

# CODE TOPICS

## 2017 FBC 6<sup>th</sup> ED SECTION 454.2 RESIDENTIAL SWIMMING POOLS

# POOLS IN FLOOD V-ZONES

### TOPIC BACKGROUND

Velocity Zones (V-zones) can be seaward of the State's CCCL or landward, such as along area bay waters. That designation means the flood waters will have wave action that puts horizontal forces/loads on anything above grade. The V-zone line on the survey is the line that makes many things happens if there is to be a pool waterward of that line. Projects in V-zones seaward of the CCCL must consider the erosion that occurs during the storm which will usually leave the pool out of the ground on its pile supports.

### WHAT THE CODE SAYS

The codes and standards at play here are the 2017 FBC 6<sup>th</sup> Ed Section 3109, adopted reference ASCE 24-14 and FEMA Guidelines, specifically, Technical Bulletin 5, 2008 or 2020- Free-of-Obstruction Requirements among others. Here are the basic concepts that must be followed:

- FEMA Technical Bulletin 5 expects pools to be flush with surrounding grades in v-zones. Local reviewers seem to accept pool structures that are raised 12" as deminimus. Pools are to be installed anti-buoyant so as to stay flush with the grade during the wave action.
- Any pool or deck construction over 12" from natural grade will need to be designed with breakaway components and the below grade parts stay in place during the wave action causing the breakaway, and would require wave runup analyses to confirm "no obstruction."
- Apparently, fill up to 24" under a pool deck can be placed in a V-zone, but that leads to requiring a breakaway retaining wall and piles (maybe helical) to hold the floor of the pool in place while the walls break away.
- Retaining walls higher than 24" are pretty much prohibited in V-zones due to the adverse wave actions from non break away walls and if break away walls were used there would be excessive fill redistributed.
- In V-zones, the code requires all structures to have horizontal members to be above the flood elevation. Since the bottom of the pool is not likely to be at that elevation, any pool elevated more than 24" above grade would likely have the horizontal floor connected to concrete piles to remain in place while the walls breakaway.

### REQUIRED AT PLAN REVIEW

- For pools in V-zones flush with surrounding grade, a simple anti-buoyant concrete shell can be specified, and the required V-zone certification letters provided.
- For pools in filled decks between 12" and 24" above grade, there needs to be specs for breakaway retaining walls, piling to hold the floor of the pool in place, runup analysis, and specifications for breakaway pool walls.
- For pools in V-zones more than 24" above grade, the specifications need to connect the pool floor to enough concrete piling to hold the floor in place while the pool walls breakaway and the waves flow under and around.
- The concrete pile designs will consider the allowable lateral loads defined in the soil reports.
- If in a "Coastal V-zone", none of this applies as erosion is expected and must be considered in the pile support design.

### REQUIRED DURING INSPECTION

Simply inspect to approved plans and specifications.

Disclaimer: This is offered as a summary and guidance on code requirements. This does not authorize a code violation.