



Canadian Standards Association
Mississauga, Ontario
To the Part I Committee

Subject No. 3031

Chair: M.D. Gardener

Date: April 1, 2003

Title: Deletion of Rule 12-516(2)(c)

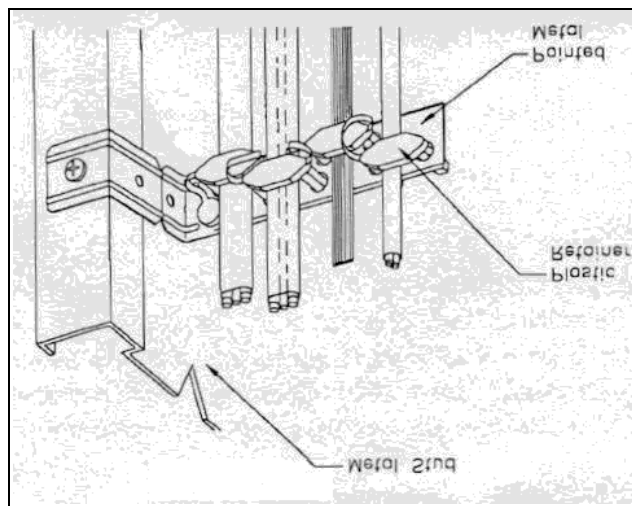
Submitted by: R. Leduc of Alberta Municipal Affairs **AND** Kevin King of Cooper B-Line Inc., 509 West Monroe Street, Highland, Illinois, 62249, Tel: (618) 654-2184, Fax: (618) 654-3361 on May 31, 2001.

Proposal: Delete Paragraph 12-516(2)(c)

Reason for Request: The CE Code Handbook states that the intent of Rule 12-516(2) is to “limit the possibility of a damaged cable energizing the steel studs”. Paragraph (a) should be adequate in limiting cables from being damaged thus not requiring the redundant requirement of having additional “insulating material” between the cable and the metal stud.

Supporting Information: The NEC, like the CEC, has requirements for protecting the cable from mechanical injury, but no additional requirement for requiring insulating material between the cable and a metal stud [see NEC Article 300-4(b)].

There are products currently available that provide for means of securing cables to metal studs while preventing damage to cables during and after construction.



COOPER B-line
Model BRC4

Chair's Comments: I agree with the proposal

Subcommittee Deliberations: The results of the 1st go-around are 9 members in agreement with the proposal and 6 members not in agreement.

At this point, there is no consensus for the proposal.

After discussing the results with the submitter, he offered to provide comments on the negative replies to help resolve some of the Subcommittee members concerns. Therefore, I've decided to go for a 2nd round to see if the concerns of the negative replies have been adequately dealt with and if we can achieve consensus on this proposal.

When Subcommittee members are reviewing this subject, please keep in mind we are dealing with Rule 12-516 where the rule refers to protection for NMSC cable in "concealed" locations.

The submitter was asked to comment on the negative ballots in an effort to resolve some of the negatives. The negative comments are summarized below followed by the submitter's comments to those responses.

1. No technical justification. NEC is not necessarily a valid reference.

Submitter's comments: The technical justification is based on the fact that Paragraph 2(b) permits NMS cable to come into contact with metal inserts. The potential for damage to NMS cable is more likely to be damaged at these metal inserts. The surface area of cable in contact with the metal insert is much less than where the cable is run along the face of the stud. The lbs/sq. in is much greater on a smaller surface area when pressure is applied to the cable from inappropriate construction activity. Therefore, if the risk of damage at a metal insert is greater yet permissible, then it stands to reason that NMS cable should be permitted to run along the metal stud.

I believe that the NEC is pertinent here, since it applies to 300,000,000 Americans. Surely, what works for them should work for one tenth as many Canadians.

2. It is not only drywall screws that present a concern, but NMS cable may be inadvertently damaged during or after installation. Metal studs may not be bonded and become energized from a damaged NMS cable.

Submitter's comments: Paragraph (a) recognizes the potential of damage for NMS cable. If Paragraph (a) is properly applied, then the member's concern with damage to cable is addressed. The potential for damage is, in my opinion, greater at the point where the NMS cable is in contact with a metal insert than where it is run along a metal stud (see comments to 1 above). If we are not concerned with the metal studs becoming energized from NMS contact with metal inserts, what is the justification for being concerned that the installation is more susceptible to becoming energized when NMS cable is run in contact with the flat, smooth surface of a metal stud?

3. Cable could be damaged by sharp edges. NEC is not necessarily a valid reference.

Submitter's comment: The flat side of a metal stud is smooth. If for whatever reason a stud does have a sharp edge, Paragraph (a) and Rule 2-108 would require that the installer prevent the cable from exposure to the sharp edge. (See 1 above for comment on NEC).

4. NMS cable is too susceptible to misuse.

Submittor's comment: Anything can be susceptible to misuse. We rely on worker qualifications and the normal inspections process to address issues of misuse.

5. Rule 12-516(2)(a) is limited in its ability to protect against accidental energizing of the structural metal. The protection afforded during installation is not verifiable and therefore not enforceable. Another thing that must be considered is the potential of a defect in the cable from the manufacturing process, or shipping and handling or onsite damage prior to installation. The added measure of safety afforded by 2(c) is not redundant.

Submittor's comment: The rule in the Code is foolproof. They can all be broken and the inspection process is no guarantee that violations will all be identified. In any case, an inspector can surely identify conditions of misuse and inadequate protection when inspecting an electrical installation in metal studs. Therefore Rule 12-516(2) is enforceable.

The potential for damage or defective electrical materials applies to all types. NMS cable should not be singled out.

6. The proposal is specifically for metal stud installations while the Subrule includes joists, sheathing and cladding. The very valid argument for steel studs is totally invalid for metal sheathing. Perhaps Paragraph (c) could be retained with wording that excludes metal studs but not the other metal materials.

Submittor's comments: As the member indicates, the proposal is a result of issues with metal stud installations. However, I believe that the same principles should be able to be applied to any situation where NMS cable may come into contact with a metal structure. In any case, we may wish to explore the notion of only dealing with metal studs at this time.

Submittor's additional comments:

The Rule currently requires insulating material between the NMS cable and the metal surface. What should that insulating material be: wood, plastic, 6 mil poly....? Is not the non-metallic sheath of an NMS cable insulating material in itself? What is to prevent a metal stud system from becoming energized when the ungrounded conductor comes into contact with the improperly bonded metal electrical box? How prescriptive do we need to be?

In my opinion, the issue is one of workmanship. We have Rules 2-108, 12-100, 2-120 and 2-516(2)(a), all dealing with proper installation practices and protection. A properly installed NMS cable in contact with metal poses no greater risk, and I would suggest much less risk, than an extension cord running to a block heater cord in direct contact with ungrounded metal of your car.

Subcommittee Deliberations: After the second round, there were eight members in favour of the proposal and three members not in favour.

One of the members who did not support the proposal indicated that he could support the deletion of "by a support of insulating material to ensure isolation from the metal" from the rule but felt the need to leave in "supported where it runs along or parallel to a member". However, I believe Rule 12-510 adequately covers the supporting of nonmetallic sheathed cable.

The other two members indicated the need to isolate nonmetallic sheathed cable from metallic members due to the fact that if nonmetallic sheathed cable is damaged during or after installation (i.e. a screw piercing the conductor) it could energize the metallic members and this could be a safety issue.

During the second round of discussions, the submitters adequately addressed this concern.

Subcommittee Recommendation: Accept the proposal.