

## Copper Twisted Pair for Below-Grade Conduit

Warranties for structured cabling systems can be compromised if the cables are exposed to water. One area of potential exposure to water is a below-grade conduit system (floor boxes, in-floor duct systems, conduit bodies and fittings) if not installed properly or not rated for use in wet locations.

Floor box outlets have become a popular method for distributing data, audio/video and power to multiple locations in large open floor plans. In-floor duct systems provide convenient access to these services with minimal obstruction.

When deploying in-floor systems on the bottom floor of a building, the boxes, conduit bodies and fittings are typically encased in concrete slab on or below grade, a location defined as wet by the National Electrical Code (NEC): The NEC 2014 Edition, Article 100, defines "Location, Wet" as follows:

"Installations underground or in concrete slabs or masonry in direct contact with the earth; in locations subject to saturation with water or other liquids, such as vehicle washing areas; and in unprotected locations exposed to weather."

Both the NEC and BICSI allow the use of floor boxes and in-floor duct systems in these locations **as long as they are approved by the local Authority Having Jurisdiction (AHJ).**

BICSI's Telecommunications Distribution Methods Manual (TDMM), 12th Edition, Section 5, Horizontal Pathway Systems states:

"A building's horizontal pathways must be installed in locations that protect cabling from moisture levels beyond the intended operation range of interior premises cabling. For example, slab-on grade construction where pathways are installed underground or in concrete slabs in direct contact with soil (e.g., sand and gravel) is considered a wet location. When faced with such design environments, ITS designers should design pathway or cabling systems that are suitable for use in wet locations (e.g., cabling products are often described as industrial cabling products)."

When installing such systems in wet locations, Superior Essex highly recommends the use of cables that are also rated for wet locations. Although the pathway systems may be listed for wet locations, cables in such installations face a higher risk of exposure to moisture due to accidents, improper installation or other causes. Cables that are not rated for wet locations and fail due to exposure to water are not covered under standard or extended warranties. In these applications, cables designed for wet locations provide the greatest level of protection for the cabling network. To address this need, Superior Essex offers EnduraGain™ OSP cables in Categories 5, 5e, 6 and 6A that are rated for wet locations. Several of these cables including; EnduraGain OSP Armored and Shielded versions of our CAT 6 and 6A cables, are offered with a CM/CMX rating and can be installed indoors in non-riser and non-plenum environments.

EnduraGain OSP cables without a CM/CMX rating are not listed for indoor use, and it may be necessary to transition to a listed cable between the below grade pathway and the telecommunications room (TR) or telecommunications enclosure (TE). This can be accomplished by installing a consolidation point (CP) for the transition of cable type. Following are some important considerations when implementing a CP. For additional information, refer to ANSI/TIA-568-C.1, or contact Superior Essex Technical Support.

1. Cross-connections should not be used at a CP.
2. There should be no more than one CP within the same horizontal run.
3. CP should be located at least 49 ft (15 m) from the TR or TE. If there is less than 50 ft (15.2 m) of exposure between the below grade pathway and the TR or TE, transitioning to a listed cable may not be necessary. Consult the local AHJ.

