



Safety Codes Council

COUNCIL ORDER NO. 2024-02

BEFORE THE ADMINISTRATIVE TRIBUNAL OF THE ELECTRICAL SUB-COUNCIL

(the "Tribunal")

ON MAY 17, 2024

IN THE MATTER OF the *Safety Codes Act*, Revised Statutes of Alberta 2000, Chapter S-1 (the "Act");

AND IN THE MATTER OF the Refusal of Variance issued to Coronet Electric Inc. (the "Appellant") by Parkland County (the "Respondent") dated January 8, 2024;

UPON REVIEWING AND CONSIDERING the evidence named in **The Record**, including written submissions of the Appellant and Respondent; and **UPON HEARING** the testimony of the parties at the hearing;

IT IS HEREBY ORDERED THAT the Refusal of Variance issued to the Appellant is **UPHELD**.

Appearances, Preliminary, Evidentiary, or Procedural Matters:

1. The hearing for this matter was conducted by virtual means.
2. At the commencement of the hearing, the Coordinator of Appeals confirmed the subject of the appeal as the Refusal of Variance and confirmed the names of those in attendance:
 - a. Appearing for the Appellant, the Tribunal heard from:
 - i. [REDACTED], General Manager for the Appellant;
 - b. Appearing for the Respondent, the Tribunal heard from:
 - i. [REDACTED], Electrical Safety Codes Officer for Parkland County
 - c. Facilitating the hearing on behalf of the Safety Codes Council:
 - i. [REDACTED], Corporate Counsel and Coordinator of Appeals
 - d. Attending as observers for the hearing:
 - i. [REDACTED], Corporate Governance and Appeals Paralegal
 - ii. [REDACTED], ASCA Associate
3. The Coordinator of Appeals then introduced the Chair of the Tribunal (the "Chair"), [REDACTED] and turned the hearing over to them.

4. The Chair called the hearing to order and introduced the other Tribunal members:
 - i. [REDACTED]
 - ii. [REDACTED]
 - iii. [REDACTED].
5. The Appellant and Respondent confirmed there were no objections to any members of the Tribunal, and that the Safety Codes Council in general and the Tribunal in particular had jurisdiction to hear and decide the appeal. The Tribunal also confirmed they had jurisdiction to hear and decide this appeal.
6. The Chair then explained the process of the hearing and advised of the list of the written material before the Tribunal, consisting of the documents listed below in **The Record** (see paragraph 7). The Appellant and Respondent confirmed that there were no objections to any of the material submitted to the Tribunal.

The Record:

7. The Tribunal considered, or had available for reference, the following documentation:

<u>Item</u>	<u>Description</u>	<u>Date</u>
i	Notice of Appeal	January 15, 2024
ii	Acknowledgement Letter	January 18, 2024
iii	Notification of Hearing Letter	February 2, 2024
iv	Appellant’s Brief Submission	March 5, 2024
v	Respondent’s Brief Submission	March 11, 2024

Issue:

8. This appeal concerns a refused application for a variance of rule 12-108 of the Canadian Electrical Code, 25th Ed., 2022, (the “Electrical Code”) to use different cables in parallel underground at [REDACTED] (the “Property”).

Positions of the Parties:

Appellant

From the Appellant’s submissions and testimony, the Appellant’s position is summarized as follows:

9. It is the Appellant’s position that the variance should be issued because the Installation (defined below), while not compliant with the Electrical Code, is safe and was installed in this configuration in response to supply shortages that existed due to the COVID-19 pandemic. It is the Appellant’s position that the installation meets the intent of the Electrical Code, even though it does not meet the specifications of the Code and therefore the Variance should be granted.

Respondent

From the Respondent's submissions and testimony, the Respondent's position is summarized as follows:

10. It is the Respondent's position that the Installation cannot provide approximately equivalent safety as required by section 38 of the Act because the conductors are different configurations and dissimilar construction, and therefore the Variance should not be granted. The Respondent was unable to verify that the Installation was installed in a safe manner because it was buried before inspection and therefore the Installation should not be approved.

Summary of the Evidence Provided On Behalf of the Appellant:

Written Evidence on behalf of the Appellant:

11. The Appellant received a permit to install the electrical meter service at the Property in November 2022. The Appellant installed two electrical cables for use in parallel: one four-conductor 4/0 AWG USEI90 and one two-conductor 4/0 AWG USEB90 (the "Installation"). The Appellant states that the cables were installed after a delay in material supply from manufactures due to the COVID-19 pandemic and the resulting supply chain constraints.
12. On November 28, 2022, the Respondent conducted an inspection of the Installation and deemed the Installation insufficient as the use of different conductors and cable between the splitters did not meet the intent of rule 12-108 "Conductors in Parallel" in the Electrical Code.
13. The Appellant submitted photos of the cables used. The USEB90 is made up of a black aluminum conductor, a red aluminum conductor, and a copper concentric conductor. The USEI-90 is a four conductor cable, and has a red aluminum conductor, a black aluminum conductor, a white aluminum reduced neutral and the Appellant used the blue aluminum conductor as a second neutral.
14. The Appellant quotes 12-108 (1) of the Electrical Code, which states that the "grounded circuit conductors of similar conductivity in sizes No. 1/0 AWG and larger, copper or aluminum, shall be permitted to be installed in parallel sets...", and submits that this is met, as both parallel cables are aluminum material in a size larger than the No. 1/0 AWG required, as both are 4/0 AWG. This section also requires these grounded circuit conductors to meet the following conditions:
 - a) Conductor must be free of splices throughout the total length. The Appellant submits that the conductors are free from splices throughout the total length;
 - b) Have the same circular mil area. The Appellant submits that the conductors have the same circular mil area as both are 4/0 AWG;
 - c) Have the same type of insulation. The Appellant submits that the conductors have the same type of insulation material, a cross-linked polyethylene with a 1.4mm thickness, and then the jacket insulation of low-temperature polyvinyl chloride for the jacket. The Appellant provided data sheets for the cables, showing the insulation type for each, verifying that the material is 1.4mm thick cross-linked polyethylene;
 - d) Are terminated in the same manner. The Appellant submits that the cables both terminate at the same point on both sides of the raceway;

- e) Are of the same conductor material. The Appellant submits that both conductors are made of aluminum and so this condition has been met; and
 - f) Are the same length. The Appellant submits that the cables are the same length.
- 15.** The Appellant submits that the Installation uses the black and red conductors from the USEI-90 as the current carrying conductors, the white and blue for the neutral conductors, the black and red conductors from the USEB-90 cable as current carrying conductors, and the copper from USEB as the bonding cable between the service disconnect and the home on the Property.
- 16.** It is for these reasons that the Appellant submits that the Installation would provide equivalent safety performance to the property.

Evidence on behalf of [REDACTED]:

- 17.** The Installation was installed in November 2022, during which time COVID-19 was still impacting supply chains making wiring nearly impossible to get at this time. The way that work and inspections were being conducted was also impacted by COVID-19 at this time.
- 18.** The timing of November is also significant because there was an open trench and snow was imminent, therefore the trench could not remain open indefinitely.
- 19.** Due to these factors, the Appellant determined that running the USEI90 and the USEB90 in parallel would meet the intent of rule 12-108.
- 20.** The report after the inspection states that the use of different conductors and splitters does not meet the requirements of rule 12-108. It is the belief of the Appellant that the only reason they failed is because of rule 12-108(1)(c), which requires that conductors set in parallel have the same type of insulation. The Appellant believes this is the rule because the other requirements of the rule are met: each cable is free of splices throughout the total length, they have the same circular mil area, they terminate in the same way, they are both made of aluminum, and the cables are the same length.
- 21.** The Appellant claims that the USEI90 and the USEB90 have the insulation wrapped differently, and that is the only difference. The actual material of the insulation is the same. If the cables were stripped out of their casings, it would not be possible to identify which cable was which.
- 22.** In response to the Tribunal's question, [REDACTED] confirmed that the Appellant took the white reduced conductor and the blue conductor in the USEI90 cable and made them both neutral, and then used the concentric copper around the USEB90 cable as the bond instead of as a neutral conductor. Upon further clarification, he confirmed that the two conductors in the USEI90 are being used as neutrals and that they are terminated on both ends at the same place.
- 23.** The Tribunal asked whether the Electrical Code allows for two neutrals on one side and no neutrals on the other. The answer was that the Appellant counted how many conductors were needed in total and determined that if the cables were put in a conduit together, this would be sufficient.
- 24.** The Appellant's standard business practice is to change any items identified on a failed inspection in the way required. However, in this case, the property owners have moved into the property and the cost to change the installation is significant – approximately \$15,000.00.

25. The Appellant is not trying to set a new precedent for how to do installations, but rather to achieve a one-time solution to a problem that was caused by the supply issues caused by COVID-19. The Appellant moved forward with this option because they believed the option is safe, and they did not expect the Installation would go as far as an appeal hearing.
26. The Tribunal asked whether other cables or other providers were explored as options for the Installation. [REDACTED] answered that other options were considered and that the Appellant made this decision based on cost and the best performance for the safe construction of the Installation, based on what materials their provider had available. He conceded that he could not provide information about what other alternatives were considered.

Summary of the Evidence Provided On Behalf of the Respondent:

Written Evidence on behalf of the Respondent:

27. On November 2, 2022, an electrical permit was applied for and issued with the work description "Underground trenching and service cable from meter socket to new home." A condition of the issued permit is that the applicant shall comply with the *Safety Codes Act* and applicable regulations, codes and standards.
28. On November 28, 2022, an underground inspection was conducted and failed. The deficiency noted is: "the use of different Conductors and cable between splitters does not meet the intent or letter of [Canada Electrical Code] rule # 12-108 Conductors in Parallel." It also notes that the cables were "in and covered at the time of this inspection."
29. On December 16, 2022, an underground inspection resulted in a partial pass. The inspector allowed for the USEI90 cable to feed 125 amps to provide temporary power for construction. The file notes that the previous violations and conditions were still present.
30. On January 8, 2023, the application for a variance was refused for the following reasons:
 - a) Same circular mil area not met as USEB90 neutral conductor is a reduced size and therefore not the same as the other conductors;
 - b) USEB90 and USEI90 have dissimilar insulation;
 - c) Dissimilar conductor material as the USEB90 has a copper neutral and the conductors are aluminium;
 - d) USEB90 cable requires a field installed bonding conductor; and
 - e) The trench was backfilled prior to the inspection and therefore cannot verify compliance.
31. Under rule 10-616 of the Electrical Code, a field installed bonding conductor is required to be installed with each group of parallel conductors. The USEB90 cable does not have a field installed bonding conductor.
32. The Respondent also references rule 12-012 which requires that direct buried cables shall run adjacent to each other and not cross each other. This could not be verified as the Installation was buried before inspection with no conversations with the Respondent before filling in the trench.
33. The Respondent maintains that the installation does not provide approximately equivalent or

greater safety performance to persons and property as required by a variance.

Evidence on behalf of [REDACTED]:

34. The Appellant has two neutrals and two live conductors in one cable and two live conductors and a copper in the other. The materials are not the same and therefore not compliant under rule 12-108. This is also not compliant with rule 10-616 of the Electrical Code, which requires a bonding conductor for each cable. The purpose of these rules is to ensure that parallel conductors have a balanced electrical current load. This is an installation of approximately 350 feet with different conductors and therefore there is no chance of a balanced load.
35. There are other houses in the subdivision and the Appellant did do another parallel installation at another location in compliance with the Electrical Code.
36. The Installation has been buried and therefore it is impossible to verify that the cables are not crossed in the trench. However, the photos submitted to the Respondent and in this appeal indicate that the cables could be crossed at the consumer point, contrary to rule 12-012 which requires that buried cables shall not cross each other.
37. There is no record of there being an underground inspection request. This issue could have been resolved if there had been a request for an inspection before the trench was covered.
38. In response to a question from the Tribunal, Brady confirmed that the failed inspection references rule 12-108 as the reason for failure but that there had been subsequent discussions with the Appellant regarding the Installation and these other violations mentioned but could not verify when these discussions happened.

Findings of Fact:

The Tribunal makes the following findings:

39. The facts on the physical components of the Installation are not the issue of this Appeal. What is at issue is the level of safety the Installation has and whether it meets the threshold of meeting or exceeding the safety objective of the Electrical Code sections violated.
40. Because the facts are not at issue, the Tribunal finds that the installation is made up of one four-conductor USEI90 cable without a bonding conductor and one two-conductor USEB90 cable with a concentric copper bonding conductor. The Tribunal finds that the Appellant installed these cables as a system and used the blue phase conductor and the white reduced conductor in the USEI90 as neutrals so as to have two neutrals in the system instead of one neutral in each cable.
41. The Tribunal also agrees with the Respondent that the pictures provided to the Tribunal indicate that the cables could be crossed at the consumer point. Because of this, it is possible that the cables are crossed elsewhere in the Installation and that the adjacent running of the cables cannot be verified without excavation.

Reasons for Decision:

42. On an appeal such as this, the powers of the Tribunal are set out in subsection 52(2)(b.1) of the Act, the relevant excerpt is reproduced below:

52(2) The Council may by order

(b.1) Confirm the refusal by a safety codes officer to issue a written variance or revoke the refusal by a safety codes officer to issue a written variance and issue a written variance on the terms and conditions that the Council considers appropriate...

- 43.** The Respondent was absolutely right to fail the Installation upon inspection. The Electrical Code is prescriptive and the Installation objectively does not meet the requirements of rule 12-108. That is not at issue for this Appeal. The Tribunal's task is now to determine whether a variance should be issued to the Appellants for the Installation. The threshold for this decision is set out in section 38 of the Act which states:

38(1) An Administrator or safety codes officer may issue a written variance... if the Administrator or officer is of the opinion that the variance provides approximately *equivalent or greater safety performance* with respect to persons and property as that provided for by this Act [emphasis added].

Electrical Code Rule 12-108

- 44.** Starting with the requirements under rule 12-108(1), the Tribunal went through each requirement individually to determine if the Installation, as a system, would meet the safety objective of the rule.
- 45.** Rule 12-108(1) requires that "ungrounded and grounded circuit conductors of similar conductivity in sizes No. 1/0 AWG and larger, copper or aluminum, shall be permitted to be installed in parallel sets provided that each parallel phase or grounded conductor set individually..." meet certain specifications. This section would require two or more conductors to be installed parallel to each other, and each to have a neutral and a bonding conductor. The service conductors carry the electrical current, the neutral is the return path of the electricity – it carries the excess electrical load, and the bonding conductor is used to connect conductive components not intended to carry a current to the grounding neutral so that in the event of an electrical fault or surge electricity will flow through the bonded components to the grounded neutral so the current is neutralized, reducing the risk of a shock or fire. The Installation does not result in each cable having all three conductors, as the USEB90 does not have a neutral and the USEI90 has two neutrals. It is the Appellant's submission that the Installation has the components required but not in the specific configuration required.
- 46.** Rule 12-108(1)(a) requires that the parallel conductors be free of splices throughout the total length of the installation. There is no evidence before the Tribunal that there are splices throughout the length of the Installation and therefore this condition is met.
- 47.** Rule 12-108(1)(b) requires that the parallel conductors have the same circular mil area. The intent of this section is to ensure that the resistance of each conductor in the system is the same to avoid overheating. Smaller conductors carry lower electrical loads, and therefore if the size of the conductors are different, the smaller conductor will increase in heat faster than the larger, which can cause overheating of the smaller conductor. In the Installation, the USEI90 has two neutrals - one standard neutral and one reduced neutral. The Appellant is right that the live conductors are the same size in both the USEI90 and the USEB90. However the neutrals present in the USEI90 are different sizes and therefore the smaller neutral conductor will increase in heat faster than the other and could cause overheating. This condition is not met. It is the Appellant's submission that the

Installation still has two neutrals, just not in the specific configuration. The Tribunal disagrees with the Appellant's submission as the difference in the size of the neutrals increases the risk of the reduced neutral overheating. This risk would not be present if the neutrals were the same size.

48. Rule 12-108(1)(c) requires the parallel conductors to have the same insulation. The purpose of this is to prevent insulation damage from occurring to one conductor as compared to an adjacent conductor due to a lower temperature rating or a different condition of use. The Appellant provided the data sheets that the USEI90 and the USEB90 cables do have the same insulation with different packaging. Both have a 1.4mm black, crosslink polyethylene insulation. Therefore, this requirement is met.
49. Rule 12-108(1)(d) requires that the parallel conductors are terminated in the same manner. Both cables terminate at the same points on either end of the Installation. Therefore, this requirement is met.
50. Rule 12-108(1)(e) requires that the cables are of the same conductor material. The purpose of this section is to ensure that the conductivity in the system is the same to avoid different electrical currents, which could result in overheating. In the Installation, the conducting cables are aluminum, and therefore this rule is met.
51. The Tribunal asked the Appellant whether the code allows for two neutrals in one cable and no cables on the other. The Appellant did not answer this question directly, but stated that they counted the conductors required and believed it would be sufficient under the code and rule 12-108.
52. The Tribunal agrees with the Appellant that the Installation will work. However, working is not the standard that is required under section 38 of the Act. The standard that is required is that the variance provide approximately equivalent or greater safety performance. While the components required are present in the Installation, the configuration of the cable parts is important to achieving the safety performance intended by rule 12-108. By having two neutral conductors in the USEI90 cable, Rule 12-108(1)(b) comes into play. The neutrals are different sizes. While the total mil area of the neutrals may meet the mil area required for the voltage of the Installation, the different sizes of the neutrals mean that the smaller neutral will increase in heat faster than the larger neutral, resulting in an increased risk of overheating and failure. Because there is this increased risk of overheating and failure due to the different sized neutrals that would not be present had the Appellant's installation complied with the Electrical Code, the Installation does *not* provide approximately equivalent or greater safety performance than an installation that was installed in compliance with the Electrical Code.

Rule 10-616

53. Because the Installation has the USEB90 cable using the copper as the bonding conductor rather than the neutral, rule 10-616(4) also needs to be considered.
54. Rule 10-616(4) requires that a bonding conductor installed with each group of parallel conductors shall "be in accordance with subrule (3) divided by the number of groups of parallel conductors. The Installation is a group of two parallel conductors. Therefore, under this rule the copper in the USEB90 cable must be size 6 AWG in order to carry a 200 amp service, as set out under Table 16 of the Electrical Code. The size of the copper was not put in front of the Tribunal, and therefore the

Tribunal is not in a position to determine whether this rule has been met.

Rule 12-012

55. Finally, it is the concern of the Respondent and a fact found by this Tribunal that the pictures provided by the Appellant indicate that the cables could be crossed at the consumer point and therefore it is important that Rule 12-012 of the Electrical Code be considered.
56. Rule 12-012 states that direct buried cables shall not cross each other. The intent is to ensure that there is no cable damage sustained due to the pressure and weight of the cables and earth causing undue stress on the cables at the cross point.
57. The Installation was buried before an inspection was conducted and therefore it is impossible to know if the cables do cross in the trench. If they do, this must be remedied. Without confirmation, the Variance cannot be granted.

Other Considerations

58. The Appellant informed the Tribunal that the Installation was installed in its current configuration as a response to supply issues experienced due to the COVID-19 pandemic. The Tribunal does not dispute that the COVID-19 pandemic did have an impact on supply chains. However, the Appellant provided testimony that the Appellant only looked at the stock their regular supplier had. No evidence was provided as to efforts made to locate compliant cables from other suppliers. Regardless, supply chain issues due to the pandemic were real issues that had to be grappled with by construction companies in all disciplines. Variances do come into play to allow for substitutions and alternatives for multiple reasons, which would include the pandemic. Applying for a variance, however, does not guarantee a variance.
59. Variances are indeed allowed under the Act if the Safety Codes Officer believes that the variance will meet or exceed the safety objectives of the original section. However, there is also a process that should be followed – both from a safety and a consumer service and protection perspective; namely, a variance is to be applied for *before* work is done. From a safety perspective, the Safety Codes Officer reviewing the variance is in an unfair position of reviewing unclear information and also potentially experiencing undue pressure to issue the variance because the work has already been done and refusing will result in delays and costs. The cost and time to remedy a non-compliant installation is not a valid reason for a variance to be granted. A Safety Codes Officer and this Tribunal are not obligated to save a business time or money by granting a variance post-work, especially if that work cannot be inspected to verify that it is safe. The safety system is not an “ask for forgiveness” process.
60. In this case, the Appellant applied for a permit and then built the Installation in a manner different than what was approved through the permit process all in less than four weeks. Given the difficulty in obtaining product and the consideration given to alternative installations claimed by the Appellant, it is reasonable to infer that at the time of applying for the permit the Appellant was aware they may not be able to obtain the proper cables required for a standard installation. Therefore, the Appellant would have been aware at the time of applying for a permit that a variance would likely be required and could have applied for a variance at that time.
61. Additionally, the Respondent has provided evidence that there is no record of the Appellant applying for an inspection prior to burying the installation. This, again, is improper process, as not

only was the installation incorrect, but the Respondent was then put in the unfair position of being asked to approve an irregular installation without the benefit of inspecting the Installation.

Summary

- 62. The Tribunal does not find that the Installation will achieve approximately equivalent or greater safety performance so as to meet the standard set out in section 38(1) of the Act. The different sizes of the neutral conductors in the USEI90 cable increase the likelihood of overheating and failure of the smaller neutral than would exist if each cable had its own neutral conductor.
- 63. The Tribunal has therefore determined that the variance refusal is upheld.

Signed at the City of Edmonton)
in the Province of Alberta)
this 17th day of May, 2024)

██████████ Chair,
Electrical Sub-Council
Administrative Tribunal