SWAGAT
UNECE’s 67th Session of Working Party on Road Traffic Safety and ESCAP at IRTE, Faridabad, India 4th to 6th December 2013

Efforts of Indian Railway to Reduce Accidents at Road-Rail Interface

Alok Kumar, Director(Safety), Ministry of Railways, Government of India
Flow of Presentation

- Road Accidents at Road-Rail Interface.
- Safety Scenario of Level Crossings on Indian Network.
- Elimination of Unmanned Level Crossings
  - Performance in Past 5 Years // Roadmap ahead,
- Trend of Level Crossing Accidents & Causality
- Participation of IR in 2nd Global Road Safety Week of UNECE & ILCAD-2013 at Geneva in May 2013.
- Safety Campaigns on Level Crossing by IR.
- Conclusion
Conflict at Road-Rail Interface

Crossing of Road & Rail Traffic

Grade Separated Crossing
- Road Over Bridge
- Road Under Bridge

Level Crossing
- Unmanned Level Crossing
- Manned Level Crossing

TVU: Train Vehicle Unit (TVU) product of average number of Road Vehicle and Trains passing a crossing in 24 hours.
Indian Railway Network

- No. of Railway System: 16 Zonal Rly
- Staff directly Employed: 1.3 Million
- Route Kilometer: 64,600 KM
- Block Station: 7000 Nos
- Passenger Carried/Day: 23 Million
- Freight Carried/Year: 970 Million Ton
Number of Level Crossings on IR
(Manned & Unmanned : As on 1\textsuperscript{st} Apr’2013)

- **18672** Manned LC
- **12582** Unmanned LC

*Total Number of Level Crossings (Manned & Unmanned) are **31254 Nos.**
*There are no GUARDED-Unmanned Level Crossing on Indian Railway unlike European Countries. Cheap and robust solution are to be found for this.*
Scenario of Level Crossings on IR

- Indian Railway Network has 31,254 Level Crossings (as on 01.04.2013) out of which, 18,672 (60%) are Manned and balance 12,582 (40%) are unmanned.

- These Level Crossings contribute 40% of all Consequential Train Accidents and 66% Fatalities over Indian Railways.

- The onus for safe movement over unmanned level crossing lies with the road users (Section 131 of “Motor Vehicle Act” and Section 161 of “Indian Railway Act”) as per existing Law in India.

- From analysis it has emerged that manning of Unmanned Level Crossing is not an ideal solution. VISION 2020 of Ministry of Railways, Government of India envisages to eliminate all unmanned level crossing within a time frame of next five to seven years as an interim measure.

- To further enhance safety it has been decided to replace all Level Crossings by Grade Separators(Road Over Bridge/Road Under Bridge) gradually over a period of time.
### Number of Unmanned LCs Eliminated in last five years (2008-2013)

<table>
<thead>
<tr>
<th>Year</th>
<th>By Closure/Merger/Subway</th>
<th>By Manning</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>556</td>
<td>259</td>
<td>815</td>
</tr>
<tr>
<td>2009-10</td>
<td>553</td>
<td>377</td>
<td>930</td>
</tr>
<tr>
<td>2010-11</td>
<td>800</td>
<td>434</td>
<td>1234</td>
</tr>
<tr>
<td>2011-12</td>
<td>481</td>
<td>777</td>
<td>1258</td>
</tr>
<tr>
<td>2012-13</td>
<td>700</td>
<td>463</td>
<td>1163</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>3090</strong></td>
<td><strong>2310</strong></td>
<td>*<em>5400</em></td>
</tr>
</tbody>
</table>

*After elimination of above 5400 Level Crossings, there are still 12582 Nos (As on 01.04.2013) of Unmanned Level Crossings which poses threat of loss of human life.*
Continuous Elimination of UMLC by IR

2012 on Graph Means Financial Year 2012-2013 (1st April 2012 to 31st March 2013)
As on 01st April 2013, Manned LC are 18762 Nos, Unmanned LC are 12582 Nos, Total LC are 31254 Nos.
Number of UMLC planned for Elimination during the 12\textsuperscript{th} Five Year Plan (2012-2017) by IR.

<table>
<thead>
<tr>
<th>Items</th>
<th>2013-14</th>
<th>2014-15</th>
<th>2015-16</th>
<th>2016-17</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CLOSURE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Low TVU LC</td>
<td>173</td>
<td>309</td>
<td>218</td>
<td>207</td>
<td>907</td>
</tr>
<tr>
<td><strong>MERGER</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>to nearby LC/RUB/ROB</td>
<td>203</td>
<td>377</td>
<td>366</td>
<td>360</td>
<td>1306</td>
</tr>
<tr>
<td><strong>ROB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>by Road Under Bridge Construction</td>
<td>476</td>
<td>1286</td>
<td>1272</td>
<td>1390</td>
<td>4424</td>
</tr>
<tr>
<td><strong>RUB</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>by Road Over Bridge Construction</td>
<td>5</td>
<td>18</td>
<td>17</td>
<td>15</td>
<td>55</td>
</tr>
<tr>
<td><strong>MANNING</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>of Unmanned LC</td>
<td>495</td>
<td>936</td>
<td>814</td>
<td>871</td>
<td>3116</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>1352</td>
<td>2926</td>
<td>2687</td>
<td>2843</td>
<td>9808*</td>
</tr>
</tbody>
</table>

Total number of UMLC (as on 01.04.2013) is 12582 and out of this 9808 have been planned for elimination. Balance 2774 UMLC has not been planned, being on different Gauge (Meter Gauge/Narrow Gauge) and will be taken up during Gauge Conversion as per the Uni-gauge Policy of Ministry of Railway.
No. of Causalities (Killed/Injured) on Level Crossing on IR

Note: Year 2012 on Graph Means Financial Year 2012-2013 (1st April 2012 to 31st March 2013)
Working on Five Es: Engagement, Education, Engineering, Enforcement and Economics

- Indian Railways always pioneered in implementation of the Five Es (Engagement, Education, Engineering, Enforcement and Economics) through various means, brief of which is given below.

  1). Engagement: NGOs, R&D Organisations and Engineering College have been engaged to tackle the issue of LC Accidents.

  2). Education: Indian Railway launches regional and nationwide safety campaigns to improve awareness of road users time to time through distribution of Hand Bills, Sticking of Posters, sending SMS, delivering Safety messages at public events, in public places, shops, cinemas, advertisement on media like newspaper, Radio, Street Shows, Morning Walks, Cultural Programs etc. Apart from this the lessons on level crossing safety has been included in school syllabus and safety park has been established.
Working on Five Es: Engagement, Education, Engineering, Enforcement and Economics

3) Engineering: Engineering Technology is made use of to develop various safety systems on level crossings, like double lifting barrier, electrified boom, LED Signals etc. Cable Stayed Road Over Bridges are being provided at major busy railway yards. R&D is being promoted in collaboration with academic institutions and business houses.

4) Enforcement: Enforcement is ensured through consistent monitoring/implementation of legislation provided in law (Motor Vehicle Act/Indian Railway Act) related to use of level crossing. Crossing of tracks at unauthorised locations is made a punishable offence. Safety Checks are conducted with association Traffic Police(RTO), Railway Police(GRP & RPF), NGOs and penalty is imposed on defaulters.

5) Economics: Works of elimination of unmanned level crossings are funded by Prime Minister/Chief Minister/Member of Parliament Development Fund, Village Road Scheme and from Petrol/Diesel Cess.
(1) **Jurg SUTER**, Swiss Federal O/O Transport
(2) **Alok Kumar**, Director(Safety,) Ministry of Railways,
(3) **Martin Gallagher**, Network Rail Head of Level Crossings
(4) **Massimo Costa**, Italian Railway Investigation Body.

Below[LtoR] :
(1) **Dr. Eva MOLNAR**, Director, Transport Division, UNECE, Geneva
(2) **Vassiliki MYLONA**, Road Safety Institute, Greece.
(3) **Isabelle FONVERNE**, Projects Officer, UIC, Paris.
(4) **Tamo VAHEMETS**, CEO, Operation Lifesaver, Estonia.
(5) **Alok KUMAR**, Director(Safety,) Ministry of Railways, New Delhi
A Level Crossing Barrier in form of BOOM is provided to restrain the road users physically, which is operated by GATEMAN who remains vigilant, round the clock in three shift.
INNOVATIVE POSTERS AT LC – Deep Impact as Reported in Forbes Magazine, India

Publication of LC Safety Leaflets

SAFETY RULES
FOR MANNED
&
UNMANNED
RAILWAY CROSSINGS

UNMANNED
Remember, all vehicles are under statutory obligation to follow the rules under Section 131 of Motor Vehicles Act, 1988 and Section 161 of the Indian Railways Act, 1989 regarding negligently crossing unmanned level crossings. Violation shall be punishable with imprisonment, which may extend to 1 year.

MANNED
Violation of rules regarding opening/breaking of gates in case of manned level crossings, is a punishable offence under Section 160 of the Indian Railways Act, 1989, which prescribes imprisonment for a term extending to 3 to 5 years.

South Eastern Railway
Rail Safety is no accident
છંટનેશનલ લેવલ કોસિંગ અપેરનેસ એ ની ઉજવણી માટે હિલ્મ શો અને પુકકા નાટક યોજયા

બાસ્ટીમાં રહેલા દ્વારા છંટનેશનલ લેવલ કોસિંગ અપેરનેસ ઉમી કરવામાં આવી હતી. ઉજવણીના ભાગમાં હિલ્મ અને પુકકા નાટક યોજા હતું.

બદલા રીતે દ્વારા વિભાગમાં આવેલા ૧૯૩૬ કાર્ટક પેટી ભર્લે રીતે કાર્ટક હાઇટનમાં વિનામા છે. રીતે સાતપીઠ દ્વારા આ હાઇટનમાં વિનામા રીતે કાર્ટક પર્યાવરણીય નિમ્નલોકી કરવામાં આવે છે. ઉને રીતે રાજ્યની એક વિભાગમાં વચ્ચે માટે નોકરી મળી ગયી હતી. શક્ત તેમ ખેતરમાં હાઇટનમાં રીતે કાર્ટક પર અચૂક પ્રતિકર્ષણના આંદોલનના સહજ છે.

જયારે આ અંગી જનતા મટના ૨૦૦૪ ડિસેમ્બર ૩૩જ્ઞર વેભિયલ વેબસાઇટની આવશ્યકતા હતી. જયારે પાસેજેટપર તાલુકાના જભાગામ, કલ્પ અને સુસંપન્ન કલ્પ શો યોજાય હતો.
TRAs: Transport Research Arena
RCG: Research Coordination Group
CTG: Coordination Technical Group
IRRB: International Rail Research Board
WCRR: World Congress on Railway Research
ERRAC: European Rail Research Advisory Council
HORIZON-2020: The European Union Programme for Research and Innovation
UIC Innovation Awards

The UIC has launched the second edition of its Innovation Awards and the call for candidates is now open. Applications are welcomed from organisations undertaking innovation activities that further the field of research and have demonstrated practical value.

See the UIA Innovation Award website for further information
CONCLUSION

❖ Accidents at Road-Rail Interface (Level Crossing) is a global problem and each region is trying to tackle in their own way.

❖ Loss of Human Resource ...

❖ Understanding of the Problem!

❖ If IRTE plans a workshop in 2014 – ASEAN countries must participate...

❖ Exchange of Technology & Knowledge.....

  o ILCAD-2014, GLXS-2014
  o Group of Expert on Level Crossings
  o Branch of Operation Lifesaver in each region
  o Other such NGOs to be enlisted.
THANK YOU FOR PAYING ATTENTION