Deductions of lintel stirrups	nos	130.00					
			813.14	0.27				
	6 mm DIA						4.309642	
	TOAL WIGHT =	kg/m	0.22				219.7917	
	REINFORCEMENT DIA (6 mm) =						48.69	
	TOTAL REINFORCEMENT =						124.47	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		130.00	0.825			107.25	
	8 mm DIA						2.145	
	TOAL WIGHT =	kg/m	0.39				109.395	
	REINFORCEMENT DIA (8 mm) =						43.08	
							167.55	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.18	Providing and laying TOR steel reinforcement for all RCC works as per the structural details and placing the rebar cage in position including cutting, bending, binding with 18 gauge GI wire etc. complete for FF LINTEL BAND	kgs					159.41	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		2	12.94			25.88	C/C
	Grid line 2							
	btwn A-B		2	4.23			8.46	C/C
	Grid line 2							
	btwn C-D		2	5.00			10	in/in
	Grid line 3							
	btwn B-C		2	3.37			6.73	c/in
	Grid line 3							
	btwn C-D		2	5.23			10.46	c/in
	Toilet wall		2	5.88			11.758	OUT/C
	TOTAL =						73.288	
B	VERTICAL							
	Grid line A							
	btwn 1-2		2	6.99			13.97	c/c
	Grid line B							
	btwn 1-3		2	13.97			27.94	c/c
	staircase- store		2	4.00			8.00	c/o
	Grid line C							
	btwn 1-3		2	13.97			27.94	o/in
	Grid line D							
	btwn 1-3		2	13.97			27.94	o/in
	Toilet wall		2	4.78			9.55	
	TOTAL =						115.34	
Total length =							188.63	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	Add 2% extra =						3.77	
	Total length8 mm bars =						192.40	
	8 mm BAR	kg/m	0.39				75.78	
	REINFORCEMENT DIA (8 mm) =						75.78	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		943.14				223.4321	
	Deductions of lintel stirrups	nos	100.00					
			843.14	0.27				
	6 mm DIA						4.468642	
	TOAL WIGHT =	kg/m	0.22				227.9007	
	REINFORCEMENT DIA (6 mm) =						50.49	
	TOTAL REINFORCEMENT =						126.27	
	STIRRUPS							
	TOTAL RINGS/STIRRUPS		100.00	0.825			82.5	
	8 mm DIA						1.65	
	TOAL WIGHT =	kg/m	0.39				84.15	
	REINFORCEMENT DIA (8 mm) =						33.14	
							159.41	

	slab size					
1	Beams 200 on grid		16			
a	16 dia					
	nos =		48			
	l =		5.63			
	Total length =		270.24			
	kg/m weight =		1.58			
	Total weight =		425.73	kgs		
b	8 dia			8 mm		
	nos =		24			
	l =		5.63			
	Total length =		135.12			
	kg/m weight =		0.39			
	Total weight =		53.22	kgs		
c	Stirrups			6 mm		
	Nos =		28.15			
	Total beams		12.00			
	Therefore total nos =		337.80			
	Length =		0.92			
	Total length =		310.776			
	kg/m weight =		0.22			
	Total weight =		68.85	kgs		
	Therefore total rebars for 200 beams =				547.80	kgs
1	Beams 230 on grid		10			
a	10 dia					
	nos =		4			

	l =		43.56		
	Add 2%		44.4312		
	Total length =		177.7248		
	kg/m weight =		0.62		
	Total weight =		109.37	kgs	
b	Stirrups			6	mm
	Nos =		217.80		
	Length =		0.98		
	Total length =		213.444		
	kg/m weight =		0.22		
	Total weight =		47.29	kgs	
	Therefore total rebars for 230 beams =				156.66 kgs
	l =	7.06			
	8 mm tor		0.2	c/c	
	nos required =			35	
	straight bar length =			10.84	m
	no of straight bars =			18	
				191.33	m
	alt bent up bar length =			11.12	m
	no of alt bent up bars =			18	
				196	m
	total 8 mm length =			388	
	per kg weight =			0.39	kg/m
	TOTAL WEIGHT =			153	kgs.
	b =	5.46			
	8 mm tor		0.2	c/c	
	nos required =			27	
	straight bar length =			14.04	
	no of straight bars =			14	

				192		
	alt bent up bar length =			14.32		
	no of alt bent up bars =			14		
				195		
	total 8 mm length =			387		
		per kg weight =		0.39	kg/m	
	TOTAL WEIGHT =			152	kgs.	
	Extra top +600 over the supports 108 mm					
		I =		1.43		
		I =	5			
		8 mm tor		0.2 c/c		
	nos =		25.00			
			12.5			
	Total length =		35.75			
		per kg weight =		0.39	kg/m	
	Total weight =			14	kg	
	Extra top +600 over the supports 10 mm					
		I =		0.83		
		I =	5			
		8 mm tor		0.2 c/c		
	nos =		25.00			
			12.5			
	Total length =		20.75			
		per kg weight =		0.39	kg/m	
	Total weight =			8	kg	
	Total slab rebar weight =			1032	kg	

THEREFORE TOTAL REINFORCEMENT FOR				77.92	sq.m OF SLAB =			
						1032	KGS	
						13.24205	kg/sq.m	
	/SQ.M	GF	FF					
	13.24	143	157.4	SCHOOL				
		116.30	131.24	KIOSK				
Add reinforcement for staircase				KGS				
TOTAL REINFORCEMENT GF =				1889.38	KGS.		SCHOOL	GF
Add reinforcement for staircase								
				1540.05	KGS.		KIOSK	
TOTAL REINFORCEMENT FF =				2084.30	KGS.		SCHOOL	FF
				1737.89	KGS.		KIOSK	

Brickwork

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m					18.95	
A	HORIZONTAL							
	Grid line 1							
	btwn A-D		1	12.94	0.23	0.38	1.116075	C/C
	Grid line 2							
	btwn A-D		1	4.23	0.23	0.38	0.3648375	C/C
	Grid line 2							
	btwn C-D		1	5.00	0.23	0.38	0.43125	in/in
	Grid line 3							
	btwn B-C		1	3.37	0.23	0.38	0.2902313	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.23	0.38	0.4510875	c/in
	TOILET WALL		1	5.88	0.23	0.38	0.5070638	OUT/C
	TOTAL =						3.160545	
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.23	0.38	0.60	c/c
	Grid line B							
	btwn 1-2		1	6.99	0.23	0.38	0.60	c/c
	staircase- store		1	4.00	0.23	0.38	0.35	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.23	0.38	1.20	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.23	0.38	1.20	o/in
	TOILET		1	4.78	0.23	0.38	0.41	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
	TOTAL =						4.371581	
	BRICK MASONRY =						7.53	
	Add 350 wall						4.96	
	Add 460 wall						6.46	
	TOTAL BRICK MASONRY =						18.95	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m					38.91	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	4.23	0.23	4.27	4.1513643	C/C
	Grid line 1							
	btwn C-D		1	5.23	0.23	4.27	5.1327743	C/C
	Grid line 2							
	btwn A-B		1	4.23	0.23	4.27	4.1513643	C/C
	Grid line 2							
	btwn C-D		1	5.00	0.23	4.27	4.90705	in/in
	Grid line 3							
	btwn B-C		1	3.37	0.23	4.27	3.3024447	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.23	4.27	5.1327743	c/in
	TOTAL =						26.77777	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.23	4.27	6.86	c/c
	Grid line B							
	btwn 1-2		1	6.99	0.23	4.27	6.86	c/c
	staircase- store		1	4.00	0.23	4.27	3.93	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.23	4.27	13.71	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.23	4.27	13.71	o/in
	TOTAL =						45.05653	
	TOTAL BRICK MASONRY KIOSK =						45.06	
B	DEDUCTIONS FOR OPENINGS							
1	DOORS							
	Office		1	0.9	0.23	2.3	0.4761	
	Library		1	0.9	0.23	2.3	0.4761	
	Class 1		1	1.2	0.23	2.3	0.6348	
	Class 2		1	1.2	0.23	2.3	0.6348	
2	WINDOWS							
	Office		1	1.7	0.23	1.5	0.5865	
	Library		1	1.7	0.23	1.5	0.5865	
	Class 1		2	1.2	0.23	1.5	0.828	
	Class 2		2	1.2	0.23	1.5	0.828	
	OPENING DEDUCTIONS TOTAL =						5.05	
3	LINTEL						1.09	
	TOTAL =						38.91	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m					43.28	
A	HORIZONTAL							
	Grid line 1							
	btwn A-B		1	4.23	0.23	4.27	4.1513643	C/C
	Grid line 1							
	btwn C-D		1	5.23	0.23	4.27	5.1327743	C/C
	Grid line 2							
	btwn A-B		1	4.23	0.23	4.27	4.1513643	C/C
	Grid line 2							
	btwn C-D		1	5.00	0.23	4.27	4.90705	in/in
	Grid line 3							
	btwn B-C		1	3.37	0.23	4.27	3.3024447	c/in
	Grid line 3							
	btwn C-D		1	5.23	0.23	4.27	5.1327743	c/in
	TOTAL =						26.77777	
B	VERTICAL							
	Grid line A							
	btwn 1-2		1	6.99	0.23	4.27	6.86	c/c
	Grid line B							
	btwn 1-2		1	6.99	0.23	4.27	6.86	c/c
	staircase- store		1	4.00	0.23	4.27	3.93	c/o
	Grid line C							
	btwn 1-3		1	13.97	0.23	4.27	13.71	o/in
	Grid line D							
	btwn 1-3		1	13.97	0.23	4.27	13.71	o/in
	ADD BM UPTO PLINTH						4.37	
	TOTAL =						49.42811	
	TOTAL BRICK MASONRY KIOSK =						49.43	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
B	DEDUCTIONS FOR OPENINGS							
1	DOORS							
	Office		1	0.9	0.23	2.3	0.4761	
	Library		1	0.9	0.23	2.3	0.4761	
	Class 1		1	1.2	0.23	2.3	0.6348	
	Class 2		1	1.2	0.23	2.3	0.6348	
2	WINDOWS							
	Office		1	1.7	0.23	1.5	0.5865	
	Library		1	1.7	0.23	1.5	0.5865	
	Class 1		2	1.2	0.23	1.5	0.828	
	Class 2		2	1.2	0.23	1.5	0.828	
	OPENING DEDUCTIONS TOTAL =							5.05
3	LINTEL						1.09	
	TOTAL =							43.28

Plaster works

Interior Plaster

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.01	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m				669.55	
	INTERIOR PLASTER						
A	OFFICE						
			1.00	14.54	4.27	62.04	
B	LIBRARY						
			1.00	14.54	4.27	62.04	
C	CLASS 1						
			1.00	23.53	4.27	100.40	
D	CLASS 2						
			1.00	23.53	4.27	100.40	
E	PASSAGE		1.00	32.67	4.27	139.40	
F	TOILTES						
	boys toilet		1.00	8.04	2.10	16.88	
			1.00	1.95	2.10	4.10	
	partition		2.00	5.40	2.50	26.99	
	Ladies toilet		1.00	2.59	2.70	6.99	
			1.00	8.29	2.70	22.39	
	Partition		1.00	4.778	2.10	10.03	
G	CEILING PLASTER						
	OFFICE					13.08	
	LIBRARY					13.08	
	CLASS 1					33.84	
	CLASS 2					33.84	
	PASSAGE					44.65	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
H	STAIRCASE WASTE SLAB PLASTER						
	1st flight		1.00	3.57	1.50	5.36	
	2nd flight		1.00	1.39	1.50	2.08	
	TOTAL =					697.61	
I	DEDUCTIONS						
1	DOORS						
	Office		1	0.9	2.3	2.07	
	Library		1	0.9	2.3	2.07	
	Class 1		1	1.2	2.3	2.76	
	Class 2		1	1.2	2.3	2.76	
	Entrance		1	2.65	2.3	6.095	
2	WINDOWS						
	Office		1	1.7	1.5	2.55	
	Library		1	1.7	1.5	2.55	
	Class 1		2	1.2	1.5	3.6	
	Class 2		2	1.2	1.5	3.6	
	OPENING DEDUCTIONS TOTAL =					28.055	
	TOTAL PLASTER GF =					669.55	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
4.03	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on interior brick surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m				582.24	
	INTERIOR PLASTER						
A	OFFICE						
			1.00	14.54	4.27	62.04	
B	LIBRARY						
			1.00	14.54	4.27	62.04	
C	CLASS 1						
			1.00	23.53	4.27	100.40	
D	CLASS 2						
			1.00	23.53	4.27	100.40	
E	PASSAGE		1.00	34.43	4.27	146.91	
G	CEILING PLASTER						
	OFFICE					13.08	
	LIBRARY					13.08	
	CLASS 1					33.84	
	CLASS 2					33.84	
	PASSAGE					44.65	
	TOTAL =					610.29	
H	DEDUCTIONS						
1	DOORS						
	Office		1	0.9	2.3	2.07	
	Library		1	0.9	2.3	2.07	
	Class 1		1	1.2	2.3	2.76	
	Class 2		1	1.2	2.3	2.76	
	Entrance		1	2.65	2.3	6.095	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY	REMARKS
2	WINDOWS						
	Office		1	1.7	1.5	2.55	
	Library		1	1.7	1.5	2.55	
	Class 1		2	1.2	1.5	3.6	
	Class 2		2	1.2	1.5	3.6	
	OPENING DEDUCTIONS TOTAL =					28.055	
	TOTAL PLASTER FF =					582.24	

Exterior Plaster

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.06	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on GF level upto a height of 3 mts	sq.m				242.65	
	EXTERIOR PLASTER						
	office-class 1		1.00	47.03	4.99	234.54	
	passage		1.00	3.25	0.27	0.88	
	toilet		1.00	10.88	2.40	26.11	
	TOTAL					261.53	
	Deductions						
1	WINDOWS						
	Office		1	1.7	1.5	2.55	
	Library		1	1.7	1.5	2.55	
	Class 1		2	1.2	1.5	3.6	
	Class 2		2	1.2	1.5	3.6	
	entrance		1	2.86	2.3	6.578	
	OPENING DEDUCTIONS TOTAL =					18.878	
	THEREFORE EXTERIOR PLASTER GF =					242.65	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	H	Q	REMARKS
4.07	Providing and laying lime pozzolona plaster in proportion 1:1.5:3 (where 1 part is lime, 1.5 parts is pozzolona and 3 is sand) 12 mm thick on exterior brick and concrete surfaces in true line and level finished even and smooth including curing and scaffolding, etc. complete on FF level upto a height of 3 mts	sq.m				215.56	
	EXTERIOR PLASTER						
	office-class 1		1.00	51.48	4.54	233.56	
	passage		1.00	3.25	0.27	0.88	
	TOTAL					234.44	
	Deductions						
1	WINDOWS						
	Office		1	1.7	1.5	2.55	
	Library		1	1.7	1.5	2.55	
	Class 1		2	1.2	1.5	3.6	
	Class 2		2	1.2	1.5	3.6	
	entrance		1	2.86	2.3	6.578	
	OPENING DEDUCTIONS TOTAL =					18.878	
	THEREFORE EXTERIOR PLASTER GF =					215.56	

Finishing and Painting

All quantities of Interior and exterior painting are same as corresponding plastering quantities, so have been not included in the report.

Flooring works

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.01	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on GF level	sq.m			133.56	
SCHOOL GF						
	OFFICE		1.00	13.08	13.08	
	LIBRARY		1.00	13.08	13.08	
	CLASS 1		1.00	33.84	33.84	
	CLASS 2		1.00	33.84	33.84	
	PASSAGE		1.00	39.72	39.72	
TOTAL =					133.56	
TOTAL FLOORING GF (sq.m) =					133.56	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.02	Providing and laying India patent stone (IPS) flooring 40 mm thick with cement concrete 1:2:4 using 10 mm maximum size graded stone aggregates laid to levels or alternate by s, finished smooth with cement slurry, at all depth and heights below and above plinth level including from work, ramming curing, etc., complete as directed on FF level	sq.m			127.51	
SCHOOL FF						
	OFFICE		1.00	13.08	13.08	
	LIBRARY		1.00	13.08	13.08	
	CLASS 1		1.00	33.84	33.84	
	CLASS 2		1.00	33.84	33.84	
	PASSAGE		1.00	33.67	33.67	
TOTAL =					127.51	
TOTAL FLOORING GF (sq.m) =					127.51	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	Q	REMARKS
6.03	Providing and laying broken white china mosaic flooring for plain surfaces comprising of 18 to 25 mm size broken glazed tiles (6mm thick) laid over 40 mm thick bed of cement mortar 1:6 (where 1 is cement and 6 is sand) including applying neat cement slurry, the flooring shall be tampered to bring mortar up to the joints including grouting the joints with white cement and rounding the junctions upto 15 cm along the parapet at TERRACE level	sq.m			151.16	
SCHOOL TERRACE						
	Terrace		1.00	151.16	151.16	
TOTAL =					151.16	
TOTAL FLOORING TERRACE (sq.m) =					151.16	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	AREA	QUANTITY	REMARKS
6.04	Providing and laying polished kota stone 20 mm thick over a base of 40 mm cement mortar 1:6 (where 1 part is cement and 6 parts is coarse sand) for flooring in toilet and neatly joined with cement slurry to give an even finish etc complete on GF level	sq.m			23.88	
SCHOOL GF						
	Toilet		1.00	23.88	23.88	
TOTAL =					23.88	
TOTAL KOTA FLOORING GF (sq.m) =					23.88	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	BREADTH	QUANTITY	REMARKS
6.04	Providing and laying polished Kota stone slab (Polished, Green colour) flooring over 20 mm. (average) thick base of cement mortar 1:6 (1 cement : 6 coarse sand) laid over the staircase, and joined with cement slurry, so as to give an even surface etc. complete at GF	sq.m				12.68	
SCHOOL FLOORING							
	AREA					12.68	
TOTAL =						12.68	

MISCELLANEOUS ITEMS QUANTITIES.

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.01	EXCAVATION for foundation in loose soil or soft soil upto 1.5 m depth including sorting out and stacking of useful materials, and lead upto 30 mts etc. complete	cu.m					3.05	
	FOR PERIPHERIAL WALLS		1	13.63	0.65	0.38	3.32	
	DEDUCTION		2	4.54	0.12	0.15	0.16	
	DEDUCTION		2	3	0.12	0.15	0.11	
	TOTAL =						3.05	
	TOTAL EXAVATION =						3.05	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.02	Backfilling the available excavated earth in trenches of plinth, sides of foundation in layers not exceeding 20 cm in thickness and consolidating each layer by ramming and watering	cu.m					2.04	
	BACK FILL							
	BELOW G.L.		1	4.54	3	0.15	2.043	
	TOTAL =						2.043	
	TOTAL BACK FILL						2.04	
	ANTI TERMITE							
	ANTI TERMITE		1	5	3.115	1	15.575	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
1.03	Providing and carrying out plinth filling with soil in layers not exceeding 20 cm in depth including watering, compaction etc complete	cu.m					5.45	
	PLINTH FILL		1	4.54	3	0.40	5.448	
	TOTAL =						5.448	
	TOTAL BACK FILL						5.45	

Design Package Using Alternate Building Materials & Technologies, West Zone

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.01	Providing and laying PCC in Foundation and Plinth in proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) including curing ramming etc.	cu.m					0.79	
	STEPS OF STAGE	1	1	13.63	0.65	0.08	0.6644625	
	STEPS OF KIOSK	1	2	1.5	0.55	0.08	0.12375	
	TOTAL =						0.788213	
	TOTAL =						0.79	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
2.02	Providing and laying PCC at ground level proportion 1:4:8 (where 1 part is cement, 5 parts is fine aggregates, 10 parts is aggregates) of thickness 75mm including curing ramming etc.	cu.m					0.32	
			1	5.00	0.84	0.08	0.315	
	TOTAL =						0.315	
	TOTAL =						0.32	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.01	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) below ground level upto 1.5 m depth including curing etc complete	cu.m					1.90	
	FOR 230 mm WALL	1	1	15.31	0.23	0.16	0.56	
	FOR 350 mm WALL	1	1	14.83	0.35	0.15	0.78	
	FOR STEPS	1	1	5	0.75	0.15	0.56	
	TOTAL =						1.90	
	TOTAL BRICK MASONRY =						1.90	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	cu.m					2.87	
	FOR PERIPHERIAL WALLS	1	1	15.31	0.23	0.40	1.41	
	1ST STEP	1	1	5	0.75	0.15	0.56	
	2ND STEP	1	1	5	0.5	0.15	0.38	
	3RD STEP	1	1	5	0.25	0.15	0.19	
	STEPS OF KIOSK	1	2	1.5	0.5	0.15	0.23	
	STEPS OF KIOSK	1	2	1.5	0.25	0.15	0.11	
	TOTAL =						2.87	
	TOTAL BRICK MASONRY =							2.87

SR NO	ITEM DESCRIPTION	UNIT	NOS.	L	B	H	Q	REMARKS
3.02	Providing and laying brick work using common burnt clay bricks having a crushing strength of 50 kg/sq.cm in cement mortar of 1:6 (where 1 part is cement, 6 parts is sand) including curing etc complete at GF level	sq.m					15.20	
	FOR PERIPHERIAL WALLS		1	5	1	3.04	15.2	
	TOTAL =						15.2	
	TOTAL BRICK MASONRY =						15.20	

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	HEIGHT	QUANTITY
4.01	White washing with lime on decorated wall surfaces (one coat) to give an even shade including thoroughly brooming the surface to remove dirt, dust, mortar drops and loose scales of lime wash and other foreign matter etc. complete on INTERNAL surfaces on GF level	sq.m				18.93
	ON FACES OF THE STAGE	2	3.115		0.45	2.80
	ON FACES OF THE STAGE	1	5		0.45	2.25
	PLASTERING ON STEPS RISER	3	5		0.15	2.25
	PLASTERING ON STEPS TRAD	3	5		0.25	3.75
	SIDE OF 1ST STEP	2	0.75		0.15	0.23
	SIDE OF 2ND STEP	2	0.5		0.15	0.15
	SIDE OF 3RD STEP	2	25		0.15	7.50
	TOTAL QUANTITY (sq.m) =					18.93

SR NO	ITEM DESCRIPTION	UNIT	NOS.	LENGTH	B	HEIGHT	QUANTITY
4.02	Providing and constructing benches of (2.76m x 0.35m) with brick masonry of 230 mm above ground level and 350 mm brick masonry below ground level of bricks 50 kg/cm² and PCC of 75 mm thk. Having offset of 100 mm on both the sides including base of kota stone on top of brick masonry of 25 mm thk. etc. complete(rate is on the sq.m of kota stone used)	cu.m					
	BK. MASONRY ABOVE G.L.		87.00	0.35	0.23	0.45	3.15
	BK. MASONRY BELOW G.L.		87.00	0.35	0.35	0.45	4.80
	PCC		87.00	0.35	0.55	0.08	1.26
	KOTA STONE FLOORING		29.00	2.76	0.35	1.00	28.01

ABOUT BMTPC

The Building Materials & Technology Promotion Council (BMTPC) was setup in 1990 as an inter-ministerial organisation under the Ministry of Housing & Urban Poverty Alleviation to bridge the gap between laboratory research and field level application. The Council also provides technical support for strengthening of SMEs in the building materials sector through development and promotion of eco-friendly and energy-efficient projects, manufacturing technologies and appropriate services to entrepreneurs.

Vision

BMTPC to be world class knowledge and demonstration hub for providing solutions to all with special focus on common man in the area of sustainable building materials, appropriate construction technologies & systems including disaster resistant construction.

Mission

To work towards a comprehensive and integrated approach for promotion and transfer of potential, cost-effective, environment-friendly, disaster resistant building materials and technologies including locally available materials from lab to land for sustainable development of housing.



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