ALTERNATIVE ALIGNMENTS

Various alternatives considered for the proposed line and merits & demerits of each one have been discussed in following paragraphs, after due reconnaissance survey work for searching best fit alignment for this purpose.

2.1a Tori-Biratoli(Fly-Over Line/ROR line)

Alternative -1

This alignment starts from the center line of existing Tori Station building. It goes parallel to Tori-Mahuamilan UP main line up to 1.432 km (rail Fly-Over Line). Then it takes a 2° right turn towards Mahuamilan. This curve ends at ch-2.035 Km. Then it goes straight about 967 m. It crosses kamta river at Ch-2.57 Km & 3.02 Km. After this it takes 2.5° left turn towards Biratoli. This curve ends at 3.552 Km. After this it takes another 3.5° left turn towards Biratoli. This curve ends at Ch-4.35 Km. It crosses Tori-Mahuamilan mail line at Ch-4.531 Km. After crossing Tori-Mahuamilan main line, it takes another 3° left turn toward Biratoli station, which ends at Ch- 5.75 Km. Again it takes another 3.5° right turn towards Biratoli station which ends at ch-8.75 km and meets Tori-Shivpur line and goes parallel to this up to Biratoli Station. Total length of this route is 10.67 Km. Alignment is marked/shown as Green colour in toposheet.

Disadvantages:

(I) The route will cross Deonad River twice.

(II) Number of crossing Nala, Ravines etc of Deonad River will increase requirement of structures. Due to this cost of the project will be increased.

(III) Runs through protected forest (Open Jungle).

(IV) Numbers of affected residential areas are high.

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Advantages:

(I) Gradient is flatter.

Alternative -2

This alignment starts from the center line of existing Tori Station Building. It goes parallel to Tori-Mahuamilan up main line up to 1.392 km (Rail Fly-Over line) and crosses NH 99 at Ch-0.600 Km (existing L.C. No 12A). Then it takes a 3.5^0 right turn towards Mahuamilan. Then it goes straight about 639 m. After this, It takes 3.9^0 left turn towards Biratoli. This curve ends at ch-2.613 km. Alignment crosses kamta nala at 2.700 km. After crossing kamta river, it takes a 3.9^0 left turn and crosses Tori - Mahuamilan main line at chainage 3.16 Km (182.8Km from GMO,Latt: 023°40'34'' Long: 084°46'05''). After crossing Tori-Mahuamilan main line, it takes another 3.9^0 left turn towards Biratoli Station. At ch-3.67 km it crosses an earthen road at Bhandargarh village. This line will meet Tori-Shivpur line at Ch-6.641 km (Fly Over line, 3.11 Km of Tori Shivpur line) and goes parallel with Tori-Shivpur line. Total length of this route is 9.43 Km. The alignment is marked as red colour in index plan.

Disadvantages :

(I) Three transmission towers will be required to be shifted at chianage 3.0 km, 3.2 km, and 3.575 km.

(II) Lifting of transmission lines at chainage 2.85km and Ch-4.780 Km are required.

Advantages:

(I) Shortest alignment (9.43 Km), fully satisfying required gradients.

(II) Reserve/Protected forest area near Tori is avoided.

(III) Runs parallel to the 3.390 Km length with existing Tori – Shivpur route which reduces requirement of land.

(IV) Earth work up to 2.268km is already done in Tori-Shivpur project. So it reduces project cost.

(V) Less number of residential areas will be affected.

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Alternative -3

This alignment also starts from the center line of existing Tori Station Building. Then it goes parallel to Tori-Mahuamilan main line up to Ch-1.15 Km. Then it takes 2° right turn towards Mahuamilan and ends at Ch- 1.8 Km. Then it goes straight about 830 m. It crosses Kamta River at Ch-2.537 km. After this, it takes a 3.9° left turn towards Mahuamilan and it ends at Ch-3.2 km. Again it crosses Kamta River at Ch-3.385 Km.After that it takes another 3.9° left turn towards Biratoli Station and it ends at Ch-4.23 Km. This line crosses Tori-Mahuamilan main line at Ch-4.29 Km. After crossing the main line it takes another 3° left turn. This curve starts at Ch-5.05 Km and ends at ch-5.63 Km. After that it goes straight about 400m . Then it takes a 3.5° right turn towards Biratoli station. After end of this curve, it will meet Tori-Shivpur line and follow Tori-Shivpur line up to Biratoli Station. Total length of this route is 10.5 Km. This alignment has been shown in blue colour in the topo sheet.

Disadvantages:

(I) Length of the alignment is greater than the alternative 2.

(II) The route will cross the Deonad River twice.

(III) Number of crossing Nala, Ravines etc. of Deonad River, will increase the structure. Due to this, cost will be more.

Advantages:

1. Gradient is flatter than alternative 2

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2.1b Mahuamilan-Biratoli (Avoiding Surface Line)

Alternative -1

This alignment starts from the center line of existing Mahuamilan Station Building .It runs parallel to Mahuamilan-Tori main line up to 1.42 Km. Then it takes right turns towards Biratoli station. This line crosses protected forest from Ch-3.29 Km to Ch-4.124 Km. After passes through a protected forest it goes straight about 960 m . Then it takes right turn towards Biratoli stations and meets Tori-Biratoli station at Ch-6.57 Km and follows Tori-Shivpur line up to Biratoi Station. This alignment has been shown in green colour in the topo sheet.

Disadvantages:

- This alignment passes through a protected forest.
- Numbers of affected residential areas are high.

Advantages:

- Alignment passes through plain terrain.

Alternative -2

This alignment starts from the center line of existing Mahuamilan Station and runs parallel to existing Mahuamilan-Tori DN main line. It follows existing line up to 2.325 km (avoiding surface line). Then it takes a 2.0^0 right turn towards Biratoli. This curve will end at 3.0 Km (avoiding surface line). From this it will go straight and cross earthen road at 3.19 km (avoiding surface line). At Ch-3.284 km (avoiding surface line) it takes 2.5^0 left turn and ends at 3.689 km (avoiding surface line). After this it takes another 2° right turn towards Biratoli Station and it ends at Ch-5.638 Km (avoided surface line). From Ch-5.638 Km (avoiding surface line), it goes parallel with existing Tori-Shivpur Surface line. This alignment has been shown in red colour in the topo sheet.

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Disadvantages:

- One transmission tower will be required to be shifted at chianage at 3.25 km from Mahuamilan.
- Lifting of transmission tower at Ch-4.450 Km from Mahuamilan is required.

Advantages:

- Land acquisition is less because a large part of this line goes parallel to existing Mahuamilan-Tori DN main line from 0 km to 2.325 Km. After that it follows Alternative 2 of fly-over line from 3.6 Km to the Biratoli station. Due to flatter ground, quantity of excavation and filling is less and numbers of structures are also less.
- Less number of residential areas will be affected.

Alternative -3

This alignment starts from the center line of existing Mahuamilan Station Building. It follows Mahuamilan-Tori main line DN main line from Ch-0 Km to 1.4 Km. Then it takes a right turn towards Biratoli. Then it goes straight. After this it passes through a protected forest from Ch-3.496 Km to 5.016 Km. Then it takes a left turn from Ch-5.016 Km and curve ends at Ch- 5.841 Km. After that it takes another right turn towards Biratoli Stations and meets Tori-Shivpur line at Ch-7.18 Km and follows Tori-Shivpur line up to Biratoli Station. This alignment has been shown in blue colour in the topo sheet.

Disadvantages:

- This alignment passes through a protected forest.
- This line passes through Kusumtoli, Tujitoli, Piparahi villages etc. So land requirement in dense populated areas is high.

Advantages: The land is vacant apart from the residential areas mentioned above and undulation is less than the other to alternatives.

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2.2 Selection of route-

2.2(a) Alternative 2 of Fly-Over connection was selected as the final route for proposed alignment.

Reasons are mentioned below:

- Alternative 2 is going parallel to Tori-Mahuamilan up main line from 0 km to 1.392 km(Fly-Over Line) & It will follow existing Tori-Shivpur B.G. line from Ch-6.041Km(Ch-3.11Km of Tori Shivpur surface line) to Biratoli Station ; due to this quantity of acquired land will be less than the other alternatives.
- Less number of residential areas will be affected /disrupted.
- Number of structures is less.

So alternative-2 is suitable and economic among the three alternative alignments of Fly-Over connections and the same has been shown in red colour on the topo sheet.

2.2(b) For avoiding surface line Alternative 2 is proposed as the final route for final alignment.

Reasons are mentioned below:

- Alternative 2 is going parallel to Mahuamilan –Tori DN main line up to 2.325km and again it follows the existing Tori-Shivpur line from 5.638km (avoiding line) to Ch-9.04 Km(avoiding line). So the quantity of acquired land is less.
- Less number of residential areas will be affected.
- Number of structures is less.

So alternative-2 is suitable and economic among the three alternative alignments of avoiding surface line connections and the same has been shown in red colour on the topo sheet.

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