CONFINED SPACES

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Often when the term "confined space" is used in a preconstruction meeting, interested parties immediately conjure images of full body suits; a self-contained breathing apparatus (SCBA); and complicated permits that must be filled out initially, maintained throughout the shift, and archived for infinity. For some contractors, this may be reality; however, it is not for most contractors in the concrete restoration industry. Truth be told, a confined space entry is normally no more complicated than working on an elevated slab or in a foundation trench. It is the task of performing normal work activities in a location that may be more dangerous if a number of possible hazards are not controlled or eliminated.

The first step in entering a confined space is to determine if the space meets the OSHA definition of a confined space, which is a space that:

"(1) Is large enough and so configured that an employee can bodily enter and perform assigned work;

(2) Has limited or restricted means for entry or exit (for example, tanks, vessels, silos, storage bins, hoppers, vaults, and pits are spaces that may have limited means of entry); and

(3) Is not designed for continuous employee occupancy."

The space must meet ALL of the criteria to be classified as a confined space. Once a work area is classified as a confined space, the contractor should then refer to the flowchart found in Appendix A of the Confined Space Standard (Fig. 1). This flowchart leads a contractor down the path of compliance in determining what type of space is present and what methods of protection are required by OSHA to be used in entering the space. The flowchart is self-explanatory. A question is asked, and when answered (Yes or No), the contractor follows that path of the flowchart, following the instructions provided. The flowchart can be broken into thirds with the top third of the chart determining if a work place is a confined space, the middle third determining what type of confined space (permit-required or not), and the bottom third determining entry procedures should a space be a permit-required confined space. About halfway down, the flowchart asks, "Does space have known or potential hazards?" It is at this point that a user is determining whether or not the space is a permit-required confined space or not. The hazards which define a space as permit required can be found in OSHA's definition of a confined space, which is "a space that has one or more of the following characteristics:

(1) Contains or has a potential to contain a hazardous atmosphere;

(2) Contains a material that has the potential for engulfing an entrant;

(3) Has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross-section; or

(4) Contains any other recognized serious safety or health hazard."

Once again, if the space has ANY of the aforementioned listed characteristics, it is a permit-required confined space. However, if certain conditions are met as the flowchart progresses, the space can be reclassified to "non-permit-required." In fact, the next step on the flowchart asks, "Can the hazards be eliminated?" If the answer is yes, then the space can be reclassified to non-permit-required. A contractor must be careful in clas-

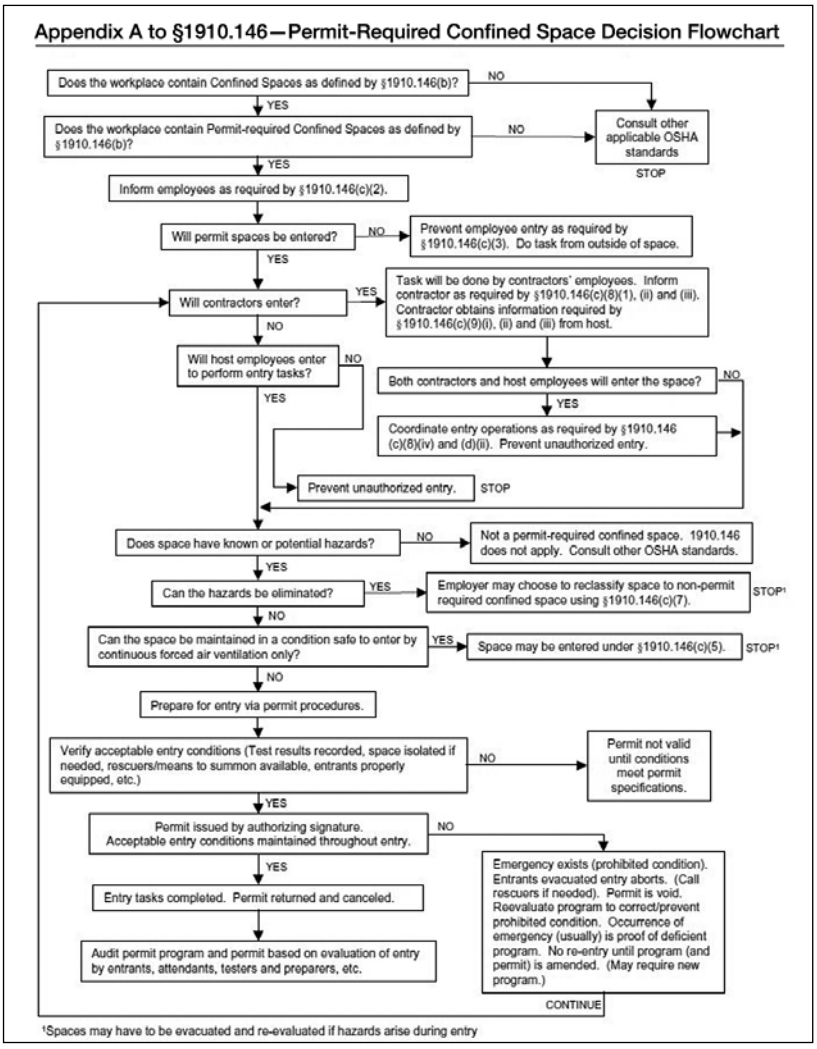

Fig. 1

sifying the hazard as "eliminated." For a hazard to be eliminated, there must be no potential for the hazardous condition to arise while employees are in the space. For example, if there is high-voltage electricity in the space, such as from an electrical transformer, and the electrical connections are covered by a qualified contractor, high-voltage electricity would be controlled, not eliminated. For the hazard to be eliminated in this example, the electrical power would have to be shut down and/or disconnected from the transformer and any residual energy stored in the transformer removed. Furthermore, a space cannot be reclassified until the hazard is eliminated. If you have to enter the space to eliminate the hazard, it must remain a permit-required confined space until elimination is complete.

A subsequent step on the flowchart details the only condition which will allow reclassification through control of a hazard: "Can the space be maintained in a condition safe to enter by continuous forced air ventilation only?" This condition would most commonly be found in confined space entries of sewer systems and/or communications vaults. You'll commonly see large yellow ducts entering manholes as utility contractors maintain their equipment. This is a prime example of a hazardous atmosphere being controlled through the use of mechanical forced air ventilation.

If the space is non-permit-required, employees can enter the space to work as normal. Keep in mind that if a space has no permit-required hazards to begin with, the contractor must also review the equipment and materials that will be used in the space. If a hazardous chemical is introduced into the space to perform work, the space would be classified as permit-required. If the contractor determines that the space to be entered is a permit-required confined space, the flowchart outlines the steps to be followed to permit safe entry.

To prepare and execute an entry permit, use one of the generic permits available in OSHA's confined space standard (1910.146, Appendix D), find a contact number on the Internet, or draft your own. Regardless of the method, the permit must address all of the known and potential hazards in the space, methods of control, and response to emergencies. If a permit requires atmospheric testing for hazardous atmospheres, the testing must be done prior to entry and logged on the permit. If control or lockout of hazardous energy is required, it must be accomplished and logged on the permit. The permit must be filled out prior to entry and signed off by the entry supervisor.

When entering a permit-required confined space, an attendant must maintain contact with the entrants from outside the space. The contact can be visual or audible. If the entrants travel into the space beyond the vision of the attendant, two-way radio communication is required. A cell phone is not an acceptable method of communication. Cell service can drop without warning. Both the attendant and entrants must be familiar with the hazards of the space and trained how to react if an emergency should occur. The entry supervisor must also be trained in the knowledge and hazards of the space so that this individual can properly supervise a permit-required confined space entry. A rescue/emergency action plan must be in place should an accident occur. The rescue/emergency action plan will vary based on the configuration of the space. For instance, a typical rescue method for a vertical manhole entry into a communications vault is to erect a tripod (Fig. 2) over the hole with a personnel hoist attached to the entrant via a full-body harness. In this case, if an emergency arises, the attendant would simply hoist the entrant out of the space. A complicated space, however, may require that a trained rescue team be on standby near the space, should it be necessary to enter and retrieve a victim. In no case is calling 911 an acceptable emergency action plan. The victim of an accident in a space that contains a hazardous atmosphere can expire in a matter of minutes, if not seconds. It can take hours for a trained rescue team to arrive on scene, if one is even available.

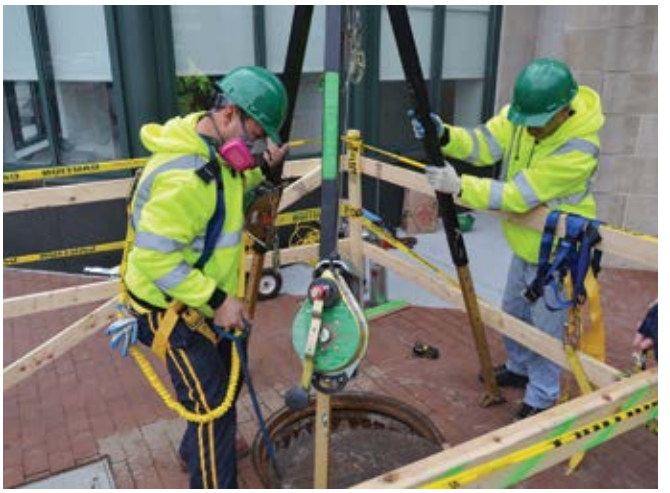

Fig. 2

Finally, the OSHA confined space standard requires a great deal of communication between the owner of the space, contractors, and subcontractors. The standard outlines each entity's responsibility in communicating the knowledge and hazards of the space.

Furthermore, the current confined space regulation is a General Industry Standard. OSHA's Construction Standard references the General Industry Standard, thus requiring construction contractors to abide by its regulations. For more information, the reader can download a 23-page publication released by OSHA in 2004, which provides a detailed explanation of the rule. The publication can be found at **www.osha.gov/Publications/osha3138.pdf**.

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