MORD Specifications for Rural Roads

by
D. P. GUPTA
Former DGRD & Additional Secretary
Ministry of Road Transport & Highways
Government of India

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Specifications

- This is an important part of bidding document
- Adherence to it is legally binding on the Contractor
- Road Agency “Engineer” has obligation to ensure that Contractor complies with the requirements laid down in the specifications.
Specifications

- Applicable for rural roads (not just PMGSY)
- Some differences with MORTH specifications (only some – not many)
- Requirements specified
  - Materials quality (acceptance standards)
  - Workmanship quality (acceptance standards)
  - Construction operations
  - Methodology of construction (appropriate equipment)
  - Sequencing of operations
• Monitoring of quality
  - Tests and their norms
  - Frequency of tests
  - Criteria for acceptance (include level of tolerance)

• Inspection by supervising staff and officers
  - Degree of intensiveness
  - Timeliness and Regularity

• Inspection by contractor’s personnel
  - Intensive
  - Regular
• Scope of work
• Methodology for measurement
• Coverage of pay item i.e. unit rate
• What is incidental to work
Social and environmental safeguards

- Integral to specifications
- Environment protection measures
- Environment management plans
Companions

- Quality Assurance Handbook
- Standard Data Book
- There are other companions also.
  Several IRC codes, NRRDA publications, State PWD / SRRDA’s own documents and government circulars
### TABLE 301.1: MINIMUM DENSITY REQUIREMENT FOR SUITABILITY OF EMBANKMENTS/SUB-GRADE MATERIALS


<table>
<thead>
<tr>
<th>Type of work</th>
<th>Max. Laboratory dry unit weight</th>
</tr>
</thead>
</table>
| (a) Embankment not subject to flooding- Height upto 3m - height more than 3 m | IS: 2720, Part 7  
Not less than 14.4 kN/m³  
Not less than 15.2 kN/m³ |
| (b) Embankment subject to flooding | Not less than 15.2 kN/m³ |

Factor 1 gm/cc = 9.81 kN/m³
<table>
<thead>
<tr>
<th>Description</th>
<th>Plain and Rolling Terrains</th>
<th>Hilly Terrain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edges of Carriageway</td>
<td>(±) 20 mm</td>
<td>(±) 30 mm</td>
</tr>
<tr>
<td>Edges of roadway and lower layers of pavement</td>
<td>(±) 30 mm</td>
<td>(±) 50 mm</td>
</tr>
</tbody>
</table>
### TABLE 301.3: COMPACTION REQUIREMENT FOR EMBANKMENTS/SUB-GRADE/EXPANSIVE CLAYS (P. 26 QA I)

<table>
<thead>
<tr>
<th>Type of Work</th>
<th>Relative Compaction as percentage of maximum laboratory dry density</th>
</tr>
</thead>
<tbody>
<tr>
<td>Embankment</td>
<td>Not less than 97 percent of Standard Proctor density as per IS:2720 (Part 7)</td>
</tr>
<tr>
<td>Sub-grade (Top 300 mm of embankment and shoulders)</td>
<td>Not less than 100 percent of Standard Proctor Density as per IS:2720 (Part 7)</td>
</tr>
<tr>
<td>Expansive Clays</td>
<td></td>
</tr>
<tr>
<td>I) Sub-grade and 500 mm portion just below the sub-grade</td>
<td>Not allowed</td>
</tr>
<tr>
<td>II) Remaining portion of Embankment</td>
<td>Not less than 90 percent of Standard Proctor Density as per IS:2720 (Part 7)</td>
</tr>
</tbody>
</table>
### Table 301.4: Quality Control Tests and Their Frequency for Borrow Material, Earthwork for Embankment and for Sub Grade (P. 26 QA I)

<table>
<thead>
<tr>
<th>Type of Test</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A. Earthwork for Embankment</strong></td>
<td></td>
</tr>
<tr>
<td>1. Soil Classification as per IS:1948</td>
<td></td>
</tr>
<tr>
<td>I. Sieve analysis (Wet Sieve Analysis except for cohesionless soils)</td>
<td>One Test from each source for one km or part thereof.</td>
</tr>
<tr>
<td>II. LL, PL and PI</td>
<td></td>
</tr>
<tr>
<td>2. Standard Proctor Compaction Test (IS:2720 Part 7). Test results to</td>
<td>-do-</td>
</tr>
<tr>
<td>ascertain Dry Density-Moisture Content Relationship.</td>
<td></td>
</tr>
<tr>
<td>3. Free Swell Index Test (IS:2720 Part 40) (where required)</td>
<td>-do-</td>
</tr>
<tr>
<td>4. Deleterious Content (where required)</td>
<td>-do-</td>
</tr>
<tr>
<td>I. Organic matter content by loss-on Ignition method or as per IS 2720</td>
<td></td>
</tr>
<tr>
<td>Part 22</td>
<td></td>
</tr>
<tr>
<td>II. Total soluble sulphate content (IS 2720 Part 27) where suspected on</td>
<td></td>
</tr>
<tr>
<td>past experience. This can be easily confirmed by a quick test using</td>
<td></td>
</tr>
<tr>
<td>barium chloride.</td>
<td></td>
</tr>
</tbody>
</table>
Special Focus Needed

- Material at source, at site
- Compaction
- Drainage
- Zero Tolerance outside Tolerance limits
- Make your road section a model for your state
- Guide contractor in his attaining quality
- Enhance construction industry practices
- Contractor is a partner in progress

(what do you do if resource costs become volatile)
Submission to All

- Do spend time to read and reread every clause
- Try to understand more why a clause says what it says.
- Current document under update / revision
- Feedback of difficulties faced during execution
- Problems of interpretation arising
- The ‘Engineer’ and the ‘Contractor’ has no escape from understanding and complying with the specifications.
Thank you for your resolve to undertake a detailed reading and understanding the MORD Specifications

dpgupta36@gmail.com