Post-Tensioned Concrete Slab Bridge

1.0 Bridge Description
   1.1 Superstructure Slab and Post-Tensioning
   1.2 Railings
   1.3 Substructure
   1.4 Bearings

2.0 Design Records
   2.1 Superstructure
   2.2 Substructures
   2.3 Design Records
   2.4 Post-Tensioning Shop Drawings

3.0 Construction Records
   3.1 Falsework Design Calculations
   3.2 As-Built Plans
   3.3 Material Records
      3.3.1 Concrete compressive strength
      3.3.2 Admixtures
      3.3.3 Post-Tensioning ducts
      3.3.4 Anchorage assemblies
      3.3.5 Post-Tensioning strands
      3.3.6 Grout
   3.4 Final Elevation survey
   3.5 Calculations
      3.5.1 Jacking Forces
      3.5.2 Elongation
      3.5.3 Anchorage Stresses
   3.6 Grouting Records
   3.7 Stressing Records
   3.8 Friction Test

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Figure 70-1A
3.9 Qualifications
    3.9.1 Qualification Requirements listed in Contract and Special Provision for Workers
    3.9.2 Qualifications of Workers performing the Post-Tensioning and Grouting
    3.9.3 Qualifications of Inspectors overseeing the Post-Tensioning and Grouting

4.0 Types and Causes of Distress
    4.1 General
    4.2 Cracking and Spalling in Concrete
    4.3 Corrosion of Reinforcing and Post-Tensioning Steel
    4.4 Relaxation of Post-Tensioning Steel
    4.5 Post-Tensioning wire breaks
    4.6 Creep and Shrinkage
    4.7 Voids in Concrete
    4.8 Improperly grouted tendons
    4.9 Anchorage and Coupler Stresses

5.0 Inspection Requirements and Procedures
    5.0.1 Inspection Plan of Action
    5.0.2 NDT / Testing Plan of Action
        5.0.2.1 What to Test
        5.0.2.2 Where to Test
        5.0.2.3 How to Access Areas to Test
        5.0.2.4 How to Re-cover Areas Tested
    5.1 Qualifications of Inspectors and NDT Technicians
    5.2 Equipment
        5.2.1 Access Equipment
        5.2.2 Inspection Equipment
        5.2.3 Safety Equipment
        5.2.4 Traffic Control and Miscellaneous Equipment
    5.3 NBIS Condition Survey
    5.4 Elevation Survey
    5.5 NDT / Testing
        5.5.1 Stresses in Strands
        5.5.2 Corrosion Activity
            5.5.2.1 Visual Rust Evaluation
            5.5.2.2 Corrosion Rate

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Figure 70-1A contd.
5.5.2.3 Corrosion Potential
5.5.2.4 pH of Grout
  5.5.2.4.1 At Duct Interface
  5.5.2.4.2 At Wire Surface
5.5.2.5 Moisture Content of Grout
5.5.2.6 Chloride Content of Grout
5.5.2.7 Petrographic Examination

5.6 Inspection Checklist
5.7 Schedule
  5.7.1 Regular Inspections
  5.7.2 In-Depth Inspections
  5.7.3 Elevation Surveys
  5.7.4 NDT / Testing

6.0 Bridge Load Capacity Ratings
  6.1 Initial Load Rating from Design
    6.1.1 Inventory and Operating Ratings
      6.1.1.1 H-20 Truck
      6.1.1.2 HS-20 Truck
      6.1.1.3 HL-93 Truck
      6.1.1.4 INDOT Group of Permitted Vehicles
  6.2 Load Rating based on As-Built Conditions
  6.3 Guidelines on when to Re-Load Rate

7.0 Drawings of Details for use during Inspections
  [Drawings should show all noted defects as of the date when the bridge was opened to traffic.]

8.0 Maintenance Requirements and Procedures
  8.1 Maintenance Plan of Action
  8.2 What to Maintain
  8.3 How to Maintain
  8.4 When to Maintain
  8.5 Maintenance Log

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Figure 70-1A contd.