



Canadian Standards Association
Mississauga, Ontario
To the Part I Committee

Subject No. 3192 Chair: M.D. Gardener/S. Douglas Date: March 10, 2005

Title: Installation of Cable Trays, Rules 12-2200(5) and (8)

Submitted by: Garry Bickerstaff of Elspect Electrical Ltd., 2923-5th Ave NE, Calgary, Alberta, T2A 6T8, Tel: (403) 250-3338, Fax: (403) 291-4543 on August 16, 2004.

Proposal: Amend Rule 12-2200 as follows:

1. Amend 12-2200(5) as follows:
(5) Cable trays shall be adequately supported by non-combustible supports in such a manner as to prevent supports from aligning with tray joints and no more than one tray joint between support joints.
2. Add a new Subrule (8) to Rule 12-2200 as follows:
(8) In locations subject to extreme temperature changes, provision shall be made for expansion and contraction in long runs of cable tray in the form of expansion joints.

Reasons for Request: The amendment to Subrule (5) is to re-enforce the Appendix B note recommending that the “ideal support point for cable be at the one-quarter span point.” Too often, installers place the support directly beneath a cable tray joint causing sagging and potential failure of the tray.

The addition of a Subrule (8) is to be consistent with similar installations involving long lengths outdoors.

Supporting Information:

See CE Code, Part I - Rule 12-1012
 - Rule 12-1118
 - Rule 12-1214

Chair’s Comments:

To assist in your deliberations, I have sent this proposal to a cable tray manufacture for comment. Following is a copy of the reply;

My opinion regarding positioning of splice plates is as follows;

-The worst location for a splice plate is directly over the support point.

- The best location for a splice plate is at 25% of span between supports.
- Placing a splice plate at mid point is not desirable and (worst spot between spans) and if this is done, a derating factor could be applied which would derate the load bearing capability of the tray to compensate for the poor positioning of the splice.
- Keep in mind that there are types of trays (mid-span splice style) with special splice plates designed so that the original load bearing capability of the tray is conserved even if it is located mid-way between supports (the splice plate is usually longer, heavier and often incorporates a reinforcing plate below the bottom flange of the siderail).

Subcommittee Deliberations: Nine members replied, five agreed and four disagreed. Following are the comments received;

1) This is a reversal of our stated direction. We have been deleting prescriptive requirements in the CEC that are covered by Part II standards, and manufacturer's instructions. We had Table 42 which gave us the load/support span and it was deleted since it was an impediment to certain designs. We are now re-introducing design restrictions into the CEC. I would only support this if the Part II standard could not address the issue.

2) I disagree with both proposed amendments. First, the issue with the number and location of supports is a certification issue and is dependant on the load class of the cable tray. Following is from C22.2 No. 126: Cable Trays:

5.2

The manufacturer shall provide, in readily available catalogue form, or, with each shipment of cable tray, a set of installation instructions, which shall include the following:

- (a) a table or chart clearly indicating the maximum allowable simple beam loading in kilograms per linear metre and the maximum recommended distance in metres between supports for each loading;
- (b) details on recommended support spacings and locations;

Second, this issue with expansion and contraction should only be a concern with nonmetallic cable trays. I would support this amendment if the term "nonmetallic" was inserted in front of "cable tray" in the proposed new Subrule 8.

3) I totally support this proposal and, as I can see, the manufacturer's comments do the same. These proposed changes re-enforce the appendix B note to this Rule.

4) I disagree for somewhat the same reasons as Dunc.

As I see it, there are 2 components to this proposal:

The first is supporting where there is no extreme temperature difference. NEC 392.6 states that trays shall be supported in accordance with installation instructions. A tray manufacturer's spec. indicated splice plate construction shall be such that a splice can be located anywhere within the support span.

Secondly, when there is extreme temperature differences, we should identify the requirement for expansion joints, but leave the installation of the supports as per manufacturer's instructions.

So we don't get into design issues, and based on the above I am proposing the following:

2200(5) Leave as is in current code.

2200(8) In locations subject to extreme temperature changes, provision shall be made for expansion and contraction in long runs of cable tray, in the form of expansion joints.

5) I am not sure of the correct meaning of the submission and in light of the mfg's comments, it is correct re the location of the support. Should the verbiage be support points rather than 'joints'??
I have no problem with (8)

If the tray is approved for the purpose then there is nothing wrong with the support aligning with the joint.

Secondly the word 'joint' should be 'point'.
See my revised text

1. Suggest revise as follows:

(5) Unless approved for the purpose cable trays shall be adequately supported by non-combustible supports in such a manner as to prevent supports from aligning with tray joints and no more than one tray joint between support [points].

6) I agree with Gary to a point but agree with the Chairman completely. We have to be careful that we are not getting into the engineering aspect.

Chair's comment:

I have reviewed this subject and comments received with the submitter and he agrees with the following proposal.

Round Two Proposal: Amend Rule 12-2200 as follows:

Amend 12-2200(5) as follows:

(5) Cable trays shall be adequately supported by non-combustible supports located as specified by the manufacturer.

Add a new Subrule (8) to Rule 12-2200 as follows:

(8) In locations subject to extreme temperature changes, provision shall be made for expansion and contraction in long runs of non-metallic cable tray in the form of expansion joints.

Add a new (e) to the Appendix B note for Rule 12-2200 as follows:

(e) Cable tray supports should be installed in such a manner as to prevent supports from aligning with tray joints.

Round Two Subcommittee Deliberations: Eight members replied, seven agreed and one disagreed. Following are the comments received;

1) I can accept this proposal, as it is not design restrictive.

2) I disagree with adding "non-metallic" in 12-2200(8). Part of the submitter's supporting information included a reference to Rule 12-1012 which deals with expansion joints in rigid metal conduit. Extreme temperature changes have an effect on all trays, so why restrict only to non-metallic?

3) I agree with the second Round. - but I have some concerns:

The NEC 2005 in Article 392.6(C) states "Cable Trays Shall be supported at intervals in accordance with installation instructions", which is similar to a Rule in the CEC and I liked

keeping it that way. This allows for the non-prescriptive approach some members are supporting. However, not all people read installation instructions or are even aware of them. The CEC is a more a consistent (and available) standard for electricians and engineers alike.

Second concern is with the use of ambiguous terms like “Extreme temperature Changes” or “Long Runs”. I don’t like it in 12-1012 either. As a future item I may suggest we are more specific as written in 12-1118 (45mm expansion/contraction) based on Appendix B calculation method.

Chair’s comment:

The word “non-metallic” was removed as a result on the one disagreement sent in.

Subcommittee Recommendation: Amend Rule 12-2200 as follows:

Amend 12-2200(5) as follows:

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Add a new Subrule (8) to Rule 12-2200 as follows:

(8) In locations subject to extreme temperature changes, provision shall be made for expansion and contraction in long runs of cable tray in the form of expansion joints.

Add a new (e) to the Appendix B note for Rule 12-2200 as follows:

(e) Cable tray supports should be installed in such a manner as to prevent supports from aligning with tray joints.