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***Whip Fire
Projects***
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39 Years 1981-2020

Ready, Steady, Fire!

South Africa's
First Pre-Designed
Fire Sprinkler Sprayer System

ASIB

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MARKETING INFORMATION

- Whip Fire presents our all new WF-Main, WF-Range, WF-Roof & WF-InRack sprinkler system!
- S.A.'s first Pre-Manufactured Warehouse Roof / In-Rack sprinkler system which is **FM, UL, CE and ASIB approved.**
- No more waiting for the Fire guys to finish installing before you can store your goods. We finish the sprinkler installation within days of the racking being done!

On some Projects we have been installing in conjunction with the Roofing Installer and had to wait for the roof to be complete to progress, as our installation time is that quick and easy, saving Clients Time and Money!
- Short lead times.
- No more on-site painting and manufacturing – No more mess!
 - Our pipes and fittings are epoxy coated for a long-lasting perfect finish!
- Fits all conventional racking and shelving layouts.
 - It can be easily adapted / modified to suit unusual Client specific racking/shelf layouts.
- All pipes are Pressure Test Certified.
- All Material components of the Sprinkler Installation are batch coded for quality assurance.
- Whip Fire Qualified Professional Teams are ready to design and install
 - We DO NOT SUBCONTRACT our installations!
- We can offer a wide Range of Services from *DESIGN, INSTALLATION, DETECTION, PUMPS, TANKS, VALVES* as well as *FIRE SIGNAGE*.
- Whip Fire takes care of the Sprinkler System ASIB certification.
- Need to move or rearrange your racks?
 - We can move your sprinkler system with your racks without replacing them.
- No more creep whilst installing. This means perfectly aligned sprinkler placement.
- We carry stock. No more waiting for manufacturing!



1. Introduction to Whip Fire's Pre-Designed System

Given the fast-paced, repetitive nature of the Fire Protection Industry, Whip Fire recognised the need to develop a Pre-Designed Sprinkler Sprayer System that would assist us in becoming more efficient in terms of design, supply and installation.

A pre-designed system allows our Installers to get the product to site quicker, install faster and in turn move on to the next job timeously.

The Pre-Designed Sprinkler Sprayer System is a "Plug and Play" system that requires no specialist manufacturing operations such as drilling, welding, corrosion prevention and/or painting, as the system is a bolt-together type system that assembles quicker and easier.

It is a "One Size Fits All" type system – the components have been designed to fit both racking systems and roof grid systems at the same time – ***Two problems, one solution!***

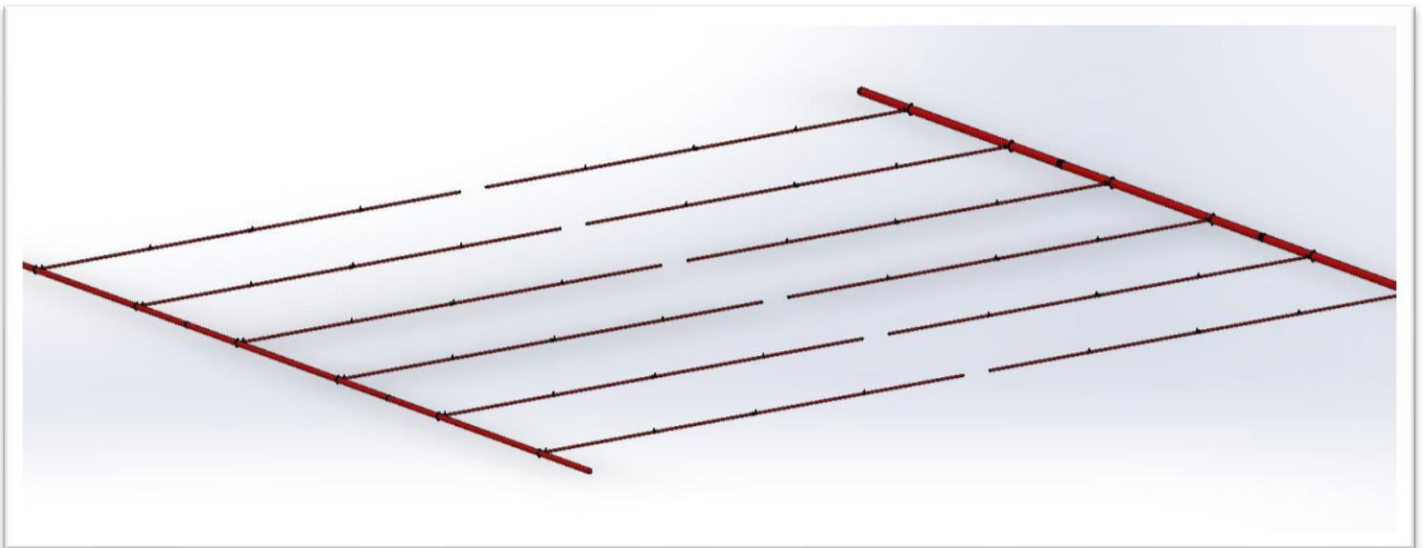
Designed to meet the requirements of High Hazard type rack structure protection systems - the same pipe that protects a rack system very easily becomes a pipe that will protect a roof structure.

Clients will reap the benefits as their uniquely tailored sprinkler systems by Whip Fire, will consume ***less time Designing, Manufacturing and Installing***, thus reducing the time taken to complete projects.

Furthermore, **our Racking System** has the additional benefit of being ***easily moveable*** and ***reusable*** with minimum cost, redesign and on-site modification works, thus ***saving Client's time and money***, should their requirements change over time.

2. System Application

This Pre-Designed Sprinkler/Sprayer system has been designed for use in the Fire Protection Industry as a Pre-Designed Sprinkler Sprayer System to meet both the requirements for fire protection in Racking Systems and fire protection in Roof structures.

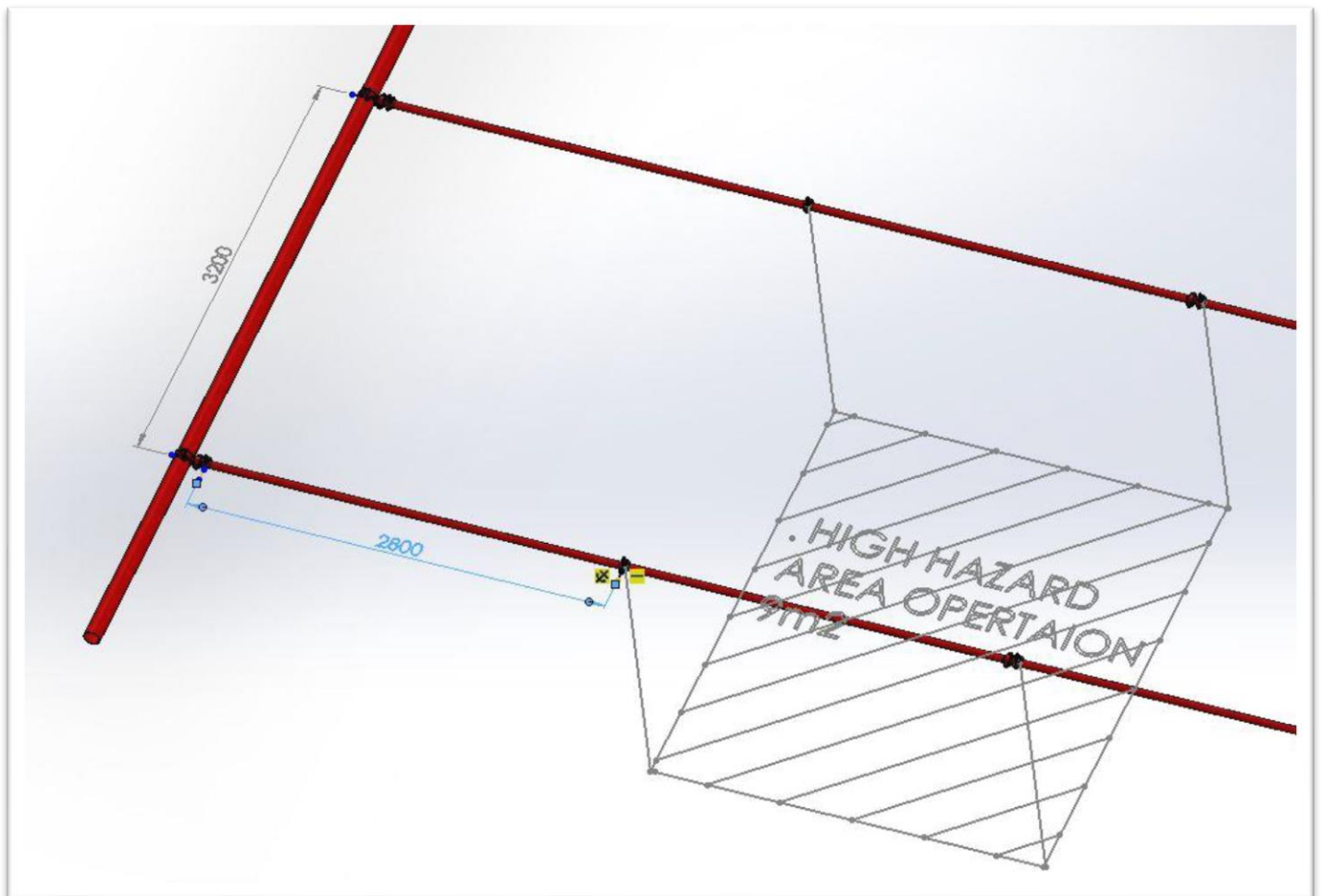


Typical Roof Grid Sprinkler System using WF-Range and WF-Main

This schematic is not to scale.

For roof structure applications, the system has been Pre-Designed to meet the requirement of a High Hazard (9 square meters area of operation) fire sprinkler system, when the pre-designed WF-Range series of pipes are used in conjunction with the pre-designed WF-Main series of pipes.

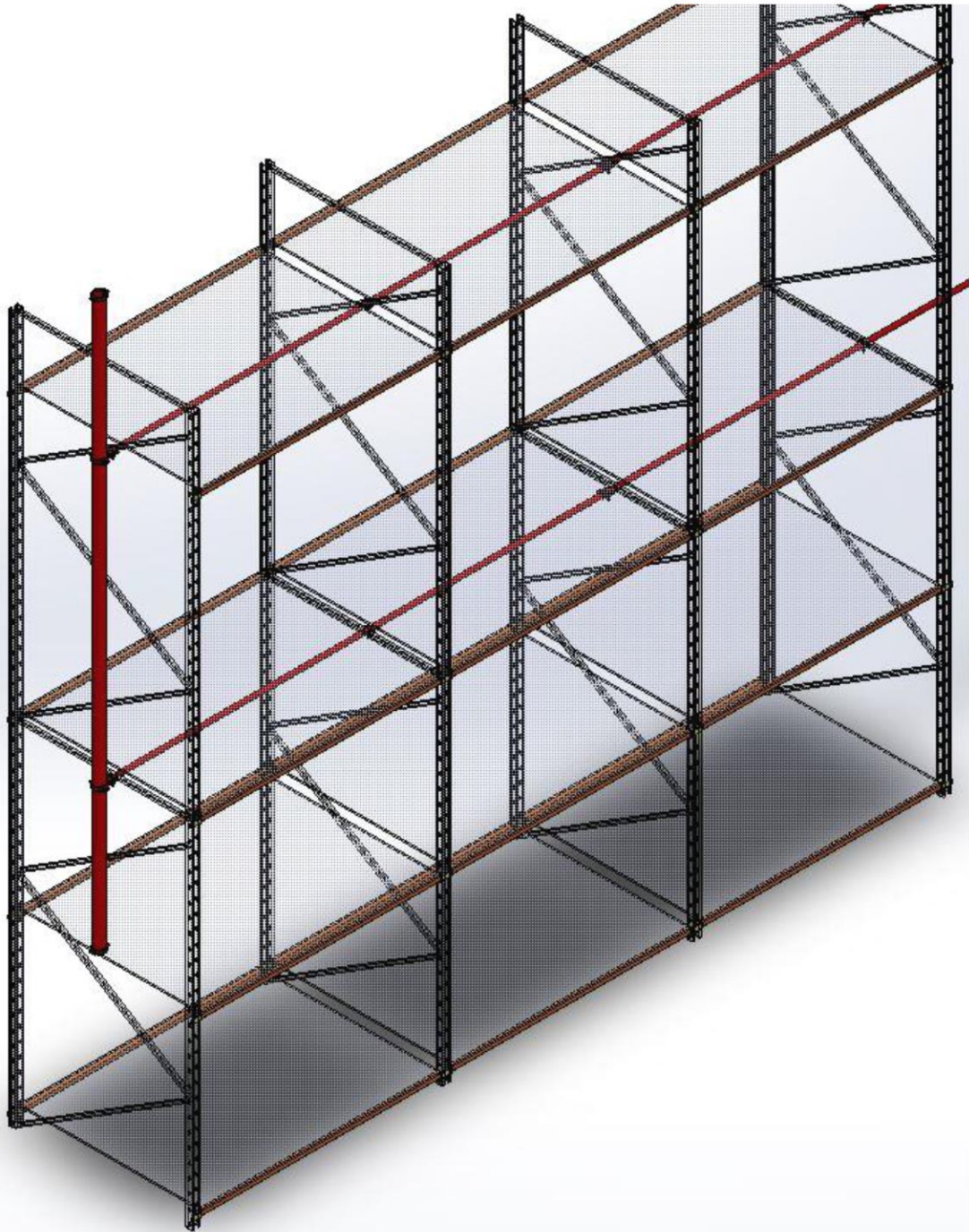
The System is pre-designed to meet the requirements of High Hazard Fire Risk
(area of operation = 9m²)



Schematic not to scale

When used in racking structures the System has been pre-designed to meet **Fire Hazard Categories 1, 2 and 3** and can be **easily adapted to meet Category 4** by simply adding the required extra outlet holes.

WF-Range used in a typical Racking scenario



Schematic not to scale



3. Material Specifications

Manufactured to meet both the UL and FM Specification, from the highest quality Grade A steel, each pipe and fitting is pressure tested to meet The American Society for Testing Material – ASTM A795, before undergoing a full chemical corrosion protection, priming and Epoxy top-coating.

- See ASTM A795 Standard attached.
- See Steel Specification attached.
- See Corrosion Protection / Paint Top Coating Specification attached.

ASTM A795 Standard



Designation: A 795/A 795M – 07

Standard Specification for Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use¹

This standard is issued under the flag designation A 795/A 795M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope^{*}

1.1 This specification covers black and hot-dipped galvanized welded and seamless steel pipe in NPS 1/2 to NPS 10, inclusive [DN 15 to DN 250, inclusive] (Note 1), with wall thicknesses as given in Table 1 and Table 2. Pipe having other wall thicknesses may be furnished provided such pipe complies with all other requirements of this specification and the outside diameter is as given in Table 2. Pipe ordered under this specification is intended for use in fire protection systems. The pipe may be bent, but it is not intended for bending made at ambient temperature wherein the inside diameter of the bend is less than twelve times the outside diameter of the pipe being bent (Note 2).

Note 1—The dimensionless designators NPS (nominal pipe size) and DN (nominal diameter) have been substituted in this standard for such traditional terms as “nominal diameter,” “size,” and “nominal size.”

Note 2—Successful bending of pipe is a function of equipment and technique as well as pipe properties.

1.2 This pipe is suitable for joining by the following methods:

1.2.1 *Light-Weight Fire Protection Pipe*—Rolled groove, welding, and fittings for plain end pipe. See Table 1 for dimensions.

1.2.2 *Standard-Weight Fire Protection Pipe*—Cut or rolled groove, threading, welding, and fittings for plain end pipe. See Table 2 for dimensions.

1.2.3 For pipe having dimensions other than those of Table 1 and Table 2, the joining method must be compatible with the pipe dimensions. A complete listing of standard light weight dimensions appears in ASME B36.10 and B36.19.

1.3 The following safety hazards caveat pertains only to the test method portion, Sections 8, 9, and 10, of this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

¹ This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Alloys and is the direct responsibility of Subcommittee A01.09 on Carbon Steel Tubular Products.

Current edition approved July 1, 2007. Published August 2007. Originally approved in 1982. Last previous edition approved in 2004 as A 795/A 795M-04.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other. Combining values from the two systems may result in nonconformance with the specification.

2. Referenced Documents

2.1 ASTM Standards:²

A 90/A 90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

A 700 Practices for Packaging, Marking, and Loading Methods for Steel Products for Shipment

A 751 Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

A 865 Specification for Threaded Couplings, Steel, Black or Zinc-Coated (Galvanized) Welded or Seamless, for Use in Steel Pipe Joints

B 6 Specification for Zinc

E 213 Practice for Ultrasonic Examination of Metal Pipe and Tubing

E 309 Practice for Eddy-Current Examination of Steel Tubular Products Using Magnetic Saturation

2.2 ASME Standards:

B1.20.1 Pipe Threads, General Purpose, Inch³

B36.10 Welded and Seamless Wrought Steel Pipe³

B36.19 Stainless Steel Pipe³

2.3 Federal Standard:

Fed. Std. No. 123 Marking for Shipments (Civil Agencies)⁴

2.4 Military Standards:

MIL-STD-129 Marking for Shipment and Storage⁴

MIL-STD-163 Steel Mill Products, Preparation for Shipment and Storage⁴

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

⁴ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

^{*}A Summary of Changes section appears at the end of this standard.



A 795/A 795M - 07

TABLE 1 Dimensions, Weights, and Test Pressure For Light-Weight Fire Protection Pipe—Schedule 10^a

NPS Designator	DN Designator	Outside Diameter		Nominal Wall Thickness		Weight Plain End		Test Pressure			
		in.	mm	in.	mm	lb/ft	kg/m	Furnace-Welded		Seamless and Electric-Resistance-Welded	
								psi	kPa	psi	kPa
1/4	20	1.050	[26.7]	0.083	[2.11]	0.86	[1.22]	500	[3400]	700	[4800]
1	25	1.315	[33.4]	0.109	[2.77]	1.41	[2.09]	500	[3400]	700	[4800]
1 1/4	32	1.660	[42.2]	0.109	[2.77]	1.81	[2.59]	500	[3400]	1000	[6900]
1 1/2	40	1.900	[48.3]	0.109	[2.77]	2.09	[3.11]	500	[3400]	1000	[6900]
2	50	2.375	[60.3]	0.109	[2.77]	2.64	[3.93]	500	[3400]	1000	[6900]
2 1/2	65	2.875	[73.0]	0.120	[3.05]	3.63	[5.28]	500	[3400]	1000	[6900]
3	80	3.500	[88.9]	0.120	[3.05]	4.34	[6.46]	500	[3400]	1000	[6900]
3 1/2	90	4.000	[101.6]	0.120	[3.05]	4.98	[7.41]	500	[3400]	1200	[8300]
4	100	4.500	[114.3]	0.120	[3.05]	5.62	[8.37]	500	[3400]	1200	[8300]
5	125	5.563	[141.3]	0.134	[3.40]	7.78	[11.58]	c	c	1200	[8300]
6	150	6.625	[168.3]	0.134	[3.40]	9.30	[13.85]	c	c	1000	[6900]
8	200	8.625	[219.1]	0.188 ^c	[4.78]	16.06	[23.26]	c	c	800	[5500]
10	250	10.750	[273.1]	0.188 ^c	[4.78]	21.23	[31.62]	c	c	700	[4800]

^a Schedule 10 corresponds to Schedule 10S as listed in ANSI B36.19 for NPS 1/4 through 6 [DN 20 through 150] only.

^b Furnace-welded pipe is not made in sizes larger than NPS 4 [DN 100].

^c Not Schedule 10.

TABLE 2 Dimensions, Weights, Test Pressures For Standard-Weight Fire Protection Pipe—Schedule 30 and Schedule 40

NPS Designator	DN Designator	Specified Outside Diameter		Nominal Wall Thickness ^a		Weight Plain End		Weight Threaded and Coupled ^b		Test Pressure			
		in.	mm	in.	mm	lb/ft	kg/m	lb/ft	kg/m	Furnace-Welded		Seamless and Electric-Resistance-Welded	
										psi	kPa	psi	kPa
1/8	15	0.840	[21.3]	0.109	[2.77]	0.85	[1.27]	0.85	[1.27]	700	[4800]	700	[4800]
1/4	20	1.050	[26.7]	0.113	[2.87]	1.13	[1.69]	1.13	[1.69]	700	[4800]	700	[4800]
1/2	25	1.315	[33.4]	0.133	[3.38]	1.68	[2.50]	1.68	[2.50]	700	[4800]	700	[4800]
1 1/4	32	1.660	[42.2]	0.140	[3.56]	2.27	[3.39]	2.28	[3.40]	1000	[6900]	1000	[6900]
1 1/2	40	1.900	[48.3]	0.145	[3.68]	2.72	[4.05]	2.73	[4.07]	1000	[6900]	1000	[6900]
2	50	2.375	[60.3]	0.154	[3.91]	3.66	[5.45]	3.69	[5.50]	1000	[6900]	1000	[6900]
2 1/2	65	2.875	[73.0]	0.203	[5.16]	5.80	[8.64]	5.83	[8.68]	1000	[6900]	1000	[6900]
3	80	3.500	[88.9]	0.216	[5.49]	7.58	[11.25]	7.62	[11.35]	1000	[6900]	1000	[6900]
3 1/2	90	4.000	[101.6]	0.226	[5.74]	9.12	[13.58]	9.21	[13.71]	1200	[8300]	1200	[8300]
4	100	4.500	[114.3]	0.237	[6.02]	10.80	[16.06]	10.91	[16.25]	1200	[8300]	1200	[8300]
5	125	5.563	[141.3]	0.259	[6.56]	14.63	[21.79]	14.82	[22.07]	c	c	1200	[8300]
6	150	6.625	[168.3]	0.280	[7.11]	18.99	[28.29]	19.20	[28.60]	c	c	1200	[8300]
8	200	8.625	[219.1]	0.277 ^a	[7.04]	24.72	[36.62]	25.57	[38.09]	c	c	1200	[8300]
10	250	10.750	[273.1]	0.307 ^a	[7.80]	34.27	[51.05]	35.78	[53.29]	c	c	1000	[6900]

^a NPS 1/8 through 6 [DN 15 through 150]—Schedule 40; NPS 8 and 10 [DN 200 and 250]—Schedule 30.

^b Based on 20-ft [6.1 m] lengths.

^c Furnace-welded pipe is not made in sizes larger than NPS 4 [DN 100].

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *defect*—an imperfection of sufficient size or magnitude to be cause for rejection.

3.1.2 *imperfection*—any discontinuity or irregularity found in the pipe.

4. Classification

4.1 Pipe may be furnished in the following types (Note 3):

4.1.1 *Type F*—Furnace-butt welded, continuous welded,

4.1.2 *Type E*—Electric-resistance-welded, or

4.1.3 *Type S*—Seamless.

Note 3—See Annex A.1 for definitions of the types of pipe.

5. Ordering Information

5.1 Orders for material under this specification should include the following, as required, to describe the desired material adequately:

5.1.1 Quantity (feet, metres, or number of lengths),

5.1.2 Name of material (steel pipe),

5.1.3 Type (seamless, electric-resistance-welded, or furnace-welded),

5.1.4 Grade (seamless and electric-resistance-welded only),

5.1.5 Size (NPS or DN designator and weight class; standard weight or light weight; or outside diameter) and wall thickness (Table 1 and Table 2),

5.1.6 Finish (black, galvanized, or other type of coating as specified by the purchaser),

5.1.7 Length (specific or random),

5.1.7.1 Grade for Type E and Type S,

5.1.8 End finish,

5.1.8.1 Plain end, square cut,

5.1.8.2 Plain end, beveled,

5.1.8.3 Cut groove (Note 4),

5.1.8.4 Rolled groove (Note 4),

5.1.8.5 Threads only,

5.1.8.6 Threaded and coupled, and

5.1.8.7 Couplings power tight.

Note 4—Type of groove specified by the purchaser.

5.1.9 ASTM designation.

6. Materials and Manufacture

6.1 The steel for both welded and seamless pipe shall be made by one or more of the following processes: open-hearth, electric-furnace, or basic-oxygen.

6.2 Welded pipe NPS 4 [DN 100] and under may be furnace-welded or electric-resistance welded. Welded pipe over NPS 4 [DN 100] shall be electric-resistance-welded.

6.3 The weld seam of electric-resistance-welded pipe in Grade B shall be heat treated after welding to a minimum of 1000 °F [540 °C] so that no untempered martensite remains, or otherwise processed in such a manner that no untempered martensite remains.

7. Chemical Composition

7.1 The steel shall conform to the requirements as to chemical composition specified in Table 3.

7.2 An analysis of two pipes from each lot of 500 lengths, or fraction thereof, may be made by the purchaser. The chemical composition thus determined shall conform to the requirements specified in Table 3.

7.3 Methods, practices, and definitions for chemical analysis shall be in accordance with Test Methods, Practices, and Terminology A 751.

7.4 If the analysis of either pipe does not conform to the requirements specified in Table 3, analyses shall be made on additional pipes of double the original number from the same lot, each of which shall conform to the requirements specified in Table 3.

8. Hydrotest

8.1 Each length of pipe shall be subjected to a hydrostatic test by the manufacturer. The minimum test pressure shall be as prescribed in Table 1 and Table 2. This does not prohibit testing at a higher pressure at the manufacturer's option. The manufacturer may apply the hydrostatic test to pipe with plain ends, with threads only, or with threads and couplings. The hydrostatic test may be applied to single or multiple lengths.

8.2 The hydrostatic test shall be applied, without leakage through the pipe wall, to each length of pipe.

Note 5—The hydrostatic test pressures given herein are inspection test pressures. They are not intended as a basis for design and do not have any direct relationship to working pressures.

TABLE 3 Chemical Requirements

	Composition, max, %			
	C	Mn	P	S
Type E (electric-resistance-welded pipe) & Type S (seamless pipe)				
Open-hearth, electric-furnace, or basic-oxygen:				
Grade A	0.26	0.96	0.036	0.036
Grade B	0.30	1.20	0.036	0.036
Type F (furnace-welded pipe)				
Open-hearth, electric-furnace, or basic-oxygen			0.050	0.045

9. Nondestructive Electric Test

9.1 As an alternative to the hydrostatic test, and when accepted by the purchaser, test each pipe with a nondestructive electric test in accordance with Practice E 213 or Practice E 309. It is the intent of this test to reject pipe containing defects.

9.2 The following information is for the benefit of the user of this specification:

9.2.1 The ultrasonic examination referred to in this specification is intended to detect longitudinal discontinuities having a reflective area similar to or larger than the reference notch. The examination may not detect circumferentially oriented imperfections or short, deep defects.

9.2.2 The eddy-current examination referenced in this specification has the capability of detecting significant discontinuities, especially of the short, abrupt type.

9.2.3 The hydrostatic test referred to in Section 8 is a test method provided for in many product specifications. This test has the capability of finding defects of a size permitting the test fluid to leak through the tube wall and may be either visually seen or detected by a loss of pressure. This test may not detect very tight, through-the-wall defects or defects that extend an appreciable distance into the wall without complete penetration.

9.2.4 A purchaser interested in ascertaining the nature (type, size, location, and orientation) of discontinuities that can be detected in the specific application of these examinations should discuss this with the manufacturer of the tubular product.

9.3 In order to accommodate the various types of nondestructive electric testing equipment and techniques in use, the calibration tube shall contain, at the option of the producer, any one or more of the following discontinuities to establish a minimum sensitivity level for rejection.

9.3.1 *Drilled Hole*—Drill a hole radially and completely through the pipe wall, care being taken to avoid distortion of the pipe while drilling. The diameter of the hole shall not be larger than 0.031 in. [0.8 mm] for pipe under 0.125 in. [3.2 mm] in wall thickness, not larger than 0.0625 in. [1.6 mm] for pipe between 0.125 in. [3.2 mm] and 0.200 in. [5.0 mm] in wall thickness, and not larger than 0.125 in. [3.2 mm] for pipe over 0.200 in. [5.0 mm] in wall thickness.

9.3.2 *Transverse Tangential Notch*—Using a round tool or file with a 1/4-in. [6-mm] diameter, file or mill a notch tangential to the surface and transverse to the longitudinal axis of the pipe. The notch shall have a depth not exceeding 12½ % of the specified wall thickness of the pipe.

9.3.3 *Longitudinal Notch*—Machine a notch 0.031 in. [0.8 mm] or less in width in a radial plane parallel to the pipe axis on the outside surface of the pipe, to have a depth not exceeding 12½ % of the specified wall thickness of the pipe. The length of the notch shall be compatible with the testing method.

9.3.4 *Compatibility*—The discontinuity in the calibration pipe shall be compatible with the testing equipment and method being used.

9.4 Reject pipe producing a signal equal to or greater than the calibration discontinuity.

10. Flattening Test

10.1 Perform the flattening test on pipe in accordance with the following:

10.1.1 *Electric-Resistance-Welded Pipe*—Flatten a specimen at least 4 in. [100 mm] in length cold between parallel plates in three steps with the weld located either 0° or 90° from the line of direction of force as required in 10.1.1.1. During the first step, a test for ductility of the weld, no cracks or breaks on the inside or outside surfaces shall occur until the distance between the plates is less than two thirds of the original outside diameter of the pipe. As a second step, continue the flattening. During the second step, a test for the ductility exclusive of the weld, no cracks or breaks on the inside or outside surfaces shall occur until the distance between the plates is less than one third of the original outside diameter of the pipe, but is not less than five times the wall thickness of the pipe. During the third step, a test for soundness, continue the flattening until the specimen breaks or the opposite walls of the specimen meet. Evidence of laminated or unsound material or of incomplete weld that is revealed during the entire flattening test shall be cause for rejection.

10.1.1.1 For pipe produced in single lengths, perform the flattening test specified in 10.1.1 on both crop ends from each length of pipe. Alternate the tests from each end with the weld at 0° and at 90° from the line of direction of force. For pipe produced in multiple lengths, perform the flattening test on crop ends representing the front and back of each coil with the weld at 90° from the line of direction of force, and on two intermediate rings representing each coil with the weld 0° from the line of direction of force.

10.1.1.2 For pipe that is to be subsequently reheated throughout its cross section and hot formed by a reducing process, the manufacturer shall have the option of obtaining the flattening test specimens required by 10.1.1.1 either prior to or after such hot reducing.

10.1.2 *Furnace-Welded Pipe*—For furnace-welded pipe, flatten a specimen not less than 4 in. [100 mm] in length cold between parallel plates in three steps. Locate the weld 90° from the line of the direction of force. During the first step, a test for quality of the weld, no cracks or breaks on the inside, outside, or end surfaces shall occur until the distance between the plates is less than three fourths of the original outside diameter of the pipe. As a second step, continue the flattening. During the second step, a test for ductility exclusive of the weld, no cracks or breaks on the inside, outside, or end surfaces shall occur until the distance between the plates is less than 60 % of the original outside diameter of the pipe. During the third step, a test for soundness, continue the flattening until the specimen breaks or the opposite walls of the specimen meet. Evidence of laminated or unsound material, or of incomplete weld that is revealed during the entire flattening test, shall be cause for rejection.

10.2 Surface imperfections in the test specimen before flattening, but revealed during the first step of the flattening test, shall be judged in accordance with the workmanship requirements in Section 15.

10.3 Superficial ruptures as a result of surface imperfections shall not be cause for rejection.

11. Coating

11.1 Galvanized pipe shall be coated with zinc inside and outside by the hot-dip process. The zinc used for the coating shall be any grade of zinc conforming to Specification B 6.

11.2 *Weight of Coating*:

11.2.1 The weight of the zinc coating shall not be less than 1.5 oz/ft² [0.46 kg/m²] as determined from the average of two specimens tested in accordance with 16.1 and not less than 1.3 oz/ft² [0.40 kg/m²] for either of the specimens. The weight of coating expressed in ounces per square foot or kilograms per square metre shall be calculated by dividing the total weight of zinc, inside plus outside, by total area, inside plus outside, of the surface coated.

11.2.2 Test specimens for the determination of weight of coating shall be cut approximately 4 in. [100 mm] in length.

11.2.3 Determine the weight of zinc coating by a stripping test in accordance with Test Method A 90/A 90M. The total zinc on each specimen shall be determined in a single stripping operation.

11.2.4 If flattening tests are made on galvanized samples, any flaking or cracking of the galvanized coating shall not be cause for rejection.

11.3 *Protective Coating*—If required by the purchaser, the pipe shall be cleaned of all foreign matter, dried, and given a protective coating such as oil, lacquer, enamel, etc., as agreed upon by the purchaser.

12. Lengths

12.1 Unless otherwise specified, pipe shall be furnished in single random lengths of 16 to 22 ft [4.9 to 6.7 m].

13. Weights

13.1 The weights with the corresponding wall thicknesses for pipe of various outside diameters are prescribed in Table 1 and Table 2.

13.2 Nipples shall be cut from pipe of the same quality and the same or heavier weight described in 13.1.

14. Dimensions, Weight, and Permissible Variations

14.1 *Weight*—For the pipe covered by Table 1 and Table 2, the weight shall not vary more than ± 5 % from that prescribed. The weight of pipe having other wall thicknesses shall not vary more than ± 5 % from the nominal weight calculated from the relevant equations in Section 5 of ASME B36.10M.

NOTE 6—The weight tolerance of ± 5 % is determined from the weights of customary lifts of pipe as produced for shipment by the mill divided by the total length in the lift. On pipe sizes over NPS 4 [DN 100], where individual lengths may be weighed the weight tolerance is applicable to the individual length.

14.2 *Diameter*—For pipe NPS 1½ [DN 40] and under, the outside diameter at any point shall not vary more than ± ⅛ in. (0.016 in.) [0.41 mm] from the specified outside diameter. For pipe NPS 2 [DN 50] and over, the outside diameter shall not vary more than ± 1 % from the specified outside diameter.

14.3 *Thickness*—The minimum wall thickness at any point shall not vary more than 12.5 % under the nominal wall thickness.



15. Workmanship, Finish, and Appearance

15.1 The finished pipe shall be reasonably straight and free of defects. Any imperfection having a depth greater than 12½ % of the specified wall thickness, measured from the surface of the pipe, shall be considered a defect. All burrs at the pipe ends shall be removed.

15.2 *End Finish*—Pipe shall conform to the following practice:

15.2.1 Each end of pipe shall be furnished plain end unless otherwise specified.

15.2.2 When threads are specified, all threads shall be in accordance with the gaging practice and tolerances of ASME B1.20.1.

15.2.3 When couplings are specified, they shall be manufactured in accordance with Specification A 865.

16. Number of Tests

16.1 Two test specimens for the determination of weight of coating shall be taken, one from each end of one length of galvanized pipe, selected at random from each lot of 500 lengths, or fraction thereof, of each size.

16.2 Each length of pipe shall be subjected to one of the tests specified in Section 8 or 9.

16.3 For electric-resistance-welded pipe, tests specified in 10.1.1 shall be made.

16.4 For furnace-welded pipe, the tests specified in 10.1.2 shall be made on one length of pipe from each lot of 25 tons, or fraction thereof, of pipe NPS 1½ [DN 40] and smaller, and from each lot of 50 tons, or fraction thereof, of pipe NPS 2 [DN 50] and larger.

17. Retests

17.1 If the weight of coating of any lot does not conform to the requirements specified in 11.2, retests of two additional pipe from the same lot shall be made, each of which shall conform to the requirements specified.

17.2 If any section of furnace-butt-welded pipe fails to comply with the requirements of 10.1.2, double the number of tests shall be made, after having rejected the length(s) that exhibit failure. Each of the retests shall conform to the requirements specified.

17.3 If any section of electric-resistance-welded pipe NPS 4 [DN 100] or less fails to comply with the requirements of 10.1.1 for pipe produced in multiple lengths, double the number of tests shall be made, after having rejected the length(s) that exhibit failure. Each of the retests shall conform to the requirements specified.

17.4 If any section of electric-resistance-welded pipe larger than NPS 4 [DN 100] fails to comply with the requirements of 10.1.1 for pipe produced in single lengths, other sections may be cut from the same end of the same length until satisfactory tests are obtained, except that the finished pipe shall not be shorter than 80 % of its length after the original cropping; otherwise the length shall be rejected. For pipe produced in multiple lengths, retests may be cut from each end of each individual length in the multiple. Such tests shall be made with the weld alternately 0° and 90° from the line of direction of force. Each length that exhibits failure shall be rejected.

18. Inspection

18.1 The inspector representing the purchaser shall have free entry at all times while work is being performed, to all parts of the manufacturer's works that concern the manufacture of the material ordered. The manufacturer shall afford the inspector all reasonable facilities to satisfy him that the material is being furnished in accordance with this specification. All tests (except product analysis) and inspection shall be made at the place of manufacture prior to shipment, unless otherwise specified, and shall be so conducted as not to interfere unnecessarily with the operation of the works.

18.2 *For Government Procurement Only*— Except as otherwise specified in the contract, the contractor is responsible for the performance of all inspection and test requirements specified herein and may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless disapproved by the purchaser at the time of purchase. The purchaser shall have the right to perform any of the inspections and tests at the same frequency as set forth in this specification, where such inspections are deemed necessary to assure that material conforms to prescribed requirements.

19. Rejection

19.1 Each length of pipe received from the manufacturer may be inspected by the purchaser and, if it does not meet the requirements of this specification based on the inspection and test methods as outlined herein, the length may be rejected and the manufacturer shall be notified. Disposition of rejected pipe shall be a matter of agreement between the manufacturer and the purchaser.

19.2 Pipe found in fabrication or in installation to be unsuitable for the intended use, under the scope and requirements of this specification, may be set aside and the manufacturer notified. Such pipe shall be the subject of a mutual investigation as to the nature and severity of the deficiency and the forming or installation, or both conditions involved. Disposition shall be a matter of agreement.

20. Certification

20.1 The producer or supplier shall, upon request, furnish to the purchaser a certificate of inspection stating that the material has been manufactured, sampled, tested, and inspected in accordance with this specification, and has been found to meet the requirements.

21. Product Marking

21.1 Each length of pipe shall be legibly marked by rolling, stamping, or stenciling to show the name or brand of the manufacturer, the kind of pipe, that is, continuous-welded, electric-resistance-welded A, electric-resistance-welded B, seamless A, or seamless B, Grade A or B for Type E or S pipe, the ASTM designation, the length, and the letters "NH" if not hydrostatically tested. Bundled pipe NPS 1½ [DN 40] and smaller may have this information marked on a tag, securely attached to each bundle.

21.2 When pipe sections are cut into shorter lengths by a subsequent processor for resale as material, the processor shall

ASTM A 795/A 795M – 07

transfer complete identifying information to each unmarked cut length, or to metal tags securely attached to bundles of unmarked small diameter pipe. The same material designation shall be included with the information transferred and the processor's name, trademark, or brand shall be added.

21.3 Bar Coding—In addition to the requirements in **21.1** and **21.2**, bar coding is acceptable as a supplemental identification method. The purchaser may specify in the order a specific bar coding system to be used.

22. Packaging, Package Marking, and Loading

22.1 When specified in the purchase order, packaging, marking, and loading of shipment shall be in accordance with those procedures of Practices **A 700**.

22.2 For Government Procurement—When specified in the contract or purchase order, material shall be preserved, packaged, and packed in accordance with the requirements of **MIL-STD-163**. The applicable levels shall be as specified in the contract or order. Marking for shipment of such material shall be in accordance with **Fed. Std. No. 123** and **MIL-STD-129** for military agencies.

23. Keywords

23.1 black steel pipe; seamless steel pipe; steel pipe; welded steel pipe; zinc coated steel pipe

ANNEX

(Mandatory Information)

A1. DEFINITIONS OF TYPES OF PIPE

A1.1 Type F, Furnace-Welded Pipe, Continuous-Welded—Pipe produced in continuous lengths from coiled skelp and subsequently cut into individual lengths, having its longitudinal butt-joint forge welded by the mechanical pressure developed in rolling the hot-formed skelp through a set of round pass welding rolls.

A1.2 Type E, Electric-Resistance-Welded Pipe—Pipe produced in individual lengths or in continuous lengths from coiled skelp (flat-rolled product) and subsequently cut into individual lengths, having a longitudinal butt joint wherein

coalescence is produced by the heat obtained from resistance of the pipe to the flow of electric current in a circuit of which the pipe is a part, and by the application of pressure. Included in this category are induction welded or RF-welded pipe.

A1.3 Type S, Wrought Steel Seamless Pipe—Wrought steel seamless pipe is a tubular product made without a welded seam. It is manufactured by hot working steel and, if necessary, by subsequently cold finishing the hot-worked tubular product to produce the desired shape, dimensions, and properties.

SUMMARY OF CHANGES

Committee A01 has identified the location of selected changes to this specification since the last issue, **A 795/A 795M – 04**, that may impact the use of this specification. (Approved July 1, 2007)

(J) Revised **14.2**.

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Whip Fire
Projects

WEIFANG EAST STEEL PIPE INTERNATIONAL TRADING CO.,LTD.

28 CHUNYUAN ROAD, WEICHENG DIST., WEIFANG CITY, SHANDONG PROVINCE, CHINA

TO: Fire Afrique Limited

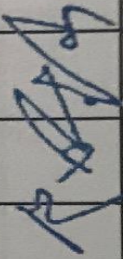
CERTIFICATE NO.: WFM/A2017AWF01

2nd Floor, Block B, Medine News

DATE: FEB 9, 2018

MILL TEST CERTIFICATE

Chaussee Street Port Louis Mauritius

Chaussee Street Port Louis Mauritius														
SIZE (mm)	WEIGHT (KGS)	PCS	FLATTING TEST	BEND TEST	HYDROS-TATIC TEST	MECHANICAL PROPERTIES			CHEMICAL COMPOSITION (%)				REMARKS	
						T. S. Mpa	Y. P. S. Mpa	E. L. %	C	Mn	P	S		
ASTM A795 SCH10, GR. A, GROOVED 40MM PIPE PRE-DRILLED FINISHED IN RED EPOXY, GROOVED 100MM/150MM PIPE PRE-DRILLED FINISHED IN RED EPOXY. GROOVED MECHANICAL TEE														
1 1/2" 48.342.77*5600	104.427	5996	-	GOOD	GOOD	383	316	42	0.1	0.31	0.014	0.015		
1 1/2" 48.342.77*5600	17.416	1000	-	GOOD	GOOD	383	318	42	0.1	0.31	0.014	0.015		
1 1/2" 48.342.77*2800	2.194	252	-	GOOD	GOOD	380	297	44.5	0.06	0.29	0.018	0.015		
1 1/2" 48.342.77*2800	1.324	152	-	GOOD	GOOD	380	297	44.5	0.06	0.29	0.018	0.015		
4" 114.343.05*6400	32.462	606	GOOD	-	GOOD	380	296	44	0.06	0.3	0.018	0.015		
6" 165.043.40*6400	13.296	150	GOOD	-	GOOD	412	326	42	0.11	0.31	0.013	0.012		
Grooved Mechanical Tee	0.570	300	GOOD	-	GOOD	413	330	38	0.08	0.32	0.029	0.013		
GRAND TOTAL:	171.689	8456												
						维坊亿斯特钢管国际贸易有限公司 WEIFANG EAST STEEL PIPE INTERNATIONAL TRADING CO., LTD								
This is to certify that the above goods have been duly inspected conform to the above specification and the results are acceptable.						 WEIFANG EAST STEEL PIPE INTERNATIONAL TRADING CO., LTD.								

ANNEXURE A1 : PAINT SPECIFICATION

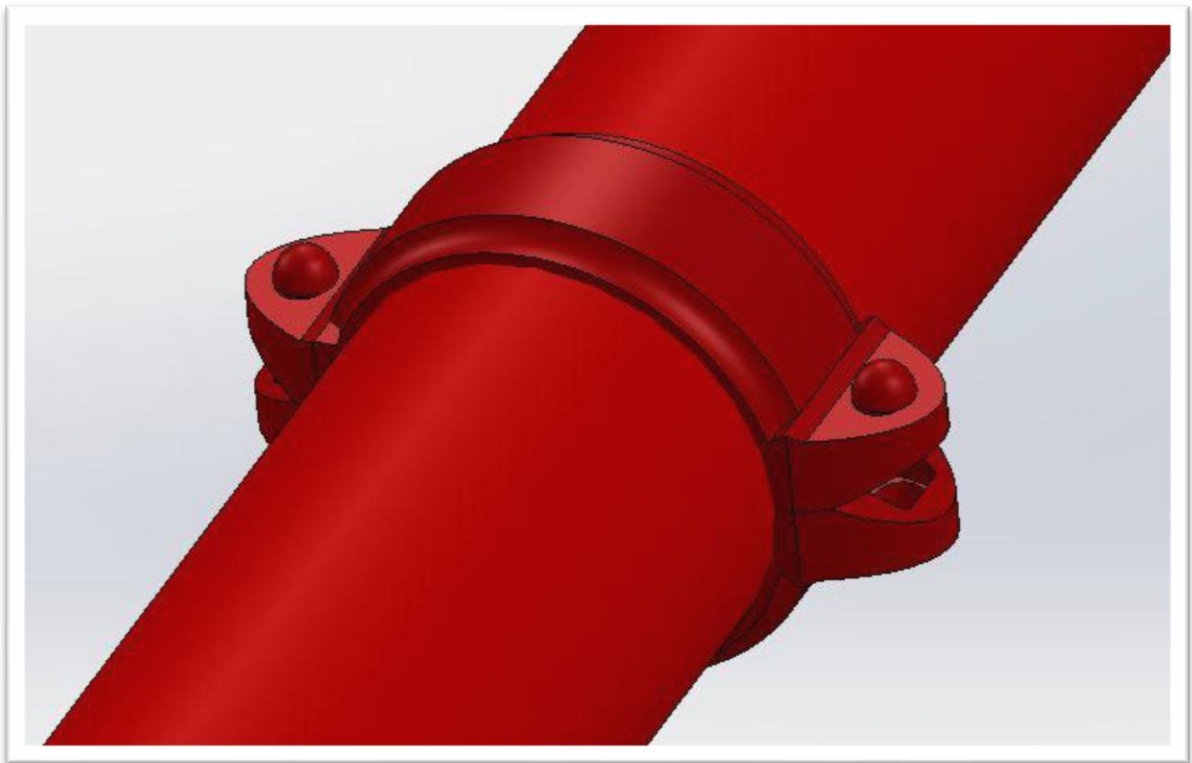
Process No	Process	Major Constituent	Content	Number of coats applied	Use/Properties/Reason
1	Acid Pickling	H ₂ SO ₄ Sulphuric acid	10% ~ 25%		Cleaning and descaling removing the oil, rust, oxide skin.
2	Phosphatization	Morphology like	Phosphoric acid, Two zinc hydrogen phosphate, Zinc nitrate		Forming a uniform, meticulous, dense phosphating film to improve the adhesion and corrosion resistance and improve the quality of the paint.
3	Primer	Epoxy paint	Epoxy resin, anthracene pigments and fillers, solvents, amines	1 coat 10 microns thick	Supply a good adhesive base, excellent chemical stability and mechanical properties.
4	Paint	Epoxy paint	paint curing agent, diluent=4, 1: 3.5	1 coat 20 microns thick	High gloss, good hardness, good adhesion and chemical resistance, but poor weatherability and is not suitable for outdoor use.
5	Baking Drying	Epoxy paint	110±10 deg C		Enhances the gloss and strength of the paint

5. System Components

5.1 WF-Main

A Pre-Designed Grid Main (pipes that supply water to range pipes) is supplied pre-grooved with outlet holes to accept matching grooved tees for quick coupling to the Pre-Designed WF-Range series of pipes.

The hole spacing when used in conjunction with the WF-Range pipe has been pre-designed to meet the requirements of a High Hazard Fire Sprinkler System.



WF-Main connected using WF-Couple Flexible Couplings



5.2 WF-Range

A Pre-Designed series of Range pipes (pipes that supply water to sprinkler heads).

WF-Range comes pre-grooved with numerous outlet hole configurations, all ready to accept the mechanical tees in the WF-Couple series.

Pre-Designed to meet the leg spacing and sprinkler spacing of the majority of Racking Systems, with a pipe in the series to match almost any rack setup configuration.

WF-Range easily adapts to become a range pipe in Roof Structure Sprinkler Systems for a High Hazard Fire Sprinkler System, when used in conjunction with the WF-Main series of pipes.

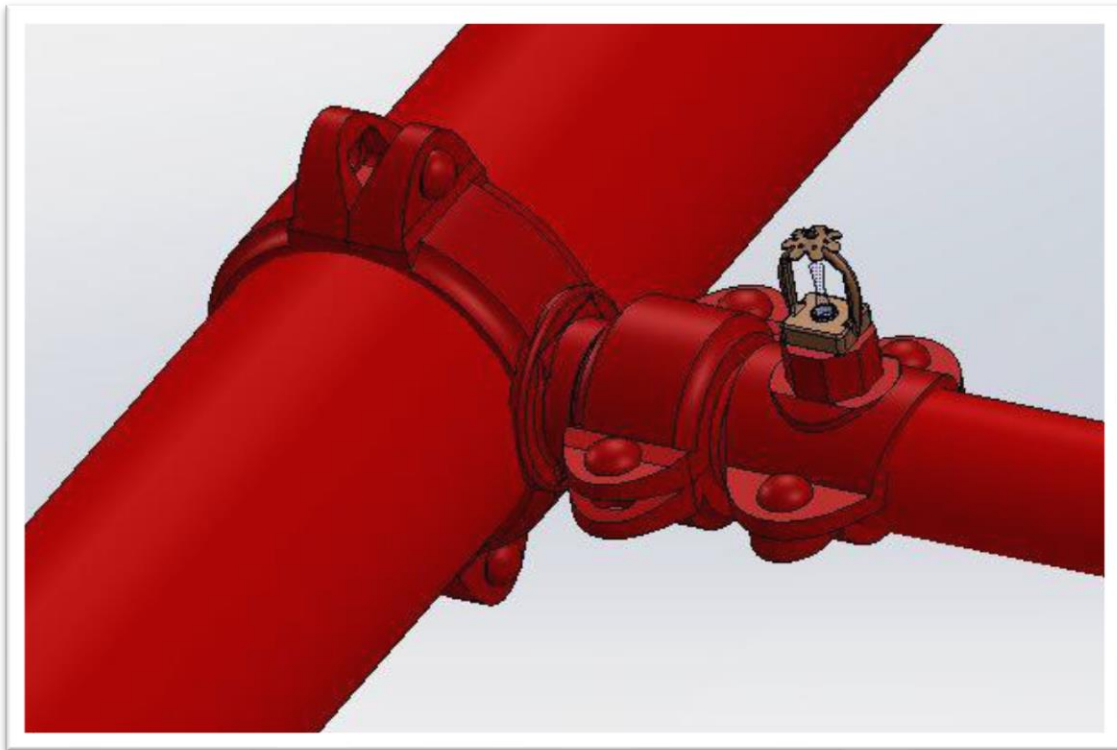


WF-Main and WF-Range come Pre-Grooved, Pre-Drilled and coated.

Seen here is a shortened sample of WF-Range

5.3 WF-Couple

WF-Couple is a series of flexible couplings and mechanical tees that negate the need for specialist welding, machining and pipe threading, along with improved sealing and leak prevention.



WF-Main coupled to WF-Range using a WF-Couple grooved mechanical tee.

**WF-Couple mechanical tee seen here, used to attach the required
sprinkler to the WF-Range pipe**

The series contains flexible couplings that join WF-Main to WF-Main and WF-Range to WF-Range, as well as WF-Main to WF-Range.

The series also contains grooved mechanical tees to connect WF-Main to WF-Range, along with threaded mechanical tees to seamlessly connect sprinklers to the WF-Range series of pipes.



WF-Couple flexible couplings (300 psi rated) – connects WF-Main and WF-Range



WF-Couple grooved and threaded mechanical tees – connects WF-Main to WF-Range and sprinklers to WF-Range



5.4 WF-Sprink

Sprinkler specification is design dependant and extremely unique to each design and class of hazard.

For this reason the System is not supplied with sprinklers unless the specifications are clearly defined upon ordering.



WF-Sprink sprinklers are supplied upon order as per each project's design requirements

6. Excluded Components

6.1 Connecting Mains

Connecting Mains (the piping that connects the roof grid sprinkler system to the pump and tank supply/council main supply via an ICV) are not included in this Pre-Designed Sprinkler Sprayer System, as these components are Project and Design Specific, in terms of hydraulic performance.

6.2 Pumps and Tanks

Pumps and Tanks are not supplied with this Pre-Designed Sprinkler Sprayer System, as these components are also Project and Design Specific in terms of the type of hazard and hydraulic requirements of each project.

These components are matched to a project by Pump and Tank Suppliers with the relevant expertise.



An example of a Pump set – each Pump set is matched to the Sprinkler system's water supply requirements



A Typical Tank Set with Pump Room situated between the tanks – the size of each tank is closely matched to the water supply requirements and is project/hazard specific.



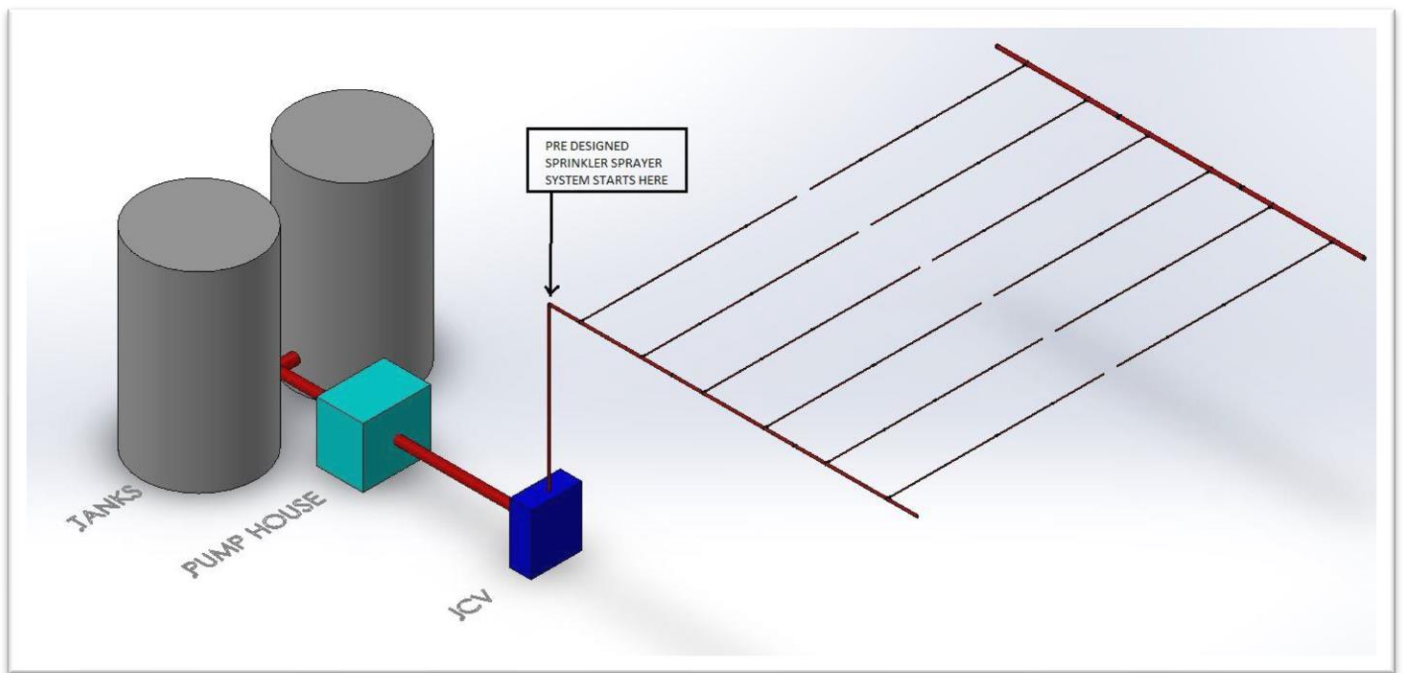
6.3 Installation Control Valve (I.C.V.)

Installation Control Valves are another component that are project and design specific and will depend on whether the System's water is supplied from a pump and tank installation or the council's main water supply.

The number of valves and ICV pipe diameters are matched according to each project.



7. Schematic of the Pre-Designed Roof Grid System in relation to the excluded components



This Schematic depicts the Pre-Designed Sprinkler Sprayer System relative to the excluded items – Pumps and Tanks, ICV and Connecting Mains.



8. Endorsements / Approvals

A.S.I.B. APPROVAL

- 8.1** The **Automatic Sprinkler Inspection Bureau of South Africa [A.S.I.B.]** has confirmed that the WhipFire Pre-Designed System and materials is fully acceptable to them in terms of being fully compliant with the **FACTORY MUTUAL [F.M.]** and **LOSS PREVENTION COUNCIL [L.P.C.]** Standards.

THE AUTOMATIC SPRINKLER INSPECTION BUREAU (PTY) LIMITED			
		1497 IMRALI CNR LOUIS BOTHA AND TUDHOPE AVENUES REREA JOHANNESBURG 2098 TELEPHONE: +27 11 642 1700 FACSIMILE: +27 11 642 1019 E-MAIL: asib@asib.co.za WEB SITE: http://www.asib.co.za	
REGISTRATION NUMBER: 1979061000207		INDEPENDENT THIRD PARTY INSPECTION AND ADVISORY SERVICE SINCE 1970	
Your Reference: N/A	Our Reference: JWL01/jg/WF- Approval	Inspection Date: N/A	
	Code: N/A	Date: 0 th of February 2019	
Whip Fire Projects 22 Flemington Street Kyalami Estate Midrand Johannesburg 1684 Attention: <i>Mr Alan Watt</i>			
<div style="border: 2px solid red; padding: 5px; text-align: center;"> PRE-DESIGNED WAREHOUSE INTERMEDIATE LEVEL PROTECTION AND/OR ROOF OR CEILING LEVEL PROTECTION </div>			
This serves to confirm that the sprinkler installation marketed by Whip Fire Projects as a pre-designed sprinkler sprayer system is acceptable in every respect to this company. The installations philosophy regarding fixings, couplings and installation is acceptable.			
<ul style="list-style-type: none"> ➤ The pipework used is Factory Mutual certified and therefore acceptable; ➤ The grooved couplings and fittings are Factory Mutual certified and therefore acceptable; ➤ The sprinkler heads, guards and water shields are Factory Mutual or Loss Prevention Certification Board approved and certified and therefore acceptable. 			
The design of the systems are to comply with the relevant Rules, Codes or Standards governing the installation which, it is assumed, will be internationally recognised.			
Assuring you of our best attention at all times.			
Yours faithfully, THE AUTOMATIC SPRINKLER INSPECTION BUREAU (PTY) LIMITED			
			
Natasha Goring Managing Director			
Director: N Goring (Managing)			



- 8.2 A.S.I.B.** has also endorsed / confirmed that with The WhipFire Pre-Designed System, we may tie-in to any Existing Fire Protection System – you can use WHIPFIRE as your new In-Rack Protection Contractor should you already have an existing Roof Sprinkler System, or we can Modify / Upgrade & Tie-In to any Existing Racking sprinkler protection, to give our client's the versatility of WhipFire's System.

From: John Goring <john@asib.co.za>

Date: 05 July 2018 at 13:42:50 SAST

To: alan@whipfire.co.za

Cc: Natasha Goring <natasha@asib.co.za>, Nico Van Loggerenberg <nico@asib.co.za>

Subject: RACK SYSTEM

Good day to you,

This serves to confirm that we would see no objection to the Whip Fire rack system being moved in conjunction with racks should they need to be relocated.

This is based on the fact that the system uses mechanical couplings and tees.

Should there be any query in this respect, please contact our offices accordingly.

Kind regards,

J W L Goring

ASIB

Telephone: +27 11 642 1703

Mobile: +27 82 777 8927

Email: john@asib.co.za



F.M. APPROVALS

Approval Guide



Pipe Fittings

These fittings are suitable for interconnecting piping, valves and other components in both wet and dry automatic sprinkler systems. Installation should be according to applicable sprinkler system fabrication rules. These rules limit the minimum size of sprinkler piping to 1 in., nominal. FM Approved pipe fittings of smaller sizes are intended for use as valve trim, gauge connections, and for other peripheral service. The water flow path of the sprinkler system cannot be designed using smaller sizes than 1 in., nominal. Unless otherwise noted in the listing, these fittings have 175 psi (1205 kPa) rated working pressure.

Threaded connections on fittings can be made to FM Approved threadable thinwall pipe or to Schedule 40 pipe. Refer to the "Steel Pipe" listings for a summary of the various types of FM Approved steel pipe suitable for threading or grooving."

The fittings manufacturer's installation instructions must be observed in all cases. When connections are made to FM Approved pipe, the pipe manufacturer's installation instructions must also be followed.

Unless otherwise stated below, the maximum ambient temperature to which these fittings should be subjected is 225°F (107°C).

Fittings, Side Outlet, Rigid

These fittings allow installation of a perpendicular branch line of reduced size, while joining inline pipes of equal diameters. These fittings bolt over a hole in the run pipe, and allow installation of a perpendicular branch line of reduced size. The maximum branch line size is one pipe size reduced from the run pipe size.

Approval Guide



Grooved Couplings or Fittings

Grooved couplings are used to join pipe and fittings in both wet and dry sprinkler systems. Unless otherwise noted, these couplings are intended to provide some flexibility in piping systems. Typical applications are in sprinkler risers, in feed mains passing through walls from one building area to another, in locations subject to earthquakes, in the discharge line from aboveground pump suction tanks, in new connections to existing feed mains and in air or water fire service lines subject to excessive vibration or difficult alignment.

Unless otherwise noted, these couplings are limited to use with rolled or cut groove-ended pipe, valves and fittings, at a minimum rated working pressure of 175 psi (1205 kPa) and are suitable for aboveground service. Higher rated pressures are noted in the text of the listing. Selection of pipe schedules for use with grooved pipe couplings should be made according to applicable FM Global Property Loss Prevention Data Sheets installation standards. These pipe schedules determine system pressure ratings and may take precedence over the higher rated working pressures listed for some couplings.

Installation must be made according to the manufacturer's instructions and requirements. Where couplings are used to join FM Approved pipe, the pipe manufacturer's installation instructions and requirements must also be observed. Grooves should be made according to ANSI/AWWA C606 (latest edition), "Grooved and Shouldered Joints", unless otherwise specified.

FM Approved grooved pipe couplings joining steel pipe may be used in underground service, subject to the installation restrictions placed upon the pipe and to the coupling manufacturer's recommendations and requirements.

Unless otherwise stated in the listing, these couplings have been evaluated for a maximum ambient temperature of 225°F (107°C), suitable for use in normal warehouse protection. For special applications, temperatures, or environments, the manufacturer's recommendations and requirements are to be followed.

Grooved Couplings, Standard-Flexible

These couplings join pipe, valves or fittings having equal nominal-sized diameters.



Certificate of Compliance

This certificate is issued for the following:

Steel Pipe for Automatic Fire Sprinkler Systems

<u>Pipe Specification</u>	<u>Pipe Schedule</u>	<u>Pipe Sizes</u>
ASTM A135 / A135M	Schedule 10	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, 8 inch NPS
ASTM A135 / A135M	Schedule 40	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, 8 inch NPS
ASTM A795 / A795M	Schedule 10	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, 8 inch NPS
ASTM A795 / A795M	Schedule 40	1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 3-1/2, 4, 5, 6, 8 inch NPS

Prepared for:

Weifang East Steel Pipe Co., Ltd
28 Chunyuan Road, Weicheng District
Weifang City, Shandong Province
China

Manufactured at:

Weifang East Steel Pipe Co., Ltd
28 Chunyuan Road, Weicheng District
Weifang City, Shandong Province
China

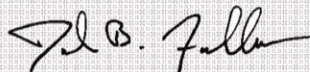
FM Approvals Class: 1630 – “Steel Pipe for Automatic Fire Sprinkler Systems”

Approval Identification: 3049283

Approval Granted: April 18, 2014

To verify the availability of the Approved product, please refer to www.approvalguide.com

Said Approval is subject to satisfactory field performance, continuing Surveillance Audits, and strict conformity to the constructions as shown in the Approval Guide, an online resource of FM Approvals.



David B. Fuller
VP, Manager of Fire Protection
FM Approvals
1151 Boston-Providence Turnpike
Norwood, MA 02062 USA

November 13, 2017

Date



~~~~~





# Whip Fire Projects

Reg 2005/032820/07

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Dion De Klerk

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Johannesburg 1684

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PO Box 1580, Bellville 7535

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**Dion De Klerk**

Managing Director  
Whip Fire - JHB  
082 786 6231

22 Flemington Street  
Kyalami Estate, Midrand,  
Johannesburg  
1684



DIRECTORS: A.D. Watt, S. Watt, I.P. van Graan, M.R. van Graan

