STATE BUILDING CODE INTERPRETATION NO. I-24-07

October 19, 2007

The following official interpretation is offered in response to several questions received by this office regarding the entrapment avoidance provisions of Section AG106 of the 2003 International Residential Code portion of the 2005 State Building Code.

Question 1. If a pool filtration system relies only on skimmers and has no submerged drain, must there be a minimum of 2 skimmers separated by 3 feet? Must there be an SVRS device?
Answer 1. No to both questions. The current code does not make a distinction between the two most prevalent types of suction outlets; surface skimmers and submerged outlets (drains), nor does it require the use of main drains in pools where surface skimmers are employed. The intent of Section AG106 is to prevent three basic types of entrapment: hair entrapment; body or limb entrapment; and evisceration. Hair entrapment and evisceration are prevented by use of an intact ANSI/ASME A112.19.8M approved cover, which the code specifically does not require for skimmers at Section AG 106.2. Given the physical characteristics of surface skimmers that are equipped with a weir and a skimmer basket and are vented to the atmosphere through the cover; body or limb entrapment are highly unlikely to occur at a surface skimmer. For this reason, I believe that it is the intent of the code to apply the various code requirements for entrapment avoidance to submerged suction outlets (drains) only. Thus, the location and number of skimmers would be a function of water circulation to maintain water quality, and the requirements for the number of outlets, separation distance and safety vacuum relief system (SVRS) devices would not apply to pools served by surface skimmers alone. Again, Section AG106.2 specifically exempts surface skimmers from the approved cover requirements.

Question 2. Section AG106.4 requires a minimum of 2 suction outlets. Can a pool be constructed with a single skimmer and a single submerged drain that are separated by three feet as long as the combined line to the pump is protected by an SVRS?
Answer 2: No. Although the code uses the term suction outlets, the intent of the code is that if a main drain system is employed, there be a minimum of two such drains, each protected by an approved cover meeting the requirements of Section AG106.2 and separated by a minimum of three feet. The key here is the modifier “of the approved type” to the term suction outlet. Research into this question indicates that wherever submerged drains are employed the intent of the code is to require a minimum of two matching submerged suction outlets; that is, two submerged main drains. This requirement does not apply to pool cleaner fittings covered by Section AG106.5.

Question 3. A pool has two skimmers (A and B) and a single main drain in the floor of the pool. The main drain has a compliant cover and is piped into the bottom of skimmer (A). 2” suction lines run from each of the skimmers to a tee which then goes to a pump protected by an SVRS device. Does this comply with the code’s requirements to have a minimum of two suction outlets separated by a minimum of three feet?
Answer 3. No. Using similar logic found in Answer 2, any pool with a submerged main drain must have two such drains separated by a minimum of three feet (see response 4). In addition, it should be noted that the intent of the code is that the tee connecting the two submerged suction outlets (drains) to the single suction line should be as close to the center of the pipe connecting the drains as possible. This helps to ensure flow rates in the two drains that are as equal as possible.

Question 4. How does one measure the minimum three foot separation required between suction outlets?
Answer 4. The code doesn't specify how to measure the separation. The language of the code does, however, require a three foot horizontal or vertical separation distance between *outlets.* The intent is to create a situation where a single body is unlikely to cover both outlets. Since the exposed portion of the outlet is the cover, it stands to reason that the separation distance must be measured from near point of the openings in the cover to near point of the openings in the other nearest cover. This method of measurement will likely result in center of pipe to center of pipe separation distances that exceed three feet.

Question 5. Assuming a pool has two main drains with the appropriate covers and separation as well as one or more surface skimmers, can the suction line from the drains be piped into the front hole of one of the skimmers and the suction line to the pump come out of the rear hole of the same skimmer, assuming the line that then goes to the pump is SVRS protected?
Answer 5. The code does not specify how the pool must be piped. The proposed method of piping does not appear to be any more hazardous than piping the main drains and the skimmers independently to the pumps through an SVRS and thus appears to meet the intent of the code.

Note: Given that approved drain covers are essentially the only protection against hair entrapment and evisceration it is imperative that owners/operators of swimming pools and spas equipped with submerged suction outlets be made aware of the need to shut down any such pool or spa with a drain cover that is missing, broken or not securely fastened.