



Submittal Cover Sheet

All Submittals are to be uploaded as one (1) combined PDF document including this cover sheet.

PROJECT NUMBER / NAME:	07366-215 – USCS Lake City Phase 3
SUBMITTAL NUMBER:	211200-1.0
SUBMITTAL SUBJECT TITLE:	Product Data / Piping / Fittings
DATE OF SUBMISSION:	08.28.23
REFERENCE SPECIFICATION SECTION:	211200
SUBCONTRACTOR COMPANY NAME:	Wiginton Fire Systems
SUBCONTRACTOR CONTACT NAME:	Payton Davis
FULL OR PARTIAL SUBMITTAL:	Full

Important requirements for all submittals:

1. Submittals shall include a table of contents outlining the content included for the submission.
2. Submittals shall identify equipment, systems or materials using the same symbols as used on the schedules, drawings or applicable paragraphs/ sections of the specification.
3. Submittals shall clearly identify the name of Manufacturers included in the submission.
4. Reference Specification Section 010000-General Requirements for more information.



Wiginton
FIRE SYSTEMS

6363 Greenland Rd, Jacksonville, FL 32258

TEL: 904-262-6107 - FAX: 904-268-7268

www.wigintonfiresystems.com

1010780

US COLD STORAGE PHASE III

211 NE MCCLOSKEY AVE.

LAKE CITY, FL. 32055

Submittal Revision: 0

Dated: 08/21/2023

The materials submitted in this package...

are intended to describe the type and quality of all materials to be used on this project. This submittal intends that all materials, appliances, pieces, parts, and craftsmanship, will be equal to and/or better than the specific item shown and that actual per foot friction losses will be equal to and/or less than indicated herein.

Some of the items included may be substituted due to common procurement, stocking and supply procedures, scheduling requirements, etc. at the option of WFS, however ALL supplied and installed materials will meet the requirements of the applicable NFPA code in effect at the time of installation.

PIPE & FITTINGS

Wiginton Fire Systems

Steel Pipe Submittal

All of the steel pipe to be used on this project meets or exceeds the requirements of one or more of the following standards as required by Section 6.3 of NFPA 13-2016 edition:

ASTM A795 Specification for Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe for Fire Protection Use

ANSI/ASTM A 53 Specification for Black and Hot-Dipped Zinc Coated (Galvanized) Welded and Seamless Steel Pipe

ASTM A 135 Specification for Electric – Resistance Welded Steel Pipe

Manufacturers may vary. As per Section 6.3.7 of NFPA 13-2016 edition, all piping shall be marked along its length to properly identify its type, schedule and manufacturing standard.

Additional approvals or listings are not required when:

1. Steel pipe meeting the above referenced ASTM specifications is used and joined by welding or roll-grooved pipe and fittings, the minimum nominal wall thickness for pressures up to 300 psi shall be in accordance with Schedule 10 for sizes up to 6 inches and .188 inches for 8" – 10" pipe.
2. Steel pipe meeting the above referenced ASTM specifications is used and joined by threaded fittings, the minimum wall thickness shall be in accordance with Schedule 40 in sizes less than 8 inches for pressures up to 300 psi.

Exception: Pipe meeting the above referenced ASTM specifications with wall thickness and pressure limitations less than Schedule 40 for threading or Schedule 10 for welding and roll-grooving, which have been investigated for suitability in automatic sprinkler installations and listed for this service, shall be permitted when installed in accordance with their UL or FM listing limitations.

All steel piping is to be installed in strict accordance with the guidelines of NFPA 13 and therefore requires no special submittal of specific manufacturer's installation instructions as noted in paragraph 23.1.4 of NFPA 13-2016 edition.

Wiginton Fire Systems Threaded and Flanged Fittings Submittal

All of the threaded or flanged fittings to be used on this project meet or exceed the requirements of one or more of the following standards as required by Sections 6.4 and 6.5 of NFPA 13-2016 edition:

ANSI B16.4	Cast Iron Fittings Class 125 and 250
ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings
ANSI B16.3	Malleable Iron Fittings, Class 150 and 300

Manufacturers may vary.

Fittings are to be installed in strict accordance with the guidelines of NFPA 13 and therefore require no special submittal of specific manufacturer's installation instructions as noted in paragraph 23.1.4 of NFPA 13-2016 edition.



No. V10



No. V11



No. V20

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 12"/DN50 – DN300

Pipe Material

- Carbon steel

Maximum Working Pressure

- 400 psi/2758 kPa

Application

- Connects pipe and provides change in direction
- Supplied with Victaulic Original Groove System (OGS) grooved ends
- Exclusively for use with Victaulic couplings, valves, accessories and pipe which feature ends formed with the Victaulic OGS groove profile

NOTES

- QuickVic™ grooved end fittings are intended for use only in grooved piping systems and are not intended for use with Victaulic plain end couplings.
- QuickVic™ grooved end fittings shall not be used with flange adapters, such as the Victaulic Style 741 or 743 *Vic-Flange* Adapters. When connecting to flanged components, a No. V15 or No. V16 flanged elbow shall be used.

2.0 CERTIFICATION/LISTINGS

Product designed and manufactured under the Victaulic Quality Management System, as certified by LPCB in accordance with ISO-9001:2015.

3.0 SPECIFICATIONS - MATERIAL

Fitting: Ductile iron conforming to ASTM A536, Grade 65-45-12.

Fitting Coating: (specify choice)

- ☐ Standard: Orange coating.
- ☐ Optional: Hot dipped galvanized as per ASTM A123.

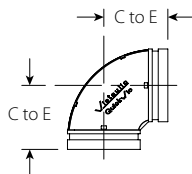
ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.

4.0 DIMENSIONS

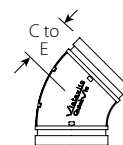
Elbows

No. V10 90° Elbow

No. V11 45° Elbow



No. V10



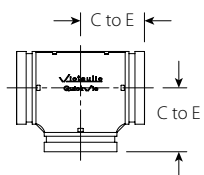
No. V11

Size		No. V10 90° Elbow		No. V11 45° Elbow	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Wgt. (Each) lb kg	C to E inches mm	Approx. Wgt. (Each) lb kg
2 DN50	2.375 60.3	2.75 70	1.5 0.7	2.00 51	1.2 0.5
2 ½	2.875 73.0	3.00 77	2.2 1.0	2.25 58	1.7 0.8
3 DN80	3.500 88.9	3.50 86	2.9 1.4	2.50 64	2.3 1.0
4 DN100	4.500 114.3	4.00 102	4.4 2.0	3.00 77	3.7 1.7
6 DN150	6.625 168.3	5.50 140	10.8 4.9	3.50 89	7.4 3.4
8 DN200	8.625 219.1	6.88 173	25.4 11.5	4.25 108	18.9 8.6
10 DN250	10.750 273.0	8.25 210	41.0 18.6	4.00 102	25.0 11.3
12 DN300	12.750 323.9	9.50 239	66.3 30.1	4.50 115	35.9 16.3

4.1 DIMENSIONS

Tee

No. V20 Straight Tee



No. V20

Size		No. V20 Straight Tee	
Nominal inches DN	Actual Outside Diameter inches mm	C to E inches mm	Approx. Wgt. (Each) lb kg
2 DN50	2.375 60.3	2.75 70	2.1 0.95
2 ½	2.875 73.0	3.00 77	2.2 1.5
3 DN80	3.500 88.9	3.50 86	4.8 2.2
4 DN100	4.500 114.3	4.00 102	6.0 2.7
6 DN150	6.625 168.3	5.50 140	20.0 9.1
8 DN200	8.625 219.1	6.88 173	36.9 16.8
10 DN250	10.750 273.0	8.25 210	63.6 28.8
12 DN300	12.750 323.9	9.50 239	90.3 41.0

4.2 DIMENSIONS

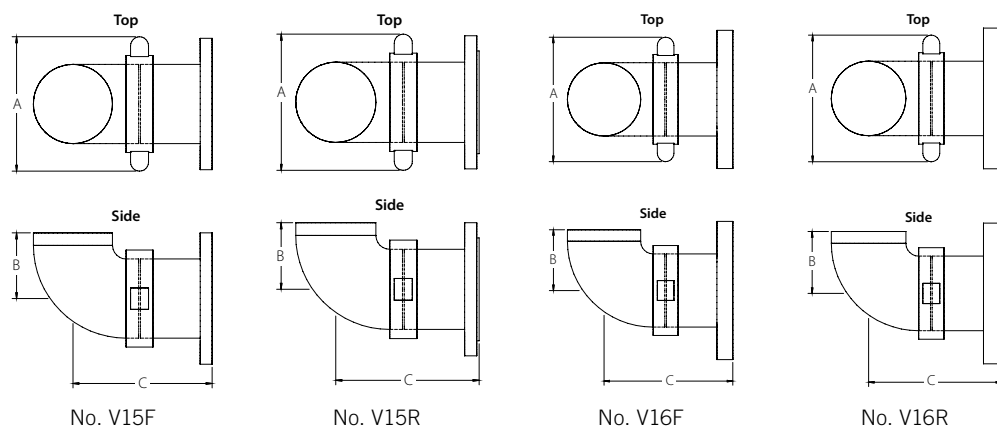
Flanged Elbows

No. V15F ANSI Class 150 Flanged Elbow (Flat Face)

No. V15R ANSI Class 150 Flanged Elbow (Raised Face)

No. V16F ANSI Class 300 Flanged Elbow (Flat Face)

No. V16R ANSI Class 300 Flanged Elbow (Raised Face)



Size		No. V15F and No. V15R ANSI Class 150 Flanged Elbow				No. V16F and No. V16R ANSI Class 300 Flanged Elbow			
Nominal inches DN	Actual Outside Diameter inches mm	A inches mm	B inches mm	C inches mm	Approx. Weight (Each) lb kg	A inches mm	B inches mm	C inches mm	Approx. Weight (Each) lb kg
2	2.375	6.13	2.75	6.88	10.2	6.13	2.75	6.88	12.4
DN50	60.3	156	70	175	4.6	156	70	175	5.6
2½	2.875	6.75	3.00	7.13	14.9	6.75	3.00	7.13	16.9
	73.0	171	76	181	6.8	171	76	181	7.7
3	3.500	7.50	3.50	7.63	18.1	7.50	3.50	7.63	22.9
DN80	88.9	191	89	194	8.2	191	89	194	10.4
4	4.500	8.75	4.00	10.13	27.7	8.75	4.00	10.13	36.6
DN100	114.3	222	102	257	12.6	222	102	257	16.6
6	6.625	11.25	5.50	11.63	45.4	11.25	5.50	11.63	65.4
DN150	168.3	286	140	295	20.6	286	140	295	29.7
8	8.625	14.25	6.88	13.06	82.4	14.25	6.88	13.06	111.4
DN200	219.1	362	175	332	37.4	362	175	332	50.5
10	10.750	17.13	8.25	16.44	129.8	17.13	8.25	16.44	166.6
DN250	273.0	435	210	418	58.9	435	210	418	75.6
12	12.750	19.00	9.50	17.69	183.2	19.00	9.50	17.69	241.4
DN300	323.9	483	241	449	83.1	483	241	449	109.5

5.0 PERFORMANCE

Flow Data

Frictional Resistance

This chart expresses the frictional resistance of the Victaulic QuickVic™ Grooved End Fittings as equivalent feet of straight pipe.

Size		No. V10 90° Elbow	No. V11 45° Elbow	No. V20 Tee	
Nominal inches DN	Actual Outside Diameter inches mm			Branch ft m	Run ft m
2 DN50	2.375 60.3	3.5 1.1	1.8 0.5	8.5 2.6	3.5 1.1
2½	2.875 73.0	4.3 1.3	2.2 0.7	10.8 3.3	4.3 1.3
3 DN80	3.500 88.9	5.0 1.5	2.6 0.8	13.0 4.0	5.0 1.5
4 DN100	4.500 114.3	6.8 2.1	3.4 1.0	16.0 4.9	6.8 2.1
6 DN150	6.625 168.3	10.0 3.0	5.0 1.5	25.0 7.6	10.0 3.0
8 DN200	8.625 219.1	13.0 4.0	6.5 2.0	33.0 10.1	13.0 4.0
10 DN250	10.750 273.0	17.0 5.2	8.3 2.5	41.0 12.5	17.0 5.2
12 DN300	12.750 323.9	20.0 6.1	10.0 3.0	50.0 15.2	20.0 6.1

6.0 NOTIFICATIONS



 **WARNING**

- Read and understand all instructions before attempting to install, remove, adjust, or maintain any Victaulic piping products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

- [06.33: Victaulic QuickVic™ Installation-Ready™ Rigid Coupling Style 107V](#)
- [07.01: Victaulic OGS Grooved End Fittings](#)
- [29.01: Victaulic Terms and Conditions of Sale](#)
- [I-100: Victaulic Field Installation Handbook](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.

Victaulic® FireLock™ Installation-Ready™ Rigid Couplings

Style 009N and Style 109



Patented



Patented

1.0 PRODUCT DESCRIPTION

Available Sizes

- Style 009N: 1 ¼ – 12"/DN32 – DN300
- Style 109: 1 ¼ – 4"/DN32 – DN100

Pipe Material

- Schedule 10, Schedule 40 or specialty carbon steel pipe listed in Section 5. For use with alternative materials and wall thicknesses please contact Victaulic
- For exceptions reference section 6.0 Notifications

Maximum Working Pressure

- Accommodates pressures ranging from full vacuum (29.9 in Hg/760 mm Hg) to 365 psi/2517 kPa

Function

- Joins carbon steel pipe with grooved ends conforming to [publication 25.01](#)
- Provides a rigid pipe joint designed to restrict axial or angular movement

2.0 CERTIFICATION/LISTINGS



ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.



3.0 SPECIFICATIONS – MATERIAL

Housing: Ductile iron conforming to ASTM A 536, Grade 65-45-12. Ductile iron conforming to ASTM A 395, Grade 65-45-15, is available upon special request.

Housing Coating: (specify choice)

- ☐ Orange coating
- ☐ Red coating (standard for EMEA-I and Asia Pacific)
- ☐ Optional for Style 009N: Hot Dipped Galvanized per ASTM A123
- ☐ Optional for Style 109: Mechanically Galvanized per ASTM B695 (available only in North America and Latin America).

Gasket: (specify choice)

☐ **Grade “E” EPDM (Type A) Vic-Plus™ Pre-lubricated Gasket**

EPDM (Violet Color Code). Applicable for wet and dry (oil-free air) fire protection systems only. Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems at -40°F/-40°C and above. Not compatible for use with hot water services or steam services.

NOTES

- Reference should always be made to [publication I-100](#), Victaulic Field Installation Handbook for gasket lubrication instructions.
- Services listed are General Service Guidelines only. It should be noted that there are services for which these gaskets are not compatible. Reference should always be made to [publication 05.01](#), Victaulic Gasket Selection Guide for specific gasket service guidelines and for a listing of services which are not compatible.

Bolts/Nuts: (specify choice)

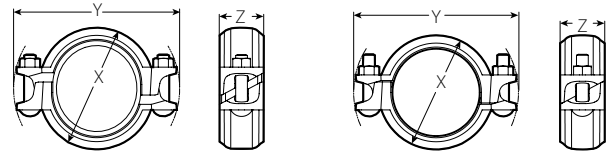
- ☐ Standard: Carbon steel oval neck track bolt(s) meeting the mechanical property requirements of ASTM A449 (imperial) and ISO 898-1 Class 9.8 (M10-M16) Class 8.8 (M20 and greater). Carbon steel hex nuts meeting the mechanical property requirements of ASTM A563 Grade B (imperial) and ASTM A563M Class 9 (metric). Track bolts and hex nuts are zinc electroplated per ASTM B633 Fe/Zn 5, finish Type III (imperial) or Type II (metric).
- ☐ Optional for Style 009N: Stainless steel oval neck track bolts meeting the requirements of ASTM F593, Group 2 (316 stainless steel), condition CW. Stainless steel Heavy Hex nuts meeting the requirements of ASTM F594, Group 2 (316 stainless steel), condition CW, with galling-resistant coating.¹

¹ Optional bolts/nuts are available in imperial size only.

Coupling Linkage: High Strength Steel with comparable physical properties to that of the Track Bolt (ASTM A449). Linkage is zinc electroplated per ASTM B633 Fe/Zn 5, Type III Finish.

4.0 DIMENSIONS

Style 009N Two-Bolt Installation-Ready Coupling



Style 009N Pre-Assembled

Style 009N Joint Assembled

Size		Maximum Working Pressure ²	Maximum End Load ²	Allow. Pipe End Separation ³	Qty.	Bolt/Nut		Dimensions					Weight
Nominal	Actual Outside Diameter					Pre-assembled		Joint Assembled		Z	Approx. (Each)		
						X	Y	X	Y				
inches DN	inches mm	psi kPa	lb N	inches mm		inches mm	inches mm	inches mm	inches mm	inches mm	lb kg		
1 ¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	2	¾ × 2 M10 × 51	3.13 79	5.00 127	2.75 70	5.00 127	2.00 51	1.4 0.6	
1 ½ DN40	1.900 48.3	365 2517	1035 4604	0.10 2.54	2	¾ × 2 M10 × 51	3.38 86	5.13 130	3.00 76	5.13 130	2.00 51	1.5 0.7	
2 DN50	2.375 60.3	365 2517	1617 7193	0.12 3.05	2	¾ × 2 ½ M10 × 63	4.00 102	5.63 143	3.50 89	5.63 143	2.00 51	1.9 0.9	
2 ½	2.875 73.0	365 2517	2370 10542	0.12 3.05	2	¾ × 2 ½ M10 × 63	4.50 114	6.13 156	4.00 102	6.13 156	2.00 51	2.1 1.0	
DN65	3.000 76.1	365 2517	2580 11476	0.12 3.05	2	¾ × 2 ½ M10 × 63	4.63 118	6.00 152	4.13 105	6.13 156	2.00 51	2.1 1.0	
3 DN80	3.500 88.9	365 2517	3512 15622	0.12 3.05	2	¾ × 2 ½ M10 × 63	5.13 130	6.75 171	4.63 117	6.75 171	2.00 51	2.3 1.0	
4 DN100	4.500 114.3	365 2517	5805 25822	0.17 4.32	2	¾ × 2 ½ M10 × 63	6.00 152	7.88 200	5.63 143	7.50 191	2.13 54	2.9 1.3	
	4.250 108.0	365 2517	5178 23020	0.17 4.32	2	¾ × 2 ½ M10 × 63	5.63 152	7.38 187	5.38 137	7.38 187	2.13 54	3.1 1.4	
5	5.563 141.3	365 2517	8872 39456	0.17 4.32	2	½ × 3 M12 × 76	7.25 184	9.25 235	6.75 171	9.13 232	2.25 57	5.0 2.3	
	5.250 133.0	365 2517	7901 35106	0.17 4.32	2	½ × 3 M12 × 76	6.63 168	9.00 229	6.38 162	9.00 229	2.25 57	4.8 2.2	
DN125	5.500 139.7	365 2517	8672 38529	0.17 4.32	2	½ × 3 M12 × 76	6.88 175	9.25 235	6.75 171	9.13 232	2.25 57	4.9 2.2	
6 DN150	6.625 168.3	365 2517	12582 44469	0.17 4.32	2	½ × 3 ¼ M12 × 83	8.38 213	10.38 264	7.88 200	10.13 257	2.25 57	6.0 2.7	
	6.250 159.0	365 2517	11198 49753	0.17 4.32	2	½ × 3 ¼ M12 × 83	7.88 200	10.00 254	7.38 187	9.88 251	2.25 57	5.6 2.5	
	6.500 165.1	365 2517	12112 53813	0.17 4.32	2	½ × 3 ¼ M12 × 83	8.00 203	10.25 260	7.75 197	10.13 257	2.25 57	6.0 2.7	
8 DN200	8.625 219.1	365 2517	21326 94863	0.17 4.32	2	¾ × 4 M16 × 101	10.88 276	13.38 340	10.25 260	13.13 333	2.50 64	11.4 5.2	
	8.500 216.0	365 2517	20712 55968	0.17 4.32	2	¾ × 4 M16 × 101	10.63 270	13.25 337	10.25 260	10.13 257	2.63 67	11.4 5.2	
10 DN250	10.750 273.0	300 2068	27229 121121	0.25 6.4	2	7⁄8 × 6 ½ M22 × 165	13.75 349	17.00 432	13.25 337	17.13 435	2.75 70	22.6 10.3	
12 DN300	12.750 323.9	300 2068	38303 170380	0.25 6.4	2	7⁄8 × 6 ½ M22 × 165	16.00 406	19.00 483	15.50 394	19.13 486	2.75 70	27.6 12.5	

² Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See the Listings/Approvals section of this publication for ratings on other pipe.

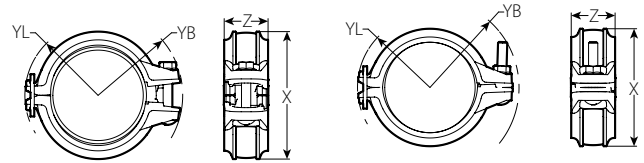
³ The allowable pipe separation dimension shown is for system layout purposes only. Style 009N couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

- When assembling Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009N or Style 109 couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

4.1 DIMENSIONS

Style 109 One-Bolt *Installation-Ready* Coupling



Style 109 Pre-Assembled

Style 109 Joint Assembled

Size		Max. Working Pressure	Max. End Load	Allow. Pipe End Sep. Maximum	Bolt/Nut		Dimensions								Weight
Nominal	Actual Outside Diameter				Qty.	Size	Pre-Assembled				Assembled				Approx. (Each)
							YL	YB	X	Z	YL	YB	X	Z	
inches DN	inches mm	psi kPa	Lbs. N	inches mm		inches mm	inches mm	inches mm	inches m m	inches mm	inches mm	inches mm	inches mm	lb kg	
1 ¼ DN32	1.660 42.4	365 2517	790 3514	0.10 2.54	1	¾ x 2 ¼ M10 x 57	1.97 50	2.49 63	3.17 81	1.95 50	1.93 49	2.59 66	2.84 72	1.95 50	1.5 0.7
1 ½ DN40	1.900 48.3	365 2517	1035 4603	0.10 2.54	1	¾ x 2 ¼ M10 x 57	2.13 54	2.60 66	3.41 87	1.95 50	2.1 53	2.68 68	3.07 78	1.95 50	1.6 0.7
2 DN50	2.375 60.3	365 2517	1617 7192	0.12 3.048	1	¾ x 2 ¼ M10 x 57	2.32 59	2.85 72	3.76 96	1.98 50	2.29 58	2.95 75	3.45 88	1.98 50	1.9 0.9
2 ½	2.875 73.0	365 2517	2370 10540	0.12 3.048	1	¾ x 2 ¼ M10 x 57	2.63 67	3.09 78	4.29 109	1.99 51	2.61 66	3.15 80	3.93 100	1.99 51	2.1 1.0
DN65	3.000 76.1	365 2517	2580 11476	0.12 3.048	1	7/16 x 2 ¾ M11 x 69	2.68 68	3.22 82	4.56 116	2.03 52	2.64 67	3.45 88	4.22 107	2.03 52	2.4 1.1
3 DN80	3.500 88.9	365 2517	3512 15620	0.12 3.048	1	7/16 x 2 ¾ M11 x 69	2.93 74	3.53 90	5.13 130	2.07 53	2.89 73	3.78 96	4.67 119	2.07 53	2.7 1.2
4 DN100	4.500 114.3	300 2068	4771 21223	0.17 4.318	1	7/16 x 2 ¾ M11 x 69	3.47 88	4.01 102	6.03 153	2.08 53	3.43 87	4.22 107	5.56 141	2.08 53	3.5 1.6

⁴ Working Pressure and End Load are total, from all internal and external loads, based on standard weight (ANSI) steel pipe, standard roll or cut grooved in accordance with Victaulic specifications. See the Listings/Approvals section of this publication for ratings on other pipe.

⁵ The allowable pipe separation dimension shown is for system layout purposes only. Style 109 couplings are considered rigid connections and will not accommodate expansion or contraction of the piping system.

NOTES

- When assembling Style 009N or Style 109 couplings onto end caps, take additional care to make certain the end cap is fully seated against the gasket end stop. For Style 009N or Style 109 couplings, use FireLock No. 006 end caps containing the "EZ" marking on the inside face or No. 60 end caps containing the "QV EZ" marking on the inside face. Non-Victaulic end cap products shall not be used with Style 009N or Style 109 couplings. IMPORTANT: Gaskets intended for the Style 009 or Style 009V couplings cannot be used with the Style 009N or Style 109 coupling. There is no interchanging of gaskets or housings between coupling styles.
- Use Of FlushSeal Gaskets For Dry Pipe Systems** Style 009N or Style 109 couplings are supplied with Grade "E" Type A gaskets. These gaskets include an integral pipe stop, that once installed provides the similar benefits as a FlushSeal gasket for dry pipe systems. It should be noted that standard Victaulic FlushSeal gaskets cannot be used with the Style 009N or Style 109 couplings.
- The Allowable Pipe End Separation dimension shown is for system layout purposes only. Style 009N or Style 109 Installation-Ready rigid couplings are considered rigid connections and will not accommodate expansion/contraction or angular movement of the piping system. Contact Victaulic for torsional resistance information.

5.0 PERFORMANCE

Style 009N Two-Bolt *Installation-Ready Coupling Listings/Approvals*⁶

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approval agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal	Actual Outside Diameter	Sch. 10	Sch. 40	Sch. 10	Sch. 40		
inches DN	inches mm	psi kPa bar	psi kPa bar	psi kPa bar	psi kPa bar	psi kPa bar	psi kPa bar
1 ¼ DN32	1.660 42.4	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
1 ½ DN40	1.900 48.3	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
2 DN50	2.375 60.3	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
2 ½	2.875 73.0	365 2517 25	365 2517 25	363 2503 25	363 2503 25	– – –	363 2500 25
DN65	3.000 76.1	365 ⁷ 2517 ⁷ 25 ⁷	– – –	363 ⁸ 2503 ⁸ 25 ⁸	– – –	363 2500 25	363 2500 25
3 DN80	3.500 88.9	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
	4.250 108.0	– – –	– – –	363 2503 25	363 2503 25	– – –	– – –
4 DN100	4.500 114.3	365 2517 25	365 2517 25	363 2503 25	363 2503 25	363 2500 25	363 2500 25
	5.250 133.0	– – –	– – –	363 ⁸ 2503 ⁸ 25 ⁸	– – –	– – –	– – –
DN125	5.500 139.7	290 ⁹ 2000 ⁹ 20 ⁹	– – –	363 ⁸ 2503 ⁸ 25 ⁸	– – –	232 1600 16	363 2500 25
5	5.563 141.3	290 2000 20	365 2517 25	363 2503 25	363 2503 25	232 1600 16	363 2500 25
	6.250 159	– – –	– – –	363 ⁸ 2503 ⁸ 25 ⁸	– – –	– – –	– – –
	6.500 165.1	290 ¹⁰ 2000 ¹⁰ 20 ¹⁰	– – –	363 ⁸ 2503 ⁸ 25 ⁸	– – –	– – –	363 2500 25

⁶ Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the [Victaulic Installation Manual I-009N](#) for details concerning when supplemental lubrication is required.

⁷ cULus listed for DIN 2458 (EN 10220) 2.6 mm pipe wall.

⁸ FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

⁹ cULus listed for EN 10220 4.0 mm pipe wall.

¹⁰ cULus listed for EN 10255 4.5 mm pipe wall.

¹¹ With optional stainless steel fasteners, cULus Listed to 175psi/1207 kPa/12 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the end face of the bolt.

¹² FM approved for 0.188" pipe wall.

¹³ cULus listed for 0.188" pipe wall.

5.0 PERFORMANCE (CONTINUED)

Style 009N Two-Bolt *Installation-Ready Coupling Listings/Approvals*⁶

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approval agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal	Actual Outside Diameter	Sch. 10	Sch. 40	Sch. 10	Sch. 40		
inches DN	inches mm	psi kPa bar	psi kPa bar	psi kPa bar	psi kPa bar	psi kPa bar	psi kPa bar
6 DN150	6.625 168.3	300 2068 20	365 2517 25	300 2068 20	363 2503 25	232 1600 16	363 2500 25
	8.515 216.3	290 2000 20	– – –	363 ⁸ 2503 ⁸ 25 ⁸	– – –	– – –	– – –
8 DN200	8.625 219.1	300 2068 20	365 2517 25	300 ¹² 2068 ¹² 20 ¹²	363 2503 25	232 1600 16	363 2500 25
10 DN250	10.750 273.0	300 ¹³ 2068 ¹³ 20 ¹³	300 2068 20	300 ¹² 2068 ¹² 20 ¹²	300 2068 20	– – –	– – –
12 DN300	12.750 323.9	300 ¹³ 2068 ¹³ 20 ¹³	300 2068 20	250 ¹² 1720 ¹² 17 ¹²	300 2068 20	– – –	– – –

⁶ Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the [Victaulic Installation Manual I-009N](#) for details concerning when supplemental lubrication is required.

⁷ cULus listed for DIN 2458 (EN 10220) 2.6 mm pipe wall.

⁸ FM approved for BS 1387 (EN 10255) Medium 3.6 mm pipe wall.

⁹ cULus listed for EN 10220 4.0 mm pipe wall.

¹⁰ cULus listed for EN 10255 4.5 mm pipe wall.

¹¹ With optional stainless steel fasteners, cULus Listed to 175psi/1207 kPa/12 bar and FM Approved to the FM ratings shown in the above table. The stainless steel fasteners have a marking designation of "316" on the end face of the bolt.

¹² FM approved for 0.188" pipe wall.

¹³ cULus listed for 0.188" pipe wall.

5.1 PERFORMANCE

Style 109 One-Bolt *Installation-Ready Coupling Listings/Approvals*¹⁵

The information provided below is based on the latest listing and approval data at the time of publication. Listings/Approvals are subject to change and/or additions by the approvals agencies. Contact Victaulic for performance on other pipe and the latest listings and approvals.

Size		cULus		FM		VdS	LPCB
Nominal inches DN	Actual Outside Diameter inches mm	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	Sch. 10 psi kPa bar	Sch. 40 psi kPa bar	psi kPa bar	psi kPa bar
1 ¼ DN32	1.660 42.4	365 2517 25	365 2517 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
1 ½ DN40	1.900 48.3	365 2517 25	365 2517 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
2 DN50	2.375 60.3	365 2517 25	365 2517 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
2 ½	2.875 73.0	365 2517 25	365 2517 25	365 2517 25	365 2517 25	– – –	– – –
DN65	3.000 76.1	365 2517 25	365 2517 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
3 DN80	3.500 88.9	365 2517 25	365 2517 25	365 2517 25	365 2517 25	232 1600 16	363 2503 25
4 DN100	4.500 114.3	300 2068 20	365 2517 25	300 2068 20	300 2068 20	– – –	290 2000 20

¹⁵ Listed/Approved for continuous use in wet and dry systems. Listed/Approved for dry systems -40° F/C and above. Please see the Victaulic [Installation Manual I-109](#) for details concerning when supplemental lubrication is required.

5.2 PERFORMANCE

Specialty Pipe

Style 009N Two-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size	Pressure Rating	
	inches DN	cULus psi kPa bar	FM psi kPa bar
EF	1 ¼ – 4 DN32 – DN100	300 2068 20	N/A
EL	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	N/A
EZF	3 – 4 DN80 – DN100	300 2068 20	N/A
EZT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
FF	1 ½ – 4 DN40 – DN100	300 2068 20	N/A
GL	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
	6 DN150	175 1205 12	175 1205 12
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
TF	2 ½ – 4 73.0 mm – DN100	N/A	300 2068 20
WG5, WG5E, WF5, WG7, WG7E, WL7	1 ¼ – 4 DN32 – DN100	175 1205 12	300 2068 20
WLS	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZF = EZ-Flow steel pipe manufactured by Northwest Pipe Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG5, WG5E, WF5 = WGalweld 5, WGalweld 5E, WFlow 5 steel pipe manufactured by Wuppermann Stahl GmbH.
- WG7, WG7E, WL7 = WGalweld 7, WGalweld 7E, WLight 7 steel pipe manufactured by Wuppermann Stahl GmbH
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

5.3 PERFORMANCE

Specialty Pipe

Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size	Pressure Rating	
	inches	cULus psi kPa bar	FM psi kPa bar
	DN		
EF	1 ¼ – 2 ½ DN32 – 73.0 mm	N/A	300 2068 20
	1 ½ – 2 ½ DN40 – 73.0 mm	300 2068 20	N/A
	3 – 4 DN80 – DN100	300 2068 20	300 2068 20
Easy-Flow	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
	3 – 4 DN80 – DN100	N/A	300 2068 20
EL	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
ET40	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
EZT	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
	1 ½ – 2 DN40 – DN50	300 2068 20	N/A
FF	1 ½ – 4 DN40 – DN100	300 2068 20	300 2068 20
GL	1 ¼ – 2 DN32 – DN50	N/A	300 2068
MF	1 ¼ – 4 DN32 – DN100	300 2068 20	300 2068 20
MT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20
MLT	1 ¼ – 2 DN32 – DN50	300 2068 20	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- Easy-Flow = Easy-Flow steel pipe manufactured by Borusan Mannesmann Boru.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG7, WG7E = WGalweld 7 and WGalweld 7E steel pipe manufactured by Wuppermann Stahl GmbH.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

5.3 PERFORMANCE (CONTINUED)

Specialty Pipe

Style 109 One-Bolt *Installation-Ready* Coupling Listings/Approvals

Pipe Type	Size	Pressure Rating	
	inches	cULus psi kPa bar	FM psi kPa bar
	DN		
TF	2 ½ – 4 73.00 mm – DN100	N/A	300 2068 20
WG7, WG7E	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20
	3 – 4 DN80 – DN100	N/A	300 2068 20
WLS	1 ¼ – 2 DN32 – DN50	N/A	300 2068 20

NOTES

- EF = EDDY FLOW steel pipe manufactured by Bull Moose Tube Co.
- Easy-Flow = Easy-Flow steel pipe manufactured by Borusan Mannesmann Boru.
- EL = EDDYLITE steel pipe manufactured by Bull Moose Tube Co.
- ET40 = Eddythread 40 steel pipe manufactured by Bull Moose Tube Co.
- EZT = EZ-Thread steel pipe manufactured by Youngstown Tube Co.
- FF = Fire-Flo steel pipe manufactured by Youngstown Tube Co.
- GL = GL steel pipe manufactured by Wheatland Tube Co.
- MF = Mega-Flow steel pipe manufactured by Wheatland Tube Co.
- MT = Mega-Thread steel pipe manufactured by Wheatland Tube Co.
- MLT = MLT steel pipe manufactured by Wheatland Tube Co.
- TF = Tex-Flow steel pipe manufactured by Tex-Tube Co.
- WG7, WG7E = WGalweld 7 and WGalweld 7E steel pipe manufactured by Wuppermann Stahl GmbH.
- WLS = WLS steel pipe manufactured by Wheatland Tube Co.

6.0 NOTIFICATIONS

WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

- These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.
- The installer shall understand the use of this product and why it was specified for the particular application.
- The installer shall understand common industry safety standards and potential consequences of improper product installation.
- It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.
- The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.

Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

NOTICE

- Victaulic does not recommend the use of any furnace butt-welded pipe with sizes 2"/DN50 and smaller Victaulic gasketed joint products. This includes, but is not limited to, ASTM A53 Type F pipe.

7.0 REFERENCE MATERIALS

[05.01: Seal Selection Guide](#)

[25.01: Original Groove System \(OGS\) Groove Specifications](#)

[I-009N: Installation Instructions FireLock EZ™ Rigid Coupling Style 009N](#)

[I-100: Victaulic Field Installation Handbook](#)

[I-109: Installation Instructions FireLock™ One-Bolt Rigid Coupling Style 109](#)

[I-ENDCAP: Victaulic End Caps Installation Instructions](#)

[I-IMPACT: Impact Tool Usage Guidelines](#)

[AN-001: Application Notification - Potential Incompatibility of Type F Pipe, Sizes NPS 2" | DN50 and Smaller](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.

SPRINKLERS



TECHNICAL DATA

ESFR PENDENT SPRINKLER VK503 (K16.8)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

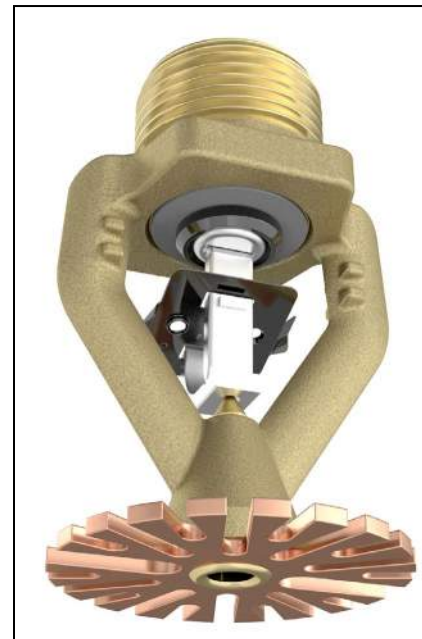
Viking Early Suppression Fast Response (ESFR) Pendent Sprinkler VK503 is a fast response fusible element type sprinkler designed for early fire suppression. With a 16.8 (242 metric*) nominal K-Factor and special deflector, this sprinkler produces large, high-momentum water droplets in a hemispheric pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire.

Viking Sprinkler VK503 may be used in the protection of ordinary types of storage. However, it is primarily intended to protect the following types of storage, which tend to produce severe-challenge fires: palletized and solid pile storage and single, double, multiple row, and portable open rack storage (no open-top containers or solid shelves). Viking ESFR Pendent Sprinkler VK503 provides protection of most common storage materials, including:

- Encapsulated or unencapsulated Class I, II, III, and IV commodities*.
- Cartoned and uncartoned unexpanded plastics*.
- Cartoned expanded plastics*.

*Refer the Approval Charts and Design Criteria on pages 3-5 for cULus Listing and FM Approval requirements that must be followed.

In addition, some storage arrangements of rolled paper, aerosols, and rubber tires may be protected by Viking ESFR Pendent Sprinkler VK503.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS



cULus Listed: Category VNBH

Successfully meets UL 199 test standard and compliance program for ESFR sprinklers installed in-rack storage with high clearances to ceiling (20 ft or greater)



FM Approved: Class 2027

NYC Approved: MEA 89-92-E, Volume 41

China Approval: Approved according to China GB Standard

Refer to Approval Charts and Design Criteria for requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Available since 2007.

Maximum Working Pressure: 175 psi (12 bar). Factory tested hydrostatically to 500 psi (34.5 bar).

Thread size: 3/4" NPT or 20 mm BSPT

Nominal K-Factor: 16.8 U.S. (242 metric*)

* Metric K-factor measurement shown is when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Overall Length: 2-7/8" (73 mm)

Deflector Diameter: 1-3/4" (44.5 mm)

Covered by one or more of the following patents: US5,829,532; US6,059,044; US6,336,509; US6,502,643; US6,868,917; AU722593; GB2336777

Material Standards:

Frame Casting: Brass UNS-C84400

Deflector: Phosphor Bronze UNS-C51000

Seat and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape



TECHNICAL DATA

ESFR PENDENT SPRINKLER VK503 (K16.8)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Compression Screw: Stainless Steel UNS-S31603

Trigger and Support: Stainless Steel UNS-S31600

Fusible Element Assembly: Beryllium Nickel, coated with black acrylic paint.

Ordering Information: (Also refer to the current Viking price list.)

Order ESFR Pendent K16.8 Sprinkler VK503 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to sprinkler base part number.

Finish Suffix: Brass = A

Temperature Suffix: 165 °F (74 °C) = C, 205 °F (96 °C) = E

For example, sprinkler VK503 with a Brass finish and a 165 °F (74 °C) temperature rating = Part No. 14073AC.

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrench: Part No. 13635WB (double-ended wrench - Use Side A. Side B is for use with K25.2 ESFR Pendent Sprinkler VK510) Available since 2006.

Sprinkler Cabinet: Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

A. Sprinklers must be handled with care. They must be stored in a cool, dry place in their original shipping container. Never install

WARNING

Viking sprinklers are manufactured and tested to meet rigid requirements of the approving agency. The sprinklers are designed to be installed in accordance with recognized installation standards. System design must be based on ESFR design guidelines described in the latest edition of Viking technical data, applicable FM Global Loss Prevention Data Sheets, the latest NFPA Standards, the latest standards of Verband der Sachversicherer (VdS), Loss Prevention Council (LPCB), the Authorities Having Jurisdiction, and also with the provisions of governmental codes, ordinances, and standards whenever applicable. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinkler inoperative and will automatically nullify the approval and any guarantee made by The Viking Corporation.

sprinklers that have been dropped or damaged in any way. Such sprinklers should be destroyed immediately.

NOTE: Wet pipe systems must be provided with adequate heat.

- B. The sprinklers must be installed after the piping is in place to prevent mechanical damage. Before installing, be sure to have the appropriate sprinkler model and style, with the correct orifice size, temperature rating, and response characteristics.
- C. With the sprinkler contained in the plastic protective cap, apply a small amount of pipe-joint compound or tape to the male threads only, while taking care not to allow a build-up of compound in the sprinkler orifice.
- D. **Use ONLY sprinkler wrench 13635WB (shown in Figure 1) for installing ESFR Sprinkler VK503! With the sprinkler contained in the protective cap, install the sprinkler onto the piping by applying the sprinkler wrench to the sprinkler wrench flats only, while taking care not to damage the sprinkler operating parts.**
 - DO NOT use any other type of wrench, as this could damage the unit.
 - DO NOT use the sprinkler deflector or fusible element to start or thread the sprinkler into a fitting.
 - DO NOT exceed 50 ft. lbs. of torque (hand tight, plus approximately two full turns with the wrench) to install these sprinklers. Higher levels of torque may distort the sprinkler inlet with consequent leakage or impairment of the sprinkler.
- E. After installation, the entire sprinkler system must be tested. The test must be conducted to comply with the Installation Standards. Make sure the sprinkler has been properly tightened. If a thread leak occurs, normally the unit must be removed, new pipe-joint compound or tape applied, and then reinstalled. This is due to the fact that when the joint seal is damaged, the sealing compound or tape is washed out of the joint. Immediately replace any damaged units, using the special sprinkler wrench only.
- F. **After installation and testing and repairing of all leaks, remove the protective caps from the sprinklers. Do NOT use any type of tool to remove the cap. Remove the cap by hand: turn it slightly and pull it off the sprinkler. When removing caps, use care to prevent dislodging or damaging sprinkler ejector spring and fusible element. THE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**



TECHNICAL DATA

ESFR PENDENT SPRINKLER VK503 (K16.8)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

G. System design must be based on ESFR design guidelines described in applicable FM Global Loss Prevention Data Sheets, the latest standards of Verband der Sachversicherer, LPCB, the National Fire Protection Association, and the Authorities Having Jurisdiction. All requirements of recognized sprinkler system design standards apply to systems utilizing Viking ESFR Pendent Sprinklers.

5. OPERATION

During fire conditions, the heat-sensitive fusible element assembly disengages, releasing the seat and spring assemblies to open the waterway. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to suppress the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE

The owner is responsible for maintaining the fire protection system and devices in proper operating condition. For minimum maintenance and inspection requirements, refer to the NFPA standard that describes care and maintenance of sprinkler systems. In addition, the Authorities Having Jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

- A. The sprinklers must be inspected on a regular basis for corrosion, mechanical damage, obstructions, paint, etc. The frequency of inspections may vary due to corrosive atmosphere, water supplies, and activity around the device.
- B. Sprinklers that have been painted or mechanically damaged must be replaced immediately. Sprinklers showing signs of corrosion shall be tested and/or replaced immediately as required. Installation standards require sprinklers to be tested and, if necessary, replaced after a specified term of service. For Viking ESFR Pendent Sprinklers, refer to the Installation Standards (e.g., NFPA 25) and the Authorities Having Jurisdiction for the specified period of time after which testing and/or replacement is required. Sprinklers that have operated cannot be reassembled or reused, but must be replaced. When replacing sprinklers, use only new sprinklers.
- C. The sprinkler discharge pattern is critical for proper fire protection. Therefore, nothing should be hung from, attached to, or otherwise obstruct the discharge pattern. All obstructions must be immediately removed or, if necessary, additional sprinklers installed.
- D. When replacing existing sprinklers, the system must be removed from service. Refer to the appropriate system description and/or valve instructions. Prior to removing the system from service, notify all Authorities Having Jurisdiction. Consideration should be given to employment of a fire patrol in the affected area.
 1. Remove the system from service, drain all water, and relieve all pressure on the piping.
 2. Using the special sprinkler wrench, remove the old sprinkler and install the new unit. Care must be taken to ensure that the replacement sprinkler is the proper model and style, with the correct orifice size, temperature rating, and response characteristics. A fully stocked spare sprinkler cabinet should be provided for this purpose.
 3. Place the system back in service and secure all valves. Check the replaced sprinklers and repair all leaks.
- E. Sprinkler systems that have been subject to a fire must be returned to service as soon as possible. The entire system must be inspected for damage and repaired or replaced as necessary. Sprinklers that have been exposed to corrosive products of combustion, but have not operated, should be replaced. Refer to the Authorities Having Jurisdiction for minimum replacement requirements.

7. AVAILABILITY

Viking ESFR K16.8 Pendent Sprinkler VK503 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.



TECHNICAL DATA

ESFR PENDENT SPRINKLER VK503 (K16.8)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

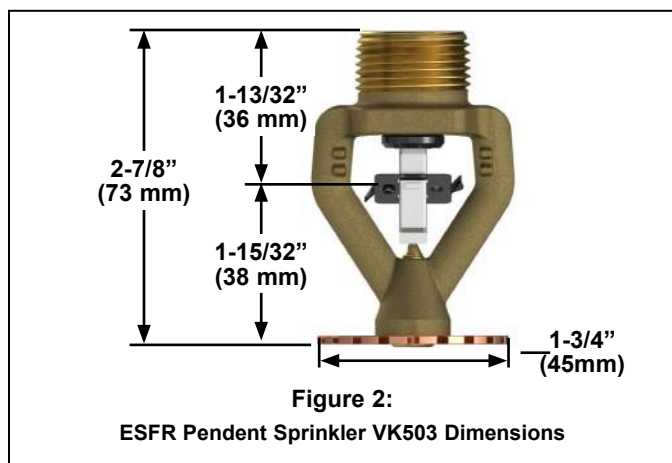
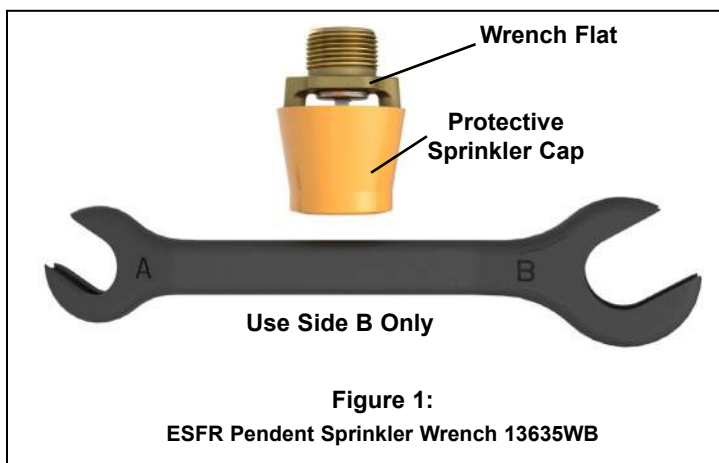
Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Frame Paint Color
Ordinary	165 °F (74 °C)	100 °F (38 °C)	None
Intermediate	205 °F (96 °C)	150 °F (65 °C)	White

Sprinkler Finish: Brass

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.





TECHNICAL DATA

ESFR PENDENT SPRINKLER VK503 (K16.8)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 1 (UL) ESFR Pendent Sprinkler VK503 Maximum 175 PSI (12 bar) WWP

KEY	
Temperature	Finish
A1X	Escutcheon (if applicable)

Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ^{3,4} (Refer also to Design Criteria.)					
		Inches	mm	U.S.	metric ²	Inches	mm	cULus ⁵	NYC ⁶	VdS	LPCB	CE	China Approval
14073	VK503	3/4"	--	16.8	242	2-7/8	73	A1	A1	--	--	--	--
14818	VK503	--	20 mm	16.8	242	2-7/8	73	A1	A1	--	--	--	--
20372 ⁷	VK503	--	20 mm	16.8	242	2-7/8	73	B1	--	--	--	--	B1
Approved Temperature Ratings A - 165 °F (74 °C) and 205 °F (96 °C) B - 165 °F (74 °C)							Approved Finish 1 - Brass						

Footnotes

- ¹ Base part number shown. For complete part number, refer to the price list.
² Metric K-Factor measurement shown is when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-Factor shown by 10.0.
³ This chart shows listings and approvals available at the time of printing. Other approvals may be in process.
⁴ Refer to the latest standards of NFPA 13.
⁵ Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada.
⁶ Accepted for use, City of New York Department of Buildings, MEA Number 89-92-E, Vol. 41.
⁷ Approved according to China GB Standard.

DESIGN CRITERIA - UL (Also refer to Approval Chart 1.)

cULus Listing Requirements:

ESFR Pendent Sprinkler VK503 is cULus Listed as indicated in the Approval Chart for installation in accordance with the latest appropriate NFPA standards (including NFPA 13) for ESFR Pendent K16.8 (242 bar) Sprinklers, for:

- Protecting rack storage of certain specified materials up to 35 ft (10.7 m) high in buildings with 40 ft (12.2 m) high ceilings with NO in-rack sprinklers.
- Protecting rack storage of certain specified materials up to 40 ft (12.2 m) high in buildings with 45 ft (13.7 m) high ceilings with one row of in-rack sprinklers.
- NFPA 13 indicates the following for ESFR pendent sprinklers having a 16.8 nominal K-Factor: Position the deflector a maximum of **14"** (356 mm) and a minimum of **6"** (152 mm) below the ceiling.
- The minimum area of coverage allowed per sprinkler is 64 ft² (5.8 m²) per NFPA 13.

Maximum Roof or Ceiling Slope: 2 in 12 (167 mm/m or 9.5 degrees).

Sprinkler Position: Approved for use only in the pendent position. Align the deflector parallel with the ceiling or roof.

System Type: Wet systems only.

Deflector Distance from Walls: At least 4" (102 mm) from walls, and no more than one-half the allowable distance permitted between sprinklers.

Clearance from Deflector to Top of Storage: At least 36" (914 mm).

Maximum Distance Between Sprinklers: The maximum area of coverage allowed per sprinkler is 100 ft² (9.3 m²)*.

- For buildings over 30 ft (9.1 m) high, spacing between sprinklers and/or branch lines must be from 8 to 10 ft (2.4 to 3.1 m)**.
- For building heights up to 30 ft (9.1 m), the spacing allowed between sprinklers and/or branch lines is 8 to 12 ft (2.4 to 3.7 m), provided the area covered per sprinkler does not exceed the maximum 100 ft² (9.3 m²) allowed**.

**Refer to the Installation Standards for permissible deviations from the maximum sprinkler/branch line spacing rules above, to eliminate obstructions created by trusses and bar joists when using ESFR sprinklers.

Minimum Area of Coverage: The minimum area of coverage allowed per sprinkler is 64 ft² (5.8 m²).

Note: If the ceiling is beam and girder or panel construction, locate sprinklers in the bays rather than under the beams.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Viking ESFR Pendent Sprinklers are to be installed in accordance with the latest edition of Viking technical data, the latest standards of VdS, NFPA, and any other Authorities Having Jurisdiction, and also with provisions of governmental codes, ordinances, and standards whenever applicable.



TECHNICAL DATA

ESFR PENDENT SPRINKLER VK503 (K16.8)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 2 (FM) ESFR Pendent Sprinkler VK503 Maximum 175 PSI (12 bar) WWP								Temperature Finish Escutcheon (if applicable) A1X KEY
Base Part Number ¹	SIN	NPT Thread Size		Nominal K-Factor		Overall Length		FM Approvals ^{3,4} (Refer also to Design Criteria below.)
		Inches	mm	U.S.	metric ²	Inches	mm	
14073	VK503	3/4"	--	16.8	242	2-7/8	73	A1
14818	VK503	--	20 mm	16.8	242	2-7/8	73	A1
20372 ⁵	VK503	--	20 mm	16.8	242	2-7/8	73	B1
Approved Temperature Ratings A - 165 °F (74 °C) and 205 °F (96 °C) B - 165 °F (74 °C)						Approved Finish 1 - Brass		
Footnotes								
¹ Base part number shown. For complete part number, refer to the price list.								
² Metric K-Factor measurement shown is when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-Factor shown by 10.0.								
³ This chart shows the FM Approvals available at the time of printing. Other approvals may be in process.								
⁴ FM Approved as a quick response pendent Storage sprinkler. Refer to Design Criteria below.								
⁵ Approved according to China GB Standard.								

DESIGN CRITERIA - FM (Also refer to Approval Chart 2 above.)
FM Approval Requirements: 1. Sprinkler VK503 is FM Approved as a quick response pendent Storage sprinkler as indicated in the FM Approval Guide. • For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheets 2-0 and 8-9). 2. Approved storage sprinklers are also FM Approved for use as Non-Storage sprinklers. • For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling. NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.
IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Viking ESFR Pendent Sprinklers are to be installed in accordance with the latest edition of Viking technical data, the latest applicable FM Global Loss Prevention Data Sheets, including 2-0 and 8-9, applicable standards of NFPA, and any other Authorities Having Jurisdiction, and also with provisions of governmental codes, ordinances, and standards whenever applicable.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

Maximum Torque:

1/2" NPT: 14 ft-lbs. (19.0 N-m)

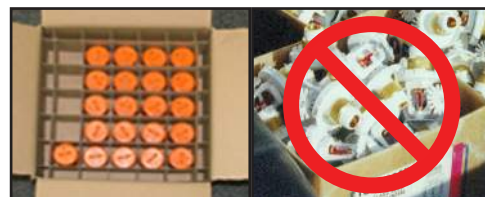
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from and upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



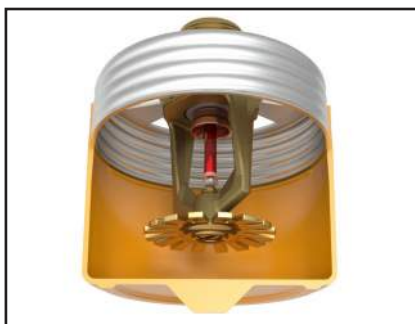
BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com



CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)

Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers **MUST** receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating **MUST** be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



TECHNICAL DATA

SPRINKLER OVERVIEW

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

1. DESCRIPTION

Viking fire sprinklers consist of a threaded frame with a specific waterway or orifice size and a deflector for distributing water in a specified pattern. A closed or sealed sprinkler refers to a complete assembly, including the thermosensitive operating element. An open sprinkler does not use an operating element and is open at all times. The distribution of water is intended to extinguish a fire or to control its spread.

Viking sprinklers are available in several models and styles. Refer to specific sprinkler technical data pages for available styles, finishes, temperature ratings, thread sizes, and nominal K-Factors for the particular model selected.

2. LISTINGS AND APPROVALS

Refer to the Approval Charts on the appropriate sprinkler technical data page(s) and/or approval agency listings.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

3. TECHNICAL DATA

Pressure Ratings:

Maximum allowable water working pressure is 175 psig (12 Bar) unless rated and specified for high water working pressure [250 psig (17.2 bar)].

Sprinkler Identification:

Viking sprinklers are identified and marked with the word "Viking", the sprinkler identification number (SIN) consisting of "VK" plus a three digit number*, the model letter, and the year of manufacture.

Available Finishes:

Viking sprinklers are available in several decorative finishes. Some models are available with corrosion-resistant coatings or are fabricated from non-corrosive material. Refer to the sprinkler technical data page for additional information.

Available Temperature Ratings:

Viking sprinklers are available in several temperature ratings that relate to a specific temperature classification. Applicable installation rules mandate the use and limitations of each temperature classification. In selecting the appropriate temperature classification, the maximum expected ceiling temperature must be known. When there is doubt as to the maximum temperature at the sprinkler location, a maximum-reading thermometer should be used to determine the temperature under conditions that would show the highest readings to be expected. In addition, recognized installation rules may require a higher temperature classification, depending upon sprinkler location, occupancy classification, commodity classification, storage height, and other hazards. In all cases, the maximum expected ceiling temperature dictates the lowest allowable temperature classification. Sprinklers located immediately adjacent to a heat source may require a higher temperature rating.

K-Factors:

Viking sprinklers are available in several orifice sizes with related K-Factors. The orifice is a tapered waterway and, therefore, the K-Factor given is nominal. Nominal U.S. K-Factors are provided in accordance with the 1999 edition of NFPA 13, Section 3-2.3. Refer to the specific data page for appropriate K-Factor information.

Available Styles:

Viking sprinklers are available for installation in several positions as indicated by a stamping on the deflector. The deflector style dictates the appropriate installation position of the sprinkler; it breaks the solid stream of water issuing from the sprinkler orifice to form a specific spray pattern. The following list indicates the various styles and identification of Viking sprinklers.

UPRIGHT SPRINKLER: A sprinkler intended to be installed with the deflector above the frame so water flows upward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSU" (Standard Sprinkler Upright) or "UPRIGHT" on the deflector.

PENDENT SPRINKLER: A sprinkler intended to be oriented with the deflector below the frame so water flows downward through the orifice, striking the deflector and forming an umbrella-shaped spray pattern downward. Marked "SSP" (Standard Sprinkler Pendent) or "PENDENT" on the deflector.

CONVENTIONAL SPRINKLER: An "old style" sprinkler intended to be installed with the deflector in either the upright or pendent position. The deflector provides a spherical type pattern with 40 to 60 percent of the water initially directed downward and a proportion directed upward. Must be installed in accordance with installation rules for conventional or old style sprinklers. DO NOT USE AS A REPLACEMENT FOR STANDARD SPRAY SPRINKLERS. Marked "C U/P" (Conventional Upright/Pendent) on the deflector.

Viking Technical Data may be found on
The Viking Corporation's Web site at
<http://www.vikinggroupinc.com>.
The Web site may include a more recent
edition of this Technical Data Page.



TECHNICAL DATA

SPRINKLER OVERVIEW

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

VERTICAL SIDEWALL (VSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The deflector provides a water spray pattern outward in a quarter-spherical pattern and can be installed in the upright or pendent position with the flow arrow in the direction of discharge. Marked "SIDEWALL" on the deflector with an arrow and the word "FLOW". (Note: Some vertical sidewall sprinklers can only be installed in the upright or pendent position—in this case, the sprinkler will also be marked "UPRIGHT" or "PENDENT".)

HORIZONTAL SIDEWALL (HSW) SPRINKLER: A sprinkler intended for installation near the wall and ceiling. The special deflector provides a water spray pattern outward in a quarter-spherical pattern. Most of the water is directed away from the nearby wall with a small portion directed at the wall behind the sprinkler. The top of the deflector is oriented parallel with the ceiling or roof. The flow arrows point in the direction of discharge. Marked "SIDEWALL" and "TOP" with an arrow and the word "FLOW".

EXTENDED COVERAGE (EC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listings. Maximum area of coverage, minimum flow rate, orifice size, and nominal K-Factor are specified in the individual listings. EC sprinklers are intended for Light-Hazard occupancies with smooth, flat, horizontal ceilings unless otherwise specified. In addition to the above markings, the sprinkler is marked "EC".

QUICK RESPONSE (QR) SPRINKLER: A spray sprinkler with a fast-actuating operating element. The use of quick response sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction (AHJ) prior to installing.

QUICK RESPONSE EXTENDED COVERAGE (QREC) SPRINKLER: A spray sprinkler designed to discharge water over an area having the maximum dimensions indicated in the individual listing. This is a sprinkler with an operating element that meets the criteria for quick response. QREC sprinklers are only intended for Light Hazard occupancies. The sprinkler is marked "QREC".

FLUSH SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The unit is mounted flush with the ceiling or wall, with the fusible link exposed. Upon actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

CONCEALED SPRINKLER: A decorative spray sprinkler intended for installation with a concealed piping system. The sprinkler is hidden from view by a cover plate installed flush with the ceiling or wall. During fire conditions, the cover plate detaches, and upon sprinkler actuation, the deflector extends beyond the ceiling or wall to distribute water discharge. The sprinkler is marked "SSP", "PEND", or "SIDEWALL" and "TOP".

RECESSED SPRINKLER: A spray sprinkler assembly intended for installation with a concealed piping system. The assembly consists of a sprinkler installed in a decorative adjustable recessed escutcheon that minimizes the protrusion of the sprinkler beyond the ceiling or wall without adversely affecting the sprinkler distribution or sensitivity. Refer to the appropriate technical data page for allowable sprinkler models, temperature ratings, and occupancy classifications. DO NOT RECESS ANY SPRINKLER NOT LISTED FOR USE WITH THE ESCUTCHEON.

CORROSION-RESISTANT SPRINKLER: A special service sprinkler with non-corrosive protective coatings, or that is fabricated from non-corrosive material, for use in atmospheres that would normally corrode sprinklers.

DRY SPRINKLER: A special-service sprinkler intended for installation on dry pipe systems or wet pipe systems where the sprinkler is subject to freezing temperatures. The unit consists of a sprinkler permanently secured to an extension nipple with a sealed inlet end to prevent water from entering the nipple until the sprinkler operates. The unit MUST be installed in a tee fitting. Dry upright sprinklers are marked with the "B" dimension [distance from the face of the fitting (tee) to the top of the deflector]. Dry pendent and sidewall sprinklers are marked with the "A" dimension [the distance from the face of fitting (tee) to the finished surface of the ceiling or wall].

LARGE DROP SPRINKLER: A type of special application sprinkler used to provide fire control of specific high-challenge fire hazards. Large drop sprinklers are designed to produce an umbrella-shaped spray pattern downward with a higher percentage of "large" water droplets than standard spray sprinklers. The sprinkler has an extra-large orifice with a nominal K-Factor of 11.2. Marked "HIGH CHALLENGE" and "UPRIGHT".

EARLY SUPPRESSION FAST-RESPONSE (ESFR) SPRINKLER: A sprinkler intended to provide fire suppression of specific high-challenge fire hazards through the use of a fast response fusible link, 14.0, 16.8, or 25.2 nominal K-Factor, and special deflector. ESFR sprinklers are designed to produce high-momentum water droplets in a hemispherical pattern below the deflector. This permits penetration of the fire plume and direct wetting of the burning fuel surface while cooling the atmosphere early in the development of a high-challenge fire. Marked "ESFR" and "UPRIGHT" or "PEND".

INTERMEDIATE LEVEL/RACK STORAGE SPRINKLER: A standard spray sprinkler assembly designed to protect its operating element from the spray of sprinklers installed at higher elevations. The assembly consists of a standard or large orifice upright or pendent sprinkler with an integral upright or pendent water shield and guard assembly. Use only those sprinklers that have been tested and listed for use with the assembly. Refer to the technical data page for allowable sprinkler models.

RESIDENTIAL SPRINKLER: A sprinkler intended for use in the following occupancies: one- and two-family dwellings with the fire protection sprinkler system installed in accordance with NFPA 13D; residential occupancies up to four stories in height with the fire protection system installed in accordance with NFPA 13R; and where allowed by the Authority Having Jurisdiction in residential portions of any occupancy with the fire protection system installed in accordance with NFPA 13.



TECHNICAL DATA

SPRINKLER OVERVIEW

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Residential sprinklers have a unique distribution pattern and utilize a “fast response” heat sensitive operating element. They enhance survivability in the room of fire origin and are designed to provide a life safety environment for a minimum of ten minutes. For this reason, residential sprinklers must not be used to replace standard sprinklers unless tested for and approved by the Authority Having Jurisdiction. In addition to standard markings, the unit is identified as “RESIDENTIAL SPRINKLER” or “RES”.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

Refer to the appropriate sprinkler technical data page(s).

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking sprinklers are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers and the appropriate sprinkler general care, installation, and maintenance guide. Vikings sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable. The sprinkler technical data page may contain installation requirements specific for the sprinkler model selected. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.



TECHNICAL DATA

USE OF CORRECT INSTALLATION WRENCHES FOR ESFR SPRINKLERS (VK500, VK503, VK510, VK514 AND VK520)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
Visit the Viking website for the latest edition of this technical data page.

CORRECT INSTALLATION WRENCHES FOR USE WITH VIKING ESFR SPRINKLERS

ESFR sprinklers must be installed using the manufacturer's special installation wrench only, while taking care not to over-tighten or damage the sprinkler operating parts. Figure 1 below shows an example of correct use of a designated ESFR sprinkler wrench. Use of any other wrench, such as those shown in Figures 2 through 4 below, could damage the unit.

- Viking ESFR Upright Sprinklers: Use Viking Wrench Part Number 05118CW/B.
- Viking ESFR Pendent K14 and K16.8 Sprinklers: Use Viking Wrench Part Number 10285W/B or double-ended 13635W/B (Side A).
- Viking ESFR Pendent K25.2 Sprinklers: Use Viking Wrench Part Number 12143W/B or double-ended 13635W/B (Side B).
- Viking ESFR Pendent K28 Sprinklers: Viking Wrench Part Number (double-ended) 13635W/B (Side B only).

The sprinkler is contained in a plastic cap for protection during shipping and installation. With the sprinkler contained in the plastic cap, apply a small amount of pipe-joint compound or tape to the male threads of the sprinkler and then install the ESFR sprinkler by applying the wrench to the sprinkler wrench flats only. DO NOT use the deflector or fusible element to start or thread the sprinkler into a fitting.

Take care not to over-tighten the sprinkler and/or damage its operating parts!

Maximum Torque: 3/4" NPT: 20 ft-lbs. (27.1 N-m) 1" NPT: 30 ft-lbs. (40.7 N-m)

DO NOT install sprinklers onto piping at the floor level. Install sprinklers after the piping is in place at the ceiling to prevent mechanical damage.



Figure 1: Correct use of designated installation wrench with ESFR Pendent K14 Sprinkler SIN VK500 and sprinkler cap



Figure 2: Incorrect installation wrench (ESFR sprinkler shown with Channel Locks)



Figure 3: Incorrect installation wrench (ESFR sprinkler shown with a crescent wrench)



Figure 4: Incorrect installation wrench (ESFR sprinkler shown with a pipe wrench)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

NOTE: The sprinklers are contained in plastic caps for protection during shipping and installation. Remove the caps from the sprinklers **AFTER** installation. Use care when removing the caps to prevent dislodging the ejector spring or damaging the fusible element. The caps **MUST** be removed from sprinklers **BEFORE** placing the system in service!

Refer to the latest appropriate technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Viking Web site at www.vkinggroupinc.com.

WARNING

Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed. Any sprinkler with damage to the operating element should be destroyed.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at www.vikinggroupinc.com or contact Viking directly.



TECHNICAL DATA

MICROMATIC® STANDARD RESPONSE UPRIGHT SPRINKLER VK200 (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

The Viking Micromatic® Standard Response Upright VK200 Sprinkler is a small, thermosensitive, glass-bulb spray sprinkler available in several different finishes, temperature ratings, and K-Factors to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive environments and are listed/approved as indicated in the Approval Charts.

Viking standard response sprinklers may be ordered and/or used as open sprinklers (glass bulb and pip cap assembly removed) on deluge systems. Refer to Ordering Instructions.

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV



FM Approved: Class Series 2000



VdS Approved: Certificates G414013, G414014, G498006, and G4060055



LPCB Approved: Certificate 096e/06



CE Certified: Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001, EC-certificate of constancy of performance 0832-CPR-S0021

China Approval: Approved according to China GB Standard



MED Certified: Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003

NOTE: Other International approval certificates are available upon request.

Refer to Approval Charts and Design Criteria for listing and approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)[†]
 Maximum Working Pressure: 175 psi (12 bar) wwp
 Factory tested hydrostatic rating: 500 psi (34.5 bar)
 Thread size: 1/2" NPT, 15 mm BSP, 3/4" NPT, 20 mm BSPT
 Nominal K-Factor: 8.0 U.S. (115.2 metric^{**})
 Glass-bulb fluid temperature rating: -65 °F (-55 °C)
 Overall Length: 2-3/8" (60 mm)

[†] cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

^{**} Metric K-factor measurement shown is in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

Material Standards:

Frame Casting: Brass UNS-C84400
 Deflector: Copper UNS-C19500
 Bulb: Glass, nominal 5 mm diameter
 Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
 Screw: Brass UNS-C36000
 Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
 For Polyester Coated Sprinklers: Belleville Spring-Exposed
 For ENT coated Sprinklers: Belleville Spring - Exposed, Screw and Pipcap - ENT plated.

^{††}Not for FM Approval.

Ordering Information: Refer to Table 1.

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov



TECHNICAL DATA

MICROMATIC® STANDARD RESPONSE UPRIGHT SPRINKLER VK200 (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Micromatic® Standard Response Upright Sprinkler VK200 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TABLE 1: ORDERING INFORMATION
Instructions: Using the sprinkler base part number,
(1) add the suffix for the desired Finish
(2) add the suffix for the desired Temperature Rating.

Sprinkler Base Part No.	Size		1: Finishes		2: Temperature Ratings				
	NPT Inch	BSPT mm	Description	Suffix ¹	Nominal Rating	Bulb Color	Hazard Classification	Max. Ambient Ceiling Temperature ²	Suffix
18263	3/4	--	Brass	A	135 °F (57 °C)	Orange	Ordinary	100 °F (38 °C)	A
18266	--	20	Chrome	F	155 °F (68 °C)	Red	Ordinary	100 °F (38 °C)	B
18268 ⁸	1/2	--	White Polyester	M-/W	175 °F (79 °C)	Yellow	Intermediate	150 °F (65 °C)	D
20377 ⁹	--	20	Black Polyester	M-/B	200 °F (93 °C)	Green	Intermediate	150 °F (65 °C)	E
			Wax	C	286 °F (141 °C)	Blue	High	225 °F (107 °C)	G
			Wax over Polyester	V-/W	360 °F (182 °C)	Mauve	Extra High	300 °F (149 °C)	H
			ENT ³	JN	500 °F (260 °C)	Black	Ultra High ⁶	465 °F (240 °C)	L

Example: 13001MB/W = VK200 with White Polyester Finish and 155 °F (68 °C) Nominal temperature rating. This sprinkler is to be installed into an area with a maximum ambient temperature of 100 °F (38 °C) meaning if the area will experience temperatures above the maximum ambient rating, you shall use a higher temperature-rated sprinkler.

Corrosion Resistant Coatings⁵

- White Polyester and Black Polyester in all temperature ratings.
- ENT in all temperature ratings except 135 °F (57 °C).
- Wax-Coated Brass and Wax over Polyester⁷ for sprinklers with the following temperature ratings:
155 °F (68 °C) Lt. Brown Wax | 175 °F (79 °C) Brown Wax | 200 °F (93 °C) Brown Wax | 286 °F (141 °C) Dk. Brown Wax⁷

Accessories

Sprinkler Wrenches (see Figure 1):

- A. Standard Wrench: Part No. 21475M/B
- B. Standard Wrench for Wax Coated Sprinklers: Part No. 10896W/B
- C. Socket Wrench for Recessed Pendent Sprinklers: Part No. 13655W/B (A 1/2" ratchet is required, not available from Viking)
- D. Socket Wrench for Wax Coated Sprinklers: Part No. 13577W/B (A 1/2" ratchet is required, not available from Viking)
- E. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool⁹: Part No. 15915

Sprinkler Cabinet:

- A. Up to 6 sprinklers: Part number 01724A (available since 1971).
- B. 6-12 Sprinklers: Part number 01725A (available since 1971).

Footnotes

- Where a dash (-) is shown in the Finish suffix designation, insert the desired Temperature Rating suffix. See example above.
- Based on NFPA 13, NFPA 13R, and NFPA 13D. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.
- FM Approved corrosion resistant.
- The corrosion resistant and corrosion proofing coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Chart(s). These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings. For ENT coated automatic sprinklers, the waterway is coated.
- Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), response time may be severely retarded.
- Wax melting point is 170 °F (76 °C) for 286 °F (141 °C) temperature rated sprinklers. For more information regarding wax coatings, refer to [Bulletin Form No. F_010201](#).
- Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to [Bulletin F_051808](#).
- The 1/2" NPT Large Orifice Sprinkler is listed and approved for retrofit only when installed in accordance with NFPA 13.
- Approved according to China GB Standard.



TECHNICAL DATA

MICROMATIC® STANDARD RESPONSE UPRIGHT SPRINKLER VK200 (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

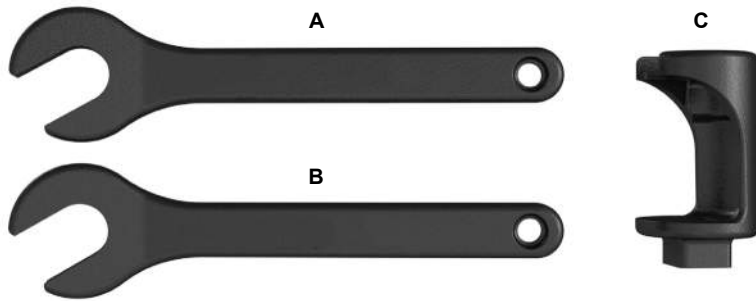


Figure 1: Sprinkler Wrenches

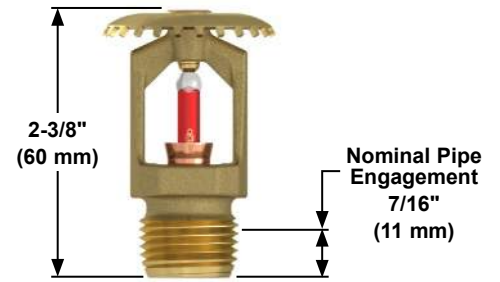


Figure 2: Sprinkler Dimensions

Step 1: Carefully slide the wrench around the deflector.



Step 2: Carefully press the wrench downward and ensure engagement with the sprinkler wrench flats.



Figure 3: Wax Coated Sprinkler Installation



TECHNICAL DATA

MICROMATIC® STANDARD RESPONSE UPRIGHT SPRINKLER VK200 (K8.0)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 1 (UL)

Micromatic® Standard Response Upright Sprinklers
Maximum 175 PSI (12 bar) WWP

Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³ (Refer also to UL Design Criteria.)					
		NPT	BSPT	U.S.	metric ²	Inches	mm	cULus ⁴	VdS	LPCB	CE ⁸	 ¹⁰	China Approval
Standard Orifice													
18263	VK200	3/4"	20 mm	8.0	115.2	2-1/4"	57	A1, B4, C5, D3, E6	A2	A2, B4	F3	F3	--
18266	VK200	--	20 mm	8.0	115.2	2-1/4"	57	A1, B4, C5, D3, E6	A2	A2, B4	F3	F3	--
18268 ⁹	VK200	1/2"	15 mm	8.0	115.2	2-1/4"	57	A1, B4, C5, D3, E6	A2	A2, B4	F3	F3	--
20377 ¹¹	VK200	--	20 mm	8.0	115.2	2-1/4"	57	G3	--	--	--	--	G3
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)													
10220 ⁹	VK200	1/2"	15 mm	8.0	115.2	2-1/4"	57	A1, B4, C5, D3, E6	A2	A2, B4	F3	F3	--
10141	VK200	3/4"	20 mm	8.0	115.2	2-1/4"	57	A1, B4, C5, D3, E6	A2	A2, B4	F3	F3	--
10169	VK200	--	20 mm	8.0	115.2	2-1/4"	57	A1, B4, C5, D3, E6	A2	A2, B4	F3	F3	--
Approved Temperature Ratings A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 286 °F (141 °C) D - 500 °F (260 °C) ⁷ E - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C), and 500 °F (260 °C) ⁷ F - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), and 360 °F (182 °C) G - 155 °F (68 °C), 200 °F (93 °C), and 286 °F (141 °C)								Approved Finishes 1 - Brass, Chrome, White Polyester ^{5,6} and Black Polyester ^{5,6} 2 - Brass, Chrome, White Polyester ⁶ , and Black Polyester ⁶ 3 - Brass and Chrome 4 - Wax-Coated Brass and Wax Over Polyester ⁵ 5 - High Temperature 200 °F (93 °C) Wax Coating (corrosion resistant); maximum ambient temperature allowed at ceiling = 150 °F (65 °C) 6 - ENT ⁵					
Footnotes 1. Base part number is shown. For complete part number, refer to Viking's current price schedule. 2. Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. 3. This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals. 4. Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada. 5. cULus Listed as corrosion resistant. 6. Other colors are available on request with the same Listings and Approvals as the standard colors. 7. Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), the response time of the Ultra-High temperature rated sprinkler may be severely retarded. 8. CE Certified, Standard EN 12259-1, EC-certificate of conformity 0832-CPD-2001, and EC-certificate of constancy of performance 0832-CPR-S0021. 9. The 1/2" NPT Large Orifice Sprinkler is listed and approved for retrofit only when installed in accordance with NFPA 13. 10. MED Certified, Standard EN 12259-1, EC-certificate 0832-MED-1003. 11. Approved according to China GB Standard.													

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1.)

cULus Listing Requirements:

The Viking Micromatic® Standard Response Upright Sprinkler VK200 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light, Ordinary, and Extra Hazard occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

MICROMATIC® STANDARD RESPONSE UPRIGHT SPRINKLER VK200 (K8.0)

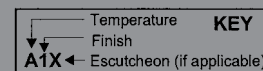
The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 2 (FM)

Micromatic® Standard Response Upright Sprinklers
Maximum 175 PSI (12 bar) WWP



Sprinkler Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals ³ (Refer also to Design Criteria below.)
		NPT	BSPT	U.S.	metric ²	Inches	mm	
Standard Orifice								
18268 ⁷	VK200	1/2"	15 mm	8.0	115.2	2-1/4"	57	A1, B2, C1, D3
18263	VK200	3/4"	20 mm	8.0	115.2	2-1/4"	57	A1, B2, C1, D3
18266	VK200	--	20 mm	8.0	115.2	2-1/4"	57	A1, B2, C1, D3
20377 ⁸	VK200	--	20 mm	8.0	115.2	2-1/4"	57	E4
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)								
10220 ⁷	VK200	1/2"	15 mm	8.0	115.2	2-1/4"	57	A1, B2, C1, D3
10141	VK200	3/4"	20 mm	8.0	115.2	2-1/4"	57	A1, B2, C1, D3
10169	VK200	--	20 mm	8.0	115.2	2-1/4"	57	A1, B2, C1, D3
Approved Temperature Ratings A - 135°F (57 °C), 155°F (68 °C), 175°F (79 °C), 200°F (93 °C), 286 °F (141 °C), and 360 °F (182 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 500 °F (260 °C) ⁵ D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C), 360 °F (182 °C), and 500 °F (260 °C) ⁵ E - 155 °F (68 °C), 200 °F (93 °C), 286 °F (141 °C)				Approved Finishes 1 - Brass, Chrome, White Polyester ⁴ , and Black Polyester ⁴ 2 - Wax-Coated Brass (corrosion resistant) 3 - ENT ⁶ 4 - Brass and Chrome				
Footnotes ¹ Base part number is shown. For complete part number, refer to Viking's current price schedule. ² Metric K-factor shown is for use when pressure is measured in bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. ³ This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals. ⁴ Other colors are available on request with the same Approvals as the standard colors. ⁵ Sprinklers of Ultra-High temperature rating are intended for use inside ovens, dryers, or similar enclosures with normal operating temperatures above 300 °F (149 °C). Where the ambient temperature around the Ultra-High temperature rated sprinkler is significantly reduced below 300 °F (149 °C), the response time of the Ultra-High temperature rated sprinkler may be severely retarded. ⁶ FM approved as corrosion resistant. ⁷ The 1/2" NPT Large Orifice Sprinkler is listed and approved for retrofit only when installed in accordance with NFPA 13. ⁸ Approved according to China GB Standard.								

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2.)

FM Approval Requirements:

The Viking Micromatic® Standard Response Upright Sprinkler VK200 is is FM Approved as standard response **Non-Storage** upright sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to page F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!**General Handling and Storage:**

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

Maximum Torque:

1/2" NPT: 14 ft-lbs. (19.0 N-m)

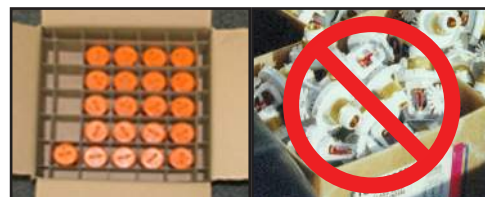
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



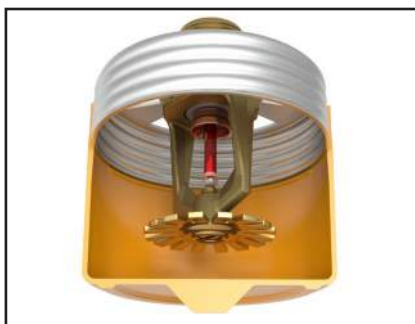
BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com



CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)

Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers **MUST** receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating **MUST** be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at www.vikinggroupinc.com or contact Viking directly.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

The Viking Microfast® Quick Response Pendent Sprinkler **VK302** is a small thermosensitive glass bulb spray sprinkler available with various finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive environments and are Listed and Approved as indicated in the Approval Charts.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV



FM Approved: Class Series 2000



VdS Approved: Certificates G414009, G414010, G4040095, and 4880045



LPCB Approved: Certificate 096e/06



CE: Standard EN 12259-1, Declaration of Performance DOP_Sprinklers_LPCB_5-2-19, DOP_VK302ENT_29-1-20 & DOP_VK302-57C_30-9-20

China Approval: Approved according to China GB standard



MED Certified: Standard EN 12259-1, EC-certificate of conformity 0832-MED-1003

Refer to Approval Chart 1 and Design Criteria cULus Listing requirements, and refer to Approval Chart 2 and Design Criteria for FM Approval requirements that must be followed.

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)
 Rated to 175 psi (12 bar) water working pressure
 Factory tested hydrostatically to 500 psi (34.5 bar)
 Thread size: 1/2" NPT, 15 mm BSP
 Nominal K-Factor: 5.6 U.S. (80.6 metric**)
 Glass-bulb fluid temperature rated to -65 °F (-55 °C)
 Overall Length: 2-1/4" (58 mm)

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass
 Deflector: Phosphor Bronze UNS-C51000 or Copper UNS-C19500
 Bulb: Glass, nominal 3 mm diameter
 Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape
 Screw: Brass UNS-C36000
 Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400
For Polyester Coated Sprinklers: Belleville Spring-Exposed
For ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pipcap - ENT plated.

Ordering Information: (Also refer to the current Viking price list.)

Order Quick Response Pendent Sprinklers by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN

Temperature Suffix: 135 °F (57 °C) = A, 155 °F (68 °C) = B, 175 °F (79 °C) = D, 200 °F (93 °C) = E, 286 °F (141 °C) = G

For example, sprinkler VK302 with a Brass finish and a 155 °F (68 °C) temperature rating = Part No. 12979AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the current Viking price list.)

Sprinkler Wrenches:

A. Standard Wrench: Part No. 21475M/B.

B. Wrench for Recessed Pendent Sprinklers: Part No. 13655W/B** (available since 2006)

C. Optional Protective Sprinkler Cap Remover/Escutcheon Installer Tool*** Part No. 15915 (available since 2010)

**A ½" ratchet is required (not available from Viking).

***Allows use from the floor by attaching a length of 1" diameter CPVC tubing to the tool. Ideal for sprinkler cabinets. Refer to Bulletin F_051808.

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

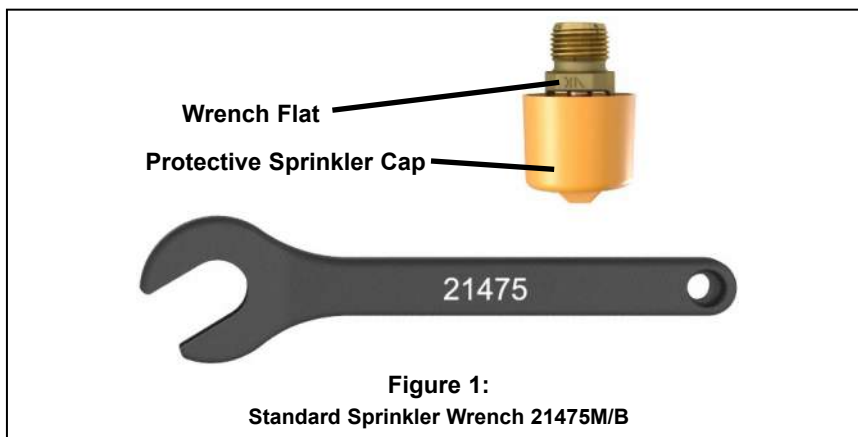
Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.





TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT

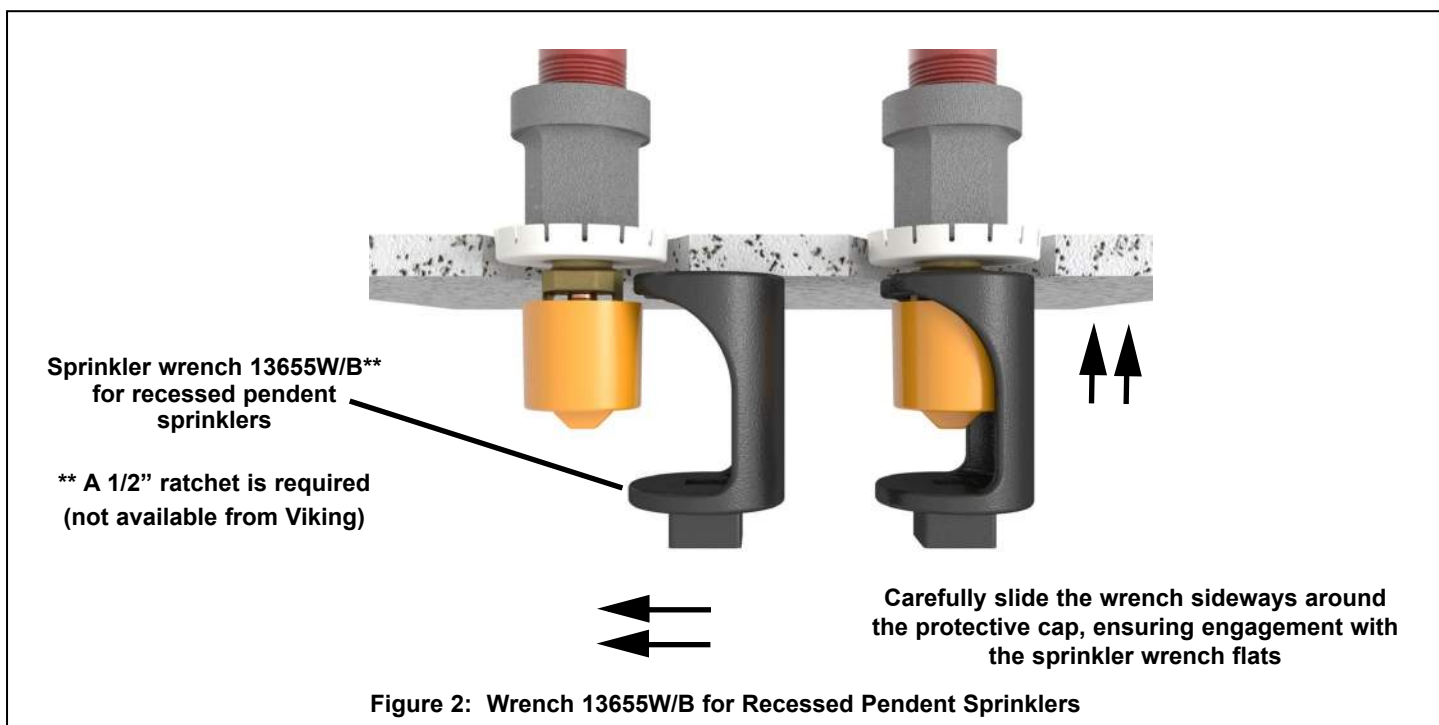
Corrosion-Resistant Coatings³: White Polyester, and Black Polyester. ENT in all temperature ratings except 135 °F (57 °C)

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

³ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester and ENT coatings. For ENT coated automatic sprinklers, the waterway is coated.





TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 1 (UL) The Viking Microfast® Quick Response Pendent Sprinkler VK302 Maximum 175 PSI (12 Bar) WWP														
Temperature Finish A1X ← Escutcheon (if applicable) KEY														
Base Part Number¹	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals³ (Refer also to Design Criteria.)					
			NPT	BSP	U.S.	metric²	Inches	mm	cULus⁴	VdS	LPCB	CE⁷	MED⁸	China Approval
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2, C2X	A1	A1Z, B1Y	D1Z, C1Y, D2, A1Z, B1Y	D1	--
21354⁹	VK302	Pendent	--	15 mm	5.6	80.6	2-1/4	58	D3	--	--	--	--	D3
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)														
06662B	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2, C2X	--	--	--	--	--
18021	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y	A1	A1Z, B1Y	D1Z, C1Y, D2	D1	--
Approved Temperature Ratings A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C) B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) C - 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C) D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)					Approved Finishes 1 - Brass, Chrome, White Polyester⁵,⁶, Black Polyester⁵,⁶ 2 - ENT⁵ 3 - Chrome				Approved Escutcheons X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 Recessed Escutcheon Y - Standard surface-mounted escutcheon or recessed with the Viking Micromatic® Model E-1, E-2, or E-3 Recessed Escutcheon Z - Standard surface-mounted escutcheon					
Footnotes ¹ Base part number shown. For complete part number, refer to Viking's current price schedule. ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. ³ This table shows the listings and approvals available at the time of printing. Other approvals may be in process. ⁴ Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada. ⁵ cULus Listed as corrosion-resistant. ⁶ Other colors are available on request with the same Listings and Approvals as the standard colors. ⁷ CE: Standard EN 12259-1, Declaration of Performance DOP_Sprinklers_LPCB_5-2-19, DOP_VK302ENT_29-1-20 & DOP_VK302-57C_30-9-20. ⁸ MED Certified, Standard EN 12259-1, EC-0832-MED-1003. ⁹ Approved according to China GB Standard.														

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is cULus Listed as indicated in the Approval Chart for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray pendent sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 2 (FM) The Viking Microfast® Quick Response Pendent Sprinkler VK302 Maximum 175 PSI (12 Bar) WWP

	Temperature	KEY
—	Finish	
A1X	Escutcheon (if applicable)	

Base Part Number ¹	SIN	Sprinkler Style	Thread Size		Nominal K-Factor		Overall Length		FM Approvals ³ (Refer also to Design Criteria.)
			NPT	BSP	U.S.	metric ²	Inches	mm	
12979	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2X, C2
21354 ⁶	VK302	Pendent	--	15 mm	5.6	80.6	2-1/4	58	C3

NOTICE - Product Below - Limited Availability (Contact Local Viking Office)

06662B	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y, D2X, C2
18021	VK302	Pendent	1/2"	15 mm	5.6	80.6	2-1/4	58	A1Z, B1Y

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)
 B - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), and 200 °F (93 °C)
 C - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), 286 °F (141 °C)
 D - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C)

Approved Finishes

1 - Brass, Chrome, White Polyester⁴, and Black Polyester⁴
 2 - ENT⁵
 3 - Chrome

Approved Escutcheons

X - Standard surface-mounted escutcheon or the Viking Micromatic® Model E-1 Recessed Escutcheon
 Y - Standard surface-mounted escutcheon or recessed with the Viking Micromatic® Model E-1 or E-2 Recessed Escutcheon
 Z - Standard surface-mounted escutcheon

Footnotes

- ¹ Base part number shown. For complete part number, refer to Viking's current price schedule.
² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.
³ This table shows the FM Approvals available at the time of printing. Other approvals may be in process.
⁴ Other colors are available on request with the same Approvals as the standard colors.
⁵ FM approved as corrosion resistant.
⁶ Approved according to China GB Standard.

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Viking Microfast® Quick Response Pendent Sprinkler VK302 is FM Approved as quick response **Non-storage** pendent sprinklers as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE PENDENT SPRINKLER VK302 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

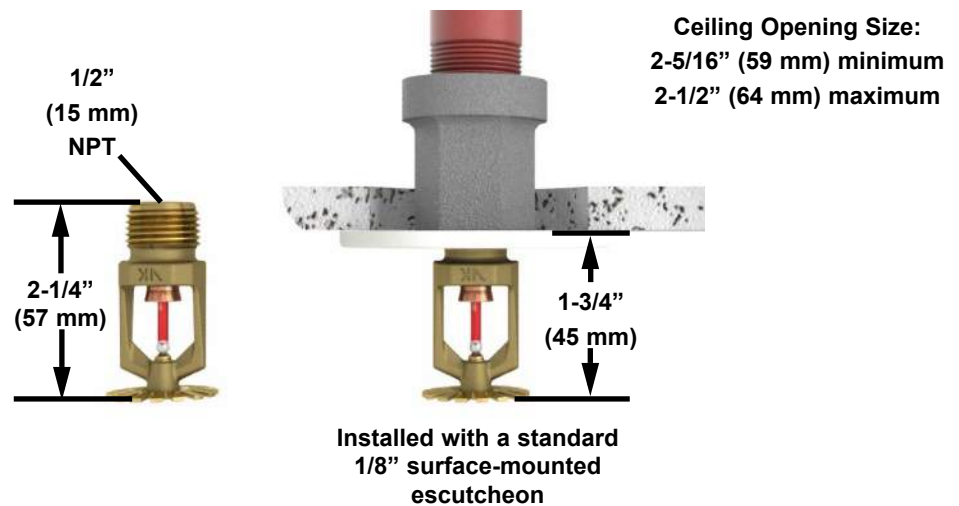


Figure 3: Sprinkler Dimensions with a Standard Escutcheon

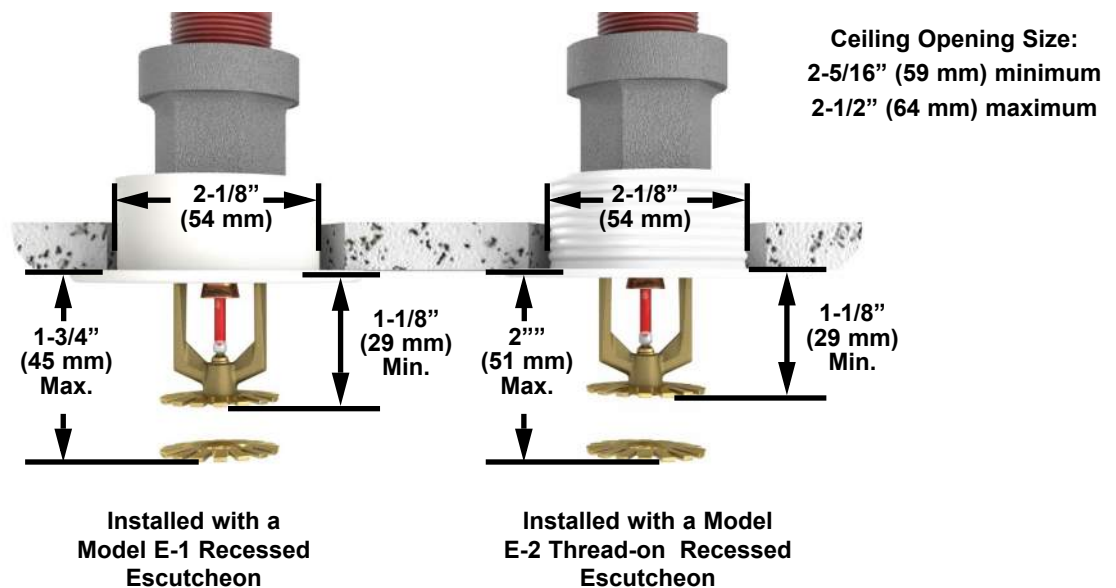


Figure 4: Sprinkler Dimensions with the Model E-1 and E-2 Recessed Escutcheons



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!

General Handling and Storage:

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

Maximum Torque:

1/2" NPT: 14 ft-lbs. (19.0 N-m)

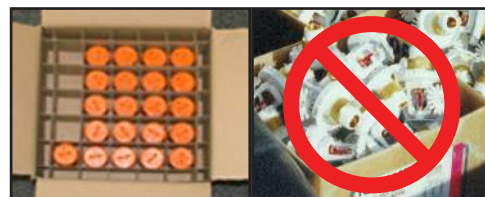
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from an upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



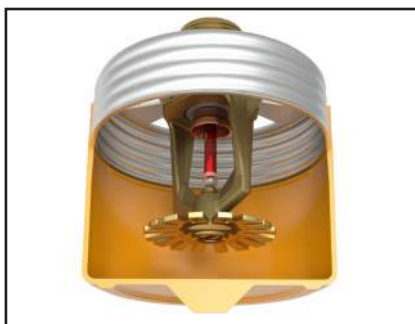
BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com



CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)

Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers **MUST** receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating **MUST** be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at www.vikinggroupinc.com or contact Viking directly.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

The Viking Microfast® Quick Response Upright Sprinkler VK300 is a small, thermosensitive, glass-bulb spray sprinkler available in several different finishes and temperature ratings to meet design requirements. The special Polyester and Electroless Nickel PTFE (ENT) coatings can be used in decorative applications where colors are desired. In addition, these coatings have been investigated for installation in corrosive atmospheres and are listed/approved as corrosion resistant as indicated in the Approval Charts.

2. LISTINGS AND APPROVALS



cULus Listed: Category VNIV

FM Approved: Classes 2002 and 2020

Refer to Approval Charts and Design Criteria for listing and approval requirements that must be followed.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

3. TECHNICAL DATA

Specifications:

Minimum Operating Pressure: 7 psi (0.5 bar)*

Maximum Working Pressure: 175 psi (12 bar) wwp.

Factory tested hydrostatically to 500 psi (34.5 bar)

Testing: U.S.A. Patent No. 4,831,870

Thread size: 1/2" NPT, 15 mm BSP

Nominal K-Factor: 5.6 U.S. (80.6 metric**)

Glass-bulb fluid temperature rated to -65 °F (-55 °C)

Overall Length: 2-3/16" (56 mm)

*cULus Listing, FM Approval, and NFPA 13 installs require a minimum of 7 psi (0.5 bar). The minimum operating pressure for LPCB and CE Approvals ONLY is 5 psi (0.35 bar).

Material Standards:

Frame Casting: Brass UNS-C84400 or QM Brass

Deflector: Brass UNS-C23000 or Copper UNS-C19500

Bulb: Glass, nominal 3 mm diameter

Belleville Spring Sealing Assembly: Nickel Alloy, coated on both sides with PTFE Tape

Screw: Brass UNS-C36000

Pip Cap and Insert Assembly: Copper UNS-C11000 and Stainless Steel UNS-S30400

For Polyester Coated Sprinklers: Belleville Spring-Exposed

For ENT Coated Sprinklers: Belleville Spring-Exposed, Screw and Pipcap - ENT plated

Ordering Information: (Also refer to the current Viking price list.)

Order Viking Microfast® Quick Response Upright Sprinkler VK300 by first adding the appropriate suffix for the sprinkler finish and then the appropriate suffix for the temperature rating to the sprinkler base part number.

Finish Suffix: Brass = A, Chrome = F, White Polyester = M-/W, Black Polyester = M-/B, and ENT = JN

Temperature Suffix (°F/°C): 135°/57° = A, 155°/68° = B, 175°/79° = D, 200°/93° = E, and 286°/141° = G

For example, sprinkler VK300 with a 1/2" NPT thread, Brass finish and a 155 °F/68 °C temperature rating = Part No. 12978AB

Available Finishes And Temperature Ratings: Refer to Table 1.

Accessories: (Also refer to the Viking website.)

Sprinkler Wrench: Standard Wrench: Part No. 21475M/B (available since 2017)

Sprinkler Cabinets:

A. Six-head capacity: Part No. 01724A (available since 1971)

B. Twelve-head capacity: Part No. 01725A (available since 1971)

4. INSTALLATION

Refer to appropriate NFPA Installation Standards.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

5. OPERATION

During fire conditions, the heat-sensitive liquid in the glass bulb expands, causing the glass to shatter, releasing the pip cap and sealing spring assembly. Water flowing through the sprinkler orifice strikes the sprinkler deflector, forming a uniform spray pattern to extinguish or control the fire.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

The Viking Microfast® Quick Response Upright Sprinkler VK300 is available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

TABLE 1: AVAILABLE SPRINKLER TEMPERATURE RATINGS AND FINISHES

Sprinkler Temperature Classification	Sprinkler Nominal Temperature Rating ¹	Maximum Ambient Ceiling Temperature ²	Bulb Color
Ordinary	135 °F (57 °C)	100 °F (38 °C)	Orange
Ordinary	155 °F (68 °C)	100 °F (38 °C)	Red
Intermediate	175 °F (79 °C)	150 °F (65 °C)	Yellow
Intermediate	200 °F (93 °C)	150 °F (65 °C)	Green
High	286 °F (141 °C)	225 °F (107 °C)	Blue

Sprinkler Finishes: Brass, Chrome, White Polyester, Black Polyester, and ENT

Corrosion-Resistant Coatings³: White Polyester, Black Polyester, and Black PTFE. ENT in all temperature ratings except 135 °F (57 °C)

Footnotes

¹ The sprinkler temperature rating is stamped on the deflector.

² Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.

³ The corrosion-resistant coatings have passed the standard corrosion test required by the approving agencies indicated in the Approval Charts. These tests cannot and do not represent all possible corrosive environments. Prior to installation, verify through the end-user that the coatings are compatible with or suitable for the proposed environment. For automatic sprinklers, the coatings indicated are applied to the exposed exterior surfaces only. Note that the spring is exposed on sprinklers with Polyester, ENT, and PTFE coatings. For ENT coated automatic sprinklers, the waterway is coated.

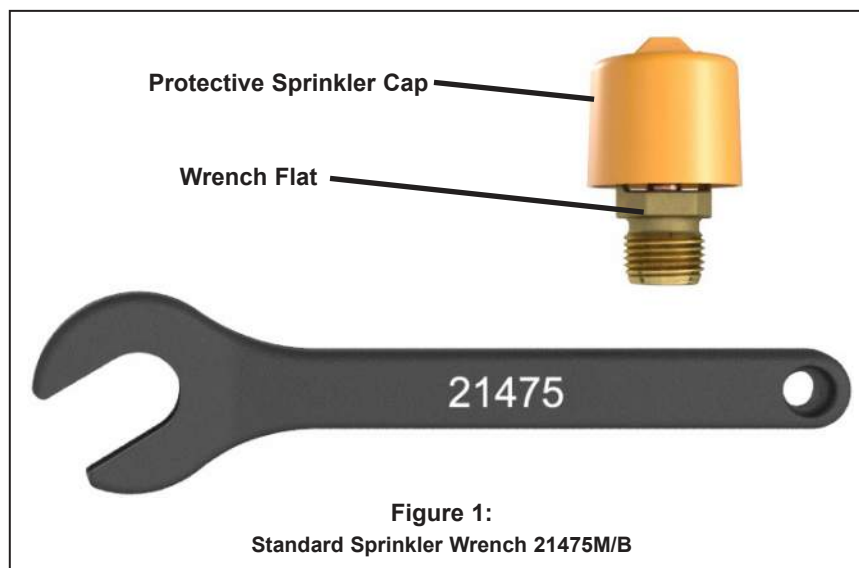


Figure 1:
Standard Sprinkler Wrench 21475M/B



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 1 (UL)

Microfast® Quick Response
 Upright Sprinkler VK300
 Maximum 175 PSI (12 bar) WWP

	Temperature	KEY
↓	Finish	
A1X ←	Escutcheon (if applicable)	

Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		Listings and Approvals ³				
		NPT	BSP	U.S.	metric ²	Inches	mm	cULus	VdS	LPCB	NYC ⁸	CE
12978	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2	--	--	See footnote 7.	--

NOTICE - Product Below - Limited Availability (Contact Local Viking Office)

06661B	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2	--	--	See footnote 7.	--
--------	-------	------	-------	-----	------	--------	----	--------	----	----	-----------------	----

Approved Temperature Ratings

A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)

B - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141 °C)

Approved Finishes

1 - Brass, Chrome, White Polyester^{5,6}, and Black Polyester^{5,6}
 2 - ENT⁶

Footnotes

¹ Base part number is shown. For complete part number, refer to Viking's current price schedule.

² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0.

³ This table shows the listings and approvals available at the time of printing. Check with the manufacturer for any additional approvals.

⁴ Listed by Underwriters Laboratories Inc. for use in the U.S. and Canada

⁵ Other colors are available on request with the same Listings and Approvals as the standard colors.

⁶ cULus Listed as corrosion resistant.

⁷ Meets New York City requirements, effective July 1, 2008

⁸ Accepted for use, City of New York Board of Standards and Appeals, Calendar Number 219-76-SA and City of New York Department of Buildings, MEA 89-92-E, Vol. 16.

DESIGN CRITERIA - UL

(Also refer to Approval Chart 1 above.)

cULus Listing Requirements:

The Viking Microfast® Quick Response Upright Sprinkler VK300 is cULus Listed as indicated in Approval Chart 1 for installation in accordance with the latest edition of NFPA 13 for standard spray sprinklers.

- Designed for use in Light and Ordinary Hazard occupancies.
- The sprinkler installation rules contained in NFPA 13 for standard spray upright sprinklers must be followed.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



TECHNICAL DATA

MICROFAST® QUICK RESPONSE UPRIGHT SPRINKLER VK300 (K5.6)

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

Approval Chart 2 (FM)

Microfast® Quick Response
Upright Sprinkler VK300
Maximum 175 PSI (12 bar) WWP

	Temperature	KEY
↓	Finish	
A1X	Escutcheon (if applicable)	

Base Part Number ¹	SIN	Thread Size		Nominal K-Factor		Overall Length		FM Approvals ³ (Refer also to Design Criteria below.)
		NPT	BSP	U.S.	metric ²	Inches	mm	
12978	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2
NOTICE - Product Below - Limited Availability (Contact Local Viking Office)								
06661B	VK300	1/2"	15 mm	5.6	80.6	2-3/16	56	A1, B2
Approved Temperature Ratings A - 135 °F (57 °C), 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C) B - 155 °F (68 °C), 175 °F (79 °C), 200 °F (93 °C), and 286 °F (141°C)							Approved Finishes 1 - Brass, Chrome, White Polyester ⁵ , and Black Polyester ⁵ 2 - ENT ⁶	
Footnotes ¹ Base part number is shown. For complete part number, refer to Viking's current price schedule. ² Metric K-factor measurement shown is when pressure is measured in Bar. When pressure is measured in kPa, divide the metric K-factor shown by 10.0. ³ This table shows the FM Approvals available at the time of printing. Check with the manufacturer for any additional approvals. ⁵ Other colors are available on request with the same Approvals as the standard colors. ⁶ FM approved as corrosion resistant.								

DESIGN CRITERIA - FM

(Also refer to Approval Chart 2 above.)

FM Approval Requirements:

The Microfast® Quick Response Upright Sprinkler VK300 is FM Approved as a quick response **Non-Storage** upright sprinkler as indicated in the FM Approval Guide. For specific application and installation requirements, reference the latest applicable FM Loss Prevention Data Sheets (including Data Sheet 2-0). FM Global Loss Prevention Data Sheets contain guidelines relating to, but not limited to: minimum water supply requirements, hydraulic design, ceiling slope and obstructions, minimum and maximum allowable spacing, and deflector distance below the ceiling.

NOTE: The FM installation guidelines may differ from cULus and/or NFPA criteria.

IMPORTANT: Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to Form No. F_080614 for general care, installation, and maintenance information. Viking sprinklers are to be installed in accordance with the latest edition of Viking technical data, the appropriate standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards, whenever applicable.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!**General Handling and Storage:**

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

Maximum Torque:

1/2" NPT: 14 ft-lbs. (19.0 N-m)

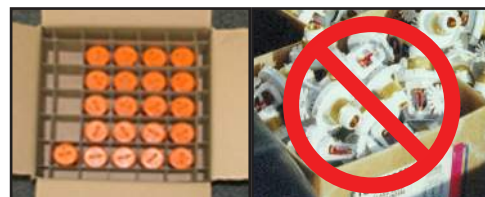
3/4" NPT: 20 ft-lbs. (27.1 N-m)

1" NPT: 30 ft-lbs. (40.7 N-m)



CORRECT
(Original container used)

INCORRECT
(Placed loose in box)



CORRECT
(Protected with caps)

INCORRECT
(Protective caps not used)



CORRECT
(Piping is in place at the ceiling)

INCORRECT
(Sprinkler at floor level)



CORRECT
(Special installation wrenches)

INCORRECT
(Designated wrench not used)



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

! WARNING

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from and upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



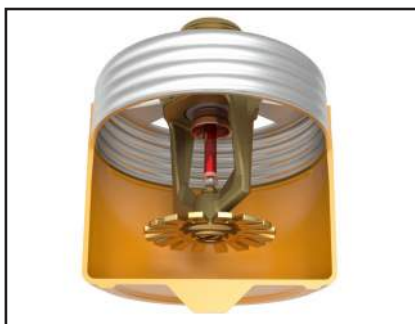
BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com



CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)

Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.

**BULLETIN****REGULATORY AND HEALTH
WARNINGS**

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Regulatory and Health Warnings applying to materials used in the manufacture and construction of fire protection products are provided herein as they relate to legally mandated jurisdictional regions.

⚠ WARNING**STATE OF CALIFORNIA, USA**

Installing or servicing fire protection products such as sprinklers, valves, piping etc. can expose you to chemicals including, but not limited to, lead, nickel, butadiene, titanium dioxide, chromium, carbon black, and acrylonitrile which are known to the State of California to cause cancer or birth defects or other reproductive harm.

For more information, go to www.P65Warnings.ca.gov

2. WARRANTY TERMS AND CONDITIONS

For details of warranty, refer to Viking's current list price schedule at www.vikinggroupinc.com or contact Viking directly.

VALVES

FireLock™ High Pressure Butterfly Valve

Series 765 with Weatherproof Actuator – Supervised Open



1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 12"/DN50 – DN300

Pipe Material

- Carbon Steel, Schedule 10, Schedule 40. For use with alternative material please contact Victaulic

Maximum Working Pressure

- Up to 365 psi/2517 kPa/25 bar

Application

- High pressure butterfly valve with an approved weatherproof actuator housing for indoor and outdoor use
- Designed for fire protection services only
- Designed to be supervised open
- Exclusively for use with pipe and Victaulic products which feature ends formed with the Victaulic Original Groove System (OGS) groove profile (see section 7.0 for Reference Materials)

Available End Connection

- Victaulic Original Groove System (OGS) standard groove

2.0 CERTIFICATION/LISTINGS



LPS 1185: Issue 3.1
Cert/LPCB Ref. 104/02
846a/02



ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.



2.0 CERTIFICATION/LISTINGS (CONTINUED)

Size		Approval/Listing Service Pressures				
Nominal inches DN	Actual Outside Diameter inches mm	Series 765 Butterfly Valve				
		cULus psi kPa	FM psi kPa	VdS psi kPa	LPCB psi kPa	CCC psi kPa
2 DN50	2.375 60.3	365 2517	365 2517	365 2517	365 2517	363 2500
2½	2.875 73.0	365 2517	365 2517	–	365 2517	–
DN65	3.000 76.1	365 2517	365 2517	365 2517	365 2517	363 2500
3 DN80	3.500 88.9	365 2517	365 2517	365 2517	365 2517	363 2500
	4.250 108.0	365 2517	365 2517	–	365 2517	–
4 DN100	4.500 114.3	365 2517	365 2517	365 2517	365 2517	363 2500
	5.250 133.0	365 2517	365 2517	–	365 2517	–
DN125	5.500 139.7	365 2517	365 2517	365 2517	365 2517	–
5	5.563 141.3	365 2517	365 2517	–	365 2517	–
	6.250 159.0	365 2517	365 2517	–	365 2517	–
	6.500 165.1	365 2517	365 2517	–	365 2517	363 2500
6 DN150	6.625 168.3	365 2517	365 2517	365 2517	365 2517	–
8 DN200	8.625 219.1	365 2517	365 2517	365 2517	365 2517	363 2500
10 DN250	10.750 273.0	365 2517	300 2068	–	365 2517	363 2500
12 DN300	12.750 323.9	365 2517	300 2068	–	365 2517	–

3.0 SPECIFICATIONS – MATERIAL

Body: Ductile iron conforming to ASTM A536, Grade 65-45-12.

End Face, 2 – 6"/DN50 – DN150: Ductile iron conforming to ASTM A536, Grade 65-45-12

Seal Retainer, 8 – 12"/DN200 – DN300: Ductile iron conforming to ASTM A536, Grade 65-45-12

Coating: Black alkyd enamel

Disc: Ductile iron conforming to ASTM A536, Grade 65-45-12, with electroless nickel coating conforming to ASTM B733

Seat: EPDM

Stem Seal Cartridge: Brass

Bearings: Stainless steel with TFE lining

Stem Seals: Nitrile

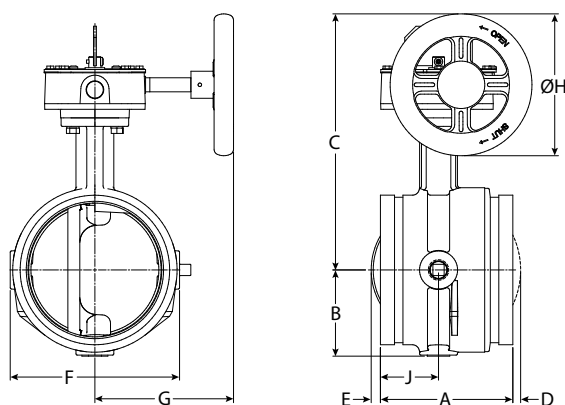
Stem Retaining Ring: Carbon steel

Actuator:

- **2 – 8"/DN50 – DN200:** Bronze traveling nut on a steel lead screw, in a ductile iron housing
- **10 – 12"/DN250 – DN300:** Steel worm and cast iron quadrant gear, in a cast iron housing

4.0 DIMENSIONS

Series 765



Size		Dimensions									Weight
Nominal	Outside Diameter	End to End									Approx. Each
inches DN	inches mm	A inches mm	B inches mm	C inches mm	D inches mm	E inches mm	F inches mm	G inches mm	H inches mm	J inches mm	lb kg
2	2.375	4.25	2.28	6.41	—	—	4.00	4.22	4.50	2.12	8.2
DN50	60.3	108	58	163	—	—	102	107	114	54	3.7
2½	2.875	3.77	2.28	7.54	—	—	4.00	4.22	4.50	1.77	9.7
	73.0	96	58	192	—	—	102	107	114	45	4.4
DN65	3.000	3.77	2.28	7.54	—	—	4.00	4.22	4.50	1.77	9.7
	76.1	96	58	192	—	—	102	107	114	45	4.4
3	3.500	3.77	2.53	7.79	—	—	4.50	4.22	4.50	1.77	10.7
DN80	88.9	96	64	198	—	—	114	107	114	45	4.9
	4.250	4.63	2.88	8.81	—	—	5.50	4.22	4.50	2.20	14.0
	108.0	118	73	224	—	—	140	107	114	56	6.4
4	4.500	4.63	2.88	8.81	—	—	5.50	4.22	4.50	2.20	14.0
DN100	114.3	118	73	224	—	—	140	107	114	56	6.4
	5.250	5.88	3.35	10.88	—	—	6.56	6.19	6.30	2.58	25.4
	133.0	149	85	276	—	—	167	157	160	66	11.5
DN125	5.500	5.88	3.35	10.88	—	—	6.56	6.19	6.30	2.58	25.4
	139.7	149	85	276	—	—	167	157	160	66	11.5
5	5.563	5.88	3.35	10.88	—	—	6.56	6.19	6.30	2.58	25.4
	141.3	149	85	276	—	—	167	157	160	66	11.5
	6.250	5.88	3.84	11.38	—	0.41	7.52	6.19	6.30	2.58	28.7
	159.0	149	98	289	—	10	191	157	160	66	13.0
	6.500	5.88	3.84	11.38	—	0.41	7.52	6.19	6.30	2.58	28.7
	165.1	149	98	289	—	10	191	157	160	66	13.0
6	6.625	5.88	3.84	11.38	—	0.41	7.52	6.19	6.30	2.58	28.7
DN150	168.3	149	98	289	—	10	191	157	160	66	13.0
8	8.625	5.33	5.07	12.63	0.80	1.47	10.00	6.19	6.30	2.33	43.0
DN200	219.1	135	129	321	20	37	254	157	160	59	19.5
10	10.750	6.40	6.37	15.64	1.41	1.81	12.25	8.10	9.00	—	80.6
DN250	273.0	163	162	397	36	46	311	206	229	—	36.5
12	12.750	6.50	7.36	16.64	2.30	2.80	14.25	8.10	9.00	—	94.6
DN300	323.9	165	187	423	58	71	362	206	229	—	42.9

NOTE

- Optional ½"/15mm tap available for all sizes. Contact Victaulic for details.

5.0 PERFORMANCE

Series 765

The chart expresses the frictional resistance of Victaulic FireLock™ Series 765 High Pressure Butterfly Valve in equivalent feet/meters of straight pipe.

Size		Equivalent Feet/M of Pipe
Nominal inches mm	Actual Outside Diameter inches mm	
2 DN50	2.375 60.3	6 1.8
2 ½	2.875 73.0	6 1.8
DN65	3.000 76.1	6 1.8
3 DN80	3.500 88.9	7 2.1
	4.250 108.0	8 2.4
4 DN100	4.500 114.3	8 2.4
	5.250 133.0	12 3.7
DN125	5.500 139.7	12 3.7
5	5.563 141.3	12 3.7
	6.250 159.0	14 4.3
	6.500 165.1	14 4.2
6 DN150	6.625 168.3	14 4.2
8 DN200	8.625 219.1	16 4.9
10 DN250	10.750 273.0	18 5.5
12 DN300	12.750 323.9	19 5.8

5.1 PERFORMANCE

Series 765

C_v values for flow of water at +60°F/+16°C with a fully open valve are shown in the table below. For additional details, contact Victaulic.

Formulas for C_v Values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

Where:

Q = Flow (GPM)

ΔP = Pressure Drop (psi)

C_v = Flow Coefficient

Formulas for K_v Values:

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

Where:

Q = Flow (m³/hr)

ΔP = Pressure Drop (Bar)

K_v = Flow Coefficient

Size		Flow Coefficient
Nominal inches mm	Actual Outside Diameter inches mm	Full Open C_v K_v
2	2.375	170
DN50	60.3	147
2½	2.875	260
	73.0	225
DN65	3.000	260
	76.1	225
3	3.500	440
DN80	88.9	380
	4.250	820
	108.0	710
4	4.500	820
DN100	114.3	710
	5.250	1200
	133.0	1040
DN125	5.500	1200
	139.7	1040
5	5.563	1200
	141.3	1040
	6.250	1800
	159.0	1560
	6.500	1800
	165.1	1560
6	6.625	1800
DN150	168.3	1560
8	8.625	3400
DN200	219.1	2940
10	10.750	5800
DN250	273.0	5020
12	12.750	9000
DN300	323.9	7790

6.0 NOTIFICATIONS

WARNING



- Read and understand all instructions before attempting to install any Victaulic products.
- Always verify that the piping system has been completely depressurized and drained immediately prior to installation, removal, adjustment, or maintenance of any Victaulic products.
- Wear safety glasses, hardhat, and foot protection.

Failure to follow these instructions could result in death or serious personal injury and property damage.

- These products shall be used only in fire protection systems that are designed and installed in accordance with current, applicable National Fire Protection Association (NFPA 13, 13D, 13R, etc.) standards, or equivalent standards, and in accordance with applicable building and fire codes. These standards and codes contain important information regarding protection of systems from freezing temperatures, corrosion, mechanical damage, etc.
- The installer shall understand the use of this product and why it was specified for the particular application.
- The installer shall understand common industry safety standards and potential consequences of improper product installation.
- It is the system designer's responsibility to verify suitability of materials for use with the intended fluid media within the piping system and external environment.
- The material specifier shall evaluate the effect of chemical composition, pH level, operating temperature, chloride level, oxygen level, and flow rate on materials to confirm system life will be acceptable for the intended service.

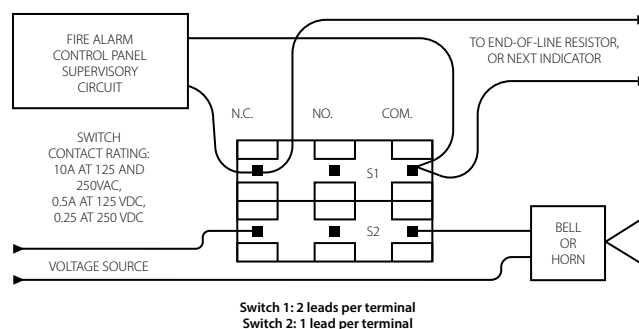
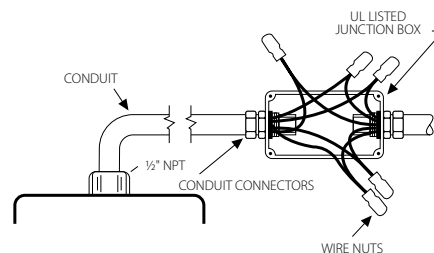
Failure to follow installation requirements and local and national codes and standards could compromise system integrity or cause system failure, resulting in death or serious personal injury and property damage.

7.0 REFERENCE MATERIALS

Switch and Wiring

- The supervisory switch contains two, single pole, double throw, pre-wired switches.
- Switches are rated:
10 amps @ 125 or 250 VAC/60 Hz
0.50 amps @ 125 VDC
0.25 amps @ 250 VDC
- Switches supervise the valve in the “open” position.
- One switch has two #18 MTW wires per terminal, which permit complete supervision of leads (refer to diagrams and notes below). The second switch has one #18 MTW wire per terminal. This double circuit provides flexibility to operate two electrical devices at separate locations, such as an indicating light and an audible alarm, in the area that the valve is installed.
- A #14 MTW ground lead (green) is provided.
Switch #1 = S1 For connection to the supervisory circuit of a UL Listed alarm control panel
Switch #2 = S2 Auxiliary switch that may be connected to auxiliary devices, per the authority having jurisdiction

S1	{	Normally Closed: (2) Blue
		Common: (2) Yellow
S2	{	Normally Closed: Blue with Orange Stripe
		Normally Open: Brown with Orange Stripe
		Common: Yellow with Orange Stripe



NOTES

- The above diagram shows a connection between the common terminal (yellow – S1 and yellow-with-orange stripe – S2) and the normally closed terminal (blue – S1 and blue-with-orange stripe – S2). In this example, the indicator light and alarm will stay on until the valve is fully open. When the valve is fully open, the indicator light and alarm will go out. Cap off any unused wires (e.g. brown with orange stripe).
- Only S1 (two leads per terminal) may be connected to the fire alarm control panel.
- The connection of the alarm switch wiring shall be in accordance with NFPA 72 and the auxiliary switch per NFPA 70 (NEC).

7.1 REFERENCE MATERIALS

[29.01: Victaulic Terms and Conditions of Sale](#)

[I-100: Victaulic Field Installation Handbook](#)

[10.01: Regulatory Approval Reference Guide](#)

[10.81: FireLock™ Butterfly Valve Series 705 with Weatherproof Actuator](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, and the applicable building codes and related regulations as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be constructed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.



TECHNICAL DATA

2-1/2" & 3" (DN65 & DN80) MODEL F DELUGE VALVE VERTICAL CONVENTIONAL TRIM CHART

Maximum 250 PSI Water Working Pressure

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

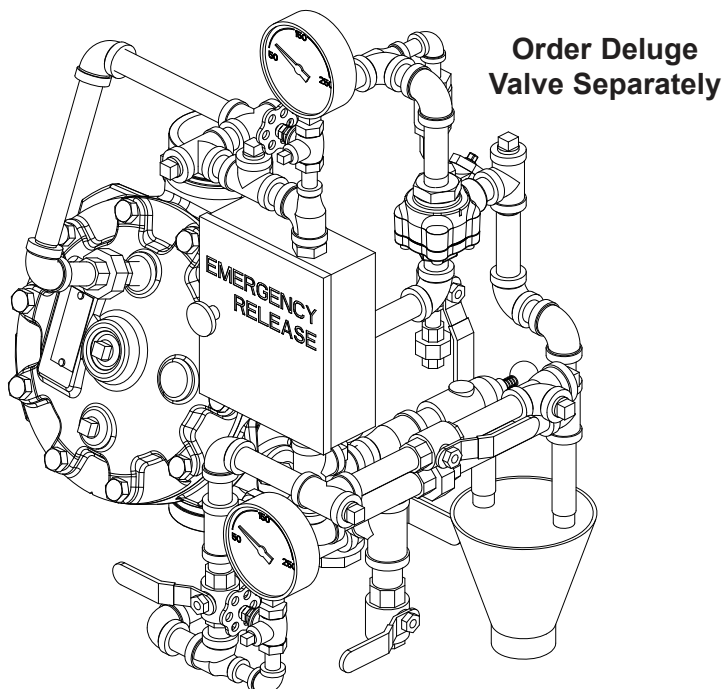


Figure 1



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

This Trim Chart is for use with the following Viking Trim Sets

Valve Size	Galvanized Trim Part No.	Brass Trim Part No.
2-1/2" (DN65) & 3" (DN80)	14636-1	14636-2

This Trim is for use with the following Release Module Trim Kits

Release Type	Galvanized*	Brass**
Pneumatic	10809	10811
Electric	10830	10832
Electric/ Pneumatic	12661-1	12661-2
Pneumatic/ Pneumatic	12662-1	12662-2

* Standard Trim sets for Model F Deluge Valves consist of galvanized nipples and fittings.

**Refer to Technical Data describing the Halar® Coated Deluge Valve and the *Viking Foam Systems Engineering and Design Data* book for applications where brass trim is recommended.

Note: Nipple lengths for brass trim may vary from those shown on this Trim Chart.

Notes: For use with Trim Chart on Page 239a

Note: When viewing this data page online, **blue text** represents hyperlinks and will open the appropriate data page when clicked.

General Notes:

- Valve must be trimmed as shown. Any deviation from trim size or arrangement may affect the proper operation of the valve.
- All pipe and fittings shall be galvanized or brass except when other materials are specified in the Technical Data for the Halar® Coated Deluge Valve.
- Gauges are brass as furnished with trim.
- When Model F Deluge Valves are used on pre-mixed Foam Systems, trim piping must be of copper pipe with brass fittings unless otherwise specified in the Technical Data for the Halar® Coated Deluge Valve or the *Viking Foam Systems Engineering and Design Data* book.
- Dimensions in parentheses are millimeter and may be approximations.

Note 1: 1/2" (15 mm) NPT plugged outlet provided for connecting certain optional components and associated trim.

Note 2: Release System connection. Viking Deluge and Flow Control Valves are compatible with hydraulic, pneumatic, and electric release systems. A Pneumatic Actuator is required on all Viking Deluge Valves and Flow Control Valves equipped with Pneumatic Release Systems.

Note 3: Alarm Connections: Connect alarm line piping to 3/4" (20 mm) NPT outlet. When using a Water Motor Alarm, a strainer is required. 1/2" (15 mm) NPT outlet is for electric Alarm Pressure Switch.

Note 4: Optional non-interruptible connection for Alarm Pressure Switch to activate electric alarm panel. Note: After the Deluge Valve trips, this location cannot be shut off. Alarms may operate until the outlet chamber of the deluge valve is de-pressurized below the set point of the Alarm Pressure Switch.

Note 5: Viking Drain Check Valve is manufactured with a 0.067" (1.7 mm) orifice to allow alarm line to drain. DO NOT substitute. Check label for proper orientation.

Note 6: Inlet side of PORV is connected to the top chamber of the deluge valve. Inlet of PORV should be facing up. Outlet goes to open drain.

Replaces Form No. F_121703 Rev April 15, 2011

(Added P65 Warning.)



TECHNICAL DATA

2-1/2" & 3" (DN65 & DN80) MODEL F DELUGE VALVE VERTICAL CONVENTIONAL TRIM CHART

Maximum 250 PSI Water Working Pressure

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Refer to page 239a
for General Notes and
Notes 1 through 6.

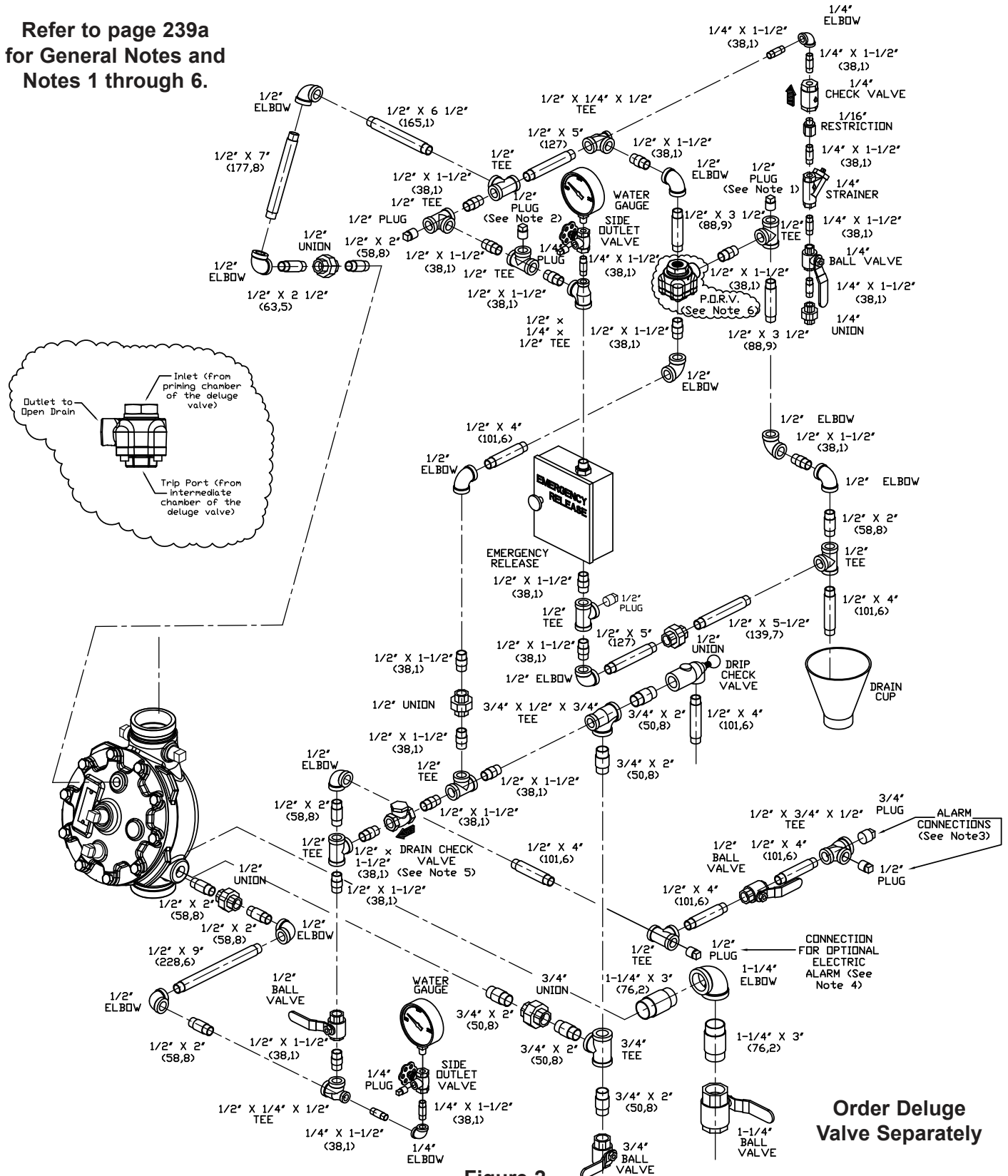


Figure 2

Order Deluge
Valve Separately



TECHNICAL DATA

2-1/2" & 3" (DN65 & DN80) MODEL F DELUGE VALVE VERTICAL CONVENTIONAL TRIM CHART

Maximum 250 PSI Water Working Pressure

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

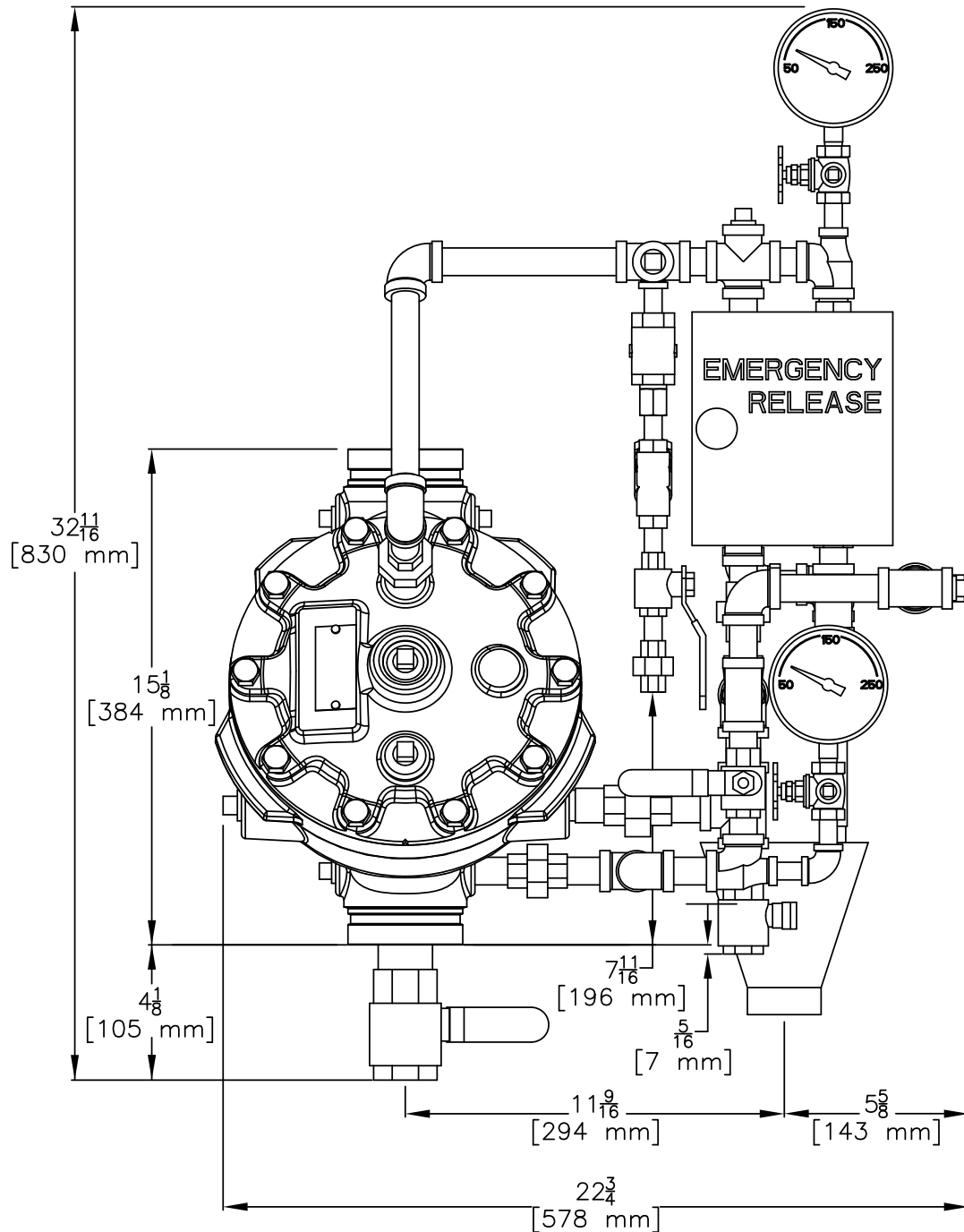


Figure 3a: Installation Dimensions



TECHNICAL DATA

**2-1/2" & 3" (DN65 & DN80) MODEL
F DELUGE VALVE VERTICAL
CONVENTIONAL TRIM CHART**
Maximum 250 PSI Water Working Pressure

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

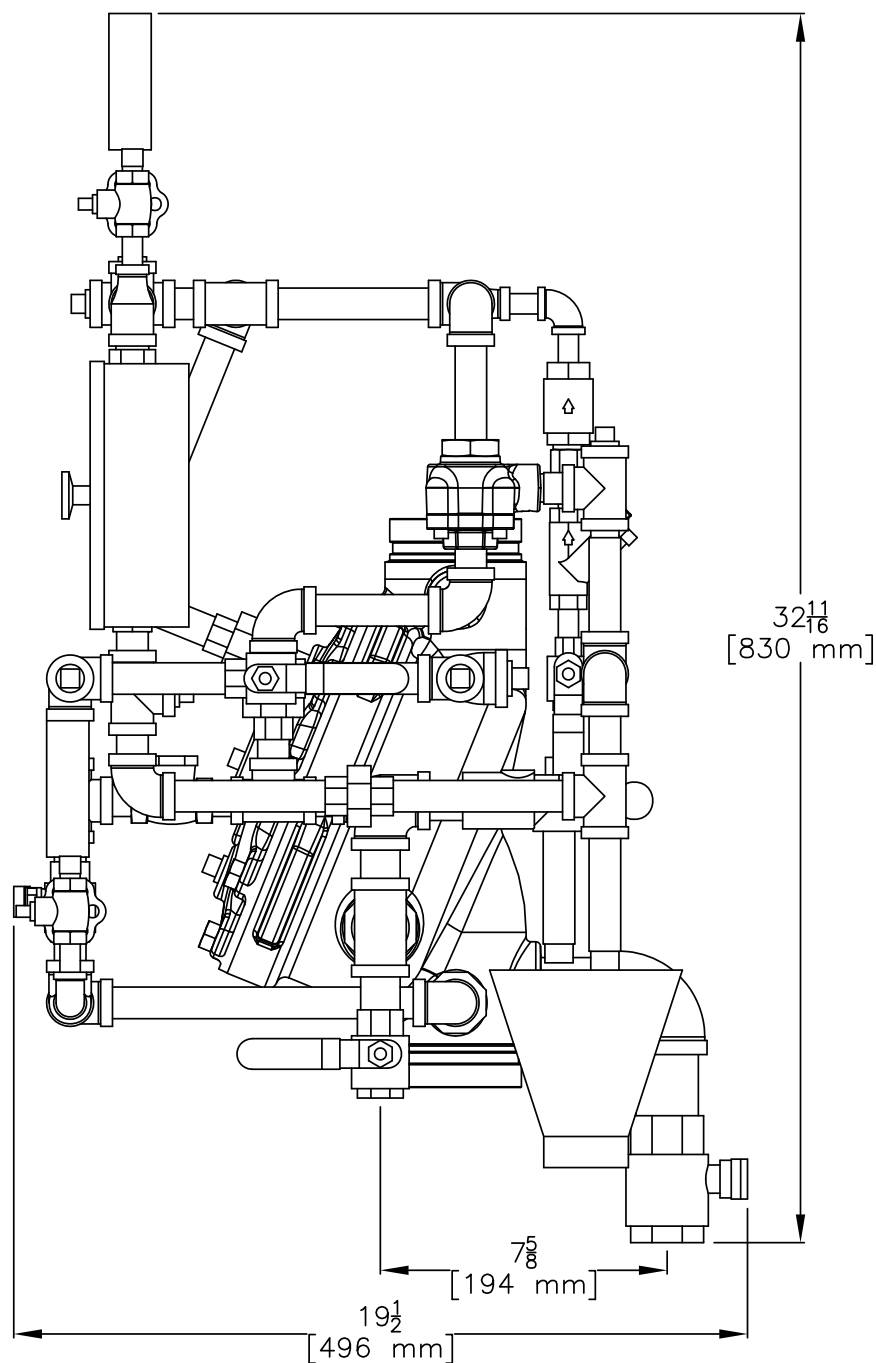


Figure 3b: Installation Dimensions



TECHNICAL DATA

4" (DN100) MODEL F-1 STRAIGHT THROUGH DELUGE VALVE VERTICAL CONVENTIONAL TRIM CHART Maximum 250 PSI WWP

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

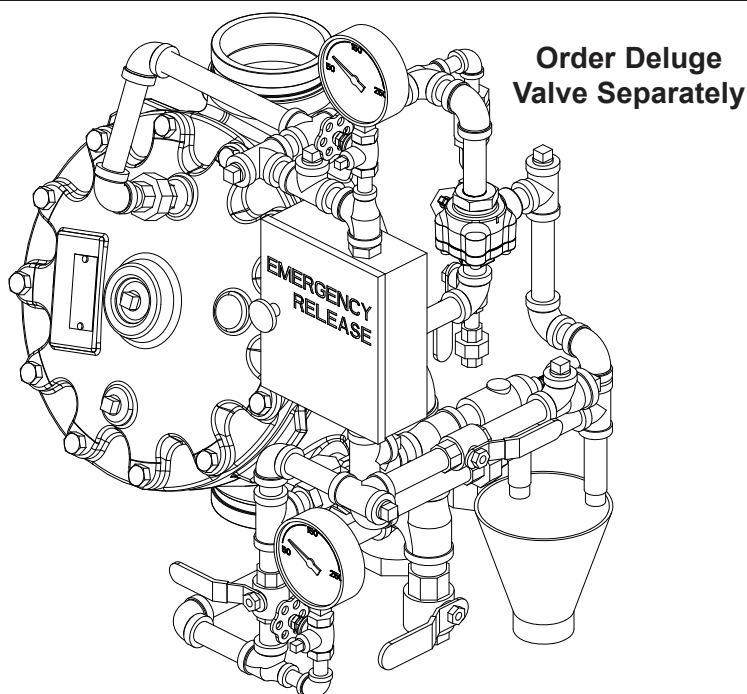


Figure 1



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

This Trim Chart is for use with
the following Viking Trim Sets

Valve Size	Galvanized Trim Part No.	Brass Trim Part No.
4" (DN80)	14639-1	14639-2

This Trim is for use with the following
Release Module Trim Kits

Release Type	Galvanized*	Brass**
Pneumatic	10809	10811
Electric	10830	10832
Electric/ Pneumatic	12661-1	12661-2
Pneumatic/ Pneumatic	12662-1	12662-2

* Standard Trim sets for Model F Deluge Valves consist of galvanized nipples and fittings.

**Refer to Technical Data describing the Halar® Coated Deluge Valve and the *Viking Foam Systems Engineering Design Data* book for applications where brass trim is recommended.

Note: Nipple lengths for brass trim may vary from those shown on this Trim Chart.

Notes: For use with Trim Chart on Page 240f

Note: When viewing this data page online, [blue text](#) represents hyperlinks and will open the appropriate data page when clicked.

General Notes:

- Valve must be trimmed as shown. Any deviation from trim size or arrangement may affect the proper operation of the valve.
- All pipe 3/4" (20 mm) and smaller shall be galvanized steel except when other materials are specified in the Technical Data for the Halar® Coated Deluge Valve or when other materials are specified in the *Viking Foam Systems Engineering and Design Data* book.
- When Model F Deluge Valves are used on pre-mixed Foam Systems, trim piping must be of copper pipe with brass fittings unless otherwise specified in the Technical Data for the Halar® Coated Deluge Valve or the *Viking Foam Systems Engineering and Design Data* book.
- Dimensions in parentheses are millimeter and may be approximations.

Note 1: 1/2" (15 mm) NPT plugged outlet provided for connecting certain optional components and associated trim.

Note 2: Release System connection. Viking Deluge and Flow Control Valves are compatible with hydraulic, pneumatic, and electric release systems. A Pneumatic Actuator is required on all Viking Deluge Valves and Flow Control Valves equipped with Pneumatic Release Systems.

Note 3: Alarm Connections: Connect alarm line piping to 3/4" (20 mm) NPT outlet. When using a Water Motor Alarm, a strainer is required. 1/2" (15 mm) NPT outlet is for electric Alarm Pressure Switch.

Note 4: Optional non-interruptible connection for Alarm Pressure Switch to activate electric alarm panel. Note: After the Deluge Valve trips, this location cannot be shut off. Alarms may operate until the outlet chamber of the deluge valve is de-pressurized below the set point of the Alarm Pressure Switch.

Note 5: Viking Drain Check Valve is manufactured with a 0.067" (1.7 mm) orifice to allow alarm line to drain. Do not substitute. Check label for proper orientation.

Note 6: Inlet side of PORV is connected to the top chamber of the deluge valve. Inlet of PORV should be facing up. Outlet goes to open drain.



TECHNICAL DATA

**4" (DN100) MODEL F-1 STRAIGHT
THROUGH DELUGE VALVE
VERTICAL CONVENTIONAL TRIM
CHART** Maximum 250 PSI WWP

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

**Refer to page 240e
for General Notes and
Notes 1 through 6.**

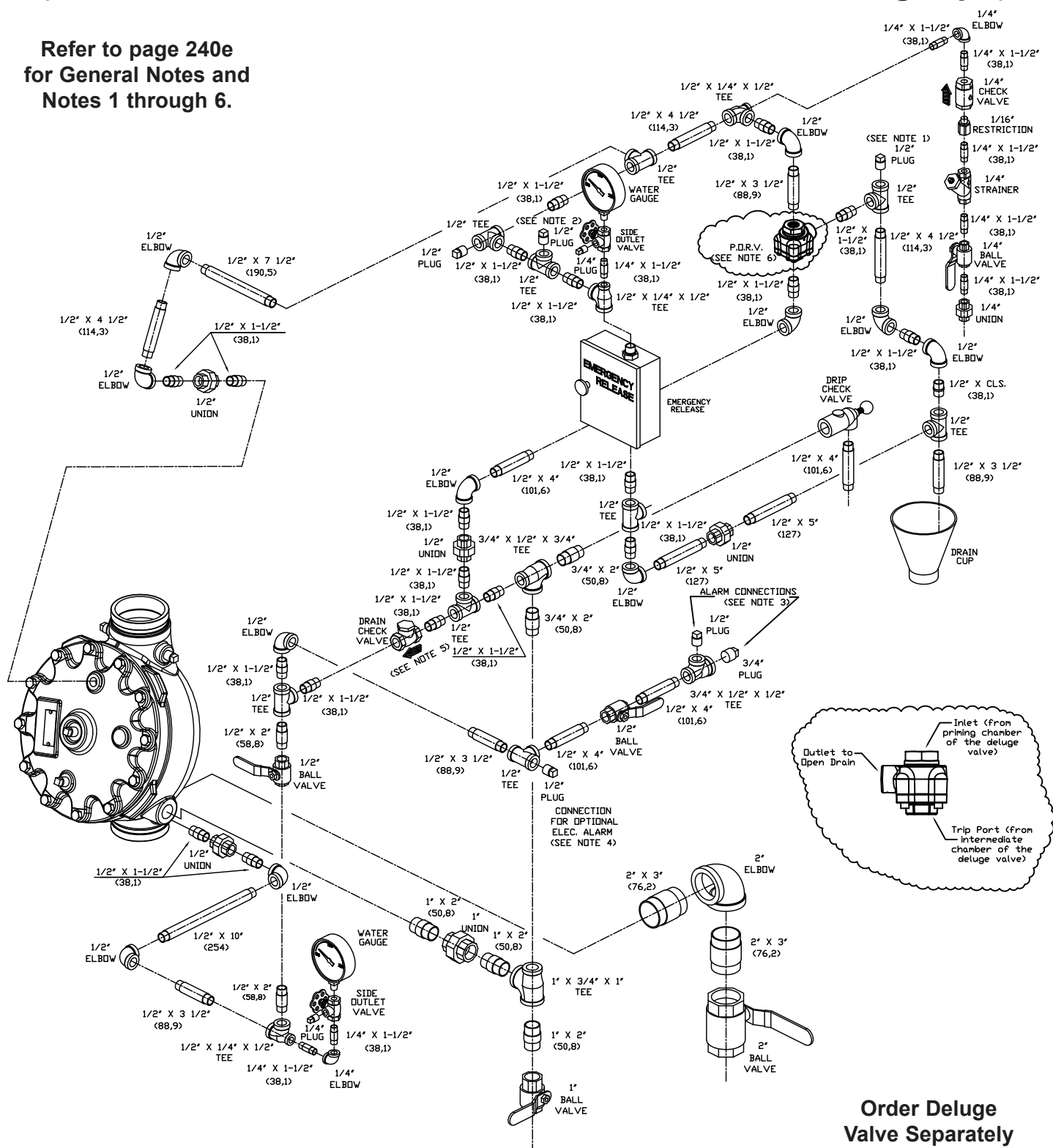


Figure 2

4" (DN100) MODEL F-1 STRAIGHT THROUGH DELUGE VALVE VERTICAL CONVENTIONAL TRIM CHART

Technical drawing of a gas cylinder assembly. The drawing shows a spherical gas cylinder with a pressure regulator and an emergency release valve. The emergency release valve is labeled "EMERGENCY RELEASE". The drawing includes dimensions in inches and millimeters.

Dimensions:

- Overall height: $29\frac{5}{8}$ [744.41mm]
- Overall width: $17\frac{1}{2}$ [452.44mm]
- Overall depth: $7\frac{1}{4}$ [183.79mm]
- Height of the emergency release valve: $5\frac{3}{8}$ [135.73mm]
- Height of the pressure regulator: $5\frac{1}{8}$ [129mm]
- Height of the gas cylinder: $19\frac{1}{2}$ [495mm]
- Height of the emergency release valve body: $8\frac{1}{8}$ [221.33mm]
- Height of the pressure regulator body: $\frac{1}{4}$ [6.35mm]

Form No. F_051402 18.10.25 P65



TECHNICAL DATA

**4" (DN100) MODEL F-1 STRAIGHT
THROUGH DELUGE VALVE
VERTICAL CONVENTIONAL TRIM
CHART** Maximum 250 PSI WWP

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

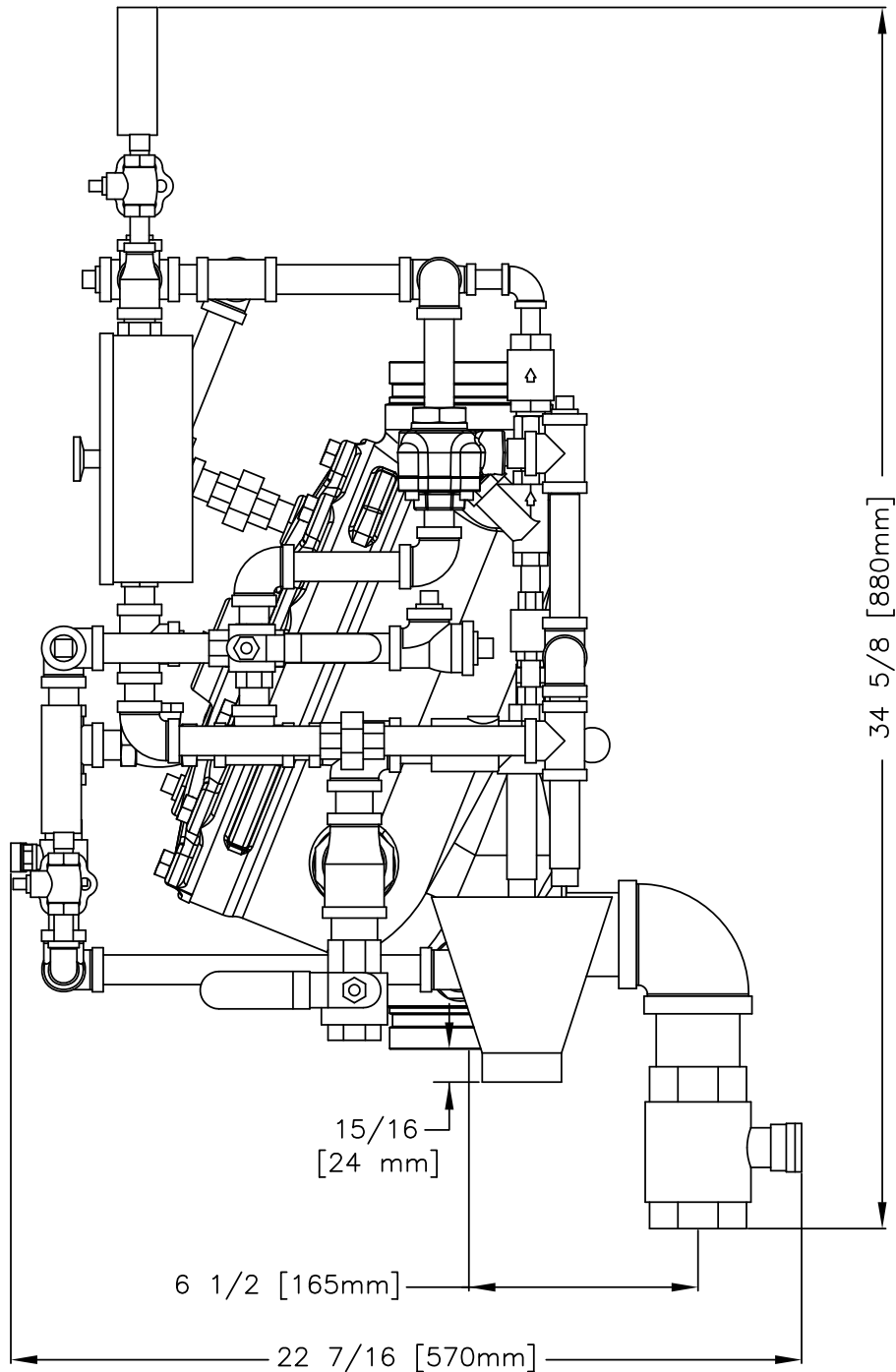


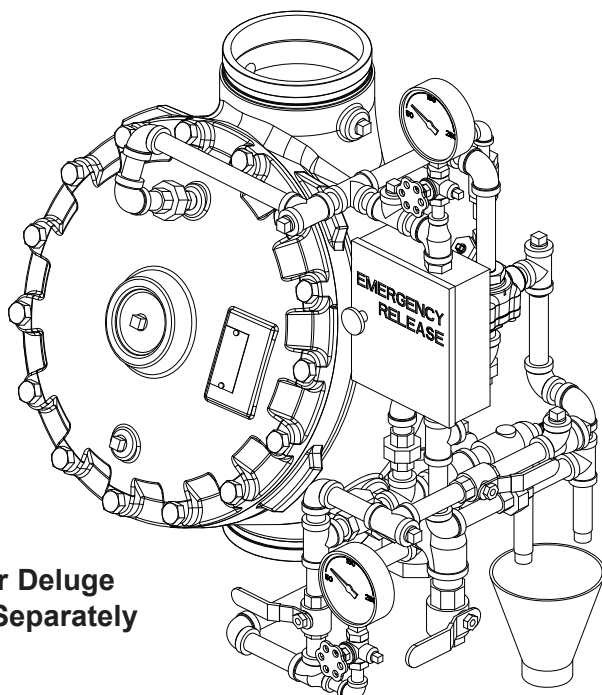
Figure 3b: Installation Dimensions



TECHNICAL DATA

DELUGE TRIM 6" (DN150) MODEL F-1 STRAIGHT THROUGH VERTICAL VALVE

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com



**Order Deluge
Valve Separately**

Figure 1



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

This Trim Chart is for use with
the following Viking Trim Sets

Valve Size	Galvanized Trim Part No.	Brass Trim Part No.
6" (DN150)	14641-1	14641-2

This Trim is for use with the following
Release Module Trim Kits

Release Type	Galvanized*	Brass**
Pneumatic	10809	10811
Electric	10830	10832
Electric/ Pneumatic	12661-1	12661-2
Pneumatic/ Pneumatic	12662-1	12662-2

* Standard Trim sets for Model F Deluge Valves consist of galvanized nipples and fittings.

**Refer to Technical Data describing the Halar® Coated Deluge Valve and the *Viking Foam Systems Engineering Design Data* book for applications where brass trim is recommended.

Note: Nipple lengths for brass trim may vary from those shown on this Trim Chart.

Notes: For use with Trim Chart on Page 241f

Note: When viewing this data page online, [blue text](#) represents hyperlinks and will open the appropriate data page when clicked.

General Notes:

- Valve must be trimmed as shown. Any deviation from trim size or arrangement may affect the proper operation of the valve.
- All pipe 3/4" (20 mm) and smaller shall be galvanized steel except when other materials are specified in the Technical Data for the Halar® Coated Deluge Valve or when other materials are specified in the *Viking Foam Systems Engineering and Design Data* book.
- When Model F Deluge Valves are used on pre-mixed Foam Systems, trim piping must be of copper pipe with brass fittings unless otherwise specified in the Technical Data for the Halar® Coated Deluge Valve or the *Viking Foam Systems Engineering and Design Data* book.
- Dimensions in parentheses are millimeter and may be approximations.

Note 1: 1/2" (15 mm) NPT plugged outlet provided for connecting certain optional components and associated trim.

Note 2: Release System connection. Viking Deluge and Flow Control Valves are compatible with hydraulic, pneumatic, and electric release systems. A Pneumatic Actuator is required on all Viking Deluge Valves and Flow Control Valves equipped with Pneumatic Release Systems.

Note 3: Alarm Connections: Connect alarm line piping to 3/4" (20 mm) NPT outlet. When using a Water Motor Alarm, a strainer is required. 1/2" (15 mm) NPT outlet is for electric Alarm Pressure Switch.

Note 4: Optional non-interruptible connection for Alarm Pressure Switch to activate electric alarm panel. Note: After the Deluge Valve trips, this location cannot be shut off. Alarms may operate until the outlet chamber of the deluge valve is de-pressurized below the set point of the Alarm Pressure Switch.

Note 5: Viking Drain Check Valve is manufactured with a 0.067" (1.7 mm) orifice to allow alarm line to drain. DO NOT substitute. Check label for proper orientation.

Note 6: Inlet side of PORV is connected to the top chamber of the deluge valve. Inlet of PORV should be facing up. Outlet goes to open drain.



TECHNICAL DATA

DELUGE TRIM

6" (DN150) MODEL F-1

STRAIGHT THROUGH VERTICAL VALVE

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

**Refer to page 241e
for General Notes and
Notes 1 through 6.**

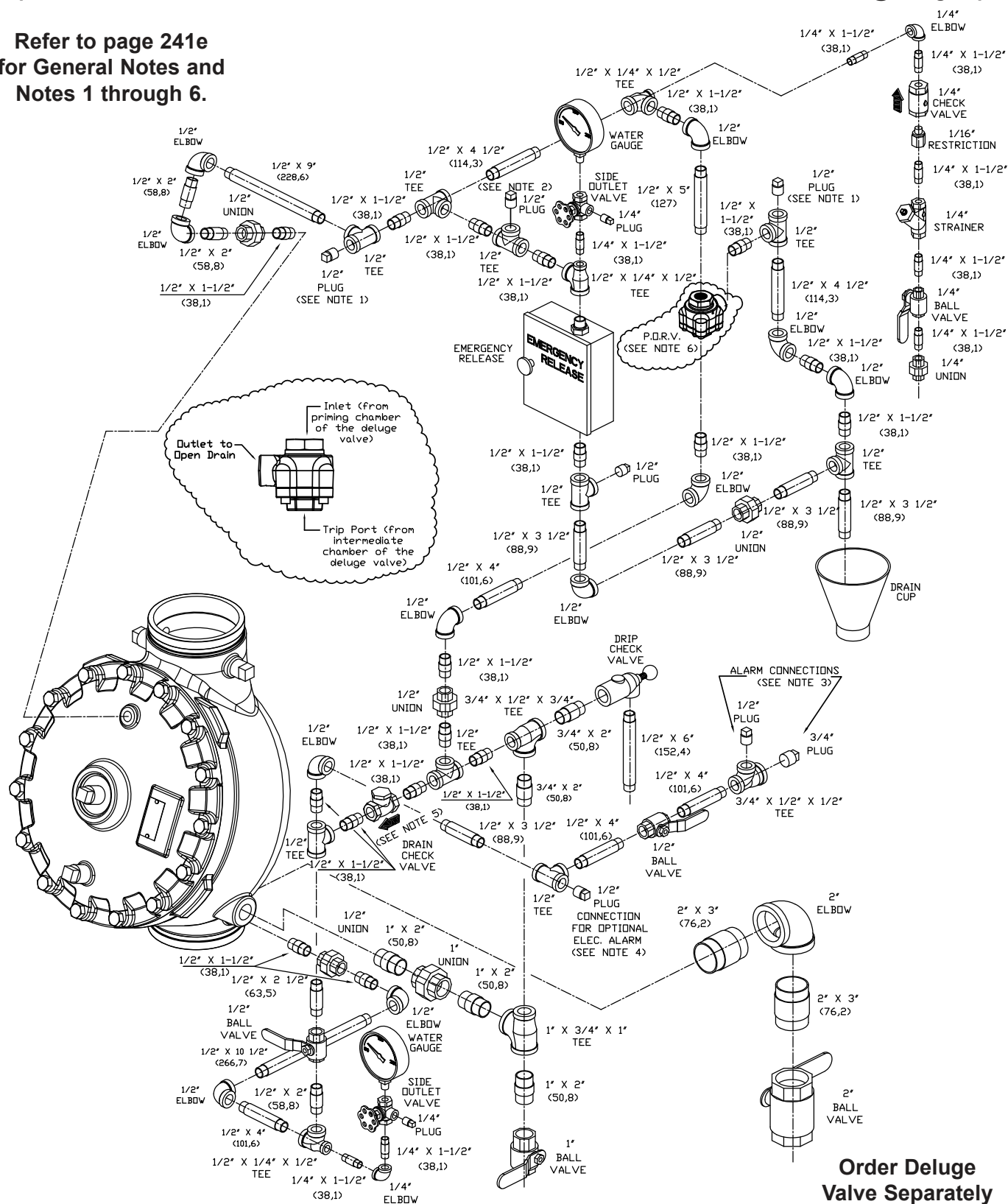


Figure 2



TECHNICAL DATA

DELUGE TRIM

6" (DN150) MODEL F-1

STRAIGHT THROUGH VERTICAL VALVE

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

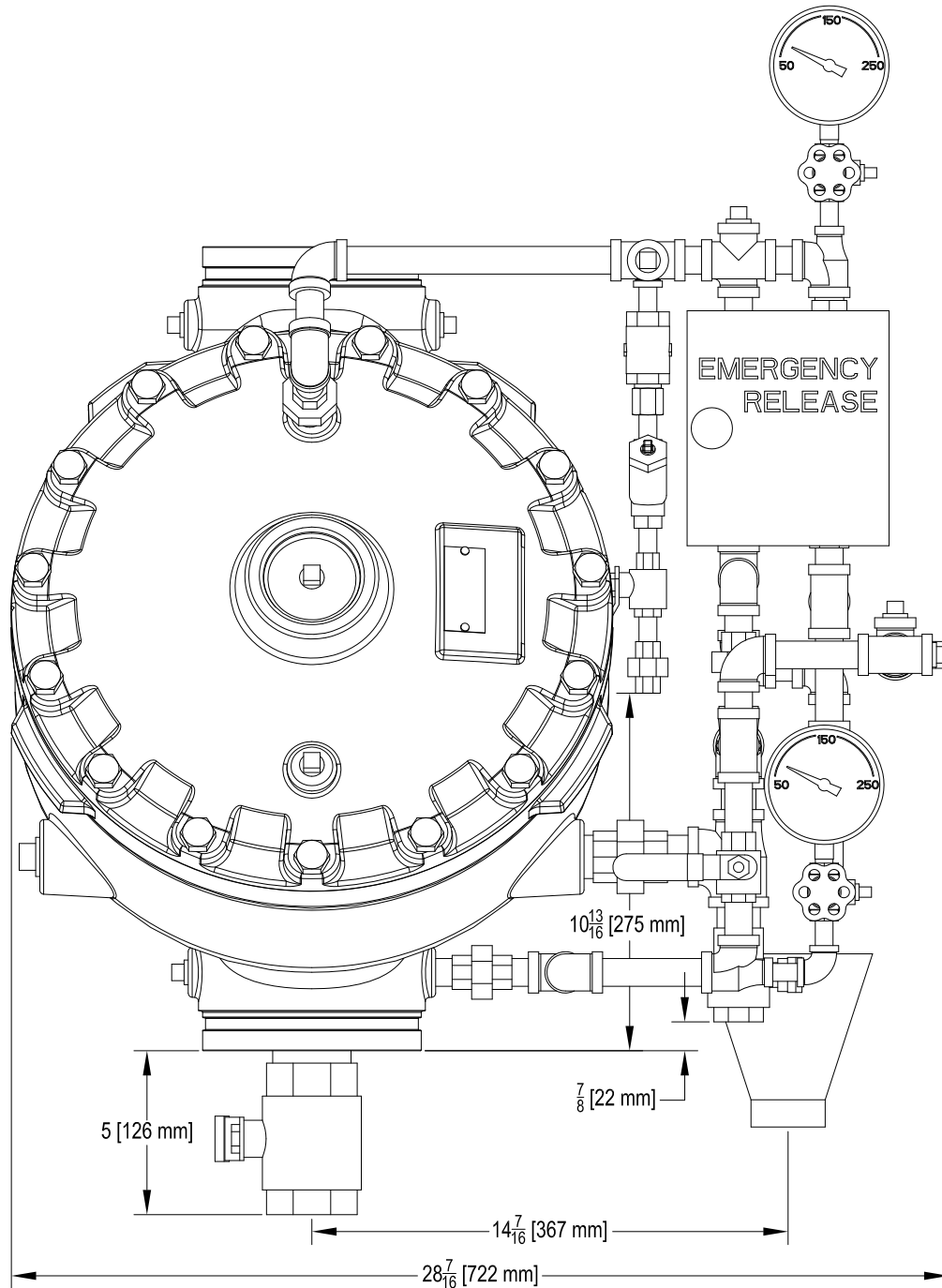


Figure 3a: Installation Dimensions



TECHNICAL DATA

DELUGE TRIM
6" (DN150) MODEL F-1
STRAIGHT THROUGH VERTICAL VALVE

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

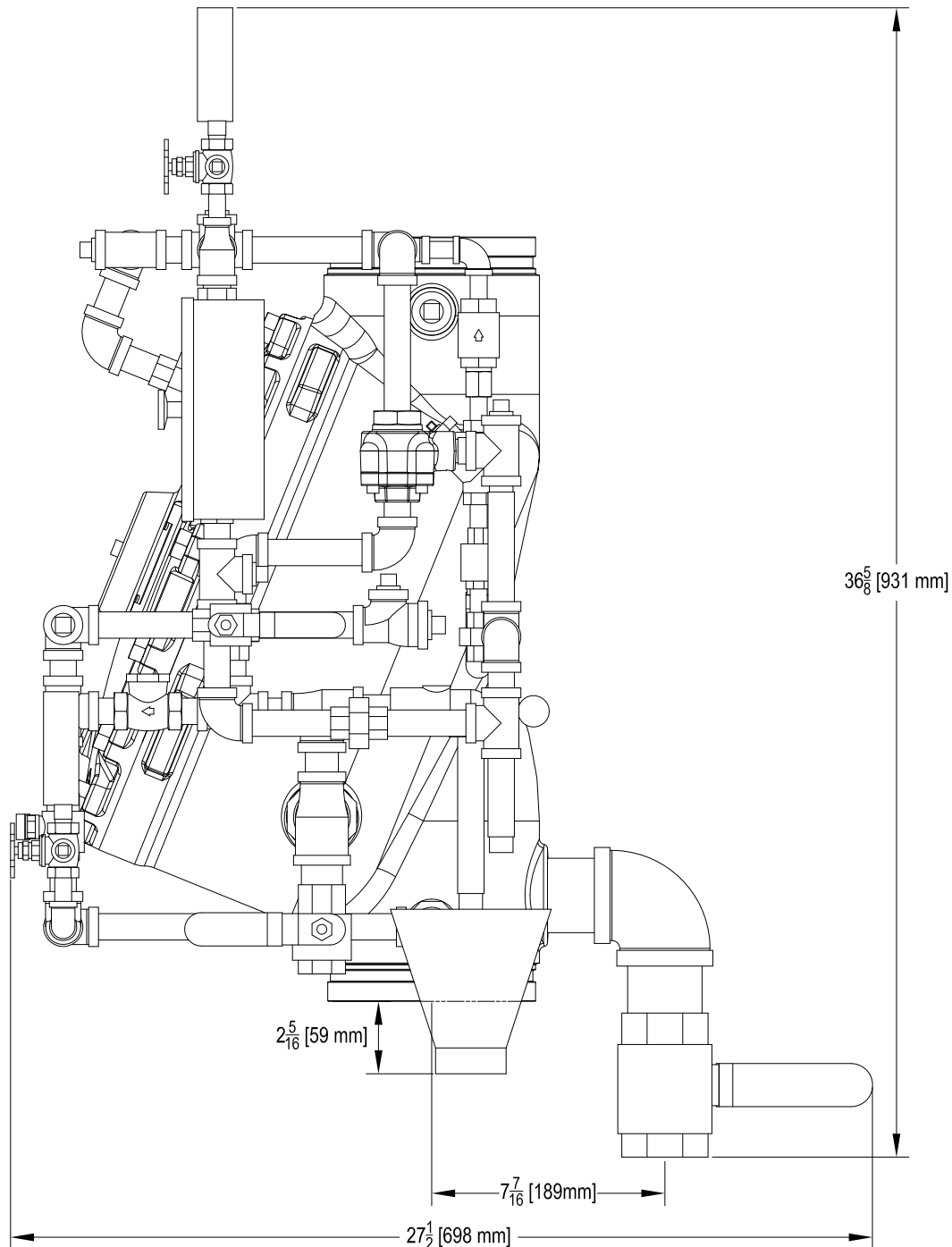


Figure 3b: Installation Dimensions

FireLock® Check Valves

Series 717 Check Valve

Series 717H High Pressure Check Valve



10.08



Series 717H
High Pressure Check Valve
(2 – 3"/DN50 – DN80)



Series 717
(2 ½ – 3"/73 mm – DN80)



Series 717
(4 – 12"/DN100 – DN300)

1.0 PRODUCT DESCRIPTION

Available Sizes

- 2 – 3"/DN50 – DN80 (Series 717H)
- 2 ½ – 12"/73 mm – DN300 (Series 717)

Pipe Material

- Carbon Steel, Schedule 10, Schedule 40. For use with alternative material please contact Victaulic.

Maximum Working Pressure

- Up to 365 psi/2517 kPa/25 bar
- Working pressure dependent on pipe size, valve size and approval requirements.

Application

- Designed for use in Fire Protection systems.
- Prevents back flow.
- Single-disc mechanism incorporates a spring-assisted feature for non-slamming operation.
- Can be installed either vertically (flow upwards only) or horizontally.
- Valve body cast with arrow indicator to assist with proper valve orientation.
- Optional upstream and downstream pressure taps included on select sizes. See Section 3.0.
- Provided with grooved ends.
- Rated for ambient temperature use in fire protection systems.

Available End Connections

- Victaulic Original Groove System (OGS) standard groove

2.0 CERTIFICATION/LISTINGS



ALWAYS REFER TO ANY NOTIFICATIONS AT THE END OF THIS DOCUMENT REGARDING PRODUCT INSTALLATION, MAINTENANCE OR SUPPORT.



2.0 CERTIFICATION/LISTINGS

Approvals/Listings

Series 717H

Size		Approval/Listing Service Pressures				
Nominal inches DN	Actual Outside Diameter inches mm	cULus psi kPa	FM psi kPa	LPCB psi kPa	VdS psi kPa	CCCf psi kPa
2 DN50	2.375 60.3	365 2517	365 2517	365 2517	363 2500	N/A
2 ½	2.875 73.0	365 2517	365 2517	365 2517	N/A	363 2500
DN65	3.000 76.1	365 2517	365 2517	365 2517	363 2500	363 2500
3 DN80	3.500 88.9	365 2517	365 2517	365 2517	363 2500	363 2500

Series 717

Size		Approval/Listing Service Pressures				
Nominal inches DN	Actual Outside Diameter inches mm	cULus psi kPa	FM psi kPa	LPCB psi kPa	VdS psi kPa	CCCf psi kPa
2 ½	2.875 73.0	250 1725	N/A	N/A	N/A	N/A
DN65	3.000 76.1	250 1725	N/A	N/A	232 1600	N/A
3 DN80	3.500 88.9	250 1725	N/A	N/A	232 1600	N/A
4 DN100	4.500 114.3	365 2517	365 2517	365 2517	363 2500	363 2500
DN125	5.500 139.7	365 2517	365 2517	365 2517	363 2500	363 2500
5	5.563 141.3	365 2517	365 2517	365 2517	N/A	N/A
	6.500 165.1	365 2517	365 2517	365 2517	N/A	363 2500
6 DN150	6.625 168.3	365 2517	365 2517	365 2517	363 2500	N/A
8 DN200	8.625 219.1	365 2517	365 2517	348 2400	247 1700	363 2500
10 DN250	10.750 273.0	250 1725	250 1725	250 1725	N/A	232 1600
12 DN300	12.750 323.9	250 1725	250 1725	250 1725	N/A	N/A

3.0 SPECIFICATIONS – MATERIAL

Body:

- ☐ Ductile Iron conforming to ASTM A536, Grade 65-45-12.

Body Coating:

- ☐ Series 717H Body: Black Paint
- ☐ Series 717H Endface: Electroless Nickel conforming to ASTM B733
- ☐ Series 717 (2 ½ – 3"/73mm – DN80): PPS Coating
- ☐ Standard: Series 717 (4 – 12"/DN100 – DN300): Black Paint
- ☐ Optional: Series 717 (4 – 12"/DN100 – DN300): PPS Coating

Body Seat:

- ☐ Series 717H: Nitrile O-ring installed into an Electroless Nickel plating conforming to ASTM B733
- ☐ Series 717 (2 ½ – 3"/73 mm – DN80): PPS Coated Ductile Iron
- ☐ Series 717 (4 – 12"/DN100 – DN300): Ductile Iron with Electroless Nickel plating conforming to ASTM B733

Disc Seal or Coating: (specify choice¹)

- ☐ **Nitrile (Series 717H only)**
- ☐ **EPDM**

NOT COMPATIBLE FOR PETROLEUM SERVICES.

Discs:

- ☐ Series 717H: CF8M Cast Stainless Steel
- ☐ Series 717 (2 ½ – 3"/73 mm – DN80): Aluminum bronze with elastomer seal
- ☐ Series 717 (4 – 12"/DN100 – DN300): Elastomer encapsulated disc.

Shaft:

- ☐ Series 717H: Brass
- ☐ Series 717 (2 ½ – 3"/73 mm – DN80): Type 416 Stainless Steel
- ☐ Series 717 (4 – 12"/DN100 – DN300): Type 316 Stainless Steel

Spring:

- ☐ Type 302/304 Stainless Steel

Shaft Plug:

- ☐ Series 717H: Carbon Steel Zinc Plated
- ☐ Series 717: Carbon Steel Zinc Plated

Pipe Plug:

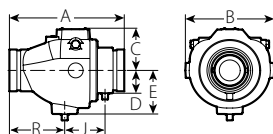
- ☐ Series 717H: Carbon Steel Zinc Plated
- ☐ Series 717: Carbon Steel Zinc Plated

Optional Pressure Taps:

- ☐ Series 717H: Available on all sizes
- ☐ Series 717: Available on sizes 4 – 12"/DN100 – DN300

4.0 DIMENSIONS

Series 717H

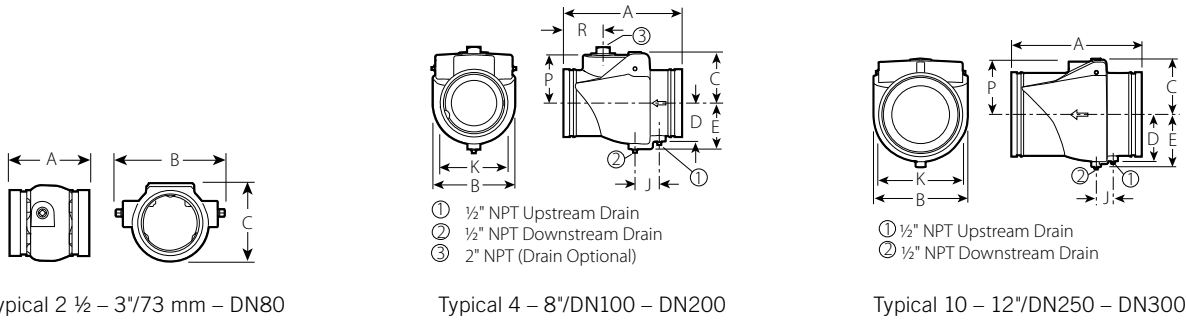


Typical 2 – 3"/50 – 80 mm

Size		Dimensions						Weight
Nominal inches DN	Actual Outside Diameter inches mm	E to E A inches mm	B inches mm	C inches mm	E inches mm	J inches mm	R inches mm	Approx. (Each) lb kg
2	2.375	8.66	6.46	3.23	3.02	2.80	4.25	10.7
DN50	60.3	220	165	83	77	72	108	4.9
2½	2.875	9.37	6.94	3.31	3.40	3.38	4.38	13.8
	73.0	238	177	85	87	86	112	6.3
DN65	3.000	9.37	6.94	3.31	3.40	3.38	4.38	13.8
	76.1	238	177	85	87	86	112	6.3
3	3.500	9.62	7.44	3.53	3.65	3.38	4.63	20.0
DN80	88.9	244	189	90	93	86	118	9.1

4.1 DIMENSIONS

Series 717



Size		Dimensions								Weight
Nominal inches DN	Actual Outside Diameter inches mm	E to E A inches mm	B inches mm	C inches mm	E inches mm	J inches mm	K inches mm	P inches mm	R inches mm	Approx. (Each) lb kg
2 ½	2.875 73.0	3.88 99	4.26 109	3.57 91	– –	– –	– –	– –	– –	3.6 1.6
DN65	3.000 76.1	3.88 99	4.26 108	3.57 91	– –	– –	– –	– –	– –	3.6 1.6
3 DN80	3.500 88.9	4.25 108	5.06 129	4.17 106	– –	– –	– –	– –	– –	4.5 2.0
4 DN100	4.500 114.3	9.63 245	6.00 152	3.88 99	3.50 89	2.00 51	4.50 114	3.50 89	3.35 85	20.0 9.1
DN125	5.500 139.7	10.50 267	6.80 173	4.50 114	4.17 106	2.15 55	5.88 149	4.08 104	3.98 101	27.0 12.2
5	5.563 141.3	10.50 267	6.80 173	4.50 114	4.17 106	2.15 55	5.88 149	4.08 104	3.98 101	27.0 12.2
	6.500 165.1	11.50 292	8.00 203	5.00 127	4.50 114	2.38 60	6.67 169	4.73 120	3.89 99	38.0 17.2
6 DN150	6.625 168.3	11.50 292	8.00 203	5.00 127	4.50 114	2.38 60	6.67 169	4.73 120	3.89 99	38.0 17.2
8 DN200	8.625 219.1	14.00 356	9.88 251	6.06 154	5.65 144	2.15 55	8.85 225	5.65 144	5.75 146	64.0 29.0
10 DN250	10.750 273.0	17.00 432	12.00 305	7.09 180	6.69 170	2.15 55	10.92 277	6.73 171	– –	100.0 45.4
12 DN300	12.750 323.9	19.50 495	14.00 356	8.06 205	7.64 194	2.51 64	12.81 325	7.73 196	– –	140.0 63.5

5.0 PERFORMANCE

Flow Characteristics

The charts below express the flow of water at 60°F/16°C through valve.

Formulas for C_v/K_v values:

$$\Delta P = \frac{Q^2}{C_v^2}$$

$$Q = C_v \times \sqrt{\Delta P}$$

Where:

Q = Flow (GPM)

ΔP = Pressure Drop (psi)

C_v = Flow Coefficient

$$\Delta P = \frac{Q^2}{K_v^2}$$

$$Q = K_v \times \sqrt{\Delta P}$$

Where:

Q = Flow (m³/hr)

ΔP = Pressure Drop (Bar)

K_v = Flow Coefficient

Series 717H

Size		Flow Characteristics
Nominal inches DN	Actual Outside Diameter inches mm	Full Open C_v K_v
2	2.375	160
DN50	60.3	138
2½	2.875	215
	73.0	186
DN65	3.000	215
	76.1	186
3	3.500	315
DN80	88.9	272

Series 717

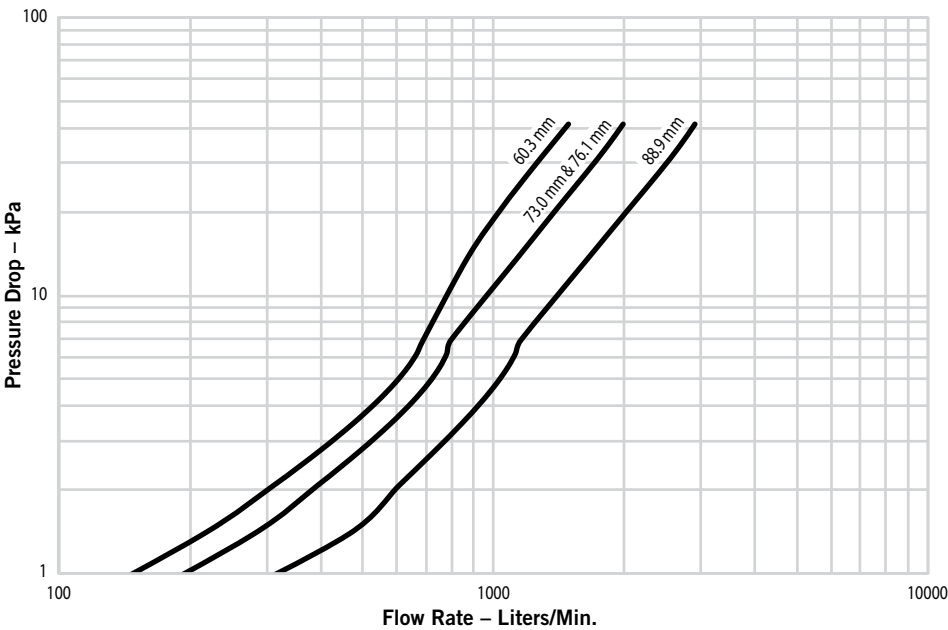
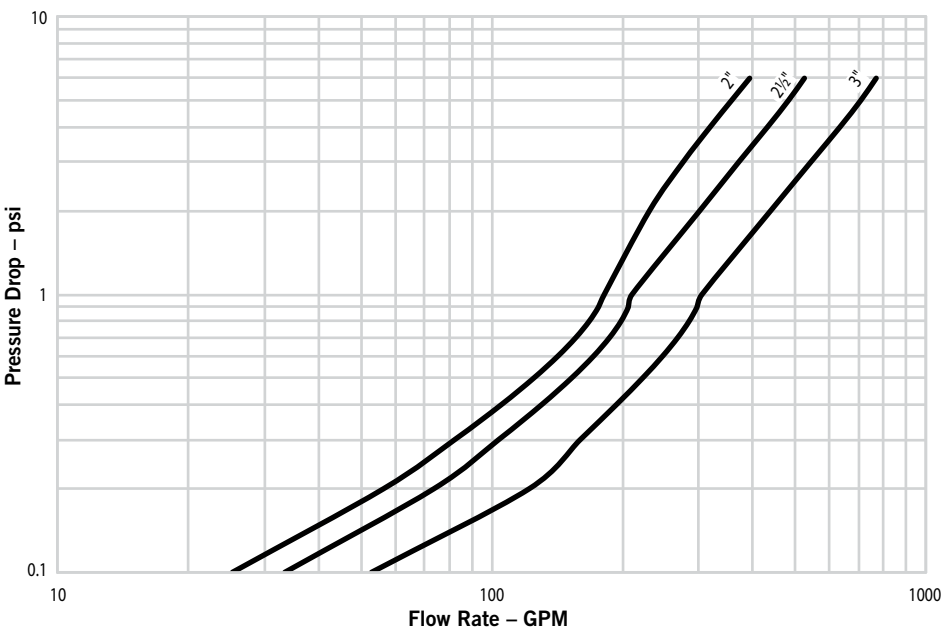
Size		Flow Characteristics
Nominal inches DN	Actual Outside Diameter inches mm	Full Open C_v K_v
2½	2.875	140
	73.0	121
DN65	3.000	140
	76.1	121
3	3.500	250
DN80	88.9	216
4	4.500	390
DN100	114.3	337
DN125	5.500	700
	139.7	606
5	5.563	700
	141.3	606
	6.500	1000
	165.1	865
6	6.625	1000
DN150	168.3	865
8	8.625	1800
DN200	219.1	1557
10	10.750	3000
DN250	273.0	2595
12	12.750	4200
DN300	323.9	3633

5.0 PERFORMANCE (CONTINUED)

Flow Characteristics

The charts below express the flow of water at 60°F/16°C through valve.

S717H

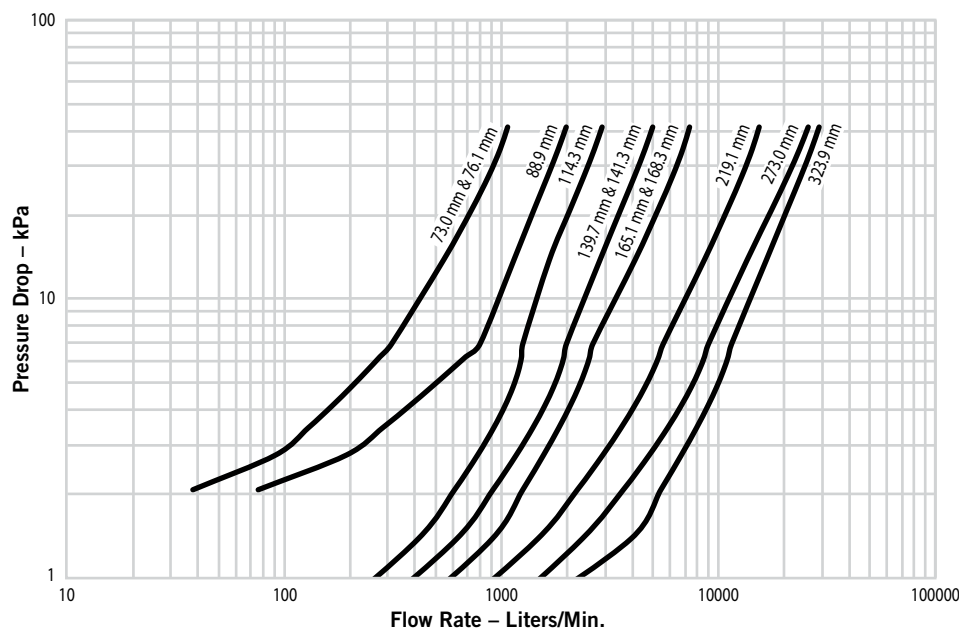
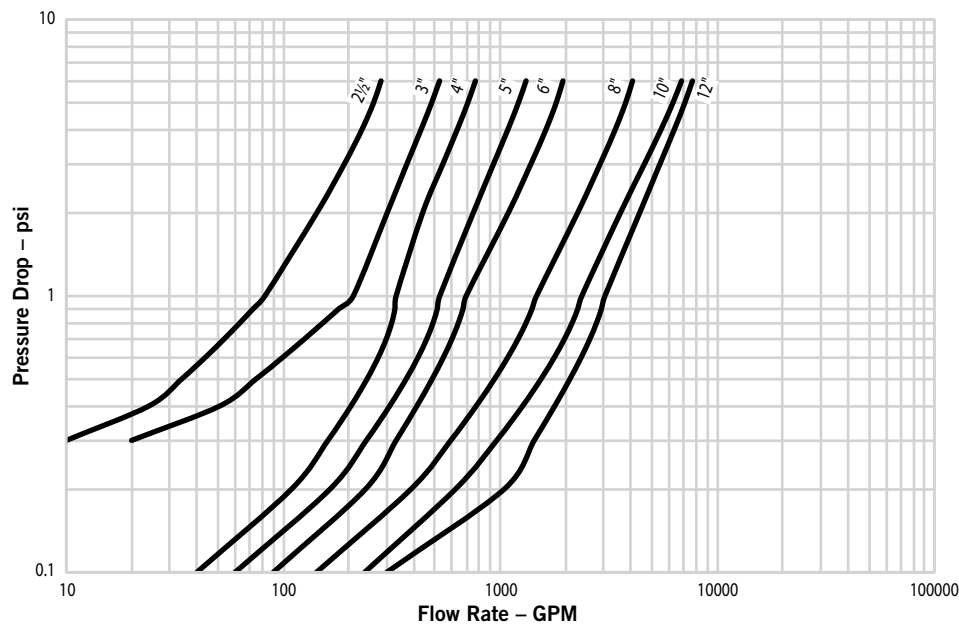


5.1 PERFORMANCE

Flow Characteristics

The charts below express the flow of water at 60°F/16°C through valve.

S717



6.0 NOTIFICATIONS

WARNING



- Depressurize and drain the piping system before attempting to install, remove, adjust, or maintain any Victaulic piping products.

7.0 REFERENCE MATERIALS

[05.01: Seal Selection Guide](#)

[10.01: Regulatory Approval Reference Guide](#)

[29.01: Terms and Conditions/Warranty](#)

[I-100: Field Installation Handbook](#)

User Responsibility for Product Selection and Suitability

Each user bears final responsibility for making a determination as to the suitability of Victaulic products for a particular end-use application, in accordance with industry standards and project specifications, as well as Victaulic performance, maintenance, safety, and warning instructions. Nothing in this or any other document, nor any verbal recommendation, advice, or opinion from any Victaulic employee, shall be deemed to alter, vary, supersede, or waive any provision of Victaulic Company's standard conditions of sale, installation guide, or this disclaimer.

Intellectual Property Rights

No statement contained herein concerning a possible or suggested use of any material, product, service, or design is intended, or should be construed, to grant any license under any patent or other intellectual property right of Victaulic or any of its subsidiaries or affiliates covering such use or design, or as a recommendation for the use of such material, product, service, or design in the infringement of any patent or other intellectual property right. The terms "Patented" or "Patent Pending" refer to design or utility patents or patent applications for articles and/or methods of use in the United States and/or other countries.

Note

This product shall be manufactured by Victaulic or to Victaulic specifications. All products to be installed in accordance with current Victaulic installation/assembly instructions. Victaulic reserves the right to change product specifications, designs and standard equipment without notice and without incurring obligations.

Installation

Reference should always be made to the Victaulic installation handbook or installation instructions of the product you are installing. Handbooks are included with each shipment of Victaulic products, providing complete installation and assembly data, and are available in PDF format on our website at www.victaulic.com.

Warranty

Refer to the Warranty section of the current Price List or contact Victaulic for details.

Trademarks

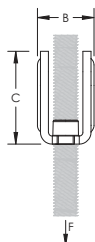
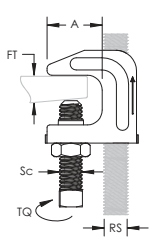
Victaulic and all other Victaulic marks are the trademarks or registered trademarks of Victaulic Company, and/or its affiliated entities, in the U.S. and/or other countries.

HANGERS

SBC Stamped Beam Clamp, Top Mount



- Allows structural attachment to metal beams, bar joist, channel, or angle iron in top mount position only unless used on a parallel flange
- Lightweight, one-piece stamped body provides superior strength and eliminates deficiencies associated with castings
- Spins onto threaded rod and allows for easy adjustment
- Conforms with Federal Specification WW-H-171 (Type 23), Manufacturers Standardization Society ANSI®/MSS-SP-58 (Type 19)



Material: Steel
Finish: Pregalvanized



Part Number	Rod Size RS	Flange Thickness FT	A	B	C	Screw Diameter Sc	Torque TQ	Static Load F
SBC037	3/8"	3/4" Max	0.925"	0.85"	1.58"	3/8"	5 ft lb	500 lb

Set screw must be tightened and torqued onto the sloped side of the I-beam, channel, or angle iron flange.

Recognizing that torque wrenches are generally not used or available on many job sites, the setscrew should be tightened so it contacts the I-beam and then an additional 1/4 to 1/2 turn added.

ANSI is a registered trademark of American National Standards Institute. FM is a registered certification mark of FM Approvals LLC, LTD. UL, UR, cUL, cUR, cULus and cURus are registered certification marks of UL LLC.

WARNING

nVent products shall be installed and used only as indicated in nVent's product instruction sheets and training materials. Instruction sheets are available at www.erico.com and from your nVent customer service representative. Improper installation, misuse, misapplication or other failure to completely follow nVent's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death and/or void your warranty.

© 2021 nVent All rights reserved

nVent, nVent CADDY, nVent ERICO, nVent ERIFLEX and nVent LENTON are owned by nVent or its global affiliates.

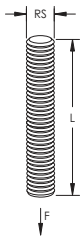
All other trademarks are the property of their respective owners. nVent reserves the right to change specifications without prior notice.



Threaded Rod



- Cut to length as needed



Material: Steel
 Finish: Electrogalvanized
 Tensile Strength: 58,000 psi
 Yield Strength: 36,000 psi

Part Number	Rod Size RS	Length L	Static Load F
0502506EG	1/4"	6'	240 lb
0502510EG	1/4"	10'	240 lb
0503706EG	3/8"	6'	600 lb
0503710EG	3/8"	10'	610 lb
0503712EG	3/8"	12'	600 lb
0505006EG	1/2"	6'	1,130 lb
0505010EG	1/2"	10'	1,130 lb
0505012EG	1/2"	12'	1,130 lb
0506206EG	5/8"	6'	1,810 lb
0506210EG	5/8"	10'	1,810 lb
0506212EG	5/8"	12'	1,810 lb
0507506EG	3/4"	6'	2,710 lb
0507510EG	3/4"	10'	2,710 lb
0507512EG	3/4"	12'	2,710 lb
0508706EG	7/8"	6'	3,770 lb
0508710EG	7/8"	10'	3,770 lb

Load based on Max. 650 degrees F.



115 STANDARD DUTY LOOP HANGER



The 115 Standard Duty Loop Hanger is ideal for suspending stationary, non-insulated pipe lines, including CPVC pipes, in fire sprinkler systems. A knurled insert nut helps simplify vertical adjustments and flared edges on the base (1/2" to 4" sizes) help protect pipes from coming into contact with any sharp edges of the hanger.

CERTIFICATIONS



FEATURES

Flared edges help prevent any sharp surfaces from coming into contact with the pipe (1/2" to 4" sizes)

Retained insert nut helps ensure the loop hanger and insert nut stay together

Recommended for the suspension of stationary non-insulated pipe lines

Manufactured to use the minimum rod size permitted by NFPA® for fire sprinkler piping

Conforms with Federal Specification WW-H-171 (Type 10), Manufacturers Standardization Society (MSS) SP-58 (Type 10)

SPECIFICATIONS

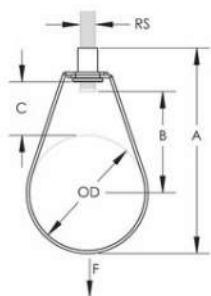
Finish Pregalvanized

Material Steel

Catalog Number	Pipe Size	Outer Diameter(OD)	Rod Size(RS)	A	B	C	Static Load(F)
1150050EG	1/2"	0.840"	3/8"	2 13/16"	1 1/8"	1"	300 lb
1150075EG	3/4"	1.050"	3/8"	3"	1 3/16"	15/16"	300 lb
1150100EG	1"	1.315"	3/8"	3 1/4"	1 3/8"	15/16"	300 lb
1150125EG	1 1/4"	1.660"	3/8"	3 9/16"	1 1/2"	15/16"	300 lb

Catalog Number	Pipe Size	Outer Diameter(OD)	Rod Size(RS)	A	B	C	Static Load(F)
1150150EG	1 1/2"	1.900"	3/8"	3 13/16"	1 5/8"	15/16"	300 lb
1150200EG	2"	2 3/8"	3/8"	4 1/4"	1 7/8"	15/16"	300 lb
1150250EG	2 1/2"	2 7/8"	3/8"	5 15/16"	3 7/16"	2"	525 lb
1150300EG	3"	3 1/2"	3/8"	6 9/16"	3 1/2"	1 15/16"	525 lb
1150350EG	3 1/2"	4"	3/8"	7 1/16"	3 3/4"	1 15/16"	585 lb
1150400EG	4"	4 1/2"	3/8"	7 9/16"	4"	1 15/16"	650 lb
1150500EG	5"	5 9/16"	1/2"	9 13/16"	4 3/4"	2 1/4"	1,000 lb
1150600EG	6"	6 5/8"	1/2"	11 5/16"	6 5/16"	3 5/16"	1,000 lb
1150800EG	8"	8 5/8"	1/2"	12 7/8"	6 7/8"	2 7/8"	1,000 lb

DIAGRAMS



WARNING

nVent products shall be installed and used only as indicated in nVent's product instruction sheets and training materials. Instruction sheets are available at www.nvent.com and from your nVent customer service representative. Improper installation, misuse, misapplication or other failure to completely follow nVent's instructions and warnings may cause product malfunction, property damage, serious bodily injury and death and/or void your warranty.

North America

+1.800.753.9221

Option 1 – Customer Care

Option 2 – Technical Support

Europe

Netherlands:

+31 800-0200135

France:

+33 800 901 793

Europe

Germany:

800 1890272

Other Countries:

+31 13 5835404

APAC

Shanghai:

+ 86 21 2412 1618/19

Sydney:

+61 2 9751 8500



Our powerful portfolio of brands:

nVent.com CADDY ERICO HOFFMAN RAYCHEM SCHROFF TRACER

© 2022 nVent. All nVent marks and logos are owned or licensed by nVent Services GmbH or its affiliates. All other trademarks are the property of their respective owners.

nVent reserves the right to change specifications without notice.

ACCESSORIES

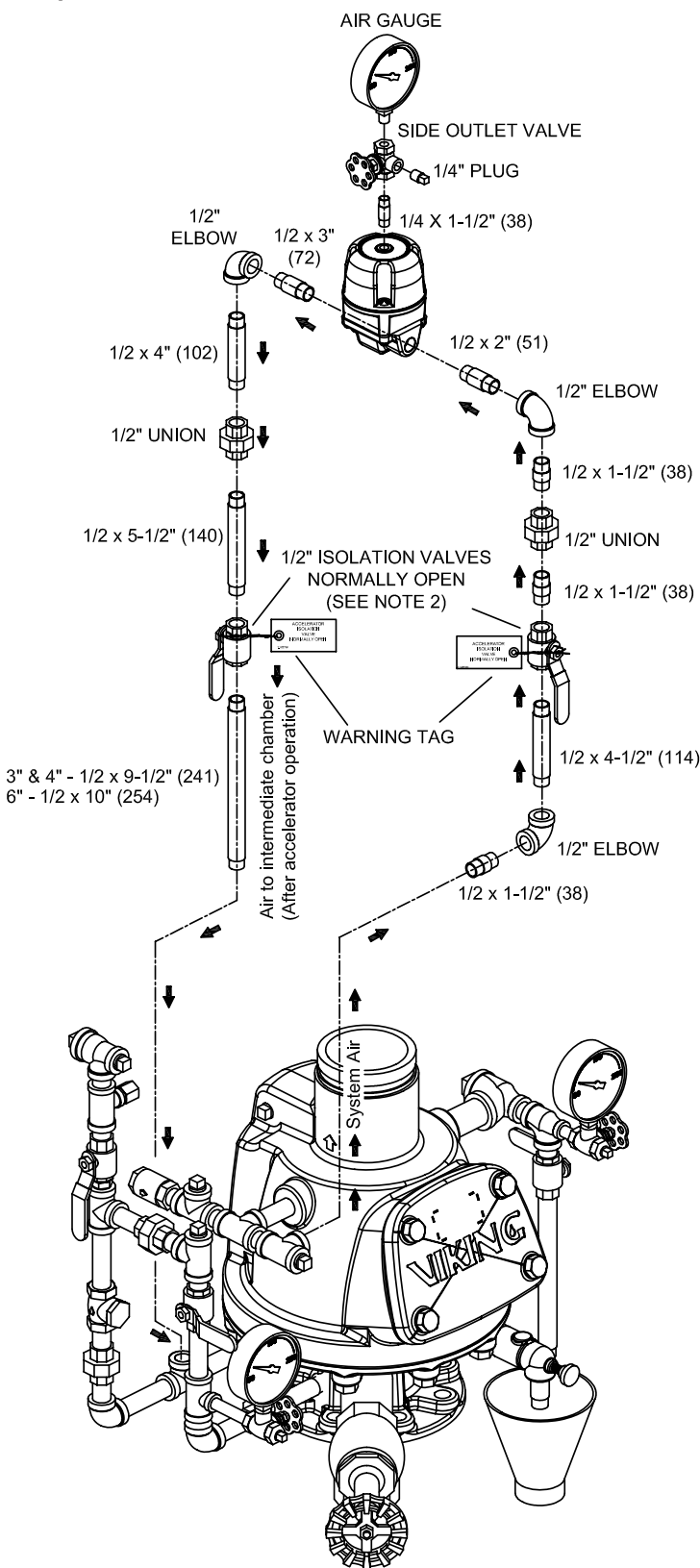


TECHNICAL DATA

MODEL D-2 ACCELERATOR TRIM

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services 877-384-5464 Fax: 269-945-4495 Email: techsvcs@vikingcorp.com

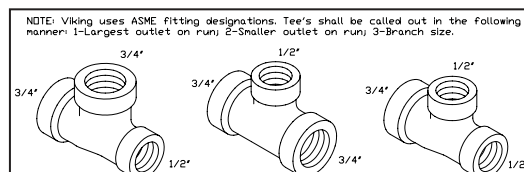


Model D-2 Accelerator Trim

Valve Size	Trim Part Number
3", 4" & 6"	09730
Standard Trim Sets include galvanized nipples and fittings.	

General Notes:

- Accelerator must be trimmed as shown. Any deviation from trim size or arrangement may affect operation of the Accelerator.
- Dimensions in parenthesis are millimeter and may be approximations.
- Viking uses ASME fitting designations. Tee's shall be called out in the following order: 1 - largest outlet on run; 2 - Smaller outlet on run; 3 - Branch size.



Note 1: The Model D-2 Accelerator is not included with trim packages and must be ordered separately (P/N 09881). Accelerators must be trimmed as shown. For instructions pertaining to PLACING THE SYSTEM IN SERVICE, refer to Technical Data for the Model D-2 Accelerator.

Note 2: Accelerator Isolation Valves are NORMALLY OPEN. Do not close either Isolation Valve, except during system hydrostatic test and when servicing the Accelerator.

Accelerator Operation:

(Refer to Accelerator Technical Data)

1st: System air pressure is reduced.

2nd: Accelerator operates, exhausting air pressure from inlet piping and routing the system air into the intermediate chamber of the Dry Valve.

CAUTION: When resetting air to accelerator, all air in top chamber of accelerator must be bled to zero so it will seat when adding air. The air can be bled by loosening the air gauge on top of the accelerator.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov



TECHNICAL DATA

ACCELERATOR MODEL D-2

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

1. DESCRIPTION

The Viking Model D-2 Accelerator is a quick-opening device, with an integral anti-flood assembly, used to increase the operating speed of a differential type dry pipe valve. An accelerator (quick-opening device) is recommended on all differential dry pipe valves and is required on dry pipe systems of certain capacities. Refer to NFPA Standards and Authorities Having Jurisdiction. The Viking Model D-2 Accelerator is a direct replacement for the Model D-1 Accelerator.

Features

- Pilot responsive
- Refer to NFPA-13 for maximum system size
- Automatically resets
- Integral anti-flood assembly
- Factory Tested

2. LISTINGS AND APPROVALS



UL Listed: VJPZ



FM Approved: ACCELERATORS with Built-In Anti-flooding Device.

3. TECHNICAL DATA

Specifications:

Shipping Weight: 6.2 lbs. (2.8 kg)

Material Specifications:

Refer Figure 2.

Ordering Information:

Available since 1998

Part Number: 09881

Accessories:

Model D-2 Accelerator Trim Kit (galvanized steel) for installation on Viking Model F Dry Valves (all sizes). Includes one air gauge. Viking Part No. 09730

4. INSTALLATION

A. On Dry Valve Trim

Verify that the water supply piping has been adequately flushed to reduce the opportunity for foreign matter to contaminate sprinkler piping and/or trim components. Install the Model D-2 Accelerator in the dry valve trim piping according to the Model D-2 Accelerator Trim Chart. The dry system air supply must be connected as shown on the trim chart. DO NOT expose the accelerator to the hydrostatic test.

CAUTION

THE DRY VALVE CLAPPER MUST BE LATCHED OPEN DURING PERFORMANCE OF THE HYDROSTATIC TEST. FOLLOW INSTALLATION INSTRUCTIONS BELOW IN PARAGRAPH 4B: GENERAL INSTALLATION INSTRUCTIONS.

B. General Installation Instructions

The air supply should be from an automatic, regulated and restricted source supplied with clean, dry, oil-free air (or nitrogen). Devices used should be specifically listed for such service. A Viking air maintenance device and an appropriately sized dehydrator are recommended. When corrosive atmospheres and/or contaminated water supplies are present, it is the owner's responsibility to verify compatibility with the Model D-2 Accelerator and associated equipment.

1. Remove all plastic thread protectors from the openings of the accelerator.
2. Apply a small amount of pipe-joint compound or tape to the external threads of all pipe connections required. Take care not to allow any compound, tape, or other foreign matter inside any of the nipples or openings of the accelerator or trim.
3. The Model D-2 Accelerator must be installed upright (with the air gauge opening at the top) as shown on the trim chart. Observe flow arrow, on bottom of accelerator, below the 1/2" NPT inlet.
4. Install a 0-80 psi (0-5.5 bar) retard to 250 psi (17.2 bar), air gauge in the 1/4" (8 mm) NPT opening in the top of the accelerator.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

Scan with smart phone to access
 technical and troubleshooting resources.





TECHNICAL DATA

ACCELERATOR MODEL D-2

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

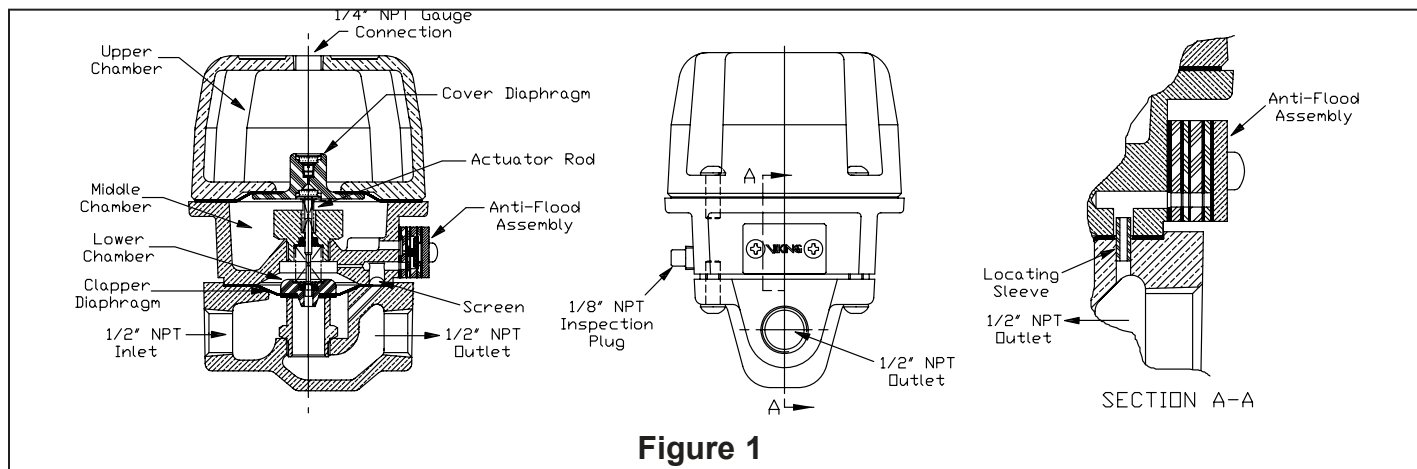


Figure 1

5. DO NOT expose the accelerator to the hydrostatic test.

CAUTION

THE ACCELERATOR ISOLATION VALVES ARE TO BE KEPT IN THE NORMALLY OPEN POSITION. DO NOT CLOSE, EXCEPT DURING HYDROSTATIC TESTING OR TO SERVICE THE ACCELERATOR.

C. Placing In Service

I. On Dry Valve Trim

When the dry pipe system is ready to be placed in service, verify that all equipment is adequately heated and protected to prevent freezing and physical damage.

1. With the water supply main control valve CLOSED, drain all water from the dry pipe system. If the system has operated, open all low-point drains and the system flow test valve. Allow enough time to completely drain the system.
2. Verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
3. Reset the dry valve (Refer to individual Technical Data for the dry valve).
4. Close all low point drains, the system flow test valve, and the priming water level test valve in the dry valve trim.
5. Observe the air pressure gauge on top of the accelerator. The gauge must read zero before the accelerator will automatically reset. It may be necessary to loosen, remove, and re-install the accelerator air gauge (use the appropriate wrench) to vent trapped air pressure from the upper chamber, even when the gauge indicates zero if the air supply is on while performing this step.
6. Pressurize the system in accordance with recommended settings. DO NOT exceed 60 psi (4.1 bar).
7. When the air pressure on the accelerator air gauge equals the system set pressure, perform Dry Pipe Valve Priming Water Level Test described in Paragraph 6-B-I to verify that water is not present above the priming level test valve in the dry valve trim. Priming water is NOT required for Viking dry valves. If the presence of water is detected above the priming level test valve, the system may not have been properly drained. To verify that the system has been properly drained, repeat Steps 1 through 7 above as required.

NOTE: STEP 7 IS REQUIRED ANY TIME WATER HAS ENTERED THE SPRINKLER PIPING. IF NO WATER HAS BEEN ALLOWED TO ENTER THE SYSTEM SINCE THE PREVIOUS PRIMING WATER LEVEL TEST, THIS STEP MAY NOT BE REQUIRED.

8. Open the main drain valve (located on the inlet of the dry valve).
9. Slowly open the water supply main control valve.
10. When flow is developed from the main drain, close the main drain valve.
11. Fully open and secure the water supply main control valve supplying the dry valve.
12. Secure all valves in their normal operating position.
13. Notify authorities having jurisdiction and those in the affected area that the system is in service.

5. OPERATION (Refer to Figure 1.)

The accelerator operates on the principle of unbalanced pressures. When the accelerator is pressurized, air enters the inlet, goes through the screen filter into the lower chamber and through the anti-flood assembly into the middle chamber. From the middle



TECHNICAL DATA

ACCELERATOR MODEL D-2

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

chamber, the air slowly enters the upper chamber through an orifice restriction in the cover diaphragm.

In the SET position, the system air pressure is the same in all chambers. The accelerator outlet is at atmospheric pressure. When a sprinkler or release operates, the pressure in the middle and lower chambers will reduce at the same rate as the system. The orifice restriction in the cover diaphragm restricts the air flow from the upper chamber, causing a relatively higher pressure in the upper chamber. The pressure differential forces the cover diaphragm down, pushing the actuator rod down. This action vents the pressure from the lower chamber to the outlet, allowing the inlet pressure to force the clapper diaphragm open. The pressure in the accelerator outlet forces the anti-flood assembly closed.

On a dry pipe system the air pressure from the accelerator outlet is directed to the dry pipe valve intermediate chamber. As the air pressure increases in the intermediate chamber of the dry valve, the dry valve pressure differential is destroyed and the dry valve trips, allowing water to enter the dry pipe system.

After the dry valve trips, water entering the intermediate chamber of the dry valve will fill the trim piping connecting the accelerator to the dry system. However, when the anti-flood assembly is pressurized closed, water is prevented from entering the middle and upper chambers of the accelerator.

6. INSPECTIONS, TESTS AND MAINTENANCE

NOTICE

THE OWNER IS RESPONSIBLE FOR MAINTAINING THE FIRE PROTECTION SYSTEM AND DEVICES IN PROPER OPERATING CONDITION.

Prior to performing any work on the system in which the Model D-2 Accelerator is installed, refer to technical data for the system and equipment used.

WARNING

ANY SYSTEM MAINTENANCE THAT INVOLVES PLACING A CONTROL VALVE OR DETECTION SYSTEM OUT OF SERVICE MAY ELIMINATE THE FIRE PROTECTION CAPABILITIES OF THAT SYSTEM. PRIOR TO PROCEEDING, NOTIFY ALL AUTHORITIES HAVING JURISDICTION. CONSIDERATION SHOULD BE GIVEN TO EMPLOYMENT OF A FIRE PATROL IN THE AFFECTED AREAS.

The Viking Model D-2 Accelerator must be kept free of foreign matter, freezing conditions, corrosive atmospheres, contaminated water supplies, and any condition that could impair its operation or damage the device.

It is imperative that the system be inspected and tested on a regular basis. The frequency of the inspections may vary due to contaminated water supplies, corrosive water supplies, corrosive atmospheres, as well as the condition of the air supply to the system. For minimum maintenance and inspection requirements, refer to NFPA 25. In addition, the authority having jurisdiction may have additional maintenance, testing, and inspection requirements that must be followed.

A. Inspection

I. After every operation, and each time water is allowed to enter the system:

1. Inspect the interior of the accelerator for the presence of water. Dampness or condensation may indicate that the air supply is not being dried adequately. If water is allowed to enter the middle and/or upper chamber of the accelerator, it may contaminate the accelerator orifices and prevent it from operating properly.
2. Remove the 1/8" NPT inspection plug. If water or dampness is present, the accelerator must be disassembled (as described in Section 6-C-II: Disassembly), cleaned, and dried.

II. Inspection of Accelerators:

Weekly inspection is recommended. If the system is equipped with a low air (or nitrogen) alarm, monthly inspections may be adequate.

1. Check the air pressure gauge located on the top of the accelerator. Air pressure in the upper chamber of the accelerator should equal the air pressure maintained in the system on which it is installed. A difference in pressures other than slight variation due to gauge calibration tolerance may indicate gauge malfunction, plugged accelerator orifices and/or filters, or other maintenance is required. See Section 6-C ACCELERATOR MAINTENANCE.

NOTE: STANDARD TOLERANCE ALLOWANCE IN PRESSURE GAUGE CALIBRATION MAY RESULT IN A SLIGHT VARIATION WHEN THE PRESSURE READINGS OF ANY TWO GAUGES ARE COMPARED.

2. Verify that all other trim valves are in their normal operating position.
3. Check for signs of mechanical damage and/or corrosive activity. If detected, perform maintenance as required or, if necessary, replace the device.
4. Verify that the accelerator and trim are adequately heated and protected to prevent freezing and physical damage.



TECHNICAL DATA

ACCELERATOR MODEL D-2

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

5. Verify that the water supply main control valve is open and secure.

B. Tests

I. Dry Pipe Valve Priming Water Level Test, Low Air Alarm Test, and Non-Flow Accelerator Test for Dry Valves Equipped with a Model D-2 Accelerator and Installed According to Model D-2 Accelerator Trim Charts:

The priming water level test is recommended quarterly and each time the system is placed in service after water has entered the system. Also, each time the system is placed in service after water has entered the system, it is good practice to repeat the priming water level test within one week. Testing is used to verify that the system has been properly drained and that no water is present above the priming level test valve in the dry valve trim after draining the system. Any water columning (accumulation of water above the priming level test valve) can slow or even prevent the dry valve clapper from opening when the dry system operates.

Quarterly testing of low air alarms is recommended. Semi-annual testing of accelerators is recommended. Conduct non-flow test when partial flow test or full flow test is not required:

1. Notify the Authority Having Jurisdiction and those in the area affected by the test.
2. Close the water supply main control valve supplying the dry valve.
3. Open the main drain valve (located on the inlet of the dry valve).

NOTE: PERFORMING STEPS 4 OR 5 OF THIS TEST WILL CAUSE THE ACCELERATOR TO OPERATE. HOWEVER, WITH THE WATER SUPPLY MAIN CONTROL VALVE CLOSED, AND THE MAIN DRAIN VALVE OPEN, OPERATION OF THE ACCELERATOR SHOULD NOT TRIP THE DRY VALVE.

4. Dry valve priming water level test:
 - a. Verify that the water supply main control valve is closed and the main drain valve is open.
 - b. Close the air supply.
 - c. Fully open the priming level test valve in the dry valve trim to check for the presence of water. If the presence of water is detected, the system may not have been properly drained. Perform steps 1 through 7 in Paragraph 4-C-I of PLACING ACCELERATOR IN SERVICE on Dry Valve Trim.
 - d. When the test is complete: If/when no water is detected, open the air supply and continue to Step 6.
5. Low-air alarm test and non-flow accelerator test:
 - a. Verify that the water supply main control valve is closed and the main drain valve is open.
 - b. Gradually open the priming level test valve in the trim of the dry valve to simulate operation of the dry system. Observe and record the pressure at which the low air alarm operates.
 - c. When the test is complete, continue to Step 6.
6. Close the priming level test valve.
7. Loosen (use the appropriate wrench), and remove the accelerator air gauge to release pressure from the upper chamber of the accelerator, allowing it to reset.
8. Re-install and tighten (use the appropriate wrench) the accelerator air gauge.
9. Allow pressure to be restored to the dry pipe system and accelerator.
10. When air pressure on the accelerator air gauge equals the system set pressure, verify that the intermediate chamber of the dry valve is free of water. No water should flow from the drip check when the plunger is pushed.
11. When testing is complete, return the system being tested to service. Perform Steps 8 through 13 of Paragraph 4.C PLACING ACCELERATOR IN SERVICE on Dry Valve Trim.

C. Accelerator Maintenance (Refer to Figure 2.)

I. On Dry Valves

To remove a Model D-2 Accelerator from the trim of the dry valve for inspection and/or maintenance:

1. Close the water supply main control valve and open the main drain (located on the inlet of the dry valve), placing the system out of service.
2. Isolate the accelerator from the system by closing the shut-off valves on the accelerator trim.
3. Loosen the accelerator air gauge to vent the trapped air pressure from the accelerator.
4. Loosen each of the pipe unions necessary to disconnect the accelerator from the trim.
5. Refer to Paragraph 6.II-B: Disassembly.

II. Disassembly (Refer to Figure 2.)

1. Remove the four cover screws (16a) from the base (15) using a 3/16" Allen wrench.
2. Remove the cover (1) from the housing (7).
3. Remove the cover diaphragm assembly (2) from the housing (7) for inspection. Blow air through filters and orifice. Replace the assembly if unit is damaged or plugged. **DO NOT attempt to wash or clean the filters or orifice. Water may cause them to become plugged, requiring replacement of the assembly.**
4. Remove the actuator rod (4), actuator rod spring (5), and retaining ring (3) for inspection and cleaning. Replace the actuator rod (4) if it is pitted, corroded, or damaged.

NOTE: REPLACE BOTH U-CUPS (10) WHENEVER THE ACTUATOR ROD (4) IS REPLACED.



TECHNICAL DATA

ACCELERATOR MODEL D-2

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com

5. Remove the housing insert (6) using a socket wrench with a 1-3/8" socket.
6. With the housing insert (6) removed, the U-cup (10) and U-cup retainer (11) can be removed from the housing insert (6) using a tool with a diameter of 1/8" or less.
7. Remove the housing spring (12) from the housing (7).
8. To remove any other parts from the accelerator, the accelerator will now need to be turned over so that the base (15) is in the upright position.
9. Remove the four socket head screws (16b) from the base (15), using a 3/16" Allen wrench.
10. With the housing (7) now removed, the screen filter (9) can be removed using a tool with a diameter of 1/4" or less.
11. Remove the anti-flood kit from the housing (7) using a Phillips head screwdriver.
12. The clapper diaphragm (13) can now be removed from the base (15).
13. With the clapper diaphragm (13) now removed, the U-cup (10) and U-cup retainer (11) can be removed from the clapper diaphragm (13) using a tool with a diameter of 1/8" or less.
14. The seat (14) can now be removed from the base (15) using a socket wrench with a 7/8" socket.
15. If the locating pin (17) needs to be replaced (offered individually, not part of a repair kit), remove it from the base (15) and replace it with a new one.

III. Installation of New Parts

To start installing the new parts, start from the base (15) and work your way up.

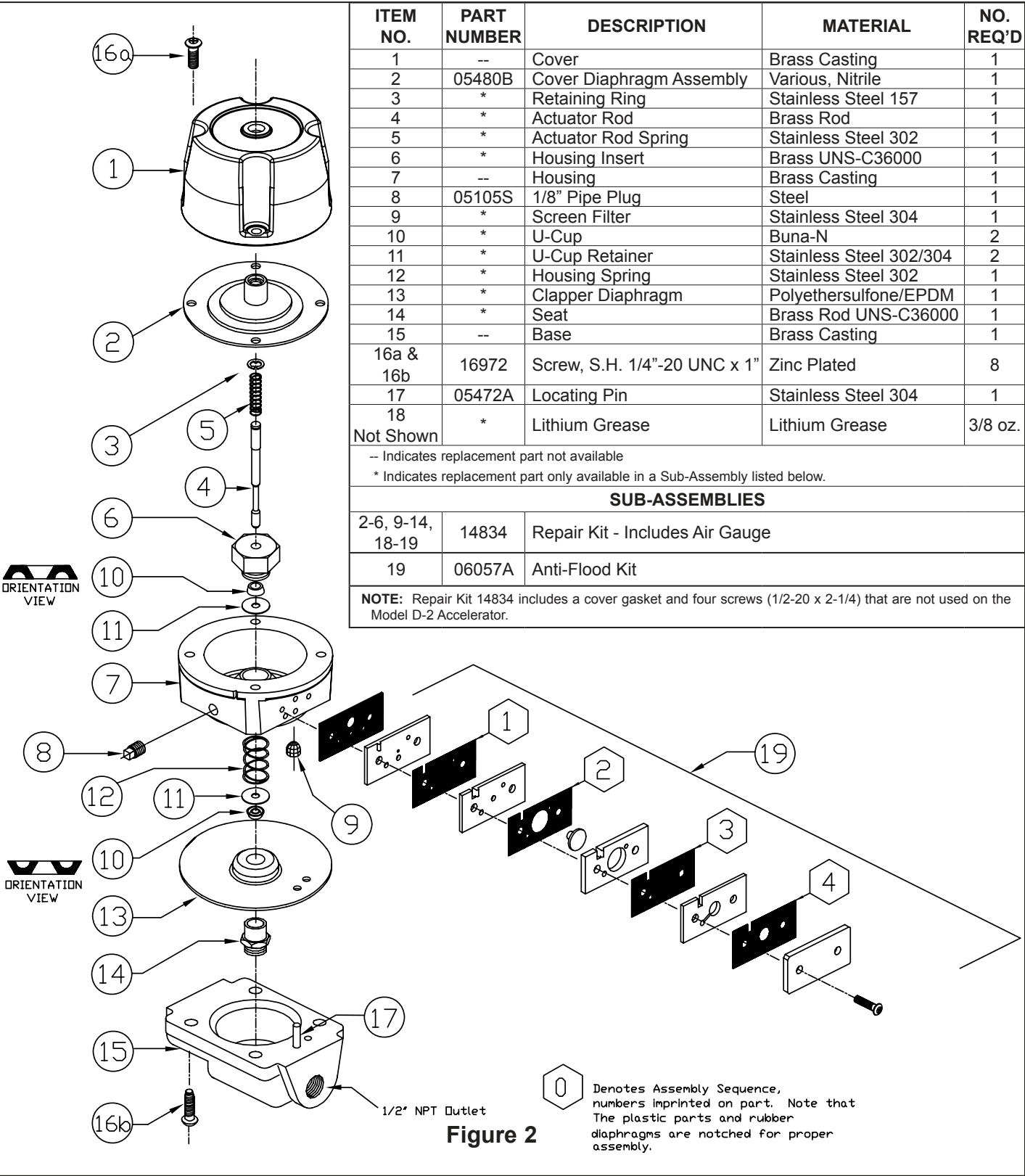
1. Install the seat (14) into the base (15) using a socket wrench with a 7/8" socket.
 2. Before installing the clapper diaphragm (13), the U-cup (10) and U-cup retainer (11) must first be installed into the clapper diaphragm (13). To install the U-cup (10) and U-cup retainer (11) into the clapper diaphragm (13).
 - a. Apply the Lithium grease (18) evenly spread on the U-cup (10) and U-cup retainer (11).
 - b. Install the U-cup (10) and U-cup retainer (11) into the clapper diaphragm (13) with the tapered side of the U-cup (10) installed into the clapper diaphragm (13).
 3. The clapper diaphragm (13) can now be installed onto the base (15) by lining up the hole in the clapper diaphragm (13) with the locating pin (17).
 4. Install the new anti-flood kit onto the housing (7) with a Phillips head screwdriver, making sure the Viking logo is in the upright position.
 5. Prior to installing the housing (7) back onto the base (15), the screen filter (9) will need to be installed into the housing (7), using a tool with a diameter of 1/4" or less.
 6. Re-install the housing (7) onto the base (15) by lining up the hole in the housing (7), with the locating pin (17).
 7. The accelerator can now be turned over so that the base (15) is in the upright position, and the four socket head screws (16b) can now be installed into the base (15) using a 3/16" Allen wrench.
 8. Turning the accelerator over so that the housing (7) is now in the upright position, the housing spring (12) can now be installed into the housing (7).
 9. Before installing U-cup (10) and U-cup retainer (11) into the housing insert (6):
 - a. Apply the Lithium grease (18) evenly spread on the U-cup (10) and U-cup retainer (11).
 - b. Install the U-cup (10) and U-cup retainer (11) into the housing insert (6) with the tapered side of the U-cup (10) installed into the housing insert (6).
 10. Install the housing insert (6) into the housing (7), making sure that the center of the housing insert (6) lines up with the housing spring (12) and using a socket wrench with a 1-3/8" socket to install the housing insert (6).
 11. Install the actuator rod spring (5) onto the actuator rod (4).
 12. Install the actuator rod (4) into the housing insert (6).
 13. Install the cover diaphragm assembly (2) onto the cover (1).
- NOTE: THE COVER DIAPHRAGM ASSEMBLY IS NOT PART OF THE REPAIR KIT. IT IS OFFERED AS AN INDIVIDUAL COMPONENT ONLY. SEE FIGURE 2.**
14. Install the cover (1) onto the housing (7) verifying that the center of the cover diaphragm assembly (2) lines up with the actuator rod (4).
 15. The four cover screws (16a) can now be installed into the cover (1) using a 3/16" Allen wrench.



TECHNICAL DATA

ACCELERATOR MODEL D-2

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page: www.vikinggroupinc.com



DAP Series Dry Air Pac® - for Dry Pipe Sprinkler Systems

Compressor/Dryer Packages for Corrosion Mitigation and Freezer Room Applications

Specifically designed to fill the sprinkler system with moisture free air to 40 PSI in 30 minutes per NFPA 13.

General Air Products DAP Series Dry Air Pac® is a FM Approved, twin tower regenerative dryer / compressor package designed for fire protection. This turn-key system provides the dry pipe or pre-action sprinkler system with moisture free air to a -40° to -60° F dew point standard (-100° F dew point is achievable - consult factory for details). Ensuring that no moisture is sent downstream from the air compressor will significantly reduce corrosion in all systems and prevent ice plug formation in cold storage applications.

The air compressor on the Dry Air Pac® is designed to fill the sprinkler system in 30 minutes in accordance with NFPA 13 standards, as well as provide the higher pressure needed to allow the twin tower regenerative dryer to function at peak efficiency.

Prior to entering the regenerative air dryer, an air cooled aftercooler cools the compressors hot discharge air to a maximum 100° F. A coalescing prefilter with differential pressure gauge removes oil vapor and other contaminants that can effect the desiccant in the drying towers. A combination particulate filter and regulator prevents downstream migration of desiccant dust while regulating air pressure to the sprinkler system.

All components are pre-piped, pre-tested, and pre-wired for ease of mechanical and electrical installation on site. Each unit also includes a UL Listed, FM Approved Air Maintenance Device.

The Dry Air Pac® has been the sprinkler industry's benchmark for nearly 30 years in cold storage facilities and other installations where moisture removal is essential.



- Turn-key Design for Easy Installation
- -40° to -60° F Dew Point Standard
- NEMA Rated / UL Listed Motor
- Industrial Duty Compressor Pump
- Integrated Twin Tower Desiccant Dryer
- Electronic Drain Valve with Timer Controls
- Combination Afterfilter / Regulator
- Compact Air Cooled Aftercooler
- Prefilter with Differential Pressure Gauge
- UL Listed / FM Approved AMD
- Fully Integrated Control Panel
- ASME Coded Air Receiver
- UL Listed Pressure Switch
- Bubble Tight Air Check Valves
- ASME Pressure Safety Valves
- Vibration Isolation Pads
- Pre-piped, Pre-wired & Pre-Tested
- Lifetime Customer Service & Tech Support

Did You Know? - The FM Approval on the Dry Air Pac® eliminates the requirement to connect the air intake to the freezer room. NFPA 13 exempts any approved packages from this costly requirement. General Air Products Dry Air Pac® meets this exemption in NFPA 13.

System Capacity (gal)	Model Number	Motor			Dimensions (in)			Weight (lbs)
		HP	Phase	Available Voltage	L	W	H	
500	DAP500A	2	Single	115V / 208V-230V	44	24	70	425
500	DAP500B	2	Three	208V-230V / 460V	44	24	70	425
1000	DAP1000B	5	Three	208V-230V / 460V	44	24	70	550
2000	DAP2000B	5	Three	208V-230V / 460V	44	24	73	550

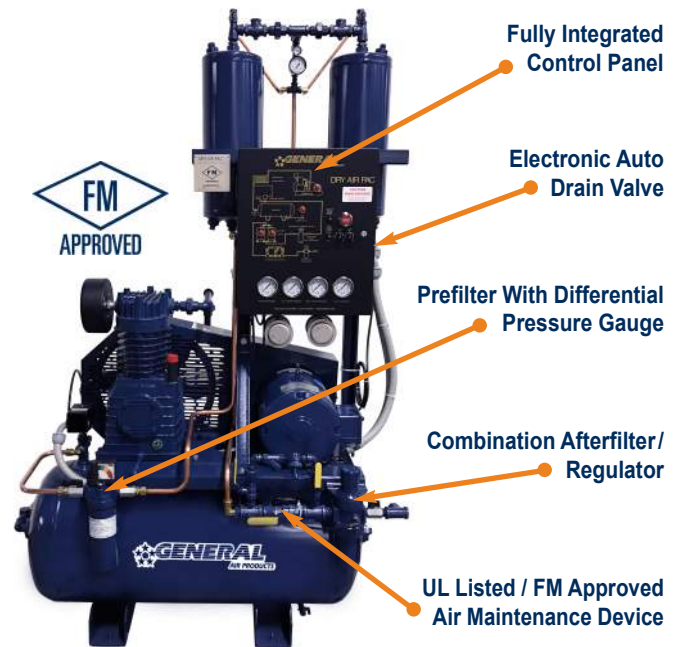
NOTE: Specific voltage required when ordering.



Dry Air Pac®

Compressor/Dryer Packages

For Corrosion Mitigation & Freezer Room Applications



The Advantages Of Dry Air...



Prevent Ice Plug Formation In Cold Storage Facilities

The Dry Air Pac® has been the sprinkler industry's benchmark for nearly 30 years in cold storage facilities and other installations where moisture removal is essential. This turn-key system provides the dry pipe or pre-action sprinkler system with moisture free air to a -40° to -60° F dew point standard. Ensuring that no moisture is sent downstream from the air compressor will prevent frost accumulation and ice plug formation in cold storage facilities/freezer room applications.

Mitigate Corrosion In All Dry Pipe & Pre-Action Systems



Did you know? - The Dry Air Pac® can be a less expensive alternative to nitrogen generation for corrosion protection in dry pipe & pre-action systems. When the pressure dew point of air is controlled to -26°C (-14.8°F) or lower, the oxidation process is eliminated and corrosion cannot occur. Furthermore, the Dry Air Pac® does not significantly obstruct air flow like a much more restrictive nitrogen generator making this a better alternative in many applications. This is especially true in systems with higher leak rates.

General Air Products has been the leading authority for filling dry pipe and pre-action fire sprinkler systems for more than 50 years. Quite simply, providing the most dependable equipment and technical support for this application is what we do. Whether your system demands nitrogen, dry air or standard compressed air, only General Air Products has the best solution for every application.



Complete Dry Sprinkler System Filling Solutions



COMPRESSED AIR



DRY AIR



NITROGEN



ACCESSORIES



13D PUMP & TANKS

Anaerobic Thread Sealant Paste with PTFE

Description

PipeFit® AS Anaerobic Thread Sealant with PTFE is formulated to provide the highest pressure resistant seal of any anaerobic compound suitable for fire sprinkler systems. PipeFit® AS provides lubrication during assembly then cures to a resilient, vibration-proof polymer shim which is resistant to corrosive chemicals, solvents and galvanic attack between dissimilar metals. After complete cure (24 hours) the joint can be disassembled with normal pipe working tools if required. **DO NOT USE ON CPVC OR OTHER PLASTIC PIPE.**



Directions

Apply PipeFit® AS to first few male threads then assemble parts normally. Cures to 50% in 4 hours, 90% in 8 hours and completely cured within 24 hours. **DO NOT USE DOPE AND TAPE TOGETHER.**

Can be used on stainless steel.

WARNING: CONTAINS METHACRYLATE ESTERS Avoid eye contact or extended skin exposure. For eye contact, immediately flush with water for 15 minutes and seek medical attention. For extended skin exposure wash contact area thoroughly and consult a physician.

KEEP OUT OF REACH OF CHILDREN. FOR EMERGENCY SPILL INFORMATION CONTACT CHEMTREC 1(800) 424-9300.

Specifications

Product Characteristics:
Paste

Color:
White

S Gravity:
1.15gm/cc

Viscosity:
1500000cps

Flash point:
860° F

Temp Range:
-65° F to +400° F

Storage stability at <75° F:
250 ml - 12 months
750 ml - 12 months
7 l - 6 months

Performance Characteristics

Cure speeds:
50% - 4 hours
90% - 8 hours
100% - 24 hours

Locking Torque:
400 in. lbs (½" NPT)

Cured Seal:
10000psi Fluids
3000psi Gases
125 psi Natural Gas

Chemical Resistance:
Excellent



3198 LIONSHEAD AVE
CARLSBAD, CA 92010
TEL + 1 760 599-1168
+ 1 800 344-1822
FAX + 1 800 344-3775

© 2012 Fire Protection Products, Inc.





TECHNICAL DATA

SPRINKLER WATER SHIELDS AND GUARDS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

1. DESCRIPTION

Viking Model A-1, B-1, and C-1 Sprinkler Water Shields and Guards are used in conjunction with Viking frame style upright or pendent sprinklers where allowed by the approvals. (Refer to the Approval Chart) The guards are hard-wire cages designed to encase the sprinklers and protect them from mechanical damage. They are recommended for areas where sprinklers are installed at a low elevation and/or near a high degree of human or mechanical activity.

Water shields protect the sprinklers' heat-sensing operating element from water spray discharge from sprinklers located at a higher elevation. Viking frame style sprinklers with Model B-1 or C-1 Water Shields are converted to intermediate level/rack storage sprinklers. They may be used in any application where water shielding is required, such as in-rack sprinkler systems, under grating, on pilot sprinklers for deluge systems, and outdoors as a weather shield.

NOTE: Sprinkler water shields and guards are not designed to be used on sprinklers installed in recessed escutcheons.

2. LISTINGS AND APPROVALS

FM Approved: Class 2091

VdS Approved: Certificate G4920022

Refer to the Approval Chart for more information.



WARNING: Cancer and Reproductive Harm-
www.P65Warnings.ca.gov

3. TECHNICAL DATA

Specifications:

Model A-1, B-1, and C-1 Sprinkler Guards (Available since 1982)

Diameter: 2-5/16" (59 mm), Height: 2-1/4" (57 mm)

Model B-1 Sprinkler Water Shield (Available since 1984)

Diameter: 4-3/8" (111 mm), Thickness: 0.0359" (1 mm)

Model C-1 Sprinkler Water Shield (Available since 1986)

Diameter: 3-1/2" (89 mm), Thickness: 0.0359" (1 mm)

Material Standards:

Sprinkler Guards: UNS-G10100 Bright Basic Steel Wire

Water Shields: UNS-G10080 Cold Rolled Steel

TABLE 1: ORDERING INFORMATION

Sprinklers must be ordered separately. Refer to the appropriate sprinkler Technical Data Page

Part Number	Description	Size	
		NPT	BSP
05446A	Model A-1 Guard	1/2"	15 mm
21934	Model A-1 Guard	3/4"	20 mm
05866A	Model B-1 Guard with shield	1/2"	15 mm
06509A	Model C-1 Guard with shield	1/2"	15 mm
06682A	Model C-1 Guard with shield	3/4"	20 mm
06467B	Model C-1 Water Shield	1/2"	15 mm
06656B	Model C-1 Water Shield	3/4"	20 mm
06471A*	Model C-1 Guard	1/2"	15 mm
06471A*	Model C-1 Guard	3/4"	20 mm

* Must be installed in conjunction with the Model C-1 Water Shield.



Model A-1 Sprinkler Guard



Model B-1 Upright Water Shield and Guard Assembly



Model C-1 Pendent Water Shield and Guard Assembly



Model C-1 Pendent Water Shield



Model C-1 Pendent Guard

Figure 1: Guards and Shields



TECHNICAL DATA

SPRINKLER WATER SHIELDS AND GUARDS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

4. INSTALLATION

NOTE: Viking Model A-1, B-1, and C-1 Sprinkler Water Shields and Guards are not available factory pre-assembled with the sprinklers. They must be ordered separately and then field installed onto the Viking frame style sprinklers.

Refer to the appropriate Viking sprinkler Technical Data Page for warnings and additional installation instructions. Then install units according to the following steps.

A. MODEL A-1 SPRINKLER GUARD

Viking frame style sprinklers must be installed on the system prior to adding the Model A-1 Sprinkler Guards onto the sprinklers. After the sprinklers are installed:

1. Remove the retaining ring from the Model A-1 Sprinkler Guard.
2. Spread and hold the two bracket halves at the base of the guard just enough to place the guard over the deflector and wrench boss of the sprinkler.

NOTICE

Excessive spreading of the guard may break the weld.

3. With the sprinkler inside the sprinkler guard, orient the guard with the heavy wire base parallel to the sprinkler wrench boss. The two halves of the bracket should grip the sprinkler in the slot between the wrench boss and the threads.
4. Press the retaining ring over the guard and toward the base of the sprinkler until the ring snaps firmly into the depressions provided on each of the six wire members of the guard.

Removal:

To remove, reverse the instructions. If the sprinkler must also be removed, follow the system instructions and notify appropriate personnel.

B. MODEL B-1 UPRIGHT SPRINKLER WATER SHIELD AND GUARD ASSEMBLY

The Model B-1 Upright Water Shield and Guard are available as a welded assembly only. Viking frame style upright sprinklers must be installed on the system prior to installing the Model B-1 Upright Water Shield and Guard Assembly onto the sprinklers. After the sprinklers are installed:

1. Position the retaining ring against the water shield.
2. Spread and hold the two bracket halves at the base of the guard just enough to place the guard over the deflector and wrench boss of the sprinkler.

NOTICE

Excessive spreading of the guard may break the weld.

3. With the sprinkler inside the sprinkler guard, orient the guard with the heavy wire base parallel to the sprinkler wrench boss. The two halves of the bracket should grip the sprinkler in the slot just below the wrench boss, and above the threads.
4. Press the retaining ring down until it slides into the notches in the six wire members of the guard.

Removal:

To remove, reverse the instructions. If the sprinkler must also be removed, follow the system instructions and notify appropriate personnel.

C. MODEL C-1 PENDENT SPRINKLER WATER SHIELDS AND GUARDS

The Model C-1 Pendent Water Shields can be installed with or without the Model C-1 Guard. However, the Model C-1 Guard cannot be installed without the Model C-1 Water Shield.

Water Shield:

1. Thread the Viking frame style pendent sprinkler into the shield. The concave surface of the shield should face the sprinkler deflector.
2. Apply a small amount of pipe-joint compound or tape to the external threads of the sprinkler only, taking care not to allow a build-up of compound in the sprinkler inlet.
3. Install the sprinkler unit on the piping using the standard sprinkler wrench. DO NOT use the shield to start or thread the sprinkler into the fitting.
4. Tighten the sprinkler until the water shield is snug against the face of the fitting.



TECHNICAL DATA

SPRINKLER WATER SHIELDS AND GUARDS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

C-1 Guard with Water Shield:

Viking frame style pendent sprinklers and Model C-1 Water Shields must be installed on the system prior to installing the Model C-1 Guard onto the sprinkler. If the Model C-1 Guard is used:

1. Remove the retaining ring from the guard.
2. Place the Model C-1 Guard over the sprinkler.
3. Spread each half of the cage slightly and gently push the cage onto the shield retainer until it snaps into place.

NOTICE

Excessive spreading of the guard may break the weld.

4. Slide the retaining ring onto the cage by pressing up until it locks into the notches on each of the six wire cage members.

Removal:

To remove, reverse the instructions. If the sprinkler must also be removed, follow the system instructions and notify appropriate personnel.

5. OPERATION

Refer to the sprinkler technical data page for the sprinkler model used. Water shields protect the sprinklers' heat-sensing operating element from water spray discharge from sprinklers located at a higher elevation. The Sprinkler Guard is a hard-wire cage designed to encase the sprinkler and protect it from mechanical damage.

6. INSPECTIONS, TESTS AND MAINTENANCE

Refer to NFPA 25 for Inspection, Testing and Maintenance requirements.

7. AVAILABILITY

Viking sprinkler water shields and guards are available through a network of domestic and international distributors. See The Viking Corporation web site for the closest distributor or contact The Viking Corporation.

8. GUARANTEE

For details of warranty, refer to Viking's current list price schedule or contact Viking directly.

NOTICE

IMPORTANT

- Viking Model A-1, B-1, and C-1 Sprinkler Water Shields and Guards are used in conjunction with Viking frame style ½" or ¾" NPT (15 mm or 20 mm BSP) upright or pendent sprinklers where allowed by the approvals. (Refer to the Approval Chart.)
- Model A-1, B-1 and C-1 Sprinkler Water Shields and Guards are NOT designed to be used on sprinklers installed in recessed escutcheons.
- Always refer to Bulletin Form No. F_091699 - Care and Handling of Sprinklers. Also refer to the appropriate sprinkler data page. Viking sprinklers are designed to be installed in accordance with the latest edition of Viking technical data, the latest standards of NFPA, FM Global, LPCB, APSAD, VdS or other similar organizations, and also with the provisions of governmental codes, ordinances, and standards whenever applicable. The use of certain types of sprinklers may be limited due to occupancy and hazard. Refer to the Authority Having Jurisdiction prior to installation.

⚠ WARNING

Viking products are manufactured and tested to meet the rigid requirements of the approving agency. The sprinklers are designed to be installed in accordance with recognized installation standards. Deviation from the standards or any alteration to the sprinkler after it leaves the factory including, but not limited to: painting, plating, coating, or modification, may render the sprinkler inoperative and will nullify the approval and any guarantee made by The Viking Corporation.



TECHNICAL DATA

SPRINKLER WATER SHIELDS AND GUARDS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com
 Visit the Viking website for the latest edition of this technical data page www.vikinggroupinc.com

APPROVAL CHART			
Guard Model	Sprinkler SIN	FM	VdS
A-1	VK100	✓	
	VK102	✓	
	VK108	✓	
	VK110		✓ ¹
	VK130	✓	
	VK132	✓	
	VK200	✓	
	VK202	✓	✓ ¹
	VK206	✓	✓ ¹
	VK300	✓	
	VK302	✓	✓ ¹
	VK350	✓	
	VK352	✓	✓ ¹
B-1	VK100	✓	
	VK108	✓	
	VK200	✓	
	VK300	✓	
	VK350	✓	
C-1	VK102		✓ ¹
	VK110		✓ ¹
	VK202		✓ ¹
	VK206	✓	✓ ¹
	VK302	✓	✓ ¹
	VK352	✓	✓ ¹
¹ For VdS, only the 3/4" guard PN 06656B is approved. ² This table shows the listing and approvals available at the time of printing. Other approvals may be in process.			



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

SPRINKLERS ARE FRAGILE - HANDLE WITH CARE!**General Handling and Storage:**

- Store sprinklers in a cool, dry place.
- Protect sprinklers during storage, transport, handling, and after installation.
- Use the original shipping containers. DO NOT place sprinklers loose in boxes, bins, or buckets.
- Keep sprinklers separated at all times. DO NOT allow metal parts to contact sprinkler operating elements.

For Pre-Assembled Drops:

- Protect sprinklers during handling and after installation.
- For recessed assemblies, use the protective sprinkler cap (Viking Part Number 10364).

Sprinklers with Protective Shields or Caps:

- DO NOT remove shields or caps until after sprinkler installation and there no longer is potential for mechanical damage to the sprinkler operating elements.
- **Sprinkler shields or caps MUST be removed BEFORE placing the system in service!**
- Remove the sprinkler shield by carefully pulling it apart where it is snapped together.
- Remove the cap by turning it slightly and pulling it off the sprinkler.

Sprinkler Installation:

- DO NOT use the sprinkler deflector or operating element to start or thread the sprinkler into a fitting.
- **Use only the designated sprinkler head wrench!** Refer to the current sprinkler technical data page to determine the correct wrench for the model of sprinkler used.
- DO NOT install sprinklers onto piping at the floor level.
- Install sprinklers after the piping is in place to prevent mechanical damage.
- DO NOT allow impacts such as hammer blows directly to sprinklers or to fittings, pipe, or couplings in close proximity to sprinklers. Sprinklers can be damaged from direct or indirect impacts.
- DO NOT attempt to remove drywall, paint, etc., from sprinklers.
- **Take care not to over-tighten the sprinkler and/or damage its operating parts!**

Maximum Torque:**1/2" NPT: 14 ft-lbs****3/4" NPT: 20 ft-lbs.****1" NPT: 30 ft-lbs.****CORRECT**
(Original container used)**INCORRECT**
(Placed loose in box)**CORRECT**
(Protected with caps)**INCORRECT**
(Protective caps not used)**CORRECT**
(Piping is in place at the ceiling)**INCORRECT**
(Sprinkler at floor level)**CORRECT**
(Special installation wrenches)**INCORRECT**
(Designated wrench not used)**⚠ WARNING**

Any sprinkler with a loss of liquid from the glass bulb or damage to the fusible element should be destroyed. Never install sprinklers that have been dropped, damaged, or exposed to temperatures exceeding the maximum ambient temperature allowed. Sprinklers that have been painted in the field must be replaced per NFPA 13. Protect sprinklers from paint and paint overspray in accordance with the installation standards. Do not clean sprinklers with soap and water, ammonia, or any other cleaning fluid. Do not use adhesives or solvents on sprinklers or their operating elements.

Refer to the appropriate technical data page and NFPA standards for complete care, handling, installation, and maintenance instructions. For additional product and system information Viking data pages and installation instructions are available on the Viking Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

PROTECTIVE SPRINKLER SHIELDS AND CAPS

General Handling and Storage:

Many Viking sprinklers are available with a plastic protective cap or shield temporarily covering the operating elements. The snap-on shields and caps are factory installed and are intended to help protect the operating elements from mechanical damage during shipping, storage, and installation. NOTE: It is still necessary to follow the care and handling instructions on the appropriate sprinkler technical data sheets* when installing sprinklers with bulb shields or caps.

WHEN TO REMOVE THE SHIELDS AND CAPS:

NOTE: SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!

Remove the shield or cap from the sprinkler only after checking all of the following:

- The sprinkler has been installed*.
- The wall or ceiling finish work is completed where the sprinkler is installed and there no longer is a potential for mechanical damage to the sprinkler operating elements.

SHIELDS AND CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!



Figure 1: Sprinkler shield being removed from a pendent sprinkler.



Figure 2: Sprinkler cap being removed from a pendent sprinkler.



Figure 3: Sprinkler cap being removed from and upright sprinkler.

HOW TO REMOVE SHIELDS AND CAPS:

No tools are necessary to remove the shields or caps from sprinklers. DO NOT use any sharp objects to remove them! **Take care not to cause mechanical damage to sprinklers when removing the shields or caps.** When removing caps from fusible element sprinklers, use care to prevent dislodging ejector springs or damaging fusible elements. NOTE: Squeezing the sprinkler cap excessively could damage sprinkler fusible elements.

- To remove the shield, simply pull the ends of the shield apart where it is snapped together. Refer to Figure 1.
- To remove the cap, turn it slightly and pull it off the sprinkler. Refer to Figures 2 and 3.

NOTICE

Refer to the current sprinkler technical data page to determine the correct sprinkler wrench for the model of sprinkler used.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

* Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



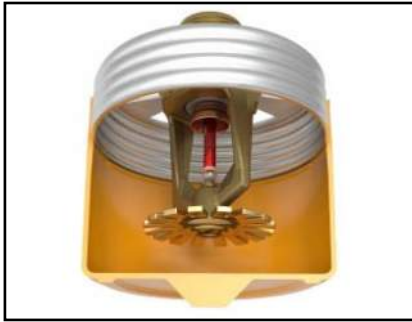
BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058
 Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com



CONCEALED COVER ASSEMBLIES ARE FRAGILE!
TO ASSURE SATISFACTORY PERFORMANCE OF THE PRODUCT, HANDLE WITH CARE.



Concealed Sprinkler and Adapter
 Assembly with Protective Cap



Concealed Sprinkler and Adapter
 Assembly (Protective Cap Removed)

Cover Plate Assembly
 (Pendent Cover 12381 shown)



GENERAL HANDLING AND STORAGE INSTRUCTIONS:

- Do not store in temperatures exceeding 100 °F (38 °C). Avoid direct sunlight and confined areas subject to heat.
- Protect sprinklers and cover assemblies during storage, transport, handling, and after installation.
 - Use original shipping containers.
 - Do not place sprinklers or cover assemblies loose in boxes, bins, or buckets.
- Keep the sprinkler bodies covered with the protective sprinkler cap any time the sprinklers are shipped or handled, during testing of the system, and while ceiling finish work is being completed.
- Use only the designated Viking recessed sprinkler wrench (refer to the appropriate sprinkler data page) to install these sprinklers. **NOTE:** The protective cap is temporarily removed during installation and then placed back on the sprinkler for protection until finish work is completed.
- Do not over-tighten the sprinklers into fittings during installation.
- Do not use the sprinkler deflector to start or thread the sprinklers into fittings during installation.
- Do not attempt to remove drywall, paint, etc., from the sprinklers.
- Remove the plastic protective cap from the sprinkler before attaching the cover plate assembly. **PROTECTIVE CAPS MUST BE REMOVED FROM SPRINKLERS BEFORE PLACING THE SYSTEM IN SERVICE!**

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



BULLETIN

CARE AND HANDLING
OF SPRINKLERS

The Viking Corporation, 210 N Industrial Park Drive, Hastings MI 49058

Telephone: 269-945-9501 Technical Services: 877-384-5464 Fax: 269-818-1680 Email: techsvcs@vikingcorp.com

USE THE FOLLOWING PRECAUTIONS WHEN HANDLING WAX-COATED SPRINKLERS

Many of Viking's sprinklers are available with factory-applied wax coating for corrosion resistance. These sprinklers MUST receive appropriate care and handling to avoid damaging the wax coating and to assure satisfactory performance of the product.

General Handling and Storage of Wax-Coated Sprinklers:

- Store the sprinklers in a cool, dry place (in temperatures below the maximum ambient temperature allowed for the sprinkler temperature rating. Refer to Table 1 below.)
- Store containers of wax-coated sprinklers separate from other sprinklers.
- Protect the sprinklers during storage, transport, handling, and after installation.
- Use original shipping containers.
- Do not place sprinklers in loose boxes, bins, or buckets.

Installation of Wax-Coated Sprinklers:

Use only the special sprinkler head wrench designed for installing wax-coated Viking sprinklers (any other wrench may damage the unit).

- Take care not to crack the wax coating on the units.
- For touching up the wax coating after installation, wax is available from Viking in bar form. Refer to Table 1 below. The coating MUST be repaired after sprinkler installation to protect the corrosion-resistant properties of the sprinkler.
- Use care when locating sprinklers near fixtures that can generate heat. Do not install sprinklers where they would be exposed to temperatures exceeding the maximum recommended ambient temperature for the temperature rating used.
- Inspect the coated sprinklers frequently soon after installation to verify the integrity of the corrosion resistant coating. Thereafter, inspect representative samples of the coated sprinklers in accordance with NFPA 25. Close up visual inspections are necessary to determine whether the sprinklers are being affected by corrosive conditions.

TABLE 1

Sprinkler Temperature Rating (Fusing Point)	Wax Part Number	Wax Melting Point	Maximum Ambient Ceiling Temperature ¹	Wax Color
155 °F (68 °C) / 165 °F (74 °C)	02568A	148 °F (64 °C)	100 °F (38 °C)	Light Brown
175 °F (79 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
200 °F (93 °C)	04146A	161 °F (71 °C)	150 °F (65 °C)	Brown
220 °F (104 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown
286 °F (141 °C)	02569A	170 °F (76 °C)	150 °F (65 °C)	Dark Brown

¹ Based on NFPA-13. Other limits may apply, depending on fire loading, sprinkler location, and other requirements of the Authority Having Jurisdiction. Refer to specific installation standards.



Never install sprinklers that have been dropped, damaged, or exposed to temperatures in excess of the maximum ambient temperature allowed.

Refer to the appropriate current technical data pages for complete care, handling, and installation instructions. Data pages are included with each shipment from Viking or Viking distributors. They can also be found on the Web site at www.vikinggroupinc.com.



Submittal Cover Sheet

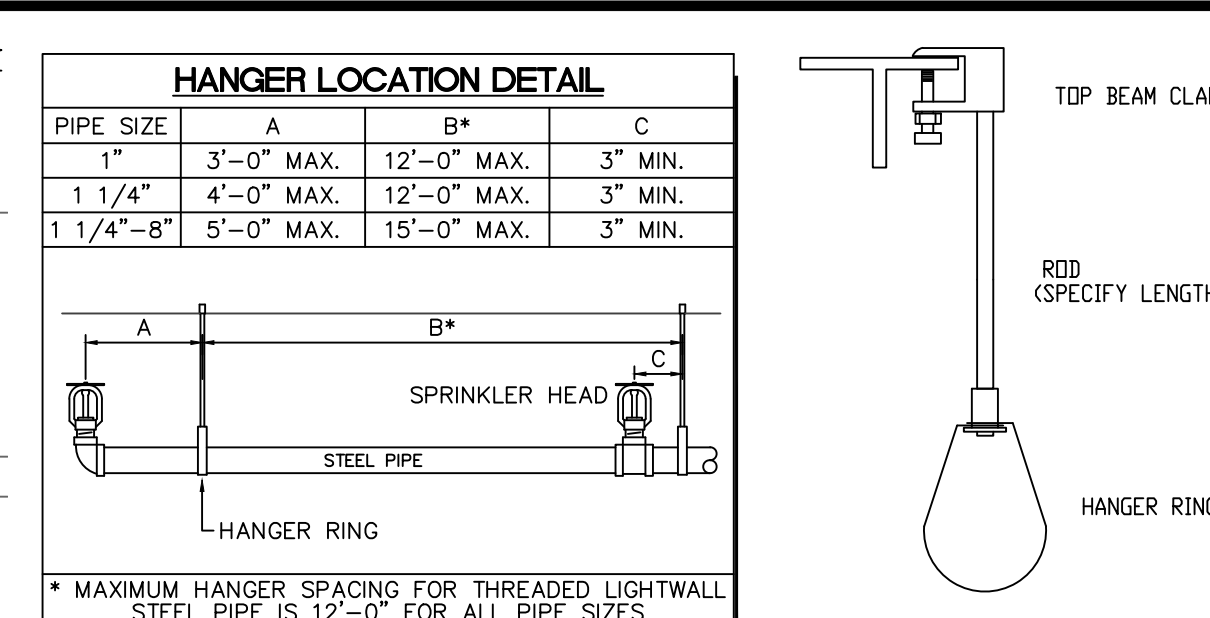
All Submittals are to be uploaded as one (1) combined PDF document including this cover sheet.

PROJECT NUMBER / NAME:	07366-215 – USCS Lake City Phase 3
SUBMITTAL NUMBER:	211316-1.0
SUBMITTAL SUBJECT TITLE:	Wiginton Fire Systems Drawings
DATE OF SUBMISSION:	08.28.23
REFERENCE SPECIFICATION SECTION:	211316
SUBCONTRACTOR COMPANY NAME:	Wiginton Fire Systems
SUBCONTRACTOR CONTACT NAME:	Payton Davis
FULL OR PARTIAL SUBMITTAL:	Full

Important requirements for all submittals:

1. Submittals shall include a table of contents outlining the content included for the submission.
2. Submittals shall identify equipment, systems or materials using the same symbols as used on the schedules, drawings or applicable paragraphs/ sections of the specification.
3. Submittals shall clearly identify the name of Manufacturers included in the submission.
4. Reference Specification Section 010000-General Requirements for more information.





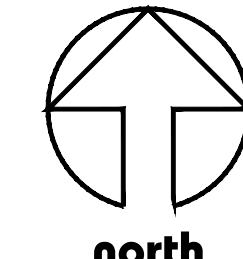
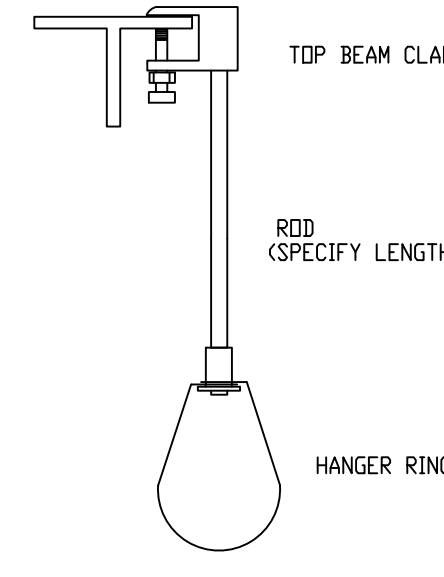
FOR ALL PRE-ACTION SYSTEMS:

- * BRANCH LINES SHALL BE PITCHED AT LEAST 1/2" PER 10 FT.
- * MAINS SHALL BE PITCHED AT LEAST 1/2" PER 10 FT.

HANGER LOCATION DETAIL

PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/4"-8"	5'-0" MAX.	15'-0" MAX.	3" MIN.

* MAXIMUM HANGER SPACING FOR THREADED LIGHTWALL STEEL PIPE IS 12'-0"

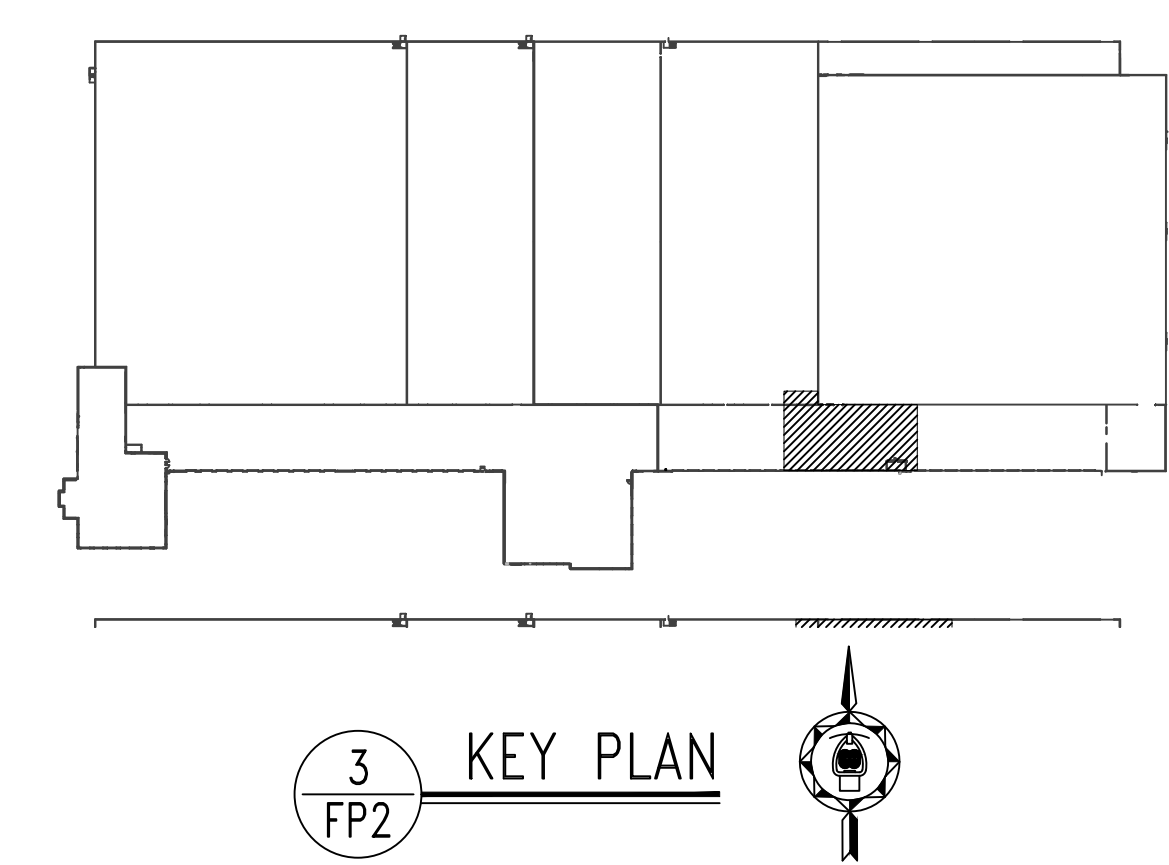


BRANCH OFFICE LOCATIONS:

Atlanta, GA	Atlanta, GA
404.389.5200	404.389.5200
Houston, TX	Houston, TX
832.728.6100	832.728.6100
Orlando, FL	Orlando, FL
407.585.3200	407.585.3200
Tampa, FL	Tampa, FL
813.623.2333	813.623.2333
W Palm Bch, FL	W Palm Bch, FL

[illegible]

SCALE: 1/4" = 1'-0"
SPKRS THIS SHEET: 0
SPKRS ON JOB: 5,798
AHJ: CCFD
WFS SALES: KRH
CUSTOMER: STELLAR
PERMIT NO:



3 KEY PLAN

1 PARTIAL NEW RAILDOCK FEED PLAN
FP2 SCALE 1/4" = 1'-0"

[illegible]

SPECIAL NOTE REGARDING M.I.C.:
WIGINTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGINTON DOES NOT WARRANT MATERIALS FROM DETRIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTAINENCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258

Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS

DATE: 08/17/23

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

PROJECT NAME/ADDRESS:

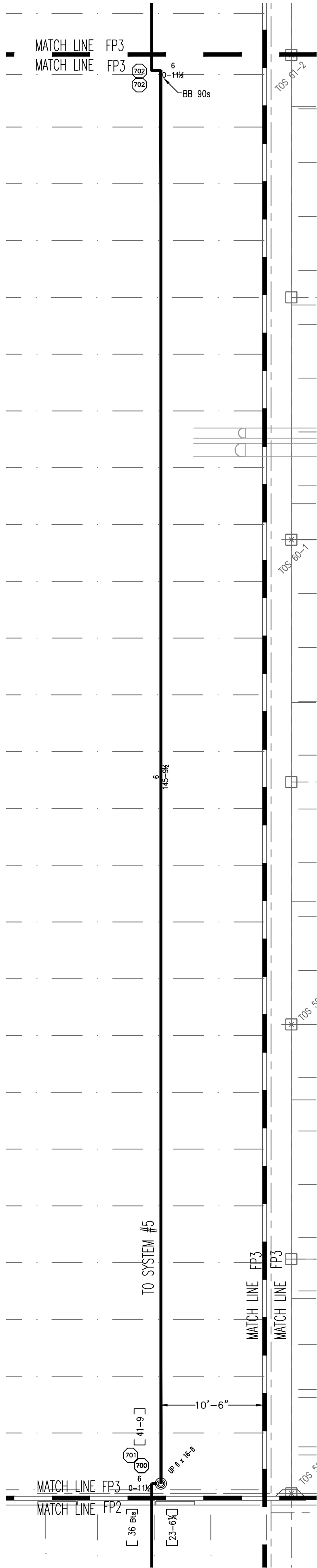
PARTIAL NEW RAILROAD OVERHEAD PLANT

SHEET TITLE:

1010780
PROJECT NO:

FP **2** OF **23**
DRAWING NO:

CONTINUES ON DETAIL 2
THIS SHEET.



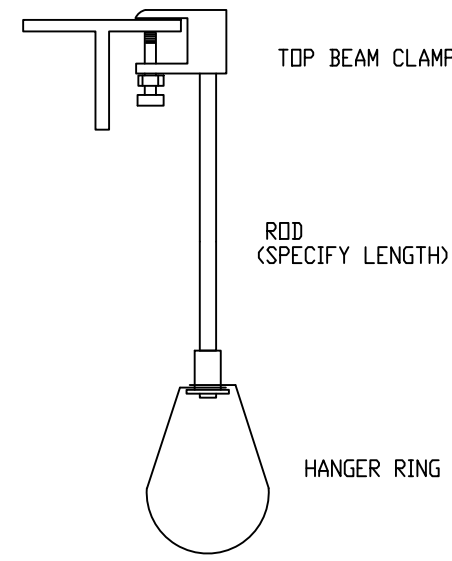
1 PARTIAL NEW RAILDOCK FEED PLAN
SCALE 1/8" = 1'-0"



2 PARTIAL NEW RAILDOCK FEED PLAN
SCALE 1/8" = 1'-0"

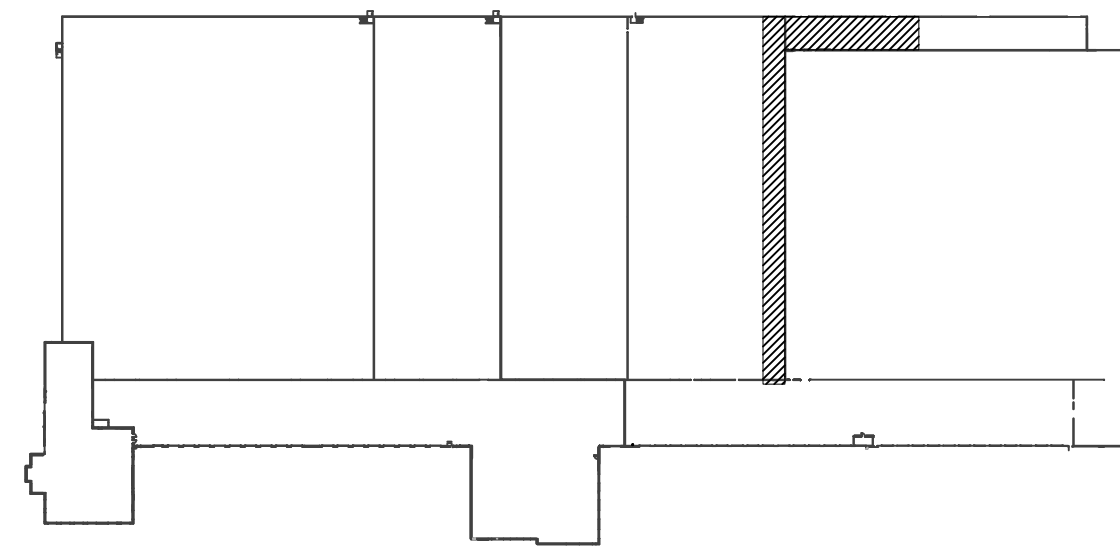
HANGER LOCATION DETAIL			
PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/2"-8"	5'-0" MAX.	15'-0" MAX.	3" MIN.

* MAXIMUM HANGER SPACING FOR THREADED LIGHTWALL STEEL PIPE IS 12'-0" FOR ALL PIPE SIZES

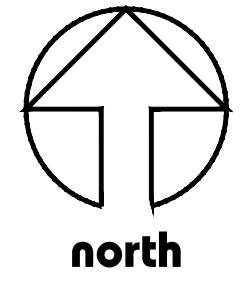


3 HANGER #01
N.T.S.

FOR ALL PRE-ACTION SYSTEMS:
* BRANCH LINES SHALL BE PITCHED AT LEAST 1/2" PER 10 FT.
* MAINS SHALL BE PITCHED AT LEAST 1/2" PER 10 FT.



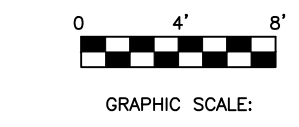
4 KEY PLAN
FP3



BRANCH OFFICE LOCATIONS:	
Dallas, TX	404.389.8861
Jacksonville, FL	904.262.6107
Orlando, FL	407.585.3300
Tampa, FL	813.633.3333
Fort Myers, FL	352.886.2402
Corpus Christi, TX	361.682.1331

MATERIALS & ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
1-2	THREADED PIPE	SC&40	STEEL CHANNEL
1-1/2-6	WELDED PIPE	SC&13	STEEL CHANNEL
8	WELDED PIPE	SC&10	STEEL CHANNEL
		SC&6	STEEL CHANNEL
		SC&4	STEEL CHANNEL
		SC&3	STEEL CHANNEL
		SC&2	STEEL CHANNEL
		SC&1	STEEL CHANNEL
		SC&0	STEEL CHANNEL
		SC&-1	STEEL CHANNEL
		SC&-2	STEEL CHANNEL
		SC&-3	STEEL CHANNEL
		SC&-4	STEEL CHANNEL
		SC&-5	STEEL CHANNEL
		SC&-6	STEEL CHANNEL
		SC&-7	STEEL CHANNEL
		SC&-8	STEEL CHANNEL
		SC&-9	STEEL CHANNEL
		SC&-10	STEEL CHANNEL
		SC&-11	STEEL CHANNEL
		SC&-12	STEEL CHANNEL
		SC&-13	STEEL CHANNEL
		SC&-14	STEEL CHANNEL
		SC&-15	STEEL CHANNEL
		SC&-16	STEEL CHANNEL
		SC&-17	STEEL CHANNEL
		SC&-18	STEEL CHANNEL
		SC&-19	STEEL CHANNEL
		SC&-20	STEEL CHANNEL
		SC&-21	STEEL CHANNEL
		SC&-22	STEEL CHANNEL
		SC&-23	STEEL CHANNEL
		SC&-24	STEEL CHANNEL
		SC&-25	STEEL CHANNEL
		SC&-26	STEEL CHANNEL
		SC&-27	STEEL CHANNEL
		SC&-28	STEEL CHANNEL
		SC&-29	STEEL CHANNEL
		SC&-30	STEEL CHANNEL
		SC&-31	STEEL CHANNEL
		SC&-32	STEEL CHANNEL
		SC&-33	STEEL CHANNEL
		SC&-34	STEEL CHANNEL
		SC&-35	STEEL CHANNEL
		SC&-36	STEEL CHANNEL
		SC&-37	STEEL CHANNEL
		SC&-38	STEEL CHANNEL
		SC&-39	STEEL CHANNEL
		SC&-40	STEEL CHANNEL
		SC&-41	STEEL CHANNEL
		SC&-42	STEEL CHANNEL
		SC&-43	STEEL CHANNEL
		SC&-44	STEEL CHANNEL
		SC&-45	STEEL CHANNEL
		SC&-46	STEEL CHANNEL
		SC&-47	STEEL CHANNEL
		SC&-48	STEEL CHANNEL
		SC&-49	STEEL CHANNEL
		SC&-50	STEEL CHANNEL
		SC&-51	STEEL CHANNEL
		SC&-52	STEEL CHANNEL
		SC&-53	STEEL CHANNEL
		SC&-54	STEEL CHANNEL
		SC&-55	STEEL CHANNEL
		SC&-56	STEEL CHANNEL
		SC&-57	STEEL CHANNEL
		SC&-58	STEEL CHANNEL
		SC&-59	STEEL CHANNEL
		SC&-60	STEEL CHANNEL
		SC&-61	STEEL CHANNEL
		SC&-62	STEEL CHANNEL
		SC&-63	STEEL CHANNEL
		SC&-64	STEEL CHANNEL
		SC&-65	STEEL CHANNEL
		SC&-66	STEEL CHANNEL
		SC&-67	STEEL CHANNEL
		SC&-68	STEEL CHANNEL
		SC&-69	STEEL CHANNEL
		SC&-70	STEEL CHANNEL
		SC&-71	STEEL CHANNEL
		SC&-72	STEEL CHANNEL
		SC&-73	STEEL CHANNEL
		SC&-74	STEEL CHANNEL
		SC&-75	STEEL CHANNEL
		SC&-76	STEEL CHANNEL
		SC&-77	STEEL CHANNEL
		SC&-78	STEEL CHANNEL
		SC&-79	STEEL CHANNEL
		SC&-80	STEEL CHANNEL
		SC&-81	STEEL CHANNEL
		SC&-82	STEEL CHANNEL
		SC&-83	STEEL CHANNEL
		SC&-84	STEEL CHANNEL
		SC&-85	STEEL CHANNEL
		SC&-86	STEEL CHANNEL
		SC&-87	STEEL CHANNEL
		SC&-88	STEEL CHANNEL
		SC&-89	STEEL CHANNEL
		SC&-90	STEEL CHANNEL
		SC&-91	STEEL CHANNEL
		SC&-92	STEEL CHANNEL
		SC&-93	STEEL CHANNEL
		SC&-94	STEEL CHANNEL
		SC&-95	STEEL CHANNEL
		SC&-96	STEEL CHANNEL
		SC&-97	STEEL CHANNEL
		SC&-98	STEEL CHANNEL
		SC&-99	STEEL CHANNEL
		SC&-100	STEEL CHANNEL



SCALE: 1/8" = 1'-0"
SPKRS THIS SHEET: 0
SPKRS ON JOB: 5,798
AHJ: CCFD
WFS SALES: KRH
CUSTOMER: STELLAR
PERMIT NO:

SEAL:



SPECIAL NOTE REGARDING M.I.C.:
WIGNTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURCHASER TO REVIEW EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURCHASER. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGNTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSION CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER/MANAGER TO PROVIDE THE REQUIRED MAINTENANCE AND UPKEEP OF THIS FIRE PROTECTION SYSTEM AND RELATED EQUIPMENT ACCORDING TO THE LATEST EDITION OF NFPA 25 AND ALL GOVERNING CODES AND ORDINANCES.

WFS REVIEW	
DATE	RELEASED FOR
BY	

SYSTEM DEMAND INFORMATION									
DESIGN AREA	DENSITY/AREA	FDC TO SPRINKLER	UPPER REGION	PER REGION	FDC TO DOWN	LOCATION	DESIGN AREA	INCIDENT	SPRINKLER

DESIGN CRITERIA									
DESIGN AREA	INCIDENT	SPRINKLER	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA

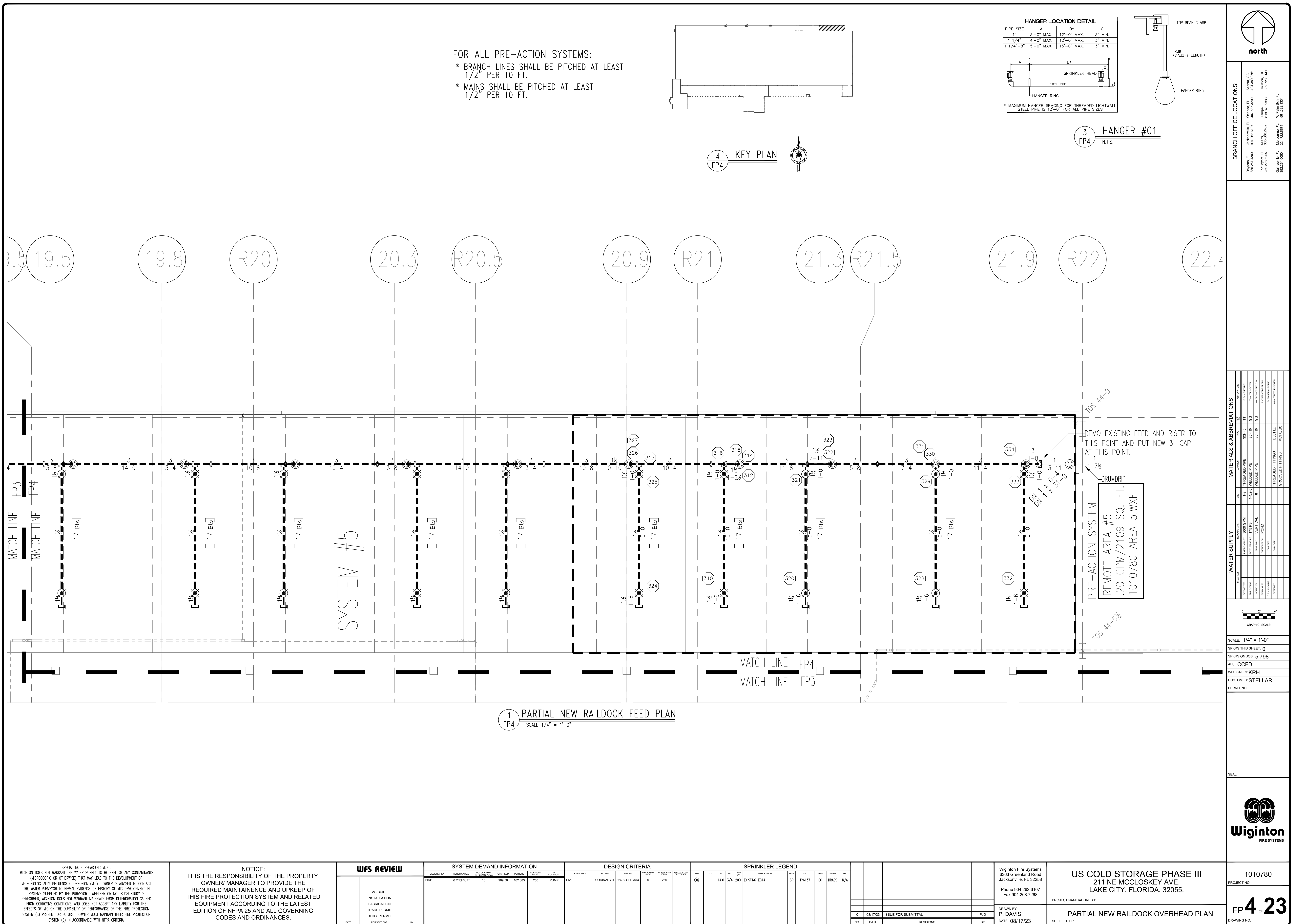
SPRINKLER LEGEND									
SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER	SPRINKLER

NO.	DATE	REVISIONS	BY
0	08/17/23	ISSUE FOR SUBMITTAL	PJD

Wignton Fire Systems
6383 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268
DRAWN BY:
P. DAVIS
DATE: 08/17/23

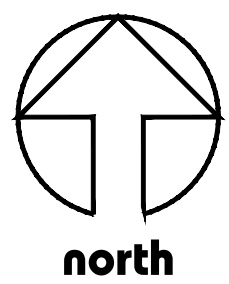
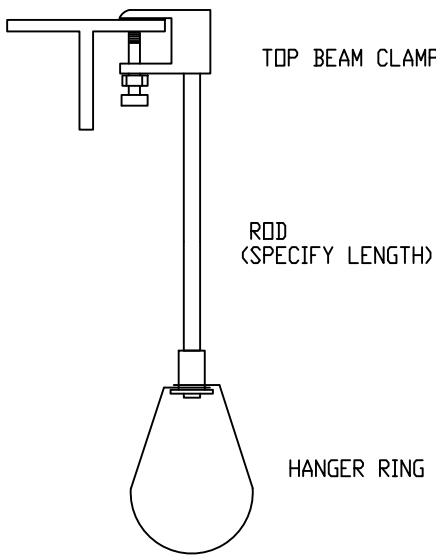
US COLD STORAGE PHASE III
211 NE McCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.
PROJECT NAME/ADDRESS:
PARTIAL NEW RAILDOCK OVERHEAD PLAN
SHEET TITLE:

1010780
PROJECT NO:
3 of 23
DRAWING NO:



HANGER LOCATION DETAIL			
PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/2"-8"	5'-0" MAX.	15'-0" MAX.	3" MIN.

* MAXIMUM HANGER SPACING FOR THREADED LIGHTWALL STEEL PIPE IS 12'-0" FOR ALL PIPE SIZES.

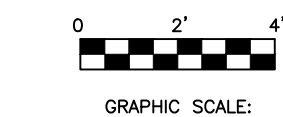


BRANCH OFFICE LOCATIONS:

Daytona, FL	Jacksonville, FL	Orlando, FL	Atlanta, GA
386.257.4300	904.262.6107	404.389.8861	404.389.8861
Fort Myers, FL	Miami, FL	Tampa, FL	Houston, TX
239.276.9966	305.886.2402	813.633.2333	832.728.1414
Corpus Christi, FL	Nashville, FL	W. Palm Beach, FL	
302.254.0040	321.722.0565	861.882.1331	

MATERIALS & ABBREVIATIONS

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
1-2	THREADED PIPE	SC-10	SC-10
1-1/2-6	WELDED PIPE	SC-10	SC-10
8	DUCTILE	SC-10	SC-10
10	DUCTILE	SC-10	SC-10
12	DUCTILE	SC-10	SC-10
14	DUCTILE	SC-10	SC-10
16	DUCTILE	SC-10	SC-10
18	DUCTILE	SC-10	SC-10
20	DUCTILE	SC-10	SC-10
22	DUCTILE	SC-10	SC-10
24	DUCTILE	SC-10	SC-10
26	DUCTILE	SC-10	SC-10
28	DUCTILE	SC-10	SC-10
30	DUCTILE	SC-10	SC-10
32	DUCTILE	SC-10	SC-10
34	DUCTILE	SC-10	SC-10
36	DUCTILE	SC-10	SC-10
38	DUCTILE	SC-10	SC-10
40	DUCTILE	SC-10	SC-10
42	DUCTILE	SC-10	SC-10
44	DUCTILE	SC-10	SC-10
46	DUCTILE	SC-10	SC-10
48	DUCTILE	SC-10	SC-10
50	DUCTILE	SC-10	SC-10
52	DUCTILE	SC-10	SC-10
54	DUCTILE	SC-10	SC-10
56	DUCTILE	SC-10	SC-10
58	DUCTILE	SC-10	SC-10
60	DUCTILE	SC-10	SC-10
62	DUCTILE	SC-10	SC-10
64	DUCTILE	SC-10	SC-10
66	DUCTILE	SC-10	SC-10
68	DUCTILE	SC-10	SC-10
70	DUCTILE	SC-10	SC-10
72	DUCTILE	SC-10	SC-10
74	DUCTILE	SC-10	SC-10
76	DUCTILE	SC-10	SC-10
78	DUCTILE	SC-10	SC-10
80	DUCTILE	SC-10	SC-10
82	DUCTILE	SC-10	SC-10
84	DUCTILE	SC-10	SC-10
86	DUCTILE	SC-10	SC-10
88	DUCTILE	SC-10	SC-10
90	DUCTILE	SC-10	SC-10
92	DUCTILE	SC-10	SC-10
94	DUCTILE	SC-10	SC-10
96	DUCTILE	SC-10	SC-10
98	DUCTILE	SC-10	SC-10
100	DUCTILE	SC-10	SC-10



SCALE: 1/4" = 1'-0"
SPKRS ON THIS SHEET: 0
SPKRS ON JOB: 5,798
AHL: CCFD
WFS SALES: KRH
CUSTOMER: STELLAR
PERMIT NO:

SEAL:



SPECIAL NOTE REGARDING M.I.C.:
WIGINTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURCHASER TO REVIEW EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURCHASER. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGINTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSION CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER/ MANAGER TO PROVIDE THE REQUIRED MAINTENANCE AND UPKEEP OF THIS FIRE PROTECTION SYSTEM AND RELATED EQUIPMENT ACCORDING TO THE LATEST EDITION OF NFPA 25 AND ALL GOVERNING CODES AND ORDINANCES.

WFS REVIEW		
DATE	RELEASED FOR	BY

SYSTEM DEMAND INFORMATION									
DESIGN AREA	DENSITY/AREA	W.C. SQ. FT. AREA	UPR. PRESS.	FR. PRESS.	FR. LOSS	LOC. LOSS	DESIGN AREA	INCHES	SPRINKLER
FIVE	31/2109 SQ. FT.	10	960.56	152.883	250	PUMP	FIVE	ORDINARY II	324 SQ. FT. MAX

DESIGN CRITERIA									
DESIGN AREA	INCHES	SPRINKLER	DESIGN AREA	INCHES	SPRINKLER	DESIGN AREA	INCHES	SPRINKLER	DESIGN AREA
FIVE	ORDINARY II	324 SQ. FT. MAX	0	250					

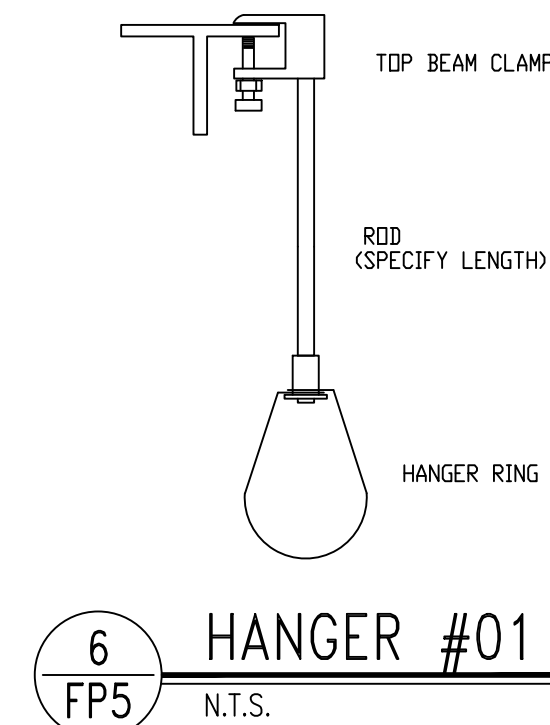
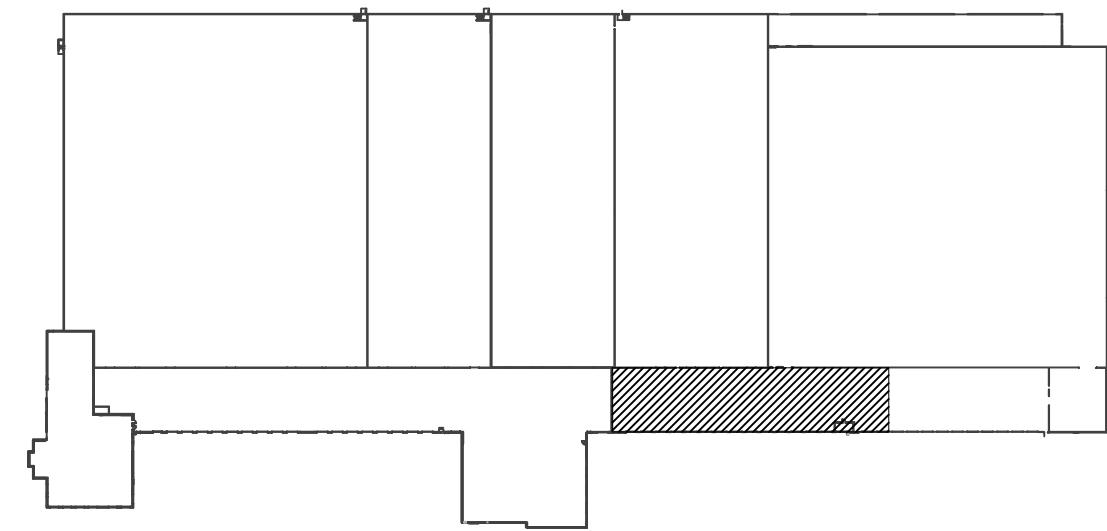
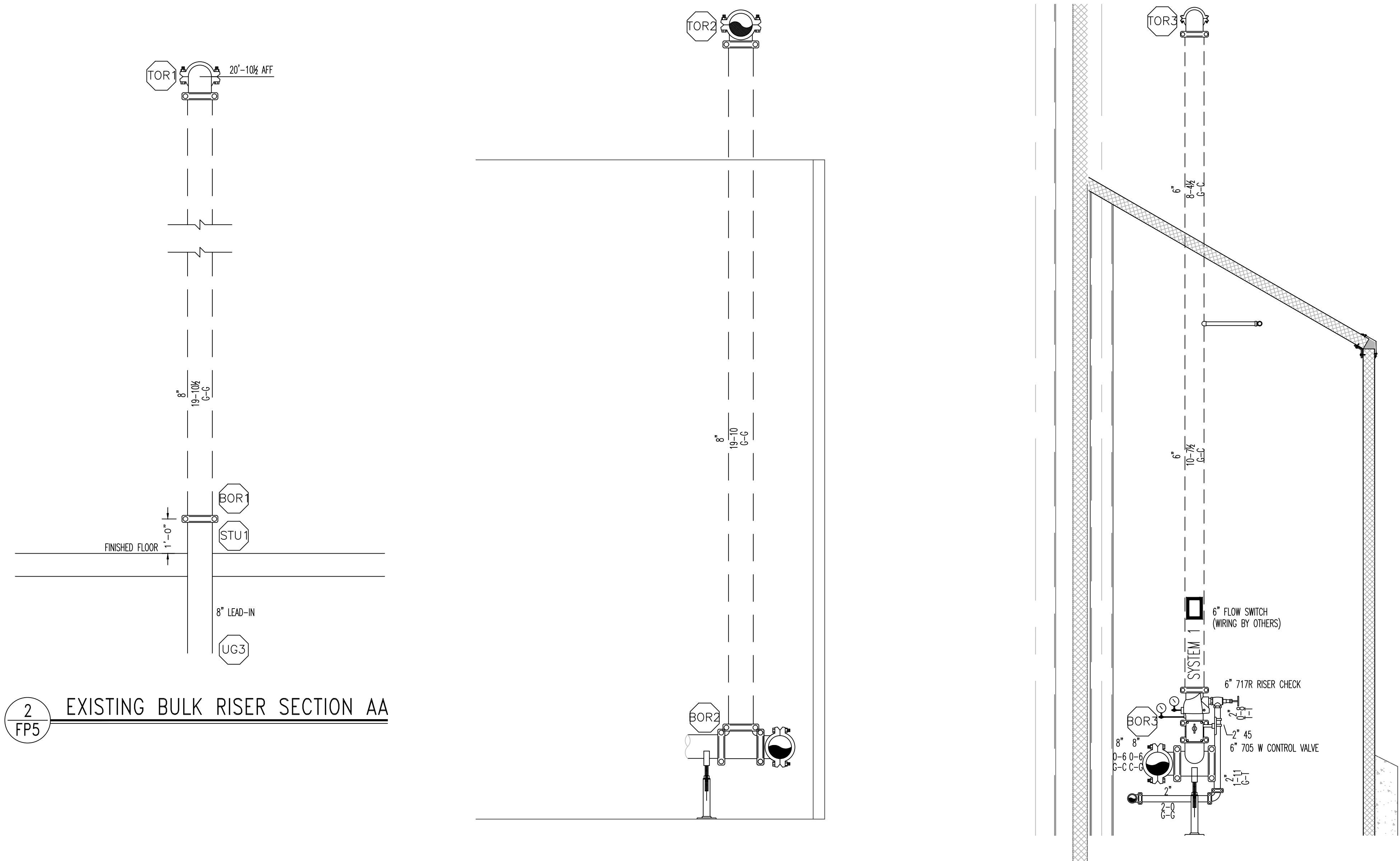
SPRINKLER LEGEND									
QTY	SP	HT	TYPE	NAME & MODEL	SR	TA	TYPE	FRSH	EXC.
0	14.0	3/4	200	EXISTING EC14	SR	TY6137	EC	BRASS	N/A

0	08/17/23	ISSUE FOR SUBMITTAL	PJD
NO.	DATE	REVISIONS	BY

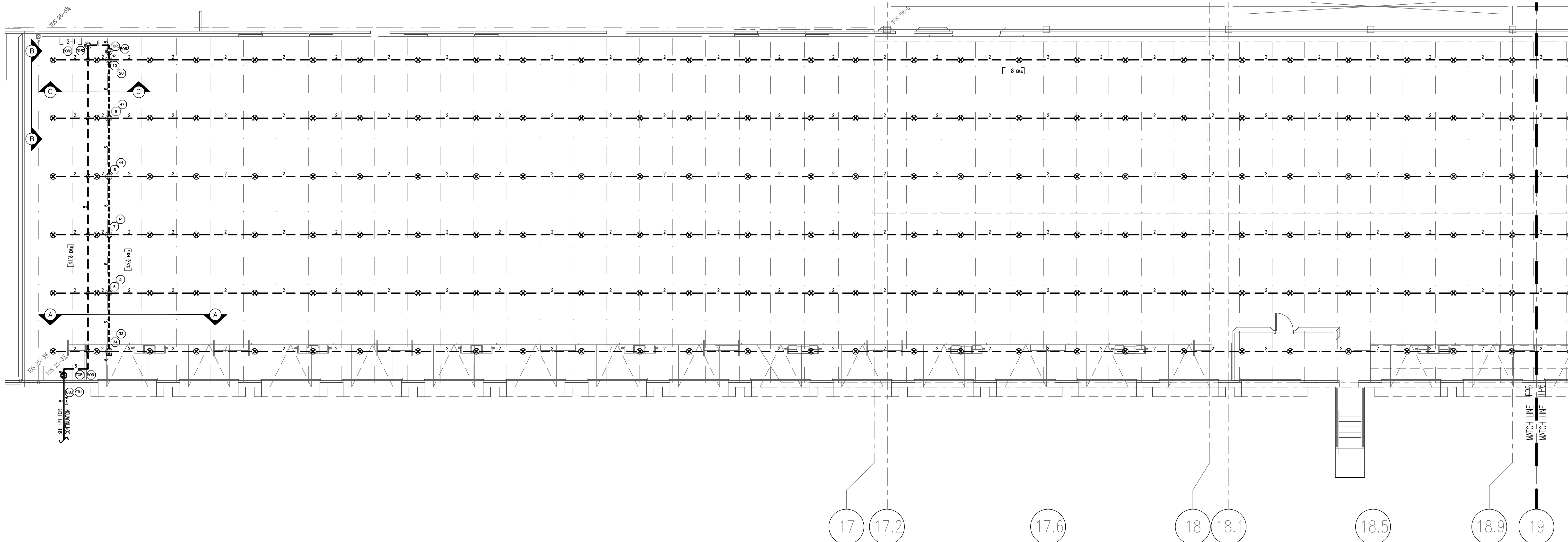
Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32256
Phone 904.262.6107
Fax 904.268.7268

US COLD STORAGE PHASE III
211 NE McCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.
PROJECT NAME/ADDRESS:
PARTIAL NEW RAILDOCK OVERHEAD PLAN
SHEET TITLE:

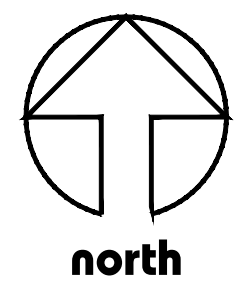
1010780
PROJECT NO:
4 of 23
DRAWING NO:



THIS PLAN IS FOR HYDRAULIC REFERENCE ONLY
ALL UNDERGROUND PIPING IS EXISTING



1 PARTIAL TRUCK DOCK FIRE PROTECTION PLAN
FP5 SCALE 1/8" = 1'-0"



BRANCH OFFICE LOCATIONS:

Atlanta, GA
404.389.8881
Dallas, TX
972.262.1107
Denver, CO
303.733.3333
Houston, TX
281.416.1107
Los Angeles, CA
310.262.1107
Miami, FL
305.262.1107
Minneapolis, MN
612.262.1107
New York, NY
212.262.1107
Phoenix, AZ
602.262.1107
Portland, ME
503.262.1107
San Francisco, CA
415.262.1107
Seattle, WA
206.262.1107
Tampa, FL
813.262.1107
Wichita, KS
316.262.1107

MATERIALS & ABBREVIATIONS

WATER SUPPLY

GRAPHIC SCALE:

SCALE: 1/8" = 1'-0"
SPKRS THIS SHEET: 0
SPKRS ON JOB: 5,798
AHJ: CCFD
WFS SALES: KRH
CUSTOMER: STELLAR
PERMIT NO:

SEAL:



SPECIAL NOTE REGARDING M.I.C.:
WIGNTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURCHASER TO OBTAIN EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURCHASER. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGNTON DOES NOT WARRANT MATERIALS FROM DETERIORATION CAUSED FROM CORROSION CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER/MANAGER TO PROVIDE THE REQUIRED MAINTENANCE AND UPKEEP OF THIS FIRE PROTECTION SYSTEM AND RELATED EQUIPMENT ACCORDING TO THE LATEST EDITION OF NFPA 25 AND ALL GOVERNING CODES AND ORDINANCES.

WFS REVIEW		
DATE	RELEASED FOR	BY

SYSTEM DEMAND INFORMATION									
DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA

DESIGN CRITERIA									
DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA

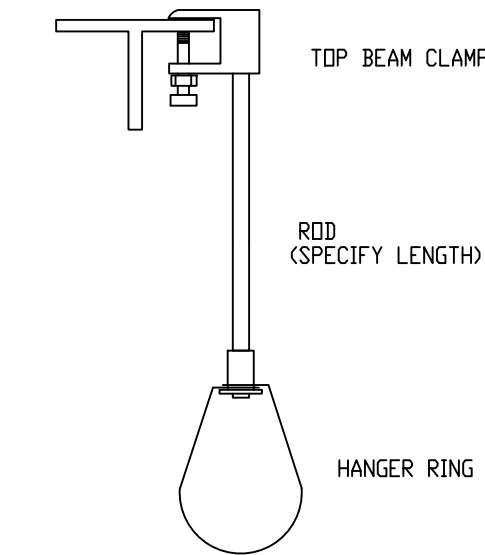
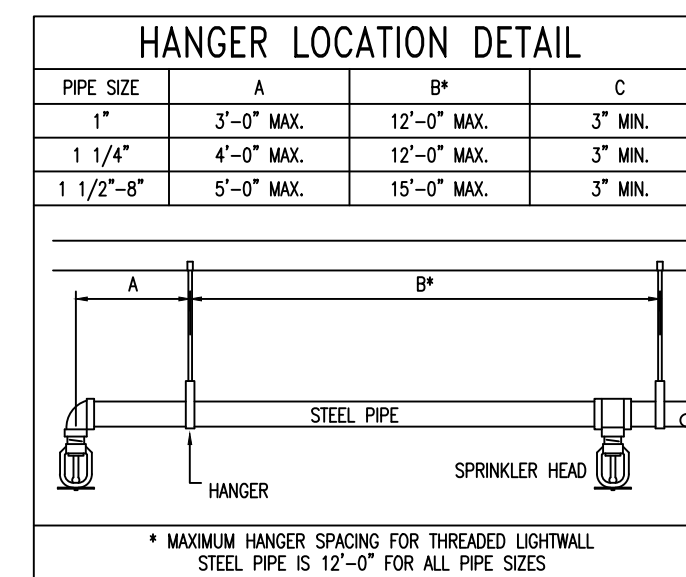
SPRINKLER LEGEND									
SPR	QTY	SPR	QTY	SPR	QTY	SPR	QTY	SPR	QTY
16.8	5/4"	16.8	5/4"	16.8	5/4"	16.8	5/4"	16.8	5/4"

REVISIONS									
NO.	DATE	REVISIONS	BY	DATE	REVISIONS	BY	DATE	REVISIONS	BY
0	08/17/23	ISSUE FOR SUBMITTAL	PJD						

Wignton Fire Systems
6383 Greenland Road
Jacksonville, FL 32256
Phone 904.262.6107
Fax 904.268.7288
DRAWN BY:
P. DAVIS
DATE: 08/17/23

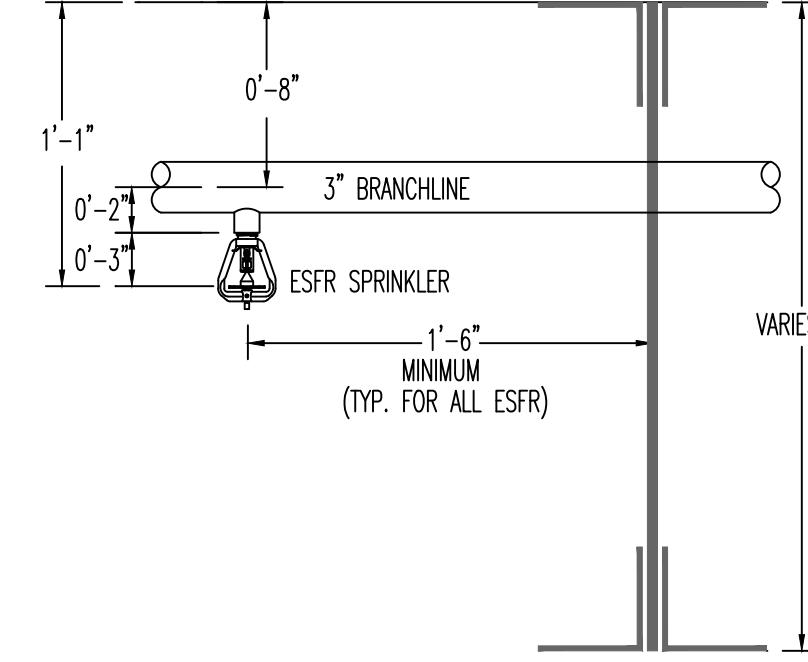
US COLD STORAGE PHASE III
211 NE McCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.
PROJECT NAME/ADDRESS:
PARTIAL TRUCK DOCK FIRE PROTECTION PLAN
SHEET TITLE:

1010780
PROJECT NO:
5 OF 23
DRAWING NO:



BRANCH OFFICE LOCATIONS:

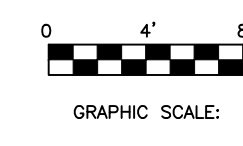
Daytona, FL	386.287.4300	Jacksonville, FL	904.282.6107	Orlando, FL	407.585.2300	Atlanta, GA	404.389.9981
Fort Myers, FL	239.278.5955	Miami, FL	305.688.2402	Tampa, FL	813.623.2333	Houston, TX	832.726.8114
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			



4 ESFR DETAIL
FP6 N.T.S.

LOCATION	TYPE	END AREA	ABOVE
----------	------	----------	-------

17-00000-1	155
------------	-----



SCALE: 1/8" = 1'-0"

KRS THIS SHEET: 78

U: CCFD

CUSTOMER: STELLAR

Al:



1010780

62

DRAWING NO:

SPECIAL NOTE REGARDING M.I.C.:
WINGTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WINGTON DOES NOT WARRANT MATERIALS FROM DETERIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTAINENCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

WFS REVIEW		
	AS-BUILT	
	INSTALLATION	
	FABRICATION	
	TRADE PERMIT	
	BLDG. PERMIT	
DATE	BY: EASON COR.	

[illegible][illegible][illegible]

0	08/17/23	ISSUE FOR SUBMITTAL		PJD
NO	DATE	REVISIONS		BY

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/23

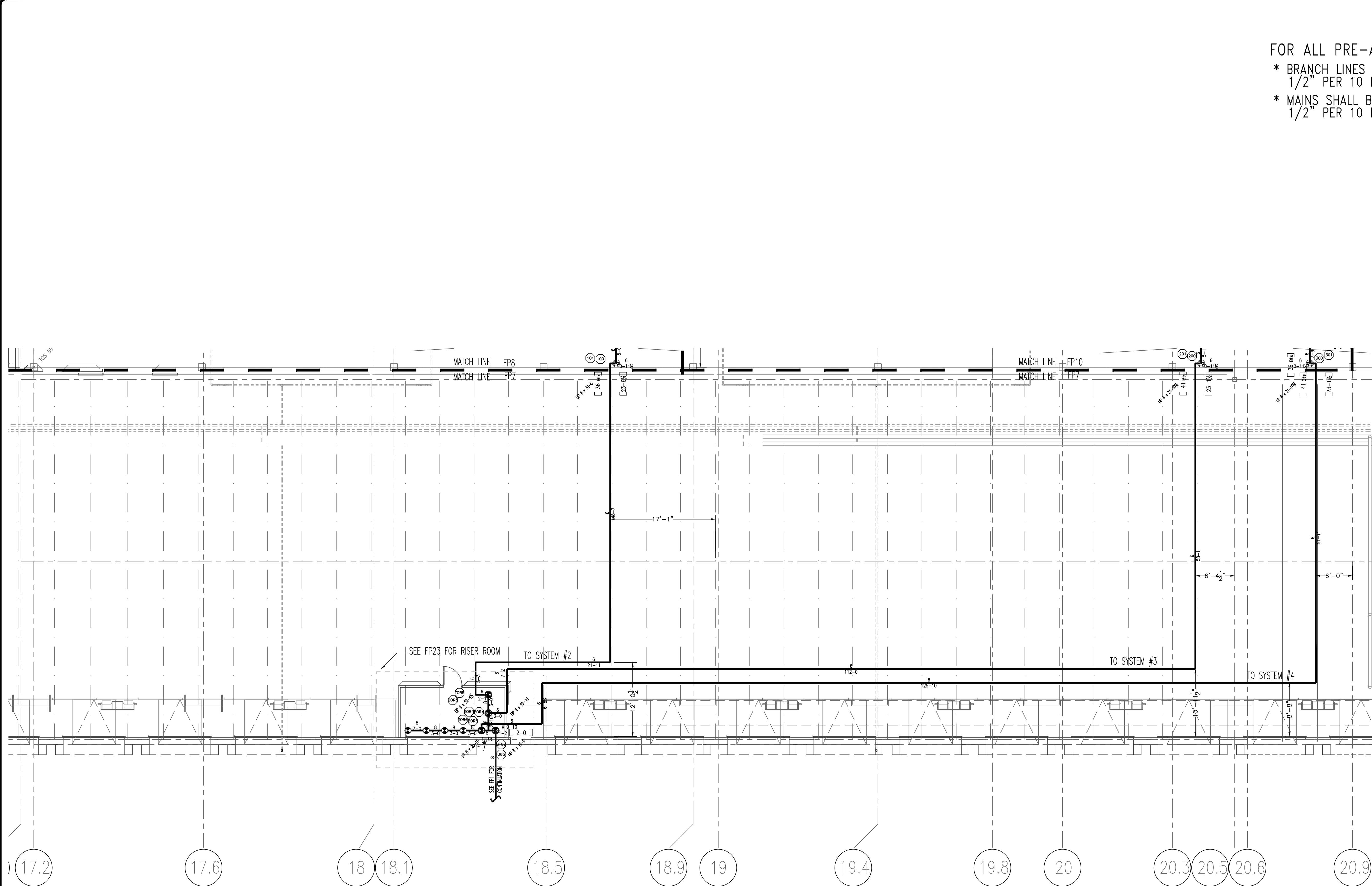
US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

T NAME/ADDRESS:

PARTIAL TRUCK DOCK FIRE PROTECTION R

TITLE:

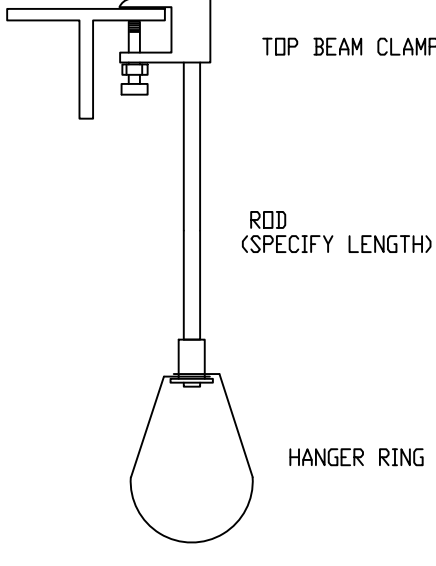
1010780
PROJECT NO:
FP **6** OF **2**
DRAWING NO:



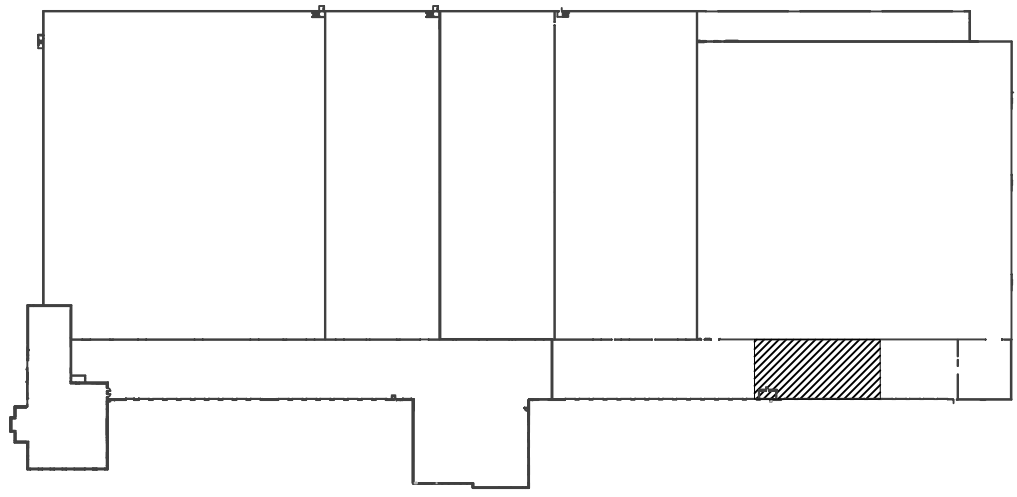
1 PARTIAL OVERHEAD FIRE PROTECTION PLAN
SCALE 1/8" = 1'-0"

FOR ALL PRE-ACTION SYSTEMS:
* BRANCH LINES SHALL BE PITCHED AT LEAST 1/2" PER 10 FT.
* MAINS SHALL BE PITCHED AT LEAST 1/2" PER 10 FT.

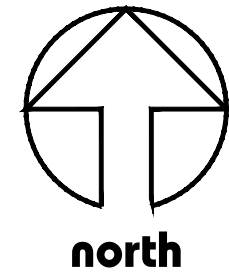
HANGER LOCATION DETAIL			
PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/2"-6"	5'-0" MAX.	15'-0" MAX.	3" MIN.



2 HANGER #01
N.T.S.



3 KEY PLAN



BRANCH OFFICE LOCATIONS:	
Dallas, TX	404.389.8861
Jacksonville, FL	904.262.6107
Orlando, FL	407.585.3300
Atlanta, GA	404.389.8861
Fort Myers, FL	352.886.2402
Miami, FL	305.886.2402
San Antonio, TX	210.486.2402
San Diego, CA	619.486.2402
Seattle, WA	206.486.2402
Wichita, KS	316.486.2402

WATER SUPPLY	
WATER SUPPLY	3000 GPM
WATER SUPPLY	175 PSI
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD
WATER SUPPLY	100% COLD

0	4'	8'
GRAPHIC SCALE		

SCALE: 1/8" = 1'-0"
SPKRS THIS SHEET: 0
SPKRS ON JOB: 5,798
AHJ: CCFD
WFS SALES: KRH
CUSTOMER: STELLAR
PERMIT NO:

SEAL:



SPECIAL NOTE REGARDING M.I.C.:
WIGINTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURCHASER TO REVIEW EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURCHASER. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGINTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSION CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER/ MANAGER TO PROVIDE THE REQUIRED MAINTENANCE AND UPKEEP OF THIS FIRE PROTECTION SYSTEM AND RELATED EQUIPMENT ACCORDING TO THE LATEST EDITION OF NFPA 25 AND ALL GOVERNING CODES AND ORDINANCES.

WFS REVIEW	
DATE	RELEASED FOR
BY	

SYSTEM DEMAND INFORMATION	
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA

DESIGN CRITERIA	
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA

SPRINKLER LEGEND	
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER
SPRINKLER	SPRINKLER

0	08/17/23	ISSUE FOR SUBMITTAL	PJD
NO.	DATE	REVISIONS	BY

Wiginton Fire Systems
6383 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

US COLD STORAGE PHASE III
211 NE McCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.
PROJECT NAME/ADDRESS:
PARTIAL OVERHEAD FIRE PROTECTION PLAN
SHEET TITLE:

1010780
PROJECT NO:
FP 7 OF 23
DRAWING NO:



Daytona, FL	386.297.4300	Jacksonville, FL	904.262.8107	Orlando, FL	407.850.3200	Atlanta, GA	404.399.9681
Fort Myers, FL	239.278.5955	Miami, FL	305.888.2402	Tampa, FL	813.623.2333	Houston, TX	832.728.8141
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			



Wiginton
FIRE SYSTEMS

FP **8** OF **23**
DRAWING NO:



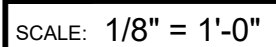
Diagram illustrating the components of a hanging scale:

- TOP BEAM CLAMP
- ROD (SPECIFY LENGTH)
- HANGER RING



BRANCH OFFICE LOCATIONS:

Daytona, FL	386.257.4390	Jacksonville, FL	Orlando, FL	Atlanta, GA
		904.262.6107	407.585.3200	404.369.9981
Fort Myers, FL	239.278.5655	Miami, FL	Tampa, FL	Houston, TX
		305.868.2402	813.623.2333	832.739.8141
Gainesville, FL		Melbourne, FL	W Palm Bch, FL	

[illegible]

SPKRS THIS SHEET: 165

SPKRS ON JOB: 5,798

AHJ: CCFD

WFS SALES: KRH

CUSTOMER: STELLAR

PERMIT NO:

1000

1000

1. *Journal of the American Medical Association*, 2000; 284: 2689-2695.

1. *Journal of the American Medical Association*, 2000; 284: 2689-2695.

1. *Journal of the American Medical Association*, 1997; 277: 1033-1036.

10. *Journal of the American Medical Association*, 2000; 283: 2669-2674.

10. *Journal of the American Medical Association*, 2000; 283: 2669-2675.

1. *Journal of the American Medical Association*, 1997; 277: 1001-1005.

1. *Journal of the American Medical Association*, 2000; 283: 2686-2692.

SEAL: _____

1. *Journal of the American Medical Association*, 2000; 283: 2689-2694.

1. *Journal of the American Medical Association*, 2000; 283: 2689-2696.



Uljia

Wignit
FIRE ON

FILE 07

10. *Journal of the American Medical Association*, 2000; 283: 2669-2674.

--

1010780

PROJECT NO.: 1010700

Downloaded from ascelibrary.org by University of California, San Diego on 06/01/15. Copyright ASCE, For All Rights Reserved, No part of this document may be reproduced without written permission from ASCE.

100

5105

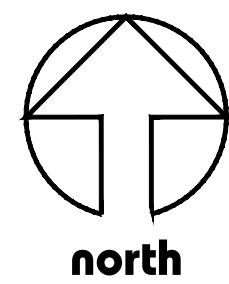
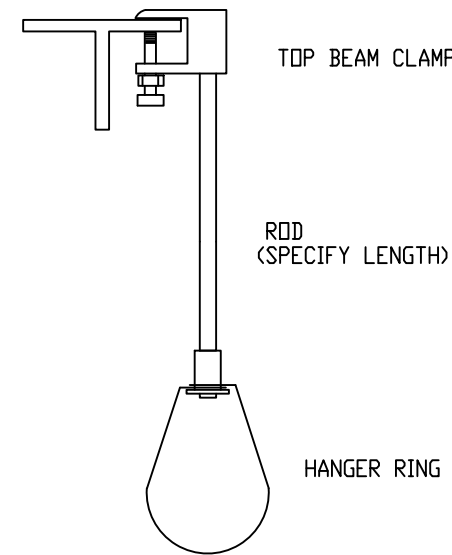
FPI OF 2

DRAWING NO:

HANGER LOCATION DETAIL

PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3' MIN.
1 1/4"	4'-0" MAX.	12'-0" MAX.	3' MIN.
1 1/4"-8"	5'-0" MAX.	15'-0" MAX.	3' MIN.

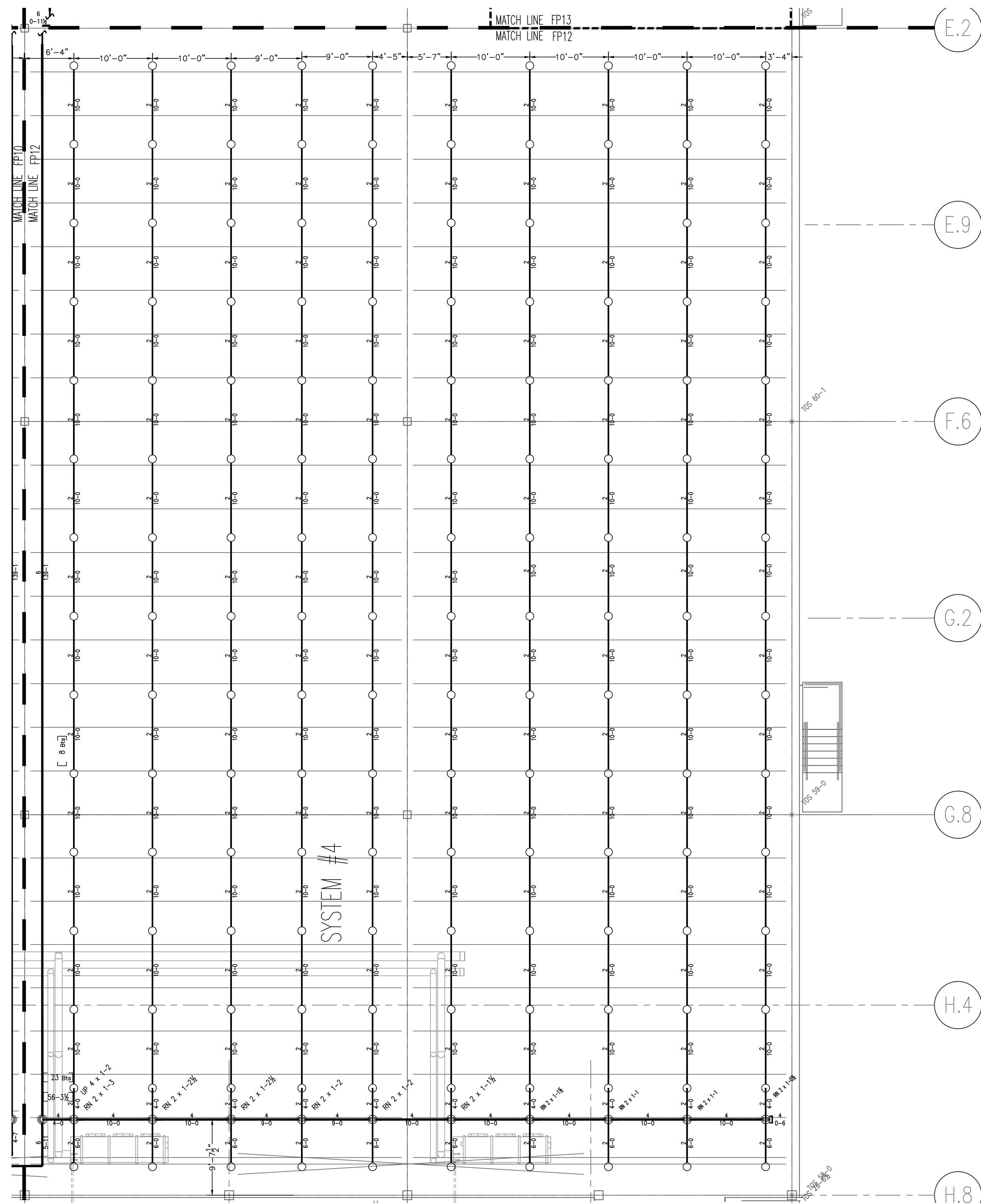
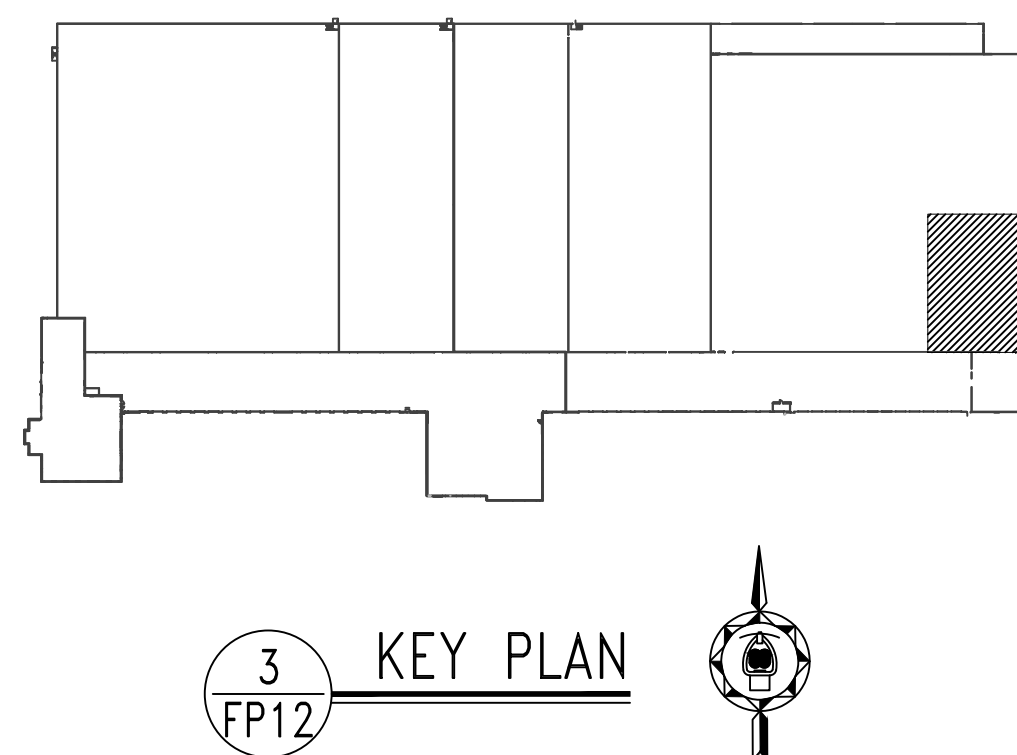
* MAXIMUM HANGER SPACING FOR THREADED LIGHTWALL STEEL PIPE IS 12'-0" FOR ALL PIPE SIZES



BRANCH OFFICE LOCATIONS:

Daytona, FL	305.237.4300	Jacksonville, FL	904.382.6107	Orlando, FL	407.585.3200	Atlanta, GA	404.389.9981
Fort Myers, FL	239.278.5955	Miami, FL	305.865.2402	Tampa, FL	813.623.2333	Houston, TX	832.728.8141
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			

2 HANGER #01
FP12 N.T.S.



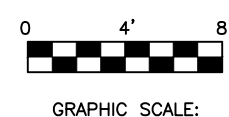
1 PARTIAL OVERHEAD FIRE PROTECTION PLAN
 FP12 SCALE 1/8" = 1'-0"

MATERIALS & ABBREVIATIONS

[illegible]

WATER SUPPLY

FLOW TEST	DATE OF TEST	MAX. CAPACITY	3000 GPM
	TIME OF TEST	MAX. PRESSURE	175 PSI
	START PSI	PUMP TYPE	VERTICAL
	RESIDUAL PSI	ELECTRON FLOW	POND
	GLOBAL FLOWING	TANK SIZE	
	TESTING BY:	TANK TYPE	



SCALE: 1/8" = 1'-0"

SPKRS THIS SHEET: 150

SPKRS ON JOB: 5,798

AHJ: CCFD

WFS SALES: KRH

CUSTOMER: STELLAR

PERMIT NO:

SEAL



1010780
PROJECT NO:

FP **1223** OF **23**
DRAWING NO:

SPECIAL NOTE REGARDING M.I.C.:
WINGTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WINGTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTENANCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

[illegible]

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258

Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/23

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

PROJECT NAME/ADDRESS

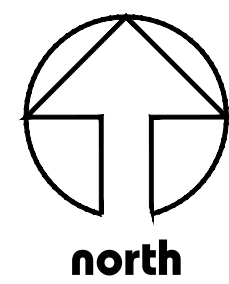
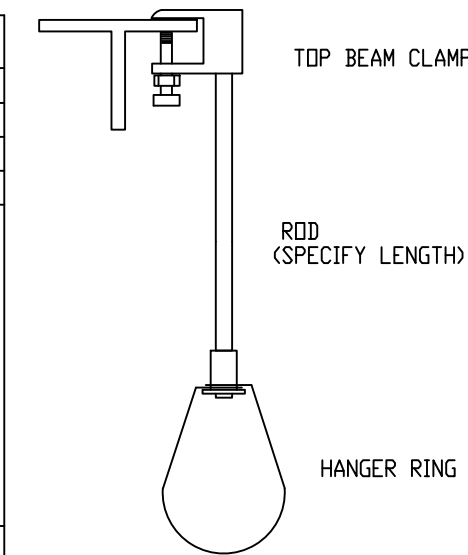
PARTIAL OVERHEAD FIRE PROTECTION PLAN

SHEET TITLE

HANGER LOCATION DETAIL

PIPE SIZE	A	B*	C
1"	3'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/4"	4'-0" MAX.	12'-0" MAX.	3" MIN.
1 1/2 - 8"	5'-0" MAX.	12'-0" MAX.	3" MIN.

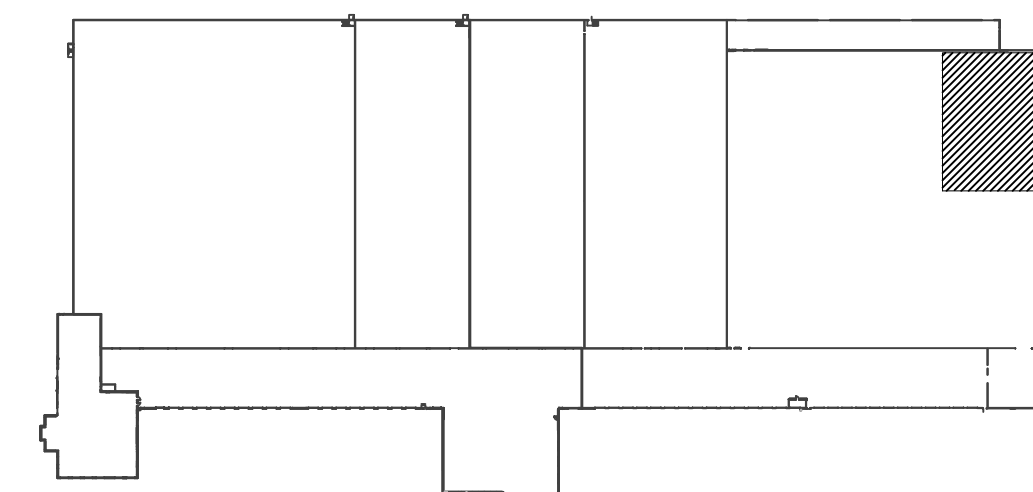
* MAXIMUM HANGER SPACING FOR THREADED LIGHTWALL STEEL PIPE IS 12'-0" FOR ALL PIPE SIZES



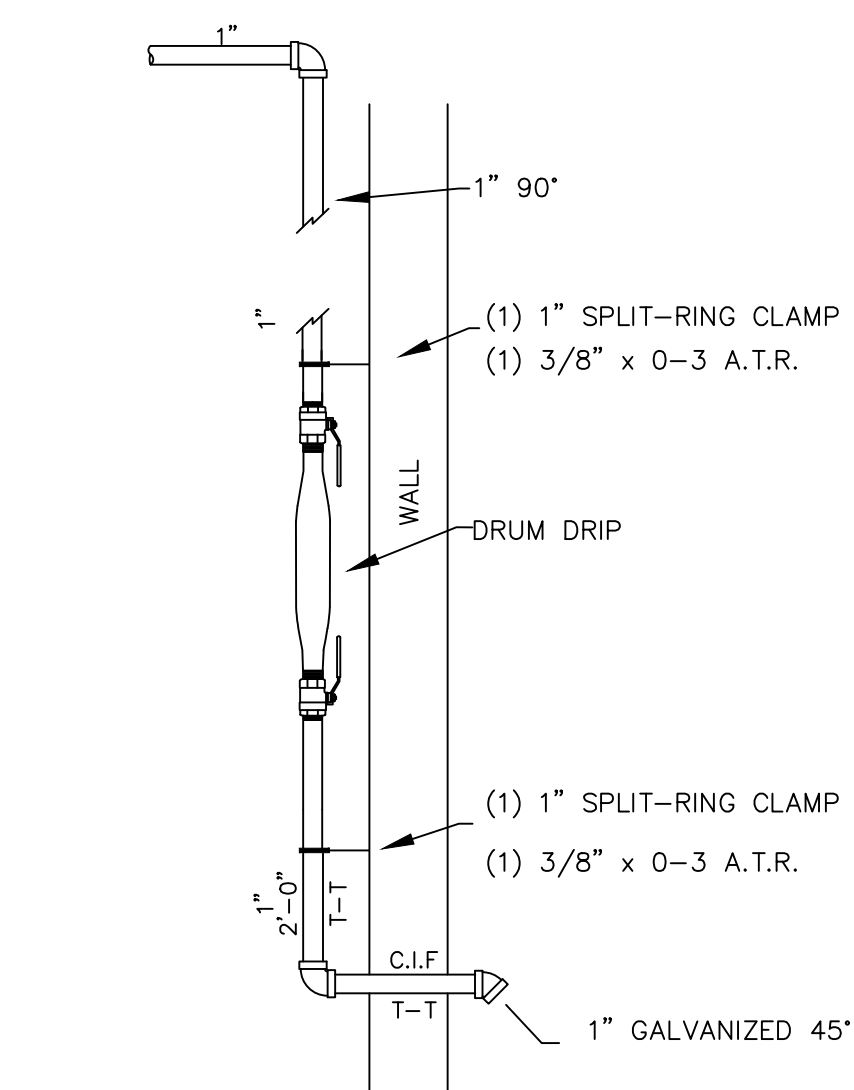
BRANCH OFFICE LOCATIONS:

Daytona, FL	366,257,430	Jacksonville, FL	904,262,6107	Orlando, FL	407,585,3200	Atlanta, GA	404,369,9681
Fort Myers, FL	239,278,9655	Miami, FL	305,683,2402	Tampa, FL	813,623,2333	Houston, TX	832,728,8141
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			

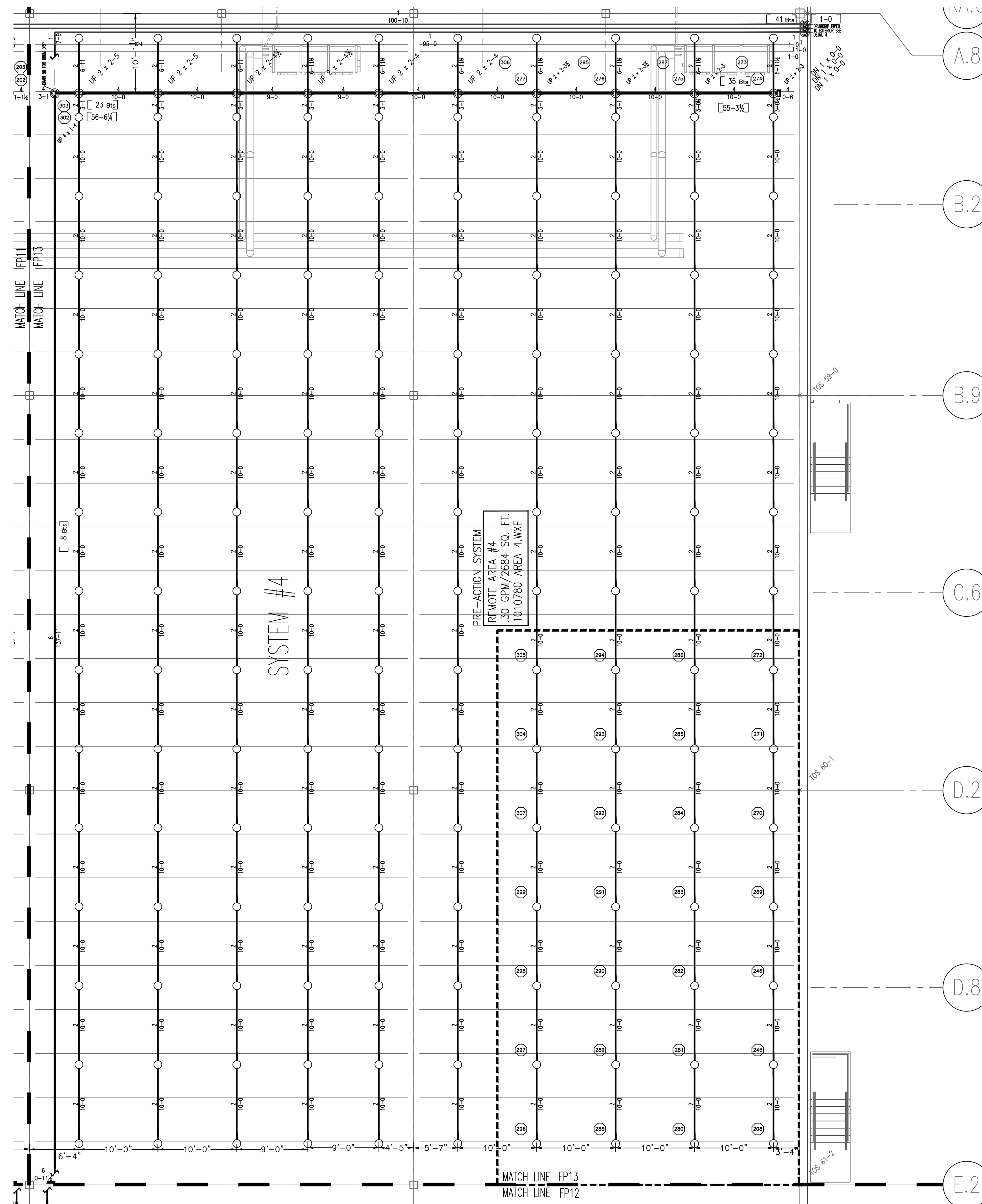
2 HANGER #01
FP13 N.T.S.



3 KEY PLAN
FP13



4 DRUM DRIP TO EXTERIOR DETAIL
FP13



1 PARTIAL OVERHEAD FIRE PROTECTION PLAN
FP13 SCALE 1/8" = 1'-0"

IGNITION DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, MIGNITION DOES NOT WARRANT MATERIALS FROM DETERIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTENANCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

[illegible]

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/23

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

PROJECT NAME/ADDRESS:

PARTIAL OVERHEAD FIRE PROTECTION PLAN

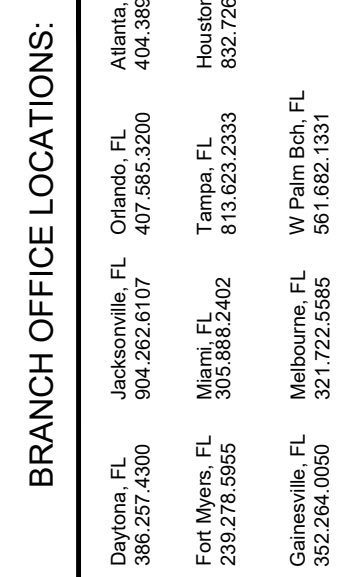
1010780
PROJECT NO:

FP **13** OF **23**

DRAWING NO:

Diagram illustrating the components of a hanging scale:

- TOP BEAM CLAMP
- ROD (SPECIFY LENGTH)
- HANGER RING



2 HANGER #01
FP14 N.T.S.



WATER SUPPLY		MATERIALS & ABBREVIATIONS			
ITEM	DESCRIPTION	UNIT	QUANTITY	TYPE	REMARKS
1	WATER SUPPLY	1000 GPM			
2	WATER SUPPLY	1000 GPM			
3	WATER SUPPLY	1000 GPM			
4	WATER SUPPLY	1000 GPM			
5	WATER SUPPLY	1000 GPM			
6	WATER SUPPLY	1000 GPM			
7	WATER SUPPLY	1000 GPM			
8	WATER SUPPLY	1000 GPM			
9	WATER SUPPLY	1000 GPM			
10	WATER SUPPLY	1000 GPM			
11	WATER SUPPLY	1000 GPM			
12	WATER SUPPLY	1000 GPM			
13	WATER SUPPLY	1000 GPM			
14	WATER SUPPLY	1000 GPM			
15	WATER SUPPLY	1000 GPM			
16	WATER SUPPLY	1000 GPM			
17	WATER SUPPLY	1000 GPM			
18	WATER SUPPLY	1000 GPM			
19	WATER SUPPLY	1000 GPM			
20	WATER SUPPLY	1000 GPM			
21	WATER SUPPLY	1000 GPM			
22	WATER SUPPLY	1000 GPM			
23	WATER SUPPLY	1000 GPM			
24	WATER SUPPLY	1000 GPM			
25	WATER SUPPLY	1000 GPM			
26	WATER SUPPLY	1000 GPM			
27	WATER SUPPLY	1000 GPM			
28	WATER SUPPLY	1000 GPM			
29	WATER SUPPLY	1000 GPM			
30	WATER SUPPLY	1000 GPM			
31	WATER SUPPLY	1000 GPM			
32	WATER SUPPLY	1000 GPM			
33	WATER SUPPLY	1000 GPM			
34	WATER SUPPLY	1000 GPM			
35	WATER SUPPLY	1000 GPM			
36	WATER SUPPLY	1000 GPM			
37	WATER SUPPLY	1000 GPM			
38	WATER SUPPLY	1000 GPM			
39	WATER SUPPLY	1000 GPM			
40	WATER SUPPLY	1000 GPM			
41	WATER SUPPLY	1000 GPM			
42	WATER SUPPLY	1000 GPM			
43	WATER SUPPLY	1000 GPM			
44	WATER SUPPLY	1000 GPM			
45	WATER SUPPLY	1000 GPM			
46	WATER SUPPLY	1000 GPM			
47	WATER SUPPLY	1000 GPM			
48	WATER SUPPLY	1000 GPM			
49	WATER SUPPLY	1000 GPM			
50	WATER SUPPLY	1000 GPM			
51	WATER SUPPLY	1000 GPM			
52	WATER SUPPLY	1000 GPM			
53	WATER SUPPLY	1000 GPM			
54	WATER SUPPLY	1000 GPM			
55	WATER SUPPLY	1000 GPM			
56	WATER SUPPLY	1000 GPM			
57	WATER SUPPLY	1000 GPM			
58	WATER SUPPLY	1000 GPM			
59	WATER SUPPLY	1000 GPM			
60	WATER SUPPLY	1000 GPM			
61	WATER SUPPLY	1000 GPM			
62	WATER SUPPLY	1000 GPM			
63	WATER SUPPLY	1000 GPM			
64	WATER SUPPLY	1000 GPM			
65	WATER SUPPLY	1000 GPM			
66	WATER SUPPLY	1000 GPM			
67	WATER SUPPLY	1000 GPM			
68	WATER SUPPLY	1000 GPM			
69	WATER SUPPLY	1000 GPM			
70	WATER SUPPLY	1000 GPM			
71	WATER SUPPLY	1000 GPM			
72	WATER SUPPLY	1000 GPM			
73	WATER SUPPLY	1000 GPM			
74	WATER SUPPLY	1000 GPM			
75	WATER SUPPLY	1000 GPM			
76	WATER SUPPLY	1000 GPM			
77	WATER SUPPLY	1000 GPM			</



SCALE:	$\frac{3}{32}'' = 1'-0''$
SPKRS THIS SHEET:	0
SPKRS ON JOB:	5,798
AHJ:	CCFD
WFS SALES:	KRH
CUSTOMER:	STELLA
PERMIT NO:	

SEAL -



1010780
PROJECT NO:

FP1423
DRAWING NO:

SPECIAL NOTE REGARDING M.I.C.:
WINGTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WINGTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTAINENCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORINANCES

[illegible]

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258

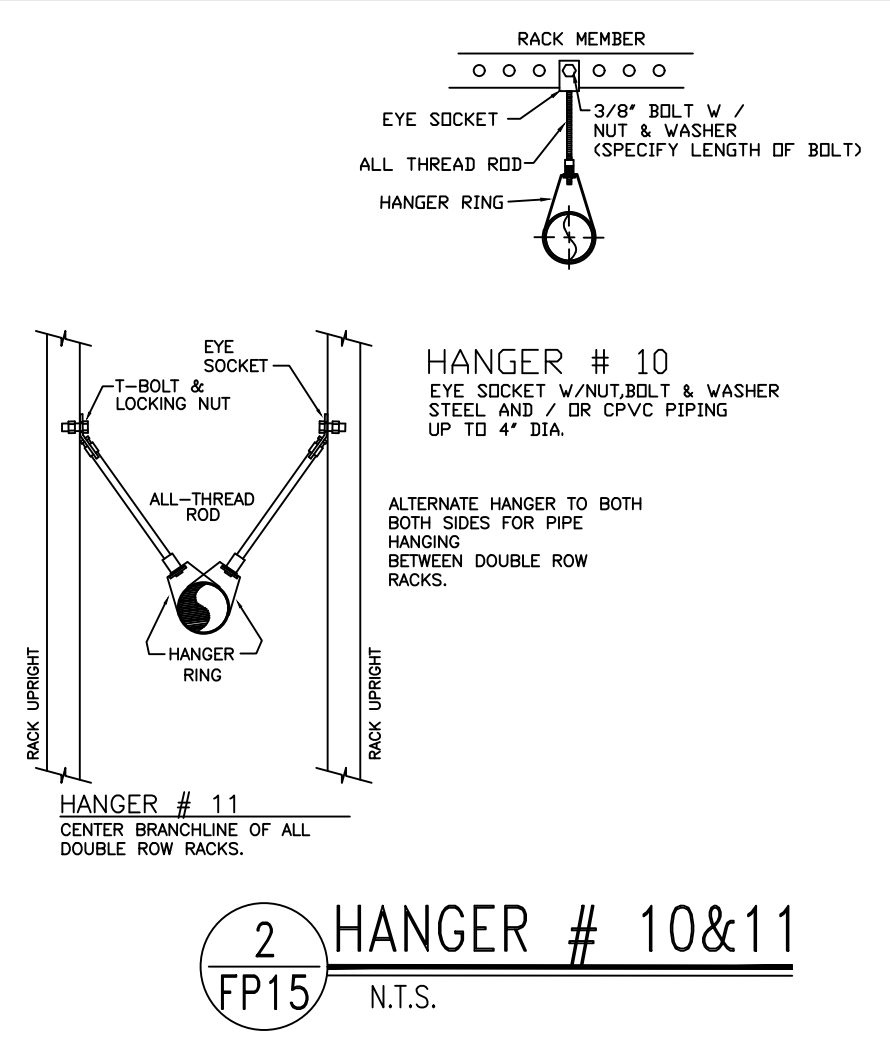
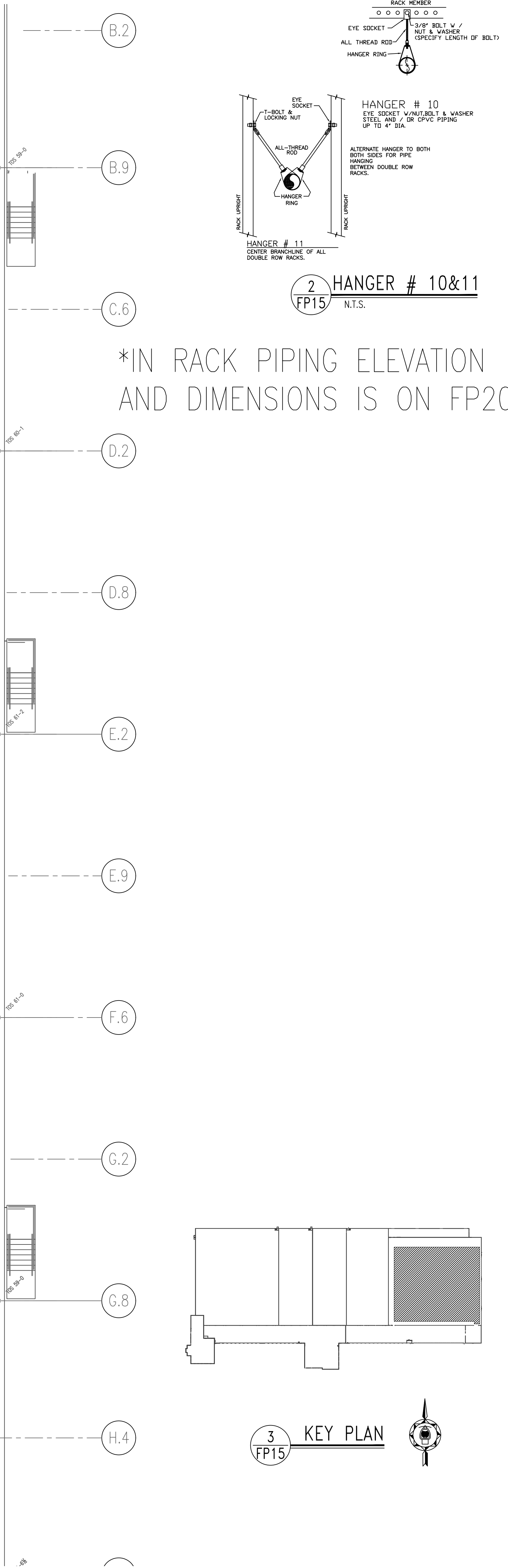
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/21

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA, 32055.

PROJECT NAME/ADDRESS

OVERHEAD RACK FEED FIRE PROTECTION PLAN



*IN RACK PIPING ELEVATION AND DIMENSIONS IS ON FP20

1 LEVEL 1 IN-RACK FIRE PROTECTION PLAN
SCALE 3/32" = 1'-0"

SPECIAL NOTE REGARDING M.I.C.:
WIGINTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGINTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSION CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER/ MANAGER TO PROVIDE THE REQUIRED MAINTENANCE AND UPKEEP OF THIS FIRE PROTECTION SYSTEM AND RELATED EQUIPMENT ACCORDING TO THE LATEST EDITION OF NFPA 25 AND ALL GOVERNING CODES AND ORDINANCES.

WFS REVIEW	
DATE	RELEASED FOR
BY	

SYSTEM DEMAND INFORMATION									
DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA
DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA

DESIGN CRITERIA									
DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA
DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA	DESIGN CRITERIA

SPRINKLER LEGEND									
SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND
SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND	SPRINKLER LEGEND

0	08/17/23	ISSUE FOR SUBMITTAL	PJD
NO.	DATE	REVISIONS	BY

Wiginton Fire Systems
6383 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7288

US COLD STORAGE PHASE III
211 NE McCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.
PROJECT NAME/ADDRESS:
LEVEL 1 IN-RACK FIRE PROTECTION PLAN
SHEET TITLE:

1010780
PROJECT NO:
1523
DRAWING NO:

BRANCH OFFICE LOCATIONS:
Daytona, FL
Jacksonville, FL
Orlando, FL
Tampa, FL
Fort Myers, FL
Gainesville, FL
Adams, GA
Atlanta, GA
Houston, TX
Memphis, TN
Nashville, TN
New York, NY
Phoenix, AZ
San Antonio, TX
Seattle, WA
Wichita, KS

GRAPHIC SCALE:
1" = 1'-0"

SCALE: 3/32" = 1'-0"

SPKRS ON THIS SHEET: 957

SPKRS ON JOB: 5,798

AHU: CCFD

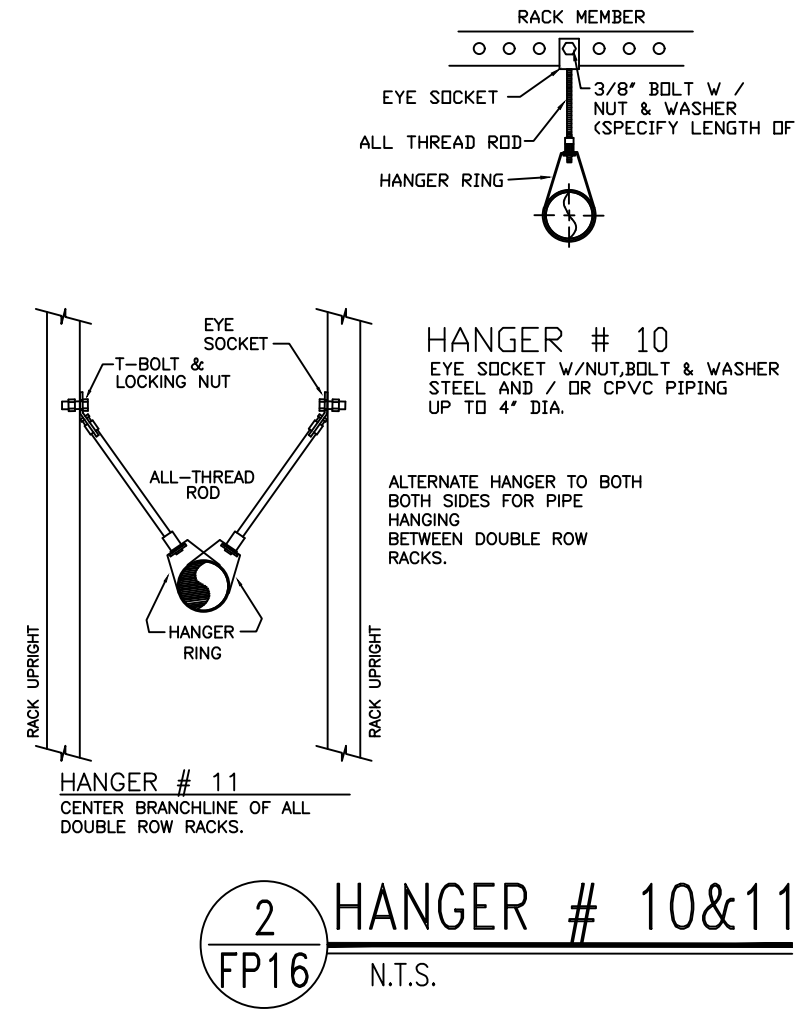
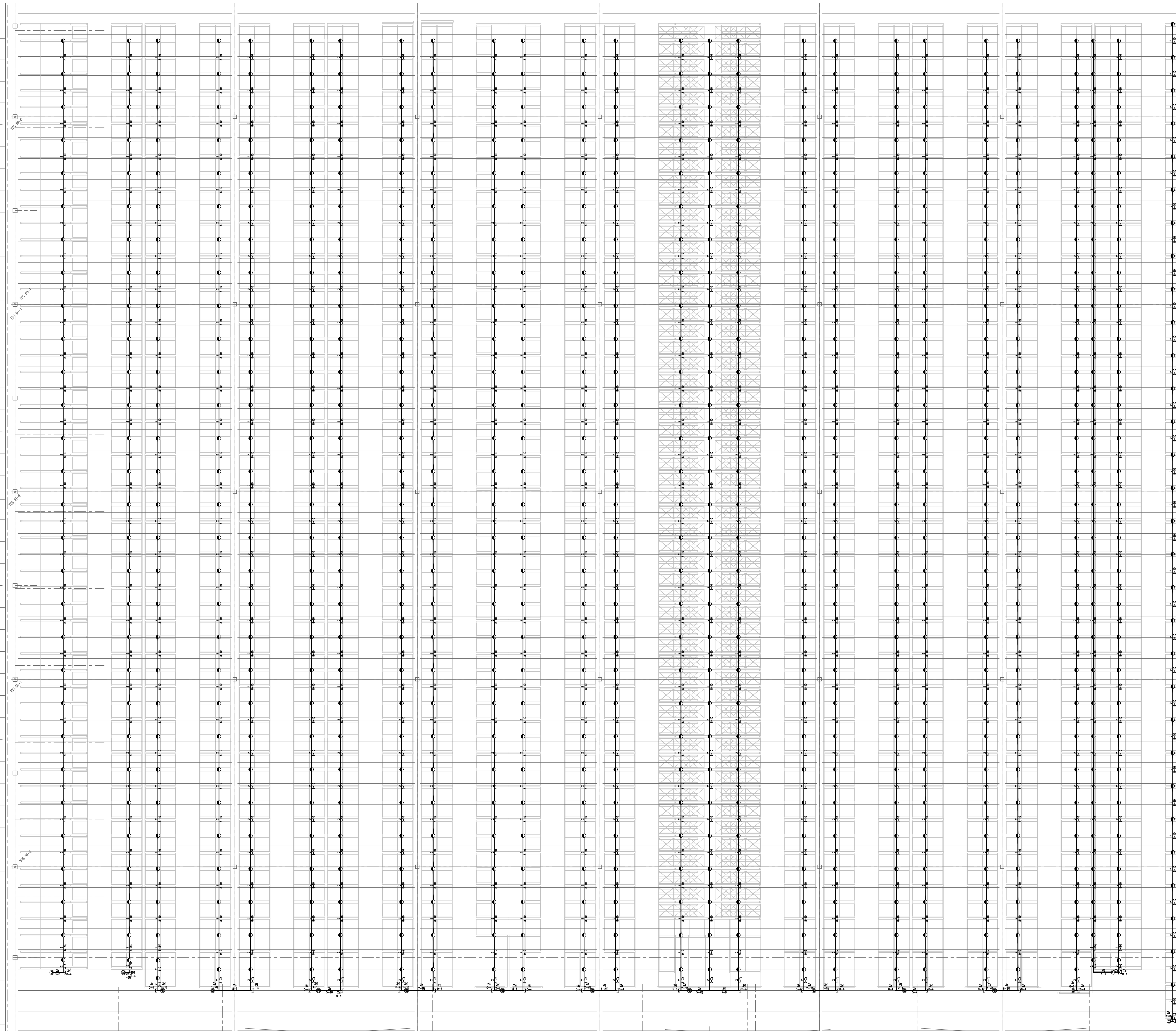
WFS SALES: KRH

CUSTOMER: STELLAR

PERMIT NO:

Wiginton
FIRE SYSTEMS

1523



*IN RACK PIPING ELEVATION
AND DIMENSIONS IS ON FP20

1 LEVEL 2 IN-RACK FIRE PROTECTION PLAN
SCALE 3/32" = 1'-0"

3 KEY PLAN
FP16

SPECIAL NOTE REGARDING M.I.C.:
WIGINTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVIEW EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGINTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSION CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER/ MANAGER TO PROVIDE THE REQUIRED MAINTENANCE AND UPKEEP OF THIS FIRE PROTECTION SYSTEM AND RELATED EQUIPMENT ACCORDING TO THE LATEST EDITION OF NFPA 25 AND ALL GOVERNING CODES AND ORDINANCES.

WFS REVIEW	
DATE	RELEASED FOR
BY	

SYSTEM DEMAND INFORMATION									
DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA

DESIGN CRITERIA									
DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA	DESIGN AREA

SPRINKLER LEGEND									
NO.	DATE	REVISIONS	BY	NO.	DATE	REVISIONS	BY	NO.	DATE

Wiginton Fire Systems 6383 Greenland Road Jacksonville, FL 32258 Phone 904.262.6107 Fax 904.268.7268	DRAWN BY: P. DAVIS DATE: 08/17/23
--	---

US COLD STORAGE PHASE III 211 NE McCLOSKEY AVE. LAKE CITY, FLORIDA. 32055.	LEVEL 2 IN-RACK FIRE PROTECTION PLAN
--	--------------------------------------

1010780 PROJECT NO.	1623 DRAWING NO.
------------------------	---------------------

BRANCH OFFICE LOCATIONS:

Jacksonville, FL 32202
Daytona, FL 32127
Fort Myers, FL 33901
Gainesville, FL 32608
Hawthorne, FL 32640
Miami, FL 33133
Naples, FL 34109
Orlando, FL 32801
Tampa, FL 33606
W. Palm Bch., FL 33409

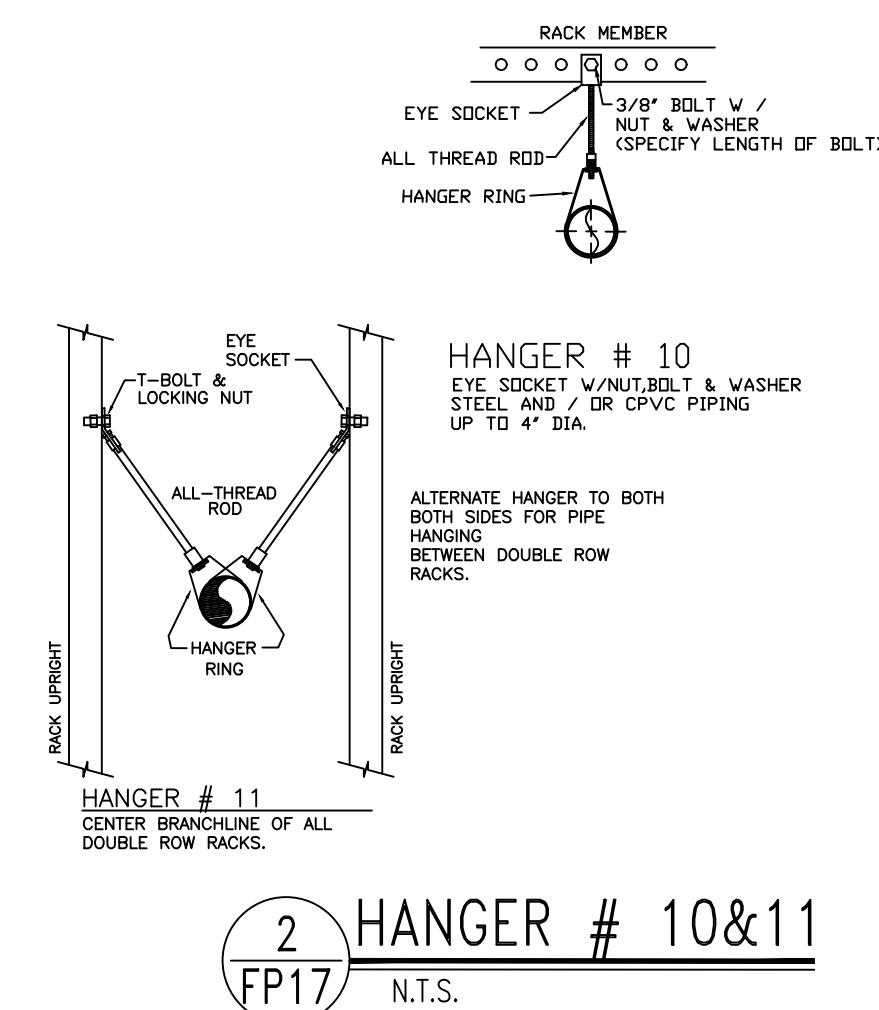
Wiginton
FIRE SYSTEMS

US COLD STORAGE PHASE III
211 NE McCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

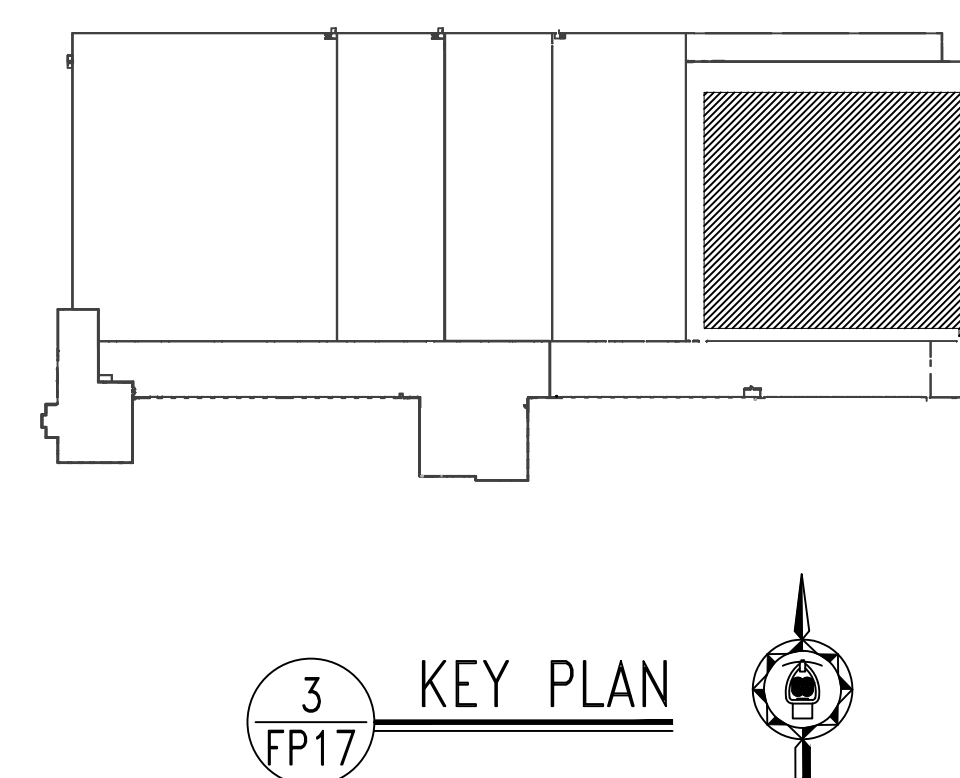
LEVEL 2 IN-RACK FIRE PROTECTION PLAN

1010780
PROJECT NO.

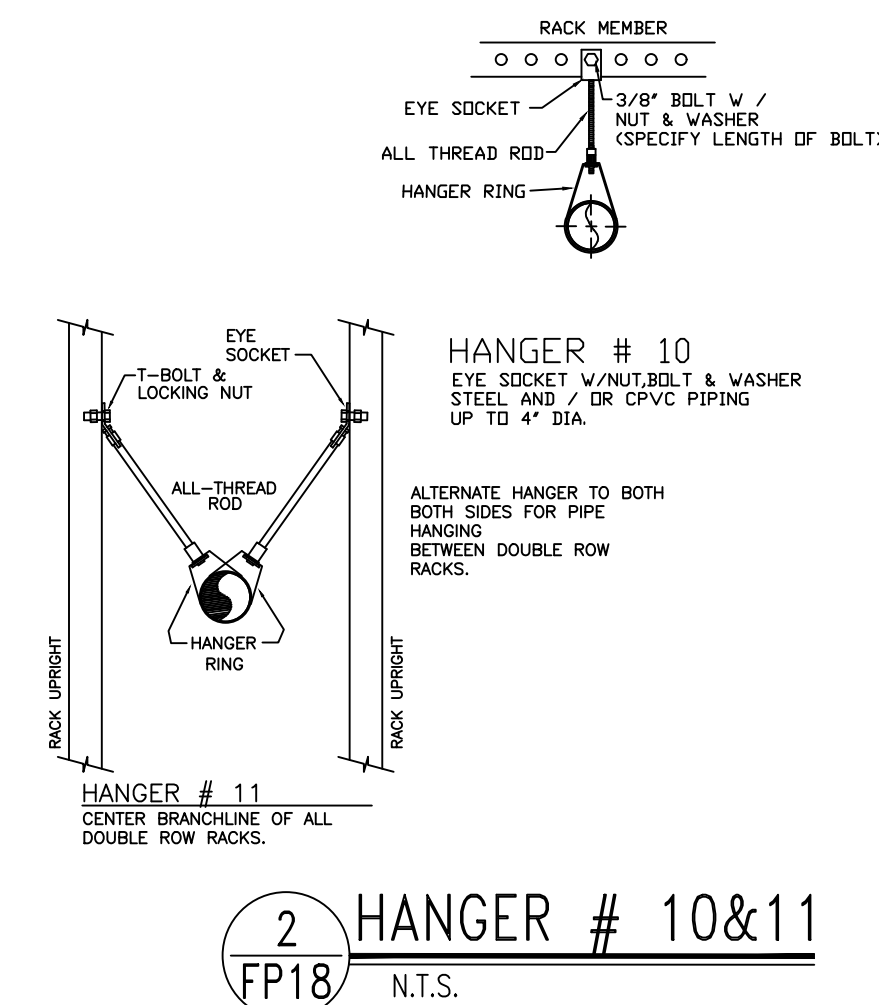
1623
DRAWING NO.



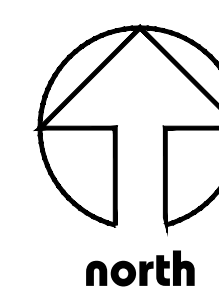
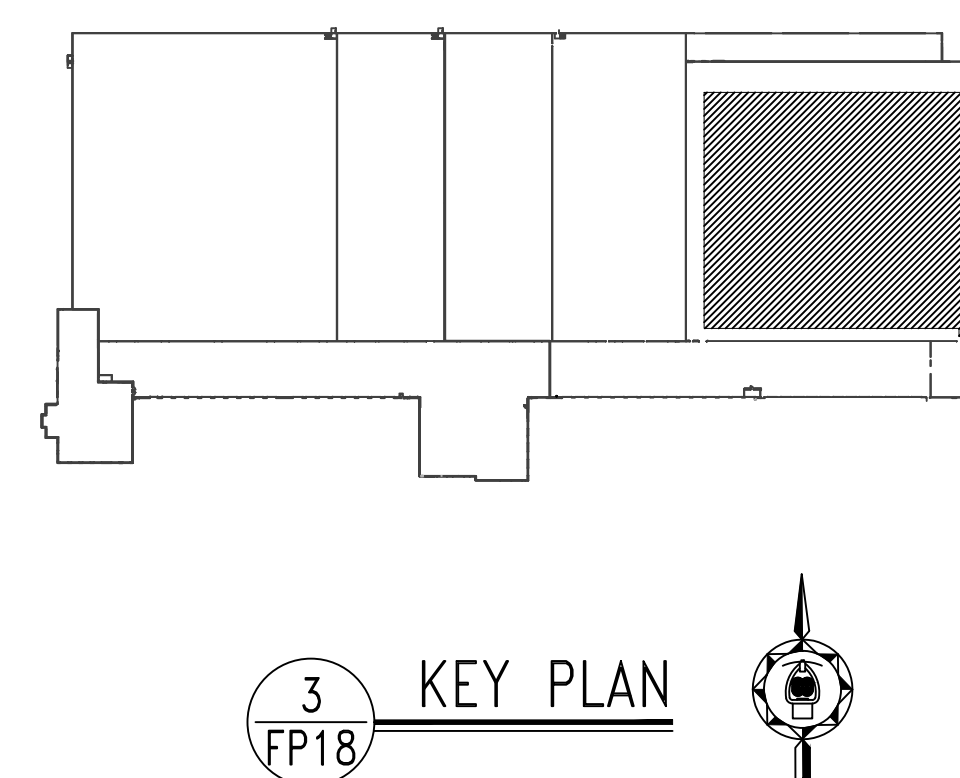
*IN RACK PIPING ELEVATION
AND DIMENSIONS IS ON FP20

[illegible]

FP17 OF 23
DRAWING NO:

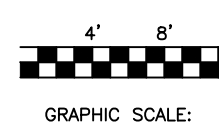


*IN RACK PIPING ELEVATION
AND DIMENSIONS IS ON FP20



BRANCH OFFICE LOCATIONS:

Daytona, FL	386-257-4300	Jacksonville, FL	904-262-6107	Orlando, FL	407-585-3200	Atlanta, GA	404-389-9581
Fort Myers, FL	239-278-5955	Miami, FL	305-888-2402	Tampa, FL	813-623-2333	Houston, TX	832-728-8141
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			

[illegible]

SCALE:	$\frac{3}{32}'' = 1'-0''$
SPKRS THIS SHEET:	757
SPKRS ON JOB:	5,798
AHJ:	CCFD
WFS SALES:	KRH
CUSTOMER:	STELLAR
PERMIT NO:	

SEAL:



SPECIAL NOTE REGARDING M.I.C.:
WIGINTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGINTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NPFA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTENANCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

[illegible]

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32256
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/22

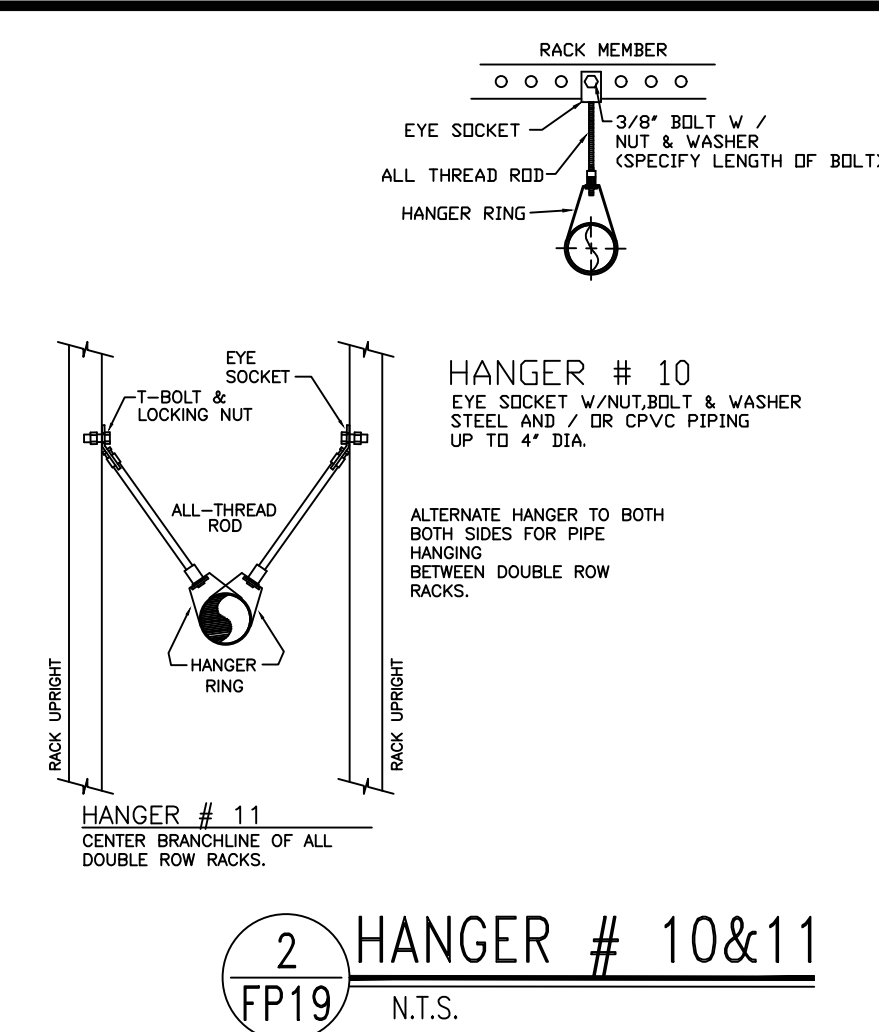
US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA, 32055.

PROJECT NAME/ADDRESS

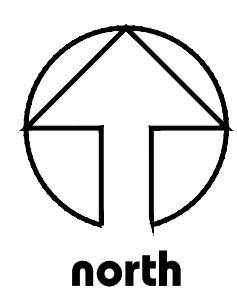
LEVEL 4 IN-RACK FIRE PROTECTION PLAN

1010780
PROJECT NO:

FP **1823** OF
DRAWING NO:



*IN RACK PIPING ELEVATION
AND DIMENSIONS IS ON FP20

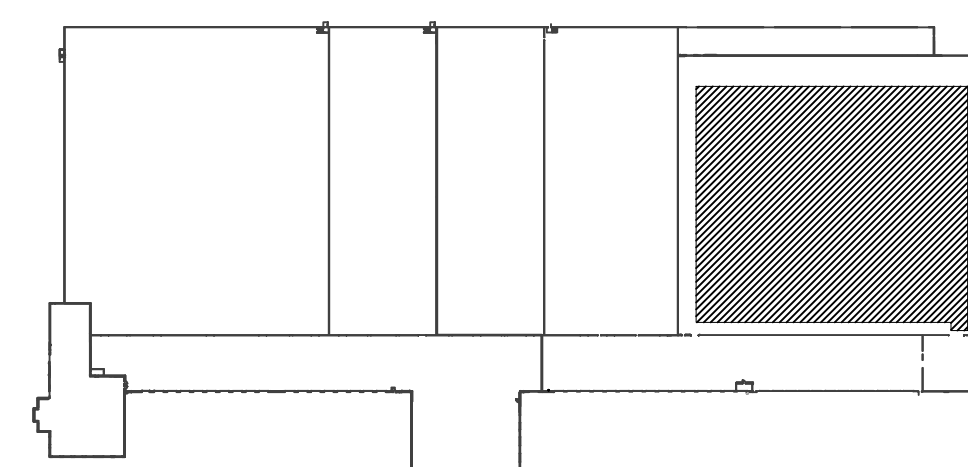


BRANCH OFFICE LOCATIONS:

Daytona, FL	386.257.4300	Jacksonville, FL	904.262.6107	Orlando, FL	407.585.3200	Atlanta, GA	404.389.9581
Fort Myers, FL	239.278.5955	Miami, FL	305.885.2402	Tampa, FL	813.623.2333	Houston, TX	832.728.8141
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			

[illegible]

SCALE: $\frac{3}{32}'' = 1'-0''$
 SPKRS THIS SHEET: 1144
 SPKRS ON JOB: 5,798
 AHJ: CCFD
 WFS SALES: KRH
 CUSTOMER: STELLAR
 PERMIT NO:



3 KEY PLAN
FP19

SEAL:



1010780
PROJECT NO:

FP1923
DRAWING NO:

SPECIAL NOTE REGARDING M.I.C.:
WINGTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WINGTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTENANCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

[illegible]

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

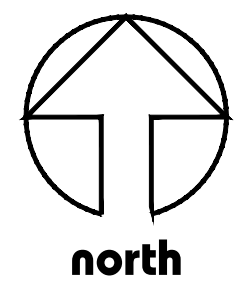
DRAWN BY:
P. DAVIS
DATE: 08/17/23

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

PROJECT NAME/ADDRESS:

LEVEL 5 IN-RACK FIRE PROTECTION PLAN

1010780
PROJECT NO:



BRANCH OFFICE LOCATIONS:

Fort Myers, FL	239 278 5955
Jacksonville, FL	904 262 6107
Orlando, FL	407 585 3200
Atlanta, GA	404 389 9581
Houston, TX	832 728 8141
Tampa, FL	813 623 2333
Miami, FL	305 888 2402

KEY PLAN

RACK FEED EQUIPMENT LEGEND

- | | |
|----|---------------------------|
| 1 | 3" FIRELOCK 90 |
| 2 | 2½ GROOVED FIRELOCK CAP |
| 3 | 3" RISER CLAMP |
| 4 | 2½" RISER CLAMP |
| 5 | 2½ FIRELOCK 90 |
| 6 | DRUM DRIP |
| 7 | 3" X 2½" REDUCING COUPLIN |
| 8 | 2½" X 2" REDUCING COUPLIN |
| 9 | 3" DRAIN CAP |
| 10 | 3" DRAIN CAP |

WATER SUPPLY		MATERIALS & ABBREVIATIONS			
ITEM NO.	DESCRIPTION	SIZE	UNIT	MATERIALS & ABBREVIATIONS	
1	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
2	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
3	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
4	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
5	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
6	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
7	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
8	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
9	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
10	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
11	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
12	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
13	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
14	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
15	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
16	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
17	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
18	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
19	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
20	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
21	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
22	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
23	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
24	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
25	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
26	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
27	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
28	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
29	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
30	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
31	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
32	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
33	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
34	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
35	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
36	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
37	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
38	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
39	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
40	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
41	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
42	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
43	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
44	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
45	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
46	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
47	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
48	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
49	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
50	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
51	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
52	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
53	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
54	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
55	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
56	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
57	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
58	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
59	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
60	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
61	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
62	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
63	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
64	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
65	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
66	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
67	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
68	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
69	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
70	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
71	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
72	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
73	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
74	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
75	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
76	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
77	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
78	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
79	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
80	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
81	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
82	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
83	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
84	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
85	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
86	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
87	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
88	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
89	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
90	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
91	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
92	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
93	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
94	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
95	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
96	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
97	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
98	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
99	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"
100	1/2" GALV. DWV	1/2"	FT	1/2"	1/2"



SCALE: 1/4" = 1'-0"
SPKRS THIS SHEET: 0
SPKRS ON JOB: 5,798
AHJ: CCFD
WFS SALES: KRH
CUSTOMER: STELLAR
PERMIT NO:

SEAL:



1010780

PROJECT NO:

FP 20 OF 23

DRAWING NO:

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA, 32055.

PROJECT NAME/ADDRESS

SYSTEM 6 BACK FEED FIRE PROTECTION PLAN

SHEET TITLE:

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17

SYSTEM 6 BACK FEED FIRE PROTECTION PLAN

SHEET TITLE:

1 SYSTEM #6 RACK FEED SECTION VIEW CC
FP20 SCALE 1/4" = 1'-0"

SCALE $1/4" = 1'-0"$

USES REVIEW

SYSTEM DEMAND INFORMATION

DESIGN CRITERIA

SPRINKLER LEGEND

SPECIAL NOTE REGARDING M.I.C.:
WINGTON DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MICROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WINGTON DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSIIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTAINENCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

	AS-BUILT	
	INSTALLATION	
	FABRICATION	
	TRADE PERMIT	
	BLDG. PERMIT	
	SEALING PERMIT	

[illegible][illegible][illegible]

0	08/17/23	ISSUE FOR SUBMITTAL		PJD
NO	NAME	ID: 1001040		REV

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/23

US COLD STORAGE PHASE III 211 NE MCCLOSKEY AVE. LAKE CITY, FLORIDA. 32055.	
PROJECT NAME/ADDRESS	
SYSTEM 6 RACK FEED FIRE PROTECTION PLAN	
SHEET TITLE	



Daytona, FL	386.237.4390	Jacksonville, FL	904.262.6107	Orlando, FL	407.585.3200	Atlanta, GA	404.399.9561
Fort Myers, FL	239.278.5955	Miami, FL	305.886.2402	Tampa, FL	813.623.2333	Houston, TX	832.726.8144
Gainesville, FL		Melbourne, FL		W Palm Bch, FL			



1	3" FIRELOCK 90
2	2½ GROOVED FIRELOCK CAP
3	3" RISER CLAMP
4	2½" RISER CLAMP
5	2½ FIRELOCK 90
6	DRUM DRIP
7	3" X 2½" REDUCING COUPLING
8	2½" X 2" REDUCING COUPLING
9	3" DRAIN CAP
10	3" DRAIN CAP

0 2'

GRAPHIC SCALE:

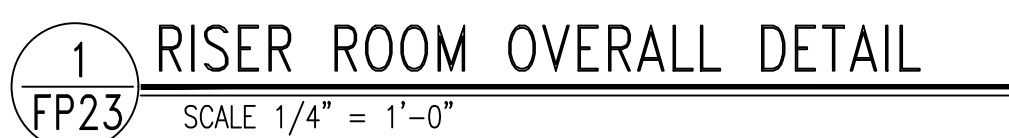
PERMIT NO:

Wigint
FIRE SYS

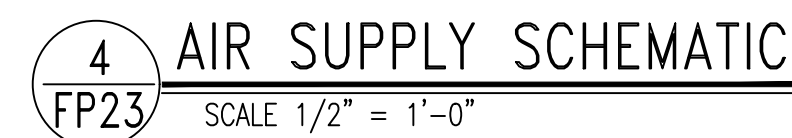
FD-21

FP2 OF
DRAWING NO:

RISER EQUIPMENT LEGEND	
1	6" VIKING MODEL F-1 DELUGE VALVE W/ ELECTRIC/ PNEUMATIC DOUBLE-INTERLOCK TRIM
2	4" VIKING MODEL F-1 DELUGE VALVE W/ ELECTRIC/ PNEUMATIC DOUBLE-INTERLOCK TRIM
3	3" VIKING MODEL F-1 DELUGE VALVE W/ ELECTRIC/ PNEUMATIC DOUBLE-INTERLOCK TRIM
4	6" VICTAULIC 705 BUTTERFLY VALVE W/ TAMPER
5	4" VICTAULIC 705 BUTTERFLY VALVE W/ TAMPER
6	3" VICTAULIC 705 BUTTERFLY VALVE W/ TAMPER
7	6" VICTAULIC 717R RISER CHECK VALVE W/ TRIM
8	4" VICTAULIC 717R RISER CHECK VALVE W/ TRIM
9	3" VICTAULIC 717R RISER CHECK VALVE W/ TRIM
10	½" THREADED BALL VALVE W/ ½" PLUG AND 0-3" ½" NIPPLE
11	6" FIRELOCK 90
12	4" FIRELOCK 90
13	3" FIRELOCK 90
14	8" FIRELOCK 90
15	8" FIRELOCK TEE
16	2" FIRELOCK 90
17	2" FIRELOCK TEE
18	8" FIRELOCK CAP
19	½" OUTLET FOR PRIMING
20	PIPE STAND 1-5"
21	VIKING MODEL D-2 AIR MAINTENANCE DEVICE
22	ELECTRIC BELL (WIRED BY OTHERS)
23	3" RISER CLAMP
24	4" RISER CLAMP
25	6" RISER CLAMP

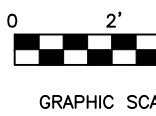


NOTES: ALL RISER COMPONENTS FOR BOTH IN-RACK AND CEILING SYSTEMS IN FREEZER ARE TYPICAL WITH EXCEPTION TO NOMINAL PIPE AND VALVE SIZES. LOW AIR AND ALARM PRESSURE SWITCH WIRING BY OTHERS.



BRANCH OFFICE LOCATIONS:

Atlanta, GA	404.380.3300	Houston, TX	832.720.3300
Orlando, FL	407.585.3200	Tampa, FL	813.623.2333
Jacksonville, FL	904.262.6107	Miami, FL	305.898.2402
Fort Myers, FL	941.339.3300	Fort Lauderdale, FL	954.339.3300
Fort Lauderdale, FL	954.339.3300	Melbourne, FL	321.255.3300
Fort Worth, TX	817.339.3300	Phoenix, AZ	602.339.3300
San Antonio, TX	214.339.3300	San Diego, CA	619.339.3300
San Jose, CA	408.339.3300	Seattle, WA	206.339.3300
San Francisco, CA	415.339.3300	W Palm Bch, FL	561.339.3300

[illegible]

SCALE: 1/4" = 1'-0"

SPKRS THIS SHEET: 0

SPKRS ON JOB: 5,798

AHJ: CCFD

WFS SALES: KP

CUSTOMER: STELLAR

PERMIT NO. _____

SEAL:



1010780

PROJECT NO:

US COLD STORAGE PHASE III
211 NE MCCLOSKEY AVE.
LAKE CITY, FLORIDA. 32055.

PROJECT NAME/ADDRESS

RISER ROOM FIRE PROTECTION PLAN

Wiginton Fire Systems
6363 Greenland Road
Jacksonville, FL 32258
Phone 904.262.6107
Fax 904.268.7268

DRAWN BY:
P. DAVIS
DATE: 08/17/23

SPECIAL NOTE REGARDING M.I.C.:
WIGNITION DOES NOT WARRANT THE WATER SUPPLY TO BE FREE OF ANY CONTAMINANTS (MACROSCOPIC OR OTHERWISE) THAT MAY LEAD TO THE DEVELOPMENT OF MICROBIOLOGICALLY INFLUENCED CORROSION (MIC). OWNER IS ADVISED TO CONTACT THE WATER PURVEYOR TO REVEAL EVIDENCE OF HISTORY OF MIC DEVELOPMENT IN SYSTEMS SUPPLIED BY THE PURVEYOR. WHETHER OR NOT SUCH STUDY IS PERFORMED, WIGNITION DOES NOT WARRANT MATERIALS FROM DETEIORATION CAUSED FROM CORROSIIVE CONDITIONS, AND DOES NOT ACCEPT ANY LIABILITY FOR THE EFFECTS OF MIC ON THE DURABILITY OR PERFORMANCE OF THE FIRE PROTECTION SYSTEM (S) PRESENT OR FUTURE. OWNER MUST MAINTAIN THEIR FIRE PROTECTION SYSTEM (S) IN ACCORDANCE WITH NFPA CRITERIA.

NOTICE:
IT IS THE RESPONSIBILITY OF THE PROPERTY
OWNER/ MANAGER TO PROVIDE THE
REQUIRED MAINTENANCE AND UPKEEP OF
THIS FIRE PROTECTION SYSTEM AND RELATED
EQUIPMENT ACCORDING TO THE LATEST
EDITION OF NFPA 25 AND ALL GOVERNING
CODES AND ORDINANCES.

[illegible]



Submittal Cover Sheet

All Submittals are to be uploaded as one (1) combined PDF document including this cover sheet.

PROJECT NUMBER / NAME:	07366-215 – USCS Lake City Phase 3
SUBMITTAL NUMBER:	211316-2.0
SUBMITTAL SUBJECT TITLE:	Fire Sprinkler Calculations
DATE OF SUBMISSION:	08.28.23
REFERENCE SPECIFICATION SECTION:	211316
SUBCONTRACTOR COMPANY NAME:	Wiginton Fire Systems
SUBCONTRACTOR CONTACT NAME:	Payton Davis
FULL OR PARTIAL SUBMITTAL:	Full

Important requirements for all submittals:

1. Submittals shall include a table of contents outlining the content included for the submission.
2. Submittals shall identify equipment, systems or materials using the same symbols as used on the schedules, drawings or applicable paragraphs/ sections of the specification.
3. Submittals shall clearly identify the name of Manufacturers included in the submission.
4. Reference Specification Section 010000-General Requirements for more information.



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3 AREA 1
Drawing : FP6
Location : 211 NE MCCLOSKEY AVE. LAKE CITY, FL.
Remote Area : 1
Contract : 1010780
Data File : USCS PH3 AREA 1.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

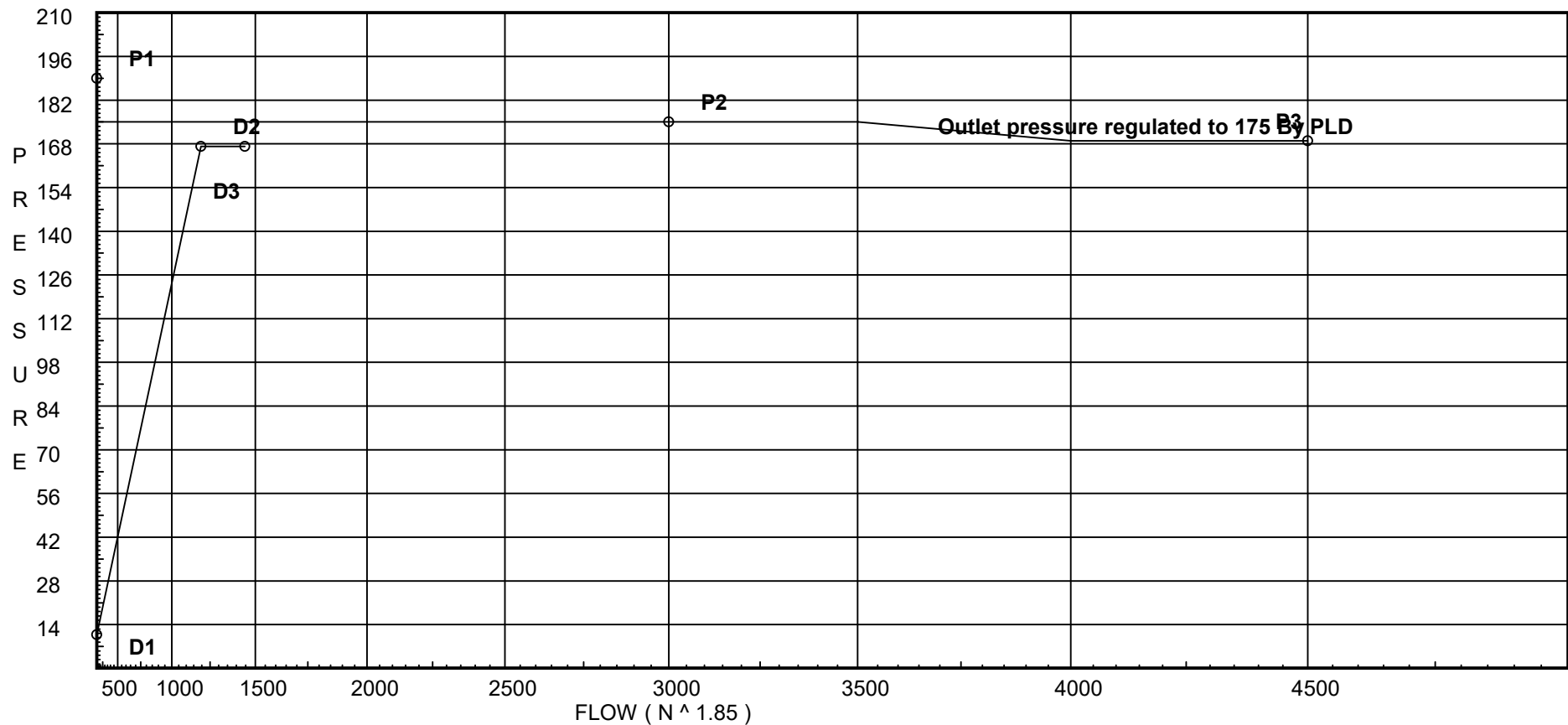
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 10.806
D2 - System Flow : 1194.54
D2 - System Pressure : 167.139
Hose (Demand) : 250
D3 - System Demand : 1444.54
Safety Margin : 7.861



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			188.99	1444.54	167.139

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
1	24.95	16.8	35.0	99.39	1.0	1
2	24.95	16.8	35.02	99.42	1.0	1
3	24.95	16.8	35.23	99.71	1.0	1
4A	0.0		48.39			
4	24.95		43.91			
5	24.95		134.61			
6	22.82		139.47			
7	23.03		139.43			
8	23.25		139.44			
9	23.46		139.54			
10	23.68		139.72			
TOR3	23.7		140.23			
BOR3	2.08		153.96			
BOR2	2.08		154.62			
TOR2	23.06		145.93			
TOR1	21.85		147.62			
BOR1	1.0		156.96			
STU1	0.0		157.41			
UG3	-8.0		161.1			
UG2	-8.0		162.63	250.0		
UG1	-8.0		165.71			
UG	-8.0		169.58			
STUB	4.0		164.72			
PUMP	0.0		167.14			
11	24.95	16.8	35.03	99.44	1.0	1
12	24.95		36.51			
13	22.82		37.94			
14	23.04		38.06			
15	23.25		38.44			
16	23.47		38.56			
17	23.68		38.53			
18	25.81		38.08			
19A	0.0		52.61			
19	25.81		43.96			
20	25.81		134.85			
21	22.82		45.08			
22	23.04		45.01			
23	23.25		44.97			
24	23.47		44.9			
25	23.68		44.82			
26	22.61		37.97			

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 4
Date

NODE ANALYSIS (cont.)

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>		<i>Notes</i>
27	24.73		36.55			
28	24.73	16.8	35.08	99.5	1.0	1
29	24.73	16.8	35.04	99.45	1.0	1
30	24.73	16.8	35.07	99.48	1.0	1
31	24.73	16.8	35.27	99.77	1.0	1
32A	0.0		48.35			
32	24.73		43.99			
33	24.73		134.69			
34	22.61		139.55			
35	25.16		36.63			
36	25.16	16.8	35.11	99.55	1.0	1
37	25.16	16.8	35.07	99.5	1.0	1
38	25.16	16.8	35.1	99.53	1.0	1
39	25.16	16.8	35.29	99.81	1.0	1
40A	0.0		48.51			
40	25.16		43.86			
41	25.16		134.57			
42	25.38		40.26			
43A	0.0		54.8			
43	25.38		44.21			
44	25.37		134.6			
45	25.59		38.13			
46A	0.0		52.76			
46	25.59		44.27			
47	25.58		134.69			
48	22.61		45.17			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
1 to 2	24.95 24.95	16.80	45.17	3			10.000	120	35.000 0.0			
								0.0024	0.024	Vel =	1.74	
2 to 3	24.95 24.95	16.80	99.42	3			10.000	120	35.024 0.0			
								0.0202	0.202	Vel =	5.56	
3 to 4A	24.95 0	16.80	99.71	3	4F	16.127	28.042 16.127	120	35.226 10.806			
								0.0533	2.355	Vel =	9.39	
4A to 4	0 24.95		0.0	2			15.875	120	48.387 -10.806			
								0.3986	6.327	Vel =	21.45	
4 to 5	24.95 24.95		-45.13	2	2X	20.921	311.160 20.921	120	43.908 0.0			
								0.2731	90.700	Vel =	17.49	
5 to 6	24.95 22.820		0.0	2	T	12.307	2.120 12.307	120	134.608 0.923			
								0.2731	3.940	Vel =	17.49	
6 to 7	22.820 23.03		199.17	6			10.000	120	139.471 -0.091			
								0.0051	0.051	Vel =	4.03	
7 to 8	23.03 23.25		199.18	6			10.000	120	139.431 -0.095			
								0.0108	0.108	Vel =	6.04	
8 to 9	23.25 23.46		198.80	6			10.000	120	139.444 -0.091			
								0.0184	0.184	Vel =	8.05	
9 to 10	23.46 23.68		198.83	6			10.000	120	139.537 -0.095			
								0.0276	0.276	Vel =	10.06	
10 to TOR3	23.68 23.7		199.39	6	V	12.573	0.910 12.573	120	139.718 -0.009			
								0.0389	0.525	Vel =	12.07	
TOR3 to BOR3	23.7 2.08		0.0	6	T B	37.72	21.620 12.573	120	140.234 9.364			
								0.0389	4.359	Vel =	12.07	
BOR3 to BOR2	2.08 2.08		0.0	8	V T	15.269	4.660 56.377	120	153.957 0.0			
								0.0109	0.667	Vel =	7.17	
BOR2 to TOR2	2.08 23.06		0.0	8	V	15.269	20.980 15.269	120	154.624 -9.086			
								0.0109	0.396	Vel =	7.17	
TOR2 to TOR1	23.06 21.85		0.0	8	3V	45.806	60.330 45.806	120	145.934 0.524			
								0.0109	1.160	Vel =	7.17	
TOR1 to BOR1	21.85 1		0.0	8			28.850	120	147.618 9.030			
								0.0109	0.315	Vel =	7.17	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
BOR1 to STU1	1 0		0.0 1194.54	8 8.249			1.000 1.000	120 0.0110	156.963 0.433 0.011			
STU1 to UG3	0 -8		0.0 1194.54	8 8.27	L	20.56	8.000 20.560 28.560	140 0.0081	157.407 3.465 0.232		Vel = 7.17	
UG3 to UG2	-8 -8		0.0 1194.54	8 7.68	T G	43.857 5.012	99.800 48.869 148.669	150 0.0102	161.104 0.0 1.523		Vel = 7.13	
UG2 to UG1	-8 -8	H250	250.00 1444.54	8 7.68	T G	43.857 5.012	162.700 48.869 211.569	150 0.0146	162.627 0.0 3.080		Vel = 8.27	
UG1 to UG	-8 -8		0.0 1444.54	8 7.68	L	16.29	249.333 16.290 265.623	150 0.0146	165.707 0.0 3.868		Vel = 10.00	
UG to STUB	-8 4		0.0 1444.54	8 8.27	L	20.56	9.000 20.560 29.560	140 0.0115	169.575 -5.197 0.341		Vel = 10.00	
STUB to PUMP	4 0		0.0 1444.54	10 10.42	B 2L S	34.74 58.509 100.563	15.000 193.811 208.811	150 0.0033	164.719 1.732 0.688		Vel = 8.63	
PUMP			0.0 1444.54						167.139		K Factor = 111.74	
System Demand Pressure									167.139			
Safety Margin									7.861			
Regulated Pressure									175.000	PLD		
1 to 11	24.95 24.95		54.22 54.22	3 3.26			10.000 10.000	120 0.0033	35.000 0.0 0.033		Vel = 2.08	
11 to 12	24.95 24.95	16.80	99.44 153.66	3 3.26	X	17.471	47.880 17.471 65.351	120 0.0226	35.033 0.0 1.478		Vel = 5.91	
12 to 13	24.95 22.82		0.0 153.66	3 3.26	T	20.159	2.120 20.159 22.279	120 0.0226	36.511 0.923 0.503		Vel = 5.91	
13 to 14	22.82 23.04		153.33 306.99	4 4.26			10.000 10.000	120 0.0221	37.937 -0.095 0.221		Vel = 6.91	
14 to 15	23.04 23.25		155.86 462.85	4 4.26			10.000 10.000	120 0.0473	38.063 -0.091 0.473		Vel = 10.42	
15 to 16	23.25 23.47		-163.44 299.41	4 4.26			10.000 10.000	120 0.0211	38.445 -0.095 0.211		Vel = 6.74	
16 to 17	23.47 23.68		-150.67 148.74	4 4.26			10.000 10.000	120 0.0058	38.561 -0.091 0.058		Vel = 3.35	
17 to 18	23.68 25.81		0.0 148.74	3 3.26	T	20.159	2.120 20.159 22.279	120 0.0213	38.528 -0.923 0.475		Vel = 5.72	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 7
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
18 to 19A	25.81 0		0.0 148.74	3 3.26	2X 4F 34.943 16.127	106.355 51.070 157.425	120 0.0213	38.080 11.178 3.352		Vel = 5.72	
19A to 19	0 25.81		0.0 148.74	2 2.157		15.875 15.875	120 0.1592	52.610 -11.178 2.527		Vel = 13.06	
19 to 20	25.81 25.81		50.65 199.39	2 2.157	2X 20.921	311.160 20.921 332.081	120 0.2737	43.959 0.0 90.888		Vel = 17.51	
20 to 10	25.81 23.68		0.0 199.39	2 2.157	T 12.307	2.120 12.307 14.427	120 0.2737	134.847 0.923 3.948		Vel = 17.51	
10			0.0 199.39					139.718		K Factor = 16.87	
4 to 21	24.95 22.82		45.13 45.13	2 2.157	T 12.307	2.120 12.307 14.427	120 0.0175	43.908 0.923 0.252		Vel = 3.96	
21 to 22	22.82 23.04		45.71 90.84	4 4.26		10.000 10.000	120 0.0023	45.083 -0.095 0.023		Vel = 2.04	
22 to 23	23.04 23.25		43.33 134.17	4 4.26		10.000 10.000	120 0.0048	45.011 -0.091 0.048		Vel = 3.02	
23 to 24	23.25 23.47		-35.36 98.81	4 4.26		10.000 10.000	120 0.0027	44.968 -0.095 0.027		Vel = 2.22	
24 to 25	23.47 23.68		-48.16 50.65	4 4.26		10.000 10.000	120 0.0007	44.900 -0.091 0.007		Vel = 1.14	
25 to 19	23.68 25.81		0.0 50.65	3 3.26	T 20.159	2.120 20.159 22.279	120 0.0030	44.816 -0.923 0.066		Vel = 1.95	
19			0.0 50.65					43.959		K Factor = 7.64	
13 to 26	22.82 22.61		-153.32 -153.32	4 4.26		10.000 10.000	120 -0.0061	37.937 0.091 -0.061		Vel = 3.45	
26 to 27	22.61 24.73		0.0 -153.32	3 3.26	T 20.159	2.120 20.159 22.279	120 -0.0225	37.967 -0.918 -0.502		Vel = 5.89	
27 to 28	24.73 24.73		0.0 -153.32	3 3.26	X 17.471	47.880 17.471 65.351	120 -0.0225	36.547 0.0 -1.472		Vel = 5.89	
28 to 29	24.73 24.73	16.80	99.49 -53.83	3 3.26		10.000 10.000	120 -0.0032	35.075 0.0 -0.032		Vel = 2.07	
29 to 30	24.73 24.73	16.80	99.45 45.62	3 3.26		10.000 10.000	120 0.0023	35.043 0.0 0.023		Vel = 1.75	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 8
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
30 to 31	24.73 24.73	16.80	99.49 145.11	3 3.26		10.000	120	35.066 0.0 0.204		Vel = 5.58	
31 to 32A	24.73 0	16.80	99.77 244.88	3 3.26	4F 16.127	28.042 16.127 44.169	120	35.270 10.711 2.365		Vel = 9.41	
32A to 32	0 24.73		0.0 244.88	2 2.157		15.875	120	48.346 -10.711 6.355		Vel = 21.50	
32 to 33	24.73 24.73		-45.71 199.17	2 2.157	2X 20.921	311.160 20.921 332.081	120	43.990 0.0 90.700		Vel = 17.49	
33 to 34	24.73 22.61		0.0 199.17	2 2.157	T 12.307	2.120 12.307 14.427	120	134.690 0.918 3.940		Vel = 17.49	
34 to 6	22.61 22.820		0.0 199.17	6 6.357		10.000	120	139.548 -0.091 0.014		Vel = 2.01	
6			0.0 199.17					139.471		K Factor = 16.86	
14 to 35	23.04 25.16		-155.87 -155.87	3 3.26	T 20.159	2.120 20.159 22.279	120	38.063 -0.918 -0.517		Vel = 5.99	
35 to 36	25.16 25.16		0.0 -155.87	3 3.26	X 17.471	47.880 17.471 65.351	120	36.628 0.0 -1.518		Vel = 5.99	
36 to 37	25.16 25.16	16.80	99.55 -56.32	3 3.26		10.000	120	35.110 0.0 -0.035		Vel = 2.16	
37 to 38	25.16 25.16	16.80	99.49 43.17	3 3.26		10.000	120	35.075 0.0 0.021		Vel = 1.66	
38 to 39	25.16 25.16	16.80	99.53 142.7	3 3.26		10.000	120	35.096 0.0 0.198		Vel = 5.49	
39 to 40A	25.16 0	16.80	99.81 242.51	3 3.26	4F 16.127	28.042 16.127 44.169	120	35.294 10.897 2.323		Vel = 9.32	
40A to 40	0 25.16		0.0 242.51	2 2.157		15.875	120	48.514 -10.897 6.241		Vel = 21.29	
40 to 41	25.16 25.16		-43.33 199.18	2 2.157	2X 20.921	311.160 20.921 332.081	120	43.858 0.0 90.710		Vel = 17.49	
41 to 7	25.16 23.03		0.0 199.18	2 2.157	T 12.307	2.120 12.307 14.427	120	134.568 0.923 3.940		Vel = 17.49	
			0.0								

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 9
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
7			199.18					139.431		K Factor = 16.87	
15 to 42	23.25 25.38		163.44	2	T 12.307	2.120 12.307	120	38.445 -0.923			
42 to 43A	25.38 0		163.44	2.157		14.427	0.1895	2.734		Vel = 14.35	
42 to 43A	25.38 0		0.0	3	X 4F 17.471 16.127	106.355 33.598	120	40.256 10.992			
43A to 43	0 25.38		163.44	3.26		139.953	0.0254	3.548		Vel = 6.28	
43A to 43	0 25.38		0.0	3		15.875	120	54.796 -10.992			
43 to 44	25.38 25.37		163.44	3.26		15.875	0.0253	0.402		Vel = 6.28	
43 to 44	25.38 25.37		35.36	2	2X 20.921	311.160 20.921	120	44.206 0.004			
44 to 8	25.37 23.25		198.8	2.157		332.081	0.2722	90.389		Vel = 17.45	
44 to 8	25.37 23.25		0.0	2	T 12.307	2.120 12.307	120	134.599 0.918			
8			198.8	2.157		14.427	0.2722	3.927		Vel = 17.45	
8			0.0 198.80					139.444		K Factor = 16.84	
16 to 45	23.47 25.59		150.67	3	T 20.159	2.120 20.159	120	38.561 -0.918			
45 to 46A	25.59 0		150.67	3.26		22.279	0.0218	0.485		Vel = 5.79	
45 to 46A	25.59 0		0.0	3	2T 4F 40.319 16.127	106.355 56.446	120	38.128 11.083			
46A to 46	0 25.59		150.67	3.26		162.801	0.0218	3.551		Vel = 5.79	
46A to 46	0 25.59		0.0	2		15.875	120	52.762 -11.083			
46 to 47	25.59 25.58		150.67	2.157		15.875	0.1630	2.587		Vel = 13.23	
46 to 47	25.59 25.58		48.16	2	2X 20.921	311.170 20.921	120	44.266 0.004			
47 to 9	25.58 23.46		198.83	2.157		332.091	0.2723	90.418		Vel = 17.46	
47 to 9	25.58 23.46		0.0	2	T 12.307	2.130 12.307	120	134.688 0.918			
9			198.83	2.157		14.437	0.2723	3.931		Vel = 17.46	
9			0.0 198.83					139.537		K Factor = 16.83	
21 to 48	22.82 22.61		-45.71	4		10.000	120	45.083 0.091			
48 to 32	22.61 24.73		-45.71	4.26		10.000	-0.0007	-0.007		Vel = 1.03	
48 to 32	22.61 24.73		0.0	2	T 12.307	2.120 12.307	120	45.167 -0.918			
32			-45.71	2.157		14.427	-0.0180	-0.259		Vel = 4.01	
32			0.0 -45.71					43.990		K Factor = -6.89	
22 to 40	23.04 25.16		-43.33	2	T 12.307	2.120 12.307	120	45.011 -0.918			
40			-43.33	2.157		14.427	-0.0163	-0.235		Vel = 3.80	
40			0.0 -43.33					43.858		K Factor = -6.54	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP9
Location : 211 NE MCCLOSKEY AVENUE LAKE CITY, FL
Remote Area : 2
Contract : 1010780
Data File : USCS PH3 AREA 2.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

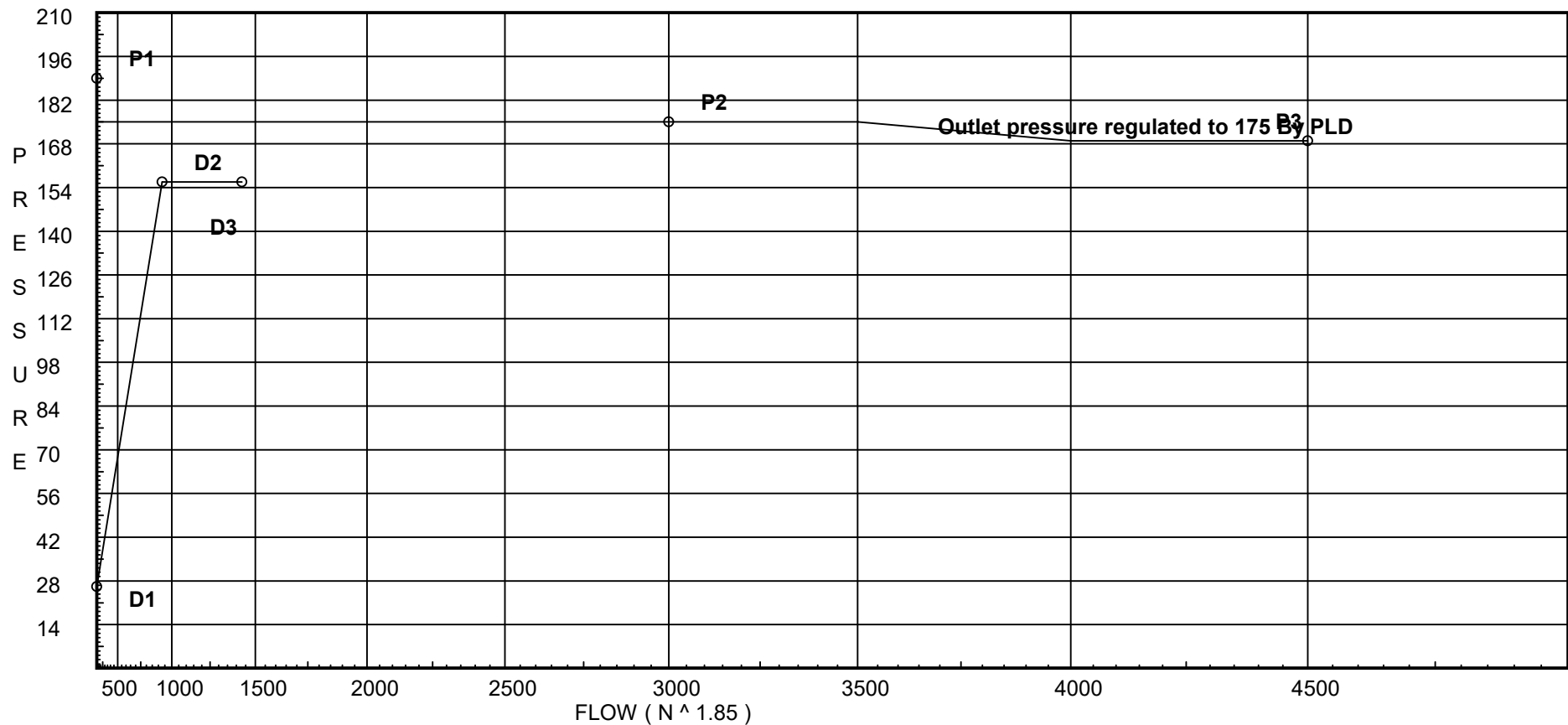
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 26.155
D2 - System Flow : 928.91
D2 - System Pressure : 155.798
Hose (Demand) : 500
D3 - System Demand : 1428.91
Safety Margin : 19.202



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			188.991	1428.91	155.798

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
151	60.39	8	14.06	30.0	0.3	100
193	60.17	8	14.27	30.22	0.3	100
194	59.95	8	14.79	30.76	0.3	100
195	59.74	8	15.78	31.78	0.3	100
196	59.52	8	17.43	33.4	0.3	100
197	59.3	8	19.97	35.75	0.3	100
198	59.09	8	23.63	38.89	0.3	100
199	57.54		64.78			
204	56.51		70.16			
205	56.49		70.35			
206	56.46		71.02			
207	56.44		72.43			
103	56.29		91.56			
102A	56.29		93.38			
102	55.12		94.13			
101	55.0		105.79			
100	23.53		122.47			
TOR5	23.37		126.73			
BOR5	3.0		141.27			
BOR4	3.0		141.3			
STU2	3.0		141.72			
UG5	-8.0		146.69			
UG4	-8.0		147.73	500.0		
UG2	-8.0		151.44			
UG1	-8.0		154.46			
UG	-8.0		158.25			
STUB	4.0		153.39			
PUMP	0.0		155.8			
209	60.39	8	14.1	30.04	0.3	100
210	60.17	8	14.31	30.26	0.3	100
211	59.95	8	14.83	30.8	0.3	100
212	59.74	8	15.82	31.82	0.3	100
213	59.52	8	17.48	33.45	0.3	100
214	59.3	8	20.02	35.8	0.3	100
215	59.09	8	23.7	38.94	0.3	100
216	57.54		64.94			
217	60.39	8	14.25	30.2	0.3	100
218	60.17	8	14.46	30.42	0.3	100
219	59.95	8	14.98	30.96	0.3	100
220	59.74	8	15.98	31.98	0.3	100
221	59.52	8	17.65	33.61	0.3	100

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

NODE ANALYSIS (cont.)

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>		<i>Notes</i>
222	59.3	8	20.22	35.97	0.3	100
223	59.09	8	23.92	39.13	0.3	100
224	57.54		65.54			
225	60.39	8	14.56	30.52	0.3	100
226	60.17	8	14.77	30.75	0.3	100
227	59.95	8	15.3	31.29	0.3	100
228	59.74	8	16.32	32.32	0.3	100
229	59.52	8	18.03	33.97	0.3	100
230	59.3	8	20.64	36.34	0.3	100
231	59.09	8	24.42	39.53	0.3	100
232	57.54		67.52			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
151 to 193	60.39 60.17	8.00	30.00 30.0	2 2.157		10.000 10.000	100 0.0116	14.062 0.095 0.116		Vel = 2.63	
193 to 194	60.17 59.95	8.00	30.22 60.22	2 2.157		10.000 10.000	100 0.0419	14.273 0.095 0.419		Vel = 5.29	
194 to 195	59.95 59.74	8.00	30.77 90.99	2 2.157		10.000 10.000	100 0.0898	14.787 0.091 0.898		Vel = 7.99	
195 to 196	59.74 59.52	8.00	31.77 122.76	2 2.157		10.000 10.000	100 0.1564	15.776 0.095 1.564		Vel = 10.78	
196 to 197	59.52 59.3	8.00	33.41 156.17	2 2.157		10.000 10.000	100 0.2440	17.435 0.095 2.440		Vel = 13.71	
197 to 198	59.3 59.09	8.00	35.75 191.92	2 2.157		10.000 10.000	100 0.3573	19.970 0.091 3.573		Vel = 16.85	
198 to 199	59.09 57.54	8.00	38.89 230.81	2 2.157	X 7.466	73.040 7.465 80.505	100 0.5027	23.634 0.671 40.470		Vel = 20.26	
199 to 204	57.54 56.51		0.0 230.81	2 2.157	T 8.783	1.040 8.783 9.823	100 0.5028	64.775 0.446 4.939		Vel = 20.26	
204 to 205	56.51 56.49		0.0 230.81	4 4.26		10.000 10.000	100 0.0182	70.160 0.009 0.182		Vel = 5.20	
205 to 206	56.49 56.46		231.12 461.93	4 4.26		10.000 10.000	100 0.0660	70.351 0.013 0.660		Vel = 10.40	
206 to 207	56.46 56.44		232.26 694.19	4 4.26		10.000 10.000	100 0.1401	71.024 0.009 1.401		Vel = 15.63	
207 to 103	56.44 56.29		234.72 928.91	4 4.26	V 6.39	72.960 6.390 79.350	100 0.2403	72.434 0.065 19.064		Vel = 20.91	
103 to 102A	56.29 56.29		0.0 928.91	4 4.26	V 6.39	1.170 6.390 7.560	100 0.2402	91.563 0.0 1.816		Vel = 20.91	
102A to 102	56.29 55.12		0.0 928.91	4 4.26		1.000 1.000	100 0.2400	93.379 0.507 0.240		Vel = 20.91	
102 to 101	55.12 55		0.0 928.91	6 6.357	5V 44.868	294.620 44.868 339.488	100 0.0342	94.126 0.052 11.611		Vel = 9.39	
101 to 100	55 23.53		0.0 928.91	6 6.357	V 8.974	80.140 8.974 89.114	100 0.0342	105.789 13.630 3.048		Vel = 9.39	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
100 to TOR5	23.53 23.37		0.0 928.91	6 6.357	5V 26.921 17.947 28.716	44.868 77.833 44.868 122.701	100 0.0342	122.467 0.069 4.197		Vel = 9.39	
TOR5 to BOR5	23.37 3		0.0 928.91	6 6.357	T 2B S	20.370 73.583 93.953	100 0.0342	126.733 11.322 3.213		* * Fixed Loss = 2.5 Vel = 9.39	
BOR5 to BOR4	3 3		0.0 928.91	8 8.249		3.000 3.000	100 0.0097	141.268 0.0 0.029		Vel = 5.58	
BOR4 to STU2	3 3		0.0 928.91	8 8.249	T V	29.339 4.000 10.897 40.235 44.235	100 0.0096	141.297 0.0 0.425		Vel = 5.58	
STU2 to UG5	3 -8		0.0 928.91	8 8.27	L	11.033 10.000 11.033 21.033	100 0.0095	141.722 4.764 0.200		Vel = 5.55	
UG5 to UG4	-8 -8		0.0 928.91	8 7.68	T G	38.602 100.090 4.412 43.014 143.104	140 0.0073	146.686 0.0 1.046		Vel = 6.43	
UG4 to UG2	-8 -8	H500	500.00 1428.91	8 7.68	T	43.857 216.330 43.857 260.187	150 0.0143	147.732 0.0 3.713		Vel = 9.90	
UG2 to UG1	-8 -8		0.0 1428.91	8 7.68	T G	43.857 162.700 5.012 48.869 211.569	150 0.0143	151.445 0.0 3.019		Vel = 9.90	
UG1 to UG	-8 -8		0.0 1428.91	8 7.68	L	16.29 249.333 16.290 265.623	150 0.0143	154.464 0.0 3.790		Vel = 9.90	
UG to STUB	-8 4		0.0 1428.91	8 8.27	L	20.56 9.000 20.560 29.560	140 0.0113	158.254 -5.197 0.334		Vel = 8.53	
STUB to PUMP	4 0		0.0 1428.91	10 10.42	B 2L S	34.74 15.000 58.509 193.811 208.811	150 0.0032	153.391 1.732 0.675		Vel = 5.38	
PUMP			0.0 1428.91					155.798		K Factor = 114.48	
System Demand Pressure								155.798			
Safety Margin								19.202			
Regulated Pressure								175.000		PLD	
209 to 210	60.39 60.17	8.00	30.04 30.04	2 2.157		10.000 10.000	100 0.0116	14.101 0.095 0.116		Vel = 2.64	
210 to 211	60.17 59.95	8.00	30.27 60.31	2 2.157		10.000 10.000	100 0.0420	14.312 0.095 0.420		Vel = 5.30	
211 to 212	59.95 59.74	8.00	30.80 91.11	2 2.157		10.000 10.000	100 0.0900	14.827 0.091 0.900		Vel = 8.00	
212 to 213	59.74 59.52	8.00	31.82 122.93	2 2.157		10.000 10.000	100 0.1568	15.818 0.095 1.568		Vel = 10.79	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 7
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
213 to 214	59.52 59.3	8.00	33.45 156.38	2 2.157		10.000	100	17.481 0.095 2.446		Vel = 13.73	
214 to 215	59.3 59.09	8.00	35.79 192.17	2 2.157		10.000	100	20.022 0.091 3.582		Vel = 16.87	
215 to 216	59.09 57.54	8.00	38.95 231.12	2 2.157	X 7.466	73.040 7.465 80.505	100	23.695 0.671 40.570		Vel = 20.29	
216 to 205	57.54 56.49		0.0 231.12	2 2.157	T 8.783	1.060 8.783 9.843	100	64.936 0.455 4.960		Vel = 20.29	
205			0.0 231.12					70.351		K Factor = 27.56	
217 to 218	60.39 60.17	8.00	30.20 30.2	2 2.157		10.000	100	14.246 0.095 0.117		Vel = 2.65	
218 to 219	60.17 59.95	8.00	30.41 60.61	2 2.157		10.000	100	14.458 0.095 0.424		Vel = 5.32	
219 to 220	59.95 59.74	8.00	30.96 91.57	2 2.157		10.000	100	14.977 0.091 0.909		Vel = 8.04	
220 to 221	59.74 59.52	8.00	31.98 123.55	2 2.157		10.000	100	15.977 0.095 1.582		Vel = 10.85	
221 to 222	59.52 59.3	8.00	33.61 157.16	2 2.157		10.000	100	17.654 0.095 2.470		Vel = 13.80	
222 to 223	59.3 59.09	8.00	35.98 193.14	2 2.157		10.000	100	20.219 0.091 3.615		Vel = 16.96	
223 to 224	59.09 57.54	8.00	39.13 232.27	2 2.157	X 7.466	73.040 7.465 80.505	100	23.925 0.671 40.944		Vel = 20.39	
224 to 206	57.54 56.46		0.0 232.27	2 2.157	T 8.783	1.080 8.783 9.863	100	65.540 0.468 5.016		Vel = 20.39	
206			0.0 232.27					71.024		K Factor = 27.56	
225 to 226	60.39 60.17	8.00	30.52 30.52	2 2.157		10.000	100	14.557 0.095 0.119		Vel = 2.68	
226 to 227	60.17 59.95	8.00	30.75 61.27	2 2.157		10.000	100	14.771 0.095 0.432		Vel = 5.38	
227 to 228	59.95 59.74	8.00	31.29 92.56	2 2.157		10.000	100	15.298 0.091 0.928		Vel = 8.13	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 8
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
228 to 229	59.74 59.52	8.00	32.32 124.88	2 2.157			10.000 10.000	100 0.1614	16.317 0.095 1.614		Vel = 10.96	
229 to 230	59.52 59.3	8.00	33.96 158.84	2 2.157			10.000 10.000	100 0.2518	18.026 0.095 2.518		Vel = 13.95	
230 to 231	59.3 59.09	8.00	36.34 195.18	2 2.157			10.000 10.000	100 0.3686	20.639 0.091 3.686		Vel = 17.14	
231 to 232	59.09 57.54	8.00	39.53 234.71	2 2.157	T	8.783	73.040 8.783 81.823	100 0.5185	24.416 0.671 42.429		Vel = 20.61	
232 to 207	57.54 56.44		0.0 234.71	2 2.157	X	7.466	1.100 7.465 8.565	100 0.5186	67.516 0.476 4.442		Vel = 20.61	
207			0.0 234.71						72.434		K Factor = 27.58	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP11
Location : 211 NE MCCLOSKEY AVENUE LAKE CITY, FL
Remote Area : 3
Contract : 1010780
Data File : USCS PH3 AREA 3.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

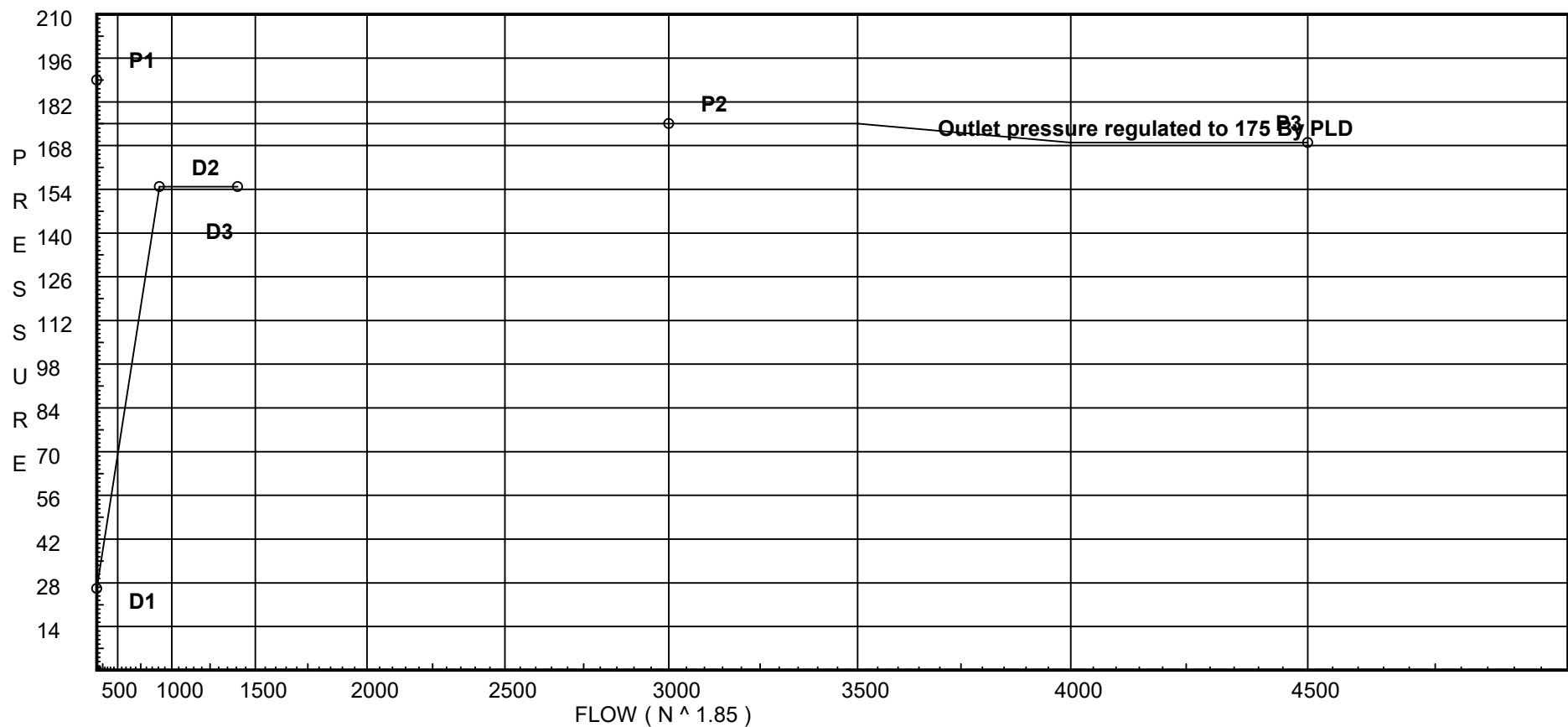
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 26.155
D2 - System Flow : 907.21
D2 - System Pressure : 154.823
Hose (Demand) : 500
D3 - System Demand : 1407.21
Safety Margin : 20.177



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			188.991	1407.21	154.823

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
233	60.39	8	14.06	30.0	0.3	100
234	60.17	8	14.27	30.22	0.3	100
235	59.95	8	14.79	30.76	0.3	100
236	59.74	8	15.78	31.78	0.3	100
237	59.52	8	17.43	33.4	0.3	100
238	59.3	8	19.97	35.75	0.3	100
239	59.09	8	23.63	38.89	0.3	100
240	57.54		64.78			
241	56.5		70.16			
242	56.48		70.36			
243	56.46		71.02			
244	56.44		72.43			
203	56.29		90.33			
202	55.15		92.56			
201	55.0		104.26			
200	23.41		119.26			
TOR4	23.17		126.41			
BOR4	3.0		140.72			
STU2	3.0		141.12			
UG5	-8.0		146.08			
UG4	-8.0		147.08	500.0		
UG2	-8.0		150.69			
UG1	-8.0		153.62			
UG	-8.0		157.31			
STUB	4.0		152.44			
PUMP	0.0		154.82			
247	60.39	8	14.1	30.04	0.3	100
248	60.17	8	14.31	30.26	0.3	100
249	59.95	8	14.83	30.8	0.3	100
250	59.74	8	15.82	31.82	0.3	100
251	59.52	8	17.48	33.45	0.3	100
252	59.3	8	20.02	35.8	0.3	100
253	59.09	8	23.7	38.94	0.3	100
254	57.54		64.94			
255	60.39	8	14.25	30.2	0.3	100
256	60.17	8	14.46	30.42	0.3	100
257	59.95	8	14.98	30.96	0.3	100
258	59.74	8	15.98	31.98	0.3	100
259	59.52	8	17.65	33.61	0.3	100
260	59.3	8	20.22	35.97	0.3	100
261	59.09	8	23.92	39.13	0.3	100

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

NODE ANALYSIS (cont.)

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
262	57.54		65.54			
263	59.95	8	26.4	41.11	0.3	100
264	59.74	8	26.7	41.34	0.3	100
265	59.52	8	27.54	41.98	0.3	100
266	59.3	8	29.24	43.26	0.3	100
267	59.09	8	32.11	45.34	0.3	100
268	57.54		67.67			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
233 to 234	60.39 60.17	8.00	30.00 30.0	2 2.157		10.000	100	14.062 0.095			
234 to 235	60.17 59.95	8.00	30.22 60.22	2 2.157		10.000	100	14.273 0.095	Vel =	2.63	
235 to 236	59.95 59.74	8.00	30.77 90.99	2 2.157		10.000	100	14.787 0.091	Vel =	5.29	
236 to 237	59.74 59.52	8.00	31.77 122.76	2 2.157		10.000	100	15.776 0.095	Vel =	7.99	
237 to 238	59.52 59.3	8.00	33.41 156.17	2 2.157		10.000	100	17.435 0.095	Vel =	10.78	
238 to 239	59.3 59.09	8.00	35.75 191.92	2 2.157		10.000	100	19.970 0.091	Vel =	13.71	
239 to 240	59.09 57.54	8.00	38.89 230.81	2 2.157	X 7.466	73.040 7.465	100	23.634 0.671	Vel =	16.85	
240 to 241	57.54 56.5		0.0 230.81	2 2.157	T 8.783	1.040 8.783	100	64.775 0.450	Vel =	20.26	
241 to 242	56.5 56.48		0.0 230.81	4 4.26		10.000	100	70.164 0.009	Vel =	20.26	
242 to 243	56.48 56.46		231.12 461.93	4 4.26		10.000	100	70.355 0.009	Vel =	5.20	
243 to 244	56.46 56.44		232.26 694.19	4 4.26		10.000	100	71.024 0.009	Vel =	10.40	
244 to 203	56.44 56.29		213.02 907.21	4 4.26	V 6.39	71.150 6.390	100	72.434 0.065	Vel =	15.63	
203 to 202	56.29 55.15		0.0 907.21	4 4.26	V 6.39	1.140 6.390	100	90.331 0.494	Vel =	20.42	
202 to 201	55.15 55		0.0 907.21	6 6.357	5V 44.868	310.560 44.868	100	92.556 0.065	Vel =	20.42	
201 to 200	55 23.41		0.0 907.21	6 6.357	V 8.974	355.428 31.480	0.0327	11.637 13.682	Vel =	9.17	
200 to TOR4	23.41 23.17		0.0 907.21	6 6.357	5V 44.868	170.250 44.868	100	119.264 0.104	Vel =	9.17	
						215.118	0.0327	7.042			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
TOR4 to BOR4	23.17 3		0.0 907.21	6 6.357	T 2B S	26.921 17.947 28.716	20.170 73.583 93.753	100 11.236 3.069		* * Fixed Loss = 2.5 Vel = 9.17	
BOR4 to STU2	3 3		0.0 907.21	8 8.249	T V	29.339 10.897	4.000 40.235 44.235	100 0.0 0.408		Vel = 5.45	
STU2 to UG5	3 -8		0.0 907.21	8 8.27	L	11.033 11.033	10.000 4.764 21.033	100 141.123 4.764		Vel = 5.42	
UG5 to UG4	-8 -8		0.0 907.21	8 7.68	T G	38.602 4.412	100.090 43.014 143.104	140 0.0 1.001		Vel = 6.28	
UG4 to UG2	-8 -8	H500	500.00 1407.21	8 7.68	T	43.857 43.857	216.330 43.857 260.187	150 0.0 3.609		Vel = 9.75	
UG2 to UG1	-8 -8		0.0 1407.21	8 7.68	T G	43.857 5.012	162.700 48.869 211.569	150 0.0 2.935		Vel = 9.75	
UG1 to UG	-8 -8		0.0 1407.21	8 7.68	L	16.29 16.290	249.333 16.290 265.623	150 0.0 3.685		Vel = 9.75	
UG to STUB	-8 4		0.0 1407.21	8 8.27	L	20.56 20.560	9.000 20.560 29.560	140 157.308 -5.197		Vel = 8.40	
STUB to PUMP	4 0		0.0 1407.21	10 10.42	B 2L S	34.74 58.509 100.563	15.000 193.811 208.811	150 1.732 0.656		Vel = 5.29	
PUMP			0.0 1407.21					154.823		K Factor = 113.09	
System Demand Pressure								154.823			
Safety Margin								20.177			
Regulated Pressure								175.000		PLD	
247 to 248	60.39 60.17	8.00	30.04	2			10.000	100 0.095			
248 to 249	60.17 59.95	8.00	30.27	2			10.000	100 0.095		Vel = 5.30	
249 to 250	59.95 59.74	8.00	30.80	2			10.000	100 0.091		Vel = 8.00	
250 to 251	59.74 59.52	8.00	31.82	2			10.000	100 0.095			
251 to 252	59.52 59.3	8.00	122.93	2.157			10.000	0.1568 1.568		Vel = 10.79	
252 to 253	59.3 59.09	8.00	33.45	2			10.000	100 0.095			
			156.38	2.157			10.000	0.2446 2.446		Vel = 13.73	
			35.79	2			10.000	100 0.091			
			192.17	2.157			10.000	0.3582 3.582		Vel = 16.87	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 7
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
253 to 254	59.09 57.54	8.00	38.95 231.12	2 2.157	X 7.466	73.040 7.465 80.505	100 0.5039	23.695 0.671 40.570		Vel = 20.29	
254 to 242	57.54 56.48		0.0 231.12	2 2.157	T 8.783	1.060 8.783 9.843	100 0.5039	64.936 0.459 4.960		Vel = 20.29	
242			0.0 231.12					70.355		K Factor = 27.55	
255 to 256	60.39 60.17	8.00	30.20 30.2	2 2.157		10.000 10.000	100 0.0117	14.246 0.095 0.117		Vel = 2.65	
256 to 257	60.17 59.95	8.00	30.41 60.61	2 2.157		10.000 10.000	100 0.0424	14.458 0.095 0.424		Vel = 5.32	
257 to 258	59.95 59.74	8.00	30.96 91.57	2 2.157		10.000 10.000	100 0.0909	14.977 0.091 0.909		Vel = 8.04	
258 to 259	59.74 59.52	8.00	31.98 123.55	2 2.157		10.000 10.000	100 0.1582	15.977 0.095 1.582		Vel = 10.85	
259 to 260	59.52 59.3	8.00	33.61 157.16	2 2.157		10.000 10.000	100 0.2470	17.654 0.095 2.470		Vel = 13.80	
260 to 261	59.3 59.09	8.00	35.98 193.14	2 2.157		10.000 10.000	100 0.3615	20.219 0.091 3.615		Vel = 16.96	
261 to 262	59.09 57.54	8.00	39.13 232.27	2 2.157	X 7.466	73.040 7.465 80.505	100 0.5086	23.925 0.671 40.944		Vel = 20.39	
262 to 243	57.54 56.46		0.0 232.27	2 2.157	T 8.783	1.080 8.783 9.863	100 0.5086	65.540 0.468 5.016		Vel = 20.39	
243			0.0 232.27					71.024		K Factor = 27.56	
263 to 264	59.95 59.74	8.00	41.11 41.11	2 2.157		10.000 10.000	100 0.0207	26.400 0.091 0.207		Vel = 3.61	
264 to 265	59.74 59.52	8.00	41.33 82.44	2 2.157		10.000 10.000	100 0.0749	26.698 0.095 0.749		Vel = 7.24	
265 to 266	59.52 59.3	8.00	41.98 124.42	2 2.157		10.000 10.000	100 0.1603	27.542 0.095 1.603		Vel = 10.92	
266 to 267	59.3 59.09	8.00	43.26 167.68	2 2.157		10.000 10.000	100 0.2783	29.240 0.091 2.783		Vel = 14.72	
267 to 268	59.09 57.54	8.00	45.34 213.02	2 2.157	X 7.466	73.040 7.465 80.505	100 0.4334	32.114 0.671 34.890		Vel = 18.70	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 8
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
268 to 244	57.54 56.44		0.0 213.02	2 2.157	T	8.783	1.100 8.783 9.883	100 0.4334	67.675 0.476 4.283		Vel = 18.70	
244			0.0 213.02						72.434		K Factor = 25.03	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP13
Location : 211 NE MCCLOSKEY AVENUE LAKE CITY, FL
Remote Area : 4
Contract : 1010780
Data File : USCS PH3 AREA 4.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

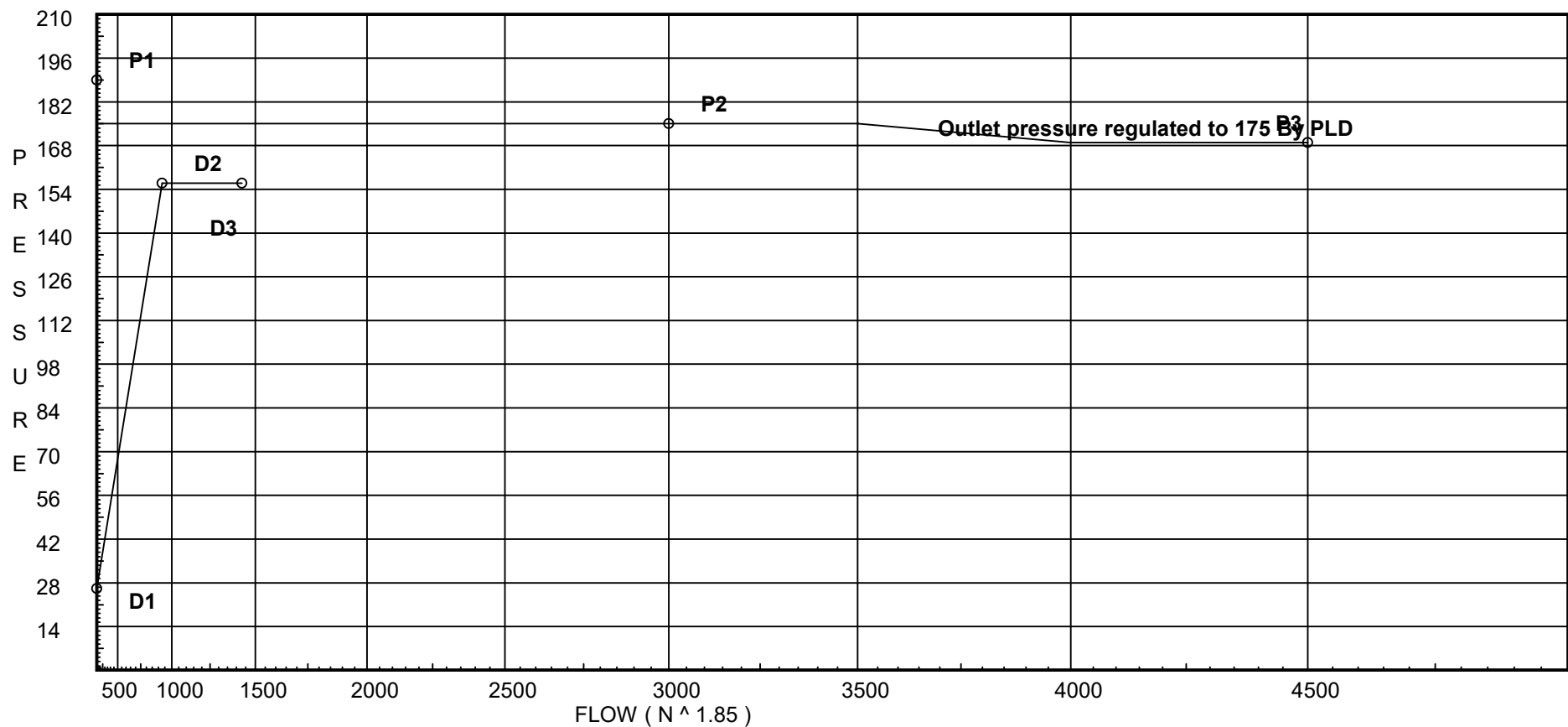
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 26.155
D2 - System Flow : 929.07
D2 - System Pressure : 155.971
Hose (Demand) : 500
D3 - System Demand : 1429.07
Safety Margin : 19.029



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0
X	90'Tee-BranchFirelock002	0	0	0	0	0	8.5	10.8	13	0	16	21	25	33	9.3	11	0	0	0	0	0

Units Summary

Diameter Units	Inches
Length Units	Feet
Flow Units	US Gallons per Minute
Pressure Units	Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			188.991	1429.07	155.971

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
208	60.39	8	14.06	30.0	0.3	100
245	60.17	8	14.27	30.22	0.3	100
246	59.95	8	14.79	30.76	0.3	100
269	59.74	8	15.78	31.78	0.3	100
270	59.52	8	17.43	33.4	0.3	100
271	59.3	8	19.97	35.75	0.3	100
272	59.09	8	23.63	38.89	0.3	100
273	57.54		64.79			
274	54.91		71.67			
275	54.93		71.85			
276	54.95		72.5			
277	54.95		73.9			
303	54.95		90.11			
302	54.95		91.96			
301	54.95		103.65			
300	23.41		118.7			
TOR6	23.12		127.35			
BOR6	3.0		141.77			
STU2	3.0		142.07			
UG5	-8.0		147.03			
UG4	-8.0		147.9	500.0		
UG2	-8.0		151.62			
UG1	-8.0		154.64			
UG	-8.0		158.43			
STUB	4.0		153.56			
PUMP	0.0		155.97			
280	60.39	8	14.1	30.05	0.3	100
281	60.17	8	14.32	30.27	0.3	100
282	59.95	8	14.83	30.81	0.3	100
283	59.74	8	15.82	31.82	0.3	100
284	59.52	8	17.49	33.45	0.3	100
285	59.3	8	20.03	35.8	0.3	100
286	59.09	8	23.7	38.95	0.3	100
287	57.54		64.97			
288	60.39	8	14.25	30.2	0.3	100
289	60.17	8	14.46	30.43	0.3	100
290	59.95	8	14.98	30.97	0.3	100
291	59.74	8	15.98	31.98	0.3	100
292	59.52	8	17.66	33.62	0.3	100
293	59.3	8	20.23	35.98	0.3	100
294	59.09	8	23.94	39.14	0.3	100

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

NODE ANALYSIS (cont.)

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
295	57.54		65.58			
296	60.39	8	14.57	30.53	0.3	100
297	60.17	8	14.78	30.76	0.3	100
298	59.95	8	15.31	31.3	0.3	100
299	59.74	8	16.33	32.33	0.3	100
307	59.52	8	18.04	33.98	0.3	100
304	59.3	8	20.65	36.35	0.3	100
305	59.09	8	24.43	39.54	0.3	100
306	57.54		66.89			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
208 to 245	60.39 60.17	8.00	30.00 30.0	2 2.157			10.000	100	14.062 0.095			
245 to 246	60.17 59.95	8.00	30.22 60.22	2 2.157			10.000	100	14.273 0.095	Vel =	2.63	
246 to 269	59.95 59.74	8.00	30.77 90.99	2 2.157			10.000	100	14.787 0.091	Vel =	5.29	
269 to 270	59.74 59.52	8.00	31.77 122.76	2 2.157			10.000	100	15.776 0.095	Vel =	7.99	
270 to 271	59.52 59.3	8.00	33.41 156.17	2 2.157			10.000	100	17.435 0.095	Vel =	10.78	
271 to 272	59.3 59.09	8.00	35.75 191.92	2 2.157			10.000	100	19.970 0.091	Vel =	13.71	
272 to 273	59.09 57.54	8.00	38.89 230.81	2 2.157	X	7.466	73.070 7.465	100	23.634 0.671	Vel =	16.85	
273 to 274	57.54 54.91		0.0 230.81	2 2.157	T	8.783	2.640 8.783	100	64.791 1.139	Vel =	20.26	
274 to 275	54.91 54.93		0.0 230.81	4 4.26			10.000	100	71.672 -0.009	Vel =	20.26	
275 to 276	54.93 54.950		231.15 461.96	4 4.26			10.000	100	71.846 -0.009	Vel =	5.20	
276 to 277	54.950 54.950		232.32 694.28	4 4.26			10.000	100	72.497 0.0	Vel =	10.40	
277 to 303	54.950 54.950		234.79 929.07	4 4.26	V	6.39	61.050 6.390	100	73.899 0.0	Vel =	15.63	
303 to 302	54.950 54.950		0.0 929.07	4 4.26	V	6.39	1.333 6.390	100	90.107 0.0	Vel =	20.91	
302 to 301	54.950 54.950		0.0 929.07	6 6.357	5V	44.868	296.780 44.868	100	91.963 0.0	Vel =	20.91	
301 to 300	54.950 23.41		0.0 929.07	6 6.357	V	8.974	31.480 8.974	100	103.651 13.660	Vel =	9.39	
300 to TOR6	23.41 23.12		0.0 929.07	6 6.357	6V	53.842	195.333 53.842	100	118.695 0.126	Vel =	9.39	
							249.175	0.0342	8.525			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
TOR6 to BOR6	23.12 3		0.0 929.07	6 6.357	T 2B S	26.921 17.947 28.716	20.120 73.583 93.703	100 0.0342	127.346 11.214 3.206		* * Fixed Loss = 2.5 Vel = 9.39	
BOR6 to STU2	3 3		0.0 929.07	8 8.249	T V	29.339 11.033	2.280 29.338 31.618	100 0.0096	141.766 0.0 0.304		Vel = 5.58	
STU2 to UG5	3 -8		0.0 929.07	8 8.27	 L G	 14.338 4.412	10.000 11.033 21.033	100 0.0095	142.070 4.764 0.200		Vel = 5.55	
UG5 to UG4	-8 -8		0.0 929.07	8 7.68	 L G	 14.338 4.412	100.090 18.750 118.840	140 0.0073	147.034 0.0 0.869		Vel = 6.43	
UG4 to UG2	-8 -8	H500	500.00 1429.07	8 7.68	T T G	43.857 43.857 5.012	216.330 43.857 260.187	150 0.0143	147.903 0.0 3.713		Vel = 9.90	
UG2 to UG1	-8 -8		0.0 1429.07	8 7.68	 T G	 43.857 5.012	162.700 48.869 211.569	150 0.0143	151.616 0.0 3.020		Vel = 9.90	
UG1 to UG	-8 -8		0.0 1429.07	8 7.68	 L	 16.29	249.333 16.290 265.623	150 0.0143	154.636 0.0 3.791		Vel = 9.90	
UG to STUB	-8 4		0.0 1429.07	8 8.27	 L	 20.56	9.000 20.560 29.560	140 0.0113	158.427 -5.197 0.334		Vel = 8.54	
STUB to PUMP	4 0		0.0 1429.07	10 10.42	B 2L S	34.74 58.509 100.563	15.000 193.811 208.811	150 0.0032	153.564 1.732 0.675		Vel = 5.38	
PUMP			0.0 1429.07						155.971		K Factor = 114.43	
System Demand Pressure									155.971			
Safety Margin									19.029			
Regulated Pressure									175.000		PLD	
280 to 281	60.39 60.17	8.00	30.05	2			10.000	100	14.105 0.095		Vel = 2.64	
281 to 282	60.17 59.95	8.00	30.26	2			10.000	100	14.316 0.095		Vel = 5.30	
282 to 283	59.95 59.74	8.00	30.81	2			10.000	100	14.831 0.091		Vel = 8.00	
283 to 284	59.74 59.52	8.00	31.83	2			10.000	100	15.823 0.095		Vel = 10.79	
284 to 285	59.52 59.3	8.00	33.45	2			10.000	100	17.486 0.095		Vel = 13.73	
285 to 286	59.3 59.09	8.00	156.4 192.2	2			10.000	100	20.028 0.091		Vel = 16.87	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 7
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
286 to 287	59.09 57.54	8.00	38.95 231.15	2 2.157	X 8.783	73.070 7.465 80.535	100 0.5041	23.702 0.671 40.595		Vel = 20.29	
287 to 275	57.54 54.93		0.0 231.15	2 2.157	T	2.620 8.783 11.403	100 0.5041	64.968 1.130 5.748		Vel = 20.29	
275			0.0 231.15					71.846		K Factor = 27.27	
288 to 289	60.39 60.17	8.00	30.20 30.2	2 2.157		10.000 10.000	100 0.0117	14.253 0.095 0.117		Vel = 2.65	
289 to 290	60.17 59.95	8.00	30.43 60.63	2 2.157		10.000 10.000	100 0.0424	14.465 0.095 0.424		Vel = 5.32	
290 to 291	59.95 59.74	8.00	30.97 91.6	2 2.157		10.000 10.000	100 0.0909	14.984 0.091 0.909		Vel = 8.04	
291 to 292	59.74 59.52	8.00	31.98 123.58	2 2.157		10.000 10.000	100 0.1583	15.984 0.095 1.583		Vel = 10.85	
292 to 293	59.52 59.3	8.00	33.62 157.2	2 2.157		10.000 10.000	100 0.2471	17.662 0.095 2.471		Vel = 13.80	
293 to 294	59.3 59.09	8.00	35.98 193.18	2 2.157		10.000 10.000	100 0.3617	20.228 0.091 3.617		Vel = 16.96	
294 to 295	59.09 57.54	8.00	39.14 232.32	2 2.157	X 8.783	73.070 7.465 80.535	100 0.5088	23.936 0.671 40.977		Vel = 20.40	
295 to 276	57.54 54.950		0.0 232.32	2 2.157	T	2.600 8.783 11.383	100 0.5087	65.584 1.122 5.791		Vel = 20.40	
276			0.0 232.32					72.497		K Factor = 27.29	
296 to 297	60.39 60.17	8.00	30.53 30.53	2 2.157		10.000 10.000	100 0.0119	14.566 0.095 0.119		Vel = 2.68	
297 to 298	60.17 59.95	8.00	30.76 61.29	2 2.157		10.000 10.000	100 0.0433	14.780 0.095 0.433		Vel = 5.38	
298 to 299	59.95 59.74	8.00	31.30 92.59	2 2.157		10.000 10.000	100 0.0928	15.308 0.091 0.928		Vel = 8.13	
299 to 307	59.74 59.52	8.00	32.32 124.91	2 2.157		10.000 10.000	100 0.1614	16.327 0.095 1.614		Vel = 10.97	
307 to 304	59.52 59.3	8.00	33.98 158.89	2 2.157		10.000 10.000	100 0.2520	18.036 0.095 2.520		Vel = 13.95	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 8
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
304 to 305	59.3 59.09	8.00	36.35 195.24	2 2.157		10.000	100	20.651 0.091 3.689		Vel = 17.14	
305 to 306	59.09 57.54	8.00	39.55 234.79	2 2.157	X 7.466	73.070 7.465 80.535	100	24.431 0.671 41.785		Vel = 20.61	
306 to 277	57.54 54.950		0.0 234.79	2 2.157	T 8.783	2.570 8.783 11.353	100	66.887 1.122 5.890		Vel = 20.61	
277			0.0 234.79					73.899		K Factor = 27.31	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP4
Location : 211 NE MCCLOSKEY AVE. LAKE CITY, FLORIDA. 32055
Remote Area : 5
Contract : 1010780
Data File : USCS PH3 AREA 5.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

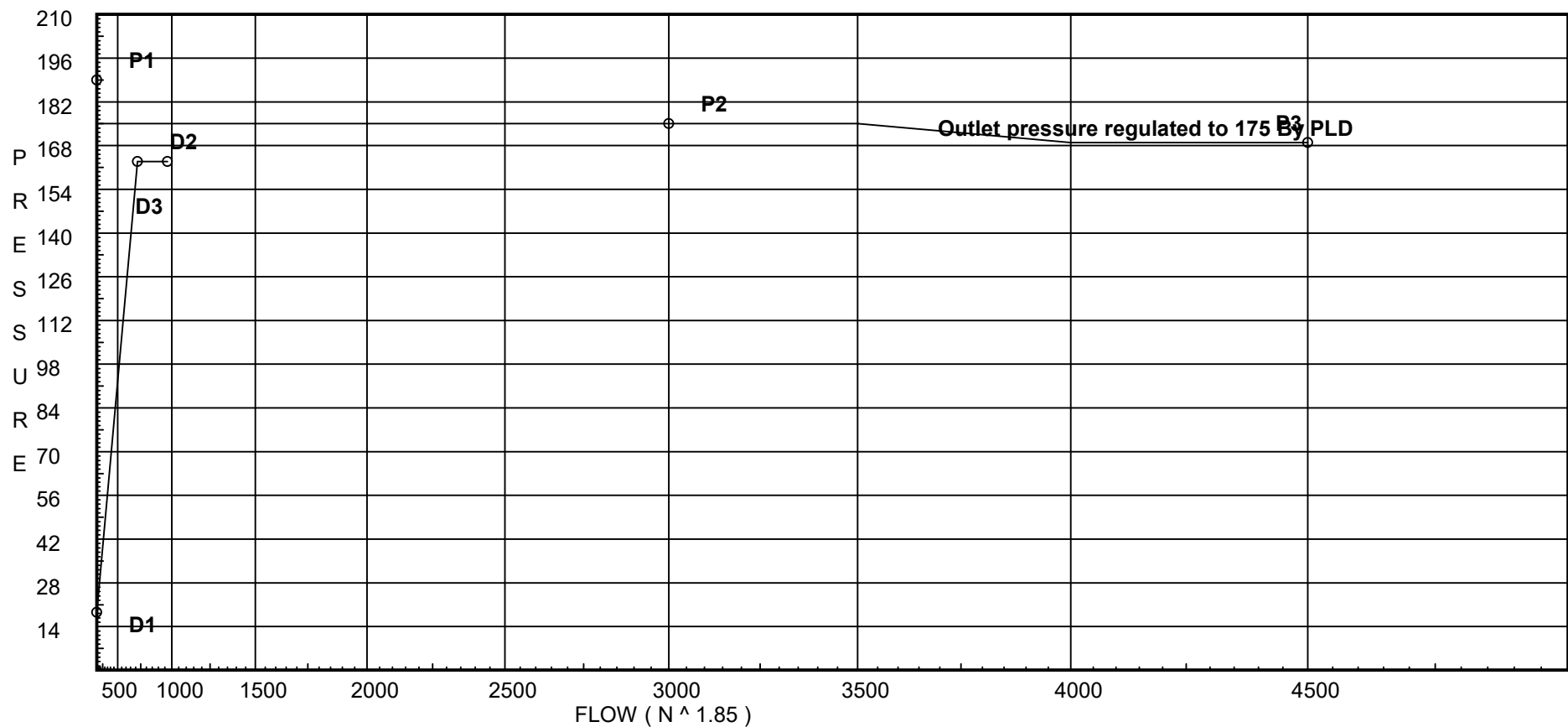
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 18.593
D2 - System Flow : 719.556
D2 - System Pressure : 162.883
Hose (Demand) : 250
D3 - System Demand : 969.556
Safety Margin : 12.117



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
E	NFPA 13 90' Standard Elbow	1	2	2	3	4	5	6	7	8	10	12	14	18	22	27	35	40	45	50	61
F	NFPA 13 45' Elbow	1	1	1	1	2	2	3	3	3	4	5	7	9	11	13	17	19	21	24	28
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			189.441	969.56	162.883

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
310	42.93	14	23.77	68.26	0.2	324
312	42.69	14	26.53	72.12	0.2	324
314	42.67		33.32			
315	41.75		39.09			
316	41.75		40.38			
317	41.75		44.02			
800	0.0		125.48			
318	41.74		122.39			
703	41.71		122.7			
702	42.08		126.48			
701	41.78		130.13			
700	25.1		137.9			
TR10	3.0		151.92			
BR10	3.0		155.14			
BOR9	3.0		155.16			
BOR8	3.0		155.18			
BOR7	3.0		155.19			
BOR6	3.0		155.21			
STU2	3.0		155.29			
UG5	-8.0		160.18			
UG4	-8.0		160.72	250.0		
UG2	-8.0		162.53			
UG1	-8.0		164.01			
UG	-8.0		165.86			
STUB	4.0		160.82			
PUMP	0.0		162.88			
320	42.93	14	21.6	65.07	0.2	324
321	42.69	14	24.14	68.78	0.2	324
322	42.67		31.36			
323	41.75		36.67			
324	42.93	14	29.1	75.52	0.2	324
325	42.69	14	32.4	79.7	0.2	324
326	42.67		37.15			
328	42.93	14	23.64	68.07	0.2	324
329	42.69	14	26.39	71.92	0.2	324
330	42.67		29.6			
331	41.75		35.34			
332	42.93	14	27.22	73.04	0.2	324
333	42.69	14	30.33	77.1	0.2	324
334	41.75		34.56			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
310 to 312	42.93 42.69	14.00	68.26 68.26	1.5 1.682			15.000 15.000	100 0.1772	23.772 0.104 2.658			
312 to 314	42.69 42.67	14.00	72.12 140.38	1.5 1.682	2E	7.065	3.010 7.066 10.076	100 0.6728	26.534 0.009 6.779		Vel = 9.86	
314 to 315	42.67 41.75		0.0 140.38	1.5 1.682	T	7.065	0.920 7.066 7.986	100 0.6728	33.322 0.398 5.373		Vel = 20.27	
315 to 316	41.75 41.75		423.96 564.34	3 3.26			3.670 3.670	100 0.3515	39.093 0.0 1.290		Vel = 20.27	
316 to 317	41.75 41.75		0.0 564.34	3 3.26			10.330 10.330	100 0.3517	40.383 0.0 3.633		Vel = 21.69	
317 to 800	41.75 0		155.22 719.56	3 3.26			114.990 114.990	100 0.5512	44.016 18.082 63.387		Vel = 21.69	
800 to 318	0 41.74		0.0 719.56	4 4.26			100.000 100.000	100 0.1498	125.485 -18.078 14.979		Vel = 27.66	
318 to 703	41.74 41.71		0.0 719.56	6 6.357			14.160 14.160	100 0.0213	122.386 0.013 0.302		Vel = 16.20	
703 to 702	41.71 42.08		0.0 719.56	6 6.357	V	8.974	176.010 8.974 184.984	100 0.0213	122.701 -0.160 3.944		Vel = 7.27	
702 to 701	42.08 41.78		0.0 719.56	6 6.357	2V	17.947	146.770 17.947 164.717	100 0.0213	126.485 0.130 3.513		Vel = 7.27	
701 to 700	41.78 25.100		0.0 719.56	6 6.357	V	8.974	16.670 8.974 25.644	100 0.0213	130.128 7.224 0.547		Vel = 7.27	
700 to TR10	25.100 3		0.0 719.56	6 6.357	5V F	44.868 6.282	157.540 51.150 208.690	100 0.0213	137.899 9.572 4.449		Vel = 7.27	
TR10 to BR10	3 3		0.0 719.56	8 8.249	T 2B S 2V	29.339 20.118 37.721 21.794	21.990 98.073 120.063	100 0.0060	151.920 2.500 0.720		* * Fixed Loss = 2.5 Vel = 4.32	
BR10 to BOR9	3 3		0.0 719.56	8 8.249			3.000 3.000	100 0.0060	155.140 0.0 0.018		Vel = 4.32	
BOR9 to BOR8	3 3		0.0 719.56	8 8.249			3.000 3.000	100 0.0060	155.158 0.0 0.018		Vel = 4.32	
BOR8 to BOR7	3 3		0.0 719.56	8 8.249			3.000 3.000	100 0.0060	155.176 0.0 0.018		Vel = 4.32	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
BOR7 to BOR6	3 3		0.0 719.56	8 8.249			3.000 3.000	100 0.0060	155.194 0.0 0.018		Vel = 4.32	
BOR6 to STU2	3 3		0.0 719.56	8 8.249	V	10.897	2.290 10.897 13.187	100 0.0060	155.212 0.0 0.079		Vel = 4.32	
STU2 to UG5	3 -8		0.0 719.56	8 8.27	L	11.033	10.000 11.033 21.033	100 0.0059	155.291 4.764 0.125		Vel = 4.30	
UG5 to UG4	-8 -8		0.0 719.56	8 7.68	L G	14.338 4.412	100.090 18.750 118.840	140 0.0046	160.180 0.0 0.541		Vel = 4.98	
UG4 to UG2	-8 -8	H250	250.00 969.56	8 7.68	T	43.857	216.330 43.857 260.187	150 0.0070	160.721 0.0 1.812		Vel = 6.71	
UG2 to UG1	-8 -8		0.0 969.56	8 7.68	T G	43.857 5.012	162.700 48.869 211.569	150 0.0070	162.533 0.0 1.473		Vel = 6.71	
UG1 to UG	-8 -8		0.0 969.56	8 7.68	L	16.29	249.333 16.290 265.623	150 0.0070	164.006 0.0 1.850		Vel = 6.71	
UG to STUB	-8 4		0.0 969.56	8 8.27	L	20.56	9.000 20.560 29.560	140 0.0055	165.856 -5.197 0.163		Vel = 5.79	
STUB to PUMP	4 0		0.0 969.56	10 10.42	B 2L S	34.74 58.509 100.563	15.000 193.811 208.811	150 0.0016	160.822 1.732 0.329		Vel = 3.65	
PUMP			0.0 969.56						162.883		K Factor = 75.97	
System Demand Pressure									162.883			
Safety Margin									12.117			
Regulated Pressure									175.000		PLD	
320 to 321	42.93 42.69	14.00	65.07 65.07	1.5 1.682			15.000 15.000	100 0.1622	21.600 0.104 2.433		Vel = 9.40	
321 to 322	42.69 42.67	14.00	68.78 133.85	1.5 1.682	2E	7.065	4.640 7.066 11.706	100 0.6160	24.137 0.009 7.211		Vel = 19.33	
322 to 323	42.67 41.75		0.0 133.85	1.5 1.682	T	7.065	0.920 7.066 7.986	100 0.6161	31.357 0.398 4.920		Vel = 19.33	
323 to 315	41.75 41.75		290.12 423.97	3 3.26			11.670 11.670	100 0.2072	36.675 0.0 2.418		Vel = 16.30	
315			0.0 423.97						39.093		K Factor = 67.81	
324 to 325	42.93 42.69	14.00	75.52 75.52	1.5 1.682			15.000 15.000	100 0.2137	29.096 0.104 3.205		Vel = 10.90	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
325 to 326	42.69 42.67	14.00	79.69 155.21	1.5 1.682	E	3.533	2.310 3.533 5.843	100 0.009 4.733		Vel = 22.41	
326 to 317	42.67 41.75		0.0 155.21	1.5 1.682	T	7.065	0.920 7.066 7.986	100 0.398 6.471		Vel = 22.41	
317			0.0 155.21					44.016		K Factor = 23.39	
328 to 329	42.930 42.690	14.00	68.07 68.07	1.5 1.682			15.000 15.000	100 0.1763 2.645		Vel = 9.83	
329 to 330	42.690 42.67	14.00	71.91 139.98	1.5 1.682	E	3.533	1.250 3.533 4.783	100 0.009 3.201		Vel = 20.21	
330 to 331	42.67 41.75		0.0 139.98	1.5 1.682	T	7.065	0.920 7.066 7.986	100 0.398 5.345		Vel = 20.21	
331 to 323	41.75 41.75		150.14 290.12	3 3.26			13.000 13.000	100 0.1027 1.335		Vel = 11.15	
323			0.0 290.12					36.675		K Factor = 47.91	
332 to 333	42.930 42.690	14.00	73.04 73.04	1.5 1.682			15.000 15.000	100 0.2009 3.013		Vel = 10.55	
333 to 334	42.690 41.75	14.00	77.10 150.14	1.5 1.682	E	3.533	1.480 3.533 5.013	100 0.407 3.819		Vel = 21.68	
334 to 331	41.75 41.75		0.0 150.14	3 3.26	T	14.388	11.350 14.387 25.737	100 0.0 0.782		Vel = 5.77	
331			0.0 150.14					35.340		K Factor = 25.26	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP19
Location : 211 NE MCCLOSKEY AVENUE LAKE CITY, FL
Remote Area : 10
Contract : 1010780
Data File : USCS PH3 Area 10.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

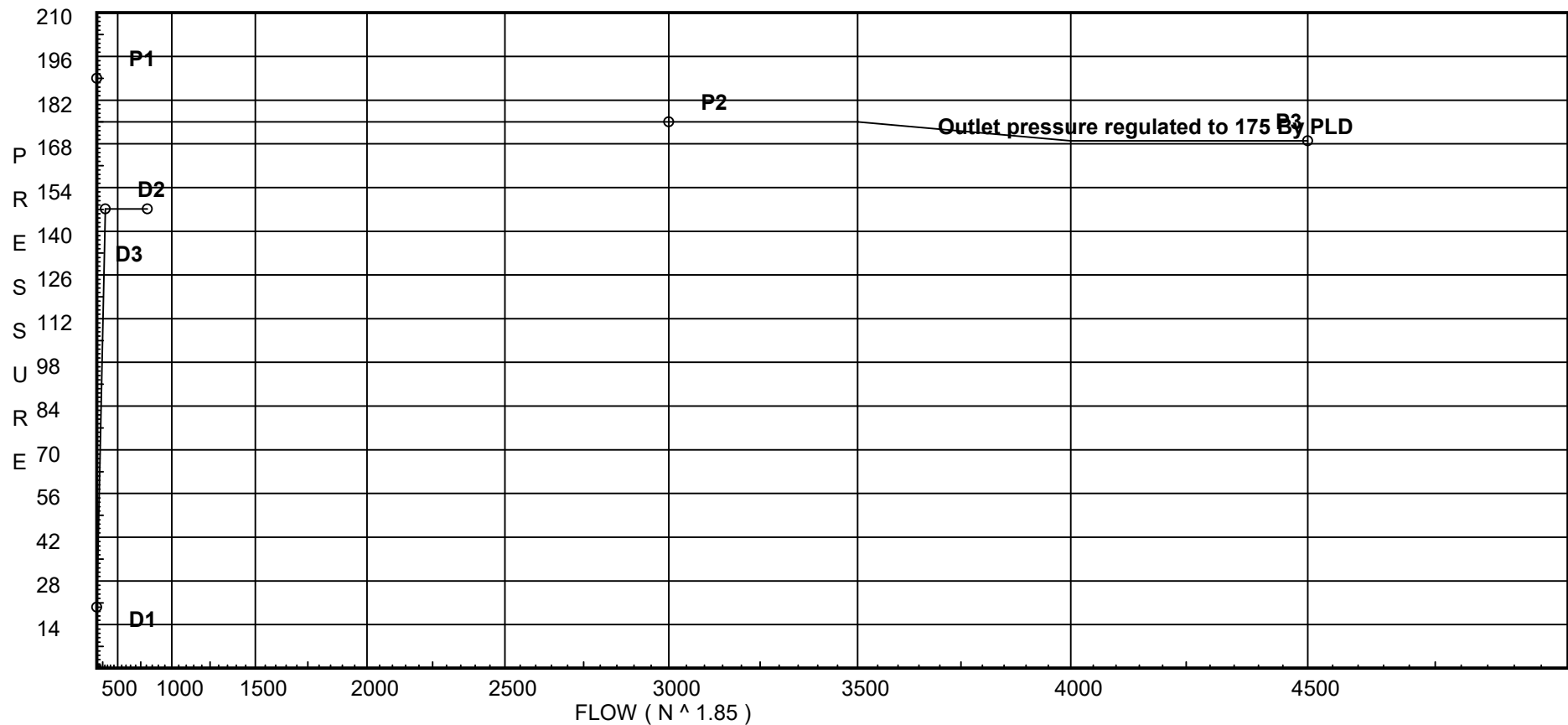
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 19.632
D2 - System Flow : 308.329
D2 - System Pressure : 147.147
Hose (Demand) : 500
D3 - System Demand : 808.329
Safety Margin : 27.853



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			189.316	808.33	147.147

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
H1	45.33	5.6	28.7	30.0	1.0	1
H2	45.33	5.6	28.77	30.04	1.0	1
H3	45.33	5.6	29.03	30.17	1.0	1
H4	45.33	5.6	29.81	30.58	1.0	1
H5	45.33	5.6	31.15	31.26	1.0	1
278	45.33		83.7			
407	45.33		84.86			
406	54.64		82.14			
405	54.6		85.55			
404	54.6		86.79			
402	54.47		94.88			
401	23.53		112.39			
400	23.44		118.44			
TOR9	23.37		123.03			
BOR9	3.0		141.64			
BOR8	3.0		141.65			
BOR7	3.0		141.65			
BOR6	3.0		141.65			
STU2	3.0		141.67			
UG5	-8.0		146.46			
UG4	-8.0		146.59	500.0		
UG2	-8.0		147.89			
UG1	-8.0		148.94			
UG	-8.0		150.26			
STUB	4.0		145.18			
PUMP	0.0		147.15			
H6	36.58	5.6	30.23	30.79	1.0	1
H7	36.58	5.6	30.34	30.85	1.0	1
H8	36.58	5.6	30.73	31.04	1.0	1
H9	36.58	5.6	31.55	31.45	1.0	1
H10	36.58	5.6	32.96	32.15	1.0	1
309	36.58		87.16			
408	36.58		88.44			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
H1 to H2	45.33 45.33	5.60	30.00 30.0	2 2.157		8.830 8.830	120 0.0083	28.699 0.0 0.073		Vel = 2.63	
H2 to H3	45.33 45.33	5.60	30.04 60.04	2 2.157		8.830 8.830	120 0.0297	28.772 0.0 0.262		Vel = 5.27	
H3 to H4	45.33 45.33	5.60	30.17 90.21	2 2.157		8.830 8.830	100 0.0884	29.034 0.0 0.781		Vel = 7.92	
H4 to H5	45.33 45.33	5.60	30.58 120.79	2 2.157		8.830 8.830	100 0.1516	29.815 0.0 1.339		Vel = 10.61	
H5 to 278	45.33 45.33	5.60	31.26 152.05	2 2.157	T 8.783	217.480 8.783 226.263	100 0.2322	31.154 0.0 52.549		Vel = 13.35	
278 to 407	45.33 45.33		0.0 152.05	2.5 2.635	T 16.474	2.000 16.474 18.474	120 0.0625	83.703 0.0 1.155		Vel = 8.95	
407 to 406	45.33 54.64		156.28 308.33	3 3.26	V 6.72	9.300 6.720 16.020	120 0.0820	84.858 -4.032 1.314		Vel = 11.85	
406 to 405	54.64 54.6		0.0 308.33	3 3.26	2V 9.592	19.917 9.592 29.509	100 0.1149	82.140 0.017 3.392		Vel = 11.85	
405 to 404	54.6 54.6		0.0 308.33	3 3.26	V 4.796	6.000 4.795 10.795	100 0.1150	85.549 0.0 1.241		Vel = 11.85	
404 to 402	54.6 54.47		0.0 308.33	3 3.26	2V 9.592	60.300 9.592 69.892	100 0.1149	86.790 0.056 8.033		Vel = 11.85	
402 to 401	54.47 23.53		0.0 308.33	3 3.26	V 4.796	30.940 4.795 35.735	100 0.1149	94.879 13.400 4.107		Vel = 11.85	
401 to 400	23.53 23.44		0.0 308.33	3 3.26	2V 9.592	42.708 9.592 52.300	100 0.1149	112.386 0.039 6.011		Vel = 11.85	
400 to TOR9	23.44 23.37		0.0 308.33	3 3.26	2V 9.592	30.084 9.592 39.676	100 0.1150	118.436 0.030 4.561		Vel = 11.85	
TOR9 to BOR9	23.37 3		0.0 308.33	3 3.26	T 20.159 2B 26.879 S 21.503	20.370 68.541 88.911	120 0.0820	123.027 11.322 7.293	** Fixed Loss = 2.5	Vel = 11.85	
BOR9 to BOR8	3 3		0.0 308.33	8 8.249		3.000 3.000	100 0.0013	141.642 0.0 0.004		Vel = 1.85	
BOR8 to BOR7	3 3		0.0 308.33	8 8.249		3.000 3.000	100 0.0013	141.646 0.0 0.004		Vel = 1.85	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
BOR7 to BOR6	3 3		0.0 308.33	8 8.249			3.000 3.000	100 0.0010	141.650 0.0 0.003		Vel = 1.85	
BOR6 to STU2	3 3		0.0 308.33	8 8.249	V	10.897	2.280 10.897 13.177	100 0.0013	141.653 0.0 0.017		Vel = 1.85	
STU2 to UG5	3 -8		0.0 308.33	8 8.27	L	15.459	10.000 15.459 25.459	120 0.0009	141.670 4.764 0.022		Vel = 1.84	
UG5 to UG4	-8 -8		0.0 308.33	8 7.68	T G	38.602 4.412	100.090 43.014 143.104	140 0.0010	146.456 0.0 0.136		Vel = 2.14	
UG4 to UG2	-8 -8	H500	500.00 808.33	8 7.68	T	43.857	216.330 43.857 260.187	150 0.0050	146.592 0.0 1.295		Vel = 5.60	
UG2 to UG1	-8 -8		0.0 808.33	8 7.68	T G	43.857 5.012	162.700 48.869 211.569	150 0.0050	147.887 0.0 1.052		Vel = 5.60	
UG1 to UG	-8 -8		0.0 808.33	8 7.68	L	16.29	249.333 16.290 265.623	150 0.0050	148.939 0.0 1.321		Vel = 5.60	
UG to STUB	-8 4		0.0 808.33	8 8.27	L	20.56	9.000 20.560 29.560	140 0.0039	150.260 -5.197 0.116		Vel = 4.83	
STUB to PUMP	4 0		0.0 808.33	10 10.42	B 2L S	34.74 58.509 100.563	15.000 193.811 208.811	150 0.0011	145.179 1.732 0.236		Vel = 3.04	
PUMP			0.0 808.33						147.147		K Factor = 66.64	
System Demand Pressure									147.147			
Safety Margin									27.853			
Regulated Pressure									175.000		PLD	
H6 to H7	36.58 36.58	5.60	30.79 30.79	2 2.157			8.830 8.830	100 0.0121	30.234 0.0 0.107		Vel = 2.70	
H7 to H8	36.58 36.58	5.60	30.85 61.64	2 2.157			8.830 8.830	100 0.0437	30.341 0.0 0.386		Vel = 5.41	
H8 to H9	36.58 36.58	5.60	31.04 92.68	2 2.157			8.830 8.830	100 0.0930	30.727 0.0 0.821		Vel = 8.14	
H9 to H10	36.58 36.58	5.60	31.45 124.13	2 2.157			8.830 8.830	100 0.1596	31.548 0.0 1.409		Vel = 10.90	
H10 to 309	36.58 36.58	5.60	32.15 156.28	2 2.157	T	8.783	213.050 8.783 221.833	100 0.2444	32.957 0.0 54.206		Vel = 13.72	
309 to 408	36.58 36.58		0.0 156.28	2.5 2.635	T	16.474	3.000 16.474 19.474	120 0.0658	87.163 0.0 1.281		Vel = 9.19	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
408 to 407	36.58 45.33		0.0 156.28	3 3.26		8.750 8.750	120 0.0233	88.444 -3.790 0.204		Vel = 6.01	
407			0.0 156.28					84.858		K Factor = 16.97	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP19
Location : 211 NE MCCLOSKEY AVENUE LAKE CITY, FL
Remote Area : 11
Contract : 1010780
Data File : USCS PH3 AREA 11.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

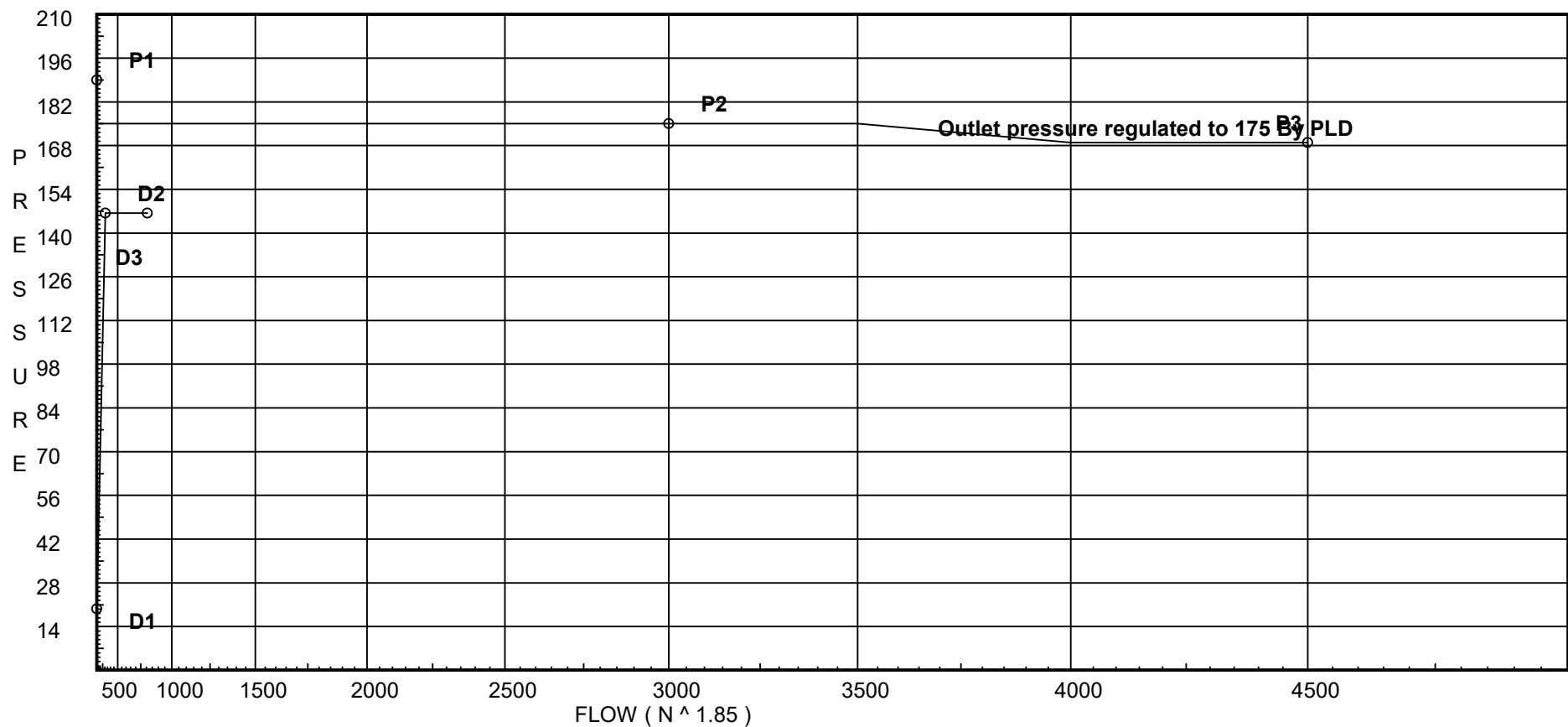
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 19.671
D2 - System Flow : 309.965
D2 - System Pressure : 146.338
Hose (Demand) : 500
D3 - System Demand : 809.965
Safety Margin : 28.662



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			189.316	809.96	146.338

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
H11	45.42	5.6	28.7	30.0	0.3	1
H12	45.42	5.6	28.8	30.05	0.3	1
H13	45.42	5.6	29.17	30.24	0.3	1
H14	45.42	5.6	29.95	30.65	0.3	1
H15	45.42	5.6	31.29	31.33	0.3	1
279	45.42		85.11			
506	45.42		87.27			
505	45.42		88.91			
308	54.69		85.68			
504	54.69		86.34			
503	54.5		97.5			
502	54.47		99.76			
501	23.53		117.31			
500	23.53		124.1			
510	23.43		125.3			
TOR8	23.36		126.9			
BOR8	3.0		140.82			
BOR7	3.0		140.82			
BOR6	3.0		140.82			
STU2	3.0		140.84			
UG5	-8.0		145.63			
UG4	-8.0		145.77	500.0		
UG2	-8.0		147.07			
UG1	-8.0		148.12			
UG	-8.0		149.45			
STUB	4.0		144.37			
PUMP	0.0		146.34			
H16	36.75	5.6	30.78	31.07	0.3	1
H17	36.75	5.6	30.89	31.13	0.3	1
H18	36.75	5.6	31.28	31.32	0.3	1
H19	36.75	5.6	32.12	31.74	0.3	1
H20	36.75	5.6	33.55	32.44	0.3	1
311	0.0		105.78			
507	0.0		106.65			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
H11 to H12	45.42 45.42	5.60	30.00 30.0	2 2.157		8.830 8.830	100 0.0116	28.699 0.0 0.102		Vel = 2.63	
H12 to H13	45.42 45.42	5.60	30.05 60.05	2 2.157		8.830 8.830	100 0.0417	28.801 0.0 0.368		Vel = 5.27	
H13 to H14	45.42 45.42	5.60	30.25 90.3	2 2.157		8.830 8.830	100 0.0886	29.169 0.0 0.782		Vel = 7.93	
H14 to H15	45.42 45.420	5.60	30.64 120.94	2 2.157		8.830 8.830	100 0.1521	29.951 0.0 1.343		Vel = 10.62	
H15 to 279	45.420 45.420	5.60	31.33 152.27	2 2.157	T 8.783	222.300 8.783 231.083	100 0.2329	31.294 0.0 53.814		Vel = 13.37	
279 to 506	45.420 45.420		0.0 152.27	2.5 2.635	T 16.474	18.000 16.474 34.474	120 0.0627	85.108 0.0 2.162		Vel = 8.96	
506 to 505	45.420 45.420		157.69 309.96	3 3.26	V 4.796	9.300 4.795 14.095	100 0.1161	87.270 0.0 1.636		Vel = 11.91	
505 to 308	45.420 54.690		0.0 309.96	3 3.26	V 4.796	2.000 4.795 6.795	100 0.1161	88.906 -4.015 0.789		Vel = 11.91	
308 to 504	54.690 54.69		0.0 309.96	3 3.26	V 4.796	0.917 4.795 5.712	100 0.1161	85.680 0.0 0.663		Vel = 11.91	
504 to 503	54.69 54.5		0.0 309.96	3 3.26	V 4.796	90.660 4.795 95.455	100 0.1161	86.343 0.082 11.079		Vel = 11.91	
503 to 502	54.5 54.47		0.0 309.96	3 3.26	V 4.796	14.560 4.795 19.355	100 0.1160	97.504 0.013 2.246		Vel = 11.91	
502 to 501	54.47 23.53		0.0 309.96	3 3.26	V 4.796	30.940 4.795 35.735	100 0.1161	99.763 13.400 4.148		Vel = 11.91	
501 to 500	23.53 23.53		0.0 309.96	3 3.26	2V 9.592	48.890 9.592 58.482	100 0.1161	117.311 0.0 6.788		Vel = 11.91	
500 to 510	23.53 23.43		0.0 309.96	3 3.26		10.000 10.000	100 0.1160	124.099 0.043 1.160		Vel = 11.91	
510 to TOR8	23.43 23.36		0.0 309.96	4 4.26	4V 25.561	24.150 25.561 49.711	100 0.0316	125.302 0.030 1.569		Vel = 6.98	
TOR8 to BOR8	23.36 3		0.0 309.96	4 4.26	T 2B S 18.795 22.554 20.674	20.360 62.023 82.383	100 0.0315	126.901 11.318 2.598	** Fixed Loss = 2.5	Vel = 6.98	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Eqiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
BOR8 to BOR7	3 3		0.0 309.96	8 8.249			3.000 3.000	100 0.0013	140.817 0.0 0.004		Vel = 1.86	
BOR7 to BOR6	3 3		0.0 309.96	8 8.249			3.000 3.000	100 0.0010	140.821 0.0 0.003		Vel = 1.86	
BOR6 to STU2	3 3		0.0 309.96	8 8.249	V	10.897	2.290 10.897 13.187	100 0.0013	140.824 0.0 0.017		Vel = 1.86	
STU2 to UG5	3 -8		0.0 309.96	8 8.27	L	11.033	10.000 11.033 21.033	100 0.0012	140.841 4.764 0.026		Vel = 1.85	
UG5 to UG4	-8 -8		0.0 309.96	8 7.68	T G	38.602 4.412	100.090 43.014 143.104	140 0.0010	145.631 0.0 0.138		Vel = 2.15	
UG4 to UG2	-8 -8	H500	500.00 809.96	8 7.68	T	43.857	216.330 43.857 260.187	150 0.0050	145.769 0.0 1.299		Vel = 5.61	
UG2 to UG1	-8 -8		0.0 809.96	8 7.68	T G	43.857 5.012	162.700 48.869 211.569	150 0.0050	147.068 0.0 1.056		Vel = 5.61	
UG1 to UG	-8 -8		0.0 809.96	8 7.68	L	16.29	249.333 16.290 265.623	150 0.0050	148.124 0.0 1.326		Vel = 5.61	
UG to STUB	-8 4		0.0 809.96	8 8.27	L	20.56	9.000 20.560 29.560	140 0.0040	149.450 -5.197 0.117		Vel = 4.84	
STUB to PUMP	4 0		0.0 809.96	10 10.42	B 2L S	34.74 58.509 100.563	15.000 193.811 208.811	150 0.0011	144.370 1.732 0.236		Vel = 3.05	
PUMP			0.0 809.96						146.338		K Factor = 66.96	
System Demand Pressure									146.338			
Safety Margin									28.662			
Regulated Pressure									175.000		PLD	
H16 to H17	36.75 36.75	5.60	31.07	2 2.157			8.830 8.830	100 0.0122	30.784 0.0 0.108		Vel = 2.73	
H17 to H18	36.75 36.75	5.60	31.13	2 2.157			8.830 8.830	100 0.0445	30.892 0.0 0.393		Vel = 5.46	
H18 to H19	36.75 36.75	5.60	31.32	2 2.157			8.830 8.830	100 0.0945	31.285 0.0 0.834		Vel = 8.21	
H19 to H20	36.75 36.75	5.60	31.74	2 2.157			8.830 8.830	100 0.1623	32.119 0.0 1.433		Vel = 11.00	
H20 to 311	36.75 0	5.60	32.43 157.69	2 2.157	T	8.783	217.880 8.783 226.663	100 0.2485	33.552 15.916 56.315		Vel = 13.85	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
311 to 507	0		0.0	2.5		13.000	120	105.783 0.0			
507 to 506	0		157.69	2.635		13.000	0.0669	0.870	Vel =	9.28	
507 to 506	0		0.0	3		8.670	100	106.653 -19.671			
506	45.420		157.69	3.26		8.670	0.0332	0.288	Vel =	6.06	
506			0.0 157.69					87.270	K Factor =	16.88	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3 AREA 1

Page 10
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv	Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
23 to 43	23.25 25.38		35.36 35.36	2 2.157	T	12.307	2.120 12.307 14.427	120 0.0112	44.968 -0.923 0.161		Vel = 3.10	
43			0.0 35.36						44.206		K Factor = 5.32	
24 to 46	23.47 25.59		48.16 48.16	2 2.157	T	12.307	2.120 12.307 14.427	120 0.0197	44.900 -0.918 0.284		Vel = 4.23	
46			0.0 48.16						44.266		K Factor = 7.24	



WIGINTON FIRE SYSTEMS
6363 GREENLAND RD.
JACKSONVILLE, FL. 32258
904-262-6107

Job Name : USCS PH3
Drawing : FP19
Location : 211 NE MCCLOSKEY AVENUE LAKE CITY, FL
Remote Area : 12
Contract : 1010780
Data File : USCS PH3 AREA 12.WXF

Water Supply Curve

WIGINTON FIRE SYSTEMS
USCS PH3

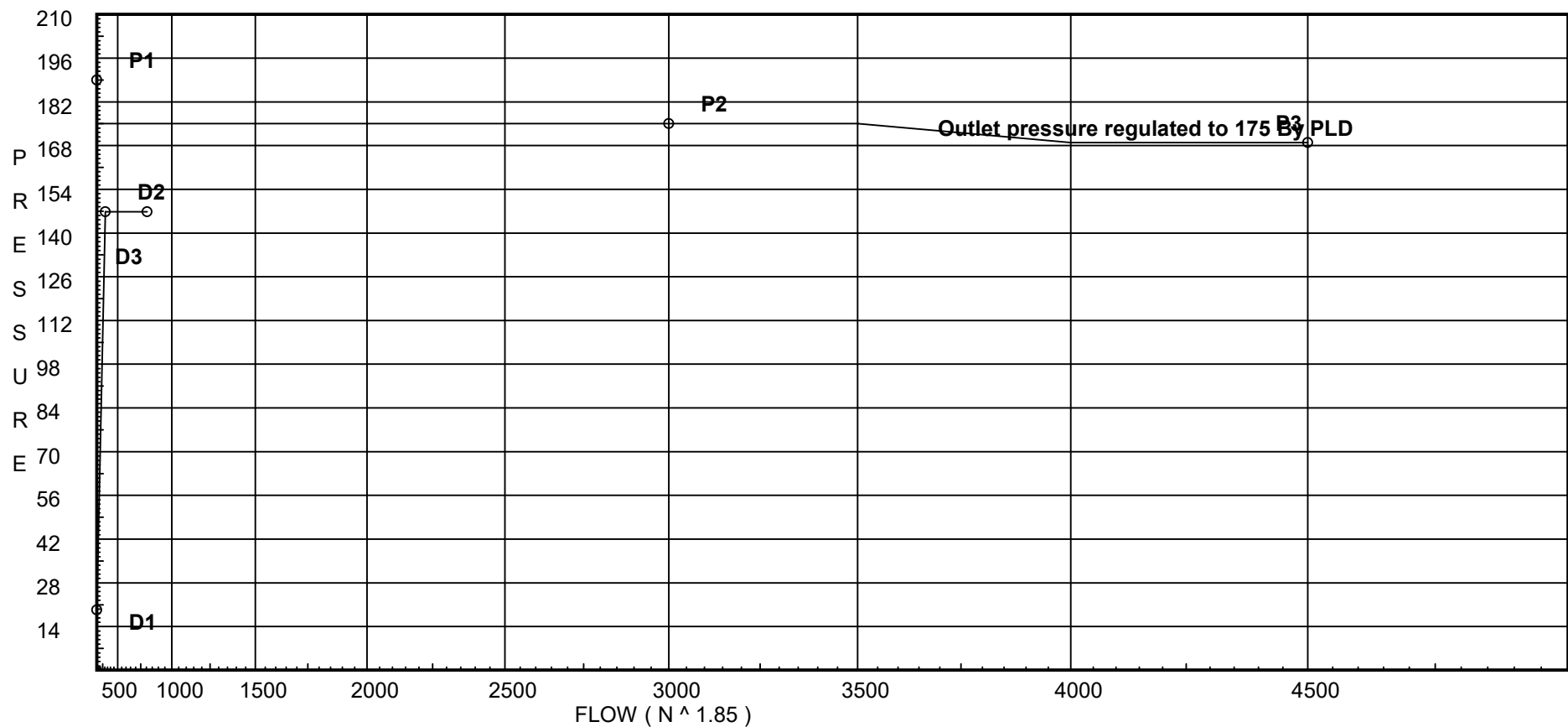
Page 1
Date

Pump Data:

P1 - Pump Churn Pressure : 189
P2 - Pump Rated Pressure : 175
P2 - Pump Rated Flow : 3000
P3 - Pump Pressure @ Max Flow : 169
P3 - Pump Max Flow : 4500

Demand:

D1 - Elevation : 19.325
D2 - System Flow : 307.42
D2 - System Pressure : 146.790
Hose (Demand) : 500
D3 - System Demand : 807.42
Safety Margin : 28.210



Fittings Used Summary

WIGINTON FIRE SYSTEMS
USCS PH3

Page 2
Date

Fitting Legend

Abbrev.	Name	1/2	3/4	1	1 1/4	1 1/2	2	2 1/2	3	3 1/2	4	5	6	8	10	12	14	16	18	20	24
B	NFPA 13 Butterfly Valve	0	0	0	0	0	6	7	10	0	12	9	10	12	19	21	0	0	0	0	0
G	NFPA 13 Gate Valve	0	0	0	0	0	1	1	1	1	2	2	3	4	5	6	7	8	10	11	13
L	NFPA 13 Long Turn Elbow	0.5	1	2	2	2	3	4	5	5	6	8	9	13	16	18	24	27	30	34	40
S	NFPA 13 Swing Check	0	0	5	7	9	11	14	16	19	22	27	32	45	55	65					
T	NFPA 13 90' Flow thru Tee	3	4	5	6	8	10	12	15	17	20	25	30	35	50	60	71	81	91	101	121
V	90' Ell Firelock #001	0	0	0	0	0	3.5	4.3	5	0	6.8	8.5	10	13	4.5	5.1	0	0	0	0	0

Units Summary

Diameter Units Inches
Length Units Feet
Flow Units US Gallons per Minute
Pressure Units Pounds per Square Inch

Note: Fitting Legend provides equivalent pipe lengths for fittings types of various diameters. Equivalent lengths shown are standard for actual diameters of Sched 40 pipe and CFactors of 120 except as noted with *. The fittings marked with a * show equivalent lengths values supplied by manufacturers based on specific pipe diameters and CFactors and they require no adjustment. All values for fittings not marked with a * will be adjusted in the calculation for CFactors of other than 120 and diameters other than Sched 40 per NFPA.

Flow Summary - NFPA

WIGINTON FIRE SYSTEMS
USCS PH3

Page 3
Date

SUPPLY ANALYSIS

<i>Node at Source</i>	<i>Static Pressure</i>	<i>Residual Pressure</i>	<i>Flow</i>	<i>Available Pressure</i>	<i>Total Demand</i>	<i>Required Pressure</i>
PUMP	See Information on Pump Curve			189.315	807.42	146.79

NODE ANALYSIS

<i>Node Tag</i>	<i>Elevation</i>	<i>Node Type</i>	<i>Pressure at Node</i>	<i>Discharge at Node</i>	<i>Notes</i>	
H21	44.62	5.6	28.67	29.98	0.3	1
H22	44.62	5.6	28.77	30.04	0.3	1
H23	44.62	5.6	29.14	30.23	0.3	1
H24	44.62	5.6	29.92	30.63	0.3	1
H25	44.62	5.6	31.26	31.31	0.3	1
609	0.0		104.92			
607	44.62		86.71			
606	58.38		82.87			
605	58.38		83.59			
604	58.38		85.05			
603	54.5		98.97			
602	54.47		101.21			
601	23.53		118.69			
611	23.53		121.14			
600	23.41		122.43			
TOR7	23.13		127.53			
BOR7	3.0		141.3			
BOR6	3.0		141.31			
STU2	3.0		141.32			
UG5	-8.0		146.11			
UG4	-8.0		146.24	500.0		
UG2	-8.0		147.54			
UG1	-8.0		148.58			
UG	-8.0		149.9			
STUB	4.0		144.82			
PUMP	0.0		146.79			
H26	36.17	5.6	29.83	30.58	0.3	1
H27	36.17	5.6	29.93	30.64	0.3	1
H28	36.17	5.6	30.31	30.83	0.3	1
H29	36.17	5.6	31.12	31.24	0.3	1
H30	36.17	5.6	32.52	31.93	0.3	1
610	0.0		104.54			
608	36.17		90.03			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 4
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
H21 to H22	44.62 44.62	5.60	29.98	2		8.830	100	28.669 0.0			
H22 to H23	44.62 44.62	5.60	30.04	2		8.830	100	28.771 0.0	Vel =	2.63	
H23 to H24	44.62 44.62	5.60	60.02	2		8.830	100	0.0416 0.367	Vel =	5.27	
H24 to H25	44.62 44.62	5.60	30.23	2		8.830	100	29.138 0.0	Vel =	7.92	
H25 to 609	44.62 0	5.60	30.63	2		8.830	100	29.919 0.0	Vel =	10.61	
609 to 607	0 44.62		120.88	2	V 3.074	230.460 3.074	100	0.1520 1.342	Vel =	13.36	
607 to 606	44.62 58.38		31.31	2	T 11.758	233.534	100	0.2327 54.333	Vel =	8.95	
606 to 605	58.38 58.38		0.0	2.5		1.000	100	104.919 -19.325	Vel =	11.82	
605 to 604	58.38 58.38		152.19	2.635		11.757	100	0.0878 1.120	Vel =	11.82	
604 to 603	58.38 54.5		155.23	3	V 4.796	13.750 4.795	100	86.714 -5.959	Vel =	11.82	
603 to 602	54.5 54.47		307.42	3.26		18.545	100	0.1143 2.119	Vel =	11.82	
602 to 601	54.47 23.530		0.0	3	V 4.796	1.500 4.795	100	82.874 0.0	Vel =	11.82	
601 to 611	23.530 23.530		307.42	3.26		6.295	100	0.1144 0.720	Vel =	11.82	
611 to 600	23.530 23.41		0.0	3	V 4.796	7.910 4.795	100	83.594 0.0	Vel =	11.82	
600 to TOR7	23.41 23.13		307.42	3.26		12.705	100	0.1143 1.452	Vel =	11.82	
TOR7 to BOR7	23.13 3		0.0	3	V 4.796	102.330 4.795	100	85.046 1.680	Vel =	11.82	
BOR7	3		307.42	3.26		107.125	100	0.1143 12.246	Vel =	11.82	
			0.0	3	V 4.796	14.660 4.795	100	98.972 0.013	Vel =	11.82	
			307.42	3.26		19.455	100	0.1143 2.223	Vel =	11.82	
			0.0	3	V 4.796	30.940 4.795	100	101.208 13.400	Vel =	11.82	
			307.42	3.26		35.735	100	0.1143 4.085	Vel =	11.82	
			0.0	3	2V 9.592	11.833 9.592	100	118.693 0.0	Vel =	11.82	
			307.42	3.26		21.425	100	0.1143 2.449	Vel =	11.82	
			0.0	4		39.700	100	121.142 0.052	Vel =	6.92	
			307.42	4.26		39.700	0.0311	1.233	Vel =	6.92	
			0.0	4	4V 25.561	134.870 25.561	100	122.427 0.121	Vel =	6.92	
			307.42	4.26		160.431	0.0311	4.984	Vel =	6.92	
			0.0	4	T 18.795	20.130	100	127.532	* * Fixed Loss = 2.5 Vel = 6.92		
			307.42	4.26	2B 22.554 S 20.674	62.023 82.153	0.0311	11.218 2.552			

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 5
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
BOR7 to BOR6	3 3		0.0 307.42	8 8.249		3.000 3.000	100 0.0013	141.302 0.0 0.004		Vel = 1.85	
BOR6 to STU2	3 3		0.0 307.42	8 8.249	V 10.897	2.280 10.897 13.177	100 0.0012	141.306 0.0 0.016		Vel = 1.85	
STU2 to UG5	3 -8		0.0 307.42	8 8.27	L 15.459	10.000 15.459 25.459	120 0.0009	141.322 4.764 0.022		Vel = 1.84	
UG5 to UG4	-8 -8		0.0 307.42	8 7.68	T G 38.602 4.412	100.090 43.014 143.104	140 0.0010	146.108 0.0 0.136		Vel = 2.13	
UG4 to UG2	-8 -8	H500	500.00 807.42	8 7.68	T 43.857	216.330 43.857 260.187	150 0.0050	146.244 0.0 1.291		Vel = 5.59	
UG2 to UG1	-8 -8		0.0 807.42	8 7.68	T G 43.857 5.012	162.700 48.869 211.569	150 0.0050	147.535 0.0 1.050		Vel = 5.59	
UG1 to UG	-8 -8		0.0 807.42	8 7.68	L 16.29	249.333 16.290 265.623	150 0.0050	148.585 0.0 1.319		Vel = 5.59	
UG to STUB	-8 4		0.0 807.42	8 8.27	L 20.56	9.000 20.560 29.560	140 0.0039	149.904 -5.197 0.116		Vel = 4.82	
STUB to PUMP	4 0		0.0 807.42	10 10.42	B 2L S 34.74 58.509 100.563	15.000 193.811 208.811	150 0.0011	144.823 1.732 0.235		Vel = 3.04	
PUMP			0.0 807.42					146.790		K Factor = 66.64	
System Demand Pressure								146.790			
Safety Margin								28.210			
Regulated Pressure								175.000		PLD	
H26 to H27	36.17 36.17	5.60	30.58 30.58	2 2.157		8.830 8.830	100 0.0120	29.826 0.0 0.106		Vel = 2.68	
H27 to H28	36.17 36.17	5.60	30.64 61.22	2 2.157		8.830 8.830	100 0.0431	29.932 0.0 0.381		Vel = 5.38	
H28 to H29	36.17 36.17	5.60	30.83 92.05	2 2.157		8.830 8.830	100 0.0918	30.313 0.0 0.811		Vel = 8.08	
H29 to H30	36.17 36.17	5.60	31.25 123.3	2 2.157		8.830 8.830	100 0.1575	31.124 0.0 1.391		Vel = 10.83	
H30 to 610	36.17 0	5.60	31.93 155.23	2 2.157	V 3.074	230.460 3.074 233.534	100 0.2413	32.515 15.665 56.355		Vel = 13.63	
610 to 608	0 36.17		0.0 155.23	2.5 2.635	T 11.758	1.000 11.757 12.757	100 0.0910	104.535 -15.665 1.161		Vel = 9.13	

Final Calculations : Hazen-Williams

WIGINTON FIRE SYSTEMS
USCS PH3

Page 6
Date

Node1 to Node2	Elev1 Elev2	K Fact	Qa Qt	Nom Act	Fitting or Equiv Len	Pipe Ftngs Total	CFact Pf/Ft	Pt Pe Pf	*****	Notes	*****
608 to 607	36.17 44.62		0.0 155.23	3 3.26		10.600 10.600	100 0.0324	90.031 -3.660 0.343		Vel = 5.97	
607			0.0 155.23					86.714		K Factor = 16.67	