Proposals

Item #: 132
WEStand 2023  Section: Figure F 301.1(1) - Figure F 301.1(9)

SUBMITTER: Laura Allen
Chair, WE-Stand Gray Water Ready Plumbing Task Group

RECOMMENDATION:
Add new text

FIGURE F 301.1(1)
GRAY WATER DRAINAGE SYSTEM—DIVERTER VALVE IN CRAWL SPACE

For SI units: 1 inch = 25 mm
FIGURE F 301.1(2)
GRAY WATER DRAINAGE SYSTEM – SINGLE FIXTURE ON SECOND FLOOR NEAR EXTERIOR WALL
For SI units: 1 inch = 25 mm

FIGURE F 301.1(3)
GRAY WATER DRAINAGE SYSTEM – SINGLE FIXTURE ON SECOND FLOOR WITH STUB-OUT ABOVE GRADE, FROM CRAWL SPACE UNDER THE FIRST FLOOR
For SI units: 1 inch = 25 mm
FIGURE F 301.1(4)
GRAY WATER DRAINAGE SYSTEM – MULTIPLE FIXTURES ON CONCRETE SLAB FOUNDATION

For SI units: 1 inch = 25 mm
Note: A dedicated electrical receptacle should be installed not less than 10 feet (3048 mm) away from the stub out to ensure that power is available for a future gray water system pump.

FIGURE F 301.1(5)
GRAY WATER DRAINAGE SYSTEM – GRAYWATER PIPING EXTENDS OUTSIDE SLAB FOR ACCESS, THEN RETURNS INTO SLAB TO JOIN OTHER DRAINAGE PIPING

For SI units: 1 inch = 25 mm
Note: A dedicated electrical receptacle should be installed not less than 10 feet (3048 mm) away from the stub out to ensure that power is available for a future gray water system pump.
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE GRAYWATER IRRIGATION PIPE IS RUN THROUGH CRAWLSPACE

For SI units: 1 inch = 25 mm

Notes:
1. The union is necessary to provide access for maintenance of the standpipe and trap.
2. The air admittance valve prevents accidental siphoning of the washing machine and is installed at the highest elevation of the piping on the irrigation side of the diverter valve.

GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE CLOTHES WASHER IS NEAR AN EXTERIOR WALL OR ON A CONCRETE SLAB FOUNDATION

For SI units: 1 inch = 25 mm
FIGURE F 301.1(8)
OVERVIEW OF A GRAVITY-FLOW, BRANCHED DRAIN SYSTEM

For SI units: 1 inch = 25 mm

FIGURE F 301.1(9)
OVERVIEW OF PUMPED GRAYWATER TO IRRIGATION SYSTEM

For SI units: 1 inch = 25 mm

Notes:
1 Check with AHJ for surge tank venting requirements.
2 A dedicated electrical receptacle should be installed not less than 10 feet (3048 mm) away from the stub out or pump basin to ensure that power is available for a future gray water system pump.
Figure F 301.1(1) through Figure F 301.1(9) have been included to assist users of the appendix in visualizing the listed requirements. Offering a wide variety of detailed figures ensures that provisions are understood and implemented correctly.

Figure F 301.1(1) illustrates graywater being collected from a first-floor shower/bath, with the diverter valve located in the crawlspace or basement. Figure F 301.1(2) shows graywater being collected from a second-story shower/bath, with the diverter valve located below the bathroom inside the wall of the first floor.

Figure F 301.1(3) shows the same plumbing set-up as installed in Figure F 301.1(2), except the shower/bath drain pipe runs through the first floor and into the crawlspace. The graywater stub-out is located outside of the exterior crawl space foundation wall or crawl space vent, above grade. This configuration may be applicable when fixtures are located in the interior of the building and a stub-out can't be piped easily through an exterior wall above floor level.

Figure F 301.1(4) shows graywater diversion from the shower/bath and clothes washing machine in a house with a slab-on-grade foundation, where the diverter valve is located outside the building envelope in a subsurface enclosure (i.e., an irrigation valve box). The subsurface enclosure containing the diverter valve needs to be permanently accessible (i.e., no structures or hardscape covering it). The diverter valve should be positioned as high as possible in the enclosure to ensure graywater can drain at a 1/4 inch per 12 inch slope into a future gravity irrigation system or pump basin.

Figure F 301.1(5) demonstrates how to make graywater from a tub/shower (or other fixture) accessible when the bathroom is on a slab and the main drain is in another area of the building. The tub/shower drain has been directed through the slab and perimeter foundation to a subsurface enclosure (i.e., an irrigation valve box). A diverter valve and backwater valve are located in the box, providing a graywater stub out. The tub/shower drain then loops back through the foundation and into the slab to proceed to where it connects with the building's other drainage piping. 1/4 inch per 12 inches of slope must be carefully maintained on this loop piping.

Figure F 301.1(6) illustrates laundry-to-landscape piping in a building with a crawl space.

Figure F 301.1(7) illustrates laundry to landscape piping in a slab on grade building. A diverter valve is mounted to the wall in an access panel and connected directly to the discharge hose of the clothes washer.

Figure F 301.1(8) demonstrates a conceptual image of how a gravity-flow, branched drain graywater system transports graywater to multiple landscape plants without a storage tank or pump.

Figure F 301.1(9) shows graywater from a lavatory and tub/shower being made available for irrigation. All of figures were gathered from the Guidance on Ordinance Compliance in Illustrations which may be accessed via the following link:

COMMITTEE ACTION: ACCEPT AS SUBMITTED

TOTAL ELIGIBLE TO VOTE: 30

VOTING RESULTS: AFFIRMATIVE: 27  NEGATIVE: 1  NOT RETURNED: 2  CRAWFORD, WILLIAMS

EXPLANATION OF AFFIRMATIVE:
ALLEN: As the proponent, I plan to check back in with the task group and incorporate the concerns I heard at the TC meeting, for example, not calling-out specific pipe material in the images. I think the images are important to include in the appendix as they turn the concept of graywater ready plumbing into what a builder would actually need to do to comply with it.

EXPLANATION OF NEGATIVE:
WHITE: The illustrations show some issues with this concept. The use of diverter valves seems to show an issue for cleaning out the line through the diverter valve, and it does not appear they are sanitary pattern valves. Also, the use of splitter fittings (double elbows) would present cleanout issues.
PUBLIC COMMENT 1

Code Year: 2023 WEStand  Section #: Figure F 301.1(1), Figure F 301.1(6) - Figure F 301.1(8)  Item #: 132

SUBMITTER: Laura Allen  Grewater Action  Comment #: 1

RECOMMENDATION:
Accept as Modified

Request to accept the code change proposal as modified by this public comment.

FIGURE F 301.1(1)
GRAY WATER DRAINAGE SYSTEM– DIVERTER VALVE IN CRAWL SPACE
FIGURE F 301.1(6)
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE GRAYWATER IRRIGATION PIPE IS RUN THROUGH CRAWLSPACE

For SI units: 1 inch = 25 mm

Notes:
1 The union is necessary to provide access for maintenance of the standpipe and trap.
2 The air admittance valve prevents accidental siphoning of the washing machine and is installed at the highest elevation of the piping on the irrigation side of the diverter valve.
FIGURE F 301.1(7)
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE CLOTHES WASHER IS NEAR AN EXTERIOR WALL OR ON A CONCRETE SLAB FOUNDATION

For SI units: 1 inch = 25 mm
OVERVIEW OF A GRAVITY-FLOW, BRANCHED DRAIN SYSTEM

For SI units: 1 inch = 25 mm

SUBSTANTIATION:
These images are to support the new Appendix F. Though the original proposal passed, several people brought up the issue of calling out materials in the drawing as problematic since the specific material used may vary based on regional conditions. This proposal intends to fix that and remove mention of specific materials (ABS or PVC) while keeping the useful information. The following revisions were made:
Figure F 301.1 (1)- Removed “ABS” label
Figure F 301.1 (6)- Removed “Schedule 40 PVC” label
Figure F 301.1 (7)- Removed “Schedule 40 PVC” label
Figure F 301.1 (8)- Removed “ABS” labels

COMMITTEE ACTION: ACCEPT AS SUBMITTED

TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 25 NEGATIVE: 1 ABSTAIN: 1 NOT RETURNED: 1 WILLIAMS

EXPLANATION OF NEGATIVE:
WHITE: I do not believe some portions of the illustrations meet the intent of the plumbing code but perhaps others do not believe this is plumbing.

EXPLANATION OF ABSTAIN:
TABAKH: The level of potential public risk warrants further discussion on this section, and language beyond that of a conceptual nature for blackwater treatment for potable water reuse is premature at this time.
PUBLIC COMMENT 1A

Code Year: 2023 WEStand  Section #: Figure F 301.1(6), Figure F 301.1(7)  Item #: 132

SUBMITTER: Arnie Rodio  Pace Setter Plumbing, Corp.

Comment #: 1A

RECOMMENDATION:
Accept as Modified

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm

Notes:
1. The union is necessary to provide access for maintenance of the standpipe and trap.
2. The air admittance valve prevents accidental siphoning of the washing machine and is installed at the highest elevation of the piping on the irrigation side of the diverter valve.

FIGURE F 301.1(6)
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE GRAYWATER IRRIGATION PIPE IS RUN THROUGH CRAWLSPACE*
FIGURE F 301.1(7)
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE CLOTHES WASHER IS NEAR AN EXTERIOR WALL OR ON A CONCRETE SLAB FOUNDATION

SUBSTANTIATION:
Figures F 301.1(6) and F 301.1(7) are being updated to illustrate graywater piping vented through the roof. This update is necessary to prevent conflict with an existing American National Standard, the Uniform Plumbing Code, which requires venting through the roof per Section 1002.1.

[2024 UPC] 906.1 Roof Termination. Each vent pipe or stack shall extend through its flashing and shall terminate vertically not less than 6 inches (152 mm) above the roof nor less than 1 foot (305 mm) from a vertical surface. ABS and PVC piping exposed to sunlight shall be protected by water based synthetic latex paints.
TOTAL ELIGIBLE TO VOTE: 28

VOTING RESULTS: AFFIRMATIVE: 16 NEGATIVE: 7 ABSTAIN: 1 NOT RETURNED: 4 CRAWFORD, LANSING, STRAHL, WILLIAMS

EXPLANATION OF AFFIRMATIVE:

CUDAHY: It would most likely tie into the existing vent system and anti-syphon valves are available and sometimes supplied.

MANN: This is in direct conflict with the UPC. We cannot have two IAPMO codes conflicting. The drawing should show the vent extending through the roof. Or, of course, tied into a vent extending through the roof. There is a vent in the drawing and could easily be tied into that vent. Furthermore, there is no definition for the Air Admittance Valve shown in the drawing.

EXPLANATION OF NEGATIVE:

ALLEN: I think there is some confusion with how the system works and what the AAV is being used for. I think the submitter of the public comment is misreading the diagram, since the graywater side of the diverter valve is totally isolated/separate from the DWV system, and there is a vent through the roof, as required by code).

I wonder if we could modify the labels to address this? The piece doesn't have to be an AAV (that is just the most common thing that is used). What if we called this a "vacuum relief device" or valve?

Here is a bit more about the system: The AAV is not used as a vent, as this portion of the gray water system is isolated from the building DWV system. It is only connected to the appliance, the washing machine. This seemingly small modification would create unfixable issues for this particular gray water system.

KLEIN: I am very confused. Looking back over the voting record for this item, Figure F 301.1(6) and Figure F 301.1(7) were overwhelmingly approved by the full committee during our last meeting. The AAV's shown in these figures are for a portion of the gray water drainage system that is not intended to be connected to the rest of the sanitary drainage system. I would be surprised if the question of whether this could be allowed in WE•Stand wasn't discussed at length in our meeting. Since it had such overwhelming support, we appear to have decided it was acceptable to include it.

LANDO: 1st comment: I get it. We did talk about this during the voting. The AAV is really a 'belts and suspenders' device operating on the grey water side of the system whereas the plumbing stack venting is working to vent the building side (as per WE•Stand and main code).

2nd comment: As I am looking at the entire proposal again, I think that the issue that is giving people heartburn is Figure F 301.1(7). Yes? As I read the diagram, I think that:
1. The title should remove the word "drainage" to prevent confusion as to including this work under the plumbing drainage section. This is a "Gray Water System" starting from the clothes washer box, passing the washer connection and out of the structure. So, we should call it a "Gray Water System – Clothes Washer Gray Water System Where Gray Water Is Run Through Crawl Space."
2. As for the AAV, I see what it is doing and think that an irrigation "king drain valve, or frost protection valve" would do the same thing, but overall, I don't think that the system needs either one. I think that the piping is just an extension of the washer hose, and it doesn't need any special valve. Washing machines are protected with a backwater valve and would throw an error code if it were blocked from draining. Being a gray water system, all of these parts and connections should fall under the gray water section of the WE•Stand. If we allow the AAV or other devices, it should be included in the code (obviously). However, I would hate to throw out this entire proposal based on that single fitting which isn't part of the plumbing system.

LENGER: I concur with Laura Allen.

OSANN: I concur with Laura Allen's statement.

PREMER: I concur with Laura (and others' statements) in terms of the AAV's intended use.

SOVOCOOL: I agree with Laura on this.

EXPLANATION OF ABSTAIN:

KOELLER: This is not my area of expertise.
PUBLIC COMMENT 1B

Code Year: 2023 WEStand   Section #: Figure F 301.1(6), Figure F 301.1(7)   Item #: 132

SUBMITTER: Laura Allen   Greywater Action   Comment #: 1B

RECOMMENDATION:
Accept as Modified

For SI units: 1 inch = 25 mm, 1 foot = 304.8 mm
* The union is necessary to provide access for maintenance of the standpipe and trap.

FIGURE F 301.1(6)
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE GRAYWATER IRRIGATION PIPE IS RUN THROUGH CRAWLSPACE*
FIGURE F 301.1(7)
GRAY WATER DRAINAGE SYSTEM – CLOTHES WASHER GRAYWATER SYSTEM WHERE CLOTHES WASHER IS NEAR AN EXTERIOR WALL OR ON A CONCRETE SLAB FOUNDATION

SUBSTANTIATION:
This particular gray water system is NOT connected to the DWV system of the house. It operates from the appliance, the washing machine, solely. It needs the low pressure from the machine pumping out the gray water to operate. Tying the gray water line into the vent may disrupt the pressure in the system and interfere with the functionality of the irrigation portion of the system. Also, the water may push up into the vent and drain and drain away, without anyone knowing. This would defeat the purpose of putting in this irrigation system.

The valve is installed to allow air to leave the line (but not enter it) and serves the purpose of breaking a potential siphon that could form in a system installed in a downward sloping yard. If a siphon forms in the line, it could interfere with the washing machine fill cycle, which could waste water.