Rail Metro Traction Design Course

ADVANCE ELECTRICAL DESIGN & ENGINEERING INSTITUTE
(Registered under MSME & An ISO 9001:2008 CERTIFIED)

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Chapter-1: Power supply arrangements traction substation (TSS/PSS/RSS)

1. Type of Existing Substation
2. Spacing and location of traction substation
3. Energy consumption calculation
4. 25 kV Supply at Traction Substations (220kV/132kV/110KV/66V to 25 KV)
5. Selection and sizing of Traction switchgears
   A. Selection and sizing of DP isolator and SP isolator
   B. Selection of Busbar
   C. Selection and sizing of CT and PT
   D. Selection and sizing of LA
   E. Selection and sizing of Breaker
   F. Selection and sizing of Traction transformer
   G. Bus coupler interrupter
   H. Sizing calculation of control panel
   I. Sizing of earthing calculation/ earth mat design
   J. DSLP calculation
   K. Illumination design
   L. Control room design
   M. DC battery bank Sizing calculation
   N. Aux. load design
   O. Relay co-ordination for system protection
   P. Cable Sizing calculation

Chapter-2: Selection of traction overhead equipment (OHE)

1. Design criteria OHE sectors and selection of equipment
2. Feeding and Sectioning Arrangements
3. Overhead Electrification and Catenary Lines
   A. Sub sectioning & parallel substation (SSP)
   B. Sectioning and paralleling post (SP)
   C. Bridging interruptor
   D. Neutral section
   E. Protection of OHE equipment's
      a. Substation scheme Lighting Arrestor
      b. Auxiliary supply transformer design at post end
      c. Potential transformer design at each sub-sector
      d. Design and monitoring of interrupters
      e. Booster Transformer selection

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Chapter 3: Electro Magnetic Interference & Electro Magnetic Compatibility

1. Permissible limit of EMI and EMC
2. Permissible capacitively - coupled current
3. Coupling between circuits
4. Conductive coupling
5. Electrostatic induction

Chapter 4: Selection and sizing of signaling/monitoring equipment

1. Scheme of signalling
2. Selection of Remote Control Centre (RCC)
3. SCADA system
4. RTU selection
5. Communication Mode
6. Communication Facilities
7. Train Control/Section Control:
8. Dy. Control Telephone:
9. Stock Control Telephone
10. Traction Loco Control
11. Traction Power Control
12. Emergency Control Circuit
13. Hot Line Communication
14. Walkie Talkie sets

Chapter 5: Railway Clearance crossing regulation

1. Overhead crossing of power lines
2. Recommendation of underground line buried near railway track
3. Overhead transmission line clearance and ROW

Chapter 6: Costing and Bill of material (BOM) of Traction System

1. Costing and BOQ of Traction substation (TSS)
2. Costing and BOQ of OHE system
3. Costing of electrical equipment's

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