Series 1500 Update: Traffic Control and Communications

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Arup
Background

Phase 1:
• Updates to 1500 series documents
• New RCD details
• New TA 77
• New HD 20

Phase 2:
• Updates to 1500 series documents
• New RCD Details
• Updates to TA 77
• New TD 302
Phase 2

Focus of Phase 2 of the DMRB Update on:

- Weigh-in-Motion
- Poles for Lightweight Equipment
- Gantry Structures for ITS Equipment
- Electrical Power for ITS Equipment
- Traffic Control and Communications Systems Change Management
Weigh-in-Motion

- Included in ‘NRA TA 77 Traffic Control and Communications Infrastructure Design’
- Cost 323 European WIM Specification
- Criteria for Choice of Sites
Poles for Lightweight Equipment

- Updates to 1500 series
- Lightweight ITS equipment includes detection equipment, cameras, solar panels for ITS equipment and motorway entry signals.

<table>
<thead>
<tr>
<th><strong>Equipment Type</strong></th>
<th><strong>Design Criteria</strong></th>
<th><strong>Material Type</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Detection Equipment</strong></td>
<td><strong>Pole Height:</strong></td>
<td><strong>Steel#</strong></td>
</tr>
<tr>
<td>H: 6.1m</td>
<td>CHS 168X4</td>
<td>CHS 200X4</td>
</tr>
<tr>
<td>H1: 5.3m</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2: 0.8m</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pole Height:</strong></td>
<td>CHS 219X4.5</td>
<td>CHS 250X4</td>
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<tr>
<td>H: 8.0m</td>
<td></td>
<td></td>
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<tr>
<td>H1: 7.0m</td>
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<td></td>
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<tr>
<td>H2: 1.0m</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Motorway Sign</strong>*</th>
<th><strong>Sign face Area:</strong></th>
<th><strong>Material Type</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>A: 1.8 m²</td>
<td>2 CHS 114X4</td>
<td>2 CHS 165X3.3</td>
</tr>
<tr>
<td>Planting Depth:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2: 0.7m</td>
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<td></td>
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<tr>
<td>Sign face Area:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A: 2.7 m²</td>
<td>2 CHS 114X6</td>
<td>2 CHS 200X3.3</td>
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<tr>
<td>Planting Depth:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H2: 0.8m</td>
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<tr>
<td>Sign face Area</td>
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</tr>
<tr>
<td>A: 3.6 m²</td>
<td>2 CHS 140X5</td>
<td>2 CHS 226X4</td>
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<tr>
<td>Planting Depth:</td>
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<td></td>
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<tr>
<td>H2: 0.9m</td>
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</table>
Gantry Structures for ITS Equipment

Included in the 1800 series Updates
Gantry Structures for ITS Equipment
Electrical Power for ITS Equipment

Included in ‘NRA TA 77 Traffic Control and Communications Infrastructure Design’

Motorway Cables:

• Armoured Power Cable
• Armoured Copper Communications Cable
• Armoured Composite Optical Fibre/Copper Cable
• Armoured Cable Installation

Miscellaneous Equipment:

• Uninterruptible Power Supplies (UPS)
• Batteries associated with Motorway Communication Systems
• Renewable Power Supplies
Electrical Power for ITS Equipment

Power Supply Design

- Equipment Design Loads
- Operational and Design Requirements
- Safety Considerations

Table A - Nominal Electrical Load of Motorway Communications Equipment

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Power (W)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable Message Sign - Small</td>
<td>2,000</td>
</tr>
<tr>
<td>Variable Message Sign - Large</td>
<td>5,000</td>
</tr>
<tr>
<td>Roadside Equipment Cabinet</td>
<td>2,000</td>
</tr>
<tr>
<td>Full Portal Gantry</td>
<td>10,000</td>
</tr>
<tr>
<td>Entry Signals (per site)</td>
<td>4,000</td>
</tr>
</tbody>
</table>
Electrical Power for ITS Equipment

- Updates to 1500 Series
- Updated RCD Drawings
TD 302: Traffic Control and Communications Systems Change Management

Purpose:

- This is a new document that provides an overview of the Change Management process for technology change process. It outlines the activities involved in scheme delivery and the life-cycle from concept design up to the stage where it is handed over into operation and maintenance.
- To provide the key stakeholders with information to help develop the Project Execution Plan for their particular scheme. It identifies the typical activities involved in commissioning and their sequence, identifies typical roles, responsibilities, deliverables and possible areas of risk.
- Ensuring the timely and accurate capture and passage of information throughout the lifecycle.
TD 302: Traffic Control and Communications Systems Change Management

Application to Scheme Categories:

- Roadside hardware changes,
- In-station system changes, including software updates
- Data fault correction e.g. discrepancies observed by operators,
- NRA procedural changes,
- Operator procedural changes,
- MSP procedural changes

Scheme Stages

- Stage 1: Design
- Stage 2: Pre-Works Activities
- Stage 3: Works
- Stage 4: Commissioning/Integration
- Stage 5: Handover/Service Entry Point
TD 302: Traffic Control and Communications Systems Change Management
TD 302: Traffic Control and Communications Systems Change Management

Approach

• Defining the elements of work and activities
• The sequence of work in which activities must be addressed.
• Defining the deliverables (Products) that must be in place before the next stage of the process is commenced.
• Defining the parties and stakeholders involved within each stage of the process.
• Defining roles and responsibilities.
TD 302: Traffic Control and Communications Systems Change Management

Outputs

- Project Execution Plan
- Communications Plan
- Risk Register
- Document Register
- Programme and Commissioning Plan
- FAT and SAT Results
- As-built documents