ADOPTED by Council at its meeting held December 5, 2011 **[M357-2011]**
/AA
Windsor, Ontario December 5, 2011

REPORT NO.17 of the
PUBLIC SAFETY STANDING COMMITTEE
of its meeting held November 16, 2011

Present: **Councillor Jones, Chair**
Councillor Dilkens
Councillor Gignac
Councillor Maghnieh

Regrets: **Councillor Payne**

That the following recommendation of the Public Safety Standing Committee **BE APPROVED** as follows:

Moved by Councillor Gignac, seconded by Councillor Dilkens

I. That effective January 1, 2012, the Building Department's City-wide enforcement of the Ontario Building Code by mandating backwater valves on all newly constructed single family dwellings, semi-detached dwellings and townhouse dwellings; and further,

IL That all lot grading plans for new developments include details and notes on the provision of Backwater Valves (BWV).

Carried.

Clerk's Note: The report dated October 31, 2011 titled "Mandatory Backwater Valve Installation for New Home Construction for Sewers" is ***attached*** as background information.

Livelink 15559, SB2011

DEPUTY CITY C \K

NOTIFICATION :				
Name	Address	Email Address	Telephone	FAX
Albert Schepers, P.Eng		albert@rrsengineering.ca		
Greater Windsor Home Builders Association		gwhba@wincom.net		

ltemNo. **1**

THE CORPORATION OF THE CITY OF WINDS-OR
Public Safety Standing Committee - Administrative Report

MISSION STATEMENT:
"The City of Windsor, with the involvement of its citizens, will deliver effective and responsive municipal services, and will mobilize innovative community partnerships"

LiveLink REPORT #: 15559 SB2011	**Report Date: October 31, 2011**
Author's Name: Wm. Jean, Manager of Permit Services/Deputy Chief Building Official	Date to Standing Committee: Nov 16, 2011
Author's Phone: 519 -255-6267 ext. 6459	Classification #:
Author's E-mail: wjean@city.windsor.on.ca	

TO: · **Public Safety Standing Committee**

SUBJECT:- Mandatory Backwater Valve Installation for New Home Construction for Sewers

1. RECOMMENDATION: City Wide: X Ward(s):

That the Public Safety Standing Committee **APPROVE the following:**

I. Effective January 1, 2012, the Building Department's City-wide enforcement of the Ontario Building Code by mandating backwater valves on all newly constructed single family dwellings, semi-detached dwellings and townhouse dwellings; and further,

II -That all lot grading plans for new developmeµts include details arid notes on the provision of Backwater Valves (BWV).

EXECUTIVE SUMMARY:

NIA

1. BACKGROUND:

At their meeting of March 9, 2011 City Council adopted resolution CR155/2011:

*"That Administration **INVESTIGATE** developing a Flood Protection Bylaw for newly constructed residential properties which would make bac/ifl,ow valves on both sanitary and storm connections, sump pump overflows, and lot grading systems mandatory for · Downspout Disconnection areas and report its findings and recommendations.*"

3. DISCUSSION:

The rainstorm of JuneS/6, 2010 was a once in 100 year rainfall event which overwhelmed the City's sewer system . While the City of Windsor spends millions of dollars each year on improvements to the sewer system, it was deemed beneficial to offer incentives to homeowners to install equipment which will deal with stormwater in order to reduce the impact of these events in the future. Consequently the City launched a Basement Flooding Subsidy Program in June of 2011. While the installation of the noted equipment will not ensure that a basement flooding event will never occur, **such actions may reduce the impact of severe rainfall events and lessen the extent of any damage associated with these events.**

Water can penetrate basements in several ways and for many reasons, including thdollowing:

a) Backup through the sanitary sewer system to the floor drain;·
b) Stormwater overwhelming the capacity of the sump pump, causing backup up from the sump pump;
c) Sump pump failures due to power outages, <>veruse, or other malfunctions;
d) Poor grading around the house;
e) .Throngh cracks in thy_basenient walls or floors.

Backwater Valve (BWV) Teclmology and Industry Experience

"Building drains" are defined· in the Ontario Building Code (OBC) as the lowest horizontal piping, including vertical offset, that conducts sewage, clear waste water or storm water by gravity to a building sewer. In other words, it is the portion of the plumbing system within a building. "Building sewers" are defined as a sanitary building sewer or a storm building sewer. In other words, it is the portion of the plumbing system outside the building and connected to the municipal sewer.

On sanitary building drains, the City of Windsor only permits the use of "normally open" BWV devices that allows venting of the internal·plumbing systein of-a b1,:tilllilg·(as· per Ontario Building Code requirements). BWV have proved to be reliable for use on the sanitary service lateral to prevent backflow.

BWV would :riot normally be required for stoim sewers servicing new houses as all storgi w te drainage systems ai-e outside of the house. In-cases where there are no s p ·pumps and the subsurface drainage is tied directly to the storm sewers, backflow is a possibility. In such cases, backflow could occur and thus a BWV on the storm sewer lateral is optional. However, this condition does not occur :frequently.

Current Ontario Building Code Regulations

The Ontario Building Code states the following regarding protection to a house from backflow:

7.4.6.4. Protection from Backflow

(1) *Except as permitted* ***in*** *Sentence (2), a backwater valve that would prevent free circulation of air shall not be installed in a building drain or in a building sewer.*

(2) *A backwater valve may be installed in a building drain provided that,*

(a) it is a "normally open" design conforming to,

(i) CANICSA-B70, "Cast Iron Soil Pipe, Fittings, and Means of Joining",

(ii) CAN/CSA-Bl81.l, "Acrylonitrile-Butadiene-Styrene (ABS) Drain, Waste, and Vent Pipe and Pipe Fittings",

(iii) CAN/CSA-Bl81.2, "Polyvinylchloride (PVC) and Chlorinated Polyvinylchloride (CPVC) Drain, Waste, and Vent Pipe and Pipe Fittings", or

(iv) CAN/CSA-B182.l, "Plastic Drain and Sewer Pipe and Pipe Fittings", and

(b) it does not serve more than one dwelling unit.

***(3)** Except as provided in Sentences (4) and (5), where a building drain or a branch **may be** subject to backjlow, a backwater valve **shall be** installed on every fzxture drain connected to them w_hen the fzxture=is located below t e level of the adjoining street.*

(4) Where more than one fzxture is located on a storey and all are connected to the same branch, the backwater valve may be installed on the branch.

***(5)** A subsoil drainage pipe that drains into-a sanitar/drainage system that ii-subject to surcharge §hall:be connected in _s_uch .a manner thatsewage._ 99nnot back up in_to the:subsoil _ drainage pip .* ----

The National Building Code of Canada requires every new home_t Jiave_ a BWV installed on both the storm and sanitary sewer _service laterals, but municipalities follow their respective provincia.l builcfuig codes. The current Ontario Building Code (OBC) permits the installation of BWV on buildmg drains provided the-BWV is "normally open", meets the CSA standards for the type of material used and the building drain does not serve more than one dwelling unit. **In Ontario, under the OBC, the installation of BWV on building drains of new homes is an option but not mandatory unless a building drain may be subject to back.flow.**

The severe weather event of June 2010 was uncharacteristic for the historical climate conditions of the City. Various homes within the City experienced flooding. This occurrence has demonstrated that despite all reasonable precautions the City's sewer system could be overwhelmed, and building drains may be subject to backflow. In the opinion of the City· Engineer; there is- no single building--drain, below the -leverof the adjoining street that_ i .. completely immune from this possibility. Accordingly, pursuant to Section 7.4.6.4(3) of the OBC, the Chief Building- Official is obligated to mandate the jnstaUatiop. of BW_V on building drains of- all -new construction of single -family dwellings :s e t a c h e d dwellings and to"1llh.ouses where th fixtures are located_below the level of the adjoining street.·

The Building _Code Branch of the Ontario -Ministry of M cipal Affairs and Housing is currently undergoing a review of the existing Building_ Code for potential amendments to_ the Code. The second round- of onsultations with stakeholders was .concluded in April of 2011. One of the potential changes to the Ontario Building Code is to_ret.J_-ect that of the-National Building Code, in that, there will be manaatory BWV for new dwelliilg units.·

Building Code v Flood Protection By-law

S.35 of the Building Code Act provides as follows:

Municipal By-laws

***35.** (1) This Act and the Building Code supersede all municipal by-laws respecting the construction or demolition of buildings -*

Different Treatments

(2) In the event that this Act or the building code and a municipal by-law treat the same subject-matter in different ways in respect to standards for the use of a building described in Section 10 or standards for the maintenance or operation of a sewage system, this Act or the-Building Code prevails and the by-law is inoperative to the extent that it differs from this Act or the Building Code.

The provisions of the Building Code Act are clear in indicating that the Act and the Building Code are paramount over any municipal by-laws dealing with the construction and demolition of buildings and maintenance and operation of sewage systems. In particular the requirement for BWV is addressed in paragraph 7.4.6.4(3) of the Building Code. Therefore there is no need for a municipal by-law on this issue.

Cost of Technology

· Typically, the cost to install .a BWV at the time of construction is approximately. $250 per valv , . When considering the_costs:. assQciated with basement flood .damages, social impacts,. inconvenience to the homeowner and grant costs. for retrofit protective plumbing programs offeredoy the municipality;:the cost to install as part of}nitial construction is negligible.

Municipal Best Practices

A peer review was undertaken to investigate and document the practices of peer municipalities related to.the use of BWV for new construction. The review included municipal governments in 4 Provinces (3 in Ontario (Toronto, Ottawa and Welland), two _in Quebec, two in Saskatchewan and one in Alberta). Of the peer municipalities reviewed, all have implemented various strategies and programs, including specific requirements for use of BWVs. In Ontario, the Cites of Toronto, Ottawa and Welland currently mandate the installation of a BWV on building drains for new house construction due to the possibility of backflow throughout their respective municipalities.

Recommended Measures

·-·- A coBJ._preh ive review· aertaken by the Public Works Dep ent to <;Iet e the consequences oftherainfall events of June 5 and 6, 2010. City Council directed Administration to investigate procedures to deal With newly constructed res1.dential properties which would make backflow valves on sanitary drains mandatory for the entire City. The following plans for moving forward are recommended.

1. **Mandatory Installation of ·Backwater Valves for new Single Family Dwellings, Semi-Detached Dwellings and Townhouse Dwellings**

   The review identified opportunities to increase the level of protection against sewer backups. Commencing January 1, 2012, the Building Department will enforce the Ontario Building Code to mandate the installation of a BWV on all building drains below street level placed in new houses. Further, the additional material cost for a BWV installed in a new home at the time of construction is significantly less than in a retrofit situation (approximately $250 compared to $1,400). In cases where backflow could occur on a storm building sewer, a BWV is recommended but not mandatory. However, it is anticipated that

this condition will not occur frequently as sump pumps are normally installed in all new construction. Furthermore, lot grading plans that are submitted with new developments will be required to note and indicate that BWV are to be included. It is further noted that the current basement Flooding Subsidy Program for the installation_ofBWVs and sump pumps does not apply to new construction.

The OBC does not mandate that a BWV be installed on existing building drains or building sewers unless the entire building drain or building sewer is entirely replaced. Where only a portion of the building drain or sewer is repaired for an existing home, a BWV is not mandatory.

2 Increase Homebuilder/Homeowner Awareness

Many property owners and builders are not aware of the existence or maintenance requirements for BWVs and other measures to reduce the risk of basement backups (i.e., not connecting sump pump outlets to.internal sanitary plumbing systems directing eaves tr..9ugh e>_utlets away from the home). The f§llowing measures are recommended:

a) Provide homebuilders with general infomiatiQn to be shared with new ho_!!leowners -- - related to maintenance ·of BWVs, s -p u m p s (where applicable) aiid- other measures that can reduce the risk of basement backups.

b).Develop an annual campaign focused on m asures residents can_coriside_rto reduce the risk of basement backups. This could be conveyed through information highlighted on the City's website and/or included with the tax bill. Also, brochures could be left at the time of the occupancy of a new house.

c) Update information available on the Building Department's web-site.

3. Backwater Valve Inspections

The_!!uilding Department provid §._inspections at different stages of construction. Through the building permit application process there is an opportunity to increase awareness of both contractors and homeowners of the benefits ofBWVs and other general measures that-may -reduce the risk of basement backups;

4 . RISK ANALYSIS:

The installation of BWV's on both storm and sanitary service laterals for new home .. o truction provides an enhanced level of protection against basement flooding in new homes. There will be a reiatively minimal financial impact on all homeowners building a new home and this is discussed further under Financial Matters.

5. FINANCIAL MATTERS:

Requiring the installation of a BWV on building drains, as part of the initial new construction, would have minimal impacts on costs to the homebuilder and ultimately, the homeowner. When installed with new home construction, the cost ofa BWV is approximately $250, as

compared with retrofit costs of approximately $1,400 under the City's Basement Flooding Subsidy Program. There is a clear benefit to future homeowners to having this protective device installed at the time of original construction. It is noted that the Basement Flooding Subsidy Program for the installation of BWVs and sump pumps does not apply for new construction.

6. CONSULTATIONS:

Lee Anne Doyle, Chief Building Official
Mario Sonego, City E_ngineer
WiraH.D. Vendrasco,-Legal Counsel
Dennis Gervais, Plumbing fuspector
Dana Paladino, Supervis_or, Risk Management
Roberto Vani, Manager of fuspections
Al Peach, Manag r of fu pt::ctions
City of Toronto, Buikling partmen·t
City of Ottawa - Building Department
City of Welland- Building Department

Media releases will be issued and the City website updated once the policy is approved. The Greater Windsor Home Builders Association and the local branch of the Essex-Kent Chapter of Consulting Engineers of Ontario have been notified of this report.

7. CONCLUSION:

The_Ontario Building Code requires the installation of a BWV where backflow may occur. The City Engineer has confirmed-that there is Iio single building drain_that is ·completely immune from experie11cing l>ackflow during a severe weather event. Accordingly,--under the OBC the Chief Bwl:ding Official is obligated-to mandate the installatioiiof a BWV on the buildip._g _drain. As a result, an applicant" for a building p_ermit involving a sewer drain where the drain is below - thelevel of the adjoining street anywhere in the City of Windsor shall bereqwed to install a BWV on the building drain, effective January 1, 2012.

While. the installation of a BWV will not ensure that a basement flooding event will never occur, such equipinent may reduce the impact _ of severe rainfall events and lessen the probability of any damage·associated with these events. The proposals contained within this report represent a positive direction for the City to reduce the risk of basement flooding. The installation of BWV's on building drains with new home construction provides an enhanced level of protection against basement flooding.

It istobenoted that the Basement Flooding Subsidy Program for the installation ofBWVs and sump pumps does not apply to new construction.

Wm. Jean
Manager of Permit Services/Deputy Chief Building Official

Building Official

G i .
City Solicitor and Corporate Leader, Economic Development and Public Safety

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APPENDICES:
Appendix A - Illustration

NOTIFICATION :				
Name	Address	Email Address	Telephone	Fax
Essex-Kent CEO Attention: Albert Schepers	2080 North Talbot Road, RR#l, Windsor, ON N8W 5J5	albert@gsins:gector.com	519-737-9162 ext: 22	519-737-9163
Greater Windsor Home Builders Association Attention: Mike Dinchik	2880 Temple Drive, Windsor, ON N8W 5J5	hba@wincom.net	519-948-3247	519-948-4660

Appendix A

ILLUSTRATION

BACKWATER VALVE INSTALLATION