

THESIS 2013

**“MOUNTAINEERING TRAINING
INSTITUTE
AT DALHOUSIE”**

**DEPARTMENT OF ARCHITECTURE
BIRLA INSTITUTE OF TECHNOLOGY
MESRA, RANCHI**

**THESIS GUIDE –
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INTRODUCTION :

➤ PROJECT NAME - Mountaineering Training Institute at Dalhousie

➤ SITE AREA - 11.3 Acres

➤ LOCATION - Dalhousie, Himachal Pradesh

➤ BRIEF –

Hill architecture has its very unique form of architecture and the issues or concerns that should be taken care of in hill architecture are as follows :-

- Geological
- Climatological
- Geographical
- Natural Hazards
- Socio-cultural

➤ CONCERNS AFFECTING BUILDING -

	FOUNDATION	D.P.C	STRUC. SYS	BUILDING ORIENTATION	WINDOW	ROOF	WALLS	BUILT FORM
RAIN-FALL	⊙	⊙			⊙	⊙		⊙
SNOW-FALL	⊙	⊙	⊙		⊙	⊙		⊙
LANDSLIDE	⊙		⊙				⊙	
EARTHQUAKE	⊙		⊙				⊙	
DAYLIGHT				⊙	⊙		⊙	
WIND FLOW				⊙	⊙			⊙

This chart shows the relation between the various concerns and its effects on the building components. The circles show which all concerns are affecting which all building components.

AIM OF THE PROJECT :

- To organize, support and provide a base for expeditions for mountaineering, rock climbing, trekking at high altitudes
- To promote, encourage, support and execute schemes for related adventure activities

SCOPE OF THE PROJECT :

- Academic Block
 - Lecture Hall (3 nos with approx 140 sq m each)
 - Seminar Room
 - Common Room
 - Instructor's Room
 - Toilet
- Administrative Block
 - Principal's Room (with attached toilet)
 - Conference Room
 - Accounts Office
 - Administration Office
 - Store
 - Waiting Area
 - Toilet
- Indoor Climbing Wall
 - Instructor's Room
 - Equipment's Room
 - Climbing Wall Area
- Medical Examination Room
- Outdoor Climbing Wall
- Obstacle Area
- Library
- Mountaineering Museum
 - Display Area
 - Souvenir Shop
 - Ticket Counter
- Restaurant
 - Kitchen
 - Store
 - Preparation Area
 - Restaurant Deck

SITE ANALYSIS :

➤ PHYSIOGRAPHY OF SITE -

- SITE : Edu block Banikhet, Centre Dalhousie
- LOCATION : 32°32'N - 75°59'E
- SITE AREA : 11.3 Acres
- ROADS : Dalhousie road and Upper Bakrota Round road
- NEARBY LANDMARKS : Dalhousie public school
- SITE FEATURES : steep contour
- ELEVATION (DALHOUSIE) : Ranges Between 1,525m And 2,378m high from sea level
- DISTANCE FROM TOWN BUS STAND : 3 kms



➤ CLIMATE -

- CLIMATE : HUMID SUBTROPICAL
- MEAN ANNUAL RAINFALL : 1180 to 1900 mm
- MEAN HUMIDITY - 55% TO 80%
- MAXIMUM TEMPERATURE DURING SUMMER : 35°C
- MINIMUM TEMPERATURE DURING WINTER : -2°C
- DOMINANT WIND DIRECTION : E-N-E
- AVERAGE WIND SPEED - 14 km/hr





LEGENDS -

-  WIND FLOW DIRECTION
-  DIRECTION OF SLOPE OF SITE

➤ SOIL DETAILS –

- alpine humus mountain soils (gravelly loamy sand and generally high in organic matter)
- is a contoured land with surface elevation of about 2000 m from sea level

➤ VEGETATION & FLORA -

- Coniferous forests
 - Chir (*Pinus roxyburghii*)
 - Deodar (*Cedrus deodara*)
 - Kail (*Pinus wallichiana*)
 - Spruce (*Picea smithiana*)
 - Chilgoza (*Pinus gerardiana*)
- Broad leaved or deciduous forests
 - Sal (*Shorea robusta*)
 - Shisham (*Dalbergia sisoo*)
 - Walnut (*Juglans regia*)
 - Ban oak

CASE STUDY :

Himalayan Mountaineering Institute (Darjeeling) –



➤ LOCATION :

- located at the Jawahar Parbat
- the stretch of Jawahar Road that goes by the Shrubbery Nightingale Park in Richmond Hill, and all the way to HMI and the Zoo located in the Jawahar Parvat area

➤ FACILITIES :

- Outdoor Climbing Wall
- Indoor Climbing Wall
- Library
- Auditorium
- Museum
- Souvenir Shop
- Administrative Office Complex
- Restaurant





➤ **TYPES OF COURSES OFFERED :**

- Institute conducts 16 scheduled courses every year
- One adventure courses is reserved for visually handicapped persons
- One course on methods of instruction (MOI) is conducted for the potential instructors who wants to pursue mountaineering as a career

➤ **OBSERVATIONS DURING CASE STUDY :**

- departments scattered in the HMI premises at various levels due to the contour
- meandering pathways
- elaborate landscaping
- lack of proper signage
- absence of separate lecture halls

LITERATURE STUDY :

Nehru Institute of Mountaineering (Uttarkashi) –

➤ **ABOUT :**

- Situated near Uttarkashi in the state of Uttarakhand
- Surrounded by mountains and river Bhagirathi gushing on one side
- The flora and fauna in the campus is well maintained, with several species of birds and beautiful Himalayan garden with plants that grow in high altitude

➤ **FACILITIES :**

- Outdoor Artificial Walls
- Gyan Hall (that houses Indoor Artificial Wall & Gymnasium)
- Volleyball Court
- Basketball Court
- Graduation Ground
- Museum
- Library

- Administration Block
- Auditorium
- Trainees Hostel & Guest Room
- Souvenir Shop
- Café
- Internet centre etc



➤ **OUTDOOR ARTIFICIAL CLIMBING WALL :**

- Freestanding outdoor artificial climbing wall of a shell concrete/ferro cement structure
- rising upto 10 meters

➤ **HOSTEL :**

- bunker system room with 6 comfortable beds
- accommodate 120 participants
- Built in Dining Hall and Kitchen
- In built Lecture Hall & TV lounge
- Cyber Café & Telephone facilities

➤ **MEDICAL INSPECTION ROOM : 3 bedded hospital**

➤ **SEMINAR HALL (DUNAGIRI) : capacity of 60 delegates**

➤ **ADMINISTRATIVE BLOCK (THALAY SAGAR) -**

- Named after one of the mountains of the Garhwal Himalaya
- Houses the offices of :
 - Principal & Vice Principal
 - Registrar
 - Accounts Branch
 - Training Wing
 - Instructor's room

AREA REQUIREMENTS:

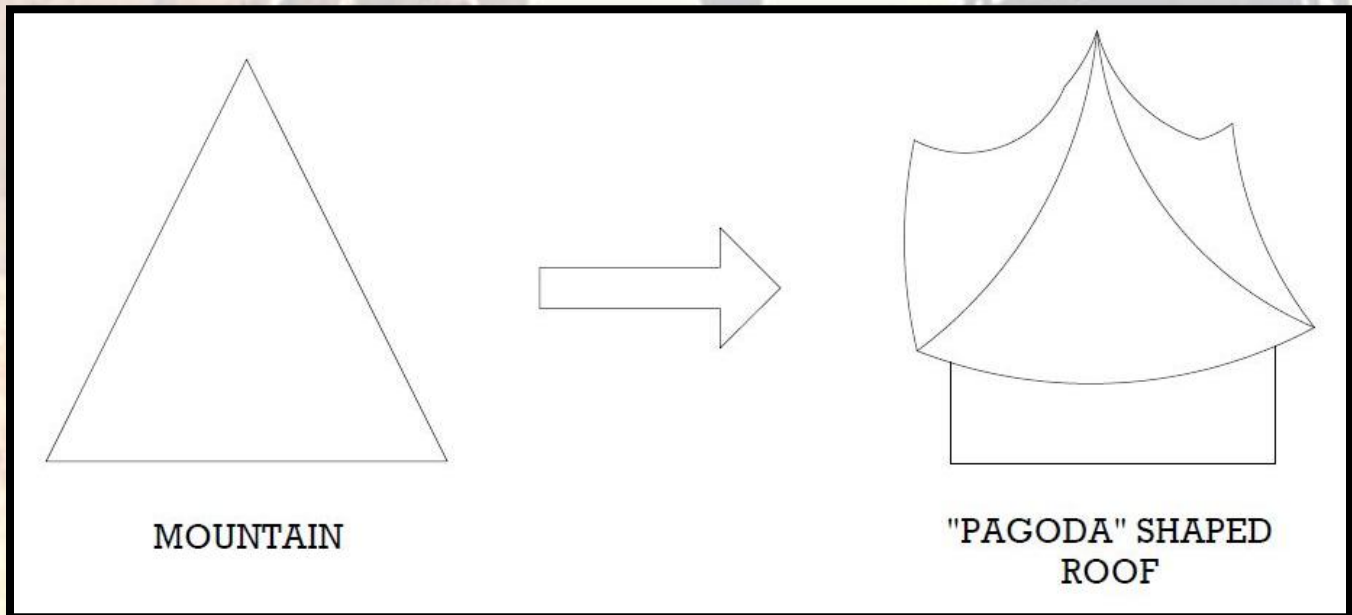
	SPACES REQUIRED	QTY	USERS	CASE STUDY (HMI)	LITERATURE STUDY (NIM)	AREA PROPOSED
1.	ADMINISTRATION					
	RECEPTION AND WAITING	1	20	-	-	40 sqm
	REGISTRATION ROOM	1	4	25 sqm	20 sqm	25 sqm
	PRINCIPALS OFFICE	1	1	20 sqm	25 sqm	20 sqm
	ACCOUNTS OFFICE	1	3	35 sqm	25 sqm	25 sqm
	STORE	1	-			20 sqm
2.	ACADEMIC BLOCK					
	LECTURE HALL	1	40	-	90 sqm (60 ppl)	60 sqm
	LIBRARY	1	40	80 sqm	80 sqm	100 sqm
	MULTI-PURPOSE HALL	1	40	300 sqm	80 sqm	80 sqm
	COMMON ROOM	1	40			60 sqm

	SPACES REQUIRED	QTY	USERS	CASE STUDY (HMI)	LITERATURE STUDY (NIM)	AREA PROPOSED
3.	OTHER					
	RESTAURANT	1	20			100 sqm
	CANTEEN & KITCHEN	1	50			
	INDOOR CLIMBING WALL	1	20	125 sqm		100 sqm
	TRAINEES HOSTEL	2	40	(120 ppl)	(120 ppl)	
	AUDITORIUM	1	150	270 sqm (150 ppl)	375 sqm (250 ppl)	300 sqm
	SHOPS	2				100 sqm
	MUSEUM	1		130 sqm		150 sqm
	OUTDOOR CLIMBING WALL	1		400 sqm		400 sqm
	TRAINING FIELD	1				

BASIC DESIGN CONCEPT :

➤ CONCEPT 1 : MOUNTAIN → PAGODA

- As the project site is in DALHOUSIE (Himachal Pradesh) which receives more than average amount of rainfall and snowfall, the roof of the buildings should have sloping roof
- McLeodganj and Dharamsala are places having TIBETAN influence as Dalai Lama fled to India and took refuge there. These two places evolved as important pilgrimage as well as tourist destinations. Many monasteries have evolved in these places since then.
- Dalhousie is few hours away from these places. Hence, similar types of features used in architecture of its neighboring places are attempted to be incorporated in the design.
- “PAGODA” an important feature of Buddhist Architecture will be used as roofing structure for all buildings in my project. It also adds to the aesthetics of the buildings.



➤ CONCEPT 2 : VERNACULAR ARCHITECTURE OF HIMACHAL PRADESH - “KATH KHUNI”

- Kath khuni is an indigenous wood and stone construction technique
- Walls are made of deodar and limestone with rubble acting as insulation
- Plinth is entirely constructed of stone
- Slate shingles – wooden framework and cap the building as the roof tiles
- One peculiar feature is projecting carved stone in one or more corners

In my project I have used this style just for aesthetic purpose and not for structural purpose.

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- Himalayan Architecture – by Ronald M. Bernier
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A silhouette of a person climbing a rock face against a bright, hazy sky. The person is positioned on the right side of the frame, reaching up with their right arm. The rock face is on the left, showing vertical cracks and textures. The background is a soft, yellowish-white glow, suggesting a sunrise or sunset. The text "THANK YOU" is centered over the image in a blue, serif font.

THANK YOU