**DRAFT**

**Resolution**

**The Second International Central Asian Road Conference (CARC 2023)**

**Uzbekistan, Tashkent**

**Tashkent September 28, 2023**

Participants of the Second International Central Asian Road Conference emphasized that the development of a network of high-quality and safe roads is a priority on an international scale.

The Central Asia sees road improvement and development programs on the background of new the technologies implementation. These projects were provided with extensive human, financial, and material resources. In the short and long run, the key focus for transport ministry offices is to ensure optimal implementation by innovative technologies and efficient road construction materials, machinery, mechanisms, equipment, and laboratories.

According to the both domestic and global experience, one of the ways to improve the quality of the road network and safety is the extensive use of high-performance technologies, bitumen modifiers, various types of asphalt concrete, primarily polymer crushed stone-mastic asphalt concrete, polymer-bitumen binders matching the climatic conditions of Uzbekistan, the use of emulsion technologies, including thin layers of wear from cast emulsion-mineral mixtures (Micro Surfacing), two-layer surface treatment, recycling existing coatings using bitumen emulsions combined with cement, soil stabilization using proven stabilizers, etc. Implementation of the Superpave system will facilitate production of binders and asphalt concrete mixtures matching the climatic conditions of the region and traffic properties. It is advisable to ensure the usage for the repair and maintenance of advanced and durable technologies and materials suitable for the actual climatic conditions of the Republic, including mastics and sealants for crack and joint repair, regular treatment of coatings with hydrophobic and rejuvenating compounds, pilot pit repair using pneumatic spraying, and initiate the production of cold packaged asphalt concrete for pit repair in collaboration with Crafco. There is need for assistance in providing the testing laboratories with the state-of-the-art quality control instruments and equipment, including Superpaves and road marking quality control devices, meeting the global standards. It is advisable to carry out the training sessions and educational courses both domestic (in Uzbekistan) and abroad (leading research institutions and organizations) for the national road sector professionals. There is a need to review the existing national regulatory documents, harmonize them, and align them with the global standards with consideration to the Uzbekistan's conditions.

The participants of the international conference CARC 2023 in Tashkent comprised administrators, experts, professionals, and technology providers from nearly 30 countries, including those from the CIS, Europe, North and South America, China, the Middle East, and Africa.

This international conference featured approximately 36 scientific presentations by specialists across four special sessions addressing the current challenges of the road industry in Central Asia. As part of the conference there was an exhibition showcasing road construction materials, equipment, and technologies.

At the opening session the representatives and leaders from the government, Ministry of Transport, Uzbekistan's road administration, the CIS Executive Committee, the Intergovernmental Council of Road Workers, and representatives of transport ministries from Central Asian countries addressed the participants with greetings on the meaning and timeliness of the international conference and exhibition. In the course of the conference, the key topics of discussion comprised the challenges of reforms and financing of Uzbekistan's road sector, and the prospects of developing and constructing toll roads under Public-Private Partnerships (PPP).

The speakers emphasized specifics of the implementation of the FIDIC system, its role in the engineering industry, experience of application thereof in Central Asia, and the necessity for an integrated road management system.

The second session was dedicated to the quality of asphalt concrete coverings, and saw in-depth and extensive discussions on enhancing the quality of asphalt concrete mixtures through various means and methods. The methods of preventing rut formation by utilizing high-modulus asphalt concretes and various polymers were considered.

Additionally, representatives from various countries spoke on the durability of asphalt-concrete roads, crushed stone-mastic asphalt-concrete mixtures, modification of asphalt-concrete mixtures, and the latest technologies, equipment, and materials for road construction.

The third session addressed the enhancement of bitumen binders, polymer-bitumen binders, and the adoption of the Superpave methodology. Besides, suggestions on the Superpave methodology improvement were put forward on the back of experiences in the Republic of Kazakhstan, the Russian Federation, the United States, Canada, the Middle East, Europe, and other countries. This session also included presentations on new modifier technologies, proposed solutions for colored asphalt concrete mixtures, issues related to improving road quality and longevity, among other challenges. Additionally, there was a showcase of state-of-the-art equipment for the production, storage, and transportation of polymer-bitumen binders and bitumen emulsions.

The fourth section was dedicated to the upkeep and repair of roads. The focus of discussion comprised the efficiency of recycling technology with bitumen emulsion and other emulsion-based technologies for creating protective layers (Micro-surfacing, SPO (anti-skid surfacing), PO (surfacing)) and rejuvenating the top layers of road surfaces. Additionally, there was a display of innovative equipment for producing advanced bitumen emulsions and implementing various bitumen emulsion-based technologies.

Particular emphasis was placed on the use of high-quality mastics and sealants (specifically by Crafco), matching the climatic conditions of the Republic of Uzbekistan, as well as advanced equipment for repairing cracks and potholes, including joint fillers and pneumatic spray repair equipment. Methods to extend the lifespan of road surfaces through the use of rejuvenating and hydrophobic impregnations and compounds were also outlined, with special focus on the collaborative production of cold packaged asphalt concrete in Uzbekistan using Crafco technology.

The session also covered the construction and repair of expansion bridge joints using high-tech materials by Crafco, and the performance of modern laboratory equipment and devices for quality control of both road construction materials and road markings.

The speakers highlighted the significance of adopting a road asset management system (RAS), modeled after those in developed European countries, and the introduction of modern systems for weight and dimension data measurement and control.

Having reviewed and discussed the reports, the participants of the international scientific-practical conference put forth the following recommendations:

1. To suggest to the transport ministries and road administrations of Central Asia to implement in their respective organizations the new technologies, materials, and equipment presented at the conference. These innovations can improve the quality of road construction, and reduce maintenance and repair costs for both new and existing roads.
2. To combine the efforts of government representatives, business entities, and scientific and design organizations in public-private partnerships (PPP) to develop a network of new roads in the Central Asian region.
3. To perform comprehensive review of the technical policy for the FIDIC methodology in Central Asia at transport construction sites, along with initiating training programs for specialists in this methodology.
4. To recommend to the road construction organizations in Central Asia to extensively use asphalt concrete with polymers during production, as well as polymer-bitumen binders and emulsion technologies for creating protective layers and surface treatments.
5. To encourage the road construction organizations in Central Asia to extensively adopt polymer crushed stone-mastic asphalt concrete.
6. To promote the broad application of Superpave volumetric design methods for creating high-quality binders and asphalt concrete mixtures for the construction, reconstruction, and repair of heavily trafficked road surfaces in the region.
7. To advise transport ministries and road administrations of the region to organize training programs to ensure in-depth understanding of new technologies and techniques for preparing modified bitumens, polymer-asphalt-concrete mixtures, crushed stone-mastic and polymer-crushed stone-mastic asphalt concretes, emulsion technologies, Superpave methodology, FIDIC rules, etc. These programs should be based at the Center for Advanced Studies and Research Laboratory of the Research and Educational Center InDorTech, in collaboration with regional Road Research Institutes (DorNII).
8. To instruct the conference organizer, and the Intergovernmental Council of Road Workers, to plan and ensure the organization of the upcoming international panel conference in Central Asia to continue discussions on existing challenges and develop practical suggestions for enhancing and expanding the regional road network.
9. To ask the transport ministries and road administrations of Central Asia for support and assistance in the organization of the annual Central Asian Road Conference (CARC), coordinated by the Intergovernmental Council of Road Workers and InDorTech LLP, and to engage specialists and professionals in their respective countries for the event. The decision has been made to host the third International Central Asian Road Conference (CARC 2023) in the Republic of Kyrgyzstan in September 2024.
10. Participants of the international conference are encouraged to actively engage in events organized by the Intergovernmental Council of Road Workers, comprising the regular meetings of the Council and the international panel conference and exhibition in Astana, Republic of Kazakhstan, scheduled for November 16-17, 2023.