APPLICATION FOR HCAI SPECIAL SEISMIC CERTIFICATION PREAPPROVAL (OSP)

OFFICE USE ONLY

APPLICATION #: OSP-0222

HCAI Special Seismic Certification Preapproval (OSP)

Type: ☐ New ☒ Renewal

Manufacturer Information

Manufacturer: Technibus Inc.

Manufacturer's Technical Representative: Mike Baker

Mailing Address: 1501 Raff Road S.W., Canton, OH 44710

Telephone: (330) 478-6395 Email: mbaker@technibus.com

Product Information

Product Name: Electrical Busways

Product Type: NA

Product Model Number: 600V, 5kV, and 15kV – Brand Labeled for GE, Square D, and Eaton – See Attached

General Description: Metal Enclosed Bus Duct consisting of an internally supported bus bar within a metal enclosure

Mounting Description: Rigid, See Certified Product Tables

Tested Seismic Enhancements: None

Applicant Information

Applicant Company Name: W.E. Gundy & Associates

Contact Person: Travis Soppe

Mailing Address: 1199 Shoreline Drive, Suite 310, Boise, ID 83702

Telephone: (208) 342-5989 Email: tsoppe@wegai.com

Title: President

California Licensed Structural Engineer Responsible for the Engineering and Test Report(s)

Company Name: W.E. GUNDY & ASOCIATES INC.

Name: Travis Soppe California License Number: S6115

Mailing Address: P.O. Box 9121, Boise, ID 83707

Telephone: (208) 342-5989 Email: tsoppe@wegai.com

Certification Method

☐ GR-63-Core ☒ ICC-ES AC156 ☐ IEEE 344 ☐ IEEE 693 ☐ NEBS 3

☐ Other (Please Specify):

Testing Laboratory

Company Name: CLARK TESTING LABORATORY, INC.

Contact Person: Suzanne Mazon

Mailing Address: 1801 Route 51, Jefferson Hills PA 15025

Telephone: (412) 387-1001 Email: smazon@clarktesting.com

Seismic Parameters

Design Basis of Equipment or Components (F_p/W_p) = 1.44

S_{DS} (Design spectral response acceleration at short period, g) = 2.0

a_p (Amplification factor) = 1.0

R_p (Response modification factor) = 2.5

Ω_0 (System overstrength factor) = 2.0

I_p (Importance factor) = 1.5

z/h (Height ratio factor) = 1

Natural frequencies (Hz) = See Attachment

Overall dimensions and weight = See Attachment

HCAI Approval (For Office Use Only) - Approval Expires on 08/15/2029

Date: 8/15/2023

Name: Mohammad Karim Title: Supervisor, Health Facilities

Special Seismic Certification Valid Up to: S_{DS} (g) = 2.0 z/h = 1

Condition of Approval (if applicable):

TECHNIBUS METAL ENCLOSED BUS - 600V, 5kV, and 15kV
CERTIFIED PRODUCT LINE MATRIX
VERTICAL BUS BAR ORIENTATION

WEGAI
W.E. GUNDY & ASSOCIATES, INC.
STRUCTURAL & EARTHQUAKE ENGINEERING

Technibus Identification Number	Bus Material	Bus # and Size (in)	Bus Support Material	Bus Support Spacing (in) (min-max)	Enclosure Material	Width (in)	Depth (in)	Duct Weight (lbs/ft) (min - max)	Representative UUT
6-a-12	AL	(3) 0.50x3	GPO3	9"	AL	21"	8"	21	UUT 4-L, UUT 3-U
6-a-12	AL	(3) 0.50x3	GPO3/PORC	4" - 9"	AL/SS/STL	21"	8"	21 - 42	interpolated
6-a-12 w/neutral	AL	(4) 0.50x3	GPO3/PORC	4" - 9"	AL/SS/STL	21"	8"	23 - 44	interpolated
6-c-12	CU	(3) 0.38x3	GPO3/PORC	5" - 8"	AL/SS/STL	21"	8"	29 - 50	interpolated
6-c-12 w/neutral	CU	(4) 0.38x3	GPO3/PORC	5" - 8"	AL/SS/STL	21"	8"	34 - 55	interpolated
6-a-16	AL	(3) 0.62x4	GPO3/PORC	7" - 14"	AL/SS/STL	21"	10"	26 - 48	interpolated
6-a-16 w/neutral	AL	(4) 0.62x4	GPO3/PORC	7" - 14"	AL/SS/STL	21"	10"	29 -51	interpolated
6-c-16	CU	(3) 0.50x3	GPO3/PORC	6" - 11"	AL/SS/STL	21"	8"	33 - 55	interpolated
6-c-16 w/neutral	CU	(4) 0.50x3	GPO3/PORC	6" - 11"	AL/SS/STL	21"	8"	39 - 61	interpolated
6-a-20	AL	(3) 0.62x6	GPO3/PORC	8" - 17"	AL/SS/STL	21"	14"	32 - 57	interpolated
6-a-20 w/neutral	AL	(4) 0.62x6	GPO3/PORC	8" - 17"	AL/SS/STL	21"	14"	36 - 41	interpolated
6-c-20	CU	(3) 0.62x4	GPO3/PORC	9" - 16"	AL/SS/STL	21"	10"	47 - 69	interpolated
6-c-20 w/neutral	CU	(4) 0.62x4	GPO3/PORC	9" - 16"	AL/SS/STL	21"	10"	56 - 78	interpolated
6-a-25	AL	(6) 0.38x6	GPO3/PORC	8" - 17"	AL/SS/STL	27"	14"	37 -65	interpolated
6-a-25 w/neutral	AL	(8) 0.38x6	GPO3/PORC	8" - 17"	AL/SS/STL	27"	14"	42 - 70	interpolated
6-c-25	CU	(3) 0.50x6	GPO3/PORC	8" - 15"	AL/SS/STL	21"	14"	54 - 79	interpolated
6-c-25 w/neutral	CU	(4) 0.50x6	GPO3/PORC	8" - 15"	AL/SS/STL	21"	14"	66 - 91	interpolated
6-a-32	AL	(6) 0.62x6	GPO3/PORC	14" - 28"	AL/SS/STL	27"	14"	47 - 76	interpolated
6-a-32 w/neutral	AL	(8) 0.62x6	GPO3/PORC	14" - 28"	AL/SS/STL	27"	14"	56 - 85	interpolated
6-c-32	CU	(6) 0.38x6	GPO3/PORC	10" - 19"	AL/SS/STL	27"	14"	75 - 104	interpolated
6-c-32 w/neutral	CU	(8) 0.38x6	GPO3/PORC	10" - 19"	AL/SS/STL	27"	14"	92 - 122	interpolated
6-c-40	CU	(6) 0.63x6	GPO3/PORC	24" - 42"	AL/SS/STL	36"	14"	111 - 138	interpolated
6-c-40 w/neutral	CU	(8) 0.63x6	GPO3/PORC	21" - 37"	AL/SS/STL	36"	14"	155 - 182	interpolated
5/15-c-40	CU	(6) 0.63x6	GPO3/PORC	30"	AL/SS/STL	36"	14"	125 - 163	interpolated
6-c-50	CU	(6) 0.50x8	GPO3/PORC	24" - 43"	AL/SS/STL	42"	24"	131 - 165	interpolated
6-c-50 w/neutral	CU	(8) 0.50x8	GPO3/PORC	22" - 39"	AL/SS/STL	42"	24"	160 - 194	interpolated
5/15-c-50	CU	(8) 0.50x8	GPO3/PORC	42"	AL/SS/STL	42"	24"	143 - 187	interpolated
5/15-c-60	CU	(12) 0.38x6	GPO3/PORC	36" & 42"	AL/SS/STL	42"	28"	162 - 206	interpolated
5/15-c-60	CU	(12) 0.38x6	GPO3/PORC	36"	SS/STL	42"	28"	206	UUT 3-L, UUT 2-U
6-c-60	CU	(12) 0.38x6	GPO3/PORC	18" - 39"	AL/SS/STL	42"	28"	162 - 206	interpolated
6-c-60	CU	(12) 0.38x6	GPO3/PORC	18"	SS/STL	42"	28"	206	UUT 3-L, UUT 2-U

General Notes:

1) Tested configuration consists of horizontal main span with support spacing ≤ 180", vertical main span with support spacing ≤ 48", horizontal elbow with support spacing ≤ 30", vertical transition elbow with support spacing ≤ 24", and phase-reversal and tee-tap sections supported on both sides.

2) See drawings X-023-0004-2, X-023-0014-2, X-023-0020-2, X-023-0021-2, and X-023-022-2 for cross section information.

TECHNIBUS METAL ENCLOSED BUS - 600V, 5kV, and 15kV
CERTIFIED PRODUCT LINE MATRIX
HORIZONTAL BUS BAR ORIENTATION

WEGAI
W.E. GUNDY & ASSOCIATES, INC.
STRUCTURAL & EARTHQUAKE ENGINEERING

Technibus Identification Number	Bus Material	Bus # and Size (in)	Bus Support Material	Bus Support Spacing (in) (min-max)	Enclosure Material	Width (in)	Depth (in)	Duct Weight (lbs/ft) (min - max)	Representative UUT
5-a-12	AL	(3) 0.50x3	POLY/PORC	48"	AL	27"	14"	30	UUT 2-L, UUT 1-U
5/15-a-12	AL	(3) 0.50x3	POLY/PORC	20" - 48"	AL/SS/STL	27"	14"	30 - 61	interpolated
5/15-UL-c-12	CU	(3) 0.38x3	POLY	24"	AL	27"	14"	34	interpolated
5/15-c-12	CU	(3) 0.25x3	POLY/PORC	20" - 48"	AL/SS/STL	27"	14"	34 - 65	interpolated
5/15-a-16	AL	(3) 0.62x4	POLY/PORC	23" - 48"	AL/SS/STL	30"	14"	34 - 68	interpolated
5/15-UL-c-16	CU	(3) 0.50x3	POLY	36"	AL	27"	14"	41	interpolated
5/15-c-16	CU	(3) 0.50x3	POLY/PORC	20" - 48"	AL/SS/STL	27"	14"	41 - 74	interpolated
5/15-a-20	AL	(3) 0.62x6	POLY/PORC	29" - 48"	AL/SS/STL	36"	14"	41 - 79	interpolated
5/15-UL-c-20	CU	(3) 0.62x4	POLY	39"	AL	30"	14"	55	interpolated
5/15-c-20	CU	(3) 0.62x4	POLY/PORC	23" - 48"	AL/SS/STL	30"	14"	55 - 89	interpolated
5/15-a-25	AL	(6) 0.62x4	POLY/PORC	46" - 48"	AL/SS/STL	30"	14"	44 - 77	interpolated
5/15-UL-c-25	CU	(3) 0.50x6	POLY	42"	AL	36"	14"	64	interpolated
5/15-c-25	CU	(3) 0.50x6	POLY/PORC	29" - 48"	AL/SS/STL	36"	14"	64 - 101	interpolated
5/15-a-32	AL	(6) 0.62x6	POLY/PORC	48"	AL/SS/STL	36"	14"	55 - 93	interpolated
5/15-UL-c-32	CU	(6) 0.38x6	POLY	48"	AL	36"	14"	85	interpolated
5/15-c-32	CU	(6) 0.38x6	POLY/PORC	48"	AL/SS/STL	36"	14"	85 - 122	interpolated
15-c-32	CU	(6) 0.38x6	POLY/PORC	48"	SS/STL	36"	14"	122	UUT 1-L, UUT 4-U

General Notes:

1) Tested configuration consists of horizontal main span with support spacing ≤ 180", vertical main span with support spacing ≤ 48", horizontal elbow with support spacing ≤ 30", vertical transition elbow with support spacing ≤ 24", and phase-reversal and tee-tap sections supported on both sides.

2) See drawings X-027-001-2 and X-027-002-2 for cross section information.

TECHNIBUS METAL ENCLOSED BUS - 600V, 5kV, and 15kV
CERTIFIED SUBCOMPONENT MATRIX

WEGAI
W.E. GUNDY & ASSOCIATES, INC.
STRUCTURAL & EARTHQUAKE ENGINEERING

Subassembly Type	Manufacturer	Item Number/Description	Representative UUT
Shiping Split - S1	Technibus	Bus hdwr ZP w/LK, Cover hdwr 316ss	UUT 1-L & UUT 3-L
Shiping Split - S2	Technibus	Bus hdwr 304ss w/LK, Cover hdwr tek screw	UUT 1-L
Shiping Split - S3	Technibus	Bus hdwr ZP w/Bell, Cover hdwr tek screw	UUT 2-L & UUT 4-L
Shiping Split - S4	Technibus	Bus hdwr 304ss w/Bell, Cover hdwr 304ss thru-bolt	UUT 2-L
Shiping Split - S5	Technibus	Bus hdwr 316ss w/Bell, Cover hdwr 300 series tek screw	UUT 2-L
Bus Split - S6	Technibus	Bus hdwr 304ss w/Bell	UUT 3-L
Shiping Split - S7	Technibus	Bus hdwr SBZ w/Bell, Cover hdwr 300 series tek screw	UUT 4-L
12" Strip Heater 240v/150w	Chromalox	OT-1225 129402	UUT 1-L
12" Strip Heater 415v/250w	Chromalox	PT-12VW 600002108	UUT 1-L
8" Strip Heater 240v/150w	Chromalox	OT-815 129349	UUT 2-L
8" Stip Heater 415v/250w	Chromalox	OT-827vw 275w 813290	UUT 2-L
Large Ring Heater 750w	Chromalox	A-70 792826	UUT 1-L & UUT 3-L
Small Ring Heater 500w	Chromalox	A-70 792825	UUT 4-L
Termination Box	Technibus	24 x 24 x 42 - AL/SS/STL - Assembly 4A5	UUT 1-L & 2-L
Termination Box	Technibus	24 x 36 x 48 - AL/SS/STL - Assembly 2A5	UUT 3-L & 4-L
Heater Monitor Box	Technibus	X-115-0001 - Heater remote thermistat & alarm	UUT 1-L & 2-L
Outdoor Junction Box	Technibus	2 x 4 x 4 14ga	UUT 3-L
Indoor Junction Box	Technibus	2 x 4 x 4 14ga	UUT 4-L
Standard Thermostat	Thermodisc	6OT21 202877	UUT 3-L
Explosion Proof Thermostat	Johnson Controls	A19AUC-3C	UUT 4-L
Adjustable Thermostat	Penn	A19ABC-24E	UUT 2-L
1/2 Hour Firestop	Technibus	1/2 HR rating - 2001 silicone RTV foam	UUT 3-U, UUT 1-U
3 Hour Firestop	Technibus	3 HR rating - 2001 silicone RTV foam	UUT 3-L
Expansion Joint	Technibus	Indoor 5kv - 1200amp	UUT 1-U
Expansion Joint	Technibus	Outdoor 600v - 6000amp	UUT 2-U
Expansion Joint	Technibus	Indoor 600v - 1200amp	UUT 3-U
Expansion Joint	Technibus	Outdoor 15v - 3200amp	UUT 4-U

TECHNIBUS METAL ENCLOSED BUS - 600V, 5kV, and 15kV
MULTIPLE LISTING / BRANDED PRODUCT LINE MATRIX
VERTICAL BUS BAR ORIENTATION

WEGAI
W.E. GUNDY & ASSOCIATES, INC.
STRUCTURAL & EARTHQUAKE ENGINEERING

Technibus Identification #	Square D Identification #	Eaton Identification #	GE Identification #	Representative UUT
6-a-12	SQD-6-a-12	EA-6-a-12	GE-6-a-12	UUT 4-L, UUT 3-U
6-a-12 w/neutral	SQD-6-a-12 w/neutral	EA-6-a-12 w/neutral	GE-6-a-12 w/neutral	
6-c-12	SQD-6-c-12	EA-6-c-12	GE-6-c-12	
6-c-12 w/neutral	SQD-6-c-12 w/neutral	EA-6-c-12 w/neutral	GE-6-c-12 w/neutral	
6-a-16	SQD-6-a-16	EA-6-a-16	GE-6-a-16	
6-a-16 w/neutral	SQD-6-a-16 w/neutral	EA-6-a-16 w/neutral	GE-6-a-16 w/neutral	
6-c-16	SQD-6-c-16	EA-6-c-16	GE-6-c-16	
6-c-16 w/neutral	SQD-6-c-16 w/neutral	EA-6-c-16 w/neutral	GE-6-c-16 w/neutral	
6-a-20	SQD-6-a-20	EA-6-a-20	GE-6-a-20	
6-a-20 w/neutral	SQD-6-a-20 w/neutral	EA-6-a-20 w/neutral	GE-6-a-20 w/neutral	
6-c-20	SQD-6-c-20	EA-6-c-20	GE-6-c-20	
6-c-20 w/neutral	SQD-6-c-20 w/neutral	EA-6-c-20 w/neutral	GE-6-c-20 w/neutral	
6-a-25	SQD-6-a-25	EA-6-a-25	GE-6-a-25	
6-a-25 w/neutral	SQD-6-a-25 w/neutral	EA-6-a-25 w/neutral	GE-6-a-25 w/neutral	
6-c-25	SQD-6-c-25	EA-6-c-25	GE-6-c-25	
6-c-25 w/neutral	SQD-6-c-25 w/neutral	EA-6-c-25 w/neutral	GE-6-c-25 w/neutral	
6-a-32	SQD-6-a-32	EA-6-a-32	GE-6-a-32	
6-a-32 w/neutral	SQD-6-a-32 w/neutral	EA-6-a-32 w/neutral	GE-6-a-32 w/neutral	
6-c-32	SQD-6-c-32	EA-6-c-32	GE-6-c-32	
6-c-32 w/neutral	SQD-6-c-32 w/neutral	EA-6-c-32 w/neutral	GE-6-c-32 w/neutral	
6-c-40	SQD-6-c-40	EA-6-c-40	GE-6-c-40	
6-c-40 w/neutral	SQD-6-c-40 w/neutral	EA-6-c-40 w/neutral	GE-6-c-40 w/neutral	
5/15-c-40	SQD-5/15-c-40	EA-5/15-c-40	GE-5/15-c-40	
6-c-50	SQD-6-c-50	EA-6-c-50	GE-6-c-50	
6-c-50 w/neutral	SQD-6-c-50 w/neutral	EA-6-c-50 w/neutral	GE-6-c-50 w/neutral	
5/15-c-50	SQD-5/15-c-50	EA-5/15-c-50	GE-5/15-c-50	
5/15-c-60	SQD-5/15-c-60	EA-5/15-c-60	GE-5/15-c-60	UUT 3-L, UUT 2-U
6-c-60	SQD-6-c-60	EA-6-c-60	GE-6-c-60	UUT 3-L, UUT 2-U

General Notes:

1) Tested configuration consists of horizontal main span with support spacing ≤ 180", vertical main span with support spacing ≤ 48", horizontal elbow with support spacing ≤ 30", vertical transition elbow with support spacing ≤ 24", and phase-reversal and tee-tap sections supported on both sides.

2) See drawings X-023-0004-2, X-023-0014-2, X-023-0020-2, X-023-0021-2, and X-023-022-2 for cross section information.

TECHNIBUS METAL ENCLOSED BUS - 600V, 5kV, and 15kV
MULTIPLE LISTING / BRANDED PRODUCT LINE MATRIX
HORIZONTAL BUS BAR ORIENTATION

WEGAI
W.E. GUNDY & ASSOCIATES, INC.
STRUCTURAL & EARTHQUAKE ENGINEERING

Technibus Identification #	Square D Identification #	Eaton Identification #	GE Identification #	Representative UUT
5*/15-a-12	SQD-5*/15-a-12	EA-5*/15-a-12	GE-5*/15-a-12	UUT 2-L, UUT 1-U
5/15-UL-c-12	SQD-5/15-UL-c-12	EA-5/15-UL-c-12	GE-5/15-UL-c-12	
5/15-c-12	SQD-5/15-c-12	EA-5/15-c-12	GE-5/15-c-12	
5/15-a-16	SQD-5/15-a-16	EA-5/15-a-16	GE-5/15-a-16	
5/15-UL-c-16	SQD-5/15-UL-c-16	EA-5/15-UL-c-16	GE-5/15-UL-c-16	
5/15-c-16	SQD-5/15-c-16	EA-5/15-c-16	GE-5/15-c-16	
5/15-a-20	SQD-5/15-a-20	EA-5/15-a-20	GE-5/15-a-20	
5/15-UL-c-20	SQD-5/15-UL-c-20	EA-5/15-UL-c-20	GE-5/15-UL-c-20	
5/15-c-20	SQD-5/15-c-20	EA-5/15-c-20	GE-5/15-c-20	
5/15-a-25	SQD-5/15-a-25	EA-5/15-a-25	GE-5/15-a-25	
5/15-UL-c-25	SQD-5/15-UL-c-25	EA-5/15-UL-c-25	GE-5/15-UL-c-25	
5/15-c-25	SQD-5/15-c-25	EA-5/15-c-25	GE-5/15-c-25	
5/15-a-32	SQD-5/15-a-32	EA-5/15-a-32	GE-5/15-a-32	
5/15-UL-c-32	SQD-5/15-UL-c-32	EA-5/15-UL-c-32	GE-5/15-UL-c-32	
5/15*-c-32	SQD-5/15*-c-32	EA-5/15*-c-32	GE-5/15*-c-32	UUT 1-L, UUT 4-U

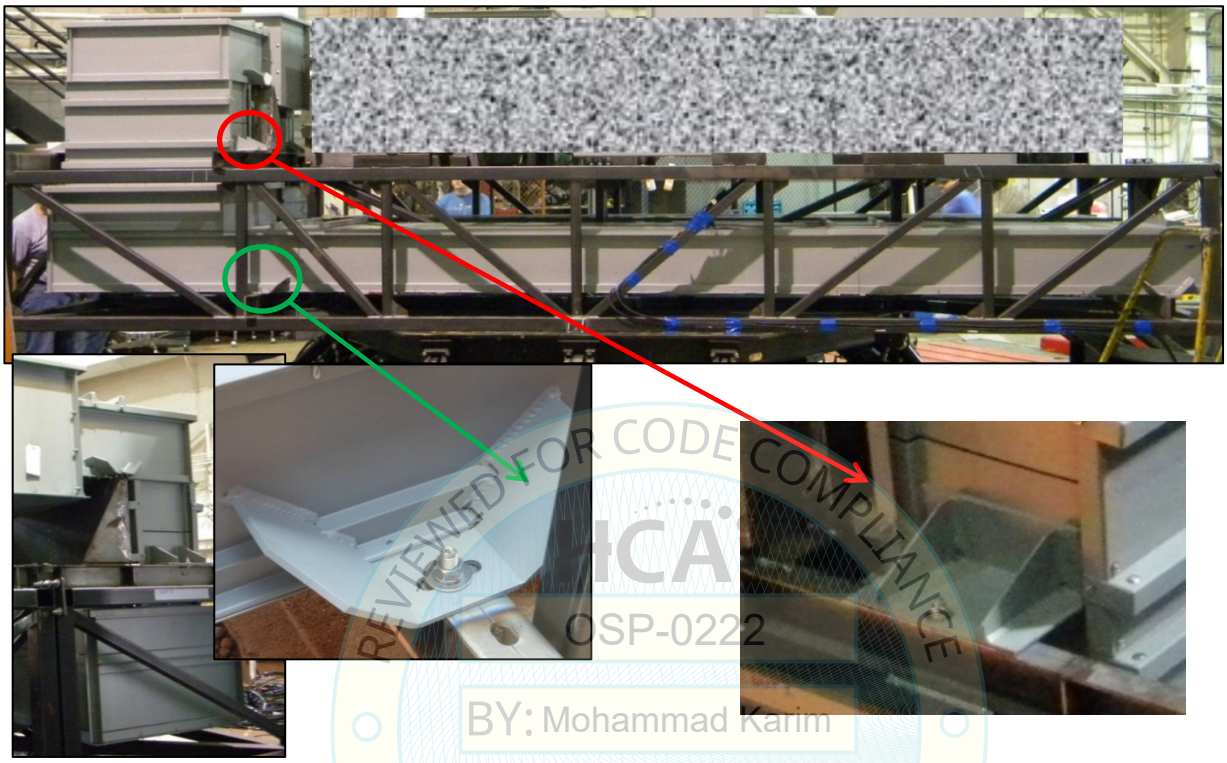
General Notes:

1) Tested configuration consists of horizontal main span with support spacing ≤ 180", vertical main span with support spacing ≤ 48", horizontal elbow with support spacing ≤ 30", vertical transition elbow with support spacing ≤ 24", and phase-reversal and tee-tap sections supported on both sides.

2) See drawings X-027-001-2 and X-027-002-2 for cross section information.

UUT 1-L	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct and side mount (vertical bus, red) with a 1/2" diameter grade 5 bolt on each side of the duct.



End View

Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 15-c-32

UUT Function: Transmission and Distribution of Electricity

UUT Description: 180" main span, horizontal-vertical transition elbow, 48" vertical mount section, vertical elbow section that ties into a juction box, S1/S2 shipping splits, heater monitoring box, 750w large ring heater, 12" strip heater 240v/150w, and 12" strip heater 415v/150w.

UUT Construction/Component Description: Enclosure is a combination of 14ga SS, 14ga STL, and 11ga STL, 3/8"x6" horizontal copper bus bar, expoxy insulation, polyester/porcelean bus bar supports spaced at 48" o.c., copper ground bar, S1/S2 shipping splits, termination box, heater monitoring box, ring heater, and 2 - 12" strip heaters.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
2,520	14.25	38	288	na	na	na

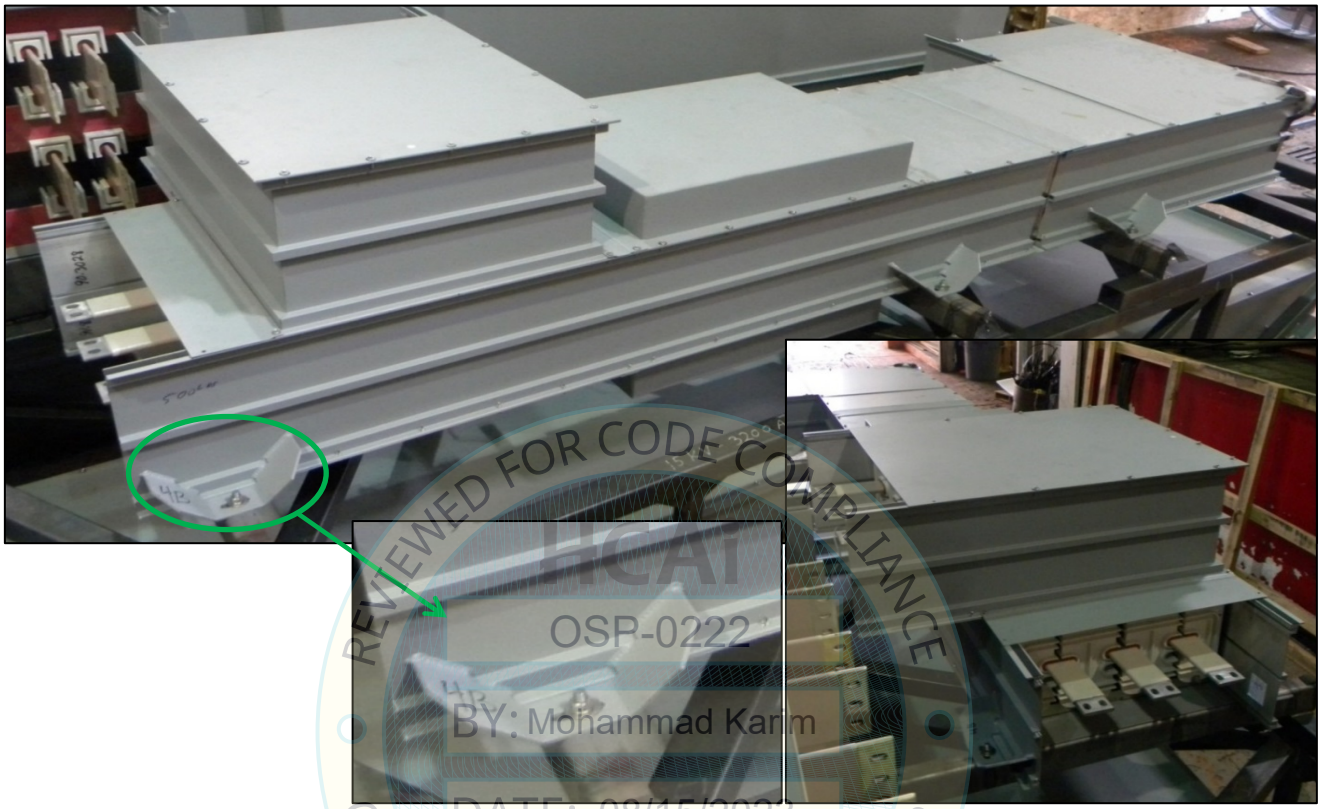
SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT 1-U	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct.



Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 5-a-12

UUT Function: Transmission and Distribution of Electricity

UUT Description: (top picture from left to right) Tee-tap section, phase reversal section, 31" indoor expansion joint, horizontal elbow, and 1/2 hour firestop.

UUT Construction/Component Description: Enclosure constructed of Aluminum, 1/2"x3" horizontal aluminum bus bar, expoxy insulation, polyester bus bar supports spaced at 48" o.c..

UUT PROPERTIES

Weight (lb)	Dimensions			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
460	14.25	27	204	na	na	na

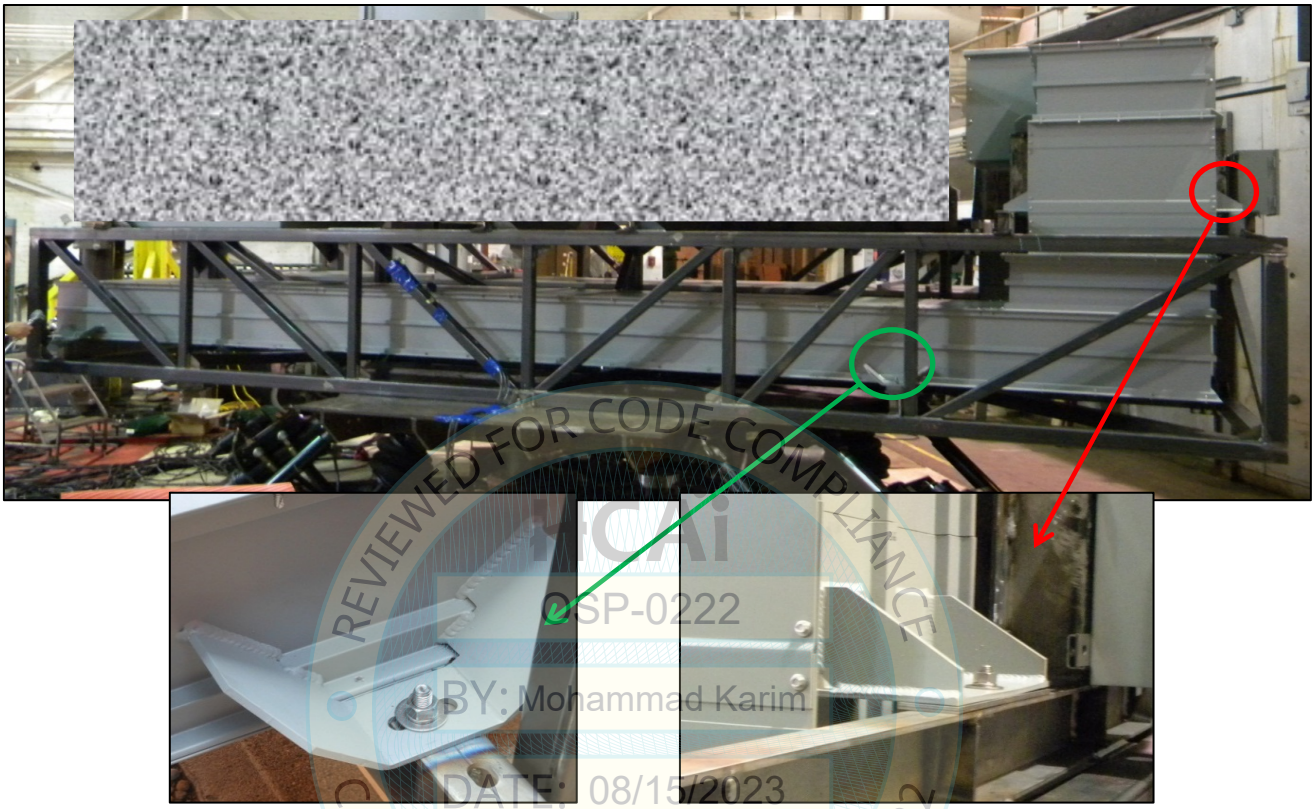
SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT 2-L	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. Gundy & Associates, Inc. Structural & Earthquake Engineering

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct and side mount (vertical bus, red) with a 1/2" diameter grade 5 bolt on each side of the duct.



Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 5-a-12

UUT Function: Transmission and Distribution of Electricity

UUT Description: 180" main horizontal span, horizontal-vertical transition elbow, 48" vertical mount section, vertical elbow section that ties into a juction box, S4/S5 shiping splits, adjustable thermostat, heater monitor box, 8" strip heater 240v/150w, and 8" strip heater 415v/250w.

UUT Construction/Component Description: Enclosure constructed of Aluminum, 1/2"x3" horizontal aluminum bus bar, expoxy insulation, polyester/porcelean bus bar supports spaced at 48" o.c., S4/S5 shipping splits, adjusutable thermostat, heater monitor box, and 2 - 8" strip heaters.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
650	14.25	27	288	na	na	na

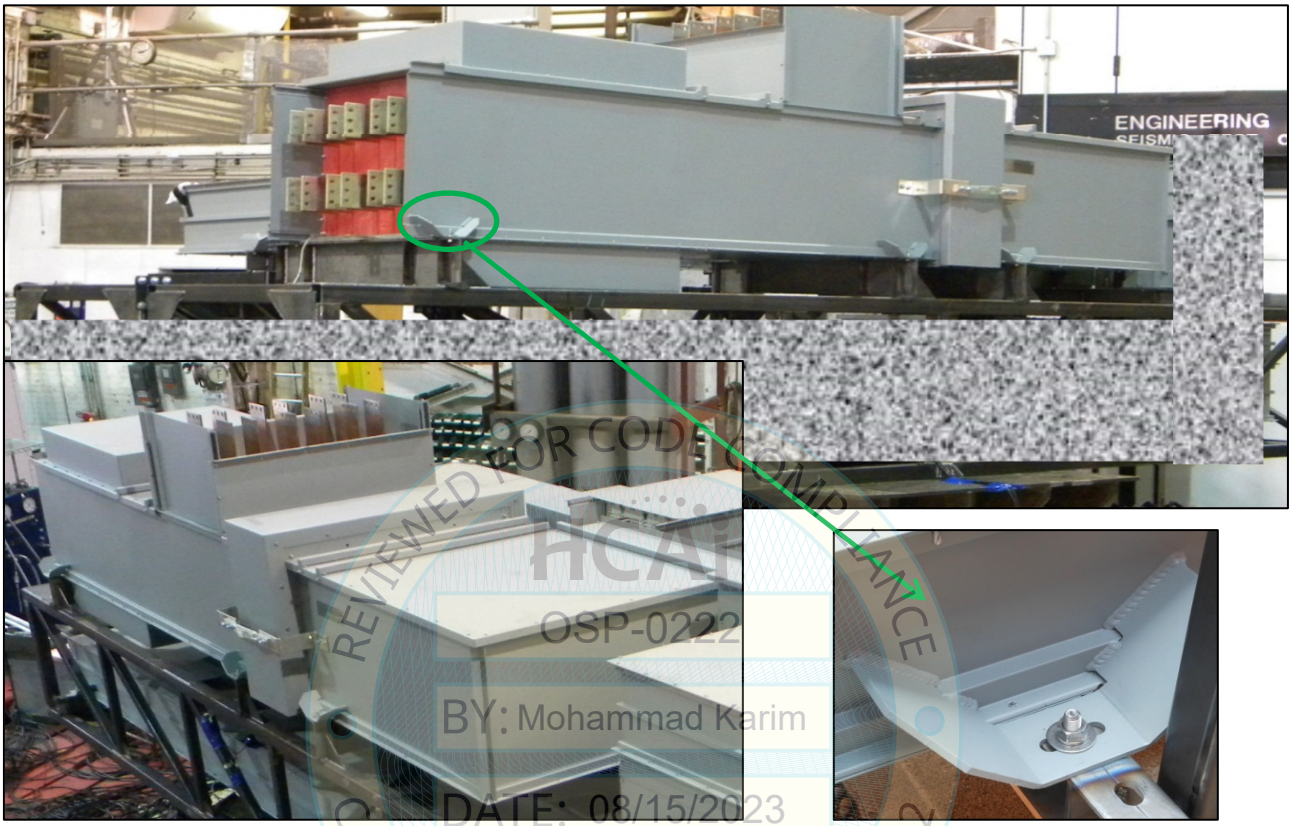
SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT 2-U	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct.



Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 6-c-60

UUT Function: Transmission and Distribution of Electricity

UUT Description: (top picture from left to right) Phase reversal section, tee-tap section, 22" outdoor expansion joint, and horizontal elbow.

UUT Construction/Component Description: Enclosure constructed of 14ga SS, 3/8"x6" vertical copper bus bar, expoxy insulation, glastic/porcelean bus bar supports spaced at 18" o.c., and copper ground bus bar.

UUT PROPERTIES

Weight (lb)	Dimensions			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
4,410	28	42	294	na	na	na

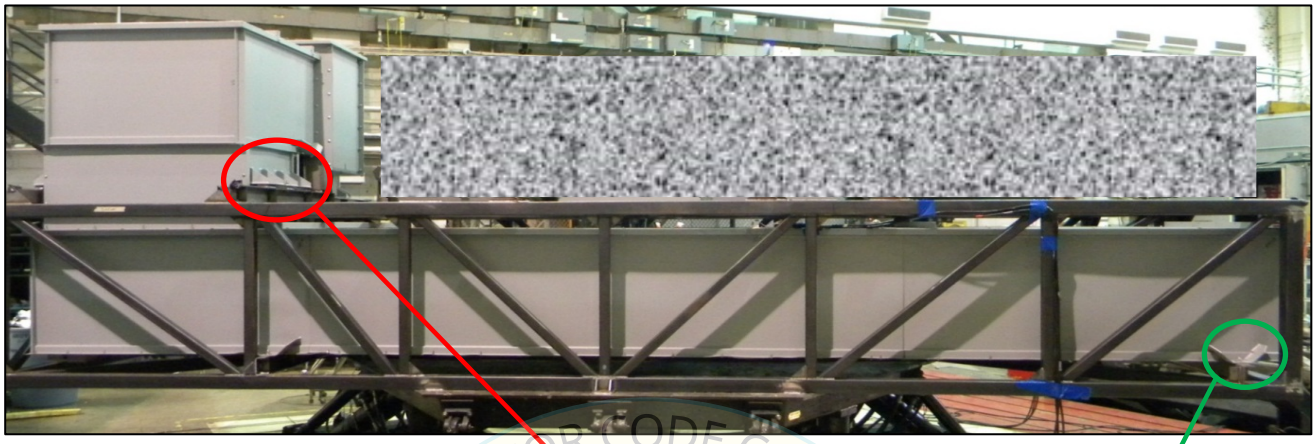
SEISMIC TEST PARAMETERS

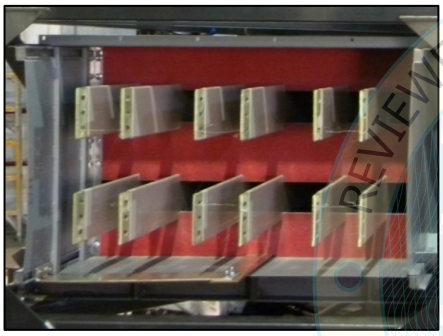
Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

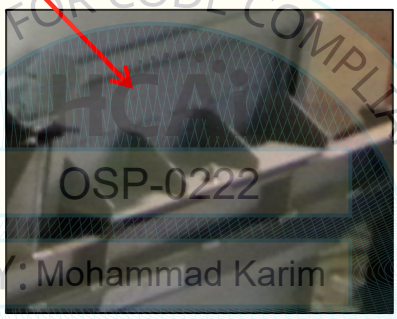
UUT 3-L	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct and side mount (vertical bus, red) with a 1/2" diameter grade 5 bolt on each side of the duct.





End View



Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 6-c-60 and 5/15-c-60

UUT Function: Transmission and Distribution of Electricity

UUT Description: 180" main horizontal span, 3 hour firestop, horizontal to vertical transition elbow, 48" vertical mount section, vertical elbow section that ties into a juction box, S1/S6 shipping splits, outdoor junction box, standard thermostat, large ring heater 750w.

UUT Construction/Component Description: Enclosure constructed of 14ga SS, 3/8"x6" vertical copper bus bar, expoxy insulation, glastic/porcelean bus bar supports spaced at 36" o.c., copper ground bus, S1/S6 shipping splits, standard thermostat, and a large ring heater.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
4,410	28	42	294	na	na	na

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT 3-U	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct.

Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 6-a-12

UUT Function: Transmission and Distribution of Electricity

UUT Description: (top picture from right to left) Phase reversal section, tee-tap section, 22" indoor expansion joint, horizontal elbow, and 1/2 hr firestop.

UUT Construction/Component Description: Enclosure constructed of Aluminum, 1/2"x3" vertical aluminum bus bar, expoxy insulation, glastic bus bar supports spaced at 9" o.c., and 1/2 hr firestop.

UUT PROPERTIES

Weight (lb)	Dimensions			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
210	8.25	21	132	na	na	na

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT 4-L	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct and side mount (vertical bus, red) with a 1/2" diameter bolt on each side of the duct.

Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 6-a-12

UUT Function: Transmission and Distribution of Electricity

UUT Description: 180" main horizontal span, horizontal-vertical transition elbow, 48" vertical mount section, vertical elbow section that ties into a juction box, S3/S7 shipping splits, explosion proof thermostat, and a small ring heater 500w.

UUT Construction/Component Description: Enclosure constructed of Aluminum, 1/2"x3" vertical aluminum bus bar, expoxy insulation, glastic bus bar supports spaced at 9" o.c., S3/S7 shipping splits, exposion proof thermostat, and a small ring heater.

UUT PROPERTIES

Weight (lb)	Dimensions (inches)			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
450	8.25	21	282	na	na	na

SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

UUT 4-U	UNIT UNDER TEST (UUT) SUMMARY SHEET	WEGAI W.E. GUNDY & ASSOCIATES, INC. STRUCTURAL & EARTHQUAKE ENGINEERING

Mounting Details: Bottom mount (horizontal bus, green) with a 1/2" diameter grade 5 bolt on each side of the duct.

Manufacturer: Technibus

Product Line: 600V, 5kV, and 15kV Metal Enclosed Bus Duct

Identification Number: 15-c-32

UUT Function: Transmission and Distribution of Electricity

UUT Description: (top picture from left to right) Tee-tap section, phase reversal section, 31" outdoor expansion joint, horizontal elbow.

UUT Construction/Component Description: Enclosure constructed of 14ga SS, 3/8"x6" horizontal copper bus bar, expoxy insulation, polyester bus bar supports spaced at 48" o.c..

UUT PROPERTIES

Weight (lb)	Dimensions			Natural Fequency (Hz)		
	Duct Height	Duct Width	Total Duct Length	FB	SS	V
1,995	14.25	36	228	na	na	na

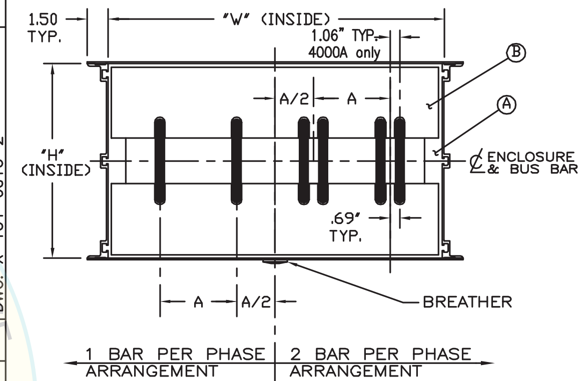
SEISMIC TEST PARAMETERS

Building Code / Test Criteria	S_{DS}	z / h	I_P	A_{FLX-H}	A_{RIG-H}	A_{FLX-V}	A_{RIG-V}
CBC 2022 / ICC-ES AC156	2.0	1.0	1.5	3.2	2.4	1.33	0.53

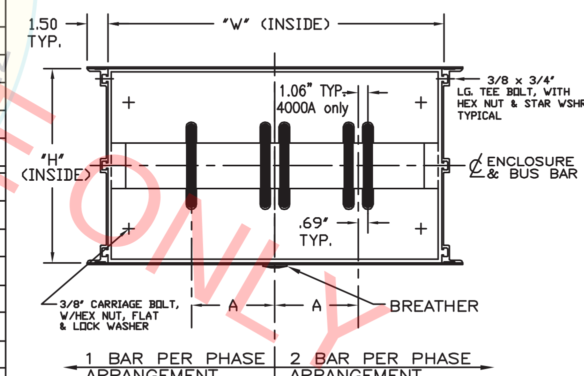
Note: The unit was full of contents during testing and remained fuctional before and after the ICC-ES AC156 test. The unit maintained structural integrity during and after the ICC-ES AC156 Test.

	MOMENTARY FAULT RATING KA RMS ASY			
ASY →	87	113	133	150
SYM →	65	85	100	113
PEAK →	150	196	230	260

	AMPERES	BUS DESCRIPTION	"H"	"W"	"A"	SUPPORT SPACING				3-POLE WEIGHT PER FT (LBS.)	3-POLE TYPE Ⓐ SUPPORT BRACKET DWG. X-303-0002-1	3-POLE TYPE Ⓑ GLASTIC SUPPORT DWG. X-400-0002-2 HALF SUPT DWG. X-101-0028-2	3-POLE TYPE Ⓦ VAPOR BARRIER DWG. X-803-0007-2	3-POLE TYPE FOAM CONTAINMENT CHANNEL DWG. X-101-0016-2	4-POLE WEIGHT PER FT (LBS.)	4-POLE TYPE Ⓐ SUPPORT BRACKET DWG. X-303-0002-1	4-POLE TYPE Ⓑ GLASTIC SUPPORT DWG. X-400-0002-2 HALF SUPT DWG. X-101-0028-2	4-POLE TYPE Ⓦ VAPOR BARRIER DWG. X-803-0007-2	4-POLE TYPE FOAM CONTAINMENT CHANNEL DWG. X-101-0016-2
COPPER	1200	(1) .38" X 3.00"	8"	18"	4.12"	8"	6"	5"	5"	29	1	1	1	11	34	1	10	10	11
COPPER	1600	(1) .50" X 3.00"	8"	18"		11"	8"	7"	6"	33	1	2	2	11	39	1	11	11	11
COPPER	2000	(1) .62" X 4.00"	10"	18"		16"	12"	10"	9"	47	2	4	3	11	56	2	13	12	11
COPPER	2500	(1) .50" X 6.00"	14"	18"		15"	11"	10"	8"	54	3	5	4	11	66	3	14	13	11
COPPER	3200	(2) .38" X 6.00"	14"	24"	5.50"	19"	14"	12"	10"	75	3	8	6	1	92	3	17	15	1
COPPER	4000	(2) .63" X 6.00"	14"	33"	10.00"	42"	32"	27"	24"	111	3	21	21	4					
COPPER	4000	(2) .63" X 6.00"	14"	33"	7.75"	37"	28"	24"	21"						155	3	22	22	4
ALUMINUM	1200	(1) .50" X 3.00"	8"	18"	4.12"	9"	7"	5"	4"	21	1	2	2	11	23	1	11	11	11
ALUMINUM	1600	(1) .62" X 4.00"	10"	18"		14"	10"	8"	7"	26	2	4	3	11	29	2	13	12	11
ALUMINUM	2000	(1) .62" X 6.00"	14"	18"		17"	13"	10"	8"	32	3	6	5	11	36	3	15	14	11
ALUMINUM	2500	(2) .38" X 6.00"	14"	24"	5.50"	17"	12"	10"	8"	37	3	8	6	1	42	3	17	15	1
ALUMINUM	3200	(2) .62" X 6.00"	14"	24"	5.50"	28"	21"	17"	14"	47	3	9	7	1	56	3	18	16	1



4-POLE CROSS SECTIONAL VIEW



3-POLE CROSS SECTIONAL VIEW

REV 10

MICROFILMED

REVISIONS

NO	BY	DATE	
1	JWL	5-18-98	ADDED SHEET 2
2	RDM	3-6-03	REV. MOMENTARY FAULT RATING
3	JWL	3-12-03	ADDED HALF SUP'T & CONT
4	JWL	4-22-03	MINOR CHG'S
5	JWL	5-20-04	REMOVED 5000A
6	RCH	3-2-06	SHORT CIRCUIT SPACING
7	JWL	11-7-07	REVISED 4000A
8	JWL	12-10-07	ADDED 1.06 BAR SPACING
9	JB	1-11-11	(CU)CHANGE FAULT RATING AND SUPPORT SPACING
10	RDM	9-13-11	CHANGE WEIGHTS

DRAWN BY EDM/RDF
DATE 11/30/93
SCALE .125=1
CHK' D.
APP' D.

TECHNIBUS®
METAL ENCLOSED BUS SYSTEMS
1501 RAFF RD. SW.
CANTON, OHIO 44710

ORIGINAL PROJECT:
SYSTEM NAME:

Tolerances:
Unless otherwise noted, all tolerances shall be: ± .03

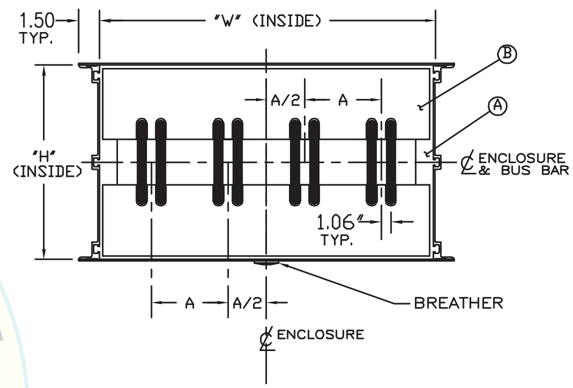
TITLE
600V. AC 1200 TO 4000A DUCT NON-VENTED
INDOOR/OUTDOOR 3 & 4P
CROSS SECTION (VERT. CONFIGURATION)
DWG. No. X-023-0004-2 SHT.1 OF 2

SEQ.	TYPE	EQP.	MFG.	F. I.	SIZE
X-023-0004-2					2

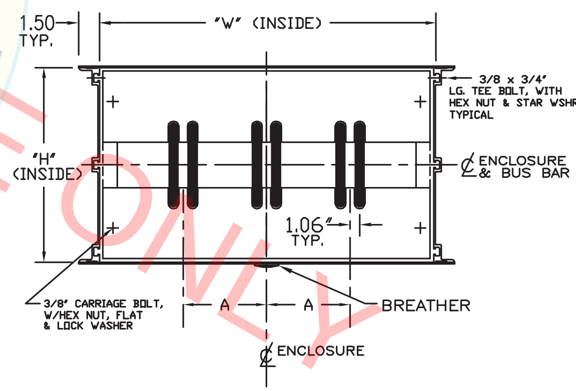
MOMENTARY FAULT RATING

	KA RMS ASY			
ASY	87	113	133	150
SYM	65	85	100	113
PEAK	150	196	230	260

	AMPERES	BUS DESCRIPTION	"H"	"W"	"A"		SUPPORT SPACING				3-POLE WEIGHT PER FT (LBS.)	3-POLE TYPE (A) SUPPORT BRACKET DWG. X-403-0013-2	3-POLE TYPE (B) GLASTIC SUPPORT DWG. X-400-0002-2 HALF SUPT DWG. X-101-0028-2	3-POLE TYPE (W) VAPOR BARRIER DWG. X-803-0007-2		4-POLE WEIGHT PER FT (LBS.)	4-POLE TYPE (A) SUPPORT BRACKET DWG. X-403-0013-2	4-POLE TYPE (B) GLASTIC SUPPORT DWG. X-400-0002-2 HALF SUPT DWG. X-101-0028-2	4-POLE TYPE (W) VAPOR BARRIER DWG. X-803-0007-2	
COPPER	5000	(2) .50" X 8.00"	24"	39"	12"		43"	33"	28"	24"	131	3	19	19						
COPPER	5000	(2) .50" X 8.00"	24"	39"	10"		39"	30"	25"	22"						160	3	20	20	
ALUMINUM																				



4-POLE CROSS SECTIONAL VIEW



3-POLE CROSS SECTIONAL VIEW

REV 6

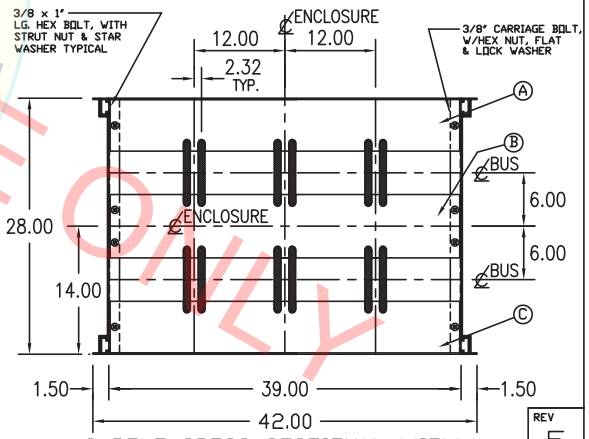
MICROFILMED

REVISIONS

NO	BY	DATE	
1	JWL	3/11/03	ADDED HALF SUP'T & CONT
2	RCH	3-2-06	SHORT CIRCUIT SPACING
3	JWL	11-7-07	REVISED ENCL & SPACING
4	JWL	12-10-07	REVISED BAR SPACING @ 1.06
5	JB	1-11-11	CHANGE FAULT RATING AND SUPPORT SPACING
6	RDM	9-13-11	CHANGE WEIGHTS

DRAWN BY JWL	TECHNIBUS® METAL ENCLOSED BUS SYSTEMS	TITLE 600V. 5000A AC BUSDUCT NON-VENTED INDOOR/OUTDOOR 3 & 4P CROSS SECTION (VERT. CONFIGURATION)	
DATE 5/11/98		DWG. No. X-023-0004-2 SHT.2 OF 2	
SCALE .125=1	ORIGINAL PROJECT: SYSTEM NAME:	SEQ. / TYPE / EQP. / MFG. / F. I.	SIZE
CHK'D.	Tolerances: Unless otherwise noted, all tolerances shall be: ± .03	X-023-0004-2	2
APP'D.			

	AMPERES	BUS DESCRIPTION		MOMENTARY FAULT RATING KA RMS ASY				3-POLE WEIGHT PER FT (LBS.)	3-POLE SUPPORT BRACKET TYPE				4-POLE WEIGHT PER FT (LBS.)	4-POLE TYPE			
				ASY →	87	113	133	150		Ⓐ DWG. X-304-0014-2	Ⓑ GLASTIC SUPPORT DWG. X-403-0009-2	Ⓒ GLASTIC SUPPORT DWG. X-403-0009-2	Ⓦ VAPOR BARRIER DWG. X-803-0009-2					
				SYM →	65	85	100	113									
				PEAK →	150	196	230	260									
				SUPPORT SPACING	39"	30"	25"	18"									
COPPER	6000	(4) .38" X 6.00"							162	1	1	1	2				



3-POLE CROSS SECTIONAL VIEW

REV 5

MICROFILMED

REVISIONS	NO	BY	DATE
ADDED HALF ADDED CHN'L	1	JWL	3/12/03
SHORT CIRCUIT SPACING	2	RCH	3-2-06
REDESIGN PER 5KV DESIGN	3	JWL	11-12-07
CHANGE FAULT RATING AND SUPPORT SPACING	4	JB	1-11-11
CHANGE WEIGHTS	5	RDM	9-13-11

DRAWN BY: JWL
DATE: 5/21/98
SCALE: .125=1
CHK'D.
APP'D.

TECHNIBUS
METAL ENCLOSED BUS SYSTEMS

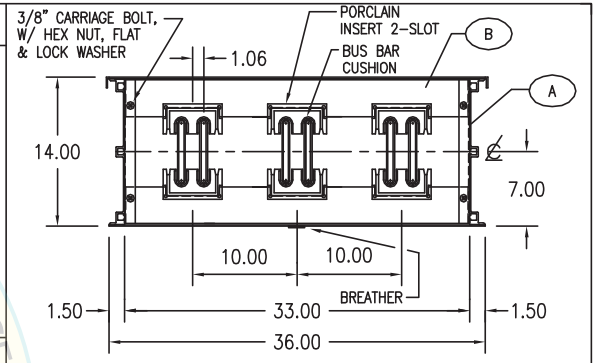
ORIGINAL PROJECT: SYSTEM NAME:

Tolerances: Unless otherwise noted, all tolerances shall be: ± .03

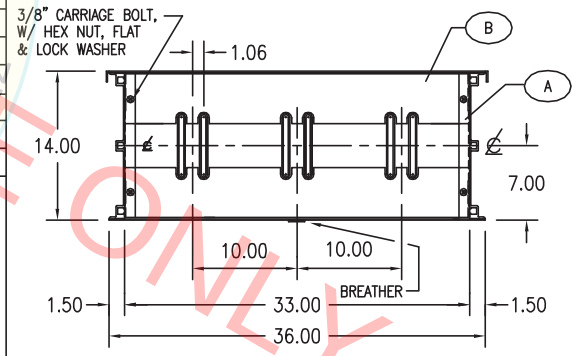
TITLE
600V. 6000A AC BUSDUCT NON-VENTED
INDOOR/OUTDOOR 3P
CROSS SECTION (VERT. CONFIGURATION)
DWG. No. X-023-0014-2

SEQ.	TYPE	EQP.	MFG.	F. I.	SIZE
X-023-0014-2					2

	AMPERES	BUS DESCRIPTION	MOMENTARY FAULT RATING KA RMS ASY			5KV WEIGHT PER FT (LBS.)	5KV TYPE			15KV WEIGHT PER FT (LBS.)	15KV TYPE		
			39	58	78		(A) SUPPORT BRACKET DWG. X-303-0002-1	(B) GLASTIC SUPPORT DWG. X-403-0007-2	(W) VAPOR BARRIER DWG. X-803-0002-2		(A) SUPPORT BRACKET DWG. X-303-0002-1	(B) GLASTIC SUPPORT DWG. X-403-0010-2	(W) VAPOR BARRIER DWG. X-803-0006-2
	SYM →		25.81	38.71	51.61								
			SUPPORT SPACING										
COPPER	4000	(2) .63" X 6.00"	30"	30"	30"	125	3	1	13		3	1	13



15KV CROSS SECTION



5KV CROSS SECTION

REV 8

MICROFILMED

REVISIONS NO	BY	DATE	
1	JL	10/30/01	ADDED UL
2	KK	3/20/03	CHANGED MOMENTARY
3	JL	4/22/03	MINOR CHG'S
4	RCH	3-2-06	SHORT CIRCUIT SPACING
5	JWL	8-6-08	REVISED SUP'T TYPE NUMBER
6	JAZ	10-20-08	REV'D MOMENTARY SUP'T SPACING PER UL SPEC
7	JWL	9-22-09	CHANGED SUP'T TYPE NUMBER
8	RDM	9-13-11	CHANGED WEIGHT

DRAWN BY: JWL
DATE: 7/05/01
SCALE: .125=1
CHK'D.
APP'D.

TECHNIBUS®
METAL ENCLOSED BUS SYSTEMS
1501 RAFF RD. SW.
CANTON, OHIO 44710

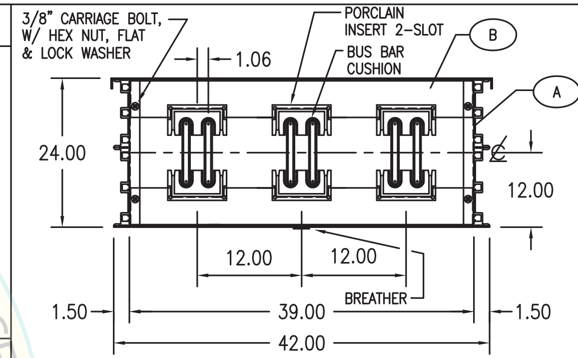
ORIGINAL PROJECT: SYSTEM NAME:

TITLE
5 & 15KV 4000A AC BUSDUCT NON-VENTED
INDOOR/OUTDOOR 3 PHASE
UL-CROSS SECTION
DWG. No. X-023-0020-2

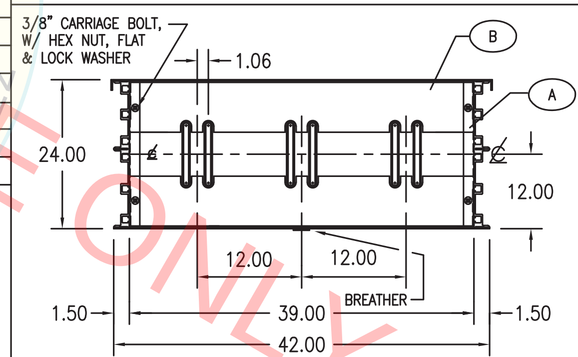
SEQ.	TYPE	EQP.	MFG.	F. I.	SIZE
X-023-0020-2					2

		5KV								15KV				
		MOMENTARY FAULT RATING							MOMENTARY FAULT RATING					
		KA	RMS	ASY	WEIGHT PER FT (LBS.)	SUPPORT BRACKET DWG. X-403-0013-2 (A)	GLASTIC SUPPORT DWG. X-403-0008-2 (B)	VAPOR BARRIER DWG. X-803-0002-2 (W)	KA	RMS	ASY	WEIGHT PER FT (LBS.)	SUPPORT BRACKET DWG. X-403-0013-2 (A)	GLASTIC SUPPORT DWG. X-403-0011-2 (B)	VAPOR BARRIER DWG. X-803-0006-2 (W)
		39	58	78											
	SYM	25.81	38.71	51.61											
AMPERES	BUS DESCRIPTION	SUPPORT SPACING				TYPE			SUPPORT SPACING						
5000	(2) .50" X 8.00"	42"	42"	42"	143	1	1	14	30"	30"	30"		1	1	12

COPPER



15KV CROSS SECTION



5KV CROSS SECTION

REV 5

MICROFILMED

REVISIONS

NO	BY	DATE	
1	KK	3/20/03	REVISED FAULT RATINGS
2	JL	4/22/03	MINOR CHG'S
3	RCH	3-2-06	SHORT CIRCUIT SPACING
4	JAZ	10-20-08	REV'D MOMENTARY SUP'T SPACING PER UL SPEC
5	RDM	9-13-11	CHGD. WEIGHT

DRAWN BY JWL
DATE 7/05/01
SCALE .125=1
CHK'D.
APP'D.

TECHNIBUS®
METAL ENCLOSED BUS SYSTEMS
1501 RAFF RD. SW.
CANTON, OHIO 44710

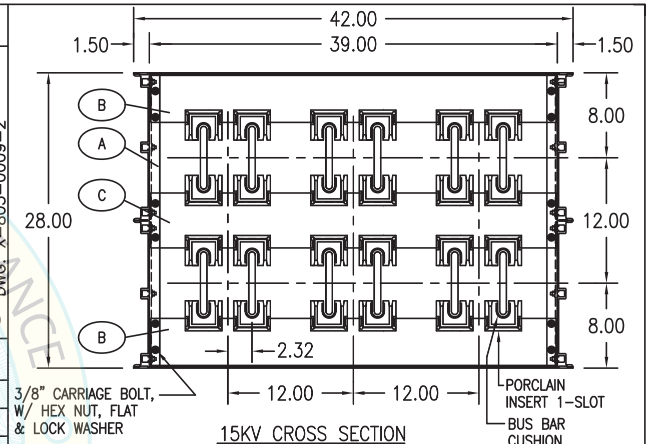
ORIGINAL PROJECT:
SYSTEM NAME:

TITLE
5 & 15KV 5000A AC BUSDUCT NON-VENTED
INDOOR/OUTDOOR 3 PHASE
UL-CROSS SECTION
DWG. No. X-023-0021-2

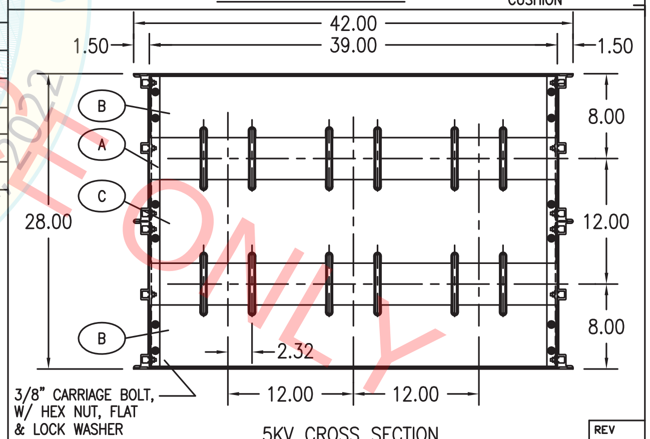
SEQ.	TYPE	EQP.	MFG.	F. I.	SIZE
X-023-0021-2					2

						5KV						15KV							
		MOMENTARY FAULT RATING				WEIGHT PER FT (LBS.)	SUPPORT BRACKET DWG. X-403-0014-2 (A)	GLASTIC SUPPORT DWG. X-403-0009-2/O (B)	GLASTIC SUPPORT DWG. X-403-0009-2/R (C)	VAPOR BARRIER DWG. X-803-0009-2 (W)	MOMENTARY FAULT RATING				WEIGHT PER FT (LBS.)	SUPPORT BRACKET DWG. X-403-0014-2 (A)	GLASTIC SUPPORT DWG. X-403-0012-2/P (B)	GLASTIC SUPPORT DWG. X-403-0012-2/T (C)	VAPOR BARRIER DWG. X-803-0009-2 (W)
		KA	RMS	ASY							KA	RMS	ASY						
		58	78	102															
	SYM →	25.81"	38.71"	51.61"			TYPE												
AMPERES	BUS DESCRIPTION	SUPPORT SPACING									SUPPORT SPACING								
6000	(4) .38" X 6.00"	42"	42"	42"		162	1	1	1	2	36"	36"	36"			1	1	1	1

COPPER



15KV CROSS SECTION



5KV CROSS SECTION

REV 5

MICROFILMED

REVISIONS

NO	BY	DATE	
1	KK	3/20/03	REVISED FAULT RATINGS
2	JL	4/22/03	MINOR CHG'S
3	RCH	3-2-06	SHORT CIRCUIT SPACING
4	JAZ	10-20-08	REV'D MOMENTARY SUP'T SPACING PER UL SPEC
5	RDM	9-13-11	CHGD. WEIGHT

DRAWN BY JWL
DATE 7/05/01
SCALE .125=1
CHK' D.
APP' D.

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METAL ENCLOSED BUS SYSTEMS
1501 RAFF RD. SW.
CANTON, OHIO 44710

ORIGINAL PROJECT:
SYSTEM NAME:

TITLE
5 & 15KV 6000A AC BUSDUCT NON-VENTED INDOOR/OUTDOOR 3 PHASE UL-CROSS SECTION
DWG. No. X-023-0022-2

SEQ.	TYPE	EQP.	MFG.	F. I.	SIZE
X-023-0022-2					2

NOTE:
1200A, 1600A, 2000A, 2500A, 3000A COPPER BUS DUCT ON THIS DRAWING IS UL LISTED.

EPOXY INSULATION TEST 15KV TEST LEVEL .09
EPOXY INSULATION TEST 25KV TEST LEVEL .12
EPOXY INSULATION TEST 38KV TEST LEVEL .18

	AMPRES	FIG.	BUS DESCRIPTION	"D"	"H"	"W"	WT./FT.	SUPPORT SPACING 39 (25.81)	58 (38.71)	78 (51.61)	100 (64.52)	(A) SUPPORT BRACKETS DWG. X-302-0002-2	(B) GLASTIC SUPPORT DWG. X-400-0001-4	(W) 5KV VAPOR BARR. DWG. X-803-0002-2	(D) BUS BAR CUSHION DWG. X-101-0023-1	(W) 15KV SILICONE FIRESTOP DWG. X-803-0006-2	EQUIPMENT TERMINATION DWG. X-109-0018-2	(C) SUPPORT BRACKETS DWG. X-101-0002-4	FOAM CONTAINMENT CHANNEL DWG. X-101-0016-2
COPPER	UL-1200	1	(1) 1/4 x 3	6.75	14	24	34	24	24	24		1		1	2	1	1		1
COPPER	UL-1600	1	(1) 1/2 x 3	6.62	14	24	41	36	36	36		1		1	1	1	5		1
COPPER	UL-2000	1	(1) 5/8 x 4	7.62	14	27	55	39	39	39		2		4	1	4	8		2
COPPER	UL-2500	1	(1) 1/2 x 6	9.62	14	33	64	42	42	42		4		5	1	5	6		4
COPPER	UL-3000	1	(2) 3/8 x 6	9.75	14	33	85	48	48	48		4		9	2	9	10		4
COPPER	4000	1	(2) 5/8 x 6	9.63	14	33	125	48	48	48	48	4		9	1	9	15		4
COPPER	5000	2	(2) 1/2 x 8	12.00	24	39	143	48	48	48	43			12	1	12	13	1	5
ALUMINUM	1200	1	(1) 1/2 x 3	6.62	14	24	30	48	44	31	20	1		1	1	1	5		1
ALUMINUM	1600	1	(1) 5/8 x 4	7.62	14	27	34	48	48	36	23	2		4	1	4	8		2
ALUMINUM	2000	1	(1) 5/8 x 6	9.62	14	33	41	48	48	46	29	4		5	1	5	9		4
ALUMINUM	2500	1	(2) 5/8 x 4	7.62	14	27	44	48	48	48	46	2		7	1	7	14		2
ALUMINUM	3000	1	(2) 5/8 x 6	9.62	14	33	55	48	48	48	48	4		9	1	9	15		4

ASM/PRT DWG NO. — TYPE NUMBER

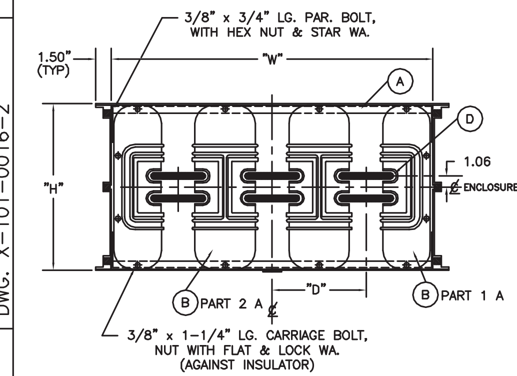

FIG.1

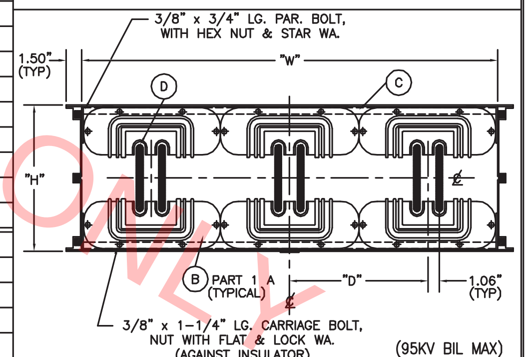

FIG.2

(95KV BIL MAX)

No.	BY	DATE	REVISION
9	RCH	3-10-06	SHORT CIRCUIT SPACING
7	JWL	3-12-03	ADDED CONTAINMENT BRACKET
6	RDM	3-06-03	ADDED BIL NOTE & CHGD LOGO
5	JL	10-29-01	ADDED 4000A & 5000A ALSO UL LABEL
4	KK	7-06-01	REVISED SUPPORT SPACING
3	KK	6-27-01	DELETED 4000A & 5000A INFO.
2	MAB	5-25-00	ADDED 5KV SILICONE VAPOR BARRIER
1	JWL	5-1-98	ADDED 5KV VAPOR BARRIER

No.	BY	DATE	REVISION
11	RDM	9-13-11	CHGD WEIGHTS
10	JAZ	10-20-08	CHGD MOMENTARY SPACING PER UL SPEC
8	RDM	3-19-03	CHGD MOMENTARY

MICROFILMED:
DRN/CHK: DPS
MATERIAL: N/A
DATE: 10/1/93
FINISH: N/A
SCALE: NTS
TITLE: 5 & 15 KV AC BUS DUCT NON-VENTED INDOOR & OUTDOOR 3P 3W CROSS SECTION POLYESTER INSULATORS
APP'D:
DRAWING No: X-027-0001-2
REV: 11

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METAL ENCLOSED BUS SYSTEMS
1501 Raff Road SW.
Canton, Ohio 44710

NOTE:
1200A, 1600A, 2000A, 2500A, 3000A COPPER BUS DUCT ON THIS DRAWING IS UL LISTED.

EPOXY INSULATION TEST 15KV TEST LEVEL .09
EPOXY INSULATION TEST 25KV TEST LEVEL .12
EPOXY INSULATION TEST 38KV TEST LEVEL .18

	AMPRES	FIG.	BUS DESCRIPTION	"D"	"H"	"W"	WT./FT.	SUPPORT SPACING 39 (25.81)	58 (38.71)	78 (51.61)	100 (64.52)	(A) SUPPORT BRACKETS DWG. X-302-0002-2	(B) GLASTIC SUPPORT DWG. X-400-0001-4	(W) 5KV VAPOR BARR. DWG. X-803-0002-2	(D) BUS BAR CUSHION DWG. X-101-0023-1	(W) 15KV SILICONE FIRESTOP DWG. X-803-0006-2	EQUIPMENT TERMINATION DWG. X-109-0018-2	(C) SUPPORT BRACKETS DWG. X-101-0002-4	FOAM CONTAINMENT CHANNEL DWG. X-101-0016-2
COPPER	UL-1200	1	(1) 1/4 x 3	6.75	14	24	34	24	24	24		1		1	2	1	1		1
COPPER	UL-1600	1	(1) 1/2 x 3	6.62	14	24	41	36	36	36		1		1	1	1	5		1
COPPER	UL-2000	1	(1) 5/8 x 4	7.62	14	27	55	39	39	39		2		4	1	4	8		2
COPPER	UL-2500	1	(1) 1/2 x 6	9.62	14	33	64	42	42	42		4		5	1	5	6		4
COPPER	UL-3000	1	(2) 3/8 x 6	9.75	14	33	85	48	48	48		4		9	2	9	10		4
ALUMINUM	1200	1	(1) 1/2 x 3	6.62	14	24	30	48	44	31	20	1		1	1	1	5		1
ALUMINUM	1600	1	(1) 5/8 x 4	7.62	14	27	34	48	48	36	23	2		4	1	4	8		2
ALUMINUM	2000	1	(1) 5/8 x 6	9.62	14	33	41	48	48	46	29	4		5	1	5	9		4
ALUMINUM	2500	1	(2) 5/8 x 4	7.62	14	27	44	48	48	48	46	2		7	1	7	14		2
ALUMINUM	3000	1	(2) 5/8 x 6	9.62	14	33	55	48	48	48	48	4		9	1	9	15		4

ASM/PRT DWG NO. — TYPE NUMBER

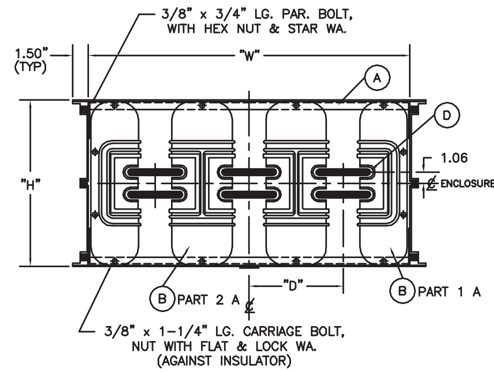

FIG.1

No.	BY	DATE	REVISION
12	RDM	9-13-11	REMOVED 4000A AND 5000A
11	RDM	9-13-11	CHGD WEIGHTS
10	JAZ	10-20-08	CHGD MOMENTARY SPACING PER UL SPEC
8	RDM	3-19-03	CHGD MOMENTARY

No.	BY	DATE	REVISION
9	RCH	3-10-06	SHORT CIRCUIT SPACING
7	JWL	3-12-03	ADDED CONTAINMENT BRACKET
6	RDM	3-06-03	ADDED BIL NOTE & CHGD LOGO
5	JL	10-29-01	ADDED 4000A & 5000A ALSO UL LABEL
4	KK	7-06-01	REVISED SUPPORT SPACING
3	KK	6-27-01	DELETED 4000A & 5000A INFO.
2	MAB	5-25-00	ADDED 5KV SILICONE VAPOR BARRIER
1	JWL	5-1-98	ADDED 5KV VAPOR BARRIER

MICROFILMED:

DRN/CHK: DPS
MATERIAL: N/A
DATE: 10/1/93
FINISH: N/A
SCALE: NTS
TITLE: 5 & 15 KV AC BUS DUCT NON-VENTED INDOOR & OUTDOOR 3P 3W CROSS SECTION POLYESTER INSULATORS
APP'D:
DRAWING No: X-027-0001-2
REV: 12

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METAL ENCLOSED BUS SYSTEMS
1501 Raff Road SW.
Canton, Ohio 44710

CAD FILE: AT806

NOTE:
1.) NONE OF THE BUS DISCRIBED BELOW IS UL LISTED.
2.) PORCELAIN INSULATORS WERE NOT CERTIFIED IN THESE ARRANGEMENTS.

	AMPRES	FIG.	BUS DESCRIPTION	"D"	"H"	"W"	WT./FT.	SUPPORT SPACING SYM 25.81 / 40	38.71 / 60	51.61 / 80	64.52 / 100	(A) SUPPORT BRACKETS DWG. X-302-0002-2	(B) GLASTIC SUPPORT DWG. X-101-0002-4	(C) PORCELAIN SUPPORT DWG. X-101-0008-2	(D) BUS BAR CUSHION DWG. X-101-0023-1	(W) 5/15KV SILICONE BARR. DWG. X-803-0006-2	(FF) THRU TYPE PORCELAIN DWG. X-101-0009-2	FOAM CONTAINMENT CHANNEL DWG. X-101-0016-2
												TYPE NUMBER						
COPPER	1200	1	(1) 1/4 x 3	6.75	14	24	34	48	43	32	20	1			2	1	1	1
	1600	1	(1) 1/2 x 3	6.62	14	24	41	48	48	31	20	1			1	1	1	1
	2000	1	(1) 5/8 x 4	7.62	14	27	55	48	48	36	23	2			1	4	2	2
	2500	1	(1) 1/2 x 6	9.62	14	33	64	48	48	46	29	4			1	5	6	4
	3000	1	(2) 3/8 x 6	9.75	14	33	85	48	48	48	48	4			2	9	3	4
	4000	1	(2) 5/8 x 6	9.63	14	33	125	48	48	48	48	4			1	9	3	4
	5000	2	(2) 1/2 x 8	12.00	24	39	143	48	48	48	43		1		1	12	3	5
ALUMINUM	1200	1	(1) 1/2 x 3	6.62	14	24	30	48	44	31	20	1			1	1	1	1
	1600	1	(1) 5/8 x 4	7.62	14	27	34	48	48	36	23	2			1	4	2	2
	2000	1	(1) 5/8 x 6	9.62	14	33	41	48	48	46	29	4			1	5	6	4
	2500	1	(2) 5/8 x 4	7.62	14	27	44	48	48	48	46	2			1	7	5	2
	3000	1	(2) 5/8 x 6	9.62	14	33	55	48	48	48	48	4			1	9	3	4

ASM/PRT DWG NO.

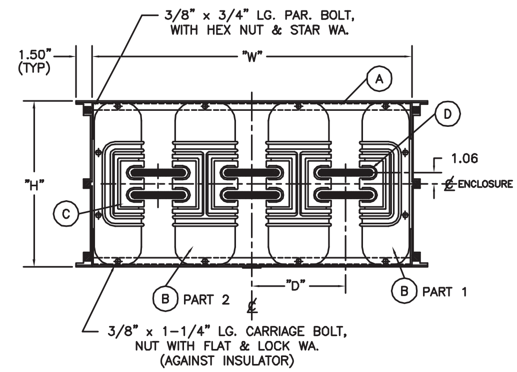
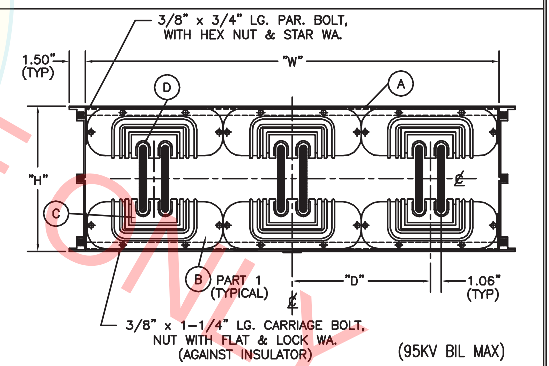


FIG.1



(95KV BIL MAX)

FIG.2

No.	BY	DATE	REVISION
7	RCH	3-2-06	SHORT CIRCUIT SPACING
6	JWL	4/22/03	MINOR CHG'S
5	RDM	3/6/03	ADDED BIL NOTE
4	JL	10/30/01	ADDED 4000A & 5000A INFO.
3	KK	7/06/01	REVISED SUPPORT SPACING
2	KK	6/27/01	DELETED 4000A & 5000A INFO.
1	JWL	12/4/00	REVISED VAPOR BARRIER

MICROFILMED:
DRN/CHK: DPS
MATERIAL: N/A
DATE: 10/1/93
FINISH: N/A
SCALE: NTS
TITLE: 5 & 15 KV AC BUS DUCT NON-VENTED INDOOR & OUTDOOR 3P 3W CROSS SECTION PORCELAIN INSULATOR (NOT UL LISTED)
APP'D:
DRAWING No: X-027-0002-2
REV: 8

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METAL ENCLOSED BUS SYSTEMS
1501 Raff Road SW.
Canton, Ohio 44710

CAD FILE: AT805