STAFF GAUGE CONSTRUCTION, GENERALLY

Location:

The gauge needs to be where the observer can see it. Major points are that if the observer comes into the site and has to cross the emergency spillway that will not be safe when the spillway is flowing. So in this case the gauge would have to be located where the observer gets to emergency spillway. It always has to be located toward the pond (upstream) from the control section to give a true reading. It should not be close to the control section because that would cause a potential erosion situation and head-cutting as flow splits around the post and recombines turbulently. As far as distance upstream if you put it in the emergency spillway, my personal preference is the location where the water depth would be 2 feet deep when the control section starts to flow.

If the observer's access to the dam is on the dam abutment side you have to decide if you want to put it in the upstream pool area near the abutment or if you want to walk across the top of the dam to the emergency spillway and put it near that abutment. If overtopping is eminent that also presents a safety hazard. Again, my personal choice is on the abutment side and I will cross the dam to check if the spillway is eroding and go back before overtopping occurs. The stage III trigger (evacuation) may be set lower but will never be set higher than 2 feet below the top of the dam which will give the observer a comfortable margin to cross back to their entry point.

The zero elevation should be set at the elevation of the high point in the emergency spillway (control section). That's easy to say but the control sections have differentially settled over time so may not be level. I have never seen any literature that gives guidance on the elevation to use. I would choose the lowest elevation myself because that would be the most conservative choice.

Some districts have chosen not to put in a depth reading gauge but have used reflectors to set the stage II & III elevations. That is okay with me as long as everyone knows where the water level on the reflector has to be before the depth triggers the next stage but I would use both reflectors and the tape measure type (for lack of a better term) depth measure. I would also use a depth scale that measures no less than in ½ foot increments. Painting a scale on a 4 x 4 is acceptable if it can be easily read.

Remember, watching for erosion occurring in the spillway near the control section is one of the main duties of the observer because it could trigger an early evacuation so seeing the spillway is a requirement of the plan, not an option.