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Elastomeric Bridge Bearing Pads Replacement and Rectification.

Methodology for Replacement of Bearing Pads

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1. Safety Measures:

To adopt safety measures following steps should be taken while replacing the Bearing pads under the bridge by placing jacks directly under girder ends on top of transom/abutments to install new bearing pads.

i. To complete this job on either side South bond or the North bond, we need to do it by closing of the said portion or its recommended to avoid heavy traffic and light traffic passing at speed of 20 km/hour.

ii. No movement on the bridge would be allowed during bearing pad replacement process. Whereas in few conditions slow traffic movement can be allowed. It is recommended while on lifting suitable diversion on said part may be applied with through a person having flag in hand with safety jacket to guide the traffic.

Bridge Structure Lifting

A lifting frame is in general a design-and-built machine used in segmental bridge construction. It consists of lifting devices and metal structures for lifting bridge segments in position for assembling.
In many instances, it is advantageous for extremely large & heavy components to be prefabricated away from their final location. In most cases they must be lowered, jacked horizontally or lifted into their final position. When their weight or size exceeds the capacity of available carnage, other heavy lifting facilities must be considered.
Our company carries a large stock of fully tested hydraulic jacks (hydra-jacks) available for service and sale at competitive rates.
Hydraulic pumps and control systems range from our basic set-ups to the more complicated electronic control and structural monitoring systems used for controlled hydraulic movement.
We are able to offer a total service from start to finish for a wide range of applications. Areas where our expertise has been proved invaluable include:

- Lifting Heavy Weights
- Lifting Bridges for replacing bearing pads

2. Cleaning The Debris.

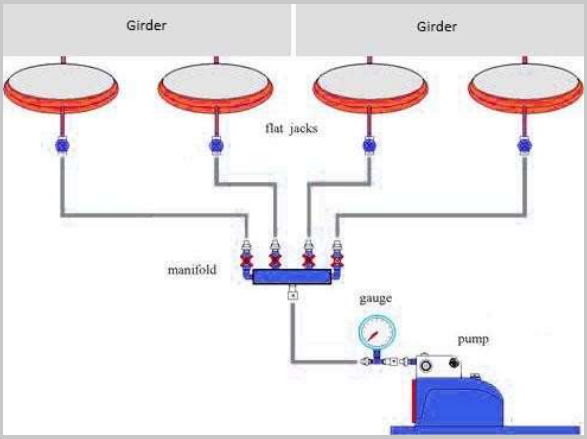
On the top of Transom / abutment debris nearby the bearing plinth would be removed and surface should clean properly before starting the replacement procedure.

3. Preparation and installation of the equipment & accessories.

After arrangement of all safety measures and clearing debris, bearing pads would be replaced using below method. We number of flats jacks for lifting. Larger models or alternate models can be made on order. For permanent situations, the flats jacks can be injected with an epoxy resin.
Jack used in above mentioned projects are of more than 100Tons capacity and 6” inch height, piston diameter 160mm & stroke is 30mm.

1. Hydraulic jacks would be installed below each girder as per photograph. Access ladders and work platforms around transoms where ever necessary, removal & shifting of work platform to next piers.

2. Confectioning of all the Hydraulic jacks and gauges.
Hydraulic jacks are used as a means of Lifting bridges so that defective or frozen bearings can be removed. Hydraulic jacks of approx. 200-ton capacity are being used. Now it's time to set the jacks one by one and activate them through the hydraulic pump.



3. For all hydraulic jack one hydraulic pump is enough with the help of manifold lines part. Hydraulic Pump is activated through the three phase generator. After that all the jacks would be fixed by giving some pressure to touch the below surface of girder. Packing of small plates can be used if required to touch the surface. This step can be done to all the jacks one by one to sure that they take the load at once for complete one side span of the bridge.

4. Lifting of bridge Span. Dial gauges will be used to check the level of span and exact lifting of the girders. After that, hydraulic pump gives the pressure to all the jacks at once and lifting procedure is started. After lifting of 5-6mm bearing pads would be free and all the load of span is on the jacks.
   Carry out lifting of one end of deck at one time, removal of damaged bearing pads, cleaning top of grout pedestal, applying thin mortar on top of grout pedestal (if required, it is done when bearing pad has been used for more than 15 years) and placing / fixing of new bearing pads at correct line and level, lowering down the deck on top of new bearing pads, removal & shifting of equipment to next piers till completion of all the works.

5. It is important to mention that in case of new bearing pad only 4 to 5 mm and incase of old bearing pad lifting of girder is done up to 10 mm. The maximum limit of lifting is 15 mm.

6. Remove old bearing pad.

   Note the dial gauge reading if required and mark the existing pad position one by one and then remove it and replace the new bearing pad in same position one by one. After successfully replacement, release the pressure of jacks and load is again on the structure. Remove the jacks and again do the same procedure to next side of the span if needed.

7. Install new bearing pad.

8. De-mobilization of Hydraulic pump, Manifold, Jacks, equipment and accessories.

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Completed Projects in Pakistan

No.	Project Name	Year	Client Name	Consultant Name	Contractors
1	Bridge lifting and Rectification of Bearing pads at Lahore Sialkot Motorway.	2018	NHA	ZEERUK	FWO
2	Supply of Wire Mesh fence at Peshawar-Karachi Motorway (PKM) Sukkur-Multan Section 5 & 6	2018	NHA	SMEC	China State Construction Engineering Corporation Ltd.
3	Replacement of old Bearing pads with new at Bridge No. 04 overlay and Extension of Super Highway to motorway (M-9) Project.	2020	NHA	NESPAK	FWO
4	Replacement of old Bearing pads Timergara Khar Mohmand Ghat Road Project Brg. No. 1,2,3,4 & 5 TKMG Road.	2021	PKHA	Pavron	FWO 121 QCB
5	Supply of Nflex Bearing pads at Derya Khan Bridge on River Indus.	2023	PKHA	NESPAK	Haji Raees & Sons Construction Pvt. Ltd.
6	Replacement of Bearing pads at Derya Khan Bridge on River Indus.	2023	PKHA	NESPAK	Haji Raees & Sons Construction Pvt. Ltd.
7	Supply of Nflex Bearing pads on Lillah Jhelum Road Project.	2023	C&W	NESPAK	Skor Construction
8	Supply of Nflex Bearing pads on Shahdara Multilevel Flyover Project Lahore.	2023	LDA	NESPAK	MAAKSONS
9	Supply of Nflex Bearing pads on Bedian Underpass Project Lahore.	2023	LDA	NESPAK	MAAKSONS
10	Supply of Nflex Bearing pads on Khanpur Canal Lahore-Sheikhupura- Faisalabad Dual Carriageway Project.	2023	FDA	NESPAK	LAFCO-KRC-JV
11	Replacement of Bearing pads on Khanpur Canal Lahore-Sheikhupura- Faisalabad Dual Carriageway Project.	2023	FDA	NESPAK	LAFCO-KRC-JV
12	Supply of Nflex Bearing pads on Ghora Chowk Walton Road Flyover Lahore	2023	LDA	NESPAK	EDDCO
13	Supply of Nflex Bearing pads at construction of Bridge at Sitara Green City Faisalabad.	2024	Sitara Developers Pvt. Ltd.	Osmani Associates	Sitara Developers Pvt. Ltd.
14	Bearing Pad Rectification at 8 Lane Overhead Bridge at Imamia Colony Railway Crossing, Shahdara, Lahore.	2024	NHA	NESPAK	NLC
15	Supply of Nflex Bearing pads at construction of Mandra Bridge at Chashma Road Dera Ismail Khan.	2024	PKHA	NESPAK	Haji Raees & Sons Construction Pvt. Ltd.
16	Supply of Nflex Bearing pads on New Ravi Bridge at Shahdara Multilevel Flyover Project Lahore.	2024	LDA	NESPAK	MAAKSONS
17	Supply of Nflex Bearing pads at Re-modeling and upgradation of ADA Nullah and Walton Road (Package-2) Construction of Flyover at Cheel Chowk, Lahore.	2024	LDA / CBD	NESPAK	EDDCO
18	Supply of Nflex Bearing pads for Noor Khan Base (PAF) Rawalpindi.	2024	PAF	DW&CE PAF	STAR ENGINEERING
19	Supply of Nflex Bearing pads at Alam Godar Bridge Khyber Agency Charsadda.	2024	PKHA	NESPAK	Shah Faisal Construction Company
20	Bearing pads Rectification at Mandra Bridge, Chashma Road Dera Ismail Khan.	2024	PKHA	NESPAK	Haji Raees & Sons Construction Pvt. Ltd.

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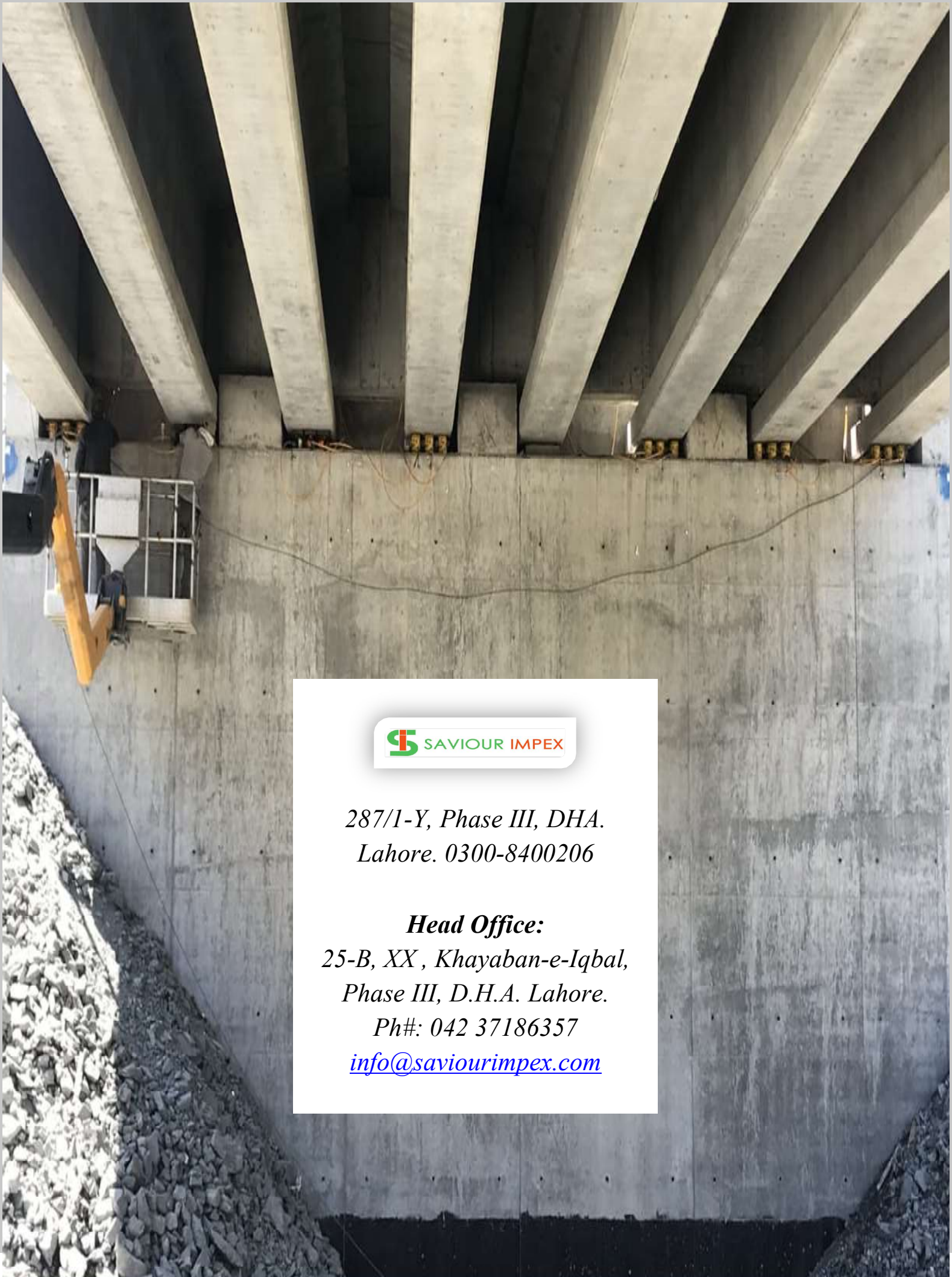

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