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2012 IFC Code & Commentary

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SECTION 912

FIRE DEPARTMENT CONNECTIONS

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.

◆ An FDC is required as part of a water-based suppression system as the auxiliary water supply. These connections give the fire department the capability of supplying the necessary water to the automatic sprinkler or standpipe system at a sufficient pressure without pressurizing the underground supply. The FDC also serves as an alternative source of

water should a valve in the primary water supply be closed. A fire department connection does not, however, constitute an automatic water source. See Figure 903.3.1.1 for a typical FDC arrangement on a wet pipe sprinkler system.

The requirements for the FDC depend on the type of sprinkler system installed and whether a standpipe system is installed. NFPA 13 and 13R, for example, include design considerations for FDCs that are an auxiliary water supply source for automatic sprinkler systems; NFPA 14 is the design standard to use for FDCs serving standpipe systems. Threads for FDCs to sprinkler systems,

standpipes, yard hydrants or any other fire hose connection must be approved (NFPA 1963 may be utilized as part of the approval or as otherwise approved) and be compatible with the connections used by the local fire department (see commentary, Sections 903.3.6 and 905.1).

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.



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◆ This section specifies that the FDC must be located so that vehicles and hose lines will not interfere with access to the building for the use of other fire department apparatus. The location of potential connected hose lines to the FDC and hydrants must be preplanned with the fire department. Many fire departments have a policy restricting the distance that a FDC may be from a fire hydrant. Some also have policies that indicate the maximum distance from the nearest point of fire department vehicle access (often, the curb). Since fireground operations are based on local operational procedures, it is only reasonable that the fire chief of the jurisdiction

have approval authority over the location of and access to the FDC.

Landscaping can also be a hindrance to fire department operations. Even where the FDC is visible, the extensive use of landscaping may make access difficult.

Landscaping also changes over time. What may not have been an obstruction when it was planted can sometimes grow into an obstruction over time.

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.

◆ FDCs must be readily visible and easily accessed. A local policy constituting what is readily visible and accessible needs to be established. While the intent is clearly understandable, its application can vary widely. A precise policy is the best way to avoid ambiguous directives that result in inconsistent and arbitrary enforcement. Usually, the policy will address issues such as location on the outside of the building and proximity to fire hydrants.

Landscaping is often used to hide the FDCs from the public. This can greatly hamper the efforts of the fire department in staging



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operations and supplying water to the fire protection systems. Landscaping must be designed so that it does not obstruct the visibility of the FDC. Since fireground operations are based on local operational procedures, it is only reasonable that the fire chief of the jurisdiction have final approval authority over the visibility of and access to the FDC.

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.

◆ The section acknowledges that FDCs on existing buildings may not always be readily visible from the street or nearest point of fire department vehicle access. In those instances, the location of the connection must be clearly marked with signage. The FDC may be located on the side of the building or in an alley, not visible to arriving fire-fighting forces. A sign is necessary so that those

driving the arriving apparatus know where to maneuver the vehicle to get close to the FDC.

912.3 Access. Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or any other fixed or moveable object. Access to fire department connections shall be approved by the fire chief.

Exception: Fences, where provided with an access gate equipped with a sign complying with the legend requirements of Section 912.4 and a means of emergency operation.

The gate and the means of emergency operation shall be approved by



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the fire chief and maintained operational at all times.

◆ The FDC must be readily accessible to fire fighters and allow fire-fighting personnel an adequate area to maneuver a hose for the connection.

Landscaping design must not block a clear view of the FDC from arriving fire department vehicles. Depending on the type of landscaping materials, an active maintenance program may be necessary to maintain ready access over time. This section also recognizes that the obstructing objects regulated here can be either fixed or movable (such as outdoor furnishings, shopping cart queue areas, etc.). Note that no specific

dimension is given as was the case in previous editions of the code.

This performance language avoids previous misinterpretations that the code intended to allow obstructions to FDC access as long as they were kept 3 feet (914 mm) away. Since fireground operations are based on local operational procedures, it is only reasonable that the fire chief of the jurisdiction have final approval authority over the access to the FDC.

The exception recognizes the practical fact that sometimes, security or other considerations make installation of a fence around a building necessary as long as the

fence meets the stated criteria. The sign requirement intends to provide a visual location cue to approaching fire apparatus where the height of the fence may obscure the visibility of the FDC.

912.3.1 Locking fire department connection caps. The fire code official is authorized to require locking caps on fire department connections for water-based fire protection systems where the responding fire department carries appropriate key wrenches for removal.

◆ This section allows for the FDC caps to be equipped with locks as long as the fire departments that respond to that building or facility have the



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appropriate key wrenches. This avoids vandalism and affords a more functional FDC when needed. Locking caps, even more so than regular FDC caps, need proper maintenance so that they can be removed when required. Any time that an additional mechanical function is added to something that is exposed to the elements, it must be done with the understanding that the corrosive nature of the elements can place the FDC out of commission if the cap cannot be removed (see Figure 912.3.1).

912.3.2 Clear space around connections. A working space of not less than 36 inches (762 mm) in width, 36 inches

(914 mm) in depth and 78 inches (1981 mm) in height shall be provided and maintained in front of and to the sides of wallmounted fire department connections and around the circumference of free-standing fire department connections, except as otherwise required or approved by the fire chief.

◆ Care must be taken so that fences, utility poles, barricades and other obstructions do not prevent access to and use of FDCs. A clear space of 3 feet (914 mm) must be maintained in front of and to either side of wall-mounted FDCs [Figure 912.3.2(1)] and around free-standing FDCs [Figure 912.3.2(2)]

to allow easy hose connections to the fitting and efficient use of spanner wrenches and other tools needed by the apparatus engineer.

Though not specifically mentioned in this section, it is also important that FDCs be installed with the hose connections well above adjoining grade to accommodate the free turning of a spanner wrench when connecting hoses to the FDC.

912.3.3 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.



C+S and more

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◆ Section 312 requires vehicle impact protection by placing steel posts filled with concrete around the FDC. Section 312 gives the specifications for the posts.

912.4 Signs. A metal sign with raised letters at least 1 inch (25 mm) in size shall be mounted on all fire department connections serving automatic sprinklers, standpipes or fire pump connections. Such signs shall read: AUTOMATIC SPRINKLERS or STANDPIPES or TEST CONNECTION or a combination thereof as applicable. Where the fire department connection does not serve the entire building, a sign shall be provided indicating the portions of the building

served.

◆ The purpose of the sign is to provide the responding firefighters with the correct information on which portions of a building are served by the fire department connection. They identify the type of system or zone served by a given FDC.

Many buildings include multiple sets of fire department connections which are not interconnected, such as separate connections for the building sprinkler system and the dry standpipe system in open parking structures. Some buildings may have only a partial sprinkler



Figure 912.3.1
LOCKING FDC CAPS
(Photo courtesy of Knox Company)



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system, such as rehabilitated buildings where a sprinkler system is only installed on certain floors or a building that only has basement sprinklers in accordance with Section 903.2.11.

Signs may also distinguish FDCs from fire pump test headers. Usually, FDCs may be distinguished from fire pump test headers by the types of couplings provided. FDCs are customarily equipped with female couplings, while fire pump test headers usually have separately valved male couplings. Furthermore, fire pump test headers are equipped with one 1 1/2 -inch (64 mm) outlet for each 250 gallon per minute (gpm) (16 L/s) of rated

capacity.

Raised letters are required so that any repainting or fading of the colors on the sign will not affect its ability to be read. Each letter must be at least 1 inch (25 mm) in height so that the wording is clear. Often the wording may be abbreviated such that

“AUTOMATIC SPRINKLERS” reads as “AUTO. SPKR.” Existing signs may use language slightly different than that noted in the code. As long as the information is adequately communicated there should be no reason to require new signage to replace existing ones (see Figure 912.4).



Figure 912.4
FIRE DEPARTMENT CONNECTION WITH SIGN



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912.5 Backflow protection. The potable water supply to automatic sprinkler and standpipe systems shall be protected against backflow as required by the International Plumbing Code.

◆ Section 608.16.4 of the IPC requires all connections to automatic sprinkler systems and standpipe systems to be equipped with a means to protect the potable water supply. The means of backflow protection can be either a double check-valve assembly or a reduced pressure-principle backflow preventer.

This, in general, assumes a FDC is required. For example, a limited-area sprinkler system off the domestic

supply does not necessarily require a FDC and would not require backflow protection.

912.6 Inspection, testing and maintenance. All fire department connections shall be periodically inspected, tested and maintained in accordance with NFPA 25.

◆ Because FDCs are components of a water-based extinguishing system, NFPA 25 is applicable. Inspections must determine that connections are unobstructed, well-protected and in good working order.

Plugs or covers must be installed to protect threads and pipe openings, and must be

easily removed to permit connection of a fire hose.

Caps or plugs must be kept in place whenever the connection is not in use to discourage the insertion of objects into the connection openings. The interior of piping behind connection clappers must be checked for foreign material and obstructions.

Threads must be compatible with local fire service hose couplings and free of burrs, depressions and other flaws. Couplings must spin freely. Clappers, if installed in the pipe openings, must open easily and automatically return to the closed position.

Exposed piping, fittings,



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valves and couplings
must be free of water
where subject to
freezing. Defects must
be corrected without
delay. These and other
maintenance features
are addressed in NFPA
25.

Next Month SECTION
913

FIRE PUMPS (page 441)



The International Code Council, a membership association dedicated to building safety and fire prevention, develops the codes used to construct residential and commercial buildings, including homes and schools. Most U.S. cities, counties and states that adopt codes choose the International Codes developed by the International Code Council.



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