

# Initial Environmental Examination

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June 2022

## India: Assam Skill University Project

Sub-Project: Detailed Design and Construction of Assam Skill University Campus and Facilities

Prepared by Assam Skill Development Mission for the Asian Development Bank. This is a revised version of the draft originally posted in April 2021 available on <https://www.adb.org/projects/documents/ind-53277-002-iee-0>.

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**ASDM**  
Assam Skill Development Mission



सत्यमेव जयते

**GOVT OF ASSAM**  
**ASSAM SKILL DEVELOPMENT MISSION**  
**5<sup>th</sup> FLOOR, DPS ROAD, KATABARI**  
**GARCHUK: GUWAHATI (ASSAM)-781035**

**No. ASDM/ASUP/12/2022/ 364**

**Dated 8<sup>th</sup> June 2022**

**To**

**The Director, SAHS**  
**South Asia Department**  
**Human and Social Development division**  
**Asian Development Bank**  
**Mandaluyong, Metro Manila, Philippines**

**Subject: Endorsing the Revised and Final IEE Report (Campus and Facilities) (Project No. 53277)**

**Ref. ASDM-49/2017/513 dated 17<sup>th</sup> April 2021**

Sir,

With reference to the above, the Revised and Final IEE Report for Detailed Design and Construction of Assam Skill University Campus and Facilities based on the due diligence study conducted for the entire 250 bighas of the land proposed for the Assam Skill University is submitted herewith. (Project No. 53277-002).

We hereby express our endorsement of the Revised and Final IEE Report for the Campus and Facilities of Assam Skill University Project.

Yours faithfully

Chief Executive Officer  
Assam Skill University Project

**Memo No. ASDM/ASUP/12/2022/**

**Dated 8<sup>th</sup> June 2022**

Copy to:

1. P.S to Principal Secretary, Skill Employment and Entrepreneurship Department for kind appraisal to Principal Secretary
2. Office copy

Chief Executive Officer  
Assam Skill University Project

## ABBREVIATIONS

ADB	-	Asian Development Bank
ASDM	-	Assam Skill Development Mission
ASI	-	Archaeological Survey of India
ASU	-	Assam Skill University
CPCB	-	Central Pollution Control Board
CSQA	-	Construction Supervision and Quality Assurance
DMP	-	Disaster Management Plan
EA	-	Executing Agency
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
GoA	-	Government of Assam
Gol	-	Government of India
GRC	-	Grievance Redress Committee
GRM	-	Grievance Redress Mechanism
IEE	-	Initial Environmental Examination
IA	-	Implementing Agency
MOEFCC	-	Ministry of Environment, Forest and Climate Change
PMC	-	Project Management Consultants
PMU	-	Project Management Unit
PSC	-	Project Steering Committee
PUC	-	Pollution Under Control
PWD	-	Public Works Department
REA	-	Rapid Environmental Assessment
SEIAA	-	State Environment Impact Assessment Authority
SEED	-	Skill, Employment and Entrepreneurship Department
SPS	-	Safeguard Policy Statement
STP	-	Sewage Treatment Plant

## **CURRENCY EQUIVALENTS**

(As of 5 June 2022)

Currency unit – Indian rupee (Rs)

Rs1.00 = \$0.01288494

\$1.00 = Rs 77.61

## **WEIGHTS AND MEASURES**

µg	–	microgram
dB(A)	–	weighted decibel
km	–	kilometer
km <sup>2</sup>	–	square kilometer
m	–	meter
m <sup>2</sup>	–	square meter

## TABLE OF CONTENTS

<b>EXECUTIVE SUMMARY</b>	<b>i</b>
<b>I. INTRODUCTION</b>	<b>1</b>
A. Background	1
B. Compliance with India’s Environmental Regulatory Framework	3
C. International Agreements and Commitments of Government of India	6
D. Asian Development Bank’s Environmental Safeguard Policy Principles	7
E. Review and Approval Procedure	7
F. Report Structure	7
<b>II. DESCRIPTION OF THE PROJECT COMPONENTS</b>	<b>8</b>
A. Components of the ASU Project	8
B. Executing and Implementing Agencies	13
C. Implementation Schedule	13
<b>III. DESCRIPTION OF THE EXISTING ENVIRONMENT for ASU CAMPUS SITE</b>	<b>14</b>
A. Environmental Profile	14
B. Ecological Resources	21
C. Economic Resources Industries	26
D. Social and Cultural Resources	28
<b>IV. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES</b>	<b>29</b>
A. Environmental Impacts	29
B. Location Impacts	29
C. Impacts during Design and Pre-Construction Phase	29
D. Impacts during Construction Phase	30
E. Environmental Impacts during Operation Phase	32
F. Description of Planned Mitigation Measures for the Identified Impacts	36
G. Land Aquisition and Resettlement	48
<b>V. ANALYSIS OF ALTERNATIVES</b>	<b>49</b>
A. Introduction	49
B. Without Project Scenario	49
C. With Project Scenario	49
D. ASU Location Alternatives	49
E. Material Usage and Sustaibility considerations	50
F. Conclusion	50
<b>VI. ENVIRONMENT MANAGEMENT PLAN (EMP)</b>	<b>51</b>
A. Institutional Arrangements for Project Implementation	51
B. Responsibility for updating IEE during Pre-Construction and Construction	53
C. Environmental Monitoring Plan	83
D. Capacity Building	87
E. Environmental Budget	88
F. Environmental Monitoring and Reporting	90

<b>VII.</b>	<b>PUBLIC CONSULTATION AND INFORMATION DISCLOSURE</b>	<b>91</b>
	A. Process For Consultations Followed	91
	B. Future Consultation and Information Disclosure	98
	C. Grievance Redress Mechanism	98
	D. Composition and functions of GRC	99
<b>VIII.</b>	<b>FINDINGS AND RECOMMENDATIONS</b>	<b>101</b>
<b>IX.</b>	<b>CONCLUSIONS</b>	<b>102</b>

### LIST OF ANNEXURES

Annexure-1: MoEFCC Notification on exemption of environmental clearance for educational institutions	103
Annexure-2: Rapid Environmental Assessment (REA) Checklist	113
Annexure-3: Achitectural Drawings of ASU Campus Construction and Development	121
Annexure-4: Sample Traffic Management Plan	153
Annexure-5: Land Records Certified by the Revenue Department Officials Showing GoA Ownership	157
Annexure-6: Photographs and AttendanceSheetsof consultations	160
Annexure-7: No objections from forest and Wildlife Divisions of State Forest Department	167

### LIST OF TABLES

Table-1: Environmental Regulatory Compliance .....	4
Table-2: Description of the ASU Campus Components.....	10
Table-3: Soil Quality Data for Sub-Project Region .....	16
Table-4: Brahmaputra River Water quality in Sub-Project Region.....	18
Table-5: Different Categories of Forests in Darrang District.....	21
Table-6: Common Tree Species around ASU Site .....	22
Table-7: Protected Areas in Assam.....	25
Table-8: Details of Existing Micro and Small Enterprises and Artisan Units in Darrang District .....	27
Table-9: Land Use Pattern of Darrang District .....	27
Table-10: Summary of Environmental Impacts and Planned Mitigation Measures .....	37
Table-11: Pre-Construction Phase Environmental Management Plan for Detailed Design and Construction of ASU Campus and Facilities .....	55
Table-12: Construction Phase Environmental Management Plan for Construction of ASU Campus and Facilities .....	66

Table-13: Operation Phase Environmental Management Plan for ASU Campus and Facilities .....	78
Table-14: Environmental Monitoring Plan for the Detailed Design and Construction of ASU Campus and Facilities during Pre-construction, Construction and Operation Phases .....	84
Table-15: Site- and Activity-Specific Plans/Programs as per EMP .....	86
Table 16: Training Modules for Environmental Management.....	87
Table-17: Environmental Management and Monitoring costs (INR) .....	89
Table-18: Dates and Stakeholders Consulted.....	92
Table-19: Views, Comments, and Suggestions of Stakeholders at ASU Campus Site and Considerations in ASU Design.....	93
Table-20: Summary of Stakeholder Consultations at Institutional Level .....	95

### **LIST OF FIGURES**

Figure-1: Location of ASU site .....	8
Figure-2: Location of ASU Site .....	9
Figure-3: Layout Plan of ASU and Floor Plans Drawings .....	11
Figure-4: Month Wise Temperature Variation at Mangaldoi.....	15
Figure-5: Rainfall Data for Mangaldoi.....	15
Figure-6: Hydrogeology Map for Darrang District.....	19
Figure-7 : Seismological Map of Assam .....	20
Figure-8: Forest cover Map of Assam .....	21
Figure-9: Protected Areas of Assam .....	26
Figure-10: Green Areas in ASU Campus.....	35
Figure-11: Project implementation arrangement for safeguard compliance .....	53
Figure-12: Grievance Redress Mechanism (ASU Project).....	100



## **EXECUTIVE SUMMARY**

1. The objective of the Assam Skill University Project (ASUP) is to strengthen industry-aligned and flexible skills education and training system in Assam by developing management and operating systems, business models, faculty development and management systems for Assam Skill University (ASU); developing environmentally sustainable and climate resilient ASU campus and facilities; designing and delivering industry-aligned and flexible skills education and training programs; developing the capacity to manage and support entrepreneurship, applied research and development, and technology transfer; and improving access to professional development and skills education and training resources for technical and vocational education and training and higher education institutions in Assam, the northeastern region, and neighboring countries. The Skill, Employment and Entrepreneurship Department (SEED) of the Government of Assam (GoA) will be the executing agency (EA) and Assam Skill Development Mission (ASDM) will be the implementing agency (IA) of the project. ASDM has established a project management unit (PMU) to carry out day-to-day project management activities. To achieve the above-mentioned objective; it is proposed to support design and construction of a new green field ASU on 82.737-acre (250.281Bigha<sup>1</sup> or say 250 Bigha) land (334828.083 m<sup>2</sup>) plot near Mangaldoi in Darrang district.

2. At the time of project concept stage in September 2020, 100 Bigha of land were allotted for the ASU, and the project team completed environmental screening, categorization and consultations in November 2020. Subsequently, in January 2021, the government of Assam, through the land advisory committee of the Darrang district, recommended additional 150 Bigha of land for the project. Based on this recommendation, the ASDM carried out the engineering survey and prepared a preliminary design layout covering an area of 210 Bigha (69.5 acres) of land with an aim of making campus more open, grand and beautiful. The IEE report was prepared in March 2021 and was approved in April 2021 for 210 Bigha area. Subsequently after loan signing, additional area (40 Bigha) was also included, due to this ASU plot boundary limits were changed and boundary wall length changed. Hence, this IEE report is updated for 250 Bigha plot of ASU. In newly added area of 40 Bigha, the EA will plan and implement the facilities in future.

3. The site for ASU has been finalized near Mangaldoi town of Darrang district in Assam. The site is about 73 km from Guwahati. The ASU will be comprised of: (a) school of manufacturing and construction; (b) school of management and finance; (c) school of agriculture and food technology; (d) school of technology; (e) school of sustainability; (f) school of mobility; (g) school of design and creativity; (h) school of tourism, hospitality and wellness; (i) school of healthcare; (j) school of entrepreneurship and innovation; (k) school of life skills and languages; (l) school of lifelong learning; and (m) school of faculty and curriculum development. The built-up area of the ASU will be around 76,131 m<sup>2</sup>. The total cost of project is estimated to be US\$ 140 million.

4. The ASU project site is an unencumbered land owned by the government. The project is categorized as 'B' for environment. Accordingly, to comply with the Asian Development Bank (ADB) Safeguard Policy Statement (SPS), 2009, this updated initial environmental examination (IEE) report has been prepared for the latest sub-project configuration and ASU plot area of 250 Bigha.

5. For ease of implementation, ASU campus development has been divided into a few sub-projects. Some of these subprojects, will be prepared and supported under the project, while the others will be prepared after the construction is completed. The current subproject

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<sup>1</sup> In the State of Assam, 1 Bigha= 0.33057643 acre (1337.80864 m<sup>2</sup>)

involves detailed design and construction of ASU campus and facilities, including academic and administration buildings (18386 m<sup>2</sup>), laboratories (13008m<sup>2</sup>), workshops (2761m<sup>2</sup>), staff quarters and guest houses(14609m<sup>2</sup>), hostels (3500 m<sup>2</sup>), community center(2316m<sup>2</sup>), miscellaneous buildings (1079 m<sup>2</sup>), multipurpose hall (2316 m<sup>2</sup>), single storied corridor with RCC roof (1144m), single storied corridor with sheeting roof (3102 m),and open air theatre (150 m<sup>2</sup>). Asbestos products will not be used in the roofing sheets. The subproject also comprises utility infrastructure, including sewage treatment plant (STP) (400 KLD capacity for phase I, space available for future expansion), transformer capacity 4000 kVA, DG set for backup power 1500 kVA and overhead water storage tank (400m<sup>3</sup>), solar power heating system for 64000 liters per day capacity and roof top solar system for solar power generation 100 kW capacity. The utility infrastructure is included in the built-up area (76,131m<sup>2</sup>) mentioned above (para. 2). Three rainwater harvesting structures with a combined capacity of 800 m<sup>3</sup> will also be provided. This revised IEE report has been prepared for ASU project based on overall plot, preliminary design, soil testing and geotechnical investigation report and drawings of above-mentioned ASU campus and facilities.

6. Preliminary design of ASU campus and facilities has been finalized after topographic survey, soil testing and geotechnical report and with due consideration to other climatic and location specific factors such as intense rainfall, liquefaction phenomena (weak soil strength) and earthquake zone V coefficient. The detailed design under progress takes care of all the above risk factors. The construction of ASU campus and facilities will mainly be for buildings, workshops and laboratories and furnishing these with equipment, instruments, and machinery. In addition to electrifying these buildings and facilities, drainage, water supply and sewage network systems and sewage treatment plant will be installed as part of utility infrastructure. To make campus ambience soothing to the eyes, plantation of shrubs and ornamental trees, landscaping in open areas (total green area -217830.74 m<sup>2</sup>), and development of existing small ponds/low lying areas as water bodies shall also comprise this subproject.

7. This revised IEE report provides details of the subproject and associated potential environmental impacts during pre-construction, construction, and operation phases. The revised IEE report also suggests ways of mitigating and addressing these identified environmental impacts.<sup>2</sup> In the vicinity of ASU site, there are no environmentally and/or ecologically protected areas (national parks, wild-life or bird sanctuaries, tiger reserves, biospheres, forests, etc.), wetlands, mangroves, or estuaries in or near the ASU site. There are no archeologically protected monuments, structures, or heritage sites within 300 m distance of ASU plot boundary (nearest protected structure at about 35 km distance from ASU site). The ASU site is a plain terrain.

8. Since the subproject will involve civil works, consumption of natural resources (water, construction materials), transportation of construction materials, usage of construction equipment and machinery and consumption of power supply, there will be environmental impacts. Similar to the construction stage impacts, there will be environmental impacts during operation phase as well. Yet environmental impacts during both construction and operation phases are not likely to be significant as these will be limited to ASU site with no tree cutting requirements for campus and facilities construction. The routine and localized impacts associated with construction and operation can be mitigated easily by following the measures laid down in the revised **Environment Management Plan (EMP)** included in the revised IEE report. The revised EMP will be included in the contract of the finalized contractor. **The**

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<sup>2</sup>Local stakeholders were involved in developing the revised IEE through discussions on-site and public consultation during November 2020, February 2021 and March 2022. Their views were incorporated into the revised IEE, and the design of the project. The revised IEE will be made available at public locations in the town such as municipal office building, district administration office, and site office of ASU. It will be disclosed to a wider audience via the ADB and ASDM websites.

**revised IEE confirms the subproject (detailed design and construction of ASU campus and facilities) as environment category “B”.** No further special study or detailed environmental impact assessment (EIA) needs to be undertaken to comply with ADB SPS, 2009 or Government of India EIA Notification, 2006.

9. A ‘with’ and ‘without’ ASU project scenario has been considered to justify the subproject. Location and usage of alternative materials have also been analyzed from environmental and sustainability considerations. The sustainability considerations have also been discussed for the project scenario.

10. PMU at ASDM is responsible for supervising overall planning and implementation of civil works. The PMU has environmental and social safeguard specialists. To assist PMU in supervision, project management consultant (PMC) (firm) and construction supervision and quality assurance (CSQA) firm have been appointed. PMU and PMC will ensure that the revised EMP is followed during pre-construction and construction phases. The revised EMP implementation will be monitored by the environment safeguard specialists of PMU and appointed PMC firm.

11. Grievance redress mechanism (GRM) will be established under the project to address grievances of aggrieved party or persons. The GRM will be transparent, easily accessible and time bound for the resolution of grievances. The EA (SEED) has issued an office order for the establishment of GRM. The GRM will be started once construction work starts at site and PMC CSQA firm and contractors are mobilized. The details of GRM are provided in this revised IEE report.

## I. INTRODUCTION

### A. Background

1. **Location.** The proposed location of ASU is near Mangaldoi in Darrang district of Assam. The latitude and longitude of the ASU site are given below and coordinates of newly added area central point are also given. Further, detailed map having coordinates marked on boundary of current plot is given in the next section of the report.

Sl. No.	Name of Facility	Latitude	Longitude
1	Assam Skill University	26°25'21.36"N	92° 0'53.93"E
2	Assam Skill University Newly added area (150 Bigha)	26°42'0.69"N	92° 0'12.99"E

2. The nearest rail head to Mangaldoi is Tangla at about 35 km and Rangia Junction 48 km away from the ASU site. The project site is well connected to important destinations such as Guwahati, New Jalpaiguri, Rangia and Nalbari. The distances of important destinations are given below:

Sl. No.	Name of Facility	Altitude (m)	District	Distance from ASU site
1.	ASU	51.24	Darrang	Guwahati Airport : 70 Km Guwahati City : 72 Km Tezpur : 107 Km Nalbari : 68 Km IIT Guwahati : 52 Km Udalguri : 43 Km Alipurduar : 303 Km Cooch Behar : 323 Km Darrang : 5 Km Barpeta : 123 Km Morigaon : 141 Km

3. The proposed Skill University site is a vacant land in the ownership of Assam Skill University (ASU), Government of Assam. The Darrang district geographically lies between the latitude 20° 9'N to 26.96° North and longitude 91° 45' E to 92° 22' East.

4. **Present Status of ASU Site:** The ASU site is a plain terrain. The site ownership is with Assam Skill University. There are no permanent or temporary structures on the site. There are also no trees at site. The photographs of the ASU site are shown below. The newly added area also has no trees and has plain terrain. Photographs of newly added area of 40 Bigha are also given below:



**View of Access Road Connecting Site with NH**



**Another View of Access Road**



**View of Site Showing Plain Terrain**



**Another view of site showing Plain Terrain**



**View of Site showing no Presence of Trees or Shrubs**



**View of Additional Area included in ASU plot**



**View of additional area at site showing growth of local shrubs due to vacant and unutilized land**



**View of Site showing water in some portion but no trees**

## **B. Compliance with India's Environmental Regulatory Framework**

5. India's environmental rules and regulations, as relevant for the construction of ASU, are shown in **Table 1**. The Environmental Impact Assessment (EIA) Notification, 2006 issued by the Ministry of Environment, Forests and Climate Change (MOEFCC, GOI) specifies the requirements for mandatory environmental clearances. All projects and activities are broadly categorized into two categories—category 'A' and category 'B', based on the spatial extent of potential impacts on the environment, human health, and natural and man-made resources<sup>3</sup>.

<sup>3</sup> All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, will require prior environmental clearance from the Central Government in the Ministry of Environment, Forest and Climate Change (MoEFCC) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification. All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfill the General Conditions stipulated in the Schedule, will require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In addition, General Condition (GC) of the notification specifies that any project or activity

However, MOEFCC's Notification- S.O. 3252, dated 22/12/2014, exempts all educational and training institutes from obtaining prior environmental clearance. Hence, this subproject will not require any prior environmental clearances according to the environmental rules and regulations of India. Further, as shown in **Table 1**, most other rules pertaining to India's regulatory framework such as Ancient Monuments and Archaeological Sites and Remains Act, 1958; the Wildlife (Protection) Act, 1972, amended in 2003 and 2006; and the Forest (Conservation) Act, 1980, will also not apply to construction of ASU. Permission (consent to establish and consent to operate) will be required from the State Pollution Control Board, GoA for the construction phase of the subproject. Moreover, according to ADB's SPS 2009, all ADB funded activities/projects are required to comply with the borrower country's environmental regulations. Therefore, no civil works related activities would commence until relevant regulations of India are complied with. During pre-construction, construction and operation phases of the project, compliance with National Ambient Air Quality Standards (NAAQS) for air quality, ambient noise standards for noise levels, General Standards for Discharge of Treated Effluents for wastewater discharge and Drinking Water Standards specified by Bureau of Indian Standards (BIS) will be ensured. The above standards have been specified under various acts and rules promulgated by the Gol.

**Table-1: Environmental Regulatory Compliance**

<b>Sub-Project</b>	<b>Applicability of Acts/Guidelines</b>	<b>Compliance Criteria</b>
Detailed design and construction of ASU campus and facilities	The EIA notification, 2006 (and its subsequent amendments till date) provides for categorization of projects into category 'A' and 'B', based on extent of impacts.	The sub-project is not covered in the ambit of the EIA notification (amended till date), either as a Category 'A' or Category 'B' project. As per the MOEFCC Notification S.O. 3252 dated 22/12/2014, educational and training institutions are exempted from prior environmental clearance ( <b>Annexure-1</b> ). As a result, the categorization, and the subsequent environmental assessment and clearance requirements, either from the state or the GOI, are not triggered. The guidelines of sustainable environmental management will be followed (in the design, construction and operation phases) as per the MoEFCC SO 3252 dated 22 December 2014. However, guidelines provided in the above notification for sustainable environmental management need to be followed. <b>Not Applicable</b>
	The Ancient Monuments and Archaeological Sites and Remains Act, 1958, and the rules, 1959 provide guidance for carrying out activities including conservation, construction and reuse in and around the protected monuments.	The ASU site is not close to any monument which is protected by the Archaeological Survey of India (ASI). Hence, no clearance is needed from ASI. <b>Not Applicable</b>

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specified in Category 'B' will be treated as Category A, if located in whole or in part within 5 km from the boundary of: (i) Protected Areas notified under the Wild Life(Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sub-Project	Applicability of Acts/Guidelines	Compliance Criteria
	Water (Prevention and control of pollution) Act, 1974 and Air (prevention and control of pollution) Act, 1981	Consent for Establishment (CFE) and Consent for Operation (CFO) from the State Pollution Control Board will be required during construction for installation of diesel generator set, hot mix plant, and concrete batching plant. The CFE will also be required for the project. For the operation phase, CFO will also be required. <b>Applicable</b>
	The Wildlife (Protection) Act, 1972, amended in 2003 and 2006, provides for protection and management of Protected Areas.	No wildlife protected areas within 15 km aerial distance from the ASU site. Nearest Wildlife sanctuary is at about 35 km from ASU site. <b>Not Applicable</b>
	Forest (Conservation) Act, 1980	This act provides guidelines for conservation of forests and diversion of forest land for non-forest use. It describes the penalties for contravention of the provisions of the Act. If forest land has to be acquired, clearance is required from the Forest Department. No forest land is required for the ASU. Hence, this is not applicable. <b>Not Applicable</b>
	Solid Waste Management Rules, 2016	These rules have been notified by the MoEFCC for collection, transportation and disposal of municipal waste. In the case of ASU, these rules will be applicable both during construction and operation. <b>Applicable</b>
	Hazardous Wastes (Management, Handling and Trans-boundary Movements) Rules 2016	These rules are for safe handling, storage, transportation and disposal of hazardous wastes. The hazardous waste mainly discarded fuel and lubricants on account of vehicle, equipment and machinery maintenance during construction and waste from laboratory and machinery (in workshops) will be generated during operation phase. Hence these rules will be applicable. <b>Applicable</b>
	Battery Waste Management Rules 2020	These rules have been promulgated for safe recycling of lead acid batteries. These will be applicable both during construction and operation phases. <b>Applicable</b>
	Noise Pollution (Regulation and Control) Act, 1990	This act prescribes ambient noise levels for various land uses. This act will be applicable both during construction and operation phases of ASU project. <b>Applicable</b>
	E- Waste (Management) Rules, 2016	These rules have been formulated to channelize the E-waste to authorized dismantlers for possible re-use and recycle of waste. These will be applicable during operation phase of ASU project. <b>Applicable</b>
	Permission to withdraw Ground Water	The ASU project plans to use ground water during operation phase. To withdraw ground water, permission will be required from Central Ground Water Board <b>Applicable</b>
	Bio-Medical Waste Management Rules 2016	The ASU project will have a medical center to provide first aid and referral to district hospital. There may be generation of bio-medical waste.



<b>Sub-Project</b>	<b>Applicability Acts/Guidelines</b>	<b>of</b>	<b>Compliance Criteria</b>
			This waste needs to be handled, stored and disposed of as per provisions stipulated in Bio-Medical Waste Management Rules, 2016. <b>Applicable</b>
	Construction and Demolition Waste Management Rules 2016		The rules have been formulated for safe storage, transportation, and disposal of construction and demolition waste. There will be generation of construction waste during construction phase. Hence these rules will be applicable during construction phase. <b>Applicable</b>
	Building and Other Construction Workers (Regulations of Employment and Conditions of Service) Act, 1996		The rules have been formulated and notified under this Act in 1998 for the regulation of employment and safe working conditions for the construction workers. The workers will be employed by the contractor (s) for the construction and these rules will be applicable during construction phase for proper occupational, health and safety measures at site. <b>Applicable</b>

### **C. International Agreements and Commitments of Government of India**

6. The Republic of India is party to various international agreements/conventions/treaties for conservation of environment at global level. The construction, development and operations of ASU will not trigger most of the convention/agreements including Ramsar Convention on Wetlands, 1971, Convention on World Cultural and Natural Heritage, 1972, Vienna Convention on Protection of Ozone Layer, 1985, and Montreal Protocol on Substances Depleting the Ozone layer, 1987 and Convention on Biological Diversity (CBD), 1992 because ASU site is not close to any notified wetlands and cultural and natural heritage sites, no production of ozone depleting substances from the project and no biodiversity rich areas close to project site. The only convention(s) pertaining to climate change will be triggered. This is explained below:

#### **1. United Nations Framework Convention on Climate Change (UNFCCC), 1994**

7. As per the convention the reduction/limitation requirements of Green House Gases (GHG) apply only to developed countries. The only reporting obligation for developing countries relates to the preparation of GHG inventory (GHG sources and sinks, potential vulnerability to climate change, adaptation measures and other steps being taken to address climate change). India acceded to the Kyoto Protocol in 2002 and voluntarily agreed to reduce the GHG emissions in 2018.

8. The ASU project activities will not have direct GHG emissions, but on account of slight increase in traffic both during construction and operation phases, there will be increased SO<sub>2</sub> and NO<sub>x</sub> emissions through vehicular emissions.

9. The project aims to adopt environmentally friendly construction materials, energy conservation measures (energy efficient fixtures, usage of solar energy for water heating and campus -lighting), minimization of natural resource consumption and landscaping and tree plantation.

#### D. Asian Development Bank's Environmental Safeguard Policy Principles

10. Since the proposed project is being funded by the ADB, it has to comply with ADB's SPS, 2009, in addition to the India's environmental laws and regulations applicable at the national, state and local levels. The environmental safeguard policy principles embodied in SPS, 2009 aim to avoid adverse impacts on the environment and on affected people or communities; minimize, mitigate and/or compensate for adverse project impacts, if unavoidable; help borrowers to strengthen their safeguard systems and to develop their capacity in managing the environmental and social risks. The SPS, 2009 categorizes all projects into 3 environmental categories (A, B or C) based on their potential impacts<sup>4</sup>. Similarly, ADB's rapid environmental assessment (REA) checklist was used to assess the potential impacts of the construction and development of ASU campus (**Annexure-2**). As explained in **Annexure-1**, this subproject has been categorized as 'B'. Accordingly, this revised IEE has been prepared to address the potential impacts in line with the requirements for category 'B' projects. The revised IEE was based mainly on environmental screening of additional 40 Bigha area and secondary sources of information and field reconnaissance surveys. Stakeholder consultations at ASU site are an integral part of the revised IEE. A revised EMP outlining the specific environmental measures to be adhered to during implementation of the subproject is included in the current version of IEE document. This revised EMP will be made part of contract for the selected contractor and will be implemented.

#### E. Review and Approval Procedure

11. For Category 'B' projects, the draft IEE report is prepared by EA and submitted to ADB for clearance. The IEE report is reviewed by the relevant ADB department and comments are provided. The then EA modifies the report by incorporating the comments and final IEE document is submitted for clearance. At the time of loan processing, the finalized IEE report was disclosed at ADB and ASDM websites. After clearance from ADB, this revised IEE report will also be disclosed in ADB's website in accordance with ADB's SPS 2009 and Access to Information Policy, 2018. The EA will also disclose this revised IEE report to the stakeholders in a form and language understandable to the communities (Assamese) by making hardcopies available at ASU site office, ASDM office at Guwahati and Deputy Commissioner's office at Mangaldoi. The soft copy of revised IEE report will be disclosed at ASDM website.

#### F. Report Structure

12. This revised report contains nine sections including: (i) Introduction; (ii) description of sub-project components; (iii) description of the existing environment around the sub-projects; (iv) environmental impacts and mitigation measures; (v) analysis of alternatives; (vi) EMP; (vii) public consultation and information disclosure; (viii) findings and recommendations; and (ix) conclusions.

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<sup>4</sup> As per SPS 2009, projects are assigned to one of the following four categories: (i) **Category A**. A proposed project is classified as category A if it is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented. These impacts may affect an area larger than the sites or facilities subject to physical works. An environmental impact assessment is required. (ii) **Category B**. A proposed project is classified as category B if its potential adverse environmental impacts are less adverse than those of category A project. These impacts are site-specific, few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for category B Project. An initial environmental examination is required. (iii) **Category C**. A proposed project is classified as category C if it is likely to have minimal or no adverse environmental impacts. No environmental assessment is required although environmental implications need to be reviewed (iv) **Category FI**. A proposed project is classified as category FI if it involves investment of ADB funds to or through a financial intermediary (FI) (paras. 65-67).

## II. DESCRIPTION OF THE PROJECT COMPONENTS

### A. Components of the ASU Project

13. The location of the ASU site has been shown in **Figures 1 and 2**. **Table -2** summarizes the need for the project and brief description of ASU components. The Figure-2 also has revised and current ASU plot of 250 Bigha (inclusive of newly added 40 Bigha area) showing coordinates marked on plot boundary.

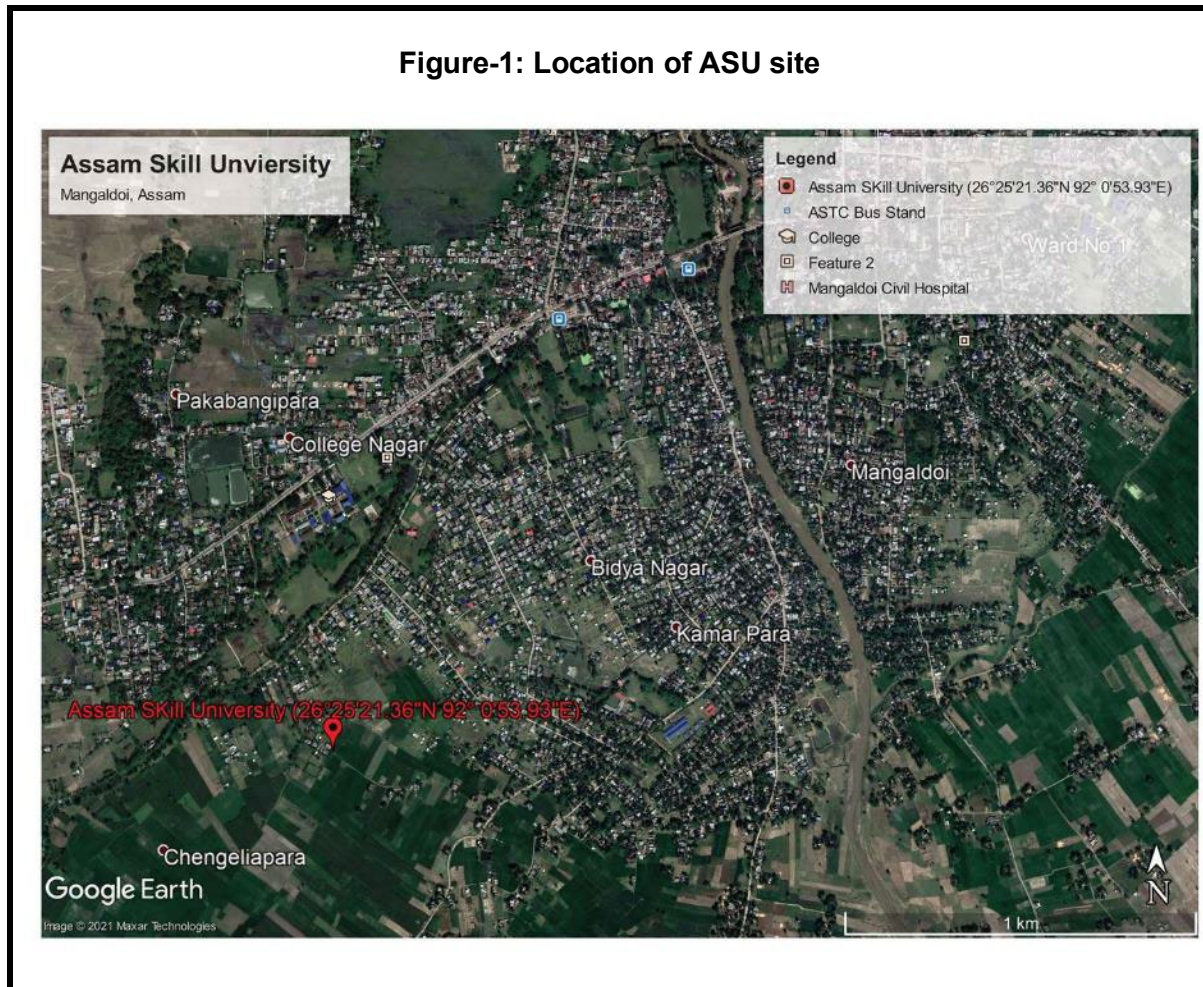
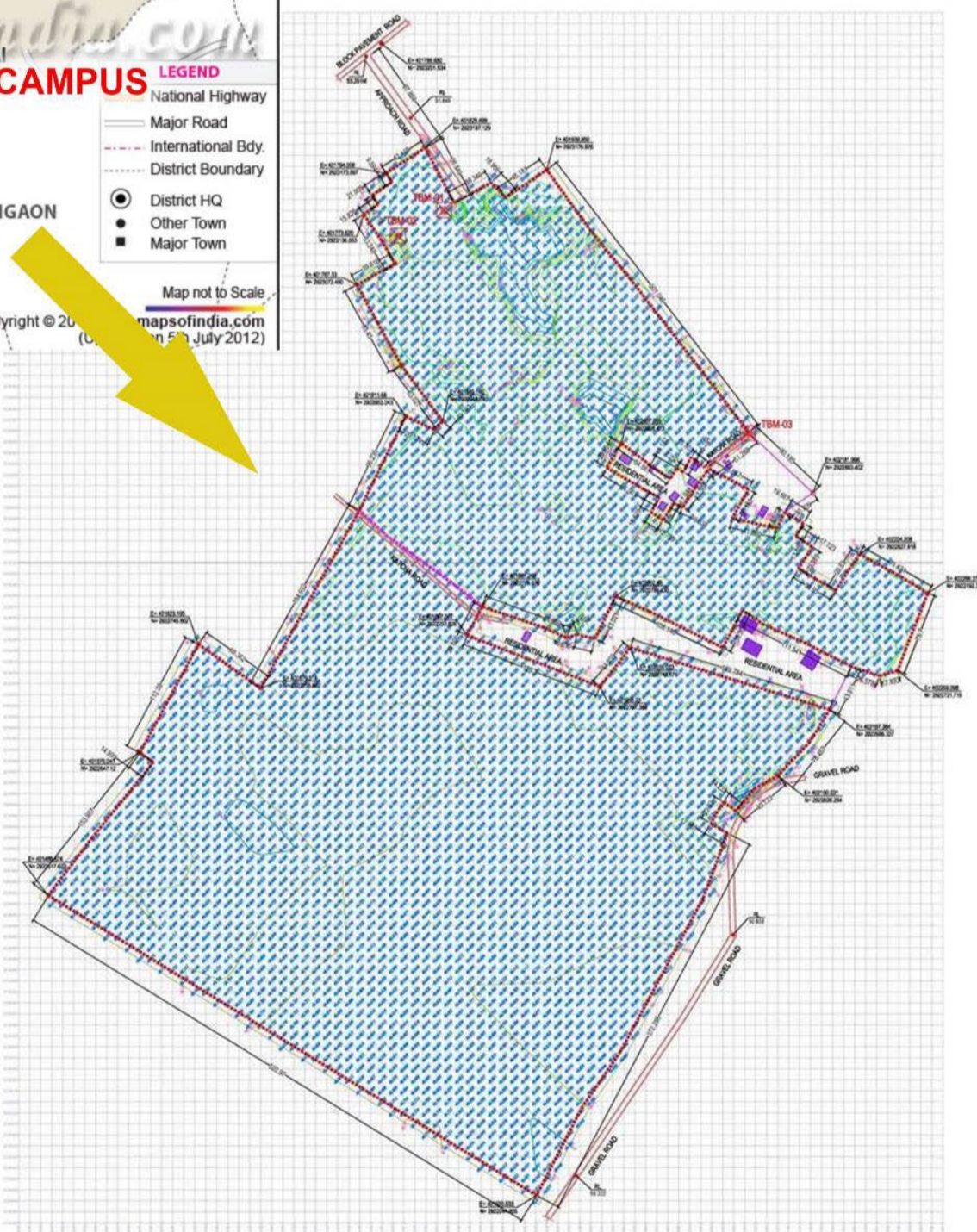
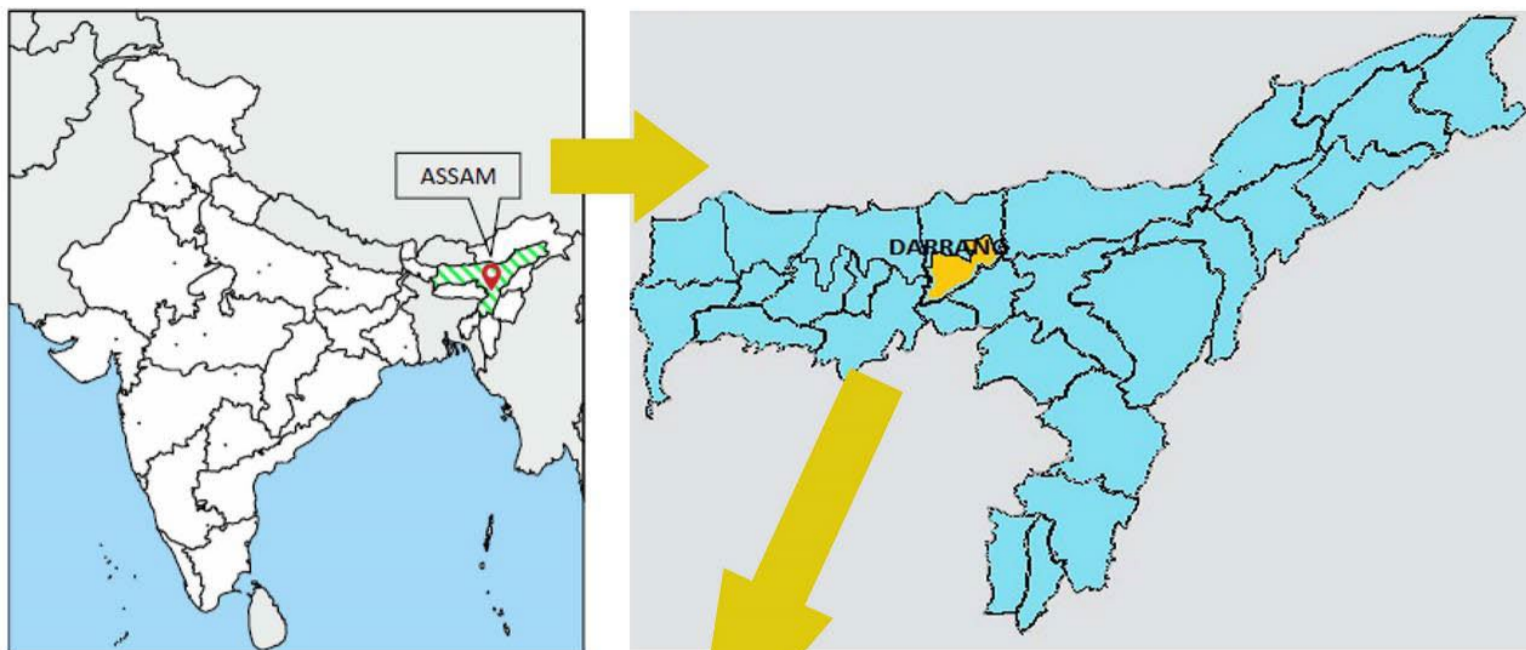


Figure-2: Location of ASU Site

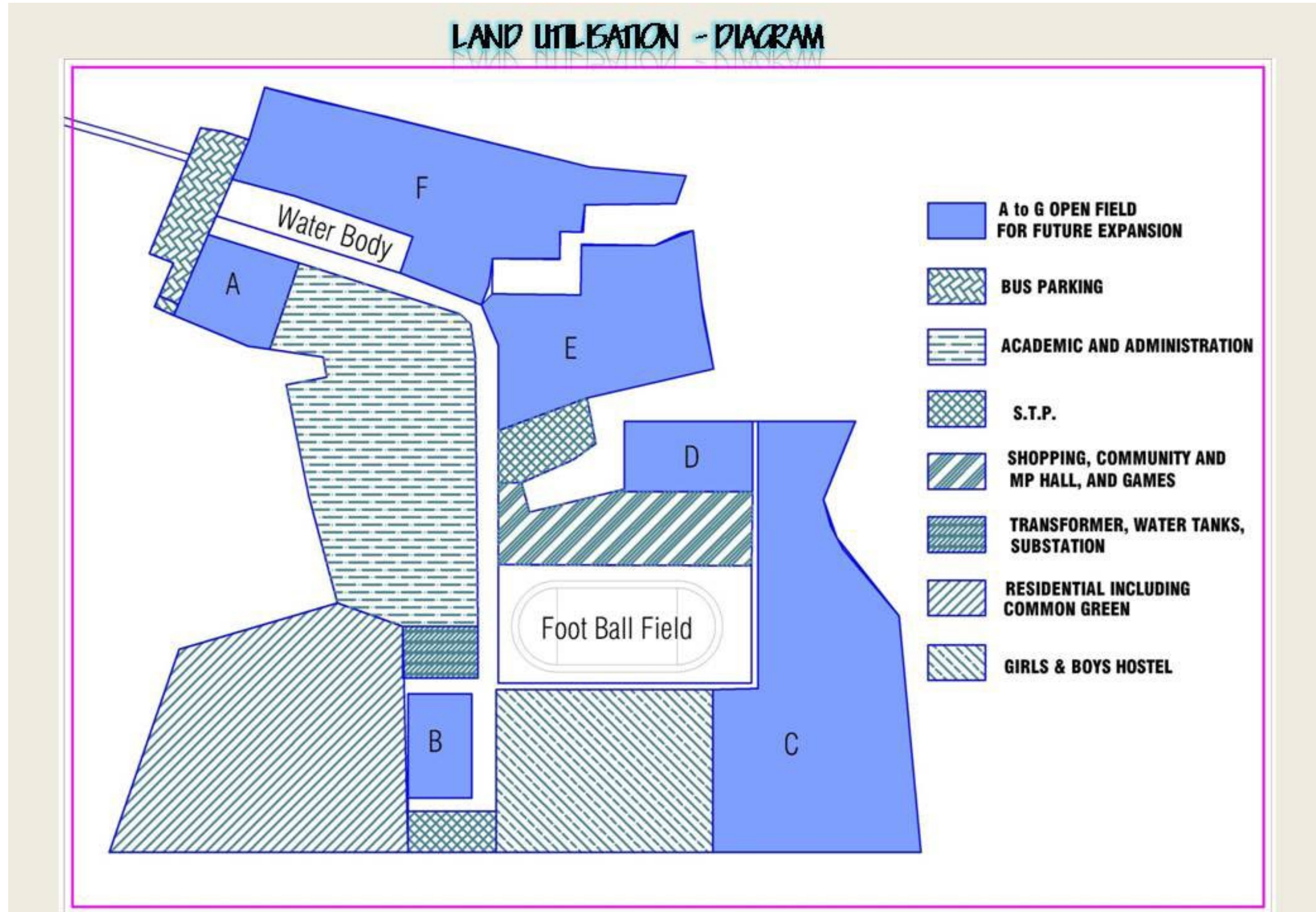


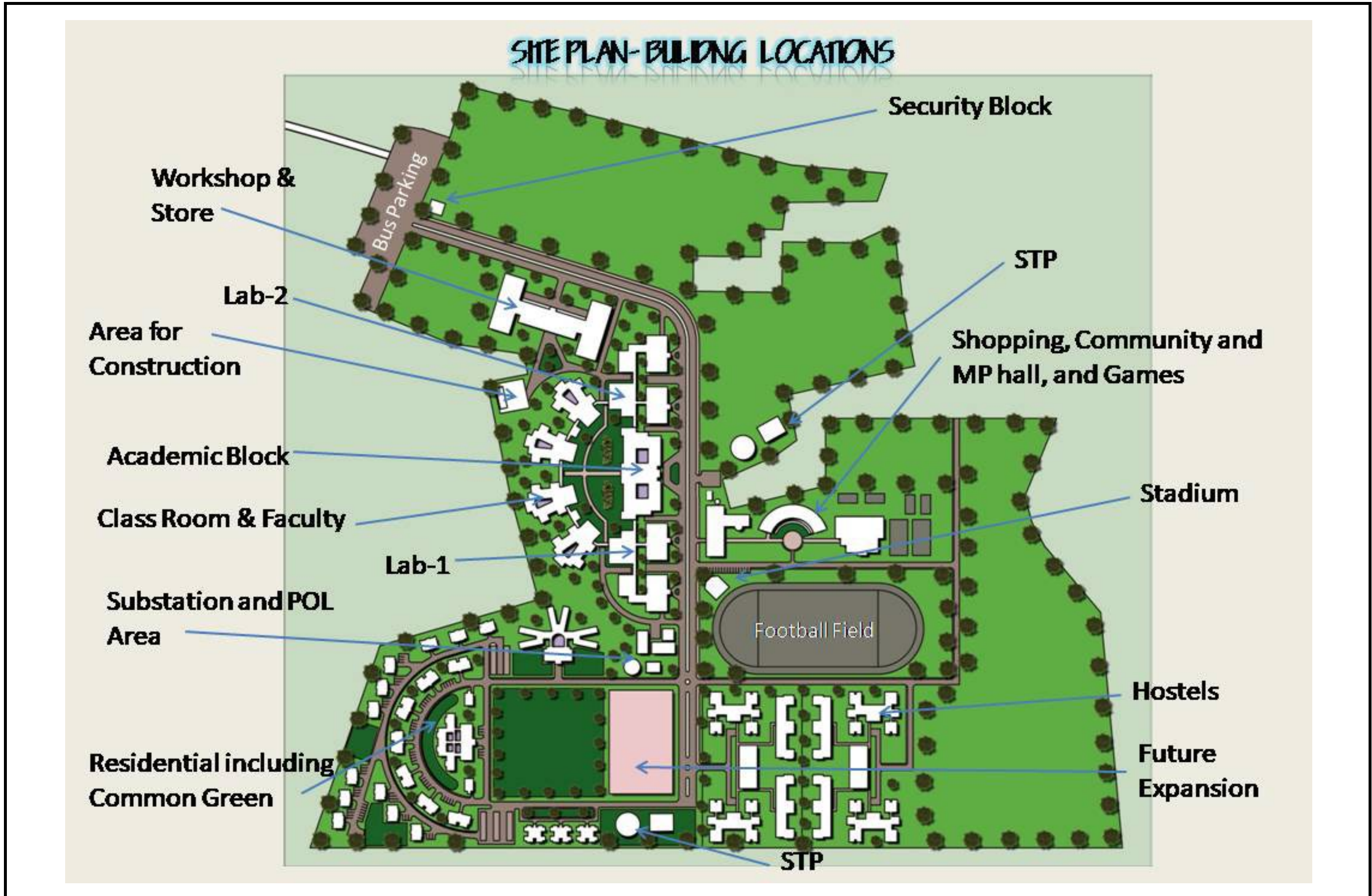
**Table-2: Description of the ASU Campus Components**

Description	Need of the Sub-project	Proposed Components
Detailed design and construction of ASU campus and facilities	Despite its abundant natural resources and higher proportion of young population (under 40 years of age) than the rest of India, Assam has yet to unleash its growth potential. Being landlocked, largely rural, and with underdeveloped infrastructure, Assam's economy is dominated by low value added, natural resource-based products and is poorly integrated with regional and global value chains. Its manufacturing sectors are undiversified and small in terms of outputs and capital investment. Limited availability of skilled workforce has been identified as one of the constraints to infrastructure and industrial development. Fewer prospects for socioeconomic development have propelled out-migration for jobs and education, leading to shortages of higher-level skills in Assam. Technical and vocational education and training and higher education is undersupplied, and the existing systems face many challenges, including low quality and lack of industry relevance of programs leading to poor employability of graduates from industrial training institutes, polytechnics, engineering colleges, and academic colleges and universities. To address these challenges, the project will assist the Government of Assam in establishing a skill university.	<p>1- The main ASU components include academic and administration buildings (18,386 m<sup>2</sup>), laboratories (13,008m<sup>2</sup>), workshops (2,761m<sup>2</sup>), staff quarters and guest house (14,609m<sup>2</sup>), hostels (3500 m<sup>2</sup>), community Centre (2,316m<sup>2</sup>), miscellaneous building (1,079 m<sup>2</sup>), multipurpose hall (2,316 m<sup>2</sup>), single storied corridor with RCC roof (1,144m), single storied corridor with sheeting roof (3,102 m), and open-air theatre (150 m<sup>2</sup>).</p> <p>2- Utility infrastructure included STP (400 kLD for phase I and space available for future expansion), transformer capacity 4000 kVA, DG set for backup power 1500 kVA and water storage tanks (400m<sup>3</sup>), solar power heating system for 64,000 liters per day and roof top solar system for power generation 100 kW.</p> <p>3-To enhance aesthetics within the campus, plantation of shrubs and trees, landscaping in open areas (217830.74m<sup>2</sup>), and development of existing small ponds (seasonal-having water availability during June to October) as water bodies shall also form part of the subproject. The water source to these ponds is monsoon rains.</p> <p>4- Three rainwater harvesting structures with a combined capacity of 800 m<sup>3</sup> will be provided. Locations will be finalized during detailed design. These rainwater harvesting structures will be the existing seasonal ponds at site. Roof top rainwater will be diverted to these ponds. The ponds will be excavated during the development for increase in volume as well as to provide sides slope stability.</p>

14. The layout plan of ASU is shown below in **Figure-3**. The floor wise drawings for ASU campus components are given in **Annexure-3**. These are all preliminary architectural drawings. These will be finalized during detailed engineering. Should there be any environmental implication due to such proposed drawings in the design, these would be assessed and reflected in updated IEE report which will be submitted to ADB for review and disclosure.

Figure-3: Layout Plan of ASU and Floor Plans Drawings





## **B. Executing and Implementing Agencies**

15. The Skill, Employment and Entrepreneurship Department (SEED) of GoA is the EA. The Assam Skill Development Mission (ASDM) is the IA. The ASDM has established a project management unit (PMU) for the overall project implementation. For the civil works components of ASU, the ASDM will be supported by the PMC team and construction supervision and quality assurance (CSQA) firm. The PMC and CSQA firm teams will be multi-disciplinary teams, including environmental specialist (intermittent inputs) in PMC team. The PMC environmental specialist has adequate experience and knowledge of environmental rules and regulations of the State and Gol and other environmental management aspects. The PMC consulting firm has been appointed. In addition to PMC, CSQA firm has also been hired for construction supervision and quality check. The civil work contractor engaged for the construction will also have environment, health and safety officer in their team till closure of their respective contracts. The ASDM will be responsible for supervising overall planning and implementation of civil works with the assistance of CSQA firm and PMC team. ASDM will ensure that the ASU and all activities financed under the ADB comply with environmental rules and regulations of Gol and GoA and ADB SPS 2009. No civil works related activities would commence until relevant regulations of Gol and GoA are complied with.

## **C. Implementation Schedule**

16. The implementation period for the proposed ASU campus is 36 months. The preliminary drawings (architectural in nature) for the ASU campus have been prepared **(Annexure-3). The detailed design is in progress and under approval process.** The bidding process for the detailed design and construction of ASU campus and facilities has been completed and construction works have been awarded. The contractor is in the process of mobilization and construction works are expected to be started by May 2022. The works are planned to be completed by April/May 2025.



### III. DESCRIPTION OF THE EXISTING ENVIRONMENT FOR ASU CAMPUS SITE

17. This section presents a brief description of the existing environment around the ASU site, including its physical resources, ecological resources, socio-economic development and social and cultural resources. Broad aspects on various environmental parameters such as geography, climate and meteorology, physiographic, geology, seismology, ecology, socio-cultural and economic development parameters that are likely to be affected by the proposed ASU campus construction and development are presented. Secondary information was collected from relevant government agencies like the State Forest Department, State Environment Department and State Pollution Control Board, and Meteorological Department.

#### A. Environmental Profile

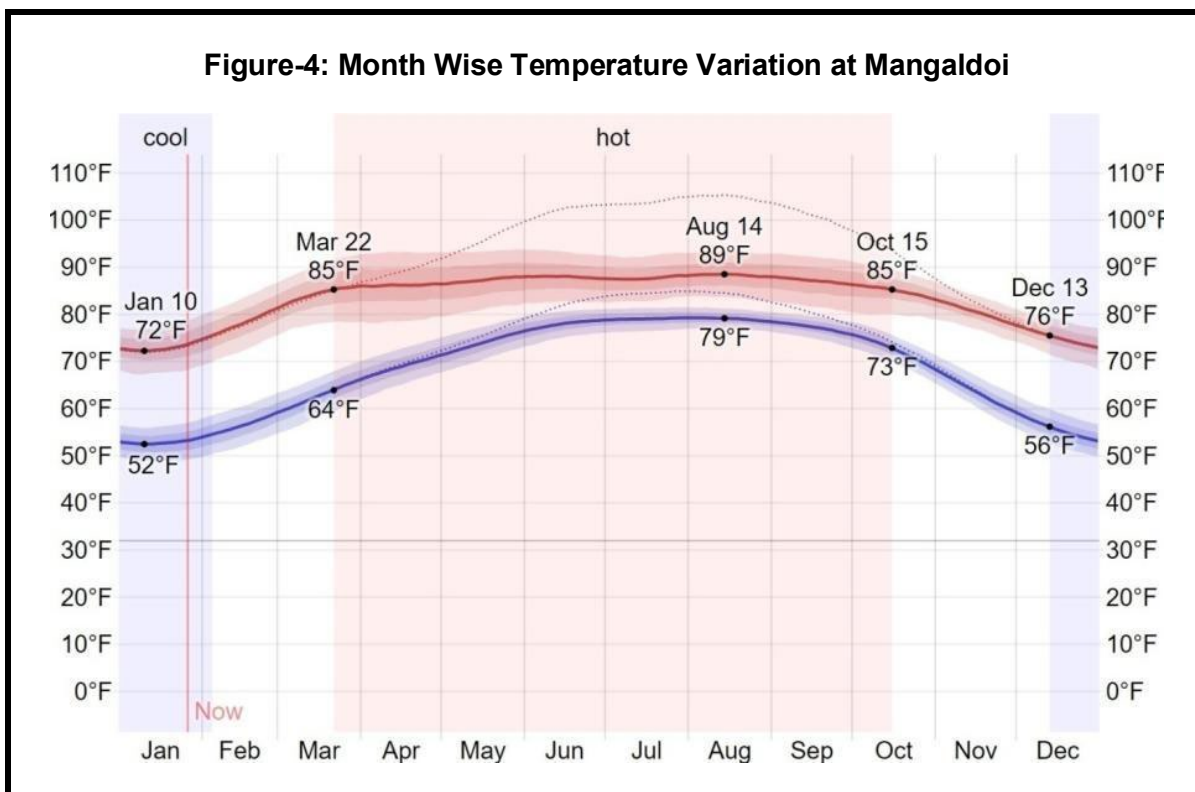
##### Air and Noise Quality

18. No air pollution sources have been seen in the surroundings of project site as site is in open area near Mangaldoi town. There are no environmental sensitive receptors (residential houses, schools, hospitals, etc.) within the perimeter of delineated ASU site. The minimum distance of residential houses from site boundary is about 50 m. The minimum distance of construction activity from the residential houses will be about 55 m. There is no baseline ambient air quality available for Mangaldoi town and ASU site. Baseline ambient air quality monitoring will be carried out by the contractor in pre-construction phase immediately after mobilization.

19. Noise levels data is not available for the ASU site. To have site specific ambient noise levels data, monitoring will be conducted by the contractor prior to start of construction works with the aim of establishing baseline conditions.

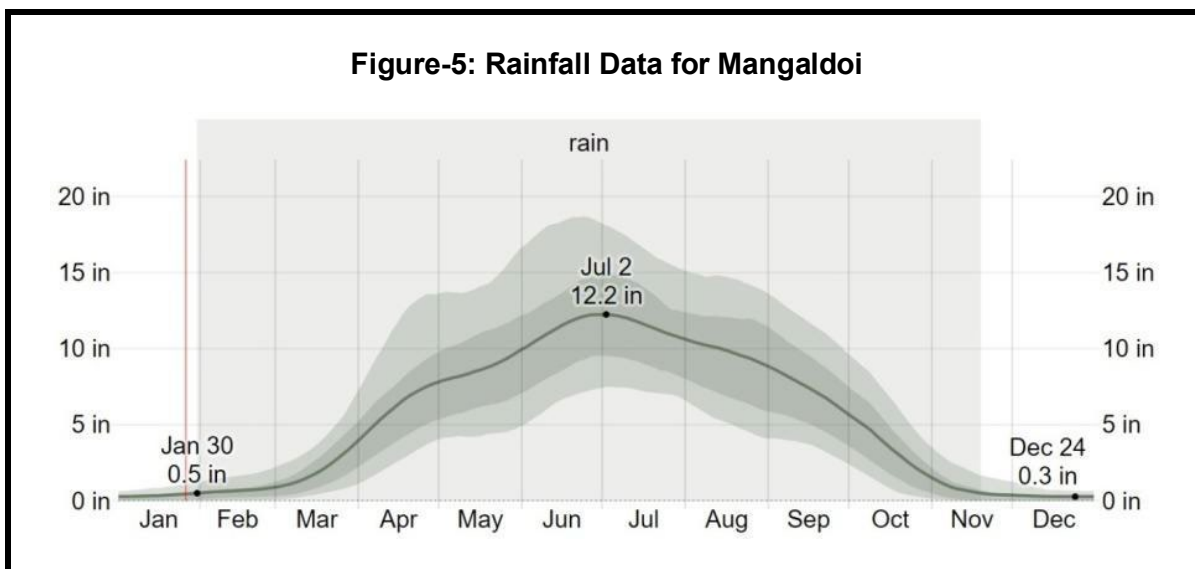
20. **Climate.** Three seasons are witnessed in Mangaldoi. From February to March weather is dry. In the month of March north-east winds carry sand and dust. In April and May local rains along with storms are a common feature. The minimum and maximum temperature varies from 11<sup>o</sup> to 32<sup>o</sup>C during this period. From June to October, there is prevalence of south-west monsoon with heavy rainfall. Temperature varies from 22 to 32<sup>o</sup>C in this season. Average annual rainfall is 1637.3 mm in the region with about 87 rainy days. About 90 % of rain occurs between April and September and July and August being the rainiest months.

21. **Temperature.** The temperature exhibits seasonal variation with minimum during the winter and higher during the summer. May, June, and early part of July are the hottest months while January and December are the cold months. The maximum temperature rises to about 32<sup>o</sup>C (89 <sup>o</sup>F) in August and the minimum temperature falls to about 11<sup>o</sup>C (52 <sup>o</sup>F) in winter months. The **Figure-4** below shows month wise Temperature data at Mangaldoi.



Source : <https://weatherspark.com/y/112086/Average-Weather-in-Mangaldai-India-Year-Round>

22. **Rainfall.** The sub-project area experiences maximum rainfall during Monsoon season from June to October while as least Rainfall is received in November and December. Average annual rainfall at Mangaldoi is around 1637.3 mm. The month wise rainfall for Mangaldoi has been shown in **Figure-5**.



Source : <https://weatherspark.com/y/112086/Average-Weather-in-Mangaldai-India-Year-Round>

23. **Humidity.** Based on climatological data of the Mangaldoi, it is found that relative humidity increases rapidly with the onset of monsoon and reaches maximum (around 96%) during August, when peak monsoon period sets in. Relative humidity is the minimum during the summer months (from April to May) with February being the driest month (around 6%). Skies are heavily clouded during the monsoon months.

24. **Wind Speed and Directions.** Generally, light to moderate winds prevail throughout the year. Average wind speed from February to June is 8.50 kmph. The wind speed is about 7.10 kmph from July to January. Peak wind speed in March month is about 9.5 kmph.

### Topography and Soils

25. The topography of project site is plain. The average elevation of the site is 51.24 m above mean sea level. Physiographically, the entire Darrang district is an alluvial plain with flat topography and there is a very gentle slope towards Brahmaputra River, which makes the southern boundary of the district. The district has soil cover of younger alluvium and older alluvium which have undergone diversified pedagogical changes. The soils are characterized by medium to high organic carbon, low to medium phosphate and potash contents. The alluvial soils are light yellow to light grey in color of recent age. At the project site soils are light grey in color. The texture of the soil ranges from sandy loam to silty loam in nature. At the site texture of soils is silty loam. The soil is suitable for cultivation of rice crop and Maize. In order to characterize the baseline soil quality data was collected from secondary published sources for project region. It has been given in **Table-3**. The soil testing and geotechnical investigations were carried for the detailed structural design. The soil results indicate the soil is found in very soft State in shallower depth. The bulk density of soil ranges from 1.76-1.95 ton/m<sup>3</sup> from a depth of 1.5 m to 15 m. According to soil report findings the soil texture is whitish brownish gray poorly graded medium to fine sand in some portions of site and brownish gray clay with some silt (at 2.0 m depth) in some portion. The soil testing and geotechnical investigations report vetted by the Civil Engineering Department of Assam Engineering College Guwahati. It has been concluded in the report that potential liquefiable zone (week soil strength for structure) exists up to a maximum depth of 10.5 m in the entire area of site (16 bore holes spread all over site were dug for investigations) so appropriate measures in building design need to be taken up. The soil texture results are also available in the above-mentioned report and these results show 100 % sand in some bore hole samples, 60-70 % sand and 30-40 % silt in some samples and very few bore hole samples have shown 20 % silt and 80 % clay. There was total sixteen bore- holes as part geo-technical investigations for the site.

**Table-3: Soil Quality Data for Sub-Project Region**

Sl. No.	Parameter	Unit	Value
1	Color	-	Brownish
2	pH	-	6.2
3	Conductivity	Micro mhos/cm	593
4	Bulk Density	gm/cm <sup>3</sup>	1.14
5	Porosity	%	42.60
6	Water Holding Capacity	%	33.80
7	Texture	-	Sandy –Loam
8	Sand	%	22
9	Silt	%	17
10	Clay	%	29
11	Gravel	%	32
12	Organic Matter	%	1.9
13	Calcium as Ca	%	0.43
14	Magnesium as Mg	%	0.20
15	Sodium	%	0.66
16	Potassium	%	0.15
17	Sulphur	%	0.08

Sl. No.	Parameter	Unit	Value
18	Nitrogen	%	0.21
19	Phosphorus	%	0.16
20	CEC	Meq/100 gm	27.9
21	Copper	mg/kg	2.3
22	Chromium	mg/kg	ND
23	Zinc	mg/kg	4.4
24	Lead	mg/kg	0.50

*Source: Environmental Impact Assessment Report for Installation of 2 Mounded Bullets at Guwahati Refinery, Year 2017*

### Surface water and Ground water

26. The ASU site is located in Brahmaputra River catchment (at a distance of about 5 km in monsoon season). There is no major surface water source close to the site. The site has not been flooded due to Brahmaputra River flow. However, during monsoon, there is water logging in low-lying some portions of site. The ASU site is not in flood plains of River Brahmaputra

27. The ground water quality data for ASU site and surroundings is not available. The contractor after mobilization will collect ground water sample (from the existing hand pumps close to site) in pre- construction phase with an aim to establish baseline for ground water quality. The Central Ground Water Board (CGWB-North Eastern Region Office) has conducted some ground water survey and studies in Darrang district in 2010 and published in 'Ground Water Information Booklet- Darrang District' in the year 2012. As per their study ground water of district is fresh and suitable for both domestic and irrigation purposes. Based on 2012 data of CGWB the depth of water level during pre-monsoon months, in Darrang district ranged from 2.0 to 4 m below ground level (bgl) and 1 to 2 m in post monsoon months. The stage of ground water development in Darrang district is only 31 % and district does not fall in critical category for ground water development. The total reserves/potential of ground water in the district is 575 million m<sup>3</sup> whereas development/usage is only 230 million m<sup>3</sup>. The hydrogeology map of Darrang district has been shown in **Figure-6**.

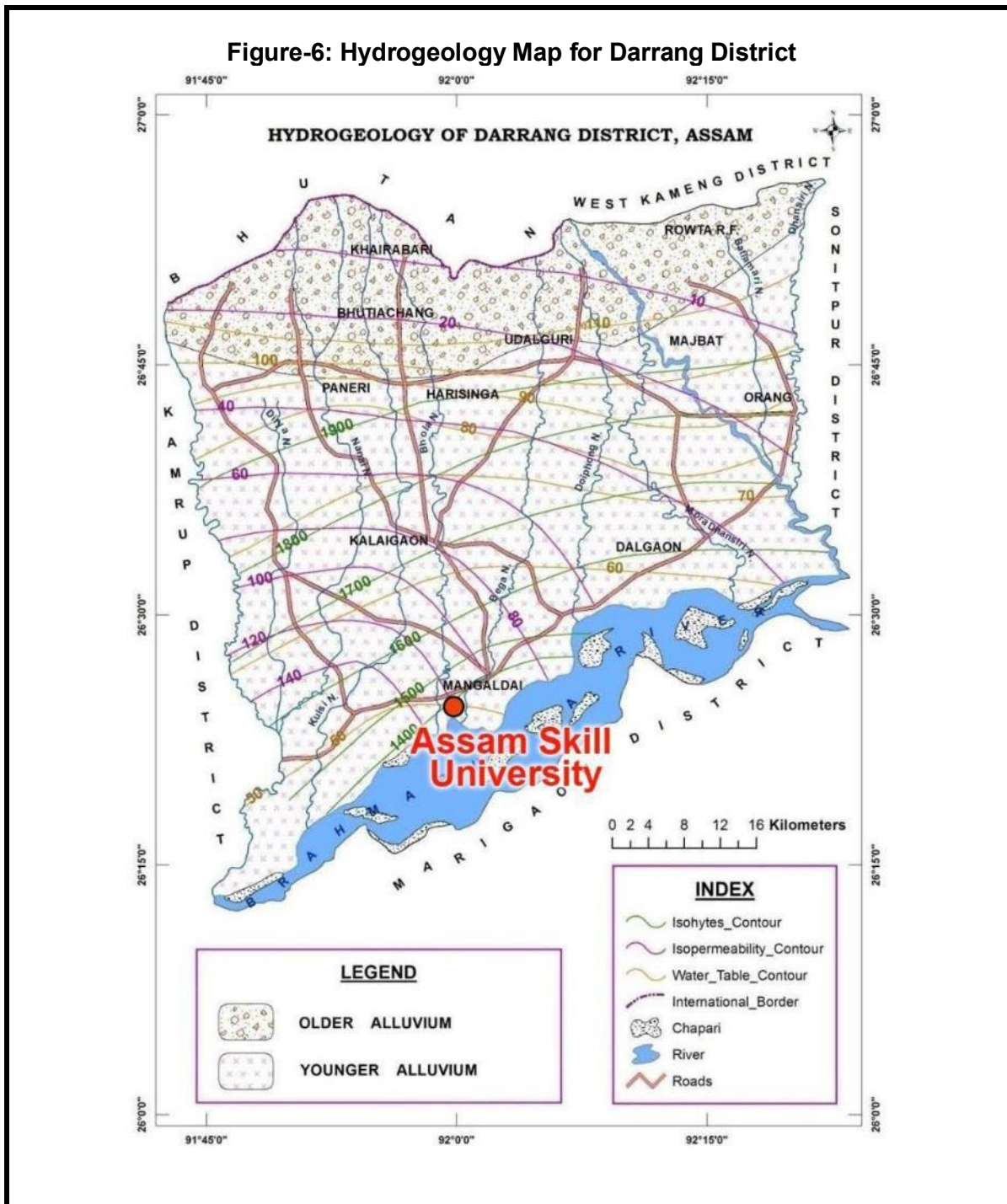
28. The surface water quality data of local stream close to ASU site is not available. The contractor after mobilization will collect sample from stream close to site (within 3 km distance) to establish baseline. Since Brahmaputra is the only river of significance in the project region so water quality data of this river was obtained from past EIA study. This river in future may be source of drinking water supply in Darrang town. Currently ground water is the drinking water source. The aerial distance of this river from site is about 5 km in monsoon season. This data has been given below in **Table-4**. It is clear from this table that heavy metals like copper, lead, mercury, cadmium and chromium were below their respective detection limits in the river water. Brahmaputra River generally conforms to Class-B & C of the CPCB, which means the water is suitable for outdoor bathing and as drinking water source after conventional treatment and disinfection.

**Table-4: Brahmaputra River Water quality in Sub-Project Region**

Sl. No.	Parameter	Unit	Value	Permissible CPCB Criteria	
				Class B (Suitable for outer Bathing)	Class C (Drinking Water source after conventional treatment and disinfection)
1	pH	-	7.4	6.5 to 8.5	6 to 9
2	Conductivity	Micromhos/cm	288	Not Stipulated	Not Stipulated
3	Dissolved Oxygen	mg/l	6.7	5 or more	4 or more
4	BOD (3 Days 27°C)	mg/l	3	3 or less	3 or less
5	Total Coliforms	MPN/100 ml	640	500 or less	5000 or less
6	Total Dissolved Solids	mg/l	168	Not Stipulated	Not Stipulated
7	Oil and Grease	mg/l	1.4	Not Stipulated	Not Stipulated
8	Cyanide as (CN)	mg/l	<0.005	Not Stipulated	Not Stipulated
9	Phenol	mg/l	<0.001	Not Stipulated	Not Stipulated
10	Total Hardness (as CaCO <sub>3</sub> )	mg/l	99	Not Stipulated	Not Stipulated
11	Chloride (as Cl)	mg/l	25	Not Stipulated	Not Stipulated
12	Sulphate (as SO <sub>4</sub> )	mg/l	3	Not Stipulated	Not Stipulated
13	Nitrate (as NO <sub>3</sub> )	mg/l	1.6	Not Stipulated	Not Stipulated
14	Fluoride (as F)	mg/l	0.2	Not Stipulated	Not Stipulated
15	Calcium (as Ca)	mg/l	28	Not Stipulated	Not Stipulated
16	Magnesium (as Mg)	mg/l	7	Not Stipulated	Not Stipulated
17	Copper (as Cu)	mg/l	<0.05	Not Stipulated	Not Stipulated
18	Iron (as Fe)	mg/l	0.40	Not Stipulated	Not Stipulated
19	Manganese (as Mn)	mg/l	<0.05	Not Stipulated	Not Stipulated
20	Zinc	mg/l	0.06	Not Stipulated	Not Stipulated
21	Boron (as B)	mg/l	<0.02	Not Stipulated	Not Stipulated
22	Arsenic (as As)	mg/l	<0.002	Not Stipulated	Not Stipulated
23	Mercury (as Hg)	mg/l	<0.001	Not Stipulated	Not Stipulated
24	Lead (as Pb)	mg/l	<0.05	Not Stipulated	Not Stipulated
25	Cadmium (as Cd)	mg/l	<0.01	Not Stipulated	Not Stipulated
26	Alkalinity (as CaCO <sub>3</sub> )	mg/l	128	Not Stipulated	Not Stipulated
27	Hexavalent Chromium as Cr+6	mg/l	<0.05	Not Stipulated	Not Stipulated

*Source: Environmental Impact Assessment Report for Installation of 2 Mounded Bullets at Guwahati Refinery, Year 2017*

Figure-6: Hydrogeology Map for Darrang District

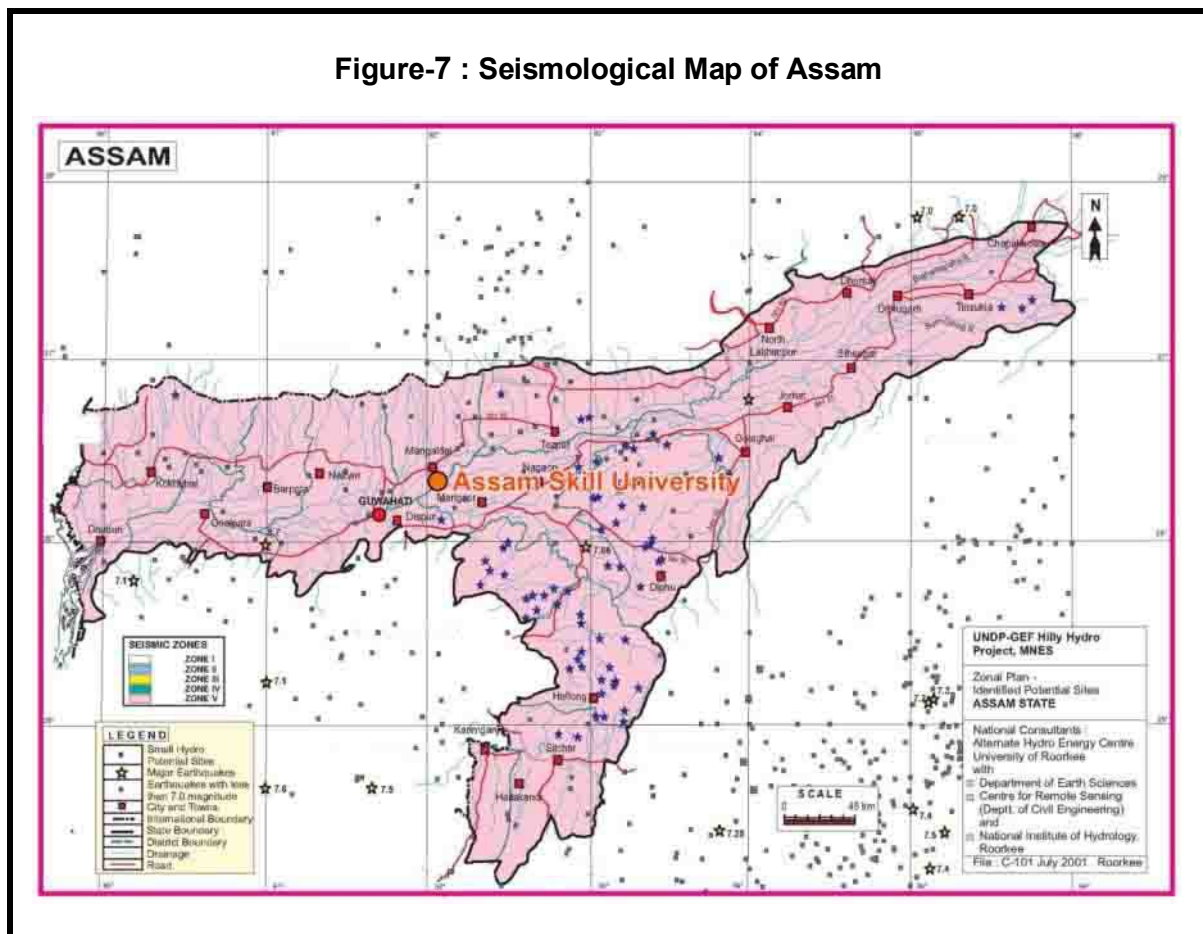


Source: Ground Water Information Booklet Darrang District, Assam -Central Ground Water Board (Year-2013)

### Geology and Seismology

29. Geologically, the project region (Darrang district) is occupied by Quaternary sediments of older and younger alluvium, where, the northern foothill part is covered mostly by old alluvium consisting of clay, sand, gravel, pebble and boulder, on the other hand, the southern new alluvium contains clay, silt and fine sand in maximum proportions. With favorable physiographical, geological, lithological and climatic factors, the project area happens to be an area of large reserve of under-ground water in regionally extensive aquifers up to a depth ranging from 50 to 300 m. There are no rock formations at site and surroundings.

30. India's seismic code divides the country into five seismic zones (I to V). The ASU campus site comes under seismic zone V as defined by Urban Earthquake Vulnerability Project (UEVP) and the Atlas prepared by the Building Materials Promotion and Technology Council (BMTPC), Government of India and UNDP [IS 1893 (Part I: 2002)]. All structures have been designed considering seismic zone V. It may be mentioned that intensity of earthquake increases from Zone I to V. The Zone V mainly covers entire North-Eastern India, parts of Jammu and Kashmir and Himachal Pradesh, Uttaranchal, Rann of Kutch in Gujarat, parts of North Bihar and Andaman & Nicobar Islands. Zones I, II and III mainly cover Central and Southern parts of Indian peninsula. As mentioned above Zone V covers the areas with the highest risk of suffering earthquakes so IS code assigns a zone factor of 0.36 for Zone V. Structural designers use this factor for earthquake resistant design of structures in Zone V. The same factor will be used in design of building structures of ASU campus. The seismological map of Assam has been given in **Figure-7**.



Source: UNDP-GEF Hilly Hydro Project- A Report on Zonal Plan Activity (Volume II) -Thematic Map, Year 2001

## Drainage

31. The ASU site drained by Brahmaputra River (at an aerial distance of about 5 km in monsoon months) and its tributaries. No flooding issues have been reported at the site because of spread of river water during monsoon. However, due to torrential rains in monsoon local depressions and some portions at site get waterlogged. This issue is being addressed in the design through design and implementation of storm water drainage system after hydrological study. All the structures of ASU will be 2 feet above finished ground level. The HFL level reported is 53.96 m at site. The reported contour levels at site vary from 50.25 to 51.102 m. The site is not in the river land or flood plains. The general slope of the site is towards Brahmaputra River in the eastern direction.

## B. Ecological Resources

### (i) Forests

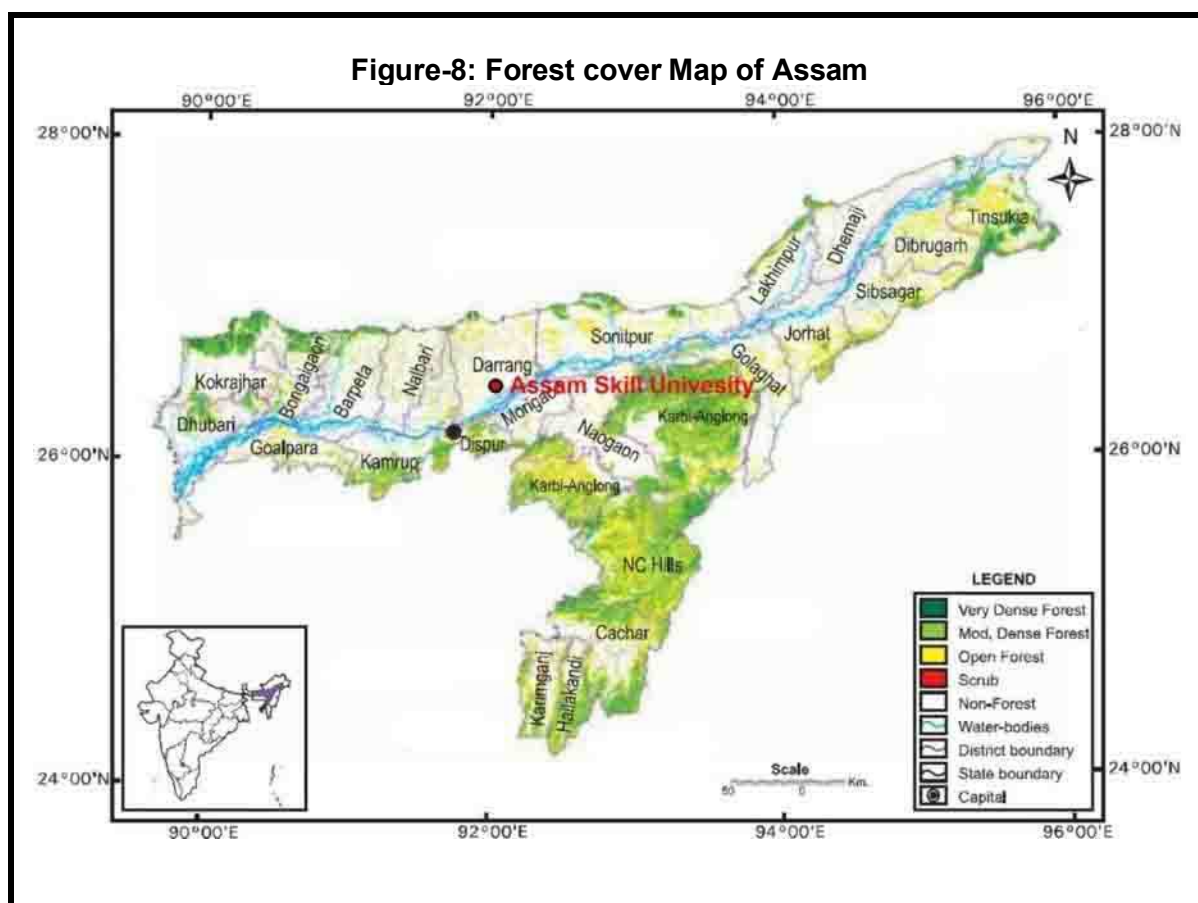
32. Various types of forests in Assam currently cover an area of nearly 28,326.51km<sup>2</sup>, which is about 36.11% of the total land area of the state. The variation in the landscape has created great diversity of flora and fauna. In terms of forest canopy density classes, the State has 2,794.86 sq km under Very Dense Forest (VDF), 10278.91 sq km under Moderately Dense Forest (MDF) and 15252.74 sq km under Open Forest (OF). Darrang district has about 5.64 % forest of total geographic area of the district. The most portions of these forest areas are managed by the Forest Department. The forest areas under very dense, moderately dense and open category are presented below in **Table-5** for Darrang district.

**Table-5: Different Categories of Forests in Darrang District**

District	Very Dense Forest Area (km <sup>2</sup> )	Moderately Dense Forest Area (km <sup>2</sup> )	Open Forest Area (km <sup>2</sup> )
Darrang	0	13.89	75.54

*Source: State Forest Department (Forest Survey of India Report -Year 2019)*

33. Five major groups of forests in Assam have been identified. These are (1) Tropical Wet Evergreen Forest, (2) Tropical Semi-evergreen Forest, (3) Tropical Moist Deciduous Forest, (4) Littoral and Swamp Forest and (5) Tropical Dry Deciduous Forest. Forest cover map for Assam is shown in **Figure -8**.



*Source: Forrest Survey of India, Year 2020*



34. The ASU site does not fall within any reserved, protected, or revenue forest areas. The newly added 40 Bigha area in the ASU plot is also not part of any reserved, protected or revenue forest areas. The forest area in Darrang district is low because it is an agriculture dominated area and in flood plains of Brahmaputra.

#### (ii) Flora and Fauna around ASU Site

35. The ASU site is at the outer skirts of Mangaldoi town. There are no protected areas within 15 km radius. Around the ASU site, one only finds domesticated fauna. At present there are no trees at site. There is presence of shrubs in some portion of ASU site. The common trees in the surroundings of ASU site (more than 40 meters away from the proposed boundary wall) are given in **Table-6**. The International Union for Conservation of Nature (IUCN) category of each tree species is also given in the **Table-6**. It is clear that some tree species belong to near threatened (NT), vulnerable (VU) and endangered (EN) categories. But none of these species are present at ASU site and these are not expected to be impacted during construction and operation phases. In the newly added portion of 40 Bigha, there are no trees. This has been verified during the recent visit.

**Table-6: Common Tree Species around ASU Site**

Sl. No.	Scientific Name	Common Name	IUCN Category
1.	<i>Aegle marmelos</i>	Bel	<i>Near Threatened (NT)</i>
2.	<i>Alangiumchinense</i>	Kodalkonia	<i>not available</i>
3.	<i>Albizia lucida</i>	Hoj	<i>Least Concern (LC)</i>
4.	<i>Albiziaodoratissima</i>	Chamkorai Heharu	<i>Least Concern (LC)</i>
5.	<i>Acrocarpusfraxinifolius</i>	Mandhani	<i>Least Concern (LC)</i>
6.	<i>Acrocarpusintegriifolia</i>	Borpat	<i>Least Concern (LC)</i>
7.	<i>Acrocarpusprocera</i>	Korai	<i>Least Concern (LC)</i>
8.	<i>Anona squamosa</i>	Custard apple	<i>Least Concern (LC)</i>
9.	<i>Azadirachtaindica</i>	Neem	<i>Least Concern (LC)</i>
10.	<i>Bauhinia purpurea</i>	Kanchan	<i>Least Concern (LC)</i>
11.	<i>Brideliaretusa</i>	Kohir	<i>Least Concern (LC)</i>
12.	<i>Bauhinia malabarica</i>	Tengakotra	<i>Least Concern (LC)</i>
13.	<i>Barringtoniaacutangula</i>	Hijal	<i>Least Concern (LC)</i>
14.	<i>Bombax malabarica</i>	Simalu	<i>Least Concern (LC)</i>
15.	<i>Carallia lucida</i>	Mohithekara	<i>not available</i>
16.	<i>Callicarpa arborea</i>	Maskiita	<i>Least Concern (LC)</i>
17.	<i>Caseariaglomerata</i>	Telbhurukia	<i>Least Concern (LC)</i>
18.	<i>Cassia fistula</i>	Sonam	<i>Least Concern (LC)</i>
19.	<i>Celtistimorensis</i>	Mahila	<i>Least Concern (LC)</i>
20.	<i>Cordia dichotoma</i>	Ghapakharea	<i>Least Concern (LC)</i>
21.	<i>Craetera religiosa</i>	Barun	<i>Least Concern (LC)</i>
22.	<i>Croton oblongifolius</i>	Makhunda	<i>Least Concern (LC)</i>
23.	<i>Callistemon linearis</i>	Bottle brush	<i>not available</i>
24.	<i>Canariumbengalensis</i>	Dhuna	<i>not available</i>
25.	<i>Canarium strictum</i>	Dhuna	<i>not available</i>
26.	<i>Cassia javanica</i>	Malayan cassia	<i>Least Concern (LC)</i>

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Scientific Name	Common Name	IUCN Category
27.	<i>Chrysophyllus lanceolatum</i>	Bon pitha	not available
28.	<i>Celbapentandra</i>	White silk cotton	Least Concern (LC)
29.	<i>Cinnamomum camophora</i>	Karpur	not available
30.	<i>Cordia sebestina</i>	Lolu	Least Concern (LC)
31.	<i>Anthocephalus chinensis</i>	Kodam	not available
32.	<i>Artocarpus chama</i>	Chamkathal	not available
33.	<i>Artocarpus integrifolia</i>	Kathal	not available
34.	<i>Acacia auriculiformis</i>	Akasmani	Least Concern (LC)
35.	<i>Acacia catechu</i>	Khair	not available
36.	<i>Crescentia cujete</i>	Bilatibel	Least Concern (LC)
37.	<i>Caesalpinia pulcherina</i>	Radhasurea	not available
38.	<i>Dalbergia sissoo</i>	Sisu	Least Concern (LC)
39.	<i>Derris robusta</i>	Kothriakorai	not available
40.	<i>Dillenia indica</i>	Outenga	Least Concern (LC)
41.	<i>Dillenia scabrella</i>	Banjole	Least Concern (LC)
42.	<i>Diospyros variegata</i>	Koliori	not available
43.	<i>Dysoxylum bicectariferum</i>	Bandardima	Least Concern (LC)
44.	<i>Dalbergia latifolia</i>	Rose wood	Vulnerable (VU)
45.	<i>Dipterocarpus retusus</i>	Holang	Endangered (EN)
46.	<i>Ehretia acuminata</i>	Gual	Least Concern (LC)
47.	<i>Erythrina stricta</i>	Modre	Least Concern (LC)
48.	<i>Eugenia balsamea</i>	Goolhajam	Least Concern (LC)
49.	<i>Elaeocarpus floribundus</i>	Jalpai	not available
50.	<i>E. ganitrus</i>	Rudrakesha	Least Concern (LC)
51.	<i>Eucalyptus tereticomis</i>	Red gum	Least Concern (LC)
52.	<i>E. globules</i>	Blue gum	Least Concern (LC)
53.	<i>E. citriodora</i>	Lemon scented	not available
54.	<i>Exbucklandia populnea</i>	Diengdok	not available
55.	<i>Ficus bengalensis</i>	Bot	not available
56.	<i>F. benamina</i>	Joribor	not available
57.	<i>F. elastica</i>	Athabor, Indian	Least Concern (LC)
58.	<i>F. hispida</i>	Dimoru	Least Concern (LC)
59.	<i>F. religiosa</i>	Ahat	Least Concern (LC)
60.	<i>F. cunia</i>	Kongroy	Least Concern (LC)
61.	<i>Flacourtia jomgomus</i>	Poniyal	Least Concern (LC)
62.	<i>Garcinia cowa</i>	Kujithekera	Least Concern (LC)
63.	<i>G. pedunculata</i>	Borthekera	Least Concern (LC)
64.	<i>G. xanthochymus</i>	Tepontenga	Least Concern (LC)
65.	<i>Gliricidia sepium</i>	Madera	Least Concern (LC)
66.	<i>Garugapinnata</i>	Rohini	Least Concern (LC)
67.	<i>Glochidion lanceदारum</i>	Armlocham	Least Concern (LC)
68.	<i>Glochidion sphaerogynum</i>	Bob Jagru	Least Concern (LC)

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Scientific Name</b>	<b>Common Name</b>	<b>IUCN Category</b>
69.	<i>Magnolia griffithii</i>	Gahorisopa	<i>Data deficient (DD)</i>
70.	<i>Machilusbombycina</i>	Som	<i>Least Concern (LC)</i>
71.	<i>Manilkarahexandra</i>	Oubard	<i>Least Concern (LC)</i>
72.	<i>Mesuaferrea</i>	Nahae	<i>not available</i>
73.	<i>Melia azedarch</i>	Ghoranim	<i>Least Concern (LC)</i>
74.	<i>Memelyloncerasiforma</i>	Kakoichera	<i>Least Concern (LC)</i>
75.	<i>Micheliachampaca</i>	Titasopa	<i>not available</i>
76.	<i>M. oblonga</i>	Phulsopa	<i>not available</i>
77.	<i>M. montana</i>	Phulsopa	<i>Least Concern (LC)</i>
78.	<i>Mimusopselongi</i>	Bakul	<i>Least Concern (LC)</i>
79.	<i>Morus macroua</i>	Bola	<i>Least Concern (LC)</i>
80.	<i>Moringa oleifera</i>	Sajina	<i>Least Concern (LC)</i>
81.	<i>Myristicakingii</i>	Amol	<i>Least Concern (LC)</i>
82.	<i>Mallotusferrugineus</i>	Larubandha	<i>not available</i>
83.	<i>Mangiferaindica</i>	Am (Mango)	<i>not available</i>
84.	<i>Micromelumminutum</i>	Sagladi	<i>not available</i>
85.	<i>Nyctanthesarbortristis</i>	Sewali	<i>not available</i>
86.	<i>Oroxylumindicum</i>	Bhatghila	<i>not available</i>
87.	<i>Premhalatifolia</i>	Gonara	<i>Least Concern (LC)</i>
88.	<i>Palaquiumpolyanthum</i>	Kurta	<i>Least Concern (LC)</i>
89.	<i>Pongamiapinrata</i>	Tamsica	<i>Least Concern (LC)</i>
90.	<i>Phoebe goalporensis</i>	Bonscn	<i>Least Concern (LC)</i>
91.	<i>Polyalthialongifolia</i>	Debdaru	<i>Least Concern (LC)</i>
92.	<i>P. pendula</i>	Pendulum tree	<i>Least Concern (LC)</i>
93.	<i>Psidium guajara</i>	Madhuriam	<i>Least Concern (LC)</i>
94.	<i>Putrajivaroxburghii</i>	Putranjibi	<i>Least Concern (LC)</i>
95.	<i>Phyllanthus emblica</i>	Amlakhi	<i>Least Concern (LC)</i>
96.	<i>Sapiumbaccatum</i>	Cheleng	<i>Least Concern (LC)</i>
97.	<i>Semecarpus anacardium</i>	Bhela	<i>not available</i>
98.	<i>Syzygiumcumini</i>	Kalajam	<i>Least Concern (LC)</i>
99.	<i>Shorearobusta</i>	Sal	<i>Least Concern (LC)</i>
100.	<i>Spathodeacampanulata</i>	Fountain tree	<i>not available</i>
101.	<i>Spondiuspinnata</i>	Amorea	<i>not available</i>
102.	<i>Swietenia macrophylla</i>	Mahogeni	<i>Vulnerable (VU)</i>
103.	<i>S. mahagoni</i>	Mahogeni	<i>not available</i>
104.	<i>Santalum album</i>	Chanolan	<i>Vulnerable (VU)</i>
105.	<i>Talaumahodgsonii</i>	Bovehamthuri	<i>not available</i>
106.	<i>Tectonagrandis</i>	Segun	<i>not available</i>
107.	<i>Terminalia chebula</i>	Silikka	<i>Least Concern (LC)</i>
108.	<i>T. Arjuna</i>	Arjun	<i>not available</i>
109.	<i>T. belerica</i>	Bhoora	<i>not available</i>

Source: Site and surrounding Observations of ASDM Site Team and Environmental Specialist

36. The fauna in the surroundings of ASU site includes Wild Boar, Jungle Cat, Asiatic Jackal, Bengal Fox, Small Indian Civet, Indian Grey Mongoose, Small Asian Mongoose, Rhesus Macaque, Assam Macaque, Capped Langur, Bengal Slow Loris, Indian Palm Squirrel, Porcupine, Lesser Bandicoot Rat, Hoary Bamboo Rat, Indian flying Fox, short nosed Indian fruit Bat, Least horseshoe Bat. The reptiles include Tree frog, Ornamented Pygmy, Indian bull frog, Common Pond Frog, Water frog, Common Rat Snake, North-eastern Kukri, Golden Tree Snake, Banded Krait, Indian Roofed Turtle, Indian Soft Shell, Peacock, etc. The common avian in the project ASU site and surroundings are Little grebe, Little cormorant, Grey Heron, Pond Heron, Smaller egret, Little egret, Stork, Lesser adjutant stork, Large whistling teal, Pintail, Common teal, Pariah kite, While backed vulture, Pied Harrier, Crested Serpent eagle Coot, Common Sand piper, Spotted dove, The cuckoo, Koel, Spotted owlet, Common kingfisher, Copper smith, Pied wood pecker. None of these are in the threatened or endangered category (Reference: Discussion with Forest Department Officials at Mangaldoi and Guwahati in February 2021).

37. There are no endangered or rare species fauna as project site is located close to Mangaldoi town.

38. The water bodies around ASU site are seasonal in nature (one backflow channel at about 100m and water pond in habitation at about 150m). There is not much presence of aquatic life in the water bodies close to the site as these are shallow ponds/low lying areas, which get dried up in winter and summer months. The site is surrounded by open agriculture land and sparse habitation.

**(iii) Protected Areas**

39. The list of protected areas (National Parks and Wildlife Sanctuaries) in Assam is given in **Table 7**. In Darrang district, there is no National Park or wildlife sanctuary. The boundary of nearest National Park (Orang) is about 38 km from ASU site. The map of protected areas is shown in **Figure-9**.

**Table-7: Protected Areas in Assam**

**(a) National Parks**

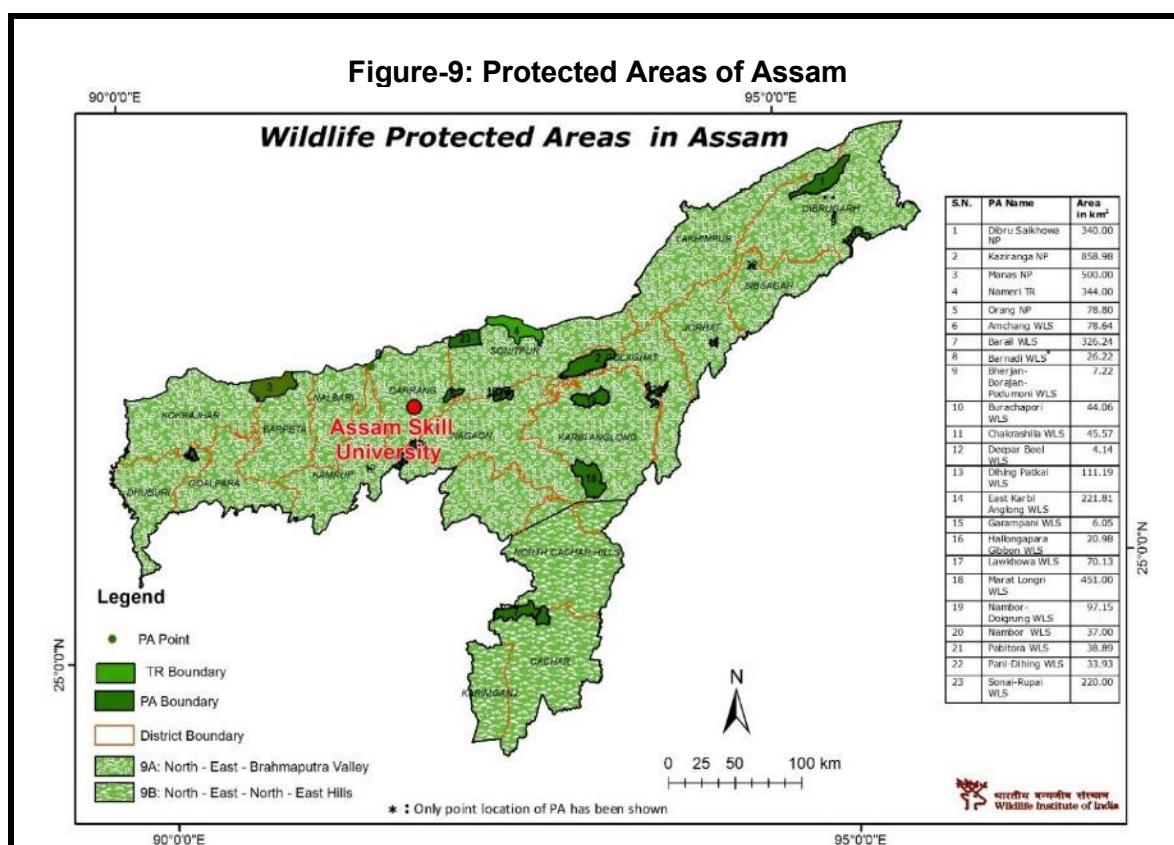
<b>Name</b>	<b>Location</b>	<b>Area (km<sup>2</sup>)</b>	<b>Year of Notification</b>
<u>Kaziranga National Park</u>	<u>Golaghat, Nagaon district and Karbi Anglong</u>	858.98	1905
<u>Manas National Park</u>	Kokrajhar, Chirang, Baksa, Bajali and Udalguri,	950.00	1985
<u>Nameri National Park</u>	<u>Sonitpur</u>	200.00	1978
<u>Dibru-Saikhowa National Park</u>	Dibrugarh and Tinsukia district	340.00	1978
<u>Orang National Park</u>	Udalguri and Sonitpur district	78.81	1999
<u>Dehing Patkai National Park</u>	Dibrugarh and Tinsukia district	231.65	2020

**(b) Wildlife Sanctuaries**

<b>Name</b>	<b>Location</b>	<b>Area (km<sup>2</sup>)</b>	<b>Year of Notification</b>
<u>Hoollongapar Gibbon Sanctuary</u>	<u>Jorhat</u>	20.98	1997
<u>Garampani Wildlife Sanctuary</u>	<u>Karbi Anglong</u>	6.05	1952
<u>Bura Chapori Wildlife Sanctuary</u>	<u>Sonitpur</u>	44.06	1995

<u>Bornadi Wildlife Sanctuary</u>	<u>Udalguri</u>	26.22	1980
<u>Sonai Rupai Wildlife Sanctuary</u>	<u>Sonitpur</u>	220.00	1998
<u>Pobitora Wildlife Sanctuary</u>	<u>Marigaon</u>	38.80	1987
<u>Panidihing Bird Sanctuary</u>	<u>Sibsagar</u>	33.93	1995
<u>Bherjan-Borajan-Padumoni Wildlife Sanctuary</u>	<u>Tinsukia</u>	7.22	1999
<u>Nambor Wildlife Sanctuary</u>	<u>Karbi Anglong</u>	37.00	2000
<u>East Karbi-Anglong Wildlife Sanctuary</u>	<u>Karbi Anglong</u>	222.81	2000
<u>Laokhowa Wildlife Sanctuary</u>	<u>Nagaon</u>	70.13	1972
<u>Chakrashila Wildlife Sanctuary</u>	<u>Dhubri and Kokrajhar</u>	45.57	1994
<u>Marat Longri Wildlife Sanctuary</u>	<u>Karbi Anglong</u>	451.00	2003
<u>Nambor-Doigrung Wildlife Sanctuary</u>	<u>Golaghat</u>	97.15	2003
<u>Dehing Patkai Wildlife Sanctuary</u>	<u>Dibrugarh and Tinsukia</u>	111.19	2004
<u>Borail Wildlife Sanctuary</u>	<u>Cachar and Dima Hasao</u>	326.25	2004
<u>Amsang Wildlife Sanctuary</u>	<u>Guwahati</u>	78.64	2004
<u>Dipor Bil Wildlife Sanctuary</u>	<u>Kamrup</u>	4.14	1989

Source: Department of Environment and Forest, Govt. of Assam, Year 2020)



Source: Department of Environment and Forest, Govt. of Assam, Year 2020)

### C. Economic Resources Industries

40. Being an agriculture prominent district, there are no large industrial units in the Mangaldoi and surroundings. As shown in **Table-8** for Darrang district, there are micro, small, and medium enterprises focusing on agro-products, food, cotton textiles, etc.

**Table-8: Details of Existing Micro and Small Enterprises and Artisan Units in Darrang District**

NIC Code No	Type of Industry	Number of Units	Employment
10	Manufacture of Food Products	43	1917
11	Manufacture Beverages	1	10
13	Manufacture of Textiles	3	95
17	Manufacture of Paper and Paper Products	3	47
20	Agro based	1	10
22	Soda water	4	36
23	Cotton textile	34	623
24	Woolen, silk & artificial Thread based clothes.	1	15
27.	Wood/wooden based furniture	1	10
31.	Chemical/Chemical based	1	10

Source: Statistical Handbook of Assam (Year 2016)

### Transportation

41. The ASU site is well connected with Guwahati, West Bengal and other states of north eastern region of the country through various national highways and state highways. The nearest rail head is Darrang at about 5 km from ASU site. The nearest operating airport is Guwahati from the ASU site and its distance is about 74 km. No clearance or permission from Airport Authority of India (AAI) is needed for the construction of ASU campus.

### Land Use

42. A study of the land use (**Table-9**) shows that majority of the area in Darrang district is under agriculture and non-agriculture uses. It is also clear that forest land and waste land is not significant. The land use of ASU site is rural open land under the ownership of GoA. If land use of ASU site is to be seen in terms of classification of **Tables 9**, it will fall 'Land put to non-agriculture uses'.

**Table-9: Land Use Pattern of Darrang District**

Land use	Area (In 000' hectare)
Geographical Area	158.5
Forest land	10.541
Culturable Waste land	3.879
Land put to Non-Agriculture Uses	97.319
Gross Cropped Area	132.670
Net Area Sown	73.319
Area Sown more than Once	59.351

Source: District Irrigation Plan 2016-2020 for Darrang District

43. **Agricultural Development.** Darrang district is basically agrarian, where more than 65 percent of the population is engaged in agriculture and allied activities. Agriculture in Darrang is characterized by small holdings operated by family labor, both men & women. Average land holding size in Darrang is 0.95 ha. However, small & marginal farmers & landless, who make up 89 % of land holders, have an average farm size of 0.57 ha. Fruits and cash crops are a major source of income. Paddy is the principal crop grown in the district

and autumn paddy, winter paddy and summer paddy are the three main types of paddy are grown in the district. Next to paddy, wheat, rapeseed and mustard, sugarcane and vegetables are the main agricultural produce. Among cash crops, Jute accounted for 3.2 % and Sugarcane 0.38 % of the total cropped area.

### **Electrification**

44. The Rural Electrification in Darrang district is 100%.

## **D. Social and Cultural Resources**

### **Population and Communities**

45. As per 2011 Census, the total population of Darrang was 928,500, with density of population 586 per sq. km, which is higher than the state average of 398. The decadal variation of population for 2001-2011 was 22.19 percent, which had experienced much higher decadal variations during last several decades. Witnessing quite a sluggish process of urbanization, the overwhelming majority of people in Darrang live in the villages. The district is predominantly rural with more than 94 per cent of the total population in the district is residing in rural area while the urban population is 5.98 percent which is lower than the state average of 14.1 percent. In terms of religious composition, around 58 per cent of the total population in the district is Hindu while the Muslim constitutes more than 35 per cent of the total population. Almost all the Muslims live in the rural areas, while around 4 percent of the Hindus live in urban areas. The other minority communities constitute less than seven per cent of the total population of the district. In the district, Dargaon Revenue Circle is the most populous having 473585 persons while Khoirabari is the least populous Revenue Circle having 8398 persons. Darrang district is basically agrarian, where more than 65 percent of the population is engaged in agriculture and allied activities. Out of the total population, 39.85 percent population was involved in agriculture as a main source of income and livelihood. Around 25 percent of the total population had agricultural laborers. Moreover, males were predominantly involved in agriculture and allied activities with 43.60 percent while women share was 27.97 percent of the total population of district. However, women were overwhelmingly in manufacturing and production in household, small scale industry, rearing of livestock and collection of forest woods etc. Like elsewhere, women are also engaged in agricultural labor.

### **Health facilities**

46. Darrang district has one civil hospital, 30 Primary Health Centers, 1 First Referral Unit, 6 Community Health Centers, and 163 Sub Centers of Community Health Centers. In addition to above mentioned government run health facilities, there are many privately owned facilities available in major urban centers of the district. At the ASU there will be one medical Centre having first aid and referral facilities. The Darrang district hospital is about 3 km from ASU site.

### **Education facilities**

47. In Darrang district there are 1,096 primary schools, 154 Middle Schools, 1,656 Senior Secondary Schools and 18 colleges. There are many technical education training institutes. The current ASU project will also contribute towards skills development and employability of youth from the Assam and North- Eastern states.

### **Archaeological Resources**

48. There are no heritage sites notified by Archaeological Survey of India (ASI) within 300 m distance from the ASU site. Similarly, no common property resources such as public wells, water tanks, playgrounds, common grassing grounds or pastures, market areas and community buildings exist at the ASU site.

#### IV. ENVIRONMENTAL IMPACT AND MITIGATION MEASURES

##### A. Environmental Impacts

49. Any project creating physical infrastructure will cause some impacts on the environment. This revised IEE examines the potential impacts anticipated during the construction and operation phases due to construction and development of ASU campus:

- (i) **Location impacts:** Impact associated with location of the project including effect on the environment and resettlement or livelihood related impacts on communities;
- (ii) **Design impacts and pre-construction impacts:** Impact arising from project design, including the technology used, scale of operations, discharge standards, topographic survey, geotechnical survey, etc.;
- (iii) **Construction impacts:** Impact resulting from construction activities including site clearance, earthworks, civil works, etc.; and
- (iv) **Operation and maintenance impacts:** Impact associated with the operation and maintenance of the ASU campus.

50. ADB's REA checklist for Buildings was used while screening the site and location of ASU and recommending mitigation measures.

##### B. Location Impacts

51. The ASU site with 250 Bigha area (inclusive of additional 40 Bigha area added) is located on unencumbered land owned by ASDM, GoA. The construction works will be on the delineated plot as per drawings given in **Annexure-3**. There are no significant ecological resources in the surroundings of ASU site as it is lying vacant and is close to Mangaldoi town. There are sparse houses outside the plot boundary of ASU. There are no heritage sites notified by ASI or State Archaeological Department within the delineated site or in the immediate surroundings (300 m distance). The nearest archaeological site to ASU is at a distance of 35km from ASU site. No significant impacts can arise due to ASU location as its components including boundary wall will not impinge upon any area of ecological, archaeological or historical importance. The ASU site is not in the immediate vicinity of national highway or state highway. The distance of National Highway -15 (connecting Guwahati and Mangaldoi) is about 1 km, so air and noise pollution impacts on ASU are not anticipated on account of vehicular traffic. The road connecting to ASU site with National Highway is being strengthened by the Assam State Public Works Department with the help of GoA budget for the roads. This will be standalone activity of Assam PWD.

52. The ASU site is located within seismic zone V and earthquakes of major magnitude may damage boundary wall and buildings of ASU.

##### C. Impacts during Design and Pre-Construction Phase

53. As noted above, the proposed project site of ASU is owned by ASDM, GoA. In the



absence of trees at the site, there are no issues pertaining to tree cutting. There is presence of shrubs in small portion of site. Based on the environmental screening of the ASU site, it is concluded that there are no significant adverse environmental impacts during the design and pre-construction phase of project. There are also no activities pertaining to obtaining environmental and forest clearances for the ASU project. The building plans will be approved by the local municipal council of Mangaldoi and/or Town and Country Planning Department of Assam Government. In the design, sustainable environmental management measures have been built in. There is water logging issue in some portions of site during monsoon months. The design needs to take care proper site drainage with appropriate studies such as hydrological and historical flood data of Brahmaputra River. The liquefaction phenomena (weak soil strength) have been identified in soil and geotechnical report up to a depth of 10.5 m. Hence, ASU building design needs to take proper safety factor in the design to take care of this issue.

#### **D. Impacts during Construction Phase**

54. All construction activities to be undertaken at the ASU site will be approved by the PMU ASDM through CSQA firm. Before giving approval, PMU will take GoA approvals internally. The regulatory approvals required for building plans will be obtained from authorities before the start of construction activities. The construction stage impacts due to the subproject are generic to the construction activities. The EMP emphasizes on the construction impacts and necessary mitigation measures to be strictly followed by the contractor and supervised by the PMU and its authorized agency appointed (PMC) by the ASDM. The key potential impacts are covered in the following paragraphs.

55. **Impact due to stockpiles of construction materials.** Improper stockpiling of construction materials could obstruct movement of locals accessing agriculture fields, if stored outside delineated site boundary in open area. Hence, due consideration will be given for proper materials storage within the construction site. Stockpiles (sand, subgrade, and earth) will be covered (with covered bricks or polythene sheet) to protect from dust and erosion. Special care needs to be taken in monsoon months as some portions of site are prone to water logging.

56. **Disposal of construction waste.** The construction waste could lead to untidy conditions at site and surroundings. These wastes will comprise broken pieces of bricks, surplus earth, discarded and /or spilled construction materials, shuttering materials, etc. In the ASU construction, it shall be mandatory for the contractor to ensure proper disposal of the construction waste at the disposal site as designated by the PMU and CSQA firm.

57. **Quarry and Borrow pits operations.** Since the civil works are of a small size, all construction material will be procured from market/sources compliant with the environmental regulations of India. There will not be any need for direct procurement of stone dust and sand and other building materials from quarries. The borrow pit operations are not required as site is plain. For raising level of site sand from approved and operating sand quarries near Brahmaputra River will be obtained.

58. **Increase in noise levels.** Noise levels in the immediate proximity of ASU construction site are expected to increase during construction. However, these will be largely imperceptible as civil works will be confined to relatively small area because nature of building construction works is such that it would not generate noises large enough to cause any difficulties. Further, there are no rock formations at site, so there will not be any requirement for blasting. Hence extreme noise generations are ruled out. There are no houses in the immediate vicinity of the site. The distance of nearest house is about 50 m from the boundary. The least distance of

construction activity from house will be 55 m. Further, well raised (1.8 m height above ground level) boundary wall will be ready before start of intensive construction activities of ASU campus. This will also act as noise barrier. Transportation of construction materials will be confined to daytime, depending upon extent of construction activity. The increase in noise levels is expected to be between 3-5 dB (A) for the nature of construction works involved in the ASU campus. This increase will be felt up to 50 m only as first row of houses at about 50 m boundary will act as a noise barrier to other houses at farther distances. This noise will be intermittent in nature, and will last only during the construction phase. Necessary monitoring of noise levels will be taken up as part of environmental monitoring plan.

59. **Impacts on biodiversity during construction phase.** No major impacts are expected on the biodiversity during the construction phase as current ASU site of 250 Bigha area (inclusive of additional 40 bigha area) has no presence of trees, very minimal presence of shrubs and is in an open area. There are no endangered or rare species of flora and fauna in the surroundings of proposed ASU site. The site is not on migratory route of birds and seasonal ponds (low lying areas) do not attract birds.

60. **Disturbance due to traffic during construction phase.** At the time of construction, inconvenience to locals is not anticipated as site is accessible through an existing motorable road and away from habitation. Traffic on the connecting road to the ASU site from NH-15 is almost insignificant. However, a sample Traffic Management plan is attached in **Annexure-4**.

61. **Impact on cultural properties.** The ASU campus construction and development will not have any impact on any religious structure or any other structure of historical and/or cultural significance.

62. **Ground Water.** Ground water will not be extracted and used for construction purposes. The contractor will arrange for water from the market. It will be supplied by the authorized water tankers. The problem of ground water contamination is also not anticipated during the construction phase since there will be proper disposal of the wastewater generated from the construction camp and workers' camp.

63. **Ambient Air Quality.** Generation of dust is anticipated during transportation, excavation, and construction activities. Some dust and gaseous emissions will also be generated during the construction period from machines such as mixers, and vehicles engaged in transportation of construction materials. Pollutants of primary concern at this stage include respirable and suspended particulate matter (RSPM) and gaseous emissions (NO<sub>x</sub>, SO<sub>2</sub>, CO, etc.). However, transportation of construction materials will be confined to a few trips per day depending upon extent of construction activity. Therefore, impact at this stage will be temporary and restricted to the close vicinity of the ASU construction site only.

64. All vehicles and construction equipment operating for the contractor, CSQA firm, and PMU ASDM will obtain and maintain "Pollution under Control" (PUC) certificates. To control dust emissions, vehicles deployed for sand and aggregate haulage, will be covered with tarpaulins to prevent spillage. Regular sprinkling of water during excavations, loading, unloading, vehicular movement on approach roads, and raw material transport will prevent spread of dust and other contaminants. Periodic air quality monitoring will be conducted to ensure that emissions to comply with the vehicle emission standards specified by the GoI and ambient air quality standards specified by the Central Pollution Control Board. The contractor will submit emission monitoring results as a compliance with environmental monitoring plan. The impacts related to air pollution on account of construction activities will be felt close to ASU site.

65. **Construction Waste.** Some waste will be generated due to excavated earth material

and waste from construction. Debris and excavated earth material can be reused subject to the approval of the Engineer during the construction. Waste generated during construction will be disposed of as per provisions of 'Construction and Demolition Waste Management Rules, 2016' and to the satisfaction of the Engineer. The disposal locations for waste will be finalized in consultation with local civic authorities and in compliance with construction and demolition waste management rules 2016. The clean-up and restoration operations will be implemented by the contractor prior to demobilization. The contractor will clear all temporary structures and dispose of all garbage from project site. Entire construction site and surrounding vacant area will be left tidy, at the contractors' expense as per the satisfaction of the Engineer.

66. The contractor is likely to engage local labor for various construction activities. However, in cases when migrant labor has to be engaged, the contractor will establish properly designed labor camp with all basic amenities such as dignified well-ventilated and well-lit accommodation, potable water supply, gender segregated sanitation facilities, including provision of septic tanks and soak pits, and COVID-19 protection facilities. The permission for labor employment (registration with local labor office) should be obtained (under the Inter State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979). Dust bins, hand sanitizer and hand washing facilities will be provided in adequate numbers at camp site. The EMP lays down some measures to address likely adverse impacts associated with the labor camps.

67. **Occupational Health and Safety and COVID-19.** The occupational health and safety related impacts will include injury to the construction work force, chances of more accidents at site and adverse impacts on health of workers if proper measures are not adopted and necessary protection gadgets are not used. COVID-19 related impacts will cause chances of more infections if protection measures are not provided. The COVID-19 related measures should be taken up at site as per the guidelines issued by the Ministry of Health and Family Welfare and Government of Assam for the construction projects.

68. **Site Enclosure to avoid washing of loose earth and other construction materials during monsoon.** As mentioned earlier that major portion of site face water logging issues during monsoon and torrential rains. The contractor needs to take appropriate measures such as proper enclosure of site with MS sheet to avoid washing of construction materials during rains and possible damage to crops and houses in the surroundings.

## **E. Environmental Impacts during Operation Phase**

69. Since only educational activities will be undertaken at the ASU campus, there will not be any adverse environmental impact during operation. Necessary regulatory permissions (such as occupancy certificate, permission from fire department, consent to operate from Assam Pollution control Board, etc.) will be obtained from civic authorities before start of operations of ASU. The ASU campus design provides for adequate parking, accommodation, and safe disposal for wastewater and solid waste. Toilet blocks will be connected to sewerage network of the ASU campus as sewage treatment plant has been planned for wastewater treatment. The solid waste generated at ASU campus during operation phase will be segregated. Its disposal will be integrated with Mangaldoi town waste disposal. There may be generation of some waste on account of maintenance and operation of solar water heating system. The supplier of the solar water heating system will be responsible for collecting the waste for possible reuse and recycling. Since STP has been planned for the wastewater treatment, effective operation and maintenance of STP needs to be undertaken as part of ASU operations and maintenance. One medical center is planned to provide first aid and referral center. There may be generation of biomedical waste at this center. This waste needs collection and disposal as per 'Bio-Medical Waste Management Rules, 2016'.

70. Given the residential nature of ASU campus (Students Hostels and staff quarters), there will not be any significant vehicular increase on account of its operations. Traffic on the road connecting to the campus with NH-15 will be marginal. Hence vehicular emissions on account of traffic movement will be insignificant. A diesel generator (1500 kVA capacity) will be required, but it will be operated only during power cuts. The generator will be of the silent type and will comply with the levels stipulated by Central Pollution Control Board.

71. The water requirements for the ASU campus during the operation phase will be met from ground. The water requirement has been estimated around 400 kLD. Necessary permission from Central Ground Water Board will be obtained. Though the requirement is not significant, but continuous withdrawal will have impact on ground water table in the surroundings of institution. This impact shall be taken care through design of ground water recharge features (rainwater harvesting structures) in the campus. Based on raw water characteristics, necessary treatment will be provided. The treatment for raw water will include screening, reduction of total suspended solids (TSS) and hardness and disinfection to meet drinking water standards specified in IS:10500 by the Bureau of Indian Standards. The waste generated (mainly sludge) will be disposed of after appropriate treatment in low lying areas in the campus.

72. In the operation phase, there will be generation of different types of solid wastes (municipal waste from residential areas, biomedical waste from medical center, hazardous waste from laboratories/workshops, E-Waste from IT and computer facilities and discarded lead acid batteries). These wastes will require handling, transport, and disposal as per regulatory requirements of their respective categories to avoid environmental impacts.

73. There will be occupational risks due to handling and storage of hazardous and toxic chemicals in some of the laboratories and workshops. These risks include minor fire on account of leakage (e.g., LPG leakage) and injuries due to spillage.

74. **Safety Measures.** The design of the ASU campus buildings includes structural and seismic safety measures required by India's latest building codes (in seismic zone V). The other safety features are explained below:

- The ASU campus will be equipped with fire-fighting systems with portable fire extinguishers and smoke detectors. The staircase will have adequate width to allow for people to exit the campus buildings during any fire-related or other eventuality.
- During natural calamities, the operations will be stopped. The trainees and staff will be safely evicted as per the disaster management plan of Darrang district will be followed.
- A medical center will be provided for first aid and preliminary treatment.
- Building design and toilet facilities will be barrier-free for physically challenged persons.

75. **Socio-economic Impacts.** The project will have positive socio-economic impact during construction as it will provide employment and business opportunities. In the operation phase, the ASU functioning will also have a positive socio-economic impact since it will provide Assam and other north-eastern states youth and adults an opportunity to enhance job-oriented skills at an affordable price. In addition to the above, local economy will also grow through demand of houses on rentals, local goods consumption, service shops operations and operations of eateries in the Mangaldoi town specially ASU campus surroundings.

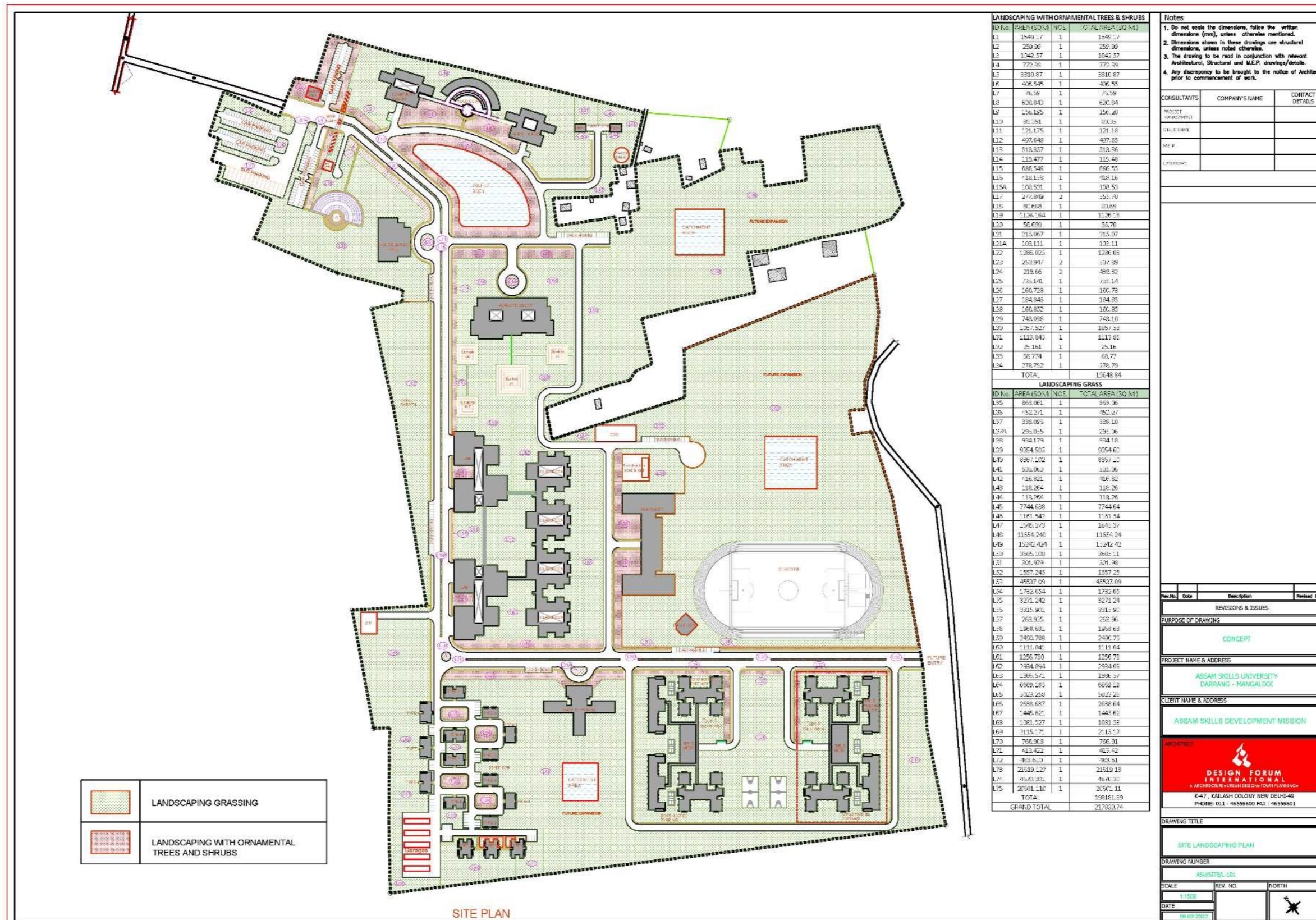
76. **Flora and Fauna.** The ASU campus land is owned by the GoA. In the absence of any trees or vegetation, no adverse impact on fauna and flora is anticipated. No tree cutting is

required. Further, in the ASU campus, plantation of shrubs and landscaping will be taken up along the pathways and vacant spaces to enhance natural ambience. The total area available for shrubs and tree plantation is 217830.74 m<sup>2</sup>. This comprises of 19648.84 m<sup>2</sup> for landscaping with ornamental trees and shrubs plantation and 198181.89 m<sup>2</sup> for landscaping with grassing. The ASU layout plan showing green areas is given in **Figure-10**. There is no existence of any wildlife/bird sanctuary, national park or any other area notified by the GoA or MoEFCC for ecological importance within an aerial distance of 15 km from the ASU site.

**77. Emergency Plan for Accident and Natural Hazards.** For operation phase, onsite emergency plan will be prepared by the ASU. For natural calamities, the Disaster Management Plan prepared by GoA for Darrang district will be followed. The GoA has prepared district wise Disaster Management Plans as per provisions of Disaster Management Act 2005 of Government of India.

**78. Maintenance of Drainage System in the Campus.** It is clear from the earlier description that project site receives more than 1500 mm rainfall during monsoon months so there will be flooding issues in campus if drainage system is not maintained.

Figure-10: Green Areas in ASU Campus



**Notes**

- Do not scale the dimensions, follow the written dimensions (mm), unless otherwise mentioned.
- Dimensions shown in these drawings are structural dimensions, unless noted otherwise.
- The drawing to be read in conjunction with relevant Architectural, Structural and M.E.P. drawings/details.
- Any discrepancy to be brought to the notice of Architect prior to commencement of work.

CONSULTANTS	COMPANY'S NAME	CONTACT DETAILS
PROJECT MANAGER		
SKETCHER		
M.P.F.		
LANDSCAPER		

Rev. No.	Date	Description	Prepared By
REVISIONS & ISSUES			
PURPOSE OF DRAWING			
CONCEPT			
PROJECT NAME & ADDRESS			
ASSAM SKILLS UNIVERSITY DARRANG - MANGALDOI			
CLIENT NAME & ADDRESS			
ASSAM SKILLS DEVELOPMENT MISSION			
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DRAWING TITLE			
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SCALE	REV. NO.	NORTH	
1:1500			
DATE			
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## F. Description of Planned Mitigation Measures for the Identified Impacts

79. Screening of environmental impacts is based on the magnitude and duration of the impact. **Table-10** summarizes the potential environmental impacts for ASU for the project life cycle. The mitigation measures including the institutional responsibilities for implementing the same have also been summarized. The subproject site is located sufficiently away from protected areas and the components proposed will not impact any environmentally sensitive or protected areas. All subproject activities including construction and operation will take place within available government land. When national regulations differ from the performance levels and measures presented in WBEHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent measures are appropriate in view of specific project circumstances, a detailed justification of the applied standard or guideline shall be provided during implementation.

80. The baseline monitoring for ambient air quality of the Project area would be undertaken by the civil works contractor prior to commencing with the works. The proposed mitigation measures are expected to maintain the overall ambient air quality during construction and operation stages. The interventions proposed through the mitigation measures are not expected to improve the prevailing ambient air quality. The air emissions from the construction activities would be monitored for compliance with the national standards as required by the regulatory framework. During implementation, no activities are envisaged that would contribute to deterioration of ambient air quality. The WBEHS guidelines have emission limits more stringent than the NAAQS for PM<sub>10</sub>, PM<sub>2.5</sub> and SO<sub>2</sub>. If the prevailing ambient air quality is observed to be exceeding WBEHS guidelines and/or NAAQS, the efforts would be made to maintain the ambient air quality through the mitigation measures.

**Table-10: Summary of Environmental Impacts and Planned Mitigation Measures**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
<b>1</b>	<b>Location Impacts</b>				
<b>1.1</b>	Lack of sufficient planning to ensure long term sustainability of the ASU campus features and ensure protection especially from earthquake and other natural disasters	Permanent	Major	<p>The preliminary design of ASU campus has been completed considering earthquake coefficient of zone V. To take care of liquefaction phenomenon at site appropriate foundation with adequate strength is adopted as per findings of geotechnical and soil investigation report. This report is vetted by Assam Engineering College Guwahati.</p> <p>The site is not on the bank of any river or major stream.</p> <p>During the earthquake or any other natural calamity, Disaster Management Plan prepared by the Darrang district administration will be followed. It will be updated for ASU campus in coordination with district administration.</p> <p>To address the water logging issue at site an effective drainage system is being designed based on hydrological study and historical flood data of Brahmaputra River.</p>	Contractor, ASDM, PMU
<b>2</b>	<b>Design and Pre-construction Impacts</b>				
<b>2.1</b>	Consents, permits, clearances, no objection certificates (NOC), etc.	Permanent	Minor	<p>Obtain all necessary consents, permits, clearance, NOCs, etc. prior to start of civil works.</p> <p>Acknowledge in writing and provide report on compliance with all the obtained consents, permits, clearance, NOCs, etc.</p> <p>Include in detailed design drawings and documents all conditions and provisions, if necessary.</p>	Contractor, ASDM, and PMU
<b>2.2</b>	Environmental monitoring in respect of ambient air quality,	Preconstruction, immediately	Nil	Contractor to carry out environmental monitoring immediately after mobilization to	Contractor, ASDM, and PMU



**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Potential Environmental Issues</b>	<b>Duration or Extent</b>	<b>Magnitude</b>	<b>Proposed Mitigation Measures</b>	<b>Institutional Responsibilities</b>
	water quality and noise levels to establish baseline levels	after mobilization		establish baseline in respect of ambient air quality, water quality (ground and surface), and noise levels.	
<b>2.3</b>	Layout of components to avoid impact on the aesthetics of the ASU site	Permanent	Minor	The ASU campus buildings will not have any adverse impacts on aesthetics of project site and surroundings and exteriors of campus buildings will be similar to the exteriors of buildings in the project region as well as matching with institutional looks. There will be positive impacts as green areas to be developed in campus will enhance look of the area.	Contractor, ASDM, and PMU
<b>2.4</b>	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lots, and addition of paved surface	Permanent	Moderate	The preliminary ASU layout and design considered storm water runoff. This will be provided through the development of existing seasonal water ponds (low lying areas) into water bodies within the campus. The capacity of these ponds will be increased through excavation. The part of storm water will be diverted to these water bodies and part will be channeled through drainage system (local drains) outside campus. The effective drainage plan shall be prepared by the contractor and it will be reviewed by the PMU and PMC for the implementation in the construction phase.	Contractor, ASDM, PMU
<b>2.5</b>	Integration of energy efficiency and energy conservation programs in the ASU campus planning and design	Permanent	Moderate	The following energy efficiency measures have been adopted in the ASU campus design and subsequent implementation: <ul style="list-style-type: none"> <li>• Installation of BEE certified equipment at the workshop, laboratories, classrooms and other facilities.</li> <li>• Usage of energy efficient lighting fixtures (LED and solar). The disposal of discarded</li> </ul>	Contractor, ASDM, and PMU

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				<p>LED should be done in consultation with civic bodies and supplier.</p> <ul style="list-style-type: none"> <li>• Solar energy usage for water heating.</li> <li>• Solar energy utilization for lighting. Roof top solar system of 100 kVA proposed.</li> </ul>	
<b>2.6</b>	Impacts on flora and fauna	Temporary	Minor	<p>There is no requirement for tree cutting for the development of ASU campus. There may be requirement for removal of locally grown shrubs in some portion of ASU site. This loss of shrubs will be made up during landscaping and tree plantation works of the ASU. The total area for landscaping will be 217830.74m<sup>2</sup> and 3000 trees and shrubs will be planted. The detailed landscaping and tree plantation plan will be prepared during project implementation. The removal of shrubs will be only from areas delineated for construction. The detailed plantation and landscaping plan shall be prepared during pre-construction phase.</p>	Contractor, PMU, and PMC
<b>3</b>	<b>Construction Impacts</b>				
<b>3.1</b>	Construction camps - location, selection, design and layouts	Temporary	Moderate	<p>Construction camp at the ASU site will be located within the ASU plot. The construction camp will not affect the day-to-day activities of local residents as workforce will not exceed 100. Adequate sanitation facilities (with septic tanks and soak pits) shall be provided at camp site so that no wastewater will be discharged outside.</p>	Contractor, ASDM, and PMU
<b>3.2</b>	Traffic circulation plan during construction	Temporary	Minor	<p>Prior to commencement of site activities and mobilization on ground, the contractor will prepare a traffic circulation plan for safe passage of local traffic during construction stage. This will include alternative access</p>	Contractor, CSQA firm, and PMU

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				<p>routes (for any emergency access), traffic regulations, signages, etc. The contractor will get these plans approved from the traffic police with the assistance of CSQA firm and PMU. In the peak time construction related traffic will not exceed 20-25 vehicles per hour, including vehicles in use of construction crew to travel to site.</p> <p>The contractor will disseminate the traffic circulation plan around the project site.</p>	
<b>3.3</b>	Impacts on flora and fauna	Temporary	Minor	<p>The PMU and PMC will conduct site induction and environmental awareness program for the construction workers and CSQA Team at site. The workers will be sensitized not cut the trees (outside site) for fire wood and not to hunt local fauna.</p> <p>The construction related activities will be limited within the site of ASU to minimize impacts on flora and fauna.</p> <p>Storage of construction materials will be within the project site limits to avoid impacts on flora (local shrubs).</p>	Contractor, PMU, PMC, and CSQA firm
<b>3.4</b>	Clearance activities, including delineation of construction areas for various buildings and facilities	Temporary	Moderate	<p>The commencement of clearance activities for the ASU campus will be undertaken with due permission local civic authorities and from the environment specialist of the PMU/PMC to minimize environmental impacts.</p> <p>All areas used for temporary construction operations will be subject to complete restoration to their former conditions with appropriate rehabilitation procedures.</p>	Contractor, CSQA firm, PMU, and PMC
<b>3.5</b>	Drinking water availability	Temporary	Major	Sufficient supply of potable water will be provided and maintained at the construction site and construction camp. If the drinking water is	Contractor, CSQA firm, PMU, and PMC

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				obtained from an intermittent public water supply, then storage tanks will be provided.	
3.6	Waste disposal	Permanent	Major	Location of disposal site for construction waste will be finalized by the environmental specialists of the PMU and PMC. The PMU will confirm the location of disposal. Further, it will be ensured that disposal of the material will not impact the seasonal water body (at site) or environmentally sensitive areas. In the disposal Construction and Demolition Waste Management Rules, 2016 will be followed.	Contractor, CSQA firm, PMU, and PMC
3.7	Stockpiling of construction materials	Temporary	Moderate	Stockpiling of construction materials should not impact or obstruct the local small drains and stockpiles will be covered to protect from dust and erosion. The stockpiles shall be bunded so that these are not washed away during intense rainfall.	Contractor, CSQA firm, PMU, and PMC
3.9	Soil and water pollution due to fuel and lubricants, construction waste	Temporary	Moderate	The fuel storage and vehicle cleaning at site should be avoided as far as possible. In case of unavoidable circumstances, fuel storage should be in the leak proof drums and storage of drums should be on temporary raised paved platform. The vehicle and equipment maintenance should be taken at the authorized workshops only to avoid pollution at site.	Contractor, CSQA firm, PMU, and PMC
3.10	Soil erosion	Temporary	Moderate	Temporary slope protection (side slopes of roads, side drains along roads in campus and excavated locations of plinths) may be required during construction at the excavated areas.  Adequate measures will be taken up so that there is no soil erosion causing risks in the vicinity.	Contractor, CSQA firm, PMU, and PMC
3.11	Siltation of existing water ponds due to spillage of construction wastes	Temporary	Moderate	No disposal of construction wastes will be carried out into the existing small water ponds at site. These will be developed as water bodies	Contractor, CSQA firm, PMU, and PMC

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				during campus development. The waste materials will be transported to the pre-identified disposal site for safe disposal. This disposal site will be identified by the PMC, PMU, and CSQA firm in consultation with local civic authorities.	
<b>3.12</b>	Generation of dust	Temporary	Moderate	The contractor will take every precaution to reduce the levels of dust at construction site. The ASU campus site will be properly barricaded with adequate height (2-3 m) prefabricated mild steel sheets from all sides to avoid air emissions and dust impacts in the surroundings of site due to construction activities.	Contractor, CSQA firm, PMU, and PMC
<b>3.13</b>	Emission from construction vehicles, equipment and machinery	Temporary	Moderate	Vehicles, equipment and machinery used for construction will conform to the relevant standards (vehicular emission standards of GoI and CPCB specified standards for equipment and machinery) and will be regularly maintained to ensure that pollution emission levels comply with the relevant requirements. The materials shall be covered while transportation. The vehicles will also have reverse horns and blinkers.	Contractor, CSQA firm, PMU, and PMC
<b>3.14</b>	Noise pollution	Temporary	Moderate	Noise limits for construction equipment used in this project will not exceed 70 dB (A). Regular monitoring will be taken up at the site as per monitoring plan.	Contractor, CSQA firm, PMU, and PMC
<b>3.15</b>	Material handling at site	Temporary	Moderate	The workers would be provided with appropriate personal protective equipment commensurate with the safety and health risks associated with the activities such as workers employed (i) on mixing cement, lime mortars, concrete, etc., would be provided with protective footwear and protective goggles; and (ii) in welding works, would be provided with welder's protective eye-shields.	Contractor, CSQA firm, PMU, and PMC

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				<p>Workers engaged in stone breaking activities will be provided with protective goggles, masks and clothing.</p> <p>The use of any toxic chemical (paints, thinners and anti-corrosive and anti-termite materials, etc.) will be strictly in accordance with the manufacturer's instructions. The CSQA firm will be given at least 6 working days' notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the contractor.</p>	
3.16	<p>Occupational health and safety and measures during construction</p> <p>COVID-19 Health and Safety Plan</p>	Temporary	Moderate	<p>Adequate safety measures for workers during handling of materials at the ASU site will be taken up. Necessary safety measures will also be taken for working at heights and trenches as per the instructions of CSQA firm team and PMC/PMU environmental specialists.</p> <p>The contractor has to comply with all regulations for the occupational safety of workers. Precaution will be taken to prevent danger of the workers from fire, accidental injury, etc. First aid treatment will be made available for all injuries likely to be sustained during the course of work.</p> <p>The Contractor will comply with all anti-malaria instructions/advisories given by the PMU, PMC or CSQA firm. Necessary awareness program will be carried out for HIV/AIDS and STD.</p> <p>All protection measures pertaining to COVID-19 will be taken at the site as per the protocol specified by the GoA and Gol for the construction sites. For this, a COVID-19 Health and safety Plan will be prepared by the</p>	Contractor, CSQA firm, PMC, and PMU

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				contractor after mobilization. The protection measures for COVID-19 will continue till pandemic threat continues.	
<b>3.17</b>	Clearing of construction of camps and restoration	Temporary	Major	Contractor at the ASU site will prepare site restoration plan for approval by the CSQA and PMC. These camp site restoration plans are to be implemented by the contractor prior to demobilization. On completion of the works, all temporary structures will be cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off, and the site left clean and tidy, at the contractor's expense, to the entire satisfaction of the engineer ( PMU and CSQA firm site team).This will be taken up comply with the condition of contract.	Contractor, CSQA firm, PMU, and PMC
<b>3.18</b>	Onsite emergency plan for accidents and mishaps and disaster management plan for natural calamities	Temporary	Major	The onsite emergency plan will be prepared by the contractor in consultation with PMC and PMU. For natural calamities, disaster management plan prepared by the Darrang District Administration under the provisions of Disaster Management Act 2005 will be followed. The updating of DMP shall be followed up by the ASU management (for inclusion of ASU operations) with the district administration.	Contractor
<b>3.19</b>	Flooding and Water Logging and construction materials accidental flow with food waters	Temporary	Major	<ul style="list-style-type: none"> <li>• The contractor will take all measures to barricade the site with MS sheet till permanent boundary wall is constructed.</li> <li>• The contractor will maintain quick drainage of site to avoid any water logging and flow of loose construction material with rainwater</li> <li>• The contractor will take all necessary mitigatory measures to ensure that mud</li> </ul>	Contractor, CSQA Firm

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				and construction materials do not enter agriculture fields of houses from storm water of site.	
<b>4</b>	<b>Operation and Maintenance impacts</b>				
<b>4.1</b>	Regulatory permissions for ASU operations	Regularly as per requirements	Moderate	All regulatory permissions such as building occupancy certificate from civic authorities, NOC from fire department, consent to operate from Assam Pollution Control Board, etc. will be obtained before start of ASU operations.	ASU management team, PMU, PMC, ASDM
<b>4.2</b>	Environmental conditions	Permanent	Moderate	Air, water and noise quality will be monitored periodically (once in a season except monsoon season) as per the environmental monitoring plan prepared. This monitoring shall be continued for the first two years. The boundary wall and plantation along the periphery will be maintained to avoid any impacts from the ASU campus in the surroundings.	ASU management team, PMU, PMC, and ASDM
<b>4.3</b>	Safety risks	Permanent	Moderate	1- Proper demarcation and flagging of the area requiring safety observations will be taken up after completion of construction works. 2- Necessary precaution measures to be observed by visitors will be printed on boards and will be prominently put inside the ASU Campus. 3- The hazardous and toxic materials at the laboratories and /or workshops will be handled and stored as per instructions provided in material safety data sheets.	ASU management team, PMU, PMC, and ASDM
<b>4.4</b>	Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection, handling and disposal	Permanent	Severe	The ASU Management will carry out maintenance of the toilets and carry out the regular waste collection and disposal of the waste to the local disposal site (authorized for use by the Mangaldoi Municipal Council). Sewage network and sewage treatment plant	ASU management team, PMU, PMC, and ASDM



**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Potential Environmental Issues	Duration or Extent	Magnitude	Proposed Mitigation Measures	Institutional Responsibilities
				<p>will be maintained effectively. For maintenance period, necessary holding capacity will be built for storage of untreated sewage. No wastewater without treatment in STP will be discharged outside ASU campus.</p> <p>The organic and inorganic waste will be segregated. The inorganic waste along with horticulture waste will be used to prepare organic manure by constructing compost pits in the open space. This manure may be used as fertilizer for landscaped area and plantation.</p> <p>Any hazardous waste generated waste generated will be handled as per the provisions of 'Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016.</p> <p>Any bio-medical waste generated at Medical Center will be handled, stored, transported and as per the provisions of 'Bio-Medical Waste Management Rules 2016'.</p> <p>The E-waste generated will be handled and disposed of as per provisions of 'E- Waste Management Rules, 2016'.</p> <p>The used and discarded lead acid batteries for recycling and disposal as per Battery Waste Management Rules, 2020'.</p>	
<b>4.5</b>	Onsite emergency plan for accidents and mishaps and disaster management plan for natural calamities	Temporary	Major	<p>The management team of ASU will prepare on site emergency plan for possible accidents and mishaps during operation phase (due to fire, handling and storage of hazardous and toxic chemicals at laboratories, workshops, water treatment plant, STP, etc.). This plan will cover all types of accidents.</p> <p>For natural calamities, the disaster management plan prepared by Darrang district administration will be followed. The updating of</p>	ASU management team, PMU, PMC, and ASDM

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Potential Environmental Issues</b>	<b>Duration or Extent</b>	<b>Magnitude</b>	<b>Proposed Mitigation Measures</b>	<b>Institutional Responsibilities</b>
				DMP shall be followed up by the ASU management (for inclusion of ASU operations) with the district administration	
<b>4.6</b>	Waste generated on account of operation and maintenance of solar water heating system and roof top solar system	Intermittent	Minor	The supplier of solar panels cells and water heating system will maintain the system. Any waste generated (damaged panels, discarded pipes and storage batteries) will be collected by the supplier for possible reuse and recycling. For this, necessary agreement will be prepared at the time of supply and installation. Any waste water generated will be diverted to sewage network.	Operator of solar panels and water heating system, ASU management team, PMU, PMC, and ASDM
<b>4.7</b>	Maintenance of drainage system of ASU campus	Regularly as per requirements	Major	The ASU management Team will maintain drainage system constructed properly to avoid flooding of campus	ASU management team, PMU, PMC, and ASDM

**G. Land Aquisition and Resettlement**

81. The proposed ASU is planned on the land owned by Assam Skill University, GoA. The revenue records showing ownership of GoA for the project site are in **Annexure-5**. The proposed plot of 250 Bigha (inclusive of additional 40 Bigha land included in plot recently) for ASU development is unencumbered Government land; therefore, there are also no squatters or encroachers. Hence, there is no requirement of any rehabilitation and resettlement for constructing boundary wall and subsequently ASU facilities and infrastructure.

## V. ANALYSIS OF ALTERNATIVES

### A. Introduction

82. In this chapter analysis of alternatives has been carried out for 'with' and 'without' ASU project, location selection, project implementation scheduling and materials usage in the detailed design and construction of ASU campus and facilities.

### B. Without Project Scenario

83. Despite its abundant natural resources and higher proportion of young population (under 40 years of age) than the rest of India, Assam has yet to unleash its growth potential. Being landlocked, largely rural, and with underdeveloped infrastructure, Assam's economy is dominated by low value added, natural resource-based products and is poorly integrated with regional and global value chains. Its manufacturing sectors are undiversified and small in terms of outputs and capital investment. Limited availability of skilled workforce has been identified as one of the constraints to infrastructure and industrial development. Fewer prospects for socioeconomic development have propelled out-migration for jobs and education, leading to shortages of higher-level skills in Assam. Technical and vocational education and training and higher education is undersupplied, and the existing systems face many challenges, including low quality and lack of industry relevance of programs leading to poor employability of graduates from industrial training institutes, polytechnics, engineering colleges, and academic colleges and universities. Without project scenario Assam youth and adults will continue facing challenges of getting job oriented skilled courses. Hence without project scenario is undesirable. The ASU will not only help youth and adults in Assam but also in the northeastern states.

### C. With Project Scenario

84. The project scenario will help Assam and other north-eastern states youth and adults in attaining job-oriented skill courses, qualification to work in the state, country and abroad. The establishment of ASU will strengthen the skills education and training ecosystem since the tag of a 'university' attached to an institution is expected to improve the general perception of skilling institutions as inferior to the conventional education system, i.e. the skill university will make skilling aspirational among youth. Further, the ASU will serve as a one stop skilling solution for the entire north eastern region of the country filling gaps in the existing training and higher education system. The government also expects ASU to cater to skilling needs of industries in neighboring countries such as Bangladesh, Bhutan, and Nepal facing similar challenges. Hence project scenario is highly desirable. While the 'with subproject scenario' may have negative environmental impacts from construction activities, the environmental impacts are projected to be temporary and short-term in nature. The impacts during construction and operation phase are not irreversible and can be readily mitigated.

### D. ASU Location Alternatives

85. Various locations for ASU were evaluated. The considerations for the ASU site finalization were availability of government land, good connectivity and proximity to planned and proposed manufacturing centers. Based on the above considerations, Mangaldoi was selected for locating ASU campus. Mangaldoi has been identified as a potential manufacturing center for electrical equipment, electronics, plastics, and pharmaceuticals. This provides ASU a competitive edge over other institutes in the state due to significant placement and industry

exposure opportunities for students and faculty members. Moreover, with major infrastructure projects such as hydropower, multimodal logistics parks, etc. which are either ongoing or are in the pipeline, Assam will require highly skilled manpower and ASU will be good source for skilled manpower. The ASU site is encumbrance free land under the ownership of GoA. The ASU site is more than 15 km from notified ecologically sensitive area such as national park, wildlife sanctuary and bird sanctuary. The ASU site is also devoid of any revenue, reserved or protected forest. There are no sites of cultural and heritage importance within the 300 m distance of boundary of ASU site.

#### **E. Material Usage and Sustaibility considerations**

86. In terms of design, materials (steel bars, cement and bricks) will be appropriately selected (as per approved design specification) considering that the area is within the seismic zone V classification. There will be no use of asbestos containing sheets or pipes. Further, to conserve natural resources, treated wastewater (300—400 kLD) will be recycled through double plumbing piping system for flushing, air conditioning and irrigation of green areas. The STP design will ensure usage of treated water for the above-mentioned usages. To reduce the carbon foot prints through solar water heating system for 64000 liters per day capacity and roof top solar system for 100 kWh solar power generations. The ASU also plans to have energy efficient lighting system.

#### **F. Conclusion**

87. It is clear from the above that without project scenario is undesirable and the location of ASU has been strategically selected with only short-term and reversible environmental impacts. To make the project outcome and outputs sustainable, necessary measures have been included in the project design.

## VI. ENVIRONMENT MANAGEMENT PLAN (EMP)

### A. Institutional Arrangements for Project Implementation

88. The Government of Assam through Skill, Employment, and Entrepreneurship Department (SEED) is the executing agency (EA). The EA (i) assumes overall responsibility for the execution of the project and reporting; (ii) engages adequate permanent or fixed-term staff to implement the project; (iii) provides overall strategic guidance on technical supervision and project execution; and (iv) ensures overall compliance with the loan covenants.

89. The implementing agency (IA) for the project is ASDM. The ASDM is registered under the Societies Act. The IA responsibilities include (i) project planning and budgeting; (ii) day-to-day assistance, supervision and guidance for the project site team and consultant; (iii) review ASU components for due diligence requirements and approve subproject proposals; (iv) bidding, evaluation and contract award; (v) managing and disbursing funds; (vi) review compliance with loan covenants, contract specifications, work plans and quality control; (viii) monitoring and reporting of environmental safeguards; and (viii) consolidate and submit progress reports, finance and accounting/audit reports, and matters requiring higher level decision to project steering committee (PSC) and ADB.

90. In Assam, a state level PSC has been established. This committee is chaired by Secretary SEED, with secretaries of industry, agriculture, land and revenue, information technology, health, planning and finance, handloom and textile, tourism, transformation and development, education, public works, social justice and empowerment, and the vice chancellor of ASU as members. The PSC has been empowered to take all decisions on behalf of the state and will provide overall advice and guidance to the EA, IA, and PMU.

91. The ASDM has established a PMU, headed by a full-time Project Director (PD) at ASDM, and consisting of personnel drawn from relevant line departments and market. This PMU will also have safeguards specialists (social and environment). These specialists will be hired from market and/or from other GoA departments on deputation. The PMU will be supported by the project management consultants (PMC). The PMU will be the nodal agency for overall management of all project activities and will be responsible for: (i) project planning and budgeting; (ii) providing day-to-day assistance, supervision and guidance for the site team, contractors and consultants; (iii) reviewing ASU components to satisfy ADB's due diligence requirements and coordinating approvals for proposals submitted by contractors, CSQA firm team, and site team of PMU; (iv) bidding, evaluation and contract award; (v) managing and disbursing funds; (vi) reviewing compliance with loan covenants, contract specifications, work plans and quality control; (vii) monitoring and reporting of environmental safeguards; (viii) consolidating and submitting progress reports, finance and accounting/audit reports, and matters requiring higher-level decision, to the PSC and ADB; and (ix) engaging and mobilization of CSQA firm at Mangaldoi ASU site for quality check and construction works supervision. To implement the construction of ASU project smoothly, the contractor will establish an ASU site office. In this office, space will be available for ASDM team, CSQA team and contractor team for better coordination of project activities. This office will be of temporary structure and will be dismantled on completion of construction activities.

92. The construction of ASU campus and facilities at site will be supervised by the CSQA firm multidisciplinary team. This CSQA firm team will be headed by the Team Leader. The CSQA firm team will be responsible for: (i) providing day-to-day assistance, supervision and guidance to the contractor; (iii) reporting to PMU; (iv) supervising construction, conducting quality control, advising PMU on approval of progress payments to contractors; and (v) maintaining records and accounts on an up-to-date basis and making these available to ADB, its missions, or auditors for inspection.

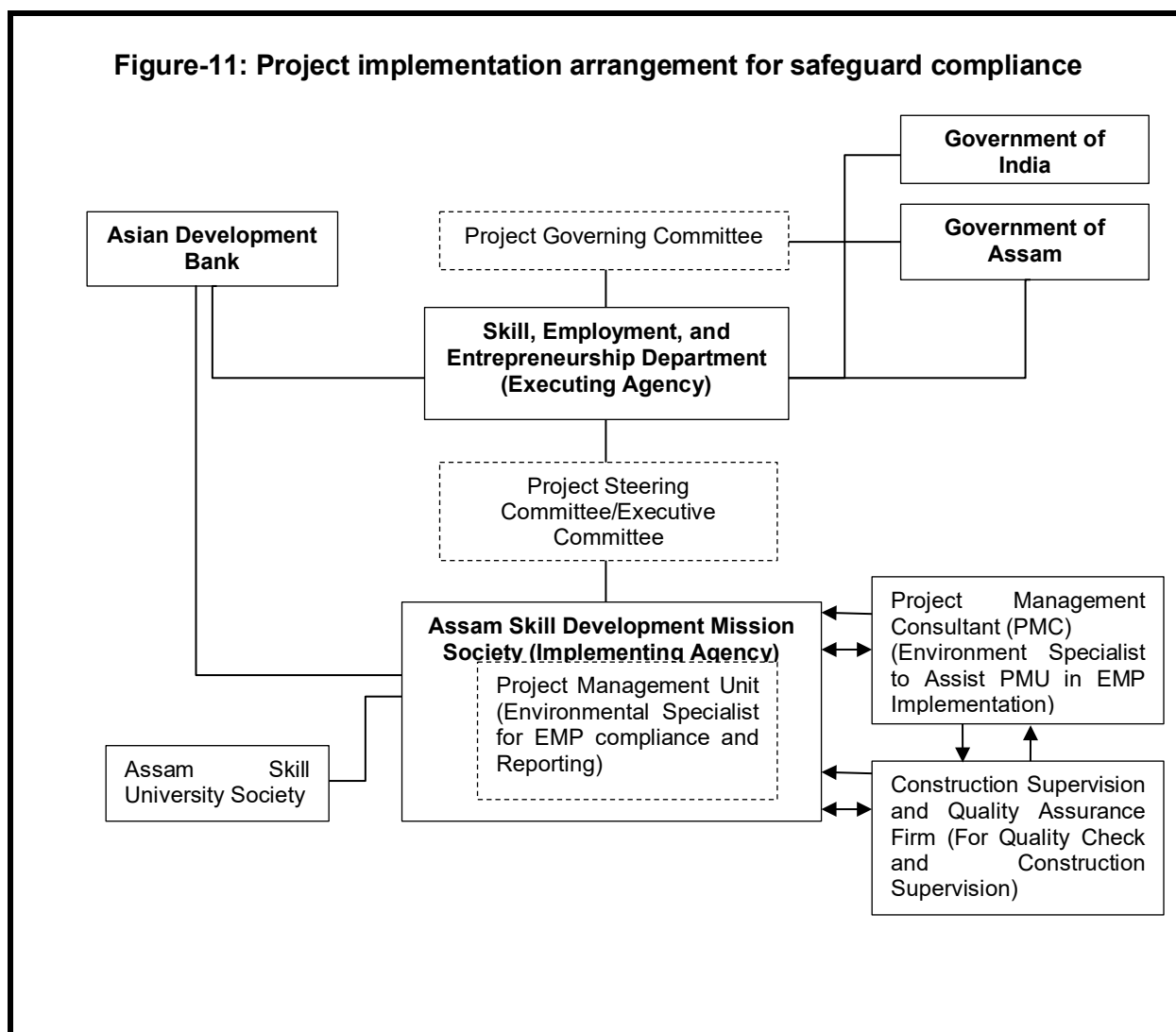
93. The project management consultant (PMC) will be engaged to provide support to the PMU in overall planning, risk management, implementation, monitoring, reporting, and evaluation under the project. The PMC team will have experienced professionals specializing in areas such as procurement, social safeguards, environmental safeguard, finance, etc. The PMC will assist the PMU and ASDM in meeting the relevant requirements of ADB, GoA, and Gol for project implementation. The PMC team will report and work under the overall guidance of the PMU.

94. In order to ensure effective implementation of safeguard related components in the project, PMU will have safeguard experts (one environmental specialist and one social development specialist). These safeguard experts will ensure implementation of environmental management plan and social safeguard actions under the project.

95. As mentioned earlier, PMC have one environmental safeguard specialist in their team. This environmental specialist is qualified graduate in environmental sciences with about 8 years of professional experience in environmental assessment and management in projects financed by international financial institutions. The environmental safeguard specialists of PMC will provide support to PMU safeguard specialists for the EMP implementation during construction, reporting, safeguards related documents preparation, disclosure, and capacity building of CSQA firm team and contractors.

96. The contractor in the current subproject will appoint one environmental and safety officer for the implementation of revised IEE and revised EMP requirements at site. The project implementation arrangement for safeguard compliance is shown below in **Figure-11**.

97. The revised EMP for the detailed design and construction of ASU campus and facilities for pre-construction, construction and operation phases is given in **Tables-11 to 13**.



## B. Responsibility for updating IEE during Pre-Construction and Construction

98. **Responsibility for monitoring.** During construction, the environmental specialist of PMU and environmental specialist of PMC will monitor the contractor's EMP implementation at site and will update IEE if there is change in scope of ASU campus features or anew component is added. During the operation phase, monitoring will be the responsibility of the PMU and/or ASU management handling ASU operations. The environmental specialist of PMU with the assistance of PMC environmental specialist will prepare semi-annual environmental monitoring reports for submission to ADB till project completion report is prepared. The frequency of submission of environmental monitoring report will be revised from semi-annual to annual in the operation phase.

99. **Responsibility for Reporting.** PMU will submit semiannual reports on the implementation of the EMP to ADB. It will permit ADB to field environmental review missions to examine in detail, the environmental aspects of the project. Any major lapses (such as non-compliances with regulatory requirements, etc.) in adhering to the revised IEE and/or revised EMPs for specific sub-projects should be reported to ADB immediately. The PMC's environment specialist will assist the PMU in finalizing the semiannual environmental monitoring reports. For any non-compliance observed, corrective actions will be implemented in a time bound manner. The cost for mitigating non-compliance will be borne by the contractor



as per contract provisions. During the bidding process, prospective contractors will be made aware of these requirements and conditions during pre-bid meetings and inclusion of IEE document as General Conditions of Contract in the contract of selected contractor. In case of mitigation costs of any unforeseen impacts are not coming in scope of contract, these will be met out of contingencies built in the overall project cost.

**Table-11: Pre-Construction Phase Environmental Management Plan for Detailed Design and Construction of ASU Campus and Facilities**

SI. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Lack of sufficient planning to ensure long term sustainability of the ASU campus and its facilities and protection of assets	Design has included provisions for ensuring effective maintenance of ASU campus infrastructure, so as to ensure the long-term sustainability. The long-term sustainability has been ensured by taking into consideration appropriate Bureau of Indian Standards Codes (BIS) in the design of ASU infrastructure considering seismic Zone V coefficient. Appropriate wind load factor (corresponding to 39 m/s wind speed, maximum possible load) has been considered in the building design (maximum wind. The preliminary design has been completed after topographic survey of ASU site. Three rainwater harvesting structures with a combined capacity of 800 m <sup>3</sup> will be provided. The capacity of rainwater harvesting structures has been finalized based on computation of	Verification of site-specific design parameters	Contractor	CSQA firm, PMU, and PMC	Review after completion of detailed design	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameters (Indicators for Compliance)</b>	<b>Responsible for Implementation</b>	<b>Responsible for Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
		runoff with rainfall data and runoff coefficient. The plinth level has been kept about 20 cm above highest flood level to ensure long term sustainability. To address the water logging issue at site an effective drainage system is being designed based on hydrological study and historical flood data of Brahmaputra River. The foundation shall be provided to take care of liquefaction phenomenon at site.					
<b>2</b>	Environmental monitoring to establish baseline monitoring	Environmental monitoring in respect of ambient air quality, water quality (Ground and surface) and noise levels immediately after mobilization to establish baseline at ASU site. Locations for sample collections may be finalized in consultations with PMU and PMC environmental specialist.	Sample collection, finalization of locations for monitoring	Contractor	PMU and PMC environmental specialist	Once before start of construction activities	Contractor
<b>3</b>	Layout of components to avoid impacts on the aesthetics of the	The ASU campus buildings will not have any adverse impacts on aesthetics of project site and surroundings	Campus buildings exteriors	Contractor	CSQA firm, and PMU, PMC	Review of exterior color of buildings after completion of	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
	project site and surroundings	and exteriors of campus buildings will be similar to the exteriors of buildings in the project region as well as matching with institutional looks. There will be positive impacts as green areas to be developed in campus will enhance look of the area. The additional 40 Bigha area added to site is also similar to existing site and will remain open and kept for future expansion.				brickwork and plaster	
4	Increased storm water runoff from alterations of the site's natural drainage patterns due to landscaping, excavation works, construction of parking lot, and addition of paved surfaces	The preliminary ASU layout and design considered storm water runoff. This will be provided through the development of existing seasonal water ponds (low lying areas) into water bodies within the campus. The capacity of these ponds will be increased through excavation. The part of storm water will be diverted to these water bodies and part will be diverted through drainage system (local drains) outside campus. The effective drainage plan shall be prepared by the contractor, and it will be	Arrangement for proper diversion of storm water runoff	Contractor	CSQA firm, PMU, and PMC	Design of drainage system and layout of ASU	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		reviewed by the PMU and PMC for the implementation in the construction phase.					
5	Consents, permits, clearances, no objection certificate (NOC), building drawings approvals from civic authorities, labor licenses of contractors, insurance for workers etc.	Obtain all necessary consents, permits, clearances, NOCs, etc. prior to start of civil works.  Acknowledge in writing and provide report on compliance (with terms and conditions) for, all obtained consents, permits, clearances, NOCs, etc.	Consents, permits, clearance and NOCs Records and communications	Contractor	CSQA firm, PMU, ASDM	Check permission from district administration	Contractor
6	Integration of energy efficiency and energy conservation programs in the ASU campus planning and design	The following energy efficiency measures have been adopted in the ASU campus design and subsequent implementation:  <ul style="list-style-type: none"> <li>• Installation of BEE certified equipment at the workshop, laboratories, classrooms and other facilities.</li> <li>• Usage of energy efficient lighting fixtures (LED and solar). The disposal of discarded LED should be done in consultation with civic bodies and supplier.</li> </ul>	Specifications of equipment, LED lights, solar panels specifications	Contractor	CSQA firm, PMU, and PMC	During installation of solar system for heating, electrification and equipment installation	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<ul style="list-style-type: none"> <li>Solar energy usage for water heating.</li> <li>Solar energy utilization for lighting. Roof top solar system of 100 kVA proposed.</li> </ul> <p>The implementation of above measures to planned and completed.</p>					
7	Establishment of baseline environmental conditions prior to start of civil works	<ol style="list-style-type: none"> <li>Conduct documentation of location of components, areas for construction zone (camp, staging, storage, stockpiling, etc.) and surroundings (within direct impact zones). Include photos and GPS coordinates.</li> <li>Carry out environmental monitoring at ASU project site for ambient air quality, water quality and noise levels to establish baseline environmental monitoring for the parameters indicated in the monitoring plan.</li> </ol>	Records and photographs, baseline environmental monitoring results	Contractor	PMC and PMU environmental specialist	Once prior to start of construction works	Contractor
8	Utilities (mainly electric line and possibility of underground cables)	<ul style="list-style-type: none"> <li>The locations and operators of utilities to be impacted for the subproject should be identified and documented in detailed</li> </ul>	List and maps showing utilities to be shifted	<ul style="list-style-type: none"> <li>Contractor will prepare preliminary list and maps of</li> </ul>	CSQA Firm and PMU	After delineation of ASU site	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>design documents to prevent unnecessary disruption of services during the construction phase.</p> <ul style="list-style-type: none"> <li>Require contractor to prepare a contingency plan to include actions to be done in case of unintentional interruption of services.</li> <li>Obtain the list of affected utilities and operators (Assam Electricity Supply Department, Water Supply Department, Telecommunication Departments, etc.).</li> <li>If relocations are necessary; contractor will coordinate with the providers to relocate the utility.</li> </ul>	Contingency plan for services disruption	<p>utilities to be shifted</p> <ul style="list-style-type: none"> <li>During detailed design phase, contractor to prepare (i) list and operators of utilities to be shifted; and (ii) contingency plan</li> </ul>			
9	Social and cultural resources	Develop a protocol for use by the contractor in conducting any excavation work, to ensure that any chance finds are recognized, and measures are taken to ensure they are protected and conserved.	Chance find protocol	PMU and PMC safeguard specialists to develop protocol for chance finds	PMU	Prior to start of construction activities	PMU operation costs

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
10	Construction camp-locations, selection, design and layout	<p>Sitting of the construction camp, if required, at project site shall be as per the guidelines below and details of layout to be approved by PMU.</p> <p>The potential sites for labor camp and construction camp shall be identified by the contractor and this identified site shall be visited by the environmental specialists of PMU and PMC and the one having least impacts on environment will be approved by the PMU. As far as possible, construction camp and labor camp will be established within the boundary of plot for the project to avoid impacts on private land. Locations for storage of construction materials shall be identified at the site or at existing buildings (taken on rent) in the vicinity of site. Sanitation facilities at construction camps shall be adequately planned.</p>	Construction Camp sites, and locations of material storage areas, sanitation facilities	Contractor	PMU and PMC	At the time of construction camp establishment and finalization of storage areas	Contractor



**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

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<b>11</b>	Sources of construction materials	<p>Use quarry sites and sources compliant with environmental regulations of India at the national, state and local levels.</p> <p>Verify suitability of all material sources and obtain approvals from PMU.</p> <p>Submit to PMU on a monthly basis documentation of sources of materials.</p>	<p>Environmental permissions issued to quarries, mines and sources of materials</p> <p>Environmental permissions of concrete batching plants and hot mix plants if concrete and pre-mix are obtained from the above.</p>	<p>Contractor</p> <p>PMU and CSQA firm to verify sources (including permits) if additional is requested by contractor</p>	PMU and CSQA firm	Upon submission by contractor	Contractor
<b>12</b>	Access for construction material transportation	<p>Plan transportation routes so that heavy vehicles do not use narrow local roads, except in the immediate vicinity of ASU campus site because close to site access roads are narrow</p> <p>Schedule transport and hauling activities during non-peak hours (between 1100 to 1700 hours).</p> <p>Locate entry and exit points for the site in a way that traffic</p>	Traffic management plan	Contractor	CSQA Firm and PMU	During delivery of construction materials	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>congestion is minimum on access roads to site.</p> <p>Keep the site free from all unnecessary obstructions.</p> <p>Drive vehicles in a considerate manner.</p> <p>Coordinate with the Traffic Police Department for temporary road diversions and for provision of traffic aids if transportation activities cannot be avoided during peak hours (in case of exigencies).</p>					
13	Occupational health and safety	<p>Comply with IFC EHS Guidelines on Occupational Health and Safety.</p> <p>Develop comprehensive site-specific health and safety (H&amp;S) plan. The overall objective is to provide guidance to contractor on establishing a management strategy and applying practices that are intended to eliminate, or reduce, fatalities, injuries and illnesses for workers</p>	Health and safety (H&S) plan	Contractor	CSQA Firm, and PMU, PMC	During pre-construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>performing activities and tasks associated with the project.</p> <p>Include in H&amp;S plan measures such as: (i) type of hazards at construction site; (ii) corresponding personal protective equipment for each identified hazard; (iii) H&amp;S training for all site personnel; (iv) procedures to be followed for all site activities; and (v) documentation of work-related accidents.</p> <p>Ensure that there will be no use of asbestos containing materials such as roofing sheets and pipes.</p> <p>Provide medical insurance and accident coverage for all workers (skilled, semi-skilled and unskilled) of contractors and sub-contractors.</p>					
14	Measures for the protection of COVID-19 at ASU campus site	All protection measures pertaining to COVID-19 will be taken at the site as per the protocol specified by the GoA and Gol for the construction	COVID-19 screening and protection facilities	Contractor	PMU, CSQA Firm, and PMC	During pre-construction phase	Contractor

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameters (Indicators for Compliance)</b>	<b>Responsible for Implementation</b>	<b>Responsible for Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
		sites. For this, a COVID-19 Health and safety Plan will be prepared by the contractor after mobilization. The protection measures for COVID-19 will continue till pandemic threat continues.					
<b>15</b>	Stakeholder consultations	Continue information dissemination, stakeholder consultations, and involvement/participation of stakeholders during project implementation.	Disclosure records  Consultations	Contractor, PMU, and PMC	ASDM	<ul style="list-style-type: none"> <li>• During updating of IEE Report (if required)</li> <li>• During preparation of site- and activity-specific plans as per EMP</li> <li>• Prior to start of construction</li> <li>• During construction</li> </ul>	PMU and contractor
<b>16</b>	Disclosure of revised IEE and revised EMP	The revised IEE report including revised EMP and monitoring table to be disclosed in English and Assamese language at ASDM website and hard copies to be made available at ASU site office, ASDM Guwahati office, and Deputy	IEE, EMP and environmental monitoring table	PMU	ASDM	Before start of construction works	PMU

Sl. No.	Environmental Issues	Mitigation Measures	Parameters (Indicators for Compliance)	Responsible for Implementation	Responsible for Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		Commissioner Darrang office.					
17	Establishment of grievance redress committee and functionality	Grievance Redress Mechanism (formation of committees) to be notified by the IA (ASDM).	Committees and contact details at site, PMU and state level	PMU	ASDM	Notification before start of construction works	PMU

**Table-12: Construction Phase Environmental Management Plan for Construction of ASU Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	Regulatory compliances	Following regulatory compliances shall be ensured at site: 1- Environmental clearances of sand and subgrade quarries/crushers, concrete batching plant and hot mix plants (construction material sources) 2- Labor license from Government of Assam 3- Copies of medical insurance and accident insurance coverage for all workers at site 4- Utility shifting permissions 5- Consent to establish from Assam Pollution Control Board	Compliance clearance copies	Contractor and PMU	ASDM	Validity during entire construction phase	Contractor and PMU

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
<b>2</b>	Sanitation, Drinking water facilities and accommodation of construction workers at construction camp	The contractor shall provide sanitation facilities at the camp site. These facilities will include dust bins in adequate numbers for solid waste collection, drinking water facilities, and separate toilets for male and females. These toilets facilities shall be well maintained, and septic tanks/soak pits shall be provided at the toilets. The dust bins shall be regularly emptied and waste from camp site shall be disposed off at designated locations. The accommodation shall be well lighted and ventilated and will have amenities such as water supply and sanitation as explained above.	Construction camp sanitation and drinking water facilities	Contractor	CSQA firm, PMU, and PMC	Regularly during construction phase	Contractor
<b>3</b>	Traffic circulation plan during construction phase	Prior to commencement of site activities and mobilization on ground, the contractor will prepare and get approved (from local traffic police after the review of CSQA firm) traffic circulation plan during construction for safe passage of public vehicles so that locals are not at inconvenience. The contractor will carry out dissemination of these information and traffic	Safe movement of traffic	Contractor	CSQA firm and PMU	Every day during construction phase	Contractor

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
		circulation plan at ASU construction site.					
<b>3</b>	Clearance activities, including delineation of construction areas	<p>Only ground cover shrubs, if any, that impinge directly on the permanent works or necessary temporary works shall be removed with prior approval from the environmental specialists of PMU and PMC.</p> <p>All areas used for temporary construction operations will be subjected to complete restoration to their former conditions with appropriate rehabilitation procedures. The photographic records shall be maintained for the temporary sites used for construction. These will help in proper restoration.</p>	Pre-construction records of site and vegetation in area of construction	Contractor	PMU, PMC, and CSQA firm	During site clearance activities	Contractor
<b>4</b>	Drinking water availability at construction camp and construction site	Sufficient supply of cold potable water to be provided and maintained. If the drinking water is obtained from an intermittent public water supply, then storage tanks will be provided. For this, contractor will submit plans which detail how availability of drinking water shall be assured.	Water supply source and availability of water	Contractor	CSQA firm and PMU	During construction phase regularly	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
<b>5</b>	Waste disposal	<p>The pre-identified disposal location shall be part of comprehensive waste disposal plan. Solid waste management plan to be prepared by the contractor in consultation with local civic authorities.</p> <p>The environmental specialist of PMU shall approve these disposal sites after conducting a joint inspection on the site with the contractor and PMC environmental specialist.</p> <p>Contractor shall ensure that waste shall not be disposed off near water stream in the surroundings of site and along the access path.</p>	Waste disposal sites, waste management plan	Contractor	PMU, and firm PMC, CSQA	Regularly during construction phase	Contractor
<b>6</b>	Stockpiling of construction materials	<p>Stockpiling of construction materials will be done in such a way that it does not impact and obstructs the drainage and movements of locals for accessing their agriculture fields. The stockpiles will be covered by tarpaulin sheet to protect from dust and erosion. The stockpiles shall be bunded so that these are not washed away during intense rainfall.</p>	Stockpiling locations at ASU site	Contractor	CSQA firm, and PMU PMC	Regularly during construction phase	Contractor



**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
7	Arrangement for construction water	The Contractor shall provide a list of locations and type of sources from where water for construction shall be acquired.  To avoid disruption/ disturbance to other water users, the contractor shall arrange water from market or from local municipality and consult PMU before finalizing the source.	Water availability at identified water source locations	Contractor	PMU, CSQA firm	Regularly during construction phase	Contractor
8	Siltation of existing water ponds due to spillage of construction wastes	No disposal of construction wastes will be carried out into the existing small water ponds at site. These will be developed as water bodies during campus development. The waste materials will be transported to the pre-identified disposal site for safe disposal.	Water ponds at ASU campus site	Contractor	PMU, PMC, CSQA firm	Regularly during construction phase	Contractor
9	Water pollution from fuel and lubricants	The contractor shall not store fuel and lubricants at site to avoid water pollution on account of spillage. These will be purchased on need basis.  The maintenance of vehicle and equipment shall be avoided at site. It will be taken up at authorized workshops.  The contractor shall ensure that all vehicle/machinery and	Vehicle parking, refueling sites, etc.	Contractor	PMU, PMC, CSQA firm	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>equipment operation, and refueling shall be carried out in such a manner that spillage of fuels and lubricants does not contaminate the ground.</p> <p>The monitoring of ground water quality will be taken up as per monitoring plan.</p>					
10	Soil pollution due to fuel and lubricants and construction wastes	<p>Fuel and lubricants storage at site will be avoided to avoid soil pollution on account of spillage. These will be purchased on need basis from market.</p> <p>Vehicle and equipment cleaning and washing shall be avoided at site.</p>	Vehicle parking area	Contractor	PMU, and firm PMC CSQA	Regularly during construction phase	Contractor
11	Soil erosion	<p>Temporary slope protection may be required during construction at the excavated areas.</p> <p>Adequate measures will be taken up so that there is no soil erosion causing risks in the vicinity.</p> <p>The construction site will be properly barricaded so that loose material and earth at site are not eroded during intense rain and carried away with storm water.</p>	Excavated areas, erosion measures taken	Contractor	PMU, and firm PMC CSQA	Regularly during construction phase	Contractor

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
<b>12</b>	Generation of dust	The contractor will take every precaution to reduce the levels of dust at construction site. The ASU campus site will be properly barricaded with adequate height prefabricated mild steel sheets from all sides to avoid air emissions and dust impacts in the surroundings of site. All filling works to be protected/covered in a manner to minimize dust generation.	ASU site, air quality monitoring results	Contractor	PMU, and firm PMC, CSQA	Regularly during construction phase	Contractor
<b>13</b>	Emission from construction vehicles, equipment and machinery	All vehicles, equipment and machinery used for construction shall conform to the relevant Bureau of India Standard (BIS) norms. The discharge standards promulgated under the Environment Protection Act, 1986 shall be strictly adhered to. The silent/quiet equipment available in the market shall be used in the construction.  The contractor shall maintain a record of Pollution under Control Certificates (PUCs) for all vehicles and machinery used during the contract period which shall be produced for verification whenever required.	PUC certificates of vehicles and machinery	Contractor	PMU, and firm PMC, CSQA	Regularly during construction phase	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
<b>14</b>	Noise pollution	<p>The contractor shall confirm that all construction equipment used in construction shall strictly conform to the MoEFCC and CPCB noise standards and all vehicles and equipment used in construction shall be fitted with exhaust silencers.</p> <p>At the construction sites noisy construction work such as operation of DG sets, use of high noise generation equipment shall be stopped during the nighttime between 10.00 pm to 6.00 am.</p> <p>Noise limits for construction equipment used in this project will follow IFC's EHS standards.</p> <p>No construction activities will be taken up in nighttime (2200 hours to 0600 hours) to avoid noise impacts. Similar to construction activities, no construction vehicle movement will be allowed in the night hours.</p> <p>Noise monitoring will be taken up as per monitoring plan.</p>	Certificates of vehicles conforming noise standards, noise monitoring results	Contractor	PMU, and firm PMC, CSQA	Regularly during construction phase	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
<b>15</b>	Impacts on flora and fauna	Minimize impacts on flora and fauna during construction phase by limiting site clearance bare minimum and limiting all types of pollution generation. The total area for landscaping to be done will be 217830.74m <sup>2</sup> and 3000 trees and shrubs will also be planted. The detailed landscaping and tree plantation plan will be prepared during project implementation. Broadly plantation will be taken up along boundary wall, side slopes of roads in campus.	Landscaping area and tree plantation	Contractor	PMU, and firm PMC, CSQA	Regularly during construction phase	Contractor
<b>16</b>	Material handling at construction site	Workers employed on mixing cement, lime mortars, concrete, etc. will be provided with protective footwear and protective goggles.  Workers who are engaged in welding works will be provided with welder's protective eye shields.  Workers engaged in stone breaking activities will be provided with protective goggles and clothing.  The use of any toxic chemical (paints, thinners and anti-	Data on available personal protective equipment	Contractor	PMU and CSQA firm	Regularly during construction phase	Contractor

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>corrosive and anti-termite materials, etc.) will be strictly in accordance with the manufacturer's instructions.</p> <p>The PMU site in-charge (District Program Manager/Deputy Director Project) will be given at least 6 working days' notice of the proposed use of any chemical. A register of all toxic chemicals delivered to the site will be kept and maintained up to date by the contractor.</p>					
17	Disposal of construction waste, and debris	The contractor shall confirm that safe disposal of the construction waste will be ensured in the pre-identified disposal locations. In no case, any construction waste will be disposed off around the ASU campus site.	Disposal site	Contractor	PMU, PMC and CSQA firm	Regularly during construction phase	Contractor
18	Onsite emergency plan for minor accidents and mishaps and disaster management plan for natural calamities	<p>The onsite emergency plan will be prepared by the contractor in consultation with CSQA firm, PMU and PMC.</p> <p>For natural calamities, disaster management plan prepared by the Darrang district administration under the provisions of Disaster</p>	Onsite emergency plan document and disaster management plan document of Darrang District	Contractor	PMU, CSQA firm, and PMC	Mock drill every quarter	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		Management Act 2005 will be followed.					
19	Occupational Health and Safety and COVID-19 measures during construction	<p>Adequate safety measures for workers during handling of materials at the construction site will be taken up.</p> <p>The contractor has to comply with all regulations for the safety of workers. Precaution will be taken to prevent danger of the workers from accidental injuries, fire, etc.</p> <p>First aid treatment will be made available for all injuries likely to be sustained during the course of work.</p> <p>The contractor will comply with all anti-malaria instructions given by the PMU, PMC, and CSQA firm</p> <p>Necessary COVID-19 protection measures will be taken up as per prescribed protocols of GoA and Gol guidelines.</p> <p>There will not be any use or handling of asbestos containing</p>	Records of availability of personal protective equipment, availability of first aid kits	Contractor	PMU, and firm PMC, CSQA	Regularly during construction phase	Contractor

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		materials such as roofing sheet and plumbing pipes.					
20	Flooding and Water Logging and construction materials accidental flow with food waters	<ul style="list-style-type: none"> <li>The contractor will take all measures to barricade the site with MS sheet till permanent boundary wall is constructed.</li> <li>The contractor will maintain quick drainage of site to avoid any water logging and flow of loose construction material with rainwater</li> <li>The contractor will take all necessary mitigatory measures to ensure that mud and construction materials do not enter agriculture fields of houses from storm water of site.</li> </ul>	Flooding and water logging	Contractor	PMU, PMC, and CSQA firm	Regularly during construction phase and especially during monsoon months	Contractor
21	Clearing of construction of camp and restoration	<p>The contractor to prepare site restoration plan for approval by the PMU or its authorized agency (such as CSQA Firm). The plan is to be implemented by the contractor prior to demobilization.</p> <p>On completion of the works, all temporary structures will be</p>	Restoration plan, and records of pre-construction of temporary sites	Contractor	PMU, ASDM, CSQA firm	End of construction phase	Contractor



Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		cleared away, all rubbish burnt, excreta or other disposal pits or trenches filled in and effectively sealed off, and the site left clean and tidy, at the contractor's expense, to the entire satisfaction of the ASDM.					

**Table-13: Operation Phase Environmental Management Plan for ASU Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
1	All regulatory permissions for operations of ASU	All regulatory permissions such as building occupancy certificate from civic authorities, NOC from fire department, consent to operate from Assam Pollution Control Board, etc. will be obtained before start of ASU operations.	List of permissions /NOCs required	ASU management team, PMU, and PMC	ASDM	Regularly for validation/renewal of permissions	ASU operational budget
2	Environmental Conditions	Air, water and noise quality will be monitored periodically as per the environmental monitoring plan prepared.  The boundary wall and plantation along the periphery will be maintained	Ambient air quality standards, drinking water quality standards, and ambient noise standards	ASU management team, PMU, and PMC	ASDM	Every season except monsoon for first two years	ASU's operational budgets

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		to avoid any impacts from the ASU campus in the surroundings.					
3	Safety risks	1- Proper demarcation and flagging of the area requiring safety observations will be taken up after completion of construction works. 2- Necessary precaution measures to be observed by visitors will be printed on boards and will be prominently put inside the ASU Campus. 3- The hazardous and toxic materials at the laboratories and /or workshops will be handled, stored and disposed as per instructions provided in material safety data sheets.	Risk area identification, boards for precautionary measures	ASU management team, PMU, and PMC	ASDM	Regularly during operation phase	ASU's operational budgets
4	Unhygienic conditions due to poor maintenance of sanitation facilities and irregular solid waste collection	The ASU operations and management team will carry out maintenance of the toilets and carry out the regular waste collection and disposal of the waste to the local disposal site. Sewage network and sewage treatment plant will be maintained effectively. No wastewater without treatment	Maintenance schedule of the STP, sewage network and toilet blocks, disposal plans of various solid wastes	ASU management team, PMU, and PMC	ASDM	Every quarter	ASU's operational budgets

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Environmental Issues	Mitigation Measures	Parameter (Indicators for Compliance)	Responsible Implementation	Responsible Supervision	Frequency for Monitoring	Sources of Fund for Implementing Mitigation Measure
		<p>will be discharged outside ASU campus.</p> <p>Any hazardous waste generated will be handled as per the provisions of 'Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2016.</p> <p>Any bio-medical waste generated at Medical Center will be handled, stored, transported and as per the provisions of 'Bio-Medical Waste Management Rules 2016'.</p> <p>The E-waste generated will be handled and disposed of as per provisions of 'E- Waste Management Rules, 2016'.</p> <p>The used and discarded lead acid batteries for recycling and disposal as per Battery Waste Management Rules, 2020.</p>					
5	Natural disasters	Necessary procedures to be followed by the visitors, students, ASU staff during natural disasters shall be written at prominent locations.	Warnings of disasters by Meteorological Department	ASU management team, PMU, and PMC	District Administration	During disasters	Government of Assam

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
6	Onsite emergency plan for minor accidents and mishaps and	The operations and management team of ASU will prepare on site emergency plan for possible minor accidents and mishaps (due to fire, handling and storage of hazardous and toxic chemicals at laboratories, workshops, water treatment plant, STP, etc.) during operation phase.	Onsite emergency plan document	ASU management team	ASDM	Mock drills every quarter	ASU operational budgets
7	Waste generated on account of operation and maintenance of solar water heating system and roof top solar system	The supplier of solar panels cells and water heating system will maintain the system. Any waste generated will be collected by the supplier for possible reuse and recycling. For this, necessary agreement will be prepared at the time of supply and installation.	Waste generation from solar system	Suppliers of solar panel cell and water heating system	ASU operations and management team, PMU, and PMC	Regularly	ASU operational budgets
8	Disposal of waste from ASU campus	The ASU operations and management team will prepare waste disposal plans for municipal waste, bio-medical waste and hazardous waste in consultations with local civic authorities and local office of Assam Pollution Control Board	Waste disposal plans for various types of wastes	ASU management team, PMU, and PMC	ASDM	Regularly	ASU operational budgets

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Sl. No.</b>	<b>Environmental Issues</b>	<b>Mitigation Measures</b>	<b>Parameter (Indicators for Compliance)</b>	<b>Responsible Implementation</b>	<b>Responsible Supervision</b>	<b>Frequency for Monitoring</b>	<b>Sources of Fund for Implementing Mitigation Measure</b>
9	Maintenance of drainage system of ASU Campus	The ASU management Team will maintain drainage system constructed properly to avoid flooding of campus	Drainage maintenance schedule and clearing of drains before monsoon	ASU management team, PMU, and PMC	ASDM	Regularly as per requirements	ASU Operational Budget

### C. Environmental Monitoring Plan

100. Environmental monitoring will be undertaken during construction at three levels. Environmental monitoring (which covers EMP implementation and compliance with rules and regulations with respect to the environment, and handling of solid and liquid waste) at site will be undertaken by the contractor during pre-construction and construction phases and will be supervised by PMU (with the support of PMC and CSQA Firm teams). Environmental monitoring during operation phase will be taken up by the PMU through an accredited laboratory. Water logging is not anticipated as ASU layout design includes ASU campus drainage system. The environment safeguards specialists of the PMU and PMC will ensure that revised IEE and revised EMP are updated for any changes in design in accordance with ADB's and GoA's requirements. The CSQA firm team and environmental specialists of PMC and PMU will ensure that all the provisions of the revised EMP are being adhered to by the contractor.

101. To ensure the effective implementation of mitigation measures and revised EMP during pre- construction and construction phases of this subproject, it is essential that an effective environmental monitoring plan is followed as given in **Table 14**. The proposed monitoring of all relevant environmental parameters, with a description of the sampling stations, frequency of monitoring, applicable standards and responsible agencies are presented in this table.

**Table-14: Environmental Monitoring Plan for the Detailed Design and Construction of ASU Campus and Facilities during Pre-construction, Construction and Operation Phases**

SI. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored and applicable standards	Locations	Frequency	Responsibility	Cost (INR/US\$)
1	Air quality	During pre-construction phase	CO, NO <sub>x</sub> , PM <sub>10</sub> , PM <sub>2.5</sub> , and SO <sub>2</sub> (applicable standards – national- National Ambient Air Quality Standards)	Location of maximum construction activity at the ASU site	Once in the pre-construction phase to establish baseline	Contractor through approved monitoring agency during pre-construction phase and ASU management team during operation phase	INR160,000/US \$2300
		During construction phase			Once in a quarter except monsoon quarter (June to September) during construction phase		
		During operation phase for first two years			Once in a quarter except monsoon quarter for first two years		
2	Ground water quality	During pre-construction phase	TDS, TSS, pH, Hardness, BOD, Faecal Coliform (applicable standards – national- Drinking Water Quality Standards specified in IS:10500)	Ground water close to ASU construction site	Once in the pre-construction phase to establish baseline	Contractor through approved monitoring agency during pre-construction phase and ASU management team during operation phase	INR160,000/US \$2300
		During construction phase			Once in in a quarter except monsoon quarter during construction phase		
		During operation phase for first two years			Once in a quarter except monsoon quarter for first two years		
3	Treated Waste Water in Recycle use in ASU campus	During operation phase	TDS, TSS, pH, Hardness, BOD, Faecal Coliform (applicable standards – national- Drinking	Treated water from STP used for recycling	Once in a quarter except monsoon quarter for first two years	ASU management team	INR 60,000/US\$850

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Field (Environmental Attribute)	Phase	Parameters to be Monitored and applicable standards	Locations	Frequency	Responsibility	Cost (INR/US\$)
			Water Quality Standards specified in IS:10500)				
<b>4</b>	Noise Levels	During pre-construction phase	Noise quality as per National Ambient Noise Standards on dB(A) scale (Applicable standards – national- National Ambient Noise Standards)	Noise levels at location of maximum construction activity at ASU site	Once in the pre-construction phase to establish baseline	Contractor through approved monitoring agency during pre-construction and construction phase and ASU management team during operation phase	INR 48,000/US \$700
		During construction phase			Once in quarter except monsoon quarter during construction phase		
		During operation phase for first two years			Once in a quarter except monsoon quarter for first two years		
		During pre-construction phase					



### Summary of Site- and Activity-Specific Plans/Programs as per ASU EMP

102. **Table-15** summarizes site- and activity-specific plans to be prepared as per EMP tables.

**Table-15: Site- and Activity-Specific Plans/Programs as per EMP**

To be Prepared During	Specific Plan/Program	Purpose	Responsible Preparation	Responsible for Implementation
Pre-construction phase	Environmental monitoring program as per detailed design	Indicate sampling locations, methodology and parameters to the contractor	PMU and PMC	Contractor
Pre-construction phase	Chance find protocol	Address archaeological or historical chance finds	PMU and PMC environment specialists	Contractor
Pre-construction phase	List of pre-approved sites for construction camp, stockpiles, and waste disposal sites	Location/s for construction camp, areas for stockpile, storage and disposal for minimization of impacts	PMU and PMC environment specialists, CSQA firm, and contractor	Contractor
Pre-construction phase	Waste management plan	Mitigate impacts due to waste generation	Contractor	Contractor
Pre-construction phase	Spill prevention and containment plan	Mitigate impacts of accidental spills of oil, lubricants, fuels, concrete, and other hazardous materials	Contractor	Contractor
Construction phase	Traffic management plan	Mitigate impacts due to transport of materials and project related traffic movement	Contractor	Contractor
Construction phase	COVID-19 health and safety plan	To comply with COVID-19 guidelines issued by the GoA and Ministry of Health and Family Welfare, Gol (MoHFW)	Contractor	Contractor
Construction phase	Health and safety (H&S) plan	To comply with IFC's EHS guidelines on occupational health and safety	Contractor	Contractor
Construction phase	Erosion control and re-vegetation plan	Mitigate impacts due to erosion and vegetation	Contractor	Contractor

To be Prepared During	Specific Plan/Program	Purpose	Responsible for Preparation	Responsible for Implementation
		removal at ASU site		
Construction phase	Environmental monitoring plan implementation	To check efficacy of mitigation measures	Environment specialists of PMU and PMC and contractor	Contractor
Operation Phase	Environmental monitoring plan implementation for first two years	To check efficacy of mitigation measures	ASU management team in close coordination with PMU	ASU management team
Operation Phase	Solid waste management plan	For effective disposal of all types of wastes	ASU management team in close coordination with PMU	ASU management team
Operation Phase	Onsite emergency plan	For handling any mishap at ASU campus on account of fire, explosion, accident, etc.	ASU management team	ASU management team

103. The guidelines for preparation of site-specific traffic management plans are in **Annexure-4**.

#### **D. Capacity Building**

104. In addition to the primary objective of project strengthening industry-aligned and flexible skills education and training systems in Assam, the subproject will also raise awareness about environmental conservation amongst implementing agency, contractors, CSQA firm team, and local communities. The project will have the opportunity to build capacity in environment protection for the above-mentioned stakeholders. In the operation phase, ASU campus management team will take up awareness about environmental conservation with the assistance of PMU.

105. The environment specialists at PMU and PMC will provide the basic training required for environmental awareness. Specific modules customized for the available skill set will be devised after assessing the capabilities of the members of the training program and the requirements of the project. The training would cover basic principles of environmental assessment and management, mitigation plans and programs, implementation techniques, monitoring methods and tools. The proposed training program along with the frequency of sessions is presented in **Table 16**.

**Table 16: Training Modules for Environmental Management**

Program	Description	Participants	Duration	Training Conducting Agency
<b>A. PRECONSTRUCTION STAGE</b>				
Sensitization workshop on environment	• Introduction to Environment: environmental assessment and social due diligence requirements in the project, regulatory clearances, and	PMU, CSQA firm, ASDM officials involved in the project, other engineering staff	½ working day	Environment specialists of PMU and PMC

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

<b>Program</b>	<b>Description</b>	<b>Participants</b>	<b>Duration</b>	<b>Training Conducting Agency</b>
	permission requirements in the project • Environmental management plan implementation, introduction of ADB Safeguard Policy Statement, 2009, and ADB guidelines on environmental considerations in planning, design and implementing projects	associated with the subproject, and contractors' technical staff		
Session 1	• Environmental impacts due to ASU project during construction and operation phases, pollution generation activities during preconstruction and construction phases • Environmental management, environmental provisions, implementation arrangements, methodology of assessment, and good engineering practices to be integrated into contract documents	PMU, CSQA firm, ASDM officials involved in the project, other engineering staff associated with the subproject, and contractors' technical staff	½ working day	Environment specialists of PMU and PMC
<b>B. CONSTRUCTION STAGE</b>				
Session 2	• Roles and responsibilities of officials, contractors, consultants toward protection of environment • Implementation arrangements and environmental monitoring during construction phase	PMU, CSQA firm, ASDM officials involved in the project, other engineering staff associated with the ASU project, and contractors' technical staff	½ working day	Environment specialists of PMU and PMC
Session 3	• Monitoring and reporting system	PMU, CSQA firm, ASDM officials involved in the project, and other engineering staff associated with the ASU project	¼ working day	Environment specialists of PMU and PMC

**E. Environmental Budget**

106. Most of the mitigation measures require the contractor to adopt good site practices, which should be part of their normal procedures and these are mandated under the prevailing regulations and standards, hence there are unlikely to be major costs associated with compliance. Only those items not covered under budgets for construction are included in the IEE budget. The revised IEE costs include mitigation, monitoring and capacity building costs. The summary budget for the environmental management costs for the sub-project is presented in **Table 17**.

**Table-17: Environmental Management and Monitoring costs (INR)**

Monitoring Component	Rate	Amount (INR)	Source of Fund
<b>Pre-Construction and Construction Phase</b>			
<b>Ambient Air Quality:</b> One location at location of maximum construction activity at ASU site (one sample during pre-construction phase and nine samples during construction phase - Total 10 samples)	10,000	100,000	Contractor
<b>Water Quality:</b> One ground water sample from ASU construction site from existing bore well/hand pump (one sample during pre-construction phase and nine samples during construction phase - Total 10 samples)	10,000	100,000	Contractor
<b>Ambient Noise Quality:</b> One location of maximum construction activity at ASU construction site (one sample during pre-construction phase and nine samples during construction phase - Total 10 samples)	3000	30,000	Contractor
<b>Cost for Occupational Health and Safety Measures</b> Occupational health and safety measures at construction site and workers' camp	Covered in the construction cost of contractor as EMP is part of bid and contract document.		Contractor
<b>Capacity Building Training Program</b>	Covered in the consultancy cost of the PMC and operation cost of PMU		
<b>Total: Pre-Construction and Construction Phase Monitoring Cost (A)</b>		<b>230,000</b>	
<b>O&amp;M Phase</b>			
<b>Ambient Air Quality</b> One location at ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	10,000	60,000	PMU and ASU
<b>Drinking Water Quality</b> One treated drinking water sample at ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	10,000	60,000	PMU and ASU
<b>Treated wastewater Quality</b> One treated wastewater sample used for recycling in ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	10,000	60,000	PMU and ASU
<b>Ambient Noise Quality</b> One location at ASU campus, thrice a year, for first 2 years (three samples a year, total of six samples)	3000	18,000	PMU and ASU

<b>Monitoring Component</b>	<b>Rate</b>	<b>Amount (INR)</b>	<b>Source of Fund</b>
<b>Maintenance of Plantation, Shrubs and Landscape Areas</b>	Covered in operation and maintenance cost of ASU campus		
Capacity Building	Covered in operation and maintenance cost of ASU campus		
Maintenance of drainage system of ASU campus to avoid water logging and flooding	Covered in operation and maintenance cost of ASU campus		
<b>Total O&amp;M Phase Monitoring Cost (B)</b>		<b>198,000</b>	
Total Cost (A+B)		<b>4,28,000</b>	
Contingencies @ 5 %		<b>21,400</b>	
<b>Total Budgeted Cost (INR)</b>		<b>4,49,400 (approx. 4,50,000)</b>	

## **F. Environmental Monitoring and Reporting**

107. The PMU with the assistance of PMC will monitor and measure the progress of EMP implementation during construction phase. During operation phase PMU safeguard cell in close coordination with ASU operations and management teams will take care of EMP implementation.

108. During construction phase, CSQA firm team with guidance from PMC and PMU environmental specialists will submit monthly monitoring and implementation reports to ASDM. The PMU environmental specialist, with the assistance of PMC environmental specialist, will prepare semi-annual environmental monitoring reports for submission to ADB on behalf of EA. The semi-annual monitoring report will document monitoring results, identify the necessary corrective actions, and reflect them in a corrective action plan. The frequency of submission of environmental monitoring reports to ADB will be reduced to annual in the operation phase. These reports on annual basis will be prepared by the PMU environmental specialist and submitted to ADB till project completion report is issued by the ADB. Monitoring reports will be posted in ADB website and in other IA locations accessible to the public.

109. If there are any unanticipated impacts found during implementation, the EA, through the PMU will update the IEE and EMP or prepare a new environmental assessment and EMP to assess the potential impacts, evaluate the alternatives, and outline mitigation measures and resources to address those impacts.

110. ADB will review project performance against the EA's commitments as agreed in the legal documents. The extent of ADB's monitoring and supervision activities will be commensurate with the project's risks and impacts. Monitoring and supervising of social and environmental safeguards will be integrated into the project performance management system. ADB will monitor the project on an ongoing basis until a project completion report is prepared.

## VII. PUBLIC CONSULTATION AND INFORMATION DISCLOSURE

### A. Process For Consultations Followed

111. The detailed design and construction of ASU campus and facilities does not involve any elements which could have an adverse impact on the community. There is no deprivation of any sort for the residents or displacement of any groups. Particularly, with regard to environmental impacts, this subproject can be characterized as having no significant adverse impacts.

112. In view of this, the need for holding a public hearing (as defined in EIA Notification 2006 of GoI) was not perceived at this stage as EIA Notification is not applicable to ASU project. However, in compliance with the ADB's guidelines, focused public consultations were undertaken during the site visit to the ASU site in Mangaldoi. The consultations were also held with the Deputy Commissioner Mangaldoi, Revenue Authorities of district and local people living close to the ASU site. The stakeholders were informed about the ASU project components and subsequent implementation in their area and their views were obtained. During the preparation of this revised IEE, consultations were also held with the ASDM, State Department of Forest and Environment, and Assam Pollution Control Board. These consultations were carried out on November 12 and 13, 2020 and February 5, and 6, 2021. After inclusion of additional 40 Bigha area to the project site, stakeholder consultations were carried out on March 03, 2022. The number of participants (male and female) is given in **Table-18**. In addition to above mentioned consultations, Government of Assam laid foundation stone for ASU at the site on February 15, 2021 and for this event, there was a public ceremony attended by about 20,000 people. This was also a mode of communication about the establishment of ASU and this ceremony was covered by local media.

113. The process of consultations was an integral part of the ASU campus design and environmental assessment, in accordance with ADB's guidelines to achieve the following objectives:

- To educate the general public, specially potentially impacted or benefited communities, individuals and stakeholders about the proposed ASU and its detailed design and construction;
- To familiarize the people with technical and environmental issues of the detailed design and construction of ASU campus and facilities for better understanding;
- To solicit the opinion of the communities, local authorities and individuals on environmental issues and assess the significance of impacts due to the subproject;
- To foster co-operation among officers of EA and IA, the community and the stakeholders to achieve a cordial working relationship for smooth implementation of the project; and
- To identify the environmental issues relating to the proposed activity.

114. During the consultations local residents opined that there is need to provide skills and job-oriented education to the youth of Assam State so that better employment opportunities are made available to them. The project will help rural youth in getting training and skills enhancement education. The project will also provide employment and business opportunities to local population during construction and operation phases. The local people demanded fast implementation of the overall project. The dates of consultations and stakeholders consulted are summarized in **Table 18**. The views, comments and suggestions of stakeholders and their incorporation in project design are presented in **Tables 19 and 20**. The records of consultations (list of participants with signatures) and consultation photographs are given in **Annexure- 6**.

**Table-18: Dates and Stakeholders Consulted**

Sl. No.	Stakeholders Consulted	Dates of Consultations	Number of Participants	
			Male	Female
1	ASU campus site	12 and 13 November 2020	10	4
2	Deputy Commissioner Darrang Office	12 November 2020	12	4
3	Assam Skill Development Mission	12 and 13 November 2020	9	2
4	District Revenue Authorities	13 November 2020	4	0
5	ASU campus site	6 February 2021	23	6
6	Principal Chief Conservator of Forest, Assam State Forest Department, Guwahati	05 February 2021	4	0
7	Assam Pollution Control Board	05 February 2021	5	0
8	Environmental Impact Assessment Authority, Assam State	05 February 2021	4	0
9	ASU Campus Site	03 March 2022	20	10

115. Most of the suggestions of stakeholders were considered in the project design, as shown in **Tables 19 and 20**.

**Table-19: Views, Comments, and Suggestions of Stakeholders at ASU Campus Site and Considerations in ASU Design**

<b>Sl. No.</b>	<b>Place</b>	<b>Date</b>	<b>Consultations held with</b>	<b>Issues discussed</b>	<b>Outcome of discussions and consideration in project design and implementation</b>
1	ASU campus site	12/11/2020 and 13/11/2020	With local people near the site, ASDM officials, and elected representatives of the State Assembly	Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, etc.	<ol style="list-style-type: none"> <li>1. Participants, especially elected State Assembly Member (MLA), welcomed the commencement of the project and assured all help during project implementation. The environmental specialist (ADB project preparation consultant) and ASDM officials thanked the MLA.</li> <li>2. One local participant suggested that local population should be given preference in supply of construction materials and employment during construction. The environmental specialist replied that contractors once appointed will procure manpower and materials. At that time local population may interact with them for the supply of materials and employment.</li> <li>3. One participant enquired about access road to the ASU site. The environmental specialist replied that access road from NH-15 will be developed. Once Mangaldoi Bypass has been constructed by the National Highways Authority of India, access road from new bypass will also be developed by the Authority.</li> <li>4. The environmental specialist solicited suggestions for environment protection from the participants. The participants suggested that plantation and waste disposal should be done with care. The environmental specialist replied that plantation and landscaping plan for the campus will be prepared and implemented. The solid waste disposal will be as per regulatory requirements.</li> <li>5. One local participant suggested during discussion that there is intense rainfall in Mangaldoi so drainage should be installed. The consultant and ASDM officials informed that campus will be designed with proper drainage system considering rainfall.</li> </ol>
2	ASU campus site	February 06, 2021	With local people near the site, ASDM officials, and village Panchayat elected representatives	ASU Project components, benefits of project, implementation	<ol style="list-style-type: none"> <li>1- The participants suggested that tree plantation in the campus should also include fruit bearing trees growing locally. The environmental specialist replied that tree plantation and landscaping plan will be prepared as part of design of campus.</li> </ol>



**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
				schedule, environmental and social impacts during project implementation, etc.	In the tree plantation plan, locally grown fruit bearing trees will be considered for plantation. 2- The environmental specialist inquired from the participants about the water availability in two small ponds at site. The participants replied that these get dried up in winter months. The environmental specialist informed the participants that these ponds will be retained and further developed during ASU campus construction. 3- All the participants said that they welcome the project in their area and will provide full cooperation during project implementation. The ASDM officials and environmental specialist thanked the participants. 4- The village head suggested that the site should have proper drainage as there is water accumulation during monsoon time. The environmental specialist informed the participants that drainage system of ASU is being designed considering rainfall intensity in the region.
3	ASU Campus Site	March 03, 2022	With local people near the site, ASDM officials, Town and Country Planning Department officials and village Panchayat elected representatives	ASU Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, additional 150 Bigha area included in the previous delineated plot, etc.	1- The locals participating in the project requested early start of construction works and were happy about the project in the area. One of local participant suggested that preference to locals should be given in the employment. The contractor representative replied that locals will be employed as per skills suiting for the construction works. 2- Deputy Director Town and Country Planning Department (T&CP) suggested that drainage problem at site should be properly addressed. The Deputy Project Director ASUDP replied that storm water drainage system of project is being designed and problem of drainage will be addressed. 3- The officials of T&CP further suggested that Building Rules and National Building Code (NBC) should be followed in design and all necessary permissions should be obtained. The ASDM officials replied that in the design building rules and NBC have been followed and all necessary permissions required for start of construction works obtained. 4- One participant suggested that Rainwater Harvesting (RWH) structures should be designed and constructed. The

Sl. No.	Place	Date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and implementation
					environmental specialist replied that because of intense rainfall and high-water table in the area, RWH may not be successful, but RWH have been designed in the form water bodies in the campus. The detailed examination is under progress and based on technical decision these will be implemented. 5- All the participants welcomed the decision of inclusion of additional 150 Bigha area for the ASU site and expressed happiness that campus will be bigger and open.

**Table-20: Summary of Stakeholder Consultations at Institutional Level**

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
1.	Deputy Commissioner Darrang Office 12/11/2020	Darrang District Deputy Commissioner, local NGO, Revenue Officials, and Darrang Municipal Council elected representatives	ASU Project components, benefits of project, implementation schedule, environmental and social impacts during project implementation, etc.	<ol style="list-style-type: none"> <li>1. The Darrang District Deputy Commissioner informed ADB project preparation consultant team that elected public representatives are in favor of project and district administration will extend all help for the project. He further suggested that Darrang district being agriculture predominant area so modern courses based on agro processing, and local agriculture-based products should be taught in the ASU. ASDM team replied that suggestion has been noted and while finalizing the courses the suggestion will be considered.</li> <li>2. One participant suggested that if trees are to be cut, then these should be replanted at another location. The environmental specialist replied that there is no requirement of tree cutting as site is flat and vacant.</li> <li>3. The official from local office of State Pollution Control Board suggested that environmental impacts of the project should be assessed thoroughly. The environmental specialist replied that environmental assessment of the project is being done and an IEE report will be completed as part of project preparation.</li> <li>4. One participant suggested that small portion of ASU should also develop a water body. In this water body rainwater should be collected from rooftop as well as from ground. This will help in ground water recharge. ADB project preparation consultant team replied that suggestion has been noted and will be considered while finalizing layout plan of ASU.</li> </ol>

**Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities**

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
				<p>5. The Deputy Commissioner informed that after COVID-19 pandemic, cultivation on land is in demand by the youth. Darrang district is a major production center of maize so courses related to food processing should be offered at ASU. The ASDM officials replied that suggestion has been noted and courses pertaining to food processing will be planned.</p> <p>6. One participating NGO from Darrang suggested that jute production is good in Darrang district and jute is exported so local youth should be trained for export of jute-based products and exotic vegetables. The ASDM officials replied that suggestion has been noted and courses will be planned considering the suggestions given in the consultation meeting.</p>
2.	Guwahati 12/11/2020 and 13/11/2020	ASDM Director and officials	Site Issues, ASU project components, regulatory permissions required and project site revenue records	<p>1. Environmental specialist enquired about land title and tree cutting requirements at site. The ASDM Director informed that there is no requirement for tree cutting. The land has been transferred in the name of ASDM.</p> <p>2. The environmental specialist informed that the project will be category B as per ADB safeguard policy Statement 2009 (SPS 2009). To comply with the policy, an IEE report containing in environmental management plan (EMP) will be prepared for each component (sub-project such as boundary wall and ASU Campus). The EMP is to be included in bidding documents and EMP budget in the project cost. The ASDM officials replied that compliance with ADB SPS 2009 and regulatory requirements will be ensured.</p>
3	Guwahati 05/02/2021	Principal Chief Conservator of Forests (PCCF), State Forest Department	Dissemination of project information and enquiry about requirement of clearance/permissions from the forest department	<p>1- The ASDM officials explained ASU project features. The environmental specialist enquired about the clearances and permissions required from the forest department and any special rule in the state. The PCCF replied that there is no requirement for any clearance since the land of the ASU campus site is the government land. He advised that that letter to divisional forest officer (DFO) may be written to confirm that no forest land is in the delineated plot of ASU. This will avoid any complications later. ASDM subsequently obtained confirmation from the forest department and letter is enclosed in <b>Annexure-7</b>.</p> <p>2- Similar to the forest land confirmation, PCCF also advised to obtain confirmation letter from divisional forest officer (wildlife) that the land</p>

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Place and date	Consultations held with	Issues discussed	Outcome of discussions and consideration in project design and Implementation
				of the ASU campus site does not fall in the eco-sensitive zone of Orang National Park. The environmental specialist thanked the PCCF and said that confirmations for both forest and eco-sensitive will be obtained from the respective DFOs. ASDM subsequently obtained confirmation from the wildlife division of forest department and letter is enclosed in <b>Annexure-7</b> .
4	Guwahati 05/02/2021	Chairman of State Environmental Impact Assessment Authority (SEIAA), Assam State	Dissemination of project information and enquiry about requirement of prior environmental clearance for the project	1- The environmental specialist explained the project features to the chairman of Assam State Environmental Impact Assessment Authority and enquired whether the project will require prior environmental clearance. The SEIAA chairman replied that education institutes are exempted from obtaining the prior environmental clearance as per MoEFCC notification. So, the project will not require prior environmental clearance. ASDM officials and environmental specialist thanked the chairman for clarification.
5	Guwahati 05/02/2021	Assam Pollution Control Board	Dissemination of project information and enquiry about requirement of 'No Objection Certificate and permissions' from Assam Pollution Control Board for the project	1-The ASDM officials explained the project and enquired about permissions and clearances required from the Assam State pollution Control Board for the project. The state pollution control board officials replied that under the national consent management scheme of Central Pollution Control Board, the project will require consent to establish and consent to operate from the Assam Pollution Control Board. Application for the consent to establish may be submitted once the design of the ASU campus and facilities have been completed. The environmental specialist thanked the officials and told that application will be made on completion of design.

## **B. Future Consultation and Information Disclosure**

116. To ensure continued public and stakeholder participation in the ASU project life cycle, periodic consultations and focus group discussion should be continued. A grievance redress committee (GRC) will be formed at the site and also at PMU level to register grievances regarding technical, social and environmental issues. The participatory process will ensure that all views are adequately reviewed and suitably incorporated in the design and implementation process. Further, to ensure an effective disclosure of the ASU project proposal to the stakeholders and the communities in the vicinity of site, an extensive project awareness campaign will be carried out.

### **Information Disclosure**

117. Electronic version of this revised IEE will be placed in the official websites of the ASDM and ADB (after clearance of this document by the GoA and ADB). On demand, any person seeking information can obtain a hard copy of the complete IEE document by paying cost of photocopy from the office of the PMU and ASU site office on a written request. The hard copies of revised IEE report summary in Assamese language will be available at ASDM office, Guwahati, ASU site office, Mangaldoi and Deputy Commissioner office, Darrang for reference.

118. The PMU will issue notification on the disclosure mechanism on its website ahead of the beginning of the subproject detailing start and end date of construction works. This will create awareness of the project implementation among the public.

## **C. Grievance Redress Mechanism**

119. The affected person(s)/aggrieved party can give their grievance verbally or in written to the ASU site office in Mangaldoi. Grievances of affected person will first be brought to the attention of the officer in charge of the site (District Program Manager of ASDM), who can resolve the issue at the site level. If the matter is not solved within 7 days period by the site in charge, it will be brought to the GRC constituted for the purpose at site. This GRC shall discuss the issue in its monthly meeting and resolve the issues within one month after receiving the grievance. If the matter is not resolved by GRC at the site level within the stipulated time, it shall be referred to GRC at PMU level by the officer in-charge of the site (District Program Manager) of ASDM.

120. GRC at PMU shall discuss the issue and try to resolve it and inform the ASU site office. If the matter is not resolved by the GRC at PMU level within one month, the matter will be referred to the state level project steering committee (SPC), who will resolve the complaint within one month. However, the aggrieved person/party can bring the matter to the Court of Law any time. The PMU and ASU site office shall keep records of all grievances received including contact details of the complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date the actions were taken and their final outcome. A complaint register will be maintained at construction site. The grievance redress process is shown below. The cost for the operation of GRM will be accounted for in project cost as part of PMU operation.

121. Further, person(s)/aggrieved party who are, or may be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The accountability mechanism provides an independent forum and process whereby people can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected person(s)/aggrieved party should first make a good faith effort to solve their problems by

working with the ADB South Asia operations department including the India Resident Mission.

#### **D. Composition and functions of GRC**

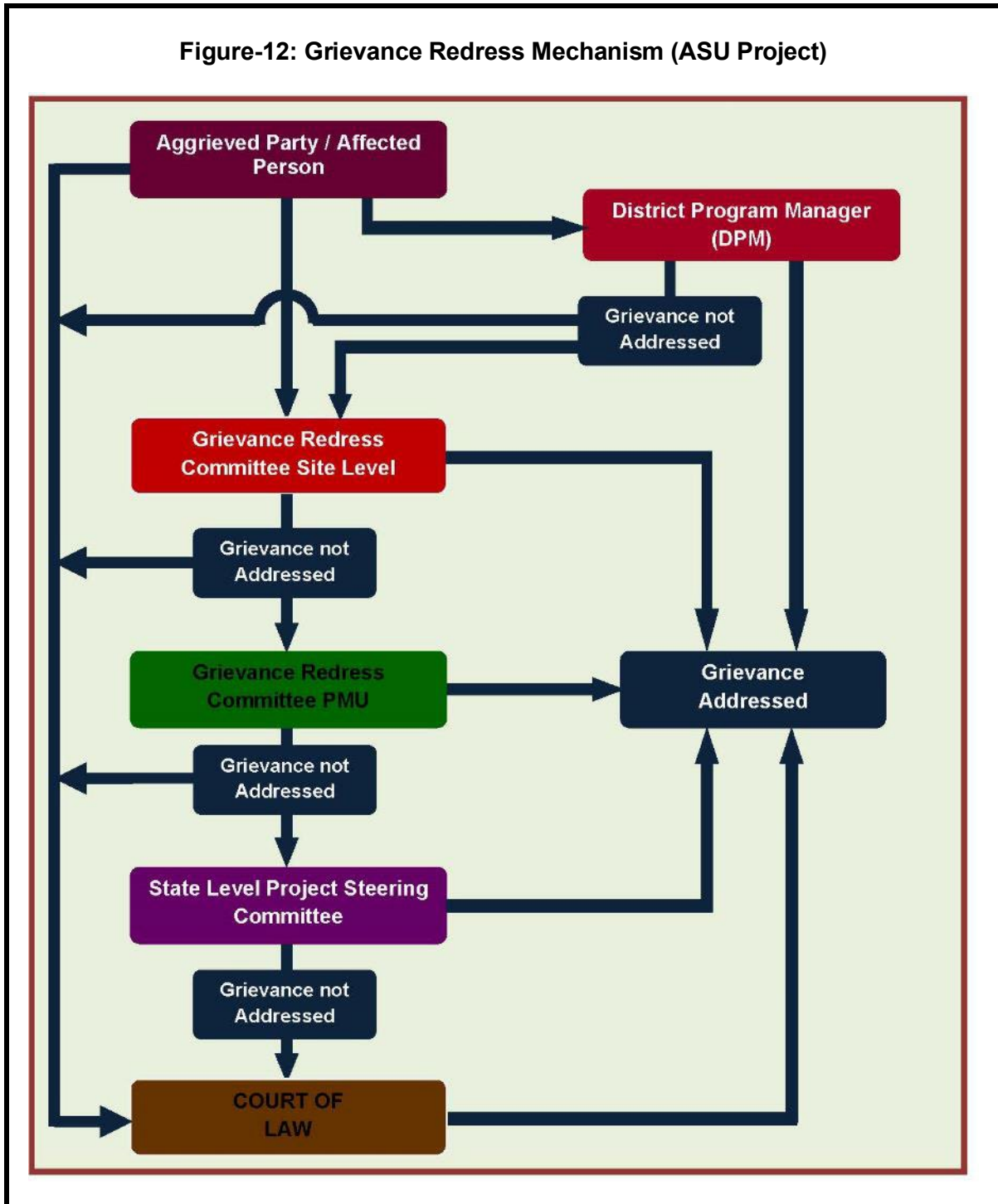
122. **Site Level Grievance Redress Committee (GRC-Site).** This committee will comprise of PMU civil engineer, PMU environment specialist, PMU gender and indigenous peoples specialist, and one local elected representative from Panchayat. The GRC-Site will be headed by District Program Manager of ASDM. It will meet at least once a month. The agenda of the meeting will be circulated to all the members and the affected persons/aggrieved party along with venue, date and time at least a week prior to the meeting. The matters shall remain with GRC at site level for one month.

123. **GRC at PMU.** There shall be one GRC in PMU. GRC at PMU will include the Director ASDM, safeguard specialists (Environmental and Social) of the PMU and Finance Officer/Manager of PMU/ASDM. The Committee shall be headed by the Mission Director, ASDM. This committee shall look into the matters, which are referred to and not resolved by GRC at site level. If the matter is not resolved by the GRC at PMU level within one month, then the aggrieved person or party can bring the matter to the state level project steering committee (PSC) which is in-charge of the project. The GRC mechanism at PMU will also refer the compliant to the PSC. However, the aggrieved person/party can bring the matter to the Court of Law any time during the process or even without approaching the GRC. The PMU and site office shall keep records of all grievances received including contact details of complainant, date of receiving the complaint, nature of grievance, agreed corrective actions and the date these were affected and final outcome. For this a complaint register will be maintained at Boundary wall construction site. The grievance redress process is shown below. The cost for functioning of GRM will be accounted for in project cost as part of PMU functioning.

124. **Approach to GRC.** Affected person or aggrieved party can approach the GRC for redress of his/their grievances through any of the following modes:

- Web based: A separate corner will be developed at the ASDM/ASU website (s) so that public and affected person can register their complaints in the online column.
- ASU project information board will be installed at site and on this board, contact details (name, phone number and email) of complaint receiving officer will be available.
- Telephone based: A telephone number will be available on the website of ASDM/ASU and at the construction site so that general public can register their complaint through telephone and mobile phone to the ASU site office and PMU office. One complaint register will also be maintained at the construction site.
- The EA (SEED) has issued an order for the establishment of GRM.
- Construction site. The grievance redress mechanism for the project for safeguards related issues is shown below in **Figure-12**:

Figure-12: Grievance Redress Mechanism (ASU Project)



## **VIII. FINDINGS AND RECOMMENDATIONS**

125. The construction and development of ASU campus on 250 Bigha plot (inclusive of recently added 40 Bigha land) does not involve any interventions in and around the natural and cultural heritage destinations and have no significant (direct and indirect) environmental impacts. It is expected that the ASU will offer industry-aligned and flexible skills education and training programs for youths and adults. This will help them in getting gainful employment locally and internationally.

126. This revised IEE has identified minor likely impacts on water, air and noise during construction and has defined mitigation measures. Minor impacts have also been identified during operation phase and mitigation measures have also been given in the revised IEE. Those mitigation measures will be implemented and monitored during project implementation. The overall environmental quality of ASU project site and surroundings will not be affected as a result of construction and operation of ASU campus.

127. The specific management measures laid down in the revised IEE will effectively address any adverse environmental impacts due to the ASU project. The effective implementation of the measures proposed will be ensured through the building of capacity towards environmental management within the PMU supplemented by the technical expertise of safeguards specialists of the PMU and PMC. Further, the environmental monitoring plan provides adequate opportunities towards course correction to address any residual impacts during boundary wall construction.



## **IX. CONCLUSIONS**

128. On the basis of the IEE, it is expected that the subproject has only minor, localized, temporary and reversible environmental impacts. The inclusion of additional 40 Bigha area does not result into any specific and /or irreversible impacts. The identified impacts can be easily mitigated through adequate mitigation measures and regular monitoring during the design, construction and post construction phases of the project. Negative impacts on water, air quality and noise levels during civil works will be appropriately monitored and adequately mitigated. This report has not identified any comprehensive, broad, diverse or irreversible adverse impacts caused by the ASU project. Based on the findings of the revised IEE, the classification of the project as Category "B" is confirmed. No further special study or detailed EIA needs to be undertaken to comply with ADB SPS (2009).

## ANNEXURE-1: MOEFCC NOTIFICATION ON EXEMPTION OF ENVIRONMENTAL CLEARANCE FOR EDUCATIONAL INSTITUTIONS

[भाग II-खण्ड 3(ii)]	भारत का राजपत्र : असाधारण	3		
<b>MINISTRY OF ENVIRONMENT, FORESTS AND CLIMATE CHANGE</b>				
<b>NOTIFICATION</b>				
New Delhi, the 22nd December, 2014				
<p>S.O. 3252(E).—Whereas, a draft notification further to amend the notification number S.O 1555(E), dated the 14th September, 2006 (hereinafter referred to as the principal notification), was published, as required under sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 in the Gazette of India ,Extraordinary, Part II, Section 3, Sub-section (ii) vide number S.O. 2319, (E) dated the 11th September, 2014 (hereinafter referred to as the said notification), inviting objections and suggestions from all persons likely to be affected thereby within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;</p> <p>And whereas, copies of the said notification were made available to the public on 11th September, 2014;</p> <p>And whereas, no objections or suggestions have been received in response to the said notification within the specified period of sixty days;</p> <p>Now, therefore, in exercise of the powers conferred by Sub-section (1) and clause (v) of Sub-section (2) of Section 3 of the said Environment (Protection) Act, 1986 (29 of 1986) read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:—</p> <p>In the principal notification, in the Schedule, under Column (1), for item 8 relating to Building/Construction Projects/Area Development Projects and Townships and sub-items 8 (a) and 8 (b) and the entries relating thereto, specified there under, the following item, sub-items and entries shall be substituted, namely:—</p>				
(1)	(2)	(3)	(4)	(5)
“8	<b>Building or Construction projects or Area Development projects and Townships</b>			
8 (a)	Building and Construction projects	>20000 sq.mtrs and < 1,50,000 sq. mtrs. of built up area	The term “built up area” for the purpose of this notification the built up or covered area on all floors put together, including its basement and other service areas, which are proposed in the building or construction projects.	<p><b>Note 1.-</b> The projects or activities shall not include industrial shed, school, college, hostel for educational institution, but such buildings shall ensure sustainable environmental management, solid and liquid waste management, rain water harvesting and may use recycled materials such as fly ash bricks.</p> <p><b>Note 2.-</b> “General Conditions” shall not apply.</p>
8	Townships and Area Development Projects	Covering an area of > 50 ha and or built up area > 1,50,000 sq. mtrs	A project of Township and Area Development Projects covered under this item shall require an Environment Assessment report and be appraised as Category ‘B1’ Project.	<p><b>Note.-</b> “General Conditions” shall not apply.</p>
[F. No. 19-2/2013-IA-III]				
MANOJ KUMAR SINGH, Jt. Secy.				

Note: The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) *vide* Notification Number S.O. 1533(E), dated the 14th September, 2006 and was subsequently amended as follows:—

1. S.O. 1737 (E), dated the 11th October, 2007;
2. S.O. 3067 (E), dated the 1st December, 2009;
3. S.O. 695 (E), dated the 4th April, 2011;
4. S.O. 2896 (E), dated the 13th December, 2012;
5. S.O.674(E), dated the 13th March, 2013;
6. S.O. 2559 (E), dated the 22nd August, 2013 ;
7. S. O. 2731 (E), dated the 9th September, 2013;
8. S. O. 562(E), dated the 26th February 2014; and
9. S. O. 1599(E), dated the 25th June, 2014.

F. No. 19-2/2013-IA-III  
Government of India  
Ministry of Environment, Forest and Climate Change  
(Impact Assessment Division)  
\*\*\*\*

Indira Paryavaran Bhawan  
Aliganj, Jor Bagh Raod  
New Delhi-110 003

Dated: 09<sup>th</sup> June, 2015

**OFFICE MEMORANDUM**

**Sub: Clarification regarding Gazette Notification No. S.O. 3252 (E) dated 22.12.2014 on applicability of Environment Clearance-reg.**

Vide Gazette Notification No. S.O. 3252 (E) dated 22.12.2014, the Ministry of Environment, Forest and Climate Change has exempted the School, College and Hostel for educational institution from obtaining prior Environment Clearance under the provisions of the EIA Notification, 2006 subject to Sustainable Environmental Management.

The Ministry is in receipt of representation from various educational institutions regarding issuing clarification on status of universities, and other educational institutions. The matter has been further examined in the Ministry and it is clarified that the Notification No. S.O. 3252 (E) dated 22.12.2014 provides exemption to buildings of educational institutions including universities form obtaining prior Environment Clearance under the provisions of the EIA Notification, 2006 subject to sustainable environmental Management. In case of medical universities/institutes the component of Hospitals will continue to require prior Environment Clearance.

The Guidelines to be followed for building projects to ensure sustainable environmental management in pursuance of Notification No. S.O.3252 (E) of 22<sup>nd</sup> December 2014 under EIA Notification 2006 are at Annexure-I.

This issues with the approval of the Competent Authority.

*Manoj*  
9.6.15  
(Manoj Kumar Singh)  
Joint Secretary

**Copy to:-**

1. All the officers of IA Division
2. The Chairperson/Member Secretaries of all the SEIAAs/SEACs.
3. The Chairman of all the Expert Appraisal Committees
4. The Chairman, CPCB
5. The Chairpersons/Member Secretaries of all SPCBs/UTPCCs.
6. IT Consultant, MoEFCC for uploading into the website.

**Copy for information:**

1. PS to MOS (Independent Charge).
2. PPS to Secretary (EF&CC).
3. All Divisional Head.
4. Website, MoEF&CC
5. Guard File.

ANNEXURE-I

**GUIDELINES TO BE FOLLOWED FOR BUILDING AND CONSTRUCTION PROJECTS  
TO ENSURE SUSTAINABLE ENVIRONMENTAL MANAGEMENT  
IN PURSUANCE OF NOTIFICATION No. S.O. 3252 (E) OF 22nd DECEMBER, 2014  
UNDER ENVIRONMENT IMPACT ASSESSMENT NOTIFICATION, 2006  
[INDUSTRIAL SHED AND EDUCATIONAL INSTITUTIONS]**

The Notification dated 22nd December, 2014 has taken out the industrial shed\*, school, college, hostel for educational institution from the requirement of prior Environment Clearance (EC) under EIA Notification, 2006 and stipulated that such buildings shall ensure sustainable environmental management, solid and liquid waste management, rain water harvesting and may use recycled materials such as fly ash bricks. These Guidelines will be applicable to all buildings and constructions which come under the ambit of Notification No S.O (E ) 3252 of 22nd December 2014. To ensure sustainable environment management these guidelines as suited will be applicable on the projects under Item 8 (a) of EIA Notification in addition to the conditions stipulated in the EC.

Land, Air, Noise, Water, Energy, Biological, Socio-economic, and Solid & other Waste Management are the main environment facets to be considered in relation to pre, during & post building construction, therefore, it is necessary to ascertain the baseline data of these environmental facets.

The project proponent should file the information about description of project as per points described below prior to start of the project. Information pertaining to compliance on other points be filed at six monthly interval to the respective State Pollution Control Board and the Regional Office of the Ministry of Environment, Forests and Climate Change.

The compliance of the following will be ensured by the respective State Pollution Control Board before giving 'Consent-to-Operate' to industries and by the Local Urban Bodies and the Development Authorities while giving the 'Occupancy Certificate' to the buildings and constructions. These Certificates should be submitted by the above authorities to the Regional Office of MoEFCC. Ministry of Environment, Forest and Climate Change can assess/evaluate/monitor the compliance of conditions enumerated in the Guidelines through verification by Regional Offices or deputed organisations / person.

S. No.	Environmental Parameters	Implementation and monitoring parameters to be included in local by-laws.
a.	Pre-requisites	<p><b>Brief description of the project</b></p> <p>01. Name of the Project, Survey number, Village, Taluka, District, State to be mentioned with Google Earth Image and GPS Co-ordinates of the plot to be submitted.</p> <p>02. Location &amp; distance from nearby landmark places / services to be mentioned.</p> <p>03. Total Built-up area (FSI and Non- FSI) should be mentioned with detailed calculations certified by local planning and sanctioning authority.</p> <p>04. Form 1, Form 1A and Consolidated statement as per Environment Notification dated September 14, 2006 to be submitted to local planning and sanctioning authority, Regional Office, MoEFCC and SPCB</p>
b.	Environment Impacts on Project Land	<p>05. The building layout, set-back/side margin, podium, basement ventilation etc. is prepared based on local building bye-laws and is approved by local competent authorities. The Project Proponent shall obtain all necessary clearance/ permission from all relevant agencies including Town Planning Authority before commencing the work.</p> <p>06. Provisional fire NOC to be obtained from local CFO ( Chief Fire Officer)</p> <p>07. "Consent-to-Establish and Consent-to-Operate" shall be obtained as required from State Pollution Control Board as provided in the Air (Prevention and Control of Pollution) Act, 1981 and Water (Prevention and Control of Pollution) Act, 1974</p> <p>08. The project proponent shall put in place a credible enforcement mechanism for compliance of energy conservation measures with its allottees, as projected, in perpetuity. This would be monitored by the designated Energy Conservation/ efficiency Authority in the State.</p> <p>09. Soil and ground water samples will be tested to ascertain that there is no</p>

		<p>threat to ground water quality by leaching of heavy metals and other toxic contaminants.</p> <p>10. Top fertile soil to be preserved and to be later used in landscape.</p> <p>11. The excavation/demolition debris must be disposed off in designated landfill areas or to be used within site for levelling purpose. Under no circumstance, the debris will be disposed in river bed/lakes etc.</p> <p>12. Undertaking to be given by project proponent that occupancy will be given only after drainage and water connections are in place.</p> <p>13. Dust/smoke prevention measures such as wheel washing, water sprinkler, screening, barricading and debris chute must be installed.</p> <p>14. This should comply with the provisions of eco-sensitive zone regulations, coastal zone regulations, heritage areas (identified in the master plan or issued separately as specific guidelines), water body zones (in such zones, no construction is permitted in the water-spread and buffer belt of 30 m minimum around the FTL [full tank level]), various hazard prone area regulations, and others if the site falls under any such area.</p> <p>15. The site planning should take into account heat island effect, size and density of the built-up areas cause heat island effect, wherein higher air temperatures are created in the dense urban areas as against the low-rise surrounding built-up areas. The solar access in the morphology of clusters can be understood in terms of utilization of direct (and not reflected or diffused) solar radiation, mainly for day lighting and heat gain. This defines the minimal distances between the buildings and the relations between built-up volume and open spaces.</p> <p>16. The proportion of open spaces and built-up edges should be designed such that it ensures winter solar access and summer ventilation.</p>
c.	Water	<p>17. Proponent shall obtain permission for ground water withdrawal from State Ground Water Authority.</p> <p>18. Storm water control and its re-use as per CGWB and BIS standards for various applications.</p> <p>19. The natural flow of existing storm water channel should not be altered or diverted.</p> <p>20. Keeping in view the use of large quantities of water in curing, measures for reducing water demand during construction should be followed. Curing water should be sprayed on concrete structures; free flow of water should not be allowed for curing. After liberal curing on the first day, all concrete structures should be painted with curing chemical to save water. Concrete structures should be covered with thick cloth/gunny bags and then water should be sprayed on them. This would avoid water rebound and will ensure sustained and complete curing. Ponds should be made using cement and sand mortar to avoid water flowing away from the flat surface while curing.</p> <p>21. The developer should ensure groundwater and municipal water meet the water quality norms as prescribed in the Indian Standards for various applications (Indian Standards for drinking [IS 10500-1991], irrigation applications [IS 11624-1986]).</p> <p>22. The use of potable water during construction should be minimized.</p> <p>23. Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.</p> <p>24. Source of water to be identified.</p> <p>25. Water treatment measures such as filtration, softeners, RO etc should be implemented.</p> <p>26. Low flow fixtures and sensors to be used to promote water conservation.</p> <p>27. Water meters to be installed to monitor consumption of water.</p> <p>28. Water balance table/chart should be prepared.</p>
d.	Waste Water Treatment	<p>29. Sewage treatment plant of capacity capable of treating 100% waste water to be installed on site.</p> <p>30. Tertiary treatment such as dual media filter, activated carbon filter and ozonation/ chlorination to be provided so that the treated water</p>

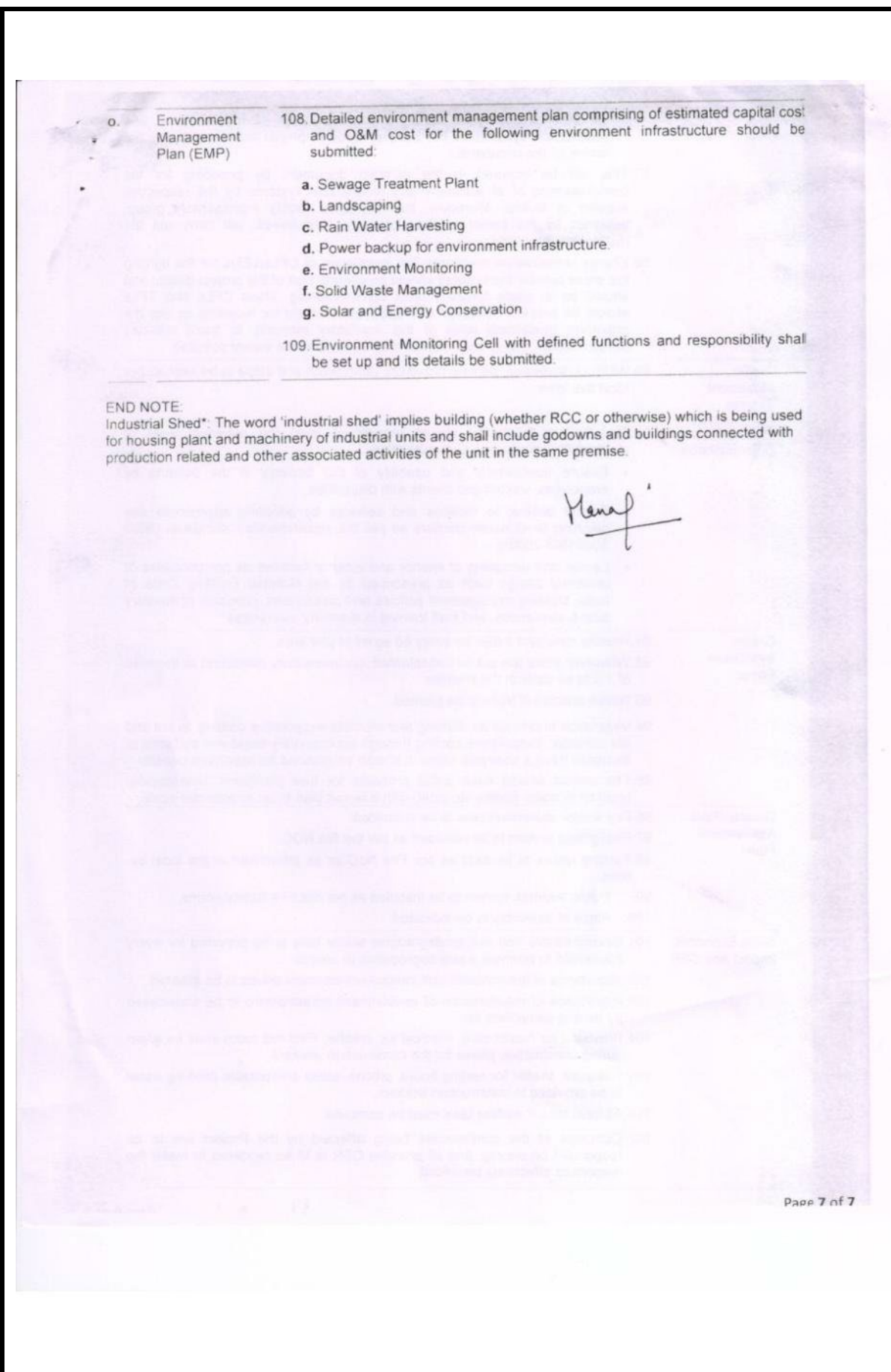
		characteristics are as per Central Pollution Control Board (CPCB) norms.
		31. If STP and pump room are installed in basement, adequate ventilation as per NBC air changes norms should be provided.
		32. Treated waste water to be recycled for flushing and gardening.
e.	Drainage Pattern	33. Excess treated water disposal plan to be submitted. 34. Total paved area of the site under parking, roads, paths or any other use should not exceed 25% of the site area or net imperviousness of the site not to exceed the imperviousness factor as prescribed by the NBC 2005 (BIS 2005b), whichever is more stringent. 35. The final disposal point for excess treated water discharge will be municipal sewer for areas where sewerage network is present. 36. In areas where sewerage network is absent, the excess treated water can be used for agriculture or can be disposed off as per CPCB rules. 37. Storm water disposal plan to be submitted. 38. The final disposal point for storm water will be municipal storm drain for areas where storm water network is present. 39. In areas where storm water network is absent, the storm water surface runoff can be disposed off in nearby natural water streams/ nallas.
f.	Ground Water	40. Hydro-geological survey for ground water analysis shall be submitted. 41. Aquifer capacity and Ground water yield shall be determined. 42. Rain water harvesting plan shall be submitted indicating the number of recharge pits and bores and total rain water to be harvested. 43. Rain water to be harvested and as a safety precaution, rainwater on-line filters be provided as per NBC norms.
g.	Solid Waste Management	<b>A) During construction phase:</b> 44. Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority. The Rules on the Solid Waste Management including Construction Waste issued by the MoEFCC as amended will be applicable. 45. Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water. 46. Any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approvals of the State Pollution Control Board. 47. Miscellaneous site debris such as broken tiles etc shall be used on site for leveling /backfilling purpose. 48. Packaged STP /mobile toilets shall be provided for labour camp. 49. Polymer bags used for cement and gypsum shall be handed over to authorized recyclers. 50. Cardboard boxes and other packaging material will be handed over to authorized recyclers.  <b>B) Post construction phase:</b> 51. Organic waste composter (OWC) or Vermiculture pits shall be installed on site for biodegradable waste treatment (capacity calculated at 0.3kg/tenement/day) The manure generated shall be used for landscaping. 52. The non-biodegradable waste or e-waste shall be handed over to authorized recyclers. 53. STP sludge shall be removed using filter press or centrifuge mechanism. The dried sludge cakes shall be used as manure in landscaping. 54. Minimize waste generation, streamline waste segregation, storage, and

h.	Air Quality and Noise Levels.	<p>disposal; and promote resource recovery from waste.</p> <p>55.Resource recovery from waste: Employ resource recovery systems for biodegradable waste as per the Solid Waste Management and Handling Rules, 2000 of the MoEFCC. Make arrangements for recycling of waste through local dealers.</p> <p>56.Use of covering sheets should be done for trucks to prevent dust dispersion from the trucks and washing of tyres when trucks with soil / debris coming on road.</p> <p>57.Hazardous Waste Management: Products, such as paints, cleaners, oils, batteries, and pesticides that contain potentially hazardous ingredients require special care when being disposed. Improper disposal of household hazardous wastes can include pouring them down the drain, on the ground, into storm sewers, or in some cases putting them out with the trash.</p> <p>The hazardous wastes from construction and demolition activities are centering oil, formwork oil, tar and tar products (bitumen, felt, waterproofing compounds, etc.), wood dust from treated wood, lead containing products, chemical admixtures, sealants, adhesive solvents, Explosives and related products and equipment used in excavation, acrylics, and silica, etc.</p> <p><b>A) During construction phase:</b></p> <p>58.The diesel required for operating DG sets shall be stored in underground tanks and clearance from Chief Controller of Explosives shall be taken, as applicable.</p> <p>59.Ambient noise levels should conform to residential standards both during day and night as per Noise Pollution (Control and Regulation) Rules, 2000. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/ SPCB.</p> <p>60.Burning of waste to be banned.</p> <p>61.The construction site DG to be maintained regularly so that the smoke emission and noise levels are as per permissible norms.</p> <p>62.Regular P.U.C check for all construction machinery coming on site be done.</p> <p>63.Noise cancellation and insulation devices such as mufflers, barricades etc to be used to avoid noise propagation to adjoining areas.</p> <p><b>B) Post construction phase:</b></p> <p>64.DG to be regularly maintained so that the smoke emission and noise levels are as per permissible norms. It shall be at least 6 meters away from the boundary.</p> <p>65.Air quality monitoring to be done quarterly.</p> <p>66.STP and water pumps, air blowers etc should be installed with noise cancellation devices or suitable acoustical enclosures to be given so that the noise levels as per NBC norms are maintained.</p> <p><b>C) During Construction &amp; Operation</b></p> <p>67.The provisions of the Air (Prevention and Control of Pollution) Act, 1981 (14 of 1981) and the rules made thereunder be complied for control of noise pollution during construction and operation.</p> <p>68.Setting up the barriers: National Building Code 2005 suggests that design solutions such as barrier blocks should be used to reduce external LA10 noise levels to at least 60-70 dB (A) at any point 1.0 m from any inward looking façade. Green belts and landscaping could act as an effective means to control noise pollution. In case of railway tracks, a minimum distance of 50m to 70m may be provided between the buildings and the tracks.</p>
i.	Energy	<p>69. Appropriate processes and material be used to encourage reduction in carbon foot print.</p> <p>70. Use of glass be reduced by up-to 40% to reduce the electricity consumption and load on air-conditioning. If necessary, use high quality double glass with special reflective coating in windows.</p> <p>71.Solar water heater to be provided adequately.</p>



72. Common area lighting should be Solar / LED.
73. Install energy meters to monitor overall consumption, and timer-switch for all common area lighting, and other consumption of measurable energy.
74. Fly ash should be used as building material in the construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on 27th August, 2003 and 3rd November, 2009.
75. Wherever possible recycled materials having low embodied energy be used.
76. Use of light coloured, reflective roofs having an SRI (solar reflectance index) of 50% or more should be promoted. The dark coloured, traditional roofing finishes have SRI varying from 5% to 20%.
77. Optimize use of energy systems in buildings that should maintain a specified indoor environment conducive to the functional requirements of the building by following mandatory compliance measures (for all applicable buildings) as recommended in the Energy Conservation Building Code (ECBC) 2007 of the Bureau of Energy Efficiency, Government of India. The energy systems include air conditioning systems, indoor lighting systems, water heaters, air heaters, and air circulation devices.
78. Use the concept of passive solar design of buildings using architectural design approaches that minimize energy consumption in buildings by integrating conventional energy-efficient devices, such as mechanical and electrical pumps, fans, lighting fixtures, and other equipment, with the passive design elements, such as building orientation, landscaping, efficient building envelope, appropriate fenestration, increased day lighting design, and thermal mass.
79. The building should be oriented optimally based on Sun-path and engineering analysis to curtail excessive solar radiations.
80. Lighting systems should comply with the ECBC 2007 and applicable to interior spaces of buildings, exterior building features, including facades, illuminated roofs, architectural features, entrances, exits, loading docks, and illuminated canopies, exterior building grounds etc. except emergency lighting and lighting in dwelling units.
81. All the point light sources installed in the building for general lighting shall be LEDs or LEDs or equivalent. All the linear light sources installed in the building for general lighting shall be T-5 or at least 4 Star BEE rated TFLs or equivalent. The installed interior lighting power shall not exceed the LPD (Lighting Power Density) value as recommended by ECBC 2007.
82. Automatic Lighting shutoff control be installed: Interior lighting/Exterior Lighting systems shall be equipped with an automatic control device in accordance with ECBC 2007. Occupancy sensors that shall turn the lighting off within 30 minutes of occupant leaving the space. It should also have option for manual turning on lights when the space is occupied. ECBC requires controls in day lit areas that are capable of reducing the light output from luminaries by at least half and Controlling of exterior lighting with photo-controls where lighting can be turned off after a fixed interval.
83. The tapping of renewable sources of energy for lighting, heating, cooling and ventilation needs, deserve special attention. For captive solar power generation, a minimum of 15 percent of sanctioned load is the requirement.
84. Solar photovoltaic (SPV) systems are direct energy conversion systems that convert solar radiation into electric energy. SPV systems should be installed to reduced use of conventional sources of energy. Roof tops of buildings as well as other exposed areas such as of parking shades should be utilized for installation of SPV systems.
85. Hot water requirement in buildings should be met through use of various types of solar water heating systems, viz. flat plate collector; single glazed double glazed; evacuated tube collectors; and Water heating with solar concentrators.
86. The Project Proponent should ensure regular energy audit.
  - i. To validate the predicted energy consumption, thermal comfort, and visual comfort criteria by an energy auditor approved by the BEE, Government of India.

		<p>ii. To ascertain continued safety in the operation of the electrical and mechanical systems of the building through proper maintenance by the owner or the occupants.</p> <p>87. This will be ensured in the contract document by providing for the commissioning of all electrical and mechanical systems by the respective supplier or builder. Moreover, the respective facility management group, assigned by the owner or the occupants themselves, will carry out the maintenance facilities.</p> <p>88. Energy conservation measures like installation of CFLs/LEDs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Used CFLs and TFLs should be properly collected and disposed off /sent for recycling as per the prevailing guidelines/ rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible.</p>
j.	Traffic Movement System	89. Width of driveways, parking provision, ramp width and slope to be kept as per local bye laws.
k.	Provisions for Differently able	<p>90. The Project Proponent should provide at least the minimum level of accessibility for persons with disabilities.</p> <ul style="list-style-type: none"> <li>• Ensure accessibility and usability of the facilities in the building by employees, visitors and clients with disabilities.</li> <li>• Ensure access to facilities and services by adopting appropriate site planning to eliminate barriers as per the recommended standards (NBC 2005 [BIS 2005]).</li> <li>• Layout and designing of interior and exterior facilities as per principles of universal design such as prescribed by the National Building Code of India, building management policies and procedures, provision of auxiliary aids &amp; appliances, and staff training in disability awareness.</li> </ul>
l.	Green Belt/Green Cover	<p>91. Provide minimum 1 tree for every 80 sq.mt of plot area.</p> <p>92. Wherever trees are cut or transplanted, compensatory plantation in the ratio of 1:3 to be done in the premise.</p> <p>93. Native species of trees to be planted.</p> <p>94. Vegetation to provide as shading and promote evaporative cooling. In hot and dry climates, evaporative cooling through appropriately sized wet surfaces or fountains have a desirable effect. It should be planned for maximum benefit.</p> <p>95. The project should have detail proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale.</p>
m.	Disaster/Risk Assessment Plan	<p>96. Fire tender movement plan to be submitted.</p> <p>97. Firefighting system to be provided as per the fire NOC.</p> <p>98. Turning radius to be kept as per Fire NoC or as prescribed in the local by-laws.</p> <p>99. Public address system to be installed as per the Fire Safety norms.</p> <p>100. Place of assembly to be indicated.</p>
n.	Socio Economic Impact and CSR	<p>101. Biodegradable and non-biodegradable waste bins to be provided for every household to promote waste segregation at source.</p> <p>102. Importance of environment and various environment drives to be initiated.</p> <p>103. Importance of maintenance of environment infrastructure to be showcased by issuing pamphlets etc.</p> <p>104. Provision for health care, medical kit, crèche, First-Aid room shall be given during construction phase for the construction workers.</p> <p>105. Adequate shelter for resting hours, crèche, clean and potable drinking water to be provided to construction workers.</p> <p>106. All local labour welfare laws must be complied.</p> <p>107. Concerns of the communities being affected by the Project are to be responded on priority, and all possible CSR is to be rendered to make the responses effectively beneficial.</p>



## ANNEXURE-2: RAPID ENVIRONMENTAL ASSESSMENT (REA) CHECKLIST

**Instructions:**

- (i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES) for endorsement by Director, RSES and for approval by the Chief Compliance Officer.
- (ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.
- (iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

**Country/Project Title** India (53277): Assam Skill University Project (ASU: Construction and development of ASU campus)

**Sector Division:** SAHS

Screening Questions	Yes	No	Remarks
<b>A. Project Sitting</b> Is the project area adjacent to or within any of the following areas:			The project (output 1) involves construction of the campus and facilities of the Assam Skill University (ASU) on a green field site under the ownership and possession of Assam Skill Development Mission (the implementing agency). The total built up area is around 76,131m <sup>2</sup> . The ASU site is not located within core or buffer zones of national parks, sanctuaries, tiger reserves, or biosphere reserves; nor within 100m from the boundary of protected monuments of archaeological importance.
▪ Underground utilities		√	There are no underground utilities at the proposed site of ASU.
▪ Cultural heritage site		√	There are no buildings of archaeological and cultural heritage importance close to the ASU site. (Within 300m distance and beyond also in Mangaldoi town). The nearest archaeologically protected structure is about 35 km from site.
▪ Protected Area		√	There are no protected areas (wildlife park or bird sanctuary) within 15km aerial distance around the proposed site of ASU. The nearest wildlife sanctuary is about 35 km aerial distance from ASU site.
▪ Wetland		√	There is no wetland within 50km aerial distance around the proposed site of ASU.
▪ Mangrove		√	The proposed site of ASU is away from coastal areas. Hence this is not applicable.
▪ Estuarine		√	The proposed site of ASU is away from coastal areas. Hence this is not applicable.
▪ Buffer zone of protected area		√	The proposed site of ASU is not in the buffer zone of any protected area.

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>▪ Special area for protecting biodiversity</li> </ul>		√	There is no special protected area for biodiversity within 15km aerial distance from the proposed site of ASU. The nearest protected area to the site is at about 35 km from ASU site.
<ul style="list-style-type: none"> <li>▪ Bay</li> </ul>		√	The proposed site of ASU is away from the coast. Hence this is not applicable.
<b>B. Potential Environmental Impacts</b>			
Will the Project cause...			
<ul style="list-style-type: none"> <li>▪ Encroachment on historical/cultural areas?</li> </ul>		√	There are no historical or cultural areas within 300m from the proposed site of ASU.
<ul style="list-style-type: none"> <li>▪ Encroachment on precious ecology (e.g. sensitive or protected areas)?</li> </ul>		√	The proposed site is located in Mangaldoi, urban areas. Hence it is away from any sensitive or protected areas.
<ul style="list-style-type: none"> <li>▪ Impacts on the sustainability of associated sanitation and solid waste disposal systems?</li> </ul>	√		For wastewater, sewage network system for sewage transport and sewage treatment plant for waste water treatment plant. The sewage treatment plant and sewer network will be maintained. The proper operation and maintenance of sanitation facilities will be ensured through environmental management plan (EMP) implementation. The EMP will be part of contract for the contractor. During operation phase, solid waste will be disposed of as part of the disposal systems of the local civic body in Mangaldoi.
<ul style="list-style-type: none"> <li>▪ Dislocation or involuntary resettlement of people?</li> </ul>		√	All project related construction works are to be undertaken in the vacant and encumbrance-free land. There will be no involuntary resettlement or dislocation of people.
<ul style="list-style-type: none"> <li>▪ Disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?</li> </ul>		√	No negative impacts on the poor, women and children, indigenous peoples, or other vulnerable groups are foreseen. The project will enhance access to industry-aligned, multidisciplinary, and flexible skills education and training for graduates from higher secondary education, industrial training institutes, polytechnics, engineering colleges, academic colleges and universities, as well as professionals and other working age population, including the poor, women, and indigenous peoples.

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Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>▪ Accident risks associated with increased vehicular traffic, leading to loss of life?</li> </ul>	√		<p>The proposed site is not on the national highway or state highway. It will be connected to the national highway through the strengthening and repair of existing local road. At present, the local road is earthen road and ends at the site. Traffic near the site is insignificant. During construction, traffic is expected to increase (for material and site staff movement). To minimize any conflict with the local population, vehicles will be driven in a considerate manner. However, to rule out any accident due to the project related vehicular traffic, flagmen will be deployed near the construction site to regulate the traffic. Traffic management plan will be prepared for the construction phase. The traffic management plan has been elaborated in revised IEE and EMP. The IEE and EMP will be part of contract document for the contractor.</p> <p>Since ASU will have hostels and residential accommodations for faculty and staff, there will be traffic increase in the operation phase. The connecting road will be properly developed and will have road signages for precautions (such as speed, no use of horn, curves approaches, etc.) to be observed by the road users. These measures will avoid conflict with the local community and accident risks.</p>
<ul style="list-style-type: none"> <li>▪ Increased noise and air pollution resulting from increased traffic volume?</li> </ul>	√		<p>There will be increase in air and noise pollution due to movement of construction vehicles. The increase is expected to be marginal and intermittent in nature because of limited number of construction-related vehicles. To minimize impacts on the local community, mitigation measures (no movement of vehicles at night, mandatory pollution under control certificate, water sprinkling for dust suppression, and regular monitoring of ambient air quality and noise levels) have been elaborated in the EMP.</p> <p>Skills education and training activities at ASU are not envisaged to result in any air or noise pollution.</p> <p>There will be increase in traffic volume owing to this project so there is a likelihood of some increase in dust and noise levels and vehicular exhaust emissions. To minimize impacts, mitigation measures (plantation of shrubs, landscaping of open areas and trees on side slopes of access road, regular monitoring, etc.) have been included in the EMP. These measures will be implemented during construction and operation phases.</p>

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<ul style="list-style-type: none"> <li>▪ Occupational and community health and safety risks?</li> </ul>	√		<p>The environmental impacts related to the construction of new buildings under the project will be minor in nature and mostly limited to the duration of construction. The impacts will be confined mainly within the construction site. These minor impacts will be mitigated through the EMP. Potential occupational health and safety risks during construction will be addressed by including provisions in the contract documents and implementation of the EMP.</p> <p>In the operation phase, safety risks due to the usage of equipment, machinery, and instruments in the laboratories and workshops of ASU will be mitigated through the formulation of safe operating procedures (SOPs). These SOPs will be developed during installation of equipment and will be displayed at equipment, machinery instruments, practical training tables, platform of laboratories and workshops.</p> <p>For COVID-19 protection during construction and operation phases, COVID-19 health and safety plan will be prepared in accordance with the guidelines issued by the government agencies and in consultation with ADB. This will also be part of contract document to the contractor.</p>
<ul style="list-style-type: none"> <li>▪ Risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?</li> </ul>	√		<p>The environmental impact related to the construction of new buildings will be minor in nature and mostly limited to the duration of construction. There will be limited physical, chemical, and biological hazards during construction and operation of ASU. The usage of any radio-active material during construction and operation is not envisaged at present. Adequate provisions will be included in the relevant contract documents to address potential occupational health and safety hazards during the construction.</p> <p>For operation phase, SOPs will be followed to minimize risks and vulnerabilities due to the usage of machinery, equipment and instruments in the laboratories and workshops (including usage of any radio-active materials if unavoidable). These SOPs will be displayed at suitable locations. To minimize COVID-19 related health hazards, COVID-19 health and safety plan will be implemented.</p>
<ul style="list-style-type: none"> <li>▪ Generation of dust in sensitive areas during construction?</li> </ul>	√		<p>During construction, there will be minor dust generation due to material handling and operation of construction machinery and equipment. This will be controlled through dust suppression measures (e.g., water spray) and proper maintenance of construction equipment and machinery. It will also be ensured that construction equipment and machinery conform to the emission norms laid down by the Central Pollution Control Board. The necessary provisions will be included in the contract document of the contractor.</p>

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Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>▪ Requirements for disposal of fill, excavation, and/or spoil materials?</li> </ul>		√	Since new buildings will be constructed on a green field site, spoil materials will be generated. There will be excavations for construction works. The excess earth generated due to these excavations will be utilized in fill works in low-lying areas of the site or any other disposal site as directed by the relevant government agencies. Given that the site is plain land, significant generation of excess excavated earth is not expected. The utilization of excess earth will be suitably included in the contract document.
<ul style="list-style-type: none"> <li>▪ Noise and vibration due to blasting and other civil works?</li> </ul>		√	During construction, some noise will be generated due to the operation of construction equipment and machinery. Adequate mitigation measures have been stipulated in the EMP. No blasting activity is envisaged during construction. Hence, there will not be any significant shaking or vibrations. Further, no construction works will be carried out during nighttime. There will be periodic ambient noise level monitoring at the construction site as per monitoring plan prepared as part of the EMP.
<ul style="list-style-type: none"> <li>▪ Long-term impacts on groundwater flows as result of needing to drain the project site prior to construction?</li> </ul>	√		The Assam State has an average annual rainfall of about 1500mm. This intense rainfall causes water logging in plain land. The long-term impact on ground flow is not expected because as part of construction works, an efficient drainage system will be developed. The ground water recharging systems such as rainwater harvesting structures are part of ASU design and will be implemented as part of the EMP. Due to construction of efficient and effective drainage system; water logging issues are not envisaged in the operation phase.
<ul style="list-style-type: none"> <li>▪ Long-term impacts on local hydrology as a result of building hard surfaces in or near the building?</li> </ul>		√	Since the site area is about 100 acres, the area to be occupied by buildings and other infrastructure will be around 20-25 acres only and the rest will remain open and green. Therefore, no long-term impacts on local hydrology are anticipated. Further, there is an average rainfall of around 1500 mm in Assam. This will help quick recharge to the aquifer.
<ul style="list-style-type: none"> <li>▪ Large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?</li> </ul>		√	ASU may have a maximum of 5,000 students, faculty and staff. Some may be accommodated at hostel facilities and residential accommodations. As most students will be from Assam, large population influx is not anticipated. As part of construction works, adequate water supply and sanitation systems (as per specified codes) will be developed. Therefore, no burden on social infrastructure and services is anticipated.  During construction, the workforce of around 100 is expected. A construction camp with adequate potable water supply and sanitation facilities will be established. Hence, there will not be any burden on social infrastructure and services. Necessary provisions for these requirements will be included in the EMP and contract documents of the contractor.



**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Screening Questions	Yes	No	Remarks
<ul style="list-style-type: none"> <li>▪ Social conflicts if workers from other regions or countries are hired?</li> </ul>		√	Preference will be given to locally available labor. The construction activities are relatively small in nature and will take place within the land owned by the Assam Skill Development Mission (the implementing agency) in Mangaldoi. At present, no need to hire workers from other regions or countries is envisaged.
<ul style="list-style-type: none"> <li>▪ Risks to community safety caused by fire, electric shock, or failure of the buildings safety features during operation?</li> </ul>		√	Since all the buildings of ASU will be new, the latest national building codes and safety measures will be adopted. The regulatory permissions for occupation of the buildings will be obtained from the local civic authorities, including fire department and other regulatory bodies after complying with the safety regulations for fire and electricity shocks.
<ul style="list-style-type: none"> <li>▪ Risks to community health and safety caused by management and disposal of waste?</li> </ul>	√		<p>During construction, waste collection and disposal system will be developed and operated by the contractor. The processes being followed will be reviewed and approved by the Assam Skill Development Mission or its appointed representative entity (construction supervision and quality assurance firm). Project management consulting firm will also help the Assam Skill Development Mission in ensuring that the required safety measures are adhered to while managing and disposing of waste.</p> <p>In the operation phase, adequate provisions will be made in the building designs for management and disposal of wastewater and other solid waste.</p>
<ul style="list-style-type: none"> <li>▪ Community safety risks due to both accidental and natural hazards, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?</li> </ul>	√		All the construction works will be limited within the fenced area of ASU in Mangaldoi and community safety risks are not foreseen in construction phase. Skills education and training activities of ASU during operation phase will not cause any hazards to the community as these will be limited to teaching and learning in classrooms and practical training classes in workshops and laboratories. The activities of ASU will not interfere with the activities of population living outside the campus. Further, the buildings will be maintained regularly in the operation phase to avoid any accident or hazard pertaining to building upkeep. Appropriate traffic safety measures would be deployed during construction and operation phases to minimize accidents with local communities.

### A Checklist for Preliminary Climate Risk Screening

**Country/Project Title: India (53277): Assam Skill University Project (ASU: Boundary Wall Construction)**

**Sector: Education**

**Subsector: Technical and Vocational Education and Training**

**Division/Department: SAHS**

Screening Questions	Score	Remarks <sup>5</sup>
<b>Location and Design of project</b>	0	The proposed ASU site is on plain land, away from river and streams, therefore, ASU campus is not likely to be affected by floods as site is above HFL. The site receives around 1500 mm rainfall so no question of drought. The site being in a plain and agrarian area with good plantation so not prone to storms and landslides.
	0	Not Applicable
<b>Materials and Maintenance</b>	0	Weather conditions at ASU site do not demand usage of any specific construction material to counteract weather phenomenon.
	0	No, weather conditions at ASU site do not require specific scheduling for maintenance.
<b>Performance of project outputs</b>	1	Yes, Extreme weather/climate conditions during construction may prolong construction period and in operation phase

<sup>5</sup> If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the sitting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

			training /teaching activities may get affected.
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Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response will be categorized as high-risk project.

**Result of Initial Screening (Low, Medium, High): Medium Risk**

**Other Comments:** None

**Prepared by:**

ANNEXURE-3: ARCHITECTURAL DRAWINGS OF ASU CAMPUS CONSTRUCTION AND DEVELOPMENT

### LAYOUT OF BLOCKS IN ACADEMIC AND ADMINISTRATION BUILDING

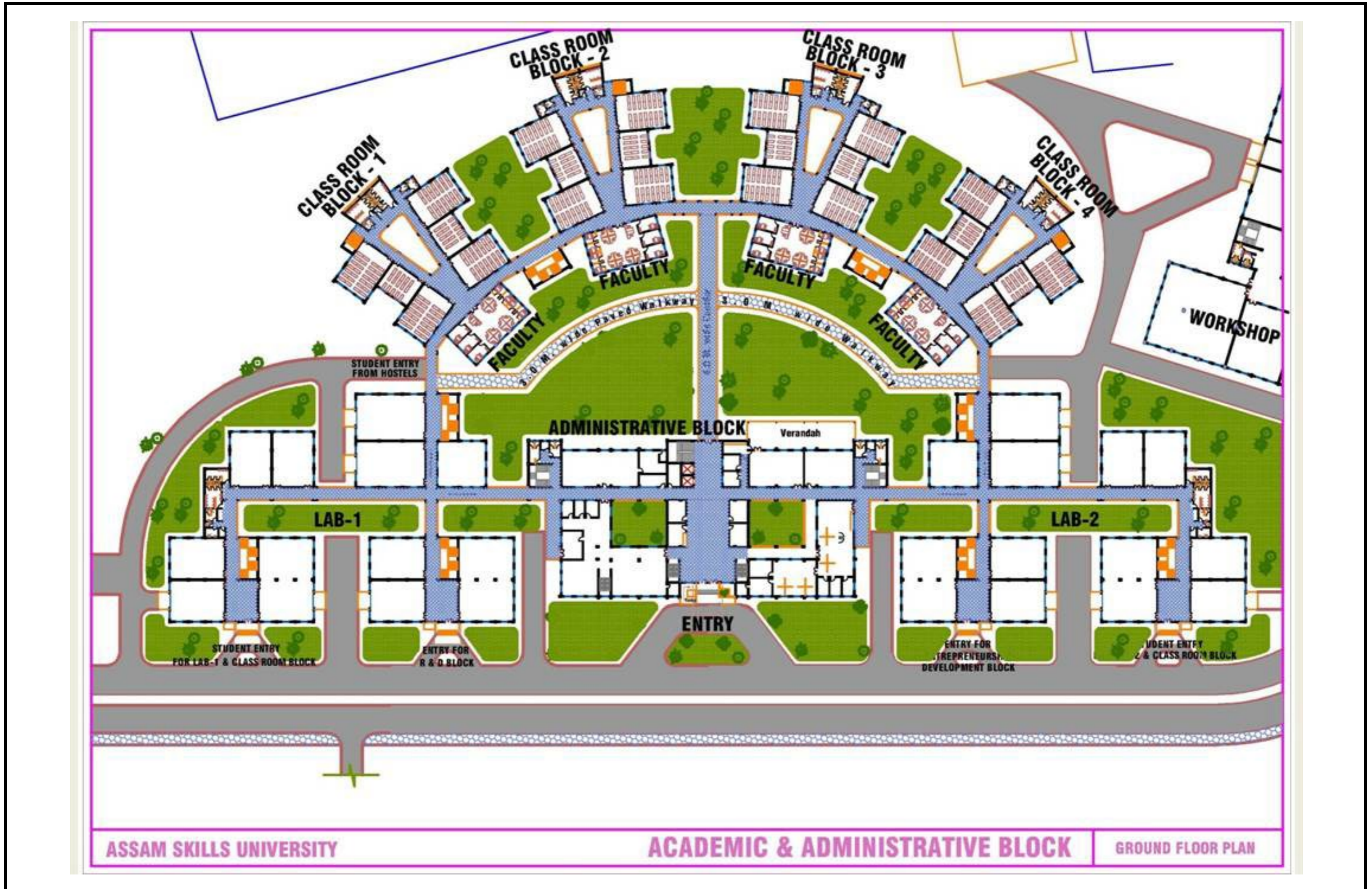
Lab-2 &  
Entrepreneurship  
Development  
Block

Academic Block

Class Room & Faculty

Lab-1  
R & D Block



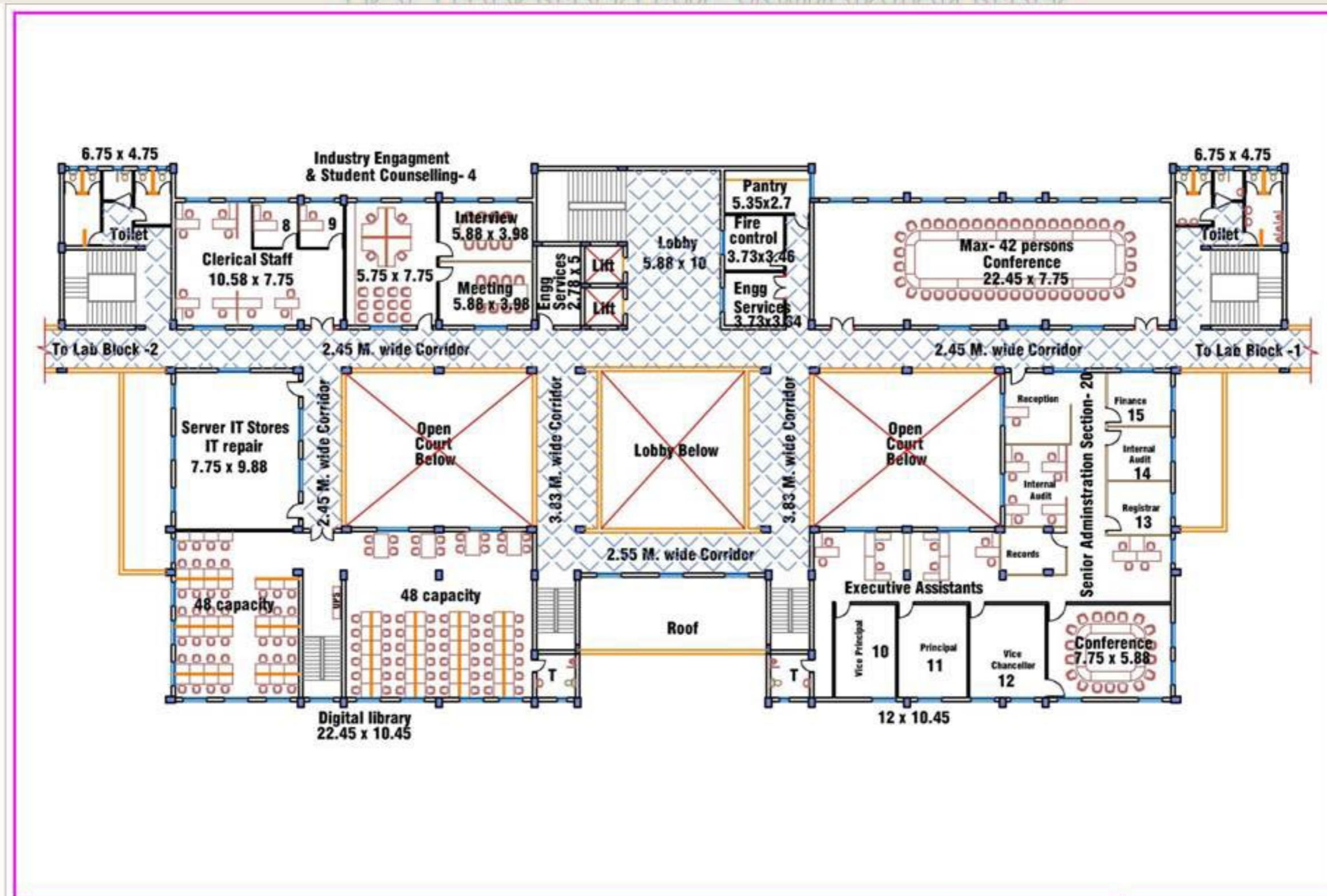


## GROUND FLOOR BLOCK PLAN - ADMINISTRATION BLOCK

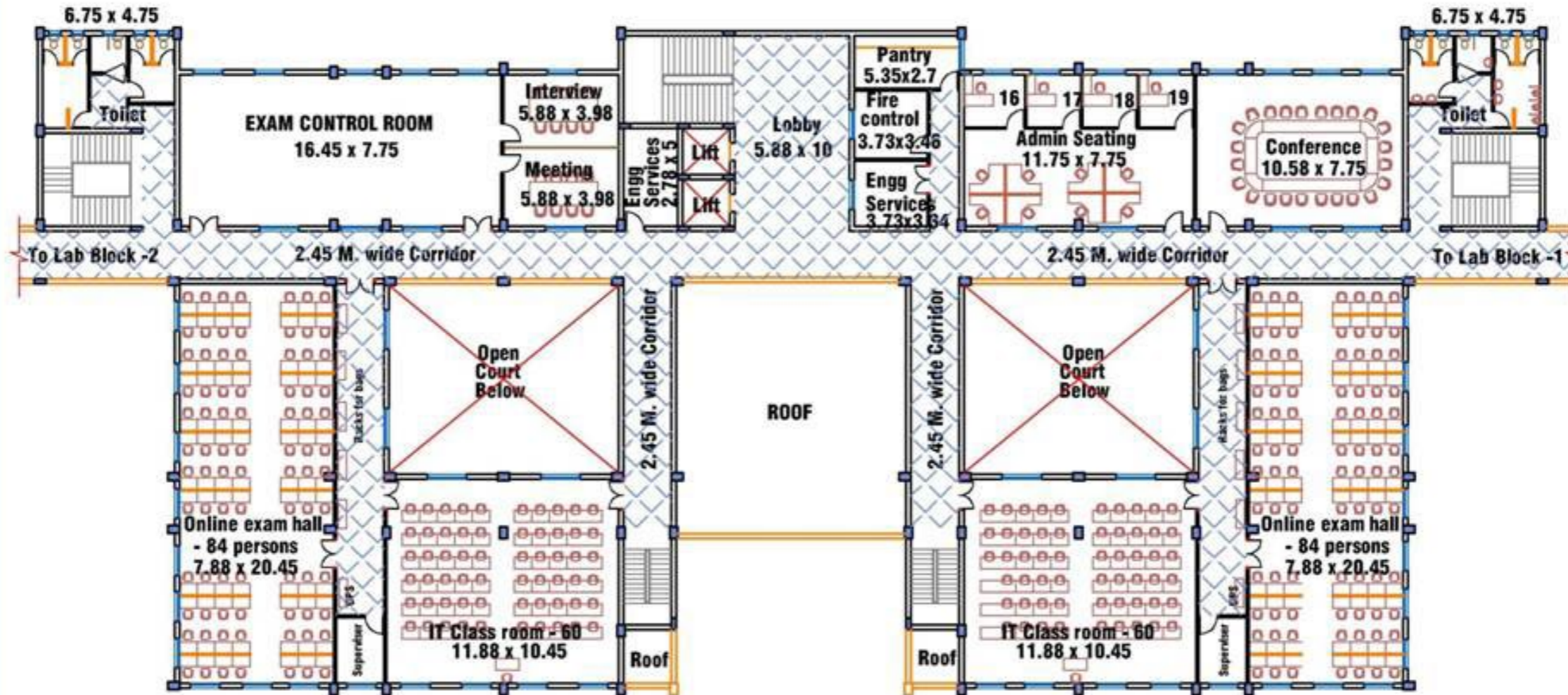


ASSAM SKILLS UNIVERSITY ADMINISTRATIVE BLOCK GROUND FLOOR PLAN

# FIRST FLOOR BLOCK PLAN - ADMINISTRATION BLOCK



## SECOND FLOOR BLOCK PLAN - ADMINISTRATION BLOCK



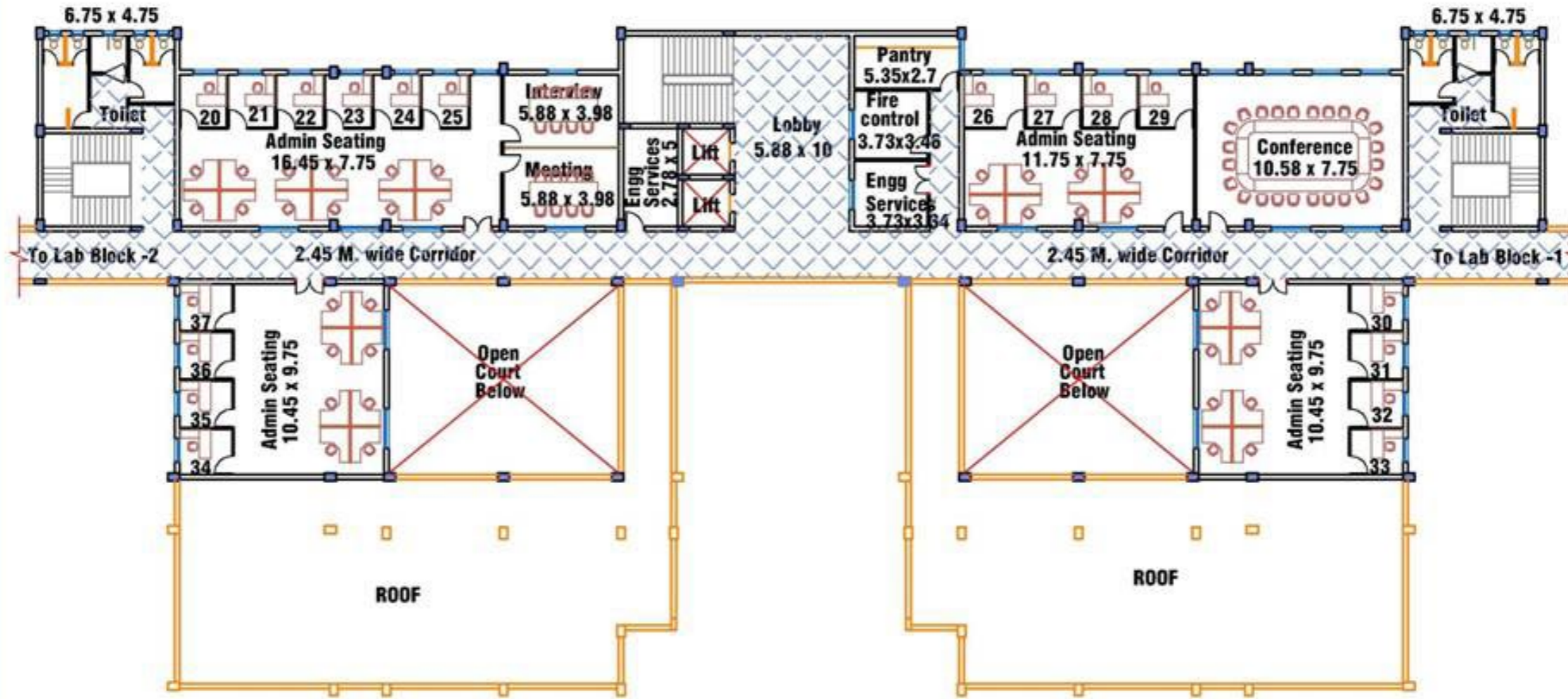
ASSAM SKILLS UNIVERSITY

ADMINISTRATIVE BLOCK

SECOND FLOOR PLAN



### THIRD FLOOR BLOCK PLAN - ADMINISTRATION BLOCK

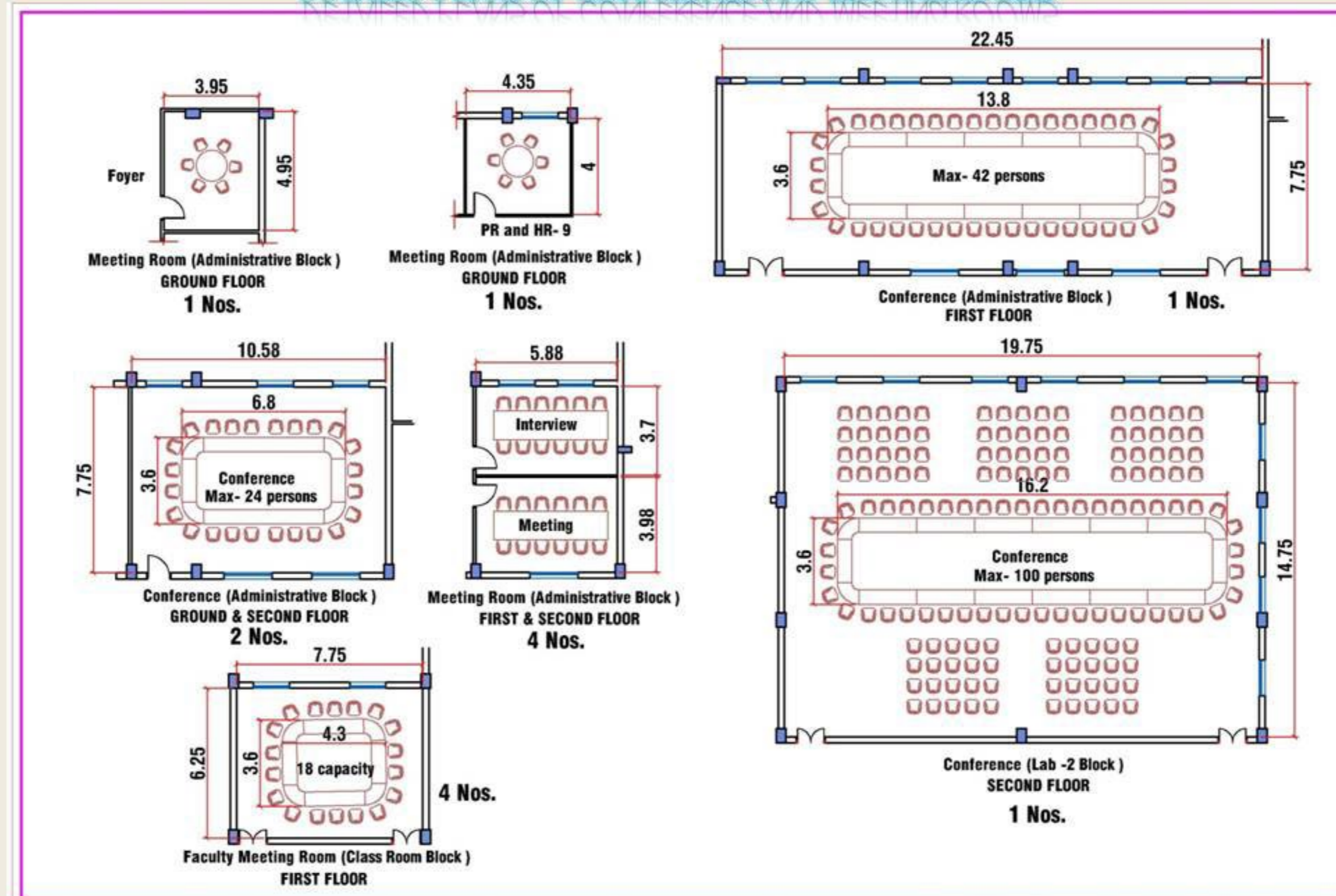


ASSAM SKILLS UNIVERSITY

ADMINISTRATIVE BLOCK

THIRD FLOOR PLAN

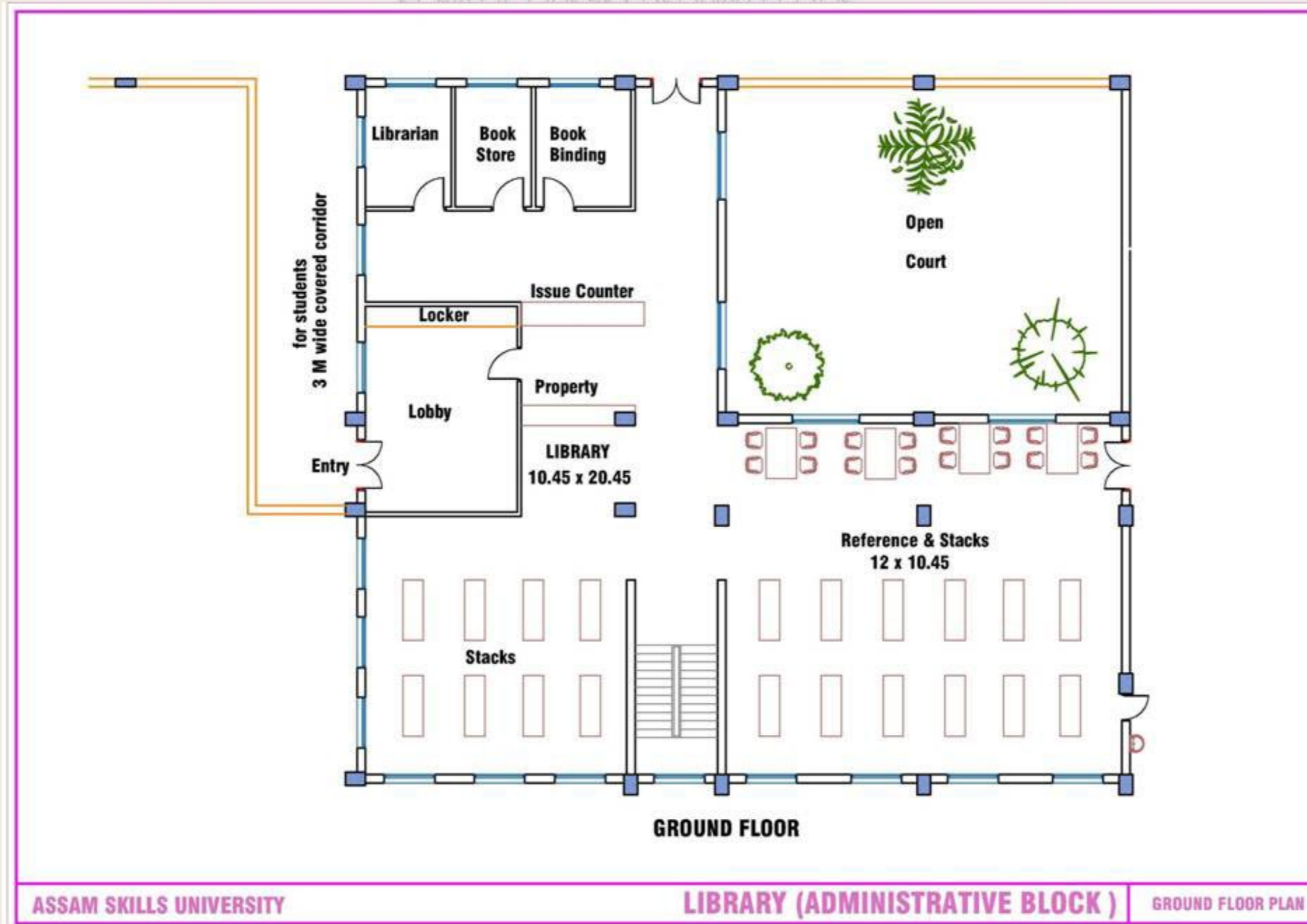
## DETAILED PLANS OF CONFERENCE AND MEETING ROOMS



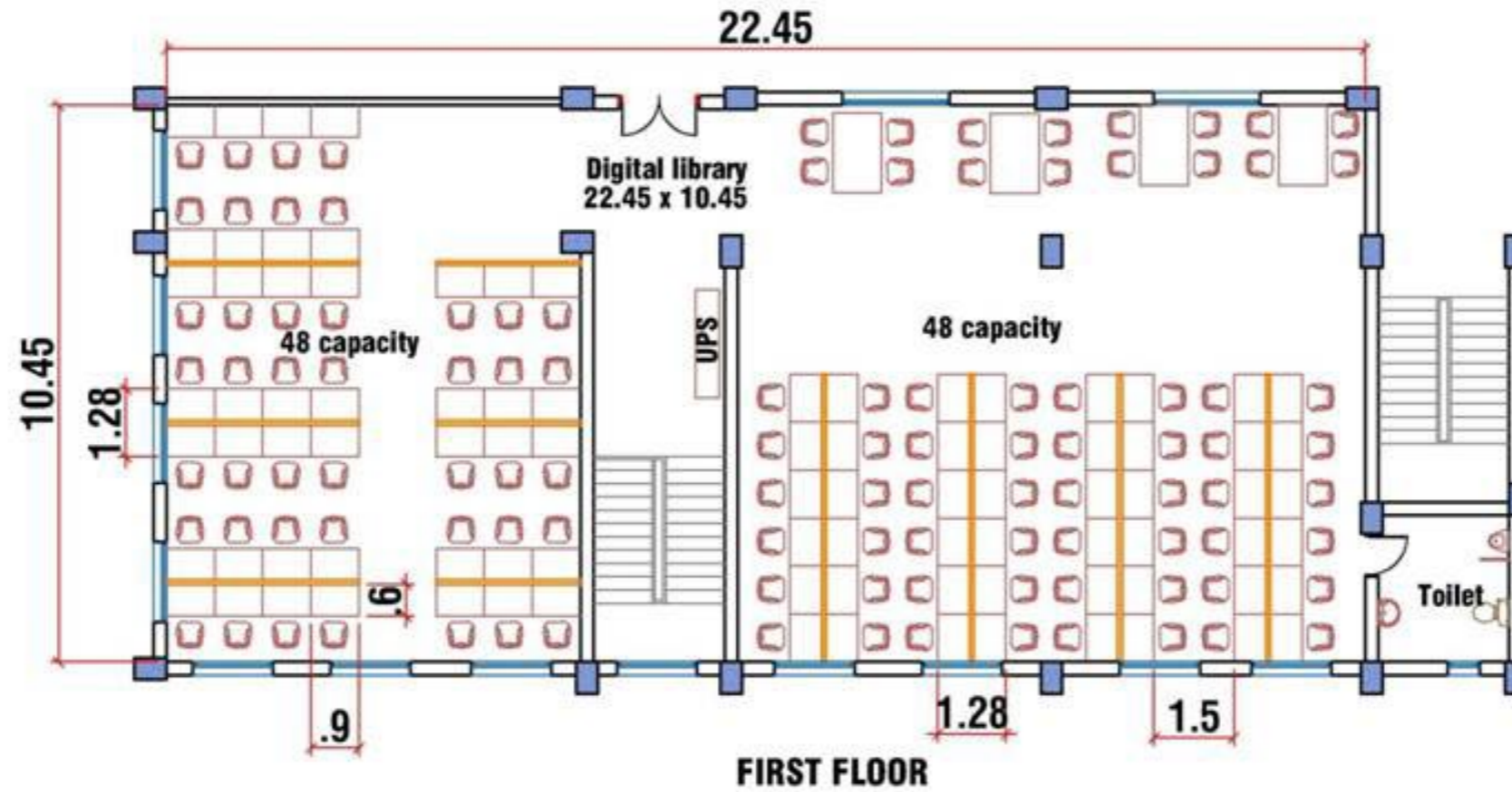
ASSAM SKILLS UNIVERSITY

CONFERENCE & MEETING ROOM

## PLAN OF LIBRARY GROUND FLOOR



## PLAN OF LIBRARY FIRST FLOOR

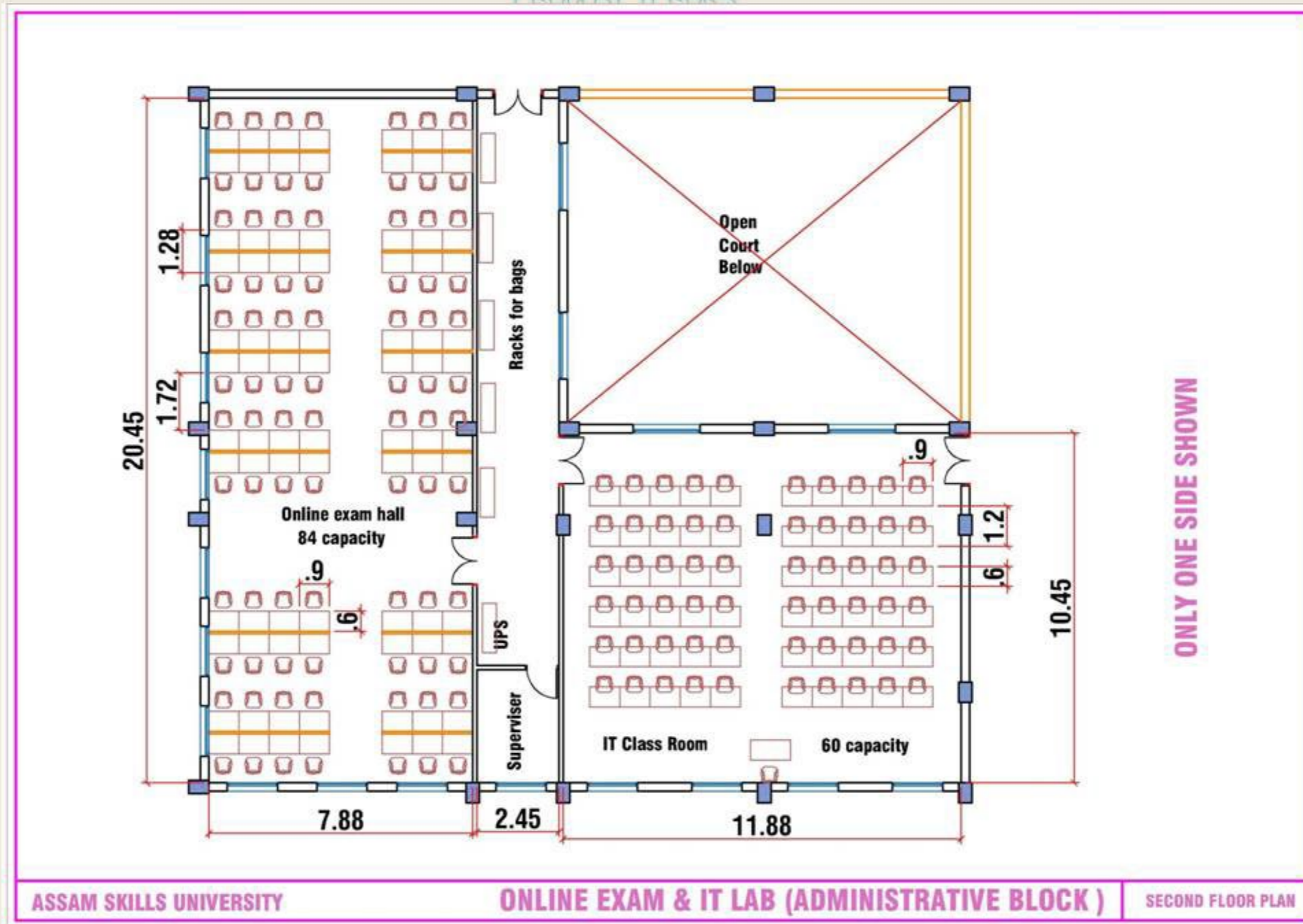


ASSAM SKILLS UNIVERSITY

LIBRARY (ADMINISTRATIVE BLOCK)

FIRST FLOOR PLAN

# PLAN OF IT LABS



# GROUND FLOOR PLAN OF LAB BLOCK-1

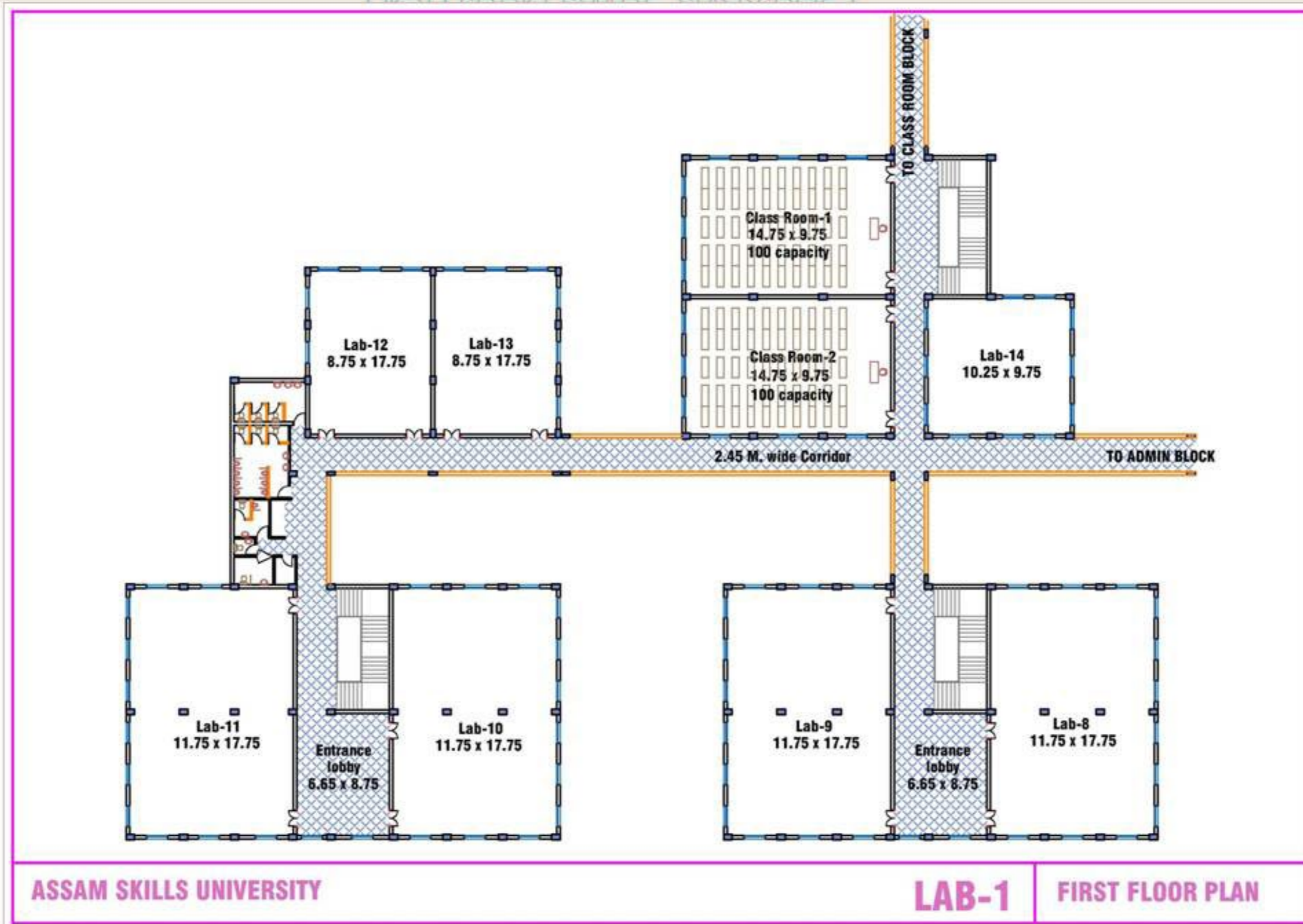


ASSAM SKILLS UNIVERSITY

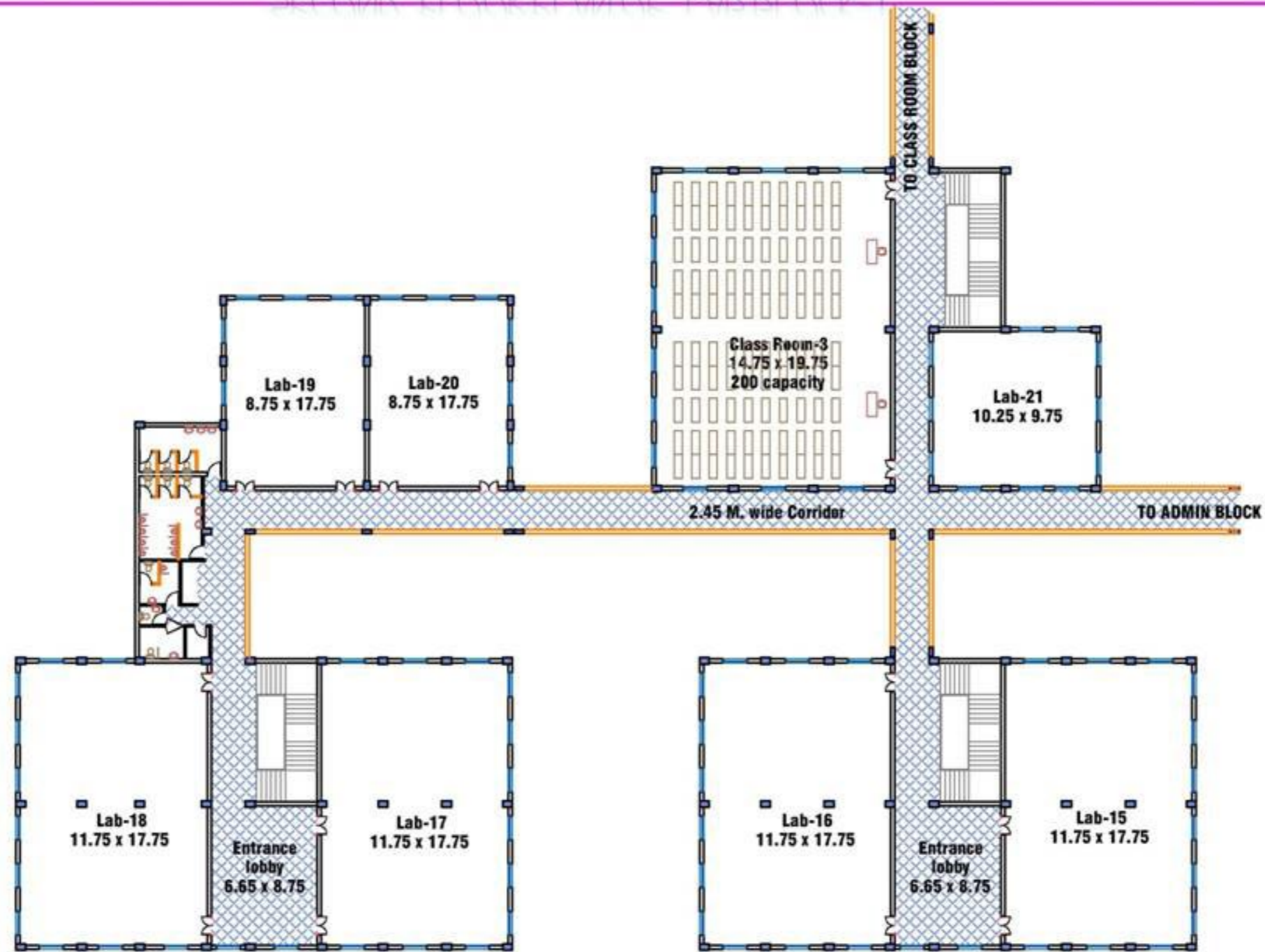
LAB-1

GROUND FLOOR PLAN

# FIRST FLOOR PLAN OF LAB BLOCK-1



## SECOND FLOOR PLAN OF LAB BLOCK-1



ASSAM SKILLS UNIVERSITY

LAB-1

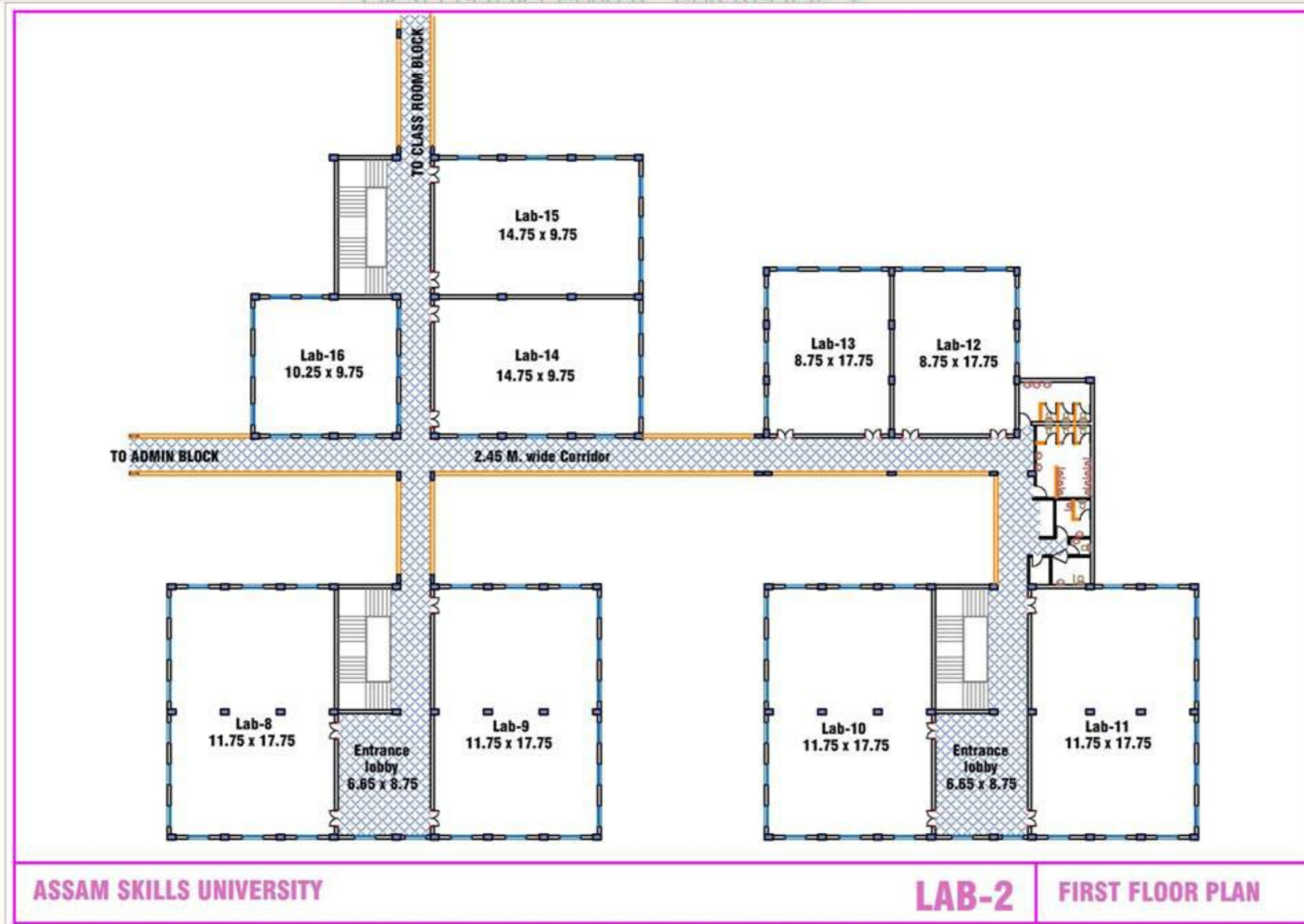
SECOND FLOOR PLAN



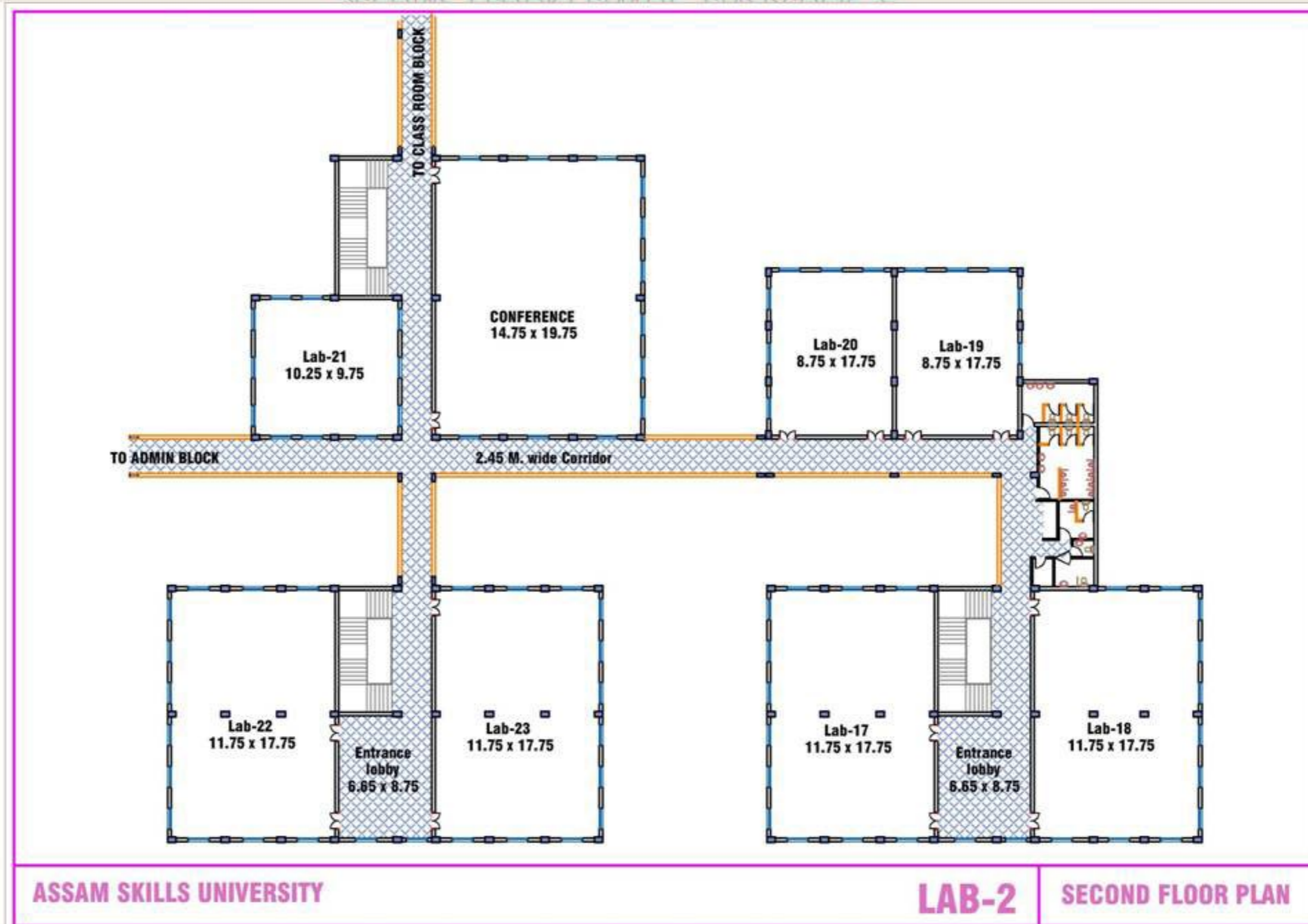
## GROUND FLOOR PLAN OF LAB BLOCK-2



## FIRST FLOOR PLAN OF LAB BLOCK-2

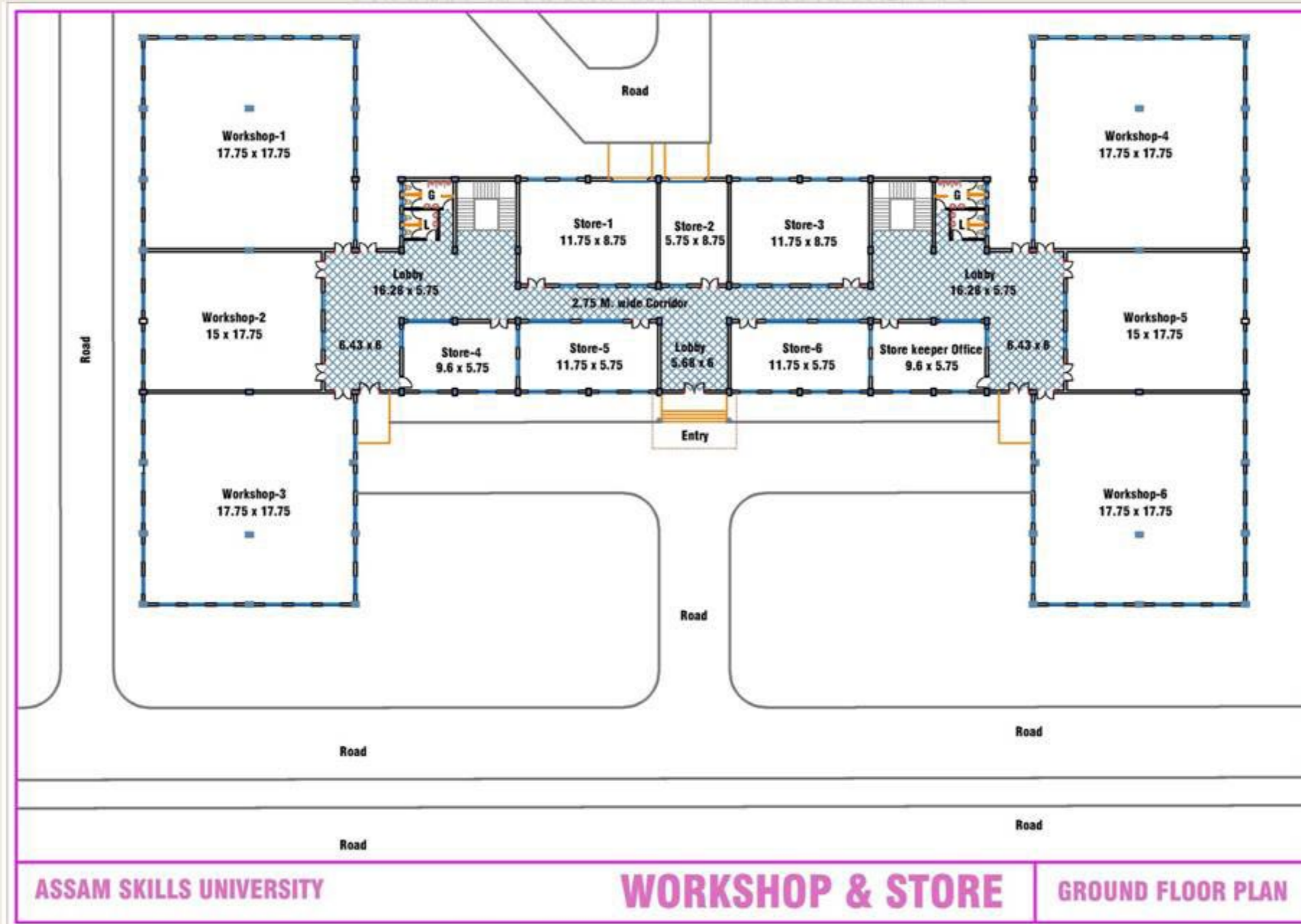


## SECOND FLOOR PLAN OF LAB BLOCK-2

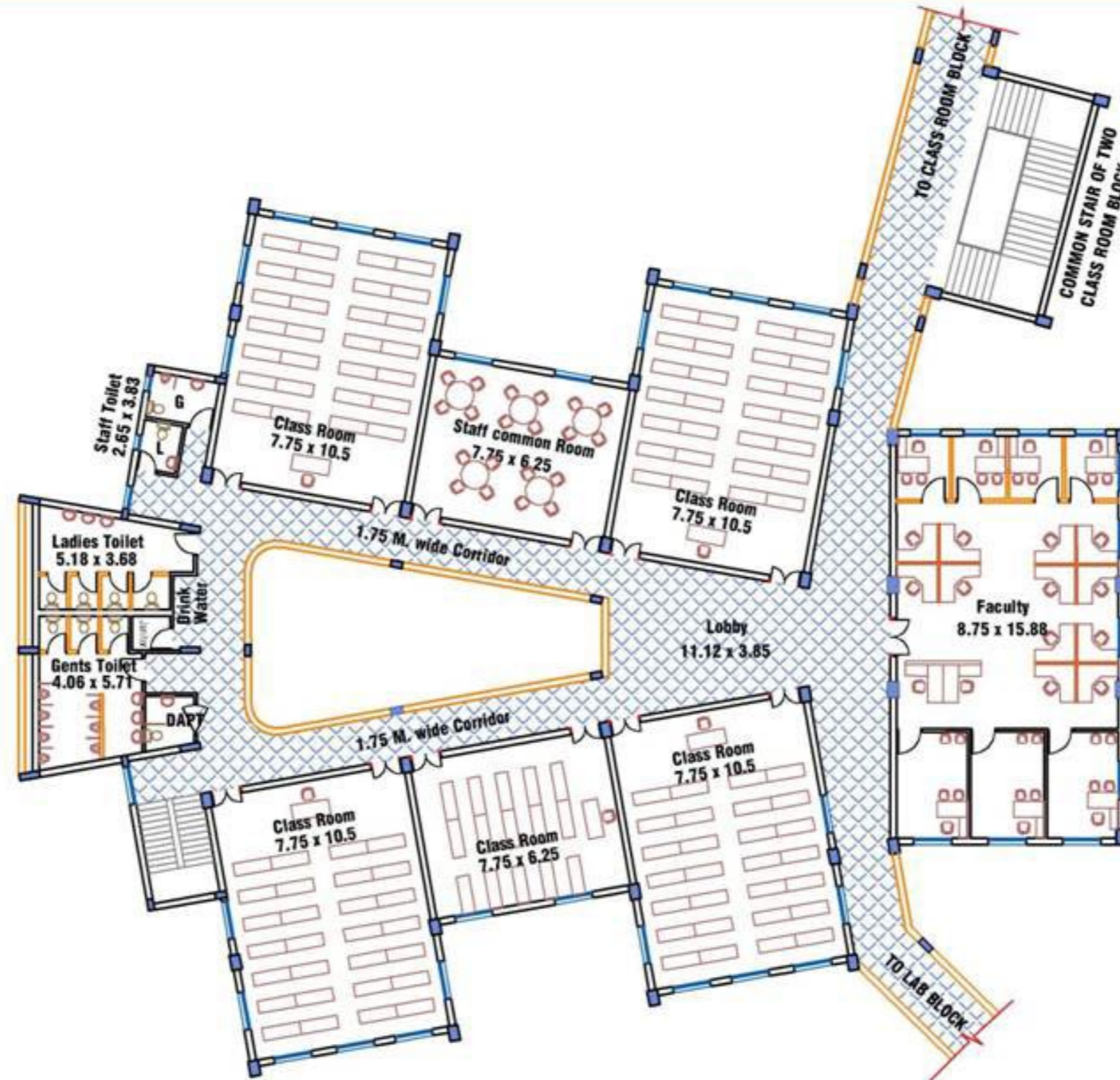




# GROUND FLOOR PLAN OF WORKSHOP BLOCK



## GROUND FLOOR PLAN OF CLASSROOM AND FACULTY BLOCK

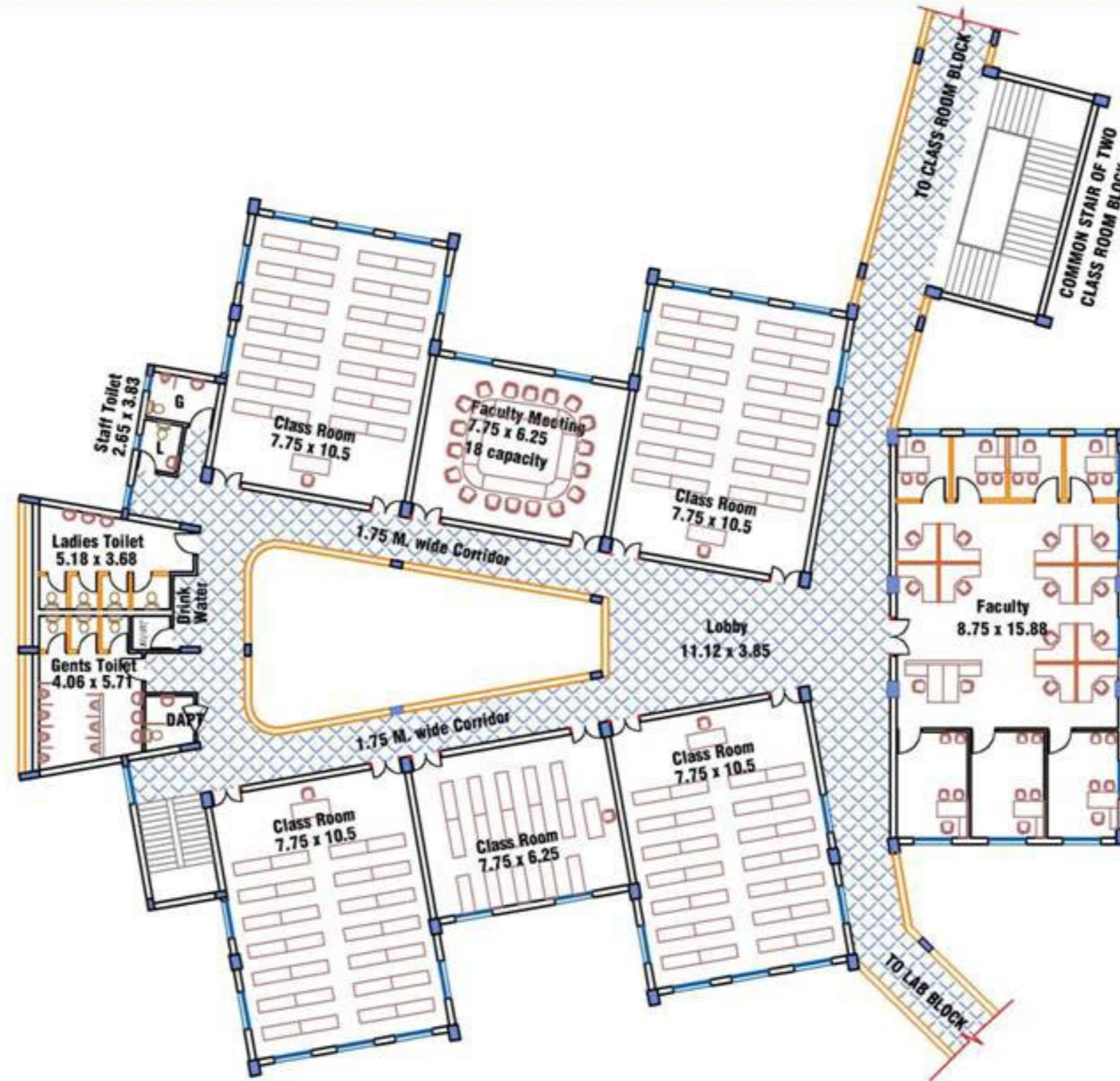


ASSAM SKILLS UNIVERSITY

CLASS ROOM BLOCK

GROUND FLOOR PLAN

## FIRST FLOOR PLAN OF CLASSROOM AND FACULTY BLOCK



ASSAM SKILLS UNIVERSITY

CLASS ROOM BLOCK

FIRST FLOOR PLAN

## SECOND FLOOR PLAN OF CLASSROOM AND FACULTY BLOCK



ASSAM SKILLS UNIVERSITY

CLASS ROOM BLOCK

SECOND FLOOR PLAN



## OPTION OF ROOFING OPEN COURT BETWEEN CORRIDORS

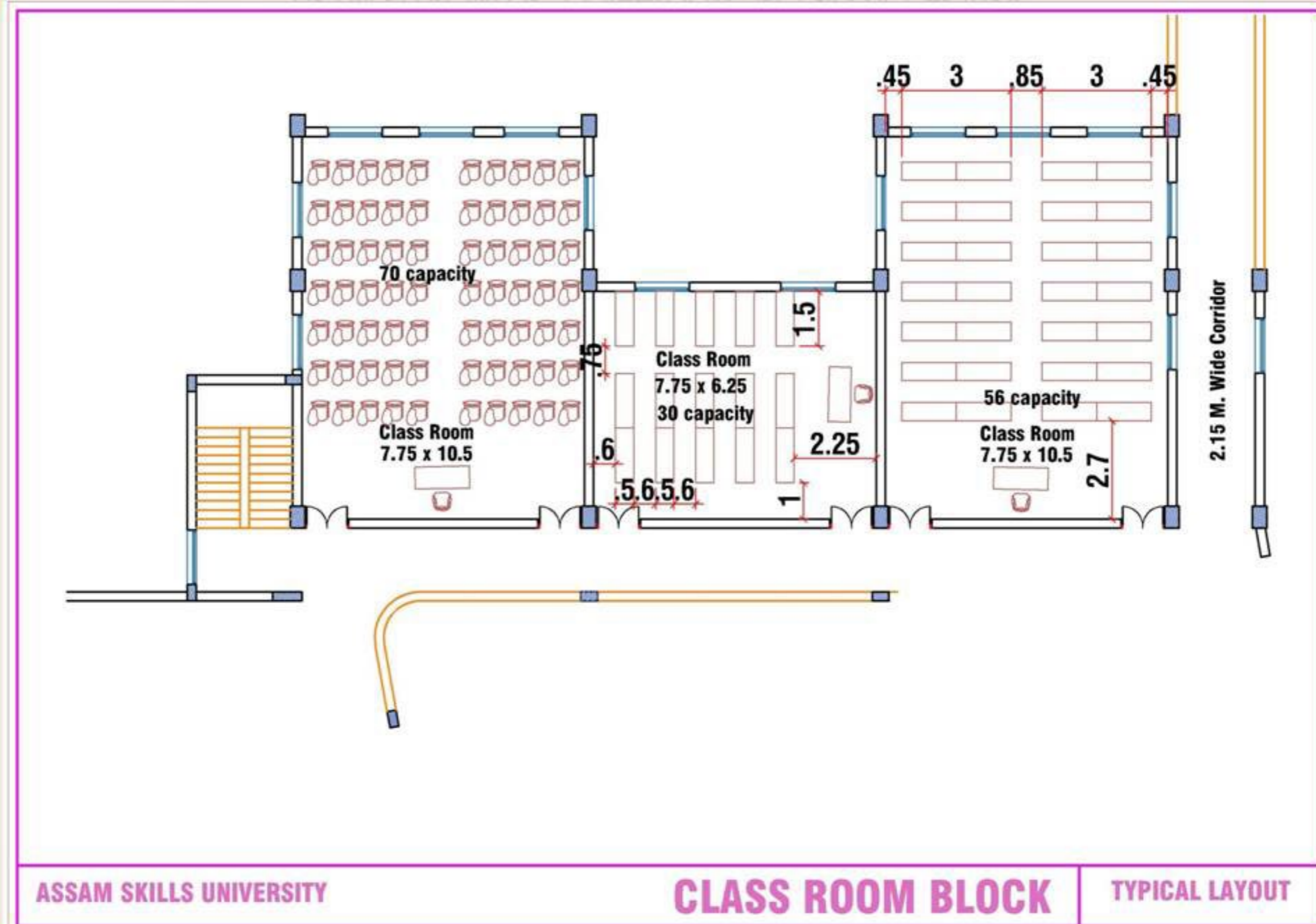


**TEXTILE MEMBRANE**

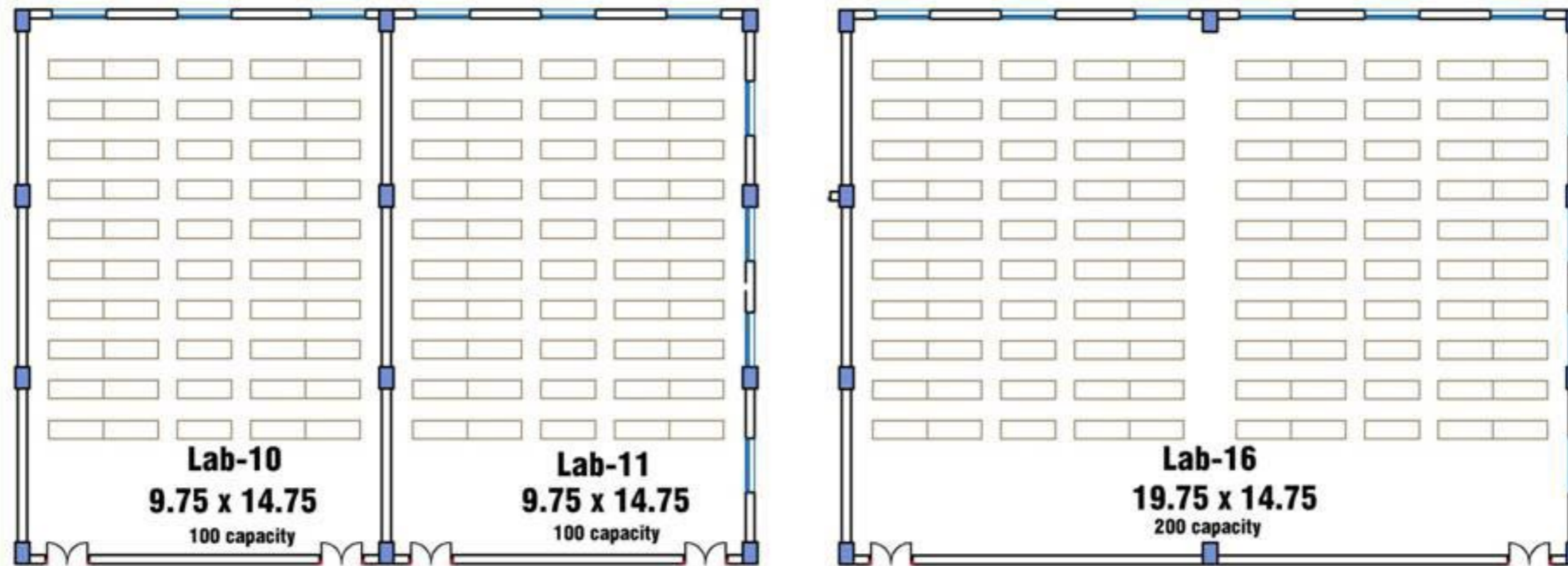
**MULTI WALL POLYCARBONATE**



## DETAILED PLAN OF CLASSROOM- 60 and 30 SEATER



## DETAILED PLAN OF CLASSROOM-100 and 200 SEATER

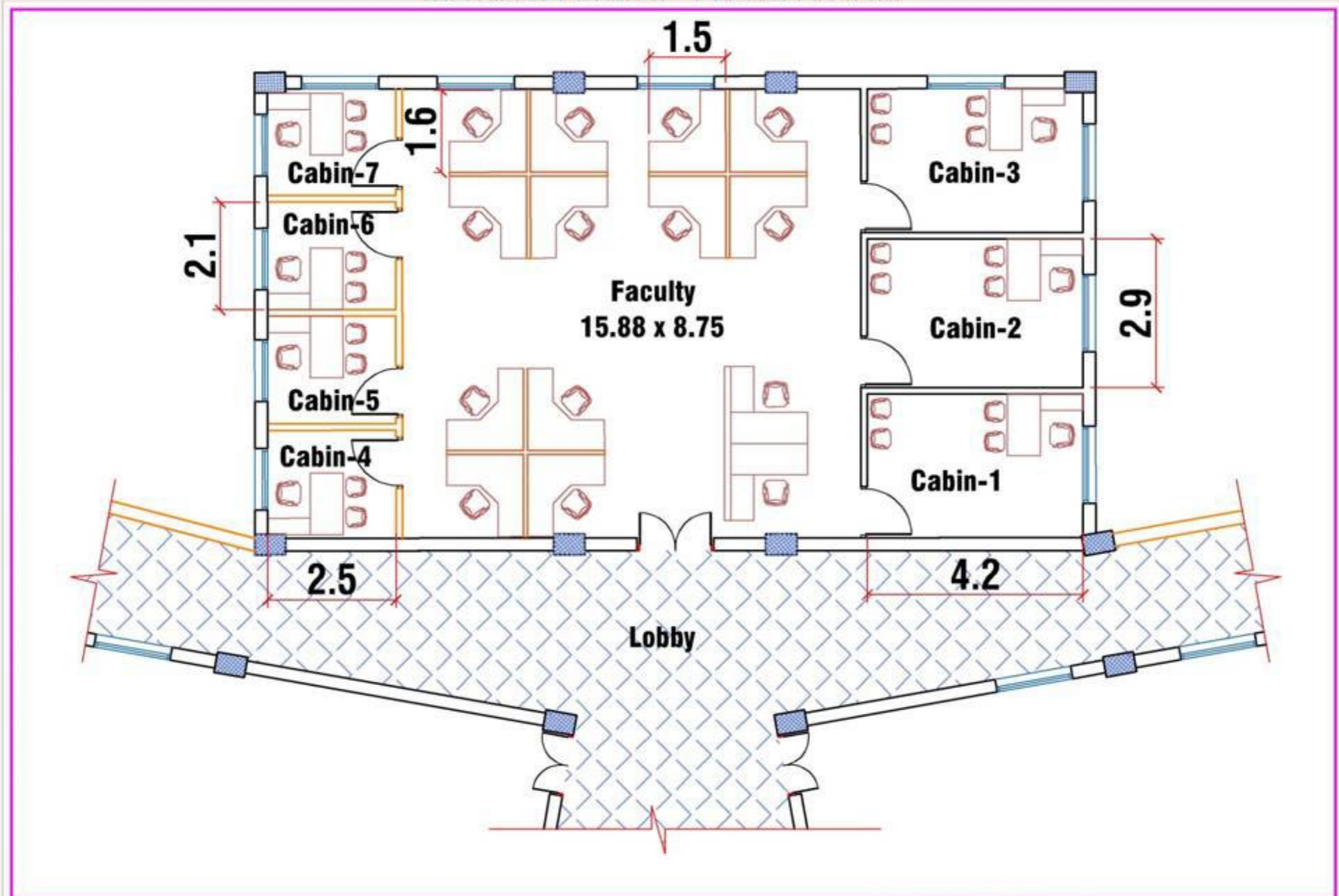


ASSAM SKILLS UNIVERSITY

CLASS ROOM

TYPICAL LAYOUT

### DETAILED PLAN OF FACULTY ROOM

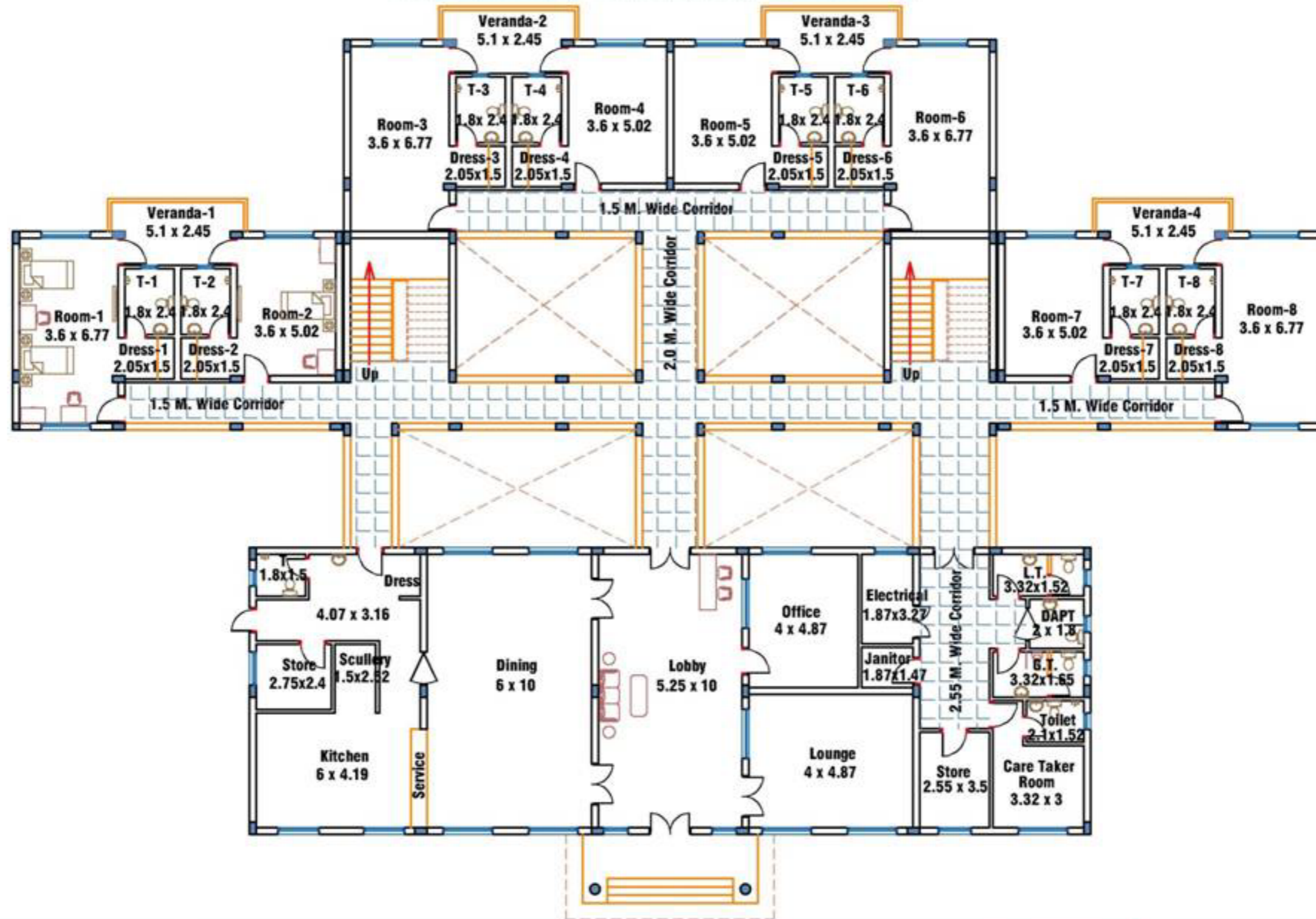


ASSAM SKILLS UNIVERSITY

FACULTY ROOM

PART PLAN

## QUESTHOUSE - GROUND FLOOR PLAN

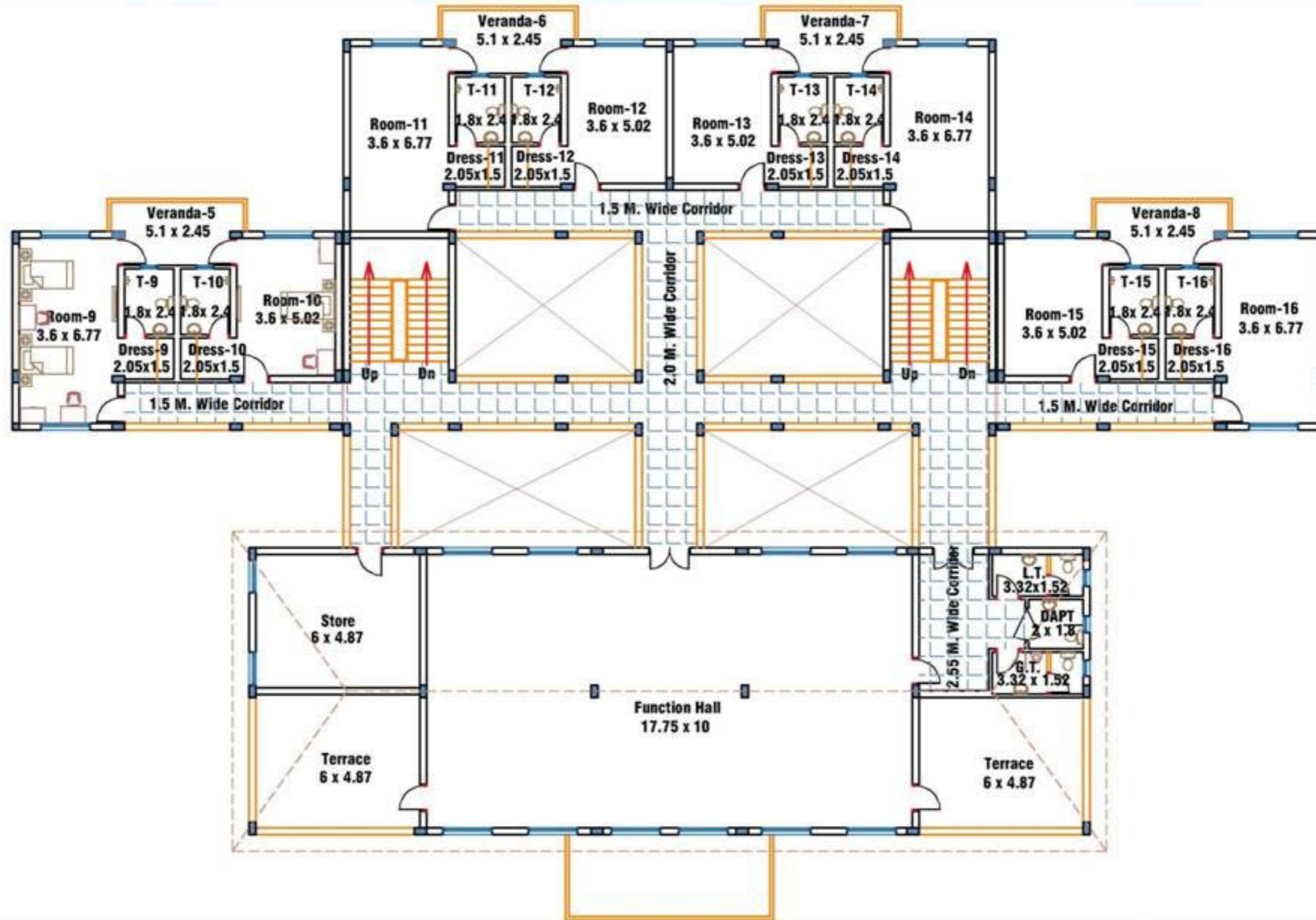


ASSAM SKILLS UNIVERSITY

GUEST HOUSE

GROUND FLOOR PLAN

# GUEST HOUSE - FIRST FLOOR PLAN

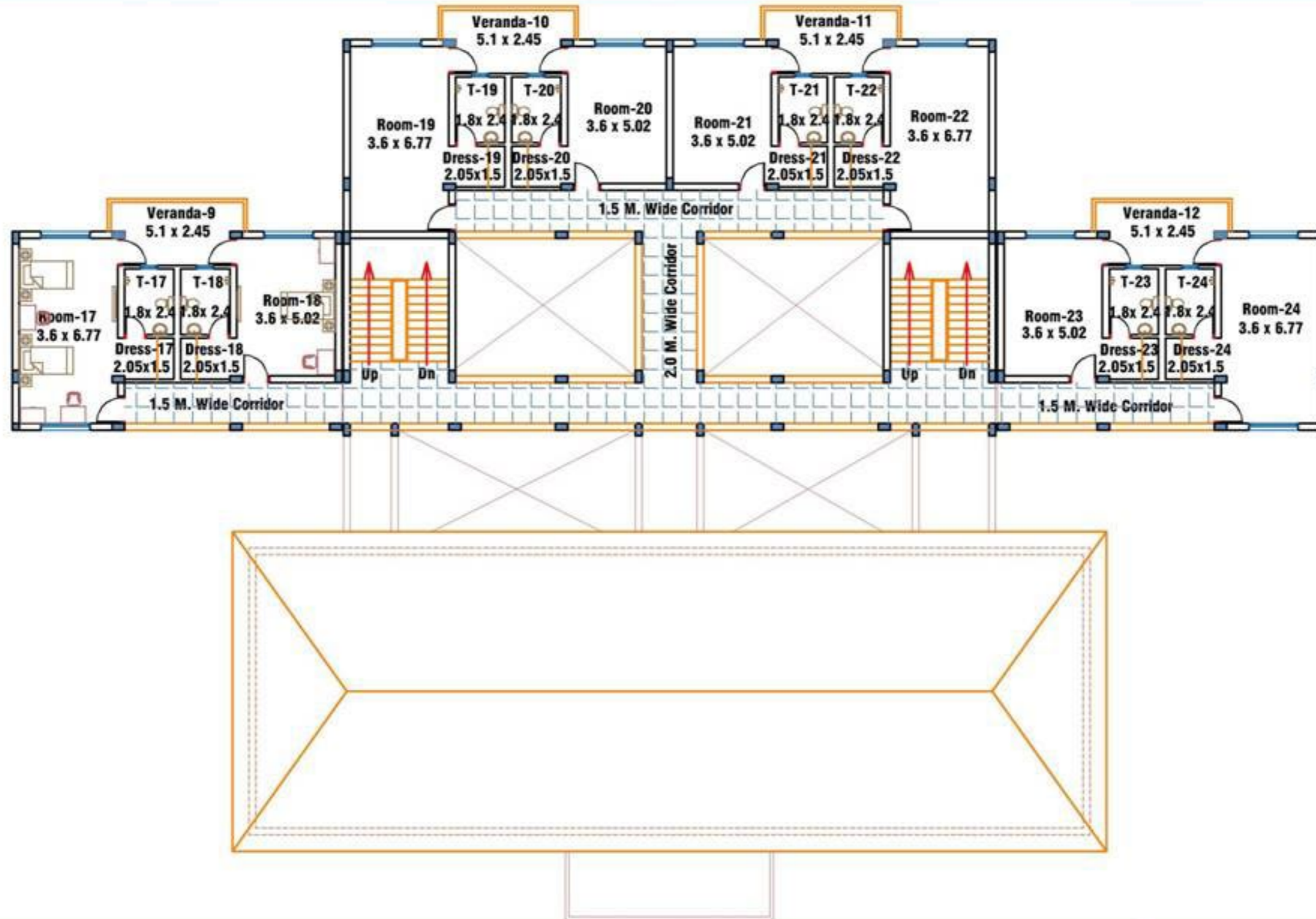


ASSAM SKILLS UNIVERSITY

GUEST HOUSE

FIRST FLOOR PLAN

## GUESTHOUSE-SECOND FLOOR PLAN

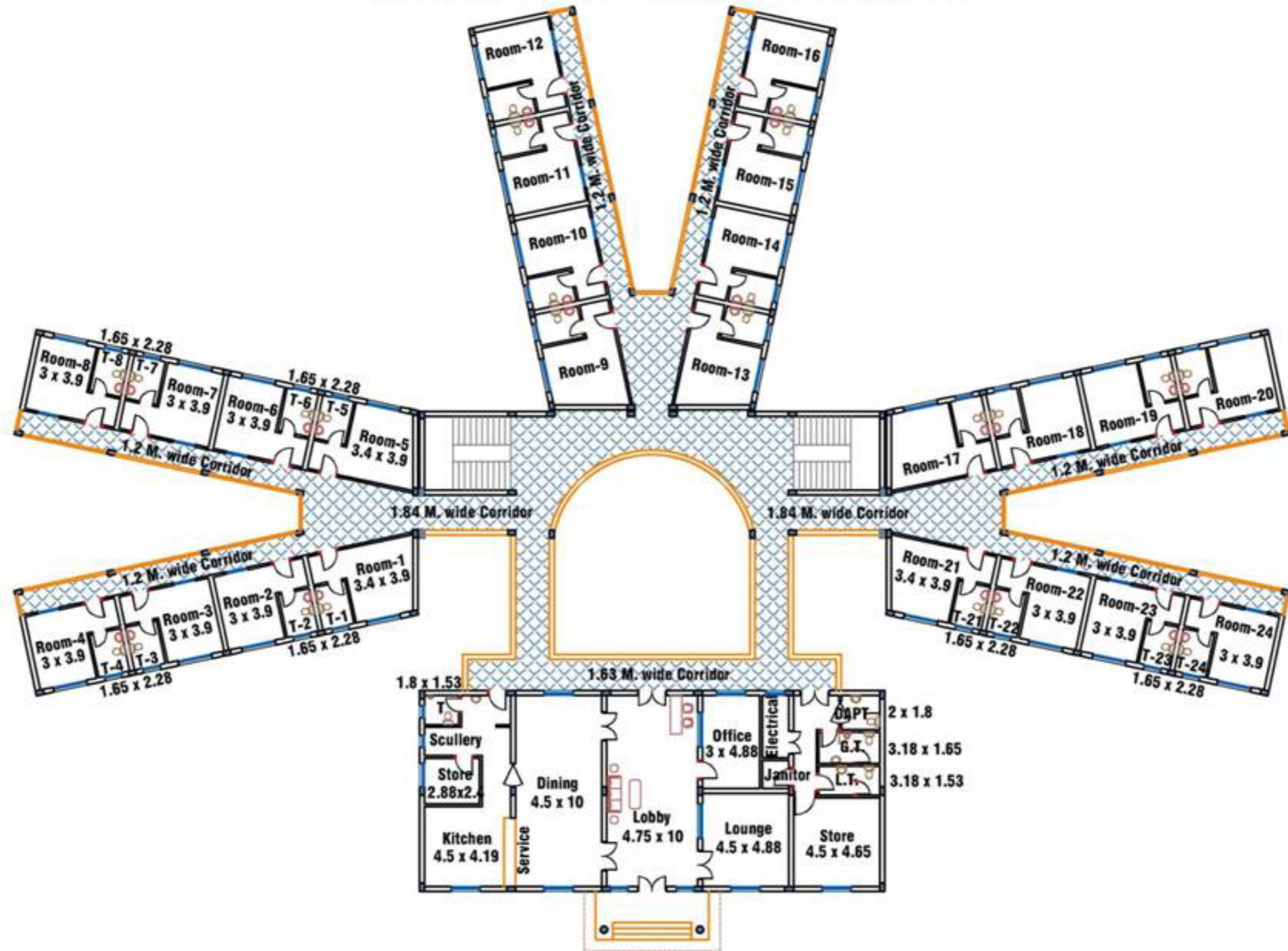


ASSAM SKILLS UNIVERSITY

GUEST HOUSE

SECOND FLOOR PLAN

# FACULTY HOSTEL - GROUND FLOOR PLAN



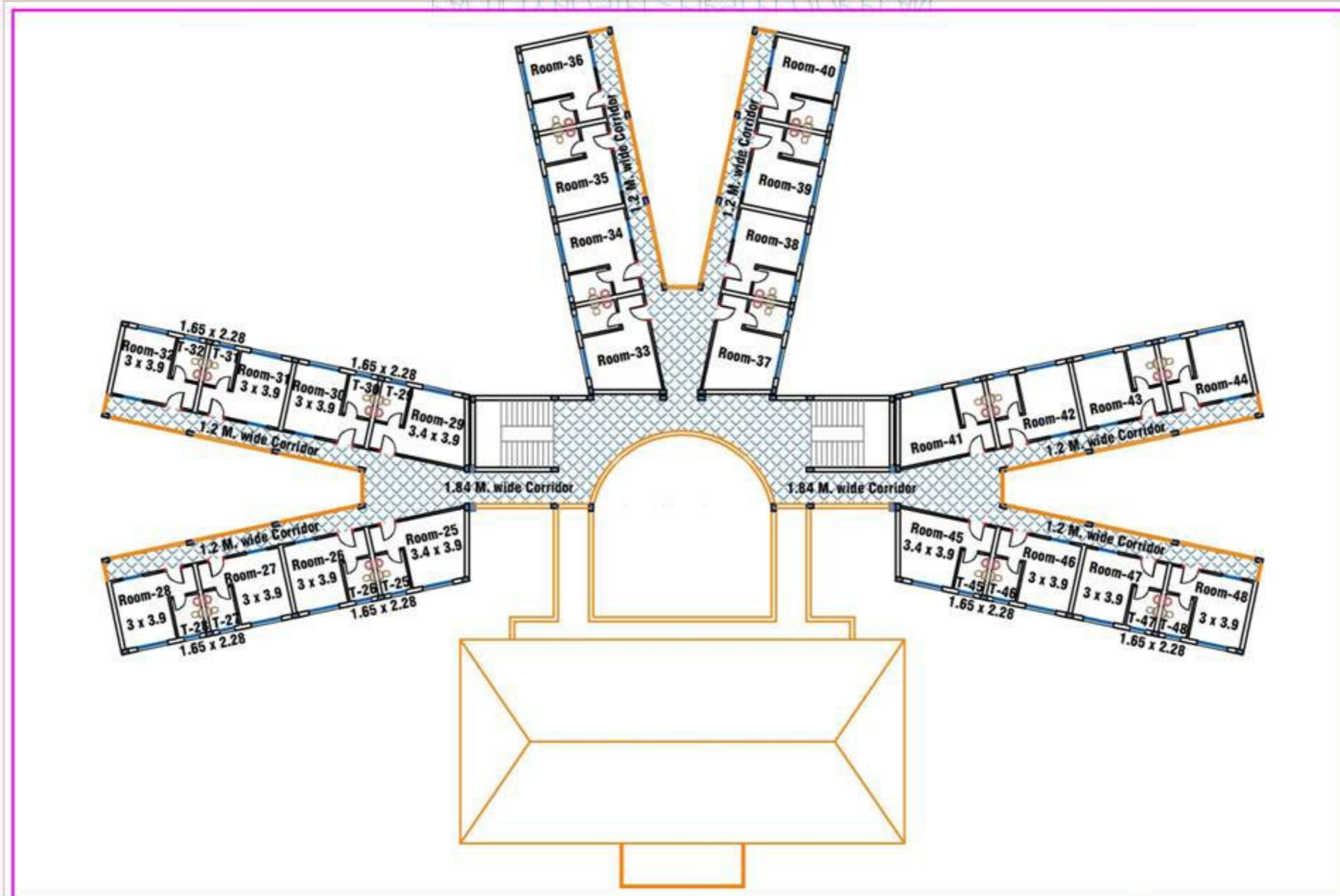
ASSAM SKILLS UNIVERSITY

FACULTY HOSTEL

GROUND FLOOR PLAN



# FACULTY HOSTEL - FIRST FLOOR PLAN

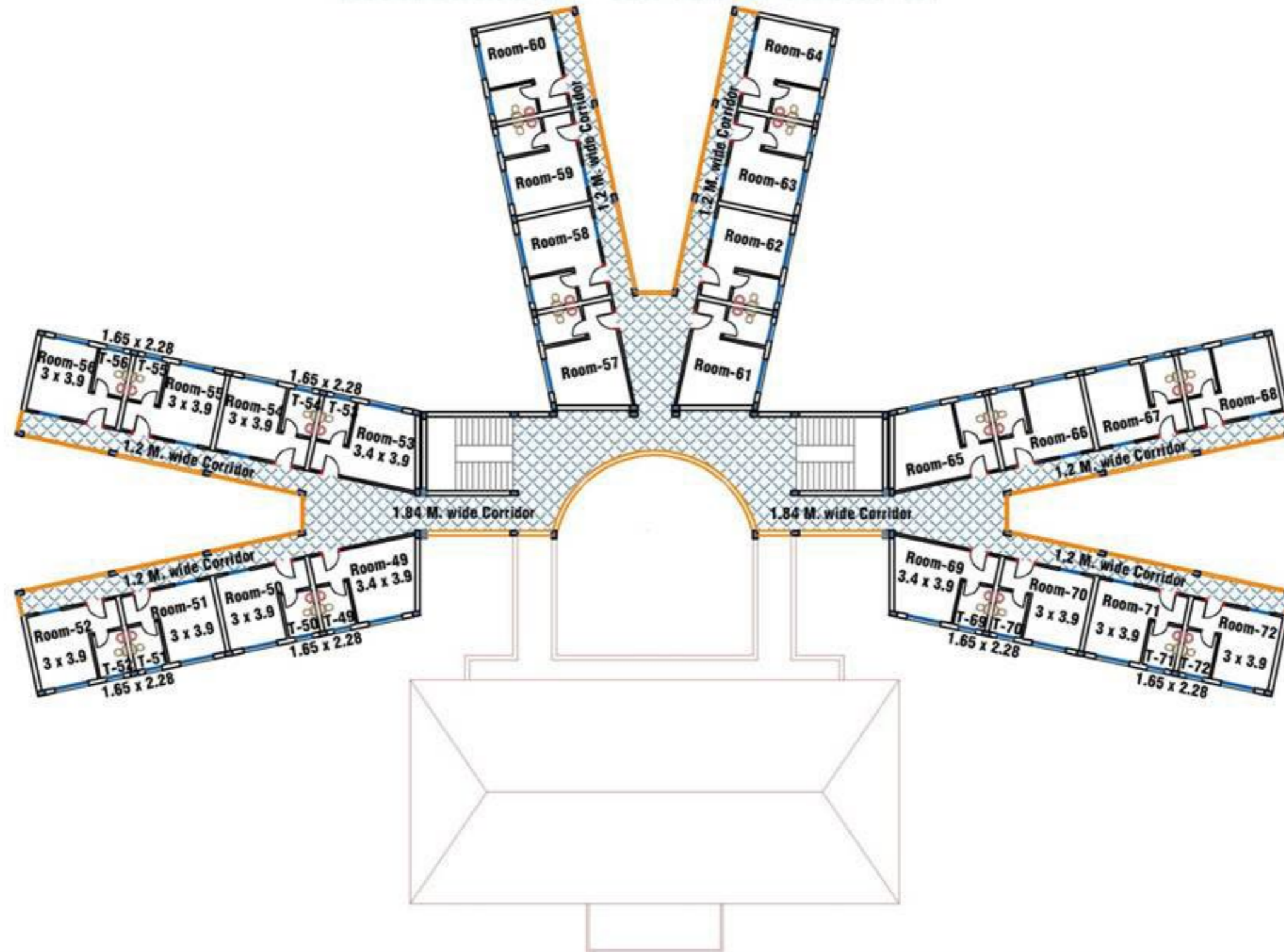


ASSAM SKILLS UNIVERSITY

FACULTY HOSTEL

FIRST FLOOR PLAN

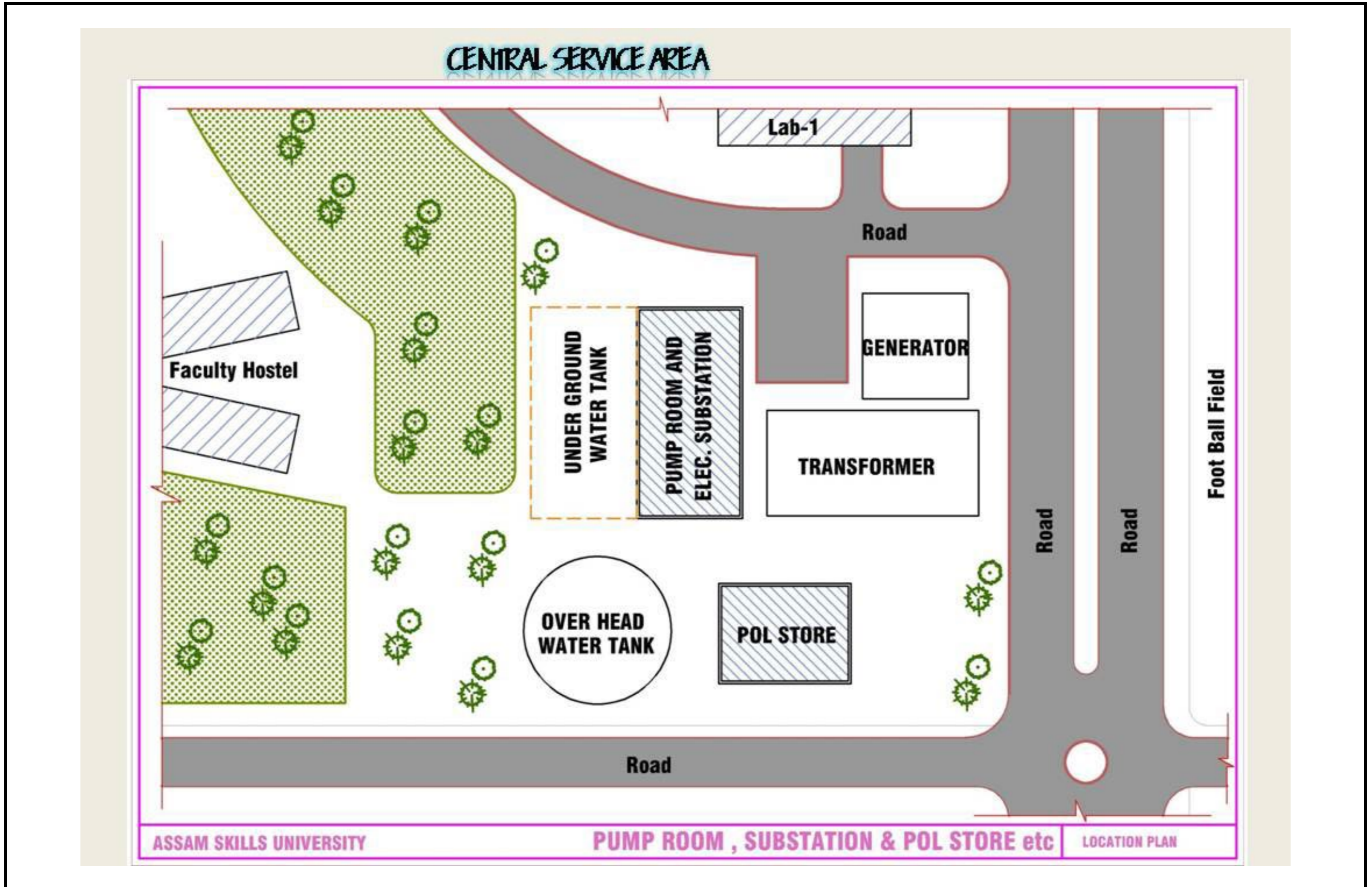
## FACULTY HOSTEL- SECOND FLOOR PLAN



ASSAM SKILLS UNIVERSITY

FACULTY HOSTEL

SECOND FLOOR PLAN



## ANNEXURE-4: SAMPLE TRAFFIC MANAGEMENT PLAN

### A. Principles

1. Since the scale of construction work for the boundary wall is relatively small, there will not be any major or prolonged disruption of local traffic. Nevertheless, it is good to prepare a traffic management plan (TMP) to minimize and avoid public inconvenience to the extent feasible. This indicative TMP will ensure the safety of all the road users along the work zone and minimize public inconvenience. It addresses the following issues:

- (i) The safety of pedestrians, bicyclists, and motorists travelling close to the construction zone;
- (ii) Protection of work crews from hazards associated with vehicle and equipment movement;
- (iii) Avoiding traffic congestion and
- (iv) Maintenance of access to adjoining properties.

### B. Operating Policies for TMP

2. The following principles will help to promote safe and efficient movement for all road users (motorists, bicyclists, and pedestrians, including persons with disabilities) through and around work zones while reasonably protecting workers and equipment.

- (i) Make traffic safety and temporary traffic control an integral and high-priority element of every project from planning through design, construction, and maintenance.
- (ii) Inhibit traffic movement as little as possible.
- (iii) Provide clear and positive guidance to drivers, bicyclists, and pedestrians as they approach and travel through the temporary traffic control zone.
- (iv) Inspect traffic control elements routinely, both day and night, and make modifications when necessary.
- (v) Pay increased attention to roadside safety in the vicinity of temporary traffic control zones.
- (vi) Keep the public well informed.
- (vii) Make appropriate accommodation for abutting property owners, residents, businesses, emergency services, railroads, commercial vehicles, and transit operations.

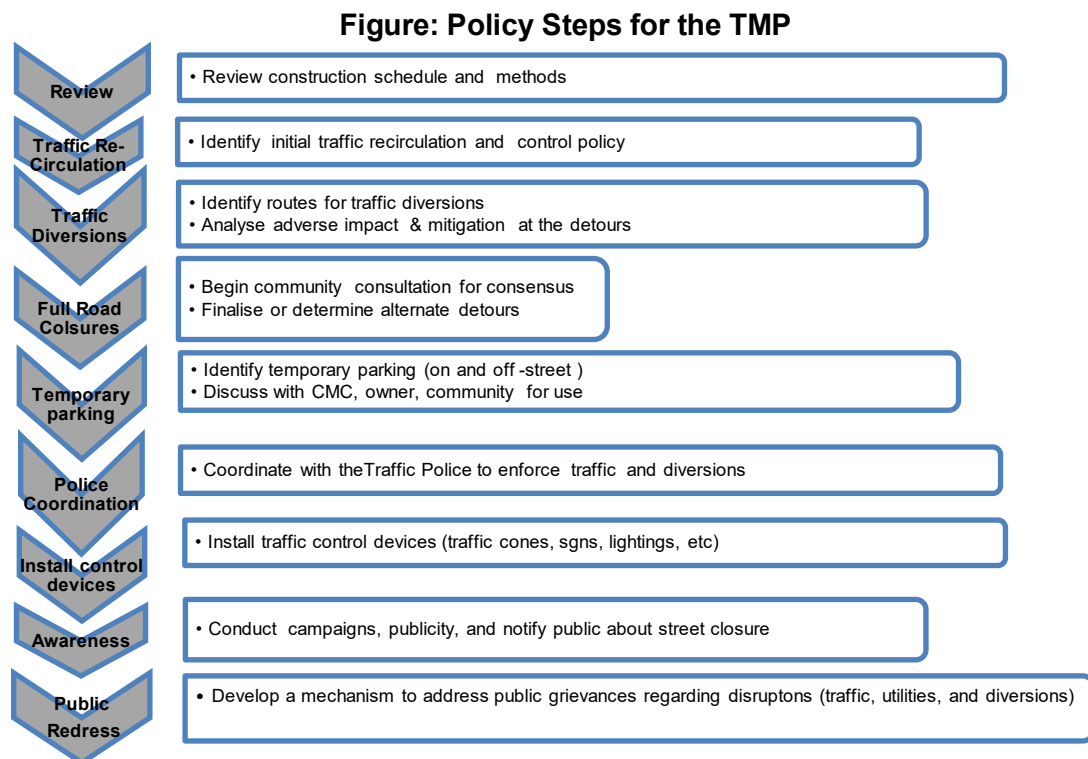
### C. Analyze the impact due to street closure, if required

3. A final decision to close a particular street and divert the traffic should involve the following steps:

- (i) Approval from the PMU site team and local administration to use alternative local streets as detours;
- (ii) Consultation with businesses, community members, traffic police, PWD, etc., regarding the mitigation measures necessary at the detours where the road is diverted during the construction;
- (iii) Determining of the maximum number of days allowed for road closure, and incorporation of such provisions into the contract documents;
- (iv) Determining if additional traffic control or temporary improvements are needed along the detour route;
- (v) Considering how access will be provided to the worksite;
- (vi) Contacting emergency service, school officials, and transit authorities to determine if there is any effect on their operations; and

- (vii) Developing a notification program to keep the public informed. As part of this program, the public should be advised of alternate routes that commuters can take or will have to take as result of the traffic diversion.

4. If full road-closure of certain streets within the area is not feasible due to inadequate capacity of the detour streets or public opposition, then full closure can be restricted to weekends with the construction commencing on Saturday night and ending on Monday morning prior to the morning rush hour traffic.



#### **D. Public awareness and notifications**

5. The PMU site team and the contractor will issue timely notifications to inform the public about the following issues:

- (i) Road blockages and alternative routes along with the duration (as applicable)
- (ii) Traffic control devices placed around the construction zones (signs, traffic cones, barriers, etc.).
- (iii) Reduced speed limits to be enforced at the work zones and traffic diversions.

8. It may be necessary to conduct an awareness campaign on road safety during construction. It will target relevant groups i.e. children, adults, and drivers. Therefore, these campaigns will be conducted in schools and community centers. In addition, the project will publish a brochure for public information. These brochures will be widely circulated around the area and will also be available at the site office. The text of the brochure should be concise to be effective, with a lot of graphics. It will serve the following purpose:

- (i) Explain why the brochure was prepared, along with a brief description of the project.
- (ii) Advise the public to expect the unexpected.

- (iii) Educate the public about the various traffic control devices and safety measures adopted at the work zones.
- (iv) Educate the public about the safe road user behaviour to emulate at the work zones.
- (v) Tell the public how to stay informed or where to inquire about road safety issues at the work zones (name, telephone, mobile number of the contact person; and
- (vi) Indicate the office hours of relevant offices.

#### **E. Vehicle Maintenance and Safety**

10. A vehicle maintenance and safety program shall be implemented by the construction contractor. The contractor should ensure that all the vehicles are in proper running condition and comply with roadworthy and meet certification standards of GoA. All vehicles should be in good condition and meet the pollution standards of GoI and GoA. The drivers will follow the special code of conduct and road safety rules of GoA. They will ensure that all loads are covered and secured. The vehicle cleaning and maintenance will not be taken up at site.

#### **F. Install traffic control devices at the work zones and traffic diversion routes**

10. The purpose of installing traffic control devices at the work zones is to delineate these areas to warn, inform, and direct the road users about a hazard ahead, and to protect them as well as the workers. As proper delineation is the key for achieving the above objective, it is important to install good traffic signs at the work zones. The following traffic control devices will be used in work zones:

- Signs
- Pavement Markings
- Channelizing Devices
- Arrow Panels
- Warning Lights

11. Procedures for installing traffic control devices at any work zone vary depending on road configuration, location of the work, construction activity, duration, traffic speed and volume, and pedestrian traffic. Work will take place along major roads, and the minor internal roads. As such, the traffic volume and road geometry vary. However, regardless of where the construction takes place, all the work zones should be cordoned off, and traffic shifted away at least with traffic cones, barricades, and temporary signs (temporary "STOP" and "GO").

12. The work zone should take into consideration, the space required for a buffer zone between the workers and the traffic (lateral and longitudinal) and the transition space required for delineation, as applicable. For the works, a 30 cm clearance between the traffic and the temporary STOP and GO signs should be provided. In addition, at least 60 cm is necessary to install the temporary traffic signs and cones.

13. Traffic police should regulate traffic away from the work zone and enforce the traffic diversion result from full street closure in certain areas during construction. Flaggers or personnel should be equipped with reflective jackets at all times and have traffic control batons (preferably the LED type) for regulating the traffic.

14. In addition to the delineation devices, all the construction workers should wear fluorescent safety vests and helmets in order to be visible to the motorists at all times. There should be provision for lighting beacons and illumination for night constructions. The PMU site team and contractor will coordinate with the local administration and traffic police regarding

the traffic signs, detour, and any other matters related to traffic. The contractor will prepare the traffic management plan in detail and submit it along with the EMP for the final approval.

**ANNEXURE-5: LAND RECORDS CERTIFIED BY THE REVENUE DEPARTMENT  
OFFICIALS SHOWING GOA OWNERSHIP**


Assam Schedule XXXVII Form No. 30  
Chitha for Surveyed Villages / জৰীপ হোৱা গাঁৱৰ চিঠা

জিলা নং:	মহকুমা/থানা/সদৰ:	চক্ৰ মঙ্গলদৈ
মৌজা নং/মাটি:	লট/লট নং/৬:	গাওঁ চক্ৰ/গেৰিমাৰিচাপৰী

দাগ নং:	মাটিৰ শ্ৰেণী		কালি (বি.ক.লে.)	পত্ৰ নং আৰু প্ৰকাৰ	ৰাজহ/টকা	স্বত্বাধীয়া কৰ/টকা
	কৃষি	অকৃষি				
১	২		৩	৪	৫	৬
২২/১৬৫১	বিশেষ কৃষি:		১০০-০-০	০.চৰকাৰী	০.০০	০.০০

পত্ৰাধ্যক্ষৰ নাম, পিতাৰ নাম আৰু ঠিকনা	নামজাৰী হবলপীঠা দখলদাৰৰ নাম, পিতাৰ নাম, ঠিকনা	ৰায়ত/ আধিকাৰ নাম, পিতাৰ নাম, ঠিকনা	ৰায়তৰ প্ৰকাৰ/ হতিয়ন নং, খাজানা বা ফছলৰ বিধি	উলটীয়া ৰায়তৰ নাম, পিতাৰ নাম, ঠিকনা	বছৰ	বেফছলী মাটিৰ কালি		ফছলী মাটিৰ কালি				ফছল গছৰ নাম আৰু সংখ্যা	মন্তব্য
						মাটি কেনেদৰে ব্যৱহৃত	কালি (বি. ক. লে.)	কৰপৰা পানী পায়	ফছলৰ নাম	কালি (বি. ক. লে.)	একাধিক ফছলী মাটিৰ কালি		
৭	৮	৯	১০	১১	১২ ১৩ ১৪	১৫ ১৬ ১৭	১৮ ১৯ ২০	২১ ২২ ২৩	২৪ ২৫ ২৬	২৭ ২৮ ২৯	৩০ ৩১ ৩২	৩৩ ৩৪ ৩৫	
১) চৰকাৰী ( অভিভাৱক চৰকাৰ) 100 B-0 K-0L ঠিকনা (.)					2020 2019 2018								স্বত্বলব টোকা (.) দৰং জিলাৰ উপায়ুক্ত মহোদয়ৰ 12-08-2020 তাৰিখৰ DRS/89/2017/155 নং চিঠি মৰ্মে ও অসম চৰকাৰৰ ৰাজহ ও দুৰ্ভোগ প্ৰশমন বিভাগৰ উপ সচিব মহোদয়ৰ 05-08-2020 তাৰিখৰ R55.53336/2018/104 আৰু 10-08-2020 তাৰিখৰ ECF No.53336/2018/107 নং হুকুম মৰ্মে ৰাজমাটি মৌজাৰ গেৰিমাৰি চাপৰি সৰব 22 নং ভি জি আৰ দাসৰ অংশ 100 বিঘা জমি কিল চিটি দৰংৰ নামত সংৰক্ষণ মুক্ত কৰি পৃথক 1651 নং হিচাপে নথি সংশোধন কৰা হল।-----জয়প্ৰকাশ দাস

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GOVERNMENT OF ASSAM  
OFFICE OF THE CIRCLE OFFICER: MANGALDAI REVENUE CIRCLE  
MANGALDAI : DARRANG

No.MRC- 12/2018/9165


Dtd. 17/10/2020

Land Holding Certificate

This is to certify that a plot of land measuring 100 Bighas covered by Dag No.22 at village Gerimari Chapori under Rangamati Mouza under Mangaldai Revenue Circle is recorded in the name of Skill City, Darrang in pursuance of Govt. order ECF No.53336/2018/26 Dated Dispur, the 13<sup>th</sup> January,2020.

Schedule of the Land:

Dag No.	Mouza	Village	Area	Remarks
22	Rangamati	Gerimari Chapori	100 Bighas	Recorded in the name of Skill City, Darrang in the Field index.

  
Circle Officer,  
Mangaldai Revenue Circle  
Mangaldai, Darrang, Assam

Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities



GOVT. OF ASSAM  
OFFICE OF THE DEPUTY COMMISSIONER :: DARRANG :: MANGALDAI  
(LAND SETTLEMENT BRANCH)

Tel : 03713 222135 :: Fax - 03713 222800, Email : [dc-darrang@nic.in](mailto:dc-darrang@nic.in). Website : <http://www.darrang.nic.in>

187

No. DRS. 85/2017/187

Dated Mangaldai, the 8<sup>th</sup> January, 2021

To,

The Mission Director,  
Assam Skill Development Mission,  
Katabari, NH-37, Guwahati-781035

Sub : Allotment of land in favour of Assam Skill University.

Sir,

With reference to the subject cited above and as per discussion held on 05.01.2021 in the office of the undersigned, I have the honour to inform you that in continuation to earlier allotment of 100 Bighas of land in favour of Assam Skill University vide Govt. letter No. 53336/2018/106 dated 31.07.2020, the Sub-Divisional Land Advisory Committee held on 11.12.2020 has recommended another 150 Bighas of land in favour of Assam Skill University adjacent to earlier allotment in the same village Gerimari consisting of Dag No. 28, 29, 30, 31, 32, 33, 34, 35, 36, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 201, 202, 203, 204, 205, 206, 207 and 208 under Rangamati Mouza of Mangaldai Revenue Circle.

This is for favour of your information and necessary action.

Encl : As stated above.

Yours faithfully,

Deputy Commissioner  
Darrang, Mangaldai

Scanned with CamScanner

**ANNEXURE-6: PHOTOGRAPHS AND ATTENDANCE SHEETS OF CONSULTATIONS**

**A. Photographs of Consultations in November 2021 and February 2021**



**Discussion with Stakeholders at Site**



**Another View of Discussion with Locals at Site**



**Discussion with locals near Site**



**View of Stakeholder Consultations at Darrang Deputy Commissioner Office**

**B. Photographs of Consultations in March 2022**



**Discussion with stakeholders at site**



**Environmental Specialist taking a note of Suggestions of stakeholders**



**Another View of Discussion**

C. Attendance Sheets of Stakeholder Consultations

**Project 53388 IND: Assam Skill University Project**

Stakeholder Consultations

Dated: \_\_\_\_\_ Location: \_\_\_\_\_

Sl. No.	Name	Organization	Phone Number	Signature
1	DILIP Kumar	D.C.	9435054171	[Signature]
2				
3	Nabajyoti opha	ADC, Darrang	94351-61015	[Signature]
4	Penhij Kz. Deha	ADC, Dimaas	9435119326	[Signature]
5	Kumar Sujal	A.D.C., Dimaas	76378/55813	[Signature]
6	Deep J. Barishya	ASDM, PHU	78965 15595	[Signature]
7	S			
8	Pinku Choudhury	AsPM, ASPH SH & CB	8852066979	[Signature]
9	SUJATIMOLICE	GEST, consult	9830300275	[Signature]
10	YASHPAL MALIK.	F.A. Coordinator Consultant, ADB	9015040458	Yashpal malik
11	Nayanid. Patra	CO, Mangabai	7086521731	[Signature]
12	Rajashree Anil	HORIZON, NGO Gen. Secy.	700 22 30788	[Signature] 12/11/2020
13	Madhuri Borah	D.S.W.O.	94350.35799	[Signature]
14	Grebaindabali	BDO, Pub MUP	7002538244	[Signature]
15	Rekha Biswas.	President G.P.	6002516502	[Signature] 12/11/20
16	Gajendra Deba	Gaonbureh	995-7678431	[Signature]

**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

ATTENDENCE SHEET FOR THE MEETING HELD ON 12/11/2020  
 CONFERENCE HALL OF DEPUTY COMMISSIONER : DARRANG AT 12 P.M

Sl. No.	Name	Designation	Mobile	Signature
	Kumar Sujal Barua	A.O.C., Darrang	76378/55813	
	Pankaj K. Deka	-ADC, Darrang	9435119326	
	Kabirjyoti Ojha	ADC, Darrang	94351-61015	
	Shree n. Das Vora	Environment Specialist - ADB	9811226458	
	N. Debraj Singh	SPM-SMLCB	7002017678	
	YASHPAL MALIK	TA COORDINATOR. Consult- ADB.	9015040458	Yashpal malik
	Sujata Mukherjee	GESI Consultant ADB	9830304275	
	Pinku Choudhury	ASPH-SMLCB ASDH	8752066979	
	Deep Jyoti Baruah	ASUP, PMU team	7896515595	
	Dipankar Boruah	SPM - ASDM	9886099104	
	MRIDUL BORUAH	AE, PCBA, RLO, TEZPUR	9101421844	
	Gautanga K. Das	Dist. Labour officer	9435151181	
	Madhuri Behera	District social coordinator	94350-35773	
	Gobinda Kalita	BDO, Pub Mangaldai	7002538244	
	Rekha Biswas.	President G.P.	6002516502	
	Gajendra Bora	Gasamburan	9957078431	
	Rajashree Sinl.	Gen Secy. HORIZON NGO.	7002280788	
	Nayan J. Pathek	CO, Mangaldai	7086521731	

Assam Skill University Project

Name	Organization	Phone	Signature
Getindra Kalita		9399910560	
Swati Anand		7577058548	
সোমিয়া মল্লিক		9401967318	
পূর্ণিমা গগৈ			
সুজিত গগৈ		81350000	
Karakiyoti Saitia			
Anima Beka	Gesimari	9101647560	
Kushal Kalita		7002359217	
Bhabon Nath		9864741475	
Surentra Bora		8071287280	
Hiten Hosen		9859368447	
নিতাই গগৈ		7577097359	
Gyjenan Devi (Chomswari)		9356243708	
Puipen Bahariah		9357078431	
		8721048353	

**D. Attendance Sheets of Stakeholder Consultations in March 2022**

**Project 53388 IND: Assam Skill University Project**

Stakeholder Consultations

Dated: 3/3/2022 Location: ASUP Site, Gerimari Chopari, Mangaldai

Sl. No.	Name	Organization	Phone Number	Signature
1	Gyendra Deka	Gamburth	9957072431	
2	Deep Jyoti Baidya	ASUM	7896515595	
3	Babul Bordola	Mangaldai	910477415	
4	Karabijoti Saha	Mangaldai Boro Association	9101647560	Karabijoti Saha
5	Bhauati Biswa	(A.P.M)	8473810594	Bhauati Biswas
6	Kalpama Deka	Local		Kalpama Deka
7	Rum Choudhury	Local	8822019782	Rum Choudhury
8	Gejam Esha Hoque	Local	6000407355	
9	EPSITA BARUA	SOCIAL WORKER	86380-98773	epsita
10	Kabita Adhikari	Social worker	9864575450	KAdhikari
11	Angnika Karita	social worker	7002327278	Angnika
12	Jiban chandra Deka	Social worker	8473861393	Jiban
13	Abendra Narayan Hazarika	do	8403897875	
14	Minaul	"	9365157153	
15	Kabita Saikia		9706529833	KS
16	Shandra Smita	Gerimari	6900378204	
17	Renuka	Geetamoni Angalik M. S. Parto. 2021 Mangaldai	8638553243	Renuka
18	D. H. Bandyopadhyay	KCP/BIL LKS	9935235115	



**Assam Skill University Project**  
**Initial Environmental Examination for Detailed Design and Construction of**  
**Assam Skill University Campus and Facilities**

Sl. No.	Name	Organization	Phone Number	Signature
19	Biraja Debn.	District	6001273375	
	Bhupen Kalita	LM	8139933346	
20	Shoosab Ali AKM	BPL	9859924042	
21	Saughite. Dutta	ASUP	8876396955	
22	Himnaly Sen	ASUP	8800188753	
23	Rupom (Boro)	ASUP	9864092761	
24	J. S. Mahoty	Dy Dir FCP	9859339420	
25	Buli Barua	J.E.P.M	7002436926	
26	Blorabi Saharia	Traces T&CP	9365622391	
27	Ratan Ch. Mandal	J.E, T&CP	9706062539	
28	Anima Debn		7002359217	
29	Shreeniwas	9811224458 Environment Dept	9811224458	
30	Nayan Pathak	CO, Mangalgi	7086521731	

**ANNEXURE-7: NO OBJECTIONS FROM FOREST AND WILDLIFE DIVISIONS OF STATE  
FOREST DEPARTMENT**



**GOVERNMENT OF ASSAM  
OFFICE OF THE DIVISIONAL FOREST OFFICER  
MANGALDAI WILDLIFE DIVISION, MANGALDAI**

No. B/46/Misc/ 220

Dated: 08.02.2021

To,

The Mission Director  
Assam Skill Development Mission

**Sub: Establishment of Assam Skill University at Gerimari Chapori, Mangaldai,  
Darrang.**

**Ref:** Your office letter No. ASDM-49/2017/482 dtd. 05.02.2021

Dear Sir,

With reference to the subject cited above, I would like to inform your goodself that, the proposed site of Assam Skill University at Gerimari Chapori Mangaldai Darrang, does not fall under proposed Eco Sensitive Zone of R G Orang National Park.

This is for your kind information.

Sincerely Yours,

*Sandeep*  
*S/Division*  
(B V Sandeep, IFS)  
Divisional Forest Officer  
Mangaldai Wildlife Division



GOVERNMENT OF ASSAM  
OFFICE OF THE DIVISIONAL FOREST OFFICER:: NORTH KAMRUP DIVISION :: RANGIA

Letter No. B/ 3119-20

Date: 25/2/2021

To

The Mission Director  
Assam Skill Development Mission  
Katabari, DPS Road, NH-37  
Garesuk, Guwahati-35

Sub: Establishment of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang.

Ref: Your letter no. ASDM-49/217/483, dt-05-02-2021.

Sir,

With reference to the subject & letter cited above, I am to inform you that as per report submitted by Beat Forest Officer, Mangaldai Beat, Mangaldai, it appears that the proposed site identified for establishment of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang does not fall under any Reserve Forest / Proposed Reserve Forest of North Kamrup Division, Rangia.

Therefore, this Forest Division has not any objection for establishment of Assam Skill University at the proposed site.

This is for your information and necessary action.

Yours faithfully

  
Divisional Forest Officer  
North Kamrup Division, Rangia

Copy to

1. The Beat Forest Officer, Mangaldai Beat, Mangaldai for information and necessary action.

  
Divisional Forest Officer  
North Kamrup Division, Rangia



**GOVT. OF ASSAM**  
**OFFICE OF THE DIVISIONAL FOREST OFFICER**  
**MANGALDAI WILDLIFE DIVISION, MANGALDAI**  
P.O.- MANGALDAI, DIST- DARRANG (Pin-784125), ASSAM  
email: dfo.mangaldoiwl@gmail.com

No. B/ 46/Misc/ 1844

Date: 22/03/2022

To,  
✓ The Mission Director,  
Assam Skill Development Mission  
5<sup>th</sup> Floor, Katabari, DPS Road,  
Garchuk, Guwahati- 781035

**Sub: Establishment of Assam Skill University at Gerimari Chapori, Mangaldai.**


**Ref: Your office letter No. ASDM/ASUP/12/2022/8 dated 10<sup>th</sup> March,2022.**

Sir,

With reference to the subject cited above, I would like to inform you that the proposed site of Assam Skill University at Gerimari Chapori, Mangaldai, Darrang. The new survey area does not falls under proposed Eco Sensitive Zone of the Orang National Park & Tiger Reserve, Silbori.

This is for favour of your kind information and necessary action.

Yours faithfully,

  
( Pradipta Baruah, AFS )  
Divisional Forest Officer  
Mangaldai Wildlife Division

Assam Skill University Project  
Initial Environmental Examination for Detailed Design and Construction of  
Assam Skill University Campus and Facilities



GOVT. OF ASSAM  
OFFICE OF THE DIVISIONAL FOREST OFFICER :: NORTH KAMRUP DIVISION :: RANGIA

Letter No Br/Genl/427-28

Date : 30-04-2022

To,  
The Deputy Commissioner,  
Darrang, Mangaldol.

Sub:- Establishment of Assam Skill University at Gerimari Chapori, Mangaldol.

Ref:- I. OSD, Assam Skill Development Mission, Garchuk, Guwahati-35 letter No. ASDM/ASUP/12/2022/7, dt-10.03.22  
II. C.O. Mangaldol Revenue Circle letter no. MRC.45/2021/521, dt-30.04.2022.  
III. B.O. Mangaldol Beat letter No. MB/30/Land/2022-23/24, dt-30.04.2022.

Sir,  
With reference to the subject cited above, I have the honour to inform you that the proposed site of Assam Skill University at Gerimari Chapori, Mangaldol, Darrang does not falls under notified Reserved Forest area as reported by the Circle Officer, Mangaldol Revenue Circle, Mangaldol & Forest Beat Officer, Mangaldol Beat, Mangaldol vide letter under references II & III(Copy enclosed).

This is for your kind information and necessary action.

Encls:-As stated above.

Yours faithfully  
**SUNNYDEO**  
**CHOUDHARY**  
Digitally signed by  
SUNNYDEO CHOUDHARY  
Date: 2022.04.30 15:53:50  
+05'30'  
Divisional Forest Officer  
North Kamrup Division, Rangia

Copy to the OSD, Assam Skill Development Mission, Garchuk, Guwahati-35 of his kind information,

**SUNNYDEO**  
**CHOUDHARY**  
Digitally signed by SUNNYDEO  
CHOUDHARY  
Date: 2022.04.30 15:57:49 +05'30'  
Divisional Forest Officer  
North Kamrup Division, Rangia