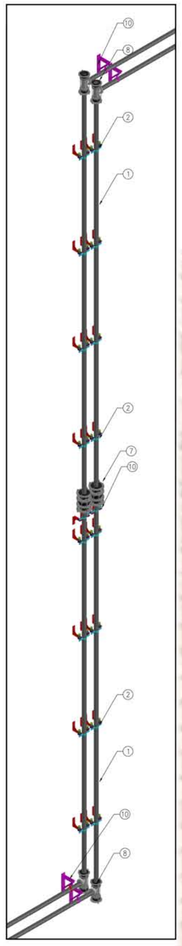
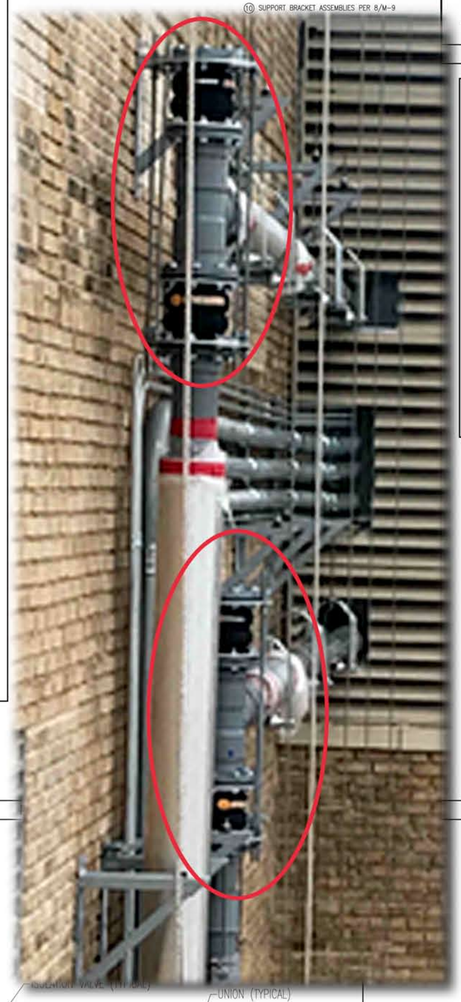


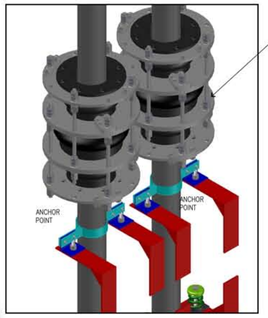


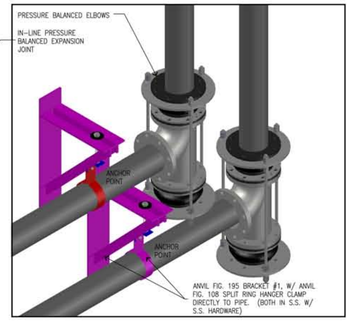
GENERAL NOTES

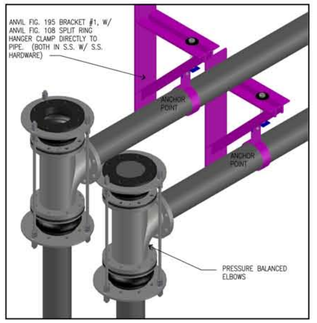
1. CONTRACTOR TO PROVIDE SUBMITTALS FOR ENTIRE ASSEMBLY FOR APPROVAL.
2. INSULATION NOT SHOWN FOR CLARITY OF SUPPORT CONNECTION REQUIREMENTS

REFERENCE NOTES

1. INSULATED CORZAN SCHEDULE 80 CPVC VERICAL RISERS ALONG OUTSIDE OF EXTERIOR WALL PER PLAN, (INSULATION NOT SHOWN)
2. ¼" THICK X 4" WIDE STAINLESS STEEL SUPPORT FRAMES, LAGGED SECURELY TO WALL AT 12'-0" INTERVALS
3. 4"X4"x4, ¼" THICK STAINLESS STEEL "ELS".
4. STAINLESS STEELS HARDWARE, (BOLTS, WASHERS, LOCKNUTS, ETC).
5. MASON INDUSTRIES IM SERIES SPRING ISOLATORS.
6. STAINLESS STEEL, HEAVY DUTY PIPE CLAMP.
7. PRESSURE BALANCED EXPANSION JOINT. PIPING TO BE ANCHORED TO WALL.
8. PRESSURE BALANCED EXPANSION ELBOWS FOR 90° TURNS.
9. EXTERIOR OF EXISTING WALL
10. SUPPORT BRACKET ASSEMBLIES PER 8/M-9







PIPING ANCHOR AT EXPANSION JOINTS

SCALE: NONE — 8

general rubber 800-233-6294

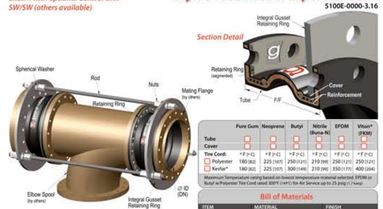
Customer: _____ Date: _____
Job/Project: _____
Ref/Tag: _____

Shown with optional Control Unit SW/SW (others available)

Style 5100E Rubber Expansion Joint

5100E-0000-3.16

Section Detail



	Pure Gum	Neoprene	Butyl	Nitrile (Buna N)	EPDM	Viton® (FKM)
Tube	☐	☐	☐	☐	☐	☐
Cover	☐	☐	☐	☐	☐	☐
Tire Cord:	°F (°C)	°F (°C)	°F (°C)	°F (°C)	°F (°C)	°F (°C)
☐ Polyester	180 (82)	225 (107)	250 (121)	210 (99)	250 (121)	250 (121)
☐ Kevlar®	180 (82)	225 (107)	300 (149)	210 (99)	350 (177)	400 (204)

Maximum Temperature rating based on lowest temperature material selected. EPDM or Butyl w/Polyester Tire Cord rated 300°F (149°C) for Air Service up to 25 psig (1.7 barg).

Bill of Materials

ITEM	MATERIAL	FINISH
Retaining Ring	Carbon Steel	Hot Dipped Galvanized
	Stainless Steel	Plain
Integral Gusset Ring	Carbon Steel	Hot Dipped Galvanized
	Stainless Steel	Plain
Rods	ASTM A193 B7 Alloy Steel	Hot Dipped Galvanized
	ASTM A193 B8M 316 SS	Plain
Nuts	ASTM A194 2H Steel	Hot Dipped Galvanized
	ASTM A194 8M 316 SS	Plain
Spherical Washers	Stainless Steel	Plain
Metal Reinforcement	High Tensile Steel	Rubber Embedded

general rubber 800-233-6294

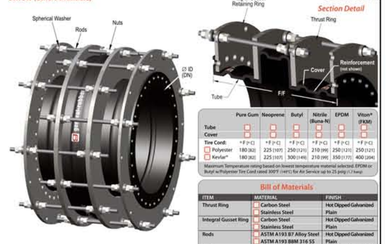
Customer: _____ Date: _____
Job/Project: _____
Ref/Tag: _____

Shown with optional Control Unit SW/SW (others available)

Style 5100P Rubber Expansion Joint

5100P-0000-3.16

Section Detail



	Pure Gum	Neoprene	Butyl	Nitrile (Buna N)	EPDM	Viton® (FKM)
Tube	☐	☐	☐	☐	☐	☐
Cover	☐	☐	☐	☐	☐	☐
Tire Cord:	°F (°C)	°F (°C)	°F (°C)	°F (°C)	°F (°C)	°F (°C)
☐ Polyester	180 (82)	225 (107)	250 (121)	210 (99)	250 (121)	250 (121)
☐ Kevlar®	180 (82)	225 (107)	300 (149)	210 (99)	350 (177)	400 (204)

Maximum Temperature rating based on lowest temperature material selected. EPDM or Butyl w/Polyester Tire Cord rated 300°F (149°C) for Air Service up to 25 psig (1.7 barg).

Bill of Materials

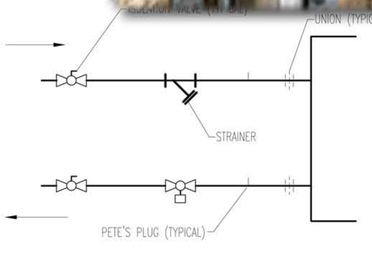
ITEM	MATERIAL	FINISH
Thrust Ring	Carbon Steel	Hot Dipped Galvanized
	Stainless Steel	Plain
Integral Gusset Ring	Carbon Steel	Hot Dipped Galvanized
	Stainless Steel	Plain
Rods	ASTM A193 B7 Alloy Steel	Hot Dipped Galvanized
	ASTM A193 B8M 316 SS	Plain
Nuts	ASTM A194 2H Steel	Hot Dipped Galvanized
	ASTM A194 8M 316 SS	Plain
Spherical Washers	Stainless Steel	Plain
Metal Reinforcement	High Tensile Steel	Rubber Embedded

PRESSURE BALANCED EXPANSION JOINTS

SCALE: NONE — 4

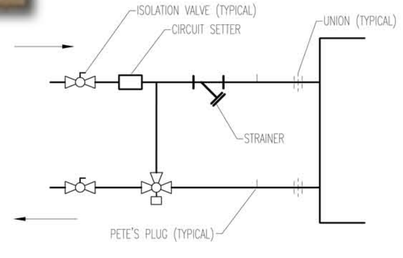
GENERAL NOTES

1. CONTRACTOR TO PROVIDE DIELECTRIC UNIONS FOR CONNECTIONS BETWEEN DISSIMILAR METALS.
2. ALL PIPING ON AIR HANDLER SIDE OF ISOLATION VALVES TO BE TYPE "L" HARD DRAWN COPPER WITH WROGHT COPPER FITTINGS. JOINTS AND SEAMS TO BE BRAZED WITH SIL-FOS 15.



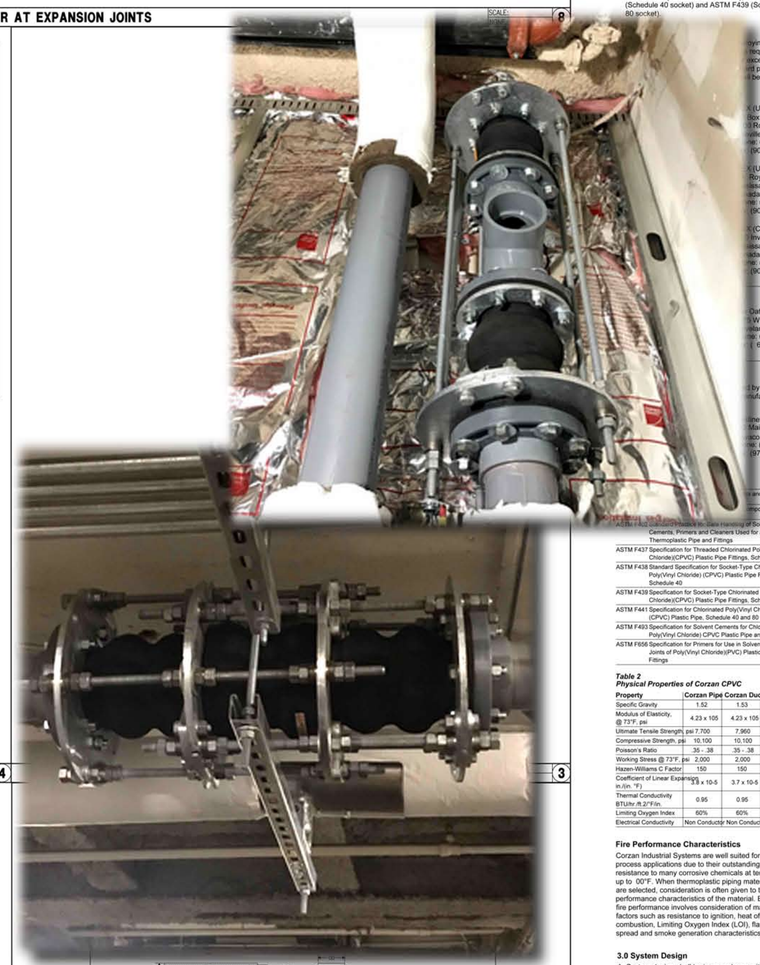
3-WAY VALVE CONNECTION DETAIL

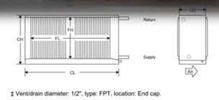
SCALE: 1/2"=1'-0" — 6



2-WAY VALVE CONNECTION DETAIL

SCALE: 1/2"=1'-0" — 5





‡ Vent/drain diameter: 1/2", type: FPT, location: End cap.

Dimensions*

Tag	C-1	C-2
Model	W2-8447-14F-57CC-R	W8-5436-06F-FCC-R
Weight	1122	453
Fin material & type	0.006 Copper Corrugated	0.006 Copper Sine-wave
Tube wall	0.016 / Smooth	0.02 / Smooth
Casing material	16 ga. stainless steel	16 ga. stainless steel
Intermediate drain pan	None	None
Coating	None	None
Turbulators	No	Yes
Header diameter	2.625	2.125
Supply / return conn. size	2.5 / 2.5	2 / 2
Connection type	MPT Copper	MPT Copper
Number of feeds	57 (One and a half)	24 (Full)
FH / FL	47.5 / 64	36 / 54
CH / CL	53.11 / 96.1	41.81 / 65.6
OAL / CD	97.66 / 16.39	67.16 / 16.39
OAD	19.39	19.39

* All distances are measured as inches.

CC-1 AND CC-2 CASED COILS SPECIFICATIONS

SCALE: NONE — 2

SPECIFICATIONS FOR Corzan® CPVC Pipe and Fittings

1.0 Product Description

Corzan®CPVC pipe and fittings are extruded/molded from CPVC compounds manufactured by Lubrizol. The pipe compounds shall meet cell class 4448 for high impact/high heat distortion temperature pipe (available through 6" and up to 8" from select manufacturers) or 3447 for pipe 8" or greater as defined by ASTM D 784. The pipe shall be certified by NSF International for use with potable water. Corrosion resistant Corzan pipe and fittings are available in iron pipe sizes (IPS) for use in both pressure bearing and drain applications at temperatures up to and including 00°F. Pressure rating varies with schedule, pipe size, and temperature. See temperature derating chart for derating factors. Chemical resistance data is available and should be referenced for proper material selection.

Corzan CPVC fittings compound shall meet cell class 3447 and carry a pressure rating listed by PPI (Plastics Pipe Institute). This Corzan CPVC compound shall be pressure rated in accordance with ASTM D- 387 and PPI TR-3 and have hydrostatic design bases of 4000 psi at 7°F and 000 psi at 80°F as listed in PPI publication TR-4.

1.1 Pipe and Fittings Dimensions and Tolerances

A. Schedules 40 and 80 pipe shall meet or exceed the requirements of ASTM F44 .

B. Fittings shall meet or exceed the requirements of ASTM F437 (schedule 80 threaded), ASTM F438 (Schedule 40 socket) and ASTM F439 (Schedule 80 socket).

2.0 Manufacturers

Solvent cement and primer shall be listed by NSF for use with potable water, and approved by the Corzan CPVC pipe and fitting manufacturers.

The piping systems shall be constructed from materials extruded/molded/fabricated by manufacturers using Corzan CPVC compounds.

A. Pipe

Charlotte Pipe & Foundry Co
P.O. Box 35430
Charlotte, NC 8 35
Phone: (800) 438-609
Fax: (800) 553- 605

Harvel Plastics, Inc.
P.O. Box 757
Easton, PA 8044-0757
Phone: (6 0) 5 -7355
Fax: (6 0) 53-4436

IPEX: (US inquiries)
PO Box 40696-0696
0 00 Rodney Street
Pineville, NC 8 34
Phone: (800) 463-957
Fax: (905) 403-9 95

IPEX (Canadian inquiries)
68 0 Invader Crescent
Mississauga, ON L5J 4C7
Canada
Phone: (866) 473-947
Fax: (905) 670-5 95

IPEX (US inquiries)
44 Royal Windsor Drive
Mississauga, ON L5J 4C7
Canada
Phone: (800) 463-957
Fax: (905) 403-9 95

B. Fittings

Charlotte Pipe & Foundry Co
P.O. Box 35430
Charlotte, NC 8 35
Phone: (800) 438-609
Fax: (800) 553- 605

IPEX (US inquiries)
PO Box 40696-0696
0 00 Rodney Street
Pineville, NC 8 34
Phone: (800) 463-957
Fax: (905) 403-9 95

IPEX (Canadian inquiries)
68 0 Invader Crescent
Mississauga, ON LST B6
Canada
Phone: (866) 473-947
Fax: (905) 670-5 95

Nibco, Inc.
5 6 Middlebury Street
P.O. Box 67
Elkhart, IN 465 6-4740
Phone: (800) 64 -5463
Fax: (574) 95-3307

Plast-O-Matic Valves, Inc.
384 Pompton Avenue
Cedar Grove, NJ 07009
Phone: (973) 56-3000
Fax: (973) 56-4745

Without the benefit of flame retardants and smoke inhibitors, Corzan CPVC inherently exhibits outstanding fire performance characteristics in terms of limited flame propagation and low smoke generation. When coupled with its excellent balance of mechanical strength, low thermal conductivity, improved hydraulics and outstanding corrosion resistance, Corzan CPVC provides excellent value in terms of safety and performance in a wide range of industrial process piping and ducting applications.

Ignition Resistance

Corzan CPVC has a flash ignition temperature of 900°F which is the lowest temperature at which sufficient combustible gas is evolved to be ignited by a small external flame. Many other ordinary combustibles, such as wood, ignite at 500°F or less.

Table 3
Flash Ignition Temperature Comparison

Material	°C	°F
CPVC	482	900
PVC, rigid	399	750
Polyethylene	343	650
White Pine	204	400
Paper	232	450

Source: Hilado, C.J., "Flammability Handbook for Plastics", Table .5, Third Edition, Technomic Publishing. 98 .

Burning Resistance

Corzan CPVC will not sustain burning. It must be forced to burn due to its very high Limiting Oxygen Index (LOI) of 60. LOI is the percentage of oxygen needed in an atmosphere to support combustion. Since the Earth's atmosphere is only % oxygen, Corzan CPVC will not burn unless a flame is constantly applied and stops burning when the ignition source is removed. Other materials will support combustion due to their low LOI.

Table 4
Limiting Oxygen Index Comparison

Material	LOI
CPVC	60
PVC, rigid	45
PVDF	44
ABS	18
Polypropylene	17
Polyethylene	17

Source: Hilado, C.J., "Flammability Handbook for Plastics", Table .5, Third Edition, Technomic Publishing. 98 .

Fire Performance Characteristics

Corzan Industrial Systems are well suited for many process applications due to their outstanding resistance to many corrosive chemicals at temperatures up to 00°F. When thermoplastic piping materials are selected, consideration is often given to the fire performance characteristics of the material. Evaluating fire performance involves consideration of many factors such as resistance to ignition, heat of combustion, Limiting Oxygen Index (LOI), flame spread and smoke generation characteristics.

3.0 System Design

A. System design shall be in accordance with the manufacturer's instructions. The design shall take into consideration such factors as pressure and flow requirements, friction loss, operating temperatures, support spacing, anchoring, bracing and thrust blocking, joining methods, and thermal expansion and contraction.

B. Maximum design pressure ratings shall not exceed those listed in the tables below. Pressure ratings apply to water at 73°F. For temperatures greater than 73°F, see derating factors listed. For fluids other than water, the full pressure rating may not apply; see the chemical resistance table for guidelines.

C. Schedule 80 pipe operating above 30°F shall NOT be threaded. Threaded pipe shall be derated to 50% of the pressure rating for the piping at the system operating temperature.

D. Flanged systems of any size shall not exceed 50 psi working pressure at 73°F. Follow the manufacturer's recommendations for temperature derating factors for services greater than 73°F.

E. Corzan valves are typically rated at 50 psi up to 40 psi at 73°F (pressure rating varies with valve type and manufacturer). Consult the valve manufacturer for pressure ratings and temperature derating schedules.

F. A Hazen-Williams friction factor of 50 shall be used in all hydraulic calculations.

Temperature Derating Factors (Pipe)

Temperature (°F)	Factor
73.60	1.00
90	0.91
100	0.82
120	0.65
140	0.50
160	0.40
180	0.25
200	0.20

Corzan® Pipe Dimensions and Pressure Ratings

Schedule 80 CPVC Nominal Pipe Size	O.D.	Minimum wall	I.D.	Nominal Maximum Average Weight (lbs/ft) @73°F
14"	0.540	0.119	0.288	0.110
38"	0.675	0.126	0.407	0.153
12"	0.840	0.147	0.528	0.225
34"	1.050	0.154	0.724	0.305
1"	1.315	0.179	0.935	0.455
114"	1.660	0.191	1.256	0.621
112"	1.900	0.200	1.476	0.754
2"	2.375	0.218	1.913	1.043
2 12"	2.875	0.276	2.289	1.594
3"	3.500	0.300	2.864	2.132
4"	4.500	0.337	3.786	3.116
6"	6.625	0.432	5.709	5.951
8"	8.625	0.500	7.565	9.540
10"	10.750	0.593	9.492	13.413
12"	12.750	0.687	11.294	18.440
14"	14.000	0.750	12.410	22.119
16"	16.000	0.843	14.214	28.424

CORZAN CPVC SPECIFICATIONS

SCALE: NONE — 1

DCA STAMP
MICHAEL MCAFFEE
(310) 721-8656
mikemcafeeengr@aol.com
PE909025
DISTRICT OF COLUMBIA
MICHAEL J. MCAFFEE
PROFESSIONAL ENGINEER

PROJECT #
PLAN CHECK
BID SET

24/2019 1 PLAN CHECK SET
08/2019 1 DELTA 1

MAY 2019

MECHANICAL SPECIFICATIONS AND DETAILS

M-8

The Cheesecake Factory
Woodward Building
1426 H Street NW
Washington, DC 20005