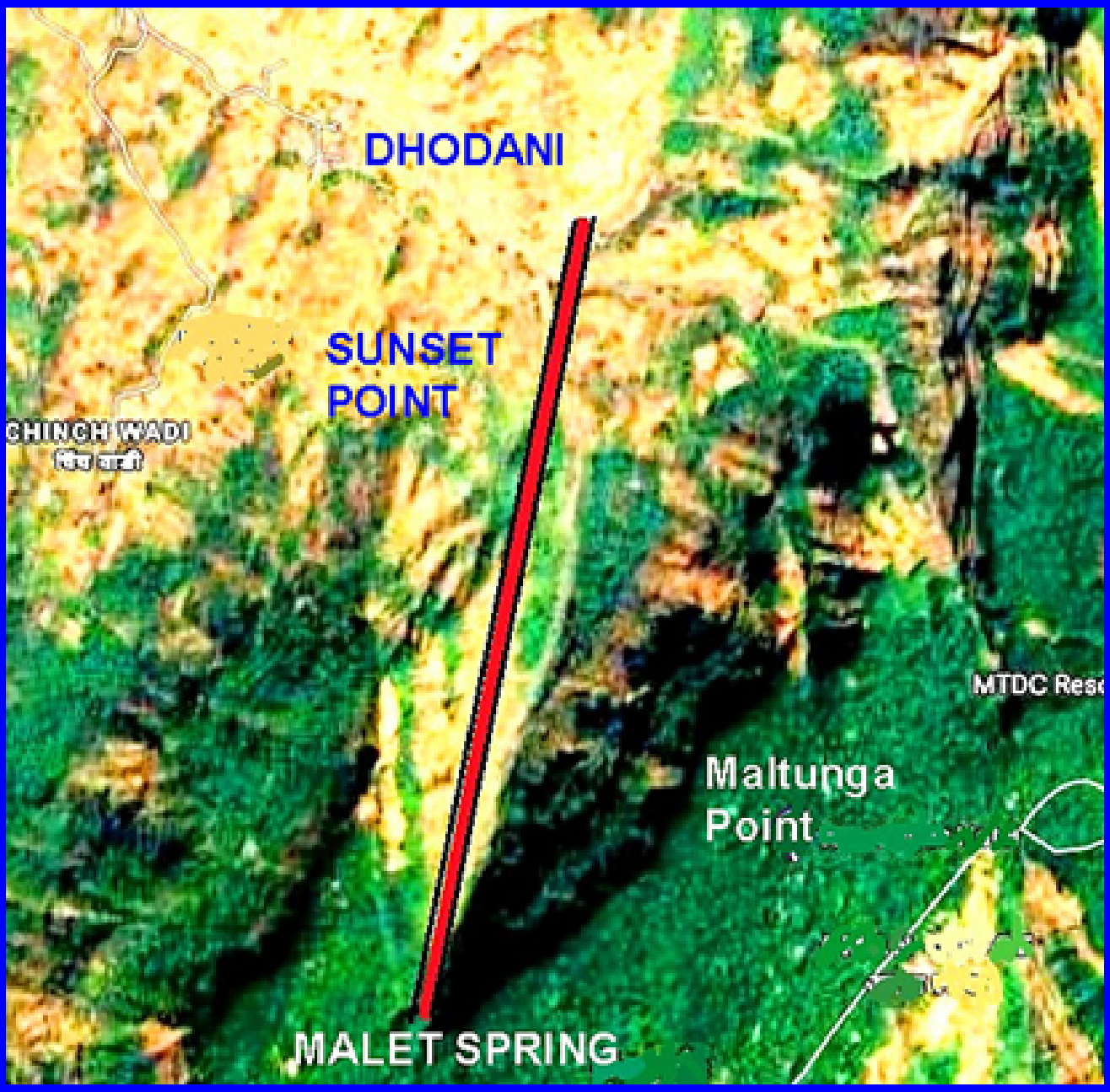
MATHERAN DREAMS OF A FUNICULAR RAILWAY FROM DHODANI TO MALET SPRING; Matheran Transport Scheme Part VI



By Dr. F.A. Wingler, Germany,
August 2020

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MATHERAN DREAMS OF A FUNICULAR RAILWAY FROM DHODANI TO MALET SPRING; Matheran Transport Scheme Part VI; by F.A. Wingler, August 2020

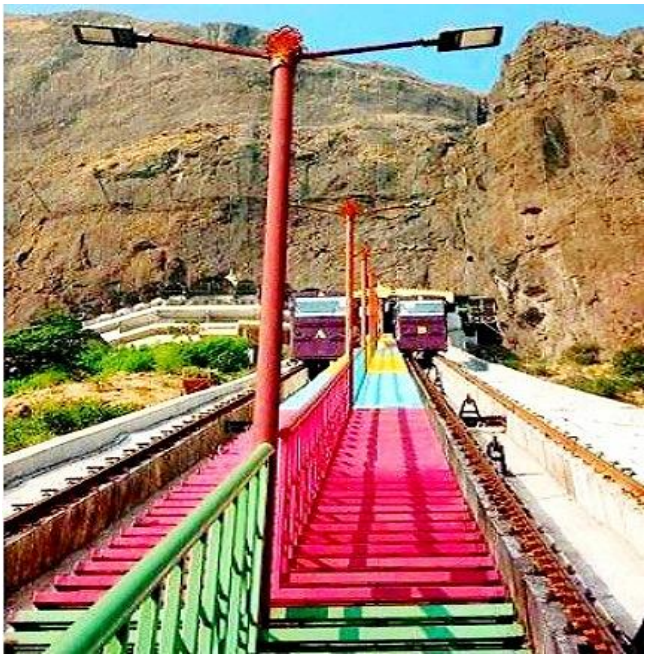
PREVIEW

The **Mumbai Metropolitan Region Development Authority, MMRDA**, had mooted the plan in 2009 to start at Matheran a **Funicula-Railway** service between Dhodani Village and Malet Spring Point on the basis of public-private-partnership. But owing to technical issues, the plan was dropped. Earlier, MMRDA had tried re-introducing the plan in 2016, but it could not take off. The development authority has proposed a Detailed Project Report (DPR) of the funicular railway in Matheran, and it is a said that the project is estimated to be done at a cost of ₹ 130 crores.

It is said that he funicular-railway service will benefit the residents and tourists during monsoon as the Central Railway (CR) suspends the Neral-Matheran toy train services from June to September and since due to frequent heavy damages inflicted to the fragile track during monsoon the service had to be closed for month many times during tourist seasons.

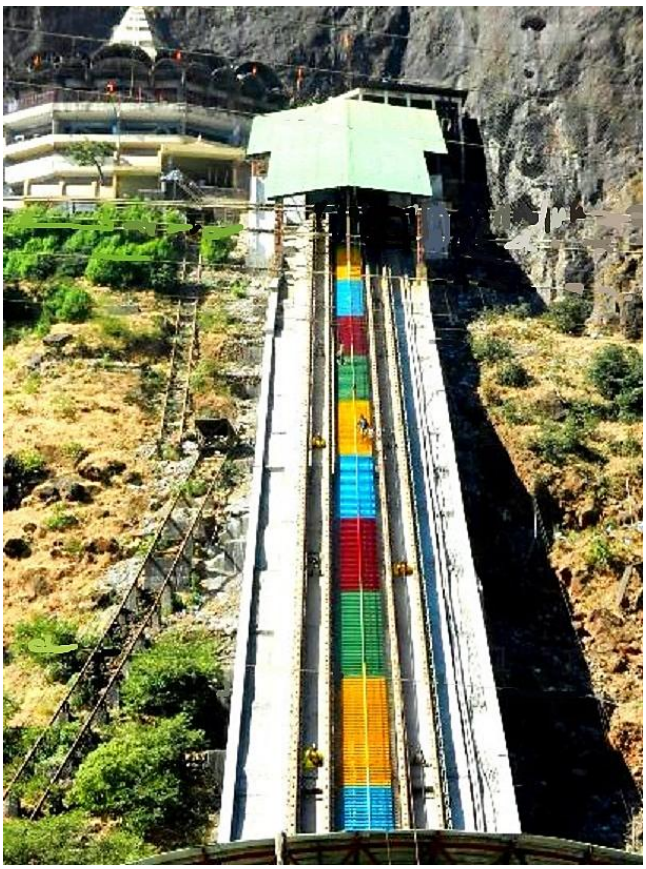
The MMRDA recently approved the building of a funicular-railway in Matheran. While locals are happy with the decision, experts are wary about MMRDA's new plan; see Rajendra B Aklekar "***Funicular Railway for Matheran receives mixed Reactions"*** | Mumbai; mid-day: Jul 23, 2020, 07:30 IST; see **ANNEXURE I** below.

The shining teaching samples for the Matheran Funicular are the since 2018 operating Saptashrungi Funicular near Nashik in Maharashtra to carry Pilgrims and devotees up and down at the Temple (see **ANNEXURE I**) on a concrete trajectory/guideway, and the uncompleted Haji Malang Shrine Funicular Railway on an uncompleted 1.4 km long elevated steel beam trajectory/guidway left to corrosion near Kaliyan, Maharastra; see **ANNEXURE II.**

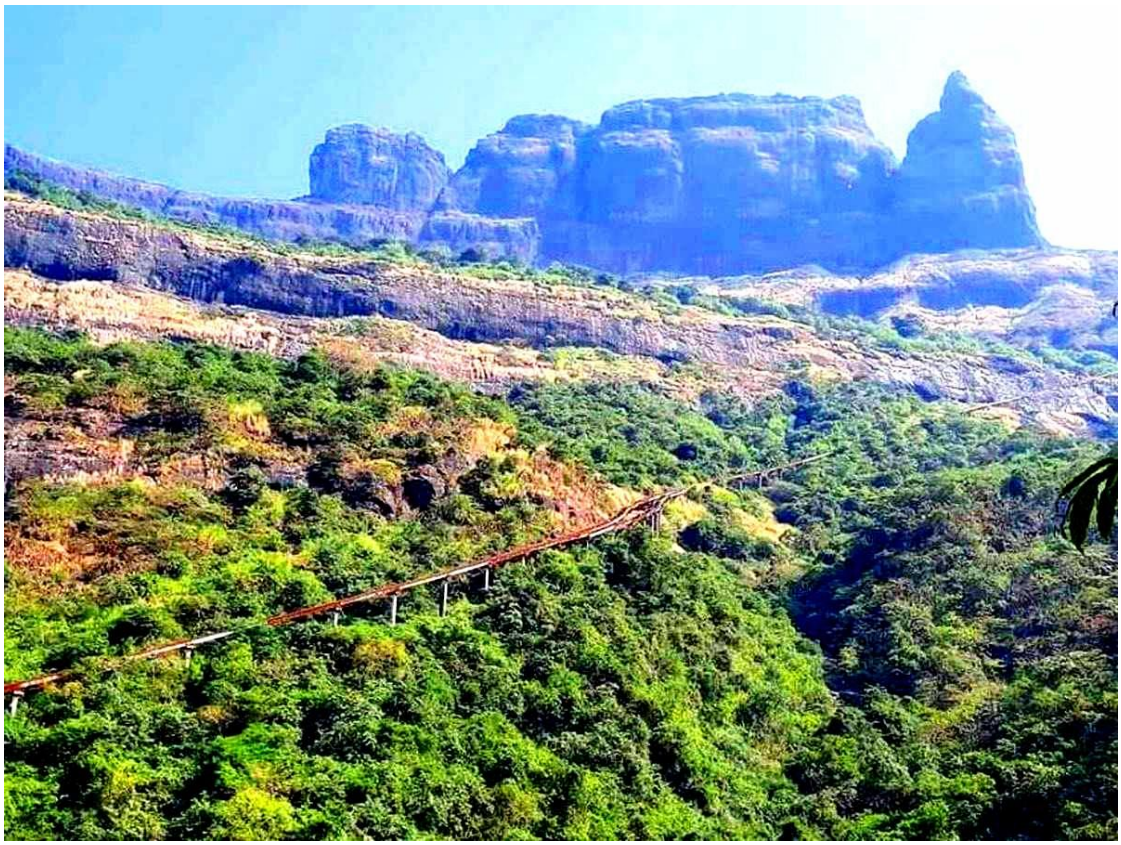


Saptashrungi Funicular Railway

This Funicular operates with two Trolleys with a capacity of 60 passengers each and counterbalanced by a rope driven over a driving wheel at the hill-station and running on rails fastened to a concrete plinth with a deep groove between them to carry the cable and to drain off the water. The funicular operates on an elevated massive 440 m long concrete trajectory/guidway with derailment preventing installations and climbs over 167 m. For emergency evacuation in case of a mishap or unwanted events, there are coloured service and evacuation border staircases with handrails. The arrangement is build in a right angle to a hill slope:



Saptashrungi Funicular Railway Derailment proof Concrete Trajectory



Uncompleted elevated Steel Beam Trajectory for Haji Malang Shrine, Rope pulled Funicular Railway near Kalyan, Maharashtra, left to Corrosion; see ANNEXURE II

INTRODUCTION

Matheran, a Hill-Station in India, Maharashtra, is the only location in India, where no tar roads and no motorized vehicles are allowed. The only road access from **NERAL** at a height of 39.31 m above sea level ends at a height of 758 m and 2 km outside the town of Matheran at **DASTURI**. All materials, goods and delivery products have to be transhipped from arriving lorries and good carriers on coolie load-carriers, hand pulled carts or pack horses and carried over an unfortified, rough and stony cart-road with steep gradients, which turns in rainy season into a slurry or mud way to Matheran Market at a height of 804 m above sea level. The cart road passes a hill-slip prone zone near Beatrice Cliff. This section slipped down during the heavy 2005 monsoon. Since that time it has not been stabilized, and since 2005 it is further drifting down few centimetres every year. This can be easily made out by the annual horizontal distortion of the rail-track and by the closure of the gap between the forward moving earth front towards the rail-track protecting gabions at the track hill side.

The supply route **DASTURI-MATHERAN** is the life line or umbilical cord of Matheran; and this live line is under the thread to get ruined by further hill-slides during a heavy monsoon rainfall like 2005. Visitors walk on the last miles, ride on a horse, use a hand pulled rickshaw or travel on the scenic and heritage 2 ft Narrow Gauge Toy Shuttle-Train. The Shuttle-Train operates with two Diesel Locos in push-pull-mode producing a lot of smoky combustion emissions. This rail service is highly vulnerable by the impact of heavy monsoon. Land-slides and rock-falls cause on the Neral-Aman-Lodge section during rainy season frequent interruptions. It takes always month, until train-service can be resumed:

Aman Lodge-Matheran Shuttle NG Train stationed at Matheran

Road Vehicles, Private Cars, Motorbikes, Taxis, Buses, Lorries and Delivery Vans are allowed until **Dasturi.** Currently the Car Park is under refurbishment; see **Annexure III**. Taxi-Stand, Bus Halt, Loading/Transhipment Station and Horse Stand are planned to follow soon.

In 2019/20, the tar road from Neral to Matheran had been overhauled. This ***"ONLY ROAD"*** from Neral to Matheran/Dasturi is now in a quite good state-of-affairs. However, some short sections have to be secured against Rock-Falls and Hill-Slides by state-of-the art **ROCKFALL MITIGATION** and **SLOPE STABILISATION**.

Rocks endangering the "Only Road"; Actions needed, Pict. by Nitin Savant

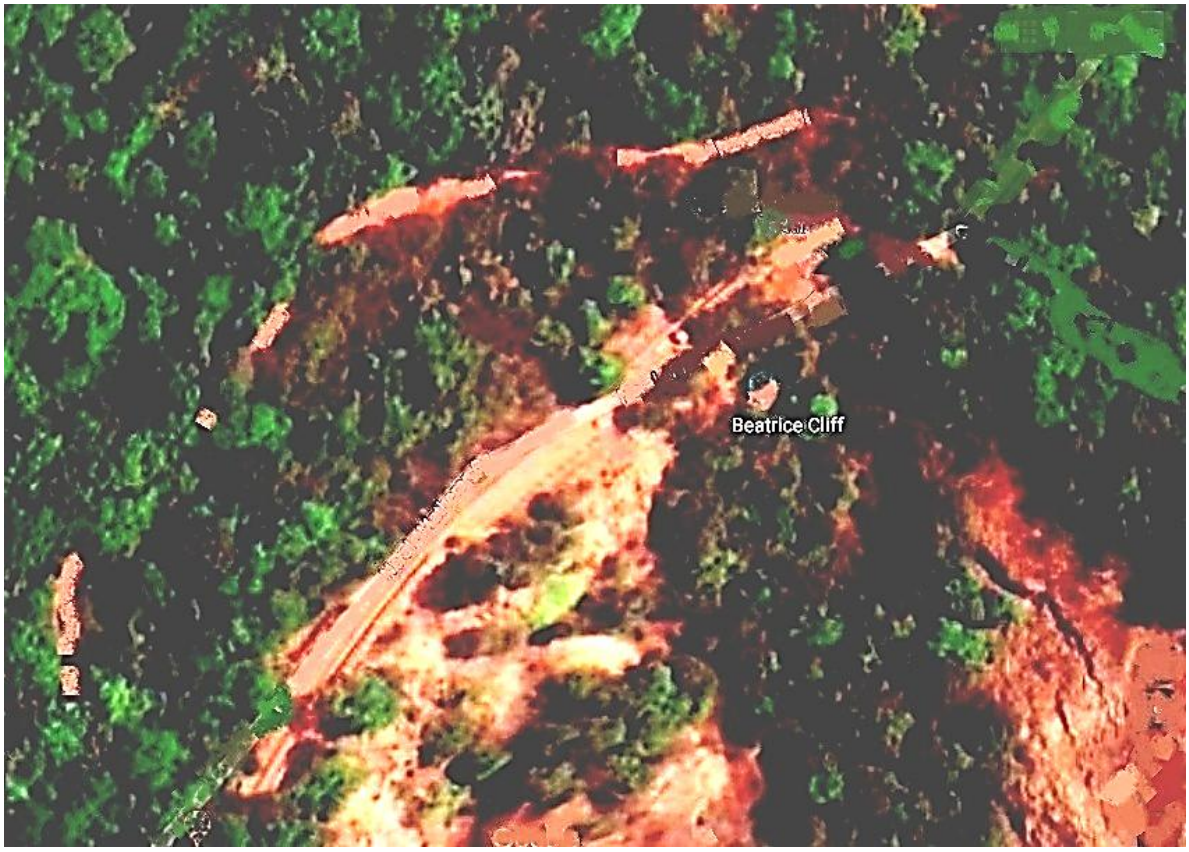
However, the last mile connectivity, the stony cart-road with steep gradient sections from Dasturi to Matheran Market had been recently in a deplorable state-of-affairs. In dry season a lot of dust mixed with hors dung got produced polluting the air of Matheran and staining terribly the adjacent shops, restaurants, hotels and foliages in this so-called ***"ecological-sensitive"*** hill station. During rainy season this lifeline turned into a mud path. However comprehensive works are currently on to bring improvements: see **Annexure III.**

To boost tourism, the Maharashtra State Government has approved the development project with brick paver blocks for covering the unpaved roads and pathways. **Annexure III** shows some current positive results and works under progress.

Hard and arduous working Matheran People restructuring the Cart-Road without Machinery, only by Hand-Labour; see also Annexure III; Pict credited by Nitin Savant

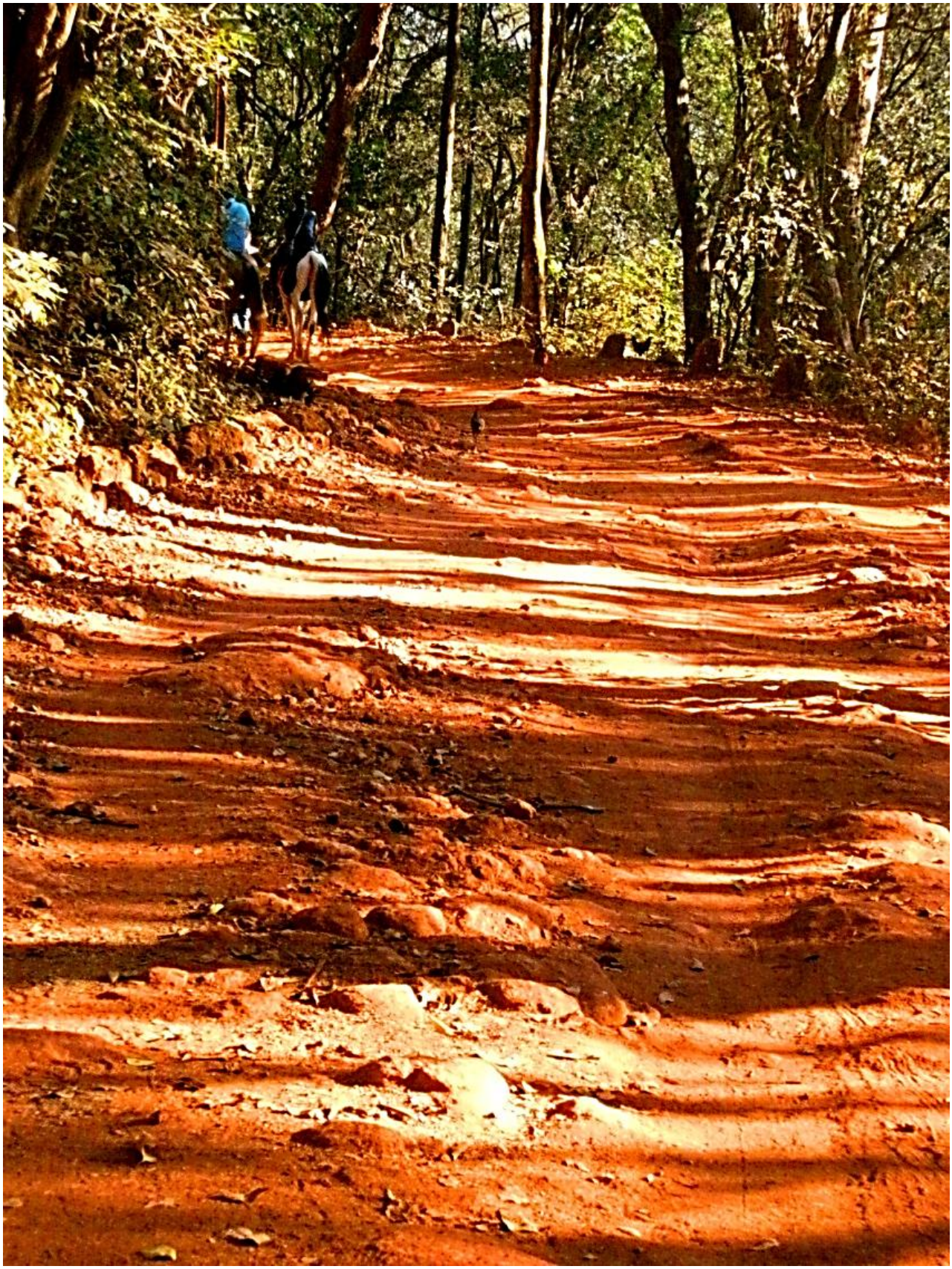
When giving Matheran a "***MAKEOVER"*** by laying brick paver blocks on the cart-road, one has to consider, that the terrain near **Beatrice Cliff** is not stable. The section, which went adrift and slit down during the 2005 monsoon rainfall, during the so-called 2005 Maharashtra floods, is still yielding and flowing. This can be made out at the gabions heaped up after the 2005 calamity along the rail-track on the hillside and on the annual horizontal loss of alignment of the rail-track, noticed last after the 2019 rainfall.

To prevent further hill-slides the whole area has to by catch-drained under a comprehenssive surface-water management to prevent the water soaking into the ground and causing further earth-slips. This has to be well understood.



Land-, Hill- and Mud-Slide prone Terrain near Beatrice Cliff; Pict.: Source Google

Foliage along the unpaved Cart-Roads and Pathways stained by stirred up Laterite Dust mixed with Horse Dung



Stony and unpaved Dasturi-Matheran Cart-Road waiting for Reengineering;
All goods for Matheran have to be carried on hand pulled carts or on pack-horses over this lane with steep gradients:

Pict. by F. Wingler, November 2019

All Goods for Matheran have to be carried on Hand pulled Carts or on Pack-Horses over this Lane with steep Gradients

The "Only" Road Neral-Matheran and the Dasturi-Matheran Cart-Road run in a terrain prone of hill-, rock- and mud-slides.

Essential for hillside stabilization is a comprehensive **SURFACE WATER MANAGEMENT**: The rainfall water has to be cached/intercepted in so-called **CATCH-DRAINS (intercepting or Brem-Drains)** above the roadways, before it can penetrate into the formation leading to rock-falls, mud- and hill-slides. The intercepted water has to be brought down into the valley in a controlled manner by step culverts; see: F. A. Wingler ***MATHERAN TRANSPORT, PART V; Challenge to make Matheran Transport Monsoon proof; preventive Measurements to secure Road and Railtrack from Destructions caused by heavy Monsoon Rainfall,*** and ***MATHERAN – AN ECOLOGICAL SENSITIVE HILLSTATION IN INDIA WITH POOR ROAD-INFRASTRUCTURE; TRANSPORT-SCHEMES, Part IV, August 2019*** on http://www.drwingler.com .

Matheran is looking for alternative Routes

Since long, people at Matheran are dreaming of an alternative route for a second access. Neral on the East-Side of the Matheran Rim is blessed with a good Commuter and Express Railway Connection to Mumbai and Pune. Between Neral and Dasturi there operates a well functioning and self organizing **Taxi Para-Transit** climbing the tar road up to Dasturi. Up-to 5 visitors can share a taxi for 50 Rupees each. Private Cars, Motorbikes, Lorries, Delivery Vans and a Bus-Service are also using this tar road up-to Dasturi, that is now in a tolerable good condition.

For the last-miles up-to Matheran there is this "***Only Cart-Road"*** or Pathway" under reconstruction (see **Annexure III)** and the 2 feet Narrow Gauge Rail-Track. The pedestrians walking on the track as a less dusty short-cut, however ruin the track structure and make it impossible for Central Railway to keep the proper alignment.

Walking on the Rail-Track and damaging the Track Structure Components

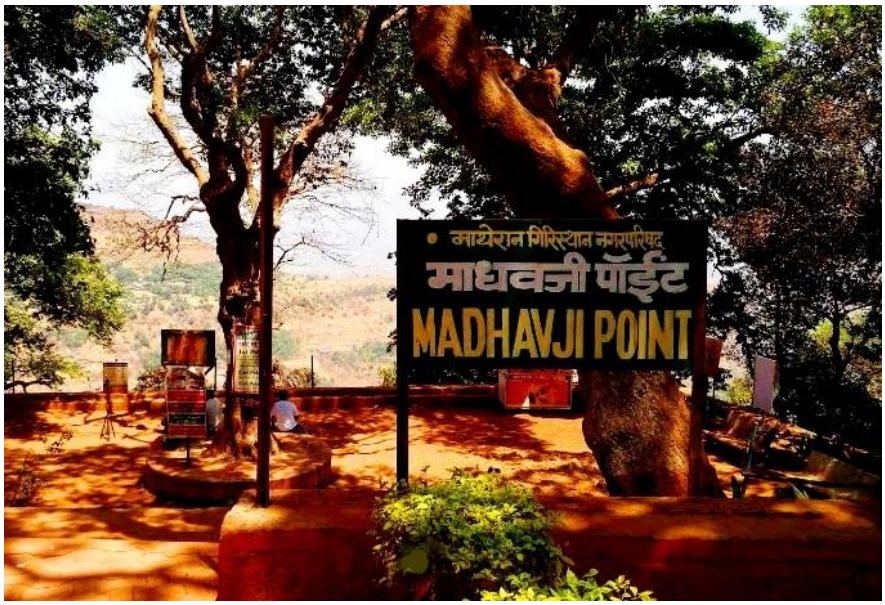
The most cost-effective and feasible solution would be to provide between Dasturi and Matheran Market an all-year-round stable and proper smooth cart road with an eased ruling gradient of not steeper than 1 in 12.5 or 8%, resistant to the impacts of the heavy monsoon rail-falls. This would help also to keep the pedestrians away from the rail-track.

Last-Mile Transport by the Rail Shuttle Service is not reliable. Its service depends on the operability of the railway line down to Neral to the Diesel Loco Shed, the Maintenance and Repair Workshop; and this line is higly vulnerable to the impacts of nature.

Diesel Loco Shed at Neral of Matheran Heritage and Scenic Toy Train

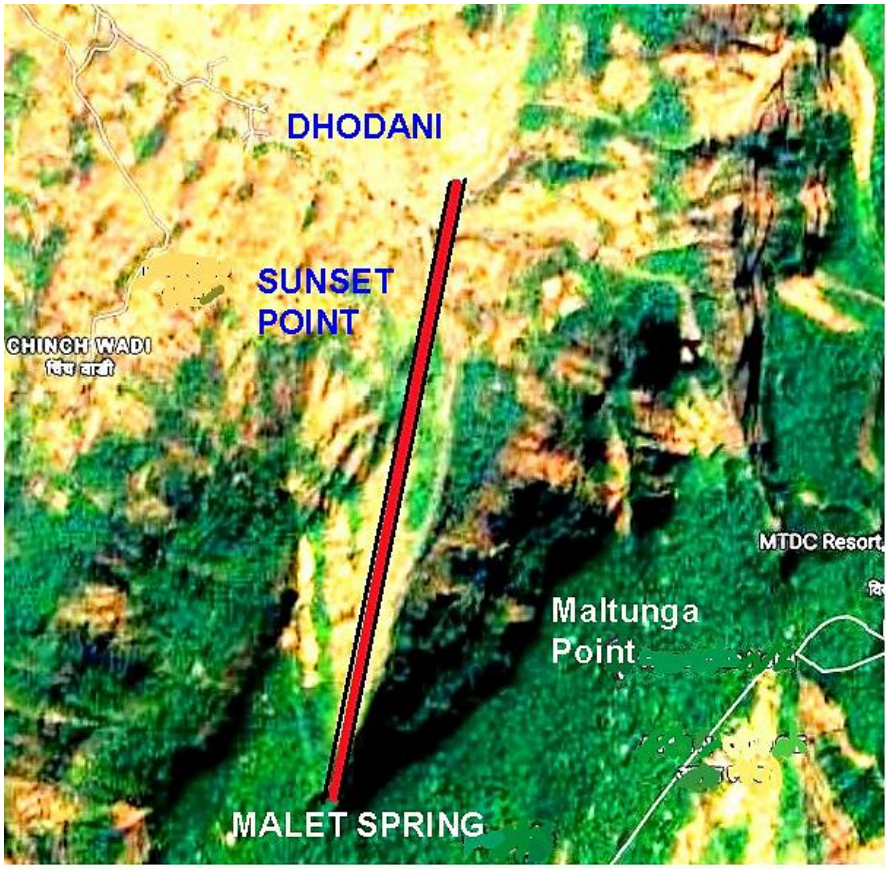
During the heavy 2005 June Monsoon Rainfalls Matheran got cut off for 3 weeks from the supply route via Neral and Dasturi, due to heavy Rock-Falls, Hill- and Mud-Slides and Earth-Slips inflicting heavy damages to the Neral Tar Road, the Rail-Track and the Dasturi-Matheran Cart-Road.

Voices have risen demanding alternative transport routes. One of those alternative projects had been an aerial Gondola and Cabin Ropeway over the **Garbut Rim** with a terminal hill station at **Madhavji Point**:



However, this project proofed to be not viable, because being uneconomical and heavily inflicting with the preservation and protection of the ecological sensitive zone.

In 2009, it was during the tenure of the Matheran business tycoon Mr. Manoj Khedkar as the president of Matheran Municipal Council, that the idea of a funicular railway on the West Matheran Side along the slopes of the ravine between Porcupine Point and Maldunga Point from Dhodani to Malet Spring Point together with a feasibility report had been floated:



Proposed Dhodani-Mallet Spring Alignment for Funicular Railway

If build as a one step funicular, the track between Malet Spring and Dodhani will be approx 2.5 km long. Dhodani cannot be reached from the Neral Rail-Head. It has only poor road access to Panvel, the nearest Rail-Head, and at a road distance of 19.8 km:

The last mile from Malet Spring to Matheran is a trail through the forest:

Forest near Mallet Spring Point seen from the Trail to Porcupine Point

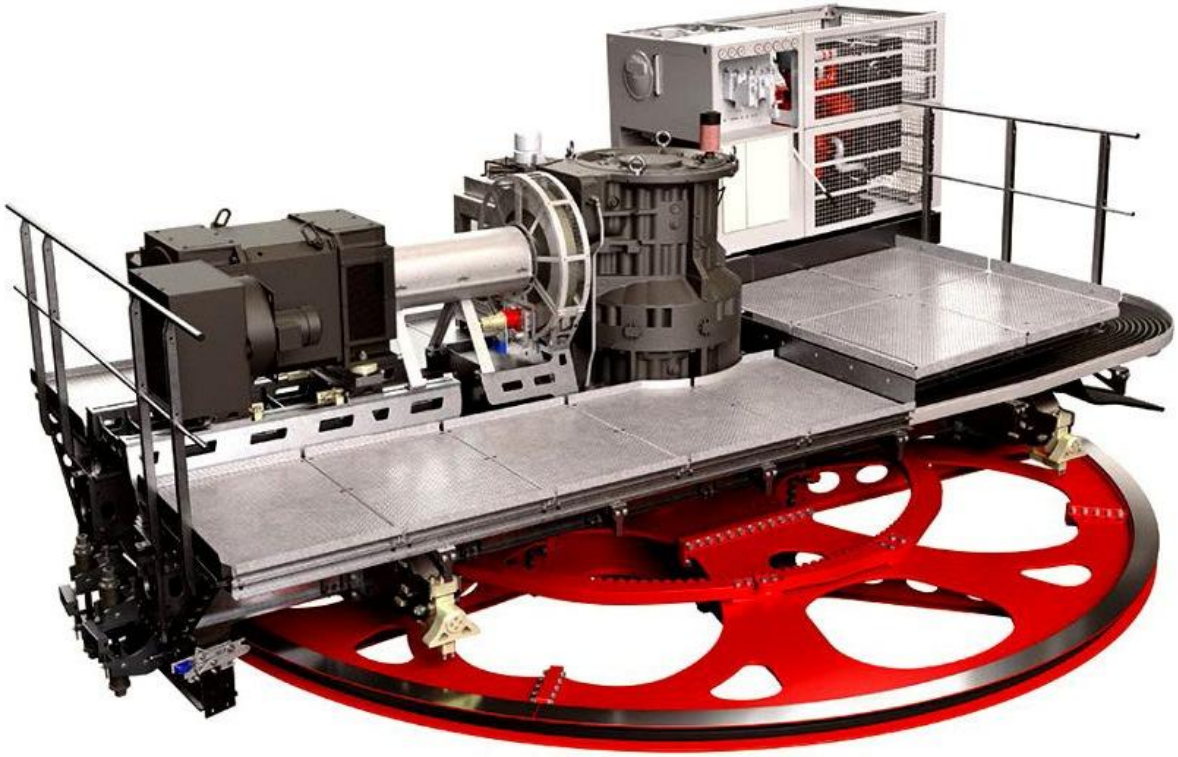
The question is, which visitor will take the more difficult and longer West-Sde route from the rail-head Panvel to Dhodani to catch an expensive funicular-railway reaching Malet Spring Point approx. 1 mile away from Matheran Market?

A funicular-railway will cause an immense inflicting impact on the nature of the ecological sensitive and protected hill station. Nevertheless, whatever type of funicular technology might be used, the funicular connection has to be constructed as an all-year-round

operational Monsoon, Rock-fall, Earth-slip and Hills-slip proof funicular transport mode resistant to corrosion during rainfall season.

Technology of Bottom Rope pulled Funicular Railway

A Funicular is a rail guided system. It is running on a rail-track. Two passenger trolleys, one going up and one going down, are counterbalanced over a bottom rope, that runs on the top station over an electric drive wheel:



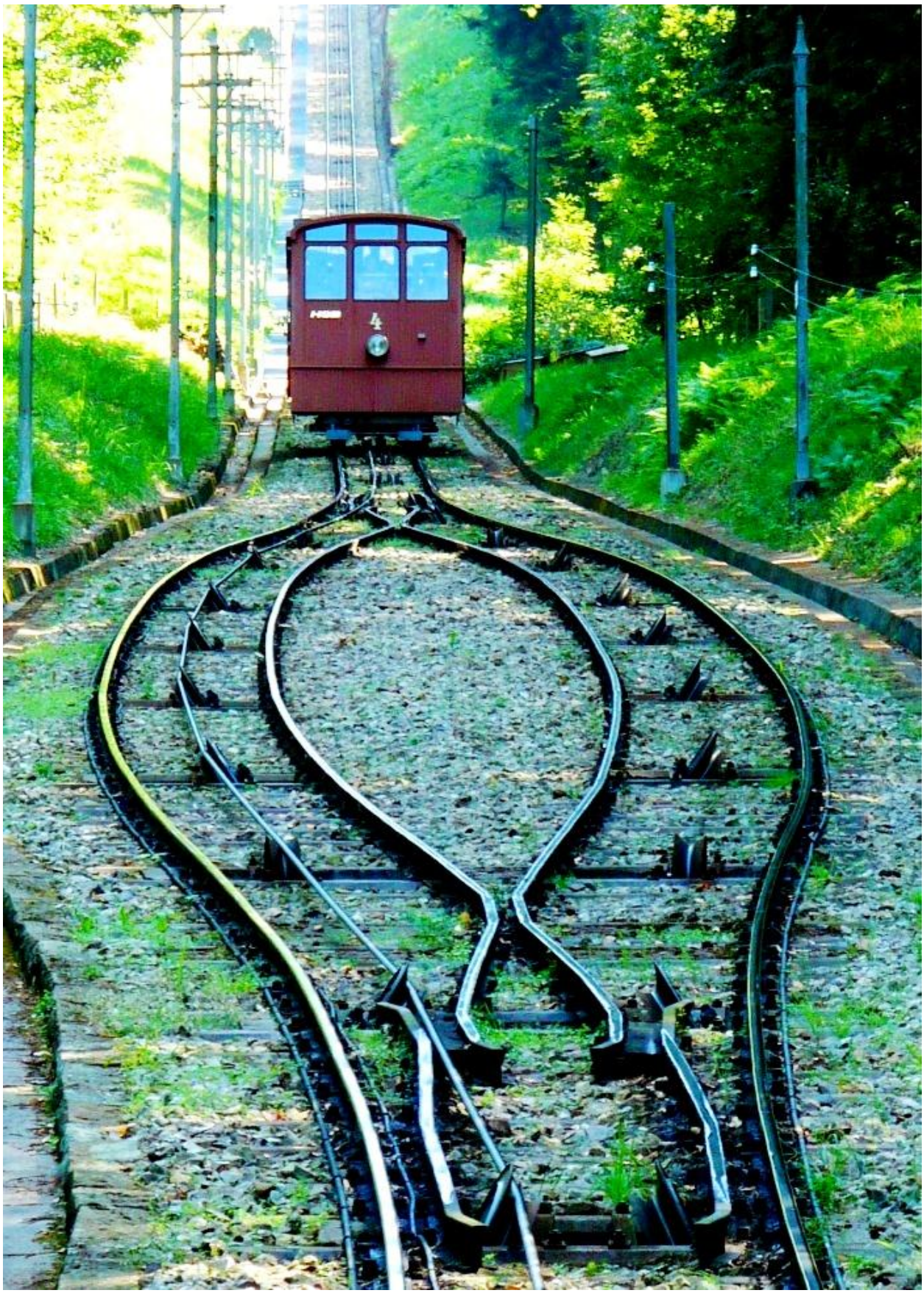
Modern electric Rope-Drive for a Funicular Railway at Top Station with Friction Break Device

The top station has to harbor all the needed affiliated assets and infrastructures. In case of power failure or power cut, there should be a back-up system with generator and battery storage facilities.

On a funicular railway with two parallel rail tracks, like at Saptashrungi, the passenger trolleys run on the rails with both wheels with one inner flange on the axle, same as of a normal railway.

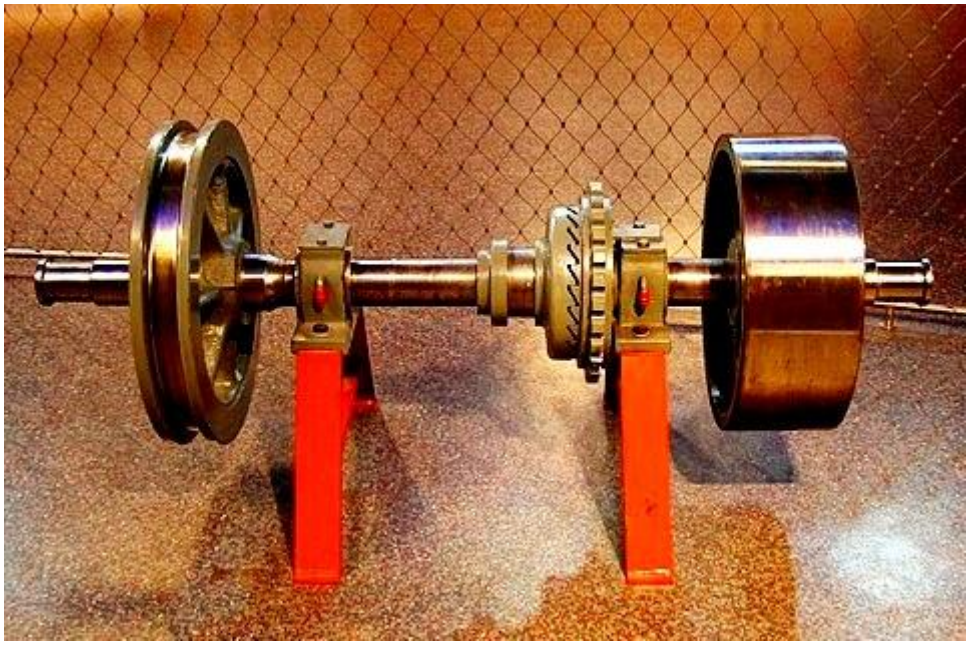
For bi-directional use on a single track, there must be just in the middle a crossing station, where up and down running passenger trolleys can meet on a siding.

Throughout the world, funiculars use as turnout a switch of the system Abt without movable tongue-rails:



Crossing Station on a Funicular Railway with fixed Turnouts of the System Abt

To negotiate such a turnout or switch, the outer left wheel on an axel needs two guiding flanges, following at a turnout the left outer rail. The inner right wheel has no flange but a broad tire running over the grove/gap needed for the rope and to run over the X-crossing.



Wheel Arrangement for a bi-directional running Funicular Railway on a single Track with a Crossing Station/Point at the Middle with left outer double flanged Guide-Wheel and right with broad tired non guided running Wheel

The upper part of a longer funicular has to be kept with a steeper gradient/incline to compensate the increasing weight of the longer down trailing steel rope in keeping both up and down passenger trolleys in balance. The increasing weight of the longer becoming down trailing steel rope exceeds by far the weight of a passenger trolley with or without passengers when reaching the lower section. In cases the landscape does not allow to allocated the needed gradient profile, on the upper section extra load is to be put on the passenger trolley as on one of the upper sections of the Joginder Nagar, Himachal Pradesh, material-haulage funicular-railway:

Material-Haulage Trolley of Joginder Nagar Funicular Railway Network taking up Load when entering less steep Gradient/Incline

The envisaged **Matheran Funicular-Railway** will be of a bi-directional single track installation with a crossing station in the middle between Dhodani and Mallet Spring, where up and down running passenger trolleys could meet. The Top Station in the Forest of Mallet Spring must harbour the electric drive and all the affiliated infrastructures and needed

assets. Such installations will come in conflict with the preservation rules for the ecological sensitive zone.

Matheran is dressing up to host Guests, Customers, Tourists and Visitors in the Post Corona Period; see Annexure III

Matheran is full of hope that after the pandemic the guests, customers, tourist and visitors will flock in as before, and Matheran is therefore dressing up its view points and trails; see also **Annexure III**:

Refurbished Trail to Panorama Point, January 2020; Pict. by Nitin Savant

CONCLUSION

Due to specific imponderability's, since decades the relevant authorities had difficulties to provide a smooth, easy to use and monsoon proof and paved all-year-round operational cart-road between Dasturi and Matheran on the existing East entrance side. The existing cart-road for material haulage by hand carts and horses is passing a hill-slip prone zone near Beatrice Riff.

It's an illusionary idea, one could engineer on the West Rim Side of Matheran an economical feasible approx 2.5 km long and nearly 800 m climbing one-step funicular-railway in this ecological sensitive and protected nature.

A funicular-railway on a simple steel beam trajectory, prone to corrode during wet season and without any provisions to prevent a derailment mishap, where the trolley might tumble from the trajectory into the abyss, as provided for the uncompleted Haji Melang Shrine Funicular-Railway project near Kalyan, will not meet any more the modern safety and risk management standards and will nowadays not be any more commissioned by the Safety Commissions.

With an all-year-round operational, safe, easy and smooth Road Access from Neral via Dasturi there will be no need for an alternative transport mode, either as an aerial Ropeway or a bottom rope pulled Funicular Railway.

MESSAGE

One has to bring first of all the existing transport and supply route from Neral via Dasturi in an all-year-round stable and monsoon proof condition, before calling for alternative transport routes and technologies.

ANNEXURE I

Funicular Railway for Matheran receives mixed Reactions

Updated: July 23th, 2020, 07:30 IST | Rajendra B Aklekar | Mumbai; mid-day. Slightly modified by F.A. Wingler

Locals are ecstatic about a Funicular Railway Project, but Expert warns against building the Funicular-Rail Line through Forest Area in an ecologically sensitive Zone.

The Funicular Railway at Saptashrungi Hilltop in Nashik plys on a solid elevated Concrete Trajectory

The MMRDA recently approved the building of a funicular railway in Matheran, thereby presenting a challenger to the 113-year-old Matheran narrow gauge railway. While locals are happy with the decision, experts are wary about MMRDA's new plan.

Expressing happiness, Manoj Khedkar, former president of Matheran Municipal Council said, "The funicular railway will solve the connectivity issues to the hill station once and for all. It was during my tenure as the president of Matheran Municipal Council that we floated the idea, and a feasibility report of the entire project had been commissioned. We are very happy to see the plan come to life finally."

However, Germany-based international railway expert Frank Wingler, who recently visited Matheran, has expressed doubts about the project. "How can an 800 m climbing rail/rope funicular on a trajectory/guideway be erected through the forest and in an ecologically sensitive zone? It will require also a smooth pathway from the envisaged hill station at Malet Spring further to Matheran as a connecting transport route,"he told mid-day in an email from Germany. "My transport solution for Matheran is a proper all season and monsoon resistant stable road from Neral to Dasturi with proper car park, taxi- and horse stand facilities, and from Dasturi to Matheran Market a stable, smooth, monsoon proof, well-drained and easy to climb cart road, resistant to hill- and mud-slides," he added.

Project Details

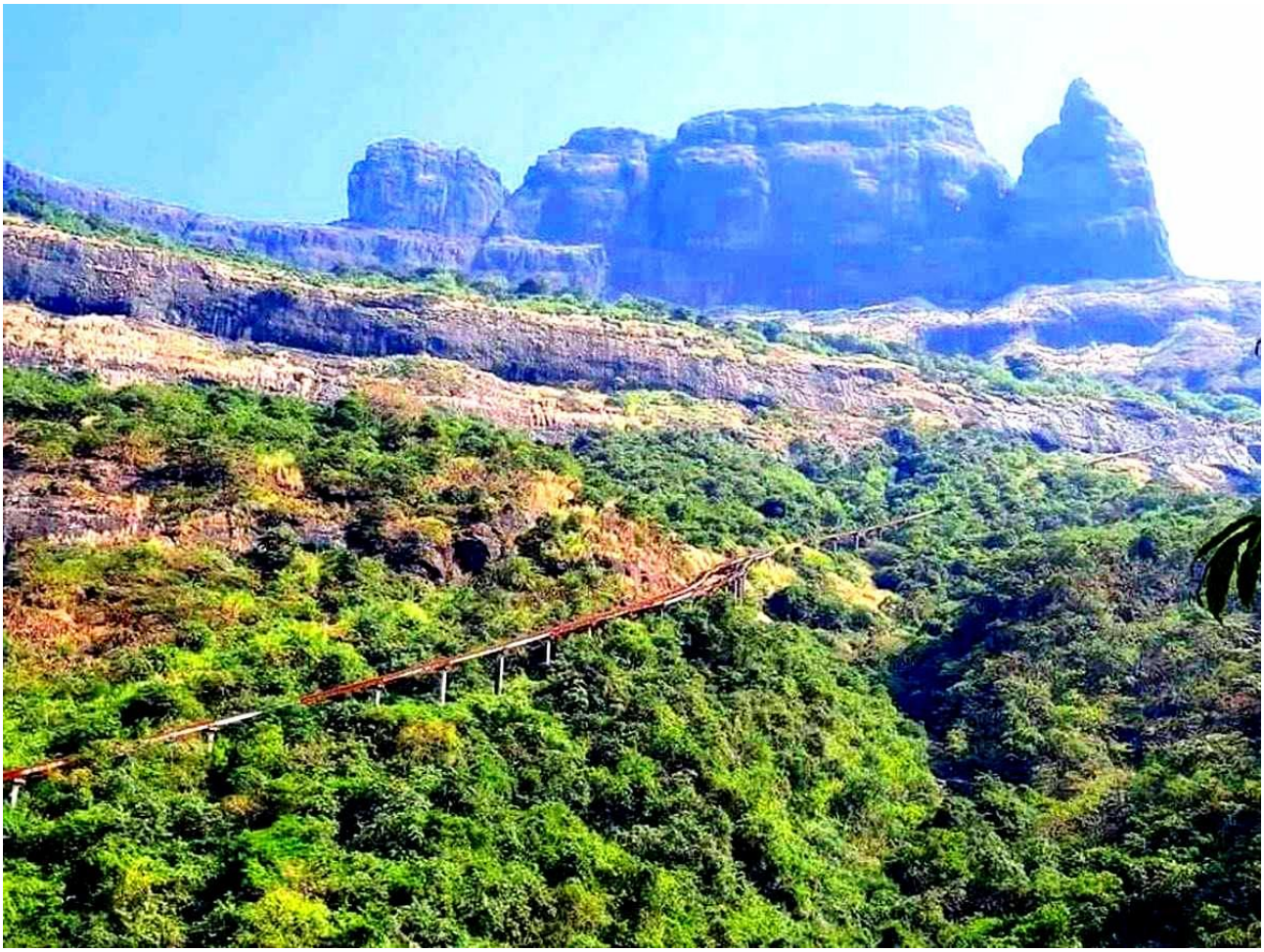
The project was approved at the MMRDA's 149th meeting held by video conference on July 7th 2020. It was around 2010 that a plan had been drawn up. As per the older plan made by Rail India Technical and Economic Service (RITES), it involved running a funicular rail service between Dhodani village and Malet Spring Point with two counterbalanced passenger trolleys with each carrying 60 commuters. The powerhouse with all its infrastructure including the electric generator and/or battery storage to bridge power cuts and failures for the electric rope drive has to be erected at Malet Spring in the forest.

'We welcome the Plan'

The Matheran narrow gauge railway line, which has been listed in the UNESCO tentative list of Mountain Railways in India, originally came up as a private venture of the Peerbhoy family between 1901 and 1907. "We welcome the new mode of transport. The only concern and regret that we have is that the authorities need to complete the historic transactions with the Peerbhoy family about the railway line and offer adequate compensation. Our claim in the Bombay High Court is still pending," said Hussain Peerbhoy, the great-great-grandson of Sir Adamjee Peerbhoy, who built the line as a family enterprise more than a century ago.

Prominent Funicular Railways in India

- Haji Malang Shrine Rope pulled Funicular Railway near Kalyan, uncompleted and proposed for completion.
- Palani – Tamil Nadu operating since 1966.
- Bhira and Bhivpuri Road near Karjat; private owned material haulage funicular railway serving Tata Hydropower Plants.
- Saptashrungi Temple, Nashik; since 2018 in operation.
- Joginder Nagar, Himachal Pradesh for material haulage. It is India's highest funicular railway, that takes rides up to 2500 m above sea level in 4 steps. It consists of a 4 km long and 4-stage network of funiculars and horizontal tracks and has six haulage car stations starting at Buffer Stop as base station at Shanan. It had been build with at-grade tracks serving three hydroelectric power plants.



Uncompleted elevated Steel Beam Trajectory for Haji Malang Shrine Funicular Railway Project near Kalyan, Maharashtra, left to Corrosion and under Scrutiny

Palani Murugan Temple Funicular Guideway, Tamil Nadu

Joginder Nagar Material Haulage Funicular, Himachal Pradesh; India`s longest Funicular in 4 Steps; Pict. by Taryan 9736

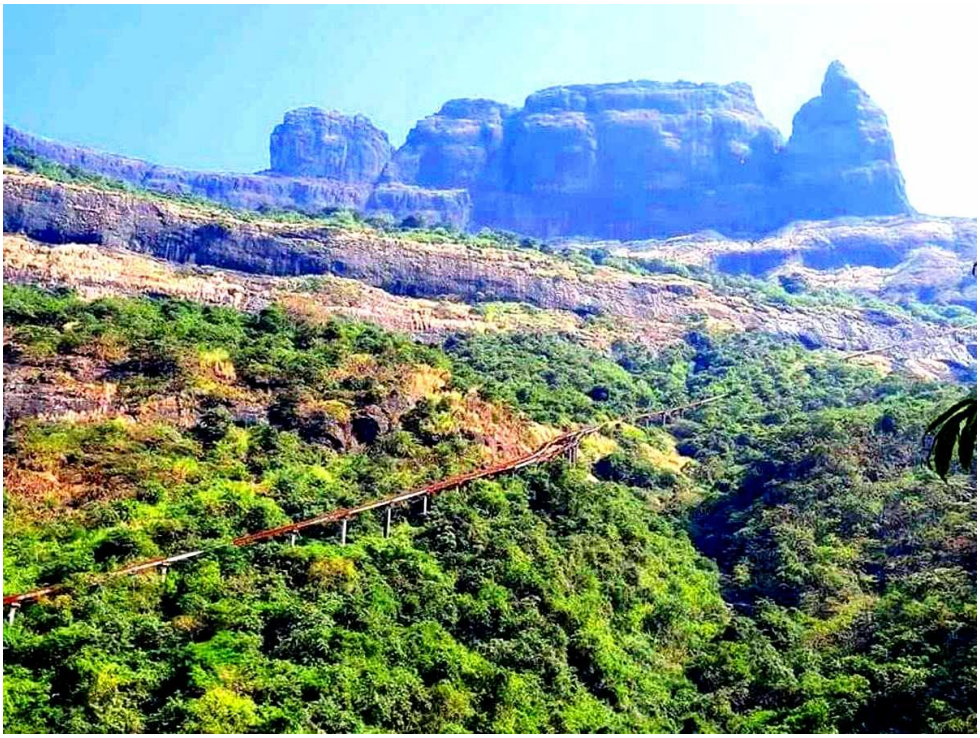
The 4 Sections of Joginder Nagar Material Haulage Funicular Railway serve Hydro Electric Power Plants

At Grade build Joginder Nagar Material Haulage Funicular, Himachal Pradesh

ANNEXURE II

Maharashtra Government sanctions Rs. 5 Crore Fund to complete Funicular Railway Project at Haji Malang Shrine, Maharashtra

By Pradeep Gupta /Times of India, TNN/ Jan. 24th 2020; https://timesofindia; modified by F.A. Wingler



Uncompleted elevated Steel Beam Trajectory for Haji Malang Shrine Rope pulled Funicular Railway near Kalyan, Maharashtra, left to Corosin and under Scrutiny

KALYAN: The Maharashtra Government has sanctioned additional a fund of Rs. 5 Crore for the long pending Funicular Railway Project at Haji Malang Gad Shrine.

The project, which started at project cost of Rs 10.42 crore in year 2008, reached up to Rs. 45.91 Crore, and now the State Government has sanctioned an additional fund of Rs. 5 Crore to complete the project on priority basis.

The Haji Malang Gad Hill had being cut to make way for the 1.2 km rope pulled funicular railway on an elevated steel beam trajectory/guidway, left currently for corrosion. The construction of funicular should give relief to devotees especially senior citizens, who have to walk up to four kilometres to reach the shrine near Kalyan.

The long pending project meeting was called by Public Works Department (PWD) Minister Eknath Shinde at Mantralay, where the Shinde directed MMRDA will give the fund of Rs. 5 Core to the Supreme Company carrying out the work, that has stopped the works for last two years as project cost increased. Shinde directed the contractor to complete the project on time or else, he said, this contract will be cancelled.

The contract of work was sanctioned in year 2008, and the foundation stone was laid in February 2013. So far PWD has missed four deadlines.

Shrikant Shinde, MP from Kalyan, who was present in meeting, said, "Around 70 percentage of work is completed and now, when the additional fund is sanctioned as requested for the contractor, work is expected to be completed soon".

The aim of the project was to develop the hills in to a tourist spot, where hundreds of devotees daily visit to take the blessings of Haji Malang Baba at Shrine.

Picture Gallery and Comment for uncompleted Haji Malang Shrine Funicular Railway under Scrutiny; Source Google Map, Date 2018

Idling Funicular Railway Trolley No. 1 at uncompleted Base Station

Idling Funicular Railway Trolley No. 2 at uncompleted Base Station

Uncompleted elevated Steel Beam Trajectory/Guideway left to Corrosion without any Derailment Protection Installations

Halfway Crossing Station of elevated Steel Beam Trajectory/Guideway left to Corrosion without any Derailment Protection Installations

Comment by F. A. Wingler, August 2020

The Haji Malang Shrine Funicular Railway had been planned in 2008 with a Steel Beam Trajectory without any Derailment Protection Installation/Measurements.

Under up-to-date Safe Operation Precaution and Risk Management Aspects, such a fragile Steel Beam Trajectory exposed to heavy corrosion of a monsoon affected environment, and without any Protection Installations against Derailments by Flange-Climbing will not be commissioned any more. The impact of the intervention in nature will be not tolerated in a declared ecological sensitive zone like in the unique Hillstation **MATHERAN.**

Annexure III

Matheran is dressing up for Post Corona Period

By F.A. Wingler, Germany, August 2020
Updated

The Beauty of Big Chowk Point during Monsoon 2020; Pict. by Nitin Savant

In a massive drive, Matheran uses currently the lock-down to improve its transport and tourist infrastructures and assets in the hope, tourists, visitors, guests and customers will flock in after the Covid-19 pandemic as before.

As already revealed, the ***"Only Tar Road"*** from Neral to Dasturi is now in a quite good shape. However it still needs better protection against, Rock-and Mud-Slides/Slips.

Tourists, Visitors, Guests and Customers will find an inviting Entrance at Dasturi with the Toll Collecting Counter and a 300 m long smooth surfaced path at the Municipal Entrance Toll Station as an interlink to the rickshaw- and horse-stand, covered and protected by a wire mesh gallery for safe, easy and smooth foot walk:

New Look for Entrance at Dasturi with Toll Collecting Boot

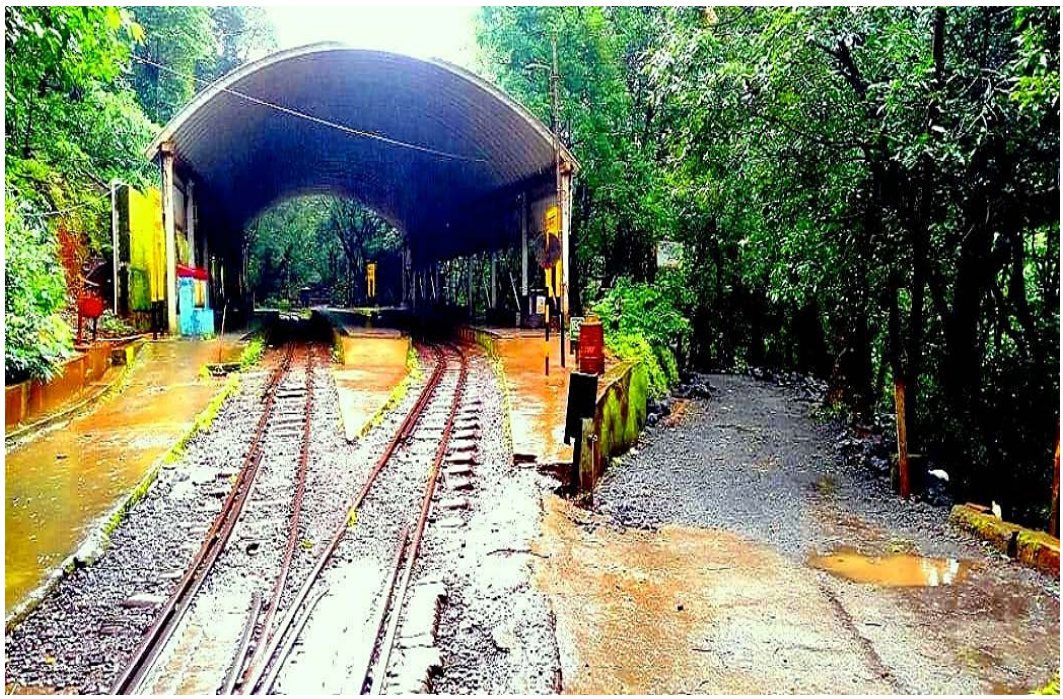
Gallery Protection of the refurbished Path from Dasturi to Rickshaw- and Horse-Stand near Aman Lodge Railway-Station; Pict.by Nitin Savant

Car-Travellers and Motor-Bikers coming with their own road vehicles will find now the long awaited new paved Car Park:

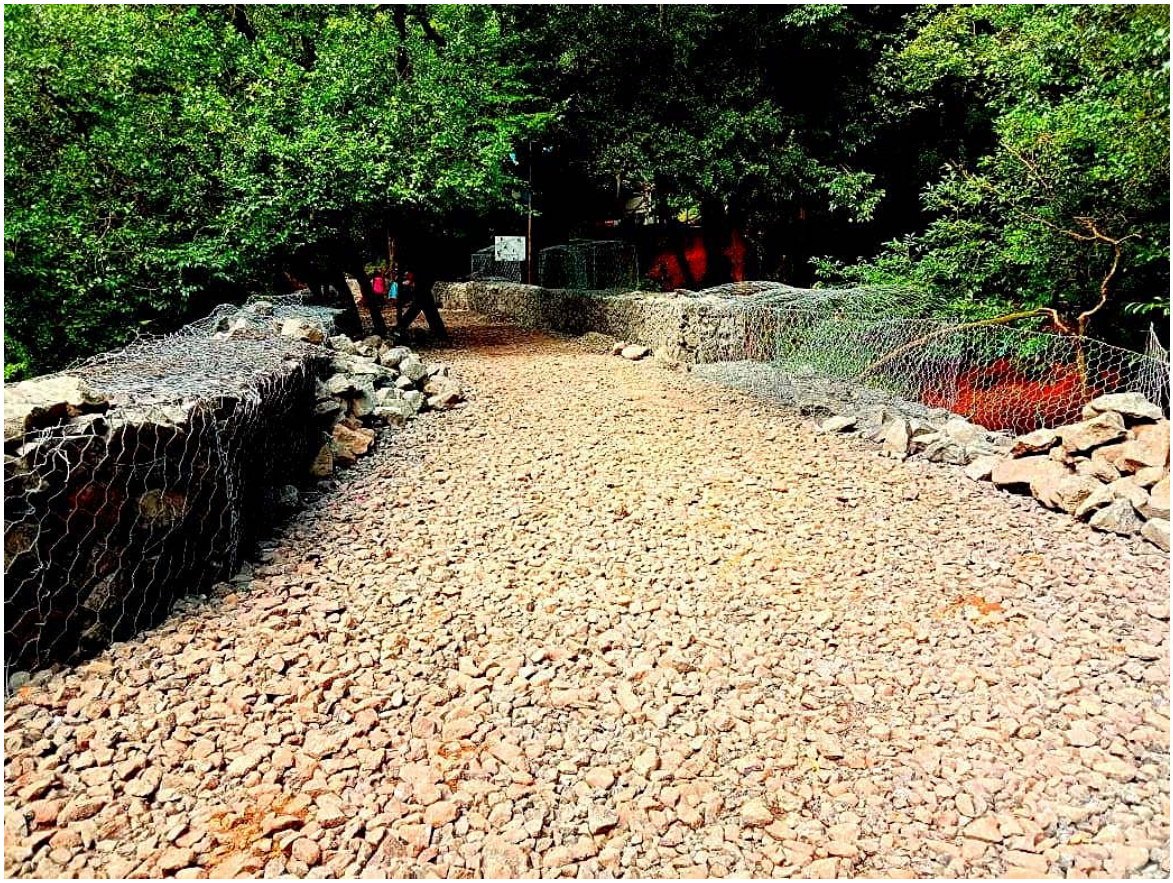
Refurbished Car Park paved with interlocking Concrete Blocks; Pict. by Nitin Savant

The author got informed that Taxi-Stand, Bus-Stand and Horse-Stand will experience in future the same refurbishment.

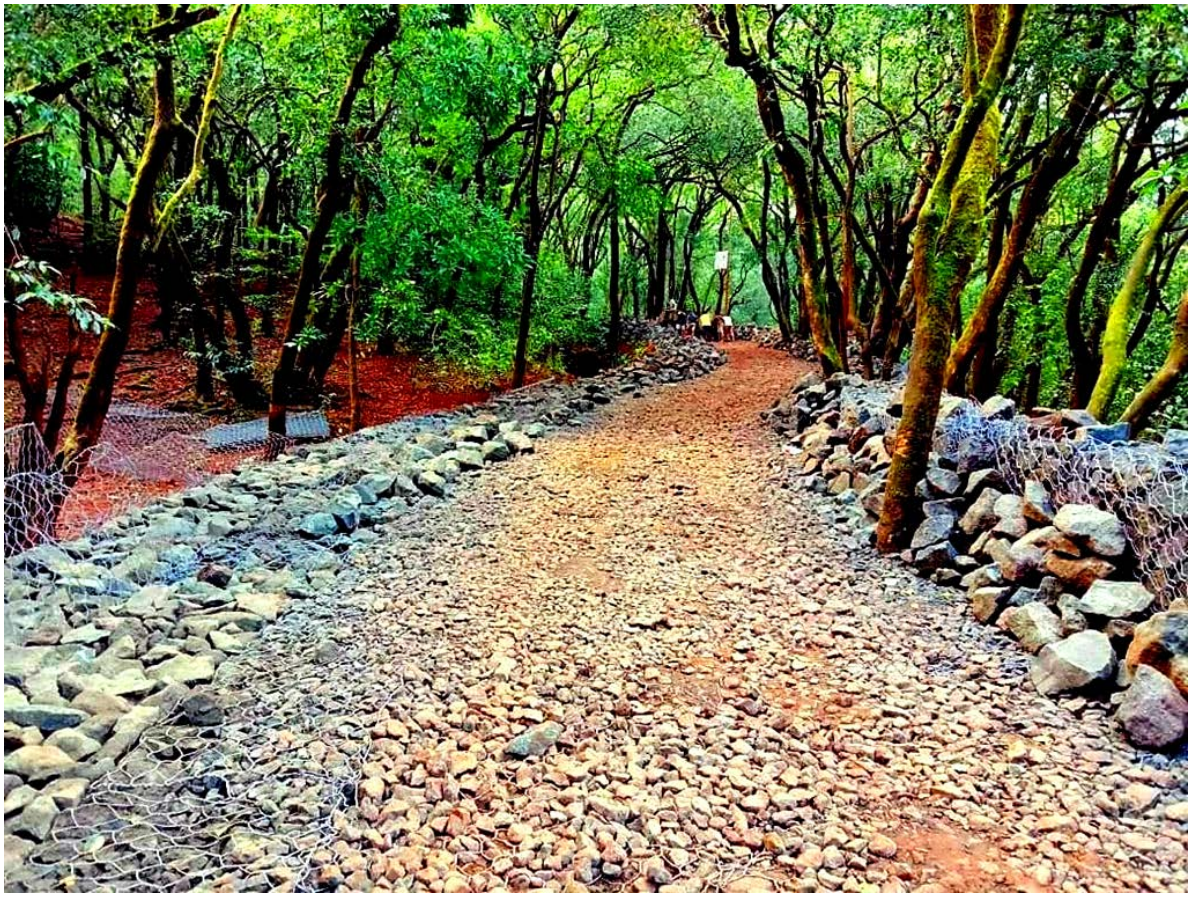
The supply line from Dasturi to Matheran Market is under a reengineering program:



Cart-Road Works already started at Aman Lodge Railway Station; Pict. by Nitin Savant



Dasturi-Matheran Cart Supply Road Reengineering Programme in Progress; Pict. by Nitin Savant



Works in Progress to provide a solid Pavement for the Dasturi-Matheran Cart-Road; Pict. by Nitin Savant

Works in Progress to provide a solid Pavement for the Dasturi-Matheran Cart-Road; Pict. by Nitin Savant

Flattening the Alignment of the Cart-Road by Lifting on Gabions over a Lowering; Pict. by Nitin Savant

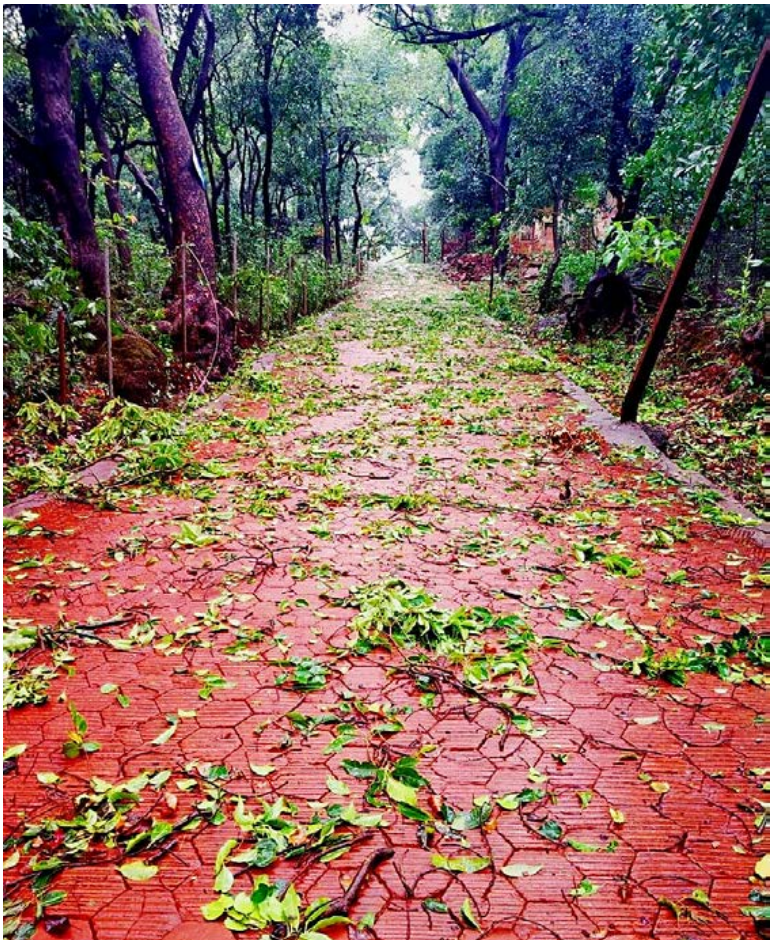
Lifting the Cart-Road on Gabions with Culvert; Pict. by Nitin Savant

As told, the project encompasses to extend a dust-free and smooth Cart-Road from Market up to Pandey Play Ground, 5 km from Dasturi.

Within the "*MAKEOVER"* program for Matheran the trails to the view-points will be refurbished.

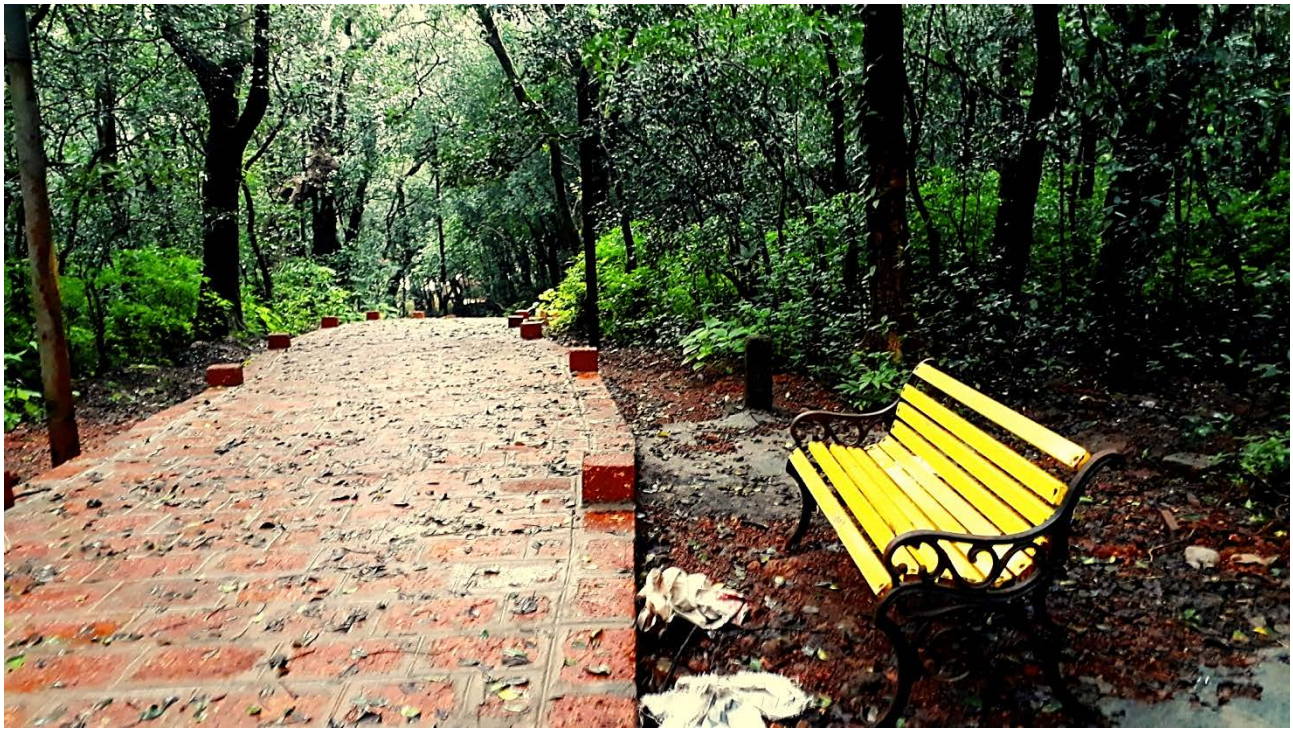
Trail to Panorama Point in new Glory; Pict. by Nitin Savant

As a pattern or model for trail refurbishments serves the improved Dr. Ambedkar pathway from near Divadkar Hotel to Paymaster Park via Cutting-Road, paved with Clay Paver Blocks:



Dr. Ambedkar Pathway to Paymaster Park via Cutting Road paved with brick paver blocks after hit by the 2020 June Nisarga Cyclone; Pict. by Nitin Savant

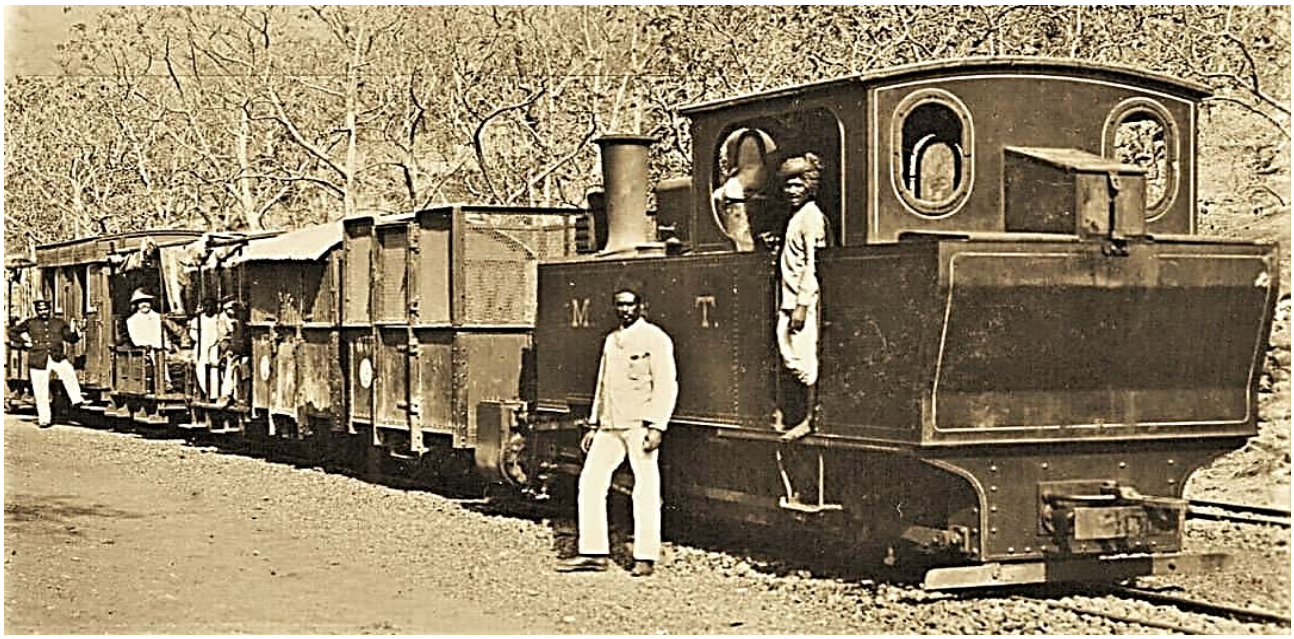
The next picture shows, how the trails to the viewpoints could be paved with Laterite Blocks:



Improvement of Prabani Path to the Convent School with Laterite Blocks; Pict. by Nitin Savant

In addition to the road, path and trail works, the basic amenities for the tourist are being taken care of at the view points and major places of Matheran.

Last not Least



Once upon a Time of Transport with Steam Narrow Gauge Train from Neral to Matheran with Germany build Orenstein & Koppel Steam Locomotive; this Locomotive served from 1905 until 1982; Picture credited by R. Aklekar