



Canadian Standards Association
Etobicoke, Ontario
To the Part I Committee

Subject No. 3057

Chair: S.J. Coles

Date: January 22, 2004

Title: Overcurrent Protection of Panelboards, Rule 14-606

Submitted by: A.Z. Tsisserev of The City of Vancouver, British Columbia on March 16, 2002

Proposal: Amend Rule 14-606 to read:

14-606 “Except for panelboards where more than 90%.....” with the rest of this Rule unchanged.

Reasons for Request: Sometime in 2000, to be precise - at our 105th meeting of the Part I Committee we adopted Subject 2774. This Subject dealt with perceived inconsistency between the relaxation allowed by Rule 14-100 for overcurrent protection of smaller conductors and a requirement of Rule 14-606 to provide overcurrent for panelboards.

The fact is that there is no conflict between those rules. (This is my view). Rule 14-100 allows omission of overcurrent for smaller conductors only (not for specific electrical equipment) under a variety of very specific conditions.

Rule 14-606 mandates overcurrent protection for a panelboard regardless whether conductors supplying this panelboard are provided with the overcurrent or not. Although the Section 14 Subcommittee was assigned to deal with the wording of Rule 14-100, the S/C recommendation has brought a change to Rule 14-606, which is presently shown in the 19th edition of the Code.

As the result of this Code change we might now encounter the situation when, for example a No. 3 AWG conductor tapped from 1600 A splitter and supplying a 100 A panelboard may be essentially allowed to be connected to this panelboard without an overcurrent protective device (to the load center) as the No. 3 AWG would be deemed in compliance with Rule 14-100(b).

The problem with this scenario is that if a relaxation for a protection of a 3 m long No. 3 AWG conductor pulled in the metal conduit between the 1600 A splitter and the panelboard does not represent tangible electrical and fire safety hazard (in case of a short circuit - 1600 A breaker protecting this main 1600 A splitter would trip, and it is highly unlikely that the overload might occur in this 3 m piece of conductor), however absence of the overcurrent protection for the panelboard might create all sorts of dangerous conditions related not only to the fault but to a simple overload.

The wording in the 18th edition of the Code was required the installer to use a combination panelboard with a 100 A overcurrent. However, under the present wording such a panelboard would be unprotected. I think that this rule created a considerable detriment to the electrical and fire safety and as such it should be reverted to the wording of the 18th edition of the Code.

I'm sure that we'll have to amend this Rule in BC accordingly when the 19th edition is adopted for use.

Chair's Comments: This proposal is a reversal of the amendment made to this Rule under Subject 2774, which was accepted by Part I letter ballot in June of 2000.

Since the publication of the 19th Edition of the Canadian Electrical Code, Part I, I have received several telephone calls stating that the actual wording of Rule 14-606 is not what was intended. Ark Tsisserev has documented the details of what he thinks is the problem and the solution in this current Subject 3057.

Reviewing the Subcommittee deliberations of the previous Subject 2774, I found some new information. Ark feels that there is NO CONFLICT between Rules 14-100 and 14-606, as was previously claimed by the submitter of Subject 2774.

Ark feels that British Columbia will have to amend Rule 14-606, before the adoption of the 19th edition of the CEC. Other regulators may wish to consider this approach in their own jurisdictions.

Subcommittee Deliberation: Eight members replied and all were in agreement with the proposal and without comment. There were no negatives.

Subcommittee Recommendation: That the proposal be accepted.

Chair's comments (Second Round):

Subject 3057 was a reversal of Subject 2774 so as to return Rule 14-606 to the way it was prior to Subject 2774. This however, did not satisfy Part 1 members as is evident in the Minutes of the Part 1 Meeting held in June 2003 (see below)

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(03-06-18)

It was explained that this is the reverse of the previous change, which attempted to solve some confusion between the two Rules. However, even now people still interpret the two Rules differently. Rule 14-100 indicates under what conditions the overcurrent protection can be omitted whereas 14-606 requires overcurrent protection on panelboards. It should not be exempted by 14-100.

There was some discussion as to why panelboards were being selected as opposed to other equipment that could be allowed by 14-100. It was suggested that the possibility of a screwdriver being used inside a panelboard was greater than inside a splitter.

Another suggestion was that the two Rules should in fact be linked. It was noted that branch circuit breakers have to be rated but what about the bus bars inside the panelboards. Another thought was that 14-100 was intended for equipment such as switchboards in order to allow the relaxation for conductors provided they are terminated in overcurrent protection.

Action by S.J.Coles It was agreed to return it to the Sub-committee for further consideration.

I have had consultation with Bob Nelson of CSA, and we have tried to resolve the confusion (apparent conflict between 14-100 and 14-606) in the following way.

Modified Proposal

1. Change Main title of Rule 14-100 to read “Overcurrent Protection of Conductors.”
2. Add: Appendix B Note (14-100) to read:

This Rule only applies to conductors interconnecting electrical equipment. It does not apply to overcurrent protection of electrical equipment as required by other Rules of the Code.
3. Rule 14-606 to be amended to read as it was in the 18th edition of the CEC which reads “14-606 (1) Except where more than 90%.....same as existing 19th CEC.”

Reason

It appears the confusion is based upon the unclear title of Rule 14-100. It could be interpreted to mean equipment even though the sub-rules all refer to conductors interconnecting electrical equipment. In the case of a panelboard (Rule 14-606) an overcurrent device is always required because most panelboards can have a total ampere sum of branch circuits which exceeds the rating of the panelboard mains. This is an entirely different situation than the interconnecting conductors covered in 14-100.

Subcommittee Deliberations: Second Round Ballot Results as follows

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| a) Agree with Chair's modified proposal | 8 |
| b) Agree with Chair's modified proposal with comments | 1 |
| c) Disagree for reasons stated | 0 |

Subcommittee member's comment:-

Originally Rule 14-606 was to allow the installations of panelboards without protection under certain conditions (do you want to start the motors of protect the panelboard) which created problems for the inspection field as many installations are made without the type of loads on the panel being known. The addition of "except for" for created even more problems for the code enforcement bodies.

Chair's response. This is not the main issue of the proposal. If this is a problem, then a new subject should be opened.

Subcommittee Recommendation: Accept the subject as proposed on the second ballot.