

# **PROJECT – REPORT**

**ON**

## **Difficulties Faced in Gauge Conversion in North Bihar in Comparison to Punjab area**

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**Refresher Course No.12202**

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## **1.0 Introduction:-**

### **1.1 Location of North Bihar:-**

North Bihar area consist of area between indo-Nepal boarder in foot hill of Himalaya to North bank of river Ganga in North-South direction and lies mid way between the humid West Bengal in East and the sub humid Uttar Pradesh in West .This area has very fragile ecology as its drains steep plains of Ganga from foot hills of Himalaya with help of numerous small and large tributaries of Ganga i.e. Koshi, Gandak, Buri Gandak, Baghmati etc. The rivers of North have become highly unstable due to change in ecology of river basin not only in

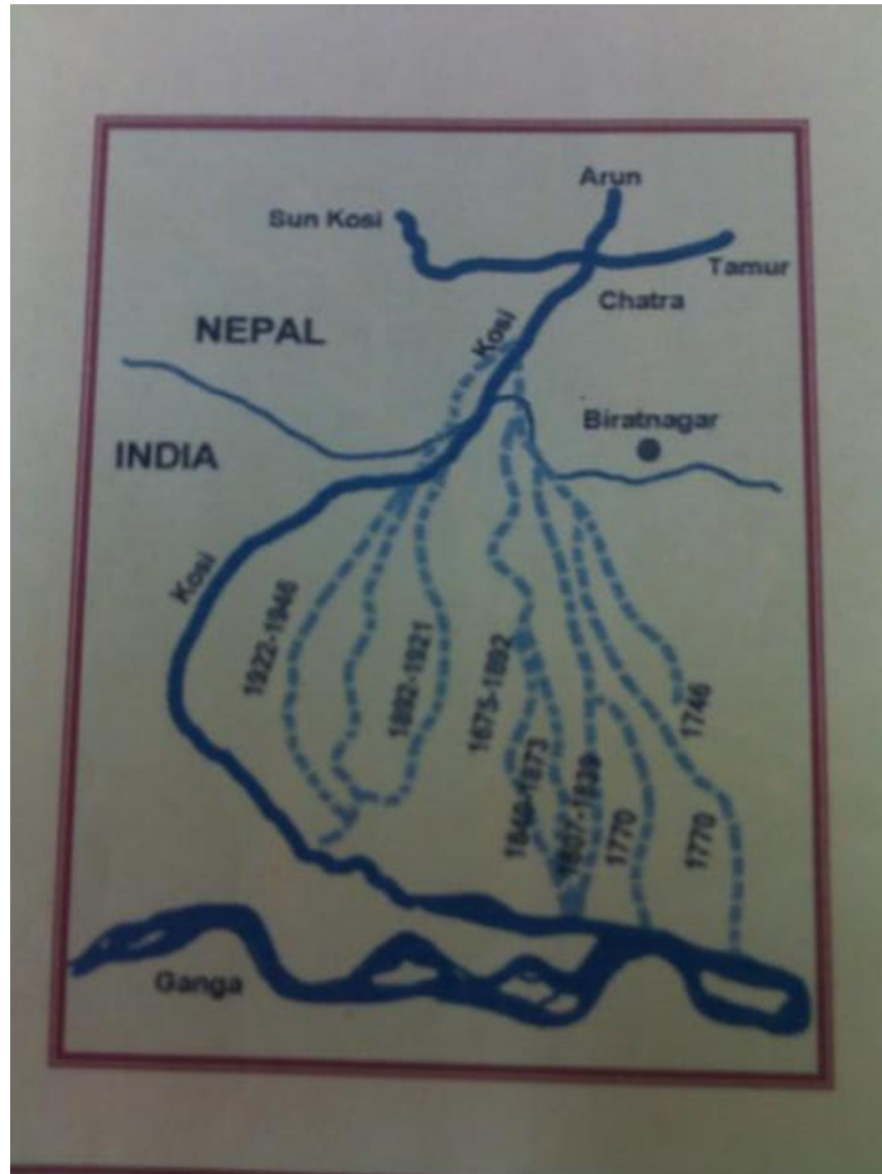
Bihar but also in up stream in Himalaya in past two centuries as well as huge tectonic activities in region.



MAP OF BIHAR

### **1.2 History of River Koshi (Main River of North Bihar):-**

The Koshi River is also called Sapta Koshi and is the largest river of Nepal and the largest tributary of the River Ganges. The Koshi drains the region lying east of Gosainthan to west of Kanchangjunga, covering a total drainage area of 60400 Sq. Km of which about 47% lies in Nepal. The rivers Tamurkoshi, Arunkoshi, Dhudkoshi, Tamakoshi, Sunkoshi, Bhotekoshi and Indrawati are the main tributaries of the Koshi basin. Some of its major tributaries such as the rivers Arunkoshi and Bhohtekoshi are Antecedent to Himalayas and originate in the Tibet autonomous Region of China. The Koshi has steep gradient in the mountains and hills while on the plains it forms numerous channels. It carries a high silt load and forms sandbars and islands. Thus, it always tends to changes its course and each year causes high flooding. Under an extensive flood control programme 40Km and 12 Km embankments were constructed along the eastern and western bank within Nepal. Extensive embankments of about 220 Km length are constructed on either side of the river in India to Confine the River flow and protect land beyond it from Floods.



SHIFT OF KOSHI RIVER

### 1.3 Sediment Load of Koshi:-

It carries the most water and the highest Sediment load. It is also called the “**Sorrow of Bihar**” because the Koshi often changed course, Bringing misery to millions of people downstream in India. In 1964, India built the Koshi Barrage

near the Border to control the floods and to provide irrigation to farms in both countries .The gray-brown river surges out of the mountains of eastern Nepal to join the Ganga in India, Depositing some 120 million cubic meters of silt along the basin every year- twice as much as the Nile and five times than the Sutlej. The River is now flowing several meters above the surrounding land, and only slender embankments in Nepal and Bihar keep the mighty river in check. Near the barrage the Koshi turns into a delta, with islands and vegetation sprouting from long sand bars. The River Koshi travels in India for about 317 Kms and has been provided with two Rail Bridges- one on Mansi- Saharsa section and one on Barauni- Katihar section of East Central Railways. In addition to it two road brides too have been provided, one on National Highway No. 31 near Kursella and other one near Drumright which caters the need of the region. There have been persistent demands for a Rail cum Road Bridge across River Kosi restoring the Pre- 1934 MG line connecting Nirmali with Saraigarh, which will accelerate the socio- economic development of the entire Mithila Region as well as access to the Kingdom of Nepal.

#### **1.4 Rail Link through Koshi River:-**

In 1887, a meter gauge rail link was provided by the B&N.W Railway Company between Nijrmali (terminal station of Darbhanga junction- Nirmali line) and Bhaptiahi (existing Saraigarh station on Mansi- Saharsa- Forbesganj line) stations. Since the Koshi River at that time was not flowing between these two stations, a small bridge having a 4x60 span was provided across the tributary river Tiljuga flowing near Nirmali. Due to continuous westward shifting of the Kosi River, this rail link was washed away in heavy flood in 1934. Owing to meandering nature of river Koshi, no attempt was, thereafter, made to restore this link for a long period. However, the situation changed considerably after construction of barrage over Kosi River at Bhimnagar (work completed in 1963 under the Kosi Project scheme) in Nepal, which restricted the river within a narrow path. Consequently, large area of Madhubani, Darbhanga, Purnia and Saharsa districts and some adjacent areas in Nepal were saved from floods. Subsequently a number of old rail links (washed away in floods) in the region were restored and open to traffic in the following years.

Supaul to Tharbitia	(13Km)09.10.1967
Tharbitia to Saraigarh	(12 KM) 16.11.1970
Saraigarh to Raghapur	(11Km) 16.06.1974
Raghapur to Pratapganj	(12Km) 21.09.1974
Pratapganj to Forbesganj	(36Km) 02.10.1975



**Koshi Bridge under Construction**

## **1.5 CLIMATE:-**

The climate of the North Bihar has no independent feature and is governed with the climate of Bihar, and in other hand it is a part of the climatic pattern of the Indian subcontinent. It enjoys a continental monsoon type of climate owing to its great distance from the sea. The factors affecting the climate of Bihar are:-  
The Himalayan Mountains in the north have a significant bearing on the distribution of monsoon rainfall in Bihar. Bihar joins the Ganga delta & Assam. It extends from 24-degree to 27-degree Northern latitude. Hence its location is tropical to sub tropical.

### **SEASONS AND THEIR DURATION**

Cold weather season- December to February

Hot weather season- March to May.

Southwest monsoon- June to September.

Retreating southwest monsoon- October to November

## 1.6 SOIL:-

Soil is one of the most important resources of a nation. It is the gift of nature of immense value. The most common use of the word soil is in the sense of a medium in which plants grow, although it has a different connotation at different time & place, and for persons engaged in different professions. Almost all the economic activities are directly or indirectly dependent on soil. Thus soil is the backbone of agricultural and industrial development.

Soil has a number of characteristics, which may be regarded as the aggregate of the physical, chemical and biological properties. The Bihar plain consists of a thick alluvial mantle of drift origin overlying in most part. The siwalik and older tertiary rocks. The soil is mainly young loam rejuvenated every year by constant deposition of silt, clay and sand brought by different streams. This soil is deficient in phosphoric acid, nitrogen and humus, but potash and lime are usually present in sufficient quantity.

### **There are three major types of soil in North Bihar: -**

Predominantly swamp soil- found in and around the Supoul District.

Terai soil- found in northern part of the district along the border of Nepal.

The Gangetic Alluvium- the plain in Bihar is covered by gangetic alluvium.

It is divisible into-

Older alluvium (Bhangar soil)

New alluvium (Khadir soil)

## 1.7 FOREST COVER:-

The sub Himalayan foothill constitutes belt of moist deciduous forests. These also consist of scrub, grass and reeds. Here the rainfall is above 1600mm and thus promotes luxuriant Sal forests in the favored areas. The hot and dry summer gives the deciduous forests. The most important trees are Shorea Robusta (Sal), Shisham, Cedrela Toona, Khair, and Semal.

## 1.8 GENERAL GEOLOGY:-

The prequaternary hard rocks are all restricted to the south of River Ganga. Even the older alluvium formation of Early Quaternary age are restricted to the alluvial uplands south of Ganga.

This part of the Koshi valley is made up entirely of soft unconsolidated quaternary sediments, which are divided into three Morpho-stratigraphic units e.g.



- (i) Purnea terrace- Khagaria formation
- (ii) Ganga- Kosi plain and
- (iii) Diara Formation present flood plain.

These represent a domain of sediments derived from the Himalayan Rivers constituting a subdued 3 tier terraced landscape in the valley area.

Geologically the recent river alluvium covers the area. The river Koshi is known to carry a heavy load of sediment from the catchment areas in Himalayas. The rocks exposed in the catchment include crystalline both igneous and metamorphic and also the Siwaliks consisting of Sandstones and shale's. Because of the weak resistance offered by Shiwalik rocks, the river Koshi transports the sediments derived from them as alluvium and deposits in the plains as it emerges from the mountains. The deposition of coarser sediments takes place near the foothills whereas in the area under consideration mostly silt, clay and fine sands are deposited, the area being far away from the mountain front.

### 1.9 Seismicity of the Area:-

The area is broadly covered by isoseismals of VII to IX of the Bihar-Nepal earthquake of 1934. It falls within zone V of the ISI seismic zoning map. The significant earthquake in Bihar of intensities VI or higher/magnitudes of V or more are as follows: -

**26<sup>th</sup> August 1833- Eastern Nepal, Mw 7.9 ± 0.1**

27.500 N, 86.500 E

Nearly 500 people were killed, most of the fatalities in the Kathmandu valley. Strong shaking caused damage at many places in Bihar like Bhagalpur and Munger. Tremors were felt at Kolkata and Jabalpur.

**04<sup>th</sup> October- 1833- Nepal- India border region.**

27.000 N, 85.000 E

Felt over a wide area of northern and eastern India.

**18<sup>th</sup> October 1833- Nepal- India border region.**

27.000 N, 85.000 E

Additional damage and casualties in Nepal and Bihar, Felt over a wide area of northern and eastern India.

**11<sup>th</sup> November 1842- Bihar- Bengal area.**

27.000 N, 88.300 E

Maximum observed intensity IX Damage at Munger, Bihar. Felt at Kolkata, Darjeeling and Guwahati/Seiches observed in the northern Bay of Bengal.

**23<sup>rd</sup> May- 1866- Nepal- India border region.**

Maximum intensity VIII at Kathmandu and in Bihar, India.

**15<sup>th</sup> January 1934- Bihar- Nepal border, Mw 8.0**

26.500 N, 86.500 E, OT- 0:43:25 UTC

Close to 10,700 people killed in North Bihar and Nepal. Heavy damage in the towns of Muzaffarpur, Morihari, Darbhanga and Munger (Monghyr). Tremores felt all over the Indian subcontinent, as far as Mumbai and even Kerala.

**20<sup>th</sup> August 1988- Udaypur Gahri, Nepal Mw 6.8**

26.755, 86.616, D= 057.0 Kms. OT= 23:09:09 UTC

Nearly 900 people were killed in eastern Nepal and the bordering district of Bihar, India. Damage was also reported from Kathmandu and Sikkim. It was felt over much of northern and eastern India and much of Nepal and as far as New Delhi.

**15<sup>th</sup> February 1993- Qasba- Purnea area, Bihar Mb4.9**

25.980 N, 87.510 E, D= 025.0 Kms, OT= 14:29:41 UTSC

### **1.10 INDUSTRIAL STATUS:-**

Major Industries operating in North Bihar are Sugar Factories. There are no other major industries operating in this area, however Railway's have sanctioned lot off projects for the area and Wheel Plant of Chapra is about to commission.

### **2.0 Special Feature of G.C. work:-**

The G.C. projects have a unique feature that makes them different from projects of Doubling and New Line. In G.C. project, the actual work of dismantling of existing track of M.G. and linking of B.G. track is done in Mega Block by suspending the existing services. During this Mega Block period, the local public is deprived of a transport system, which was otherwise available to them , therefore there is a consistent demand by public for completion of the work in minimum possible time, which is absent in Doubling/New line projects.

### **3.0 Back Ground:-**

The work of gauge conversion of Sakri- Nirmali, Jhanjharpur-Laukaha Bazar and Saharsa-Forbesgang(206.06 km ) was sanctioned in supplementary budget of 2003-04 at the cost of Rs 355.89 crore as part of East-west corridor from Gorakhpur to Katihar as deposit work sponsored by Ministry of Defense . The part detailed estimate of work was sanctioned by Railway Board for Rs 102.92 cr. covering preliminary expenses for formation and bridges to enable taking up long lead items vide letter dated 12.12.06.

The detailed estimate of work was sanctioned by Railway Board for Rs 372.14 cr. on 28.02.08 as per following department-wise break up-

Civil	325.44
Electrical	6.83
S&T	38.74
Mechanical	1.13
Total	372.14 (crore)

The part detailed estimate of work was sanctioned by Railway Board for Rs 102.92 cr. was withdrawn on sanction of detailed estimate.

**The Sarayagarh-Forbashgang section is part of Saharsa- Forbesgang having the length of 59.11 Km.**

#### **4.0 Difficulties Faced in Gauge Conversion in North Bihar are Given below:-**

Difficulties faced in Gauge Conversion work in North Bihar in general and in Gauge Conversion of Sarayagarh-Forbashgang in particular are discussed below.

#### **5.0 Geographical & Geological factors:-**

##### **5.1 Soil Type: -**

Most of the soil in the area is silty-clay, which is most unsuitable for any type of earth works i.e. embankment as well as shallow foundation and requires 1m thick blanketing for 25t axle load as RDSO guide lines. Due to non availability of better earth in reasonable distance same can not be replaced.

##### **5.2 High density of Rivers channels in area:-**

The extent gauge conversion is passing through very close to foot hills hence large numbers of river channels are crossing the alignment, which requiring numerous major bridges apart from huge balancing culverts.

##### **5.3 Very Short Working Period due to high rain fall:-**

The North Bihar is covered by high rain fall as well as low lying area; therefore working period is very short i.e. from November to May only. On start of rains earth work can not be done as well other works also suffer due to poor communication .Apart from rains earth work is also affected by crops season.

##### **5.4 Highest Earthquake Factor:-**

The area falls in Zone -V of earthquake so design of bridges and other structures become heavier, which require more inputs in terms of men and materials due to increase in scope of work.

### **5.5 Flood Prone Area:-**

The whole north Bihar is flood prone, which results in lack of communication in most of the time and short working period with high cost.

### **5.6 High Level of Subsoil water:-**

The subsoil water level in area is as high as less than one meter in area so it is very difficult to construct deep foundation and even shallow foundation requires dewatering.

### **5.7 Lack of good road network in area:-**

Road network in area is very poor and available network is also in very bad shape, however recently NHI have improved some national high ways to international standard which will certainly reduce the cost and time required for transportation of materials.

### **5.8 Lack of Potable Drinking water in area: -**

Due to presence of Arsenic and high Iron content in water in the area, it is very difficult to convince labour to stay at site, which affects progress of work.

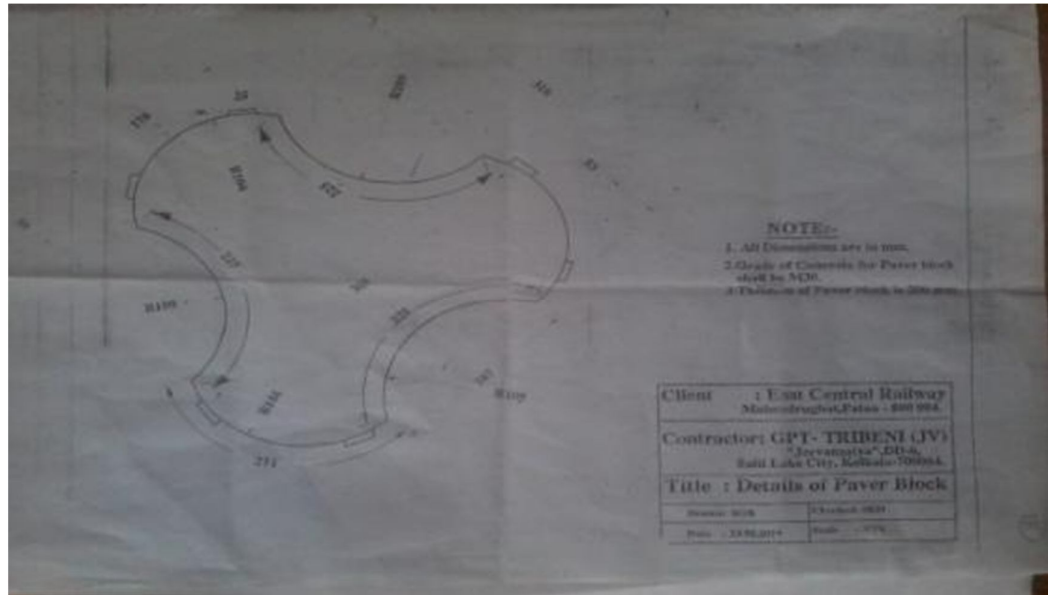
**5.9 Huge Requirement of Protection Work:-** Due to large numbers of running rivers channels and presence of erodible soil large protection work are required. The protection work drawing of Koshi bridge and its approach are attached as annexure –A

### **6.0 Non -Availability of Man, Material & Machinery in the Area: -**

Most of buildings materials are not available in the area, main are narrated below.

### **6.1 Boulders:-**

The North Bihar is made up of flood plains of Ganga and its tributaries and far away from hills or hills are across international border hence no boulders are available in north Bihar. All boulders are being transported from across the Ganga river from as far away place as Pakur /Koderma /Munger, about 350 km away from site. which lead not only to higher cost but also higher execution period of project. However precast paver blocks are also partially used for protection of approaches of Kosi Bridge.



**The drawing of special paver blocks.**

## 6.2 Ballast and Stone Chips:-

These areas also being transported from across the Ganga river from as far away place as Pakur /Koderma , about 350 km away from site .which lead not only to higher cost but also higher execution period of project. At present ballast is being transported from Pakur in BOBYN wagons and transportation of ballast in BOX/BOXN have not been very successful.

## 6.3 Blanketing Material:-

Similar to ballast, Blanketing is also not available in north Bihar and same is being transported from Pakur, which lead not only to higher cost but also higher execution period of project. At present blanketing material is being transported from Pakur in BOX/BOXN /Road and same have not been very successful. However alternate to stone dust blanketing Geo-textile with brick on edge and blanketing material was used in some of the section.

## 6.4 Coarse Sand:-

The coarse sand is also not available in north Bihar and same is being transported from across the Ganga river from as far away place as Kiul/Sahebganj, which is more than 150 km away from site.

## 6.5 Cement and Steel:-

The main stock yards of steel and cements are also located far away from site i.e .at Patna /Muzaffarpur, which is more than 200 km away from site.

## 6.6 Skill Labour and Supervising staff:-

The unskilled labour is available in abundance but skill labour and supervising staffs are not available in the area and productivity of labour is also very low.

#### **6.7 Heavy Machinery:-**

The heavy machinery require for pile drilling /Cranes for erection etc are to be arranged from Kolkata ,which lead to poor availability high cost and more time for project.

#### **6.8 Testing Facilities:-**

The most of the engineering colleges and other laboratory are located in Patna area, which lead to delay in work as well as extra cost.

#### **6.9 Industrial Market:-**

Due to absence of industrial in the, it is very difficult to arrange repair and maintenance of machinery and equipments in time.

#### **7.0 Other Problems:-**

##### **7.1 Shortage of good Agencies in area:-**

Due to remote and inaccessible location good contractors/agencies are not available in the area. The contract of earth work, bridges, Level-Crossings etc were awarded to M/S KEC DELCO and Varaha with cost of Rs 68.0 crore in the month of March 2010 but agency has executed the work of Rs 16.0 crore till date .The progress of adjacent section is also less then extent contract as both stretch of work were awarded to same agency due to lack of competition.

The work is generally awarded to joint venture for better progress but in general works are executed by local partner with very little technical and financial capacity.

The contractors also take huge time in mobilization of man, machines and material due to backwardness of area.

##### **7.2 Law and Order Problems:-**

The law and order has improved lot in recent times and no major problem is being faced except some isolated incidence by local peoples .

##### **7.3 Traffic Block of Section:-**

The section has been partially blocked for traffic from Forbesgang to Raghapur since 20January2012 but decision of elimination of level –Crossings were not finalized .However proposal of blocking of full section have been submitted recently.

#### **7.4 Funding of Project:-**

The project is funded by Ministry of Defense and all most all funds have been deposited by them but project is not progressing well due to low priority given by Railway in allotment of funds. During current year only Rs 10.00 crore have been allotted against demand of Rs crore.

#### **7.5 Medical Facilities:-**

The good medical facilities do also not exist in North Bihar and case of severe accident at site the rate of casualty is very high.

#### **8.0 Lack of proper Planning:-**

The most of projects in North Bihar were initiated on political consideration in very short notice hence proper planning could not carried out before start of work. The extent project was sanctioned in year 2003-4 but could not proceed with desired pace due to change of priority by change of Railway Minister.

The substructures of six major bridges with 13 spans of 100 feet and 5 spans of 150 feet is almost half done but tender for fabrication and erection of supper structure have not been called till date

The Koshi bridge will be completed with in few months with total cost of 323 crore but same will be used after gauge conversion of approach routes, which will take at least three years.

**9.0 Change of Policies:** - The railway board has changed the various policies during such long span of nine years since sanction of project, few are enumerated below.

#### **9.1 The bridges Loading Standards:-**

The rebuilding/strengthening of all bridges were planned to MBG loading Standard at initial stage but Railway Board has directed to construct all bridges for 25 t axle load with –out considering adjacent section’s loading standards and effect on cost and time over run on ongoing projects. Which lead to rebuilding of all 26 major bridges in place of jacketing/ strengthening of 15 No of bridges. The policy letter of Railway Board is attached as annexure- A, B, C

The RDSO approved drawing of Hume pipe bridge for 25 t axle load is not available, which will lead to rebuilding of 65 Hume pipes by RCC box bridges, That will lead to extra cost and time.

The details of minor and major bridges are attached as annexure – E &F

## **9.2 Elimination of Level- crossing Gates:-**

The railway board has directed to eliminate all man/unman L-C gates in new line/Gauge conversion works .The L-Section of project was revised to eliminate all L-C gates ,all new bridges with 25 t axle load etc. The revised estimated cost of project was increased from 352 cores to 1500 corers .The issue was discussed with ME on 18.04.2012 by CAO/S/ECR and ME has directed to ask dispensation of above but during this excise about six months were lost .The policy letter is enclosed as annexure -G .

## **10.0 Problems during Execution of Work: -**

The major problems faced during execution of work are as follows-

### **10.1Earth work:-**

The exposed surface of earth work become dusty as soon as it looses moisture and bank affected by heavily rain cut during rains .The typical photo graph of both situation are given below





## **EARTH WORK ON LOOSING MOISTURE**

### **10.2 Dismantling Under Water:-**

It is very difficult to dismantle existing bridge foundation under water, which not only require extra time and money but also pose safety hazard. In this section 18 bridges out of 123 require under water dismantling.

### **10.3 Major Bridges:-**

As area is flood prone and section have been washed out number of time in past hence part of substructures were buried deep in the river channel, which were encountered during sinking of numbers of well.

### **10.4 Minor Bridges:-**

The typical photo graph of dewatering arrangement for construction of Bridge No-23 is shown below.



It is very difficult to take RMC at every bridge site.

### **10.5 Level- Crossing:-**

Due to high bank and water logging of adjacent area working on busy L-C gate become very difficult due to lack of space.

### **10.6 Transportation of P.Way Materials:-**

Due to poor road net work and pathetic condition of existing road work, it is very difficult and time consuming to transport heavy P.Way material such as PSC sleepers, rails and fittings.

### **10.7 Linking of Track:-**

Due to laying of track without ballast on bare formation and unloading of ballast by BOBYN it is not possible to maintain cross slop in formation, which may lead to damage of sleepers .The ballast cushion is achieved by lifting of track and at least two rounds of tamping is done by machine.

### **10.8 Welding of Rails:-**

DUE to difficulties/failure of welding agency, it is proposed to link the track with second hand rails and subsequently through rail renewal will be done as soon as linking of one end loading rake length will be completed.

### **11.0 Speed Potential & Traffic Projections of section:-**

It is D-class route having speed potential of 100 kmph and most of section will remain as single line. It will provide second West-East route from Gorakhpur to Katihar predominantly for goods traffic and will provide direct connectivity to North –Eastern part of country with Northern part .As it running along Indo-Nepal boarder hence will have large strategic importance.

### **12.0 Comparison with working in to Punjab area:-**

The Punjab area is fully covered with Broad Gauge track and no Meter Gauge track is existing in the Punjab However There are doubling of Jalandhar-**Suchipind Section** is in progress apart from other new line works .The site of Jalandhar-Suchipind doubling was above visited as this section falls under most developed area of country hence non of above problem is being faced except shortage of labour. It is expected that project will completed with in four years of sanction of same.

### **13.0 Conclusion:-**

The North Bihar have numerous problems due to it geo-political locations which require compressive planning before start of project and close monitoring during projects .The huge no of projects were sanctioned in North Bihar on political consideration ,they need to be reviewed and prioritized based on availability of recourses and return on investment and considering socio-economic need of the area.





1878  
21-01-5.09

JE/Con/W  
M.K. Mishra

# East Central Railway (Construction-Organisation)

Office of the  
Chief Administrative Office/Con  
MHX., Patna  
Date: 29.04.2009

No. ECR/CAO/Con/Design/Policy/ 867

30

- Dy. Chief Engineer/Con/HJP-I, II, III & IV
- Dy. Chief Engineer/Con/SPJ-I & II
- ✓ Dy. Chief Engineer/Con/SHC-I & II
- Dy. Chief Engineer/Con/DBG-I, II, III & IV
- Dy. Chief Engineer/Con/KQR-I & II
- Dy. Chief Engineer/Con/BRKA, HZME, RGD, DHN, DNR, DOS
- Dy. Chief Engineer/Con/Patna & Munger
- Dy. Chief Engineer/Con/Works/MHX-I & II
- Dy. Chief Engineer/Con/General/MHX

**Sub:** Adoption of 25t loading-2008 and DFC loading (32.5t axle load)  
**Ref:** Railway Board letter No.2007/CE-I/BR-III/5/25t dated.16.04.09.

As per letter under reference, if is desirable that 25t loading -2008 and DFC loading (32.5t axle loading) are adopted on all ongoing projects/works. However, it implementation of new loading standards on ongoing projects/works is likely to delay the execution of project/works than MBG-1987 loading may be adopted with the approval of CAO/Con. However new projects/works would invariably conform to new loading standards refereed above.

Mishra  
29/04/09

XEN/Con/Incharge/Design  
E.C.Railway, MHX. Patna

**Copy to:**

1. Secy. to CAO/Con/North & South for kind information of CAO's please.
2. CE/Con/N-I & II, South, NE, Central, East, JH, GB & HQ for kind information please.

Sm. Singh  
Pl. Circulate to  
AFM/c, JEB/c  
& ml  
[Signature]

XEN/Con/Incharge/Design  
E.C.Railway, MHX. Patna

1968F



669  
24/4/10

East Central Railway,  
(Construction Organisation)

Office of the  
Chief Admn. Officer (Con)  
1<sup>st</sup> floor, Mahendrughat,  
Patna-800004

No. ECR/CAO/Con/W/MFP-SMI/1977

Dated 19.04.2010

Dy. Chief Engineer (Con)/I  
East Central Railway,  
Hajipur.

- Sub:** (1) Provision of Unmanned Level Crossing between Muzaffarpur to Garha of Muzaffarpur-Sitamarhi new line project.
- (2) Provision of unmanned level Crossing in Sitamarhi-Garha section of Muzaffarpur-Sitamarhi new line project.

**Ref:** This office letter no. ECR/CAO/Con/W/MFP-SMI dated 10.12.2009 and 21.12.2009

Approval for obtaining condonation for provision of unmanned Level Crossing for Muzaffarpur-Sitamarhi new line project was sent to Railway Board vide letter under reference.

Railway Board have not agreed to the said proposal and had directed that no unmanned Level Crossing should be provided. Thus all Level Crossings which were planned as unmanned should be manned.

In view of above following action be taken:-

1. Necessary modification to all yard plans.
2. Plan for execution of additional work such as provision providing of gate lodge, lifting barrier etc.
3. Suitable modification to other records.
4. A fresh proposal be submitted for creation of additional post of gatekeeper for these manned Level Crossings.

An urgent action be taken on this issue.

*sd/-*  
**(Dinesh Kumar)**  
Chief Engineer (Con)/NE

**Copy to:** Dy. CE/C/I/SHC, Suitable action be taken for all new line projects i.e. all the new level crossings should be manned.

*San*  
*AFH/CL/SHC/*  
*① Pl. take all new level crossing as Manned*  
*②*

*19/4/10*  
**Dinesh Kumar**  
Chief Engineer (Con)/NE

*copy to Shyam Kumar SE/W/...*

## Major Bridge (SRGR-FBG)

S. No.	Bet. Stn.	Br. No.	Location	Existing Span			Proposed Span	
				Type	Span	Min/Maj. Lmt	Type	Span
1	2	3	4	5	6	7	8	9
1	SRGR- RGV	3	95/4-5	Girder	2x6.1	Minor	Girder	2x6.0
2	SRGR- RGV	6	96/4-5	RCC Box	4x2.44	Minor	Box	1x18.3
3	SRGR-RGV	9	97/7-8	Girder	3x6.1	Major	Girder	2x12.2
4	SRGR-RGV	13	99/6-7	Girder	3x12.2	Major	Girder	4x12.2
5	SRGR-RGV	17	101/4-5	Girder	3x12.2	Major	Girder	4x12.2
6	SRGR-RGV	18	101/10-11	Girder	3x6.1	Major	Box	3x6.0
7	SRGR- RGV	21	103/12-13	Girder	5x6.1	Major	Girder	3x12.2
8	RGV-PPV	24	105/13-14	Girder	3x6.1	Major	Box	3x6.0
9	RGV-PPV	25	106/6-7	Girder	3x6.1	Major	Box	3x6.0
10	RGV-PPV	30	107/13-12	Girder	1x6.1	Minor	Girder	1x12.2
11	RGV-PPV	32	108/16-109/1	Girder	3x6.1	Major	Box	3x6.0
12	RGV-PPV	33	109/13-14	Girder	3x12.2	Major	Girder	4x12.2
13	RGV-PPV	36	110/5-6	Girder	3x6.1	Major	Box	3x6.0
14	RGV-PPV	38	111/10-12	Girder	7x12.2	Major	Girder	3x30.5
15	RGV-PPV	41	113/9-10	Girder	3x12.2	Major	Girder	4x12.2
16	RGV-PPV	44	115/12-13	RCC Box	11x1.96	Major	Girder	3x12.2
17	PPV-LLP	47	117/6-7	RCC slab	5x3.05	Minor	RCC Slab	3x6.1
18	PPV-LLP	52	120/1-3	Girder	5x18.3	Major	Girder	2x45.7
19	PPV-LLP	58	122/12-14	Girder	5x18.3	Major	Girder	2x45.7
20	LLP-NPV	66	128/9-10	RCC slab	3x3.05	Minor	Girder	1x12.2
21	LLP-NPV	71	130/4-5	Girder	2x6.1	Minor	Girder	2x12.2
22	LLP-NPV	73	131/4-7	Girder	10X12.2	Maj	Girder	4X30.5
23	LLP-NPV	75	131/12-13	Girder	7X6.1	Major	Girder	7X6.1
24	NPV-FBG	88	138/5-6	Girder	5X12.0	Major	Girder	2X30.5
25	NPV-FBG	92	139/11-12	Girder	3x12.2	Maj	Girder	1x45.7
26	NPV-FBG	97	141/1-3	Girder	3x6.1	Major	Girder	2x12.2
27	NPV-FBG	99	142/0-2	Girder	4x12.2	Major	Girder	5x12.2
28	NPV-FBG	101	142/9-10	RCC slab	3x4.06	Minor	Girder	1x18.3

**Major Bridge (SRGR-FBG)**

S. No.	Bet. Stn.	Br. No.	Location	Existing Span			Proposed Span	
				Type	Span	Min/Maj. Lmt	Type	Span
1	2	3	4	5	6	7	8	9
29	NPV-FBG	102	142/11-12	Girder	1x9.14	Minor	Girder	1x18.3
30	NPV-FBG	113-114	146/14-147/2	Girder	3x12.2 + 2x12.2	Major	Girder	3x30.5
31	NPV-FBG	115	147/13-14	Girder	3x6.1	Major	Girder	2x12.2
32	NPV-FBG	117	148/8-9	Girder	7x6.1	Major	Girder	7x6.1
33	NPV-FBG	123	151/4-5	Girder	3x12.2	Major	Girder	2x30.5