

# G A M M O N



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## IMS POLICY

**Integrated Management System Policy**  
(Health, Safety, Environment & Quality Policy)

Gammon is committed to create and deliver value to all its stakeholders.

For us, compliance to applicable requirements is only the beginning.

To ensure the well-being of all, we shall strive to achieve zero error.

To co-exist in harmony with nature, we shall help sustain that balance.

Our quest for excellence is addressed through improvement and innovation.

We take pride in being 'BUILDERS TO THE NATION'.

Mumbai  
2<sup>nd</sup> January, 2012

  
Abhijit Rajan  
Chairman & Managing Director

 **GAMMON INDIA LIMITED**

CL/CRP/MCOM/02/01

**Corporate Sustainability Policy**

Gammon's commitment to Corporate Social Responsibility (CSR) means being accountable for our actions to the broad range of stakeholders.

Gammon has long-established core values associated with health and safety, environment, social and economic.

We recognize the importance of both financial and non-financial performance in our efforts to maintain long-term, sustainable performance for the Company.

We put our policies into practice every day as we manage our business to promote sustainable social, environmental and economic benefits to all stakeholders wherever Gammon operates.

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## Editorial

We are pleased to publish October – December 2012 issue of Gammon Bulletin. We take pleasure in presenting some of our recent significant achievements, learning's and events from across the country to our Gammon Family, our esteemed Customers and other beloved Stake Holders.

Very recently Gammon has commissioned a major bridge across Kosi River on NH 57 in Bihar. The Cover Story aptly describes how Gammon successfully diverted and bridged the mighty Kosi River against all odds. Kosi river, which is known for its highly unpredictable nature with a tendency to change its course, and for its volatile flood discharges; at times, as high as 18 times its normal discharge, has been posing a serious challenge to Construction Engineers. Gammon met this challenge successfully and bridged this mighty river in a record time.

From road users' perspective, pot holes have been an irritating issue since times immemorial. This also poses a great challenge to the Construction Engineers both as regards avoidance of pot holes in the first place, and maintenance thereof during operation period. The article describes A to Z of pot holes including do's and don'ts for avoidance of pot holes in the first place itself.

The month of November was celebrated by Gammonites as '**Safety Month**' in H.O., Workshops and at all our Project Sites. This has helped in creating awareness about the Construction Safety across all the projects of the Company. Various innovative initiatives that were taken by Corporate Safety Department had made the celebration of '**Safety Month**' a grand success.

In the month of October 2012, an interactive Workshop was conducted in Nagpur to discuss the issues and arrive at solutions that are related to Plant and equipment. Plant personnel participated actively and the outcome of the Workshop in terms of quality of discussions, suggestions and action plan was quite encouraging. Participant offered valuable suggestions for improving quality of data entry in ERP, reducing energy costs, controlling issue and consumption of diesel, improving plant effectiveness etc.

In our quest to continually improve the Bulletin, we will be glad to receive feedback and suggestions from our valued readers to make Gammon Bulletin more and more interesting and informative for the readers.

Your feedback and suggestions may be sent to [bulletin@gammonindia.com](mailto:bulletin@gammonindia.com)



We wish all our readers a  
Merry Christmas and  
a Happy New Year  
**2013**



**R. Prakash**  
Project Director

## Gammon Bridges Mighty Kosi River

### 1. History of Kosi- the tributary of Ganga

"Kosi" is one of the mightiest and mysterious rivers that embrace the north-eastern region of our country.

The Kosi, called Kausika in Rigveda and in epic Mahabharata is a major tributary of the Holi Ganga. Seven Kosis join together to form the 'SaptaKosi River, which is popularly known as the Kosi. Sage Viśvāmītra, who was credited with writing many vadic Hyhermitage, attained the status of 'Rishi' on the banks of the river Kosi.

Kosi is also associated with many ancient spiritual stories. According to Mahabharata epic, the God of death took the form of a woman and resides on the banks of the river to keep the growth of human population under check. The most important depictions of Kosi folklore is that Kosi is a "virgin" due to its absolute carefree nature and abundant energy. It had also been portrayed as a frustrated wife of an old hermit Richeek wandering in Himalayas. On the contrary, Kosi is also been invoked as 'Kosi Ma', the mother. These narrations capture the contradiction that is innate to the river Kosi, a source of life and death, prosperity and destruction; a mother and an enchanting virgin.

Another interesting folklores about the might of Kosi is on how Kosi the beautiful, naughty and perky daughter of Himalaya overcame Ranu Sirdar, a demon. He has been accosting and pestering her to marry him. Disgusted by his advances, Kosi agreed, on basis of a condition that he had to build a dam overnight to confine her within the Himalayas, but the failure would cost him his life. Ranu agreed blindly and set down to work with his spade. Kosi's

father, disguised as a rooster came at midnight to give an alarming call. Believing, dawn has set in, Ranu ran for his life, leaving behind his spade. The story goes as Ranu Sirdar, the demon arrives every year to harness Kosi, but only to face her revenge, where she gushes out of the Himalayas with a vengeance.

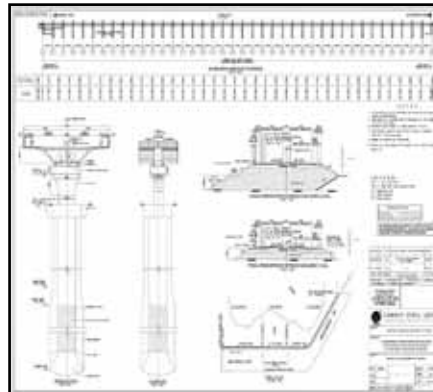


Fig 1 : layout of Kosi Project

### 2. Kosi – THE UNIQUE RIVER

In order to truly appreciate Kosi, one should understand its unique features:

- Kosi flow has a very steep slope
- The Himalayas, being relatively young mountain range, are both unpredictable as well as prone to have silt and rocks being carried off with the water.
- Kosi flows with fierce velocity since it does not have time to slow down as it meets the Ganga after a brief, quick journey from the Himalayas. The huge silt it carries defines the land-building role of the Kosi.
- The (Kosi) river fan located in north-east Bihar is one of the largest alluvial cones built by any river in the world. It is 180km long and 150km wide and shows

evidence of lateral channel shifting exceeding 120 km during the past 300 years through more than 12 distinct channels. As it cuts across the Shiwalik ranges at the India-Nepal border at Bhimnagar in to the Ganga plain, there is a sudden drop in the gradient. This makes the River to dump the extra baggage (sediment load), which fans out.

- Kosi is one of the highest sediment laden rivers in the world. It carries 0.43 mt/y/km square of sediments.

### 3. Kosi- the Devastating River

Rivers are dynamic and normally keep changing courses, because of the inherent energy and capacity to erode, scour and denude. But what Kosi did is something rare and geologists call it an avulsion. This happens when the river breaks all the rules and forcibly occupies another course.

Known to be the Sorrow of Bihar, Kosi river has once again, on 18th August, 2008, lived up to the epithet it had acquired over the years. This young river, which frequently changes its course has leashed the fury on the people of Bihar, this time in a never seen devastating manner. Kosi has shifted its course 120 km eastwards and has started flowing in its 300 year old bed which was abandoned due to the westward shift in the course of the river.

The westward shift of Kosi has been in phases, thus it did not cause damage to such an extent. But this eastward shift is sudden and turbulent and had caught people as well as the authorities by surprise. The two Kilometer breach in the embankment of Kosi in Kusaha (Nepal), has resulted in this catastrophe. The new course forcibly occupied by the river did not have the carrying capacity to hold the volume of water, hence a sheet of water about 15-20 km wide and 150 km long with a velocity of one meter per second kept flowing through the area for nearly four months. This new course could not lead this sheet of water neither to Ganga, nor back to the old stream at any point in downstream. Thus a huge area remained marooned for months affecting more

**TABLE 1**

Materials	unit	Quantity
Empty Sand Bags	Nos.	4000000
Boulders	m3	8000
PVC coated Wire Carets	m2	12500
Black Annealed Wire Carets	m2	45000
Balla for Piling	Nos.	1000
Bamboo for piling	Nos.	5000
Loose sand/Earth	m3	18000
G.S.B.	m3	3000
Polythene sheet	m2	2000
Pre – cast Concrete Blocks.	Nos.	2

**TABLE 2**

Description of Sub activity	Unit	Balance	Completed on
Well Steining	Rm	6	7-Apr-11
Well Sinking	Rm	25	15-Apr-11
Pier	Nos	12	2-Jun-11
Piercap	Nos	16	9-Jun-11
Segment casting	Nos	337	21-Aug-11
Segment Erection	Nos	444	30-Aug-11
Earth work	M3	1798923	20-Dec-11
Subgrade	M3	53574	28-Dec-11
GSB	M3	49339	2-Jan-12
WMM/WBM	M3	40195	14-Jan-12
DBM & BC	M2	363185	21-Jan-12
Boulder Pitching	M3	65005	30-Apr-12
Culverts Below Four Lane	No	3	5-Jan-12
Toll Plaza	No	1	5-Feb-12

than 30 million people in one stroke.

#### 4. Bridge Construction on NH-57:

No company other than Gammon, has built a bridge on this river after collapse of Brick Masonry Railway bridge in 1934 (which was built in 1902).

Gammon has been bridging Kosi river since decades by building Kosi barrage, Dumri Bridge and now a bridge at Nirmali. Gammon is proud to be associated in bridging Kosi river, for which NHAI had floated tenders in 2005 and awarded contract to Gammon Infra Projects Ltd under BOT Annuity in 2006. In the first journey to site in August 2006, (Which started from Darbhanga at 8:30 A.M. ended at site starting point on the

**TABLE 3**

Time cycle for Segment Casting	
Description	Duration (hrs)
Cage Placing	1
Surveying/Matching	2
Cable profiling	3
Mould fixing	6
Concreting	5
Setting	16
Separation of segments	2
Segment Lifting	1
<b>Total(hrs)</b>	<b>38</b>

next day at 11:00 A.M.) we travelled by almost all conceivable modes of transport, a Car, Train, Boat, Bike, Cycle and by foot. The distance was hardly 85 Km.

After seeing the hardships of the people, who can not avail power, education, market, medical without travelling through land & water for hours, we decided, we should contribute for the development of this separated part of the country without any delay.

The scope of the project was to construct 1875 m four lane bridge to guide water flowing in 12 km width through the bridge by constructing Guide bund and construct a 4 lane approach on either side of the bridge for a total of 8.96 km(Fig-1).



Fig 2: Initially proposed diversion scheme

#### 5. Strategy:

Three challenges that was originally predicted were (a) Preparation of access to reach the bridge site, (b) Availability of limited working period of only four to five months a year, (c) Diversion of five small streams of Kosi river towards the main stream.

After signing the Agreement in October 2006, work were to commence from April 2007, upon financial closure.

All the preliminary activities were planned simultaneously like Preparation of access, Soil investigation, Submission of all documents, Design of structures, Procurement of Materials, Mobilization of machineries, Manpower and Trial mix etc. so that works on ground can be started as soon as the commencement date.

Execution was planned in three different stages over three seasons. In **first season:** to construct approach and bunds on western side and to start foundation works on bridge from both sides. In **second season:** works on foundation to complete and start sub structure and superstructure on bridge and to complete approaches and bunds on eastern side. In **third season :** balance superstructure and connection of approaches to Bridge, Road Crust, Balance Protection Works, Toll Plaza Works and Finishing Works.



Fig 3: Modified diversion scheme

#### 6. Execution:

##### 6.1. Access:

As there was no access beyond Phulparas at 15 k.m. from start point of the project, arrangement was made with adjacent package that they will maintain the access up to their portion including Bothi river and two small streams and allow us to use the same: In return we will make Bridge on Tiljuga river which is required for both of us. Both of us fulfilled our parts and access was made ready in June 2007 only to be washed away by devastating floods in July 2007.



The flood had damaged available bridge on Bothi river which was later repaired and finally completed the access to reach our stretch up to Bunds of Kosi river was made on 6th December 2007, and to reach bridge which requires closures of two small streams was made on 7th January 2008.

Though access made in 2007 was washed away, it helped in establishing camp and field survey works. By the time access was made ready, we had completed all preliminary activities.



Photo 1 : Condition of excavators for making Pilot Channel

### 6.2. Season 2007-2008

As soon as access was made, plants and materials which were already mobilized and kept away at four kilometers distance was shifted and erected in record time. Casting of first well curb was commenced on 18th February 2008 and the earthwork on three kilometers of approach road and 11 k.m. of bunds was started simultaneously.

Access through eastern side was not possible due to larger streams on eastern side and chances of 800 m. wide portion next to the Abutment, which may make the river to shift to the said deeper portion. This forced us to change the plan and prepare access from western side and a Service Bridge was constructed between P9 and P13 which is actual portion of river Kosi (again in record time of 40 days and bridge was ready to cross on 15th March 2007).

Though we are aware that working will be possible only up to mid of June, our zeal allowed us to start work by 25th April and we started various work up to P19 by end of April.

Entire embankment for western side other than small hindrance portion was almost completed in this season. But planning of starting and completing the pitching works from April to June was shattered when heavy rains on 12th May cut off the entire access to site.

Kosi started eroding the embankment of bund when the floods reached its peak in June and the entire site team isolated to live in Island formed due to floods, was fighting to save the embankment. Our excellent liaisoning with villagers and administration helped us to smoothly control the erosion till the time Kosi breached its embankment at the Upstream in August.

### 6.3. Season 2008-2009

It was a tragedy that Kosi breached its embankment at 40 k.m. upstream and 90% of flow was shifted almost 70 k.m. away from us. With only 10% of flow, there was an opportunity to start work at all location, and we responded by starting work at all 40 well foundations by November.

Unfortunately our planning to start Approach and Bunds was stopped by villagers due to alignment issues which never got settled for the entire season, and hence no work could be carried out on Bunds.

Due to continuous persuasion and efforts, we were allowed to work on the Approach and on some parts of the Guide Bund.

Due to vigorous efforts of Bihar Government, diverted Kosi was turned back to its original flow by end of January. Lots of channels were dredged and coffer dams were constructed by them during the above process. Some of the channels were made after Kosi barrage had caused huge damage to our site.

Since work on bunds were not allowed, we were concentrating an approach road and 600 m portion of Guide bund. We know that once we complete continuous approach from bank to

bridge we will be able to control Kosi from eroding the approach as we did in last season. Two small streams were flowing at 1 kilometers and 4.5 k.m. from bridge and it was planned that after completing embankment at all other portions, closure of these two streams 30 m. and 80 m respectively will be taken up.

Early arrival of monsoon by end of April, shortage of materials from February to April caused hindrance in construction at the bridge.

Change of super structure from single cell to twin cell box girder impacted segment casting schedule and we were able to cast only one segment by the end of season.

We almost completed the embankment and were planning ourself for closure of steams when the entire water of Kosi was brought to its original river by Bihar Government. To our surprise, water flow increased by end of April. Guided through the channels made downstream of Kosi barrage started flowing at 4.5 k.m. from bridge, instead of flowing at P9 to P28 at bridge location. We were not able to close the entire approach and we know something worst is going to happen.

### 6.4. Season 2009-2010

When Kosi gets its full flow of water one can hardly get to see the land for long distance except for some island patches. Our fear came true when the water level reduced, and entire river got shifted towards east at 4.5 k.m. from main bridge. The main flow of river was exactly at center line of afflux bund for four kilometers and then shifted to center line of approach road for three kilometers making the working on the stretch virtually impossible unless river is diverted to main bridge.

The location and scheme for diversion was finalized with the help of satellite images obtained from Google through specialized agencies and field surveys.

Work on this proposed diversion started on 30th Nov 2009 and almost

65% of the works on coffer dam was completed by 23rd Dec 2009 before a Mob of villagers stopped the work and threatened to burn our equipments. Administration tried to convince the local villagers by explaining the urgency and seriousness of this work but without any successes.

After long deliberations, a new alignment with 8 km long Pilot channel & location for closure at a 393 m wide portion of river finalized after vigorous persuasion and work started in revised location from 10th Jan'2010 in full force.

#### 6.4.1. Diversion

The concept adopted for diversion was taken from the method adopted by Bihar Government few months back at upstream for bringing back Kosi river.

The idea was to create a pilot channel to guide the water to flow through the direction as defined. The channel should be capable of generating sufficient velocity, so that scouring can happen and more water can flow and vice versa thereby sucking all water from the main river. Entry of water to the channel was to be made by raising the level of water flow in main stream either partial or full by closing of the main flow.



Photo 2 : 12 meter blockage; level difference three meters.

The pilot channel alignment was derived by topo survey and an eight k.m. long channel to be finalised to connect to old deep channel at 500 m downstream of the bridge. The alignment was the one which had least habitants, acceptable to all twelve villagers, and land owners and was able generate required velocity to maintain a four meters level difference between deep channel end and mouth

of pilot channel.

Land procured for the channel and work started with eight excavators through all terrains and completed in ten days time.

Excavation was impossible in the water logged portion of Pilot Channel alignment up to desired depth. During this period, working bank was created on both ends where coffer dam needs to be made and all required materials/plants were arranged and the work started on 21st January 2010.

Unlike Bihar Government diversion, which required changing the 250 m wide river direction by almost 60°, our diversion required 90° turning of the river which was 393 m wide and had a varying water depth from One to Six Meters.

Work started from both ends of river using sand bags which were carried for one kilometer. by motor boat for Saraigarh side and huge quantities of sand bags were placed filled in nylon Crates.

After blocking 160 m, water pressure increased and dislocated the sand bags from placing location. Anticipating this, arrangements were made to Support it with Wooden (Ballas) piling on sand bags at Downstream.

Work was getting delayed due to disturbance Attack at Midnapur, two kilometers from where we were getting the materials so this method was dropped after closing 260 m, due to high water pressure and delay in getting the material.

Additional fronts opened where the depth of water was less and we were left with a balance of 35 m and 10 m as of 15th March 2010. Downstream side of Bund was filled by earth to strengthen the bund but reverse flow of water at d/s washed out all filling of 100 m in just 10 minutes.

Sand bags filled in between bamboo piling provided at both sides of earth fill, and this process continued for 5-6 days. After 15 m progress, high

water pressure pushed the sand bags at downstream and crates (5' x 3' x 1') with boulders, dumped at the middle location using two boats tied together.

After closing the 360 m, water pressure became very high and as result, water scour the river bed up to eight to ten meters as expected. Huge quantity of boulders with BA wire crate placed by boat on rest 33 m and after continuing for 10 m boats were not able stand at desired location.

Contractor worked in 2008 diversion at Kusha Bund was called upon and deployed for work. As per their advice, we decided to increase the size of crates and push them using Dozers. PVC coated wire crate (3m x3m x.9m) with boulders used to increase the Weight & Dozer used to push them in water.

Bihar Water Resource Department was actively involved during the process and helped a lot to divert the river. Along with them it was decided to close the barrage on 14th April and control the discharge from 14000 cusecs to 2000 cusecs. Only 20 m was balance to be blocked on that time. Disaster Cyclone on 13th April evening damaged all the labour huts at site & 6 boats were sunk and broken.



Photo 3 :

Using Dozer became difficult and time consuming, while the discharge increased to 20000 cusecs.

Now Wire crate with boulders was used at Downstream as well to protect bund from high speed back water flow. Excavators were used instead of Dozer to save time to close last 20 m from both ends and also used to push the boulders to close at last 12 m. The staffs from NHA1 and IC were

apprehensive on seeing the Force of River mainly due to velocity at left out opening of 20 m which was almost 20 m/sec and the difference in water level was more than three meters between upstream and downstream of the bund but Site team was highly confident.

All the boulders were packed in wire crated boxes and pushed towards opening using excavators from the both sides of the opening.

When the gap was about 12 m, crated boulders of volume 9 cum each was not sustaining the velocity of water and carried away for 15 to 20 m. On seeing this, the volume was increased by attaching multiple crate boxes and at one point of time the volume of crated box clubbed together was around 18 cum.

Settlement of already completed bund was repeatedly affecting the progress and the crated boxes, which were continuously laid on sides of existing bund.

After all the efforts and round the clock working for almost 30 to 35 days the bund was closed on 7th May 2010 and entire water started flowing through pilot channel, which, by this time widened and deepened to take full flow of 14000 cusecs of water.

Work started immediately on afflux bund and approach and almost 24000 cum of earthwork was done per day till 25th May when the cyclone had damaged bund at somewhere else and allowed the water again to its previous channel and all of our force, who were fighting to retrieve standard equipments went in vein.

#### **6.4.2. Casting of superstructure**

In winter period, dismantling of segments was taking 4 to 5 days from the date of concreting which seems be inadequate to achieve our target. In order to overcome this issue, we had conducted several trial mixes for getting early strength in concrete and finally used Hyperplastisizer.

In order to achieve the early strength for

removal of segments we have modified our concrete mix proportion for early strength and casted the segments as per modified mix and our production achieved up to 45 segments per month in this season and 60 segments at later stage.

#### **6.4.3. Segment Erection**

Entire segment launching system was indigenously designed and developed at site and launching girder was fabricated in record time for capacity of 2500 MT for 50 m span. In order to reduce the reaction, high grade steel was used for Girder, and the weight of girder alone was up to 980 MT (Photo 3). After clearance of hindrance of 200m at approach portion, in April 2010, access was prepared on top of approach and segment erection was started in July 2010.

Support of launching system was provided through a cantilever bracket cast with pier. When erection started for second span, minor cracks noticed on supporting brackets after erecting eight segments over the Launching Girder on 13th Sep 2010 and to avoid any mishap, erection works were stopped and the Designer was called to site immediately.

The design parameters were verified by senior design team and external expert once again and there was no fault noticed in the design, construction and sequence of erection. Designer, along with the experts visited site on 22nd Sep 2010 and studied the behavior for four days and decided to strengthen the bracket by applying Carbon laminates and Carbon fibers to increase the properties of the bracket.

In order to ensure proper safety, load testing was conducted on brackets at Well P8 and till the time erection continued with close watch on the structure. As erection was progressing slow, our stacking capacity exhausted at yard, we were not able to continue with casting of segments in spite of regularly increasing stacking capacity.

In order to avoid any criticalities in casting, we kept on augmenting our casting capacity continuously and lastly

our seventh bed was made operational by February 2011.

#### **6.5. Final Season 2010-2011**

As soon as the floods receded by 50% on breached location and on bridge location, we had to divert the river. This time around it needs to be straightened by 60° to direct to bridge location, the entire pilot channel which was already acting as Main River made us to attack diversion in November was completed in Feb 2011.

After completion of Camel Gantry erection on 10th February, site has got complete erection scheme in place (Photo 3) and by end of February 2011 site has no issues affecting the work except that one bridge needs to be made across the river. We thought, we had done records already, we can do it again and targeted to finish the erection in August, and whole project by December 2011.

#### **7. Tests & Completion**

As the part of the process for obtaining COD, various tests need to be performed on the structure and process of finalizing agencies for tests, methodology, schedule were finalized well in advance by end of November and all the tests were simultaneously performed, as and when any of the work got completed.

Testing commenced on 27th December, with load testing on Bridge superstructure and continued until 27th of January. By then all the work were completed expect for few crust work at bunds which were eventually got it done by 6th February 2012. By this time all road safety items and road furniture were also installed.

#### **8. Conclusions**

When review meeting conducted on 31st March 2011, no one was ready to believe that we could complete the erection of superstructure by August 2011 and whole project by 31st December. But confidence and team spirit of Gammonites was roaring and we completed almost impossible task of erection on 31st August and all the work on project by 21st January 2012, thus bridging the relationships and





cultures that was separated for more than decades, in the Mithilanchal region.

Provisional Completion Certificate was issued on 8th February 2012 and the project was opened to traffic on the same day (Photo 4).



Photo 4 : Inauguration of Kosi Bridge

One elderly local villager who has witnessed the devastating Kosi River and sufferings of locals with his own eyes said, "From heaven the 'Almighty, God' sent one Company, one Leader, and one team to our village. They came. They concurred and they went. Result was nothing sort of a miracle – unbridgeable mighty Kosi Maa (the mother), perky, vengeance - minded beti (the daughter) of Himalaya, aptly described so in Mahabharata, was bridged by them. They replaced tears of sorrow in the eyes of local villagers with tears of joy. We were taking couple of days to reach Darbanga town which is just 85 km away, now we can be there in couple of hours."

This valuable remark from a veteran grey-haired local beats the likes of OSCAR in Hollywood as it beautifully summarizes the success story of marvelous Engineering feat from non-engineer's perspective. This remark also opens flood gates of opportunities for Civil Engineering fraternity and gives a challenge to them to serve the mankind at downtrodden level whose sufferings are unimaginable.

## CELEBRATION OF SAFETY MONTH IN GAMMON



Mr. Prakash Tikare  
Vice President  
HSE, Systems & Process

### 1. PREAMBLE

Developing and Enhancing Safety culture and continually maintaining it is an important aspect for continually improving safety practices and safe working conditions. It is more so, in a Construction Industry where unorganized workforce with low literacy level and lack of construction experience is always present. Gammon, being a premiere, Construction Company and Builders to the Nation has acknowledged the due importance of construction safety and accordingly has been implementing safe construction practices across the company. In order to promote safety culture, Gammon has made it a Company Policy to celebrate the month of November every year as "Safety Month." November 2012 was no exception and was celebrated as Safety Month with lot of enthusiasm, involvement and added coverage across all Project Sites as well as at HO and Belapur Office.

All the Projects, Workshops and Offices enthusiastically participated in Safety Month celebrations in a big way and made it a grand success. Various activities were planned and conducted throughout the month to make the Safety Month, interesting, informative and result oriented.

### 2. INAUGURATION OF SAFETY MONTH

The Safety Month celebrations at HO Gammon House was inaugurated by Mr. A. B. Desai, Executive Director, by unveiling the Safety Month Banner in the presence of distinguished management personnel and employees of HO. In his inaugural address, Mr. Desai stressed the need for integrating safety requirements,

by executing agencies and creating and observing ownership on safety with responsibility. He also provided summary of activities being taken in the Gammon Projects, under the guidance of HO Safety.



Similarly, Mr. M.V.Jatkar, Executive Director; inaugurated the Safety Month celebrations by unveiling the Safety Month Banner at Belapur Office. Shri. Jatkar brought out the importance of in-built safety system from design stage itself w.r.t to the various safety provisions. They include taking care of the gaps between jump form platforms and shell, edge protection, working platform, access, egress etc. and uniformity of such best system across all Projects of Gammon.



As part of the programme, we initiated various activities to stress the need for strengthening safety at all levels and

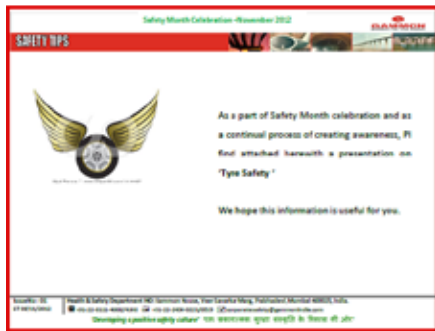


owing the responsibility for enforcing and implementing by all concerned.

### 3. NEW INITIATIVES ON SAFETY PROMOTION BY CORPORATE SAFETY

Among the various safety promotional activities, following new initiatives were taken up by HO- Safety;

- Launching of E- Learning module on safety training for self- study and training for enhancing Safety knowledge & skills of employee on topics like "On site Office emergency", "Fire Fighting" and "Home Safety on LPG" etc.
- Posting of an e-mailer on "Thought



of the week" was taken up on a weekly basis.

- Information posting on Gammon Intranet through PPTs & Videos on various safety topics like; Ergonomics, Driving Safety; Dengue etc.
- Training the participants on fire



fighting through an in-house Firefighting Demo held at both HO & Belapur.

- Obtaining safety suggestions and safety competition entries through a prominent display of suggestion box at the most accessible location.

### 4. SAFETY MONTH CELEBRATIONS AT PROJECT SITES

Various Project Sites also celebrated Safety Month in a big way and organized several interesting, promotional activities.

- Inauguration of the Safety Month Celebrations by Safety Flag Hoisting and Administering of Safety Oath.
- Promotional activities related to labour health & hygiene like health checkup camp, labour colony inspections, inspection of drinking water, canteen & wash room facilities, inspection of PPEs etc.



- Activities related to inspection of plant and equipment, training on safe use of lifting tools & tackle etc.



- Working at Heights, Scaffolding inspections, Inspection of portable electrical appliances & hand tools, Inspection of access and egress, Provision of barricading, Inspection of life lines and its related Safety trainings.
- Activities related to housekeeping and other safety promotional programs like quiz, mock drill,



firefighting training were also conducted for the active involvement of staff and workers.

- Winners of the various safety promotional competitions were suitably rewarded.



### 5. MEDIA COVERAGE:

The Safety Month celebration of Gammon was covered by local media appreciating the importance of safety accorded by Gammon management involving staff and workers across the country.



### 6. ACKNOWLEDGEMENTS

We are thankful for encouragement, guidance and whole hearted support received from the Management. Credits are also due to entire Safety Team at HO & Project Sites and the Operations. Team at Sites for making the Safety Month Celebration a grand Success.



**Madhava Reddy N**  
Consultant  
EDMS Highways Group

# Patchy Potholes: Remedies and Repairs



**Rahul Gopnarayan**  
Dy. Manager  
(Pavement Design)  
EDMS Highways Group

## 1. Introduction

Paholes - No one likes them but everyone is aggrieved by them. In fact patholes are often seen as a real public nuisance, destructive and distracting to vechile drivers and pdestrains alike.

Generally potholes occur on bituminous-surfaced pavements which are subjected to a broad spectrum of traffic levels, poor drainage, poor construction practice and other parameters. Any agency responsible for building and operation of bituminous-surfaced pavements, eventually performs pothole patching work till the concession period. In Indian context, pothole patching is generally performed either as an emergency repair to serve the purpose under harsh conditions, or as routine maintenance scheduled at comfortable environment (preferably after monsoon season).

As the road budgets are constrained and preventive maintenance is either reduced or prolonged, the potential for the development of potholes during wet weather increases significantly. The main objective in reducing pothole formation is to ensure that preservative maintenance is applied timely and to the appropriate standards. However, for the foreseeable future, this is unlikely to be fully achieved and optimum techniques for repairing potholes need to be implemented.

The majority of roads in India are surfaced with bituminous, which are more prone to potholing than concrete roads. This article hence concentrates on the occurrence of potholes on bituminous roads. Eventhough the moisture and traffic conditions may vary from season to season, the materials and methods for doing quality repairs are fairly similar. The patching techniques and bituminous mixes described in this article have been used successfully in actual field conditions across India.

## 2. Formation of Potholes

The majority of potholes form in wet

or rainy season. However it is not uncommon for potholes to develop and deteriorate during the dry season not only due to the action of traffic, but also owing to temporary wet conditions resulting from localized irrigation, ponding and/ or seepage of water. The formation of a pothole in a flexible pavement begins in a weak area of the pavement. The heavy traffic loads lead to an excessive bending of the pavement, which in turn creates cracks. Once the pavement section has cracked, water can easily enter the system and will gradually lead to the saturation of various layers of the material to a point that the pavement cannot support heavy loads any more. The effect of the water intrusion is even more pronounced during the monsoon because, the pavement is subjected to wet conditions and low temperatures.

Potholes may be accompanied by severe cracking and deformation or distortion of the surfacing around the pothole, indicating a deep-seated cause for the pothole formation. Where little deformation is observed in the vicinity of the pothole, the cause is more likely to be the entry of water through surface cracks in the road pavement and deterioration of the surfacing and upper structural layers of the pavement. Other contributing factors are poor underlying support, poor construction materials, poor construction practices or their combination. Pothole repair is necessary in those situations where potholes endanger safety and pavement rideability.

## 3. Need for Pothole Repair

The decision to patch potholes is influenced by many factors:

- Performance criteria given in operation and maintenance clauses of project road;
- The time beset scheduled rehabilitation or overlay;
- The availability of personnel, equipment, and materials;
- The tolerance of the road users (Toll payer); and

- The level of traffic and climatic conditions.

In most cases, road users, expect all potholes be repaired promptly and forms a negative opinion of the highway agency or infrastructure operator.



*Photos 1 & 2 :Untreated Potholes*

Regardless of the weather conditions, the potential safety and rideability problems that could result from unrepaired distress must be considered when deciding whether a pothole should be patched. A highway agency must repair any potentially hazardous potholes as soon as it is aware of them. The two main elements of quality pothole patching are material selection and repair procedures. The cost-effectiveness of the overall patching operation will be affected by the selection of material, labor, and equipment.

## 4. Repair Techniques / Procedures

The repair techniques are broadly divided as follows;

1. Throw-and-roll
2. Semi-permanent
3. Edge Seal

Many construction, operation and maintenance agencies use the throw-and-go method for repairing potholes. Although not considered the best way to patch potholes, it is the most commonly used method because of its high rate of production. The procedure described here is more accurately termed throw-and-roll, and it should be considered a superior alternative to the traditional throw-and-go method. The semi-permanent repair procedure, represents an increased level of effort for patching potholes, which increases the performance of the patches by improving the underlying and

surrounding support provided for the patches.

The edge seal method, requires a second pass through the repair area, but can improve patch performance in older pavements with a lot of cracking.

#### 4.1 Throw-and-roll

The throw-and-roll method consists of the following steps:

1. Remove dust using pneumatic compressor; loosen particles (debris) and water from the pothole;
2. Place the material into a pothole (which may or may not be coated with bitumen spray/emulsion);
3. Compact the patch using truck tires (min of 6 to 8 repetitions);
4. The compacted patch must have a crown between 3 mm and 6 mm;
5. Move on to the next pothole; and
6. Open the repaired section to traffic as soon as maintenance workers and equipment are cleared from the area.

Compaction provides a tighter patch for traffic than simply leaving loose material. The extra time to compact the patches (generally 1 to 2 additional minutes per patch) will not significantly affect productivity. This is especially true if the areas to be patched are separated by long distances and most of the time is spent traveling between potholes.

#### 4.2 Semi-Permanent

The semi-permanent repair method is considered one of the best for repairing potholes, short of full-depth removal and replacement.

The steps are:

1. Mark and cut the edges (Square/rectangle/circle) of potholes along with the weak area in the vicinity;



Photo 3: Cutting Pothole to Proper shape

2. Remove dust using pneumatic compressor; loosen particles (debris) and water from the pothole;



Photo 4: Pothole Repair by Semi Permanent

3. Spray a tack coat of emulsion at 0.5 kg/10 m<sup>2</sup> on the sides and bottom of the pothole;
4. Place the mix;
5. Compact with a device smaller than the patch area (Single-drum vibratory rollers and vibratory plate compactors work best);
6. Spray sand or rock dust on patched area to prevent cracking, and open to traffic after 30min;

This repair procedure provides a sound area for patches to be compacted against and results in very tightly compacted patches. However, it requires more workers and equipment and has a lower productivity rate than the throw-and-roll method.

#### 4.3 Edge seal

The edge seal method consists of the following steps:

1. Remove dust using pneumatic compressor; loosen particles (debris) and water from the pothole;
2. Place the material into a pothole (which may or may not be clean dust or debris);
3. Compact the patch using truck tires (min of 6 to 8 repetitions);
4. Verify that the compacted patch has some crown (between 3 mm and 6 mm).
5. Move on to the next pothole;
6. Once the repaired section has dried, place a ribbon of bituminous tack material on top of the patch edge (tack material should be placed on both patch and pavement surfaces);
7. Place a layer of sand or rock dust on the tack material to prevent

tracking by vehicle tires;

8. Open the repaired section to traffic as soon as maintenance workers and equipment are cleared from the area;

This procedure may require a second visit to the repaired section by the crew to allow water to dry before placing the tack. Although this does reduce the productivity of the procedure, the placement of the tack material prevents water from getting through the edge of the patch and can glue together pieces of the surrounding pavement, improving support for the patch.

### 5. Bituminous Patching Mixtures

Bituminous patching mixtures are combinations of different binders and aggregates that have special characteristics needed for filling potholes in pavements. There are different types of patching mixtures and they can range widely in cost, stability, quality, and application. The patching mixtures can be generally placed in two groups, based on the type of mixing and the temperature of the mixture at the time of placement. These groups are described as follows:

#### 5.1 Hot-Mixed, Hot-Placed Patching Mixtures

These are bituminous concrete patching mixtures that usually contain bituminous binder and a well-graded aggregate produced in hot mixing plant. "They are used while hot, usually immediately after being produced. This mixture has the highest quality of all bituminous patching mixtures and they have the same durability characteristics as bituminous concrete that is used for pavement surfacing". These mixes are designs same as conventional mix design proposed in MoRTH.

#### 5.2 Warm-Mixed, Cold-Placed Patching Mixtures

These are materials produced with liquid bituminous binders (Cut Backs) in a plant that uses a dryer to heat the aggregate or in a drum-dryer plant. These mixtures are carefully controlled and thoroughly mixed. They are used cold from a stockpile and are workable in all weather. The detailed mix design procedure and specifications are discussed in the subsequent section.



**Table 1: Physical Properties of Coarse Aggregate**

Property	Test	Requirement	Test method
Cleanliness	Grain size analysis	Max. 2% passing 0.075 micron	IS 2386 Part I
Particle shape	Flakiness & Elongation Index (combined)	Max. 40%	IS 2386 Part I
Strength *	Los Angeles Abrasion Value	Max. 40%	IS 2386 Part IV
	Aggregate Impact Value	Max. 30%	IS 2386 Part IV
Durability	Soundness (Sodium or Magnesium), 5 cycles		
	Sodium Sulphate	Max. 12%	IS 2386 Part V
	Magnesium Sulphate	Max. 18%	IS 2386 Part V
Water absorption	Water absorption	Max. 2%	IS 2386 Part III

\* The coarse aggregate may satisfy either of the two strength tests.

**Table 4:**

Bituminous material	Aggregate temperature, C	Bitumen temperature, C
MC-800	25 – 65	75 – 95*

(\*It shall be ensured that there is no open flame inside or outside the drum when MC-800 is added for mixing.)

**Table 2: Gradation of Pothole Patching Mix**

Sieve size, mm	Percent passing
9.5	100
4.75	40 – 100
2.36	10 – 40
1.18	0 - 10
0.075	0 – 2

**Table 3: Minimum Residual Bitumen Content**

Aggregate water absorption, %	Minimum residual bitumen content, %
Less than 1.0	4.5
1.1 to 1.5	5.0
1.6 to 2.0	5.5
1.18	0 - 10
0.075	0 – 2

**Table 5: Properties of Pothole Patching Mix**

No.	Properties	Criteria
1	Residual Bitumen Content, % by weight, min	4.5
2	Stability, KN at 250C, min	3.5
3	Flow, mm	6-Mar
4	Loss in Stability, on Soaking at 250C, % max	20 *
5	Coating Retention, % min	90
6	Relative density, % min	85

This pothole repair technology can be used not only during monsoon but afterward as well to repair isolated potholes and utility cuts. The characteristic required for the development of satisfactory patching mix is as follows:

### 5.2.1 Materials

**Bitumen:** Medium Curing Cutback Bitumen MC-800 conforming to Indian Standards Specification IS: 217 Specification for Cutback Bitumen shall be used. MC Cutback Bitumen shall be treated with a proper type and amount of an anti-stripping agent (generally in the range of 0.3% - 0.5% of bituminous binder).

**Coarse Aggregate:** The coarse aggregate shall consist of crushed rock, crushed gravel passing 9.5 and retained on 2.36 mm IS Sieve. It shall be clean, hard, durable and cubical shape, free from dust and soft organic and other deleterious substances. The aggregate shall satisfy the physical requirements specified in **Table 1**.

**Fine Aggregate:** Fine aggregate shall consist of crushed mineral material passing 2.36 mm sieve and retained on 75-micron sieve. No natural sand is

permitted.

### 5.2.2. Composition of Mixtures

The combined aggregate grading shall fall within the limits shown in **Table 2**. As far as possible, an aggregate with water absorption of 1.0 or less shall be used.

### 5.2.3. Residual Bitumen Content in the Mix

The minimum residual bitumen content in the mix after evaporation of solvent shall not be less than specified in the **Table 3**. The patching mix shall be rejected if it does not meet the minimum residual bitumen content.

### 5.2.4. Preparation of Mixture

The patching mix shall preferably be produced in a conventional batch type hot mix plant. However, portable or stationary asphalt drum plant can be used. The mineral aggregate should be clean and surface dry before mixing. The temperature of aggregate and bituminous material should comply with those shown in **Table 4**.

### 5.2.5 Acceptance Criteria

The Pothole Patching Mix has to satisfy the criteria in **Table 5**. In addition, the following two tests

shall be performed on the mixture. Before conducting the test the mix shall be cured completely to remove all kerosene. For curing of the mixture, the mix shall be placed in an open metal container and heat slowly on a hot plate with frequent stirring until a constant weight is achieved.

- Water Resistance Test
- Workability Test

The water resistance test indicates whether the patching mix has a potential for stripping in the pothole in presence of water. If the mix fails this test, it means a proper type and amount of an anti-stripping agent has not been used in the bituminous binder. The aggregate should be at least 90% coated with bituminous film after water resistant test, to successfully use it in pothole patching.

If the mix fails in workability test, it could be due to improper bitumen type, low bitumen content, excessive fines or improper gradation. Even one and a half percent lower bitumen content can make the patching mix unworkable and useless.

### 5.3 Readymade Mix

Readymade pothole mixes are also available in market under various brands. One such ready made mix is produced

by HINCOL, under the brand name 'ROADBOND'. Roadbond can be used for the instant repair and maintenance work such as, pothole repair, edge break, trench & utility cuts. These mixes are produced using high quality aggregate and specially designed Bitumen Emulsion. The use of readymade mixes is based on the amount of repairing work. These mixes can be used when it is needed in a small quantity.

### 6. Avoid/ Minimize Potholes

It is recommended to pay adequate attention during the construction to avoid/minimize the potholes in the first place itself:

#### Do's

- If the coating/stripping value of aggregates is less than 95%, it is recommended to use anti-stripping agent without fail.
- If the duration of time is more than 24 hrs between any two bituminous layers construction, it's suggested to provide a tack coat to avoid slipping of layers.
- The density of finished paving layer should not be less than the 92% of the average density based on theoretical maximum specific gravity of the loose mix (Gmm).
- Mixing, laying and rolling temperatures of bituminous mixes should be as per clause 5.3 of IRC:111-2009.
- Provide proper drainage layer (GSB) as per the specifications, to drain out the sub-surface water.
- Provide proper camber to drain out the surface water, without forming any water pockets on bituminous surface.
- As a part of regular maintenance,

seal the surface cracks at periodic interval with appropriate sealing technique.

#### Don't s

- Do not lay bituminous layer on damp base/binder course, and also during rains, or dust storm.
- Traffic shall not be allowed on the newly laid bituminous surface until the paved mat has cooled below a temperature of 60 °C in its entire depth.

### 7. Conclusions and Recommendations

**Bituminous Mix:** Hot-mix materials are usually expected to perform better than the warm/cold-mixed variety and they are considered to be permanent. Therefore, many agencies use hot-mix for permanent patching. Warm/Cold-mix materials can be used in monsoon for temporary repairs.

The semi-permanent repair method is considered one of the best among the described three techniques for repairing potholes, short of full-depth removal and replacement for long last performance.

### 8. References

- Manual of Practices "Materials and Procedures for Repair of Pot holes in Asphalt-Surfaced Pavements"; Federal Highway Administration, US Department of Transportation.
- "A Simple and Effective Method of Repairing Potholes in India"; Prithvi Singh Kandhal, Indian Road Congress Volume 69-3, Oct-Dec 2008.

- "Asphalt Cold Mix Manual", Asphalt Institute Manual Series MS-14:1990.

### Annex 1

Test on Bituminous Cold Mixes for Pothole Repair

#### A. Water Resistance Test

Fifty grams of patching mix, whether freshly prepared or taken from the stockpile, shall be heated at 120°C in a laboratory oven for one hour, cooled to 95°C in laboratory air, and then placed in 400 ml of boiling water in a 600 ml glass beaker and stirred with a glass rod at the rate of one revolution per second for three minutes. The water shall be decanted and the mix shall be spread on an absorbent paper for visual observation of the coating. The aggregate shall be at least 90 % coated with a bituminous film.

#### B. Workability Test

Approximately 2.5 kg of the patching mix shall be cooled to -7°C in a freezer. After cooling, the mixture shall be capable of being broken up readily with a spatula that has a blade length of approximately 200 mm.

This test shall be performed when the mix is produced and thereafter anytime during storage. If the mix is not workable at -7°C, it shall be rejected and the composition of the mix shall be properly modified (for example, by increasing the bitumen content and/or gradation changes).

This test is also applicable in areas with hot climate because it amplifies the workability characteristics of the mix by using a lower test temperature.

## WORKS IN PROGRESS



◀ NDCT - 1 Shell in Progress at GMR Energy, Raipur

Signature Bridge : Pylon Base (360 T) - Mock assembly in China ▶



# INTERACTIVE WORKSHOP AT NAGPUR

An INTERACTIVE WORKSHOP was held on 29th & 30th Oct'12 at Butibori, Nagpur for Gammon Plant Personnel. Twenty Gammonite plant personnel participated in the Workshop.



Mr. M. U. Shah in his Opening Address to the forum stated that, Plant Department with Rs. 1125 Crores worth of plant assets at our disposal has to play a very vital role in the Organization. Also Plant Department is expending annually a cash expenditure of over Rs. 225 Cr. towards spares, repairs, manpower etc. apart from the noncash expenditure of Rs. 300 Cr. towards depreciation. He also explained, the expectations from Plant Incharges / Regional Managers and the urgent need for effective Plant Monitoring & Cost Reductions highlighting the important role played by Plant Department.

## Objectives of Workshop:

1. How to reduce Energy Costs?
2. How to improve quality of data entry in ERP?
3. How to control Issue & Consumption of HSD?
4. How to improve Plant Effectiveness – Availability, Utilization & Productivity?

The participants were divided into four groups and were given different topics to analyze and present the same based on their own experience in the Organization.

Highly interactive Brainstorming sessions were conducted on each of the four topics in which valuable Inputs were given by various participants and a Time Bound Action Plan was finalized during the Workshop.

## How to reduce Energy Cost

There is a dire need to monitor, control and reduce energy cost from its current levels across the company. For this Plant Incharge / RPM shall take ownership and take all necessary steps for the same. Some of the suggestions are as follows:

- Obtain Grid Power of required quality & quantity at one or more locations, if not already obtained, duly carrying out cost benefit analysis including impact of minimum charges, if any.
- All the DG sets should invariably have the Electronic Energy Meters functioning all the time.
- Capacitor Bank for Auto correction of Power Factor must be installed.
- Optimum load management must be ensured all the time using Generators of right capacity to match with demand load and avoid use of over capacity Generators.
- Synchronise Generators where required & feasible.
- In case overall energy cost at site

is high because lower capacity Generators are not available then to raise the requisition for new low capacity Generators duly making a case with justification.

## How to improve Quality of Data Entry in ERP.

- Understand the usefulness of ERP data entry for overall project control.
- Ensure Training & Knowledge of inter departmental modules.
- Ensure all equipment Odometer and Hour meter in good working condition.
- Metered Fuel dispensers should be available.
- Well defined responsibility for data communication.
- Non-perishable master records and daily ERP updations.
- Responsibility of plant incharge
  - Ensure no lapses.
  - Cross check masters and log books.
  - Fixed Weekly meet of concerned team for checking quality of data and discrepancy, if any.
  - Communication with HO for feed back on quality and timely submission.
  - Bi weekly video conference with RPM and plant head on Cost control measures and improvements.



## ENGINEER SAID IT... By M.U.SHAH





- Sign-off of ERP data, every week / fortnight by Plant In- Charge, Store In- Charge & Project Incharge.

**How to Control Issue & Consumption of HSD.**

- Quantity received should be measured exactly in presence of responsible person.
- Leakage of tanks shall be arrested on priority & tank to be cleaned at periodical intervals.
- Close watch on HSD pilferage to be kept by keeping regular on site watch.
- Before issue of each slip, the person authorizing the issue slip to check the mileage/hours clocked after last issue.
- HSD used for parts cleaning to be re-circulated by filtering.
- Any leakages from the Equipment shall be attended on priority.
- Monthly monitoring of HSD shall be done with reference to Stand

ard Norms.

- In large sites and for scattered site where number of wheeled vehicles are more; advanced systems like RFID, fuel dispensing browsers are advised.
- Accurate & authentic HSD reconciliation shall be done periodically on monthly basis.
- All diesel generators shall be planned & synchronized for optimum utilization.
- Use of dispensing system with on-line filter attachment shall be used.
- **Plant Effectiveness**
- **Availability**
  - Reduce Downtime.
  - Timely Preventive & Productive Maintenance.
  - Critical Import Substitute.
  - Spare Inventory Planning.
- **Utilization**
  - Avoid excess mobilizations of Plant.
  - Properly Plan execution of work

- Allocate the equipment as per priority.
- Train Operators and Drivers.
- Reduce Downtime.
- Enhance Maintenance & Repair.
- Emphasis on Quality Repair.
- Carry out Maintenance in lunch hours, holidays, idle time etc.
- **Productivity of the Plant**
  - Proper Planning and Execution of the plant according to capacity and activity wise.
  - Ensure availability of required manpower at working site.
  - Address bottlenecks in the work front by proper planning.
  - Manage resources optimally.

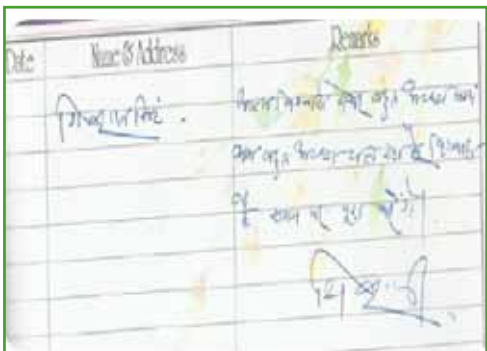
With these valuable inputs from individual, we could make the interactive Workshop more lively and interesting. We are confident that our Plant Team will implement discussions and decisions taken during this WORKSHOP in right earnest with a view to achieve the objectives of the same.

## NEWS FLASH FROM PROJECTS

### Malva Chimney & NDCT



Mr. A. B. Desai, Executive Director explains the Project to Honorable Chief Minister of Madhya Pradesh, Shri. Shivraj Singh Chouhan



Valued Remarks by Honorable Chief Minister of Madhya Pradesh, Shri. Shivraj Singh Chouhan in Gammone's Visitor Book

### Sidhi- Singrauli BOT Road Project on NH 75E



Foundation Stone Laying for Sidhi Singrauli Road Project By Honorable Chief Minister of Madhya Pradesh, Shri. Shivraj Singh Chouhan





# SERIOUSLY , LAUGHTER IS THE BEST MEDICINE

## The First Day of The Last Month of My First Inning in Gammon !!!

- M. U. Shah

They say laughter is the best medicine, even if you are laughing at yourself.

I requested for relieving me w.e.f. 31st January. This request was made through a hand written note sealed and marked "**Strictly Confidential**". However, the relieving did not materialize on 31st January and hence I came to office on 1st of February mentally preparing myself that I will have to continue for at least one more month before I was relieved.

I reached office at 0900 Hours as usual. Since the request for relieving was through a **Strictly Confidential** note, I thought no one would have known about it. However as the day unfolded, I realized that I was wrong and the reality was that surprisingly everyone from canteen boy to driver knew about it !!

### 0900 Hours

Normally the canteen boy arrives at 0905 hours, keeps a cup of tea and leaves. Today he walked past my glass cabin hurriedly but when he saw me in the cabin he was taken aback and astonished. He returned a few steps to come back to my cabin and asked, "**Saheb, you were to leave the Company and go from 31st January. You didn't go? What happened?**"

Shocked, I could not answer.

He asked, "Shall I bring tea for you?"

Recovering from the shock and after becoming normal, I said, "Yah, yah, yes, yes!"

I thought he will offer cup of tea which was in his hand but he indicated that it was for Dr. Nayak (who also has bad habit of coming early in the office like me).

He brought tea in the next trip and gave another high-voltage shock to me, "**I suppose you have come today –for the day just to clean the table (read clear pending papers) which you could not finish yesterday !**"

### 0930 Hours.

My colleague Mr. Yogesh came to me.

He said, "May I ask you something?"

"Go ahead", was my response.

He said, "I hope you will not feel bad about it."

"Don't hesitate. Go ahead.", I insisted.

He asked me, "**Are you leaving us?**"

I said, "Oh, you wanted to ask that. How can I feel bad about it? Just now the canteen boy asked the same question – rather '**why not**' part of the same question in the most unsophisticated manner. Did I feel bad about that?"

### 1000 Hours

Mr. Bandopadhyay, Training Head, came to me and said, "On 21st February there is a training programme....." Interrupting him I said, "Today is only 1st February. I don't know whether ....."

Before I could finish, he interrupted me and said straightaway, "I know ... I know.... Can you come as an **external faculty?**"

### 1100 Hours

Mr. Duchawala from HR came. Opening the door in his typical style and keeping it half opened, he asked, "Anybody surplus?"

With previous three incidents fresh in my mind, I replied; "Yes, I am the one!" He said, "**I am talking about good Engineer!**"

### 1200 Hours

One gentleman from Accounts Dept. and my lunch time card game partner came and said, "Just now I heard a rumor in the Office that you are leaving us which I didn't believe it. So I thought I will hear from the **horse's mouth** and I came straight to you."

I took a great sigh of relief and said thank God, he didn't say, "I thought I will hear from **donkey's mouth** and I came straight to ....."!!

### 1300 Hours

This time it was one vendor who came to me and said, "What will happen to my outstanding dues?"

I said, "What?"

He said, "Since you are leaving, what will happen to my outstanding dues?"

I asked, "Firstly who said I am leaving

and secondly how old are your outstanding?"

He said "Fellow vendor from Orissa told me and as regards the age of outstanding, last month my bills have celebrated 4th anniversary!"

Wondering as to how the content of a **Strictly Confidential** note could reach all the way up to Orissa and that too to a third party, I said; "For the last four years I am very much here. Has my presence ....."?

I whispered, "You don't have to worry about my possible absence, if any. I am not from Corporate Finance!"

### 1400 Hours

Now another gentleman from HR came and said, "I suggest you don't close your A/C."

I said, "I am not closing my Syndicate Bank A/C"

He said, "I am talking about payroll A/C. **Suppose you don't get job outside** and you come back to Gammon, it would be easy, if payroll A/C is not closed. The statistics show that in Gammon quite a good number of people come back. Take recent example of Mr. .... His A/C was not closed so it was very convenient else in ERP opening a new A/C is tedious. Hence, this is my personal suggestion since I know you"

### 1500 Hours

Mobile rang. Sweet voice at the other end said, "I am Miss Puja from HDFC Bank. Sir, do you need a personal loan?" With all the events since early morning still fresh in my mind, I said, "**I may need after some time.**"

She asked, "When shall I contact you again, Sir?"

I was curious to know whether they give personal loans to jobless and unemployed persons but wisely decided not to touch upon such sensitive issues till end of February.

### 1530 Hours

This time my Secretary Ms. Priscilla dropped in and voluntarily started telling about her own and her family's long term plans like son's board

examination and that she plans to take a long leave or perhaps even leave the job in which case how she will miss a boss like me. This voluntary disclosures from her surprised me but being 'Buddhu' ('Dumb'), as I was or in fact as 'I am'; I didn't understand all this till after few minutes I overheard she admitting to a crowd of ladies gathered outside my cabin who were eagerly awaiting her return from my cabin; "I lost the bet ! You all have won"! She added, "I opened up anticipating that he will also reciprocate similarly. **In fact I tried a lot but he didn't utter a single word whether he is leaving us or not". "How mean he is !!"** was her conclusion. Surrendering to all, she straightaway asked, "Which restaurant you all would like me to take you for a party?"

#### 1600 Hours

Mobile flashed SMS from Airtel reading: **"Fed up of searching job? SMS to ...."** which made me wonder as to how on earth Airtel is aware of my state of mind.

#### 1700 Hours

My senior colleague Mr. A. B. Desai came to me and asked, "Are you really sure you want to go?" I said, "Till yesterday I was not sure but after today's developments, I am pretty sure that I have to".

#### 1730 Hours

I thought I must leave office immediately before Mr. Maciel organizes an **"Emergency send off"** party in my honour (?) today itself, though I was prepared to work for at least one more month. I visualized a canteen boy handing over a paper plate with one potato wada to me which could possibly make me literally speechless on two counts – firstly because of shock and secondly because I had not yet prepared the **"send off"** speech. So as a fall back strategy, to handle the worst case scenario of **"send off"** taking place today itself on an emergency basis, I started rehearsing the speech in front of wash room mirror trying, in vain, to control expressions and body language ( at which I am very poor). After many trials decided to cover up my speechlessness by a face saving short and sweet speech saying, **"I am**

**overwhelmed by love and affection from you all. I am speechless!"**

#### 1800 Hours

The moment I set in the car, the driver said, "Can I make one request ? " I said, "What?" He said, "Can you adjust my son in Dubai?" Surprised, I asked, "Dubai?" He said, "You are going there, right?" I asked, "Who told you?" He said, "The whole office knows." I said, "But I don't know that I am going to Dubai."

#### 1900 Hours

Enroute home I was chatting on mobile with Mr. A B Desai. I told him that I was wondering how come the whole office came to know about a **"Strictly Confidential"** note.

He said, "You made a mistake"; giving me a down-to-earth practical tip he added further, "You should have sent an open letter. Nobody would have bothered to read it."

#### 2000 Hours

The moment I reached home my wife, instead offering a glass of water, asked; "Can I ask you a question?" I said, " Oh, no! Not again. But anyway, if I say no, will you refrain from asking?" She said, "No, in any case I am going to ask."

I said, "Then why this formality? Go ahead and shoot the question" She said, "I have a doubt." I yelled, "What? And this is not a question, it is a statement- rather an allegation."

I started wondering what all she might have come to know which I have not yet disclosed to her. Out of those, what should I admit even now claiming that I was about to tell her; which, though too late, still would mean less severe consequences (read punishments). I also wondered what happens if, in the process, I unnecessarily admit something, which she did not know? So instead of playing blind which is likely to create life-long embarrassment, I decided to play a sentiment card which works on ladies 9 out of 10 times. I said "Come on. I love you so much, how can I even think of hiding anything from you?"

Mellowed by this affectionate statement, she softened her stand and said, "You are with Gammon for the last twenty six years whereas with me it has been only twenty three years. You have been spending more time in Gammon than with me and despite all these, **if you could leave Gammon after twenty six years, what is the guarantee that you will not leave me?** I certainly have my doubts."

I took a great sigh of relief since it was nothing of the sort which I was anticipating. As regards guarantee, my heart wanted to say "There is no guarantee" but I did not have the courage to say so!. Moreover my brain strongly advised against it and hence I settled down saying "Oh, is that your doubt. I thought you have some other doubt." without realizing that this reply could land me in to fresh trouble and that is what exactly happened when I heard she saying, "What? That means there is something!" which needed another round of playing sentiment card for resolving.

#### 2100 Hours

At last it was my daughter who came to me and asked, "May I ask you something?" I said, "You too? Go ahead" She asked, **"What will happen to my expensive higher studies, if you do not get any other job?"**

I whispered, "What an innocent and ignorant girl! She thinks, as if while in job I can afford her higher studies! ". However, I replied to her, "HDFC Bank zindabad. In either case, we will take a personal loan from HDFC Bank. Will you please note down Miss. Puja's number from call register of my mobile."

This was an hour-to-hour count of twelve hours of the first day of the last month of my 1st inning in Gammon which, though quite humiliating, was as humorous as my 1st day in Gammon way back in 1978 (published in earlier Gammon Bulletin) and between them cover lighter side of my twenty six year long 1st inning in Gammon.





# A Million thanks to our ESTEEMED CUSTOMERS



Delhi Transport Corporation



## COMPANY NEWS

### THANKS TO ESTEEMED CUSTOMERS



75 Storeyed Building 'NATHANI HEIGHTS' in Mumbai, for Nathani Parekh Constructions Pvt. Ltd. C.V. : Rs. 347 Crores

Main Civil works for 180 MW Bajoli Holi, HEP for GMR Energy in H.P. C.V. : Rs. 369 Crores

### WELCOME To GAMMON FAMILY



**Deputy General Manager**  
Ambuj Mathur

**Manager**  
Omkar Bhagwant Pathak  
Kamal Banwarilal Purohit

**Deputy Manager**  
Partha Deb Chakrabarti  
Krishnamoorthy Chinnaaraj  
Krishnanand Umakant Naik  
Vijayakumar Mannaperumal  
S. Mariselvan  
Muthuselvam Manickam  
Anil Kumar Gopi  
Giridharan

**Assistant Manager**  
Avinash Kumar Singh  
Shalini Narinder Chuni  
Vivek Rajesh Pipalia  
Gnanaprakash Nammazhwar  
Subramani Arumugam  
Nikhil Subramanyeshwara Bhat  
Pankaj Kashyap  
Barla Keerthi Swaroop  
Likmabamibomcha  
Abhinav Choudhry

**Engineer**  
B. Lingeswaran  
Jeffy Varghese  
Rayudu Suresh  
Ravishkek Kumar Singh  
Sameer Jahagiradar  
Arun Bepari  
Ritesh Kumar  
Saileswar Behera  
Daood Ahmad Noorani  
Rashmita Sahu  
Arumugam Arunachalam

**Jr Engineer**  
Ravinder Nehra

**Executive**  
Swati Rawat  
Vijay P Shukla  
Gopal Gee Dubey  
Chinnaiyan Vigneswaran

**Officer**  
Abhishek Kumar Srivastava  
Savianna Oswald Kinny  
Madhusudhan Mallam

### AWARDS



**R Sudeesh, Manager - Project, Ennore CT**  
Falicitated by Indian Concrete Institute as "YOUNG CONCRETE ENGINEER" of Tamil Nadu.



### LECTURES DELIVERED



**Dr. N.V. Nayak –**  
12th Oct 2012  
Participated in the workshop on "Durability of Concrete" in Mumbai and delivered a lecture during the Workshop.

03rd Nov. 2012  
Participated in the workshop on "Advanced Concrete Technology II" and delivered a lecture during the Workshop in Mumbai.

06th Dec. 2012  
Participated & delivered lecture during the 2nd annual conference on "Foundation and Piling Works for Infrastructure Sectors" at New Delhi.

07th - 09th Dec. 2012  
Participated & delivered lecture in 7Cs colloquium, organized by Indian Concrete Institute in Kochi.

### GIL PARTICIPATION IN SEMINARS



**Girish Bhat**  
07th Dec. 2012  
Attended CII – Cost Congress conference and delivered a lecture under invitation from CIMA.

**V. N. Heggade**  
15th Dec. 2012  
Attended IRC B-4 Committee meeting on at Delhi.

**P. S. Raizada**  
10th- 11th Oct. 2012  
Attended a seminar on "Recent trends in Highway Development" in New Delhi organized by IRC.



06th Nov. 2012  
Participated in IRC meeting at MSRDC, Mumbai.

27th Nov. 2012  
Attended IRC meeting at MSRDC office, Bandra.

30th Nov. 2012  
Participated in seminar on Sustainable Concrete Technology and Construction organized by ICI at Mumbai.



### ALMOST CAUGHT ? WHO?!!!

- M. U. SHAH

One obedient site Engineer was used to remain at site till late night but whenever his Project In-charge leaves site early, he was also used to escape from site for an outing to nearby town. He was managing these frequent early departures with such a smartness that the Boss never came to know about this.

Once he left site early but, to every one's surprise, he came back to site. Next day when his colleague enquired about this, he replied, "Yesterday I was almost caught?"

His colleague asked, "What do you mean by almost caught? Either you are caught by the Boss or not caught?"

The Engineer replied, "I will explain to you. Yesterday the Boss left at 6-30 pm. I also left site at 6-45 pm. I didn't go to town but went home. To my bad luck, when I reached home early, I saw the Boss in my house. I had my heart in my mouth. I immediately escaped before the Boss could see me. I reached home early and rushed back to site with a lightning speed for attending to concreting. I was almost caught!!!!"

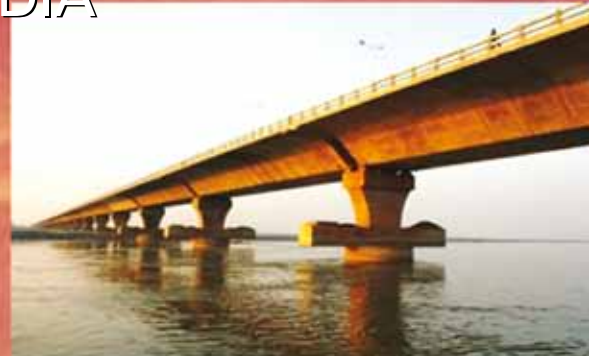


## **GAMMON** **BUILDERS TO THE NATION**

# Gammon's Concrete Contribution in Reinforcing Infrastructure in INDIA



Agra Makhanpur Expressway NH-2



Kosi Bridge NH-57



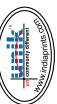
Mumbai- Nasik Expressway NH-3



Rajahmundry Expressway NH-16

# We

- were incepted in 1919
- have built largest number of bridges in commonwealth
- developed one of the largest National/ State Highway network in India
- own 23 infrastructure projects on PPP model including 14 road projects
- are in infrastructure encompassing
  - ◀ Transportation: Roads, Railways, Ports
  - ◀ Energy: Hydro, Thermal & Nuclear
  - ◀ Environmental: Water & Waste Management
  - ◀ Industrial Structures, Building & Utility Services



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