# PART 1 GENERAL

* 1. **PRINCIPLE WORK IN THIS SECTION**
		1. Automatic fire sprinkler and standpipe system throughout the building.
		2. Fire sprinkler heads, riser assemblies, hose valves and equipment.
		3. The above is intended to describe, generally, the scope of work, but shall not be considered as a limit of work to be performed under this contract. All work necessary for complete operating fire protection systems with all fixtures and equipment, as required by Authorities Having Jurisdiction, shall be performed under this section.

# REFERENCES

* + 1. NFPA 13 - Standard for the Installation of Sprinkler Systems, 2019 Edition.
		2. NFPA 24 - Standard for the Installation of Private Service Mains, 2019 Edition.
		3. Welding Materials and Procedures: Conform to AWS D 10.9.
		4. Valves: Bear UL and FM label or marking. Provide manufacturer's name and pressure rating marked on valve body.

# SUBMITTALS

* + 1. Product Data: Provide manufacturers catalogue information. Indicate valve data and ratings. Provide mill certificates from manufacturer with piping specifications.

# PART 2 PRODUCTS

* 1. **MANUFACTURERS**
		1. Mechanical couplings and fittings:
			1. Victaulic.
			2. Gruvlok.
			3. Reliable
		2. Gate, globe and check valves:
			1. Victaulic.
			2. Stockham.
			3. Nibco.
			4. United.
			5. Grinnell.
			6. Milwaukee.
		3. Butterfly valves:
			1. Demco.
			2. Centerline.
			3. Keystone.
			4. Stockham.
			5. Milwaukee
			6. Victaulic.
			7. Grinnell.
			8. Kennedy.
		4. Ball valves:
			1. Apollo.
			2. Walworth.
			3. Stockham.
			4. Milwaukee.
			5. Grinnell.

# PIPE

* + 1. Interior Sprinkler Piping:
			1. Sprinkler pipe shall meet ASTM A 795 or 135, and shall be UL Listed and FM Approved. All pipe shall have a Corrosion Resistance Ratio (CRR), of 1.00 or greater per the UL Listing. All piping shall be black carbon steel, except in pre-action systems, where pipe shall be "hot-dip" galvanized to meet ASTM A 795 zinc coating specifications.

# PIPE FITTINGS

* + 1. General: fittings used in sprinkler systems shall meet or exceed the following standards: Cast iron threaded fittings, class 125 and 250 - ANSI B16.4, cast iron pipe flanges and flanged fittings - ANSI B16.1, malleable iron threaded fittings class 160 and 300 - ANSI B16.3, factory made wrought steel buttweld fittings - ANSI B16.9.
		2. Interior piping:
			1. Cast iron, standard weight threaded fittings.
			2. Grooved end fittings with mechanical couplings.
		3. Grooved End Fittings and Couplings:
			1. Fittings shall be designed for use with grooved-end pipe and couplings.
			2. Couplings, fittings and grooving methods utilized in piping system shall be by the same manufacturer.
			3. Materials: Malleable Iron: ASTM A47.
			4. Couplings shall be mechanical type designed to engage and lock grooved pipe or fitting ends, form leak-proof joint.
			5. Housings: Malleable Iron: ASTM A47.
			6. Gaskets shall be elastomer material conforming to ASTM D2000 and a Product of coupling manufacturer.
			7. Bolts and nuts shall be track-head or oval neck type bolts with standard hexagon nuts, and heat treated carbon steel conforming to ASTM A183.
			8. Pressure Ratings: 300 p.s.i.
			9. Finish: Painted.

# FLASHINGS AND SLEEVES

* + 1. Flashings for pipes through roofs:
			1. Provide counter-flashing sleeves.
			2. Other flashings shall be galvanized sheet metal.
		2. Sleeves; of following types as required:
			1. Schedule 40, galvanized steel pipe sleeves.
			2. Adjustable, telescopic metal sleeves: Similar to Adjus-to-crete.

# VALVES, GENERAL

* + 1. Provide valves of same manufacturer for all similar applications. Valves to have manufacturer's name and pressure rating clearly marked on outside of body and shall be U.L. Listed indicating valves.
		2. All valves controlling water supplies to fire systems shall be provided with tamper switch and permanently marked identification sign.
		3. Provide valves rated not less than 175 psi water working pressure.
		4. All valves controlling sprinkler systems shall be installed so as to be operable from floor level.

# SPRINKLER AND FIRE PROTECTION - U.L. APPROVED

* + 1. Bronze gate or globe valves, 2 in. and under:
			1. 175 psi wwp.
			2. Solid disc.
			3. Screwed bonnet.
			4. Threaded end.
			5. Stockham B-133.
		2. Iron gate valves, 2-1/2 in. and larger:
1. 175 psi wwp.
2. Rising stem.
3. OS&Y.
4. Solid Wedge disc/rubber encapsulated disc.
5. Flanged or grooved ends.
6. Stockham G-634 or G-610.
	* 1. Bronze check valves, 2 in. and under:
			1. Class 125, swing type, Teflon disc.
			2. Stockham B-320-T.
		2. Iron check valves, 2-1/2 in. and larger:
			1. 175 psi wwp.
			2. Swing check.
			3. Bronze mounted.
			4. Composition disc.
			5. Bolted cap.
			6. Flanged end.
			7. Stockham G-940.
		3. High pressure gate valves, 2-1/2 in. and larger:
			1. 300 psi wwp.
			2. Rising stem.
			3. OS&Y.
			4. Solid wedge disc/rubber encapsulated disc.
			5. Flanged end.
			6. Stockham F670.
		4. Iron PIV gate valves, 4 in. and larger:
7. 175 PSI WWP.
8. Non-rising stem for indicator post.
9. Bronze mounted.
10. Solid wedge disc/rubber encapsulated disc.
11. O-ring packing.
12. Flanged end - Stockham G-632-0/G-600-0.
13. Mechanical joint end - Stockham G-635-0/G-601-0.
	* 1. Indicator posts:
			1. Wall type, straight type, with handsheet: Stockham G-950.
		2. Iron Butterfly Valves,4 in. and Larger:
			1. 175 PSI WWP.
			2. UL and FM approved for indoor and outdoor service.
			3. 410 SS stem.
			4. Aluminum bronze disc.
			5. Buna-N seat and O-ring.
			6. Wafer style.
			7. Grooved style.

# PART 3 EXECUTION

* 1. **INSTALLATION**
		1. Arrangement:
			1. Do not scale drawings for exact location of piping.
			2. Install piping to best suit field conditions and coordinate with other trades.
			3. Maximize floor space and provide access to equipment.
			4. Do not sleeve structural members without consent of Architect.

# PIPE JOINTING

* + 1. Unions: Provide unions or flanges to render all items in system easily removable, including:
			1. Valves.
		2. Pipe Ends:
			1. Perform pipe cutting and end preparation to result in clean ends with full inside diameter.
			2. Grind and ream, as necessary.
		3. Threaded Joints:
			1. Sealed with approved sealant compounds or Teflon tape.
		4. Welded Joints:
			1. Welding of piping shall be done by-welders who have been qualified by recognized agency within 6 months prior to date of Contract:
			2. Perform welding in accordance with provisions of latest issue of all applicable codes including:
				1. AWS D10.9, Level AR-3.
				2. ANSI Code for Pressure Piping.
			3. Where required, peen and wheel-grind welds.
		5. Grooved End Joints:
			1. Perform following in accordance with manufacturer's instructions.
			2. All pipe grooving and cutting shall be in accordance with manufacturer's latest published recommendations. When a mechanical grooved piping system is used, all components shall be of the same manufacturer.

# FLASHING AND SLEEVES

* + 1. Flashings: Flash and counterflash watertight all pipe penetrations of roofs and exterior walls.
		2. Sleeves:
			1. Through exterior concrete walls below grade, schedule 40, galvanized steel pipe sleeves.
			2. Seal annular space between pipe and sleeve water tight with one of the following:
1. Thunderline Link-Seals.
2. Oakum sealed in with mastic.
	* + 1. Provide membrane clamps at penetrations of membranes on exterior decks or roof areas.
			2. Packing through fire rated partitions: use sealant approved by Authority Having Jurisdiction.
		1. Maintain required clearance around all pipes passing through walls, floors, platforms and foundations. When required the clearance may be filled with non-hardening caulking.

# INSTALLATION, GENERAL

* + 1. Install valves with stems upright or horizontal, not inverted.
		2. All main control valves shall be provided with permanent identification as to portion of system controlled.
		3. Provide drain valves at main shut-off valves, low points of piping and apparatus and elsewhere as required by code.
		4. Locate valves to be accessible without climbing over equipment.

# VALVE APPLICATIONS

* + 1. Gate Valves: Shut-off, sectionalizing and isolation.
		2. Globe and Angle Valves: System drain down.
		3. Butterfly valves: May be used in systems interchangeably in place of gate valves.

# FIELD QUALITY CONTROL

* + 1. Test/operate valves from closed-to-open-to-closed position while valve is under test pressure.
		2. Test valve bonnets for tightness.
		3. Check all valves for lubricant. Service valves which do not operate smoothly with suitable lubricant before placing in operation.

# END OF SECTION