

# MEMORANDUM OF UNDERSTANDING

between



**BIHAR STATE DISASTER MANAGEMENT AUTHORITY,  
PATNA**

and



**NATIONAL INSTITUTE OF TECHNOLOGY PATNA**

for

**Vulnerability Assessment and Remedial  
Measures for Protected Monuments in Bihar**

**August 2023**

F 2082881, Date 15-09-2023

14/9/23

## ARTICLE II

Activities under this MOU: NIT Patna shall employ appropriate methods, techniques, and expertise to conduct the vulnerability assessments. The assessments may include non-destructive testing, structural analysis, documentation of existing conditions, historical research, and evaluation of potential risks posed by natural and man-made factors. Remedial measures and recommendations shall be based on mutual consent as per the requirements of the project. Publications in journals and conferences, scope for further research and development as well as Training programs shall be according to the project proposal given at Annexure-B.

## ARTICLE III

This MOU shall be valid for a period of two years from the date of signing, extendable further based on recommendation of BSDMA based on periodic review on the performance of researchers, quality of work, and quantum of work.

The monuments taken up shall be 54, as per the list obtained from the Archaeological Survey of India. The list of 54 protected monuments of Bihar is provided at Table 1 of Annexure-B.

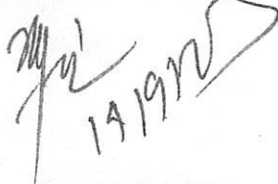
The following are the natural disasters that afflict the state of Bihar. The protected monuments of Bihar may be located in areas exposed to one or more of these disasters, apart from the man-made ones:

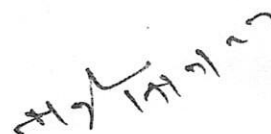
- a. Flood Zones: The major affected districts are Araria, Darbhanga, Katihar, Madhubani, Sheohar, Bhagalpur, Muzaffarpur, Purnia, Khagaria, East Champaran. (Group A & B Districts) etc. Patna is prone to urban flooding by incessant rains.
- b. Lightning and Thunderstorm Hotspots: The major hotspots are located in Gaya, Nawadah, Aurangabad, Patna, Kaimur, Banka districts etc.
- c. Earthquake: The major districts affected are Araria, Darbhanga, Madhubani, Sitamarhi, Supaul, Darbhanga, Saharsa and Madhepura which lie in Zone V - a very high-risk zone. The south-western districts of Arwal, Aurangabad, Bhojpur, Buxar, Gaya, Jahanabad, Kaimur, Nawada, Rohtas and parts of Banka and Jamui lie in Zone III. Remaining districts including state capital Patna lie in Zone IV- High risk zone (Group-A & B).
- d. Drought Zones- Entire South Bihar is prone to drought (Group-C) and water scarcity is common during summer. Arsenic and fluoride contamination is also a major concern too.

The aim of this project is to assess the risk and vulnerability of protected monuments in Bihar so that remedial measures are suggested accordingly to safeguard the heritage monuments and to prevent their damage by natural and human induced disasters. The project will analyze and provide valuable insights on the present conditions of these monuments and the measure that need to be adopted for their disaster risk reduction. The project intends initiation of necessary actions towards preservation and/or conservation of the historical importance of these monuments for the society at large for Bihar.

The deliverables shall include but not be limited to:

- a) Comprehensive vulnerability assessment reports for each protected monument, documenting the findings, analysis, and recommendations.
- b) Recommendations for remedial measures, including structural stabilization, restoration, conservation, and disaster resilience, based on the vulnerability assessments.





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**MEMORANDUM OF UNDERSTANDING**  
**Between Bihar State Disaster Management Authority, Patna, Bihar**  
**and National Institute of Technology, Patna**

This Memorandum of Understanding (hereinafter referred to as "MOU") is being prepared on this day \_\_\_\_\_, 2023, in furtherance of their mutual interest in the fields of Disaster Risk Reduction and Management and as a contribution towards making the cultural heritage sites and monuments of Bihar Disaster Resilient.

Between

Bihar State Disaster Management Authority (BSDMA) – a statutory body created under the provisions of Disaster Management Act 2005 – through its Vice Chairman/Secretary, Bihar having its address at Fifth Floor, Sardar Patel Bhawan, Bailey Road, Patna-800001, Bihar, India (hereinafter referred to as BSDMA) called as 1<sup>st</sup> Party

and

National Institute of Technology Patna – an institute of national importance under Ministry of Education, Government of India – represented through its Director/HoD (Architecture and Planning) Bihar, India (hereinafter referred to as NIT Patna, having its address Ashok Rajpath, Patna), called as 2<sup>nd</sup> Party are hereby entered into this Memorandum of Understanding (MOU) on this \_\_\_\_\_, 2023 as set forth below:

WHEREAS,

1. BSDMA will share recommendations of research work with Archaeological Survey of India (ASI), Patna for the protection, preservation, and conservation of various historic and protected monuments located within the state of Bihar from natural and man-made disasters.
2. The Department of Architecture and Planning, NIT Patna possesses the necessary qualifications, experience, and expertise suitable for conducting vulnerability assessments and recommending remedial measures for protected monuments.
3. BSDMA desires to engage the services of the Architect to conduct vulnerability assessments of protected monuments in Bihar and provide recommendations for remedial measures to ensure their preservation and conservation.
4. NIT, Patna should obtain NOC from Archaeological Survey of India (ASI), Patna to conduct the research study.

**ARTICLE I**

The MOU involves collaboration between BSDMA (1<sup>st</sup> Party) and NIT Patna (2<sup>nd</sup> Party) (both also referred to as institutions) in related disciplines.

BSDMA has accorded in-principle approval to NIT Patna to prepare a Report on Vulnerability Assessment and Remedial Measures for Protected Monuments in Bihar given at Annexure-A.

Both the institutions shall seek to promote **Vulnerability Assessment and Remedial Measures for 54 Protected Monuments in Bihar**, as notified by the Archaeological Survey of India and as agreed upon by both the parties. The assessments shall include a comprehensive analysis of potential risks, threats, and vulnerabilities to the structural and cultural integrity of the monuments.

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- c) Detailed architectural drawings, specifications, and cost estimates for implementing the recommended remedial measures.

The implementation of this project may be adopted with the budget details and schedule of payment as given in the following sections.

**Table 1: Details of Budget**

S. No	Item	Rate	First Year	Second Year	Total (Rs.)
1.	Manpower (JRF for two years) – 1	@ (31000*+18%hra) as notified and subject to changes by the DST, Govt. of India	4,38,960 (31000+18%hra)	4,38,960 (31000+18%hra)	8,77,920
2.	Travel	(~@ Rs. 5000 per monument)**	2,50,000	0	2,50,000
3.	Purchase of consumables (paper, cartridge, etc.)	Lumpsum	5,000	5,000	10,000
5.	Contingency	Lumpsum	10,000	10,000	20,000
	<b>Total</b>		<b>7,03,960</b>	<b>4,53,960</b>	<b>11,57,920</b>
6.	Institutional Overhead Charges	@ 20%	1,40,792	90,792	2,31,584
	<b>Total</b>		<b>8,44,752/-</b>	<b>5,44,752</b>	<b>13,89,504</b>

\* The salary of JRF is subject to latest notification by DST, Govt. of India.

\*\* The travel expense is an estimate only. Payment for hiring of vehicles will be based on rates specified by Government of India on production of bills with a valid GST number. The rates are applicable for one visit per monument only. Travel to more than one monument may be clubbed together.

The total budget for the project is rupees thirteen lakh eighty-nine thousand five hundred and four only.

#### Schedule of Payment

The total amount shall be payable in four installments as given below:

**Table 2: Schedule of Payment**

Installment	Amount Payable	Schedule of Payment
First installment	20% of the total sanctioned budget	On submission of inception report.
Second installment	35% of the total sanctioned budget	On submission of draft report.
Third installment	25% of the total sanctioned budget	On submission of final report.
Fourth (Final) installment	20% of the total sanctioned budget	On acceptance of the final report by BSDMA.

The technical and other details of the research project "Vulnerability Assessment and Remedial Measures of Protected Monuments in Bihar" are provided in the project proposal.

NIT Patna shall provide all information related to "Vulnerability Assessment and Remedial Measures of Protected Monuments in Bihar" including, photographs, plans, site plan, Hazard Map showing location of monument, Rapid Visual Assessment reports, presentations, copies of communications, etc. required to verify the contents of the report for Vulnerability Assessment and Remedial Measures of Protected Monuments in Bihar. These documents/photos/videos/drawings etc. shall be the exclusive property of BSDMA. NIT Patna, however, for the purpose of record may use few of them, with the written permission of BSDMA. Granting such permission shall be the sole discretion of BSDMA.

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*Handwritten signature and date 19/9/23*

#### ARTICLE IV

In future, for continuity of work after project completion- **Vulnerability Assessment and Remedial Measures for Protected Monuments in Bihar** from Disasters shall be taken up on mutual consent of BSDMA and NIT Patna.

#### ARTICLE V

Implementation of this MOU shall be dealt with between the relevant Faculties and Divisions/ Departments of both institutions. NIT Patna shall commence the vulnerability assessments upon signing of this MoU. The final vulnerability assessment reports and recommendations shall be submitted to BSDMA within the mutually agreed timeframe of two years. Wherever necessary, a specific plan shall be worked-out for each activity setting-forth detailed arrangements for collaboration. Such plans shall be subject to the final approval of the appropriate authorities of BSDMA. To facilitate development of such plans, each institution shall nominate a member of its staff to coordinate activities arising under this MOU.

#### ARTICLE VI

Both institutions agree and undertake to keep confidential at all times information and/or data that may be exchanged, acquired and/or shared in connection with the area of cooperation, as mentioned above, unless otherwise the same information already exists in the public domain.

#### ARTICLE VII

Ownership of findings of any joint research shall be vested in both institutions to this MOU and any publications regarding the same shall only be possible after prior written consent of BSDMA.

#### ARTICLE VIII

BSDMA reserves the right to terminate this MOU giving 3 (Three) months written notice to the other.

#### ARTICLE IX

Participating teaching and non-teaching staff and students and any other member from the participating institutions involved in any activities under this MOU must adhere to the law of the land as well as the rules and regulations of the host institution.

#### ARTICLE X

BSDMA and NIT Patna jointly agree to provisions as set out above. There are two copies of this MOU equally valid, one for each institution, effective from the date of its signing and shall be valid for a period agreed upon by both parties under this MOU.

**Bihar State Disaster Management  
Authority Patna**

Secretary, BSDMA  
2nd Floor, Pant Bhayan, Bailey Road,  
Patna, Bihar-800001  
Email: [sd-info@bsdma.org](mailto:sd-info@bsdma.org)

Witness ① *[Signature]*  
14/9/2023  
(Deleep Kumar, SA)

Date:

(2) *[Signature]*  
14-09-23  
F.D

**National Institute of Technology Patna**

*[Signature]* 14/9/23  
Head, Department of Architecture and  
Planning, NIT Patna  
Patna, Patna - 800005 (Bihar)  
Email: [head.ar@nitp.ac.in](mailto:head.ar@nitp.ac.in)

Witness ① *[Signature]*  
14/9/2023  
(ANUJ SHARMA, Asst. Prof.)

Date:

② *[Signature]* 14/9/2023  
(SUPRIYA KUMARI, Assistant  
Professor)