International Journal of Multidisciplinary Research and Modern Education (IJMRME)
Impact Factor: 7.315, ISSN (Online): 2454 - 6119
(www.rdmodernresearch.org) Volume 4, Issue 2, 2018

KONARK: INDIAN MONUMENTS

Aparajita Sharma
Gurukul Mahila Mahidayalaya Raipur, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh

Cite This Article: Aparajita Sharma, "Konark: Indian Monuments", International Journal of Multidisciplinary Research and Modern Education, Volume 4, Issue 2, Page Number 56-62, 2018.

Abstract:

Caring and preservation of Indian medieval monuments and sculptures is a necessary step towards their survival and prolonged exposure to the natural processes The Historical Monuments (HM)and Ancient Heritage Structures (AHS) severally affected by environmental, region. conditions prevailing in the ancient medieval Kalinga Architecture, KONARK, nearer to The Chandrabhaga shoreline Bay of Bensal which is dedicated to SUN (God Surya), declared UNESCO as World Heritage Site" have been critically analyzed and interpreted with a view of conservation and protective measures in caring of monuments. The study reveals that survival structure largely influenced by physical and chemical factors which causes the etching and deterioration of stones. It has been observed that mineralogical composition of Monumental rock shows very susceptible to erosion. Natural weathering causes the tarnish of colour. The development of etching occurs due to the reaction of stone with air/water admixture of salt vapour and winds. Under useful mitigative measures the preservation of sculpture includes cementing material coating/Vinyl coating can be practicised .Vegetal coverage/plantation/ Fencing of Casuarinas/Pteridophytes / Hedges/Ferns towards the sea shore sites would provide protective barriers for sandy winds blown from seabeaches. Another protective measure related with load bearing capacity of the foundation soil need supports of steel framework.

Key Words: Preservation, Monuments, Konark & Heritage Structure Environment

Introduction:

Monuments are important National treasures, which serves as primary sources and evidences of ancient history, cultural and social conditions in past periods of human development. Since India is rich in culture, tradition, heritage building, temples, forts and palaces, monuments, the famous world heritage site KONARK has been described with a view to discuss about the present scenario of monuments with respect to preservation and environmental conditions. Etymologically, Konark derives from Sanskrit word KONA (corner) and Arca (Surya), dedicated to Sun (God Surya). Now the ancient medieval Kalinga Architecture declared as UNESCO World Heritage Site. (WHS) It requires sustainable protective measure for survival and existence of monuments. Various physical, chemical causes and environmental elements/factors directly and indirectly deteriorating the building stones. Etching and tarnish of stone became most common damages. The aesthetic values lies with Chandrabhaga and Mitravana tales the stories of the spiritual healing. These monuments have been also called by some Europeans as "Black Pagoda" due to the resemblance of stones tarnished and looks black granite, by the effects of salty winds blown from sea banks carrying beach sands. (Loaded with sediments)

Study Area:

The historical medieval Kalinga architecture structure built by the Eastern Ganga Dynasty ruler Narsimha Dev I (1250 AD). It lies nearer to the Chandrabhaga shore line, Bay of Bengal, between N longitude 15^{O} 53' 15" and E Latitude 86^{O} 05'41", a distance of 53km. from Puri and Bhubaneshwar city. In 1984 it has been declared a World Heritage site, among 25 Cultural World Heritage (CWH) in India.

Methodology:

Under methodology, the literature review and other data regarding architectural structure, history, physical set up have been collected. The topographical map (74 I/14) (1:50,000) and satellite FCC data has been interpreted for study of geomorphic conditions and demarcated the geomorphic units of the region. Environmental criteria leading to preservation and mitigative measures have been analysed with respect to rock types and physicochemical weathering prevailing in the study area. Important conservation activities/ practices for chemical preservation and environmentally structure. Protection of monuments illustrated and discussed to improve the stability of the structure.

Historical Background:

Konark represents the vast chariot of vast chariot of Sun God SURYA, located in the eastern coast of Bay of Bengal, in Orissa. It is recorded that the temple is made in 13^{th} Century 1255AD by King Narsimha Deva of Eastern Ganga Dynasty. This Architecture is one of the seven wonders of India, a heritage site recognized by UNESCO. The region is known as Arca Khetra It. shows contribution and significance of Artisian's work in engineering/sculpture paradigms. The Sun Temple shows culture and habitation of civilization. Main carving of 24 wheels represents 24 Moons Paksha (phases) whereas 7Horses indicate 7 days of a week, and 7 colours of Sun rays.

It is assumed that up to 1837 AD the Top resist on the Apex. Due to more weight and huge tonnage of slabs/ stones the subsidence of structure giving deeper inclination in sandy soils of foundation. The Architecture represents the last phase (1100-1200AD) in Orissan Art/Architecture, East facing on shore lines of Puri. Now a days the shore line regression reaches to 1km. distance. It is situated 42km. from Puri in NE direction near shore lines /sea beaches.

Drainage Line: Change in Stream Orientation:

A tortious nature stream known as Kadua River nearby the Tikadapada is the Master River whereby the Chandrabhaga river joins, It was flowing tortuous parallel to the coastal margin/orientation. Kadua River exhibits tortuous nature, flows in left bank of Tikadapada Township. The tributary of old river channel follows parallelism orientation to coastal lines and it joins the Kadua River at the north of Konark Sun Temple. The junction point of two rivers i.e. at confluence a wide flood zones developed and due to small river channel at Confluence the river water spread over in vast alluvial plains. Low degree of channel slope and unfavorable valley geomorphic conditions might have been produced a flooded condition which causes ultimately disappearance of streams. The development of wetted landscape/old Flood plains geomorphic units, caused by the little carrying capacity of sediments the stream channels, Due to erosion & lost of river banks, the margins of valley merges in the swamp area/, forming Chandrabhaga Lake nearer to the shore of Bay of Bengal estuaries at Balukhand. Using the inductive and deductive reasoning tone, texture, colour, association, pattern, land use, geomorphic zones, vegetation settlement, rocks, exposures, water bodies. Have been interpreted. The satellite FCC image utilized for identification of geomorphic features and geomorphic units have been delineated.

Archaeological Characteristics:

Most of Indian Heritage buildings and Monuments (IHBM) had been designed skillfully entrusted by the contemporaneous Architectures/Artists under kingdom using well established technical knowhow of Indian sculpture. At present, the repair and rehabilitation programmes must be equally exhaustive due to historian supervision and Archaeological experts to keep the originality of art and design of the monuments. Under Architectural set up of configuration it shaped in a Giangiatic Chariot of carved stones, pillars, carved walls, Plan of the structure orientation shows towards east direction indicate that first sun rays strikes the principal entrance. The architectural structure of Sun temple is based as a chariot on 24wheels. (10'dia). This chariot is drawn by 7 mighty horses. The wheels and other features related with calculations and estimation of Time, Period, Years of Astronomical/Astrological considerations. In general, Art is a skill and most simply defined as attempt to create pleasing forms. Under static Art the sculpture and Architectures are combinly considered, since Art-is a barometer of a nation's culture. It finds religious origin and justification. It originated in the religious needs of contributing Yajna Vedica/Vedic sacrifies (Mukherjee, 1989).

Configuration & Design:

The huge monolithic, columns pillar, Garuda Stambh, had been dig out form Konark temple zone & shifted / brought to Puri, and founded at thefront of Lord Jagannath Temple Puri (Upadhyay etal, 2001). Landscape and slope of the terrain is important. Element which forms the structural variations for the construction planning and design of the structures. The Laterite stone blocks mainly used for the Temple core structure but Sun Idols of three numbers had made by using chlorite schist stones. No slurry or cementing materials used in joints of stones. It is known as Dry Filling Process (DFP) of jointing. During construction process, the elevated portion /levels can be matched by forming slopes of surroundings & upraising at the same time (simultaneously) with the construction of structure to reach the destinated upper part of the stone levels. Bracket – Corbellings System (BCS) adopted for these techniques. The Pyramidical roof of Jagmohon constructed by using the sand & soil casts to take the weight of the stones after resting on the cast. The soil casts removed after construction through the doors exist. Configuration scheme & their dimensions- shows that the stone beam used on the column of the Big chambers (Halls) and supported by Wrotten Iron Plates The dimension of plates measuring 10.17 meters length with 11 to 17cm^2 in cross section. Only orissan Temples, it is evident No other parts of country it is implied.

Wrotten Iron Bars/Plates:

Pillar holds the Dome, Base is cuspied shaped Jagamohan means Audience Hall i.e. Ante room compartment of an Orissan Temple.

Primises Configuration:

(Outline)

L/B = 1:1.5955, (264/165 = 1:1-6), 43,447.m^2

A = (43,560M^2) (Primises Dimension) J. Jagmohan = 30-5x30.5, L^2 A= 930.25 m, (=31x31=961m^2)

Environmental Conditions:

Under physical environment of terrain conditions, the river drainages are dominated element in making landscape The river Chandrabhaga shifted about 1 km. towards north due to migration of river courses and it now disappears on the ground surface The palaeochamels have been capped by thin veneer of sands carried by river. It is represented by alluvial zones, and plain geomorphic unit dominated by river and beach sands. Following major considerations are useful. Towards the effective caring and preservation of Konark Monument

a. Protective Measures: Accessibility to the temple inside is prohibited as it filled with rock debris / sands to keep the building / structure intact. Minute Artistic work has been created / carved by the Artist on sculptures but most of the portion has been damaged due to calamity. The social and battle activity / wars of contemporaneous reign has been illustrated and carved on walls surface but visibility and sharpness being poorer, became tarnish and damages of carvings. Natural environment causes appearance of Black Granite, originally it had sandy lusture. It has been marked that at the base of the temple images of animals. foliage, worriers, horses, sun rays positions with respect to Sun dawn, noon & Sun set phenomenon, Black pagoda named by Navigational land mark of ancient sailor It is evident that it was built at sea shore but sea margin receded with time and at present away from the structure It shows shifting of sea beach in past years of history.

b. Preservation of Monuments & Mitigative Measures: For preservation of the sculptures the effective mitigative measures include coating of polyvinyl weather proof material, cementing, grouting, cover of transparent film etc. To preserve the Jagmohan stones / slabs the filling of sands may be useful. Vegetation coverage / barrier / plantation/ fencing of casuarinas/pteridophytes / Hedges / Fern facing towards the sea shore site provide protective barrier for sandy winds blown from sea beaches.

c. Prevention for .stability of Monuments: The importance and significance of prevention of monuments lies for future time period and increase further resistance of their stability. In past, Ancient times the routine / practice of preservation is less common, limited with tiny repairs. The modern techniques for preventive measures largely depends on utility, strength, maintenance procedures and type of carving of monuments with standard norms. To secure the present status of Konark Monument the preservation work is carrying out by A S I, G.O.I. The conservation work is carried out, adopting Ancient Monument and preservation, Act, 1904; it includes three major categories composing physical – chemical, Technical and social awareness aspects. At present India has more than 3650 ancient monuments and recognized archaeological sites / remains of National importance, under methodology, ASI carried out chemical preservation and environmental development programme also conducted as awareness for peoples and social community. Under the provisions of AMASR Act,1958, the Archaeological Survey of India (ASI), protects the monuments of India, The Ancient monuments and Archaeological sites and Remains Act, 1958 considers & defines Ancient Monuments, the object must be historical, Archaeological, or artistic, interest with an existence of above or more than 100 years.

d. Mitigative Measure Programme: The mitigative measures programme can be conducted & controlled by factors affecting-

- ✓ Economic- provisions of Govt. Funds under the Budgeting schemes Govt. take responsibility to conserve monuments, collection, and Funds through private, public or public participation / pp. / Govt. of States / cultural societies.
- ✓ Govt- Action plan – assigned with corporate, multinational, for treatment, maintenance & renovation.
- ✓ Framework formulating organizational setting of Archaeological Divisions at State level / District level. Planning units.
- ✓ Conducting Surveys, Seminar, Meetings, NGO workings. Educational & Social units Organizational Institutes for Awareness / development programmes.

Physical Status of Structures:

The existing physical condition of Konark Temple premises comprises the structures envisaged and found that there are a number of cracks and joints have been developed on the walls and joining contacts of stone /slab pieces. In general observation the physical appearance indicates that it has been affected due to exposition of bared stones to the environment for long span of time & devoid of caring, negligence of maintenance, causes deterioration-

The regular cleanness and care taking during the KALA PAHAR period has been stopped afterwards, the AHI has now taking care at the tourist place / Archaeological sites. In last century, the renovation and upgradation of structure was carried out in 1901by British Govt-Funds. The blown winds from sea carrys beach sands which quickly spread over a large area of the primises. It form a thin veneer of sands i.e. blanket coverage of sands on almost complete outer portion of the temple. To support and strengthen the structure. The use of iron pillar, / pipes at sensitive weaken zones / places / portions became useful protective remedies but it is not sufficient or not capable to protect for a long time. A continuous monitoring is necessary. It needs further compact materials and dense / high strength supports, including framework in web and polynetting designs of supports.

Major Causes of Detereoration:

Factors affecting monuments forms mainly due to environmental and foundation / structure and It causes impact on monuments. Major factors which controls the stability and deterioration are climatic changes, rain fall, temperature, wind, humidity, it can be categorized under-

- ✓ Natural Causes – Environmental Impact
- ✓ Artificial Causes- Man Made Activities

The kind / varieties of stone and building materials used in the construction of 1) Foundation 2- Top structure above ground of the Konark. Natural wear & tear occurs due to temperature, rainfall humidity, wind

direction, windblown with loaded sand particles from beach Natural causes includes 1. Natural weathering 2. Natural Disasters. Man made cause are Artificial causes mainly due to Anthropogenic Activities /Farming practices, land use changes / irrigation / Agriculture etc. poor maintenance / poor civic sense of locality people, civil war , / encroachment etc. Remedies lies under 1. Technological Aspect carried out by ASI 2. Legal Aspects – G.O.I. 3. Social Aspects by local Govt. / NGO's)

Preservation Strategy for HBM:

The Heritage Building and Monuments (HBM) represents the glowing and splendors of cultural and civilization palaces / buildings /Forts/ monuments, but it being progressive decaying & extinct position with span of time it requires systematic and stepwise examination, analysis for preventive strategy. At initial or primary level the cosmetic and filling techniques of treatment are common. Under detailed plan of repairing and restoring the monuments includes investigation and various Tests in field and laboratory for checking of qualitative norms of materials. The chemical conservation treatment uses materials and digenesis technologies whereas structural (physical) method mainly maintain the outer looks / and strength of structure to resist with time Also carried out the contemporary

Awareness programmer which includes participations of peoples to appreciate the development of knowledge among society / educate the community. India possess and rich in HRM structures belonging to thousands of years old. Some had already arrangements built-up devices for the protection for rain water & natural agent, sun light, temperature, controlled arrangement and planning. In spite of these arrangements the deterioration and degradation of HBM occurs due to major causes –

- ✓ Natural Disasters. Such as Cyclone, Earth quakes.
- ✓ Incidental Activity corrosive action of constructional material
- ✓ Uncontrolled Vegetation Growth in weaker rock joints /soil layers
- ✓ Encroachment by animals/habitat, modernization/development activities' in surroundings transport vibration due to /increase in vehicle
- ✓ Land use /development urbanization/ National policy changes

Discussion and Conclusion:

The development of wetted landscape & old flood plains geomorphic units largely affects the stability of huge structure. Due to physical and chemical properties of stone blocks of monuments, the process of natural weathering causes tarnish appearance of colours. The stones are very susceptible to erosion. The changes in original colour of rocks and development of etching occurs due to the reaction with the Air /water / admixture of salt vapours' and winds. Under protective measures the load bearing capacity of foundation soil, needs supports of steel frame work.

References:

1. Brown Percy,-1965 Indian Architecture Buddist and Hindu 4th Edition, Bombay,p.108-109
2. Diwan H-D 2015, Sun Temple : Konark Orissa, Tales of Orissan Terrain, W.D.T C, AIHC & Archaeology, p+ Rssu Raipur
3. Mukherjee R.K. Radha Kumud 1989, Hindu Civilization, 5th Edition,Press Bombay,P324.
4. Upadhyay, VN & Tiwari, G. 2001, Bhartiya Sthapatya and Kala, Moti lal Banarsi Das, Chowk, Varanasi, P-259 (Ref-1o8-191)
5. C S Mathew (2016), Scaleberry Jena Pet et.al. Geophyscist & New considers researches. Web site Google
6. Sukhmoy Jana et.al- (2016, multi- Pronged) Search for Palgeo – channels near Konark Temple Odisha – implications for the mythical river Chandrabhaga httpii bharat katyan/ 97 biogspot in 2016/10/ multi pronged search / for palaeo htm /google
7. hItp //www. Current science. ac.in voI.III /08 1387 pdf
8. G.S.Mudur 2016, Evidence of lost river Geophyscists Spot Mythical Chandrabhaga. http://www.tele graph/india/com /116028/jsp/ front page story.
9. UNESCO, World Heritage Guide Lines, Google website

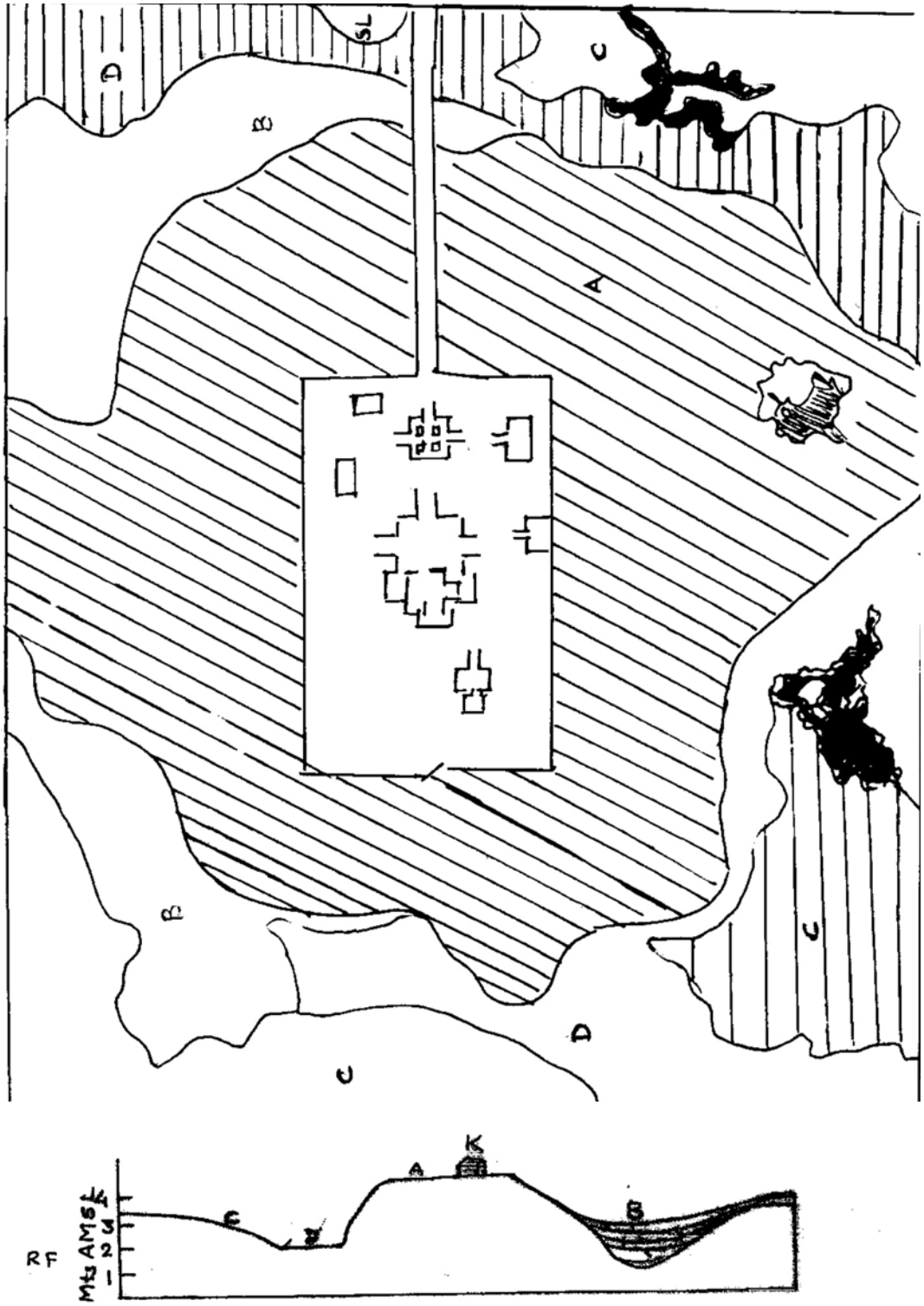


FIG. SCHEMATIC SECTION SHOWING GEOMORPHIC FEATURES
(K- KONARK)

A MOUND (Flat topped / Table land)

B WETLAND (Sand fills)

D PLAIN LAND (Border strip)

C SLOPING GROUND

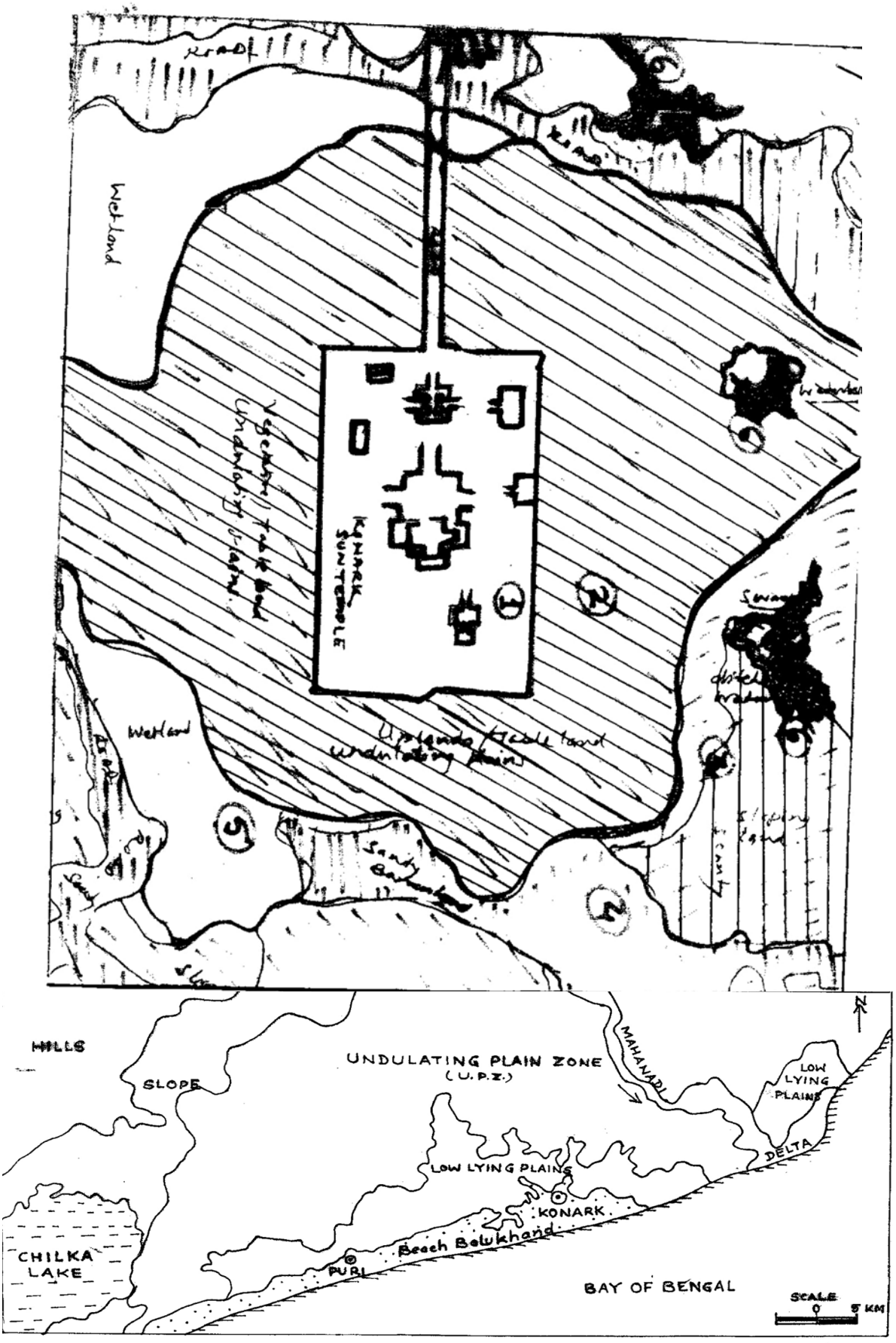
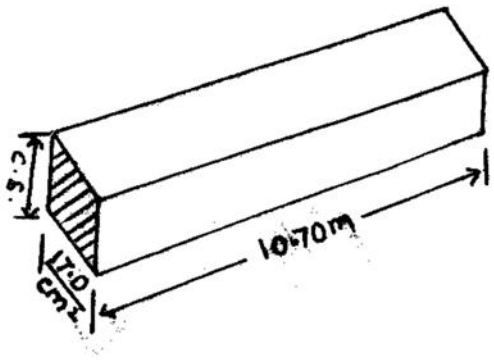


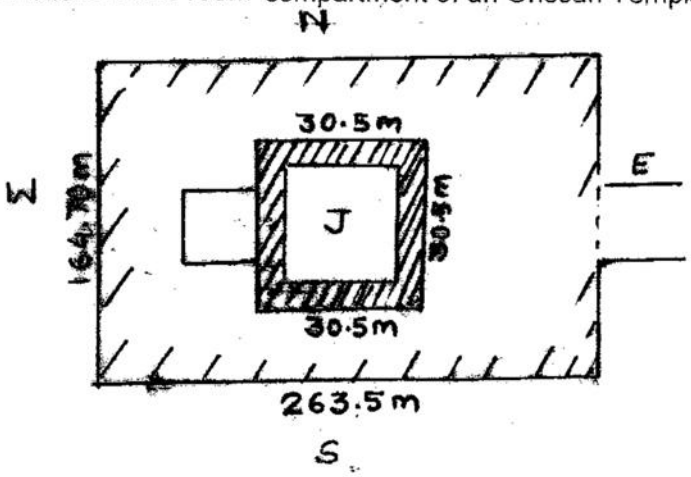
FIG. GEOMORPHIC UNITS (Based on Satellite Data)

WROTTEN IRON BARS/PLATES



PRIMISES CONFIGURATION

Pillar holds the Dome, Base is cusped shaped Jagamohan means AudienceHallsi.e. Ante room compartment of an Orissan Temple.



(primises dimension)

L/B = 1:1.5955 (OUTLINE)

(264/165= 1:1-6)

43,447.m²

A=(43.560M²)

J.Jagmohan

=30-5x30.5

L² A= 930.25 m

(=31x31=961m²)