OMEGA ANALYTICS

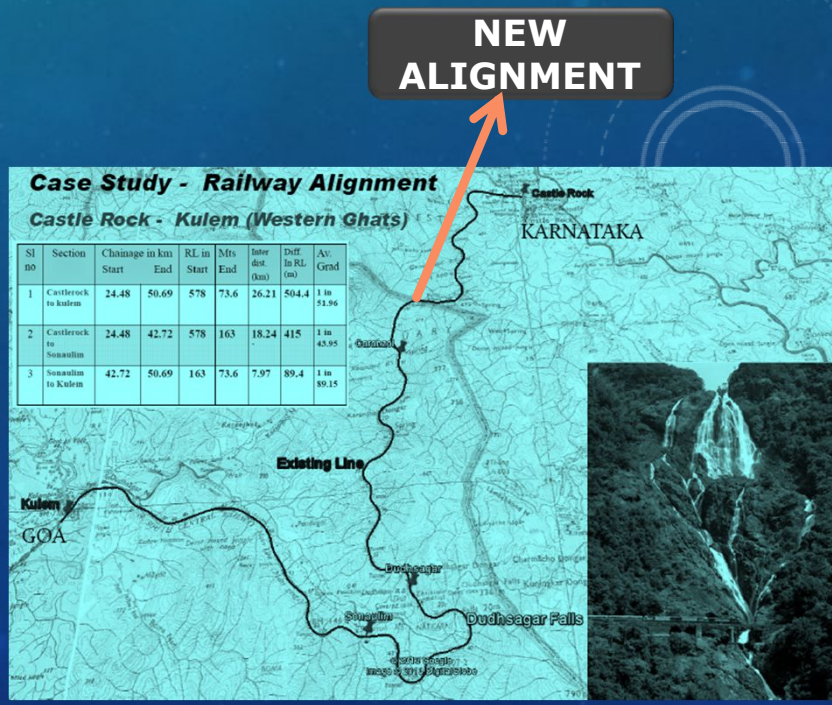
CASE STUDY

Project

- Doubling of Castle Rock – Kulem (26 km) section of South Western Railway

Problem

- Existing line has steep ruling gradient (1 in 38), sharp curves (8 degree),speed restrictions.



Sl no	Section	Chainage in km Start	Chainage in km End	RL in Start	Mts End	Inter dist (km)	Diff. In RL (m)	Av. Grad
1	Castlerock to kulem	24.48	50.69	578	73.6	26.21	504.4	1 in 51.96
2	Castlerock to Sonaulim	24.48	42.72	578	163	18.24	415	1 in 45.95
3	Sonaulim to Kulem	42.72	50.69	163	73.6	7.97	89.4	1 in 89.15

REQUIREMENTS

- Degree of the curve should not exceed 5 degrees.
- Ruling gradient to be improved to 1 in 60.
- At least one intermediate crossing station with yard length of 1100 m and maximum gradient of 1 in 260 to be planned.
- Viaduct heights and tunnel lengths to be minimized.
- Open earth work to avoided to extent possible in forest area.
- Proposed alignment to be in close proximity to existing line .

OUR SOLUTION

- Created Digital Elevation Model (DEM) of project area from ISRO Cartosat stereo images using digital photogrammetry.
- Designed 35 km alignment using DEM and multi-criteria spatial optimization techniques. Plan and profile suitably optimized
- Single longest tunnel limited to just 2.2 km
- Highest viaduct – 39 m
- Tunneling in forest area to reduce earthwork and ecological damage.
- Design completed in 2 weeks and enabled S W Railway to approach forest department for survey clearance

SUCCESS STORY

FROM THE CLIENT

"Omega Analytics, used satellite images, advanced digital terrain models and mathematical programming techniques to design the alignments. This enabled South Western Railway to finalize the alignments and estimates in short period of time. The technology used was very effective as the project sites were in forest areas and difficult ghat sections where conventional survey methods could not be used."

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