

***** EXAMINATION *****

HYDRAULIC DESIGN OF LOCK CULVERT VALVES

1. **All elements of the culvert system between the filling & emptying**
 - a) valves should be at least 3 feet below minimum lower pool
 - b) valves should be at least 5 feet below minimum lower pool
 - c) valves should be at least 7 feet below minimum lower pool
 - d) valves should be at least 9 feet below minimum lower pool

2. **Air should be sealed from the culvert system during filling**
 - a) operations in locks with lifts of 20 feet and less.
 - b) operations in locks with lifts of 40 feet and less.
 - c) operations in locks with lifts of 60 feet and less.
 - d) operations in locks with lifts of 80 feet and less.

3. **A substitute for an air vent for the filling valves is**
 - a) bulkhead slots
 - b) valve wells
 - c) other openings into the culvert
 - d) None of the above should be used

4. **A vent slot extending across the roof of the culvert as provided**
 - a) in flood control conduits is not required
 - b) in flood control conduits is recommended
 - c) in flood control conduits is mandatory
 - d) None of the above

5. **The vent valves should be locked in the desired position**
 - a) to prevent leaking of gases
 - b) to prevent explosions
 - c) to prevent accidental changing of the setting
 - d) All of the above

6. **A type of tainter valve is**
 - a) horizontally framed
 - b) double skin plate
 - c) vertical framed
 - d) Any of the above

7. **Uplift load act to**
 - a) rotate the valve to the open position
 - b) close the valve
 - c) rotate the valve to a neutral position
 - d) None of the above
8. **Covering transverse beams with a smooth, curved skin plate**
 - a) results in a blocking effect
 - b) results in a diverting effect
 - c) results in a streamlining effect
 - d) None of the above
9. **Load reversals on the valve hoist result in**
 - a) minimum wear in the strut connections
 - b) excessive wear in the strut connection
 - c) minimal structural damage
 - d) both a and c
10. **Horizontally framed valves should be limited to locks**
 - a) with lifts of no more than 10 feet
 - b) with lifts of no more than 20 feet
 - c) with lifts of no more than 30 feet
 - d) with lifts of no more than 40 feet
11. **Double skin-plate valves can be used**
 - a) with lifts of no more than 10 feet
 - b) with lifts of no more than 20 feet
 - c) with lifts of no more than 30 feet
 - d) with all lifts
12. **In a reverse tainter valve installation, the valve well**
 - a) would serve as a surge chamber
 - b) would serve as a shutoff valve
 - c) would serve as a vacuum pump
 - d) None of the above
13. **Sudden closure of a valve due to breakage of the**
 - a) hoisting mechanism is very unlikely
 - b) hoisting mechanism is not a design condition
 - c) both a and b
 - d) None of the above
14. **The conditions of peak head across the valve to be used in the**
 - a) structural design depend on local situations and designer judgment
 - b) hydraulic design depend on local situations and designer judgment
 - c) mechanical design depend on local situations and designer judgment
 - d) None of the above

15. **Poor valve seals can result in**
- a) cavitation
 - b) vibration
 - c) hoist load problems
 - d) Any of the above
16. **Flexible rubber bottom seals can be a source of serious**
- a) cavitation
 - b) vibration
 - c) hoist load problems
 - d) Any of the above
17. **The recommended type of side seal is**
- a) a plastic K-type seal
 - b) a plastic J-type seal
 - c) a rubber J-type seal
 - d) a rubber K-type seal
18. **Loss of contact in a side seal may**
- a) allow leakage
 - b) result in seal flutter
 - c) both a and b
 - d) None of the above
19. **The most problematic valve seal is**
- a) the top seal
 - b) the bottom seal
 - c) the side seal
 - d) the interior seal
20. **The seal projection on the valve should be**
- a) as hard as possible
 - b) as short as possible
 - c) as long as possible
 - d) None of the above

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