



**Look at it
this way**

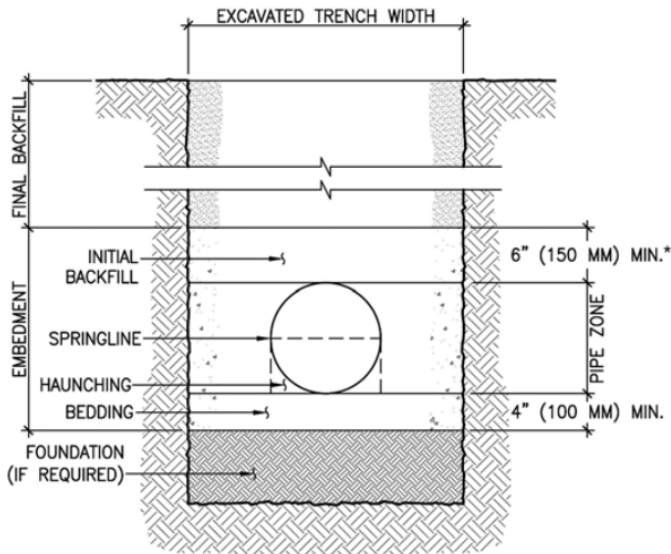
The world needs concrete solutions

Standard Sewer Pipe Installations

Are Design Engineers being too Conservative?



Every major municipality across Canada has developed their own standard installation detail for sewer pipe; some only use one bedding detail as where others use separate bedding details, based on the pipe material. A very common installation detail found in every municipality is the same detail as that found in *ASTM D2321: Underground Installation of Thermoplastic Pipe for Sewers*.



This detail shows the need to have embedment material at least 150mm above the crown of the pipe (note the asterisk too; most municipalities take it to a minimum of 300mm above the crown). Flexible pipe requires the soil envelope around it to provide the structural support it needs to withstand the design loads, otherwise it will fail. Roughly 90% of a flexible pipe's ability to resist load comes from the embedment material around it. Should the same installation principles be applied to rigid pipe, such as concrete, where roughly 90% of the load is resisted from the pipe itself?

* See 7.6 Minimum Cover

Figure 1: Installation Detail from ASTM D2321: Underground Installation of Thermoplastic Pipe for Sewers.

Recently, Ocean Pipe sourced local contractors to provide pricing for different concrete pipe installations. The two installations assessed were the current standard MMCD installation as per Drawing G4 (similar to ASTM D2321) and the concrete pipe industry recommended ASTM C1479 Type 2 installation. Simplified details of the two installation types studied in this project are shown in Figure 1 below:

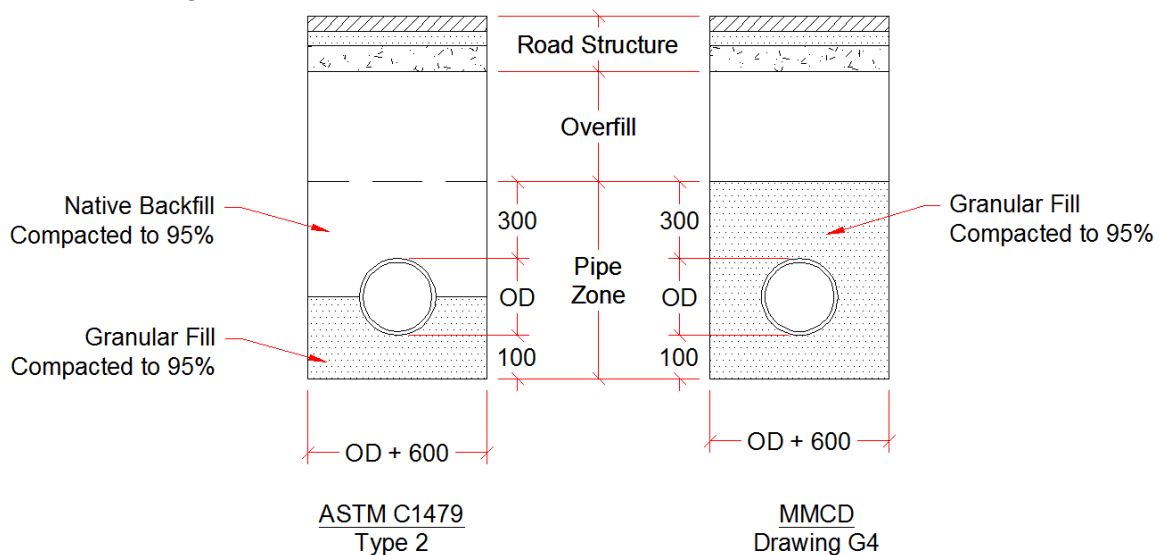


Figure 2: Installation Details Examined in this Project

The difference between the two installations is the use of native versus imported fill in the zone between the pipe springline and a level 300mm above the pipe. Because the pipe material, overfill, and road structure were identical in both installation situations, costs for these items were excluded.

The contractors calculated their prices based entirely on what was referred to as the “Pipe Zone” of each installation. Specifically, the costs of purchasing the material, local dumping of the unwanted native fill, and trucking to and from site were included in the calculation.

Because project location can have a significant impact on cost, the contractors were asked to provide two sets of pricing: one assuming the pipe was being installed in Surrey, the second assuming the pipe was being installed in Richmond. Table 1 below shows the results of this study:

| Nominal Pipe Diameter | MMCD Drawing G4 | | ASTM C1479 Type 2 | | Potential Savings | |
|-----------------------|-----------------|-----------|-------------------|-----------|-------------------|-----------|
| | Surrey | Richmond | Surrey | Richmond | Surrey | Richmond |
| 300 | \$ 54.00 | \$ 66.00 | \$ 20.00 | \$ 24.00 | \$ 34.00 | \$ 42.00 |
| 375 | \$ 58.00 | \$ 71.00 | \$ 21.00 | \$ 26.00 | \$ 37.00 | \$ 45.00 |
| 450 | \$ 66.00 | \$ 80.00 | \$ 24.00 | \$ 30.00 | \$ 42.00 | \$ 50.00 |
| 525 | \$ 76.00 | \$ 92.00 | \$ 29.00 | \$ 36.00 | \$ 47.00 | \$ 56.00 |
| 600 | \$ 88.00 | \$ 107.00 | \$ 34.00 | \$ 42.00 | \$ 54.00 | \$ 65.00 |
| 675 | \$ 88.00 | \$ 106.00 | \$ 38.00 | \$ 46.00 | \$ 50.00 | \$ 60.00 |
| 750 | \$ 116.00 | \$ 142.00 | \$ 46.00 | \$ 57.00 | \$ 70.00 | \$ 85.00 |
| 900 | \$ 137.00 | \$ 167.00 | \$ 55.00 | \$ 68.00 | \$ 82.00 | \$ 99.00 |
| 1050 | \$ 158.00 | \$ 193.00 | \$ 64.00 | \$ 79.00 | \$ 94.00 | \$ 114.00 |
| 1200 | \$ 180.00 | \$ 220.00 | \$ 73.00 | \$ 90.00 | \$ 107.00 | \$ 130.00 |
| 1350 | \$ 203.00 | \$ 249.00 | \$ 83.00 | \$ 102.00 | \$ 120.00 | \$ 147.00 |
| 1500 | \$ 228.00 | \$ 279.00 | \$ 93.00 | \$ 115.00 | \$ 135.00 | \$ 164.00 |
| 1650 | \$ 253.00 | \$ 310.00 | \$ 104.00 | \$ 128.00 | \$ 149.00 | \$ 182.00 |
| 1800 | \$ 279.00 | \$ 342.00 | \$ 115.00 | \$ 142.00 | \$ 164.00 | \$ 200.00 |

Table 1: Estimated Cost per Linear Metre to Install Concrete Pipe

As the table shows, there is potential for significant savings when using the ASTM C1479 installations recommended by the concrete pipe industry. Please keep this information in mind when designing your next project or updating your local specifications.

For additional information on the ASTM C1479 standard installations or anything else related to our products, please feel free to contact our technical staff.



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