

February 15, 2019

Kelly Winslow
EnviroHome, Inc

RE: Town of Lake Santeetlah Pipe Failures

Kelly,

The sample received for analysis is a piece of Diamond Plastics PVC pipe manufactured to ASTM D2241 DR21 including the bell. The pipe wall has cracked in primarily a straight line from the end of the bell to the end of the sample as shown in Photo 1 below.



Photo 1

Initial visual inspection of the sample indicated that there appeared to be some staining on a portion of the sample received noted by the arrow in Photo 1. Further examination indicated that in the area noted with the stain, there appeared to be a deflection of the pipe wall.

A 1-inch diameter straight rod was used to determine that there was approximately 3/16" of localized deflection of the pipe wall as indicated in Photo 2 and 3 below.

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DIAMOND PLASTICS®

C O R P O R A T I O N

Corporate Headquarters: 1212 Johnstown Rd. • P.O. Box 1608 • Grand Island, NE 68802-1608
800-PVC-PIPE • 800/782-7473 • www.dpcpipe.com



Photo 2

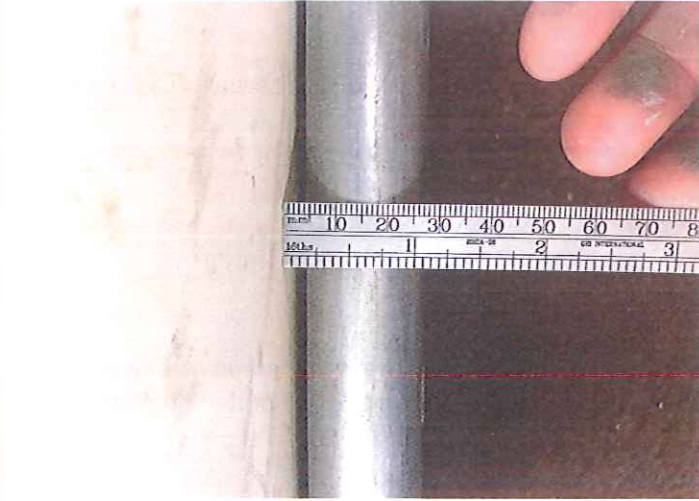


Photo 3

The deflected area of the pipe was then removed to aid in inspection of the crack from the inside of the sample as documented in Photos 4, 5, and 6 below.



Photo 4



Photo 5



Photo 6

The section removed was then cut longitudinally to allow inspection of the crack in the stained area noted in Photo 1 earlier. A small piece of something was noticed protruding into the pipe from the outside as indicated by the arrow in Photo 6. Photos 7-11 are of the longitudinal cut and surface of the crack in the stained area.

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Photo 7



Photo 8



Photo 9



Photo 10



Photo 11

The piece of material noted by the arrow in photo 6 is also shown and noted by an arrow in photo 10. The arrow in Photo 11 is showing the fracture that we believe started the crack. The crack in the area where the pipe was deflected and stained is 4-5 inches in length and has a different fractur pattern than the rest of the crack that runs the length of the sample.

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The damage in this area; in my opinion, is where the crack started and may be the result of damage from a fork on lifting equipment when unloading the pipe from trucks when shipped.



Photo 12



Photo 13

The damage noted in Photo 12 and 13 we believe is the result of ‘barring’ the pipe joints together during installation or impacts from a hammer used for assembly which is commonly on the top of pipe bells in which a wood block is not used to cushion the bar or hammer as recommended in our installation guide. The barring/hammer mark indicates the crack would have been on the bottom of the pipe as installed, which also leads to the question if the damage is the result of something under the pipe after installation causing a stress and then fracture.

Photo 14 below shows the passing results of testing performed to ASTM D2152 Standard Test Method for Adequacy of Fusion of Extruded Poly (Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion. Pipe wall thickness measurements indicated that the wall thickness of the sample ranges from a minimum of 0.331 inches with a maximum of 3.342 inches. ASTM D2241 specifies the minimum wall thickness to be 0.316 inches with a plus tolerance of 0.038 inches. The pipe sample meets this requirement.

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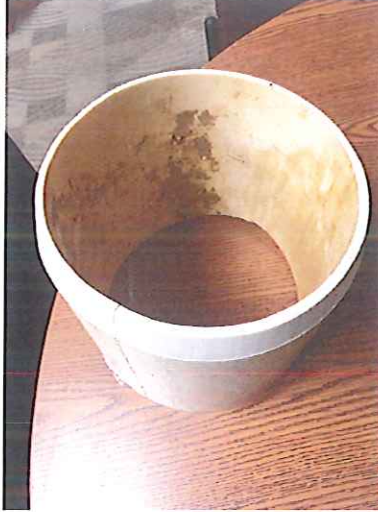
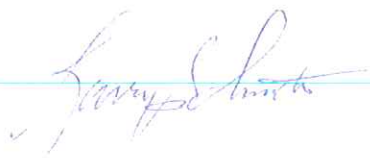


Photo 14

There were no manufacturing defects found in the testing of the pipe sample received. If we may be of further assistance in this matter, please do not hesitate to call us. For your convenience, please use our toll-free phone 1-800-PVC-PIPE (1-800-782-7473.)

Sincerely,

DIAMOND PLASTICS CORPORATION



Larry D. Schmidt, P.E.
Director of Engineering

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