



## WSDOT Test Method T 421

### ***Test Method for NEMA Type Traffic Controller Cabinet, 300 Series (170/2070 Type) Traffic Controller Cabinet, and Advanced Transportation Controller (ATC) Cabinet Inspection***

#### 1. Scope

The purpose of this test method is to document the inspection of Traffic Controller Cabinets to ensure compliance with *Standard Specifications* and Contract Documents.

#### 2. Reference Documents

- WSDOT *Standard Specifications* 9-29.13
- Caltrans Transportation Electrical Equipment Specifications
- FHWA-IP-78-16, Type 170 Signal Controller System Hardware Specification
- NEMA Standards Publication TS-1, Traffic Control Systems
- NEMA Standards Publication TS-2, Traffic Controller Assemblies with NTCIP Requirements
- AASHTO/ITE/NEMA Publication ATC 5301, Advanced Transportation Controller (ATC) Cabinet Standard

#### 3. Safety

There is no PPE required for this test method. All items are visual inspection only, with no power source applied to the Unit Under Test (UUT).

#### 4. Apparatus

An Electro-Static Discharge (ESD) Wrist Strap with cord and alligator clip shall be worn when handling Circuit Card Assemblies (CCA's) to prevent ESD damage. The Wrist Strap shall be connected via the cord and alligator clip to chassis in order to maintain the card handler at the same electrical potential as chassis ground.

#### 5. Procedure

##### 5.1 Incoming Inspection

When the Traffic Controller Cabinet arrives for testing, the contractor representative (typically the contractor's vendor) should have an appointment scheduled. Within seven (7) calendar days of arrival, the contractor representative shall assemble and demonstrate the Traffic Controller Cabinet. If assembly is not completed within these seven (7) calendar days, disposition of the Traffic Controller Cabinet is at the discretion of the Electrical Materials Laboratory personnel. Inspect the Traffic Controller Cabinet for any damage during shipping. Note any deficiencies.

## 5.2 Notify Project Office

Notify the project office and the contractor of the receipt of the Traffic Controller Cabinet. Note all Points-of-Contact who shall be copied on all communications and test results for this project.

## 5.3 Assess Traffic Controller Cabinet Compliance

The contractor representative shall provide all work necessary to assemble the Traffic Controller Cabinet at the State Materials Laboratory. The Traffic Controller Cabinet shall be inspected to ensure that it is in compliance with *Standard Specifications* and Contract Documents. Ensure that all of the required equipment is installed per these *Standard Specifications* and Contract Documents. In the event of a conflict, Contract Documents take precedence over the *Standard Specifications*. The results of successful completion of this test method shall be acceptance for further testing.

At a minimum, the following items shall be inspected against the Contract Documents and *Standard Specifications*:

1. Mylar Prints (cabinet drawings) – verify the minimum quantity per the Contract Documents are supplied by the vendor and that they match the Contract Documents
2. Labeling – verify that all labels match the cabinet drawings
3. Air Filter – verify the correct size, type, and quantity are installed
4. Wiring Laced and Clamped – verify all wiring is secured
5. Field Wire Terminal Blocks – verify correct type is installed
6. Police Keys – verify the correct quantity is supplied, if specified
7. Door Keys – verify the correct quantity is supplied, if specified
8. Door Locks – verify the correct type is installed as specified
9. Police Panel Switches – verify presence as specified
10. Circuit Breakers – verify minimum quantity and rating are installed as specified
11. Transient Suppressor – verify presence and if specified, correct type
12. Modem(s) – verify presence and type, if specified
13. Cabinet Finish – verify correct type, if specified
14. RFI Suppressor – verify presence and if specified, correct type
15. Door Light Switch(es) – verify correct quantity as specified
16. Pedestrian Switches – verify presence and if specified, quantity
17. Cabinet Lights – verify correct quantity and orientation as specified
18. 120 V<sub>ac</sub> Outlet – verify presence as specified
19. Ground Fault Circuit Interruptor – verify presence as specified
20. Equipment Clearance – verify as specified
21. Load Switches – verify quantity and type as specified
22. Intersection Display Panel – verify presence if specified, and match against intersection drawing

23. Cabinet Ground Bus Bar – verify presence as specified
24. Isolated 120 V<sub>ac</sub> bus bar (neutral) – verify presence as specified
25. Phase Selector(s) – verify quantity and type as specified
26. Flash Transfer Relay(s) – verify quantity and type as specified
27. Supplemental Resistor Load – verify presence if specified
28. Two Position Door Stop – verify presence as specified
29. Emergency Indicator Lights – verify presence if specified
30. Railroad Pre-Emption – verify presence if specified
31. Cabinet Construction – verify type if specified
32. Detector Panel – verify presence if specified
33. Detector Panel Shorting Plug (NEMA only) – verify presence if specified
34. Plastic Document Envelope – verify presence if specified
35. External Logic package (NEMA only) – verify presence and type, if specified
36. Absence of Red Assembly (170 and 2070 only) – verify presence of jumper plug area on output file
37. PROM Module (170 only) – verify PROM module is present, if controller is 170 Type
38. Dallas Chips (170 only) – verify Dallas chips, if specified and controller is 170 Type
39. AC Isolator – verify correct quantity and type, if specified
40. DC Isolator – verify correct quantity and type, if specified
41. Aux File (170 and 2070 only) – verify presence and that it is correctly populated per drawing, if specified
42. Manuals and Cut-Sheets – verify the minimum quantity is supplied for each component, if specified in the Contract Documents
43. DB9 Socket and C20 Plug (170 only) – verify presence if specified
44. C2 Plug and Cable (170 only) – verify presence if specified
45. Document Drawer – verify presence as specified
46. Controller – verify quantity and type as specified
47. CMU Door Interlock Switch (170 and 2070 only) – verify presence, if specified
48. Stop Time Switch – verify presence and quantity, if specified
49. Conflict Monitor – verify presence and type as specified
50. Inside Auto/Flash Switch – verify presence, if specified
51. Loop Amplifiers – verify quantity and type, if specified

**6. Report**

Record any deficiency that does not meet the above minimum requirements. Inspection tests shall be recorded in MATS as “As Received” if sufficient, and “As Shipped” if deficient but corrected. Inspection tests that do not apply shall have neither option checked. The overall test result shall be recorded as a “Pass” or “Fail” for test T421 in MATS.

## Performance Exam Checklist

### Method T 421 Checklist

**Test Method for NEMA Type Traffic Controller Cabinet, 300 Series (170/2070 Type) Traffic Controller Cabinet, and Advanced Transportation Controller (ATC) Cabinet Inspection**

Participant Name: \_\_\_\_\_ Exam Date: \_\_\_\_\_

Record the symbols "P" for passing or "F" for failing on each step of the checklist.

Procedure Element	Trial 1	Trial 2
1. Cabinet inspected for damage during shipping.	_____	_____
2. Project Office and Contractor notified of receipt.	_____	_____
3. Traffic Controller Cabinet assessed for compliance.	_____	_____
4. Report.	_____	_____

Comments: First Attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_ Second Attempt: Pass \_\_\_\_\_ Fail \_\_\_\_\_

Examiner Signature: \_\_\_\_\_ WAQTC #: \_\_\_\_\_

