Expert Group Meeting on Asian Highway: Project funded by the Korea Expressway Corporation (KEC)

Bangkok, 3 and 4 October 2016

Development of Technical Standards on Road Infrastructure Safety Facilities and Model ITS Deployments for the Asian Highway Network

Transport Division, UNESCAP

United Nations
Economic and Social Commission for Asia and the Pacific
Background

A treaty that provides:

- a coordinated plan for the development of highway routes of international importance in the Asia Pacific region
- with a view towards promoting and developing international road transport

The AH was conceived back in 1950s and was developed through a project called the Asian Land Transport Infrastructure Development Project (ALTID)
Asian Highway (AH)

Basic information

- A network of 144,630 km of roads linking 32 countries
- 15,650 km of access controlled roads
- About 10,092 km of Below Class III roads
- AH Agreement came into force on 4 July 2005
- 29 member States are Parties to the Agreement

Annex II to the Intergovernmental Agreement on the Asian Highway Network provides Classification and Design Standards for the highways.
## Cross Sections

### Table 4. Asian Highway design standards

<table>
<thead>
<tr>
<th>Highway classification</th>
<th>Primary (4 or more lanes)</th>
<th>Class I (4 or more lanes)</th>
<th>Class II (2 lanes)</th>
<th>Class III (2 lanes)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>L</td>
<td>R</td>
<td>M</td>
<td>S</td>
</tr>
<tr>
<td>Terrain classification</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design speed (km/h)</td>
<td>120</td>
<td>100</td>
<td>80</td>
<td>60</td>
</tr>
<tr>
<td>Width (m)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right of way</td>
<td>(50)</td>
<td>(40)</td>
<td>(40)</td>
<td>(30)</td>
</tr>
<tr>
<td>Lane</td>
<td>3.50</td>
<td>3.50</td>
<td>3.50</td>
<td>3.00</td>
</tr>
<tr>
<td>Shoulder</td>
<td>3.00</td>
<td>2.50</td>
<td>3.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Median strip</td>
<td>4.00</td>
<td>3.00</td>
<td>3.00</td>
<td>2.50</td>
</tr>
<tr>
<td>Min. radii of horizontal curve (m)</td>
<td>520</td>
<td>350</td>
<td>210</td>
<td>115</td>
</tr>
<tr>
<td>Pavement slope (%)</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Type of pavement</td>
<td>Asphalt/cement concrete</td>
<td>Asphalt/cement concrete</td>
<td>Asphalt/cement concrete</td>
<td>Dbl. bituminous treatment</td>
</tr>
<tr>
<td>Max. superelevation (%)</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Max. vertical grade (%)</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Structure loading (minimum)</td>
<td>HS20-44</td>
<td>HS20-44</td>
<td>HS20-44</td>
<td>HS20-44</td>
</tr>
</tbody>
</table>

**Notes:**

- Figures in parentheses are desirable values.
- Minimum radii of horizontal curve should be determined in conjunction with superelevation.
- The recommended width of the median can be reduced with the proper type of guard fence.
- The Parties should apply their national standards when constructing structures such as bridges, culverts and tunnels along the Asian Highway.
The Ongoing Project Structure

- Development of Road Infrastructure Safety Facility Standards
- Development of Model ITS Deployments
- Development of strategies to promote implementation of the AH Design Standards

Sharing of Knowledge and Know-How with AH member States and other Stakeholders

Strengthened capacity of AH member countries to formulate, implement, monitor and strengthened policies to improve road safety and ITS applications
Participating Countries

- Russian Federation
- Turkey
- China
- Republic of Korea
- Bangladesh
- Thailand
- India
Development of Road Infrastructure Safety Facility Standards

Achievements

- Initial reports from the five participating countries (Policy and Planning issues)
- 36 Road Infrastructure Safety Facilities (RIFs) were initially identified
- A first questionnaire was circulated to all AH member countries (December 2015)
- Survey replies were received from 17 member countries and survey replies were analyzed
- Star Rating Scenario Testing for 36 RIFs (iRAP)
- A List of Short Listed 24 RIFs have been prepared
- Detailed design standards from 5 participating countries (partially) and international practices

Initial country reports on road infrastructure safety practices from five participating countries

Analysis report of survey replies

Star Rating Scenario Scores for 36 RIFs

Short List of 24 Road Infrastructure Facilities

Detailed Design Standards (partially done)
Development of Road Infrastructure Safety Facility Standards

Next Steps

The following activities are going on

- Collect design standards from the remaining countries
- Compare design standards collected from various sources
- Propose minimum design standards (minimum requirements) for the Asian Highway network (ongoing)
- Propose detailed design standards for the Asian Highway network (ongoing)

Design standards are being developed

KECRI is also working on the development of design standards

Consideration of diverse design standards including all the participating countries will be required
Development of Road Infrastructure Safety Facility Standards

The flow Chart

Next Steps

Conduct literature review and consider initial reports from the participating countries

Prepare initial list of Road Infrastructure Safety Facilities (RIFs)

Conduct Survey in all AH member countries on the selected RIFs

Conduct Star Rating Scenario Testing for the selected RIFs

Update List of RIFs for further consideration

Complete collection of design standards from the participating countries

Compare design standards and propose design standards for the AH network
Development of Model ITS Deployments

Achievements

The following activities are completed:

- Initial reports from the participating countries were received (December 2015, except the Russian Federation i.e. May 2016)
- 6 ITS services were identified as main focus
- A first questionnaire was circulated to all AH member countries (15 January 2016)
- First survey replies were received from 21 member countries and survey replies have been analyzed
- Detailed survey replies were received from 4 participating member countries and survey replies have been analyzed

Initial country reports on ITS deployments from four participating countries
Analysis report of survey replies on ITS deployments
Detailed survey responses from four participating countries
Development of Model ITS Deployments

Existing ITS Services

- APTS - Advanced Public Transportation Systems
- TIS - Traffic Information System, Traveler Information Service
- CVO - Commercial Vehicle Operations
- AVHS - Advanced Vehicle and Highway Systems
- UTIS - Urban Traffic Information Systems
- EFPS - Electronic Fare Payment Systems
- CV - Commercial Vehicles
- ATMS - Advanced Traffic Management Systems
- TSM - Transportation Systems Management
- BMS - Bridge Management System

Selected ITS Services

- ETCS (Electronic Toll Collection System)
- ATIS (Advanced Traveler Information System)
- EMS (Emergency Management System)
- TTMS (Tunnel Traffic Management System)
- BTMS (Bridge Traffic Management System)
- WIS (Weather Information System)
Development of Model ITS Deployments

Next Steps

The following activities are going on

- Consider critical issues in the ITS deployments in the participating countries

- Consider different socio-economic backgrounds of the AH member countries in developing the model ITS deployments

- Analyze and develop model ITS deployments for the AH network

Consideration of member countries with different socio-economic condition will be necessary.

Completion of the development of model ITS deployments which is an ongoing process
Development of Strategies to promote AH standards

Next Steps

The following activity of the project is remaining

- Develop strategies to promote and facilitate the implementation of the Asian Highway design standards as per Annex II to the Intergovernmental Agreement on the Asian Highway Network

UNESCAP will work on the development of the strategies in association with KECRI next year

KECRI will designate a researcher to focus on this component

Survey questionnaire will be prepared to gather information on the current status and challenges in the member countries
Events

- A first regional seminar was held in conjunction with the 25th World Road Congress, following the Sixth Meeting of the Working Group on the Asian Highway Network, on 5 November 2015 at COEX, Seoul

- An Expert Group Meeting is being held on 3 and 4 October 2016 at the UNCC, Bangkok

- A third regional event will be held following the Seventh Meeting of the Working Group on the Asian Highway Network in 2017

The development of modern and efficient road infrastructure is closely linked to the ability to understand, develop and maintain new systems and to operate these systems efficiently to meet economic and social objectives.
# Work plan of the ongoing project

<table>
<thead>
<tr>
<th>KEY ACTIVITIES</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quarter</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**Output:** Government officials have enhanced capacity to develop national strategies to address road safety, and to establish measureable national road safety goals, targets and indicators.

1. Inception meeting between ESCAP and KEC experts
2. Conduct surveys in the selected countries to gather information on practices and experiences in the road infrastructure safety facilities
3. Conduct a comparative review of the selected RIFs, based on the data collected in the previous step
4. Review experiences of selected countries in their implementation of Intelligent Transport Systems (ITS) technologies. To work towards the development of *Model ITS Deployments* for the region
5. Develop strategies to promote and facilitate the implementation of the Asian Highway design standards
6. ESCAP with the help of Korea Expressway Corporation (KEC) holds three workshops
7. Finalize and publish the Reports

*October 2016*
Expert Group Meeting on Asian Highway: Project funded by the Korea Expressway Corporation (KEC)

Thank you

http://www.unescap.org/our-work/transport