UNIVERSITY OF MUMBAI

Press Note

Date- 23rd February, 2015

- **Rail Innovation and Technology Center will establish soon in University of Mumbai**
- **Indian Railway join hands with the University of Mumbai**
- **MU provides academic support to the Indian Railways**

Mumbai- University of Mumbai joins hands with the Indian Railway to enhance co-operation in Railways in the field of education and technology to set up 'Rail Innovation and Technology Centre' of MU in collaboration with the Indian Railways, University of Mumbai and Indian Railways signed MoU, accepted in today's Management Council. It has been agreed that MU will provide education, distribution of facilities for higher education, effective administration, and financial control and impart practical training to the candidates at the University's Ratnagiri Sub-Campus, Kalina and Kalyan.

As per the Vision 2020, railways would have developed cutting- edge indigenous technologies and turned a net exporter of technology' as the highly skilled professionals, specializing in this particular area will form the backbone to the realization of this vision so that, education and research activities focused especially on railways and its infrastructure will enable to develop the most cutting edge technology required to drive growth in this sector.

Specialized courses related to Rail road technology at the Post Graduate level and sustained research at higher level is the need of the hour, so the professional graduating from these will not only abreast with the latest technological development in this field, but will be highly skilled human intellectual capital and also provide value addition to technology through their research work.

- **The Following programmes are proposed:**

M. Tech / ME (RAILWAY MECHANICAL ENGINEERING)

This program deals with promoting research in Mechanical Engineering which is addressing needs of Indian Railways. Courses may include such as, Friction and Wear, Vibration and Noise, Modelling and Simulation Advanced FEA, Advanced stress analysis, Materials and processing, risk and safety, Aerodynamics etc.

M.Tech / ME (RAILWAY CIVIL ENGINEERING)

It deals with promoting research in Civil Engineering which is addressing needs of Indian Railways. Courses may include such as Structural Engineering, Earthquake Engineering, Advanced FEA, Soil and Geo Technology Engineering, Transport Engineering, Tunnels and Bridges, Risk and safety, Aerodynamics etc. Design of track formation.

M. Tech / ME (RAILWAY ELECTRICAL ENGINEERING)

It deals with promoting research in Electrical Engineering which is addressing needs of Indian Railway. Courses may include such as Power and traction system, Design of Overhead equipment, signaling and train controls, advanced traction systems, Systems Engineering, risk and Safety etc.

➢ Identified Areas For Innovation And Research:

Rail and Wheel Interactions:

Wheel- rail interface related issues for a wide range of operating conditions, including heavy haul, general freight, mass transit and high speed rail are important. Key areas of research will be, assessment of damage mechanisms in Wheel-rail contact, wheel-rail contact modeling. Wheel and rail material behavior, Lubrication and friction and vibration and Noise.

Dynamic modeling

Vehicle dynamics modeling provides efficient solutions to the railway industry in many areas such as wheel-rail interface related issues, rolling stock performance assessment including stability and ride quality, service life assessment and analysis, Derailment investigation, cause identification, and risk mitigation.

Noise and Vibration Control

The technology and materials used for rail noise and vibration control, particularly for the control of ground-borne vibration from rail systems, has been evolving. Therefore, the focus has to be on continuing development of the technology with ever-improving success and performance. The research areas will be materials for reduction of noise and vibration, dynamic analysis of rail systems, suspension of rail coaches.

Tunnel and Bridges

Robust design and construction of railway bridges and tunnel is another thrust arra to cater to the need of reaching the modern trains to different terrain. Advances in material technology have presented various aspects for improvement in design and construction of these structures. Apart from durability of structure to suite the terrain, the reliability to ensure safety during a strong earthquake is the requirements of the railway bridges. The beam- column joint with reduction in

transverse reinforcement is key to providing the solutions for these needs the research areas will be materials for bridges and tunnels, construction technology for tunnels.

High Speed Rail

The introduction of high-speed systems in the railway network across the world has brought new problems to railway geo-technics.This is mainly because of the significant amplification of train track vibrations at high speed becomes important aspects before laying other design aspects of the railway infrastructure. The research areas will be wave propagation in the track, assessment of the critical speed of track-embankment-ground systems, rail stability at high speeds.

Signal and system

Communication systems are an integral and important aspect of railway for safety of passengers and freight. Modernization of signaling systems is very essential. The research work within signaling and train control includes both condition monitoring of signaling assets and the application of advanced algorithms for train movement control. This includes automatic route setting and dynamic rescheduling following disturbance.

Considerable benefits can be gained through appropriate innovation and research in the area of wheel-rail interface management, including reduced defect rates, improved safety, extended wheel and rail life, improved vehicle-track interaction, reduced wheel-rail noise and development of suitable standards and maintenance procedures.

Diploma Courses

The people who are recruited in group ‘C’ Services (Field Supervisors) spend most of their career in lower management and form the backbone of railway working. Their hiring through the RRBs is on the basis of attributes such as General intelligence, logic, reasoning etc. without any system in place for testing specific aptitude for railway related working. Their entire training n Railway working commences after their appointment. There is no system to identify and train people exclusively for the Railway related jobs.

On the contrary, in china, there are specific institutes for imparting Railway related education and bulk of the recruitment in the Railways is form amongst the people who have undergone the education in these institutes. It is proposed to commence Diploma Courses in relevant areas to fill this gap.

Total Budget for Five Years: Rs.142.89 Crores

Proposed budget for the First year (2015-16)

However in first phase it is proposed to construct /renovate building /infrastructure, develop new laboratories with high end equipments / instruments and other expenses to be incurred are as under:

1) Building infrastructure 8.00 cr.
2) Laboratory with equipments 8.00 cr
3) Human Resource 3.50 cr
4) Contingency grant 0.25 cr
5) Travel expenses 0.25 cr
6) Funds for the projects 5.00 cr

Total 25.00 cr

(Quote- MoU between Indian Railway and University of Mumbai is going to be landmark decision in view of University is coming up with school of Engineering Science. This Engineering school will train the engineer dedicatedly for expertise in Railway Engineering - Dr. M. A Khan)

Leeladhar Bansod, Deputy Registrar, PR