

IFB 316164: ADDENDUM No. 1
Amendments/Changes/ Clarification
Project: 3860 Building Construction

IFB ISSUE DATE: October 30, 2015
CLOSING DATE: December 3, 2015

IFB No. 316164 is hereby clarified with the following statements, questions and answers:

The following items shall modify and supplement the project scope of work:

1. Specification Section 081416, Revise Paragraph 2.01.A, adding the following;
 4. VT Industries, Inc
2. Specification Section 107313, Revise Paragraph 2.01 as follows;
 - A. Awnings:
 1. Apollo Sunguard Systems: www.apollosunguard.com
 2. Custom Shade Sails, LLC: www.customshadesails.com
 3. Shade Sails: www.shadesails.com
 4. Substitutions: See Section 01 3000 – Administrative Requirements
3. Drawing S710908-S1-201, delete HSS 8x6 at each side of elevator, as shown within the attached sketch. Delete the section reference for 5/S1-502.
4. Drawing S710908-S1-502, Delete section 5 in its entirety.
5. Drawings S710908-A6-006, S710908-A6-007 and S710908-A6-008 (and/or other indicated locations), window sill details: Change all window sills from P-LAM material to SSF. All window sills shall be from solid surface.

General Questions (response in **Red):**

1. Per A6-003, window Type-1 is marked as Hollow Metal but the details show storefront at the metal panel locations and aluminum windows at CMU locations.... Please advise.
Battelle Response: A6-003, Window Type 1, Change note indicating “Hollow Metal Frame” to “Aluminum Frame”. Details on A6-006 are correct.
2. Door frames Type-4 are marked as Aluminum on page A6-002 but the door schedule has those frames listed as hollow metal.... Please advise
Battelle Response: A6-002, Door Frame Type 4, Change note indicating “Aluminum” to “Hollow Metal”. Door schedule on A6-001 is correct.

3. Can tensile structures be used in this project?
Battelle Response: *The use of a tensile structure for the 3860 Office Building will not be considered. However, tensile structures can be used for the exterior shade structure (Alternate Bid #1) if cost effective.*
4. Spec section 084313 calls out for a STC 37 rating, however spec section 085113 does not list the same. Please advise
Battelle Response: *Revise to specify a STC 35 rating, minimum. An STC rating is not specified on products within 085113, however, the same insulated glazing units will be utilized.*
5. On A6-009, the finish schedule for Halls 101 and 103 is calling for ceramic tile. However, on A1-111 shows these areas are scheduled for carpet 1. Please advise.
Battelle Response: *Drawings A1-111 and A1-121 are correct; all Hallways are CPT-1. Within drawings A1-212 and A1-222, disregard the note for "Hall #3 203" in the Lobby. Use "Lobby 202" for all finishes.*
6. Can use EPS be used to create the roof slope.
Battelle Response: *No, polyisocyanurate shall be used.*
7. The roof plan and building sections show a 3/16" per foot taper system which will vary in thickness from approx. 1/2" to 7". It looks like overlaying the taper system is flat stock insulation approx. 12" thick. Is this correct as the overall R value excluding the taper system would be around R-70? The specs or prints do not callout an overall R value needed.
Battelle response: *The design is based on a 3/16" per foot taper system, varying in thickness from approx. 1/2" to 7", and then covered by a 6" thick (two, 3" layers) flat stock insulation layer. Minimum R-36 at thinnest roof system section and average R-50 at overall roof system.*
8. The solar reflectance values called out in the specs for the TPO 60 mil membrane are not achievable by leading manufacturers. Please advise.
Battelle response: *Correct, the values listed are not correct. The Solar Reflectance shall be 0.77, minimum, initial, and 0.68, minimum, 3-year, certified by Cool Roof Rating Council. The roof system shall have an SRI of 98, minimum.*
9. Is the TPO membrane to be mechanically attached or fully adhered?
Battelle response: *Per 075400, 3.05. D, the roof systems is mechanically attached.*
10. Is 6 mil. visqueen an acceptable vapor underlayment to use?
Battelle response: *Yes, this is acceptable.*
11. Within spec section 06-4100 Page 1 and 2. Can the AWI Certification be change to state to follow the manufacturing standard but provider not required to be certified as long as 5 years past performance. Please advise.
Battelle response: *Yes, this is acceptable*
12. Within spec section 06-4100 Page 2 Paragraph. Line B. Can 500 mile Radius be removed from spec. Please advise.
Battelle response: *Wood should be harvested within a 500 mile radius of the project site unless availability or quality concerns are encountered that would necessitate exceeding the defined area.*

13. Counter tops in both 1st and 2nd floor kitchens. Details 21,2,3, and 7 call these to be SSF with plywood substrate below. No Legend on A0-001. Please confirm is this solid surface counter and if so is plywood substrate part of countertop or part of case work?
Battelle response: All cabinet countertops (work surfaces) shall be from solid surface quartz. The Contractor shall coordinate the plywood substrate (solid base or support rails) requirement.

Substitution Request Summary (response in Red):

1. 074213 Metal Wall Panels – Wall Panels, AEP Span 22 Gage Flush
11/10/2015, Approved. Note: this is design basis
2. 074213 Metal Wall Panels – Wall Panels, AEP Span 24 Gage Flush
11/10/2015, Rejected.
3. 074213 Metal Wall Panels – Wall Panels, Metal Sales 22 Gage Soffit and Wall
11/10/2015, Approved.
4. 22400 Plumbing Fixtures - Lavatory, Sink and Service Sink Faucets
Delta Faucets
11/10/2015, Approved
5. 230900 Instrumentation and Controls – Control Valves, Pressure Independent
Nexus, Dynamic Model ND
11/10/2015, Approved
6. 232115 Hydronic Specialties - Expansion Tanks
American Wheatley, Model BDT
11/10/2015, Approved
7. 232115 Hydronic Specialties – Manual Balance Valves
Nexus, Model Ultra XB
11/10/2015, Approved
8. 232115 Hydronic Specialties – Automatic Flow Control Valves
Nexus, Model UltraMatic
11/10/2015, Approved
9. 232115 Hydronic Specialties - Venturis
Nexus, Orturi and Venturi, Model UB and NVF
11/10/2015, Approved
10. 232115 Hydronic Specialties - Venturis
Griswold
11/10/2015, Approved
11. 233600 Air Terminal Units
Johnson Controls, Model TVS and TSS
11/10/2015, Approved

12. 235100 Breechings, Chimneys and Stacks
Schebler, Model eVent SD
11/10/2015, Approved
13. 237413 Air Handling Units
MAFNA Air Technologies
11/10/2015, Approved

***** Please see attached copies of Substitution Requests responded to*****

End of Addendum 1

The above stated clarifications are the only changes being made at this time.

Failure to acknowledge receipt of this addendum with submittal of your Bid could be cause to reject your offer. All other requirements of the RFP remain as originally stated.

Thank you,

Garrett V. Hyatt

Garrett V Hyatt
Sr. Contracting Professional
cc: File, Bidders List



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**SUBSTITUTION
REQUEST**
(During the Bidding Phase)

Project: PNNL 3860 Building Construction Substitution Request Number: 5
From: Terry Herron
To: PNNL Date: November 3, 2015
A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: Control Valves - Pressure Independent Description: Control Valves - Pressure Independent
Section: 230900 Page: 15 Article/Paragraph: 2.07

Proposed Substitution: Nexus Dynamic
Manufacturer: Nexus Valve Address: 9982 E 121st Street Fishers, IN 46037 Phone: 888 900 0947
Trade Name: Dynamic Model ND Model No.: ND

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Herron

Signed by: *Terry Herron*
Firm: Mechanical Sales, Inc.
Address: 2214 East Riverside Ave Spokane, WA 99202

Telephone: 509 327 7395

A/E's REVIEW AND ACTION

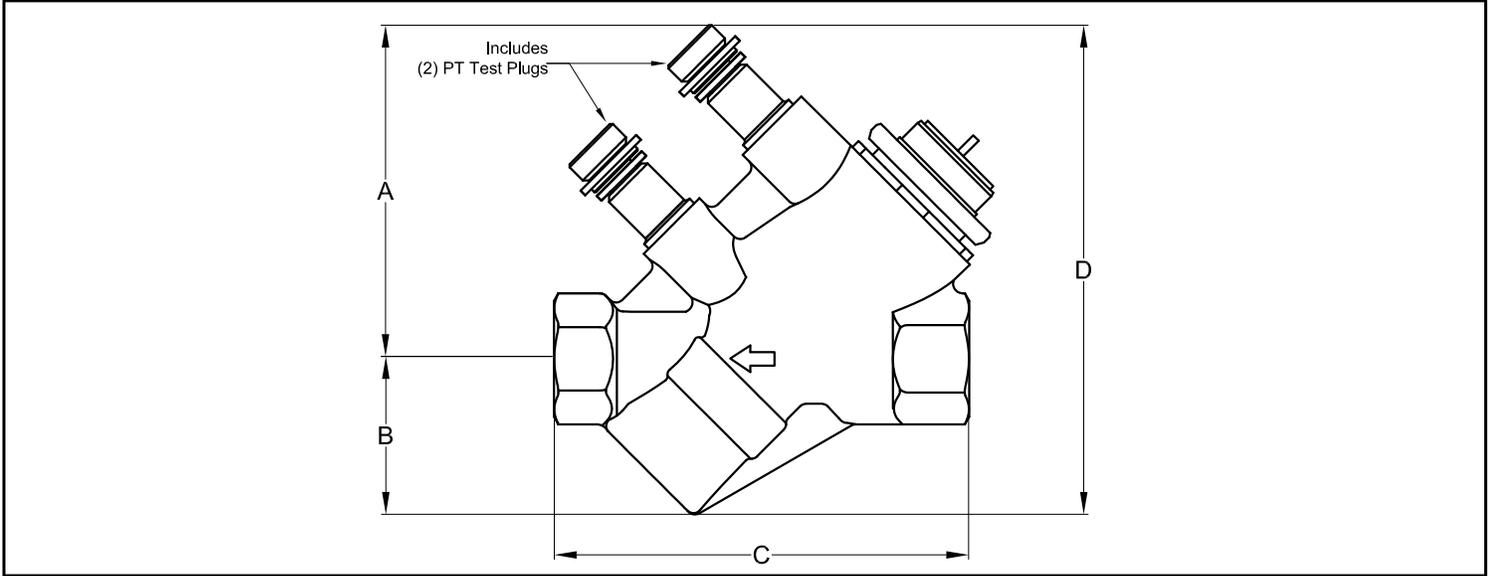
- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: *Jeff Scott* Date: 11-10-2015

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

END OF SECTION 012500

Dynamic™ Model ND Pressure Independent Control Valve (½" thru 2")



DIMENSIONS [inches]						
MODEL	SIZE	A	B	C	D	Wt. [lbs]
ND050	½	2.99	1.38	3.74	4.37	1.23
ND075	¾	3.27	1.93	4.72	5.20	1.96
ND100	1	3.19	2.20	5.00	5.39	2.94
ND125	1¼	3.43	2.83	6.06	6.26	3.91
ND150	1½	5.02	3.33	7.46	8.35	7.33
ND200	2	4.92	3.34	7.68	8.26	8.60

MATERIALS & DESIGN DATA	
BODY	.....LEAD FREE DZR Brass CW602N, 250°F, 360 PSI Max, 4-58 PSID Operating Differential
CONNECTION	.....FNPT
SEALS	.....EPDM O-RINGS
CARTRIDGE	.....PPS (Polyphenylene Sulfide)
DIAPHRAGM	.....Reinforced EPDM
CLOSE OFF PRESSURE	.....58 PSID
LEAKAGE RATE	.....0.01% of rated capacity at max. rated differential pressure, ANSI Class IV
ACCURACY	.....±7% (Measuring Venturi: ±3%)

FLOW RATE SELECTION GUIDE				
SIZE	FLOW SELECTOR	COLOR	FLOW RANGE GPM	Cv*
ND050-L	DC050L	White	0.15 - 0.52	0.27
ND050-S	DC050S	Red	0.39 - 1.98	0.90
ND050-H	DC050H	Black	1.32 - 6.16	2.89
ND075-S	DC075S	White	1.41 - 3.88	2.20
NC075-H	DC075H	Black	3.67 - 9.77	5.43
ND100-S	DC100S	White	3.80 - 10.30	5.84
ND100-H	DC100H	Black	7.70 - 14.66	9.54
ND125-H	DC125H	Black	8.40 - 19.37	9.65
ND150-S	DC150S	White	16.16 - 33.29	20.20
ND200-H	DC200H	Black	22.81 - 55.48	34.10

* Cv used for Flow verification

ACCESSORIES	
Order Code	Part No. Description
<input type="checkbox"/> H	..... HT. HANGING TAG with Model No., Location (Maximum 7 Characters)
<input type="checkbox"/> X	..... PTE. PRES / TEMP TEST PLUG EXTENSION 1/16" O.A.L.
<input type="checkbox"/> @ PTEB. PRES / TEMP TEST PLUG EXTENSION 1/16" O.A.L.

ACTUATORS (24 VAC)	
Order Code	Part No. Description
<input type="checkbox"/> - NO ACTUATOR
<input type="checkbox"/> - CONTROL SIGNAL: * Two Position / On-Off * Three Position / Floating * 0-10V Proportional / Modulating
<input type="checkbox"/> - FAIL POSITION: * Fail in Place / Non-Spring Return * Fail Safe / Spring Return

(For Actuators Order Codes please consult the "Ordering Guide" selection in Nexus Catalog)

ORDER DATA

Sample Part #:

N	D	-	0	5	0	F	-	L	-	X	H	-		
---	---	---	---	---	---	---	---	---	---	---	---	---	--	--

Model _____
 Size _____
 Connection Type _____
 Flow Range _____
 Option Order Code(s) _____
 Actuator Options _____

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

REPRESENTATIVE _____

DATE _____

For part numbers and ordering information please consult the "Ordering Guide" section in Nexus Catalog.



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SUBSTITUTION REQUEST (During the Bidding Phase)

Project: PNNL 3860 Building Construction

Substitution Request Number: 2

From: Terry Herron

To: PNNL

Date: November 3, 2015

A/E Project Number: _____

Re: _____

Contract For: _____

Specification Title: Special Duty Valves

Description: Automatic Balancing Valves

Section: 232115 Page: 3

Article/Paragraph: 2.02E

Proposed Substitution: Nexus UltraMatic

Manufacturer: Nexus Valve Address: 9982 E 121st Street Fishers, IN 46037 Phone: 888 900 0947

Trade Name: UltraMatic Model No.: UM

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Herron

Signed by: *Terry Herron*

Firm: Mechanical Sales, Inc.

Address: 2214 East Riverside Ave Spokane, WA 99202

Telephone: 509 327 7395

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: *Jeff Scott* Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

END OF SECTION 012500

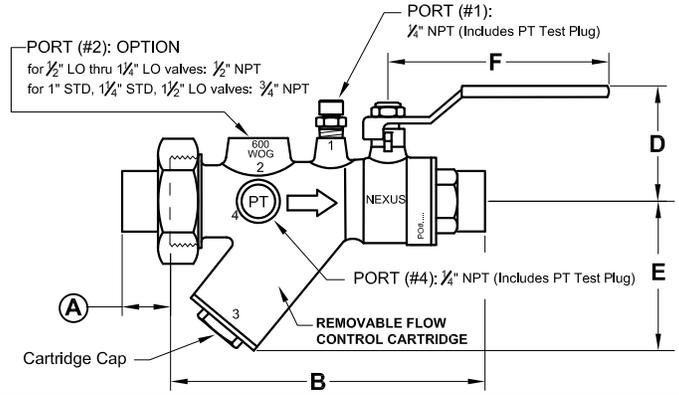
UltraMatic™ Model UM

Automatic Flow Control Valve w/ Accessory Port

(½" thru 1½" LO)

Valve Body available in FNPT, Sweat, NexPress or NexLok

DIMENSIONS [inches]													
SIZE [inches]	XLO	LO	STD	A	B				D	E	F	Cv (based on valve body only)	WT [lbs] (Tail Pieces & Nuts not included)
					F (NPT)	S (sweat)	P (NexPress)	L (NexLok)					
½		✓			3.9	4.1	4.5	4.2	1.7	1.6	1.9	9	1.2
½			✓		5.0	4.9	5.5	5.3	1.8	2.4	3.1	14	1.5
¾		✓			3.9	4.2	4.6	4.4	1.7	1.6	1.9	9	1.2
¾			✓		4.9	5.2	5.6	5.4	1.8	2.4	3.1	14	2.3
1	✓				4.3	4.4	4.6	4.9	1.7	1.6	1.9	9	1.2
1		✓			5.1	5.3	5.6	5.9	1.8	2.4	3.1	14	2.3
1			✓		6.8	6.9	7.1	-	2.5	3.5	4.3	32	3.9
1¼		✓			5.4	5.3	7.6	8.0	1.8	2.4	3.1	14	2.5
1¼			✓		6.6	6.8	8.9	9.0	2.5	3.5	4.3	32	4.4
1½		✓			6.6	7.0	9.2	9.2	2.5	3.5	4.3	32	4.5



TAIL PIECE OPTION	Nexus P/N	Lengths [inches]	Use with Valve Body size
 MNPT (Male NPT Thread)	TP075-050M	1.00	½ LO, ¾ LO, 1 XLO
	TP125-050M	1.04	
	TP125-075M	1.16	½ STD, ¾ STD, 1 LO, 1¼ LO
	TP125-100M	1.29	
	TP200-050M	1.04	
	TP200-075M	1.16	1 STD, 1¼ STD, 1½ LO
	TP200-100M	1.39	
 FNPT (Female NPT Thread)	TP125-050F	1.00	½ STD, ¾ STD, 1 LO, 1¼ LO
	TP125-075F	1.00	
	TP125-100F	1.20	
	TP200-100F	1.61	1 STD, 1¼ STD, 1½ LO
	TP200-125F	1.57	
 SWT (Female Sweat)	TP075-050S	0.59	½ LO, ¾ LO, 1 XLO
	TP125-050S	0.60	
	TP125-075S	0.85	½ STD, ¾ STD, 1 LO, 1¼ LO
	TP125-100S	1.00	
	TP200-075S	1.85	
	TP200-100S	1.85	1 STD, 1¼ STD, 1½ LO
	TP200-125S	1.85	
 NexPress	TP125-050P	1.46	½ STD, ¾ STD, 1 LO, 1¼ LO
	TP125-075P	1.54	
	TPA125-100P	3.85	
	TP200-100P	1.58	1 STD, 1¼ STD, 1½ LO
 NexLok	TPA200-125P	3.70	
	TPA200-150P	3.63	
	TP125-050L	1.03	½ STD, ¾ STD, 1 LO, 1¼ LO
	TP125-075L	1.29	
	TP200-100L	1.66	
	TPA200-125L	4.25	1 STD, 1¼ STD, 1½ LO
	TPA200-150L	4.05	

MATERIALS & DESIGN DATA	
BODY	.....HOT FORGED BRASS ASTM B283, 600 WOG, 325°F, INTERCHANGEABLE UNION ENDS
END PIECES	.....HOT FORGED BRASS ASTM B283 NexPress: 200 PSIG, 250°F / NexLok: 250 PSIG, 200°F / NexLok LD: 200 PSIG, 200°F
HANDLE & NUT	.....ZINC PLATED / PVC COATED
BALL	.....HARD CHROME PLATED BRASS / STAINLESS STEEL (optional)
BALL SEALS	.....TEFLON
SHAFT	.....BRASS / STAINLESS STEEL (optional), BLOWOUT-PROOF
SHAFT SEALS	.....DUAL FKM O-RINGS
UNION SEAL	.....FKM O-RING
CAP SEAL	.....FKM O-RING
FLOW CARTRIDGE	.....STAINLESS STEEL MOVING PARTS IN BRASS HOUSING, REMOVABLE, PAT # 8517051
CARTRIDGE SEAL	.....EPDM
ACCURACY	.....5%

FLOW RATE SELECTIONS		
SIZE [inches]	PSID (range)	GPM (± 5.0%)
½ LO, ¾ LO, 1 XLO	2 - 45	0.33, 0.5, 0.75, 1.0, 1.25, 1.5, 1.75, 2.0, 2.25, 2.5, 2.75, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0
	4 - 55	7.0, 8.0
½ STD, ¾ STD, 1 LO, 1¼ LO	2 - 45	0.33, 0.5, 0.75, 1.0, 1.25, 1.5, 1.75, 2.0, 2.25, 2.5, 2.75, 3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 7.0, 8.0, 9.0, 10.5
	5 - 65	11.0, 12.0, 13.0, 14.0, 15.0
1 STD, 1¼ STD, 1½ LO	2 - 45	7.0, 8.0, 9.0, 10.0, 11.0, 12.0, 13.0, 14.0, 15.0, 16.0, 17.0, 18.0, 19.0, 20.0, 21.0, 22.0
	2 - 60	24.0, 25.0, 30.0, 35.0
	4 - 70	40.0, 45.0

ACCESSORIES	
Order Code	Part No. Description
<input type="checkbox"/> A	.... AV-025. AUTOMATIC AIR VENT 250°F, 150 PSIG, positive shut-off, ¼" MNPT (Not available for: ½" LO, ¾" LO, 1" XLO)
<input type="checkbox"/> C	.... CV-1, CV-2. CHECK VALVE CV-1 for ½" LO, ¾" LO, 1" XLO; CV-2 for ½" STD, ¾" STD, 1" LO, 1¼" LO; Center Guided, Non-Slam Check
<input type="checkbox"/> E	.... ES-1, ES-2, ES-3. EXTENDED HANDLE Stationary housing for full-height vapor barrier
<input type="checkbox"/> H	.... HT. HANGING TAG with Model No., Location, Flow Rate (Maximum 7 Characters)
<input type="checkbox"/> L	.... SL. SHORT LEVER HANDLE
<input type="checkbox"/> V	.... MV-025. MANUAL AIR VENT 325°F, 400 PSIG, ¼" MNPT, Side Discharge
<input type="checkbox"/> X	.... MV-025L. MANUAL AIR VENT EXTENDED 325°F, 400 PSIG, ¼" MNPT, Side Discharge, 2¼" O.A.L. PTE. PRES / TEMP TEST PLUG EXTENSION 1½" O.A.L.

ORDER DATA	
Sample Part #:	
UM - 075 - S - 075 M - 040 - V	
Model	Valve Trim
UltraUM Size	Fixed End
Union End	Flow Rate (GPM)
Accessory Cap Option	Optional 3rd Port Accessory
Option Order Codes (Accessories)	

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

REPRESENTATIVE _____

DATE _____

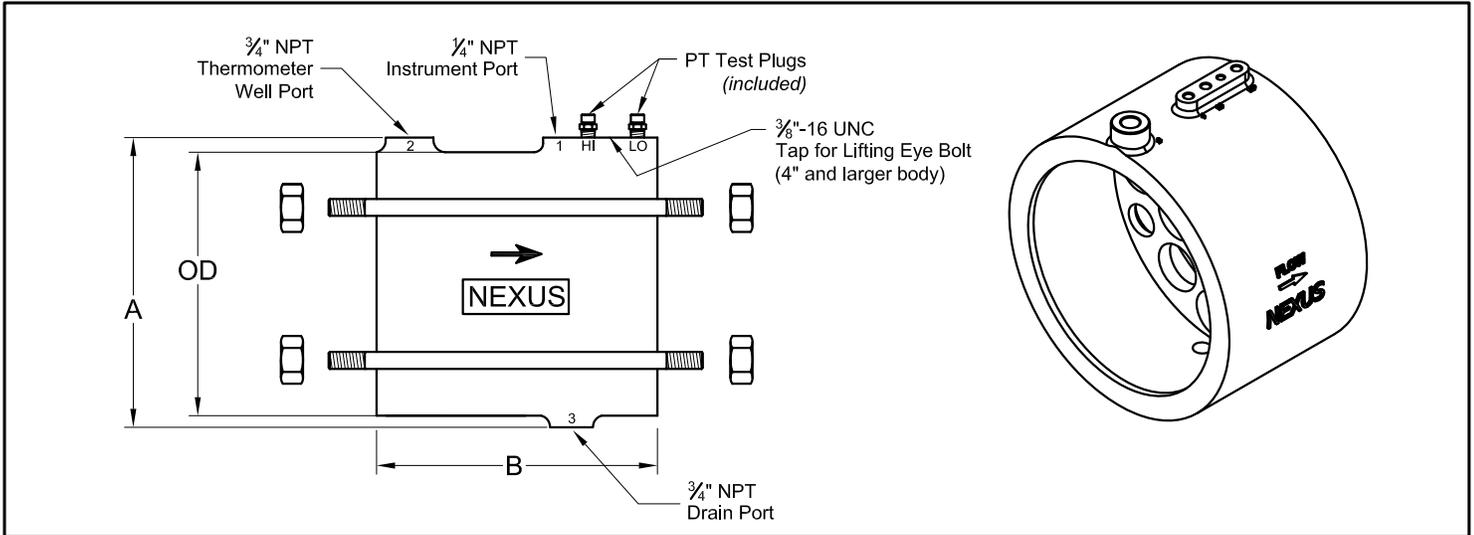
Please consult the "Ordering Guide" section in Nexus Valve Catalog for complete part number and ordering information.

UltraMatic™ Model UMW

Automatic Flow Control Valve

Wafer Style

(2½" thru 12")



DIMENSIONS [inches]								
SIZE [inches]	LO	STD	HI	EX HI	A	B	OD	WT. [lbs] (Cartridges not included)
2½	✓	✓	-	-	5.1	8.4	4.7	16.2
3	✓	✓	✓	✓	5.6	10.5	5.0	25.8
4	✓	✓	✓	✓	7.4	10.0	6.8	29.5
5	✓	✓	✓	✓	9.3	10.0	7.6	34.7
6	✓	✓	✓	✓	9.2	10.5	8.6	52.0
8	✓	✓	✓	✓	11.6	10.0	11.0	62.7
10	✓	✓	✓	✓	13.9	10.0	13.4	78.0
12	✓	✓	✓	✓	16.7	10.0	16.1	83.5

FLOW RATES Control Range [PSID]				
SIZE [inches]	LO (2-45)	STD (5-50) for 2½" STD (2-45) for 3" thru 12"	HI (2-45) for 3" HI (4-45) for 4" thru 12"	EX HI (4-70) for 3" EX HI (5-45) for 4" thru 12"
	(± 5.0%, 5 GPM increments)			
2½	25 - 70	75 - 100	-	-
3	25 - 70	75 - 120	125 - 165	140, 160, 180, 200, 220, 240
4	75 - 120	125 - 240	140, 160, 180, 200, 220, 240	245 - 480
5	75 - 190	140 - 380	165 - 310	265 - 680
6	75 - 240	245 - 480	125 - 400	485 - 960
8	125 - 480	485 - 840	130 - 800	490 - 1680
10	480 - 720	725 - 1320	730 - 1200	1450 - 2640
12	560 - 1030	1035 - 1940	1100 - 1830	2140 - 3800

ACCESSORIES			
Order Code	Part No.	Description	
<input type="checkbox"/>	A	AV-025. AUTOMATIC AIR VENT 250°F, 150 PSIG, positive shut-off, ¼" MNPT	
<input type="checkbox"/>	B	BD-075. BLOWDOWN / VENT / DRAIN 325°F, 600 PSIG, ¾" hose bib & cap	
<input type="checkbox"/>	H	HT. HANGING TAG with Model No., Location, Flow Rate (Maximum 7 Characters)	
<input type="checkbox"/>	V	MV-025. MANUAL AIR VENT 325°F, 400 PSIG, ¼" MNPT, Side Discharge	
<input type="checkbox"/>	W	TW-075. THERMOMETER WELL Brass, 1½" well, 3½" O.A.L., ¾" MNPT	
<input type="checkbox"/>	X	MV-025L. MANUAL AIR VENT EXTENDED 325°F, 400 PSIG, ¼" MNPT, Side Discharge, 2¼" O.A.L.	
<input type="checkbox"/>		PTE. PRES / TEMP TEST PLUG EXTENSION 1½" O.A.L.	

MATERIALS & DESIGN DATA	
ULTRAMATIC BODY	.....EPOXY COATED DUCTILE IRON, ASTM A536, 400 PSIG, 350°F BRASS PLUGS ARE FURNISHED FOR UNUSED PORTS
FLOW CARTRIDGE	.....304 STAINLESS STEEL MOVING PARTS IN BRASS HOUSING, PAT # 8517051
CARTRIDGE SEAL	.....EPDM
STUDS & NUTS	.....ZINC PLATED STEEL
ACCURACY	.....±5%

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

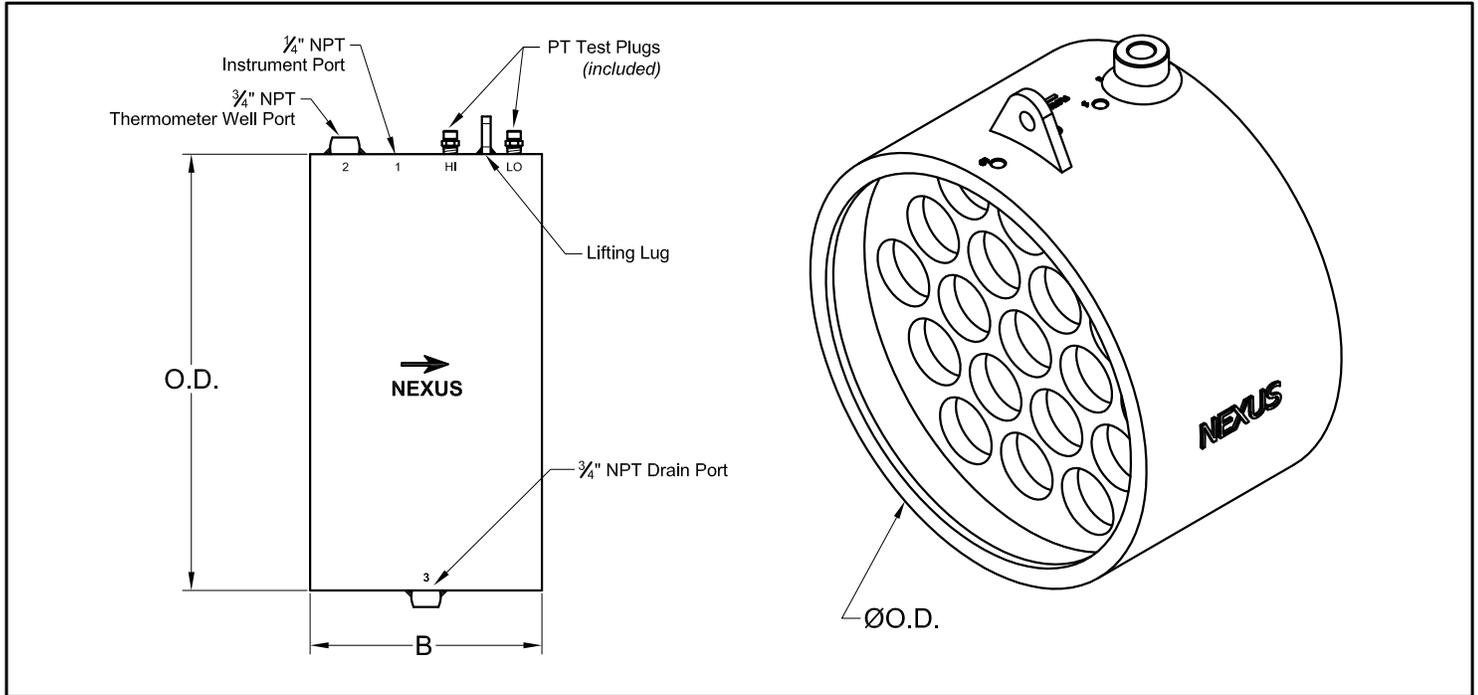
REPRESENTATIVE _____

DATE _____

For part numbers and ordering information please consult the "Ordering Guide" section in Nexus Catalog.

UltraMatic™ Model UMW

Automatic Flow Control Valve
Fabricated Wafer Style
(14" thru 48")



DIMENSIONS & FLOW RATES					
[Inches]		[GPM]			
SIZE [Inches]	B	O.D.	Max. GPM (± 5.0%)		WT. [Lbs] (Cartridges not included)
			"HI" Range (4 - 45)	"EX HI" PSID Range (5 - 45)	
14	10.0	17.5	2,200	4,560	92.0
16	10.0	20.0	3,240	6,480	118.8
18	10.0	21.4	3,720	7,440	130.7
20	10.0	23.6	4,440	8,880	152.7
24	10.0	28.0	6,600	13,200	240.0
30	12.0	34.5	10,200	20,400	339.0
36	12.0	41.0	14,520	29,040	TBD
42	12.0	47.8	19,920	39,840	TBD
48	12.0	54.3	25,920	51,840	TBD

MATERIALS & DESIGN DATA

ULTRAMATIC BODY:STEEL PIPE SA-53 GR. B
or ROLLED STEEL PLATE SA-516 GR. 70,
400 PSIG, 350°F

FLOW CARTRIDGE:304 STAINLESS STEEL MOVING PARTS
IN BRASS HOUSING, PAT # 8517051

CARTRIDGE SEAL:EPDM

ACCURACY:±5%

ORDER DATA

Sample Part #:

U	M	W	1	8	0	0	-	0	3	0	0	0	-						
---	---	---	---	---	---	---	---	---	---	---	---	---	---	--	--	--	--	--	--

Model _____
UltraMatic Size _____
Flow Rate (GPM) _____
Port Accessories _____
Option Order Codes (Accessories) _____

Please consult the Ordering Guide in the Nexus Valve catalog for complete part number and ordering information.

ACCESSORIES

Order Code	Part No.	Description
<input type="checkbox"/>	A	AV-025. AUTOMATIC AIR VENT 250°F, 150 PSIG, positive shut-off, 1/4" MNPT
<input type="checkbox"/>	B	BD-075. BLOWDOWN / VENT / DRAIN 325°F, 600 PSIG, 3/4" hose bib & cap
<input type="checkbox"/>	H	HT. HANGING TAG with Model No., Location, Flow Rate (Maximum 7 Characters)
<input type="checkbox"/>	V	MV-025. MANUAL AIR VENT 325°F, 400 PSIG, 1/4" MNPT, Side Discharge
<input type="checkbox"/>	W	TW-075. THERMOMETER WELL Brass, 1 1/2" well, 3 1/2" O.A.L., 3/4" MNPT
<input type="checkbox"/>	X	MV-025L. MANUAL AIR VENT EXTENDED 325°F, 400 PSIG, 1/4" MNPT, Side Discharge, 2 1/4" O.A.L. PTE. PRES / TEMP TEST PLUG EXTENSION 1 9/16" O.A.L.

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

REPRESENTATIVE _____

DATE _____



**SUBSTITUTION
REQUEST**
(During the Bidding Phase)

Project: PNNL 3860 Building Construction Substitution Request Number: 1
From: Terry Herron
To: PNNL Date: November 3, 2015
A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: Special Duty Valves Description: Bronze Calibrated Orifice Balancing Valves
Section: 232115 Page: 3 Article/Paragraph: 2.02C

Proposed Substitution: Nexus Ultra XB Orturi Manual Balance Valve
Manufacturer: Nexus Valve Address: 9982 E 121st Street Fishers, IN 46037 Phone: 888 900 0947
Trade Name: XB Orturi Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Herron

Signed by: *Terry Herron*
Firm: Mechanical Sales, Inc
Address: 2214 East Riverside Ave Spokane, WA 99202

Telephone: 509 327 7395

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: *Jeff Scott* Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

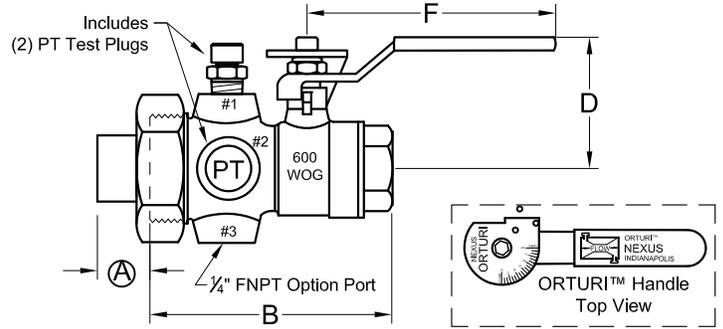
END OF SECTION 012500

UltraXB Orturi™ Model XB

Calibrated Manual Balancing Valve

(1/2" thru 2 1/2")

DIMENSIONS [inches]										
SIZE [inches]	LO	STD	A	B				D	F	WT [lbs] (Tail Pieces & Nuts not included)
				F (NPT)	S (Sweat)	P (NexPress)	L (NexLok)			
1/2		✓		2.9	3.1	3.5	3.2	1.7	1.9	0.8
3/4	✓			2.9	3.2	3.5	3.4	1.7	1.9	0.9
3/4		✓		3.1	3.3	3.6	3.6	1.8	3.1	1.5
1	✓			3.3	3.4	3.5	3.9	1.7	1.9	1.0
1		✓		3.3	3.5	3.6	4.1	1.8	3.1	1.8
1 1/4	✓			3.6	3.6	5.7	6.2	1.8	3.1	2.2
1 1/4		✓		4.1	4.3	6.3	6.7	2.5	4.3	3.5
1 1/2		✓		4.1	4.4	6.6	6.9	2.5	4.3	3.8
2		✓		5.0	5.8	7.7	8.1	3.4	5.5	4.9
2 1/2		✓		5.2	6.0	-	-	3.4	5.5	5.2



Valve Body available in FNPT, Sweat, NexPress or NexLok

TAIL PIECE OPTION	Nexus P/N	Lengths [inches]	Use with Valve Body size
 MNPT (Male NPT Thread)	TP075-050M	1.00	1/2, 3/4 LO, 1 LO
	TP125-050M	1.04	3/4 STD, 1 STD, 1 1/4 LO
	TP125-075M	1.16	
	TP125-100M	1.29	1 1/4 STD, 1 1/2
	TP200-050M	1.04	
	TP200-075M	1.16	
	TP200-100M	1.39	
TP200-125M	1.85	2, 2 1/2	
TP200-150M	1.89		
TP250-100M	1.93		
TP250-125M	1.93		
 FNPT (Female NPT Thread)	TP125-050F	1.00	1/2, 3/4 LO, 1 LO
	TP125-075F	1.00	3/4 STD, 1 STD, 1 1/4 LO
	TP125-100F	1.20	
	TP200-100F	1.61	1 1/4 STD, 1 1/2
	TP200-125F	1.57	
	TP200-150F	1.16	
	TP250-125F	1.77	
TP250-150F	1.97	2, 2 1/2	
TP250-200F	1.36		
TP250-250F	1.74		
 SWT (Female Sweat)	TP075-050S		0.59	1/2, 3/4 LO, 1 LO
	TP125-050S	0.60	3/4 STD, 1 STD, 1 1/4 LO
	TP125-075S	0.85	
	TP125-100S	1.00	
	TP200-075S	1.85	1 1/4 STD, 1 1/2
	TP200-100S	1.85	
	TP200-125S	1.85	
TP200-150S	1.38		
TP250-125S	1.69	2, 2 1/2	
TP250-150S	1.97		
TP250-200S	1.65		
 NexPress	TP125-050P	1.46	1/2, 3/4 LO, 1 LO
	TP125-075P	1.54	3/4 STD, 1 STD, 1 1/4 LO
	TPA125-100P	3.85	
	TP200-100P	1.58	1 1/4 STD, 1 1/2
	TPA200-125P	3.70	
TPA200-150P	3.63		
TPA250-150P	4.44	2, 2 1/2	
TPA250-200P	4.07		
 NexLok	TP125-050L	1.03	1/2, 3/4 LO, 1 LO
	TP125-075L	1.29	3/4 STD, 1 STD, 1 1/4 LO
	TP200-100L	1.66	
	TPA200-125L	4.25	1 1/4 STD, 1 1/2
	TPA200-150L	4.05	
TPA250-125L	4.43		
TPA250-150L	4.85	2, 2 1/2	
TPA250-200L	4.40		

FLOW RATE SELECTION GUIDE		
FLOW SELECTOR	SIZE(s)	Cv
1A	1/2, 3/4 LO, 1 LO	0.66
1B	1/2, 3/4 LO, 1 LO	1.32
1C	1/2, 3/4 LO, 1 LO	3.53
1D	1/2, 3/4 LO, 1 LO	0.30
2B	3/4 STD, 1 STD, 1 1/4 LO	1.32
2A	3/4 STD, 1 STD, 1 1/4 LO	2.46
3A	3/4 STD, 1 STD, 1 1/4 LO	3.53
3B	3/4 STD, 1 STD, 1 1/4 LO	7.42
3C	3/4 STD, 1 STD, 1 1/4 LO	16.60
4A	1 1/4 STD, 1 1/2	16.60
5A	1 1/4 STD, 1 1/2	29.70
6A	2, 2 1/2	51.60
6B	2, 2 1/2	29.70

MATERIALS & DESIGN DATA	
BODY	.....HOT FORGED BRASS ASTM B283, 600 WOG, 325°F, INTERCHANGEABLE UNION ENDS, 1/4" FNPT OPTION PORT (3 EACH)
END PIECES	.....HOT FORGED BRASS ASTM B283 NexPress: 200 PSIG, 250°F / NexLok: 250 PSIG, 200°F / NexLok LD: 200 PSIG, 200°F
HANDLE & NUT MEMORY STOP	.....ZINC PLATED / PVC COATED.....MS-1: 1080 COLD ROLLED STEEL, COATED.....MS-3: 304 STAINLESS STEEL
BALL	.....HARD CHROME PLATED BRASS / STAINLESS STEEL (optional)
BALL SEALS	.....TEFLON
SHAFT	.....BRASS / STAINLESS STEEL (optional) .....BLOWOUT-PROOF
SHAFT SEALS	.....DUAL FKM O-RINGS
UNION SEALS	.....FKM O-RING
ACCURACY	.....±3%

ACCESSORIES			
	Order Code	Part No.	Description
	<input type="checkbox"/> A	AV-025	AUTOMATIC AIR VENT 250°F, 150 PSIG, positive shut-off, 1/2" MNPT
	<input type="checkbox"/> B	BD-025	BLOWDOWN / VENT / DRAIN 325°F, 600 PSIG, 3/4" hose bib & cap
	<input type="checkbox"/> E	ES-1M, ES-2M, ES-3M	EXTENDED HANDLE Stationary housing, for full-height vapor barrier
	<input type="checkbox"/> H	HT	HANGING TAG with Model No., Location, Flow Rate (Maximum 7 Characters)
	<input type="checkbox"/> L	SL	SHORT LEVER HANDLE
	<input type="checkbox"/> V	MV-025	MANUAL AIR VENT 325°F, 400 PSIG, 1/2" MNPT, Side Discharge
	<input type="checkbox"/> X	MV-025L	MANUAL AIR VENT EXTENDED 325°F, 400 PSIG, 1/2" MNPT, Side Discharge, 2 1/4" O.A.L.
	<input type="checkbox"/>	PTE	PRES / TEMP TEST PLUG EXTENSION 1 1/8" O.A.L.

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

REPRESENTATIVE _____

DATE _____



Advancement
of Construction
Technology

**SUBSTITUTION
REQUEST**
(During the Bidding Phase)

Project: PNNL 3860 Building Construction Substitution Request Number: 6
From: Terry Herron
To: PNNL Date: November 4, 2015
A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: Air Control Devices Description: Diaphragm/Bladder-Type Expansion Tanks
Section: 232115 Page: 2 Article/Paragraph: 2.01D

Proposed Substitution: American Wheatley BDT Expansion Tank
Manufacturer: American Wheatley Address: 1005 E Houston Broken Arrow, OK 74012 Phone: 918-317-0401
Trade Name: BDT Expansion Tank Model No.: BDT-080

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Herron

Signed by: Terry Herron
Firm: Mechanical Sales, Inc.
Address: 2214 East Riverside Ave Spokane, WA 99202

Telephone: 509 327 7395

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

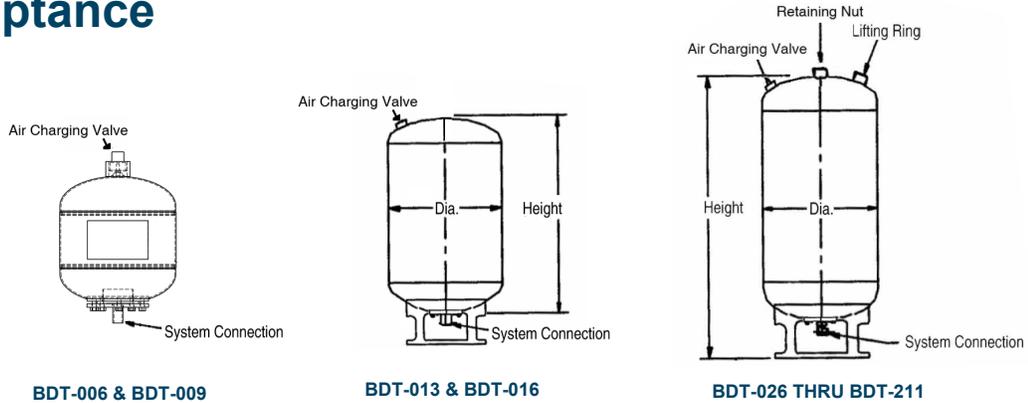
Signed by: Jeff Scott Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

END OF SECTION 012500

BDT “Multi-Purpose” Expansion Tank

Full Acceptance



PART NUMBER	ACCEPTANCE VOLUME	DIAMETER A (IN.)	HEIGHT B (IN.)	SYSTEM CONNECT IN.	WEIGHT	WORKING PRESSURE
BDT-006	6 GALLON	12	10	3/4"	24	150 PSI
BDT-009	9 GALLON	12	17	3/4"	28	150 PSI
BDT-013	13 GALLON	14	28	3/4"	50	150 PSI
BDT-016	16 GALLON	14	32	3/4"	65	150 PSI
BDT-026	26 GALLON	16	40	3/4"	98	150 PSI
BDT-040	40 GALLON	20	41	1"	140	150 PSI
BDT-060	60 GALLON	24	48	1 1/2"	220	150 PSI
BDT-080	80 GALLON	24	50	1 1/2"	235	150 PSI
BDT-112	112 GALLON	30	52	1 1/2"	273	150 PSI
BDT-135	135 GALLON	30	59	1 1/2"	340	150 PSI
BDT-162	162 GALLON	30	61	1 1/2"	360	150 PSI
BDT-185	185 GALLON	30	80	1 1/2"	545	200 PSI
BDT-211	211 GALLON	32	71	1 1/2"	480	150 PSI

- EPDM Bladder-NSF Compliant Material
- Epoxy Coated Cover is standard
- SSC Trim (Stainless Steel Cover optional)

NOTE: 175, 200, & 300 pressures are available upon request. Tank dimensions will not change.

USE: Designed to absorb expansion of fluids in typical hydronic systems. The BDT Tank is designed for storage of potable water for pressure boost systems as well as typical cooling and heating applications. Bladder material is suitable for hot water applications. Installation of tank will help eliminate constant pump use prolonging pump life and unnecessary blowing of relief valves.

SPECIFICATION:

ASME Section VIII, Division I, Stamped with Documentation
 Working Pressure: See Table Above
 Primed, Painted Exterior
 Fully Replaceable Bladder
 Fully Adjustable Field Air Charging

Maximum Temperature 280° F intermittent 300° F
 Permanent Separation of Air and Water
 Factory Air Charged to 12 P.S.I.
 Full Acceptance Bladder

Available in carbon steel construction, 304/316 stainless steel construction and other alloy construction upon request
 Dimensions are subject to change without notice, please confirm actual dimensions with factory at time of order.

JOB NAME _____
 LOCATION _____

 CONTRACTOR _____
 CONTRACTOR P.O. NO. _____

ITEMS	QUANTITY
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

American WHEATLEY
HVAC PRODUCTS®
 1005 E. Houston
 Broken Arrow, OK 74012
 Toll Free: 866-204-5229
 PH: 918-317-0401
 FAX: 918-317-0407
 www.wheatleyhvac.com
 e-mail: sales@globalflowproducts.com



Advancement
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SUBSTITUTION REQUEST

(During the Bidding Phase)

Project: PNNL 3860 Building Construction Substitution Request Number: 3

From: Terry Herron

To: PNNL Date: November 3, 2015

Re: _____ A/E Project Number: _____

Contract For: _____

Specification Title: Hydronic Specialties Description: Venturi

Section: 232115 Page: 4 Article/Paragraph: 2.03A

Proposed Substitution: Nexus Orturi & Venturi

Manufacturer: Nexus Valve Address: 9982 E 121st Street Fishers, IN 46037 Phone: 888 900 0947

Trade Name: Orturi & Venturi Model No.: UB & NVF

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Herron

Signed by: 

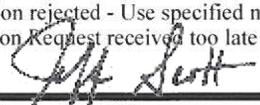
Firm: Mechanical Sales, Inc.

Address: 2214 East Riverside Ave Spokane, WA 99202

Telephone: 509 327 7395

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by:  Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

END OF SECTION 012500

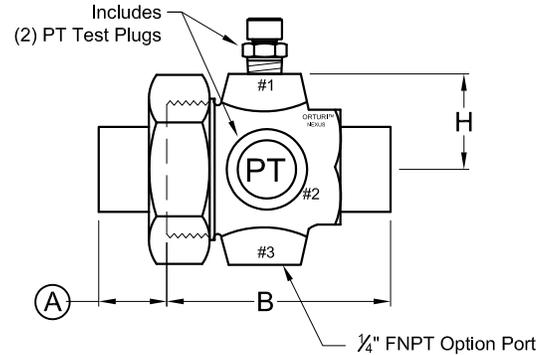
UltraUB Orturi™ Model UB

Bi-Directional Flow Meter, Modified Venturi

(½" thru 2")

Valve Body available in MNPT, FNPT or Sweat

DIMENSIONS [inches]						
SIZE [inches]	A	B			H	WT [lbs] (Tall Pieces & Nuts not included)
		M (MNPT)	F (FNPT)	S (Sweat)		
½	↓	2.2	-	1.7	0.8	0.5
¾		2.6	2.1	2.2	0.8	0.9
1		2.6	2.2	2.4	0.8	1.0
1¼		2.9	2.4	2.6	1.4	2.1
1½		3.0	2.5	2.7	1.4	2.3
2		3.1	2.6	2.9	1.7	3.2



TAIL PIECE OPTION	Nexus P/N	Lengths [inches]	Use with Valve Body size
 MNPT (Male NPT Thread)	TP075-050M	1.00	½
	TP125-050M	1.04	¾, 1
	TP125-075M	1.16	
	TP125-100M	1.29	
	TP200-050M	1.04	1¼, 1½
	TP200-075M	1.16	
	TP200-100M	1.39	
	TP200-125M	1.85	
	TP200-150M	1.89	2
	TP250-100M	1.93	
TP250-125M	1.93		
TP250-150M	1.97		
TP250-200M	2.00		
 FNPT (Female NPT Thread)	TP125-050F	1.00	¾, 1
	TP125-075F	1.00	
	TP125-100F	1.20	
	TP200-100F	1.61	1¼, 1½
	TP200-125F	1.57	
	TP200-150F	1.16	
	TP250-125F	1.77	
TP250-150F	1.97	2	
TP250-200F	1.36		
TP250-250F	1.74		
 SWT (Female Sweat)	TP075-050S	0.59	½
	TP125-050S	0.60	¾, 1
	TP125-075S	0.85	
	TP125-100S	1.00	
	TP200-075S	1.85	1¼, 1½
	TP200-100S	1.85	
	TP200-125S	1.85	
TP200-150S	1.38		
TP250-125S	1.69	2	
TP250-150S	1.97		
TP250-200S	1.65		
 NexPress	TP125-050P	1.46	¾, 1
	TP125-075P	1.54	
	TPA125-100P	3.85	
	TP200-100P	1.58	1¼, 1½
	TPA200-125P	3.70	
	TPA200-150P	3.63	
TPA250-150P	4.44	2	
TPA250-200P	4.07		
 NexLok	TP125-050L	1.03	¾, 1
	TP125-075L	1.29	
	TP200-100L	1.66	1¼, 1½
	TPA200-125L	4.25	
	TPA200-150L	4.05	
	TPA250-125L	4.43	2
	TPA250-150L	4.85	
	TPA250-200L	4.40	

FLOW RATE SELECTION GUIDE		
FLOW SELECTOR	SIZE [inches]	Cv
1A	½	0.66
1B	½	1.32
1C	½	3.53
1D	½	0.30
2B	¾, 1	1.32
2A	¾, 1	2.46
3A	¾, 1	3.53
3B	¾, 1	7.42
3C	¾, 1	16.60
4A	1¼, 1½	16.60
5A	1¼, 1½	29.70
6A	2	51.60
6B	2	29.70

ACCESSORIES

	Order Code	Part No.	Description
	<input type="checkbox"/> A	AV-025	AUTOMATIC AIR VENT 250°F, 150 PSIG, positive shut-off, ¼" MNPT
	<input type="checkbox"/> B	BD-025	BLOWDOWN / VENT / DRAIN 325°F, 600 PSIG, ¾" hose bib & cap
	<input type="checkbox"/> H	HT	HANGING TAG with Model No., Location, Flow Rate (Maximum 7 Characters)
	<input type="checkbox"/> V	MV-025	MANUAL AIR VENT 325°F, 400 PSIG, ¼" MNPT, Side Discharge
	<input type="checkbox"/> X	MV-025L	MANUAL AIR VENT EXTENDED 325°F, 400 PSIG, ¼" MNPT, Side Discharge, 2¼" O.A.L.
		PTE	PRES / TEMP TEST PLUG EXTENSION 1½" O.A.L.

MATERIALS & DESIGN DATA

BODY	.....HOT FORGED BRASS ASTM B283, 600 WOG, 325°F, INTERCHANGEABLE UNION ENDS
END PIECES	.....HOT FORGED BRASS ASTM B283 ¼" FNPT OPTION PORT (3 EACH) NexPress: 200 PSIG, 250°F / NexLok: 250 PSIG, 200°F / NexLok LD: 200 PSIG, 200°F
UNION SEAL	.....FKM O-RING
ACCURACY	.....±3%

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

REPRESENTATIVE _____

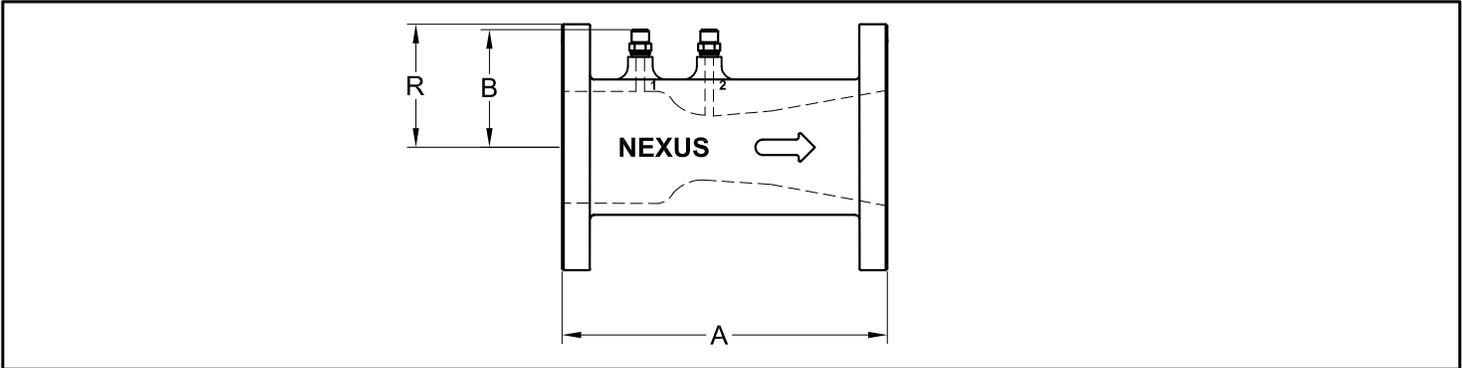
DATE _____

Please consult the "Ordering Guide" section in Nexus Valve Catalog for complete part number and ordering information.

Nexus Venturi™ Model NVF

Venturi Flow Meter

(2½" thru 12")



DIMENSIONS [inches]					
SIZE [inches]	A	B	R (Flange)	Cv	WT. [lbs]
2½	5.50	3.10	3.50	43	14.7
3	8.13	3.35	3.75	84	13.8
4	10.88	3.85	4.50	149	21.9
5	11.38	4.35	5.00	220	29.6
6	12.00	4.91	5.50	402	53.4
8	12.75	5.91	6.75	677	55.3
10	13.75	7.19	8.00	995	74.1
12	15.50	7.98	9.50	1749	106.2

MATERIALS & DESIGN DATA	
VENTURI BODY (PIPE)	.....P235GH - PRESSURE VESSEL STEEL (EQUIVALENT TO ST 35), 230 PSI, -4°F to 250°F STANDARD 150# CLASS B FLANGES (MATES TO 125# FLANGES ALSO)
VENTURI INSERT	.....P235T1 - CARBON STEEL (EQUIVALENT TO ST 37)
FLANGES	.....S235JR - CARBON STEEL, ASME B16.5, STANDARD 150# CLASS B
ACCURACY	.....±3%

FLOW RATE RECOMMENDATION GUIDE		
SIZE [inches]	IDEAL FLOW RANGES [GPM]	
	Min. Flow (@ 10 Inch WC)	Max. Flow (@ 100 Inch WC)
2½	26.0	82.0
3	50.0	158.0
4	89.0	281.0
5	131.0	415.0
6	240.0	758.0
8	404.0	1,277.0
10	594.0	1,877.0
12	1,044.0	3,300.0

BASIC INSTALLATION NOTES

- MUST BE INSTALLED IN THE INDICATED FLOW DIRECTION
- CAN BE ROTATED 360° AROUND PIPE AXIS FOR INSTALLATION
- REQUIRES A MINIMUM OF 5 STRAIGHT PIPE DIAMETERS UPSTREAM
- NO STRAIGHT PIPE DIAMETERS ARE REQUIRED DOWNSTREAM
- ALLOW A MINIMUM OF 10 STRAIGHT PIPE DIAMETERS AFTER A PUMP DISCHARGE
- 150# CLASS B FLANGES ALSO MATE TO 125# FLANGES

ACCESSORIES		
Order Code	Part No.	Description
<input type="checkbox"/>	H	.... HT. HANGING TAG with Model No., Location (Maximum 7 Characters)
<input type="checkbox"/>	X	.... PTE. PRES / TEMP TEST PLUG EXTENSION 1½" O.A.L.

ORDER DATA	
Sample Part #:	N | V | F | - | 0 | 4 | 0 | 0 | - | | | |
Model	NVF
Size	0400
Option Order Code (PTE)	X
Option Order code (HT)	H

For part numbers and ordering information please consult the "Ordering Guide" section in Nexus Catalog.

PROJECT _____

CONTRACTOR _____

PO/JOB NO. _____

ENGINEER _____

REPRESENTATIVE _____

DATE _____



**SUBSTITUTION
REQUEST**
(During the Bidding Phase)

Project: PNNL 3860 Building Construction Substitution Request Number: 4
From: Terry Herron
To: PNNL Date: November 3, 2015
A/E Project Number: _____
Re: _____ Contract For: _____

Specification Title: Rooftop Air-Handling Units Description: Rooftop Air-Handling Units
Section: 237413 Page: 1 Article/Paragraph: _____

Proposed Substitution: Mafna Air Technologies Inc.
Manufacturer: Mafna Address: 475 Sheldon Dr Cambridge, ON, Canada Phone: 519 624 4622
Trade Name: Mafna Model No.: Custom

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Terry Herron

Signed by: *Terry Herron*
Firm: Mechanical Sales, Inc.
Address: 2214 East Riverside Ave Spokane, WA 99202

Telephone: 509 327 7395

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: *J.H. Scott* Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

END OF SECTION 012500

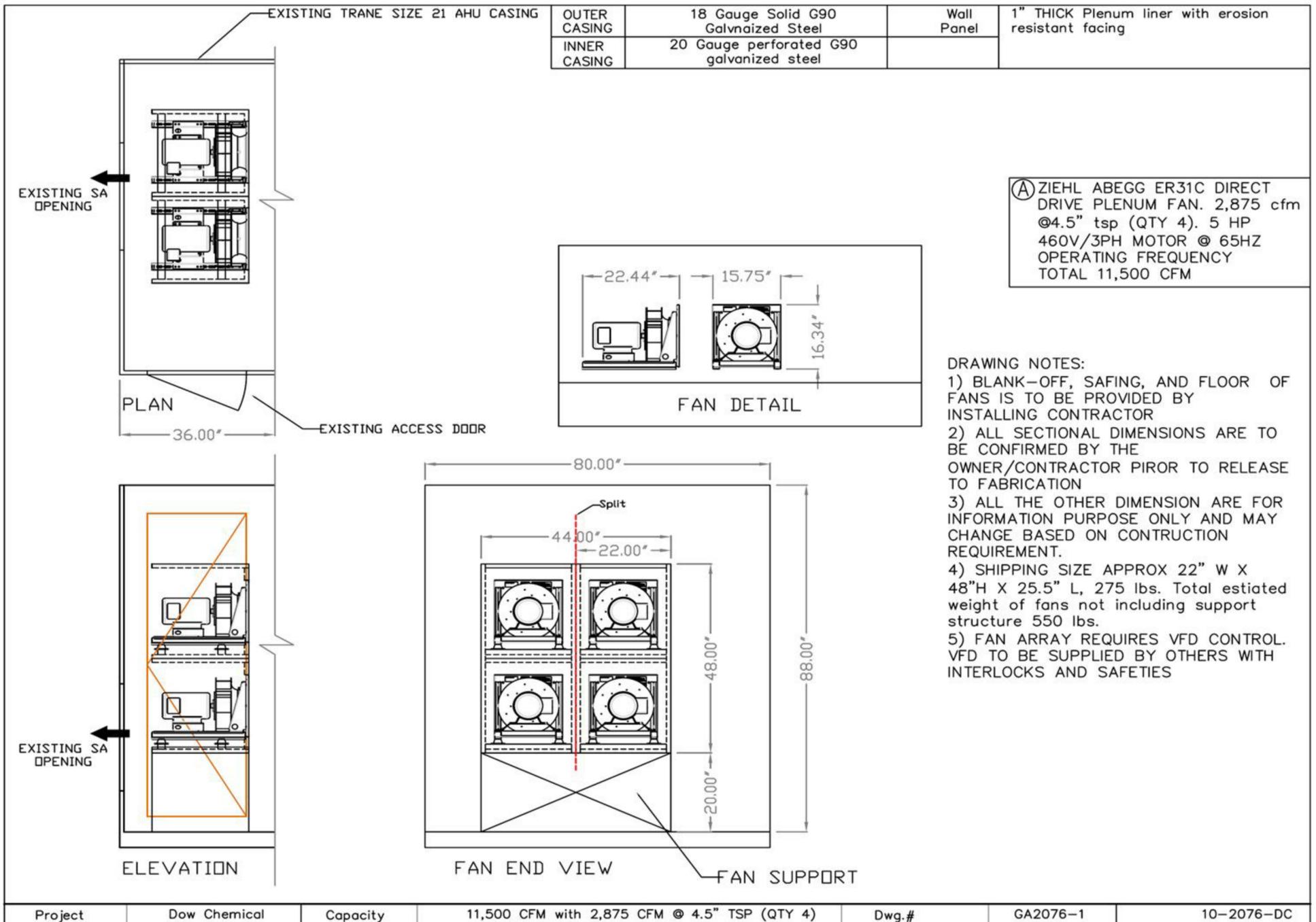
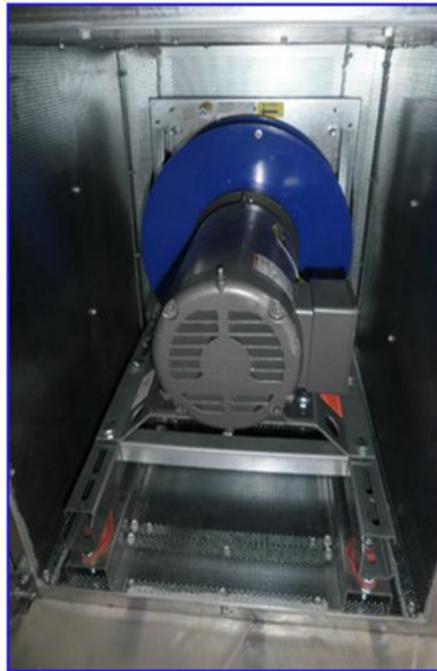
MODULAR MULTI-FAN SYSTEM

PROJECT
 Dow Chemical
 AHU Renovations

CLIENT
 Dow Chemical
 Midland, MI

REPRESENTATIVE
 Fontanesi & Kann
 Oak Park, MI

DATE SHIPPED
 January 7
 2011

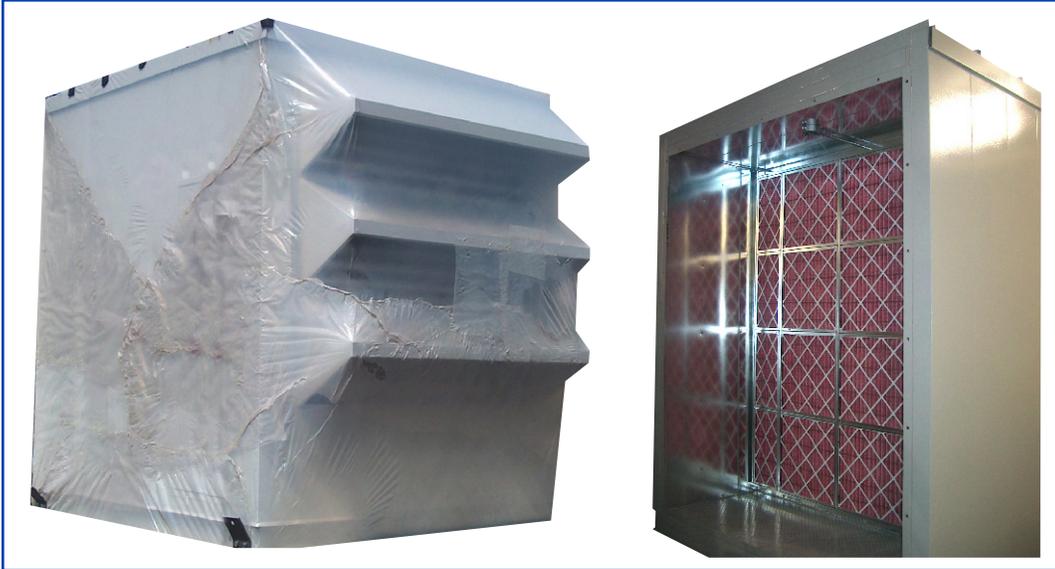


PROJECT
ASML USA Lithography
AHU-4A: 20,000 CFM

CLIENT
ASML Wilton
Wilton, CT

REPRESENTATIVE
Aercon
Cheshire, CT

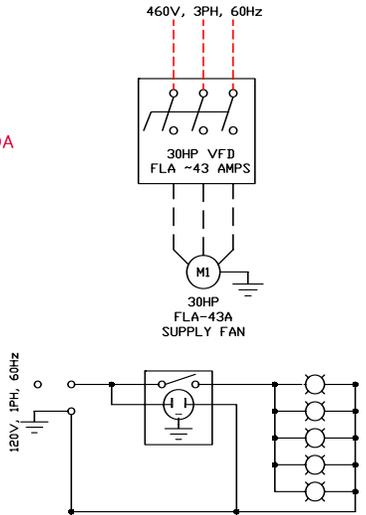
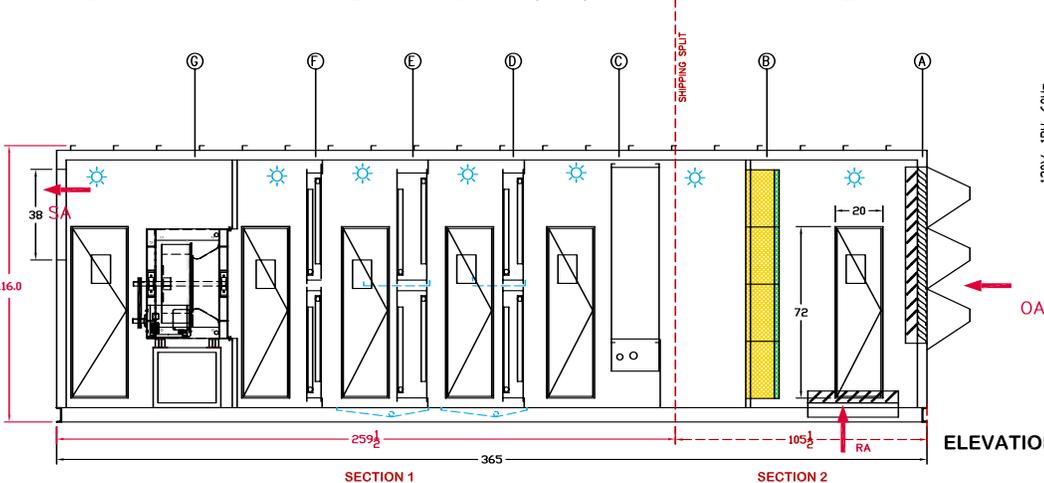
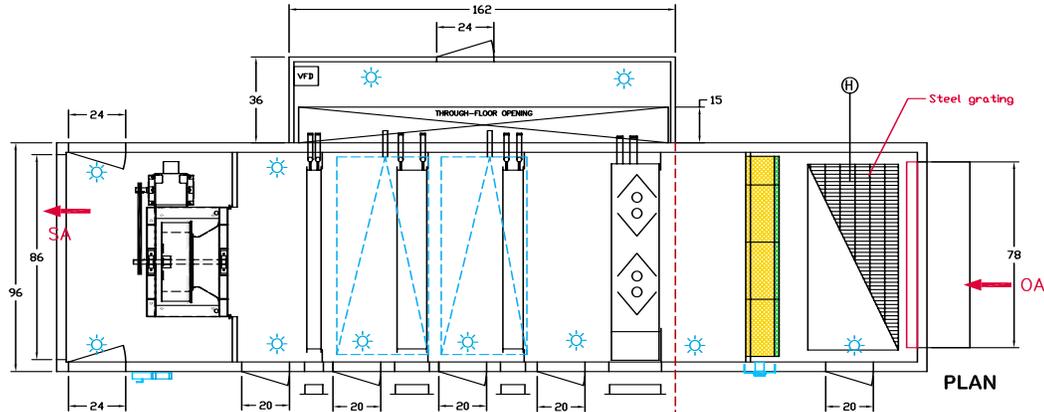
DATE SHIPPED
April 21
2008



SUBMITTAL DRAWING
OUTDOOR UNIT ESTIMATED UNIT WEIGHT 15,000 lbs
THERMAL BREAK WALL AND ROOF CONSTRUCTION

NOTES:
UNIT REQUIRES SEPARATE 120/1/60 AND 460/3/60 hz TO BE TERMINATED TO THE UNIT ON-SITE. ALL DIMENSIONS AND INTERIOR CLEARANCES ARE SUBJECT TO CLARIFICATION AT A LATER DATE.

- (A) 78"W x 74"H OA DAMPER AND LOUVER
- (B) 2" 30% + 12" 85% FILTER BANK 84"W x 96"H
- (C) 12# 24" x 24", 4# 24" x 12" (each)
- (D) IFB DAMPER STEAM HEATING COIL - 70"W x 72" H
- (E) CHILLED WATER COIL, 45"H x 75" W (QTY 2)
- (F) CHILLED GLYCOL COOLING COIL, 45"H x 75" W (QTY 2)
- (G) HOT WATER HEATING COIL, 45"H x 75" W (QTY 2)
- (H) TWIN CITY PLENUM FAN, MODEL EPF 330, CL2 20000 CFM @ 6.0" TSP, 30 HP MOTOR
- (I) 38"W x 78"L RA DAMPER



- Legend:**
- Incandescent Lighting Fixture
 - Magnehelic Gage
 - Lighting Switch
 - Removable Panel
 - Receptacle

PROJECT	ASML LITHOGRAPHY REPLACEMENT UNIT	CAPACITY	20,000 CFM @ 6" TSP	AHU-4A	DWG.#	07-2006A
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ENERGY RECOVERY AIR HANDLING UNIT WITH HEPA FILTERS

PROJECT
Carl Vinson VA Medical Centre -
Pharmacy Upgrade
ERAHU-1: 2,120cfm

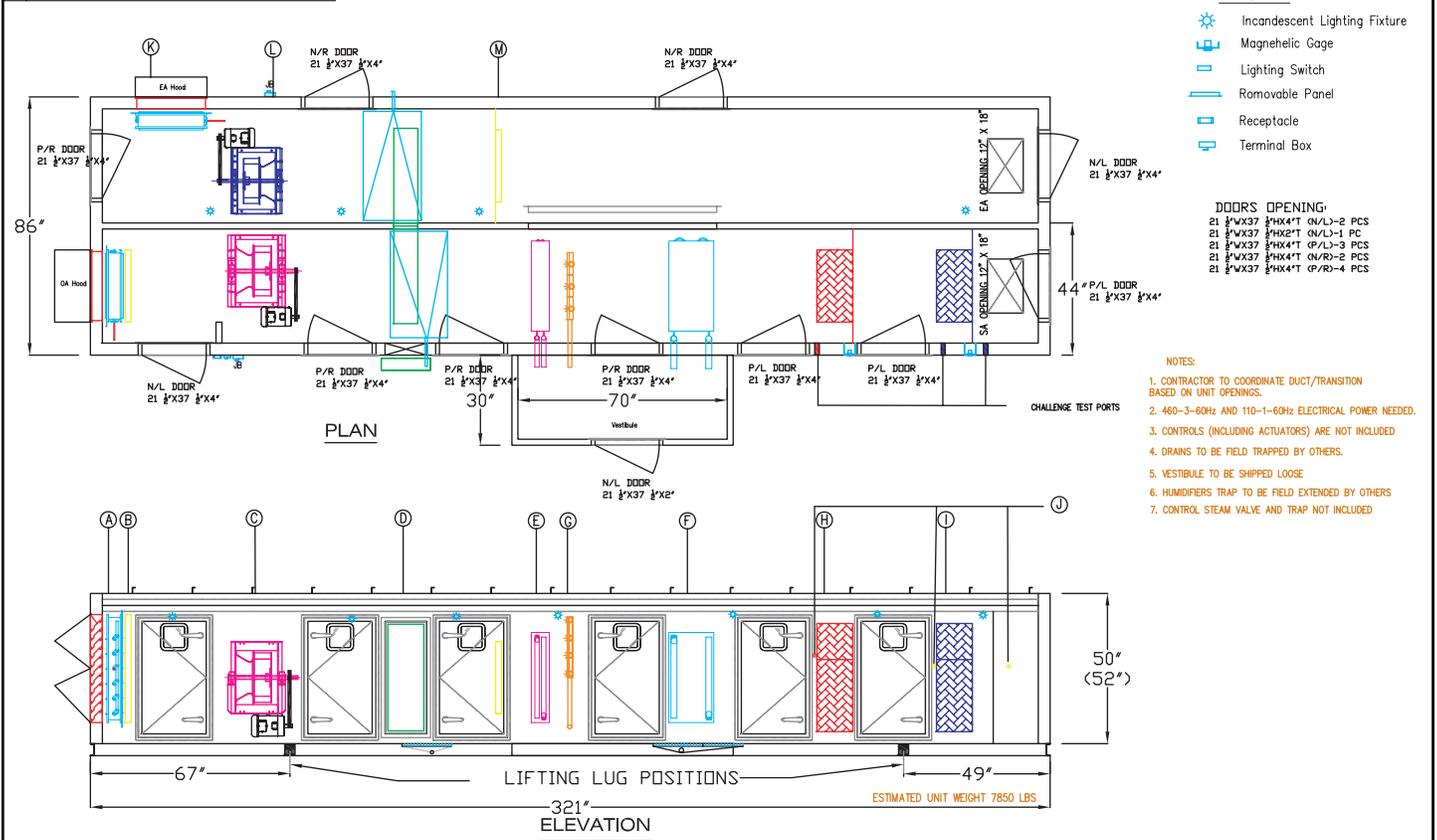
CLIENT
Carl Vinson VA
Medical Centre
Dublin, GA

REPRESENTATIVE
EcoTech Consultants
Atlanta, GA

DATE SHIPPED
November 23
2007



OUTER CASING	18 G SATIN COAT SOLID PAINTED	BASE	C4 CHANNEL - EPOXY PAINTED	PANEL	4" THICK, 3.5 lbs/ft insulation (Vestibule 2")	SUBMITTAL DRAWING	
INNER CASING	20 G G90 SOLID	UNDERSIDE FLOOR	20G G90 SOLID, 3"-3/4 insulation	FLOOR	14G STEEL CHECKER PLATE		
(A)	OA LOUVER & DAMPER 24" X 36"	(B)	2" DEPTH 24" X 36" 30/30 PREFILTER BANK	(C)	TWIN CITY PLENUM FAN, MODEL EPQ 165 ARR. 3 CL II, 2120 CFM, 5.75" TSP 5 HP MOTOR	(D)	HEAT PIPE FL32.5" X FH32.5"
(E)	HEATING WATER COIL 27" FH X 27" FL	(F)	COOLING WATER COIL 27" FH X 27" FL	(G)	HUMIDIFIERS PANEL ULTRA SORB LV 69 PPH	(H)	12" DEPTH 24" X 36" RIGA FLO MERV 14 FILTER BANK
(I)	12" DEPTH 24" X 36" HEPA 99.99% FILTER BANK	(J)	DOP TEST PORTS	(K)	EA LOUVER & DAMPER 24" X 18"	(L)	TWIN CITY PLENUM FAN EPQ 150 ARR. 3 CL I 2120 CFM, 2" TSP MOTOR 2 HP
(M)	2" DEPTH 24" X 36" 30/30 PREFILTER BANK						



PROJECT	CARL VINSON VAMC PHARMACY UPGRADE	CAPACITY	2,120 CFM	A/C	-1	Dwg.#	2001-1
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**SUBSTITUTION
REQUEST**
(During the Bidding Phase)

Project: PNNL Office Building Substitution Request Number: _____
From: Jennifer Fergen - Proctor Sales, Inc.
To: MMEC Architecture Date: November 4, 2015
A/E Project Number: _____
Re: Venturis Contract For: _____

Specification Title: Hydronic Piping Specialties Description: Venturis
Section: 232115 Page: 4 Article/Paragraph: 2.03 Hydronic Specialties

Proposed Substitution: Griswold Quickset
Manufacturer: Griswold Controls Address: 2803 Barranca Parkway, Irvine, CA Phone: 949-559-6000
Trade Name: _____ Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

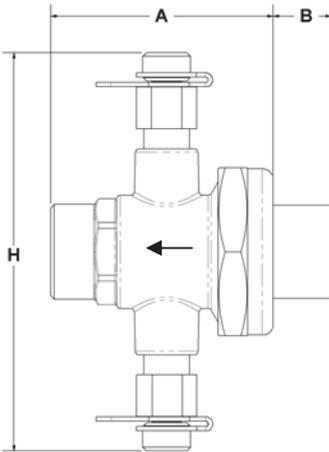
- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Jennifer Fergen
Signed by: Jennifer Fergen
Firm: Proctor Sales, Inc.
Address: 204 S Koren Road, Suite 600, Spokane Valley, WA 99212
Telephone: (509) 534-8101

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: Jeff Scott Date: 11-10-15
Supporting Data Attached: Drawings Product Data Samples Tests Reports _____



SPECIFICATIONS:

- PSI / Temperature Rating: 600 wog
- Body Material: Forged Brass ASTM B283-06
- Flow Element: **Brass Venturi**
- End Connections: Brass – NPT or Sweat
- Union Seal: EPDM O-ring
- Body Tappings¹: Two Combination P/T Test Valve and Manual Air Vent (CPTA)
- Assembly: Valve comes fully assembled
- Installation: Straight sections of piping upstream and downstream of the Metering Station aren't necessary for proper pressure measurement.
- Options: Insulation Option

FLOW RATES (+/-3%)

OUTLET SIZE	MODEL NO.	FLOW GPM ⁽²⁾ AT 4 FT/SEC	Cv ⁽³⁾	GPM RANGE FOR 5"-100" W.C. ΔP (SET W/100" GAUGE)	GPM RANGE FOR 5"-300" W.C. ΔP (SET W/300" GAUGE)
1/2", 3/4"	MS0	3.8	0.39 ⁴	0.15 – 0.67	0.15 – 1.16
			1.1	0.3 – 1.4	0.3 – 2.4
			2.5	0.6 – 2.8	0.6 – 4.6
			4.2	1.2 – 5.4	1.2 – 9.4
1"	MS1	10.8	1.8	0.6 – 2.8	0.6 – 5.0
			3.8	1.3 – 5.6	1.3 – 9.7
			7.6	2.6 – 11.5	2.6 – 19.9
			12.2	3.9 – 17.3	3.9 – 30.0
1-1/4"	MS2	18.7	10.0	3.4 – 15.0	3.4 – 26.2
1-1/2"	MS2	25.4	21.8	7.2 – 32.3	7.2 – 55.9
			54.7	13.9 – 62.0	13.9 – 107.4
2"	MS3	41.9	105.2	21.6 – 96.5	21.6 – 167.1

DIMENSIONS & WEIGHTS (NOMINAL)

SIZE	A - FIXED END CONNECTION		B - UNION END CONNECTION ⁵						H OVERALL HEIGHT	WEIGHT (LBS.)		
	FNPT	SWT	FNPT		MNPT		SWT					
1/2"	2.0	1.9	1/2":1.0	3/4":N/A ⁶	1/2":1.0	3/4":1.2	3/8",1/2":0.8		3/4":1.1	3.0	0.5	
3/4"	1.9	1.9					1/2":0.7					1":1.3
1"	2.2	2.2	1/2",3/4":1.0	1":N/A ⁶	1/2"-3/4":1.0	1":1.4	3/8",3/4":1.0	1/2":0.7	1":1.3	3.8	1.4	
1-1/4"	2.6	2.6	1",1-1/4",1-1/2":1.7		1",1-1/4",1-1/2":1.7 ⁷		1",1-1/4":1.7		1-1/2":1.4		4.5	2.9
1-1/2"	2.8	2.8										
2"	2.8	2.8	1-1/4",1-1/2":1.6	2": N/A ⁶	1",1-1/4":1.8	1-1/2", 2":1.6	1-1/4",2":1.6		1-1/2":1.7	5.2	3.9	

NOTES

- ¹ Body Tappings for accessories are a leak proof metal to metal seal and do not require pipe dope or tape. Tape or dope should not be used.
- ² The generally accepted upper limit as recommended by ASHRAE to prevent pipe noise is 4 ft/sec.
- ³ Cv's are used to calculate the permanent pressure drop. $PSID=(Flow/Cv)^2$. Use the Flow Curve for flow measurement.
- ⁴ Cv of .39 is not available in the 3/4" size.
- ⁵ For overall length, add union end connection length to body length.
- ⁶ Tailpiece is not available for this size. Male tailpiece used with coupling.
- ⁷ 1-1/4"-1-1/2" valves can also take 1/2"-3/4" MNPT tailpieces.

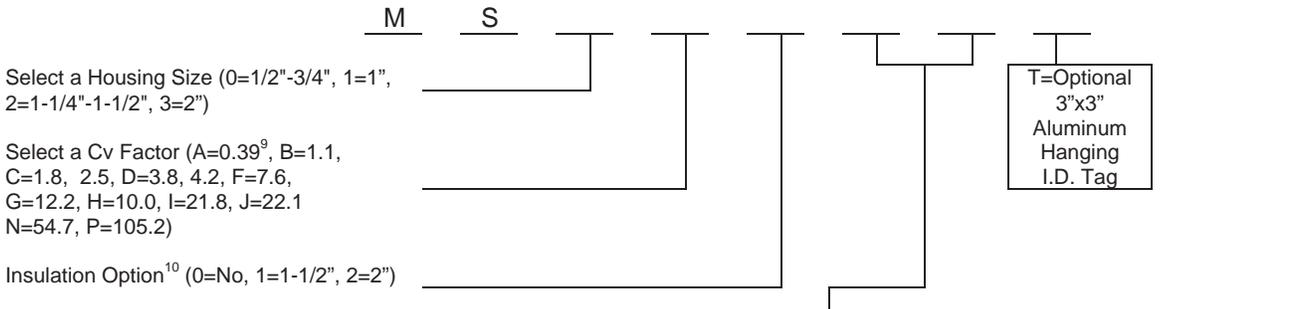
Replaces form F-4204

This specification © 2012 Griswold Controls

2803 Barranca Parkway, Irvine, CA 92606
 (949) 559-6000 Fax (949) 559-6088
 www.GriswoldControls.com



MODEL NUMBER SELECTION⁸



Valve	FIXED END OR UNION END ¹¹ (No Union Tailpiece=Z)		UNION END ONLY ¹¹
	Female Threaded	Female Sweat	Male Threaded
MS0	1/2"=E, 3/4"=F ^b	3/8"=K ¹² , 1/2"=L, 3/4"=M	1/2"=H, 3/4"=I
MS1	1/2"=E ¹² , 3/4"=F ¹² , 1"=G ⁶	3/8"=K ¹² , 1/2"=L ¹² , 3/4"=M ¹² , 1"=N	1/2"=H, 3/4"=I, 1"=J
MS2	1"=G ¹² , 1-1/4"=P, 1-1/2"=Q	1"=N ¹² , 1-1/4"=K, 1-1/2"=W	1/2"=H, 3/4"=I, 1"=J, 1-1/4"=S, 1-1/2"=T
MS3	1-1/4"=P ¹² , 1-1/2"=Q ¹² , 2"=R ⁶	1-1/4"=K ¹² , 1-1/2"=W ¹² , 2"=Y	1-1/4"=S, 1-1/2"=T, 2"=U

NOTES

⁸ Model no. and flow rate are indicated on label affixed to body.

⁹ Cv of .39 is not available in the 3/4" size.

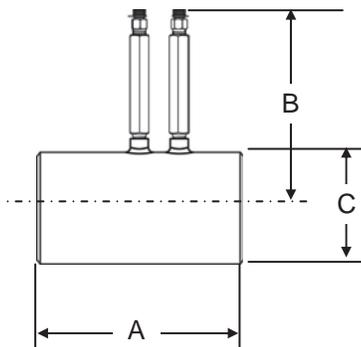
¹⁰ Insulation Option includes Accessory extensions.

¹¹ Select the Fixed End First and the Union End Second.

¹² Fixed end not available for this size. Union tailpiece only.

Replaces form F-4204

Weld End Metering Station (2-1/2" - 18")



SPECIFICATIONS:

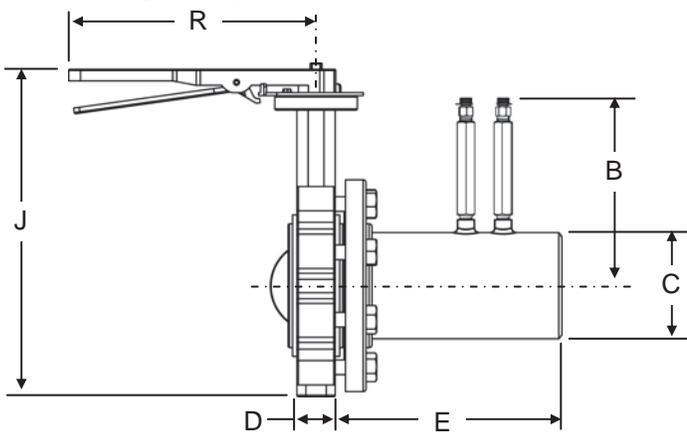
PSI/Temperature Rating
 Metering Station:
 QuickSet:

Low Loss Venturi:

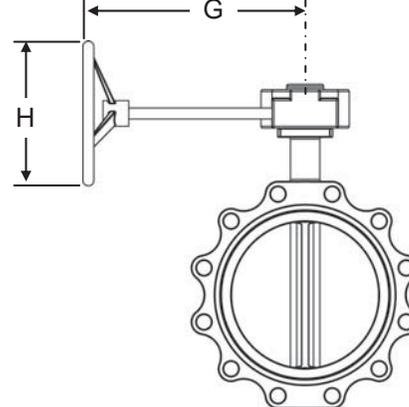
Body Material:
 Butterfly Valve¹:
 End Connections:
 Body Tappings:
 Assembly:
 Installation:

400 PSI/250° F
 175 PSI (14"-18": 150 PSI) /250° F
 Carbon Steel with Piezo-Ring to average low signal pickup.
 Carbon Steel SA-53 Grade B.
 Bronze disk, 400 series S.S. stem.
 Beveled for welding
 1/4" NPT with Brass P/T test valves
 Valve comes fully assembled.
 No straight-run is necessary for normal operation. Consult chart (F-4439) for exact Flow Constant and Permanent Pressure Drop calculations.

Weld End QuickSet with Handle Butterfly Valve (2-1/2"-6")



Gear/Hand Wheel Butterfly (8"-18")



FLOW RATES (+/-1%²)

LINE SIZE	MODEL NO.	Cv Metering Station ³	Cv Quickset ³	GPM RANGE FOR 5"-100" ⁴ W.C. ΔP (SET W/100" GAUGE)	GPM RANGE FOR 5"-300" W.C. ΔP (SET W/300" GAUGE)
2-1/2"	3QWM_	171	135	19 - 87	19 - 151
3"	3QWN_	269	201	32 - 147	32 - 255
4"	3QWP_	580	417	58 - 260	58 - 451
5"	3QWQ_	800	630	80 - 372	80 - 645
6"	3QWR_	1250	980	140 - 624	140 - 1075
8"	3QWS_	2100	1745	260 - 1180	260 - 2045
10"	3QWT_	4000	3201	375 - 1610	375 - 2790
12"	3QWU_	5700	4690	600 - 2790	600 - 4820
14"	3QWV_	7300	6225	775 - 3420	775 - 5940
16"	3QWW_	9600	8283	1250 - 5525	1250 - 9575
18"	3QWX_	14500	12057	1650 - 7405	1650 - 12830

NOTES

- ¹ Butterfly Valve is standard on QuickSet only.
- ² Accuracy is based on Griswold's manufacturing tolerances. Accuracy for determining flowrate will be affected by the accuracy of the meter used to set the valve.
- ³ Cv's are used to calculate permanent pressure drop. $PSID=(Flow/Cv)^2$. Consult chart F-4439 for flow measurement.
- ⁴ Not all gages/meters can accurately show a 5" signal. Readability is dependent on quality of the meter. Digital gages can read below 1".

Replaces form F-4406C

This specification © 2011 Griswold Controls

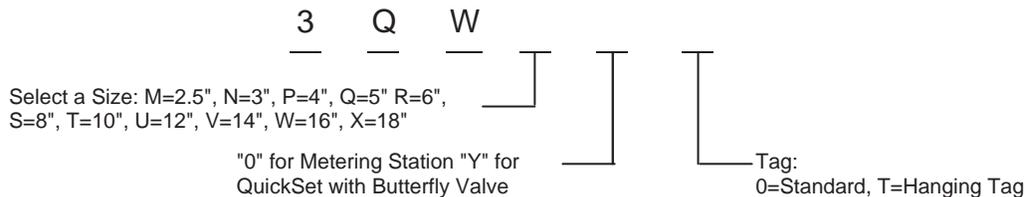
DIMENSIONS & WEIGHTS FOR METERING STATION (NOMINAL)

LINE SIZE	A	B	C	WEIGHT (LBS.)
2-1/2"	5.8	7.3	2.9	3.1
3"	6.3	7.6	3.5	4.4
4"	7.9	8.0	4.5	8.0
5"	9.8	8.6	5.6	13.4
6"	10.3	9.1	6.6	18.2
8"	12.3	10.1	8.6	32.7
10"	15.5	11.2	10.8	58.0
12"	16.3	12.2	12.8	79.7
14"	16.5	12.8	14.0	95.1
16"	17.5	13.8	16.0	111.7
18"	16.8	14.8	18.0	121.0

DIMENSIONS & WEIGHTS FOR QUICKSET (NOMINAL)

LINE SIZE	B	C	D	E	G	H	J	R HANDLE	WEIGHT (LBS.)	
									W/ HANDLE	W/GEAR WHEEL
2-1/2"	7.3	2.9	1.8	6.0	N/A	N/A	11.6	10.5	17.5	N/A
3"	7.6	3.5	1.8	6.5	N/A	N/A	12.1	10.5	20.7	N/A
4"	8.0	4.5	2.0	8.1	N/A	N/A	13.6	10.5	31.3	N/A
5"	8.6	5.6	2.1	10.0	N/A	N/A	14.6	10.5	40.7	N/A
6"	9.1	6.6	2.3	11.5	N/A	N/A	15.6	10.5	53.6	N/A
8"	10.1	8.6	2.4	15.0	9.5	12.0	18.9	N/A	N/A	99.6
10"	11.2	10.8	2.6	18.0	9.5	12.0	21.3	N/A	N/A	151.0
12"	12.2	12.8	3.0	21.5	9.5	12.0	24.6	N/A	N/A	224.9
14"	12.8	14.0	3.0	24.0	9.5	12.0	26.8	N/A	N/A	303.5
16"	13.8	16.0	4.0	27.5	15.0	16.0	30.0	N/A	N/A	392.3
18"	14.8	18.0	4.5	31.8	15.0	16.0	31.6	N/A	N/A	511.5

MODEL NUMBER SELECTION⁵



NOTES

⁵ Model no. and flow rate are indicated on label affixed to body.
Replaces form F-4406C





**SUBSTITUTION
REQUEST**
(During the Bidding Phase)

Project: Pacific Northwest National Laboratory Substitution Request Number: _____
3860- Building Construction

From: Stacey Henderson
11/10/2015

To: Pacific Northwest National Laboratory Date: _____
Garrett Hyatt- garrett.hyatt@pnnl.gov

Re: Metal Wall Panel Substitution Request A/E Project Number: _____

Contract For: _____

Specification Title: Metal Wall Panels Description: AEP Span Flush Panel- 12" coverage, 22ga
Section: 074213 Page: 2 Article/Paragraph: 2.01.A

Proposed Substitution: Metal Sales "Soffit" panel- 12" coverage, 1" height, 22ga, Continuous Factory Applied Sealant
Manufacturer: Metal Sales Mfg. Address: 2727 E. Trent Phone: 509-828-4757
Trade Name: Spokane WA 99202 Model No.: _____

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Stacey Henderson

Signed by: Stacey Henderson
Firm: Metal Sales Manufacturing Corporation
Address: 2727 E. Trent
Spokane, WA 99202

Telephone: 509-828-4757

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: EREG TURPEN Date: 10 NOV 15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

END OF SECTION 012500

COMPARISON CHART

AEP SPAN

METAL SALES

Flush Panel-12

Soffit Panel

12" coverage

12" coverage

7/8"

1" deep

Concealed Fastener

Concealed Fastener

Factory Applied Sealant

Factory Applied Sealant

24 gauge zincalume

24 Galvalume (Optional Vented Panels) and .032 Aluminum (Optional Perforated panels in Linen White)

1.0 mil Polyvinylidene Fluoride

1.0 mil Polyvinylidene Fluoride
"Color as Specified"

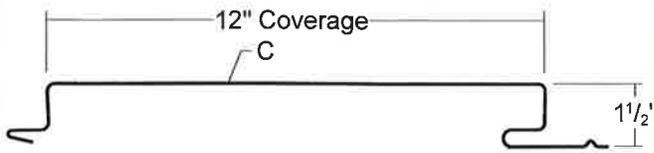
20 year Paint Finish Warranty

**45 year Integrity Paint Finish
Warranty (45 year Integrity,
35 year Chalk/Fade)**

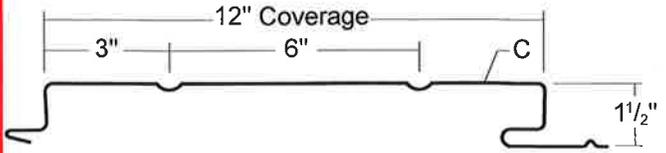
FLUSH FACE SERIES-12

CONDENSED
TECHNICAL
REFERENCE

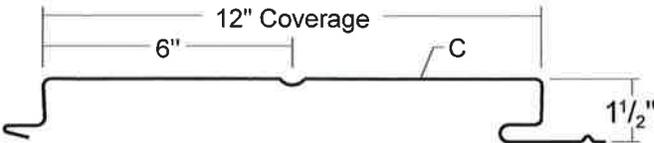
TLC-1 PANEL



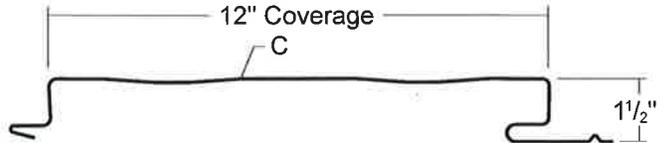
TLC-2 PANEL



TLC-3 PANEL



TLC-4 PANEL



ARCHITECTURAL
COMMERCIAL
INDUSTRIAL
PANEL

CONCEALED
FASTENED

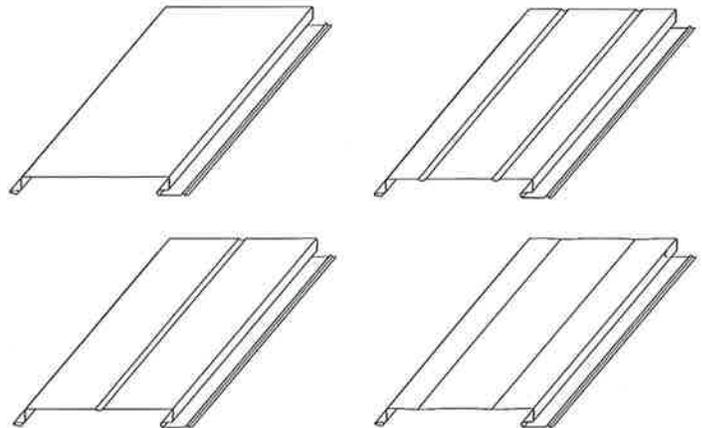
12"
COVERAGE

SOFFIT, FASCIA,
WALL AND LINER
PANEL

OPEN FRAMING OR
SOLID SUBSTRATE

PANEL OVERVIEW

- ▶ Finish: Standard: PVDF (Kynar 500®)
Optional: multi-pass Kynar 500®, Marblique, Plastisol, Polyester and MS Colorfast45® (SMP)
- ▶ Corrosion Protection: AZ50 per ASTM A 792 for painted Galvalume®
G90 per ASTM A 653 for Galvanized
- ▶ Gauges: 24 ga, 22 ga and 20 ga
- ▶ 12" panel coverage, 1 1/2" panel height
- ▶ Flush face, concealed fastened panel system
- ▶ Roll-Formed Panels
- ▶ Panel Length: 5' minimum, 40' maximum
- ▶ Optional material availability: Stainless Steel, Copper and Aluminum
- ▶ Use on single-skin or field-assembled wall systems
- ▶ Panels can be installed horizontally or vertically and are interchangeable for accent effects
- ▶ Custom capabilities include:



TESTING AND APPROVALS

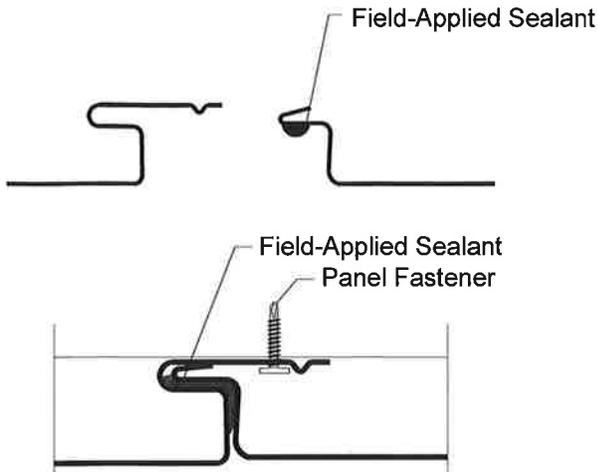
- ▶ ASTM E 283 Air Leakage
- ▶ ASTM E 331 Water Penetration
- ▶ ASTM E 330 Uniform Static Air Pressure Difference
- ▶ ASTM E 1592 Load Test

ms metal sales
manufacturing corporation

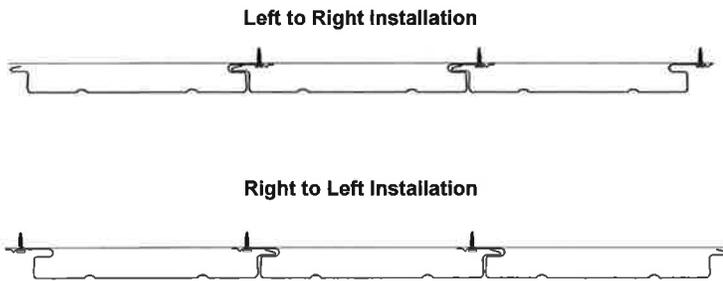
FLUSH FACE SERIES-12

CONDENSED TECHNICAL REFERENCE

FASTENING PATTERN



DIRECTIONAL DETAILS



FASTENING INFORMATION

Overdriven fasteners will cause panel distortions.

Fasteners should extend 1/2" or more past the inside face of the support material.

Thick Panels (ex. 18 ga) or supports (ex. 1/2" steel) may require predrilling of holes for screws.

Panel Fasteners:

Attaching to Wood:

#10-12 Pancake Head Wood Screw

Attaching to Steel:

<18 ga: 1/4"-13 Deck Screw

>=18 ga, <=12 ga: #10-16 Pancake Head Driller

Trim Fasteners:

1/4"-14 x 7/8" XL Stitch Screw

1/8" x 3/16" Pop Rivet

Field-Applied Sealant:

SM7108

SECTION PROPERTIES

Ga	Width in	Yield ksi	Weight psf	Top In Compression		Bottom In Compression	
				Ixx in ⁴ /ft	Sxx in ³ /ft	Ixx in ⁴ /ft	Sxx in ³ /ft
				24	12	50	1.48	0.0609	0.0616	0.1316	0.1121
22	12	50	1.93	0.0880	0.0923	0.1840	0.1592
20	12	33	2.35	0.1260	0.1421	0.2460	0.2177

ALLOWABLE UNIFORM LOADS, psf For various fastener spacings

Inward Load						Outward Load					
2'	3'	4'	5'	6'	8'	2'	3'	4'	5'	6'	8'
50	45	39	34	28	17	80	71	62	53	43	25
63	56	50	44	38	25	88	78	68	59	49	30
63	56	50	44	38	25	88	78	68	59	49	30

- Theoretical section properties have been calculated per AISI 2010 'North American Specification for the Design of Cold-Formed Steel Structural Members'. Ixx and Sxx are effective section properties for deflection and bending.
- Allowable loads are calculated in accordance with AISI 2010 specifications considering bending, shear, combined bending and shear, deflection and ASTM E 1592 testing of 24 and 22 ga panels supported by 16 ga girts. Allowable loads consider the 3 or more equal spans condition. Panel weight is not considered.
- Deflection consideration is limited by a maximum deflection ratio of L/180 of span.
- Allowable loads do not include a 1/3 stress increase for wind.
- SM7108 adhesive must be field-applied in the tongue-in-groove engagement mechanism.



Anchorage, AK 866.640.7663
 Bay City, MI 888.777.7640
 Deer Lake, PA 800.544.2577
 Denver, CO 800.289.7663
 Detroit Lakes, MN 888.594.1394
 Fontana, CA 800.782.7953
 Fort Smith, AR 877.452.3915

Independence, MO 800.747.0012
 Jacksonville, FL 800.394.4419
 Jefferson, OH 800.321.5833
 Mocksville, NC 800.228.6119
 Nashville, TN 800.251.8508
 Rock Island, IL 800.747.1206
 Rogers, MN 800.328.9316

Seattle, WA 800.431.3470
 Sellersburg, IN 800.999.7777
 Sioux Falls, SD 888.902.8320
 Spokane, WA 800.572.6565
 Temple, TX 800.543.4415
 Woodland, CA 800.759.6019

metalsales.us.com



**SUBSTITUTION
REQUEST
(During the Bidding Phase)**

Project: 3860 PNNL Office Building Construction Substitution Request Number: _____
 From: Synergy Sales NW, LLC (Tom Lister)
 To: Battelle (Garrett Hyatt garrett.hyatt@pnnl.gov) Date: 11/9/2015
MMEC Architecture (Doug Mitchell doug@mmearchitecture.com) A/E Project Number: S710908 (IFB #316164)
 Re: Division 22 Substitution Request for 3860 Building Contract For: Pacific Northwest National Laboratory (Battelle)

Specification Title: Plumbing Fixtures Description: P-4 & P-5 Faucet Chicago 116.112.AB.1
 Section: 22 4000 Page: 3 Article/Paragraph: 2.02.A.1 Lavatory Sensor Faucets

Proposed Substitution: DEMD-112LF with 069704A transformer, 060974A Converter & 061168A Connector Kit
 Manufacturer: Delta Address: 55 E 11th, Indianapolis IN 46280 Phone: 800-345-3358
 Trade Name: Delta Commercial Model No.: DEMD-112LF

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation. **See Attached**

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Tom Lister

Signed by: _____
 Firm: Synergy Sales NW, LLC
 Address: 12835 Bel-Red Rd., Suite 212
Bellevue WA, 98005

Telephone: 425-502-7944 (office) 971-274-2230 (Direct)

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: _____ Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

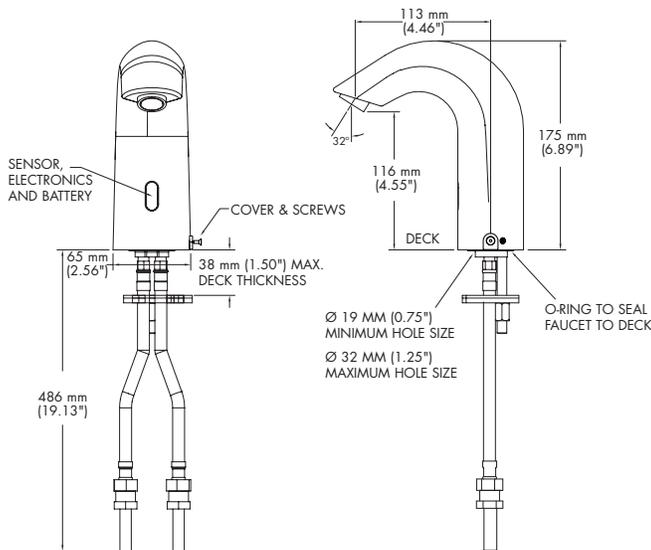
DEMD Series Electronic Lavatory Faucets (Infrared)

HDF[®]
COMMERCIAL



DEMD-112LF (BATTERY OPERATED WITH TECHNICIAN MIXER)

Note: Does not have cover plate. Would require American Standard 0490.156 Rondalyn lavatory with single hole in lieu of 0491.019 4" center Rondalyn lavatory



HARDWARE CONVERSION OF DEMD-112LF

Requires **SEPARATE** order of either:

- (A)** One 060958A DEMD plug in power supply, output 9VDC
PLUS One 061168A connector kit

- (B)** One 060704A hardwire 20VA transformer (120VAC to 24VAC)
PLUS One 060974A DEMD converter (24VAC to 9VDC)
PLUS One 061168A connector kit

SPECIFICATION: (example)

DEMD-112LF

- Deck mount electronic lavatory faucet with technician's mixer to adjust temperature
- Chrome
- Sensor detects user's hand to activate water flow
- One 9V lithium battery inside spout (included)
- Adjustable maximum run time and optional Remote Control below
- Above deck battery and electronics
- Red light indicator blinks when battery is low
- Vandal resistant (wrench flat)
- 0.5 gpm (1.9 L/min) spray outlet

OPERATION

Sensing Range:

- Factory set to 8.0" ± 1.5" (200 mm ± 40 mm)
- Adjustable from 3.15" to 11.8" (80 mm to 300 mm) with optional remote control

Maximum Run Time:

- 90 seconds, adjustable with remote control

OPTIONAL ACCESSORIES (Order Separately)

060967A

- Remote Control – allows adjustment of sensor range, maximum run time, delayed close time, temporary shutoff for cleaning and factory settings reset

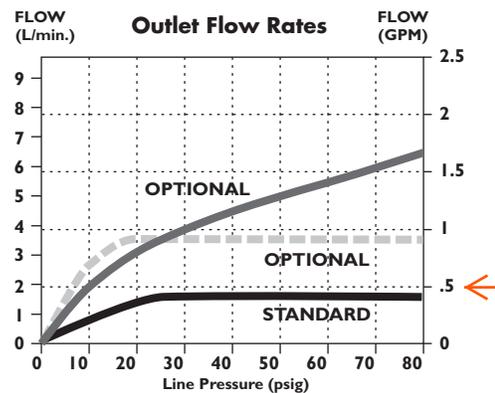
060961A

- 1.0 gpm (3.8 L/min) aerator

061118A

- 1.5 gpm (5.7 L/min) Careguard® laminar outlet

FLOW RATE vs PRESSURE



Approvals:

- IAPMO certified
- Complies to ASME A112.18.1/CSA B125.1
- Indicates compliance to ICC/ANSI A117.1
- Verified compliant with 0.25% weighted average Pb content regulations

(Contact Delta Representative for State and/or Local Approvals.)

Note: Measurements may vary ± 6mm (0.25")

Delta reserves the right (1) to make changes in specifications and materials, and (2) to change or discontinue models, both without notice or obligation. Dimensions are for reference only. See current full-line price book or www.specselect.com for finish options and product availability.

Refer to www.specselect.com for individual models. Note: Use this page as a product submittal sheet.



**SUBSTITUTION
REQUEST
(During the Bidding Phase)**

Project: 3860 PNNL Office Building Construction Substitution Request Number: _____
 From: Synergy Sales NW, LLC (Tom Lister)
 To: Battelle (Garrett Hyatt garrett.hyatt@pnnl.gov) Date: 11/9/2015
MMEC Architecture (Doug Mitchell doug@mmearchitecture.com) A/E Project Number: S710908 (IFB #316164)
 Re: Division 22 Substitution Request for 3860 Building Contract For: Pacific Northwest National Laboratory (Battelle)

Specification Title: Plumbing Fixtures Description: P-8 Faucet Chicago 897-CP
 Section: 22 4000 Page: 3 Article/Paragraph: 2.01.A.1 Sink Faucets

Proposed Substitution: Delta 28C2383 with optional 28T910 mop hanger and 28T911 hose and hanger
 Manufacturer: Delta Address: 55 E 11th, Indianapolis IN 46280 Phone: 800-345-3358
 Trade Name: Delta Commercial Model No.: 28C2383

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Tom Lister
 Signed by: _____
 Firm: Synergy Sales NW, LLC
 Address: 12835 Bel-Red Rd., Suite 212
Bellevue WA, 98005
 Telephone: 425-502-7944 (office) 971-274-2230 (Direct)

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: Jeff Scott Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

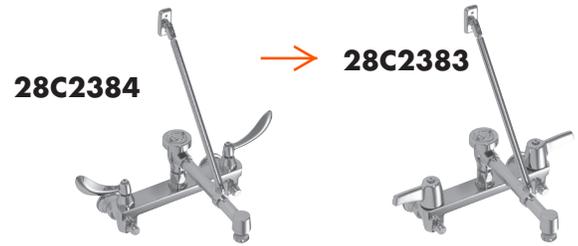
Wallmount Service Sink Faucets Rigid Spout

TECK®
COMMERCIAL

DELTA®

Specification: (example)

- **HEAVY-DUTY CAST BRASS** two handle wallmount service sink faucet
 - 203mm (8") centers, polished chrome plated finish
 - Integral check stops
 - **HEAVY DUTY 1/2" IPS BRASS PIPE** rigid pail hook spout
 - ADA compliant color indexed metal lever or blade handles with vandal resistant screws
 - **CER-TECK®** 1/4 turn ceramic structures
- and ... with ... (add spout/brace required)
 with ... (add outlet/VB required)
 with ... (add handle required)
 with ... adjustable centers
 (add Suffix **AC** if required – See Back Page)



Engineer/Architect Approval

Model Specified: Chicago 897-CP

Approval:

Date:

DESCRIPTION	PRODUCT NO.			
Two Handle Wallmount With Integral Check Stops	28C2	3	8	3



SPOUT/BRACE		OUTLET/VB		HANDLE	
0	140mm (5 1/2") Plain Spout, Less Brace (1)	0		0	
1		1	Body Mounted Double-Check Vacuum Breaker, Hose Thread Outlet (2)	1	
2		2		2	
3	267mm (10 1/2") Spout with Adjustable Top/Bottom Brace (1)	3		3	76mm (3") Lever Blade Handles
4		4		4	102mm (4") Blade Handles, Sanitary Hoods
5		5		5	152mm (6") Wrist Handles, Sanitary Hoods
6		6	Spout End Vacuum Breaker, Hose Thread Outlet	6	
7		7		7	
8		8	Body Mounted Angle Vacuum Breaker, Hose Thread Outlet	8	
9	406mm (16") Spout with Bottom Fork Brace (1) (3)	9		9	

(1) Distance from wall to Spout Outlet based on #6 Outlet. (2) Recommended for applications with a shut-off valve after Spout Outlet.
 (3) AC Suffix **not** available with #9 Spout/Brace Option.

Flow Rates are at 60 PSI.
 Refer to www.specselect.com for individual models.
 Note: Use this page front and back as a product submittal sheet.



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Wallmount Service Sink Faucets Rigid Spout

Approvals:

- CSA certified
- Complies to ASME A112.18.1/CSA B125.1
- Handles No. 3, 4, and 5
Indicates compliance to ICC/ANSI A117.1

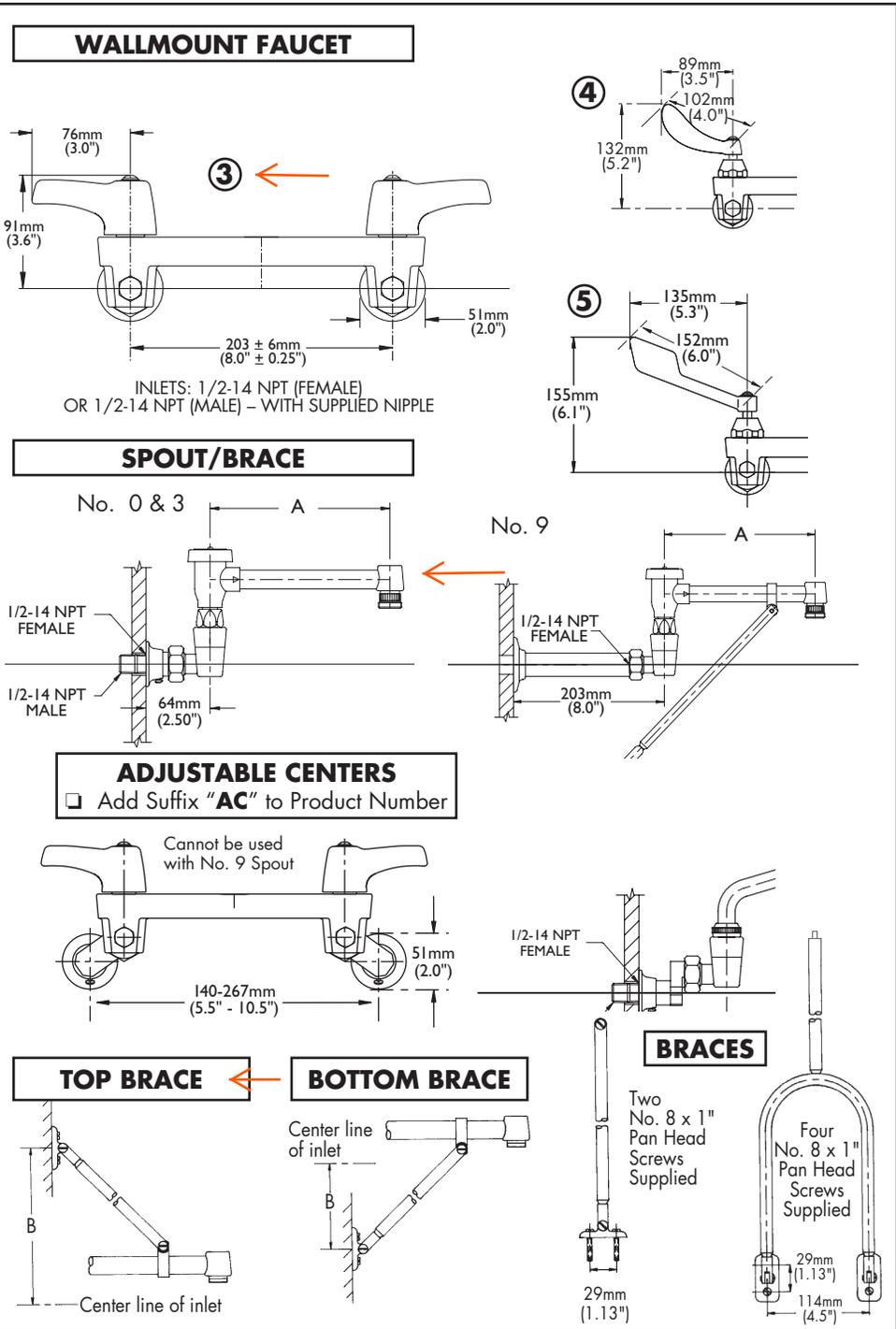
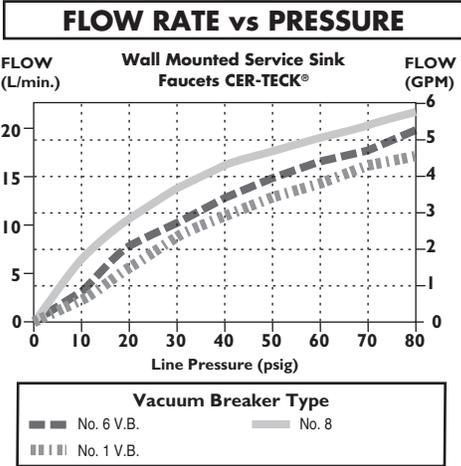
• OUTLET/VACUUM BREAKERS:

No. 1 Certified under CSA Standard B64.8 and meets ASSE 1035

No. 6 Certified under ASSE 1011 and CSA Standard B64.2

No. 8 Certified under ASSE 1001 and CSA Standard B64.1.1

(Contact Delta Representative for State and/or Local Approvals.)



Available Option for Field Conversion

28T911 ← **SEE BELOW**

Hose and Hanger
See DSP-28T9 for detailed specification

RIGID SPOUT ASSEMBLIES

Brace Rough-in dimensions based on #8 Outlet/VB

INLETS - 1/2" FIP/MIP on Spouts # 0 & 3

INLETS - 1/2" FIP on Spout # 9

SPOUT DIMENSIONS	Outlet/VB - "A"					
	#1		#6		#8	
	mm	in.	mm	in.	mm	in.
Spout/Brace #0 less -AC	104	4.1	81	3.2	86	3.4
Spout/Brace #3 less -AC	211	8.3	203	8.0	208	8.2
Spout/Brace #9 less -AC	211	8.3	203	8.0	208	8.2
Spout/Brace #0 with -AC	104	4.1	81	3.2	86	3.4
Spout/Brace #3 with -AC	211	8.3	203	8.0	208	8.2
Spout/Brace #9 with -AC	#9 spout/brace not available with -AC suffix					

Note: Measurements may vary ± 6mm (0.25")

Refer to www.specselect.com for individual models.

Note: Use this page front and back as a product submittal sheet.

Wallmount Service Sink Faucets

TECK[®]
COMMERCIAL

DELTA[®]

Specification: (example)

- **CAST BRASS** wallmount service sink faucet
- Two handle
- Integral stops
- **Rough chrome plated finish**
- Pail hook
- Inline vacuum breaker
- Hose-end spout
- Wall brace
- Color indexed metal cross handles

- 28T9**
203mm (8") centers
- 28T9-AC**
140mm (5.5") to 267mm (10.5") adjustable centers

28T9



Engineer/Architect Approval

Model Specified:

Approval:

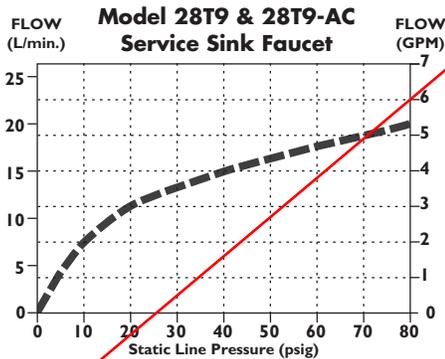
Date:



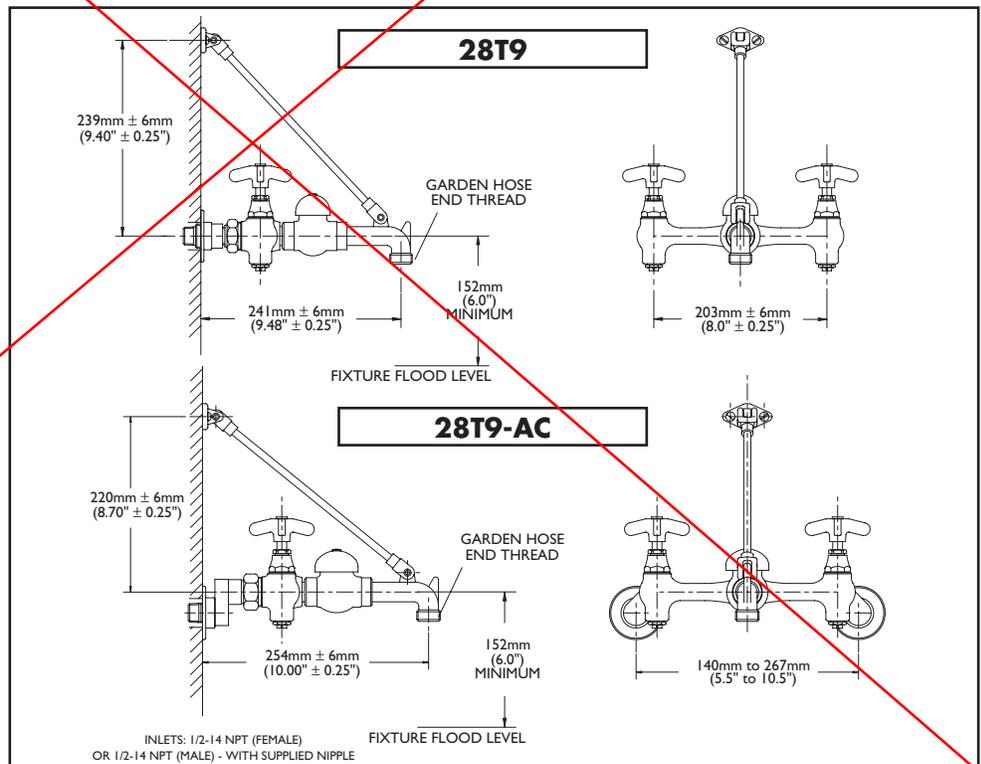
Approvals:

- CSA certified
- Complies to ASME A112.18.1/CSA B125.1 including integral back siphonage protection

Flow Rates vs PRESSURE



NOTE: Flow shown is through one side only, full open.



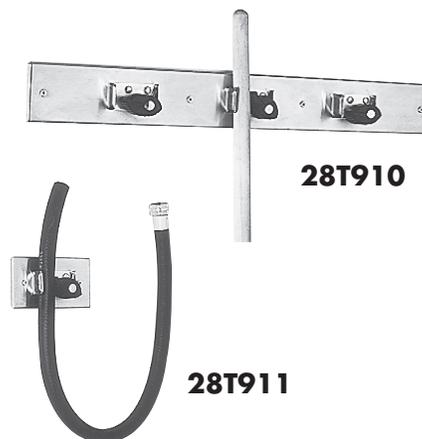
Hose and Mop Holder Accessories

28T910

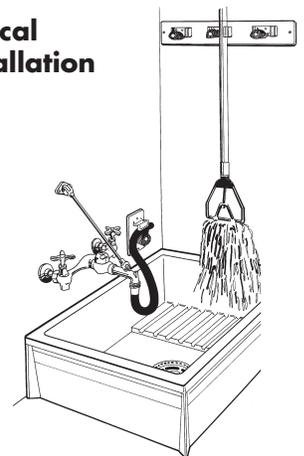
- Stainless steel mop hanger
- 76mm x 660mm (3" x 26")
- Three spring loaded rubber grip holders.

28T911

- Heavy duty 1219mm (48") long reinforced hose
- Brass coupling
- Stainless steel hanger bracket
- 76mm x 127mm (3" x 5") with rubber grip.



Typical Installation



Note: Measurements may vary ± 6mm (0.25")

Refer to www.specselect.com for individual models.

Note: Use this page as a product submittal sheet.



**SUBSTITUTION
REQUEST
(During the Bidding Phase)**

Project: 3860 PNNL Office Building Construction Substitution Request Number: _____
 From: Synergy Sales NW, LLC (Tom Lister)
 To: Battelle (Garrett Hyatt garrett.hyatt@pnnl.gov) Date: 11/9/2015
MMEC Architecture (Doug Mitchell doug@mmearchitecture.com) A/E Project Number: S710908 (IFB #316164)
 Re: Division 22 Substitution Request for 3860 Building Contract For: Pacific Northwest National Laboratory (Battelle)

Specification Title: Plumbing Fixtures Description: P-9 Faucet Chicago 200-GN8AE3-317XKAB
 Section: 22 4000 Page: 3 Article/Paragraph: 2.01.A.1 Sink Faucets

Proposed Substitution: Delta 27C1934-R7 Faucet with spray
 Manufacturer: Delta Address: 55 E 11th, Indianapolis IN 46280 Phone: 800-345-3358
 Trade Name: Delta Commercial Model No.: 27C1934-R7

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

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The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- Same warranty will be furnished for proposed substitution as for specified product.
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- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

Submitted by: Tom Lister
 Signed by: _____
 Firm: Synergy Sales NW, LLC
 Address: 12835 Bel-Red Rd., Suite 212
Bellevue WA, 98005
 Telephone: 425-502-7944 (office) 971-274-2230 (Direct)

A/E's REVIEW AND ACTION

- Substitution approved - Make submittals in accordance with Specification Section 01330.
- Substitution approved as noted - Make submittals in accordance with Specification Section 01330.
- Substitution rejected - Use specified materials.
- Substitution Request received too late - Use specified materials.

Signed by: Jeff Scott Date: 11-10-15

Supporting Data Attached: Drawings Product Data Samples Tests Reports _____

Below Deckmount Sink Faucets 8" Centers

TECK[®]
COMMERCIAL



Specification: (example)

- Below deckmount sink faucet
 - 203mm (8") centers, two handle
 - Polished chrome plated finish trim
 - **CAST BRASS** bodies
 - **BRASS** swing spout or 3/8" IPS **BRASS PIPE** Rigid/Swivel Gooseneck Spout
 - Metal hold-down package
 - Color indexed metal handles with vandal resistant screws
 - **CER-TECK[®]** 1/4 turn ceramic structures)
- and ... with ... Hose, Spray and Diverter (if applicable)
 with ... (add spout required)
 with ... (add outlet required)
 with ... (add handle required)
 with ... (add suffix **-LS** if required – See Back Page)
 with ... (add suffix **-TI** if required – See Back Page)

27C2144

27C2944



Engineer/Architect Approval

Model Specified: Chicago 200-GN8AE3-317XKAB

Approval:

Date:

DESCRIPTION	PRODUCT NO.			
WITH hose and spray	27C1	9	3	4
LESS hose and spray	27C2			

- R7



SPOUT		OUTLET		HANDLE	
0	<input type="checkbox"/>	0	<input type="checkbox"/>	0	<input type="checkbox"/>
1 203mm (8") Wallform (S2) Swing Spout (2) 	<input type="checkbox"/>	1	<input type="checkbox"/>	1	<input type="checkbox"/>
2 203mm (8") Tubular (S5) Swing Spout (2) 	<input type="checkbox"/>	2 Vandal Resistant 1.5 gpm (5.7 L/min.) Laminar with Agion [®] Antimicrobial 	<input type="checkbox"/>	2 102mm (4") Hooded Blade Handles (5) 	<input type="checkbox"/>
3	<input type="checkbox"/>	3 Vandal Resistant 1.5 gpm (5.7 L/min.) Flow Control Aerator 	<input checked="" type="checkbox"/>	3 76mm (3") Hooded Lever Handles (5) 	<input type="checkbox"/>
4	<input type="checkbox"/>	4 Standard 1.5 gpm (5.7 L/min.) Flow Control Aerator 	<input type="checkbox"/>	4 102mm (4") Blade Handles, Sanitary Hoods(5) 	<input checked="" type="checkbox"/>
5	<input type="checkbox"/>	5 Vandal Resistant Non-Aerating Spray Outlet 0.5 gpm (1.9 L/min.) 	<input type="checkbox"/>	5 152mm (6") Wrist Handles, Sanitary Hoods 	<input type="checkbox"/>
6	<input type="checkbox"/>	6	<input type="checkbox"/>	6	<input type="checkbox"/>
7	<input type="checkbox"/>	7 Smooth End, Laminar Flow Control in Base of Gooseneck Spout 1.0 gpm (3.8 L/min.) (3) 	<input type="checkbox"/>	7	<input type="checkbox"/>
8	<input type="checkbox"/>	8	<input type="checkbox"/>	8	<input type="checkbox"/>
9 Heavy Duty 152mm (6") Bend Rigid/Swivel (R4) Gooseneck Spout (1) (4) 	<input checked="" type="checkbox"/>	9	<input type="checkbox"/>	9	<input type="checkbox"/>

(1) Available **Optional Rigid/Swivel Spouts**. These spouts can ONLY be added to **SPOUT Option No. 9**. Note: Use this page front and back as a product submittal sheet. Flow Rates are at 60 PSI.
 (2) Available **Optional Swing Spouts**. These spouts can ONLY be added to **SPOUT Option No. 2**. Refer to www.specselect.com for individual models.
 (3) This outlet can ONLY be added to **SPOUT Option No. 9**. (4) 120° Limited Swing Spout available. Add Suffix **-LS**. (5) H/C Temperature Indicator Available. Add Suffix **-TI**.

Delta reserves the right (1) to make changes in specifications and materials, and (2) to change or discontinue models, both without notice or obligation. Dimensions are for reference only. See current full-line price book or www.specselect.com for finish options and product availability.



TECK[®]
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Below Deckmount Sink Faucets 8" Centers

Approvals:

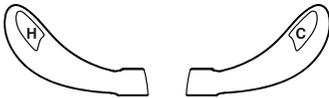
- CSA certified
- Complies to ASME A112.18.1/CSA B125.1
- Handles No. 2, 3, 4, and 5
Indicates compliance to ICC/ANSI A117.1
- Verified compliant with 0.25% weighted average Pb content regulations

(Contact Delta Representative for State and/or Local Approvals.)

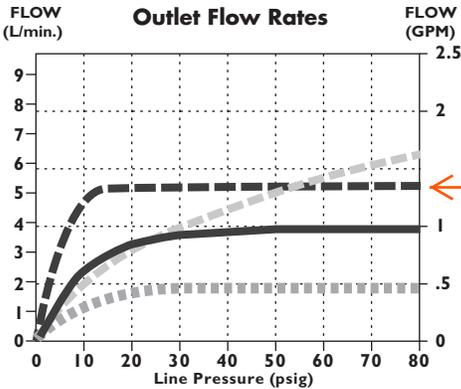
HANDLE TEMPERATURE INDICATORS

- ☐ Add suffix **"-TI"** to Product Number for handle temperature indicators "H" (red), "C" (blue).

Available on handle options 2, 3 or 4 only.



FLOW RATE vs PRESSURE



Spout Outlets

—	No. 3 & 4 Aerator	—	No. 2 Laminar Flow Outlet
—	No. 7 Flow Control	—	No. 5 Low Flow Outlet

OUTLET NO.	"D"	
	mm	in.
2	18	0.69
3	18	0.69
4	17	0.67
5	18	0.69

LIMITED SWING GOOSENECK

- ☐ Add suffix **"-LS"** to Product Number for 120° Limited Swing

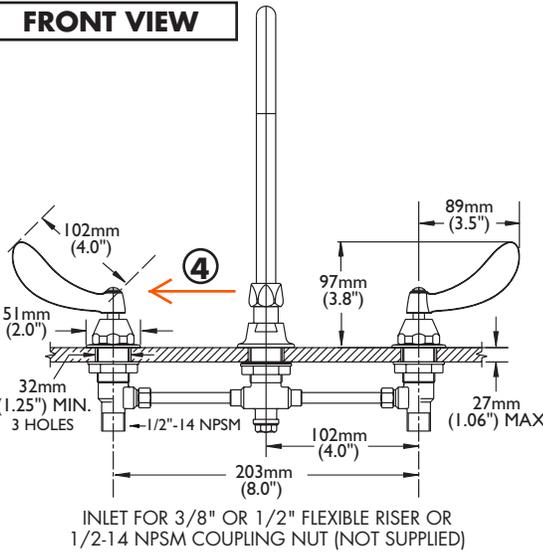
GOOSENECK SPOUT ASSEMBLIES

SPOUT/OUTLET	"A"		"C"		"L"	
	mm	in.	mm	in.	mm	in.
Gooseneck-Standard (R4) for outlets #2, 3, 4 & 5	152	6	124	4.9	146	5.8
Gooseneck-Standard (R4) for outlet #7	152	6	117	4.6	152	6.0

SWING SPOUT ASSEMBLIES

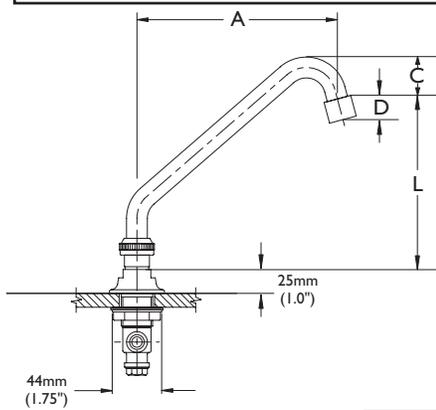
SPOUT NO.	SPOUT TYPE	"A"		"C"		"L"	
		mm	in.	mm	in.	mm	in.
1	8" Wallform Spout (S2)	206	8.1	15	0.6	130	5.1
2	8" Tubular Spout (S5)	185	7.3	41	1.6	147	5.8

FRONT VIEW



INLET FOR 3/8" OR 1/2" FLEXIBLE RISER OR 1/2-14 NPSM COUPLING NUT (NOT SUPPLIED)

SWING SPOUT



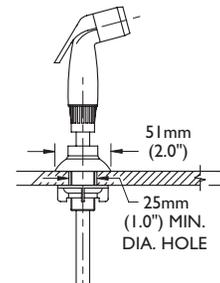
FOR OPTIONAL RIGID/SWIVEL & LIMITED SWING SPOUTS

See DSP-R/S for detailed specification

FOR OPTIONAL SWING SPOUTS

See DSP-S/S for detailed specification

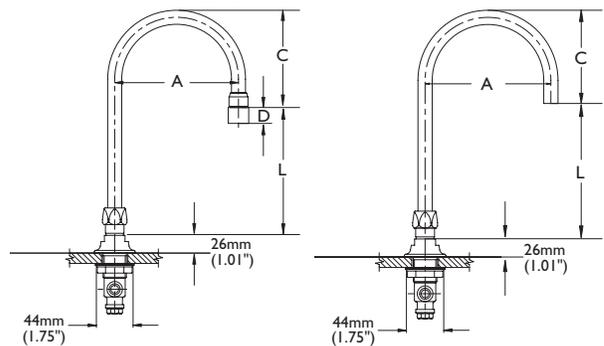
SPRAY



GOOSENECK SPOUT

Outlets #2, 3, 4 & 5

Outlet #7



SEE BELOW FOR R-7 SPOUT DETAILS

Note: Measurements may vary ± 6mm (0.25")

Refer to www.specselect.com for individual models.

Note: Use this page front and back as a product submittal sheet.



Sink Faucet Deckmount

8" deck WITH hose and spray - CER-TECK® ceramic structures

Model No: 27C1934-R7

COMPLIES WITH:

- CSA certified
- Complies to ASME A112.18.1/CSA B125.1
- Verified compliant with 0.25% weighted average Pb content regulations
- (Contact Delta Representative for State and/or Local Approvals)



SPECIFICATION:

- Below deckmount sink faucet
- 203 mm (8") centers, two handle
- Polished chrome plated finish
- Cast brass bodies
- Metal hold-down package
- CER-TECK® 1/4 turn ceramic structures
- 8" deck WITH hose and spray - CER-TECK® ceramic structures
- ● Spout: R7 - Gooseneck spout-9.0" spout reach -12.7" height(unmounted)- Standard rigid/swivel field installation unless LS Limited swing option selected-Vandal resistant.090" wall thickness
- Outlet#: 3 - Vandal Resistant Aerator Outlet- 1.5 GPM (5.7 L/min) Flow Rate at 60 psi- pressure compensating
- Handle#: 4 - 102 mm (4") Blade Handles- ADA Compliant-Sanitary Hoods- Metal-Color indexed-Vandal resistant screws

OPERATION:

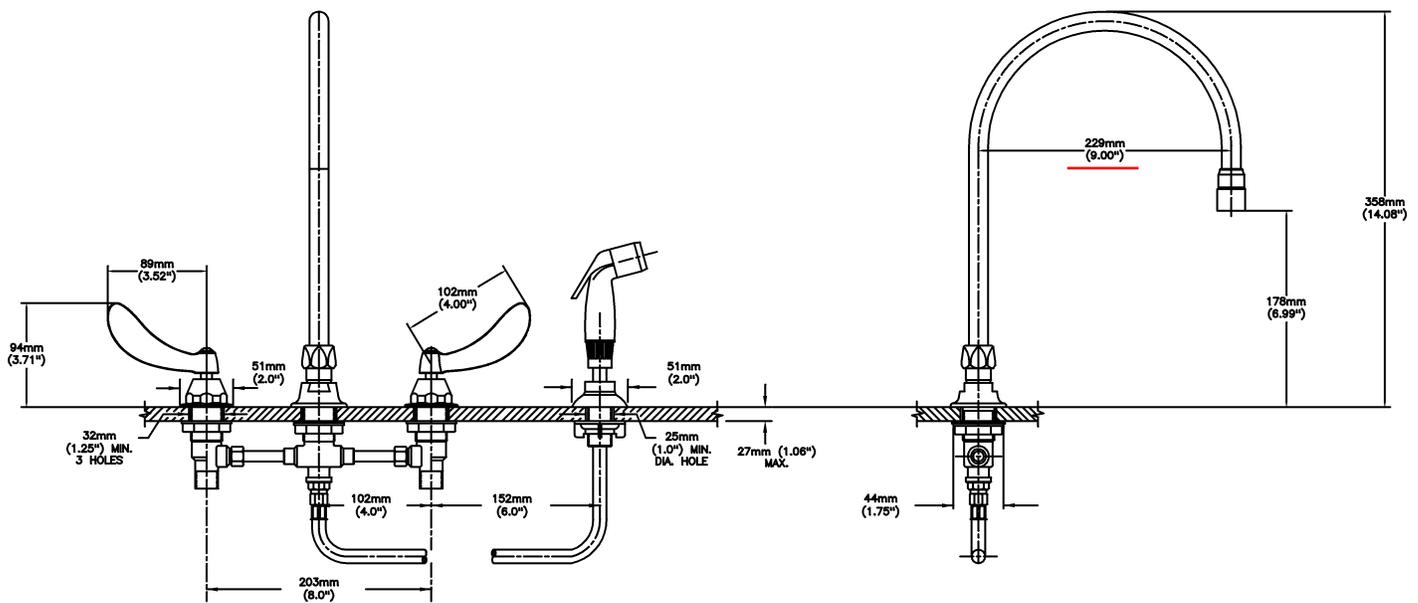
- Not Available

(Dimensional drawing on following page)

Delta reserves the right (1) to make changes to specifications and materials, and (2) to change or discontinue models, both without notice or obligation. Dimensions are for reference. Measurement may vary plus or minus 6mm(0.25"). Mounting locations are suggested only. Check with local codes for requirements in your area. This spec was produced September 17, 2015.

Delta Faucet Company - 55 East 111th St. - Indianapolis, Indiana, USA 46280 - (317) 848-1812
Delta Faucet Canada - 395 Matheson Blvd E - Mississauga, Ontario, Canada L4Z 2H2 - (905) 712-3030

Model No: 27C1934-R7



INLET FOR 3/8" OR 1/2" FLEXIBLE RISER
OR 1/2-14 NPSM COUPLING NUT (NOT SUPPLIED)

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