THE SCHOOL DISTRICT OF PHILADLPHIA
SCHOOL REFORM COMMISSION
Office of Capital Programs
440 North Broad Street, 3rd Floor – Suite 371
Philadelphia, PA 19130

TELEPHONE: (215) 400-4730

Addendum No. 4

Subject: Thomas G. Morton: HVAC Renovation Project
SDP Contract No. B-096 (C) of 2017/18
SDP Contract No. B-097 (C) of 2017/18
SDP Contract No. B-098 (C) of 2017/18

Location: Thomas G. Morton Elementary School
2501 South 63rd Street,
Philadelphia, PA 19142

This Addendum, dated 7 of October, 2020, shall modify and become part of the Contract Documents for the work of this project. Any items not mentioned herein, or affected by, shall be performed strictly in accordance with the original documents.

The following items, clarifications and/or revisions are to be included in the Contract Documents; these items are specific to the electrical contract documents:

1) In reference to addendum # 3 and the answer to question # 2 Is **all** of the ceiling tile being replaced throughout the classrooms, corridors and hallways and what about the other offices/rooms that ductwork, units and piping are being replaced (besides classrooms, corridors and hallways)

   Response: Furnish and install Armstrong (lay-in) ceiling tile (See attached information sheet). Replace all ceiling tile throughout the school with the exception of the boiler and mechanical rooms where there is no existing ceiling tile. Contractor shall submit a cut sheet for the SDP and EOR approval.

2) In light of the BAS comments in addenda 1 and 2, are the following drawing notes still valid?
   a) M4.2 General Controls Note #5
   b) E2.0 New Work Sheet Key Notes # 1,2,3
   c) E2.1 New Work Sheet Key Note #3
   d) Also, is the BAS wiring in the boiler rm in EMT or Rigid Conduit?

   Response: a) Drawing M4.2, General Controls Note No.5 stands as stated.
   b) RGS is rigid galvanized Steel conduit
   c) The EC shall provide the RGS Conduit and pull strings for the control wiring. The MC/Controls Contractor shall furnish and install the control wiring in the conduit to all BAS controls, equipment and control panel(s).
   d) The BAS wiring in the boiler room shall be run in rigid conduit by the EC

3) On drawing M2.2, the supply duct from HVU-1 is noted as duct sox. The drawing does not indicate any sizing for the duct sox. In addition, it appears as though it's drawn as rectangular ductwork.

Response: Furnish and install a sheet metal transition duct piece to attach to the duct sox. Furnish and install a 32" diameter duct sox from the new transition piece to the proposed layout shown on the drawing. See attached manufacturer's literature for specifications and installation requirements. Contractor shall submit a cut sheet for the SDP and EOR approval.

End of Addendum

Attachments:

1. **Data Sheet-Ceiling Tile**
2. **Specification-DuctSox**
3. **Submittal-DuctSox**

FINE FISSURED™
FINE FISSURED™ High NRC

Square Lay-in
medium texture

TOTAL ACOUSTICS®
Sound Absorption (NRC)
+ Sound Blocking (CAC)

Fine Fissured

Fine Fissured High NRC

Fine Fissured™ panels with Prelude® XL® 15/16" suspension system (Pgs. 458-459)

See more photos at:
armstrongceilings.com/photogallery
SEARCH: fine fissured

This economical, non-directional panel is available in standard and high-acoustical absorption options.

KEY SELECTION ATTRIBUTES

- Get total noise control and floor plan versatility with Total Acoustics® ceiling panels: NRC + CAC = Total Acoustics Performance™
- Meets ANSI S12.60 Classroom Guidelines: Items 1713, 1714, 1810, 1811
- Four new colors to complement interiors
- Economical
- Non-directional visual reduces scrap and installation time
- 30-Year Limited System Warranty against visible sag (excludes item 1738), mold and mildew
- 10-Year replacement panel available for items 1713, 1714, 1728

10-YEAR REPLACEMENT PANEL AVAILABILITY

COLORS

Due to printing limitations, shade may vary from actual product.

White (WH) | Ivory (IV) | Medium Taupe (MT) | Light Grey (LG) | Grey Stone (GS) | Adobe (AD) | Tech Black (BL)

Items 1728 and 1729 are available in colors.
Item 1713 is available in Black and White.
All other items are available in White only.

Colored ceilings are dye-lotted and should be segregated by dye lot. Do not mix.

DETAILS

1. Fine Fissured™ Square Lay-in
2. Fine Fissured™ Square Lay-in with Prelude® 15/16" suspension system

FINE FISSURED™
FINE FISSURED™ High NRC

Square Lay-in
medium texture

GREENGUARD Gold Certified
(details below)

UP TO 73% RECYCLED CONTENT

Calculate LEED contribution at armstrongceilings.com/greengenie

LEED®: energy management; construction waste mgmt; regional materials; design for flexibility; EPD; recyclable/extended producer resp.; biobased materials; recycled content; sourcing of raw materials; material ingredient reporting; low emitting/materials; lighting quality; acoustics

▲ LOCATION DEPENDENT

VISUAL SELECTION

PERFORMANCE SELECTION

Dots represent high level of performance.

$$$$

Edge Profile	Susp. Dwg. Pgs. 474-478 armstrongceilings.com/catdwgs	Item No. ◆	Dimensions (Inches)		UL Classified Acoustics NRC	UL Classified Acoustics CAC	Total Acoustics[1] NRC+CAC	Articulation Class AC	Fire Performance	Light Reflect	Mold & Mildew Protection Bio-Block	Sag Resist Humi-Guard+	Certified Low VOC Emissions	Durability	Recycled Content	Recycle Program	30-Yr Warranty
FINE FISSURED™ High NRC																	
15/16" Square Lay-in	1	**1754**	24 x 24 x 7/8"	□	0.75 •	35 •	BETTER	170 •	Class A	0.85 •	•	•	•	Std	•	•	•
	1	**1755**	24 x 48 x 7/8"	▭	0.75 •	35 •	BETTER	170 •	Class A	0.85 •	•	•	•	Std	•	•	•
FINE FISSURED™																	
15/16" Square Lay-in	1	**1736**	20 x 60 x 5/8"	▭	0.55	35 •	–	–	Class A	0.82 •	•	•	•	Std	Std	•	•
	1	**1728_ _**	24 x 24 x 5/8"	□	0.55	33	–	–	Class A	0.82* •	•	•	•	Std	Std	•	•
	1	**465**	24 x 24 x 5/8"	□	0.55	35	–	–	Class A	0.82 •	•	•	•	Std	Std	•	•
	1	**1831**	24 x 24 x 5/8"	□	0.55	35 •	–	–	Fire Guard™	0.82 •	•	•	•	Std	•	•	•
	1	**1729_ _**	24 x 48 x 5/8"	▭	0.55	35 •	–	–	Class A	0.82* •	•	•	•	Std	Std	•	•

MORE ITEMS ▶

[1] Total Acoustics® ceiling panels have an ideal combination of sound absorption and sound-blocking in one product.
GOOD (NRC 0.60-0.65; CAC 35+) **BETTER** (NRC 0.70-0.75; CAC 35+) **BEST** (NRC 0.80+; CAC 35+)

◆ Add 2-letter color suffix to item number when specifying or ordering (e.g., 1729 B L)

* Light reflectance number for white only.

SUSPENSION SYSTEMS

15/16"

Prelude®
Prelude® XL®

PHYSICAL DATA

Material
Wet-formed mineral fiber

Surface Finish
Factory-applied latex paint

Fire Performance
Class A: ASTM E84 and CAN/ULC S102 surface burning characteristics. Flame Spread Index 25 or less. Smoke Developed Index 50 or less (UL labeled). Fire Guard: A fire-resistive ceiling when used in applicable UL assemblies (Class A).

ASTM E1264 Classification
Type III, Form 2, Pattern C E; Fire Class A

Humidity/Sag Resistance
HumiGuard® Plus ceiling panels are recommended for areas subject to high humidity, up to, but not including, standing water and outdoor applications.

Mold/Mildew Protection
Ceiling panels with BioBlock® performance resist the growth of mold and mildew.

VOC Emissions
GREENGUARD Gold Certified
PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS UL.COM/GG UL 2818
Third-party certified compliant with California Department of Public Health CDPH/EHLB/Standard Method Version 1.2, 2017. This standard is the guideline for low emissions in LEED, WELL, Living Building Challenge, CalGreen Title 24, ANSI/ASHRAE/USGBC/IES Standard 189; ANSI/GBI Green Building Assessment Protocol.

Acoustical Performance
CAC testing conducted using Prelude® XL® suspension system.

Primary (Embodied) Energy
See all LCA information on our EPDs.

High Recycled Content
Contains greater than 50% total recycled content. Total recycled content based on product composition of post-consumer and pre-consumer (post-industrial) recycled content per FTC guidelines.

Insulation Value
R Factor – 1.5 (BTU units)
R Factor – 0.26 (Watts units)

30-Year Performance Guarantee & Warranty
When installed with Armstrong® Suspension System. Details at armstrongceilings.co

Weight; Square Feet/Carton
1728 – 0.70 lbs/SF; 64 SF/ctn
465 – 0.70 lbs/SF; 64 SF/ctn
1729 – 0.70 lbs/SF; 96 SF/ctn
1736 – 0.93 lbs/SF; 100 SF/ctn
1754 – 1.08 lbs/SF; 40 SF/ctn
1755 – 1.08 lbs/SF; 48 SF/ctn
1831 – 1.05 lbs/SF; 64 SF/ctn

Minimum Order Quantity
1 carton, excludes made-to-order panels

Metric Items Available
1728M, 1729M, 1736M, 1754M, 1755M, 1831M – Metric items are subject to extended lead times and minimum quantities. Contact your representative for more details.

FINE FISSURED™
FINE FISSURED™ High NRC

Square Lay-in
medium texture

GREENGUARD Gold Certified
(details below)

UP TO 73% RECYCLED CONTENT

Calculate LEED contribution at armstrongceilings.com/greengenie

LEED® v4: energy management ✓ | construction waste mgmt ✓ | regional materials ✓ | design for flexibility ✓ | EPD ✓ | recyclable/ extended producer resp. ✓ | biobased materials ✓ | recycled content ✓ | sourcing of raw materials ✓ | material ingredient reporting ✓ | low emitting/ materials ✓ | lighting quality ✓ | acoustics ✓

▲ LOCATION DEPENDENT

VISUAL SELECTION

PERFORMANCE SELECTION

Dots represent high level of performance.

$$$$

Edge Profile	Susp. Dwg. Pgs. 474-478 armstrongceilings.com/catdwgs	Item No. ◆	Dimensions (Inches)		UL Classified Acoustics NRC	UL Classified Acoustics CAC	Total Acoustics[1] NRC+CAC	Articulation Class AC	Fire Performance	Light Reflect	Mold & Mildew Protection Bio-Block	Sag Resist Humi-Guard+	Certified Low VOC Emissions	Durability	Recycled Content	Recycle Program	30-Yr Warranty
FINE FISSURED™																	
15/16" Square Lay-in	1	**466**	24 x 48 x 5/8"	▭	0.55	35	–	–	Class A	0.82 •	•	•	•	Std	Std	•	•
	1	**1830**	24 x 48 x 5/8"	▭	0.55	35 •	–	–	Fire Guard	0.82 •	•	•	•	Std	•	•	•
	1	**1737**	24 x 60 x 5/8"	▭	0.55	35 •	–	–	Class A	0.82 •	•	•	•	Std	Std	•	•
	1	**1738**	30 x 60 x 3/4"	▭	0.55	35 •	–	–	Class A	0.82 •	•	Std	•	Std	Std	•	1-Yr

FINE FISSURED™ Size Capabilities		Width	Length													
15/16" Square Lay-in	Made-to-Order Sizes (4-6 Wks)	3/4" or 5/8" Thick		–	–	–	–	Class A	0.82 •	•	Std	•	Std	Std	•	1-Yr
		12" - 30"	18" - 72"													

MORE ITEMS ▶

[1] Total Acoustics® ceiling panels have an ideal combination of sound absorption and sound-blocking in one product.
GOOD (NRC 0.60-0.65; CAC 35+) **BETTER** (NRC 0.70-0.75; CAC 35+) **BEST** (NRC 0.80+; CAC 35+)
◆ Add 2-letter color suffix to item number when specifying or ordering (e.g., 1729 B L)
* Light reflectance number for white only.

SUSPENSION SYSTEMS

15/16"

Prelude®
Prelude® XL®

PHYSICAL DATA

Material
Wet-formed mineral fiber

Surface Finish
Factory-applied latex paint

Fire Performance
Class A: ASTM E84 and CAN/ULC S102 surface burning characteristics. Flame Spread Index 25 or less. Smoke Developed Index 50 or less (UL labeled). Fire Guard: A fire-resistive ceiling when used in applicable UL assemblies (Class A).

ASTM E1264 Classification
Type III, Form 2, Pattern C E; Fire Class A

Humidity/Sag Resistance
HumiGuard® Plus ceiling panels are recommended for areas subject to high humidity, up to, but not including, standing water and outdoor applications. Excluding Item 1738 and other size panels.

Mold/Mildew Protection
Ceiling panels with BioBlock® performance resist the growth of mold and mildew.

VOC Emissions
GREENGUARD Gold Certified
Third-party certified compliant with California Department of Public Health CDPH/EHLB/Standard Method Version 1.2, 2017. This standard is the guideline for low emissions in LEED, WELL, Living Building Challenge, CalGreen Title 24, ANSI/ASHRAE/USGBC/IES Standard 189; ANSI/GBI Green Building Assessment Protocol.

PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS UL.COM/GG UL 2818

GREENGUARD GOLD

Acoustical Performance
CAC testing conducted using Prelude® XL® suspension system.

Primary (Embodied) Energy
See all LCA information on our EPDs.

High Recycled Content
Contains greater than 50% total recycled content. Total recycled content based on product composition of post-consumer and pre-consumer (post-industrial) recycled content per FTC guidelines.

Insulation Value
R Factor – 1.5 (BTU units)
R Factor – 0.26 (Watts units)

30-Year Performance Guarantee & Warranty
When installed with Armstrong® Suspension System. Details at armstrongceilings.com (Excludes items 1755, 1738, and other size panels)

Weight; Square Feet/Carton
466 – 0.70 lbs/SF; 96 SF/ctn
1738 – 0.80 lbs/SF; 75 SF/ctn
1737 – 0.93 lbs/SF; 100 SF/ctn
1830 – 1.05 lbs/SF; 64 SF/ctn

Minimum Order Quantity
1 carton, excludes made-to-order panels

Metric Items Available
1737M, 1738M, 1810M, 1811M, 1830M –
Metric items are subject to extended lead times and minimum quantities. Contact your representative for more details.

FINE FISSURED™
FINE FISSURED™ High NRC

Square Lay-in
medium texture

GREENGUARD Gold Certified
(details below)

UP TO 73% RECYCLED CONTENT

Calculate LEED contribution at armstrongceilings.com/greengenie

LEED®: energy management; construction waste mgmt; regional materials; design for flexibility; EPD; recyclable/extended producer resp.; biobased materials; recycled content; sourcing of raw materials; material ingredient reporting; low emitting/materials; lighting quality; acoustics

LOCATION DEPENDENT

VISUAL SELECTION

PERFORMANCE SELECTION

Dots represent high level of performance. $$$$

Edge Profile	Susp. Dwg. Pgs. 474-478 armstrongceilings.com/catdwgs	Item No. ◆	Dimensions (Inches)	UL Classified Acoustics NRC	UL Classified Acoustics CAC	Total Acoustics[1] NRC+CAC	Articulation Class AC	Fire Performance	Light Reflect	Mold & Mildew Protection Bio-Block	Sag Resist Humi-Guard+	Certified Low VOC Emissions	Durability	Recycled Content	Recycle Program	30-Yr Warranty
School Zone® FINE FISSURED™																
15/16" Square Lay-in	1	**1713** **1713BL**	24 x 24 x 3/4" 24 x 24 x 3/4"	0.70 •	35 •	**BETTER**	–	Class A	0.85* •	•	•	•	Std	•	•	•
	1	**1810**	24 x 24 x 3/4"	0.70 •	40 •	**BETTER**	–	Fire Guard	0.85 •	•	•	•	Std	•	•	•
	1	**1714**	24 x 48 x 3/4"	0.70 •	40 •	**BETTER**	–	Class A	0.85 •	•	•	•	Std	•	•	•
	1	**1811**	24 x 48 x 3/4"	0.70 •	40 •	**BETTER**	–	Fire Guard	0.85 •	•	•	•	Std	•	•	•

Size Capabilities		Width	Length
15/16" Square Lay-in	Made-to-Order Sizes (4-6 Wks)	**3/4" Thick**	
		12" - 30"	18" - 72"

15/16" Square Lay-in	–	–	–	–	Fire Guard	0.85 •	•	•	•	Std	Std	•	•

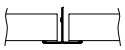
[1] Total Acoustics® ceiling panels have an ideal combination of noise reduction and sound-blocking in one product.
GOOD (NRC 0.60-0.65; CAC 35+) **BETTER** (NRC 0.70-0.75; CAC 35+) **BEST** (NRC 0.80+; CAC 35+)

◆ Add 2-letter color suffix to item number when specifying or ordering (e.g., 1729 B L)

* Light reflectance number for white only.

SUSPENSION SYSTEMS

15/16"



Prelude®
Prelude® XL®

PHYSICAL DATA

Material
Wet-formed mineral fiber

Surface Finish
Factory-applied latex paint

Fire Performance
Class A: ASTM E84 and CAN/ULC S102 surface burning characteristics. Flame Spread Index 25 or less. Smoke Developed Index 50 or less (UL labeled). Fire Guard: A fire-resistive ceiling when used in applicable UL assemblies (Class A).

ASTM E1264 Classification
Type III, Form 2, Pattern C E; Fire Class A

Humidity/Sag Resistance
HumiGuard® Plus ceiling panels are recommended for areas subject to high humidity, up to, but not including, standing water and outdoor applications. Excluding Item 1738 and other size panels.

Mold/Mildew Protection
Ceiling panels with BioBlock® performance resist the growth of mold and mildew.

VOC Emissions
GREENGUARD Gold Certified
Third-party certified compliant with California Department of Public Health CDPH/EHLB/Standard Method Version 1.2, 2017. This standard is the guideline for low emissions in LEED, WELL, Living Building Challenge, CalGreen Title 24, ANSI/ASHRAE/USGBC/IES Standard 189; ANSI/GBI Green Building Assessment Protocol.

PRODUCT CERTIFIED FOR LOW CHEMICAL EMISSIONS UL.COM/GG UL 2818

GREENGUARD GOLD

Acoustical Performance
CAC testing conducted using Prelude® XL® suspension system.

Primary (Embodied) Energy
See all LCA information on our EPDs.

High Recycled Content
Contains greater than 50% total recycled content. Total recycled content based on product composition of post-consumer and pre-consumer (post-industrial) recycled content per FTC guidelines.

Insulation Value
R Factor – 1.5 (BTU units)
R Factor – 0.26 (Watts units)

30-Year Performance Guarantee & Warranty
When installed with Armstrong® Suspension System. Details at armstrongceilings.com

Weight; Square Feet/Carton
1713, 1810 – 1.31 lbs/SF; 48 SF/ctn
1714, 1811 – 1.38 lbs/SF; 64 SF/ctn

Minimum Order Quantity
1 carton, excludes made-to-order panels

Metric Items Available
1737M, 1738M, 1810M, 1811M, 1830M – Metric items are subject to extended lead times and minimum quantities. Contact your representative for more details.

Specifications

4343 Chavenelle Rd - Dubuque, IA 52002 - USA

Project Name:

Project Location:

Verona Specification:

Spec Location:
Old Format ***Division 15, Section 15800***
2005 MasterSpec Format: ***Section/Category: [23 37 16]***

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:
A. Extent of non-metal ductwork is indicated on drawings and by requirements of this section.
B. Types of non-metal ductwork required for this project include the following:
1.Air Dispersion Products; Fabric .
1.02 QUALITY ASSURANCE:
A. Building Codes and Standards:
1. Product must be Classified by Underwriter's Laboratories in accordance with the 25/50 flame spread / smoke developed requirements of NFPA 90-A and are also classified in accordance with ICC Evaluation Service AC167.
2. All product sections must be labeled with the logo and classification marking of Underwriter's Laboratories.
B. Design & Quality Control
1. Manufacturer must have documented design support information including duct sizing, vent and orifice location, vent and orifice sizing, length, and suspension. Parameters for design, including maximum air temperature, velocity, pressure and fabric permeability, shall be considered and documented.
1.03 SUBMITTALS:
A. Product Data: Submit manufacturer's specifications on materials and manufactured products used for work of this section.
B. Building Code Data: Submit UL file number under which product is Classified by Underwriter's Laboratories.
1.04 WARRANTY
A. Manufacturer must provide a 5 Year Product Warranty for products supplied for the fabric portion of this system as well as a Design and Performance Warranty.
1.05 DELIVERY, STORAGE AND HANDLING:
A. Protect fabric systems from damage during shipping, storage and handling.
B. Where possible, store products inside and protect from weather. Where necessary to store outside, store above grade and enclose with a vented waterproof wrapping.

PART 2 - PRODUCTS
2.01 MANUFACTURER:
Subject to compliance with requirements, choose one of the following:
A. DuctSox® Corporation
Phone: (866) DUCTSOX or (563) 589-2777
FAX: (866) 398-1646 or (563) 589-2754
www.DuctSox.com
2.02 AIR DISPERSION SYSTEM, FABRIC :
A. **Verona Fabric**: Air diffusers shall be constructed of a woven fire retardant fabric complying with the following physical characteristics:
1. Fabric Construction: 100% Flame Retardant
2. Weight: 5.2 oz. /yd^2 per ASTM D3776
3. Color: (MUST SPECIFY- red, white, blue, green silver, tan or black)
4. Air Permeability: 2 (+2/-1) cfm/ft^2 per ASTM D737, Frazier
5. Temperature Range: 0 degrees F to 180 degrees F
6. Fire Retardancy: Classified by Underwriters Laboratories in accordance with the requirements of NFPA 90-A and AC-167 (noted above).

B. SYSTEMS FABRICATION REQUIREMENTS:
1. Air dispersion accomplished by linear vent and permeable fabric. Linear vent is to consist of an array of open orifices rather than a mesh style vent to reduce maintenance requirements of mesh style vents. Linear vents should also be designed to minimize dusting on fabric surface.

2. Size of vent openings and location of linear vents to be specified and approved by manufacturer.
3. Inlet connection to metal duct via fabric draw band with anchor patches as supplied by manufacturer. Anchor patches to be secured to metal duct via. zip screw fastener – supplied by contractor.
4. Inlet connection includes zipper for easy removal / maintenance.
5. Lengths to include required zippers as specified by manufacturer.
6. System to include Adjustable Flow Devices to balance turbulence, airflow and distribution as needed. Flow restriction device shall include ability to adjust the airflow resistance from 0.06 – 0.60 in w.g. static pressure.
7. End cap includes zipper for easy maintenance.
8. Fabric system shall include connectors to accommodate suspension system listed below.
9. Any deviation from a straight run shall be made using a gored elbow or an efficiency tee. Normal 90 degree elbows are 5 gores and the radius of the elbow is 1.5 times the diameter of the DuctSox.

C. DESIGN PARAMETERS:
1. Use fabric diffusers only for positive pressure air distribution components of the mechanical ventilation system.
2. Do not use fabric diffusers in concealed locations.
3. Fabric diffusers shall be designed from 0.25” water gage minimum to 3.0” maximum, with 0.5” as the standard.
4. Fabric diffusers shall be limited to design temperatures between 0 degrees F and 180 degrees F (-17.8 degrees C and 82 degrees C).
5. Design CFM, static pressure and diffuser length shall be designed or approved by the manufacturer

D. SUSPENSION HARDWARE: (include applicable components only)

1. Galvanized Tension Cable: System shall be installed using a tension cable system including a single (1 Row) or double strands (2 Row) of cable located 3” above top-dead-center (1 Row) or 3” above the 10 and 2 o’clock locations of the DuctSox system. 2 Row supports are required for systems of 32” diameter and larger. Hardware to include cable, eye bolts, cable clamps and turnbuckle(s) as required. System attachment shall be made using nylon snap clips spaced 24 inches.

PART 3 - INSTALLATION

3.01 INSTALLATION OF FABRIC AIR DISPERSION SYSTEM:
A. Install chosen suspension system in accordance with the requirements of the manufacturer. Instructions for installation shall be provided by the manufacturer with product.
B. For best results, affix last snap of eash straight run to the tension cable using the extra cable clap (provided).

3.02 CLEANING AND PROTECTION:
A. Clean air handling unit and ductwork prior to the DuctSox system unit-by-unit as it is installed. Clean external surfaces of foreign substance which may cause corrosive deterioration of facing.
B. Temporary Closure: At ends of ducts which are not connected to equipment or distribution devices at time of ductwork installation, cover with polyethylene film or other covering which will keep the system clean until installation is completed.
C. If DuctSox systems become soiled during installation, they should be removed and cleaned following the manufacturers standard terms of laundry.

Return AUI Home

DUCTSOX®

Fabric Duct Ventilation Systems

SUBMITTAL DOCUMENTS

Thomas G Morton ES HVAC Reno

This document includes details on proposed products supplied by:

DuctSox Corporation
4343 Chavenelle Drive
Dubuque, IA 52002
Ph: 866.382-8769
Fx: 563-589-2754
sales@ductsox.com
www.ductsox.com

DelRen HVAC, Inc.
100 West Narberth Terrace
Collingswood, NJ 08108
USA

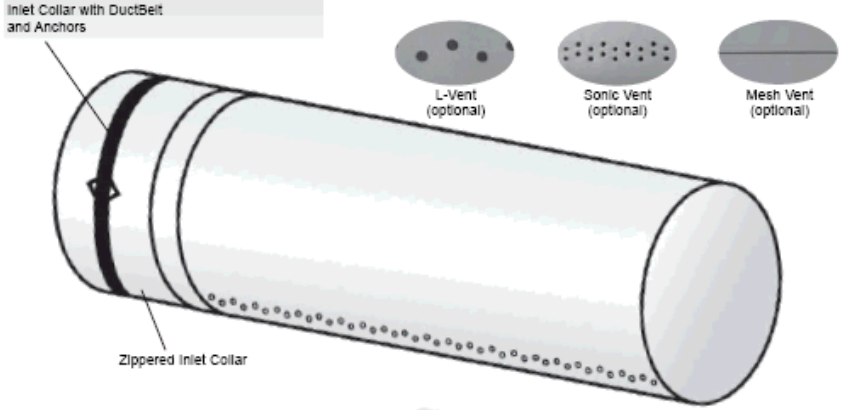
Project Location: Philadelphia, PA

Contact Phone:

Cut Sheets

COMMERCIAL

Verona™

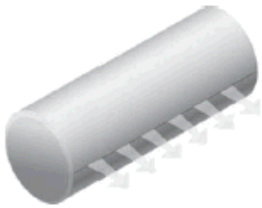


Fabric: The all purpose Verona™ is a woven air permeable commercial grade fabric that offers best-in-class performance and features. Features include finished seam construction, positive inlet anchoring system and a zippered inlet collar for the addition of DuctSox Final Filter or Adjustable Flow Device. Verona comes in seven popular colors; black, gray, white, tan, green, blue, red and custom colors. Verona is machine washable and available with all DuctSox suspension systems.

Air Permeable Fabric

(Black, Gray, White, Tan, Green, Blue, Red, Custom Colors)

Application: Ideal for any aesthetically attractive environment. Common uses are in; retail, commercial, education, and community applications. Ideal if condensation is a concern.



Comfort-Flow

Specifications:
Fabric: FR Polyester Twill
Weight: 5.2 oz/yd²
Porosity: 2 CFM/ft² @ 0.5" w.g.
Codes: UL Classified (ICC-AC167)

DUCTSOX 5 YEAR WARRANTY

CLASSIFIED UL File R18866

Terms

AIRFLOW

Terminology

VENTILATION

Airflow is delivered through a DuctSox system by pressure difference between the inside and outside of the system. Designed as a closed system, this "ineternal" pressure is calculated using:

SP_1 = Static Pressure
VP = Velocity Pressure = (Velocity/4005)2
FL = Frictional Pressure Loss, use metal equivalents.

Typical design standards suggest a ½" w.g. Static Pressure (SP) supplied at the inlet location.

Velocity Pressure (VP) according to extended testing and research - approximately 65% of VP is regained within the closed system as static pressure. To ensure proper inflation at the inlet - static pressure must be at least 30% higher than the velocity pressure

Static Pressure (SP) > VP x 1.3

Frictional Loss (FL) in most DuctSox systems is low due to inlet velocity and few diameter reductions.

Average Pressure (AP) is the summation of these pressures acting on the system:

AP = SP + ((0.65 x VP - FL) / 1/414) (inch H2O)

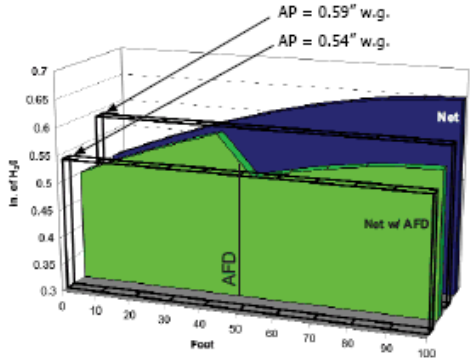
Fabric Airflow
If the design includes a porous fabric - this airflow can be calculated using the following equations:

Q_{fabric} = FP x SA x √ (AP/.5) (CFM)

FP = Fabric Porosity (rated) (CFM/ft^2)
SA = Surface Area (all fabric) (ft^2)
AP = Average Pressure (inch/w.g.)

ADJUSTABLE FLOW DEVICE (if applicable)

Airflow control is critical in HVAC air dispersion. The zip-in Adjustable Flow Device (AFD) offers variable resistance to balance static regain, balance airflow to branches reduce turbulence and reduce abrupt start-ups.



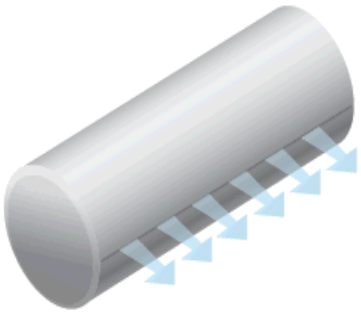
DUCTSOX
Fabric Duct Ventilation Products

4343 Chavenelle Road, Dubuque, IA 52002 Ph. 866-382-8769 Fax 866-398-1646

Series

AIRFLOW

Comfort Flow



Linear vents provide a gentle air flow. Typically used in high occupancy spaces where air diffusion and mixing are of high importance.

VENT SIZE AND AIRFLOW

To calculate vent size and airflow use the following steps:

1. Calculate airflow through fabric.

   Q_{fabric} = FP x SA x (AP/0.5)

2. Calculate Total Vent Size (TVS).

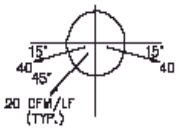
   TVS = (Q_{vent} / (Length x √ (AP/.5)

3. Select Vent Sizes.

   TVS = (VS_1 +VS_2 ...)

4. Specify Vent Orientation.

EXAMPLE



TVS = 100

100 = 40 + 40 +20

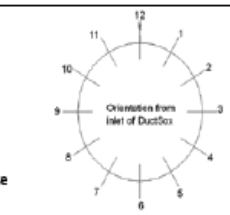
VENT LOCATION

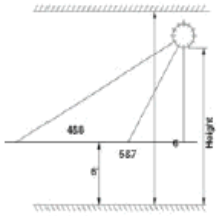
DuctSox® systems are 100% custom made, leaving room for unlimited flexibility for the locations of the vents or orifices. Some of the considerations when designing outlet orientation are:

11&1, 10&2 AND 3&9 O'CLOCK: Throw requirements focus on reaching exterior walls or filling gaps between parallel runs.

4&8, 5&7 AND 6 O'CLOCK: Throw requirements can be critical in these locations because air is delivered towards the occupied space in most cases. To calculate the throw, use the distance between the bottom of the DuctSox system and the distance above the floor using the following equations:

4&8 o'clock : (Height - 6) x 2.00 = Throw required
5&7 o'clock : (Height - 6) x 1.16 = Throw required
6 o'clock : (Height - 6) x 1.00 = Throw required





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Installation

DUCTSOX Fabric Air Dispersion Products — CABLE INSTALLATION GUIDE

Thank you for selecting a DuctSox fabric duct ventilation system. This Guide should be helpful for installing all DuctSox systems manufactured for a Tension Cable Suspension System (only). Tension cable suspension components are the most popular suspension method for DuctSox systems.

Sections of DuctSox will be labeled, assembled, bagged and boxed for shipping. More complicated systems will include a CAD detail of the system identifying which DuctSox components are in each package. Depending on the size of a project or order, the DuctSox system will be shipped by common courier in "DuctSox" boxes. All orders including our H-Track or a large amount of DuctSox may be shipped in crates by freight carrier.

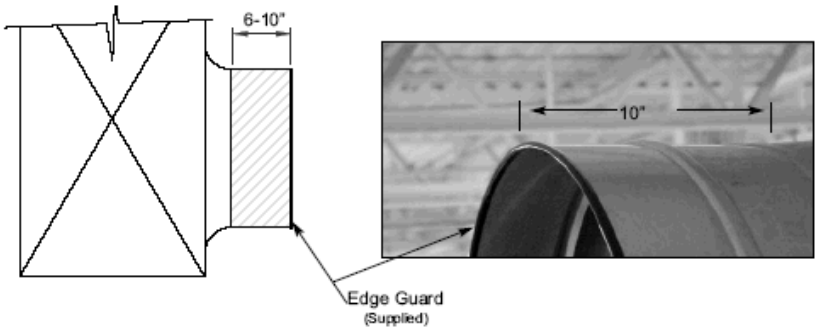
The Basic Steps of Installation include:

1: Prepare Metal Outlet Collar for Fabric Connection
2: Identify Cable Locations / Install Supports & Cable
3: Install and Assemble DuctSox Components
4: Start Up AHU / Adjust DuctSox Fitment if Needed
5: Balance Airflow / Final Filter

Step 1

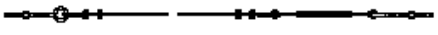
METAL OUTLET COLLAR / CONNECTION

- DuctSox are mfg. 1/2" larger than specified to fit over metal duct.
- Collar length should be 6"-10" for secure fabric attachment.
- Edge guard (provided) should be installed on the edge to reduce fabric wear.



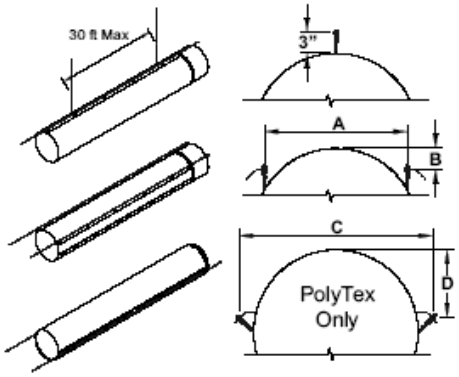
2 LOCATE CABLE ANCHORS / COMPONENTS

Tension Cable System includes 1/8" cable and hardware as shown (length = DuctSox length + 20 ft.

LENGTHS < 50 ft	LENGTHS > 50 ft
	
Hardware kit includes: 1 Turnbuckle (6" draw), 2 Eyebolts, 4 Cable Clamps and 2 Thimbles Cable Length = DuctSox Length + 20 ft (per straight)	Hardware kit includes: 2 Turnbuckles (6" draw), 2 Eyebolts, 4 Cable Clamps and 2 Thimbles Cable Length = DuctSox Length + 20 ft (per straight)

2 CABLE LOCATION / INSTALLING CABLE

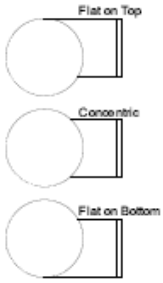
Install Cable end supports and as required. 2 Row is required for 32" dia. and larger. Construct any support brackets for 150 lbs max. cable tension. To prevent "sagging" - install provided cable support kits (cable & Gripple) every 30 ft or as needed.



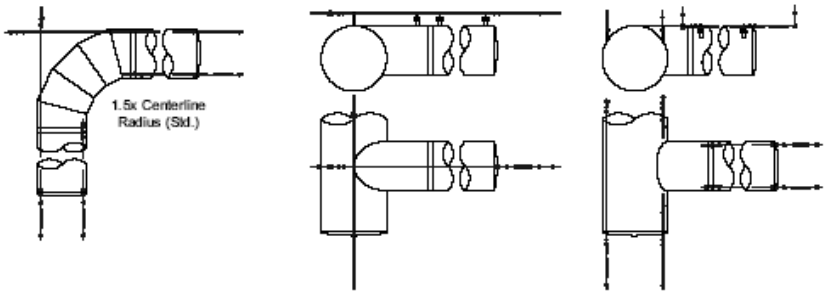
Dia.	A	B	C	D
12	10.4	0	14	5
16	13.8	1	18	7
20	17.4	2	22	9
24	20.8	3	26	11
28	24.2	4	30	13
32	27.8	5	34	15
36	30.2	6	38	17
40	34.6	7	42	19
44	38.2	8	46	21
48	41.6	9	50	23
52	45	10	54	25
56	48.4	11	58	27
60	52	12	62	29
64	55.4	13	n/a	n/a
68	58.8	14	n/a	n/a
72	62.4	15	n/a	n/a

For 14" - average between 12" & 16"
A=12.1" spacing / B = 0.5"

NOTE:
DuctSox Tee fittings are available in Flat on Top, Concentric or Flat on Bottom. When determining cable location, confirm fitting alignment to ensure proper track elevation.

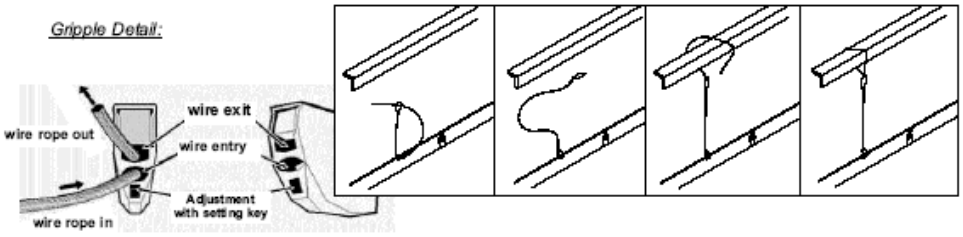


Fittings may require additional cable supporting brackets for elbows and take-off's. For best results, verify details on all fittings before determining cable end locations.



Intermediate Cable Drop supports provided include loop end and Gripple Quick Connect to ease installation.

Gripple Detail:

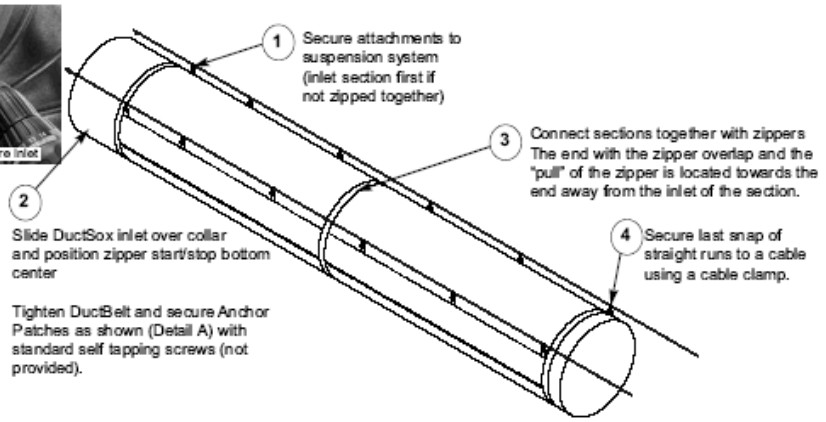


DSI-CABLE-0905B

3 DUCTSOX® FABRIC INSTALLATION

- Do not install DuctSox system until the building construction is completed and site is clean.
- Confirm centerline dimensions before unpacking and installing the DuctSox.
- During installation, use caution in all steps to keep the DuctSox clean.

Larger systems may be packaged separately. Each package will include a CAD detail revealing which sections are included in the package. Each piece includes a label on each zipper which includes diameter, length and piece number of that particular section.



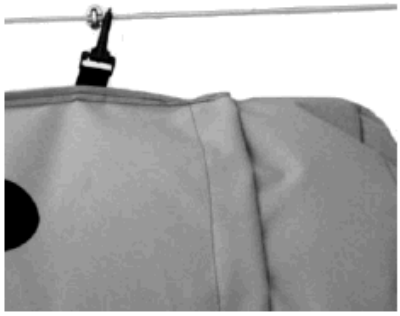
4 START UP

Turn on the AHU and inflate DuctSox System. Check all snaps and sections to ensure system is inflating properly. If required - move snaps to eliminate pucking at binding locations. If lengths to not fit properly - contact the factory to coordinate rework to ensure proper fit.

Once system is properly adjusted, deflate the system, pull the last snap in each straight section and secure tension using cable clamp to cable (will reduce inflation "poping"). If the system includes elbows - secure the last snap before elbow(s).

Cable clamps are provided to secure snaps.

Failure to install DuctSox systems correctly can void warranty.



DSI-CABLE-0905B

5 AIR BALANCING

System must be balanced to design CFM and static pressure immediately after installation. Most DuctSox systems include a zipper at the inlet location for easy access to monitor flow.

If the fabric is fluttering after balancing, please contact the factory immediately. Solutions to the fluttering include adjusting the Adjustable Flow Device (AFD), adding AFD's or other tasks that would result in laminar airflow.

FILTRATION / DuctSox FINAL FILTER®

If included, a DuctSox Final Filter will be provided assemble with the DuctSox system and should be positioned at the first zipper at the inlet of the DuctSox run. If the Equipment / fabric duct is going to be running during construction, a Merv 8 construction filter may be helpful in reducing build up of dust / dirt.

If the system becomes dirty/soiled during installaiton, please coordinate a proper cleaning prior to completion. Exterior surface dirt can - most frequently - be blown off using a combination of a brush and compressed air.

LAUNDRY INSTRUCTIONS

Sedona-Xm, TufTex, Verona, DuraTex, Microbe-X & Stat-X fabrics:

- Remove system and break down into sections
- Turn Soiled side out, soak in cold water for 30 minutes
- Wash cold gentle cycle
- Rince thoroughly (repeat cycle if water / DuctSox still soiled)
- Drip-dry or no heat tumble dry

PolyTex fabric (cannot launder)

- Remove DuctSox, spray clean with hose / water source.

If any questions arrise regarding the installation of your DuctSox system, please do not hesitate to consult your support team at **(866) DuctSox (382-8769)**.

DUCTSOX®
Fabric Air Dispersion Products
4343 Chavenelle Road
Dubuque, IA 52002-2654
www.ductsox.com

DSI-CABLE-0706

Bill of Materials

Quan	Duct Sox Description
1	32" Dia x 42' 0" - SkeleCore - Verona - 1 Row Hanging - Round Standard Color - D1 - Starts with 1 Inlet - Zipped - Ends with 1 Endcap - 2 zip(s) - 0 elbow(s) - 0 transition(s) - 0 tee(s) - 1 cross(s) - 0 Filter(s) - 1 AFD(s) - 8000 CFM - .5" Inlet Static - Comfort Flow - L-VENT - Built for Galv Cable - 5' drops - Glider
2	18" Dia x 26' 0" - SkeleCore - Verona - 1 Row Hanging - Round Standard Color - D2 - Starts with 1 Zipper - Ends with 1 Endcap - 1 zip(s) - 0 elbow(s) - 0 transition(s) - 0 tee(s) - 0 cross(s) - 0 Filter(s) - 1 AFD(s) - 2000 CFM - .5" Inlet Static - Comfort Flow - L-VENT - Built for Galv Cable - 5' drops - Glider
Quan	**Hardware Description**
1	62' - Galv Cable - D1 - Access: 1 Kit I Type - 0 Kit II Type - 5 - 5' Midsupports - 1 Cable Stops

2	46' - Galv Cable - D2 - Access: 1 Kit I Type - 0 Kit II Type - 4 - 5' Midsupports - 1 Cable Stops

Performance Data

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