

SECTION 18340

ELECTRIC SWITCH LOCK LAYOUTS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Section includes requirements for Electric Switch Lock layouts.

1.02 GENERAL

- A. Refer to Division 19, Trackwork, for track construction requirements.

1.03 REFERENCE STANDARDS

- A. American Railway Engineering and Maintenance of Way Association (AREMA):
 - 1. Communications and Signals Manual of Recommended Practices (C&S Manual).

1.04 SUBMITTALS

- A. Submit installation drawings showing the tie straps and the mounting details of the switch circuit controller, including the connections to the track switch points.
- B. Submit copies of all field-test reports.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Prior to installation, coat all parts of the Electric Switch Lock layout that are not painted or made of non-corroding material with an approved grease to prevent corrosion. Suitably plug or cap unused threaded outlets.
- B. During storage, lubricate and maintain Electric Switch Lock and switch circuit controller layouts on a regular time program until installation. The Engineer shall have the right to monitor the Contractor's compliance with this maintenance required from time to time.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Furnish new Low Style Electric Lock Operating Mechanisms and layouts, such as G & B Specialties Model 854 or Alstom Model 10A.
- B. Furnish new High Style Electric Lock Operating Mechanisms and layouts, such as Alstom Model 9B or United Switch and Signal (now Ansaldo) US&S Model SL6A.
- C. Rods and Hardware. Each Low Style Electric Switch Lock shall securely lock the switch hand throw lever in the normal position only. Provide a single color LED with

the assembly to indicate switch lock release. Each High Style Electric Lock shall have a separate lock rod attached to the vertical front rod.

- D. Junction Boxes. Each Electric Switch Lock layout shall be installed with an individual pedestal mounted junction box. These junction boxes shall be as specified in Section 18360, Signal Systems Miscellaneous Products.
- E. Electrical Fittings. All conduit, connectors, and electrical fittings, as required, for each electrical lock layout.
- F. Switch Circuit Controller and Rod. Switch circuit controller layouts shall be installed as specified in Section 18330, Switch Circuit Controller.
- G. Stranded wire: Furnish insulated No. 10 AWG stranded wire between the pedestal-mounted junction box and the switch circuit controller. Insulated wire shall be in accordance with Section 18370, Signal Wire and Cable.

2.02 SECURITY

- A. Provisions shall be made for the use of standard padlocks:
 - 1. A switch padlock to restrict entry into the operating handle location of the Electric Switch Lock.
 - 2. Signal padlocks to restrict entry into the Electric Switch Lock operating mechanism, the circuit controller, and the junction box.
- B. Padlocks will be Owner-furnished.

2.03 SOURCE QUALITY CONTROL

- A. Perform Contractor's acceptance test of each Electric Switch Lock layout prior to transporting the Electric Switch Lock layout.

PART 3 - EXECUTION

3.01 GENERAL

- A. The circuits for Electric Switch Lock layouts shall be as shown on the Contract Drawings.
- B. Mount and adjust the complete switch circuit controller layout as specified herein and as indicated on the Contract Drawings.

3.02 INSTALLATION

- A. Install two 16-foot long timber ties or concrete ties for mounting the Electric Switch Lock where Alstom Model 9B or US&S Style SL-6A Electric Locks are used and controller by the Contractor, as shown on the Contract Drawings.
- B. Mount Electric Switch Lock and controller on new and existing timber or concrete ties in conformance to Caltrain Design Standards.

- C. Dap and drill timber ties to meet the requirements of these Specifications. Limit of cutting or dapping shall not exceed 2 inches.
- D. Secure the Electric Switch Lock and switch circuit controller to the switch ties, by 3/4 inch by 10 1/2 inch bolts.
- E. Remove any ballast necessary for the installation of each Electric Switch Lock layout and replace and tamp the ballast after the installation has been completed. Spread excess ballast evenly between ties in the vicinity of the switch and lock movement layout.
- F. Make a preliminary adjustment of the Electric Switch Lock and switch circuit controller layout at the time of installation and a final adjustment when placing it in service, which shall result in the adjusting nuts being centered on the threads plus or minus 30 percent of the thread length. Make final adjustment at the time of the functional test. Make final adjustments in conformance with the requirements of AREMA C&S Manual, Parts 12.5.5 and 2.4.1.
- G. Underground cable terminating in the Electric Switch Lock and switch circuit controller junction boxes shall be dressed and potheaded as specified in Section 18370, Signal Wire and Cable. Fan the individual conductors in a neat workmanlike manner, properly tagged and terminated. Wiring between switch junction box and Electric Switch Lock and switch circuit controller shall be No. 10 AWG insulated stranded flex wire. These wires shall also be tagged and terminated. Install the wires between the Electric Switch Lock and switch circuit controller junction box and the Electric Switch Lock and switch circuit controller mechanisms in an approved flexible conduit with a minimum length of 10 inches and a maximum length of 21 inches. Fasten this flexible conduit to the switch junction box and switch mechanism with appropriate connectors.
- H. After installation, properly lubricate and maintain Electric Switch Lock and switch circuit controller layouts on a regular timed program until accepted by the Engineer.
- I. Exercise care and ensure that the Electric Switch Lock and switch circuit controllers, including switch tie plates, are thoroughly lubricated at all lubricating points, that all machined surfaces susceptible to rusting, both external and internal, are thoroughly coated with grease, as acceptable to the Engineer, and that threaded portions of switch rods and nuts are similarly coated and protected.
- J. Lubricate the switch tie plates with graphite lubricant, as acceptable to the Engineer. Thoroughly steam clean the plates to remove all oil or grease prior to application of the graphite. Periodically renew the protective coating until such time as the Owner assumes responsibility for maintenance of the equipment.
- K. Connect electric switch lock rod and switch circuit controller rods to the normally closed switch point.

3.03 SECURITY

- A. Install Owner-furnished padlocks.

3.04 TOUCH-UP

- A. Touch-up finish of all equipment described in this Section in accordance with the AREMA C&S Manual, Part 1.5.10. Touch-up shall match factory finish.

3.05 FIELD QUALITY CONTROL

- A. Inspect each Electric Switch Lock after it has been installed and correct any deficiencies noted. Conduct this inspection in conformance with the requirements of the Contractor's Installation Inspection Procedure as accepted by the Engineer.
- B. Conduct the final operational tests of switch circuit controllers as described in 18600, Signal System Testing.

END OF SECTION