

Using Offset CPVC Pipe Hangers In Concrete Construction

Clearance Is Good Craftsmanship

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I believe its good craftsmanship to avoid mounting CPVC fire sprinkler system piping in contact against concrete construction. Although mounting CPVC pipe against wood and steel construction is typical, in my opinion it should be avoided whenever practical in concrete construction. The physical properties of concrete, the construction techniques typical to concrete and the fastener installations unique to concrete combine to present numerous technical problems to be addressed when mounting CPVC in contact against concrete construction. Let's discuss the relationship between concrete and CPVC fire sprinkler piping when this pipe is installed in contact with concrete construction.

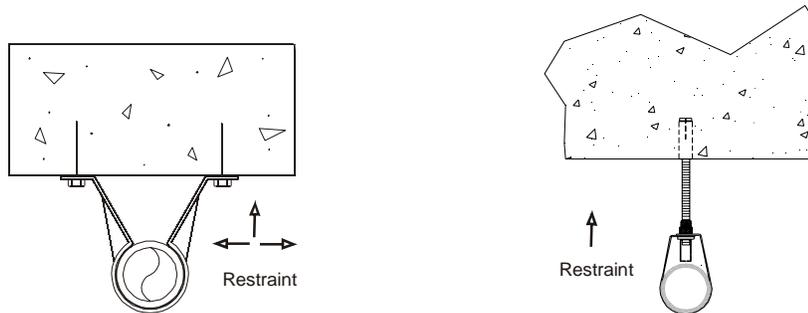
The physical properties of the concrete mixture used in construction can present technical concerns regarding the integrity of CPVC fire sprinkler pipe. Surface texture can cause scratching or abrasion of the CPVC pipe surface. When aggregate in the concrete mixture is at the surface of the finished concrete it can impose a point load to the wall of CPVC pipe. Chemical additives that enhance cure or hardness of the concrete mixture could be incompatible chemically with the chemistry of CPVC pipe causing softening of the pipe wall. If exposure to any of the aforementioned is problematic to the chemistry of the CPVC pipe – why take a chance.

The construction process typical to concrete creates construction features that need to be recognized and addressed prior to the installation of CPVC fire sprinkler piping. There may be elevation dimension irregularity across joints and seams at junction points of concrete forms. Concrete surface texture irregularity caused by the forming process or the concrete pour consistency during construction. Also, grinding to smooth the finished concrete surface may leave sharp micro edges. Concrete coatings, sealants or waterproofing applied during the construction process may be problematic to the chemistry of the CPVC fire sprinkler piping.

Concrete is technically a cracked stratum due to expansion and contraction and is subject to micro-fracture. Installation of fasteners in concrete including the quality of the fastener engagement in its concrete bore always requires special attention. This technical phenomena may favor hangers that provide the duplicity of two fasteners. Fastener installation procedures may be exacerbated by the presence or absence of aggregate at the point of installation. Shot type fasteners produce chards that may be problematic to the pipe surface integrity during the tight mounting of CPVC.

The geometry of the offset hanger provides benefits that are preferable during the installation of CPVC pipe which can be used to address all the aforementioned. Offset hangers eliminate the problems of dimensional irregularities common to tight mounting such as the outside diameter differential between pipe and fittings. The vertical offset dimension enhances vertical and horizontal alignment by bridging surface elevation dimension variations. This optically enhances perceived piping straightness and professionalism of the CPVC system installation. These hangers eliminate contact with concrete surface which negates surface abrasion due to expansion, contraction and

vibration. Further, they dampen vibration from CPVC piping caused by various building sources such as mechanical systems, air handling systems or street traffic. The ability to reach above the CPVC pipe between the ceiling and pipe surface facilitates labor and repair as access to the total pipe circumference is achievable. Additionally some offset CPVC hangers are listed to provide vertical and horizontal restraint. (see drawings)



When exposure to interaction between CPVC and concrete is problematic its always preferable to avoid the consequences. Clearance from concrete is good craftsmanship which enhances the integrity and durability of the CPVC fire sprinkler system. Fire sprinklers are defined as an emergency system and anything we can do to enhance their superior performance should be our most important professional concern.