

Engineering Marvels of 1.5 Million Years Old Man Rama Setu

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ABSTRACT

Rama went on exile for 14 years. At the end of 12th year, near Panchavadi, Sita was abducted by Ravana. Rama with the help of Hanuman located Sita at Ashoka Vatika, Sri Lanka. To reach Sri Lanka, Nala and Vanara sena constructed a sea bridge from Dhanuskhodi, India to Thalaimannar, Sri Lanka with 35 Km length and 3.5 Km width in 5 days with local trees, rocks and gravels. At Sri Lanka Rama killed Ravana and returned with Sita to Ajodhya. The sea bridge with largest area, constructed 1.5 million years before is still considered an engineering marvel.

Key words: Rama, Sita, Ravana, Hanuman, Ashoka Vatika, Nala, Rama Setu.

1. Introduction

In Tredha Yuga the celestials troubled by demons, especially Ravana, the king of Sri Lanka, appealed to Lord Vishnu who agreed to take a human incarnation to annihilate Ravana. Rama was born to king Dasharatha of Khosala Kingdom [1]. Rama decided to fulfill the promise of his father to Kaikeyi, step mother and departed to the forest on exile for 14 years with brother Lakshmana and wife Sita [2].

They spent 12 years in the forest peacefully but towards the end of the exile when they moved to Panchavadi near present Bhadrachalam, Andhra Pradesh Sita was abducted by Ravana by Pushpaga Vimana [3]. Figure 1 shows the places of travel during exile.

2. King Ravana

Ravana was born to a great sage Vishrava and daitya princes Kaikesi in the Bisrakh village, Uttar Pradesh, India [4].



Bharat during Ramayan times.

Fig 1 Places of travel during exile



Fig 2 File photo of Maestro King Ravana

Ravana's kingdom was spread over a vast region that included today's Nuwara Eliya, Badulla, Polonnaruwa, Anuradhapura, Kandy, Monaragula, Matale and Chilaw. Ravana's civilization was a highly advanced civilization [5]. It was a prosperous culture and a civilization that developed centering Sri Lanka. Ravana was a member of a highly advanced and intelligent Yaksha tribe. King Ravana was an expert among warriors, a specialist among medical men, a Rishis among astrologers, superior statesmen among rulers and a maestro among musicians [6]. The architecture of the kingdom was magnificent and houses were built on costly timber. The experts say that Ravana ruled Sri Lanka about 10,000 years ago and he possessed Pushpaga Vimana and had constructed about 5 airports on the highest point of Noroliya mountain range[7]. The Yaksha of Ravana had chemicals that could soften rocks. This is how; they bore through huge rocks to create underground tunnels and pathways.

3. Movement of Sita in Sri Lanka

The Pushpaga Vimana with Ravana and abducted Sita landed at Wierangatota (aircraft landing place in Sinhala), about 10 Km from Mahiyangana, east of the hill station of Nuwara Eliya in central Sri Lanka[8]. Figure below shows the places of movement of Sita[9].



Fig 3 Map showing movement of Sita

Sita was then taken to Goorulupota now known as Sitakotuwa where Mandodari wife of Ravana lived. Sitakotuwa is about 10 Km from Mahiyangana on the road to Kandy. Sita was housed in a cave at Sitaeliya, on the Colombo Nuwara Eliya road. Ravana then moved Sita to Ashok Vatika, the salubrious garden in the mountains.

4. Search for Sita by Rama

Rama and Lakshmana not aware of abduction of Sita started searching for Sita. It is Jatayu, dying vulture informed Rama that Sita was abducted by a demon and flown in a vimana. Rama met Sugriva, king of Kishkinda and Hanuman. Sugriva lived in Rishyamukha on the banks of present Pampa, Tungabhadra. Sugriva promised Rama to search and locate Sita. Near the ancient Kishkinda, around four kilometers from the town of Hampi, there exists a mountain called Malbhavant where Rama has sent the season. Hanuman and

vanara sena searched for Sita in all directions. Hanuman because of his powers, crossed the ocean, reached Sri Lanka, met Sita in Ashoka Vatika and informed Rama. Figure below shows Hanuman in Ashoka Vatika [12].



Fig 4 Hanuman in Ashoka Vatika

5. Construction of Rama Setu

After Hanuman located Sita in Sri Lanka, Rama, Lakshmana, Hanuman with vanara sena left Kishkinda and proceeded towards Kodikarai in Vedranyam, Ramnad district of Tamil Nadu. From this place, Rama had the first view of the sea to Sri Lanka [13].



Fig 5 Topography of Rama Setu

Rama realized that a long and wide bridge is to be constructed to transport the vanara army to Sri Lanka. Nala, a biological descendant of Viswakarma, capable of constructing a bridge across the ocean was accepted as a chief engineer by Rama to

construct a bridge [14]. The following bridge construction processes were followed.

- ❖ Survey
- ❖ Planning
- ❖ Execution
- ❖ Post completion

Nala has surveyed the areas around Rameswaram, Dhanuskhodi and other areas of Ramnad district. It was decided to construct a bridge of 100 yojana length and 10 yojana widths with a width: length ratio of 1:10. The bridge commenced from Arisalmunai in Dhanuskoti, tip of Indian Pamban Island and ends at Thalaimannar in Sri Lanka. The trees like Sala, Asvakarna, Dhava, Bamboo, Kutaja, Arjuna, Palmyra, Tilaka, Tinisa, Bilva, Saptaparna, Karnika, Mango and Ashoka were used in building the bridge. Rocks and stones from nearby mountains were uprooted and transported by mechanical contrivances. The animated Figure 6 shows the construction process.



Fig 6 Animation of Construction Process

Trees were piled on seabed to give wood cushion effect for the pile foundation. On top of this large and small stones were piled. Vanara drew up strings, a hundred yojana

long in order to keep the rocks in a straight line. The concept of linear alignment was followed [16]. Finally flat finishing was done. The bridge was constructed within 5 days. The distance covered on each day is as follows.

Day 1, 14 yojana

Day 2, 20 yojana

Day 3, 21 yojana

Day 4, 22 yojana

Day 5, 23 yojana

Total length of the bridge is 100 yojana with a width of 10 yojana. Present satellite images measures a length of 35 Km and a width of 3.5 Km. After completions the bridge was named as Nala Setu. Later as mark of respect to Rama, history named it as Rama Setu and Setu Banda. Rama with vanara army crossed over to Sri Lanka and camped at Suvel Parvata in Sri Lanka. Figure 7 shows vanara sena actively constructing the bridge.



Fig 7 Vanara sena in Bridge construction

6. War between Rama and Ravana

War between Rama and Ravana took place at Yudhaganapitiya in north of Nuwara Eliya and lasted for 13 days. Dunuwila is the place

from where Rama shot Brahmashira that killed Ravana.

The Sri Lankan king was chalking out battle plan in a place called Lakgala when the killer arrow struck him. Lakgala is a rock from the top of which Ravana could see north Sri Lanka clearly. It served as a watch tower to Ravana. After the death, Ravana's body was placed on the rock at Yahangala for the Sri Lankans to pay their respects. After the death, the Nagas tribes were grief struck. They took Ravana's body into the jungles and tried to give life with their mystical powers. As they could not bring him back to life, they mummified his body and hid it in a cave [17]. Some balm seems to be applied to the body for preserving along with some metallic ornaments. It is within the range of Harasbedda, Ragala Walapane Mountains.

7. Present status of Rama Setu

The thirty five Km long bridge which separates the Gulf of Mannar from the Pak Strait was reportedly passable on foot up to 15th century until storms deepened the channel. The Rameswaram temple record suggests that the bridge was completely above sea level until it was destroyed in a cyclone in AD 1480.

According to NASA (National Aeronautics and Space Administration) satellite image, the bridge's unique curvature and composition by age reveals that it is manmade [20]. Legend as well as Archeological studies reveals that the first sign of human

inhabitants in Sri Lanka dates back to the primitive age about 1, 75,000 years and the bridges age is also almost equivalent. Satellite image of the present bridge is shown in Figure 8 and 9.



Fig 8 Satellite image of Rama Setu



Fig 9 Satellite image from Thalaimannar

The structure of the bridge consists of a chain of shoals, coral reefs, a ridge formed in the region owing to the thinning of the earth's crust, a double tombola and a sand split or a series of barrier islands. The age of the bridge had been calculated as 1, 25,000 years which is also the age of Ramayana. The bride is a chain of limestone shoals. Some of the

sandbanks are dry and the sea in the area is very shallow, being only 1 to 10 meters deep in places.

8. Conclusion

- ❖ Rama Setu Bridge described in Ramayana is scientifically proved.
- ❖ The carbon dating of the materials used in the construction proves age of Rama Setu to be 1.5 Million years old.
- ❖ The satellite images prove that the bridge is manmade.
- ❖ Today, from Sri Lanka, Tourists are able to reach a part of the bridge which is slightly above sea level.
- ❖ Rama Setu is the widest man made sea bridge with an area of 122.50 sq Km (35 Km X3.5 Km).
- ❖ Rama Setu shall be declared as international monument under UNESCO.

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A successful man is one who can lay a firm foundation with the bricks that others throw at him.

~ Sidney Greenberg