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File No. 20248

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PREDL SYSTEMS

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Attn: Jed Friesen

Project: Vacuum Testing on 42" PVC Manhole (as named by client)-Reference standard-
ASTM C1244-11

1.0 INTRODUCTION

As requested, Metro Testing Laboratories (Burnaby), a division of CCMET Inc. (Metro) visited PREDL Systems plant to perform vacuum testing on 42" PVC manhole on March 15, 2019. Metro conducted the test as per ASTM C1244-11 Standard.

The manhole comprised of a PVC Pipe at the bottom with a riser fiber glass saddle seated on the top of the pipe. Gasket was used at the pipe to fiber glass saddle connection. The pipe had two fiber glass cap at the ends. Client confirmed that the tested manhole is manufactured with the similar consistency as the actual service manholes (as shown in Drawing-1 and Figures 1 to 3).

2.0 TESTING PROCEDURE AND RESULTS

Metro used Karol Wagner Vacuum Gauge (Serial Number 7686) which was factory calibrated on April 4, 2018. The absolute atmosphere pressure was measured 759 mm HG at the Diamond Precast yard level (See Figure 1 to 3). Metro relatively decreased the pressure up to 254 mm HG (10 in of HG) (Absolute pressure $759-254=505$ mm HG) and shut the valve to disconnect the manhole from the vacuum pump. Metro then measured the time for the manhole pressure to drop from 10" HG to 9" HG (Absolute pressure drop from 505 mm HG to 531 mm HG).

Metro repeated the test twice. The recorded times were **42** and **43 seconds**.

As per the ASTM C1244 -11 Table 1 for the Manhole with a nominal 42" in of the diameter and less than 4 feet depth, the minimum specified time is **9 seconds**.



3.0 Conclusion:

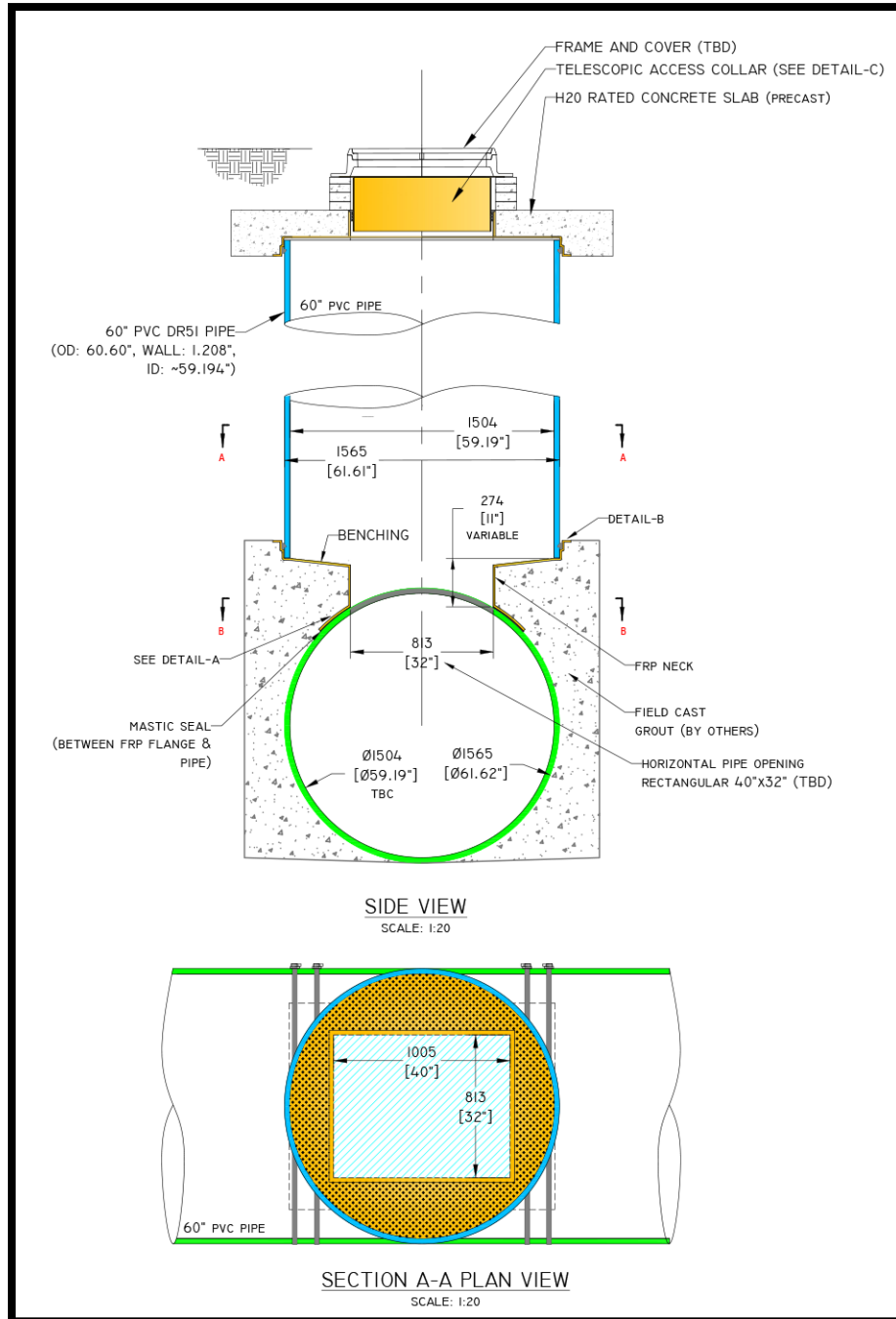
As per test results, Manhole configurations has successfully passed the test and meet of ASTM C1244-11 specifications.

We trust that this report meets your present requirements; if you have any questions, please feel free to contact us at 604-436-9111.

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Drawing 1-Manhole Sections



Figure 1- Manhole Assembly



Figure 2- Manhole Assembly



Figure 3- Manhole Assembly