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From: [Jennifer Anderson](#)

Sent: Monday, December 7, 2020 1:03:54 PM

To: [City Council](#)

Subject: [EXTERNAL] Mandatory Fire Sprinklers

Sensitivity: Normal

Attachments:

[Common Questions.pdf](#); [MBAKS Fire Sprinklers Issue Brief.pdf](#);

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Good afternoon Mayor Hall and Council,

I hope this message finds you all well. I am writing today to provide you with some additional information from the residential homebuilding industry related to mandatory fire sprinklers. I understand you will have a discussion this evening on the amendment to the 2018 Building Code that would require mandatory fire sprinkler installation in all new single-family and duplex homes in Shoreline. MBAKS is strongly opposed to the adoption of mandatory fire sprinklers in new construction.

Housing affordability continues to be a challenge in our region. The cost to implement the new codes alone, without the mandatory fire sprinkler amendment is estimated to be about 29k on a 1780 square foot home. It is in our opinion that home owners should be able to decide for themselves if they want to spend the additional money to install fire sprinkler systems.

MBAKS and its members are committed to providing homes that are safe for the residents. New homes are built to codes explicitly designed to make them safer, with specificity on fire safety. Modern techniques, materials and other advances in technology have improved fire safety in new construction.

I have attached MBAKS Issue Brief on Fire Sprinklers prepared with additional background and cost estimates for sprinkler installation. If the Council chooses to bring this item back for additional discussion, we ask that it be carefully considered and move through the Planning Commission for full discussion.

Thank you for your time and consideration. Please don't hesitate to contact me with any questions.



Jennifer Anderson | King County Manager

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We aspire to be the most trusted and respected housing experts in the Puget Sound region.

Common Questions Regarding Fire Safety and Residential Sprinkler Systems

What are the chances of a house catching fire?

Because of changes in residential construction technology, improved building code requirements -- especially for electrical and smoke alarm systems, as well as consumer behavior and the concerted efforts of fire fighters, home builders and other safety advocates - the number of fatal fires has dropped dramatically in the last 20 years. This trend is continuing, and the decline is even more impressive given our nation's significant growth in population and housing stock.

Even more dramatic is the drop in the actual death rate per million persons from house fires. According to the Centers for Disease Control, the rate dropped by more than 58 percent between 1979 and 2003. That trend will continue as more new housing stock is constructed and especially as homeowners continually maintain their smoke alarm systems.

What can be done to reduce the chances of a fire?

Occupants should risky activities such as leaving cooking or lit candles unattended and smoking, among others. Changes in smoking habits -- such as not smoking in bed, fire-safe cigarettes and ignition-resistant furnishings -- have also helped reduce the risk. As with smoke alarms, fire prevention education is a more practical, effective and proven approach to reducing home fire incidents, injury and fatalities than mandates for home fire sprinklers.

How reliable are fire sprinklers?

Proponents claim that residential sprinkler systems have proven reliable in 96 percent to 99 percent of reported structure fires when the fire was large enough to activate the system. However, according to reports from the National Fire Protection Association, there are so few fires in one- and two-family dwellings equipped with sprinklers that they are not shown in most of its recent studies.

Furthermore, it was suggested in the report that these sprinklered dwellings are built and maintained better than homes built before significant improvements in the building code. It is important to note that the sprinklers often receive credit for life saving when it was actually the result of the overall integrated system of balanced fire protection and preparedness.

The reliability of residential fire sprinklers is also questionable. There is no study that shows how long sprinkler systems will last. After smaller recalls by other companies in 1998 and 1999, a major fire sprinkler manufacturer recalled 35 million fire sprinkler heads in 2001. Any requirements that the manufacturer notify owners of homes where these defective heads were installed have now expired.

I have heard horror stories of sprinkler systems accidentally discharging, causing major water damage. Are these stories true?

Yes. Typically, these accidental discharges occur in cases of overheating, freezing, mechanical damage, corrosion or deliberate sabotage. In fact, accidental discharge is one of the major concerns with the implementation of residential sprinklers. While accidental discharge due to a manufacturing defect is rare, there have been several reported incidents of discharge when there was no fire present and the cause was due to other events.

Quick-response heads activate at lower temperatures to ensure that they react during the early stages of a fire. The drawback is that these heads cannot discern between a “good” and “bad” heat source. That is why there are certain distances that must be maintained between the sprinkler and fixtures such as fireplaces, skylights, cooking appliances and lighting.

A typical accidental discharge occurs in areas where the wet piping system is exposed to freezing temperatures. In most homes, where the sprinkler is located in the ceiling, the piping for that system is installed in the attic, where temperatures can reach the freezing point. If any portion of the piping system is exposed to these temperatures, ice can form, creating thousands of pounds of pressure on the pipe, which can crack or loosen the joints. When installed in attics and exterior walls, it is important that the insulation is installed correctly and reinstalled properly if it is disturbed.

Damage to the sprinkler can also result in a premature discharge. The sprinkler consists of a frame, the seat and the operating mechanism, which is usually a solder link or a glass vial. If the sprinkler is struck by an object or the link is dislodged, the sprinkler may be set off. Most sprinklers flow about 12 to 16 gallons a minute, so water damage can occur very rapidly.

What should I do in the event of an accidental discharge?

The system should be shut off immediately. It is important that the owner fully understand how the system works, where the shut-off valve is located (if provided) or how to turn the main water system off to the house. In many cases, the residential sprinkler system is connected to the same water piping system serving the plumbing fixtures. Shutting the main valve to the plumbing system will also shut down the sprinkler system.

The next priority is to remove as much of the water as possible before it causes permanent damage. If water has found its way into the walls or ceiling, it is important to remove all the drywall and insulation to allow these areas to air out and reduce the chance of mold or rot.

What are the maintenance requirements for a residential system? Is it something I can do myself?

Sprinkler systems are expected to work in the event of the fire, but like any system, maintenance is required to ensure it will operate when a fire is detected. Proponents claim that a NFPA 13 D does not require any maintenance to be performed on the residential sprinkler system and that the system can be installed and forgotten.

The fact is that all sprinkler systems, whether they are commercial or residential, require routine maintenance and inspection. NFPA 13 D states that it is the responsibility of the installer to provide the owner all the maintenance information and to educate the owner regarding how the system works.

When homeowners are led to believe that no precautions are necessary and no preventive maintenance needs to be performed, it leads to a false sense of security. The owner is responsible for properly maintaining a sprinkler system and should understand the components and how they work.

NFPA 13D and manufacturers suggest the minimum monthly maintenance program should include the following:

- (1) Visual inspection of all sprinklers to ensure against obstruction of spray.
- (2) Inspection of all valves to ensure that they are open.
- (3) Testing of all water flow devices.
- (4) Testing of the alarm system, where installed.
- (5) Operation of pumps, where employed.
- (6) Checking of the pressure of air used with dry systems.
- (7) Checking of water level in tanks.
- (8) Special attention to ensure that sprinklers are not painted either at the time of installation or during subsequent redecoration.

Also, if a backflow prevention device is installed as can be required, an expensive annual inspection may be mandated by the local water purveyor.

Standards also specify that antifreeze-type sprinkler systems that are installed in colder climates should be emptied and then refilled with an antifreeze solution every winter, and that monthly inspections and tests of all the water flow devices, pumps, air pressure and water level be performed.

Unlike smoke alarms, there is no way to test sprinklers other than applying heat. Smoke alarms can be tested by pressing the test button or using products that simulate smoke to verify that the smoke alarm is properly functioning and ready to alert occupants. Sprinkler manufacturers must rely on test sampling to see if the sprinkler will react to the presence of heat and activate. Defects with the sprinkler will not be known until the sprinkler fails to activate in a fire and reports are issued later for the recall of the defective sprinkler.

How many residential sprinkler systems are installed annually?

According to a national poll conducted by sprinkler advocates, 63 percent of those surveyed indicated that they were aware that residential sprinkler systems are available for one- and two- family dwellings and townhouses. However, trade reports have indicated that there is a low market demand for residential sprinklers, except for those areas where sprinkler ordinances have been mandated. The number of homes built annually that are equipped with sprinklers continue to be less than 2 percent, many of which are required by local ordinance and not as an option elected by the homebuyer.

Why aren't more systems being installed?

Opponents, including code officials and home builders, have consistently argued against fire sprinkler mandates because they are expensive, have an unreasonable impact on housing affordability and have not been demonstrated to be a practical, cost-effective, assured means for reducing fatalities. More lives can be saved by education and by ensuring that every home has and maintains working smoke alarms than by mandates for home fire sprinklers.

Costs vary significantly depending on a home's location, layout, number of stories, and other factors – especially access to water. A 2007 survey of home builders indicated that builder costs for those installations averaged \$2.66 per square foot and ranged as high as \$6.88 per square foot. When overhead and any other factors are added in, costs to home buyers escalate further.

For homes on wells, typical costs are even higher because of the need for additional components such as storage tanks and larger pumps. Owners of homes on well water need to consider how the sprinklers will operate if the power goes out or if water pressure is a problem – and solutions, like extra water tanks, pumps and generators, are costly.

What about smoke alarms?

The International Residential Code currently requires hardwired, interconnected smoke alarms to be installed in all bedrooms, outside of them and on each additional story, including basements. When one alarm is activated, all other alarms are activated as well. This effective early-warning system is the most important measure for protecting occupants against fire. More than 90 percent of the occupants survived fires that were reported to have occurred in homes equipped with hardwired interconnected smoke alarms from 2000 to 2004.

Another study published in the *Journal of the American Medical Association* found that when public health strategies to reduce residential fire-related injuries and deaths include information about smoke alarm installation, monthly testing of smoke alarms, reduction of residential fire hazards, design and practice of fire escape plans, fire safety education, and implementation of smoke alarm ordinances, residential fire-related deaths will continue to decline. It's clear that resources should be focused on ensuring every home has and maintains working smoke alarms rather than pushing for mandatory home fire sprinklers.

According to the most recent NFPA report on smoke alarms, it is estimated that over 890 lives could be saved annually if every home had working smoke alarms. Sixty-five percent of the fire fatalities reported from 2000- 2004 occurred in homes where smoke alarms were not present or smoke alarms were present and did not operate.

What do most people think about sprinklers versus smoke alarms?

When asked in a 2007 survey of 800 likely voters by Public Opinion Strategies if fire sprinklers should be required in new homes, an overwhelming 89 percent of consumers said that smoke detectors already do an adequate job of protecting them in their homes and 28 percent would not want sprinklers at all, even if they were provided free of charge. Survey results show that only 15 percent of consumers in the sample were willing to pay \$4,800 or more for a residential fire sprinkler system.

What guarantees do I have that the sprinkler system will save my life or the life of a loved one?

There are no guarantees that smoke alarms or sprinklers will prevent a fire fatality, although the use of either system will increase your chances of surviving a fire. While smoke alarms alert or notify occupants that there is a fire, if the occupant is physically impaired due to drugs or alcohol, disabled or unable to move on his or her own volition, the alarm will not prevent a fatality. There are also situations when the sprinkler system will not be able to prevent the loss of life such as when the victim is too close to the source of ignition, the system is damaged by the fire or an explosion, when the fire originates in concealed, combustible locations, when the fire is shielded by foreign objects from the effective coverage area of the sprinkler, or when the victim succumbs to smoke inhalation due to a smoldering fire -- which does not produce enough heat to activate the sprinkler system.

FIRE SPRINKLERS IN SINGLE-FAMILY HOMES

An issue brief by the Master Builders Association of King and Snohomish Counties

April 2016



BACKGROUND

In 2009, the Washington State Building Code Council (SBCC) passed an amendment to the International Residential Code (IRC) making each local city or county responsible for approval of fire sprinklers within their jurisdiction. The vote meant that there would be no statewide sprinkler mandate, and since July 1, 2010, a local option has been in effect whereby local governments can decide whether or not to mandate fire sprinklers in single-family homes. Local governments no longer need to seek approval from the SBCC before implementing a sprinkler mandate, as was the case prior to this vote. Today, six Washington cities have a sprinkler ordinance, including Bonney Lake, DuPont, Kenmore, Olympia, Redmond and Tukwila.

More recently, sprinkler proponents advocated for an amendment to the 2015 IRC that would have required all newly constructed townhomes to include an automatic fire sprinkler system, regardless of height or area. On Nov. 13, 2015, the SBCC voted to deny the amendment, reaffirming their opposition to a statewide mandate. They later affirmed this position with a second vote¹ on this question when proponents, led by the Washington State Fire Marshals, requested reconsideration of the decision.

Another recent development is the passage of legislation by the 2016 Washington State Legislature, SB 6284, to prevent water-sewer districts from prohibiting multipurpose fire sprinkler systems in single-family homes and townhomes.² With this change, water purveyors will no longer be allowed to require that sprinkler systems be installed on their own meter, thereby addressing one of the cost burdens associated with sprinkler installation.

POSITION

The Master Builders Association of King and Snohomish Counties (MBA) has long opposed mandatory fire sprinklers in single-family homes. Our association strongly supports the safety of the entire community. We do not, however, support mandating fire sprinklers in single-family homes due to the high cost of installing these systems and other implementation issues.

Given the many challenges our region faces in providing an adequate supply of affordable housing, we're concerned that adding the cost of sprinklers to new homes will have immediate, negative impacts on the cost of housing (affordability) and homeownership (attainability). Owning a home is the most valuable asset many people will have. We believe consumers should have the choice as to whether or not to install sprinklers and assume the cost, as well as the responsibility for maintaining these systems. Price escalation due to regulatory mandates negatively impacts the ability of many to afford to own a home now and in the future. We are very concerned about the significant impact on housing affordability.

Furthermore, newer homes are built to a series of building codes explicitly designed to make homes safer, with specificity on fire safety. In light of modern building techniques, materials and other advances in technology, we believe that requiring smoke alarms (including efforts to retrofit older structures), and educating the public on the importance of keeping these alarms working, offers the most cost-effective protection from fire-related deaths. In fact, of all the fire safety tools available today, installing and maintaining smoke alarms is the most practical and proven way to reduce home fatalities in the U.S. **Smoke alarms save lives.**

¹ See SBCC Meeting Documents – January 22, 2016 <https://fortress.wa.gov/ga/apps/SBCC/Page.aspx?cid=943>

² [Substitute Senate Bill 6284](#) has passed the Legislature and been delivered to the Governor.

According to a 2015 National Fire Protection Agency (NFPA) study, a review of reported fires derived from the National Fire Incident Reporting System (NFIRS) and the NFPA's fire department survey show that from 2009-2013, fires in homes with no smoke alarms caused an average of 38% of home fire deaths per year, and an additional 21% of home fire deaths occurred in fires in which smoke alarms were present but failed to operate. The report further states:

The death rate per 100 reported fires was more than twice as high in homes with no or no working smoke alarms (1.18 deaths per 100 fires) as it was in fires with working smoke alarms (0.53 deaths per 100 fires).³

Ensuring that every home in the United States had at least one working smoke alarm would save hundreds of lives every year. This measure would benefit everyone – not just those who can afford a new home with fire sprinklers.

Cost of Sprinklers Unpredictable

Fire sprinkler supporters argue that the cost to install sprinklers is not substantial, averaging \$1.35 per sprinklered square foot⁴. We believe residential fire sprinklers are a significant expense, and that they can be much higher when you factor in all related costs.

Installation costs will vary depending on the architecture of the house, local requirements, permit fees and other factors. Based on our own research, the **total cost** for sprinklers could be more than \$10,000 per home in some cases. While legislation recently adopted by the 2016 Legislature would address one specific barrier to sprinkler implementation related to water meters, the MBA's underlying concerns about cost remain.

Adding the cost of sprinklers to a home will have immediate, immeasurable impacts on the cost of housing (affordability) and homeownership (attainability). Homebuilders cannot financially bear the increased cost to build a house if it cannot be passed on to homebuyers in the form of increased home prices.

Three examples of actual sprinkler installation costs in the Puget Sound region serve to illustrate just how expensive they are:

- ❖ **City of Redmond:** One builder was quoted \$5,200 for an automatic fire sprinkler system in a 3,106-square-foot home in the city of Redmond. (The home also has a 908-square-foot garage that has sprinklers installed). The quote, prepared in February 2014, was for a flow-through sprinkler system, meaning it uses the same meter as the domestic water supply. Factoring in the sales tax of approximately \$500, plus a \$550 permit fee and \$125 cost for tenting insulation over sprinkler pipes in the attic, the total cost was closer to **\$6,375** per home.⁵
- ❖ **City of Kenmore:** Another example illustrating the cost of fire sprinklers is for a 3,600-square-foot single-family home in the city of Kenmore. The builder of this project received a bid in October 2015 for \$6,562. Factoring in the additional fees associated with the sprinkler system, the total cost is on the order of **\$7,577**. This particular project is located within the Northshore Utility District, which allows flow-through sprinkler systems. The bid does not include design fees for the system.⁶
- ❖ **City of Kirkland:** In September 2015, a builder was invoiced **\$10,700** to install fire sprinklers in a new 4,100-square foot single-family home located in the city of Kirkland (Northshore Utility District). This was a flow-through system. The builder was charged **\$8,650** for a second, 3,000-square-foot home in the same project. In addition to this expense, the builder incurred added hard costs associated with upsizing the water meter (typically from ¾ meter to 1" meter) and the water line (from 1" to 1 ½"). Though harder to quantify, it is important to note the soft costs associated with the fire sprinkler

³ Smoke Alarms in U.S. Home Fires, Ahrens, Marty (September 2015), National Fire Protection Association.

⁴ Home Fire Sprinkler Cost Assessment – 2013. Final Report, Prepared by Newport Partners on behalf of the Fire Protection Research Foundation, Sept. 2013.

⁵ See Appendix A.

⁶ See Appendix B.

permit⁷, including the increased timeline needed to obtain the permit and undergo the necessary inspections and testing that are performed at “rough in” and final inspection. Homes with sprinklers can take longer to build as a result of the additional permit and testing, which adds to the overall cost of building the home. In this example, the builder estimates this process added a month to the timeline, resulting in several thousand dollars in added carrying costs.⁸

This additional cost prices out many would-be home buyers – and doesn’t even include the additional cost of regular maintenance to keep the sprinklers operating effectively.

Maintenance Issues Present Challenge

In order to function properly, residential sprinkler systems require ongoing monthly and yearly consumer maintenance. Maintaining a residential fire sprinkler system is not the same as maintaining a smoke alarm system. The fire sprinkler valves must be checked periodically to verify the system is activated. Sprinkler heads must be checked to make sure they are clear of obstacles. Homeowners must be careful not to block them or paint over them.

Mandating sprinklers on homeowners adds ongoing maintenance costs, creating a financial burden that goes beyond the initial installation costs of these systems. We do not believe it is realistic to impose this maintenance regime on homebuyers. Rather, consumers should have the choice as to whether or not to install sprinklers and assume the necessary maintenance.

Residential Fire Sprinklers Aren’t Designed to Save Property

In some cases, fire sprinklers increase property loss because of the significant water damage they can cause. If the occupants are away or in a different part of the house – or if they accidentally discharge – the amount of water released can be considerable.

Fire Safety Has Improved Dramatically Without Sprinkler Requirement

We believe strongly that fire safety can be effectively provided without mandating costly fire sprinkler systems. New homes are safer today than ever before because of safety-focused building codes, new building techniques and advances in technology. Statistics show that fire safety continues to improve dramatically without the requirement of residential fire sprinklers.

According to the NFPA, Washington’s 2006-2010 average fire death rate (6.7 per million population) was the ninth lowest in the U.S. In fact, the long-term trend in fire death rates per million population has been sloping substantially downward in nearly every state since 1980.

Again according to the NFPA, nationally, fire deaths dropped 52% between 1980 and 2011, from 5,200 to 2,520 per year. This downward trend is even more impressive given the significant growth in both population and housing stock our nation continues to see. The reason for the decline in fire deaths is the result of technological advances in heating and electrical systems, fire-resistant building materials, new building techniques (fire stopping, fire blocking and draft-stopping) and, most importantly, hardwired smoke alarm systems, which are required in code.

As stated above, smoke alarm systems are proven to be very effective in reducing fire deaths. Analysis by the U.S. Fire Administration found that between 2001 and 2004, less than 4% of residential fire fatalities occurred in homes with working smoke alarm systems. At the same time, data from the [NFPA](#) suggests that sprinklers were irrelevant in the sharp reduction of fire incidents, injuries and deaths that occurred since the late 1970s. According to the 2009 report *U.S. Experience with Sprinklers*, the number of fires reported in one- and two-family dwellings equipped with sprinklers was 0.2% in 1980 and 1.2% in 2006. In fact, sprinkler usage in one- and two-family home fires is so low that the most recent report of *U.S. Experience with Sprinklers* (2012) does not provide separate estimates for fires in one- and two-family sprinkler-equipped dwellings but rather combines them with the fire incidents in sprinkler-equipped apartments. Still, in 2006-2010 sprinklers were present in only 6% of home fires.

⁷ In this example, the permit fee was about \$400 per home.

⁸ See Appendix C.

BARRIERS TO IMPLEMENTATION MUST BE ADDRESSED FIRST

In light of the local option on fire sprinklers, we recognize some jurisdictions may wish to weigh the merits of this issue. As such, we are strongly urging those cities and counties, before even discussing the idea of mandating sprinklers in single-family homes, to consider and address all of the barriers to fire sprinklers, as identified by the SBCC's Fire Sprinkler Technical Advisory Group (TAG).

In early 2008, at the request of the Washington State Legislature, the SBCC created the Fire Sprinkler TAG to explore the broad ramifications that surround the installation of residential fire sprinklers statewide. In November 2008, the SBCC approved their report, "Voluntary Private Residential Fire Sprinkler Systems"⁹ and forwarded it to the Legislature as the guiding document on why Washington State doesn't require sprinklers in all homes. Members of the Fire Sprinkler TAG included a comprehensive representation of all industries affected, including builders, fire safety, insurance, water, cities and counties from a general perspective.

The report identifies seven barriers and makes the case that until these issues are resolved, residential fire sprinkler systems (RFSS) in single-family homes are problematic. While two of these barriers – pertaining to water meters and shut-off issues – have since been addressed by the Washington State Legislature¹⁰, we believe the remaining barriers are still valid today and continue to be a significant concern, they being:

Lack of Preferred Design and Installation Details and Guidelines – There is a lack of consistent criteria for installing fire sprinklers that would assist builders, installers, fire personnel, water purveyors and homeowners.

Cost and Cost Recovery of a Voluntary RFSS Installation – The cost of installing residential fire sprinklers can vary widely, and homeowners often have limited ability to recover these costs, both of which act as barriers to homeowners.

Costs for Permit and Inspection – Installation of fire sprinklers require plan review and inspections, both of which add costs.

Water Use Efficiency Rule Credit for Use of Larger Meters – It is recommended that the state Department of Health provide an incremental credit to water purveyors for unaccounted for water, due to the inaccuracy of larger water meters at low flow.

Lack of Education – There is an apparent lack of awareness among homeowners about the life-safety benefits of sprinkler systems versus alarm systems, differences between new and existing single-family homes, and other key facts that could help the public make better-informed decisions about whether or not to voluntarily install sprinklers in their homes.

A great deal of time and effort went into drafting this document, and we believe it raises key questions that continue to be very relevant to this discussion. The remaining five barriers included in the report should be addressed by any jurisdiction considering mandatory sprinklers or seeking to promote voluntary installation of these systems.

MBA CONTACTS

For more information, please visit www.masterbuildersinfo.com or contact our government affairs representative for your jurisdiction at 425.451.7920.

⁹ "Voluntary Private Residential Fire Sprinkler Systems," Prepared by State Building Code Council Technical Advisory Group under SHB 2575 can be viewed from the following link: <http://sbcc.wa.gov/File.ashx?cid=466>.

¹⁰ With the passage of [SSB 6284 in 2016](#), the Washington State Legislature sought to address one of the cost barriers to sprinkler installation pertaining to water meters. In 2011, the Legislature addressed a barrier related to shut-off issues by passing legislation that, among other things, lists conditions under which public water systems are not liable for damages resulting from shutting off water to a residential home with an installed fire sprinkler system. See: [RCW 70.119A.210](#).

Appendix A

Redmond Example

February 3, 2014

Re: Automatic Fire Sprinkler System Quote 3017 for the

projects located in Redmond, WA.

We are pleased to submit our quotation in the following amounts for automatic fire sprinkler systems in the above noted projects

WP 505 Basic: Five Thousand Dollars (\$5,000.00)

W 501: Five Thousand Dollars (\$5,000.00)

WP 35-1: Five Thousand One Hundred Dollars (\$5,100.00)

WP 35-2: Five Thousand Two Hundred Dollars (\$5,200.00)

WP 30-1: Five Thousand Two Hundred Dollars (\$5,200.00)

WP 30-2: Five Thousand Two Hundred Dollars (\$5,200.00)

Prices are F.O.B. job site installed all taxes extra.

Note: We will install the model home for free if

is awarded all 53 units.

• add \$550 for permits
• add \$125 for tenting insulation over sprinkler pipes in attic.

The quotation includes the following:

- One NFPA 13D wet pipe flow through sprinkler system per the city of Redmond with CPVC pipe
- Main drain valve with water pressure gauge
- White concealed Sprinkler heads where possible.
- Spare heads and installation wrench in cabinet.
- Flush test of underground pipe with City of Redmond Fire Inspector
- Install drop with plugged outlet for one toilet on each floor 2 to 4 feet off finished floor for plumbers connection
- One year warranty

We will start our installation from an adequate domestic water supply by others

Appendix B

Kenmore Example

PLUMBING PROPOSAL PREPARED FOR:

JURISDICTION

PROJECT	
LOCATION	KENMORE
PLAN #	
BID/REF#	
BID DATE	10/26/2015

BID FIXTURE COUNT:		RI FIXTURES	8.70	
JOB #:				
ITEM	QTY	DESCRIPTION		
HEADS	33	CONCEALED SPRINKLER		
COVERS	33	CONCEALED SPRINKLER COVERS		
CABINET	1	CABINET WITH W/THREE SPRINKLER COVERS		
DRY PENDANT	1	UPRIGHT HEAD		
RISER ASSEMBLY		NA		
BID OPTIONS		DESCRIPTION		AMOUNT
1		RISER & ALARM		\$ 500.00
3		SPRINKLER GARAGE		\$ 500.00
4		DESIGN		\$ 750.00
5		TRIP CHARGE NO METER AT ROUGH IN FOR BUCKET TEST		\$ 500.00
6		INSTALL FIRE TRIM COVERS SEPARATE TRIP AFTER PLUMBING TRIM		\$ 200.00
		BID	\$	6,562 *
AUTHORIZED SIGNATURE		DATE	BID GOOD FOR 90 DAYS	

BILLING SCHEDULE	%	ORIGINAL PROPOSAL	APPROVED OPTIONS	REVISED PROPOSAL
ROUGH IN	85%	\$ 5,578	\$ -	\$5,578
	15%	\$ 984	\$ -	\$984
TOTAL	100%	\$ 6,562	\$ -	\$6,682

EXCLUSIONS

- Sales Tax
- Water meter
- Water service line
- Design
- Gas meter, Gas Piping, and/or Gas Connections
- Permits
- Insulation
- Freeze damage
- Backflow Device
- Any damage to material on-site
- Monitoring

PAYMENT TERMS

Net 10th

Past due accounts will be charged a finance charge at the periodic rate of 1-1/2% per month, which is an annual percentage rate of 18%, or a periodic rate not to exceed the maximum rate allowed by state law.

Northshore Utility District Fees Associated with Sprinklers in the City of Kenmore

Fire Protection Fee:	\$900.00
GFC Increase for 1" Meter:	No Charge – NUD only charges the cost of meter upsizing
Backflow Assembly Inspection:	\$80
Water Meter Set Increase for 1" Meter:	\$35 (3/4" x 5/8" Set Charge is \$290/1" Set Charge is \$325)
Total:	\$1,015



Northshore Utility District SINGLE-FAMILY SEWER / WATER CONNECTION COST INFORMATION

Sewer Connection Charges					
Meter Size	MFC	LFC	Total Connection Fees	Minimum Standard Permit ¹	Minimum ROW Permit ²
¾" & 1"	\$1,925	\$5,075	\$7,000	\$300	\$645

MFC - Major Facilities Charge LFC - Local Facilities Charge

¹Permit: \$300 fee covers gravity side sewer requiring only a single inspection. Pumped side sewer or other obvious situations requiring two inspections is \$400. Additional inspections due to failure to comply with the District's rules and regulations are \$80/hr with a one hour minimum. There is a \$150 fee for a revised permit to disconnect and cap a side-sewer. There is no fee for revised permits to make minor modifications or repairs to an existing side-sewer.

²ROW: Right-of-Way Permits required for side sewer connections and inspections are a minimum of \$645; however, additional charges may apply depending on the jurisdiction.

Water Connection Charges						
Meter Size	MFC	LFC	Total Connection Fees	Fire Protection ⁴	Minimum Service Installation ³	Meter Set Permit
¾" & 1"	\$1,800	\$700	\$2,500	\$900	\$3,450 – ¾" \$3,500 – 1"	\$290 – ¾" \$325 – 1"

³Service Installation: To install a service, the District shall charge its actual labor and material cost plus an additional charge for administration and overhead as set forth in Section 12.03 of the Rate Resolution. Water service installations on roads that require overlay restoration, affecting 3 or more lanes of traffic or on major arterials shall require an additional \$6000 deposit.

⁴Fire Protection: If the jurisdiction is unincorporated King County, the fee is reduced to \$600.

Per the Northshore Utility District 2015 Rate Resolution 2015-03-06

SECTION 10.00 BACKFLOW ASSEMBLY TESTING

The District shall enforce a backflow assembly testing policy in accordance with WAC 246-290-490. See Appendix "N" of the District Comprehensive Water System Plan and District Resolution 1994-4-1 for details. The District offers backflow assembly testing service to property owners upon request at a rate of \$80 per assembly.

Where a service line, meter connection and a meter box have been constructed by a developer as part of a water main extension, the meter "set" charges shall be:

Meter Size	"Set" Charge
¾-inch	\$290
1-inch	\$325
1-1/2 inch	\$660
2-inch	\$865

For short plats that include an existing water service which is to be reused, the existing service shall be assigned a new account number and the existing meter shall be replaced with a new meter at no charge.

Appendix C

Kirkland Example

West Coast Plumbing, Inc

7419 204th St Ne
 Arlington, WA 98223
 (360)403-1000

Invoice

Date	Invoice #
9/25/2015	3202

Bill To
Sapphire Homes

Ship To
6814 NE 129TH ST KIRKLAND

Project	Terms
1 HOLMES	Net 15

Item	Description	Contract	Amount
Rough In	FIRE	18,375.00	11,025.00T
Rough In		9,780.00	6,846.00T

Subtotal		\$17,871.00
Sales Tax (9.5%)		\$1,697.75
Total		\$19,568.75
Payments/Credits		\$0.00
Balance Due		\$19,568.75

Past due invoices will be charged at the periodic rate of 1-1/2% per month