

Verville, Laurie L.

From: Gary Goudreau [ggoudreau@gsinet.net]
Sent: Tuesday, April 03, 2007 9:06 AM
To: Verville, Laurie L.
Cc: 'Michael Bliss'; 'Jim Kimball'; 'Gary Lombardi'; ssilver@gsinet.net
Subject: FW: FW: RPV room

Laurie,

Below is the response so far from RFS. These are issues which the design team had discussed previously without a clear recommendation. Gary will continue to think about a possible solution for draining to the outside from the boiler room.

Given Mike Bliss' previous calculations on flood level build-up, and the time it would take the water to reach the boilers - compared to the response time of the fire department, it would seem prudent to advise BPS that we would not need to extend the sprinkler service into its own separate room. BPS needs direction asap, and I don't know when RFS will get back with an alternate solution to drain the valve to the exterior.

The JBC should discuss this at Thursday night's meeting and provide direction to BPS then.

Gary

Gary L. Goudreau
Goudreau & Associates Architects, PLLC
48 Bittersweet Lane
Chester, NH 03036
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F (603) 887-2302

-----Original Message-----

From: Gary Lombardi [mailto:glombardi@rfsengineering.com]
Sent: Monday, April 02, 2007 7:27 AM
To: ggoudreau@gsinet.net
Cc: ssilver@gsinet.net; Theodore Lempka
Subject: Re: FW: RPV room

Gary;

I would have no concern of freezing the valve due to draining it to the exterior, it would be thermally isolated from the cold adequately. Unfortunately the other fact about reduced pressure backflow preventers is that they can and do periodically drip or spit from the relief port due to pressure fluctuations or normal wear and tear. Directing this small drainage flow to the exterior in this climate can be problematic if there is any degree of regularity to this discharge as the small flows during cold weather can easily ice up the drainpipe where it exits the building wall and essentially block it. This condition is frequently encountered in low discharge plumbing drains exposed to cold areas such as on drinking fountains. A secondary concern is the termination of the large drain pipe (4"-5"Diameter) to the exterior leaves an inviting hole for all kinds of critters to move into as it must have a visible air-gap at the connection to the RPZ relief port. The question does justify a further look though as we have occasionally seen the need for some solution to this problem on other projects. Let us take another look at a possible solution. We may be able to

devise something to at least give a large discharge a point of relief to the exterior.

Gary

GARY A. LOMBARDI , CIPE
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Rist-Frost-Shumway Engineering
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Laconia , NH 03246

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w: www.rfsengineering.com

>>> "Gary Goudreau" <ggoudreau@gsinet.net> 03/30 10:26 AM >>>
Gary,

Is there any way that we can pipe from the RPZ valve to the outdoors to prevent a possible flood in the boiler room. I thought I had asked this question before, but I don't remember the answer other than it needs to be an "indirect" drain configuration. This JBC member wants to know if the indirect drain can still work by piping through the outside wall. If it is possible, would that leave us susceptible to freezing of the valve, even though the valve is located inside the boiler room?

Gary

Gary L. Goudreau

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From: Spurroad@aol.com [mailto:Spurroad@aol.com]
Sent: Friday, March 30, 2007 10:13 AM
To: ggoudreau@gsinet.net; m.bliss@dover.k12.nh.us;
cmebert@comcast.net;
cheney.ward5@comcast.net; educ76@comcast.net; jsnhindle@yahoo.com;
j.eaton@dover.k12.nh.us; john.oconnor@dover.k12.nh.us;
l.verville@dover.k12.nh.us; circleof4@comcast.net;
p.boodey@dover.k12.nh.us;
m.barrett@dover.k12.nh.us

Cc: ssilver@gsinet.net
Subject: Re: RPV room

Hi Gary:

Thanks for your input and good research. One last try. Could we do a discharge to air outside the building and meet the standards ? Do a horseshoe loop and let it flow onto the parking lot or grass ? We need the air gap and this would provide it. Just thinking of a way of not flooding even the first floor.

I will be off line from April 2 until April 5 or 6. Traveling to the northland! Thanks & CU - Ray B.

See what's free at AOL.com
<<http://www.aol.com?ncid=AOLAOF00020000000503>> .

Peggy Barrett

From: "Verville, Laurie-L." <l.verville@dover.k12.nh.us>
To: "Gary Goudreau" <ggoudreau@gsinet.net>; <Spurroad@aol.com>; <m.bliss@dover.k12.nh.us>; <cmebert@comcast.net>; <cheney.ward5@comcast.net>; <educ76@comcast.net>; <jsnhindle@yahoo.com>; <j.eaton@dover.k12.nh.us>; <john.oconnor@dover.k12.nh.us>; <circleof4@comcast.net>; <p.boodey@dover.k12.nh.us>; <m.barrett@dover.k12.nh.us>
Cc: <ssilver@gsinet.net>
Sent: Monday, April 02, 2007 1:18 PM
Subject: RE: RPV room

Hello Gary,
 Have you received a response back from RFS concerning the two scenarios Ray proposed?
 Laurie

-----Original Message-----

From: Gary Goudreau [mailto:ggoudreau@gsinet.net]
Sent: Friday, March 30, 2007 10:27 AM
To: Spurroad@aol.com; m.bliss@dover.k12.nh.us; cmebert@comcast.net; cheney.ward5@comcast.net; educ76@comcast.net; jsnhindle@yahoo.com; j.eaton@dover.k12.nh.us; john.oconnor@dover.k12.nh.us; Verville, Laurie L.; circleof4@comcast.net; p.boodey@dover.k12.nh.us; m.barrett@dover.k12.nh.us
Cc: ssilver@gsinet.net
Subject: RE: RPV room

Ray,

I will ask RFS and get back to all.

Gary

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See what's free at AOL.com.

Peggy Barrett

From: "cheney.ward5" <cheney.ward5@comcast.net>
To: "Peggy Barrett" <m.barrett@dover.k12.nh.us>; "Laurie L. Verville" <l.verville@dover.k12.nh.us>
Sent: Sunday, April 01, 2007 3:09 PM
Subject: Re: RPV room

Yes. Go ahead. Catherine.

----- Original Message -----

From: Jason Hindle
To: Carolyn Mebert (E-mail) ; Catherine Cheney ; educ76@comcast.net
Cc: Ray Bardwell (E-mail) ; Mark Geuther (E-mail) ; Laurie L. Verville ; John O'Connor (E-mail) ; Peggy Barrett ; Michael Bliss (E-mail) ; Patrick Boodey (E-mail)
Sent: Friday, March 30, 2007 6:03 PM
Subject: Fw: RPV room

JBC Members,

Please read e-mails below regarding RPV and vote in favor/against the going ahead of the current design as Gary will need to know this ASAP and before our meeting on April 12th.

Peggy, please make sure that the e-mail votes are printed and placed in the record and a formal vote taken on the 12th.

Thanks,

Jason

----- Forwarded Message -----

From: Gary Goudreau <ggoudreau@gsinet.net>
To: Michael Bliss <m.bliss@dover.k12.nh.us>
Cc: Theodore Lempka <TLempka@rfsengineering.com>; ssilver@gsinet.net; Laurie Verville <l.verville@dover.k12.nh.us>; jsnhindle@yahoo.com; p.boodey@dover.k12.nh.us
Sent: Friday, March 30, 2007 5:07:43 PM
Subject: RE: RPV room

That's a very good point Mike, thanks for making that effort. Given that calculation, and the other factors (low likelihood of failure, annual testing, FD response time, etc.), it would seem prudent to leave the design as-is with the RPZ in the boiler room. Assuming the fire department responds in the time frame they state, and that they shut off the water supply to the building when they get there, that scenario should cause the least amount of damage to the building if flooding occurs.

Jason - could you forward this email to the rest of the JBC and get an email vote so BPS can move forward ASAP?

Thanks,
 Gary

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 48 Bittersweet Lane
 Chester, NH 03036
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F (603) 887-2302

-----Original Message-----

From: Michael Bliss [mailto:m.bliss@dover.k12.nh.us]
Sent: Friday, March 30, 2007 2:14 PM
To: Gary Goudreau
Subject: RPV room

Gary- Further thoughts on RPV issue. We had said that potential flow from total failure of RPV would be 500 gals./min. Our sump pump would eliminate 200gals./min, leaving us with 300 gals./min flooding the boiler room. One liquid gal=.13368 cu.ft.The boiler room inside dimensions are 34'X 32'or 1088 cu. ft. if boilers rrest on 1' bases.300 gals./min= 40 cu.ft./min. into the room, giving us 27 min. before boilers are touched by water. As RFS proposed, an alarm can be connected from RPV to alarm panel giving us a trouble signal there. The Fire Dept. will respond to that signal, within 4 to 5 minutes according to Dep. Chief Hagman. Furthermore the RPV will be inspected yearly by Dover Watert Dept. Just wanted to lay out these insurance factors.-MB

--

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Peggy Barrett

From: <Spurroad@aol.com>
To: <jsnhindle@yahoo.com>; <cmebert@comcast.net>; <cheney.ward5@comcast.net>; <educ76@comcast.net>
Cc: <mgeuther@horneconst.com>; <l.verville@dover.k12.nh.us>; <john.oconnor@dover.k12.nh.us>; <m.barrett@dover.k12.nh.us>; <m.bliss@dover.k12.nh.us>; <p.boodey@dover.k12.nh.us>
Sent: Saturday, March 31, 2007 2:32 PM
Subject: Re: Fw: RPV room

Jason:

Have you read my e-mails to Gary ? He was to check with RSF to see if we could do a loop from the valve and discharge onto the parking lot or grass. This would allow all of the water to go overboard and should not cost as much as the piping with thrust blocks. If this is not possible, because of regs, then I would vote for the proposed design.

I just get ticked off with these wants and more costs to our project, if other communities are doing the same things and not are required to do what we do in Dover ! Plumbing codes and practices should be the same or similar around the state.

Raymond H. Bardwell, signed

See what's free at AOL.com.

Peggy Barrett

From: "Jason Hindle" <jshindle@yahoo.com>
To: "Carolyn Mebert (E-mail)" <cmebert@comcast.net>; "Catherine Cheney" <cheney.ward5@comcast.net>; <educ76@comcast.net>
Cc: "Ray Bardwell (E-mail)" <spurroad@aol.com>; "Mark Geuther (E-mail)" <mgeuther@homeconst.com>; "Laurie L. Verville" <l.verville@dover.k12.nh.us>; "John O'Connor (E-mail)" <john.oconnor@dover.k12.nh.us>; "Peggy Barrett" <m.barrett@dover.k12.nh.us>; "Michael Bliss (E-mail)" <m.bliss@dover.k12.nh.us>; "Patrick Boodey (E-mail)" <p.boodey@dover.k12.nh.us>
Sent: Friday, March 30, 2007 6:03 PM
Subject: Fw: RPV room

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Sent: Friday, March 30, 2007 2:14 PM

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Cc: <ssilver@gsinet.net>
Sent: Monday, March 26, 2007 4:35 PM
Subject: RE: RPV room

Ray,

I had already asked that question of my engineers a while back. They noted that there is no direct connection of pipe to this valve allowed, the drain arrangement must be "indirect", which means there's a break in the line from the valve to where ever it is drained to.

Gary

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 F (603) 887-2302

From: Spurroad@aol.com [mailto:Spurroad@aol.com]
Sent: Monday, March 26, 2007 4:05 PM
To: ggoudreau@gsinet.net; m.bliss@dover.k12.nh.us; cmebert@comcast.net; cheney.ward5@comcast.net; educ76@comcast.net; jsnhindle@yahoo.com; j.eaton@dover.k12.nh.us; john.oconnor@dover.k12.nh.us; l.verville@dover.k12.nh.us; circleof4@comcast.net; p.boodey@dover.k12.nh.us; m.barrett@dover.k12.nh.us
Cc: ssilver@gsinet.net
Subject: Re: RPV room

Hi Everybody:

This is a good answer, but if the valve has any pressure at the discharge port, is it possible to discharge it overboard (outside the building or into a CB) and not cause any damage inside the boiler room or the first floor ?? thanks, Ray B

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Cc: <ssilver@gsinet.net>
Sent: Monday, March 26, 2007 3:04 PM
Subject: Re: RPV room

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Sent: Tuesday, March 20, 2007 3:28 PM
Subject: RPV room

Dear JBC Members- Laurie asked me to write all of you concerning the issue raised at the Jan. 30 meeting regarding the potential of failure of the Reduced Pressure Valve (RPV) to be installed on the water supply line to the Fire Suppression system. RFS engineers did request a waiver from the Dover Plumbing Inspector to substitute a double check valve at this location. The double check valve doesn't have the possibility of failure that the RPV has because it isn't a spring loaded device. The chance of failure in the RPV (admittedly low) comes from problems with the spring. Dean Miles, Dover Plumbing Inspector, requires the RPV because he feels it provides greater protection from contamination to the city water supply. The problem, if you recall, resulting from total failure of the RPV would pour up to 500 gals.\min. into our below grade Boiler room. This would be significantly more than our new sump pump could handle. If response to the alarms we plan to place on both RPV and sump pump is not immediate, the worst case would be both boilers destroyed by rising water. With this in mind Gary came up with an alternate location for the RPV. His plan is to route the piping for Fire Suppression from the Boiler room to a new room next to the Boiler room but up at the above grade ground floor. This would allow water from a catastrophic failure of the RPV to flow down the corridor rather than filling the Boiler room.

BPS has estimated the cost of this work at \$15,000. Some of this cost occurs with the need to provide thrust protection to the 6" pipe at every change in direction, of which there are several. This cost is basically insurance against the consequences of boiler failure during the heating season.-MB

--
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Peggy Barrett

From: "Gary Goudreau" <ggoudreau@gsinet.net>
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Cc: "Steven Silver" <ssilver@gsinet.net>
Sent: Monday, March 26, 2007 10:44 AM
Subject: RE: RPV room

All,

Please see e-mail response below from RFS Engineering on this matter. In summary, the local authority having jurisdiction (as the entity responsible for the purity of the City's water supply) - in this case the City Plumbing Inspector, has the authority to require this RPZ valve assembly to be installed on the fire service entrance (in addition to it being installed on the domestic water service).

As you're A/E team, we have identified the possible side-effects that could be encountered if a failure occurred in the backflow preventer device that the City of Dover requires. What those chances are of a valve failure that could lead to a release of water into the building, no one can say - although based on the periodic checking and maintenance that is done for these valves, it would seem low. And if that occurred, where would the release of water do the least amount of damage - again, one can only speculate. Under one scenario, the release of large quantities of water to the ground floor of the building has the potential to do quite a bit of property damage, but would likely leave the building's heating system intact. The other scenario would release the water into the subterranean boiler room, with no cost-effective means to remove it as quickly as it is being released, thereby flooding the boilers (assuming the response time to the incident is delayed enough to allow damage to occur, another factor to consider). The potential damage under this scenario is not just to the boilers themselves, but the consequences of being without a heating system for the building during some potentially cold periods in winter, and what that could mean for pipes possibly freezing elsewhere in the building (potentially damaging more than just the ground floor).

Ultimately, this is a cost-benefit decision that the JBC needs to make. The Construction Manager will need an answer soon as the work to extend the sprinkler main needs to proceed soon.

RFS response:

Hi Gary;

Hopefully this is not too wordy but here goes:

The function of a backflow preventer is to keep contaminated or dirty water from being introduced backwards into the potable water supply. For this type of application, there are two types of backflow preventer which are commonly used on services. There is the double check assembly which has two spring loaded check valves to prevent contaminants from being forced backwards into the water supply main, this has no relief port to cause any discharges in the building. The other type is the reduced pressure zone assembly which has an intermediate chamber relief valve between the two spring loaded checks to dump the water between the two checks during a backpressure occurrence thus creating an air break between the two checks and providing an additional measure of safety from backflow contamination. The second type however can, if there is a malfunction, discharge several hundred gallons (300-500) per minute thru the relief port if debris were to enter it and become caught in one or both of the check valves. Usually there is only a brief discharge when a backflow condition does present itself. The other (double check assembly), because there is no relief valve will not create this situation. Both are considered very reliable because they require periodic testing to certify that they are functioning properly but obviously the reduced pressure zone assembly is a somewhat more positive backflow prevention device.

3/26/2007

Basically, the IPC 2000 (plumbing) Code does not specify the type of backflow preventer to be used. The Dover plumbing inspector does quote a paragraph in the IPC 2000 Commentary which suggests that if the fire dept pumper truck may have foul water in it, it could be pumped into the fire protection system to boost the system pressure during a fire. In that instance the Commentary does mention that the specific hazard should be carefully evaluated and the appropriate backflow preventer (such as a reduced pressure zone model) selected to protect the public water supply. It also mentions that a pumper inlet could be considered as a source of pollution. Note that the IPC 2000 Commentary does state clearly that it is advisory only and is not to be used as a substitute for the IPC 2000 Code.

The State of New Hampshire Department of Environmental Services has determined that when any plumbing system is connected to a public water supply, the water purveyor is the authority having jurisdiction regarding the selection of appropriate backflow prevention since they are ultimately responsible for the water purity being delivered by their system to all users on the system. The NH Code of Administrative Rules, Env-Ws 364 section 364.04 (c)(3) states: "It shall be the responsibility of the supplier to ensure that backflow prevention devices are installed where required....." further in section 364.05

(b)(5) it states: "It shall be the suppliers responsibility to review the degree of hazard of the cross-connection and assign the proper backflow prevention device to a specific cross-connection and designate this backflow prevention device on the specific cross-connection permit application". This means of regulation of backflow prevention is the commonly used method employed by most states in the country.

For the above reason we typically call the water dept. to determine the level of backflow prevention to be used on a service. Most water departments in New Hampshire require a double check assembly on fire protection services and a reduced pressure zone on domestic water services but there are some which require a higher level of protection on the fire protection service such as Durham, Laconia and a few others we've encountered. In conversations with the Dover Inspector it was determined that we must use the reduced pressure zone device on the fire service, the Dover water department deferred to the plumbing inspectors requirement. We are happy to comply with these requirements in the interest of making the project proceed with minimal problems during the construction phase and to avoid contract extras, but it can cause difficulties when certain units are installed in certain locations such as on this project which has limited drainage capacities. Note: the domestic water service does have reduced pressure zone assemblies but these are two small units which potentially discharge considerably less water than the one large unit which must be used on the fire protection service.

Gary

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From: Spurroad@aol.com [<mailto:Spurroad@aol.com>]

Sent: Thursday, March 22, 2007 2:28 PM

To: m.bliss@dover.k12.nh.us; cmebert@comcast.net; cheney.ward5@comcast.net; educ76@comcast.net; ggoudreau@gsinet.net; jsnhindle@yahoo.com; j.eaton@dover.k12.nh.us; john.oconnor@dover.k12.nh.us; l.verville@dover.k12.nh.us; circleof4@comcast.net; p.boodey@dover.k12.nh.us; m.barrett@dover.k12.nh.us

Subject: Re: RPV room

3/26/2007

Hi You-all:

We have hired a competent architect and engineering company and they feel the double back check is better because it does not have the mechanical spring to seal of a line failure. Our City plumbing inspector says he wants the spring loaded one. My question is, what does Dover have on its books NOW for this requirement ??? Did the other large companies have this problem, ie; Liberty, Comfort Inn and whom ever has submitted for a plumbing request ?? Dean should give us book and page and not keep coming up with his requirements. What is the common practice for Portsmouth, Rochester, Concord, Manchester and other communities that have the same water uses ? What do our professionals suggest and/or would they require ? I think Gary did a good job on a solution, if we still must follow Dean's requirements, but at another 15K. Without checking our time line from the bathroom floor drains and the bubblers required, I though Dean had reviewed the building plans. Another thing, what would the State requirements be ?

We need to have input from our professionals before we decide on a course of action.

I would like to hear all of your comments. Thanks, Ray B

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