

- 1 **(I)** Give cabinet foundation a broom finish.
- 2 **(J)** Seal space between cabinet base and foundation with permanent, flexible, waterproof  
3 sealing material.
- 4 If using a preformed cabinet pad, follow applicable procedures in Subarticles 1750-3(A)  
5 through 1750-3(J).

6 **1750-4 MEASUREMENT AND PAYMENT**

7 *Signal Cabinet Foundation* will be measured and paid as the actual number furnished,  
8 installed and accepted.

9 Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Signal Cabinet Foundation	Each

10

**SECTION 1751**

11

**CONTROLLERS WITH CABINETS**

12 **1751-1 DESCRIPTION**

13 Furnish and install controllers with cabinets and all necessary hardware. Furnish all pole or  
14 foundation mounting hardware, detector sensor cards, external electrical service disconnects,  
15 one Corbin Number 2 cabinet key, one police panel key, conflict monitors or malfunction  
16 management units, surge protection, grounding systems, AC/DC isolator cards and all  
17 necessary hardware.

18 **1751-2 MATERIAL**

19 Furnish material, equipment and hardware under this section that is pre-approved on the  
20 ITS and Signals QPL.

21 **1751-3 CONSTRUCTION METHODS**

22 **(A) General**

23 Remove existing controllers and cabinets where required. Remove maintenance diary  
24 from cabinet and place in new cabinet or deliver to the Engineer. Take existing  
25 equipment out of service only at the time directed.

26 Locate new cabinets so as not to obstruct sight distance of vehicles turning on red.

27 Install controllers, cabinets, detector sensor units and hardware that provide required  
28 phasing, color sequence, flash sequence, interconnection, railroad clearance and  
29 preemption and emergency vehicle clearance and preemption.

30 Stencil signal inventory number on cabinet side facing roadway. Use 3" black characters.

31 Provide external electrical service disconnect at all new and existing cabinet locations  
32 unless otherwise specified.

33 Do not program controller for late night flashing operation at railroad preemption  
34 installations. For all other installations, do not program controller for late night flashing  
35 operation unless otherwise directed. Ensure all signal heads for same approach flash  
36 concurrently during flashing operation.

37 Provide serial number and cabinet model number for each new controller and controller  
38 cabinet installed.

39 Install pole mounted cabinets so height to cabinet middle is 4 ft.

40 Activate controllers with proposed phasing and timing.

**Section 1752**

1 **(B) System Interconnection**

2 When interconnection of signals is required (via fiber optics, twisted pair, ethernet,  
3 wireless, etc.), install communications interface equipment and hardware for signals.  
4 Demonstrate proper operation of interconnection using manual commands and  
5 upload/download capability to each local controller from the respective master controller  
6 after interconnection is complete.

7 Program telemetry command sequences and enable devices necessary for testing of  
8 communication between local controllers and field master controllers and between field  
9 master controllers and Department-furnished central computer.

10 **(C) Workshop**

11 Provide enclosed workshop to set up and test new controllers and cabinets before  
12 installation. Locate workshop within Division responsible for project administration.  
13 Ensure workshop provides protection from weather and sufficient space to house 2 test  
14 observers, all necessary test equipment and material, controllers and cabinets.

15 Configure and test each controller and cabinet to match the proposed signal design.  
16 Ensure all equipment furnished and installed or modified by the Contractor at each  
17 location operates in full compliance with the plans and project special provisions. Test  
18 each controller and cabinet for proper color sequence, flashing operation, phase timings,  
19 preemption, coordination and conflict monitor programming or malfunction management  
20 unit programming. Ensure that simultaneous conflicting phase outputs will cause the  
21 cabinet to revert to flashing operation. For intersections with any type of preemption,  
22 submit a completed Preemption Test Procedure Checklist. The checklist is located on the  
23 Department's website.

24 Test the cabinet and controller for eight hours minimum. Following this test and before  
25 installation, the Engineer will inspect the equipment in operation. The Engineer may  
26 require other tests to ensure proper operation. These tests shall be at no additional cost to  
27 the Department.

28 **1751-4 MEASUREMENT AND PAYMENT**

29 *Controllers with Cabinet* (\_\_\_\_) will be measured and paid as the actual number of each type  
30 of controllers with cabinets furnished, installed and accepted.

31 *Detector Card* (\_\_\_\_) will be measured and paid as the actual number furnished, installed and  
32 accepted.

33 No measurement will be made of conflict monitors, malfunction management units, external  
34 electrical service disconnect, grounding systems, modems, meter bases and workshop as these  
35 will be incidental to furnishing and installing controllers with cabinets.

36 Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Controllers with Cabinet (____)	Each
Detector Card (____)	Each

37 **SECTION 1752**  
38 **MODIFY CABINET FOUNDATIONS**

39 **1752-1 DESCRIPTION**

40 Where approved by the Engineer, install conduit entrances into existing foundations in  
41 accordance with the plans and specifications. Modify existing foundations in accordance with  
42 the plans and specifications.