

**GOVERNMENT OF TRIPURA  
PUBLIC WORKS DEPARTMENT**

No.F. 28(1)/MC-PWD(R&B)/2019/1160-79

Dated, Agartala, the 29<sup>th</sup> Aug, 2020.

**MEMORANDUM**

Indian Academy of Highway Engineers (IAHE) is organizing an online training programme on “Design, Construction and Maintenance of Flexible Pavement” from 31<sup>st</sup> Aug to 11<sup>th</sup> Sep, 2020 on Cisco WebEx Meeting video conferencing application (Website and app).

In view of the above, the following officials from PWD, Government of Tripura are nominated for participation in programme as per schedule:

Sl No	Name of participant with designation and place of posting	Contact Number and e-mail ID
1	Smti Anupama Sarkar, AE O/o the SE 3 <sup>rd</sup> Circle, PWD (R&B), Udaipur	Mobile No- 8132818532 e-mail: anupamamece@gmail.com
2	Sri Satyabrata Das, AE O/o the Chief Engineer, PWD (NH)	Mobile No- 9436590252 email: satyabrata.das34@gov.in
3	Sri Rupak Das, JE O/o the Chief Engineer, PWD (NH)	Mobile No- 9436549248 e-mail: rupaksoft@gmail.com
4	Sri Pratik Pal, JE O/o the Addl. Chief Engineer, P&D Unit, PWD (R&B)	Mobile No-7005253586. email:pratikpalnit@gmail.com
5	Smt Sharmistha Majumder, JE O/o the AE, Bishramganj Sub-Division, PWD (R&B)	Mobile No- 9774449917 e-mail: sharmisthamajumder93@gmail.com
6	Sri Sourav Chakma, JE O/o the AE, Amarpur Sub-Division No.-II, PWD(R&B)	MobileNo-8730024525 chakma.sourav@tripura.gov.in
7	Sri Thaiu Mog, JE O/o the Executive Engineer, NH Division, Baikhora	Mobile No- 9862566505 e-mail:mog.thaiu@gmail.com

Participants are requested to install WebEx App from Google Play Store or iOS Store or hyperlink <https://www.webex.co.in/> and sign up to create an account free of cost. A hyperlink with Meeting ID and Password will be shared with the registered participants for attending the lectures.

( Susanta Dutta )  
Deputy Secretary, PWD.

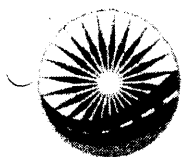
To  
All concerned Officials.....Encl: Training Schedule.

**Copy to:**

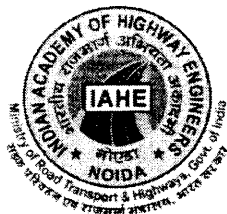
1. The Chief Engineer, PWD (NH).
2. The Additional Chief Engineer, P&D Unit, PWD (R&B)
3. The Superintending Engineer, NH Circle/ P&D Unit, PWD (R&B)/ 3rd Circle, PWD (R&B)/4th Circle, PWD (R&B).
4. The Executive Engineer, Bishramganj Division/ Amarpur Division/ NH Division, Baikhora.
5. The Assistant Engineer, Bishramganj Sub-Division/ Amarpur Sub-Division No.-II, PWD (R&B).
6. ITCC, Netaji Chowmuhani.

**Copy also to:**

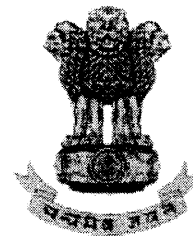
1. The Director General, IAHE, Ministry of Road Transport Highways.A-5, Institutional Area, Sector 62, Noida-201301. E-mail:trng.iahe-morth@nic.in, [director.iahe@gmail.com](mailto:director.iahe@gmail.com).
2. Shri Dinesh Kumar Sharma, Joint Director, IAHE, Ministry of Road Transport Highways.A-5, Institutional Area, Sector 62, Noida-201301. Mobile No.9711939881.



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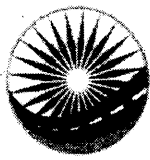


**Online Training Programme on  
Design, Construction and Maintenance of Flexible Pavement  
31<sup>st</sup> Aug to 11<sup>th</sup> Sept, 2020 on Cisco WebEx Meeting**

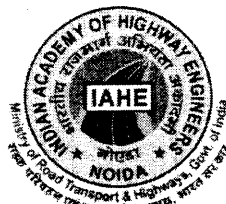
Time Period	Description of Topic	Faculty
<b>Day-1: 31 Aug, 2020 (Monday)</b>		
09:30-10:00	<b>Introduction and Opening</b> <b>Shri D. Sarangi, Director, IAHE and Shri Dinesh Sharma, Joint Director, IAHE</b>	
10:00-11:30 and 15:00-16:30	<b>Design of Flexible Pavement (Part-1)</b> <ul style="list-style-type: none"> <li>➤ Types of pavement</li> <li>➤ Load Distribution in a Flexible Pavement</li> <li>➤ Types of Flexible Pavement (Conventional Flexible Pavement, Pavement with Stabilized Base, Full Depth Asphalt Pavement)</li> <li>➤ Pavement Design Approaches (Empirical Approach, Mechanistic Approach, Mechanistic-Empirical Approach)</li> <li>➤ Principles of Flexible Pavement Design &amp; approach of IRC :37</li> <li>➤ Performance Criteria such as sub-grade Rutting criteria</li> <li>➤ Fatigue cracking criteria</li> <li>➤ Fatigue performance models for cement treated base</li> <li>➤ Reliability Factors</li> </ul>	
<b>Day-2: 1<sup>st</sup> Sept, 2020 (Tuesday)</b>		
10:00-11:30 and 15:00-16:30	<b>Design of Flexible Pavement (Part-2)</b> <ul style="list-style-type: none"> <li>➤ Analysis of flexible pavements <ul style="list-style-type: none"> <li>• Design period</li> <li>• Estimation of design traffic</li> <li>• Determination of vehicle damage factor</li> <li>• Resilient modulus of sub-grade, sub base, granular base, cement treated sub base, unbound base, cementations base, crack relief layers, foam and emulsion treated base, bituminous layers</li> <li>• Perpetual/long life pavements</li> <li>• Pavement design procedures, design catalogues</li> </ul> </li> <li>➤ <b>Sample Case Study followed by Demonstration on Design of Flexible Pavement with IIT Pave Design Software for different Pavement Compositions</b></li> </ul>	
<b>Day-2: 2<sup>nd</sup> Sept, 2020 (Wednesday)</b>		
10:00-11:30 and 15:00-16:30	<b>Design of Flexible Pavement (Part-3)</b> <ul style="list-style-type: none"> <li>➤ Analysis of flexible pavements</li> <li>➤ <b>Sample Case Study followed by Demonstration on Design of Flexible Pavement with IIT Pave Design Software for different Pavement Compositions</b></li> </ul>	
<b>Day-3: 3<sup>rd</sup> Sept, 2020 (Thursday)</b>		
10:00-11:30 and 15:00-16:30	<b>Machinery and Equipment for Flexible Pavement Construction</b> <ul style="list-style-type: none"> <li>➤ Machinery for Earthwork &amp; GSB such as Excavator, Dozer, Grader, Water Sprinkler etc.</li> <li>➤ Machinery for WMM such as WMM Plant with all accessories, Paver Finisher etc.</li> <li>➤ Equipment for tack coat and prime coat (Bitumen Pressure Distributor)</li> </ul>	

Please note: All correspondence should be addressed to the Director by designation only

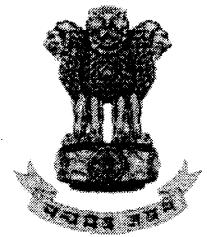
A-5, Institutional Area, Sector-62, Noida (UP) – 201 301 (India)  
Tel 0120-2405005-9, Fax 2400087 Email: [trng.iahe-morth@nic.in](mailto:trng.iahe-morth@nic.in), [director.iahe@gmail.com](mailto:director.iahe@gmail.com) Website: [iahe.org.in](http://iahe.org.in)



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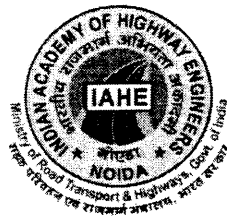
	<ul style="list-style-type: none"> <li>➤ Hot Mix Plant (Drum mix plants and batch type mixing plants)</li> <li>➤ Calibration of mixing plants</li> <li>➤ Machinery for transportation of Soil, GSB, WMM and Hot Mix</li> <li>➤ Paver Finisher for laying of Hot Mix</li> <li>➤ Equipment for compaction such as three wheel static rollers, vibratory rollers pneumatic rollers</li> <li>➤ Sequencing of rollers in compaction of flexible pavements layers</li> </ul>	
<b>Day-4: 4<sup>th</sup> Sept, 2020 (Friday)</b>		
	<b>Construction of Earthwork &amp; Granular Courses</b>	
10:00-11:30 and 15:00-16:30	<ul style="list-style-type: none"> <li>➤ Material Characteristics for Earthwork including Sub-Grade</li> <li>➤ Borrow Area Identification</li> <li>➤ Fixing Reference Pillars</li> <li>➤ Clearing &amp; Grubbing</li> <li>➤ Laying &amp; Compaction of Earthwork including Sub-Grade</li> <li>➤ Quality Control &amp; Acceptance of Earthwork including Sub-Grade</li> <li>➤ Material Characteristics for GSB, Stabilized Layers, WBM, WMM, Crusher Run Macadam</li> <li>➤ Construction of GSB, Stabilized layers, WBM, WMM, Crusher Run Macadam including control of alignment, levels and surface regularity of different layers, rectification of surface irregularity, compaction standards etc.</li> <li>➤ Quality Control &amp; Acceptance of GSB, Stabilized layers, WBM, WMM, Crusher Run Macadam</li> </ul>	
<b>Day-5: 7<sup>th</sup> Sept, 2020 (Monday)</b>		
	<b>Binders for Bituminous Construction</b>	
10:00-11:30	<ul style="list-style-type: none"> <li>➤ Viscosity grade Bitumen and its Specification and properties</li> <li>➤ Significance of bitumen properties in construction and performance</li> <li>➤ Selection Criteria for bituminous binders</li> <li>➤ Bitumen Emulsions and their Specifications</li> <li>➤ Merits of bitumen Emulsions</li> <li>➤ Cutback Bitumen and their specifications for road works</li> <li>➤ Modified Bitumen, their specifications and selection criteria</li> <li>➤ Additives such as warm mix additives, Anti-stripping agents, rejuvenating agents</li> <li>➤ Quality control tests and acceptance criteria of binders</li> <li>➤ Sampling of binders</li> </ul>	
15:00-16:30	<b>Bituminous Mix Design</b>	
	<ul style="list-style-type: none"> <li>➤ Need of mix design and Principles of bituminous mix design</li> <li>➤ Marshall method of mix design and Design Criteria</li> <li>➤ Aggregate properties</li> <li>➤ Design Procedure for Design of DBM, BC and SMA</li> <li>➤ Proportioning of Materials</li> <li>➤ Density and Voids analysis</li> <li>➤ Significance of various mix properties</li> <li>➤ Significance of Filler- bitumen Ratio</li> <li>➤ Overview of SUPERPAVE mix design procedure</li> <li>➤ Marshall Apparatus</li> <li>➤ Preparation of Marshall Specimen: Proportioning of aggregates, Mixing, Preparation of specimens for different binder content</li> <li>➤ Determination of Stability, Flow, Density, Voids etc.</li> <li>➤ Determination of Optimum Binder Content and finalization of Job Mix Formula</li> </ul>	

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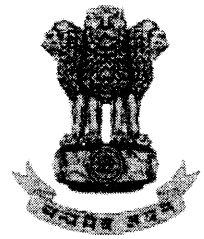
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Tel 0120-2405006-9, Fax 2400087 Email: [trng.iahe-morth@nic.in](mailto:trng.iahe-morth@nic.in), [director.iahe@gmail.com](mailto:director.iahe@gmail.com) Website: [iahe.org.in](http://iahe.org.in)



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<b>Day-6: 8<sup>th</sup> Sept, 2020 (Tuesday)</b>	
10:00-11:30 and 15:00-16:30	<p><b>Construction of Bituminous Courses</b></p> <ul style="list-style-type: none"> <li>➤ Construction of different types of bituminous layers such as BM, DBM, BC, SMA and Mastic Asphalt</li> <li>➤ Production and Transportation of Mix</li> <li>➤ Test Strip for Construction</li> <li>➤ Paving of Mix</li> <li>➤ Compaction of bituminous surface</li> <li>➤ Control of segregation</li> <li>➤ Longitudinal joints and transverse joints</li> <li>➤ Control of surface regularity</li> </ul>
<b>Day-6: 9<sup>th</sup> Sept, 2020 (Wednesday)</b>	
10:00-11:30 and 15:00-16:30	<p>Quality Control &amp; Acceptance of bituminous layers such as BM, DBM, BC, SMA and Mastic Asphalt</p>
<b>Day-7: 10<sup>th</sup> Sept, 2020 (Wednesday)</b>	
10:00-11:30 and 15:00-16:30	<p><b>Evaluation of Flexible Pavement</b></p> <ul style="list-style-type: none"> <li>➤ Functional Evaluation of Flexible Pavement</li> <li>➤ Structural Evaluation of Flexible Pavement by Benkelman Beam and Falling Weight Reflectometer</li> <li>➤ Pavement Condition Rating</li> <li>➤ Homogeneous Sections</li> <li>➤ Overlay Design, Strengthening and Rehabilitation of Flexible Pavement</li> </ul>
<b>Day-8: 11<sup>th</sup> Sept, 2020 (Friday)</b>	
10:00-11:30 and 15:00-16:30	<p><b>Maintenance &amp; Repair of Flexible Pavement</b></p> <ul style="list-style-type: none"> <li>➤ Types of distress in Flexible Pavement such as bleeding, smooth surface, streaking, hungry surface, cracking, rutting, corrugation, shoving, slippage depressions, settlements, upheavals, stripping, raveling, potholes and edge breaking</li> <li>➤ Causes of different types of pavement distress, identification methods and Repair treatment thereof</li> <li>➤ Preventive maintenance, need and types</li> <li>➤ Recycling of Pavement</li> <li>➤ Micro-surfacing</li> <li>➤ Stress absorbing membrane and stress absorbing membrane interlayer for crack sealing and prevention of reflection cracking</li> </ul>
6:30-16:45	<p><b>Feedback and concluding the programme</b> <b>Shri D. Sarangi, Director, IAHE and Shri Dinesh Sharma, Joint Director, IAHE</b></p>

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