



NORFOLK

Development Services Center

Site Fire Protection Plan

When submitting major site plans for review, please provide a dedicated Site Fire Protection Plan in accordance with the Virginia Construction Code 2015 Edition, Statewide Fire Prevention Code 2015 Edition, NFPA 24 2013 Edition and the specified City of Norfolk Codes.

Include the following on the Site Fire Protection Plan:

507.2.1 Private fire service mains.

Private fire service mains and appurtenances shall be installed in accordance with NFPA 24.

FIRE DEPARTMENT CONNECTIONS (FDC)

912.1 Installation.

Fire department connections shall be installed in accordance with the NFPA standard applicable to the system design and shall comply with Sections 912.2 through 912.6.

912.2 Location.

With respect to hydrants, driveways, buildings and landscaping, fire department connections shall be so located that fire apparatus and hose connected to supply the system will not obstruct access to the buildings for other fire apparatus. The location of fire department connections shall be *approved* by the fire chief.

912.2.1 Visible location.

Fire department connections shall be located on the street side of buildings, fully visible and recognizable from the street or nearest point of fire department vehicle access or as otherwise *approved* by the fire chief.

912.2.2 Existing buildings.

On existing buildings, wherever the fire department connection is not visible to approaching fire apparatus, the fire department connection shall be indicated by an *approved* sign mounted on the street front or on the side of the building. Such sign shall have the letters "FDC" at least 6 inches (152 mm) high and words in letters at least 2 inches (51 mm) high or an arrow to indicate the location. All such signs shall be subject to the approval of the *fire code official*.

912.4.3 Physical protection.

Where fire department connections are subject to impact by a motor vehicle, vehicle impact protection shall be provided in accordance with Section 312.

Post Indicator Valves (PIV) and Valves controlling water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and water flow switches on all sprinkler systems.

6.2.11 Post indicator valves installed not less than 40 ft (12 m) from the building for buildings less than 40 ft (12 m) in height, a post indicator valve shall be permitted to be installed closer than 40 ft (12 m) but at least as far from the building as the height of the wall facing the post indicator valve.

903.4 Sprinkler system supervision and alarms.

All valves controlling the water supply for automatic sprinkler systems, pumps, tanks, water levels and temperatures, critical air pressures and waterflow switches on all sprinkler systems shall be electrically supervised by a listed fire alarm control unit.

The PIV and any above ground valves including but not limited to valves located in a hot box controlling such water supplies shall be provided with tamper switches and be electrically supervised.

FIRE HYDRANTS

507.5 Fire hydrant systems.

Fire hydrant systems shall comply with Sections 507.5.1 through 507.5.6.

507.5.1 Where required.

Fire hydrant systems shall be located and installed as directed by the fire department. Fire hydrant systems shall conform to the written standards of the jurisdiction and the fire department.

5.2 Size of Fire Mains.

5.2.1 Private Fire Service Mains. Pipe smaller than 6 in. (152 mm) in diameter shall not be installed as a private service main supplying hydrants.

Private Fire Hydrants - Private fire hydrants must be designed to provide the minimum fire-flow demand as determined by the provides fire flow calculation. Private fire hydrants must be inspected, maintained and flow-tested annually in accordance with NFPA 25 and NFPA 291. New private fire hydrant installations must also be flow-tested as part of acceptance approval and the barrels of the private fire hydrants must be painted red (Norfolk public fire hydrant barrels are painted yellow). The bonnets of both public and private fire hydrants shall also be painted the appropriate color in accordance with NFPA 291 representing gpm flow. The bonnet colors distinguishing gpm flow are as follows: See Norfolk Fire Marshal’s Office hydrant color code sheet.

FIRE APPARATUS ACCESS ROADS

503.1 Where required. Fire apparatus access roads shall be provided and maintained in accordance with Sections 503.1.1 through 503.1.3 of the Virginia Statewide Fire Prevention Code.

FIRE LANES

Where required. Fire lane markings shall be installed in accordance with the Norfolk Fire Marshal's Office fire lane marking policy.

KEY BOXES (KNOX BOX)

506.1 Where required. Where access to or within a structure or an area is restricted because of secured openings or where immediate access is necessary for life-saving or fire-fighting purposes, the *fire code official* is authorized to require a key box to be installed in an *approved* location. The key box shall be of an *approved* type listed in accordance with UL 1037, and shall contain keys to gain necessary access as required by the *fire code official*.

FIRE PUMPS

913.1 General. Where provided, fire pumps shall be installed in accordance with this Section 913 and NFPA 20.

913.2 Protection against interruption of service. The fire pump, driver and controller shall be protected in accordance with NFPA 20 against possible interruption of service through damage caused by explosion, fire, flood, earthquake, rodents, insects, windstorm, freezing, vandalism and other adverse conditions.

When an electric fire pump is installed, a backup generator will be required in the event of loss of power.

403.3.2 Water supply to required fire pumps.

In buildings that are more than 420 feet (128 00 mm) in *building height*, required fire pumps shall be supplied by connections to no fewer than two water mains located in different streets. Separate supply piping shall be provided between each connection to the water main and the pumps. Each connection and the supply piping between the connection and the pumps shall be sized to supply the flow and pressure required for the pumps to operate.

Exception: Two connections to the same main shall be permitted provided the main is valve such that an interruption can be isolated so that the water supply will continue without interruption through no fewer than one of the connections.

STANDPIPE SYSTEMS

905.1 General.

Standpipe systems shall be provided in new buildings and structures in accordance with Sections 905.2 through 905.10. In buildings used for high-piled combustible storage, fire protection shall be in accordance with the *International Fire Code*.

905.2 Installation standard. Standpipe systems shall be installed in accordance with this section and NFPA 14. Fire department connections for standpipe systems shall be in accordance with Section 912.

FIRE COMMAND CENTER

911.1 General.

Where required by other sections of this code and in all buildings classified as high-rise buildings by this code, a fire command center for fire department operations shall be provided and shall comply with Sections 911.1.1 through 911.1.6.

911.1.1 Location and access.

The location and accessibility of the fire command center shall be approved by the fire chief.

911.1.2 Separation.

The fire command center shall be separated from the remainder of the building by not less than a 1-hour fire barrier constructed in accordance with Section 707 or horizontal assembly constructed in accordance with Section 711, or both.

911.1.3 Size.

The fire command center shall be a minimum of 96 square feet (9 m²) in area with a minimum dimension of 8 feet (2438 mm).

Exception: Where it is determined by the building official, after consultation with the fire chief, that specific building characteristics require a larger fire command center, the building official may increase the minimum required size of the fire command center up to 200 square feet (19 m²) in area with a minimum dimension of up to 10 feet (3048 mm).

REDUCED PRESSURE ZONE BACKFLOW PREVENTER (RPZ)

Sec. 11.1-116. - Protective devices for fire service systems.

Fire service systems having direct connections from the waterworks shall be provided with an air gap or a reduced pressure zone backflow preventer.

Reduced pressure zone (RPZ) backflow preventer means an assembly of differential valves and check valves, including an automatically opened spillage port to the atmosphere, designed to prevent backflow.

Sec. 11.1-119. - Location and installation requirements for protective devices.

Backflow prevention devices shall be readily accessible, preferably in the same room with the fixture they serve. Installation shall be in accordance with manufacturer's recommendations.

Devices shall be located in enclosures such that they are protected from physical damage and freezing.

Reduced pressure zone backflow preventers shall be installed a minimum of twelve (12) inches above the existing ground level/100-year flood elevation, whichever is whichever is higher, in a location readily accessible for testing and maintenance.

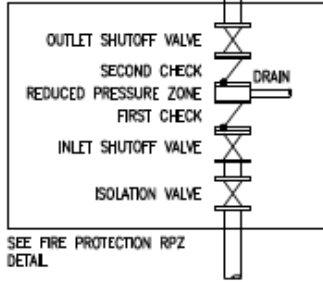
Devices installed on domestic service lines shall be protected by a strainer installed on the inlet side of the device.

Sec. 46.1-13. - Service for fire protection.

The connection of the sprinkler system to the potable water supply shall be in accordance with the Uniform Statewide Building Code and this Code. Connection of a sprinkler system to the domestic water supply main where there is a standpipe is prohibited. All sprinkler systems shall have a connection, control valve, and drain and test connection directly connected to the city water main and separate from the domestic valve and water meter. Exception: Fire sprinklers installed in single-family detached dwellings and single-family townhouse dwellings up to a maximum of three (3) stories in accordance with the International Residential Code, chapter 29, and the Uniform Statewide Building Code (USBC).

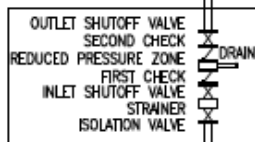
Where city water is to be used for a sprinkler system for fire protection, or underground piping and fire hydrants on a dedicated fire line, a detector check valve and bypass meter shall be installed by the department of utilities at the curb line, at the expense of the applicant, in addition to the regular charge for connection to the main. The detector check valve shall be the same size as the line serving the facility and where fire hydrants are involved shall be no smaller than six (6) inches. Such installation shall be in accordance with provisions of the Uniform Statewide Building Code (USBC).

FIRE PROTECTION RPZ ASSEMBLY INSIDE BUILDING OR HEATED ENCLOSURE



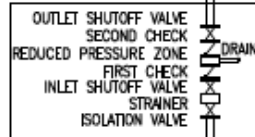
SEE FIRE PROTECTION RPZ DETAIL

DOMESTIC RPZ ASSEMBLY INSIDE BUILDING OR HEATED ENCLOSURE

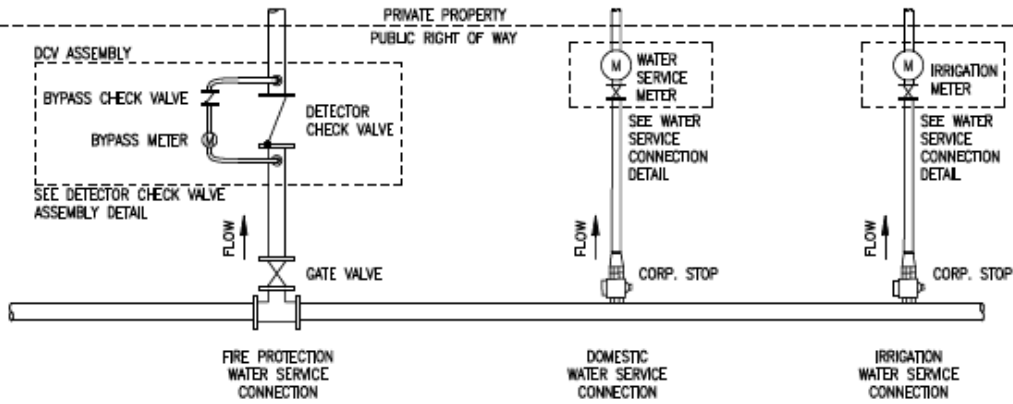


SEE DOMESTIC OR IRRIGATION RPZ DETAIL

IRRIGATION RPZ ASSEMBLY INSIDE BUILDING OR HEATED ENCLOSURE



SEE DOMESTIC OR IRRIGATION RPZ DETAIL



PLAN

NOTE:

1. IF THERE ARE FREQUENT PRESSURE FLUCTUATIONS, IN EXCESS OF 10 PSI, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE SHOULD BE INSTALLED UPSTREAM OF THE DEVICE.
2. IF THERE IS AN AUTOMATIC VALVE DOWNSTREAM OF THE DEVICE, THEN A SPRING LOADED, SOFT SEATED, CHECK VALVE & A WATER HAMMER ARRESTER SHOULD BE INSTALLED DOWNSTREAM OF THE DEVICE.
3. REDUCED PRESSURE ZONE DEVICE ASSEMBLIES, DETECTOR CHECK ASSEMBLIES, AND SERVICE METERS SHALL MATCH THE SIZE OF THE WATER SERVICE CONNECTION.



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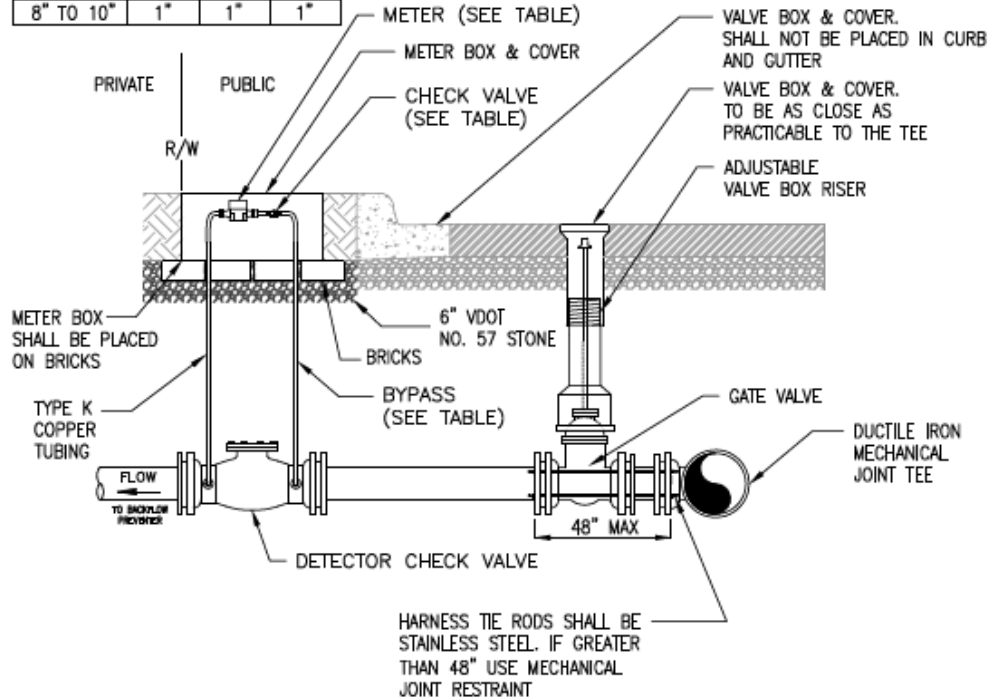
CITY OF NORFOLK – DEPARTMENT OF UTILITIES
STANDARD DETAILS

BACKFLOW PREVENTION ASSEMBLIES LAYOUT

SCALE:
NOT TO SCALE

DRAWING NO.
CW 12

DETECTOR CHECK VALVE SIZE	BYPASS SIZE		
	LINE	METER	CHECK
4" OR LESS	5/8"	5/8"	5/8"
6"	3/4"	3/4"	3/4"
8" TO 10"	1"	1"	1"



PROFILE



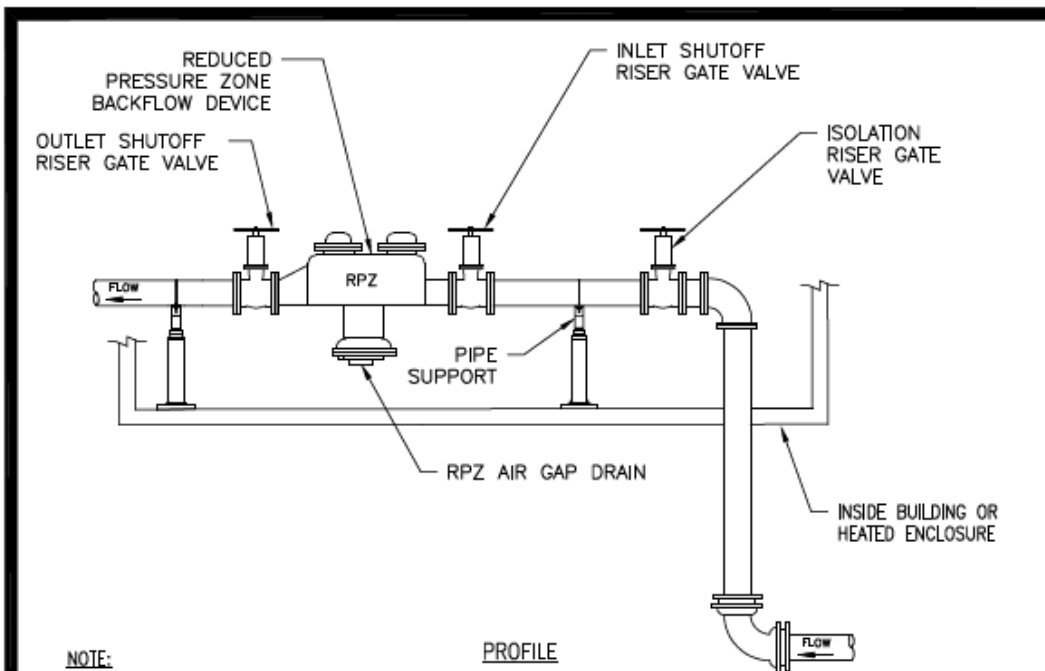
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CITY OF NORFOLK – DEPARTMENT OF UTILITIES
STANDARD DETAILS

DETECTOR CHECK VALVE ASSEMBLY

SCALE:
NOT TO SCALE

DRAWING NO.
CW 13



NOTE:

PROFILE

1. BACKFLOW ASSEMBLY SHALL BE IN ACCORDANCE WITH ASSE 1013 STANDARDS.
2. A REDUCED PRESSURE FIRE PROTECTION BACKFLOW PREVENTER ASSEMBLY SHALL BE DESIGNED FOR A WORKING PRESSURE OF 175 PSI.
3. ASSEMBLY SHALL BE DESIGNED TO OPERATE AT A MINIMUM TEMPERATURE OF 33 DEGREES FAHRENHEIT.
4. THE INTERNAL PARTS OF THE ASSEMBLY SHALL BE ACCESSIBLE FOR INSPECTIONS, TESTING, REPAIRS OR REPLACEMENT.
5. TEST COCK LOCATIONS SHALL BE: (1) ON THE SUPPLY SIDE OF THE INLET SHUTOFF VALVE, (2) BETWEEN THE INLET SHUTOFF VALVE AND THE FIRST CHECK, (3) BETWEEN THE FIRST AND SECOND CHECK, (4) BETWEEN THE SECOND CHECK AND THE OUTLET SHUTOFF VALVE.
6. THE DEVICE CAN BE INSTALLED HORIZONTALLY.
7. MAINTAIN 8 INCH MINIMUM CLEARANCE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
8. INSTALL THE DEVICE NO MORE THAN 5 FEET ABOVE THE FLOOR ELEVATION, NO STEP LADDER OR CLIMBING APPARATUS SHOULD BE REQUIRED TO FACILITATE MAINTENANCE.
9. THIS DEVICE SHALL NOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
10. THE FINISHED FLOOR ELEVATION SHALL BE ABOVE THE 100-YR FLOOD ELEVATION AND THE DEVICE SHALL HAVE 12 INCH MINIMUM CLEARANCE BETWEEN THE AIR GAP DRAIN & THE FINISHED FLOOR.



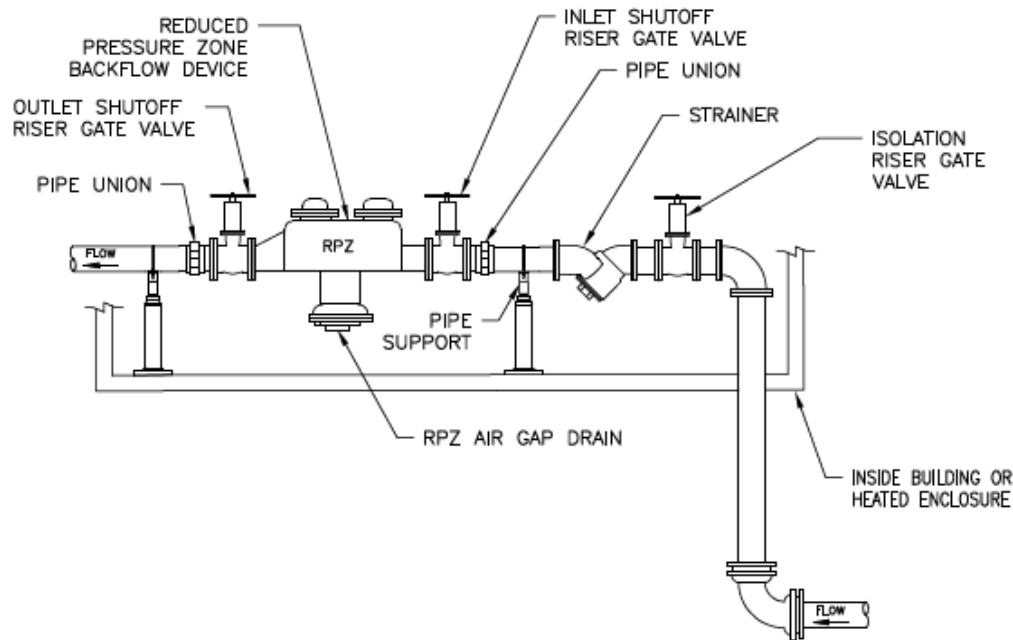
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CITY OF NORFOLK – DEPARTMENT OF UTILITIES
STANDARD DETAILS

FIRE PROTECTION SYSTEM REDUCED PRESSURE
ZONE BACKFLOW PREVENTER ASSEMBLY

SCALE:
NOT TO SCALE

DRAWING NO.
CW 14



NOTE:

PROFILE

1. BACKFLOW ASSEMBLY SHALL BE IN ACCORDANCE WITH ASSE 1013 STANDARDS.
2. ASSEMBLY SHALL BE DESIGNED TO OPERATE AT A MINIMUM TEMPERATURE OF 33 DEGREES FAHRENHEIT.
3. THE INTERNAL PARTS OF THE ASSEMBLY SHALL BE ACCESSIBLE FOR INSPECTIONS, TESTING, REPAIRS OR REPLACEMENT.
4. TEST COCK LOCATIONS SHALL BE: (1) ON THE SUPPLY SIDE OF THE INLET SHUTOFF VALVE, (2) BETWEEN THE INLET SHUTOFF VALVE AND THE FIRST CHECK, (3) BETWEEN THE FIRST AND SECOND CHECK, (4) BETWEEN THE SECOND CHECK AND THE OUTLET SHUTOFF VALVE.
5. THE DEVICE CAN BE INSTALLED HORIZONTALLY.
6. MAINTAIN 8 INCH MINIMUM CLEARANCE ABOVE THE DEVICE FOR TESTING AND MAINTENANCE.
7. INSTALL THE DEVICE NO MORE THAN 5 FEET ABOVE THE FLOOR ELEVATION, NO STEP LADDER OR CLIMBING APPARATUS SHOULD BE REQUIRED TO FACILITATE MAINTENANCE.
8. THIS DEVICE SHALL NOT BE INSTALLED BELOW GRADE, IN A PIT, OR IN A VAULT.
9. THE FINISHED FLOOR ELEVATION SHALL BE ABOVE THE 100-YR FLOOD ELEVATION AND THE DEVICE SHALL HAVE 12 INCH MINIMUM CLEARANCE BETWEEN THE AIR GAP DRAIN & THE FINISHED FLOOR.
10. PIPE UNION ONLY REQUIRED FOR LAWN IRRIGATION.



DATE: 08/18

CITY OF NORFOLK – DEPARTMENT OF UTILITIES
STANDARD DETAILS

DOMESTIC OR IRRIGATION REDUCED PRESSURE
ZONE BACKFLOW PREVENTER ASSEMBLY

SCALE:
NOT TO SCALE

DRAWING NO.
CW 15

FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE

SECTION 602 CONSTRUCTION CLASSIFICATION

TABLE 602
FIRE-RESISTANCE RATING REQUIREMENTS FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE^{a, d, g}

FIRE SEPARATION DISTANCE = X (feet)	TYPE OF CONSTRUCTION	OCCUPANCY GROUP H ^a	OCCUPANCY GROUP F-1, M, S-1 ^f	OCCUPANCY GROUP A, B, E, F-2, I, R, S-2, U ^h
X < 5 ^b	All	3	2	1
5 ≤ X < 10	IA	3	2	1
	Others	2	1	1
10 ≤ X < 30	IA, IB	2	1	1 ^c
	IIB, V/B	1	0	0
	Others	1	1	1 ^c
X ≥ 30	All	0	0	0

For SI: 1 foot = 304.8 mm.

a. Load-bearing exterior walls shall also comply with the fire-resistance rating requirements of Table 601.

b. See Section 706.1.1 for party walls.

c. Open parking garages complying with Section 406 shall not be required to have a fire-resistance rating.

d. The fire-resistance rating of an exterior wall is determined based upon the fire separation distance of the exterior wall and the story in which the wall is located.

e. For special requirements for Group H occupancies, see Section 415.6.

f. For special requirements for Group S aircraft hangars, see Section 412.4.1.

g. Where Table 705.6 permits nonbearing exterior walls with unlimited area of unprotected openings, the required fire-resistance rating for the exterior walls is 0 hours.

h. For a building containing only a Group U occupancy private garage or carport, the exterior wall shall not be required to have a fire-resistance rating where the fire separation distance is 5 feet (1523 mm) or greater.