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# Plumbing Inspection

Posted by twobyfour - June 04, 2008 9:16 PM

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The following inspection was done on my home by an independent competent qualified inspector.

Here is the Inspection

Re: Visual review of the plumbing drain/waste/vent (DWV) and water distribution piping installation at the above address.

Dear XXXXX,

Thank you for choosing Piece of Mind Inspection and Consulting Services to review the plumbing installation at your home.

Following is a list of defects that were observed at the time of the review.

## 1. Observations

1.1 The 2" ABS plastic, horizontal laundry/kitchen sink waste pipe installed beneath the floor joists at the rear basement area is supported at 64" intervals. Ontario Building Code (OBC) 7.3.4.5.(1)(e)(i) requires that ABS plastic DWV pipe be supported at intervals not exceeding 1200 mm (3 ft 11 in). (Appendix A-01)

1.2 The 2" ABS wet vent serving the water closet at the main bathroom does not have the correct slope. OBC 7.4.8.1.(1) requires that "every drainage pipe that has a size 3 in. or less, and every fixture drain, shall have a downward slope in the direction of flow of at least 1 in 50 (1/4"/ft.)". (Appendix A-02)

1.3 The 3" ABS horizontal branch at the left hand rear side of the basement is supported at 64" intervals. OBC 7.3.4.5.(1)(e)(i) requires that ABS plastic DWV pipe be supported at intervals not exceeding 1200mm (3ft 11 in). (Appendix A-03)

1.4 The ensuite shower drain between the shower trap weir and the plumbing stack is sloped towards the shower trap. OBC 7.4.8.1.(1) requires that "every drainage pipe that has a size 3 in. or less, and every fixture drain, shall have a downward slope in the direction of flow of at least 1 in 50 (1/4"/ft.)". (Appendix A-04, 05, 06)

1.5 A trap seal primer does not protect the basement floor drain. If the trap seal is not maintained, sewer gases may enter the home. OBC 7.4.5.5.(1) requires that "provision be made for maintaining the trap seal of a floor drain or hub drain by the use of a trap seal primer, by using the drain as a receptacle for 2 an indirectly connected drinking fountain, or by equally effective means". (Appendix A-07, 08)

1.6 The basement bathroom rough-in fixture vents have not been connected to the plumbing venting system. OBC 7.5.5.1.(1) requires that "every waste pipe shall be installed and back vented at the same time". OBC 7.5.5.1.(2) requires that "every vent pipe shall be installed without a sag or depression and shall have no unused open ends". Furthermore, OBC 7.5.5.5.(1) requires that "the upper end of every vent pipe that is not terminated in open air shall be connected to a venting system that is terminated in open air". Municipalities generally require that the plumbing DWV system be completed at rough-in bathrooms to ensure that the installation meets Part 7 requirements and to facilitate the testing of the system. (Appendix A-09, 10)

1.7 Portions of the blue coloured water distribution piping visible at the basement are of a different shade than the majority of the blue coloured PEX water distribution piping. The majority of the blue coloured PEX water distribution piping is identified as IPEX PEX piping and displays the appropriate certification markings. The darker blue distribution piping in question is not identified and is not marked with certification

markings. OBC 7.2.1.4.(1) requires that “every length of pipe and every fitting shall have cast, stamped or indelibly marked on it the maker’s name or mark and the weight or class or quality of the product, or it shall be marked in accordance with the relevant standard, and such markings shall be visible after installation”. OBC 7.2.1.4.(3) states “ the lack of certification markings on a product or plumbing component shall be regarded as proof, in the absence of evidence to the contrary, that no certification exists”. OBC 7.2.5.5.(4) requires that “ Cross-linked pressure pipe or tube and fittings used in above ground or underground installations of water distribution pipe shall be certified to CAN/CSA-B137.5, “Cross-linked Polyethylene (PEX) Tubing Systems for Pressure Applications.” (Appendix A-11)

1.8 The PEX water distribution piping at the basement is not properly supported at numerous areas. OBC 7.3.4.5.(2)(f) requires that “nominally horizontal piping shall be supported so that plastic water piping is supported at intervals not exceeding 1000 mm (3 ft 3 in)”. The IPEX PlumbBetter PEX Installation Guide requires that piping !” diameter or less shall be supported at a maximum spacing of 32”. (Appendix A-12, 13)

1.9 Numerous joints at the PEX water distribution piping at the basement appear to be misaligned and subject to strain at the plastic fittings. OBC 7.3.4.5.(3)(a),(b) requires that “where plastic pipe incorporating a plastic component is installed, the pipe shall be aligned without added strain on the piping and the pipe shall not be bent or pulled into position after being welded or joined. This installation also does not comply with the pipe manufacturer’s Installation Guidelines. (Appendix A-11, 14)

1.10 Inappropriate hangers at numerous locations support the PEX water distribution piping at the basement. Copper pipe supports have been used to support the piping. Abrasions at the pipe walls were noted at many areas in close proximity to the copper pipe supports. OBC 7.3.4.5.(3)(c) requires that “hangers shall not compress, cut or abrade the pipe”. This installation also does not comply with the pipe manufacturer’s Installation Guidelines. (Appendix A-15, 16, 17)

1.11 Various joints at the PEX water distribution piping at the basement have not been properly constructed. The pipe and crimp ring installation at these joints does not comply with the IPEX PlumbBetter PL-PEX Technical Information Bulletin and the PlumbBetter PEX Installation Guide. (Appendix A-17, 18)

1.12 The PEX to copper water pipe connections at the supply to the hose bibbs at the basement are not adequately anchored and the copper to PEX adapter can rotate at the barbed connection to the PEX piping. The IPEX PlumbBetter PEX Installation Guide requires that “tubing directly connected to any hose bibb shall be anchored so that any load on the hose bibb will not strain the PEX tubing”. OBC 7.6.1.1.(1) requires that “potable water systems shall be designed, fabricated and installed in accordance with good engineering practice”. (Appendix A-19, 20)

1.13 The shower valve at the ensuite bathroom and the tub and shower valve at the main bathroom are poorly supported. The valves are held in position only when the trim plate at the acrylic tub and shower units is firmly in place. The plastic rough-in template is being used as a backing plate that makes contact with the acrylic wall of the unit when the fasteners are tightened at the trim plate. OBC 7.3.4.2.(1) requires that “piping, fixtures, tanks or other devices shall be supported independently of one another”. (Appendix A-21)

1.14 The shower arms at the ensuite and main bathroom are not supported to the wall framing. OBC 7.6.1.1.(1) requires that “potable water systems shall be designed, fabricated and installed in accordance with good engineering practice”.

1.15 The air pump at the main bathroom bathtub is not accessible for servicing. The Ontario Electrical Code Rule 2-118 requires that the pump motor be accessible for servicing. (Appendix A-22)

## 2. Conclusions

2.1 Numerous deficiencies were observed at the visible plumbing DWV system at the basement area of the home. The deficiencies observed certainly contravene the requirements of OBC Part 7 and should be corrected as soon as possible. Of particular concern is the lack of trap seal protection at the basement floor drain. There is a high probability of sewer gas entering the home at this location. Providing a trap seal primer, especially given the location of the floor drain in the basement, has the potential to be an expensive undertaking. In my opinion, this floor drain should have been located at the furnace room area, where it could have been primed by the condensate from the furnace, the HRV and the air conditioner. Unfortunately, the condensate from these appliances currently discharges to the sump pit located in the furnace room. This is a less-than-ideal design.

2.2 Various deficiencies were observed at the visible water distribution piping at the basement. The deficiencies observed do not meet the requirements of OBC Part 7 and The IPEX PlumbBetter PEX Installation Guide and should be corrected as soon as possible. The installation quality of the water distribution piping in many areas is, in my opinion, below the industry standard. Stress at various plastic fittings and improper connection of the piping to these fittings may lead to premature failure of the system at these locations. Of particular concern is the lack of identification at some of the dark-blue coloured water distribution piping. This piping should be replaced as soon as possible, since it is not identifiable.

2.3 The installation of the shower and tub/shower valves and shower arms does not comply with the requirements of OBC Part 7 and, in my opinion, is well below the industry standard. Unfortunately, interior finishes may have to be removed to improve these conditions.

2.4 The vents at the basement bathroom rough-in should have been connected to the plumbing venting system at the time of the plumbing rough-in. The current installation does not comply with the requirements of OBC Part 7 and should be improved as soon as possible.

## 3. Addendum

During the inspection further defects were observed at the exterior of the home:

3.1 The foundation height at the north side basement window is less than 6" above finished grade. OBC 9.15.4.3.(1) requires that "exterior foundation walls shall extend not less than 150 mm (5 7/8 in) above finished ground level". Therefore, a window well and window well drain is required at this location. (Appendix B-01)

3.2 Window well drains do not appear to be present at the south basement window wells. OBC 9.14.6.3.(1) requires that "every window well shall be drained to the footing level or other suitable location". (Appendix B-02)

3.3 Caulking is required at all penetrations of the exterior walls. OBC 9.27.4.1.(1) requires that "caulking shall be provided where required to prevent the entry of water into the structure". (Appendix B-03)

End of Inspection Report

This is what I have been basically telling the builder, the county chief building inspector for almost two years, but I have been ignored as you can see by my previous post .... we are going to court on this one....and the county is first on the list.

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**Re:Plumbing Inspection**  
Posted by Tito - June 05, 2008 12:36 PM

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Thanks.  
Tito.

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