



MASTER MUNICIPAL CONSTRUCTION DOCUMENTS ASSOCIATION

Background

Back in April 2010, City of Abbotsford has reported a case of material non-conformance under one of their watermain replacement projects. The cause of this non-conformance is the installation of a non-thickened bell PVC C900 pipe. Under the current MMCD specification, both the 2000 and 2009 editions, the bell end of the C900 pipe are required to be thickened. Subsequently, this issue was brought forward to the Civil committee for review and clarification.

Issue

Both the 2000 and 2009 editions stated under Paragraph 2.2.2.2:

“.2 Joints: Push-on integrally thickened bell and spigot type to ASTM D 3139 with single elastomeric gasket to ASTM F477.”

Both of the BC PVC C900 producers are in conformance to this clause. The non-conforming material in the Abbotsford case was from another supplier based in the US, whose pipes do not have a thickened bell end, but are certified by the CSA and conforming to the ASTM D3139.

With further discussion with the industry, it was brought to the committee's attention that there are a number of American produced C900 PVC being used in BC that are in a similar non-conforming status. Due to the subtle technical differences, most municipal owners are unaware of this non-conformance.

Subsequently, both the Owners and the pipe producers have requested the Committee to clarify this point under a Supplemental.

Technical Discussion

Under the current ASTM D3139 specification, there are two methods for a PVC C900 to conform. First method is based on Hydrostatic Design Basis. In a simplistic way, the pipe must be subjected to a specified pressure for a specified extended period. The second method is to thicken the bell profile as per the specified geometries. Under the ASTM, if the pipe meets either criterion the pipe is considered to have passed. In this case, the CSA is only testing and certifying against the ASTM D3139 under either criterion. Accordingly, the American producers indicated their products meet and exceed the former criterion; thus, it should be considered as equivalent.

Conclusions

After over six months of review and discussion with the local industry, the Committee has formulated the following conclusions:

1. The installation practices play a significant role in the long term durability of the water infrastructure. Most of the maintenance issues often occurred at the joints as a result of over insertion or over deflection in the field. The thickened bell end will provide an additional layer of safety against unintended poor installation practices.
2. The underlying principal of the MMCD is to present the practices or products that are widely supported by its member municipalities. It does not promote unnecessary Supplementary Specification from individual municipality. A number of municipalities across BC have indicated that they will be pursuing the thickened bell requirement. Please see Appendix for the letters in supporting of the thickened bell ends.

Recommendation

The Committee, hereby, put forth the following recommendation:

Replace Paragraph 2.2.2.2 as follow:

“.2 Joints: It is mandatory that the push-on integrally thickened bell and spigot type conform to ASTM D 3139 Clause 6.2 with single elastomeric gasket to ASTM F477.”

Regards,



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Civil Committee Chair

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