Anchorage Connectors

The recently published ANSI/ASSE Z359.18-2017, Standard for Safety Requirements for Anchorage Connectors for Active Fall Protection Systems, provides design and performance specifications for anchorage connectors used in fall arrest, and test methods to determine whether products conform to the standard's requirements. Previously, the requirements for anchorage connectors were provided in the ANSI/ASSE Z359.1-2007 standard. We asked several Z359 committee members for their views on the standard's importance for fall protection and fall arrest.

Scope
To set the stage for how the standard is implemented and used in the workplace, users should understand the scope:

- This standard establishes requirements for the performance, design, testing, marking and instructions for use of anchorage connectors in travel restraint, fall arrest, rescue, work position, rope access and suspended component/tie-back line systems only.

Three Types of Anchorage Connector
Anchorage connectors are now categorized into three types, which affects product selection:

- **Type A**: designed for an active fall protection system.
- **Type T**: designed to support a suspended component/tie-back line or for an active fall protection system.
- **Type D**: designed to allow deformation or movement when arresting a fall with the purpose of absorbing fall energy and reducing the strength requirements of the anchorage to which it is attached. Deformation may be permanent or temporary. In some cases, these anchorage connectors may not be suitable for work positioning, rescue, rope access and suspended component/tie-back because of their low serviceability load rating. Also, travel restraint may be acceptable based on the serviceability rating and deformation limits of the individual product.

**PS: Why is Z359.18 important?**

**Randy:** This standard will play a critical role for end users who work with anchorage connectors as part of their fall protection programs. Prior to the release of this standard, anchorage connectors only had to pass one test, being tested with one sample. This standard strengthens the testing requirements.

The original 2007 version of Z359.1 did not allow for new technology or creative anchorage connectors, nor did it consider the structure to which the anchorage connector is to be used. This standard greatly improves the safety of anchorage connectors and also allows for innovative development of anchorage connectors to better address difficult applications. Safety is improved through the following: dynamic strength testing, residual strength testing, corrosion testing, all testing complying with the ANSI/ASSE Z359.7, Standard for Verification, more appropriate serviceability testing, low temperature performance requirements, and testing requiring use of weakest simulated substrate.

Innovation is facilitated by creating specific types of connectors with corresponding appropriate testing requirements and by defining performance requirements instead of specific design requirements. One example of this is a Type D or deformable anchorage connector. Here, the static strength requirement has been relaxed from the previous fixed value (5,000 lb) to a range of 2,700 lb up to 5,000 lb depending on the anchorage connector's ability to reduce the maximum dynamic strength test force.

To maintain a comparable safety factor with Z359.1-2007 for Type D anchor connectors, a new test lanyard is introduced that produces a maximum arresting force (MAF) of 5,000 lb when a 282-lb test weight is dropped with a freefall distance of 6 ft on a rigid anchor. At a 3-ft freefall distance, this lanyard provides an MAF of 3,600 lb. With the introduction of dynamic strength testing to anchorage connectors, the first step has been taken toward developing future standards that will ensure the safety of available products such as ballasted anchor connectors and new innovative products.