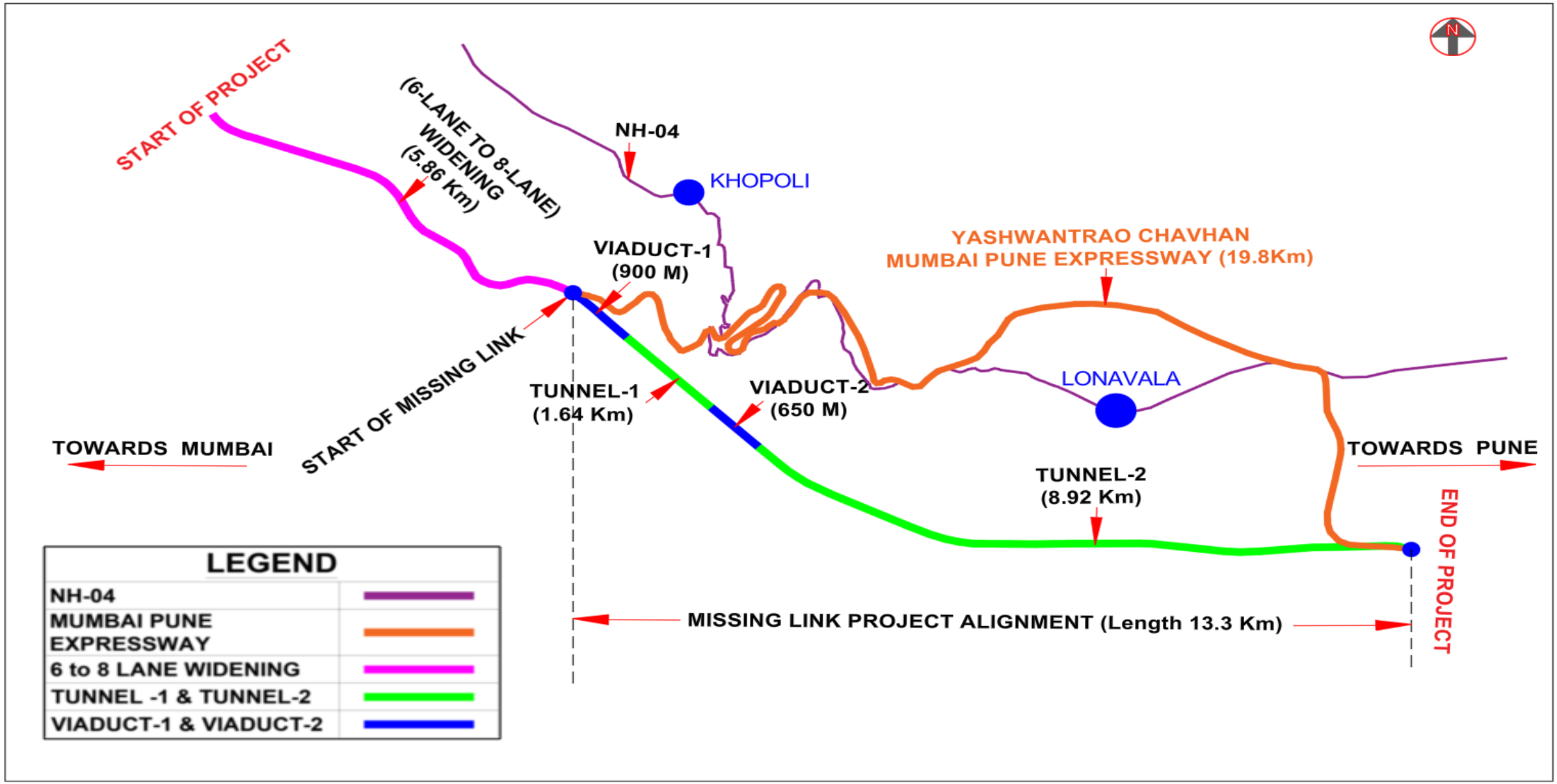
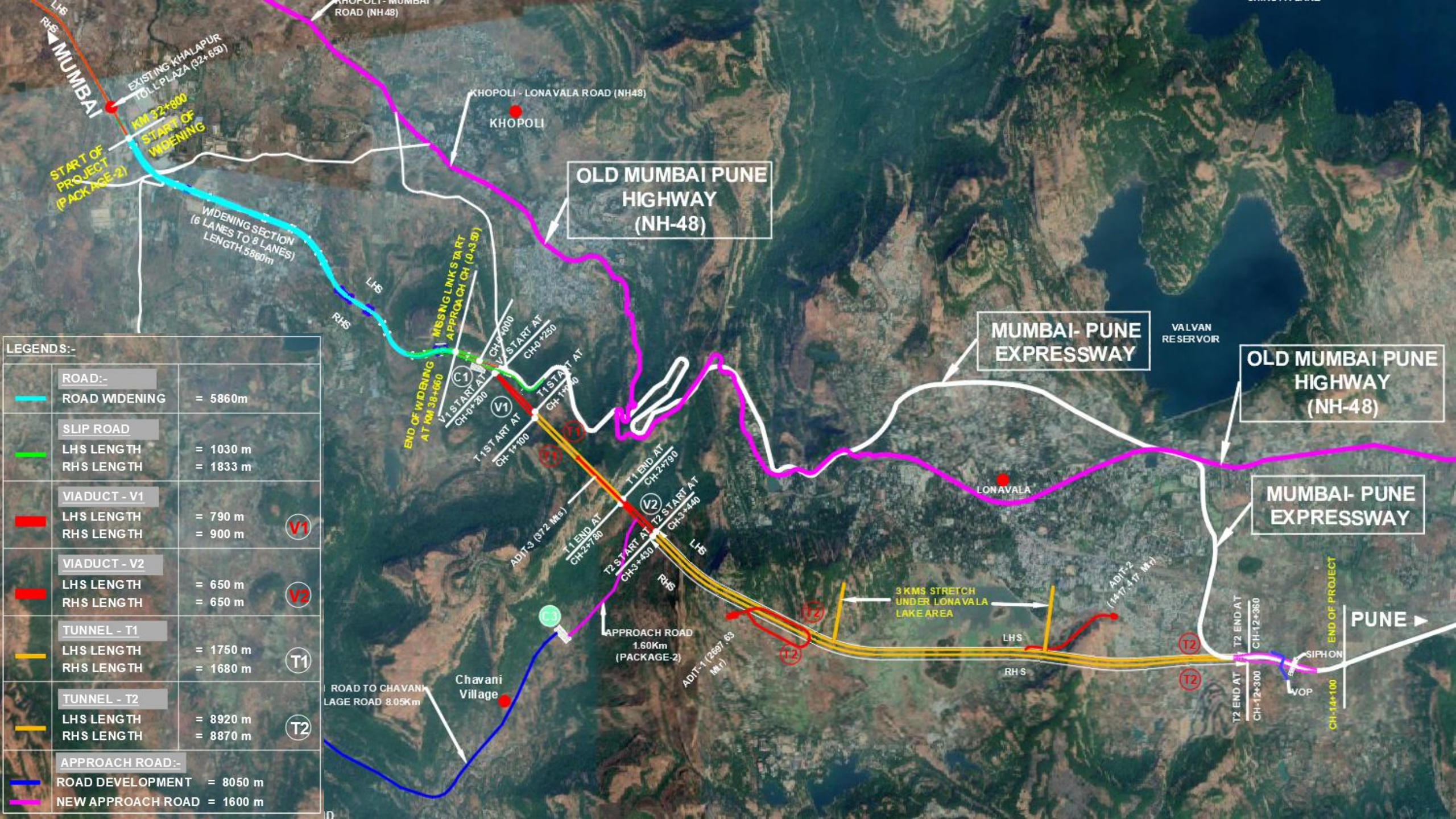
MSRDC

Missing Link Project – A challenge in Engineering

Mumbai-Pune Missing Link | Project Alignment / Key Plan





LEGENDS:-		
ROAD:-		
ROAD WIDENING	= 5860m	
SLIP ROAD		
LHS LENGTH	= 1030 m	
RHS LENGTH	= 1833 m	
VIADUCT - V1		
LHS LENGTH	= 790 m	V1
RHS LENGTH	= 900 m	
VIADUCT - V2		
LHS LENGTH	= 650 m	V2
RHS LENGTH	= 650 m	
TUNNEL - T1		
LHS LENGTH	= 1750 m	T1
RHS LENGTH	= 1680 m	
TUNNEL - T2		
LHS LENGTH	= 8920 m	T2
RHS LENGTH	= 8870 m	
APPROACH ROAD:-		
ROAD DEVELOPMENT	= 8050 m	
NEW APPROACH ROAD	= 1600 m	

NECESSITY OF THE PROJECT

- Earlier during construction of the Project Original Alignment planned from Kusgao (Sinhgad Institute) to Khandala Exit was not undertaken/dropped due to Environmental Constrain.
- Hence the National Highway bypass alignment from Lonavala To Khandala was made part Mumbai-Pune expressway.
- The were limitations to make geometric improvement of expressway standards resulting acute curve and steep gradiants.
- Due to steep gradient in Ghat section, movement of vehicles was restricted causing traffic jams and accidents.
- Due to cutting in Ghat Portion at few location strata become unstable causing incidences of rock falls, forcing authorities to close one or two lanes during monsoon leading to heavy traffic jams in this area.
- Therefore necessity of Construction of Missing link has to be taken on Priority.

PROJECT FEATURES

- The total length of the project is 19.80 km.
- Under this project, the existing 5.86 km Khalapur to Khopoli Interchange is being upgraded to 8 lane.
- The Missing Link Project of MPEW consists of 8 lane new alignment of 13.3 km. It involves two viaducts and two Tunnels.
- Design Speed : 120 Kmph

Package I – New alignment of Khopoli exit to Kusgaon (Sinhgad Institute) Consisting of two Tunnels

- Tunnel I – Two parallel tunnels having length of about 1.68 km.
- Tunnel II - Two parallel tunnels having length of about 8.92 km.
- Tunnel Width – 23.50 mt. (4 lane road each lane 3.75m+ 3m shoulder +walkway & drainage)
- Both Mumbai and Pune bound Tunnels are connected to each other at a distance of 300 meters through Cross Passage

Package II – Up-gradation of existing carriageway to 8 lane from Khalapur Toll Plaza to Khopoli exit and Construction of Two Viaducts (8 Lanes) from Khopoli exit to Kusgaon (Sinhgad Institute) on New Alignment

- Viaduct I - Two parallel bridges length of 900 mtr.
- Viaduct II - Two parallel cable stayed bridges length of 650 mtr.
- Upgradation of 8 lane Widening - Khalapur Toll Plaza to Khopoli exit 5.86 km.

CHALLENGES FACED DURING PROJECT EXECUTION

TUNNEL:

- Initial Survey and making of Adit to approach the Tunnel alignment of T2 8.92 Km and T1 1.64 Km.
- Tunnel excavation below Kusgaon village (Habitation Zone).
- Tunnel Stretch Below Lonavala Lake (around 3 km) at depth ranging from 150 mts to 180 mts.
- Challenges in the blasting work.
- Geological surprises encountered during tunnel excavation.
- Water Seepage and draining out water Tunnel T2.
- Heading and Benching works for Asia's widest tunnels with width of 23.50 m
- Muck removal and disposal from the excavated tunnels.
- Supply of oxygen for the people working in tunnels, 2 m dia. Ventilation system provided for the entire stretch.
- Mitigation of work in different rock conditions for the length of 8.92 Km

CHALLENGES FACED DURING PROJECT EXECUTION

VIADUCT:

- Working at height in hilly terrain with max. recorded wind speed of 77 Km/hr
- Heavy monsoon in Khandala with prolonged period in forest areas.
- Access to viaduct-2 from the forest areas – making of approach road of about 10 km
- Required Tests like wind tunnel test, fatigue and tensile test, stay cable test were conducted abroad for the Cable Stayed Bridge to finalize the design as these facilities was not available in India.
- Non availability of Skilled manpower.
- Trained manpower was left the site due to challenging works, terrain and weather conditions.
- Vertigo test fitness of each worker was essential due to deep valley.
- Covid outbreak was the biggest challenge.
- As the special tests for the design of bridge and main components are only conducted abroad, the slots for tests were not available during covid times.
- Permits and forest clearances.
- Rock blasting works during widening of the existing expressway in live road traffic.

CHALLENGES FACED DURING PROJECT EXECUTION

VIADUCT:

- Pylon Height :- 182 mtr from Ground Level
- Pylon construction – Doka self climbing jump formwork used to achieve 182 m pylon height.
- Pier Construction - Slip formwork technique used in valley area.
- Deck Concrete – Cantilever Form Traveller (CFT) used for deck casting of each 9 m length either side of the pylon.
- Specialist sub Contractor was appointed for Stay Cable Installation works.

PROJECT CONSTRUCTION STATUS

Package I

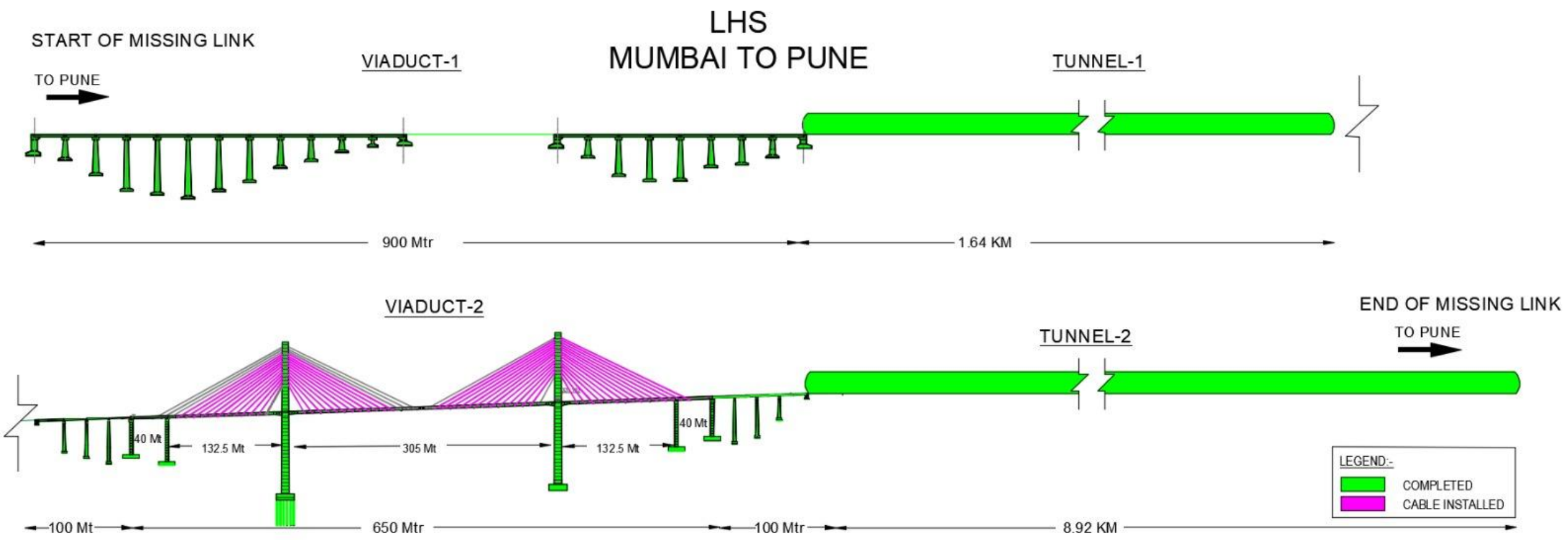
- The Construction of two parallel tubes of Tunnel-I & II is completed.
- The MEP Works of both Tunnels (T1 & T2) Completed.
- Electrical and Mechanical Testing and Commissioning work is in progress.
- Augmentation of Talegaon toll plaza 14+14 lane work is completed. Augmentation of Khalapur toll plaza 34 lane out of 30 lane work completed and 4 lane toll plaza work is in progress.
- As on date progress of work is 99.10 %.

Package II

- Upgradation of Exiting expressway to 8 lanes is completed.
- Viaduct I work is completed.
- Viaduct II Cable Stayed Bridge – Stay Cable Installation and superstructure deck slab work is in progress.
- As on date progress of work is 97.10 %.

Construction of Missing Link Project is likely to be opened for traffic in the May 2026.

PROJECT PROGRESS STATUS



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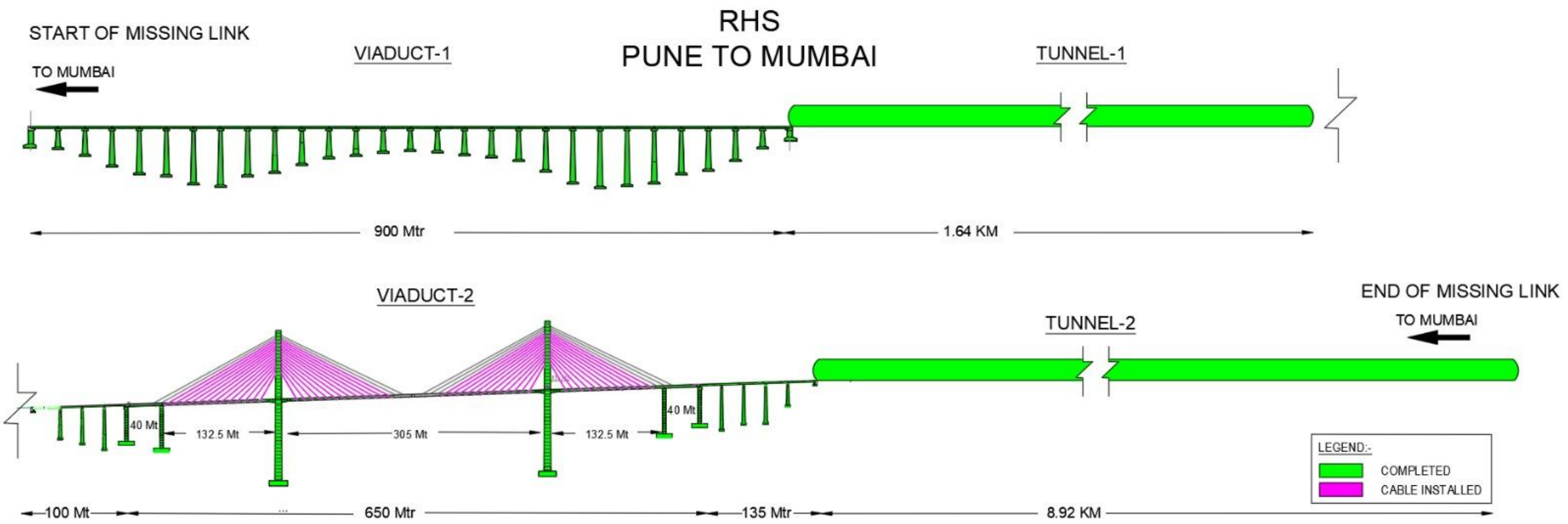
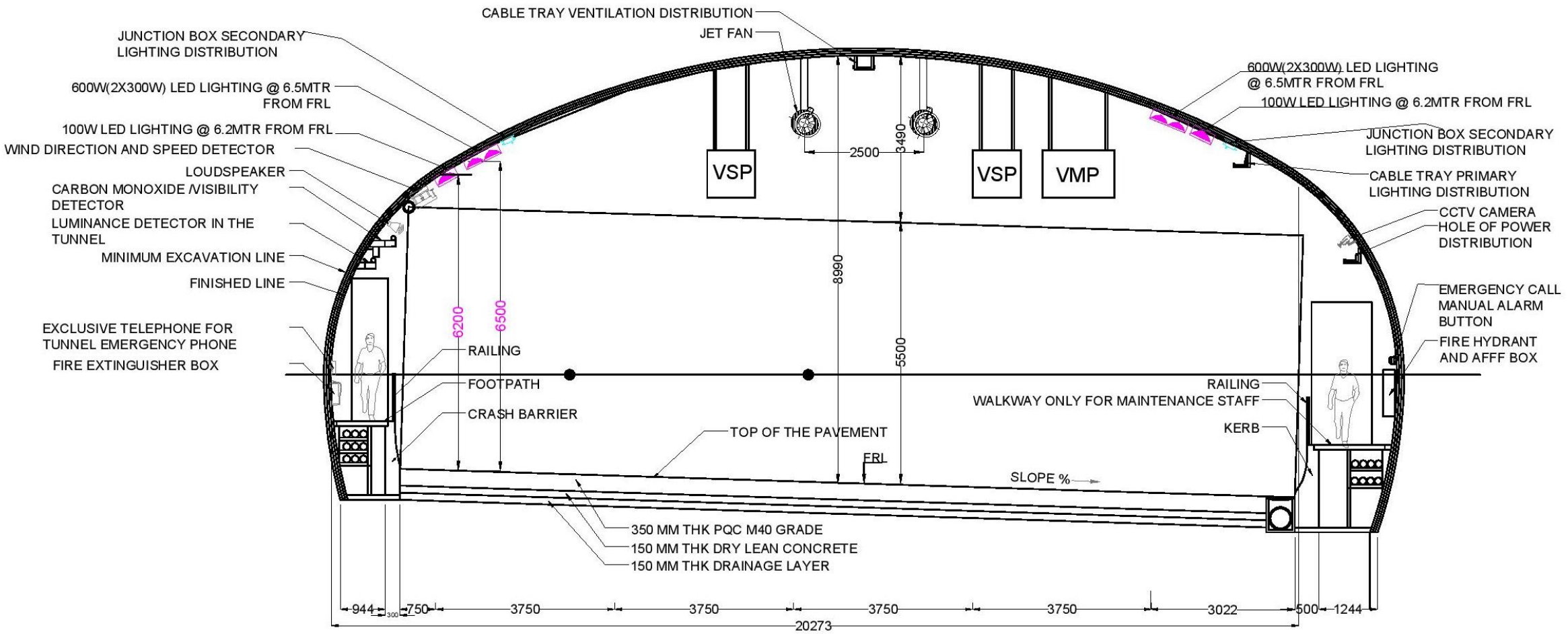
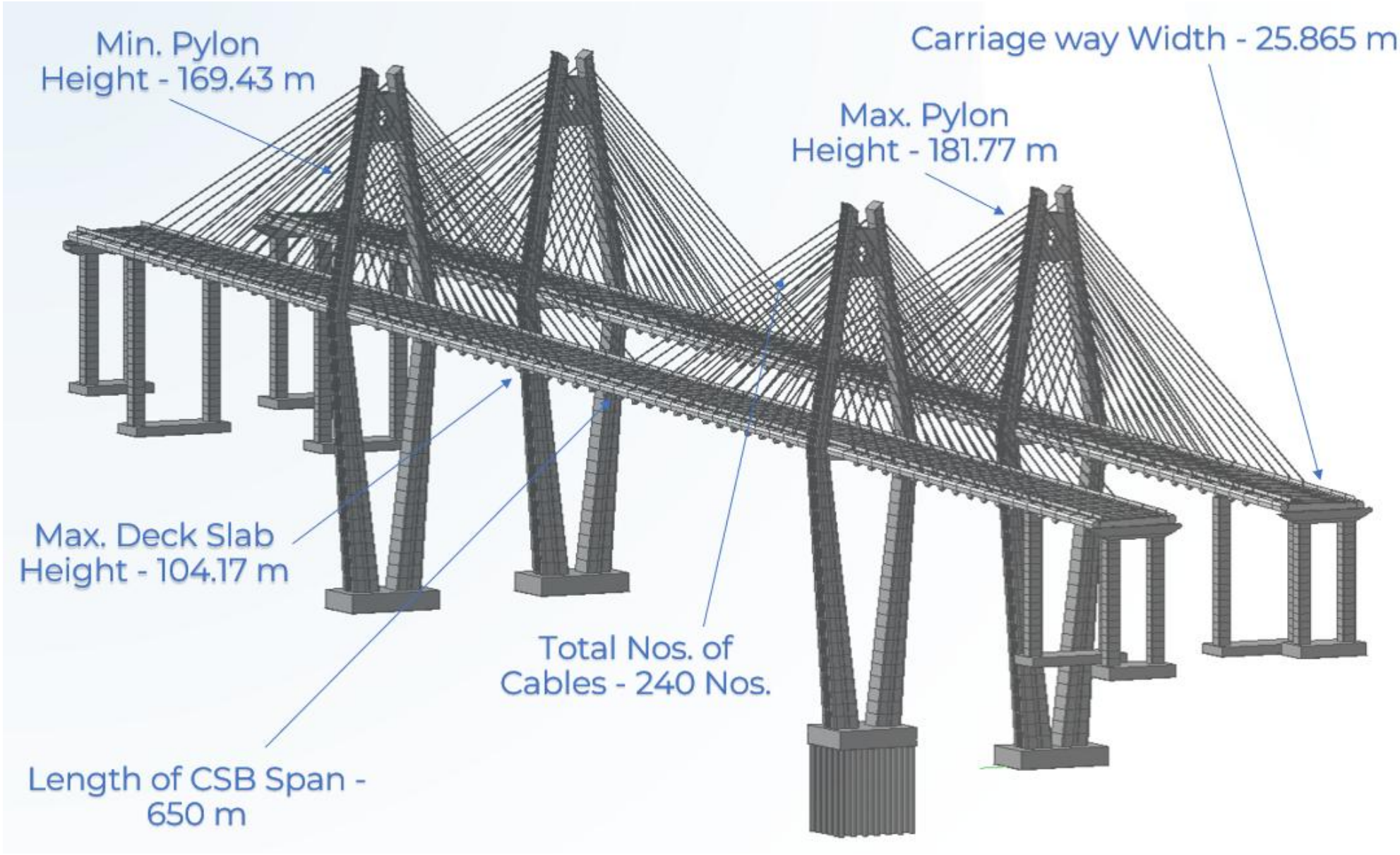


Typical Cross Section of Tunnel



CROSS SECTION OF TUNNEL (LHS)

Cable Stayed Bridge structural details



Tunnel -1

Tunnel -2

Capacity Augmentation with slip roads

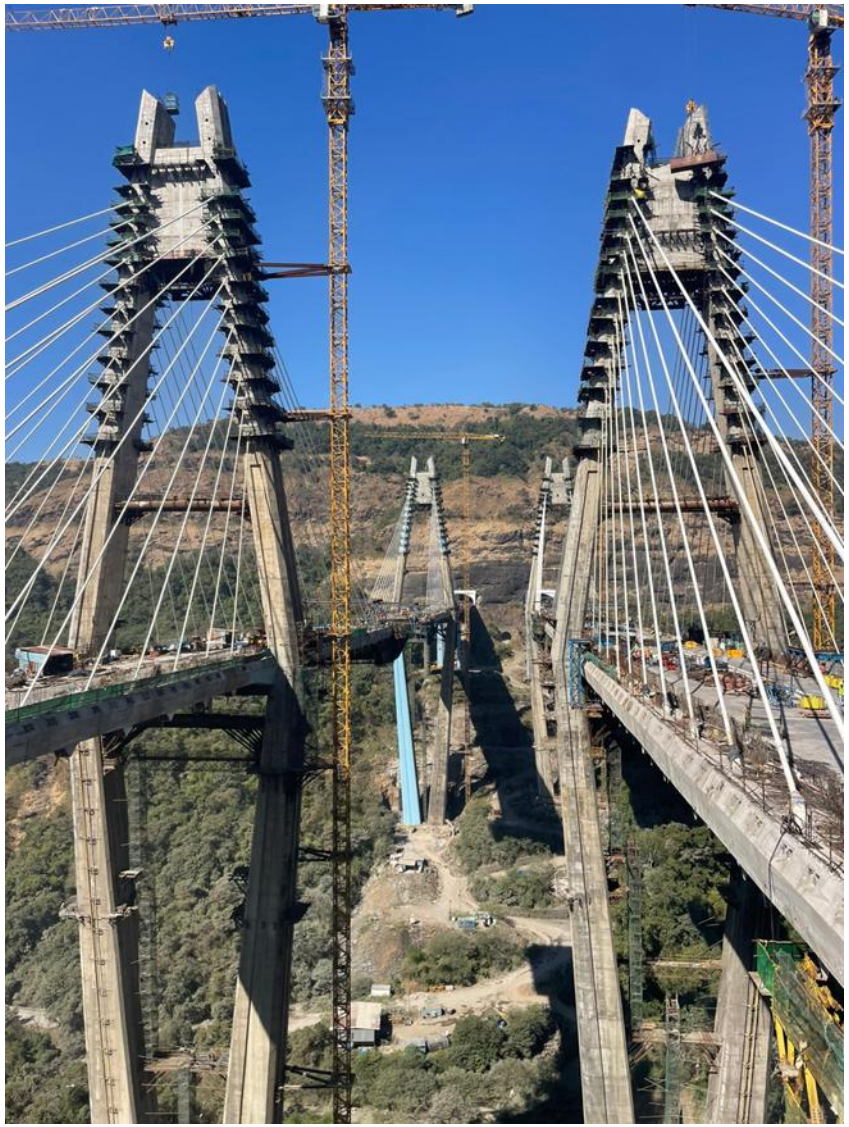
Viaduct – I (900 mtr)-(Work Completed)

Viaduct II Cable Stayed Bridge

Viaduct II Cable Stayed Bridge

Viaduct II Cable Stayed Bridge

Viaduct II Cable Stayed Bridge



Viaduct II Cable Stayed Bridge


Thank you