#	Fire Department Fire Suppression Design Requirements 1/28/2021
	Eglin Fire Suppression Specific Criteria 5/12/2021
1	Butterfly valves shall Not be installed Accept for 2 1/2" hose valves on test headers. The test header isolation valve shall not be a butterfly valve. 2 1/2" and smaller diameter valves shall be ball valves. 3" and Larger valves shall be OS&Y. All valves shall be resilient seated if possible.
2	Exterior post indicator valves shall be locked by CE and not be electronically supervised.
3	UFC 3-600-01 For locations subject to freezing, backflow preventers must be located in the facility or within a heated encloser. Provide a low temperature supervisory alarm connected to the facility FACP for heated enclosers. Heat trace must Not be used. Supervision of the heater function is prefered over temperature supervision. .
4	Make every attempt to design the project for the backflow prevention assembly to be installed in the facility. Exterior backflow prevention assemblies shall be protected from freezing with an outdoor heated, insulated, enclosed, readily accessible encloser locked by CE. The heater power and functionality shall be supervised by the facility FACP
5	All inspector's tests, axillary drain and main drain valves shall be readily accessible without the use of a ladder not be installed any higher than 72" from the floor and shall discharged to the exterior of all facilities. All drain piping shall be installed with slope so that they drain completely with no water trapping points or bellies whatsoever. All inspectors test valves shall be test and drain valves with the test orifice size designated by NFPA 13
6	The inspector's testvalves shall be test and drain ball valves and shall be readily accessible with out the use of a ladder and be located at the hydraulically most remote portion of the building.
7	Hydraulic gongs and alarm check valves shall be installed on all sprinkler systems.
8	Hydraulic design plates and general information signs shall be installed per NFPA and engraved so the markings will be permanent.
9	Fire department connections shall be installed in a readily accessible location between 36" and 48" inches above finished grade.
10	All alarm valves shall be installed in a readily accessible location between 48" and 60" above finish floor.
14	Sprinkler system piping shall be steel. In addition, Schedule 10 piping shall not be used for any fire suppression /extinguising system piping whatsoever. Minimum Schedule 40 shall be used.
15	All flow switches shall have a means of testing by water flow to the exterior of the building, including Elevator shunt flow switches.
16	Fire Department Connection Check Valves shall be readily accessible for maintenance. If buried it shall be in a valve pit in accordance with NFPA 13, 8.16.1.4.2 and Figure A.8.16.1.1.4 with a rock bottom at least 12 inches below the check valve to allow for drainage.
18	Premanufactured fire pump houses will have the entire floor area between the beams filled solid with concrete.
19	Fire hydrants will be painted according to UFC 3-600-01 and NFPA 291. The paint will be enamel and color matched as follows: Fire Hydrant red # MD-43827, Safety Yellow # MD-43828, Safety Orange # MD-43829, Safety Blue # MD-43830, Green # MD-43831.

20	Antifreeze fire suppression systems shall not be installed.
22	Fire pumps over 2000 RPMs are discouraged. Any FP over 2000 RPMs must be proven to the government's satisfaction to be the best choice for the particular application.
23	Rope/plug style tampers shall be installed on all valves requiring supervision including OS&Y. If the valve is a ball valve drill a hole in the handle to install the rope tamper or install a universal ball valve switch. All other types of valve tamper switches are prohibited.
24	Facilities with a fire suppression system shall have a backflow prevention assembly approved for the hazard with a test header that enables a forward flow test IAW UFC 3-600-01. The test header shall be installed on an exterior wall or in an approved location, outside the mechanical room, that is designed to handle the water discharge during testing. RPZ assembly relief valve drains shall be installed with an approved air gap and the drain shall be sized for the total GPM full dump capacity of the relief valve per manufactures specifications, AWWA Manual M-14 and UFC backflow prevention plumbing code. Under sized drains will flood the room and enable backflow contamination of the potable water.
25	All-thread shall not be used for pipe stands.
26	Power sources for installed heat tape and heaters shall be monitored by the fire alarm system IAW UFC, NFPA 13 and 72
27	Fire water storage tanks shall be welded. Bolted water storage tanks are prohibited.
29	Flow meters installed in fire pump systems shall be piped to either the test header or on a separate return to the fire water storage tank.
30	All fire water storage tank inlet control valves shall be slow closing solenoid valves, or controlled by solenoid valves only. Hydraulic valves controlled by pressure and float controlled valves are prohibited. The water level sensors that control the fire water storage tank inlet fill valve shall be the probe type and tell the inlet fill valve to open before the low water level supervisory signal activates and stop the inlet water flow before the high water level supervisory signal activates.IAW NFPA 22 and 72. All other types of sensers are prohibited.
31	All fire suppression systems Inclueding all foam systems shall be installed so that they drain completely with no water trapping points or bellies whatsoever.
32	For buildings that have an emergency generator installed on them, in addition to all other required systems, at a minimum, the fire system jockey pump shall also be powered by the generator. If, however, a building requires installed emergency power (powering selected circuits) intended to continue limited operations, that power shall operate emergency systems including fire protection features, including fire pumps if present.
35	A spare head of every installed dry type sprinkler head shall be placed in a box mounted to the wall near the Alarm Valve riser.

36	A recessed type wrench shall be installed in the spare sprinkler head box if any recessed sprinkler heads are installed.
37	All special tools required to reset fire sprinkler alarm valves shall be provided.
39	Non variable frequency drive jockey pump controllers are prohibited. All jockey pump controllers shall be variable frequency drive. All software and programming shall be provided with training to allow the 796 CE alarm shop to be able to maintain and program the controller.
40	The fire suppression system installer shall have a NICET 2 certification for the installation of the fire suppression system that is being installed, enough experience with the installation of the fire suppression system being installed acceptable to the AHJ and supervise the installation of all fittings, pipe, and system components at all times without exception.
41	All potable water supply to all fire water storage tanks shall be piped to the highest part of the tank with an approved air gap and or reduced pressure principle backflow prevention assembly per AFI 32-1067
42	Isolate any system over 20 heads to permit pressurizing new installation to 200 psi while leaving existing system at working pressure.
43	Fire water storage tank fill valves that use electrical means to operate a control valve will use separate sensors from the high and low water level alarms to operate the level control valve within the 1 foot allowed between the high and low level alarms IAW NFPA 22 and 72
44	Under floor detection shall be accomplished through an Air Aspirating System.
45	Please provide a box and a copy of all fire suppression O&M's and asbuilt drawings in riser room mounted to a wall. This does not need to be an additional copy to the required copies turned in at the end of the contract.
49	When pipe thread sealant is used, use non petroleum based product. We have found oil residuals on heads from the oil separating from the base of the thread sealant.
50	CPVC is prohibited for use in all sprinkler systems. For transitions into secure vaults use grounding per SCIF UFC 4-010-05, paragraph 3-5.8.2 for sprinkler pipe penetrations. Grounding
51	All check valves over 2" shall have a cover plate for maintenance without removing the check valve assembly from the piping system

53	Instead of automatic air relief valves that will leak Install a minimum one inch diameter auxiliary drain connected to the fire suppression system at a high point that allows air to be purged from the system piped to the outside of the building for every 3,000 square feet of wet fire suppression system protection. Example a building with 30,000 square foot protected by wet fire suppression systems shall have 10 auxiliary drains connected to the fire suppression sytem at a high point which facilitates the purging of air remotely spaced from each other and the alarm valve with easily accessible without the use of a ladder full port ball valves piped to the outside. All wet fire suppression systems inclueding shotgun systems shall have a minimum of one inspectors test and one auxiliary drain remotely located from the riser and each other, piped to the outside with an easily accessible without the use of a ladder, test and drain valve. Another good option for purging air in larger systems is connecting all the branch lines together at the high point and running it to the outside with a readily accessible full port ball valve or test and drain the same size as the piping. The larger the system, the larger diameter the piping will need to be connecting all the branch lines and running to the outside, in order to purge enough air.
54	On Foam systems - Please install 1" diameter schedule 40 steel piping for a solution pressure point at the inlet to the most remote foam generator. Hard pipe it so that it completely drains with no water trapping points whatsoever to a readily accessible location outside of the foam hazard and high enough off the floor to put a 55 gallon drum under it to facilitate flushing and draining the line. Please install a valve at the tap and one for the pressure gauge at the outlet . Please provide a metal placard with the distance (height) to the inlet of the generator, install it at the base to assist with calculations to figure the pressure at the most remote generator during a foam flow.
55	City water bypass loops shall not be utilized on fire pumps supplied by a non elevated fire water tank.
56	All wet fire suppression systems shall be installed in a heated and insulated space.
57	All underground fire suppression piping including fire pump systems shall be welded stainless steel or piping that requires butt fusion methods to join the pipe. Service risers transitioning from underground shall be welded stainless steel from an accessible location outside the building. All mechanical joints shall be tightened with a calibrated torque wrench to the manufacturers specifications by continuously tightening every bolt, working around the pipe until the torque wrench clicks for every single bolt without the nut spinning. Most underground leaks are caused by failure to tighten joints thoroughly. No loss of pressure or visible leaks allowed on underground fire pump or fire suppression systems. A small leak will grow over time because the stream will eat away any material it is leaking past. Pressure loss causes frequent jockey/pressure maintenance pump cycling and jockey pump controller and pump failures. Underground leaks here do not surface because of the sand, until the leakage flow rate accedes the pressure maintenance pump capacity which causes the fire pumps to run continuously. Fire pumps running continuously will burn up leaving all facilities unprotected.

58	All fire suppression systems piping shall be installed with a protective coating that inhibits corrosion applied to the inside of the pipe. One example would be Eddy Guard 2 from Bull Moose Tube. These coatings only last for a period of time depending on the company and it is still critical to install all piping so that it drains completely with no water trapping points whatsoever.
59	Before connecting any potable drinking water piping to any fire suppression system Schedule the 796 backflow prevention program manager and the fire suppression subject matter expert to be present.
60	AFI 32-1067 AWWA manual M-14 requires with out exception all backflow prevention assemblies to be tested by a cirtified backflow prevention tester with a current state cirtification for backflow testing immediately after installation, when put in to survice, when taken out of survice, when cleaned or repaired, when maintenance or repair is done upstream of the backflow prevention assembly and annually.
61	During installation, maintenance or repair upstream of the backflow prevention assembly keep the inlet shut off valve closed and flush the piping thoroughly upstream before opening the inlet valve. Thoroughly flush the upstream piping of the backflow prevention assembly and the fire suppression system before connecting the piping.
	Concrete splash blocks large enough to prevent ground erosion shall be placed to intercept discharge from all inspectors tests, axillary drains and main drain outlets .
	Read, study and actually know the project specifications, NFPA, UFC 3-600-01, AFI 32-1067, AWWA Manual M-14, and for Hangars UFC 4-211-01, check the specifications for any Air Force ETLs and all other codes.
	Readily accessible **means capable of being reached quickly for operation, renewal, or inspection, without requir- ing those to whom ready access is req- uisite to climb over or remove obsta- cles or to resort to portable ladders, chairs, etc.**

NFPA 20: Standard for the Installation of Stationary Pumps for Fire Protection, Chapter 4 General Requirements4.3.3 System Installer.4.3.3.1 Installation personnel shall be qualified or shall be supervised by persons who are qualified in the installation, inspection, and testing of fire protection systems.4.3.3.2 Minimum evidence of qualifications or certification shall be provided when requested by the authority having jurisdiction.4.3.3.3 Qualified personnel shall include, but not be limited to, one or more of the following: 1.Personnel who are factory trained and certified for fire pump system installation of the specific type and brand of system being designed 2.Personnel who are certified by a nationally recognized fire protection certification organization acceptable to the authority having jurisdiction
3.Personnel who are registered, licensed, or certified by a state or local authority 4.3.3.4 Additional evidence of qualification or certification shall be permitted to be required by the AHJ. The Qualified installer shall supervise all work at all times with no exceptions whatsoever.

NFPA 13: Standard for the Installation of Sprinkler Systems, Chapter 25 Systems Acceptance
25.6 * General Information Sign.25.6.1 The installing contractor shall provide a general information sign used to determine system design basis and information relevant to the inspection, testing, and maintenance requirements required by NFPA 25.25.6.1.1 Such general information shall be provided with a permanently marked weatherproof metal or rigid plastic sign, secured with corrosion-resistant wire, chain, or other acceptable means.

25.6.1.2 Such signs shall be placed at each system control riser, antifreeze loop, and auxiliary system control valve. 25.6.2 The sign shall include the following information: 1. Name and location of the facility protected 2. Occupancy classification 3. Commodity classification 4. Presence of high-piled and/or rack storage 5. Maximum height of storage planned 6. Aisle width planned 7. Encapsulation of pallet loads 8. Presence of solid shelving 9. Flow test data 10. Presence of flammable/combustible liquids 11. Presence of hazardous materials 12. Presence of other special storage 13. Location of auxiliary drains and low point drains on dry pipe and preaction systems 14. Original results of main drain flow test 15. Name of installing contractor or designer 16. Indication of presence and location of antifreeze or other auxiliary systems. Shotgun systems are auxiliary systems with control valves, inspecters test valves, auxiliary drains and flow switches .