*** PRICING FIRM UNTIL FEBRUARY 2025

Door Hardware Submission List		
Description	Specification	Lead Time (Weeks)
Exit Devices	Sargent 8888	1 day
	Sargent 8888-12 (Fire Rated)	1 day
	Sargent NB8700 (NB-8715-F- ETJ-96)	1 week
	Sargent NB8700-12 (Fire Rated) (12-NB-8715-F-ETJ-96)	1 week
Mortice Locks	Schlage L9000. Storeroom function 9080L (03B 6330/626)	1 week
	KL11-422 (used with electric strike)	3-4 weeks
Leversets	Marks 195 SURVIVOR series 195F/26D-G3. Gr 1. 626 Finish	1 day
Key Cylinders	Medeco Bi-Axial (H3 Keyway)	restricted, priced on application
	Schlage Paracentric (1456 and 1458 Series)	restricted, priced on application
Cylinder Guard	CGC Security Collar C26d (Keed-k24LA 26D)	1 day
Door Closers	LCN 4040xp	1 day
	LCN 1460 (large swing)	1 day
Door Stays	Glynn Johnson (90 Series) (904H32d)	1 day
Elec. Door Closers	LCN Sentronic	1 day
Elec. Strikes	Folger Adam 700 Series (LMB, 24VDC 32d Finish)712-lcbma	2-3 weeks
	Folger Adam 300 Series (LMB, 24VDC 32d Finish)310-4-lcbma	2-3 weeks
Barrier Free Operations	Micom Smart Swing SW800	2 weeks
Operator Buttons	Camden CM60/4.	1 day
	Camden CM45/X54	2 weeks
	Camden CM45/X55	2 weeks
Weatherstrip	W38S Door Sweeps 3ft	1 day
	W20S Weatherstrip 20'4"	2 weeks
Threshold	CT Series (Thermally Broken 36" x 5")CT-45	1 day
	CT Series (36" x 5") CT-10	1 day

SHERIDAN CARD ACCESS INSTALLATION STANDARDS

Typical door requirements

Card Reader:

HID Signo 40 wall mounted reader (P/N 40TKS-02-0022HM) or;

HID Signo 20 mullion mount reader (P/N 20TKS-02-0022HM)

.

The above reader(s) part number must be ordered as the firmware is exclusive to Sheridan

Reader is to be placed on the wall adjacent to the knob, not the hinge side;

Bottom of reader must be 38” to 40” above the finished floor;

The edge of the reader must be at least 2” from the door frame.

Electric strike:

Folger Adams 700 series electric strike fail secure with LBM option (12/24 volt rated); or HES 9600 series fail secure with LBM for rim mount.

Door Contact:

Sentrol 1078 or equivalent

To be mounted on top of the door with 1k ohm double end of line, normally closed termination.

Must be tied in series with strike LBM.

To be secured in place with glue or silicone.

Request to Exit (REX):

Kantech TREX or equivalent

To be mounted on the top edge secure side of door frame;

Should be above the door handle and aimed to view approx. 3” from the base of door.

RM4 Door Control module/ Door strike relay:

Software House RM4 module/ ARM-1 or compatible relay

Must be secured in a small steel keyed enclosure.

Must be mounted in the ceiling above door where drop tile is installed, or on drywall above door if there is no drop tiles.

Cabling standards

iStar to RM4 comm cable: 3 pair individually shielded 18AWG stranded copper cable (plenum rated)

Relay (for lock) to Lock power supply: 1 pair 18AWG stranded copper cable

Lock to RM4 relay: 2 pair shielded 18AWG stranded copper cable

Door Contact to RM4: 2 pair 22AWG stranded cable

REX to RM4: 2 pair 22AWG stranded cable

Reader to RM4: 6 conductor shielded 22AWG copper cable

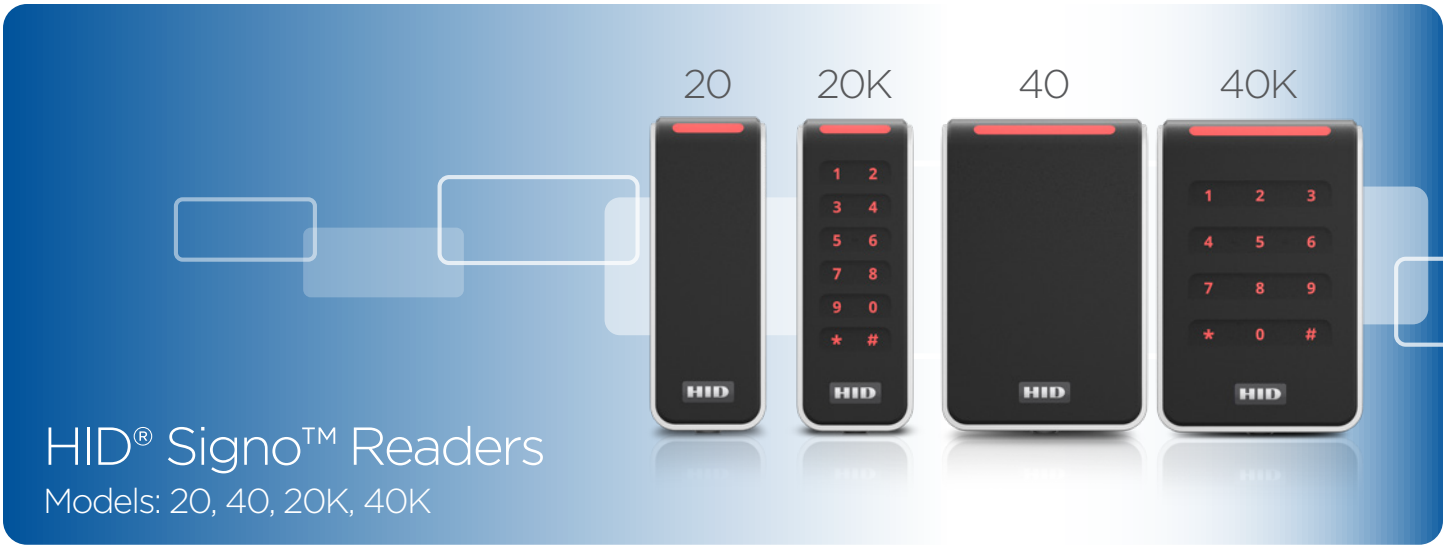
Other Equipments/ Devices

Controller: Software House iStar Ultra SE

Controller Power Supply: Software House PSX-150-E1 or equivalent

Lock Power Supply: Altronix AL600ULX or equivalent

PHYSICAL ACCESS SOLUTIONS



READY FOR THE FUTURE NOW

- Mobile-ready by default, including Apple's Enhanced Contactless Polling (ECP) to support credentials in Apple Wallet
- Sleek, innovative design to suit modern architecture
- Integrated OSDP for secure authentication and configuration post installation
- Built on a hardware platform designed to be adaptable to support future technology
- Designed to seamlessly integrate into the HID Origo® ecosystem

THE SIGNATURE LINE OF READERS FROM HID GLOBAL

- **Highly Versatile —** Support for the widest range of credential technologies, including HID Mobile Access® via native Bluetooth and Near Field Communication (NFC).
- **Unparalleled Performance —** Ultra secure storage of cryptographic keys on certified secure element hardware, plus a new surface detection feature that enables the reader to automatically recalibrate and optimize read range performance.
- **Connected to the Future —** All readers include out-of-the-box support for Open Supervised Device Protocol (OSDP) for secure bidirectional communication.

HID Signo™ is the signature line of physical access control readers from HID Global. The versatility, performance and connected capabilities of HID Signo readers set a new industry benchmark for the most highly adaptable, interoperable and secure approach to electronic access control.

Offering an unparalleled breadth of functionality, HID Signo affords security system installers and administrators a simple and effective approach to secure access control for almost any scenario.

With support for the widest array of credential technologies — past, present and future — HID Signo is the perfect choice for those looking to make the transition to a secure authentication technology.

HID Signo readers transcend the traditional approach to security by being designed to be connected and managed remotely without needing to physically touch each device. This functionality empowers access control systems to dynamically respond as new needs, configurations or threats arise.

POWERFULLY SECURE

- Multi-Layered security to ensure data authenticity and privacy
- EAL6+ Certified Secure Element Hardware
- Native OSDP secure channel capability
- Trusted secure authentication using the SIO data model
- Supports iCLASS Elite™ and Corporate 1000 Programs

MEET EVERY NEED, ADAPT TO ANY SITUATION

- Go mobile with native Bluetooth and NFC support
- Integrated 125 kHz credential read support for easy migration
- Supports over 15 common credential technologies
- Flush mount terminal block and pigtail wiring options
- Robust outdoor performance with an IP65 rating

MANAGE, UPGRADE AND CONFIGURE

- Easily and securely managed using HID Reader Manager®
- Configure via a mobile device or OSDP
- Update firmware in response to threats
- Personalize by configuring audio visual or keypad settings
- Deactivate legacy credential technology to conclude secure migration

SPECIFICATIONS

HID Signo Reader Model	20	20K	40	40K
2.4 GHz (Bluetooth) Credential Compatibility	Mobile Credentials powered by Seos® (HID Mobile Access)			
13.56 MHz (NFC) Credential Compatibility	Seos, iCLASS SE®, iCLASS SR®, iCLASS®, MIFARE Classic, MIFARE DESFire EV1/EV2, Mobile Credentials powered by Seos (HID Mobile Access)			
125 kHz Credential Compatibility	HID Proximity®, Indala Proximity®, AWID Proximity, and EM Proximity			
Typical Read Range[1]	Seos®, MIFARE Classic, MIFARE DESFire EV1/EV2 & ISO14443A Single Technology Cards – 4 to 10 cm (1.6 to 4 in) HID / AWID Proximity®, Indala Proximity®, EM Proximity & 125 kHz Single Technology Cards – 6 to 10 cm (2.4 to 4 in)			
Mounting	Suited for mullion-mount door installations or any flat surface mounting		Suited to mount and cover single gang switch boxes with a slotted mounting plate for alternate back-box spacing	
Color	Black bezel with silver trim baseplate [2]			
Keypad	No	Yes (2 x 6 layout)	No	Yes (3 x 4 layout)
Dimensions (width x length x depth)	45 mm x 121.5 mm x 19.5 mm (1.77 in x 4.78 in x 0.77 in)	45 mm x 121.5 mm x 21.5 mm (1.78 in x 4.79 in x 0.85 in)	80 mm x 121.5 mm x 19.5 mm (3.15 in x 4.78 in x 0.77 in)	80 mm x 121.5 mm x 21.5 mm (3.16 in x 4.79 in x 0.85 in)
Product Weight	Pigtail: 95 g (3.35 oz) Terminal: 75 g (2.65 oz)	Pigtail: 110 g (3.88 oz) Terminal: 90 g (3.17 oz)	Pigtail: 140 g (4.94 oz) Terminal: 120 g (4.23 oz)	Pigtail: 160 g (5.64 oz) Terminal: 140 g (4.94 oz)
Operating Voltage	12V DC			
Current Draw[3]	NSC[4]: 60 mA Peak: 250 mA Max. Avg: 70 mA IPM[5]: 45 mA	NSC[4]: 65 mA Peak: 250 mA Max. Avg: 75 mA IPM[5]: 48 mA	NSC[4]: 65 mA Peak: 250 mA Max. Avg: 75 mA IPM[5]: 45 mA	NSC[4]: 70 mA Peak: 250 mA Max. Avg: 80 mA IPM[5]: 55 mA
Device Input and Output	Input: Tri-color LED, Buzzer, Hold @ Active Low Output: Tamper Relay 0-60V DC @ 100mA Max (Dry Contact)			
Operating Temperature & Humidity	-35° C to +66° C (-31° F to +150° F) 0% to 95% non-condensing			
Storage Temperature	-40° C to +85° C (-40° F to +185° F)			
Environmental Rating	UL294 Outdoor and Indoor rated, IP65			
Transmit Frequency	125 kHz, 13.56 MHz, and 2.4 GHz			
Communications & Panel Connection	Wiegand and RS-485 Half Duplex (OSDP) via Pigtail (18 in / 0.5 m) or Terminal Strip			
Device Management	HID Reader Manager / OSDP configuration			
Certifications	UL294/cUL (US), FCC (US), IC (Canada), CE (EU), RCM (Australia, New Zealand), SRRC (China), KCC (Korea), NCC (Taiwan), iDA (Singapore), RoHS, MIC (Japan), GreenCircle, Bluetooth SIG, and additional regions. www.hidglobal.com/certifications			
Security Ratings	EAL 6+ Certified Secure Element Hardware			
Patents	www.hidglobal.com/patents			
Housing Materials	Polycarbonate – UL94 V0			
UL Reference Number	20	20K	40	40K
Warranty	Limited Lifetime			

1 Read range listed is statistical mean rounded to nearest centimeter increment for ID-1 or clamshell credentials. HID Global testing occurs in open air. Form factor, technology and environmental conditions, including metallic mounting surface, can degrade read range performance; plastic spacers are recommended to improve performance on metallic mounting surfaces.
2 Black trim baseplate & reader spacers available as an additional accessory at an additional cost.
3 Measured in accordance with UL294 standards; see Installation Guide for details.
4 NSC – Normal Standby Current; see Installation Guide for details.
5 Intelligent Power Management (IPM) – Reduces reader current consumption up to 43%, based on model, compared to standard operating mode.

hidglobal.com

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Toll Free: 1 800 237 7769
Europe, Middle East, Africa: +44 1440 714 850
Asia Pacific: +852 3160 9800
Latin America: +52 55 5081 1670

An ASSA ABLOY Group brand

2019-12-19-pacs-signo-reader-ds-en PLT-04831

ASSA ABLOY

Major door hardware approved for use at Sheridan College

January 2022

Exit Devices: Sargent 80 series exit devices with ETJ trim if applicable. The specific series within the line will be determined by the door configuration and application however typically rim devices are 8888 series and vertical rod are NB8700 series

Mortice locks: Schlage L9000 series with 03B 630/626 trim are used in new building Construction as well as renovations within buildings where they are predominant. (XL11-422 option when used with an electric strike)

Cylindrical locks: Marks cylindrical leversets, Survivor series with American style lever Typically Grade one, 626 finish. These are used in retrofits and renovations within Buildings where cylindrical locks are predominant.

Key Cylinders: Sheridan has two key systems; new buildings have Medeco restricted Bi-axial keys and cylinders (H3 end user Keyway) and older ones have Schlage restricted paracentric systems. Some global door groups have Medeco cylinders within Schlage buildings as well. Confirm the requirements with the project coordinator if you plan to be providing key cylinders.

Cylinder guard CGC security collar C26d

Door closers: LCN 4040xp series closer are used in all applications unless there is an issue where the door swing requires a greater range of motion that the closer can provide, the particular door design does not have sufficient area to apply the closer or the closer will interfere with other hardware. The substitute is the LCN 1460 is to be used if one of the above issues exist.

Door Stays Glynn Johnson sized to suit application

Electric door closer/holders: the LCN Sentronic product line. Govern your choice by the door and frame conditions

Electric strikes folger adam 700 series or 300 series LBM option,24 VDC 32d finish

Barrier Free door operators: The Micom Smart Swing SW800. This is to be used on exterior doors and interior doors. Although they are classed as low energy, additional safety sensors must be used if a safety issue is perceived with any installation. Sliding doors always require safety sensors. All applications require qualified personnel to determine the exact requirements. Activation switches: Camden CM60/4 which is a 6" round fully active switch with logo/text.
Barrier free washrooms incorporate the 4" square switches with "AURA' illuminated enclosures for occupancy indication

Weatherstrip Crowder (KNC)
Thresholds Crowder (KNC)

Card Access: the system components are to be supplied and installed by the security system integrator who must be a Softwarehouse Dealer and be certified to supply, install and maintain the systems.
Components: iClass card readers, Folger Adam strikes, Sentrol door contacts and T-rex exit sensors

COLOR FIELD

Color Field - Eco Low Embodied Carbon Version

Modular Tile

Construction
Tufted, Textured Loop

Tile Size
25 cm x 1 m (9.84" x 39.4")

Yarn Type
ECONYL® Recycled Nylon

Stain Resist / Soil Release
StainSmart®

Dye Method
PrintWorks™ Precision Dyeing

Gauge
1/10

Stitches Per Inch
14.4

Tufts
144.0/in² (2,230/100 cm²)

Finished Pile Thickness
0.103" (2.62 mm)

Standard Backing
PVC-Free WellBAC® Comfort Cushion
Available with TractionBack®

Recycled Content by Total Weight
Standard Backing: 47.9% Pre-Consumer, 7.1% Post-Consumer
NSF 140 Platinum Backing Option: 37.0% Pre-Consumer, 18.1% Post-Consumer

Embodied Carbon
9.4 (kg CO_2e)/m²

Nominal Total Thickness
0.310" (7.9 mm)

Nominal Total Weight
86.7 oz/yd² (2,940 g/m²)

Flammability (Radiant Panel ASTM-E-648)
≥ 0.45 (Class I)

Smoke Density (NFPA-258-T or ASTM-E-662)
≤ 450

Methenamine Pill Test (CPSC FF-1-70 or ASTM D 2859
Self-Extinguishing

Lightfastness (AATCC 16E)
≥ 4.0 at 80 Hours

Crocking (AATCC 165)
≥ 4.0 Wet or Dry

Static Electricity (AATCC-134) 20% R.H.,70° F.
≤ 3.5 KV, Permanent Conductive Fiber

Texture Appearance Retention Rating (TARR)
Severe Traffic End-Use Applications

Recommended Maintenance
MilliCare® Textile and Carpet Care Service Network

Indoor Air Quality—CRI Green Label Plus™
GLP0793, Carpet Category 5Y

Recommended Installation Method(s)
Planks

WARRANTIES

Lifetime Face Fiber Wear
Lifetime Antistatic
Lifetime Floor Compatibility
Lifetime Color Pattern Permanency
Lifetime Floor Release
Lifetime Cushion Resiliency
Lifetime Moisture Resistance
Lifetime Delamination of Backing
Lifetime Staining/Soiling (StainSmart®)
Lifetime Dimensional Stability
Lifetime Tuft Bind
Lifetime Edge Ravel
Flammability

This cushion-back carpet tile product is covered by one or more patents, published applications and/or patents pending. Specifications are subject to normal manufacturing tolerances and may be changed without prior notice. Copies of actual test results are available upon request.

COLOR FIELD

Color Field

Modular Tile

Construction
Tufted, Textured Loop

Tile Size
25 cm x 1 m (9.84″ x 39.4″)

Yarn Type
Milliken-Certified WearOn® Nylon

Stain Resist / Soil Release
StainSmart®

Dye Method
PrintWorks™ Precision Dyeing

Tufted Face Weight
15.0 oz/yd² (508.6 g/m²)

Gauge
1/12

Stitches Per Inch
9.8

Tufts
117.6/in² (1,821/100 cm²)

Finished Pile Thickness
0.080″ (2.03 mm)

Average Density (Finished)
6,541

Standard Backing
PVC-Free WellBAC® Comfort Cushion
Available with TractionBack®

Recycled Content by Total Weight
Standard Backing: 39.3% Pre-Consumer, 0.0% Post-Consumer
NSF 140 Platinum Backing Option: 28.6% Pre-Consumer, 10.7% Post-Consumer

Embodied Carbon
14.4 (kg CO_2e)/m²

Nominal Total Thickness
0.280″ (7.1 mm)

Nominal Total Weight
89.2 oz/yd² (3,024 g/m²)

Flammability (Radiant Panel ASTM-E-648)
≥ 0.45 (Class I)

Smoke Density (NFPA-258-T or ASTM-E-662)
≤ 450

Methenamine Pill Test (CPSC FF-1-70 or ASTM D 2859
Self-Extinguishing

Lightfastness (AATCC 16E)
≥ 4.0 at 80 Hours

Crocking (AATCC 165)
≥ 4.0 Wet or Dry

Static Electricity (AATCC-134) 20% R.H.,70° F.
≤ 3.5 KV, Permanent Conductive Fiber

Texture Appearance Retention Rating (TARR)
Severe Traffic End-Use Applications

Recommended Maintenance
MilliCare® Textile and Carpet Care Service Network

Indoor Air Quality—CRI Green Label Plus™
GLP0793, Carpet Category 5Y

Recommended Installation Method(s)
Planks

WARRANTIES

Lifetime Face Fiber Wear
Lifetime Antistatic
Lifetime Floor Compatibility
Lifetime Color Pattern Permanency
Lifetime Floor Release
Lifetime Cushion Resiliency
Lifetime Moisture Resistance
Lifetime Delamination of Backing
Lifetime Staining/Soiling (StainSmart®)
Lifetime Dimensional Stability
Lifetime Tuft Bind
Lifetime Edge Ravel
Flammability

This cushion-back carpet tile product is covered by one or more patents, published applications and/or patents pending. Specifications are subject to normal manufacturing tolerances and may be changed without prior notice. Copies of actual test results are available upon request.

COLOR FIELD | Milliken™

Volume II Colors

The 16 colors in Color Field have 4 different levels of intensity and movement to help create the exact look and feel envisioned. Even using just one hue's family, you can create unique floors—perfectly coordinated. Creativity soars when you mix your favorite combination from the 64 colors in a variety of plank installation methods.


COL106
AERO


COL154
RUNE


COL118
COMET


COL5
FELT GREY


COL108
CHELSEA FOG


COL86
CHAETURA


COL12
HAY BALE


COL15
MIDDLESTONE


COL193-106
GLACIER GREY


COL170-154
CLOUDBURST


COL19-118
DOWNPOUR


COL126-5
DRY DOCK


COL201-108
GREY TEAL


COL187-12
BRONZESHEEN


COL141-86
BLUE REED


COL20-15
WOODBINE


COL193
NIGHTSHADE


COL170
BLUE HEAVEN


COL19
FATHOM


COL126
OCEAN MIST


COL201
MALLARD


COL141
CELANDINE


COL172
AQUA SMOKE


COL20
BUTTERNUT


COL170-192-193
COTINGA


COL182-94-48
OIL BLUE


COL118-199-38
DARK NAVY


COL196-201-199
BLUE AGAVE

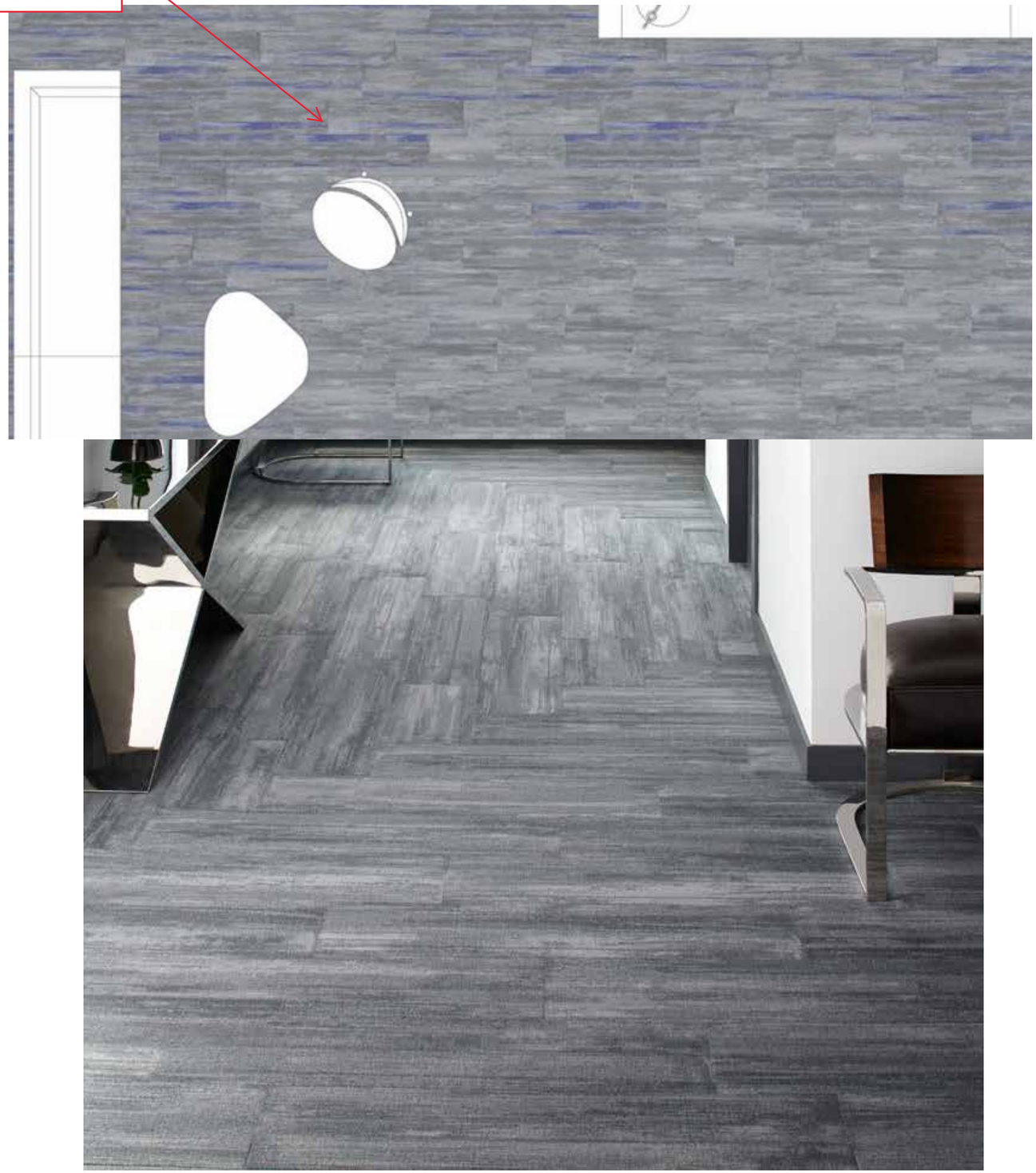

COL120-202-65
SULPHUR SPRING


COL195-75-141
COBALT GREEN


COL172-134-12
STREAMSIDE


COL33-21
GRAND BARA

ALTERNATING TWO COLOURS



Color Field in Rune, 25cm x 1m ashlar tile installation

Visualize now at
millikenfloors.com

COLOR FIELD

Construction
Tufted, Textured Loop

Tile Size
25 cm x 1 m (9.84" x 39.4")

Yarn Type
Milliken-Certified WearOn®Nylon

Stain Resist / Soil Release
StainSmart®

Finished Pile Height
0.13" (3.30 mm)

Finished Pile Thickness
0.08" (2.03 mm)

Average Density
6,541

Standard Backing
PVC-Free WellBAC® Cushion
Available with TractionBack®

Texture Appearance Retention Rating (TARR)
Severe Traffic End-Use Applications

Recommended Installation Method

PLANKS

SUSTAINABLE FEATURES

Color Field is manufactured with WellBAC® Comfort cushion backing and is certified NSF-140 Gold with 39.3% pre-consumer recycled content by total product weight. **Color Field** is also available with our NSF-140 Platinum backing option. All Milliken modular carpets carry Environmental Product Declarations and Health Product Declarations, which contribute to LEED certification. Additionally, Milliken modular carpets carry Declare® transparency labels and comply with the Red List Imperative of the Living Building Challenge.™

CERTIFIED cradle to cradle SILVER

Declare. Third Party Verified Red List Free

UL CERTIFIED ENVIRONMENTAL PRODUCT DECLARATION

Images in this brochure are approximate for color and pattern scale. Please use actual carpet samples to make your final selections.

SHOWN ON THE COVER
(Front) Color Field in Rune.
(Back) Color Field in Mallard and Grey Teal.

2710025355
CP 1021

Modular Carpet Installation Instructions - TractionBack®

The following document describes the correct method for installing Milliken modular carpet manufactured with TractionBack® adhesion backing.

APPLICABLE CRI INSTALLATION METHODS: Except where exceeded or modified by this instruction, Milliken recognizes the CRI™ Carpet Installation Standard 104 Standard for Installation of Commercial Carpet, September 2015 as the minimum acceptable standard for the installation of its carpet products.
NOTE: The installation contractor is responsible for reasonable inspection of the product prior to installation and for maintenance of dye lot integrity during installation. Milliken will not be responsible for visible defects after carpet has been installed.
GENERAL: Milliken modular carpet with TractionBack® is designed for installation without the general use of adhesive. However, the TractionBack adhesion backing system will ONLY function properly when the stringent floor preparation and installation guidelines outlined below are followed. For this reason, it is VERY important that a qualified installation contractor install this product. Milliken **strongly recommends** the use of a **Milliken Certified Installation Contractor** to install TractionBack modular carpets. As an alternate source, Floor Covering Installation Board **(FCIB)** certified contractors as well as companies that can document that they employ installers certified at the C-2 level or higher by the International Certified Floorcovering Installers Association **(CFI)** are also recognized as viable sources of quality installation.
TILE ORIENTATION: Some Milliken designs require specific installation methods (Quarter-turn, Ashlar, etc.) to achieve the intended appearance. PRIOR TO INSTALLATION, always consult your local Milliken sales representative or Milliken Technical Services (1-800-528-8453 Option 3) if you have questions or concerns about the correct installation method. Due to the nature and construction of solution-dyed nylon, we are able to provide very unique, tufted design patterns. From time to time during installation, these products may require that tiles be shifted within the layout in order to avoid a dark line in one tile being positioned next to a dark line in another tile. The dark seam is not a carpet manufacturing defect and can be avoided by attention during the installation phase.

SDN and multi tile pattern products require additional shuffling during installation. Tiles must be mixed up when pulling off the pallet to assure randomization on the floor when installing. Should repeating design elements be observed during installation, the repetitive tiles should be shifted or replaced with other tiles to alleviate the repetitive visual that may occur.

FLOOR PREPARATION:

NOTE: The following are guidelines only. The Flooring Contractor has responsibility to assure compliance. Financial responsibility for bringing any floor into conformance with these guidelines must be determined prior to beginning work.

- Subfloor: Subfloor must be structurally sound, clean, dust free, smooth and level. Cracks and holes in excess of 1/8" (3.2mm) should be filled with a Portland Cement based floor patching material such as W.W. Henry® 547 Unipro™, DAP Webcrete® 98, Maipei® PlaniPatch®, Ardex Featherfinish® or similar. Gypsum based compounds are not recommended.
- Sealing of Floor: Sealing or other post treatment of concrete floors is at the discretion of the installation contractor. In general, properly cured (90 days minimum) steel trowel finished concrete requires no additional treatment. Excessively porous or dusty concrete slabs are the only exceptions. Please call Milliken Technical Services if you have questions. Durabond D250 is a recommended product should this type of treatment be deemed necessary; however, any non-silicone-based sealer will work acceptably with non-PVC backings. **This treatment is NOT intended to be a corrective for out-of-specification water vapor transmission levels.**
- Old Adhesive: Milliken modular carpet backings are non-reactive and contain no PVC or plasticizers, so it is typically not necessary to remove old adhesive from the floor prior to installing Milliken modular carpet with TractionBack®. No chemical incompatibility exists between Milliken modular carpet with TractionBack and any existing floor covering adhesive. This includes "cutback", asphalt emulsion, general-purpose adhesive, epoxy and any other commonly found flooring adhesives. The only physical requirement for existing adhesive films is that they be smooth, non-tacky, and that residual trowel notches be reduced to 1/32"(0.8mm) or less. In most cases the removal of the existing floor covering accomplishes this with only normal sweeping, cleaning, and patching required prior to beginning installation. Milliken is not responsible for subfloor conditions. The installer has the responsibility for obtaining a successful installation.
- Dust Removal: For TractionBack to effectively prevent lateral movement, it is REQUIRED that ALL dust and dirt MUST be removed from the floor prior to installation. A thorough wet mopping of the floor surface is REQUIRED prior to beginning installation of TractionBack.
- Sweeping Compounds: Oil or silicone based sweeping compounds and similar products, except where specifically approved, must not be used during floor preparation. TractionBack must not be installed over surfaces contaminated with oily residues.
- Oily Residue/Asbestos Abatement: If your subfloor is contaminated with an oily residue either from removal of "cutback" during asbestos abatement or from a previous end use such as metal fabrication, this residue MUST be totally removed or covered prior to applying modular adhesive and carpet. In addition, if residual adhesive – either "cutback" or general purpose - has been damaged/reactivated by previously installed PVC-backed carpet, call Milliken Technical Services for guidance. NEVER scrape, sand or mechanically abrade any exposed black adhesive or any existing resilient floor. These may contain asbestos. If residual adhesive is **not** black, scrape or sand until smooth and non-tacky as required above and follow with a thorough mopping as directed above. If additional smoothing is required and residual adhesive is black (cutback or asphalt emulsion) smoothing **must** be accomplished by applying a very thin layer of one of the above patching compounds.
- Level Floor: Protruding objects must be removed. Floor must be flat (not undulating) to within 1/4" in 12' (6.4mm across 3.66m) with no abrupt changes. This is very critical with TractionBack since there can be no differential adjustment of corner alignment as is possible when a general coverage of adhesive is present.
- When working with a Gyp-Crete or Gypsum subfloor, Milliken recommends sealing with a gypsum floor sealer prior to installation. Failure to do so will result in an unacceptable installation. Gyplock Sealer by Cornerstone Coatings International Inc. is a suitable sealer.
- Carpet Storage and Conditioning: Carpet should be stored between 40°F and 100°F (4°C to 38°C) and must be conditioned to between 60°F and 90°F (15°C and 32°C) for at least 24 hours prior to and during installation.
- Installation Temperature and Humidity: Floor temperature should be 60°F (15°C) minimum for proper performance of TractionBack. Floor temperature should not exceed 90°F.
- Relative humidity of the slab should not exceed 85% as measured by the RH Probe Test (ASTM F2170).
- Floor pH should not exceed 10.0. If the pH is above 10, it must be corrected by application of a primer such as Prelude by XL Brands.
- On all TractionBack projects where the use of any supplemental adhesive materials may be necessary as a locking mechanism, and the Relative Humidity of the slab exceeds 85%RH as determined by the In-Situ relative humidity probe test. Milliken recommends the use of the applicable Milliken Non-Reactive Standard or Milliken Moisture Extreme adhesives.

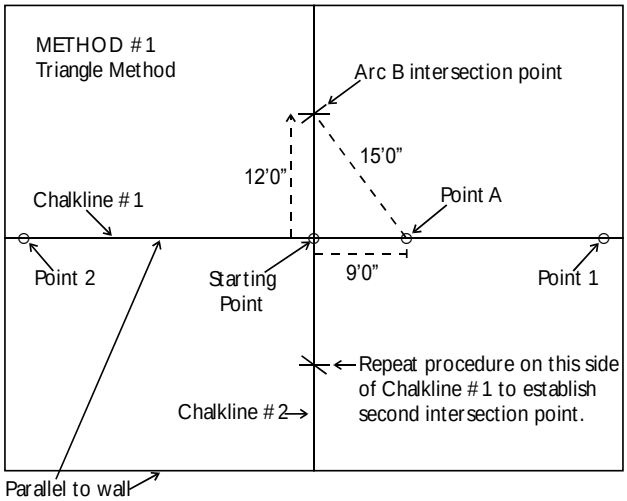
INSTALLATION INSTRUCTIONS:

GENERAL: The most important part of any modular installation occurs before the first tile goes on the floor or any adhesive is applied. **Proper planning and layout is crucial to the success of all modular installation.** Floor preparation should be verified before beginning installation. Milliken Technical Services should be contacted for assistance if problems are encountered.

1. Place a carpet tile on the cleaned floor and press the entire tile down firmly. Kneel beside the module and attempt to slide it across the floor by grasping the opposite edge and pulling. The tile should not move laterally.
2. Lift a corner of the tile and then lift the tile from the floor. The tile should easily separate from the floor surface.

CHALKLINE APPLICATION: Once floor preparation is completed and the floor thoroughly mopped, two working chalklines must be applied to the floor to insure a straight, square, and properly aligned installation. These chalklines intersect at the starting point and are exactly 90º to each other. Following are two methods for applying chalklines:

METHOD #1 - TRIANGLE METHOD:



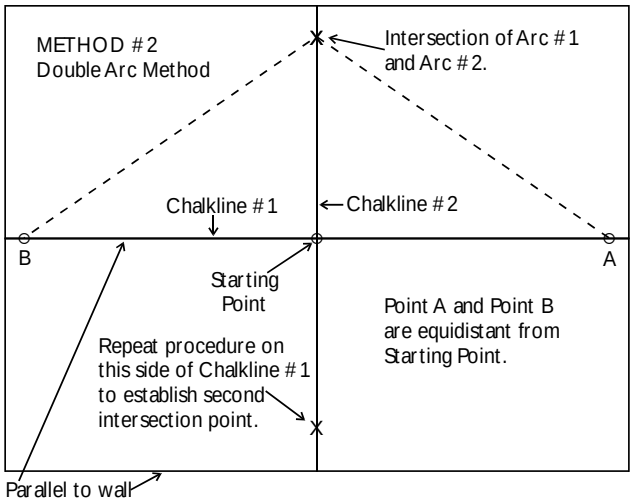
Chalkline #1: Regardless of method, chalkline one – also referred to as the "baseline" - is snapped roughly parallel to some architectural feature (outside wall, column line, etc.) and generally runs the longer dimension of the area. This is done by placing two and only two points on the floor as far apart as possible within the area at the same distance from the selected architectural feature. (See Point 1 and Point 2 on the diagram.) This distance is determined by the installer to optimize cut sizes and minimize waste.

Starting point and Chalkline #2: Select a starting point somewhere on Chalkline #1. Location of starting point is usually but not always close to the true center of the area. It may be offset to optimize cut sizes. Using the largest possible multiple of a 3-4-5 triangle (6-8-10,9-12-15,12-16-20, 15-20-25, 18-24-30, 30-40-50 etc.), construct a chalkline through the starting point exactly 90° to chalkline #1 as follows:
Note: In this example we will use a 9-12-15 triangle measured in feet and inches, however, units of measure used do not affect the validity of the procedure.

Construct Chalkline #2 as follows:

1. Measure exactly 9'0" from the starting point along chalkline #1.
2. Measure exactly 12'0" from the starting point approximately perpendicular to the line #1. Mark an arc (line) on the floor parallel to chalkline #1 four to five inches long as indicated by Arc "B".
3. Measure exactly 15'0" diagonally from point "A" to Arc "B" as indicated.
4. That point on Arc "B" exactly 15'0" from point "A" when connected with the starting point gives a line exactly 90° to chalkline #1. For maximum accuracy, this procedure should be repeated on the opposite side of chalkline #1. A chalkline or a dry line should be stretched between the two intersection points created. If measurements are accurate, the string will go directly across the starting point.

METHOD #2 - DOUBLE ARC METHOD:



Chalkline #1 - Same as in Triangle Method.

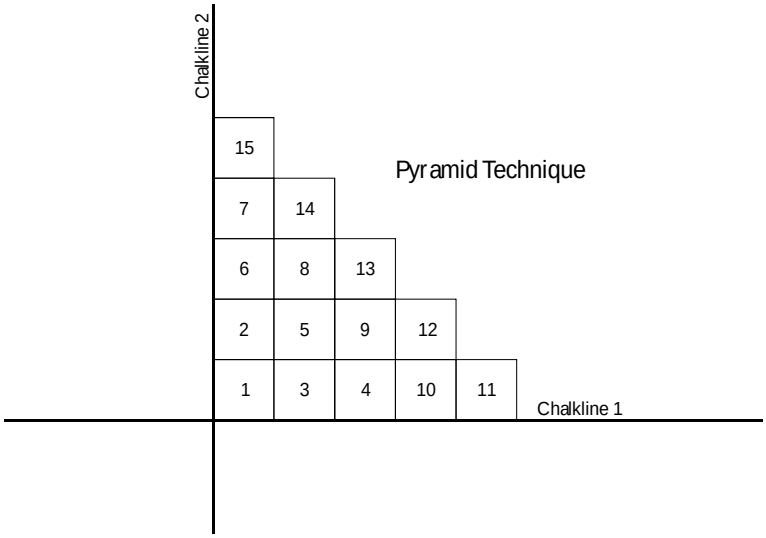
Chalkline #2 - Select starting point same as triangle method and proceed as follows:

1. From the starting point, measure any convenient distance in both directions along chalkline #1 and mark point A & B on the floor (see diagram). These points should be as close as possible to the end walls of the area and must be the same distance from the starting point.
2. From points A & B, measure diagonally as indicated by the dotted lines allowing the tape measure to feed out until you are close to the side wall. Place a framing square or a carpet module at the starting point aligned with chalkline #1 to act as a visual guide to tell you when you are close to 90 degrees. Once you feel you are close, pick a distance and remember it.
3. Strike an arc (Arc #1) measuring the distance determined above from point "A". Now working from point "B", measure diagonally using exactly the same distance used to strike Arc #1 and strike Arc #2. This intersection point connected to the starting point is a 90° angle to line #1.
4. As in the Triangle Method, this procedure should be repeated on the opposite side of line #1. Once accurate chalklines are applied, begin installation at the intersection point of the two chalklines.

When working with TractionBack®, it is necessary to move across the newly placed modules very carefully until the installation can be locked in at the perimeter.

GENERAL:

- The pyramid technique (see diagram below) gives three alignment checkpoints on each tile placed and should be used on ALL products regardless of module size or backing. This technique also helps control spacing or "growth" and keeps the entire layout closely referenced to the chalklines. Strict attention should be paid to corner alignment. Tiles out of alignment by more than 1/16" (1.6mm) on 50cm product or 1/8" (3.2 mm.) on 36" or 1m product should not be installed. Some "wandering" of edges due to undulation in the floor is unavoidable. This will be gradual and tend to come and go randomly, however, if corners become misaligned and this misalignment continues to increase, this indicates an out of square condition. The problem should be immediately determined and corrected.

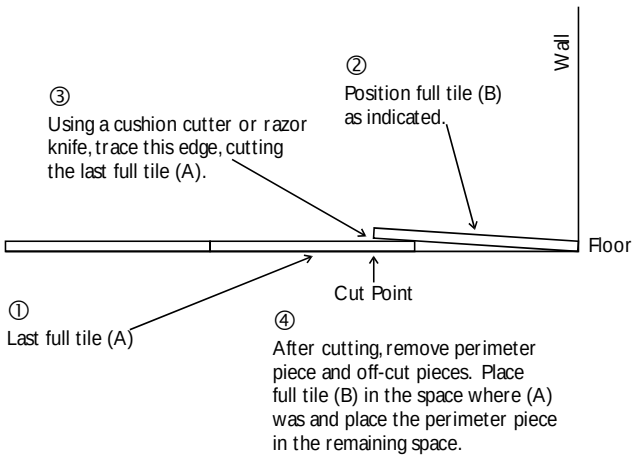


- Always **SLIDE** each module into position from the side to prevent trapped yarn. Set each module by firmly rubbing both joints. Should the TractionBack become contaminated with dust, the back of the tile should be wiped with a damp cloth to remove the contamination and restore the effectiveness of the TractionBack.
- Modules should be tight but not compressed. Peaking will occur when modules are too tight. Too loose an installation will never achieve the best possible overall appearance and can show gaps over time as the looseness accumulates in one area.

- Tightness or "growth" should be determined by measuring the distance covered by 11 full modules (10 joints). This measurement should be no more than 1/8" (3.2mm) over the calculated distance for eleven tiles. In some cases, this distance may be less than calculated. This distance may also vary between the length and width of the product. Once this "growth" figure is determined, it must be maintained throughout the installation.
- Directional arrows are applied to the back of each tile indicating pile direction. This allows the customer/installation contractor to choose the method of installation preferred: Quarter-Turned, Monolithic (Corner-to-Corner or Ashlar), Random, 180-Degree Turned, Checkerboard, Mosaic or a mixture. **Some Milliken designs REQUIRE that specific installation methods be used to achieve the desired visual. Always check with your Milliken representative or call Technical Services if there is any question.**
- Whenever possible it is recommended that arrows be run parallel to major traffic lanes. Unless it is unavoidable, arrows should not run across hallways.
- Installations receiving heavy rolling traffic should be locked in every 30'.
- When installing Milliken modular carpet with TractionBack® on inclined surfaces, a locking mechanism (Milliken Pressure Sensitive Adhesive) must be used for the entire incline area.

CUTTING:

- The parallel or "scribe" cutting technique is one method of easily and accurately cutting modular carpet. (See diagram below.) This method is valid regardless of backing system and yields a good vertical cut that is snug but not compressed. Any method that achieves this result is acceptable.



- A fixed and unmoving perimeter is mandatory to insure the performance of the finished installation. To avoid tile movement or shifting, each tile must be firmly fitted (within 1/16") to all wall lines or fixed building structures. When this is not practical, the product must be securely anchored using a perimeter adhesive (18" to 24" wide) or double-faced tape. Adhesive or double-faced tape should be used under all partial or cut tiles measuring less than 12" in any single direction.
- In situations where vertical abutments do not extend to (connect with) the floor, or cutting techniques do not yield a snug fit to the wall, Milliken recommends the use of a locking mechanism. A minimum of two strips of double faced carpet tape or a 12" wide application off Milliken pressure sensitive adhesive applied along the walls are acceptable locking mechanisms.
- Properly installed installations with TractionBack can begin receiving foot and rolling traffic as soon as they are finished and locked into the perimeter of the area. Exposed edges should be protected when rolling heavy loads such as pallets of carpet across the installed portion. Plywood or Masonite should be positioned on the carpet when heavy furniture or supplies are moved.
- The recommended casters for desk chairs should have a tread width of 3/4" to 1" (19mm to 25mm), and a wheel diameter of 2"- 2 ½"" (5cm - 6cm) tapered. Hard polyolefin composition is recommended. For more detailed information, contact Milliken Technical Services.

TRANSITIONS AND STAIRS:

- For the most attractive finish with its modular products Milliken recommends the use of top set cove base after carpet installation is completed.
- Appropriate transition strips MUST be installed wherever there is a potential for an edge to be exposed or where Milliken modular carpet finishes to another flooring type. The total thickness of Milliken modular carpet with WellBAC™ cushion requires a transition treatment capable of accepting the carpet without the necessity of modifying or adapting the edge. Johnsonite's EG-XX-W edge guard and CRS-XX-D reducer have proven successful for edge protection for products with WellBAC™ cushion. Equivalent products from other manufacturers are also acceptable.
- For best long-term performance on stairs, a double undercut nosing such as Johnsonite part SVCD-XX-A or equal should be applied to each step with modules cut to fit on both the tread and the riser. This method of installation on stairs protects the carpet from receiving the impact present at the nose and helps in holding the riser carpet in place. Generally, a Cove Base type adhesive is also used to adhere the riser and tread piece to ensure that the carpet stays in place.
- It is possible to install modular carpet with WellBAC cushion on stairs without the use of a separate nosing. This requires modifying and/or removing the backing and results in placing a structurally compromised product directly on the nose of the stair with no protection from the severe impact and abrasion that will occur. This is not recommended.
- Johnsonite transition treatments, stair nosings and similar products from other manufacturers are sold through distributors. For the location of the nearest Johnsonite distributor, call 800-899-8916. When obtaining transition/nosing treatments from other manufacturers, always be sure to specify the total thickness of the carpet product being installed to insure the correct transition product is used. **USE OF IMPROPER AND/OR INADEQUATELY INSTALLED TRANSITION TREATMENTS WILL RESULT IN EDGE FAILURE. SELECTION AND INSTALLATION OF THESE PRODUCTS IS THE RESPONSIBILITY OF THE INSTALLATION CONTRACTOR.**

PROTECTING CARPET AFTER INSTALLATION:

Milliken recognizes the CRI™ Carpet Installation Standard 104 Standard for Installation of Commercial Carpet, September 2015 as the standard guideline for protecting carpet and associated materials after installation. The CRI™ Standard specifically states: "It is recommended that carpet be the last trade on any job site. However, if it is required to protect the finished floor covering from soil or paint, or if any additional work is required to be done after installation, the carpet should be covered with a non-staining building material paper. Protect the installation from rolling traffic by using sheets of hardboard or plywood in potentially affected areas." Also, CRI™ cautions: "Self-adhering plastic films may leave residues that result in rapid soiling after removal. Do not place plastic sheeting over any carpet installation because it may present a slip hazard. Most importantly, plastic coverings will trap moisture, retard adhesive curing and may promote mold growth."

NOTE: THE ABOVE INSTALLATION INSTRUCTIONS ARE GENERAL IN NATURE AND ARE NOT COMPLETE FOR EVERY MILLIKEN MODULAR CARPET PATTERN. SOME MILLIKEN PATTERNS REQUIRE SPECIFIC INSTALLATION METHODS (QUARTER-TURNED, ASHLAR, ETC.) TO ACHIEVE THE DESIRED APPEARANCE. ALWAYS CONSULT YOUR MILLIKEN REPRESENTATIVE OR TECHNICAL SERVICES IF THERE ARE QUESTIONS ABOUT THE CORRECT INSTALLATION METHOD.

This information is supplied by Milliken & Company
300 Lukken Industrial Drive West, LaGrange, Georgia 30240
BACKED BY THE LARGEST, MOST PRODUCTIVE RESEARCH AND DEVELOPMENT FACILITY IN THE CARPET INDUSTRY.
Call Technical Services Team Toll Free 1-800-528-8453 – Select Option #2

05/2021

Modular Carpet Installation Instructions

These instructions are for use ONLY with WellBAC® Comfort Plus cushion back and WellBAC® Comfort cushion back modular carpet. DO NOT use these instructions or any Milliken Adhesive to install carpet containing PVC.

APPLICABLE CRI INSTALLATION METHODS: Except where exceeded or modified by this instruction, Milliken recognizes the CRI Carpet Installation Standard 104 Standard for Installation of Commercial Carpet, September 2015 as the minimum acceptable standard for the installation of its carpet products.

NOTE: Installation contractor is responsible for reasonable inspection of the product prior to installation and for maintenance of dye lot integrity during installation. Should problems be discovered during inspection, please contact your local Milliken sales representative or call Toll Free 1-800-528-8453 – Select Option #2. Milliken will not be responsible for visible defects after carpet has been installed.

GENERAL: All Milliken modular carpet is designed for installation without permanent adhesives. This allows easy removal and reinstallation. Installation contractor should review these instructions before starting the actual installation. As a first preference, Milliken **strongly recommends** the use of a **Milliken Certified Installation Contractor** to install its products. As an alternate source, companies that can document that they employ installers certified at the C-2 level or higher by the International Certified Floorcovering Installers Association **(CFI)** are also recognized as viable sources of quality installation.

TILE ORIENTATION: Some Milliken designs require specific installation methods (Quarter-turn, Ashlar, etc.) to achieve the intended appearance.

PRIOR TO INSTALLATION, always consult your local Milliken sales representative or Milliken Technical Services (1-800-528-8453 Option 3) if you have questions or concerns about the correct installation method. Due to the nature and construction of solution-dyed nylon (SDN), we are able to provide very unique, tufted design patterns. From time to time during installation, these products may require that tiles be shifted within the layout in order to avoid a dark line in one tile being positioned next to a dark line in another tile. The dark seam is not a carpet manufacturing defect and can be avoided by attention during the installation phase.

SDN and multi tile pattern products require additional shuffling during installation. Tiles must be mixed up when pulling off the pallet to assure randomization on the floor when installing. Should repeating design elements be observed during installation, the repetitive tiles should be shifted or replaced with other tiles to alleviate the repetitive visual that may occur.

FLOOR PREPARATION:

NOTE: The following are guidelines. The Flooring Contractor has responsibility to assure compliance. Financial responsibility for bringing any floor into conformance with these guidelines must be determined prior to beginning work.

- **Floor preparation in accordance with ASTM F710 (current version) unless specifically allowed per this document.**
- **All topical membrane forming concrete curing compounds must be removed prior to application of adhesive.**
- Concrete subfloors must be structurally sound, clean, dust free, smooth, trowel finish (not burnished) and level. Cracks and holes in excess of 1/8" (3.2mm) should be filled with a Portland Cement based floor patching material such as W.W. Henry 547 Unipro™, DAP "Webcrete 98", Maipei "PlaniPatch", Ardex "Featherfinish" or similar. **Gypsum based compounds are not recommended.**
- Milliken modular carpet backings are non-reactive and contain no P.V.C. or plasticizers. This greatly simplifies the floor preparation process and typically eliminates the necessity of old adhesive removal. See adhesive Technical Data Sheet for specifics. All Milliken Modular carpets carry the "Lifetime Floor Compatibility" warranty. **Milliken is not responsible for subfloor conditions.** The installer has the responsibility for obtaining a successful installation.
- No chemical incompatibility exists between Milliken modular carpet or Milliken Non-Reactive Standard Modular Carpet Adhesive and any existing floor covering adhesive. This includes "cutback", asphalt emulsion, general-purpose adhesive, epoxy and any other commonly found flooring adhesives.
- The only physical requirement for existing adhesive films is that they be smooth, non-tacky, and that residual trowel notches be reduced to 1/32"(0.8mm) or less. In most cases the removal of the existing floor covering accomplishes this with only normal sweeping, cleaning, and patching required prior to beginning installation.
- Regardless of adhesive type, the existing layer should have minimal residual tack. There is no chemical reaction; however, excessive tack may cause the carpet modules to become bonded too aggressively to the floor over time. This tack can be minimized or eliminated by sifting Portland cement-based patch powder into the existing film and sweeping away the excess or by applying a very thin layer of Portland patch.
- If installing with Milliken Mosaic Moisture XT or Milliken Mosaic 98 -Spray adhesives, existing adhesive film must be removed to a stain.
- If additional smoothing is required and residual adhesive is black (cutback or asphalt emulsion) smoothing **must** be accomplished by applying a very thin layer of one of the above patching compounds.
- NEVER scrape, sand or mechanically abrade any exposed black adhesive or any existing resilient floor. These may contain asbestos.
    - Please follow applicable safety protocols and have adhesive tested for asbestos before proceeding.
- If residual adhesive is **not** black, scrape or sand until smooth and non-tacky as required.
- Protruding objects must be removed. Floor must be flat (not undulating) to within 1/4" in 12' (6.4mm across 3.66m) with no abrupt changes.
- Sealing or other post treatment of concrete floors is at the discretion of the installation contractor. In general, properly cured (90 days minimum) steel trowel finished concrete requires no additional treatment. Excessively porous or dusty concrete slabs are the only exceptions. Please call Milliken Technical Services if you have questions. XL Brands Prelude is a recommended product should treatment of porous or dusty concrete slab be deemed necessary; however, any non-silicone based sealer will work acceptably with non-PVC backings. **This treatment is NOT intended to be a corrective for out-of-specification water vapor transmission levels.**
- When working with a Gyp-Crete or Gypsum subfloor, Milliken recommends sealing with a gypsum floor sealer prior to installation. Failure to do so will result in an unacceptable installation. Gyplock Sealer by Cornerstone Coatings International Inc. is a suitable sealer.
- Carpet should be stored between 40°F and 100°F (4°C to 38°C) and must be conditioned to between 60°F and 90°F (15°C and 32°C), or applicable service conditions prior to and during installation.
- Floor temperature should be 60°F (15°C) minimum for proper adhesive curing and performance.

NOTE: If your subfloor is contaminated with an oily residue either from removal of "cutback" during asbestos abatement or from a previous end use such as metal fabrication, this residue MUST be totally removed or covered prior to applying modular adhesive and carpet. In addition, If residual adhesive – either "cutback" or general purpose - has been damaged/reactivated by previously installed PVC-backed carpet, call Milliken Technical Services for guidance. **The "Lifetime Floor Compatibility" warranty does NOT apply in these situations.**

RECOMMENDED ADHESIVES:

- **Milliken Non-Reactive Standard Adhesive, packaged in 4-gallon (15.1 liter) pails** is recommended for the installation of all Milliken modular products with WellBAC® Comfort Plus & WellBAC® Comfort backing systems when:
    - **New Pour:**
        - 1. It is a new pour >45 days.
        - 2. No visible water on the surface.
        - 3. Acclimatized to service conditions.
        - 4. Bond test required with archived photo documentation.
    - **Renovation** – On grade, Above grade or Below grade
        - 1. No visible water on the surface.
        - 2. Acclimatized to service conditions.
        - 3. Bond test required with archived photo documentation.

ADDITIONAL CONSIDERATIONS:

- See each corresponding adhesive specification sheet for full technical data and detailed instructions for use.
- **Use of non-Milliken adhesives does not affect carpet product warranties, however, any claim related to adhesive performance, bond, floor releasability, or workmanship and any damage caused by this would be the total responsibility of the party responsible for using the non-recommended product.**
- Milliken Non-Reactive adhesive is especially formulated to give superior performance with Milliken's non-PVC backing systems, contain no hazardous ingredients, and provide the best indoor air quality environment available. Adhesive should be purchased with the carpet for maximum convenience and lowest total cost.

COVERAGE RATES/APPLICATION METHODS:

Recommended target coverage rates are averages based on years of performance experience with various backing types and end use environments. The installation contractor MUST determine and be responsible for the exact coverage rate for a particular project. When **estimating** adhesive requirements for a project, it is recommended that the lower end of the coverage rate range be used. It is always better to have an extra pail or can than to run short. **As a general rule when installing modular carpets, use the LEAST adhesive that will satisfy the requirements of the "adhesive verification" test outlined below.**

- **Milliken Non-Reactive Standard** adhesive is applied with a long nap (3/4 to 1 inch – 19mm to 25mm) paint roller or a 1/32" x 1/32" x 1/16" (0.8mmx0.8mmx1.6mm) notched trowel.
- **If coverage is required in square feet to conform to NIST standards, simply multiply square yards by 9 or square meters by 10.72.**
- **Milliken Non-Reactive Standard adhesive is a mint green coloration out of the container. It will dry to a translucent green tint. This change in coloration is one of the indicators that the adhesive film is ready to receive carpet.**
- **In ALL situations, adhesive is allowed to dry completely before installing carpet – See "Bond Test Procedure" outlined later in these instructions for details on determining exactly when an adhesive film is ready to receive carpet. These coverage rates apply regardless of whether the adhesive is applied with a paint roller or trowel.**

TARGET COVERAGE RATES BY PRODUCT:

Milliken Non-Reactive Standard: WellBAC® Comfort Plus cushion back and WellBAC® Comfort cushion back full spread for all tile sizes: 35 to 40 sq. yds./gallon (9.5 to 10 sq. m/liter). In extreme environments - such as casinos and convention centers - which will routinely experience extreme rolling loads in excess of 5,000lbs (2272Kg.), a heavier full spread of adhesive is recommended. Target coverage for this end use is 20 to 25 sq. yds./gallon (5 to 6 sq. m./liter) for the **Milliken Non-Reactive Standard** product.

INSTALLATION INSTRUCTIONS:

GENERAL: The most important part of any modular installation occurs before the first module goes on the floor or any adhesive is applied. **Proper planning and layout are crucial to the success of all modular installation.**

Due to the nature and construction of solution-dyed nylon (SDN), we are able to provide very unique, tufted design patterns. From time to time during installation, these products may require that tiles be shifted within the layout in order to avoid a dark line in one tile being positioned next to a dark line in another tile. The dark seam is not a carpet manufacturing defect and can be avoided by attention during the installation phase. SDN products require additional shuffling during installation to insure random installation.

From time to time, our products will experience pile crush from the packaging process. This may cause some tiles to look light & dark during initial installation. This is not a manufacturing defect, and will acclimate with time, traffic and vacuuming.

ADHESIVE READINESS SHOULD BE VERIFIED AS FOLLOWS BEFORE BEGINNING INSTALLATION.

A bond test is a mock-up installation done prior to the general installation of the Modular Carpet tile to indicate whether the adhesive will bond satisfactorily to the substrate and floor covering. Bond testing will aid in identifying both the working characteristics of the adhesive, such as the appropriate open and working time for the site conditions, and also any potential bonding problems to the substrate.

Bond Test Procedure:

1. Select an approximately 6' x 6' area (approx. 4. square meters) in a typical location on the substrate or slab. The floor should be prepped and consistent with the installation plan per Milliken Modular carpet installation instructions.
2. Milliken modular carpet adhesives should be applied to the substrate for a releasable installation in the recommended manner (trowel or roller) and application rate. The adhesive should be allowed to dry completely prior to installation of modular carpet.
3. Observe the adhesive drying time, which will vary with the floor porosity and ambient conditions. Properly dried adhesive will not transfer to the finger and will have a tacky feel.

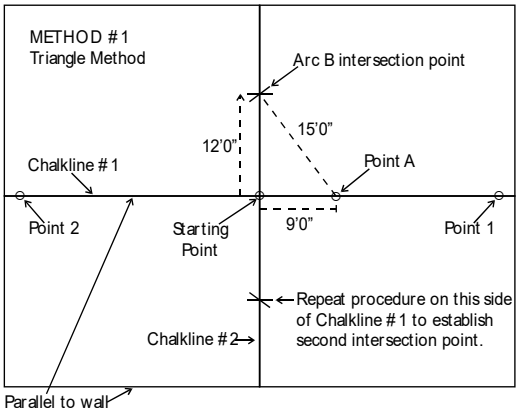
4. After placing the carpet tile on the dried adhesive apply downward pressure to assure contact with the substrate. Tiles should be immediately locked in place inhibiting lateral movement.
5. After 24 hours, observe the mock-up installation to see if any obvious problems may exist. The modular carpet should be adequately bonded to the substrate, and inhibit lateral movement with adhesive remaining firmly bonded to the substrate. To test this attempt to slide each tile. Now lift each carpet tile and check backing for adhesive transfer. All adhesive should remain on the floor. There should be no adhesive transfer to the back of the tile.

- Document with photos that show floor prep, floor with adhesive, and back of tile upon tile removal after 24hr period.
- Testing should be conducted approximately 72 hrs prior to installation.
- If installation covers multiple floors a bond test should be conducted on grade.

NEVER INSTALL ANY MILLIKEN MODULAR CARPET INTO WET ADHESIVE.

CHALKLINE APPLICATION: Once floor preparation is completed, two working chalklines must be applied to the floor to insure a straight, square, and properly aligned installation. These chalklines intersect at the starting point and are exactly 90º to each other. Following are two methods for applying chalklines:

METHOD #1 - TRIANGLE METHOD:



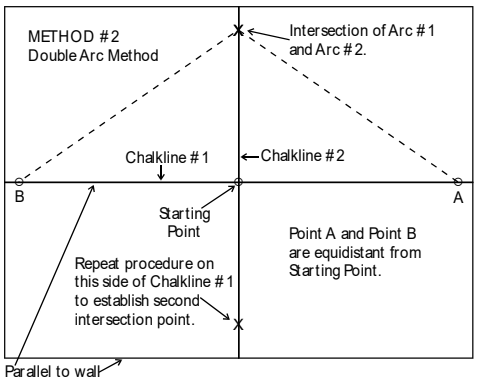
Chalkline #1: Regardless of method, chalkline one – also referred to as the "baseline" - is snapped roughly parallel to some architectural feature (outside wall, column line, etc.) and generally runs the longer dimension of the area. This is done by placing two and only two points on the floor as far apart as possible within the area at the same distance from the selected architectural feature. (See Point "1" and Point "2" on the diagram.) This distance is determined by the installer to optimize cut sizes and minimize waste.

Starting point and Chalkline #2: Select a starting point somewhere on Chalkline #1. Location of starting point is usually but not always close to the true center of the area. It may be offset to optimize cut sizes. Using the largest possible multiple of a 3-4-5 triangle (6-8-10,9-12-15,12-16-20, 15-20-25, 18-24-30, 30-40-50 etc.) construct a chalkline through the starting point exactly 90º to chalkline #1 as follows:
Note: in this example we will use a 9-12-15 triangle measured in feet and inches, however, units of measure used do not affect the validity of the procedure.

Construct Chalkline #2 as follows:

1. Measure exactly 9'0" from the starting point along chalkline #1.
2. Measure exactly 12'0" from the starting point approximately perpendicular to the line #1. Mark an arc (line) on the floor parallel to chalkline #1 four to five inches long as indicated by Arc "B".
3. Measure exactly 15'0" diagonally from point "A" to Arc "B" as indicated.
4. That point on Arc "B" exactly 15'0" from point "A" when connected with the starting point gives a line exactly 90º to chalkline #1. For maximum accuracy, this procedure should be repeated on the opposite side of chalkline #1. A chalkline or a dry line should be stretched between the two intersection points created. If measurements are accurate, the string will go directly across the starting point.

METHOD #2 - DOUBLE ARC METHOD:



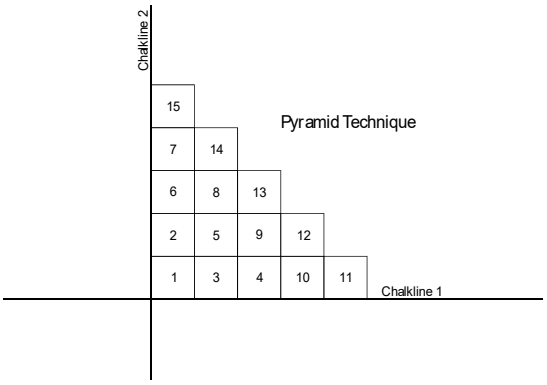
Chalkline #1 - same as in triangle method.

Chalkline #2 - select starting point same as triangle method and proceed as follows:

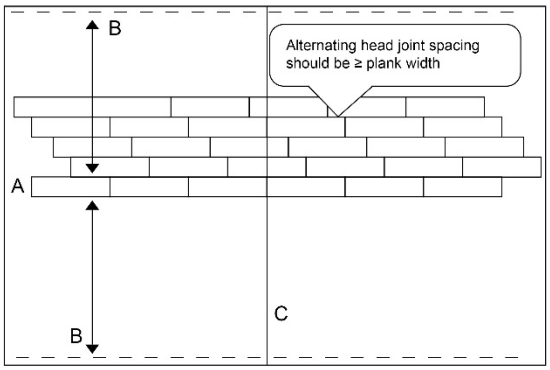
1. From the starting point, measure any convenient distance in both directions along chalkline #1 and mark point A & B on the floor (see diagram). These points should be as close as possible to the end walls of the area and must be the same distance from the starting point.
2. From points A & B, measure diagonally as indicated by the dotted lines allowing the tape measure to feed out until you are close to the side wall. Place a framing square or a carpet module at the starting point aligned with chalkline #1 to act as a visual guide to tell you when you are close to 90 degrees. Once you feel you are close pick a distance and remember it.
3. Strike an arc (Arc #1) measuring the distance determined above from point "A". Now working from point "B", measure diagonally using exactly the same distance used to strike Arc #1 and strike Arc #2. This intersection point connected to the starting point is a 90-degree angle to line #1.
4. As in the triangle method, this procedure should be repeated on the opposite side of line #1. Once accurate chalklines are applied, put down adhesive and install carpet as follows:

GENERAL:

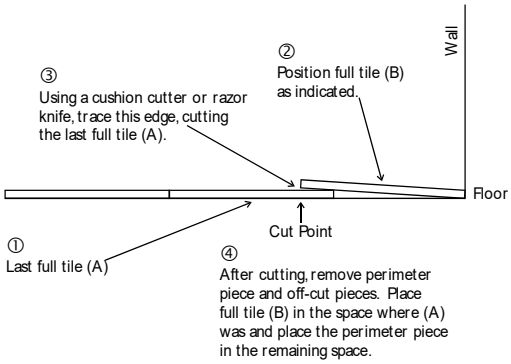
- The **pyramid technique** (see diagram below) gives three alignment checkpoints on each tile placed and should be used on ALL products regardless of module size or backing. This technique also helps control spacing or "growth" and keeps the entire layout closely referenced to the chalklines. Strict attention should be paid to corner alignment. Tiles out of alignment by more than 1/8" (3.2mm) on 50cm or 1m product should not be installed. Some "wandering" of edges due to undulation in the floor is unavoidable. This will be gradual and tend to come and go randomly, however, if corners become misaligned and this misalignment continues to increase, this indicates an out of square condition. The problem should be immediately determined and corrected.



- Always **SLIDE** each module into position from the side to prevent trapped yarn. Set each module by firmly rubbing both joints. With 1m x 1m and 36" x 36" (.91m x .91m) products, a very fine mist of water applied to the dry adhesive will facilitate sliding and positioning the product. Do not over wet. It should not be possible to slide the module after 30 to 40 seconds.
- Modules should be tight but not compressed. Peaking will occur when modules are too tight. Too loose an installation will never achieve the best possible overall appearance and, on grid installations, modules can slip, "snowplow" and create obvious gaps with use.
- Tightness or "growth" should be determined by measuring the distance covered by 11 full modules (10 joints). This measurement should be no more than 1/8" (3.2mm) over the calculated distance for eleven tiles. In some cases this distance may be less than calculated. This distance may also vary between the length and width of the product. Once this "growth" figure is determined, it must be maintained throughout the installation.
- Directional arrows are applied to the back of each tile indicating pile direction. This allows the customer/installation contractor to choose the method of installation preferred – Parquet (Quarter-Turned), Monolithic (Corner-to-Corner or Ashlar), Random, 180-Degree Turned, Checkerboard, Mosaic or a mixture. **Some Milliken designs REQUIRE that specific installation methods be used to achieve the desired visual. Always check with your Milliken representative or call Technical Services if there is any question.**
- Whenever possible it is recommended that arrows be run parallel to major traffic lanes. Unless it is unavoidable, arrows should not run across hallways.
- The **plank installation technique** (see diagram below) utilizing alternate head joint spacing.



- Construct a primary chalk line (Chalkline #1) in the center of a room typically running parallel with the longer wall of a given area. (A)
- Measure from the chalk line over the parallel wall to verify that the finish pieces will be at least one-half plank width or larger (≥12.5 cm for 25cm wide planks) (B)
- [If finish pieces measure out to less than half-plank width, primary chalk line should be shifted in either direction the distance equivalent to one-half of the plank width]
- Construct a secondary chalk line (Chalkline #2) (C) perpendicular to Chalkline #1 (A) (Additional parallel lines may be needed depending on the desired installation method). Chalkline #2 will be used to determine head joint placement of planks as well as dictating size of end cuts. Placement of this line(s) should be where resulting end cuts will be at least 25cm in length.
- After adhesive is applied and allowed to dry completely, install the first row against Chalkline #1 (A) ensuring proper alignment. Install subsequent rows in the same manner ensuring that head joint spacing is at least 25cm apart from the previous row's head joint.



- Off-cut pieces should be used elsewhere if possible. NOTE: Always mark an arrow on the back of off-cut pieces to facilitate using them in another area. Any piece that is large enough to fill the available space and maintain arrow direction and pattern match should be trimmed and used. It is permissible to carefully re-trim a cut piece and use this field cut edge to butt to a factory edge. Quality of cut and pattern match MUST be maintained for this to be done.
- Properly installed full spread installations can begin receiving foot and rolling traffic immediately. Exposed edges should be protected when rolling heavy loads such as pallets of carpet across the installed portion. Plywood or Masonite should be positioned on carpet when heavy furniture or supplies are moved on jobs.
- The recommended casters for desk chairs should have a tread width of 3/4" to 1" (19mm to 25mm), and a wheel diameter of 2"- 21/2" (5cm - 6cm) tapered. Hard polyolefin composition is recommended. For more detailed information, contact Milliken Technical Services.

TRANSITIONS AND STAIRS:

- For the most attractive finish with its modular products Milliken recommends the use of top set cove base after carpet installation is completed.
- Appropriate transition strips MUST be installed wherever there is a potential for an edge to be exposed or where Milliken modular carpet finishes to another flooring type. The increased total thickness of **WellBAC® Comfort Plus cushion back and WellBAC® Comfort cushion back modular carpet** products requires a transition treatment capable of accepting the carpet without the necessity of modifying or adapting the edge. Johnsonite's EG-XX-W edge guard and CRS-XX-D reducer have proven successful for edge protection for **WellBAC® Comfort Plus cushion back and WellBAC® Comfort cushion back modular carpet** products. Equivalent products from other manufacturers are also acceptable.
- For best long-term performance on stairs, a double undercut nosing such as Johnsonite part SVCD-XX-A or equal should be applied to each step with modules cut to fit on both the tread and the riser. This method of installation on stairs protects the carpet from receiving the impact present at the nose and helps in holding the riser carpet in place. Generally, a Cove Base type adhesive is also used to adhere the riser and tread piece to ensure that the carpet stays in place.
- It is possible to install both **WellBAC® Comfort Plus cushion back and WellBAC® Comfort cushion back modular carpet** backed modules on stairs without the use of a separate nosing. This requires modifying and/or removing the backing and results in placing a structurally compromised product directly on the nose of the stair with no protection from the severe impact and abrasion that will occur. This is not recommended.
- Johnsonite transition treatments, stair nosings and similar products from other manufacturers are sold through distributors. For the location of the nearest Johnsonite distributor, call 800-899-8916. When obtaining transition/nosing treatments from other manufacturers, always be sure to specify the total thickness of the carpet product being installed to ensure the correct transition product is used. **USE OF IMPROPER AND/OR INADEQUATELY INSTALLED TRANSITION TREATMENTS WILL RESULT IN EDGE FAILURE. SELECTION AND INSTALLATION OF THESE PRODUCTS IS THE RESPONSIBILITY OF THE INSTALLATION CONTRACTOR.**

PROTECTING CARPET AFTER INSTALLATION:

Milliken recognizes the CRI Carpet Installation 104 Standard for Installation of Commercial Carpet, September 2015 as the standard guideline for protecting carpet and associated materials after installation. The CRI Standard specifically states: "It is recommended that carpet be the last trade on any job site. However, if it is required to protect the finished floor covering from soil or paint, or if any additional work is required to be done after installation, the carpet should be covered with a non-staining building material paper. Protect the installation from rolling traffic by using sheets of hardboard or plywood in potentially affected areas." Also, CRI cautions: "Self-adhering plastic films may leave residues that result in rapid soiling after removal. Do not place plastic sheeting over any carpet installation because it may present a slip hazard. Most importantly, plastic coverings will trap moisture, retard adhesive curing and may promote mold growth."

NOTE: THE ABOVE INSTALLATION INSTRUCTIONS ARE GENERAL IN NATURE AND ARE NOT COMPLETE FOR EVERY MILLIKEN MODULAR CARPET PATTERN. SOME MILLIKEN PATTERNS REQUIRE SPECIFIC INSTALLATION METHODS (QUARTER-TURNED, ASHLAR, ETC.) TO ACHIEVE THE DESIRED APPEARANCE. ALWAYS CONSULT YOUR MILLIKEN REPRESENTATIVE OR TECHNICAL SERVICES IF THERE ARE QUESTIONS ABOUT THE CORRECT INSTALLATION METHOD.

This information is supplied by Milliken & Company
300 Lukken Industrial Drive West, LaGrange, Georgia 30240
BACKED BY THE LARGEST, MOST PRODUCTIVE RESEARCH AND DEVELOPMENT FACILITY IN THE CARPET INDUSTRY.
Call the Quality Assurance Team Toll Free 1-800-528-8453 – Select Option #2

02/2024

INSTALLATION INSTRUCTIONS - ADDENDUM

Milliken's Barrier Coating for Installation of Milliken Modular Carpet and Milliken Resilient Flooring on Chemically Abated Concrete

1. Chemically abate - recommend petroleum distillate-based chemistries.
2. Clean slab - clean/mop with water and mild detergent (blue dawn).
3. Prep slab - apply Milliken Barrier Coating (2 coats) & necessary patch.
4. Install Milliken Modular carpet or FlexForm 2.5mm & 5.0mm resilient flooring.
5. Utilize applicable adhesives as outlined below.

- APPROVED SUBSTRATES
  - Dry, chemically abated, completely cured concrete
  - For Milliken Modular Carpet, all abatement chemistries are approved.
  - For Milliken 5mm Flexform Resilient Flooring, abatement chemistries limited to petroleum distillate-based and citrus-based. Soybean oil-based abatement chemistries are not approved.

- FLOOR PREPARATION:
  - Chemical abatement: Removal of Asbestos Adhesives/"Cutback"/Residual Adhesives; if your subfloor is contaminated with old adhesives and you choose a chemical abatement method to remove them, NEVER scrape, sand, or mechanically abrade any exposed black adhesive or any existing resilient floor. These may contain asbestos. The floor should be chemically abated in accordance with all Federal, State, and Local regulations. Clean well and dry as specified in the manufacturers' abatement procedures. No oily residue should remain on the concrete.
  - Subfloor: Subfloor must be structurally sound, clean, dust free, smooth, and level. The subfloor must be cleaned according to the abatement chemical manufactures specification. To assure removal of cleaning residues and remaining contaminates, the subfloor must be clean/mopped with water and mild detergent (Blue Dawn). Allow the floor to dry.
  - Dust Removal: Prior to sealing the floor, it is REQUIRED that ALL dust and dirt MUST be removed. If not, poor adhesion of the coating can result.

- MOISTURE: **Subfloor condition must be tested prior to determining installation method and any further subfloor slab preparation.**
  - Milliken Modular Carpet – all abatement chemistries approved
    - In-situ RH ≤95% per ASTM F2170 (Relative Humidity Probe Test)
      1. Milliken Barrier Coating
      2. Moisture resistant cementitious patch like ARDEX MRF or equivalent
      3. Milliken Non-Reactive Standard Adhesive
    - In-situ RH > 95% per ASTM F2170 (Relative Humidity Probe Test)
      1. Milliken Barrier Coating
      2. Moisture resistant cementitious patch like ARDEX MRF or equivalent
      3. TractionBack Plus Adhesive System (connectors)
  - Milliken Resilient Flooring (FlexForm 2.5mm & 5.0mm only) – abatement chemistries limited to petroleum distillate-based and citrus-based. Soybean oil-based is not approved.
    - In-situ RH ≤85% per ASTM F2170 (Relative Humidity Probe Test)
      1. Milliken Barrier Coating
      2. Moisture resistant cementitious patch like ARDEX MRF or equivalent
      3. Milliken LVT Moisture XT Adhesive.
    - In-situ RH > 85% per ASTM F2170 (Relative Humidity Probe Test)
      1. Please contact Milliken Technical and Quality Assurance Team at 1-800-528-8453, option #2. These conditions require more extensive subfloor preparation, only covered under a case-by-case basis.

INSTALLATION INSTRUCTIONS - ADDENDUM

- SEALING FLOOR WITH MILLIKEN BARRIER COATING:
  - Room Preparation for Sealing: The room should be prepared by applying painter's tape to any walls or flooring abutments that will not be later covered with trim to prevent the Milliken Barrier Coating from coating/coloring those surfaces.
  - Sealing of Floor: Mix the Milliken Barrier Coating with a mixing shaft and drill until well mixed. The coating is water-based and cleans up in water. Using a large paint brush (3-6" is suggested), cut in around the edge of the floor at the wall/floor edge if trim will not cover the wall or door surface.
  - Next, using a 3/8" nap paint roller, roll the Barrier Coating over the floor. The roller can be dipped into the bucket to cover with coating and then applied to the floor. Where trim will cover the wall, the roller should spread coating right into the corner where the floor and wall meet. Coat cracks well. Do not pour the coating on the floor and roll out as uneven coverage result. Use a W pattern with the roller to get uniform coating. Coat the entire floor and allow to fully dry before proceeding. It will be a creamy pink appearance while wet but dries to a solid red color in about 1-2 hours.
  - Once dry, repeat the roller coating procedure to give the floor **TWO** coats.
  - A 5-gallon bucket of Milliken Barrier Coating should cover approximately 200 sq. yds. with two coats.

- PATCH FLOOR WITH MOISTURE RESISTANT PORTLAND CEMENT-BASED FLOOR PATCHING MATERIAL
  - Cracks and holes more than 1/8" (3.2mm) should be filled with a moisture-resistant Portland Cement based floor patching material. Gypsum based compounds are not allowed. Protruding objects must be removed. Floor must be flat (not undulating) for LVT.

- APPLICATION / INSTALLATION OF FLOORING
  - Modular Carpet - Follow Milliken Modular Carpet Installation guidelines.
  - Resilient Flooring (FlexForm 2.5mm & 5.0mm) Install with Milliken LVT Moisture XT Adhesive
    - LVT Moisture XT is a wet-set adhesive. **Do not** walk, kneel, or work directly on top of flooring without the proper use of knee-boards for at least 60 minutes after flooring is installed.
    - For special LVT layout orientations like herringbone, Ashlar, etc., please see detailed installation instructions at: https://floors.milliken.com/docs/default-source/americas-documents/technical-documents/installation-instructions/installation_instructions_milliken_flexform_2-0-2-5.pdf?sfvrsn=7152e94c_4
    - **Plan, layout, and install from strategic starting spot**; please see Figure 1 as an example. Since the installer cannot put weight on tiles and must install from the unlaid side, the adhesive applicator must apply at a 2-tile width for the installer to reach far enough to place the tile. With a strategic layout, the "glue spreader person" can continuously keep moving from spot-to-spot while the "tile layer person" installs the tile. The "tile layer person" waits about 10 minutes for the adhesive to "firm-up" and "level-out" to then lay tile, again moving from spot-to-spot. Near edges, the tile layer must first cut and dry lay fit the tile before adhesive is applied. The installation must finish at an exit door.

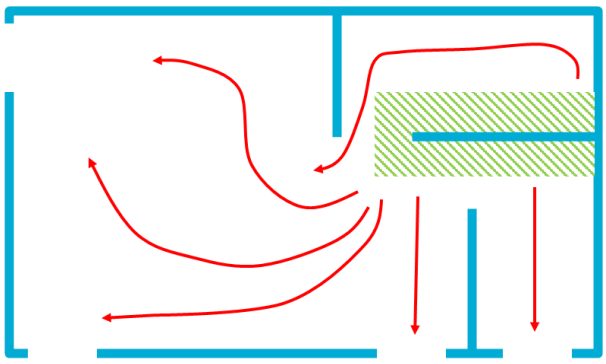


Figure 1: Strategic starting point

    - The proper conditions of the room are between 60-90°F (15-35°C), and 30-65% relative humidity.
    - Spread adhesive using a 1/16" x 1/32" x 1/32" (1.6mm x .8mm x .8mm) U Notch trowel.

INSTALLATION INSTRUCTIONS - ADDENDUM

- Wait 10 minutes after adhesive is spread to build surface tack and reduce movement. Adhesive ridges will dissipate and level-out during that time.
- Working time is approximately 45 min.
- Use a hand roller and apply normal pressure to ensure a good bond.
- Periodically lift flooring material to verify proper transfer of adhesive to tile.
- Wait a minimum of 1 hour, but no more than 2 hours, after the installation to roll and cross roll floor with a 75-100 lbs. (34-45 kg) roller to ensure proper transfer of adhesive.
- Do not wet mop the floor for 6 hours after the install is complete.

Tufted Broadloom Installation Instructions – Millitron® Patterned, Non-Patterned and Attached Cushion

Milliken **strongly recommends** the use of a **Milliken Certified Installation Contractor** to install all broadloom products. Installation contractors certified by the Floor Covering Installation Board **(FCIB)** as well as firms that can document the employment of installers certified by the International Certified Floor Covering Installers Association **(CFI)** at the R2, C2 or Master level are also recognized as sources of good quality installation labor.
APPLICABLE CRI INSTALLATION METHODS: Except where exceeded or modified by this instruction, Milliken recognizes the CRI™ 104 Standard for Installation of Commercial Carpet, and CRI™ 105 Standard for Installation of Residential Carpet September 2015 as the minimum acceptable standards for the installation of its carpet products.

NOTICE: Dealer and/or installer must inspect carpet prior to installation. Milliken **cannot be responsible** for visible defects after carpet has been cut and installed.

STRETCH-IN (OVER CUSHION) INSTALLATION:

As in all broadloom carpet installations, lay the carpet flat, remove wrinkles and allow the carpet to condition sufficiently at room temperature, which should not be less than 65 degrees F (18 degrees C). Extra effort will be required to stretch the carpet if installed below this minimum temperature. Carpet should be maintained after installation between 65 and 85 degrees F (18 to 30 degrees C). Drastic changes in temperature and humidity can cause wrinkling in installed carpet.

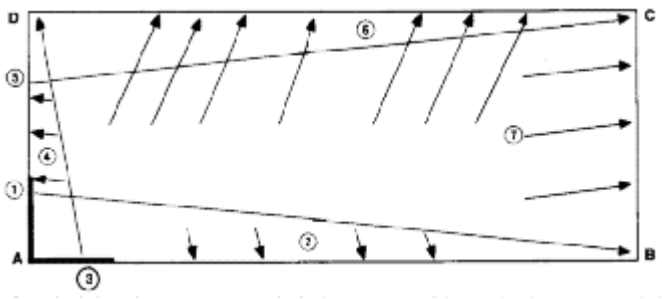
STRETCH THE CARPET

- Stretch synthetic-backed (Endura-Loc™) carpet more than jute-backed carpet. Don't worry about overstretching.
- Stretch selvage-to-selvage just as much as end-to-end.
- Stretch at least 1% in **both** directions (length and width).
- A good rule of thumb is to stretch 1 ½" per 12 feet (3.81 cm per 3.66 m).
- See the seven-step stretching procedure below.

STRETCHING AND HOOKING PROCEDURE

Below is a 7-step technique for successfully power stretching a room. (See diagram.)

1. Using a knee kicker, hook carpet in corner A as indicated by heavy lines and power stretch from A to B at a 15-degree angle. Hook carpet in corner B.
2. Using a knee kicker, hook wall AB firmly onto the tack strip working from A to B at a slight angle.
3. Power stretch from wall AB into corner D at a 15-degree angle. Hook carpet in corner D.
4. Using a knee kicker, hook wall AD firmly onto the tack strip.
5. Power stretch from wall AD into corner C at a 15-degree angle. Hook carpet in corner C. Note: This is a temporary tensioning stretch, which allows stretching into wall DC.
6. Power stretch from wall AB into wall DC, working at a 15-degree angle toward corner C. Stretcher head should be moved no more than 2 head widths between each successive stretch. Approximately 2 to 3 stretches before reaching corner C, unhook the tensioning stretch taken in step 5 and complete stretching into corner C.
7. Power stretch from wall AD to wall BC, working toward corner C at a slight angle.



Caution: Make sure carpet is uniformly stretched at least 1% in both directions. To aid you, we suggest you chalk (white chalk) a line across the carpet close to the wall and measure the distance this mark travels toward the wall.
Note: Carpet stretched in over existing carpet is not recommended or guaranteed.
In large areas, the use of a commercial stretcher is recommended (Roberts 10-222 Senior Stretcher). Large areas should be subdivided into smaller, roughly rectangular areas with each area stretched as described above.

CUSHION RECOMMENDATIONS:

RESIDENTIAL: Maximum Thickness is 7/16" or 11.2 mm (nominal) regardless of type cushion chosen.

- Bonded Polyurethane: Minimum Density 6.5#/cu. ft.
- Prime and "Densified Prime" Polyurethane: Minimum Density 2.8#/cu. ft.
- Needled Synthetic (felt): Minimum Density 32 oz./sq. yd. (1.1 Kg/sq. m.)

COMMERCIAL:

- **Needled Synthetic:** Minimum Density 40 oz./sq. yd. (1.35 Kg/sq. m.), Maximum Thickness 3/8" (9.5 mm.)
- **Slab Rubber (vulcanized synthetic rubber such as TredMor®):** Minimum Density 18#/cu. ft., Maximum Thickness ¼" (6.4 mm.)

Note: Improper cushion is a leading cause of re-stretch callbacks, seam failure, unsatisfactory carpet performance and poor appearance retention.

SEAMING PROCEDURE:

1. All methods of seaming are acceptable, however, the thermoplastic or "hot melt" method gives the strongest seam in the least amount of time and is the recommended procedure. Wider 6" (15cm) tapes are available where seam peaking is a concern. Always use a premium quality seaming tape.
2. The following seaming tapes are recommended:
   - Super 3 (Stretch-in only) and K-80 for direct and "double stick" - **Orcon Corp., 510-489-8100.**
   - GT-350 (Stretch-in only) – **Roberts Consolidated Industries (a QEP Company), 800-423-6545.**
   - The seaming iron should be equipped with a heat shield to prevent damage to backing and face yarns. Seams should be made on a hard, flat surface.

   All cut edges **MUST** be sealed. Milliken Barrier Bond® seam sealer is recommended. Refer to Material ID 3000015511 when ordering. This product is packaged in 8-ounce squeeze bottles with a standard "Yorker" tip. One (1) case is the minimum order. Each 8-ounce bottle will cover 200 linear feet of seam. Thermoplastic chemistry is also an acceptable method for preparing/sealing seam edges. This can be accomplished using a number of available hot melt guns and applicator tips designed for this purpose. Gundlach (618-233-1781) and Orcon (# above) are the most widely available sources for this technology.

CUTTING PROCEDURE:

- For cut pile non-patterned carpet, the preferred method of cutting is to row cut both breadths, however, on tufted carpet the rows are occasionally not straight enough to allow this. If this is the case, carpet should be chalk-lined and straight-edge cut from the back using a sharp razor knife.
- When cutting from the back, care should be taken to just cut through the backings. Cutting too deeply can damage the face yarns and cause an unsightly seam.
- On **non-patterned** loop pile carpet, row cut both breadths if possible. If not, row cut one breadth, overlap and scribe cut the second breadth using a cushion back cutter.
- **Remember that seam sealing is mandatory on all carpet.**
- On patterned carpet, regardless of construction, cut along complementary patterns. DON NOT ROW CUT MILLIKEN PATTERNED CARPET. Cut from the face using a "cushion back cutter" and straight edge or Gundlach's #295 UniCutter and Hang Over Straight Edge.
- An alternate method for patterned carpet is to slit the carpet approximately every 3' (1m) from the face along complementary pattern points and cut between slits from the back.

Milliken Millitron® patterned carpet should be cut on the face. ***DO NOT ROW CUT.***

PATTERN MATCH TECHNIQUE:

- Trim both breadths to be seamed along complementary pattern points as directed above. DO NOT ROW CUT MILLIKEN PATTERNED CARPET.
- For best results and maximum ease of installation, lengthwise pattern repeat, pattern bow and pattern bias should be measured on all rolls to be installed. These measurements are made as part of the final inspection process in manufacturing and are available on roll tags and on the packing list that comes with each shipment. Site measurement of these properties allows the contractor to "fine tune" the sequence of installation. Measure these as follows:

1. LENGTHWISE PATTERN REPEAT (L.P.R.):

- Divide published length pattern dimension into 144" for 12' (3.66m) wide material or 162" for 13'6" (4.1m) wide material. This answer will generally be a whole number. If not, round up to the next higher number. Example: On 13'6" (4.1m) wide material having a 40.5" length repeat, 40.5 goes into 162 four (4) times.
- Measure along both selvages on each roll the number of pattern repeats obtained above (four in this example). This measurement will typically be slightly larger or smaller than 144" or 162" (3.66m or 4.1m). **In any dye lot, all measurements obtained in this way will vary no more than 2" (5cm).**

2. PATTERN BOW (WIDTH AND LENGTH):

- For width bow, pick two identical pattern points on the same widthwise pattern line – one at the left edge and one at the right.

- Pull a chalk line or tightly stretched string between these points across the width (12′ or 13′6″, 3.66m or 4.1m). Measure the distance between the chalk line or string and the same pattern point at the point of greatest separation. **This will be no more than 1″ (2.5cm) across 12′ or 13′6″ (3.66m or 4.1m).**
- For length bow (also called "trueness of edge"), use the same procedure connecting common pattern points 40 feet (12.6m) apart along the edge of the carpet. **The pattern will be no more than ½″ (12.8mm) from the string or chalk line.**

3. PATTERN BIAS:

- Starting at the same pattern points isolated in the width bow measurement – call these "A" and "B" – measure lengthwise along both selvage edges exactly 9′ and mark these points with a small piece of tape. Call these points "C" and "D".
- Measure from point A diagonally to point C and from point B diagonally across to point D. **The difference between these measurements will not exceed 2 3/8″ (6.0cm).** More detailed information sheets on each of these criteria are available if needed.

4. GENERAL PATTERN PROCEDURES – STRETCH-IN INSTALLATIONS:

- Group rolls and cuts working from the longest pattern repeat gradually down to the shortest.
- Shift trimmed breadths to achieve a match near the midpoint of the seam
- Insert hot melt tape under the seam.
- Melt together that portion of the seam that is visually acceptable.
- Using a power stretcher or knee kicker, stretch along the "short" side (smaller pattern repeat) in 3 to 5 foot (1 to 1.6m) sections.
- As each small section of the seam is matched, insert the seaming iron and prepare that section. Leave stretcher locked in position until each section cools.
- Do not complete any section of seam that does not match.
- Once all seams are matched and complete, the entire installed area is stretched as described in the above diagram.
- Width Pattern Bow up to ½″ (1.2cm) and all pattern bias is dealt with during the power stretching process.
- Width Pattern Bow between ½″ and 1″ (1.2cm to 2.5cm) must be dealt with as the seams are assembled, working both sides of the seam simultaneously with the knee kicker, power stretcher OR "crab" stretcher as required.
- Patterned Corridor Carpets (runners and caps) are subject to the same variations and are cut, pattern-matched and installed using the techniques above. **Maximum pattern width variation is ½″ in 6′ (1.3cm in 1.8m).** For best results, keep right side runners with right side caps and left side runners with left side caps.
- These same procedures also apply on all end or "cross" seams. These seams are usually assembled from one side to the other across the width of the material.

DIRECT GLUE-DOWN INSTALLATION:

RECOMMENDED ADHESIVES:

Milliken Broadloom Carpet Adhesive – Material ID 3000015604, 4-gallon pail – is the **ONLY** recommended adhesive for all Milliken broadloom products and should be ordered with the carpet. This applies to all products having the Endura-Loc™ secondary and to all attached cushion products. This adhesive product carries the CRI™ "Green Label" and is specifically designed to provide optimum performance with all Milliken broadloom products regardless of the installation method chosen.

COVERAGE:

- Direct glue, Endura-Loc™ and attached cushion: 10 to 15 sq. yds. per gallon using a 1/8″ x 1/8″ x 1/16″ (3.2mm x 3.2mm x 1.6mm) "V" notched trowel.
- Double stick between cushion and carpet: 6 to 8 sq. yds. per gallon using a 1/8″ x 3/16″ x 1/8″ (3.2mm x 4.8mm x 3.2mm) "U" notched trowel or as recommended by the manufacturer of the double stick system being used.

FLOOR PREPARATION:

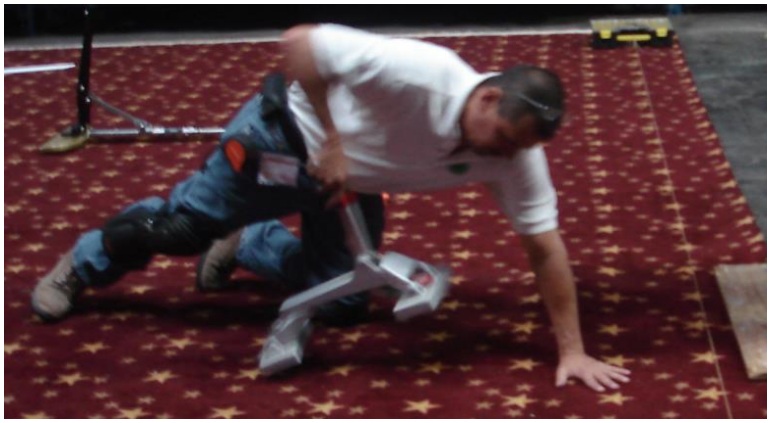
- All dust, foreign matter, non-compatible adhesive residues, grease, paint, wax, oil, dirt, etc. should be removed.
- Cracks, holes and depressions should be filled with a Portland cement based patching material. Protrusions should be removed.
- Floor surface should be smooth and non-undulating to within 1/8″ (3.2mm) in 10 feet (3.0m) in conformance with ACI standards.
- Standard alkalinity and moisture tests should be performed. Concrete slab pH should not exceed 9.0. Excessive moisture will interfere with the curing/performance of the adhesive. Water vapor transmission should not exceed 3#/1000 sq. ft. (1.4 Kg/93 sq. m.)/24-hour period as determined by the anhydrous calcium chloride test performed in accordance with ASTM F-1869-98. Milliken subscribes to the industry position that this testing should be performed by an independent agency trained and certified to perform this testing.
- "Sealing" of concrete floors is at the discretion of the flooring contractor. In general, properly cured and dried (90 days minimum) steel trowel finished concrete requires no additional treatment. Excessively porous or dusty concrete slabs are the only exceptions. Please call Technical Services if you have questions. KURE-N-SEAL WB from Sonneborn (800-243-6739) is a recommended product should this type of treatment be deemed necessary. This type of "sealing" is not a curative for excessive water vapor emission. If out of tolerance emission levels are encountered, call Technical Services for assistance.

INSTALLATION PROCEDURES – ADHESIVE INSTALLATION:

- Trowel notch size, shape and adhesive coverage rate MUST be maintained as noted above. Insufficient adhesive is the #1 cause of failure in all adhesive installations.
- Proper open time must be allowed. Temperature and relative humidity influence adhesive open time.
- If patterned carpet is being installed, installation sequence MUST be determined based on pattern repeat size as described above. There is no requirement for roll number sequence to be followed. **L.P.R. Bow and Bias amounts are printed on the packing list and roll tag for added convenience.**
- On non-patterned, loop pile carpets, row-cut one of the breadths to be seamed, overlap this edge over the second breadth and scribe cut to the row-cut edge. This method does **NOT** apply to patterned carpets. These must be cut along complementary pattern characteristics to insure a proper match. The use of hotmelt seaming tape to achieve and secure pattern match is strongly recommended on all double stick installations and is very helpful on direct cement installations where repeat variation is significant. **Orcon K-80** seam tape is the recommended product for both direct and double stick applications.
- Obtain a net seam – do not compress. Use knee kicker or "crab" stretcher to position.

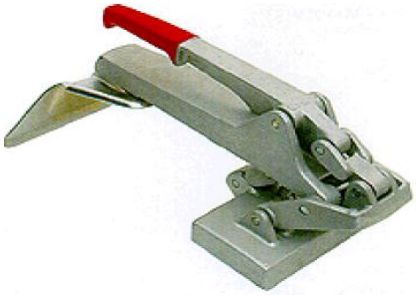
- Bead all edges with seam sealer on all carpets regardless of construction. (See previous section on seaming procedures and recommended products.)
- Avoid air entrapment. Lay carpet into adhesive working in both directions from center. Depending on the amount and type of pattern variation present, it is sometimes necessary to vary the way the carpet is placed back into the adhesive. For severe bow or bias, it is more efficient to roll the carpet into the adhesive end-to-end in short sections, working and straightening each section before proceeding. Where significant pattern repeat variation is present, it is generally easiest to assemble the seams "dry" using the K-80 seaming tape noted earlier and then roll the carpet sideways to expose the floor under the seam. The backing paper on the K-80 is then removed and adhesive spread. The carpet is rolled back into the adhesive once the proper open time is observed.
- Roll with 75 lb. (34 Kg) roller in both length and width directions or as directed by the cushion manufacturer in double stick applications.
- Restrict heavy traffic and furniture movement for 24 hours.

Power stretcher, crab stretcher, deadman, and dry lines should all be utilized to assure proper pattern alignment.



PATTERN MATCHING TOOLS:

Power Stretcher



Mini or crab stretcher

Deadman & dry line

Stay Nails

PROTECTING CARPET AFTER INSTALLATION:
Milliken recognizes the CRI™ 104 Standard for Installation of Commercial Carpet, and CRI™ 105 Standard for Installation of Residential Carpet September 2015 as the standard guidelines for protecting carpet and associated materials after installation. The CRI™ Standard specifically states: "It is recommended that carpet be the last trade on any job site. However, if it is required to protect the finished floor covering from soil or paint, or if any additional work is required to be done after installation, the carpet should be covered with a non-staining building material paper. Protect the installation from rolling traffic by using sheets of hardboard or plywood in potentially affected areas." Also, CRI™ cautions: "Self-adhering plastic films may leave residues that result in rapid soiling after removal. Do not place plastic sheeting over any carpet installation because it may present a slip hazard. Most importantly, plastic coverings will trap moisture, retard adhesive curing and may promote mold growth."

Milliken cannot be responsible for pattern match in direct glue-down installations. This includes all double stick methods. If a consumer desires an adhesive installation, carpet must be inspected for visible manufacturing defects prior to installation. Once installed, Milliken will decline all complaints except for latent defects. Sequencing of rolls by pattern repeat is mandatory for success when installing patterned carpet in any direct glue or double stick application.

Milliken and Company, Floor Covering Business
Installation Services Dept., 300 Lukken Industrial Drive West, LaGrange, GA 30240
BACKED BY THE LARGEST, MOST PRODUCTIVE RESEARCH AND DEVELOPMENT FACILITY IN THE CARPET INDUSTRY.
Call Technical Services Team Toll Free 1-800-528-8453 – Select Option #2

The above instructions represent the best available data and are deemed correct and complete. However, Milliken assumes no liability for installation-related problems.
03/2016

ULTIMA®
ULTIMA® High NRC

Square Lay-in
fine texture

TOTAL ACOUSTICS™

10-YEAR REPLACEMENT PANEL AVAILABILITY
1910, 1913

Ultima

Ultima High NRC

Ultima® Square Lay-in panels with Prelude® 15/16" suspension system (Pgs. 279-280)

cloud friendly

See more photos at:
armstrong.com/photogallery
SEARCH: ultima lay-in

A smooth visual ceiling with Total Acoustics™ performance, sound absorption, and blocking needed for today's flexible spaces

KEY SELECTION ATTRIBUTES

- Get total noise control and design flexibility with Total Acoustics™ ceiling panels: NRC + CAC = Total Acoustics™ Performance
- Smooth, clean, durable finish – Washable, Impact-resistant, Scratch-resistant, Soil-resistant
- Excellent sound absorption and blocking for Total Acoustics™ performance
- Ceiling-2-Ceiling™ Post-consumer Recycled Content options: items 1910HRC, 1913HRC. 71% Pre-consumer; 15% Post-consumer
- USDA Certified Biobased Product – 88%
- Available with AirGuard™ Coating
- Visual coordinates with Optima® panels for mixed (open/closed plan) applications
- Items 1910 and 1935 available with Create!™ printed images and patterns – see pages 175-177
- Non-directional visual reduces scrap and installation time
- Compatible with TechZone® Ceiling Systems (Pgs. 251-257)
- 30-Year Limited System Warranty against visible sag, mold, and mildew

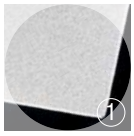
TYPICAL APPLICATIONS

- Offices – closed spaces for privacy and confidentiality; open spaces for focus, collaboration, and teaming
- Healthcare – assists in addressing HIPAA, HCAHPS, and FGI acoustical requirements
- Classrooms
- Corridors
- Lobbies/reception areas
- Department stores/retail

COLOR

White

DETAILS



1. Ultima Square Lay-in
2. Ultima Square Lay-in with Prelude 15/16" suspension system

ULTIMA®
ULTIMA® High NRC

Square Lay-in
fine texture

USDA CERTIFIED BIOBASED PRODUCT
PRODUCT 88%

CLOSED LOOP RECYCLED CONTENT
CEILING-2-CEILING
HRC items contain 15% or greater post-consumer recycled ceilings

UP TO 86% RECYCLED CONTENT

Calculate LEED contribution at armstrong.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

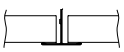
Dots represent high level of performance. $$$$

Edge Profile	Susp. Dwg. Pgs. 295-299 armstrong.com/catdwgs	Item No.	Dimensions (Inches)	UL Classified Acoustics NRC	UL Classified Acoustics CAC	Total Acoustics[1] NRC+CAC	Articulation Class AC	Fire Rating	Light Reflect	Anti-Mold & Mildew: Bio-Block	Anti-Mold & Mildew: Humi-Guard+	Sag Resist	Certified Low VOC Emissions	Durability: Water Repel	Durability: Wash	Durability: Scrub	Durability: Impact	Durability: Scratch	Durability: Soil	Recycled Content	Recycle Program	30-Yr Warranty
ULTIMA® High NRC																						
15/16" Square Lay-in	1	new 1940	24 x 24 x 1"	0.80 •	35 •	BEST	170 •	Class A	0.87 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	new 1943	24 x 48 x 1"	0.80 •	35 •	BEST	170 •	Class A	0.87 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	Other Size Panels	W: 12" - 24" / L: 24" - 60" 1" Thick	N/A	N/A	–	–	Class A	0.87 •	•	•	•	–	•	–	•	•	•	•	•	•
ULTIMA®																						
15/16" Square Lay-in	1	1420	6 x 48 x 3/4"	N/A	N/A	–	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1425	6 x 60 x 3/4"	N/A	N/A	–	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1990	12 x 48 x 3/4"	0.65 •	35 •	GOOD	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1991	12 x 60 x 3/4"	0.65 •	35 •	GOOD	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1992	12 x 72 x 3/4"	0.65 •	35 •	GOOD	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1910 1910HRC	24 x 24 x 3/4" 24 x 24 x 3/4"	0.75 •	35 •	BETTER	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	• •	•	•
	1	1913 1913HRC	24 x 48 x 3/4" 24 x 48 x 3/4"	0.75 •	35 •	BETTER	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	• •	•	•
	1	1984	24 x 60 x 3/4"	0.75 •	35 •	BETTER	–	Class A	0.85 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1980	24 x 72 x 3/4"	0.75 •	35 •	BETTER	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	FS FastSize™ Panels	W: 4" - 24" / L: 4" - 72" 3/4" Thick	N/A	N/A	–	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
ULTIMA® with AirGuard™ Coating																						
15/16" Square Lay-in	1	1900	24 x 24 x 3/4"	0.75 •	35 •	BETTER	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•
	1	1903	24 x 48 x 3/4"	0.75 •	35 •	BETTER	–	Class A	0.90 •	•	•	•	–	•	–	•	•	•	•	•	•

[1] Total Acoustics™ ceiling panels have an ideal combination of noise reduction and sound-blocking performance in one product. **FS FastSize**: Factory-finished, made-to-order sizes, shipped fast (1 carton min.)
GOOD (NRC 0.60-0.65; CAC 35+) **BETTER** (NRC 0.70-0.75; CAC 35+) **BEST** (NRC 0.80+; CAC 35+)
HRC items not available in FastSize or other size panels.

SUSPENSION SYSTEMS

15/16"



Prelude

new **Blizzard White – Suspension System Finish**
A color and texture coordinated suspension system to complement Ultima ceiling panels for a monolithic look and feel.

PHYSICAL DATA

Material
Wet-formed mineral fiber with DuraBrite® acoustically transparent membrane

Surface Finish
DuraBrite scrim with factory-applied latex paint

Fire Performance
ASTM E84 and CAN/ULC S102 surface burning characteristics. Flame Spread Index 25 or less. Smoke Developed Index 50 or less. (UL labeled).

ASTM E1264 Classification
Type IV, Form 2, Pattern E
Fire Class A

Humidity/Sag Resistance
HumiGuard® Plus ceiling panels maintain superior sag resistance. Recommended for areas subject to high humidity, up to, but not including, standing water and outdoor applications.

Anti-Mold/Mildew
Ceiling panels with BioBlock® coating contain a mold-inhibiting agent that resists the growth of mold and mildew.

VOC Emissions
Third-party certified compliant with California Department of Public Health CDPH/EHLB/Standard Method Version 1.1, 2010. This standard is the guideline for low emissions in LEED, 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 EPD's.

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 – 2.2 (BTU units)
R Factor – 0.39 (Watts units)

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

Weight; Square Feet/Carton
1420, 1425 – 1.05 lbs/SF; 24 SF/ctn
1910, 1913, 1900, 1903, – 1.08 lbs/SF; 48 SF/ctn
1940 – 1.14 lbs/SF; 40 SF/ctn
1943 – 1.125 lbs/SF; 48 SF/ctn
1980 – 1.08 lbs/SF; 72 SF/ctn
1984 – 1.08 lbs/SF; 80 SF/ctn
1990 – 1.08 lbs/SF; 24 SF/ctn
1991 – 1.08 lbs/SF; 30 SF/ctn
1992 – 1.08 lbs/SF; 36 SF/ctn

Minimum Order Quantity
1 carton

Metric Items Available
1910M, 1913M, 1940M, 1943M – Metric items are subject to extended lead times and minimum quantities. Contact your representative for more details.

TechLine℠ / 1 877 ARMSTRONG
armstrong.com/commceilings
(search: ultima)
BPCS-4595-1015

PRELUDE® XL® and PRELUDE XL High Recycled Content (HRC)

Exposed Tee Suspension System

SUSTAIN™ High Performance Sustainable Ceiling Systems

24/7 DEFEND™ Solutions for Healthier, Safer Spaces

CONTAIN CLEAN PROTECT

▲ Prelude XL suspension system

This hot-dipped galvanized steel 15/16" suspension system offers high recycled content for improved LEED® credits.

KEY SELECTION ATTRIBUTES

- **Seismic Rx®** Suspension System saves time and money; Armstrong Ceilings offers an ICC-ES approach to installations (ESR-1308)
- Prelude® XL® is part of the Sustain™ portfolio and meets the most stringent industry sustainability compliance standards today
- CleanAssure™ family of products – includes disinfectable panels, suspension systems, and trim (Cleaning and CDC-approved disinfecting options available on armstrongceilings.com/cleaning)
- **PeakForm®** profile increases strength and stability for improved performance during installation
- **SuperLock™** main beam clip is engineered for a strong, secure connection and fast, accurate alignment confirmed with an audible click; easy to remove/relocate
- Hot-dipped galvanized coating inhibits red rusting better than electrogalvanized or painted systems
- 10-Year Limited System Warranty; 30-Year Limited Ceiling Systems Warranty when used with **HumiGuard® Plus** products
- **Made-to-order** main beams and cross tees can be ordered for your project needs in one carton minimum
- Available with coating that resists dirt, bacteria, mold, mildew, and color fading
- XL® staked-on end detail provides secure locked connection: easy to remove, reuse, and relocate
- Fire Guard™ options offer UL® design fire-rated performance
- Some items available in metric sizes
- Blizzard White and Charcoal Black powder-coated finish
- Linear lighting integration is easy with made-to-order main-beam-to-cross-tee adapters, rout spacing, miter spacing, and short cross tees (3" to 6" lengths)
- 10-Year replacement items available

10-YEAR REPLACEMENT AVAILABILITY

COLORS

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

Standard

White (WH) · Black (BL) · Silver Grey (SG) · Gun Metal Grey (MY) · Silver Satin (SA) · Ivory (IV) · Medium Taupe (MT) · Adobe (AD) · Light Grey (LG) · Custom Colors Available*

Grey Stone (GS) · **Basalt (SBT)** · Riverstone (SRV) · Coffee (SCE) · Polar (SPO) · Limestone (SLM) · Fossil (SFL) · Sandstone (SSS) · Hay (SHY)

Oat (SOT) · Mist (SMT) · Pacific (SPC) · Rainstorm (SRS) · Lilac (SLC) · Twilight (STT) · Ocean (SOC) · Boxwood (SBW) · Fern (SFN)

Ivy (SIV) · Feldspar (SFS) · Topaz (STZ) · Bronzite (SBZ) · Honeysuckle (SHS) · Marigold (SMG) · **Rose (SRO)**

NOTE: 360° paint finishes and custom colors available as special order.

Premium

Camel (CM) · White Aluminum (WA)† · Natural Aluminum (NA)†

Copper (CP) · Bronze (BZ) · Pewter (PW) · Silver (SL)

Powder-Coated Finishes

Blizzard White (ZW) · Charcoal Black (ZB)

* Colors that are pre-qualified to meet Sustain™ portfolio requirements are available upon request. Other made-to-order colors must be evaluated if sustainability criteria is required. Lead time will increase.

VISUAL SELECTION

	Item No.◆	Description	Rout Spacing	Dimensions (Inches)	LOAD TEST DATA (LBS./LIN. FT.) L/360 4 Ft.	L/360 5 Ft.
PRELUDE® XL® 15/16"	**7301_ _ _**	12' HD Main Beam	6" O.C.	144 x 15/16 x 1-11/16"	16.73	8.73
	7301HRC					
(Red Numbers are Fire Guard™ items)	**8301**					
	7300_ _❖	12' ID Main Beam	6" O.C.	144 x 15/16 x 1-11/16"	13.5	6.35
	8300_ _††					
	7305_ _❖	140" HD Main Beam	10" O.C.	140 x 15/16 x 1-11/16"	16.73	8.73

PERFORMANCE

Fire Guard™	Seismic Category	CleanAssure™ Disinfectable Grid: Fog	Spray	Wipe
N/A	•	•	•	•
N/A	•	•	•	•
•	•	•	•	•
N/A	N/A	•	•	•
•	N/A	•	•	•
N/A	•	•	•	•

Dots represent high level of performance.

PACKAGING

Pieces/ Carton	LFT/ Carton
20	240
20	240
20	240
20	240
20	240
20	233

ASTM Class
HD - Heavy-duty
ID - Intermediate-duty
LD - Light-duty

NOTE: Additional Prelude XL items for TechZone® Ceiling Systems are listed in the TechZone Technical Guide (BPCS-4486), and available online at armstrongceilings.com/techzone

* Simple Span ** Hanger Wire Support Mid-Span

◆ When specifying or ordering items with a color or finish, add the two-or three-letter suffix to the end of the item number (e.g. 7301 L G _ – Light Grey)

❖ Available in White (WH), and Blizzard White (ZW) and Charcoal Black (ZB) powder-coated finishes only

†† Available in Black (BL) and White (WH) only

††† Available in Black (BL), White (WH), and Blizzard White (ZW) and Charcoal Black (ZB) powder-coated finishes only

TechLine 877 276-7876
armstrongceilings.com/preludexl

Armstrong® CEILING & WALL SOLUTIONS

PRELUDE® XL® and PRELUDE XL High Recycled Content (HRC)

Exposed Tee Suspension System

SUSTAIN™ High Performance Sustainable Ceiling Systems

Declare.

LEED® | WELL™ | LBC

UP TO 63% RECYCLED CONTENT

Calculate sustainability with GreenGenie™ armstrongceilings.com/greengenie

energy management; construction waste mgmt; regional materials (LOCATION DEPENDENT); 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

WELL Building Standard™ (WELL) Living Building Challenge® (LBC)

VISUAL SELECTION

PERFORMANCE

PACKAGING

	Item No.◆	Description	Rout Spacing	Dimensions (Inches)	LOAD TEST DATA (LBS./LIN. FT.) L/360 4 Ft.	LOAD TEST DATA (LBS./LIN. FT.) L/360 5 Ft.	Fire Guard™	Seismic Category	CleanAssure™ Disinfectable Grid: Fog	Spray	Wipe	Pieces/ Carton	LFT/ Carton
PRELUDE® XL® 15/16" (Red Numbers are Fire Guard™ items)	**7306_ _❖**	132" HD Main Beam	10", 30", 50", 56", 76", 96", 116", 122" O.C.	132 x 15/16 x 1-11/16"	16.73	8.73	N/A	•	•	•	•	20	220
	7307_ _❖	126" HD Main Beam	10", 30", 50", 70", 90", 110", 116" O.C.	126 x 15/16 x 1-11/16"	16.73	8.73	N/A	•	•	•	•	20	210
	7302_ _❖	10' ID Main Beam	6" O.C.	120 x 15/16 x 1-11/16"	13.5	6.35	N/A	N/A	•	•	•	20	200
	XL7380_ _❖	8' Cross Tee	12" O.C.	96 x 15/16 x 1-11/16"	12.12**	N/A	N/A	•	•	•	•	20	160
	XL7357_ _❖	5' Cross Tee	6", 12", 24", 30", 36", 48", 54" O.C.	60 x 15/16 x 1-11/16"	N/A	7.61	N/A	•	•	•	•	60	300
	XL7390_ _❖	6' Cross Tee	12" O.C.	72 x 15/16 x 1-11/16"	12.24*	N/A	N/A	•	•	•	•	20	120
	XL7341_ _❖ **XL7341HRC** **XL8341**	4' Cross Tee	12" O.C.	48 x 15/16 x 1-11/16"	16.89	N/A	N/A N/A •	• • •	• • •	• • •	• • •	60 60 60	240 240 240
	XL7340_ _❖ **XL8340_ _ ††**	4' Cross Tee	12" O.C.	48 x 15/16 x 1-11/16"	12.25	N/A	N/A •	• •	• •	• •	• •	60 60	240 240
	XL7342_ _ _	4' Cross Tee	12" O.C.	48 x 15/16 x 1-1/2"	7.8	N/A	N/A	•	•	•	•	60	240
	XL7348_ _❖	4' Cross Tee	12" O.C.	48 x 15/16 x 1-3/8"	6.78	N/A	N/A	•	•	•	•	60	240
	XL7330_ _ †††	3' Cross Tee	N/A	36 x 15/16 x 1-11/16"	20.3 at 3'	N/A	N/A	•	•	•	•	60	180
	XL7378_ _❖	30" Cross Tee	N/A	30 x 15/16 x 1-3/8"	16.54 at 2.5'	N/A	N/A	•	•	•	•	60	150
	XL7328_ _ _ **XL8323_ _ ††**	2' Cross Tee	N/A	24 x 15/16 x 1-3/8"	36.0 at 2'	N/A	N/A •	• •	• •	• •	• •	60 60	120 120
	XL8320HRC **XL8320**	2' Cross Tee	N/A	24 x 15/16 x 1-11/16"	61.33 at 2'	N/A	N/A •	• •	• •	• •	• •	60 60	120 120
	XL7368_ _❖	20" Cross Tee	N/A	20 x 15/16 x 1-3/8"	36.0 at 1.67'	N/A	N/A	•	•	•	•	60	100
	XL7398_ _❖	18" Cross Tee	N/A	18 x 15/16 x 1-3/8"	N/A	N/A	N/A	•	•	•	•	60	90
	XL7318_ _❖	1' Cross Tee	N/A	12 x 15/16 x 1-3/8"	36.0 at 1'	N/A	N/A	•	•	•	•	120	120
	XL7304_ _❖	4" Cross Tee	N/A	4 x 15/16 x 1-11/16"	N/A	N/A	N/A	•	•	•	•	60	20
	XL7306_ _❖	6" Cross Tee	N/A	6 x 15/16 x 1-11/16"	N/A	N/A	N/A	•	•	•	•	60	30
Size Capabilities NOTE: Up to 6 weeks for color and size combinations.	1 Ctn Min FASTSIZE 2 WEEKS order to ship	15/16" Prelude® XL® Main Beams Length 36" – 144" Rout spacing 6" from ends, 6" thereafter		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Varies	Varies

Made-to-order main beams and cross tees can be ordered with special sizes, rout spacing, and colors for your project needs in one carton minimums.

◆ When specifying or ordering items with a color or finish, add the two-or three-letter suffix to the end of the item number (e.g. XL7342 L G _ – Light Grey)

❖ Available in White (WH), and Blizzard White (ZW) and Charcoal Black (ZB) powder-coated finishes only

†† Available in Black (BL) and White (WH) only

††† Available in Black (BL), White (WH), and Blizzard White (ZW) and Charcoal Black (ZB) powder-coated finishes only

Dots represent high level of performance.

VISUAL SELECTION

PACKAGING

	Item No.◆	Face Profile	Description	Dimensions (Inches)	LOAD TEST DATA (LBS./LIN. FT.) 4 Ft.	LOAD TEST DATA (LBS./LIN. FT.) 5 Ft.	Pieces/ Carton	LFT/ Carton
Prelude XL Painted Grid to Match Axiom® Trim (360° Painted – Powder Coated Paint)	**AX73003_ _ _**	15/16"	12' ID Main Beam, Routs 6" O.C.	144 x 15/16 x 1-11/16"	13.5	6.35	20	240
	AX73013_ _ _	15/16"	12' HD Main Beam, Routs 6" O.C.	144 x 15/16 x 1-11/16"	16.73	8.73	20	240
	AX73423_ _ _	15/16"	4' Cross Tee, Routs 12" O.C.	48 x 15/16 x 1-1/2"	7.8	N/A	60	240
	AX73283_ _ _	15/16"	2' Cross Tee	24 x 15/16 x 1-3/8"	36.0 @ 2'	N/A	60	120
	AX73183_ _ _	15/16"	1' Cross Tee	12 x 15/16 x 1-3/8"	36.0 @ 1'	N/A	120	120
	AX73583_ _ _	15/16"	5' Cross Tee Routs 6", 20", and 30" from ends	60 x 15/16 x 1-1/2"	7.61	N/A	60	300
	AX73783_ _ _	15/16"	30" Cross Tee	30 x 15/16 x 1-3/8"	16.54 @ 2.5	N/A	60	150
	AX83403_ _ _	15/16"	4' Cross Tee, Routs 12" O.C.	48 x 15/16 x 1-1/2"	N/A	N/A	60	N/A
	AXAL7220_ _ _	15/16"	2' Cross Tee	24 x 15/16 x 1-1/2"	N/A	N/A	60	120

◆ When specifying or ordering items with a color or finish, add the two-or three-letter suffix to the end of the item number (e.g. 7301 L G _ – Light Grey)

TechLine 877 276-7876
armstrongceilings.com/preludexl

Armstrong® CEILING & WALL SOLUTIONS

PRELUDE® XL® and PRELUDE XL High Recycled Content (HRC)

Exposed Tee Suspension System

SUSTAIN™ High Performance Sustainable Ceiling Systems

Declare.

LEED® | WELL™ | LBC

UP TO 63% RECYCLED CONTENT

Calculate sustainability with GreenGenie™ armstrongceilings.com/greengenie

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

WELL Building Standard™ (WELL)
Living Building Challenge® (LBC)

VISUAL SELECTION

PERFORMANCE

PACKAGING

	Item No.	Face Profile	Description	Rout Spacing	Dimensions (Inches)	LOAD TEST DATA (LBS./LIN. FT.) L/360 4 Ft.	LOAD TEST DATA (LBS./LIN. FT.) L/360 5 Ft.	Fire Guard™	Seismic Category	CleanAssure™ Disinfectable Grid: Fog	Spray	Wipe	Pieces/ Carton	LFT/ Carton
Continuous Load Path (CLP)	**CLP7301**	15/16"	N/A	N/A	6 x 15/16"	N/A	N/A	N/A	•	•	•	•	20	240
	7396	15/16"	9' 6" Main Beam	6" O.C.	114 x 15/16"	16.5	8.73	N/A	•	•	•	•	20	190
	7376	15/16"	7' 6" Main Beam	6" O.C.	90 x 15/16"	16.5	8.73	N/A	•	•	•	•	20	150

Dots represent high level of performance.

ASTM Class
HD - Heavy-duty
ID - Intermediate-duty
LD - Light-duty

VISUAL SELECTION

PACKAGING

	Item No.◆	Description	Length	(A) Flange	(B) Flange	(C) Reveal	(D) Reveal	Pieces/ Carton	LFT/ Carton
Suggested Wall Moldings and Shadow Moldings	**7800_ _ _**† **7800HRC**	12' Hemmed Angle Molding	144"	7/8"	7/8"	N/A	N/A	30	360
	7808_ _❖	10' Hemmed Angle Molding	120"	2"	2"	N/A	N/A	10	100
	780812_ _❖	12' Hemmed Angle Molding	144"	2"	2"	N/A	N/A	10	120
	7807	10' Hemmed Angle Molding	120"	2"	1"	N/A	N/A	10	100
	7875_ _❖	10' Shadow Molding	120"	3/4"	15/16"	1/2"	N/A	30	300
	7877_ _❖***	10' Shadow Molding	120"	15/16"	15/16"	1/4"	N/A	30	300
	7878_ _ _†***	10' Shadow Molding	120"	15/16"	15/16"	3/8"	N/A	30	300
	7897_ _❖***	10' Shadow Molding	120"	15/16"	15/16"	1/2"	N/A	30	300
	7888	10' Shadow Molding	120"	9/16"	15/16"	3/8"	1/4"	30	300
	7850_ _❖	10' Hemmed Angle Molding	120"	1-1/8"	7/8"	N/A	N/A	30	300
	7851_ _❖	12' Hemmed Angle Molding	144"	1-1/8"	7/8"	N/A	N/A	30	360

* Simple Span ** Hanger Wire Support Mid-Span *** Suitable for IBC Category D,E,F installations using Armstrong® Seismic Rx® suspension system and BERC2 Clip
◆ When specifying or ordering items with a color or finish, add the two-or three-letter suffix to the end of the item number (e.g. XL7342 L G _ – Light Grey)
❖ Available in White (WH), and Blizzard White (ZW) and Charcoal Black (ZB) powder-coated finishes only
† Not available in Silver Grey (SG), Gun Metal Grey (MY), or Silver Satin (SA).
†† Available in White (WH), Black (BL), Silver Grey (SG), Silver Satin (SA), and Blizzard White (ZW) and Charcoal Black (ZB) powder-coated finishes only

MAXIMUM FIXTURE WEIGHT

	Configuration A	Configuration B	Item No.	Fixture A	Fixture B	Planning Module A	Planning Module B	Hanger Spacing A	Hanger Spacing B	Maximum Weight A	Maximum Weight B
Main Beam to Main Beam			**7300/8300/7302** **7301/8301**	24" x 48" 24" x 48"	24" x 48" 24" x 48"	48" x 48" 48" x 48"	48" x 48" 48" x 48"	48" 48"	48" 48"	69.27 lbs. 72.32 lbs.	49.27 lbs. 72.32 lbs.
			**7300/8300/7302** **7301/8301**	12" x 48" 12" x 48"	12" x 48" 12" x 48"	48" x 48" 48" x 48"	48" x 48" 48" x 48"	48" 48"	48" 48"	54.26 lbs. 100.0 lbs.	47.17 lbs. 63.32 lbs.
			**7300/8300/7305** **7301/8301**	24" x 48" 24" x 48"	20" x 60" 20" x 60"	60" x 60" 60" x 60"	60" x 60" 60" x 60"	48" 48"	48" 48"	56.47 lbs. 56.47 lbs.	43.21 lbs. 65.46 lbs.

Main beams tested as follows: 7300 tested at 13.0 lbs./LF to 1/360 of 4' span; 7301 tested at 16.5 lbs./LF to 1/360 of 4' span; 8500 tested at 13.3 lbs./lin. ft. to 1/360 of 4' span. 48" cross tee tested at 10.34 lbs./lin. ft. to 1/360 of 4' span.

Cross Tee to Cross Tee			**XL8340/XL7340** **XL7342** **XL8341/XL7341**	24" x 48" 24" x 48"	24" x 24" 24" x 24"	64" x 60" 64" x 60"	48" x 48" 48" x 48"	48" 48"	48" 48"	69.27 lbs. 40.89 lbs.	80.55 lbs. 52.26 lbs.
			**XL8340/XL7340** **XL8341/XL7341**	24" x 48" 24" x 48"	12" x 48" 12" x 48"	48" x 48" 48" x 48"	48" x 48" 48" x 48"	48" 48"	48" 48"	49.27 lbs. 72.32 lbs.	42.17 lbs. 63.32 lbs.

Fixtures weighing more than 56 lbs. should be independently supported. Fixture weight is based on single fixture only. For end-to-end fixtures or other configurations not shown, consult your Armstrong Ceilings representative.
NOTE: The above data is based on 48" hanger wire spacing, board weight of 1 lb./SF, maximum deflection of tees not to exceed 1/360 of the span, and suspension system installed in accordance with ASTM C636.

SUSPENSION SYSTEMS – Standard

PRELUDE® XL® and PRELUDE XL High Recycled Content (HRC)

Exposed Tee Suspension System

SUSTAIN™ High Performance Sustainable Ceiling Systems

Declare.

LEED® | WELL™ | LBC

UP TO 63% RECYCLED CONTENT

Calculate sustainability with GreenGenie™ armstrongceilings.com/greengenie

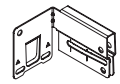
energy management	construction waste mgmt	regional materials	design for flexibility	EPD	recyclable/ extended producer resp.	biobased materials	recycled content	sourcing of raw materials	material ingredient reporting	low emitting/ materials	lighting quality	acoustics
	✓	✓	✓	✓			✓	✓				

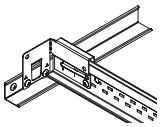
▲ LOCATION DEPENDENT

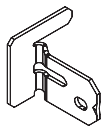
WELL Building Standard™ (WELL) Living Building Challenge® (LBC)

ACCESSORIES

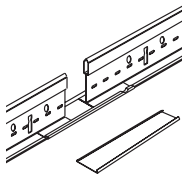
Item No.	Description	Pieces/ Carton
BERC2	**2" Beam-End Retaining Clip** Allows you to create a code-compliant Seismic D, E, F ceiling installation while eliminating the need to use 2" wall molding or spreader bars.	
BERC2	Steel	200
FZBERC2	Steel	50
ALBERC2	Aluminum	200
FZALBERC2	Aluminum	50
STAC	**Single-Tee Adapter Clip** Used to create code-compliant non-seismic and seismic C and D, E, F off-module main beam to cross tee connections.	
STAC		120
FZSTAC		50

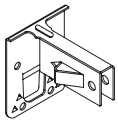






Item No.	Description	Pieces/ Carton
ES4	**Expansion Sleeves** For 15/16" Prelude	
ES4		200
FZES4		50
GCWA	**Grip Clip Wall Attachment** Joins main beam or cross tee to wall molding via locking barbs without pop rivets or screws.	
GCWA		250
FZGCWA		50



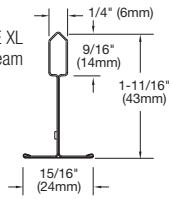


DETAILS

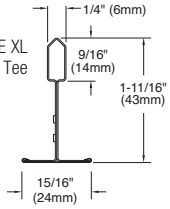
PRELUDE® XL® Main Beam

PRELUDE XL Cross Tee

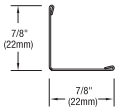
PRELUDE XL Main Beam



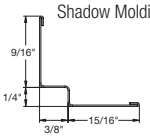
PRELUDE XL Cross Tee



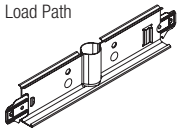
7/8" Hemmed Angle Molding



15/16" Hemmed Shadow Molding



Continuous Load Path



CLP7301 – 20 pcs

SEISMIC PERFORMANCE

Main Beams
7301, 7301HRC, 7306, 7307, 8301

Minimum Lbs. To Pull Out Compression/Tension
335.0
330.0

Cross Tees
All XL cross tees exceed 300 lbs. in both compression and tension.

ICC Reports
For areas under ICC jurisdiction, see ICC evaluation report number ESR-1308 for allowable values and/or conditions of use concerning the suspension system components listed on this page. The report is subject to re-examination, revisions, and possible cancellation.

PHYSICAL DATA

Material
G30 hot-dipped galvanized steel

Surface Finish
Baked polyester paint or powder coated
Manufactured and tested in accordance with ASTM C635

Face Dimension
15/16"

Profile
Exposed tee

Cross Tee/Main Beam Interface
Override

Design Considerations
Physical product samples for standard and custom colors are available upon request. Please refer to the physical product sample prior to making a final selection. While we strive to ensure exact color matches, various factors such as differences in materials, texture, substrate porosity, painting processes, lighting, and observer subjectivity can all affect how paint colors appear on ceiling and wall panels, suspension systems, and trim products. Due to these and other differences, ceiling and wall panels, trim products, and suspension systems with the same color name will coordinate but may not be an exact color match. Product is dye-lotted. Order sufficient initial quantities and attic stock to minimize possible color variation.

End Detail
Main Beam: Staked-on clip
Cross Tee: Staked-on clip

Duty Classification
Intermediate or Heavy-duty

Cleaning & Disinfecting
Cleaning and CDC-approved disinfecting options available on armstrongceilings.com/cleaning)

TechLine / 1 877 276-7876
armstrongceilings.com/preludexl

BPCS-3344-322

Armstrong® CEILING & WALL SOLUTIONS

STANDARD SUSPENDED CEILINGS

Assembly and Installation Instructions

1. GENERAL

1.1 This installation document is intended as a general application overview, covering essential steps of a suspended ceiling installation. This document represents standard methods as supported by the manufacturer and are in addition to following the standards outlined in ASTM C636. These standards represent the manufacturers recommendations; however, all installations are subject to requirements set forth by the authority having jurisdiction.

1.2 These instructions should be supplemented with Armstrong's "*The 20 Minute Ceiling Installer*" video for examples of the installation steps, as well as the product specific installation instructions of the product being installed.

2. TOOLS REQUIRED

2.1 Here is a list of the most common tools needed for installing a suspended ceiling. Required tools and materials may vary based on job-specific conditions.

- PPE: Cut resistant gloves, safety glasses, hard hat, steel-toe boots
- Ladder(s), rolling scaffold
- Lasers: horizontal line leveling, vertical alignment, point
- String line: control/dry line
- Chalk line
- Tape measure
- Carpenter pencil
- Cordless drill with screw tips and drill bits
- Snips: metal cutting tin snips
- Rout hole punch
- Pop riveter, aluminum white pop rivets
- Lineman pliers with wire cutter
- Hammer

Armstrong®
CEILING & WALL SOLUTIONS

- Screwdrivers: slotted, Phillips
- Spring clamps: 5 to 7 (small)
- Utility knife
- Tool belt
- Hole saw
- Fasteners: wall molding attachment

3. INSTALLATION LAYOUT

3.1 Grid Layout

3.1.1 There are many different grid layouts used for different products, panel sizes, or fixture integration. Below are guidelines for some of the more typical layouts.

3.1.1.1 Standard 2' x 4' *(Fig 1)*

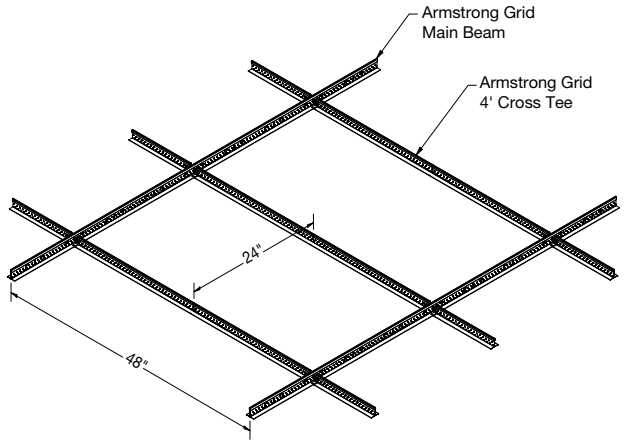
- Main beams spaced 48" O.C.
- 4' cross tees shall intersect the main beams at 90° every 24" O.C.

3.1.1.2 Standard 2' x 2' *(Fig 2)*

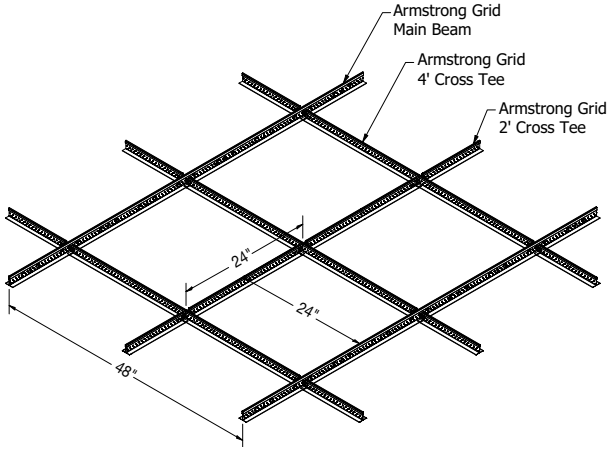
- Main beams spaced 48" O.C.
- 4' cross tees shall intersect the main beams at 90° every 24" O.C.
- 2' cross tees shall be installed at the midpoints of the 4' cross tees, creating 24" x 24" modules.

3.1.1.3 H-Layout / Cross-Hatch *(Fig 3)*

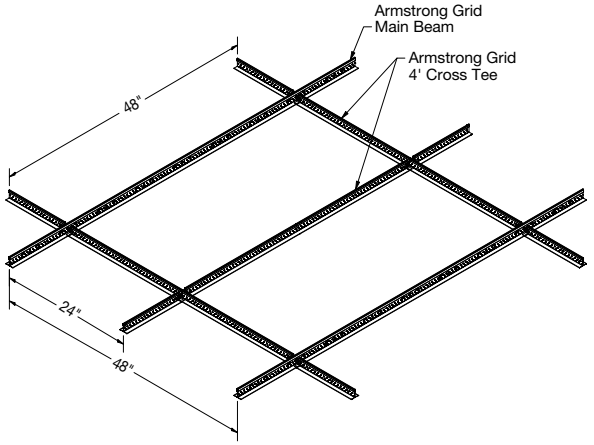
- Cross-hatched layouts differ from standard layouts by increasing the spacing of the cross tees that span the mains (typically 24" O.C.) to a distance equal to or greater than the hanger spacing along the mains (typically 48" O.C.).
- When using cross-hatched layouts, cross tees should be equivalent to mains in load carrying capacity (Lbs/LF) since they are now carrying the same load as the mains based on spacing. Refer to grid product data pages for load test data of grid components.



(Fig 1)



(Fig 2)



(Fig 3)

3.1.1.4 Plank Sizes

Grid layouts for plank sizes can be constructed in three different ways. The end solution may be chosen based on the desired panel orientation in relation to the mains and load on the grid components:

1. Main spacing equal to panel length (panel length perpendicular to mains), cross tees spanning the mains at spacing equal to panel width ***(Fig 4)***.

   Refer to the grid product data pages for load test data specific to the length of cross tee being used. Supplemental wires may be required based on the span of the grid and weight of the ceiling product being installed.

2. Main spacing equal to panel width (mains parallel to panel length), cross tees spanning the mains at spacing equal to panel length ***(Fig 5)***.

3. Cross-hatching of the grid components, allowing panel length to run parallel with mains without main spacing being equal to panel width ***(Fig 6)***.

   When cross-hatching, consider the increased load on the cross tees, especially the cross tees spanning the mains. Refer to the grid product data pages for load test data specific to the length of cross tee being used. Supplemental wires may be required based on the span of the grid and weight of the ceiling product being installed.

3.1.1.5 Running Bond / Staggered

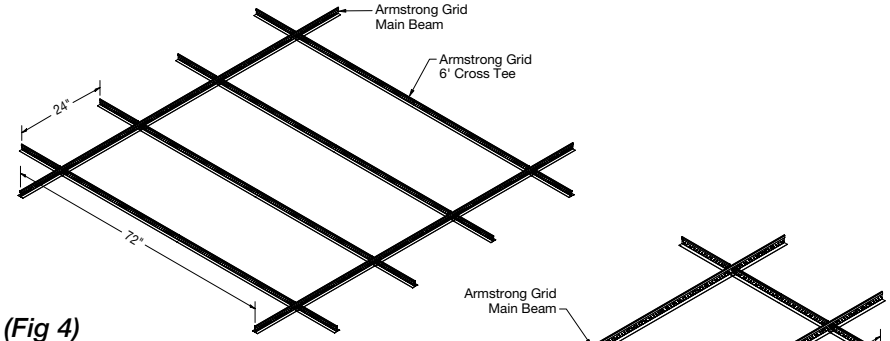
Running bond or staggered layouts differ from standard layouts by alternating the grid openings between different rows of mains. This results in single cross tees occupying rout holes. These single cross tee connections must be reinforced to meet code requirements for connection strength. Armstrong's recommended solution is the Single Tee Adapter Clip (STAC) ***(Fig 7)***.

3.2 Room Layout

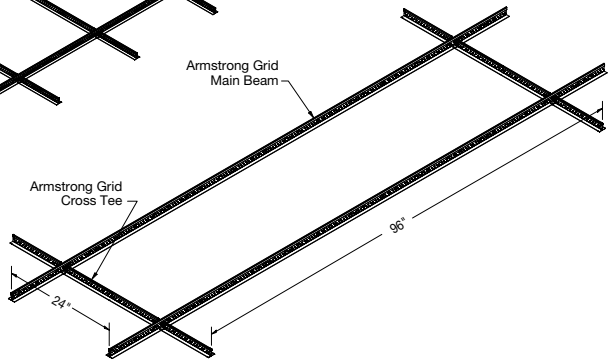
Proper layout within a space is crucial for a good installation. Some layouts may have a starting point established by the architect noted on the prints. Examples of starting points may be for a specific border dimension, full size borders, or referenced from lights or columns. It is important to check the project plans before installation.

3.2.1 Calculating Equal Borders

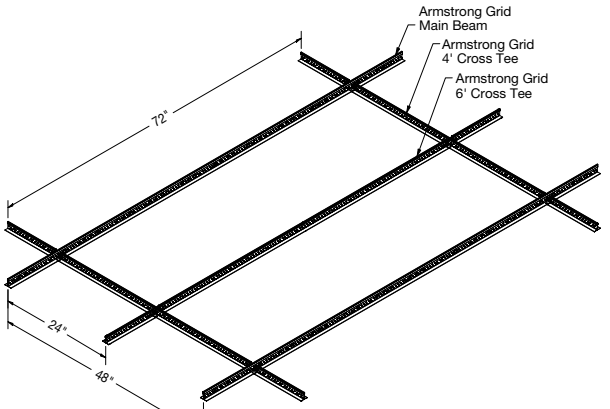
The most pleasing visual is achieved when the border panels are no less than 10" wide, and the opposite wall has the exact same size border panel achieving proper room balance. For installations that require equal borders, the following steps will help you layout an installation with equal borders on opposite sides of the space.



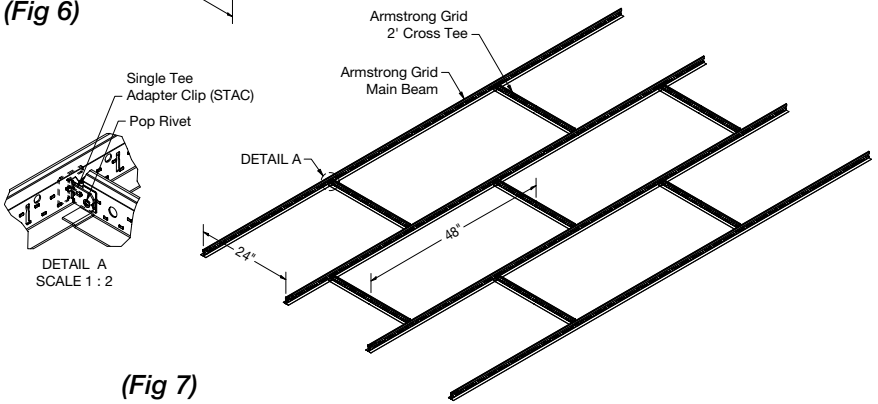
(Fig 4)



(Fig 5)



(Fig 6)



(Fig 7)

- Determine the direction of the main beams and panel length.
- Divide each dimension of the space (length and width) by the panel length in that direction.

  Ex: 28' 9" (room width) / 2' (panel width) = 14 full size panels and a 9" remainder
- Divide the remainder to get even opposite border panels. If this results in border panels less than 10" you will need to add a full panel to the remainder so that the border panels are greater than 10".

  Ex: 9" (remainder) / 2 (borders) = 4-1/2" border (too small)

  24" (full panel width) + 9" = 33" (new remainder)

  33" / 2 (borders) = 16-1/2" borders with 13 full size panels

3.3 Plenum

Allow at least 3" below the old ceiling, duct work, pipes, or wiring as clearance to maneuver a ceiling panel into the opening of the grid.

4. WALL MOLDING

4.1 Wall molding is not considered a load bearing component of most suspended ceiling systems, but it must be securely attached to the wall every 16" - 24" O.C.

4.2 Mitered Corners

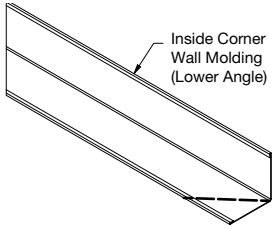
4.2.1 Inside Corners

When you get to your inside corners, a finished 45° miter is a much more pleasing visual than simply overlaying butt cuts. All you have to do is mark and cut 45° on the lower angle then overlay the butt cut upper angle for a perfect mitered visual from below ***(Fig 8)***.

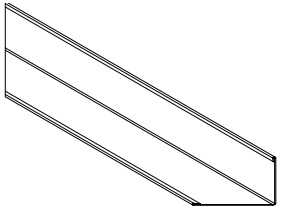
4.2.2 Outside Corners

The outside corners require a little more attention, but are still easy to achieve a clean mitered visual. Simply let the angle override past the corner, then square butt cut to length.

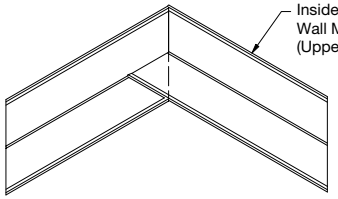
Next, cut away the vertical flange, leaving an exposed horizontal tab. Do this to both angles that approach the outside corner. After overlaying them at the corner, mark where the 45° miter cut will occur on the lower angle. Raise your upper angle and make the 45° cut on the lower angle only. Square cut the upper angle to length and you're finished with a corner that looks perfectly mitered, but is structurally sound. A spring clamp will hold the corner into place while you do the final attachment to the wall ***(Fig 9)***.

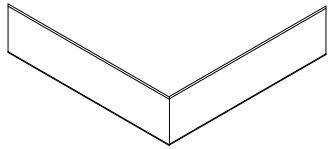


Step 1 - Mark lower angle wall molding along the bottom flange for a 45° mitered cut.



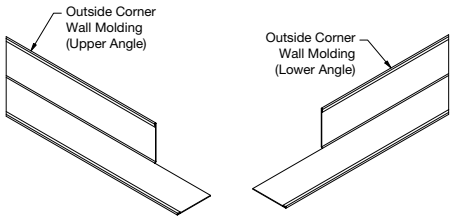
Step 2 - Make a 45° angled cut along the marked bottom flange of the lower angle molding.



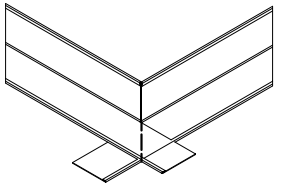


Step 3 - Overlay the butt cut upper angle wall molding over the lower angle wall molding with the 45° cut for a perfect mitered visual from below.

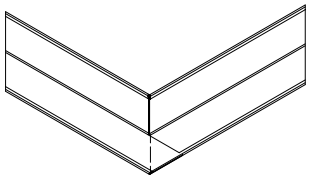
(Fig 8)



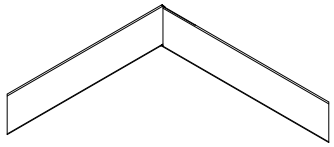
Step 1 - Allow the upper wall molding angle to override past the corner and square butt cut to length. Next, cut away part of the vertical flange to leave the lower tab exposed. Do this to both angles as shown.



Step 2 - Overlay the two outside corner angles and mark where the 45° miter cut will occur on the lower angle wall molding.



Step 3 - Raise the upper angle out of the way and make the mitered cut on the lower angle. Then, square cut the upper angle to length.



The finished result creates a perfectly mitered visual from below.

(Fig 9)

4.3 Some systems may require the use of a Structural Wall Molding, with additional instructions on installation requirements for this component.

5. SUSPENSION POINTS

5.1 The suspension system must be supported with hanger wire attached to the structure.

5.2 Holding power tests certified by the manufacturer of the fasteners must be available upon request.

5.3 Hanger wires should be a minimum 12-gauge galvanized, soft-annealed, mild steel wire.

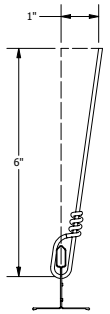
5.4 The minimum drop for hanger wire is 4", which is from the bulb of the grid to the structure. This will allow enough room to wrap your wire as well as remove ceiling panels. There is not a maximum length for suspending acoustical ceilings with 12 gauge hanger wire, unless restrictions are in place by your local code authority. Hanger wire splices are available when wire extension is necessary.

5.5 Hanger wires are typically spaced no more than 4' O.C. along the main beams, but may be spaced further if allowed by local code officials and if it is in compliance with load carrying capabilities.

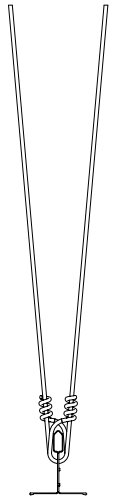
5.6 Each hanger wire must not be more than one in six out of plumb, which means there should be at least 6" of vertical drop for every 1" of lateral movement ***(Fig 10)***. For example, if you move a wire 2" out of plumb, you must have at least 12" of vertical drop. When this standard is not met, an equally sloped counter splay wire must be added in the opposing direction to maintain symmetry (ASTM C636) ***(Fig 11)***.

5.7 Hanger wire must be wrapped around itself a minimum of three full turns within 3" (ASTM C636 – subject to additional codes) ***(Fig 12)***.

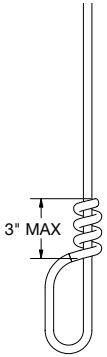
5.8 When installing fire rated main beams, all fire expansion relief cut outs must have a hanger wire within three inches (ASTM C636) ***(Fig 13)***.



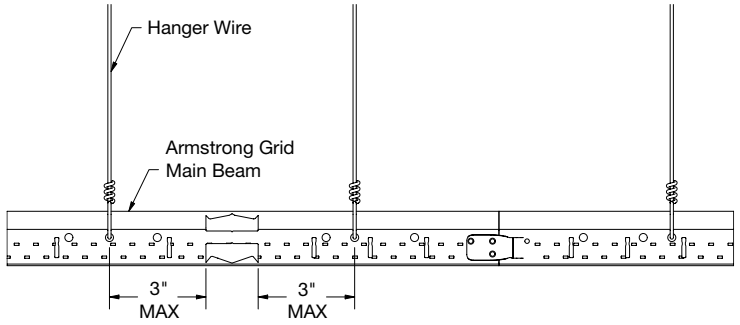
(Fig 10)



(Fig 11)



(Fig 12)



(Fig 13)

6. SUSPENSION SYSTEM INSTALLATION STANDARDS

6.1 Suspension systems, whether 9/16" or 15/16", shall be installed to meet the minimum requirements established in the ASTM C636 standard, and any other requirements established by local code.

6.2 All grid components used must be rated to carry the appropriate load per ASTM C635 and E3090. Consult the grid product data page for load carrying capabilities.

6.3 Main beams must be level to within 1/4" in 10', determined by measurements taken below the hanger points with the hanging wires tied tight. This process can be aided with the use of a level laser.

6.4 Certain products may call out a specific squareness requirement to ensure a satisfactory installation. Ensuring the grid installation is square can be done with perpendicular dry lines (control lines) or a 90° alignment laser to install the grid off of. Squareness of individual modules can also be verified by measuring opposite diagonals within an opening. The measurements of the opposite diagonals will be the same if they are square. If the grid is not square, push the module's cross tees to the right and clamp to remove slack and measure again.

7. CEILING PANEL INSTALLATION

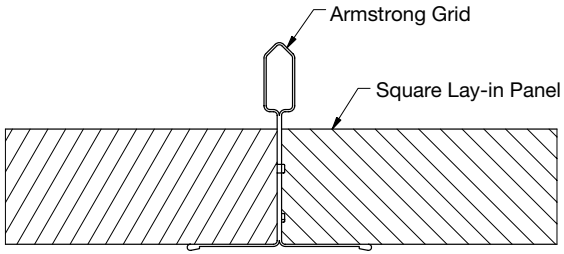
7.1 Edge Detail Types

There are several different types of edge details for panels. Refer to the product data page for edge profile type and Suspension Drawing number that can be referenced in the back of the Specifier's Reference. Some common edge details are:

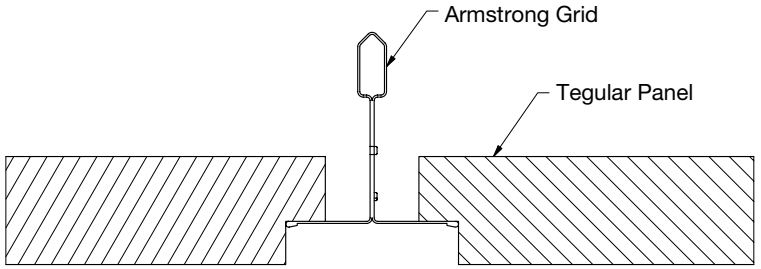
7.1.1 Square Lay-in
Square lay-in panels do not have any cuts on the edges. Each edge will provide a 90° corner. They install above the grid and should generally be installed in 15/16" grid ***(Fig 14)***.

7.1.2 Tegular
Tegular panels will have a step cut out around the edge. They will also install above the grid. Tegular edge details can vary in several characteristics, such as square or beveled, or for 9/16" or 15/16". Refer to the product data page for details regarding a specific product ***(Fig 15)***.

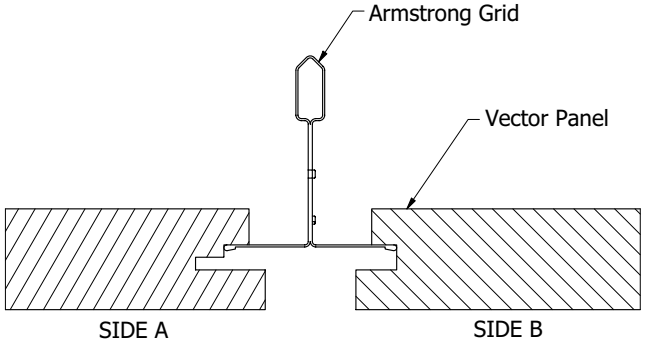
7.1.3 Vector/Concealed
Vector and Concealed panels install from below the grid. Each panel will have an A/B side and a C/D side. Only the A/B sides will engage with the grid ***(Fig 16)***. The C/D sides will act as a reverse tegular edge and will butt up next to the grid flange, but not engage with it. Refer to product specific installation instructions for information on Vector and Concealed panel edge details.



(Fig 14)



(Fig 15)



(Fig 16)

7.2 Perimeter Treatment

7.2.1 Perimeter panels less than full size shall be installed either by concealing the cut edge on the horizontal flange of a perimeter molding (option A), or by re-cutting the Tegular edge detail (option B).

7.2.2 Option A: Panel Face Resting on Molding
For option A, when the face of the panel rests on the molding, Spring Border Clips (item 7870) should be used for proper panel alignment and to prevent the possibility of the panel shifting toward the wall far enough to permit the opposite edge to drop off the grid flange ***(Fig 17)***.

7.2.3 Option B: Re-cut the Edge Detail
For option B, the suspension system rests directly on the horizontal flange of the molding. Tegular edges will have to be field-cut to allow the panel face to drop 1/4" below the grid. All field-cut edges "exposed to view" should be colored to match the factory finish. Armstrong SuperCoat Ceiling Panel Touch-up Paint is recommended ***(Fig 18)***.

7.3 Cleaning

7.3.1 Remove dust or loose dirt with a brush or vacuum with an attachment used for upholstery. Always clean in one direction to avoid rubbing dirt or debris into the tile.

7.3.2 Remove pencil marks, smudges, and stubborn dirt with an ordinary art gum eraser.

7.3.3 Most mineral fiber and fiberglass ceilings may be cleaned with a damp cloth or sponge and mild soap. Use as little water as possible and wipe the soapy film off with a clean, damp cloth or sponge.

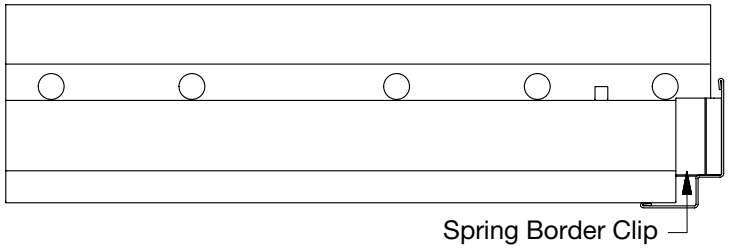
7.3.4 Some ceilings can withstand scrubbing, moisture, and germicidal cleaners. Be sure to reference the product specific data page to read the performance features of the ceiling panel.

7.4 Touch-up Paint

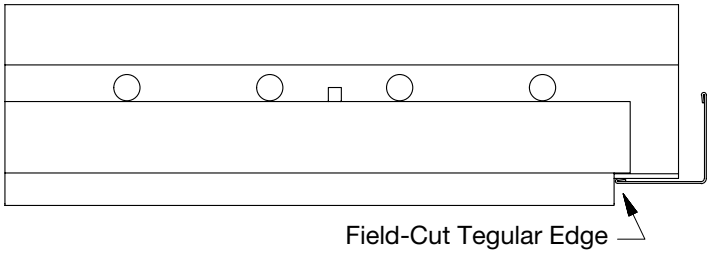
7.4.1 Armstrong cannot guarantee the printed performance of a ceiling panel after it has been repainted. Repainting can impact performance features such as light reflectance, fire resistance, acoustical performance, anti-sag, and any mold-inhibiting or retarding treatment.

7.4.2 All warranties will be voided by field painting.

7.4.3 Armstrong SuperCoat Ceiling Panel Touch-up Paint is recommended to cover any blemishes or deeper gouges.



(Fig 17)



(Fig 18)

8. LIGHTING LAYOUT CONSIDERATIONS

8.1 Lighting may impact the grid layout by either requiring an H-layout/ cross-hatching or by creating single cross tee connections (unopposed cross tees). These conditions must be addressed by following the instructions in sections 3.1.1.3 (H-Layout / Cross-Hatch) and 3.1.1.5 (Running Bond / Staggered).

8.2 All light fixtures must be independently supported unless noted otherwise in the product specific installation instructions.

8.3 Follow the lighting manufacturer installation instructions and contact your local lighting manufacturer representative with any questions.

9. HELPFUL ACCESSORIES AND CLIPS

9.1 BERC2 – 2" Beam End Retaining Clip

Joins main beam or cross tee to wall molding via locking barbs without pop rivets or screws *(Fig 19)*.

9.2 XTAC – Cross Tee Adapter Clip

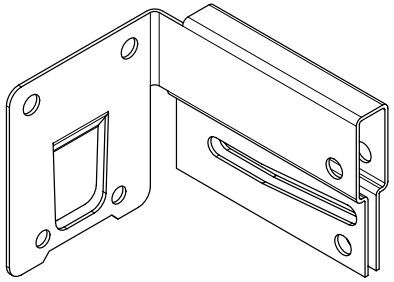
Used to attach field cut cross tees to main beams *(Fig 20)*.

9.3 GC3W – Grip Clip 3-Way

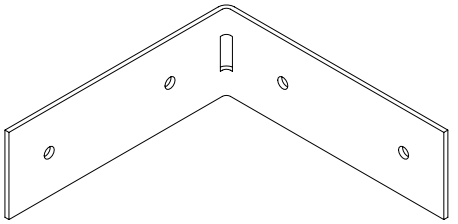
Joins main beams to cross tee via locking barbs without pop rivets or screws *(Fig 21)*.

9.4 GCWA – Grip Clip Wall Attachment

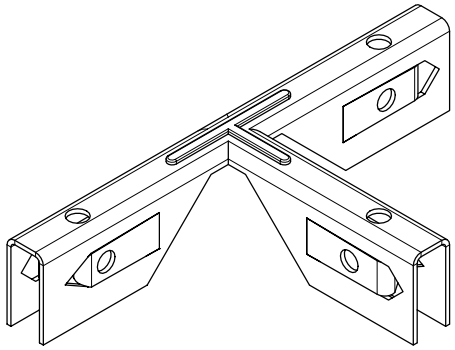
Joins main beam or cross tee to wall molding via locking barbs without pop rivets or screws *(Fig 22)*.



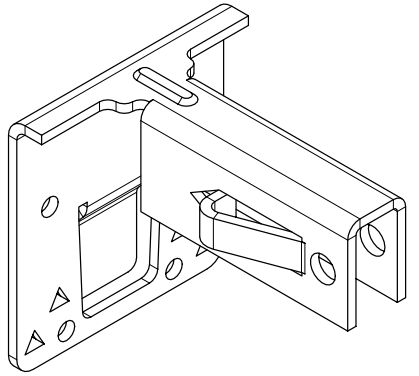
(Fig 19)



(Fig 20)



(Fig 21)



(Fig 22)

9.5 STAC – Single Tee Adapter Clip

Used to create code compliant non-seismic and seismic C, D, E, and F off-module main beam to cross tee connections. Refer to Single Tee Adapter Clip (STAC) installation guide for full instructions ***(Fig 23)***.

9.6 Stabilizer Bars

Used to maintain uniform spacing of suspension system components (main beams and cross tees) ***(Fig 24)***.

9.7 Stabilizer Clips

Used to maintain uniform spacing of grid components when Stabilizer Bars cannot be used due to lay-in panels. Refer to Large Format Ceiling Panels instructions for details ***(Fig 25)***.

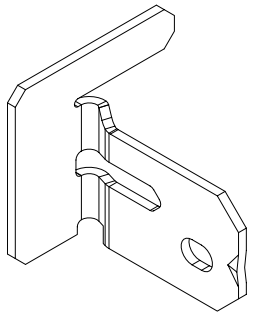
9.8 WS12 – Wire Splice

Used to splice a new hanger wire to an existing hanger wire, or if an extra-long hanger wire is needed ***(Fig 26)***.

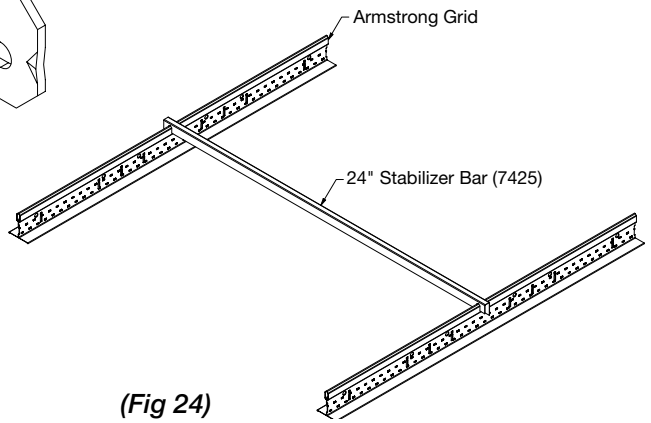
10. SEISMIC

10.1 Installations occurring in seismic design categories C, D, E, or F must be in compliance with the methods described in the Seismic Design: What You Need to Know document. This document outlines the Armstrong Seismic Rx methods for installing suspended ceilings in compliance with the International Building Code (IBC) requirements for seismic design categories C, D, E, and F.

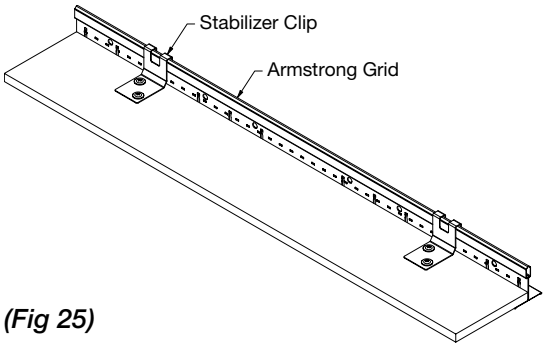
10.2 Reference the product specific installation instructions of the product being installed for any seismic installation requirements.



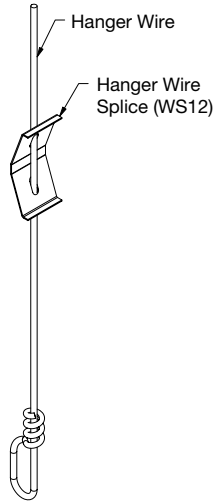
(Fig 23)



(Fig 24)



(Fig 25)



(Fig 26)

MORE INFORMATION

For more information, or for an Armstrong Ceilings representative, call 1 877 276 7876.
For complete technical information, detail drawings, CAD design assistance, installation information, and many other technical services, call TechLine customer support at 1 877 276 7876 or FAX 1 800 572 TECH.

Armstrong®
CEILING & WALL SOLUTIONS

ULTRA SPEC® 500
INTERIOR EGGSHELL FINISH
K538

Features

- Zero VOC
- Low odour
- Excellent hiding
- Great touch up
- Spatter resistant
- Decorative and uniform eggshell finish
- Quick dry
- Easy application
- Soap and water clean up
- MPI Approved
- Washable
- Qualifies for LEED® v4 credit

General Description

A professional-quality interior waterborne eggshell finish based on a proprietary acrylic resin that tints on the Gennex® zero VOC colorant system. This waterborne interior eggshell provides a decorative scrubbable finish that qualifies for LEED® v4 credit and passes the most stringent environmental standards in any colour. Because it tints on our Gennex® waterborne colorant system all Ultra Spec® 500 finishes are available in any colour without an increase in VOC.

Recommended For

Interior wall and ceiling surfaces in commercial and institutional environments where eggshell finish is desired. For use on primed or previously painted drywall, masonry, plaster, wood, metal and wallpapered surfaces.

Limitations

- Do not apply when air and surface temperatures are below 10 °C (50 °F)

Product Information

Colours — Standard:
White (01)

— Tint Bases:
Benjamin Moore® Gennex® bases 0X, 1X, 2X, 3X & 4X

— Special Colours:
Contact your Benjamin Moore representative

Certifications & Qualifications:

VOC compliant in all regulated areas

Zero VOC according to EPA Method 24

Class A (0-25) over non-combustible surfaces when tested in accordance with ASTM E-84

Master Painters Institute MPI # # 52, 52 X- Green™, 145, 145 X-Green™

Master Painters Institute High Performance # 139, 139 X-Green™

Cradle to Cradle Certified™ Silver

Benjamin Moore's Green Promise® designation is our company's assurance that this product meets – and often exceeds – rigorous environmental and performance criteria regarding VOCs, emissions, application, washability, scrubbability and packaging, while also delivering the premium levels of performance you expect from Benjamin Moore.

Qualifies for LEED® v4 Credit	CDPH v1 Emission Certified	Qualifies for CHPS low emitting credit (Collaborative for High Performance Schools)	VOC (in any colour)
YES	YES	YES	0 g/L

This Benjamin Moore product has been tested by independent third parties and meets or exceeds the published chemical restriction and performance criteria of the **Green Seal™ GS-11 2015 standard**

Customer Information Centre:
1-800-361-5898, info@benjaminmoore.ca, www.benjaminmoore.ca

Technical Data◊		White
Vehicle Type		Acrylic Copolymer
Pigment Type		Titanium Dioxide
Volume Solids		42 ± 2%
Coverage per 3.79 L at Recommended Film Thickness		32.5 – 37.1 sq. m. (350 – 400 sq. ft.)
Recommended Film Thickness	– Wet	4.3 mils
	– Dry	1.8 mils
Depending on surface texture and porosity. Be sure to estimate the right amount of paint for the job. This will ensure colour uniformity and minimize the disposal of excess paint.		
Dry Time @ 25 °C (77 °F) @ 50% RH	– To Touch	2 Hours
	– To Recoat	2-3 Hours
Painted surfaces can be washed after two weeks. High humidity and cool temperatures will result in longer dry, recoat and service times.		
Dries By		Coalescence
Viscosity		95 ± 5 KU
Flash Point		N/A
Gloss / Sheen		Eggshell (10-12 @ 60º) (10-21 @ 85º)
Surface Temperature at Application	– Min.	10 °C (50 °F)
	– Max.	32.2 °C (90 °F)
Thin With		See Chart
Clean Up Thinner		Clean Water
Weight Per 3.79 L		4.9 kg (10.8 lbs)
Storage Temperature	– Min.	4.4 °C (50 °F)
	– Max.	32.2 °C (90 °F)

Volatile Organic Compounds (VOC)
0 g/L
Zero VOC post tint (any base and any colour)

◊Reported values are for White. Contact Benjamin Moore for values of other bases or colour.

Surface Preparation

Surfaces to be painted must be clean, dry, and free of dirt, dust, grease, oil, soap, wax, scaling paint, water-soluble materials, and mildew. Remove any peeling or scaling paint and sand these areas to feather edges smooth with adjacent surfaces. Glossy areas should be dulled. Drywall surfaces must be free of sanding dust.

New plaster or masonry surfaces must be allowed to cure 30 days before applying base coat. Cured plaster should be hard, have a slight sheen and maximum PH of 10; soft, porous or powdery plaster indicates improper cure. Never sand a plaster surface; knife off any protrusions and prime plaster before and after applying patching compound. Poured or pre-cast concrete with a very smooth surface should be etched or abraded to promote adhesion, after removing all form release agents and curing compounds. Remove any powder or loose particles before priming. Wood substrates must be thoroughly dry.

Difficult Substrates: Benjamin Moore® offers a variety of specialty primers for use over difficult substrates such as bleeding woods, grease stains, crayon markings, hard glossy surfaces, galvanized metal or other substrates where paint adhesion or stain suppression is a particular problem. Your Benjamin Moore® retailer can recommend the right problem-solving primer for your special needs.

WARNING! If you scrape, sand, or remove old paint, you may release lead dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by logging onto Health Canada @ http://www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/asked_questions-questions_posees-eng.php (updating to https://www.canada.ca/en/health-canada/services/environmental-workplace-health/environmental-contaminants/lead/lead-information-package-some-commonly-asked-questions-about-lead-human-health.html)

Primer/Finish Systems

New surfaces should be fully primed, and previously painted surfaces may be primed or spot primed as necessary. For best hiding results, tint the primer to the approximate shade of the finish coat, especially when a significant colour change is desired. **Special Note:** Certain custom colours require a Deep Colour Base Primer tinted to a special prescription formula to achieve the desired colour. Consult your retailer.

Wood and Engineered Wood Products
Primer: Ultra Spec® 500 Interior Latex Primer (K534) or Fresh Start® All-Purpose Alkyd Primer (F024)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Drywall
Primer: Ultra Spec® 500 Interior Latex Primer (K534) or Fresh Start® Multi-Purpose Latex Primer (F023)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Plaster (Cured)
Primer: Ultra Spec® 500 Interior Latex Primer (K534) or Fresh Start® Multi-Purpose Latex Primer (F023)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Rough or Pitted Masonry
Primer: Ultra Spec® Masonry Interior/Exterior Hi-Build Block Filler (K571)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Smooth Poured or Precast Concrete
Primer: Ultra Spec® Masonry Interior / Exterior 100% Acrylic Masonry Sealer (K608) or Fresh Start® Multi-Purpose Latex Primer (F023)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Ferrous Metal (Steel and Iron)
Primer: Ultra Spec® HP Acrylic Metal Primer (FP04) or Super Spec HP® Alkyd Metal Primer (KP06)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Non-Ferrous Metal (Galvanized & Aluminum)

All new metal surfaces must be thoroughly cleaned with Corotech® Oil & Grease Emulsifier (V600) to remove contaminants. New shiny non-ferrous metal surfaces that will be subject to abrasion should be dulled with very fine sandpaper or a synthetic steel wool pad to promote adhesion.
Primer: Ultra Spec® HP Acrylic Metal Primer (FP04)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Eggshell Finish (K538)

Repaint, All Substrates: Prime bare areas with the primer recommended for the substrate above.

Application

Stir thoroughly before use. Apply one or two coats. For best results, use a Benjamin Moore® Professional custom-blended nylon/polyester brush, Benjamin Moore® Professional roller, or a similar product. This product can also be sprayed.

Thinning/Clean Up

Conditioning with Benjamin Moore® K518 Extender may be necessary under certain conditions to adjust open time or spray characteristics. The chart below is for general guidance

	Mild conditions	**Severe conditions**
	Humid (RH> 50%) with no direct sunlight & with little to no wind	Dry (RH<50%), in direct sunlight, or windy conditions
Brush: Nylon / Polyester	No thinning necessary	Add **K518 Extender** or **water:** Max of 236 ml to a 3.79 L of paint **Never add other paints or solvents.**
Roller: Premium Quality 10 mm roller cover		
Spray: Airless Pressure: 2,000 -2,800 psi Tip: 0.013-0.017		

Thinning is unnecessary, but if required to obtain desired application properties, a small amount of clean water may be added. Never add other paints or solvents.

Clean up: Use soap and water. Spray equipment should be given a final rinse with mineral spirits to prevent corrosion.

Environmental, Health & Safety Information

May cause allergic skin reaction.

Do not get on skin or clothing.

Use only in a well ventilated area. Keep container closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with local regulations. Wash thoroughly after handling.

KEEP OUT OF REACH OF CHILDREN
PROTECT FROM FREEZING

Refer to Safety Data Sheet for additional health and safety information.

Benjamin Moore & Co., Ltd. 8775 Keele St., Concord, ON L4K 2N1 1-800-361-5898 www.benjaminmoore.ca M72 K538 CE 111817

ULTRA SPEC® 500
INTERIOR SEMI-GLOSS FINISH
K539

Features

- Zero VOC
- Low odour
- Excellent hiding
- Spatter resistant
- Decorative and uniform semi-gloss finish
- Quick dry
- Easy application
- Soap and water clean up
- MPI Approved
- Washable
- Qualifies for LEED® v4 credit

General Description

A professional-quality interior waterborne semi-gloss finish based on a proprietary acrylic resin that tints on the Gennex® zero VOC colorant system. This waterborne interior semi-gloss has excellent stain release so it washes clean easily. The product qualifies for LEED® v4 credit and passes the most stringent environmental standards in any colour. Because it tints on our Gennex® waterborne colorant system all Ultra Spec® 500 finishes are available in any colour without an increase in VOC.

Recommended For

Interior door, trim, cabinet, wall and ceiling surfaces in commercial and institutional environments where a washable semi-gloss finish is desired. For use on primed or previously painted drywall, plaster, wood, metal and wallpapered surfaces.

Limitations

- Do not apply when air and surface temperatures are below 10 °C (50 °F)

Product Information

Colours — Standard:
White (01)

— Tint Bases:
Benjamin Moore® Gennex® bases 1X, 2X, 3X & 4X

— Special Colours:
Contact your Benjamin Moore representative

Certifications & Qualifications:

VOC compliant in all regulated areas

Zero VOC according to EPA Method 24

Class A (0-25) over non-combustible surfaces when tested in accordance with ASTM E-84

Master Painters Institute MPI # 43, 43 X-Green™, 146, 146 X-Green™
Master Painters Institute High Performance # 140, 140 X-Green™

Cradle to Cradle Certified™ Silver

Benjamin Moore's Green Promise® designation is our company's assurance that this product meets – and often exceeds – rigorous environmental and performance criteria regarding VOCs, emissions, application, washability, scrubbability and packaging, while also delivering the premium levels of performance you expect from Benjamin Moore.

Qualifies for LEED® v4 Credit	CDPH v1 Emission Certified	Qualifies for CHPS low emitting credit (Collaborative for High Performance Schools)	VOC (in any colour)
YES	YES	YES	0 g/L

This Benjamin Moore product has been tested by independent third parties and meets or exceeds the published chemical restriction and performance criteria of the **Green Seal™ GS-11 2015 standard**

Customer Information Centre:
1-800-361-5898, info@benjaminmoore.ca, www.benjaminmoore.ca

Technical Data◊		White
Vehicle Type		Acrylic Copolymer
Pigment Type		Titanium Dioxide
Volume Solids		41 ± 2%
Coverage per 3.79 L at Recommended Film Thickness		32.5 – 37.1 sq. m. (350 – 400 sq. ft.)
Recommended Film Thickness	– Wet	4.3 mils
	– Dry	1.8 mils
Depending on surface texture and porosity. Be sure to estimate the right amount of paint for the job. This will ensure colour uniformity and minimize the disposal of excess paint.		
Dry Time @ 25 °C (77 °F) @ 50% RH	– To Touch	2 Hours
	– To Recoat	4 Hours
Painted surfaces can be washed after two weeks. High humidity and cool temperatures will result in longer dry, recoat and service times.		
Dries By		Coalescence
Viscosity		93 ± 3 KU
Flash Point		N/A
Gloss / Sheen		Semi-Gloss (20-35 @ 60º)
Surface Temperature at Application	– Min.	10 °C (50 °F)
	– Max.	32.2 °C (90 °F)
Thin With		See Chart
Clean Up Thinner		Clean Water
Weight Per 3.79 L		5.1 kg (11.2 lbs)
Storage Temperature	– Min.	4.4 °C (40 °F)
	– Max.	32.2 °C (90 °F)

Volatile Organic Compounds (VOC)

0 g/L

Zero VOC post tint (any base and any colour)

◊Reported values are for White. Contact Benjamin Moore for values of other bases or colour.

Surface Preparation

Surfaces to be painted must be clean, dry, and free of dirt, dust, grease, oil, soap, wax, scaling paint, water-soluble materials, and mildew. Remove any peeling or scaling paint and sand these areas to feather edges smooth with adjacent surfaces. Glossy areas should be dulled. Drywall surfaces must be free of sanding dust.

New plaster or masonry surfaces must be allowed to cure 30 days before applying base coat. Cured plaster should be hard, have a slight sheen and maximum PH of 10; soft, porous or powdery plaster indicates improper cure. Never sand a plaster surface; knife off any protrusions and prime plaster before and after applying patching compound. Poured or pre-cast concrete with a very smooth surface should be etched or abraded to promote adhesion, after removing all form release agents and curing compounds. Remove any powder or loose particles before priming. Wood substrates must be thoroughly dry.

Difficult Substrates: Benjamin Moore offers a variety of specialty primers for use over difficult substrates such as bleeding woods, grease stains, crayon markings, hard glossy surfaces, galvanized metal or other substrates where paint adhesion or stain suppression is a particular problem. Your Benjamin Moore® retailer can recommend the right problem-solving primer for your special needs.

WARNING! If you scrape, sand, or remove old paint, you may release lead dust. LEAD IS TOXIC. EXPOSURE TO LEAD DUST CAN CAUSE SERIOUS ILLNESS, SUCH AS BRAIN DAMAGE, ESPECIALLY IN CHILDREN. PREGNANT WOMEN SHOULD ALSO AVOID EXPOSURE. Wear a NIOSH approved respirator to control lead exposure. Clean up carefully with a HEPA vacuum and a wet mop. Before you start, find out how to protect yourself and your family by logging onto Health Canada @ http://www.hc-sc.gc.ca/ewh-semt/contaminants/lead-plomb/asked_questions-questions_posees-eng.php (updating to https://www.canada.ca/en/health-canada/services/environmental-workplace-health/environmental-contaminants/lead/lead-information-package-some-commonly-asked-questions-about-lead-human-health.html)

Primer/Finish Systems

New surfaces should be fully primed, and previously painted surfaces may be primed or spot primed as necessary. For best hiding results, tint the primer to the approximate shade of the finish coat, especially when a significant colour change is desired. **Special Note**: Certain custom colours require a Deep Colour Base Primer tinted to a special prescription formula to achieve the desired colour. Consult your retailer.

Wood, and engineered wood products
Primer: Ultra Spec® 500 Interior Latex Primer (K534) or Fresh Start® All-Purpose Alkyd Primer (F024)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Drywall
Primer: Ultra Spec® 500 Interior Latex Primer (K534) or Fresh Start® Multi-Purpose Latex Primer (F023)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Plaster (Cured)
Primer: Ultra Spec® 500 Interior Latex Primer (K534) or Fresh Start® Multi-Purpose Latex Primer (F023)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Rough or Pitted Masonry
Primer: Ultra Spec® Masonry Interior/Exterior Hi-Build Block Filler (K571)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Smooth Poured or Precast Concrete
Primer: Ultra Spec® Masonry Interior / Exterior 100% Acrylic Masonry Sealer (K608) or Fresh Start® Multi-Purpose Latex Primer (F023)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Ferrous Metal (Steel and Iron)
Primer: Ultra Spec® HP Acrylic Metal Primer (FP04) or Super Spec HP® Alkyd Metal Primer (KP06)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Non-Ferrous Metal (Galvanized & Aluminum)

All new metal surfaces must be thoroughly cleaned with Corotech® Oil & Grease Emulsifier (V600) to remove contaminants. New shiny non-ferrous metal surfaces that will be subject to abrasion should be dulled with very fine sandpaper or a synthetic steel wool pad to promote adhesion.
Primer: Ultra Spec® HP Acrylic Metal Primer (FP04)
Finish: 1 or 2 coats Ultra Spec® 500 Interior Semi-Gloss Finish (K539)

Repaint, All Substrates: Prime bare areas with the primer recommended for the substrate above.

Application

Stir thoroughly before use. Apply one or two coats. For best results, use a Benjamin Moore® Professional custom-blended nylon/polyester brush, Benjamin Moore® Professional roller, or a similar product. This product can also be sprayed.

Conditioning with Benjamin Moore® K518 Extender may be necessary under certain conditions to adjust open time or spray characteristics. The chart below is for general guidance

	Mild conditions	**Severe conditions**
	Humid (RH> 50%) with no direct sunlight & with little to no wind	Dry (RH<50%), in direct sunlight, or windy conditions
Brush: Nylon / Polyester	No thinning necessary	Add **K518 Extender** or **water:** Max of 236 ml to a 3.79 L of paint **Never add other paints or solvents.**
Roller: Premium Quality 10 mm roller cover		
Spray: Airless Pressure: 1,500 -2,500 psi Tip: 0.013-0.017		

Thinning/Clean Up

Thinning is unnecessary, but if required to obtain desired application properties, a small amount of clean water may be added. Never add other paints or solvents.

Clean up: Use soap and water. Spray equipment should be given a final rinse with mineral spirits to prevent corrosion.

USE COMPLETELY OR DISPOSE OF PROPERLY. Dry empty containers may be recycled in a can recycling program**.** Local disposal requirements vary; consult your sanitation department or state-designated environmental agency on disposal options.

Environmental Health & Safety Information

May cause allergic skin reaction.

Do not get on skin or clothing.

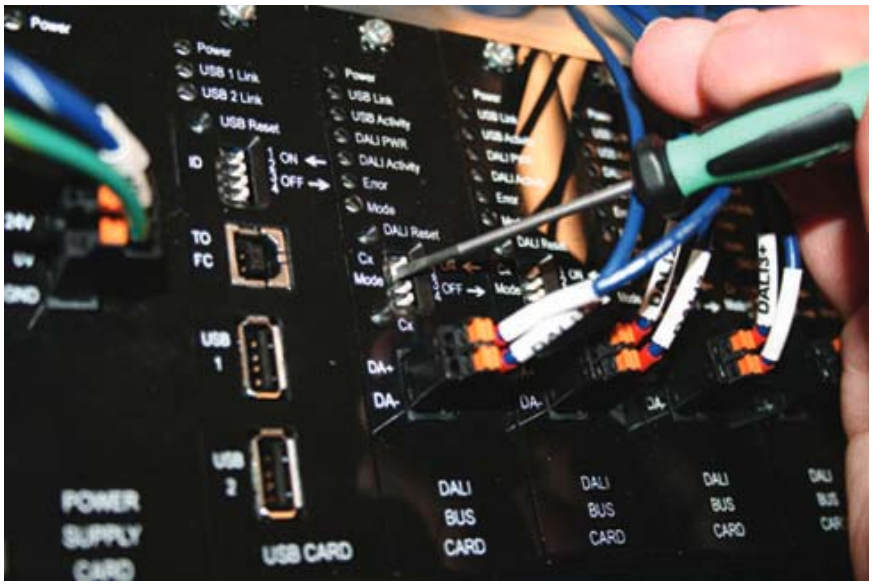
Use only in a well ventilated area. Keep container closed when not in use. In case of spillage, absorb with inert material and dispose of in accordance with local regulations. Wash thoroughly after handling.

KEEP OUT OF REACH OF CHILDREN
PROTECT FROM FREEZING

Refer to Safety Data Sheet for additional health and safety information.

Benjamin Moore & Co., Ltd. 8775 Keele St., Concord, ON L4K 2N1 1-800-361-5898 www.benjaminmoore.ca M72 K539 CE 111817

Electrical Contractor Testing Protocol Production Check List



Contents

Powering Business Worldwide

DANGER

Line voltage is present in the areas covered with a red block in the picture below

IMPORTANT

Prior to energizing any fixture(s) ensure that there are no shorts between the following:

- The two DALI wires
- Each DALI Bus wire and ground
- Each DALI Bus wire and the line voltage wiring

IMPORTANT

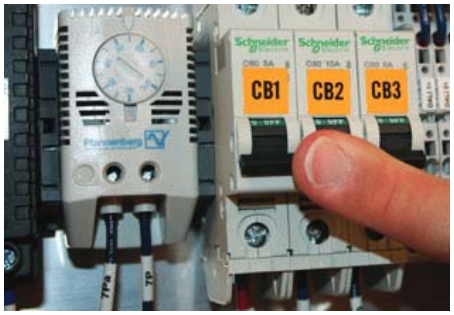
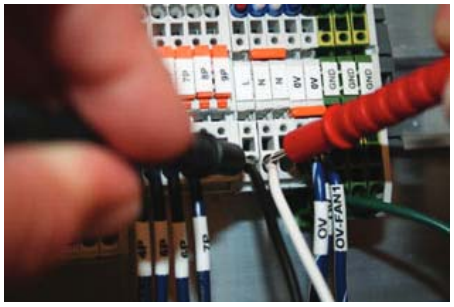
Terminate the DALI Bus wires in the Lighting Control Panel (LCP) first, before energizing the lighting circuits. After the lighting circuits are energized, ensure the line voltage is not present on the DALI Bus wires.

- Ensure that all lighting loads are powered
- Use a meter to check for line voltage on the wires as follows:
  - Between either DALI wire to ground
  - Across both DALI wires
- There should be a maximum of 24 VDC between the DALI wires and ground

IMPORTANT

All LCP connections must be verified for proper terminations according to the corresponding LCP schematics. For safety purposes, ensure that there are no faulty connections between line voltage, neutral and ground wires. Be sure that all low voltage wiring is connected or secured before energizing the LCP.

Table 1. Lighting Control Panel Power Test

	**Step 1:** Ensure all circuit breakers, all branch breakers and all circuit protection within all LCPs are in the Off position.	Completed ☐
	**Step 2:** Energize the LCP by turning On the branch circuit breaker feeding the LCP. Verify that 120 VAC power is incoming at the LCP by measuring the voltage between the terminal blocks labeled "L" for line voltage and "N" for neutral.	Completed ☐

	**Step 3:** Turn the 120 VAC breaker labeled "CB1" inside the LCP to the On position.	Completed ☐
	**Step 4:** Verify that 24 VDC is present between the terminal blocks "0V" and "1P" off the power supply secondary.	Completed ☐
	Step 5: Ensure all LCP's have a suitable ground connection and that neutral (0 VDC) and ground are at the same potential.	Completed ☐
	Step 6: Repeat the steps 1-5 for all LCPs in the building.	Completed ☐

Table 2. Cat5e Network Test

	Step 1: The LCP requires Ethernet connections for communication with the Lighting Management Software and other integration pieces. Verify that Cat5e cabling has been pulled and terminated to each designated LCP location and that a connection has been provided between the Fifth Light system and the main network switch.	Completed ☐
	Step 2: Verify that the data drops are in the correct locations (i.e. the data racks or inside the LCP).	Completed ☐
	Step 3: Using a network cable tester, verify that each Cat5e cable is functional and data can pass through it.	Completed ☐

Table 3. DALI Communication Bus Test

Step 1:

Completed ☐

Energize the DBC by turning circuit breaker "CB2" to the On position.

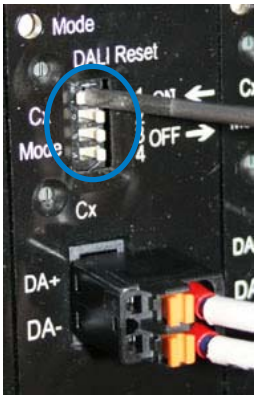
Step 2:

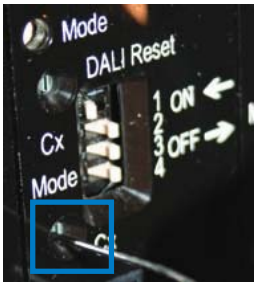
Completed ☐

1. Review the LED indicators on the DALI Bus Card:
   - "DALI PWR": Should be illuminated. If not, verify the DALI Power Card is connected and that the supply breakers are On.
   - "DALI Activity": Should be Off or flashing intermittently. If on solid, there is a short on the DALI Bus that should be rectified.
   - "Error": The "Error" LED should be fading in and out or "breathing".

     Note: If it is blinking, note the blink pattern and refer to the "DALI Card LED Error Table" in Appendix A.

2. Once the LEDs are verified to be in proper operation, proceed to Step 3 in this section.





Step 3:

Completed ☐

Test Dimmable Devices – (This includes DALI Ballast/ Drivers, Dimming Modules and DACs).

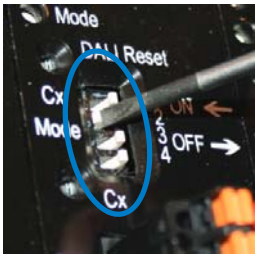
1. On the DALI Bus Card for the bus under test, set the DIP Switch setting to Commissioning Mode 1 (shown circled) with DIP Switch 1 set to On and 2, 3, 4 set to the Off position.

   Then press and hold the commissioning button, labeled Cx, (shown boxed) until the "Mode" LED Turns On. Next, follow the steps below:
   - All lamps in the fixtures should dim down to a low light level output. The lamps should then increase in light output and continue to cycle light output every 5 seconds.
   - Verify that all dimmable fixtures that should be connected to the DALI Bus are cycling with this mode.
   - If any lamps in the fixtures do not dim, turn the power Off to the affected fixture and to the DBC. Recheck all connections including the DALI Bus wire connection; then repeat the test.

     If the problem persists for a second time, set the device aside to be sent to Fifth Light to determine if the device is faulty.
   - If fixtures are dimming that are not supposed to be connected to the DALI Bus under test, turn the power Off to the fixture and to the DBC. Recheck all connections to ensure they are connected to the correct DALI Bus, then repeat the test.

2. To exit Commissioning Mode press and hold the commissioning button (shown boxed) until the "Mode" LED turns Off.

Note: Ensure that the Mode 1 DIP Switch is switched back to Off before entering another Commissioning Mode.



Step 4: Completed ☐

Test DALI Field Relays

1. On the DALI Bus Card for the bus under test, set the DIP Switch setting to Commissioning Mode 2 (shown circled) with DIP Switch 2 set to On and 1, 3, 4 set to the Off position.

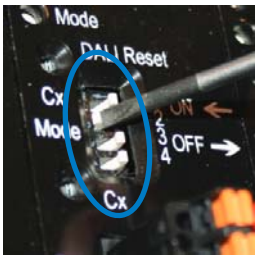
   Then press and hold the Commissioning button, labeled Cx, (shown boxed) until the "Mode" LED turns On. Next, follow the steps below:

   - Once Commissioning Mode 2 takes effect, all fixtures including the fixtures connected to a DALI Field Relay will turn On and Off every 5 seconds.
   - Verify that all fixtures/relays that should be connected to the DALI Bus are cycling with this mode.
   - If the fixtures do not turn On and Off, turn their power Off and turn Off power to the DBC. Recheck connections and repeat the test.

     If the problem persists for a second time, set the device aside for further investigation by Fifth Light.
   - If fixtures are switching that are not supposed to be connected to the DALI Bus under test, turn the power to the fixture and the DBC Off. Recheck all connections to ensure they are connected to the correct DALI Bus then repeat the test.

2. To exit Commissioning Mode, press and hold the commissioning button (shown boxed) until the "Mode" LED turns Off.

Note: Ensure that the Mode 1 DIP Switch is switched back to Off before entering another Commissioning Mode.



Step 5: Completed ☐

Test DALI Multi-Sensors and Wallstations

1. On the DALI Bus Card for the bus under test set the DIP Switch to Commissioning Mode 2 (shown circled) with DIP Switch 2 set to On and 1, 3, 4 set to the Off position.

   Then press and release the commissioning button (shown boxed). Follow the steps below to start the test:

   - Once Commissioning Mode 2 takes effect, the LEDs on all of the DALI Multi-Sensors and wallstations on this DALI Bus will blink 5 times rapidly every 5 seconds.
   - Verify that all Multi-Sensors and wallstations that should be connected to the DALI Bus are cycling their LEDs with this mode.
   - If the DALI Multi-Sensor's or wallstation's LEDs do not blink, recheck connections; then repeat the test.

     If the problem persists for a second time, set the device aside for further investigation by Fifth Light.
   - If Multi-Sensors and wallstations that are not supposed to be connected to this DALI Bus are blinking their LED's recheck all connections to ensure they are connected to the correct DALI Bus, then repeat the test.

2. To exit Commissioning Mode, press and hold the commissioning button (shown boxed) until the "Mode" LED turns Off.

Note: Ensure that the Mode 1 DIP Switch is switched back to Off before entering another Commissioning Mode.

Appendix A

Table 4. DALI Card LED Error Table

Priority	Condition Identified	Status LED Pattern	Caused By
1 (highest)	Critical fault	100ms On, 100ms Off (periodic)	Non-volatile memory (EEPROM) data error detected Equipment requires service or replacement
2	Over-voltage condition on DALI Bus	4 short 250ms blinks separated by a 250ms Off time followed by 1750ms Off (periodic)	An over voltage condition has recently been or is currently being sensed on the DALI interface circuitry
3	USB communications watchdog time-out	3 short 250ms blinks separated by a 250ms Off time followed by 1750ms Off (periodic)	Interval between receiving two valid USB commands exceeded watchdog timer interval
4	DALI Bus fault	2 short 250ms blinks separated by a 250ms Off time followed by 1750ms Off (periodic)	DALI Power Supply absent on DALI Bus device holding DALI Bus in active state DALI Bus held in a sustained active state by short circuit fault on DALI Bus
5 (lowest)	Normal operation (default)	50ms On, 1950ms Off (periodic)	No other fault or status conditions to display

Eaton
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Eaton.com

Eaton's Cooper Controls Business
203 Cooper Circle
Peachtree City, GA 30269
coopercontrol.com

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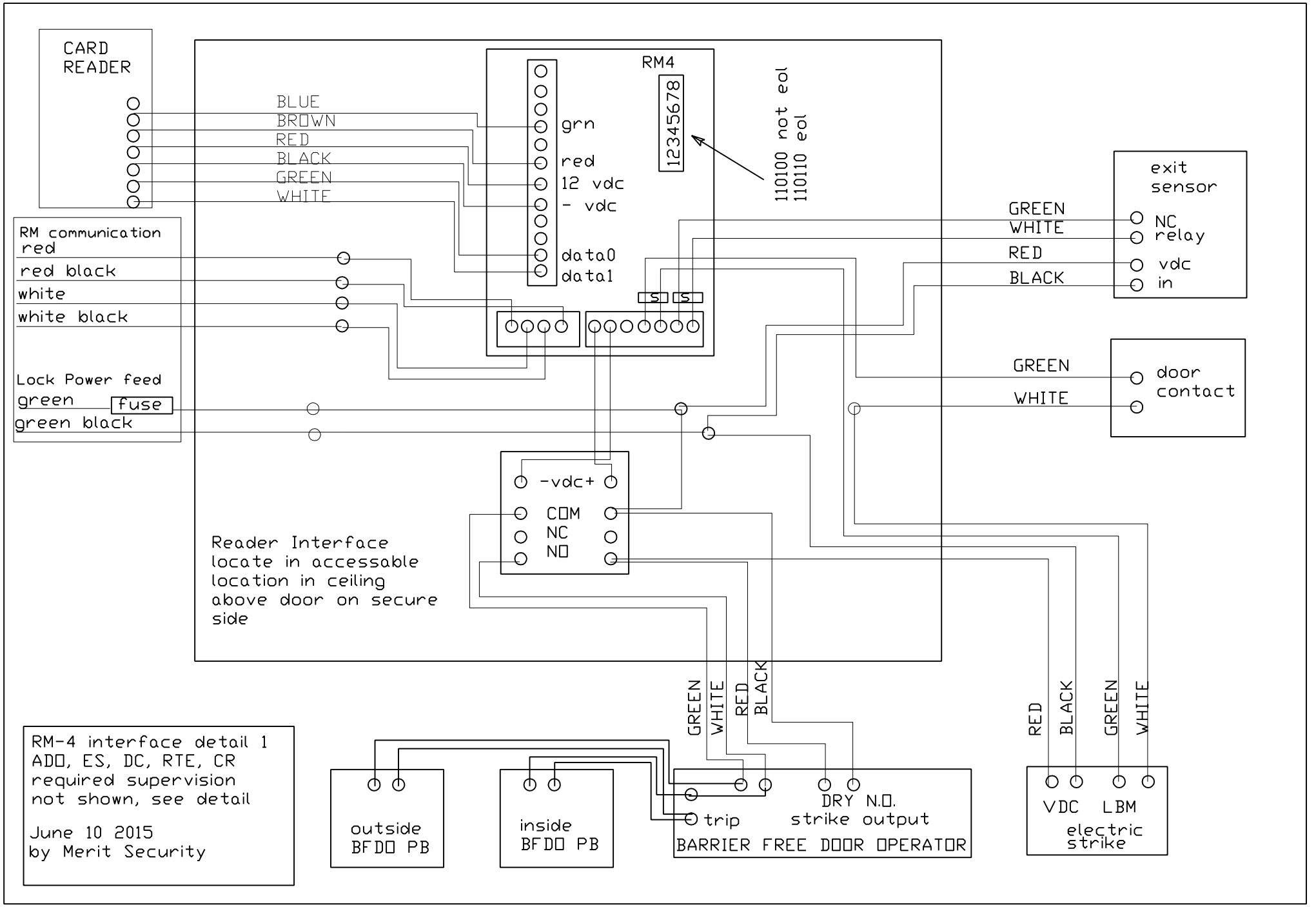
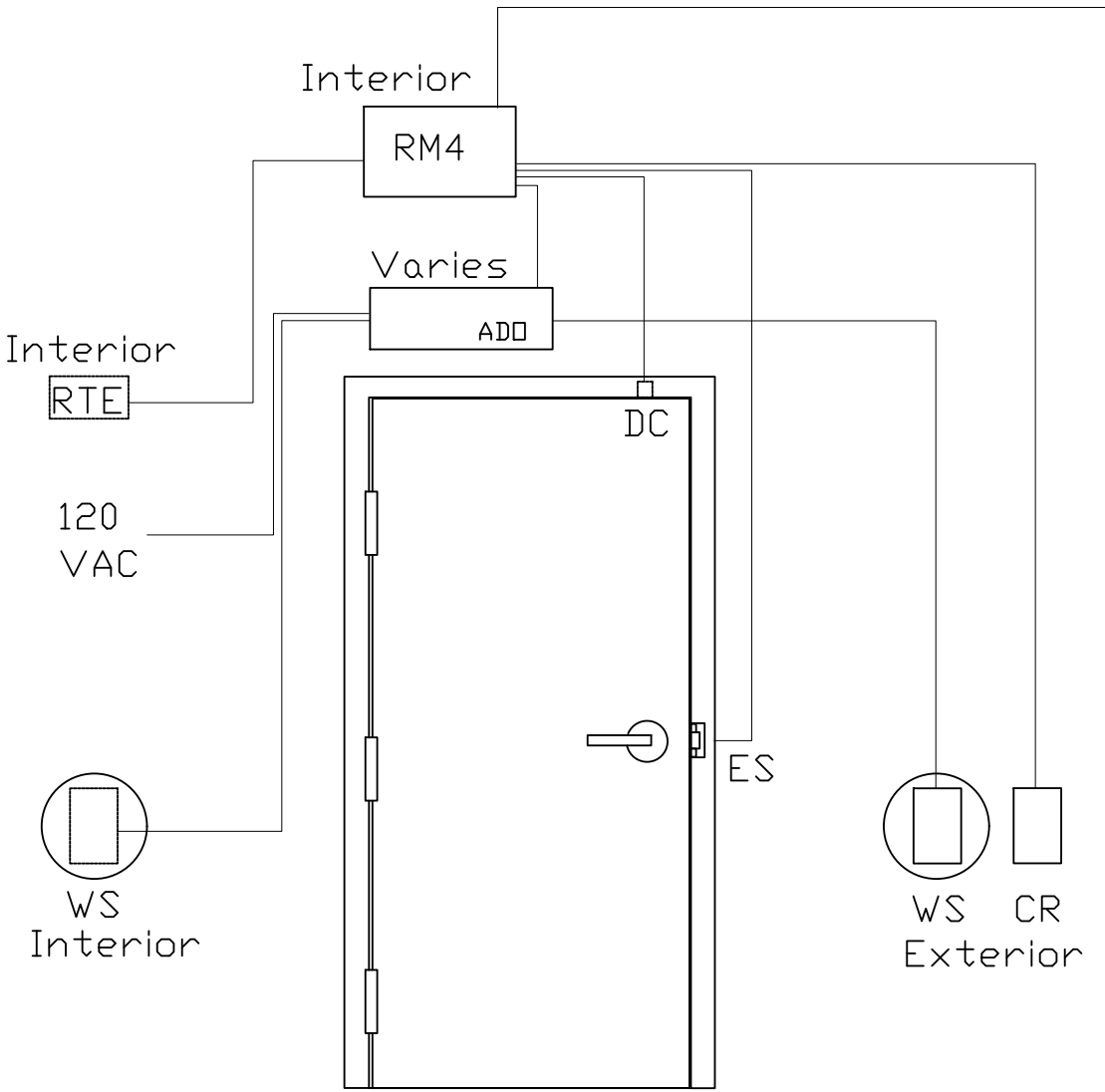

CARD READER
BLUE
BROWN
RED
BLACK
GREEN
WHITE
RM4
12345678
110100 not eol
110110 eol
grn
red
12 vdc
- vdc
data0
data1
S
S
RM communication
red
red black
white
white black
Lock Power feed
green
fuse
green black
exit sensor
GREEN
WHITE
NC
relay
RED
vdc
BLACK
in
GREEN
door contact
WHITE
-vdc+
COM
NC
NO
Reader Interface
locate in accessable
location in ceiling
above door on secure
side
GREEN
WHITE
RED
BLACK
RED
BLACK
GREEN
WHITE
RM-4 interface detail 1
ADO, ES, DC, RTE, CR
required supervision
not shown, see detail
June 10 2015
by Merit Security
outside
BFDO PB
inside
BFDO PB
trip
DRY N.O.
strike output
BARRIER FREE DOOR OPERATOR
VDC
LBM
electric
strike



CABLE TYPES

WS-barrier free wall switch	2pr #22 AWG
RM4-ADO (auto door operator)	2pr #22 AWG
CR-card reader	6C #22 AWG
DC-door contact	2C #22 AWG
ES-electric strike	2pr #22 AWG
RTE-exit sensor	2pr #22 AWG
RM4-to iStar	3PR #18 AWG

drawing not to scale. refer to construction documents for exact device locations

Sheridan College Campus

Single door typical ADO with card reader

security device cable and conduit

drawing by Merit Security 2022

Hazardous Building Materials Assessment (Pre-Construction)

Rooms B244, B237, and B255
Trafalgar Campus, B-Wing
1430 Trafalgar Road,
Oakville, Ontario

Prepared for:

Sheridan College
1430 Trafalgar Road
Oakville, ON L6H 2L1

September 20, 2024

Pinchin File: 336577.015

Issued to:	**Sheridan College**
Issued on:	**September 20, 2024**
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Issuing Office:	**Hamilton, ON**
Primary Pinchin Contact:	**Leslie Heywood, BEng Mgt.** **lheywood@pinchin.com**

Author: Adam Lazette, B.Eng.
Project Technologist

Reviewer: Leslie Heywood, BEng Mgt.
Senior Project Manager

EXECUTIVE SUMMARY

Sheridan College (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment at Trafalgar Campus, B-Wing located at 1430 Trafalgar Road, Oakville Ontario. Pinchin performed the assessment on September 13, 2024.

The objective of the assessment was to identify specified hazardous building materials in preparation for building renovation activities. The proposed work as identified by the Client includes renovations to Rooms B244 (Financial Services, Location 80), B237 (Human Resources, Organizational Development & OH&S, Location 79), and B255 (Human Resources, Location 124).

The results of this assessment are intended for use with a properly developed scope of work or performance specifications and safe work procedures.

SUMMARY OF FINDINGS

The following is a summary of significant findings; refer to the body of the report for detailed findings:

Asbestos:

- Drywall joint compound

Lead:

- Lead is present in paints and coatings.
- Batteries of emergency lights may contain solid lead.

Silica: Crystalline silica is present in concrete and other materials such as masonry.

Mercury: Mercury vapour may be present in lamp tubes.

Polychlorinated Biphenyls (PCBs): PCBs are not present.

Mould and Water Damage: Visible mould and water damage was not observed.

SUMMARY OF RECOMMENDATIONS

The following is a summary of significant recommendations; refer to the body of the report for detailed recommendations.

1. Conduct further investigation of the following items, which was not completed during this assessment:
   a. Any items listed as exclusions in this report, prior to disturbance.
2. Prepare a scope of work or specifications and safe work procedures for the hazardous materials removal required for the planned work.
3. Do not disturb suspected hazardous building materials discovered during the planned work, which have not been identified in this report and arrange for further evaluation and testing.
4. Remove and properly dispose of asbestos-containing materials prior to renovation activities.
5. Recycle mercury-containing lamp tubes when removed from service.
6. Follow appropriate safe work procedures when handling or disturbing asbestos, lead, and silica.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION AND SCOPE

Sheridan College (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment at Trafalgar Campus, B-Wing located at 1430 Trafalgar Road, Oakville Ontario.

Pinchin performed the assessment on September 13, 2024. The surveyor was accompanied by a representative of the Client during the assessment. The assessed area was unoccupied at the time of the assessment.

The objective of the assessment was to identify specified hazardous building materials in preparation for building renovation activities. The proposed work as identified by the Client includes interior renovations to Rooms B244 (Financial Services, Location 80), B237 (Human Resources, Organizational Development & OH&S, Location 79), and B255 (Human Resources, Location 124)..

The results of this assessment are intended for use with a properly developed scope of work or performance specifications and safe work procedures.

1.1 Scope of Assessment

The **assessed area** is limited to the portion(s) of the building to be renovated, as described by the Client, and identified in the drawings in Appendix I.

The assessment was performed to establish the type of specified hazardous building materials, locations and approximate quantities incorporated in the structure(s) and its finishes.

For the purpose of the assessment and this report, hazardous building materials are defined as follows:

- Asbestos
- Lead
- Silica
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Mould

The following Designated Substances are not typically found in building materials in a composition/state that is hazardous and were not included in this assessment:

- Arsenic
- Acrylonitrile
- Benzene

- Coke oven emissions
- Ethylene oxide
- Isocyanates
- Vinyl chloride monomer

2.0 METHODOLOGY

Pinchin conducted a room-by-room assessment to identify the hazardous building materials as defined in the scope.

The assessment included limited demolition of wall and ceiling finishes (drywall or plaster) to view concealed conditions at representative areas as permitted by the current building use. Limited destructive testing of flooring was conducted where possible (under ceramic tiles, carpets, or multiple layers of flooring). Demolition of exterior building finishes, masonry walls (chases, shafts etc.), and structural surrounds was not conducted.

Limited demolition of masonry block walls (core holes) was conducted to investigate for loose fill vermiculite insulation. Sampling of roofing materials was not conducted.

For further details on the methodology including test methods, refer to Appendix III.

3.0 BACKGROUND INFORMATION

3.1 Building Description

Description Item	Details
Use	Post-secondary school
Number of Floors	The building is 3 storeys plus 1 level below grade (assessed area limited to portions of the second floor)
Total Area	The assessed area is approximately 5,194 square feet.
Year of Construction	The portion of the building assessed was constructed in the 1970s.
Structure	Concrete
Exterior Cladding	Concrete, glass, and masonry
HVAC	Forced air
Roof (Outside of Scope)	Not assessed
Flooring (Assessed Area)	Carpet
Interior Walls (Assessed Area)	Drywall and masonry
Ceilings (Assessed Area)	Acoustic ceiling tiles

3.2 Existing Reports

The HMIS Online database was referenced and relied upon where applicable.

4.0 FINDINGS

The following section summarizes the findings of the assessment and provides a general description of the hazardous building materials identified. For details on approximate quantities, condition, friability, accessibility, and locations of hazardous building materials; refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI.

Any quantities listed in this report or data tables are estimated based on visual approximations only and are subject to variation.

4.1 Asbestos

4.1.1 Pipe Insulation

Pipes in the assessed area are either uninsulated or insulated with non-asbestos fibreglass or other non-asbestos insulation such as mineral fibre or elastomeric foam insulation (photo 1).

Pipes insulated with asbestos-containing insulations may be present in inaccessible spaces such as above solid ceilings, in chases, in column enclosures and within shafts.

Photo 1

4.1.2 Duct Insulation and Mastic

Ducts are either uninsulated or insulated with non-asbestos fibreglass (foil-faced or canvas jacketing, photos 1 and 2).

Mastic was not observed on exterior sections of ducts assessed.

Photo 1

Photo 2

4.1.3 Mechanical Equipment Insulation

Mechanical equipment was not found in the assessed area.

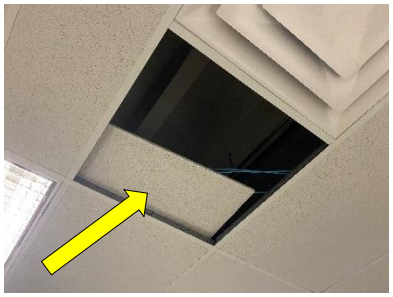
4.1.4 Vermiculite

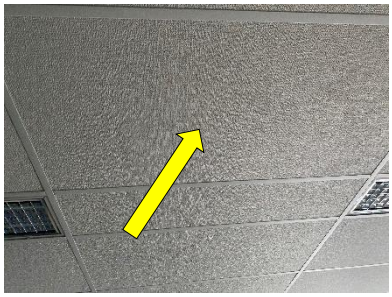
Destructive testing was conducted of a representative selection of masonry block walls, including creating penetrations at one location. The locations of destructive testing have been indicated on the drawings in Appendix I.

Loose fill vermiculite was not observed within the cavities.

4.1.5 Acoustic Ceiling Tiles

The following is a summary of acoustic ceiling tiles sampled, for a complete list of locations, refer to Appendix V.

Description	Sample Location	Date Code or Material Composition	Asbestos	Photo
2'x4', lay-in, random pinholes	Not sampled	Dated 10/30/97 and 07/23/03	None*	

Description	Sample Location	Date Code or Material Composition	Asbestos	Photo
2'x4', lay-in, rough surface	Not sampled	Fibreglass composition	None**	

*Ceiling tiles are presumed to be non-asbestos based on the date of manufacture determined from the date stamp applied to the top of the tiles. The tiles were manufactured after asbestos stopped being used in acoustic ceiling tiles.

**All ceiling tiles are presumed to be non-asbestos based on the composition of the tiles (e.g., fibreglass, wood fibre, gypsum).

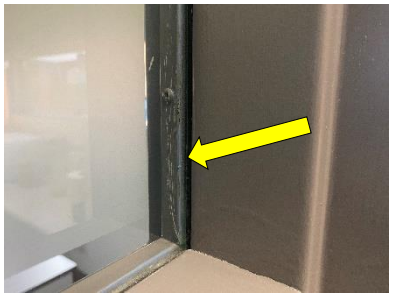
4.1.6 Drywall Joint Compound

Drywall joint compound, containing asbestos, is present on bulkhead and wall finishes throughout the assessed area (samples S0120A-G and previous HMIS samples V0020, photo 1).

Photo 1

4.1.7 Sealants, Caulking, and Putty

The following is a summary of sealants, caulking, and putties sampled, for a complete list of locations, refer to Appendix V.

Material, Description and Application	Sample Location (Location #)	Sample Number	Asbestos	Photo
Glazing putty, black on interior door and window frames	B237 - Human Resources Organizational Development & OH&S (Location 79)	S0121A-C	No	
Caulking, white on concrete deck structure	B237 - Human Resources Organizational Development & OH&S (Location 79)	S0123A-C	No	
Sealant, black on exterior windows	Not sampled	N/A	None*	

*The material is presumed to be non-asbestos based on the date of installation (2019) and composition of the material (rubber).

4.1.8 Other Building Materials

The following is a summary of other materials sampled, for a complete list of locations, refer to Appendix V.

Description	Sample Location (Location #)	Sample Number	Asbestos	Photo
Carpet mastic	Human Resources Organizational Development & OH&S (Location 79)	S0122A-G	No	
Paint/coating on concrete deck structure	Human Resources Organizational Development & OH&S (Location 79)	S0124A-C	No	

4.1.9 Excluded Materials

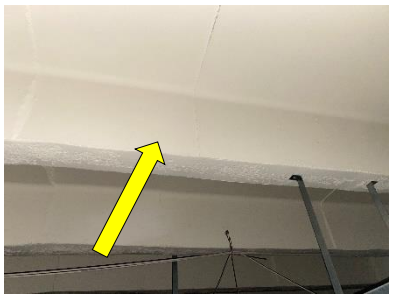
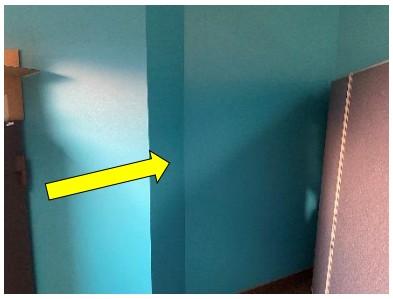
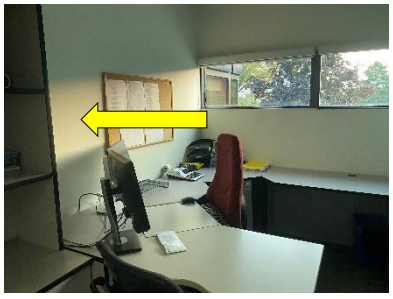
The following is a list of materials which may contain asbestos and was excluded from the assessment. These materials are presumed to contain asbestos until otherwise proven by sampling and analysis:

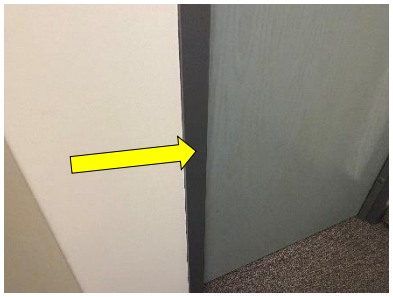
- Roofing felts and tar, mastics
- Electrical components
- Vermiculite
- Ropes and gaskets in cast-iron bell and spigot joints
- Sealants on pipe threads
- Inaccessible/concealed materials
- Materials outside of the assessed area

4.2 Lead

4.2.1 Paints and Surface Coatings

The following table summarizes the analytical results of paints sampled.

Sample Number	Colour, Substrate Description	Sample Location	Lead (%)	Photo
L0009 (HMIS)	White on concrete deck	Classroom (HMIS Location 97)	0.0043	
L0015	Aqua blue on drywall walls	B244 - Financial Services (Location 80)	<0.00023	
L0016	White on drywall walls	B244 - Financial Services (Location 80)	0.0051	
L0017	**White/Orange on poured concrete columns (composite)**	**B244 - Financial Services (Location 80)**	**0.011**	

Sample Number	Colour, Substrate Description	Sample Location	Lead (%)	Photo
L0018	Brown/Blue on metal door and window frames (composite)	B237 - Human Resources Organizational Development & OH&S (Location 79) B244 - Financial Services (Location 80)	<0.0018	

Results less than or equal to 0.1% (1,000 mg/kg), but equal to or greater than 0.009% (90 mg/kg), are considered low-level lead paints or surface coatings in accordance with the EACC guideline.

Results below the threshold of 0.009% (90 mg/kg) are assumed to be insignificant.

4.2.2 Lead Products and Applications

Lead-containing batteries may be present in emergency lighting (photo 1).

Photo 1

4.2.3 Excluded Lead Materials

Lead is known to be present in several materials which were not assessed or sampled. The following materials, where found, should be presumed to contain lead.

- Electrical components, including wiring connectors, grounding conductors, and solder
- Solder on pipe connections

4.3 Silica

Crystalline silica is assumed to be a component of the following materials where present in the building.

- Concrete
- Masonry and mortar

4.4 Mercury

4.4.1 Lamps

Mercury vapour may be present in fluorescent lamp tubes.

4.4.2 Mercury-Containing Devices

Thermostats inspected did not contain liquid mercury ampules (photo 1).

Photo 1

4.5 Polychlorinated Biphenyls

4.5.1 Caulking and Sealants

The following table presents a summary of caulking sampled:

Material, Colour, Application	Sample Location (Location #)	Sample Number	PCB (mg/kg)	Photo
Glazing putty, black on interior door and window frames	Financial Services (Location 80)	P0006	<0.2	
Caulking, white on concrete deck structure	Human Resources Organizational Development & OH&S (Location 79)	P0007	<0. 2	
Sealant, black on exterior windows	Not sampled	N/A	None*	

The material is considered a PCB solid based on the threshold (50 mg/kg).

*The material is presumed to be a non-PCB solid based on the composition of the material (rubber).

4.5.2 Lighting Ballasts

Based on visual observations (e.g., evidence of T-8 and LED fixtures with electronic ballasts) the fixtures will not contain PCB ballasts.

4.5.3 Transformers

Transformers were not found during the assessment.

4.6 Mould and Water Damage

Visible mould growth and water damage was not found during the assessment.

5.0 RECOMMENDATIONS

5.1 General

1. Prepare scope of work or performance specifications for hazardous material removal required for the planned work. The specifications should include safe work practices, personal protective equipment, respiratory protection, and disposal of waste materials.
2. If suspected hazardous building materials are discovered during the planned work, which are not identified in this report, do not disturb, and arrange for further testing and evaluation.
3. Conduct further investigation of the following items, areas, or locations, which were not completed during this assessment:
    a. Any items listed as exclusions in this report, prior to disturbance.
4. Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.
5. Retain a qualified consultant to specify, observe and document the successful removal of hazardous materials.
6. Update the asbestos inventory upon completion of the abatement and removal of asbestos-containing materials and any other relevant findings.

5.2 Remedial Work

Remedial work is not required.

5.3 Building Renovation Work

The following recommendations are made regarding renovation involving the hazardous materials identified.

5.3.1 Asbestos

Remove asbestos-containing materials (ACM) prior to renovation, alteration, or maintenance if ACM may be disturbed by the work. If the identified ACM will not be removed prior to commencement of the work, any potential disturbance of ACM must follow asbestos precautions appropriate for the type of work being performed.

Asbestos-containing materials must be disposed of at a landfill approved to accept asbestos waste.

5.3.2 Lead

For paints identified as having low levels of lead (i.e., equal to or above 0.009% (90 mg/kg) but less than or equal to the EACC guideline of 0.1% (1,000 mg/kg) for lead-containing paints) special precautions are not recommended unless aggressive disturbance (grinding, blasting, torching) is planned. Exposure from construction disturbance of paints containing lead less than 0.009% (90 mg/kg) is assumed to be insignificant.

Lead-containing items should be recycled when taken out of service.

5.3.3 Silica

Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions that comply with applicable regulations and guidelines.

5.3.4 Mercury

Do not break lamps. Recycle and reclaim mercury from fluorescent lamps when taken out of service. Mercury is classified as a hazardous waste and must be disposed of in accordance with applicable regulations.

6.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties.

Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

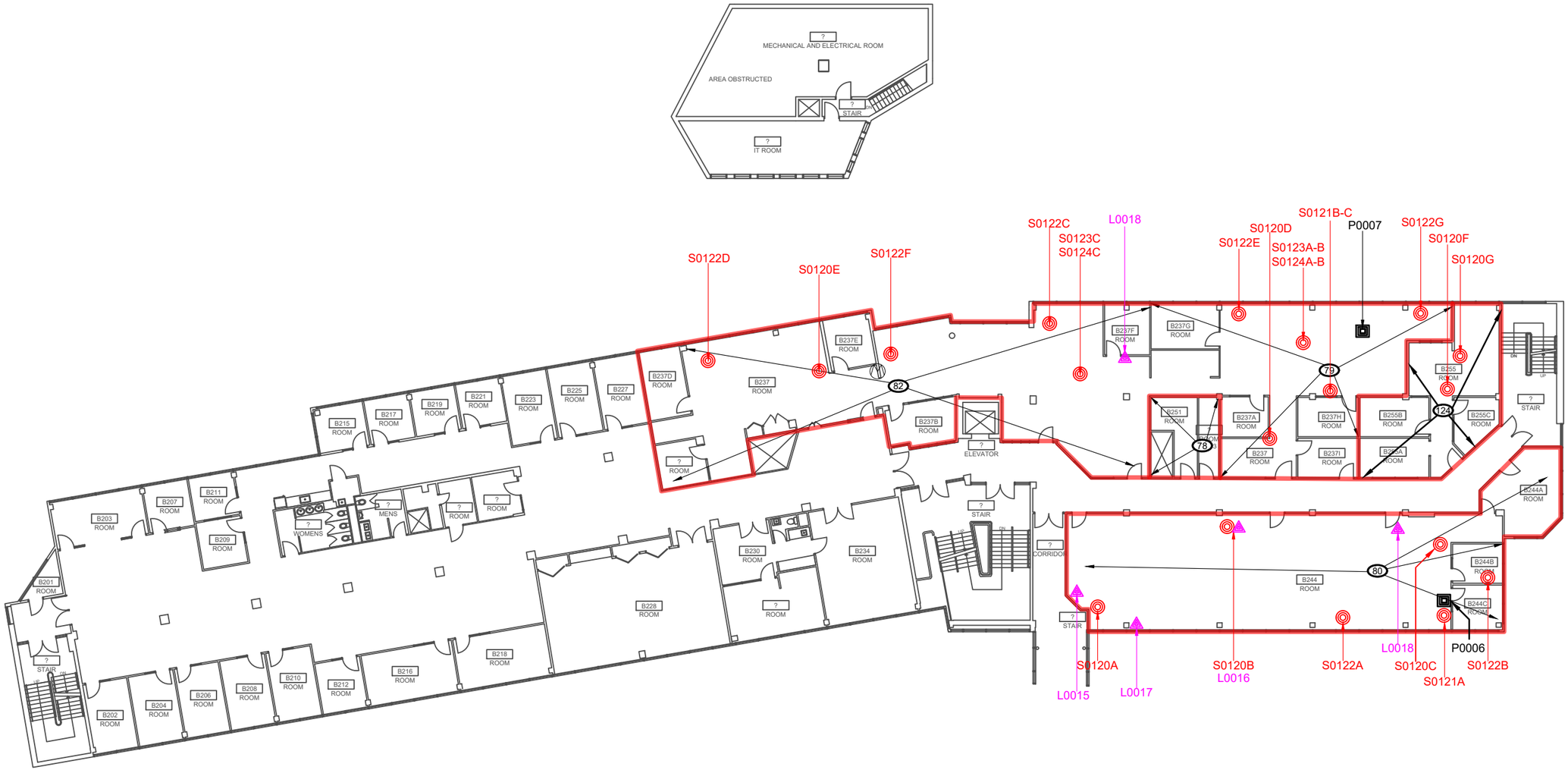
7.0 REFERENCES

The following legislation and documents were referenced in completing the assessment and this report:

1. Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation 278/05.
2. Designated Substances, Ontario Regulation 490/09.
3. Lead on Construction Projects, Ministry of Labour Guidance Document.
4. The Environmental Abatement Council of Canada (EACC) Lead Guideline for Construction, Renovation, Maintenance or Repair.
5. Ministry of the Environment Regulation, R.R.O. 1990 Reg. 347 as amended.
6. Ministry of the Environment Regulation, R.R.O. 1990 Reg. 362 as amended.
7. Silica on Construction Projects, Ministry of Labour Guidance Document.
8. Alert – Mould in Workplace Buildings, Ontario Ministry of Labour.
9. PCB Regulations, SOR/2008-273, Canadian Environmental Protection Act.
10. Surface Coating Materials Regulations, SOR/2016-193, Canada Consumer Product Safety Act.
11. Consolidated Transportation of Dangerous Goods Regulations, including Amendment SOR/2019-101, Transportation of Dangerous Goods Act.
12. Mould Guidelines for the Canadian Construction Industry, Standard Construction Document CCA 82 – 2004 (Revised 2018), Canadian Construction Association.
13. Canada Occupational Health and Safety Regulation, SOR/86-304
14. Technical Guideline to Asbestos Exposure Management Programs.

APPENDIX I

Drawings



N

LEGEND

- PINCHIN LOCATION NUMBER
- ASBESTOS BULK SAMPLE
- LEAD BULK SAMPLE
- PCB BULK SAMPLE
- VERMICULITE DRILLHOLE

FOR CLARITY, THE FOLLOWING ASBESTOS-CONTAINING MATERIALS, ARE PRESENT IN THE ASSESSED AREA, BUT HAVE NOT BEEN HATCHED ON THE DRAWING:

- DRYWALL JOINT COMPOUND BULK HEAD AND WALLS

NOT ALL KNOWN OR SUSPECTED HAZARDOUS BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE HAZARDOUS BUILDING MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED HAZARDOUS BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

BASE PLAN PROVIDED BY CLIENT.

PINCHIN

PROJECT NAME:
HAZARDOUS BUILDING MATERIAL ASSESSMENT

CLIENT NAME:
SHERIDAN COLLEGE

PROJECT LOCATION:
TRAFALGAR CAMPUS, B-WING
1430 TRAFALGAR ROAD
OAKVILLE, ONTARIO

FIGURE NAME:
SECOND FLOOR PLAN

PROJECT NUMBER:	SCALE:
336577.015	NOT TO SCALE
DRAWN BY:	REVIEWED BY:
WB	AL
DATE:	FIGURE NUMBER:
SEPTEMBER 2024	1 OF 1

APPENDIX II-A

Asbestos Analytical Certificates

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name:	**Sheridan College, Trafalgar Campus**		
Project No.:	**0336577.015**		
Prepared For:	**A. Lazette / L. Heywood**		
Lab Reference No.:	**b323123**		
Analyst(s):	**J. Dacquel**		
Date Received:	**September 13, 2024**	**Samples Submitted:**	**23**
Date Analyzed:	**September 16, 2024**	**Phases Analyzed:**	**35**

The Pinchin Ltd. Mississauga asbestos laboratory is accredited by the National Institute of Standards and Technology, National Voluntary Laboratory Accreditation Program (NVLAP Lab Code 101270-0) for the 'EPA – 40 CFR Appendix E to Subpart E of Part 763, Interim Method of the Determination of Asbestos in Bulk Insulation Samples,' and the 'EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials'; and meets all requirements of ISO/IEC 17025:2017. The Pinchin asbestos laboratory uses the aforementioned methods of analysis for all bulk materials. Please be advised that bulk materials do not include debris, dust, and tape-lift samples, and the analysis and reporting of these materials does not conform with Pinchin Ltd.'s NVLAP accreditation.

Bulk samples are checked visually and scanned under a stereomicroscope. Slides are prepared and observed under a Polarized Light Microscope (PLM) at magnifications of 40X, 100X or 400X as appropriate. Asbestos fibres are identified by a combination of morphology, colour, refractive index, extinction, sign of elongation, birefringence and dispersion staining colours. A visual estimate is made of the percentage of asbestos present. A reported concentration of less than (<) the regulatory threshold indicates the presence of confirmed asbestos in trace quantities, limited to only a few fibres or fibre bundles in an entire sample. This method complies with provincial regulatory requirements where applicable. Multiple phases within a sample are analyzed and reported separately.

All bulk samples submitted to this laboratory for asbestos analysis are retained for a minimum of three months. Samples may be retrieved, upon request, for re-examination at any time during that period.

This report relates only to the items tested.

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Sheridan College, Trafalgar Campus**
Project No.: **0336577.015**
Prepared For: **A. Lazette / L. Heywood**

Lab Reference No.: **b323123**
Date Analyzed: **September 16, 2024**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0120A Wall, Drywall And Joint Compound, Loc:80, Financial Services	2 Phases: a) Homogeneous, beige, drywall joint compound. b) Homogeneous, brown, brittle, adhesive material.	Chrysotile 0.5-5% None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
S0120B Wall, Drywall And Joint Compound, Loc:80, Financial Services	Homogeneous, white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
S0120C Wall, Drywall And Joint Compound, Loc:80, Financial Services	2 Phases: a) Homogeneous, beige, drywall joint compound. b) Homogeneous, white, drywall joint compound.	Chrysotile 0.5-5% None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
Comments:	Phase a) is very small in size. Cellulose is present on the surface of this sample.		
S0120D Wall, Drywall And Joint Compound, Loc:79, Human Resources Organizational Development & OH&S	2 Phases: a) Homogeneous, off-white, drywall joint compound. b) Homogeneous, white, drywall joint compound.	None Detected None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0120E Wall, Drywall And Joint Compound, Loc:79, Human Resources Organizational Development & OH&S	Homogeneous, white, layered, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Sheridan College, Trafalgar Campus**
Project No.: **0336577.015**
Prepared For: **A. Lazette / L. Heywood**

Lab Reference No.: **b323123**
Date Analyzed: **September 16, 2024**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0120F Ceiling, Bulkhead, Drywall And Joint Compound, Loc:124, Human	Homogeneous, white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
S0120G Wall, Drywall And Joint Compound, Loc:124, Human Resources	Homogeneous, white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
Comments:	Another phase is present but there was insufficient material submitted to analyze.		
S0121A Wall, Window Frame, Putty, Black Glazing On Interior Door Window Frames, Loc:80, Financial Services	Homogeneous, black, soft, sticky material.	None Detected	Cellulose 0.5-5% Non-Fibrous Material > 75%
S0121B Wall, Window Frame, Putty, Black Glazing On Interior Door Window Frames, Loc:79, Human Resources Organizational Development & OH&S	Homogeneous, black, soft, sticky material.	None Detected	Cellulose 0.5-5% Non-Fibrous Material > 75%
S0121C Wall, Window Frame, Putty, Black Glazing On Interior Door Window Frames, Loc:79, Human Resources Organizational Development & OH&S	Homogeneous, black, soft, sticky material.	None Detected	Cellulose 0.5-5% Non-Fibrous Material > 75%
S0122A Floor, Mastic, Loc:80, Financial Services	Non-homogeneous, yellow, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Sheridan College, Trafalgar Campus**
Project No.: **0336577.015**
Prepared For: **A. Lazette / L. Heywood**

Lab Reference No.: **b323123**
Date Analyzed: **September 16, 2024**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0122B Floor, Mastic, Loc:80, Financial Services	Non-homogeneous, yellow, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		
S0122C Floor, Mastic, Loc:79, Human Resources Organizational Development & OH&S	Non-homogeneous, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		
S0122D Floor, Mastic, Loc:79, Human Resources Organizational Development & OH&S	Non-homogeneous, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		
S0122E Floor, Mastic, Loc:79, Human Resources Organizational Development & OH&S	Non-homogeneous, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		
S0122F Floor, Mastic, Loc:79, Human Resources Organizational Development & OH&S	Non-homogeneous, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: **Sheridan College, Trafalgar Campus**
Project No.: **0336577.015**
Prepared For: **A. Lazette / L. Heywood**

Lab Reference No.: **b323123**
Date Analyzed: **September 16, 2024**

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0122G Floor, Mastic, Loc:79, Human Resources Organizational Development & OH&S	Non-homogeneous, brittle and sticky, adhesive material.	None Detected	Non-Fibrous Material > 75%
Comments:	Cellulose, hair and synthetic fibres are present on the surface of this sample.		
S0123A Structure, Deck, Caulking, White On Concrete Structure, Loc:79, Human Resources Organizational Development & OH&S	2 Phases: a) Homogeneous, white, drywall joint compound. b) Homogeneous, white, caulking material.	None Detected None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
Comments:	Phase a) is very small in size. For more reliable results, a larger sample is required.		
S0123B Structure, Deck, Caulking, White On Concrete Structure, Loc:79, Human Resources Organizational Development & OH&S	2 Phases: a) Homogeneous, white, drywall joint compound. b) Homogeneous, white, caulking material.	None Detected None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
Comments:	Phase a) is very small in size. For more reliable results, a larger sample is required.		
S0123C Structure, Deck, Caulking, White On Concrete Structure, Loc:79, Human Resources Organizational Development & OH&S	2 Phases: a) Homogeneous, white, drywall joint compound. b) Homogeneous, white, caulking material.	None Detected None Detected	Non-Fibrous Material > 75% Non-Fibrous Material > 75%
Comments:	Phase a) is very small in size. For more reliable results, a larger sample is required.		

Pinchin Ltd. Asbestos Laboratory
Certificate of Analysis

Project Name: Sheridan College, Trafalgar Campus
Project No.: 0336577.015
Prepared For: A. Lazette / L. Heywood

Lab Reference No.: b323123
Date Analyzed: September 16, 2024

BULK SAMPLE ANALYSIS

SAMPLE IDENTIFICATION	SAMPLE DESCRIPTION	% COMPOSITION (VISUAL ESTIMATE)	
		ASBESTOS	OTHER
S0124A Structure, Paint, On Concrete Deck, Loc:79, Human Resources Organizational Development & OH&S	3 Phases: a) Non-homogeneous, off-white, coating material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
	c) Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%
Comments:	Another phase is present but was not analyzed.		
S0124B Structure, Paint, On Concrete Deck, Loc:79, Human Resources Organizational Development & OH&S	3 Phases: a) Non-homogeneous, off-white, coating material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
	c) Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%
Comments:	Another phase is present but was not analyzed.		
S0124C Structure, Paint, On Concrete Deck, Loc:79, Human Resources Organizational Development & OH&S	3 Phases: a) Non-homogeneous, off-white, coating material.	None Detected	Non-Fibrous Material > 75%
	b) Homogeneous, white, drywall joint compound.	None Detected	Non-Fibrous Material > 75%
	c) Homogeneous, white, caulking material.	None Detected	Non-Fibrous Material > 75%
Comments:	Another phase is present but was not analyzed.		

Reviewed by:

Digitally signed by Pinchin Ltd.
Date: 2024.09.16 10:55:57-04'00'

Reporting Analyst:

Digitally signed by Pinchin Ltd.
Date: 2024.09.16 10:56:07-04'00'

Analyzed by: JLA 35

Reviewed by:

Report Sent by:

Pinchin Ltd. - Asbestos Laboratory
Internal Asbestos Bulk Sample Chain of Custody

Special Instructions:

Client Name:	Sheridan College		**Project Address:**	Trafalgar Campus	
Portfolio/Building No:			**Pinchin File:**	0336577.015	
Submitted by:	Adam Lazette		**Email:**	alazette@pinchin.com	
CC Results to:	Leslie Heywood		**CC Email:**	lheywood@pinchin.com	
Date Submitted:	September 13 2024		**Required by:**	September 16 2024	
# of Samples:	23		**Priority:**	Rush Turnaround	
Year of Building Construction (*Mandatory, Years ONLY*):					
Do NOT Stop on Positive (Sample Numbers):			S0120A-G, S0122A-G		
Pinchin Group Company (*Mandatory Field*):			Pinchin		
HMIS2 Building Reference #:			139142/202481396917344		
To be Completed by Lab Personnel Only:					
Lab Reference #:	b323123		**Time:**	24 hour clock	
Received by:	SEP 13 2024		**Date:**	Month Day Year	
Name(s) of Analyst(s):				SEPT. 16, 2024	

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0120	A	Wall,Drywall And Joint Compound,Loc:80,Financial Services a.) CH 0.5-5% b.) ND
S	0120	B	Wall,Drywall And Joint Compound,Loc:80,Financial Services ND
S	0120	C	Wall,Drywall And Joint Compound,Loc:80,Financial Services a.) CH 0.5-5% b.) ND
S	0120	D	Wall,Drywall And Joint Compound,Loc:79,Human Resources Organizational Development & OH&S a.) ND b.) ND
S	0120	E	Wall,Drywall And Joint Compound,Loc:79,Human Resources Organizational Development & OH&S ND
S	0120	F	Ceiling,Bulkhead,Drywall And Joint Compound,Loc:124,Human Resources ND
S	0120	G	Wall,Drywall And Joint Compound,Loc:124,Human Resources ND

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BACK

b323123

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0121	A	Wall,Window Frame,Putty,Black Glazing On Interior Door Window Frames,Loc:80,Financial Services ND
S	0121	B	Wall,Window Frame,Putty,Black Glazing On Interior Door Window Frames,Loc:79,Human Resources Organizational Development & OH&S ND
S	0121	C	Wall,Window Frame,Putty,Black Glazing On Interior Door Window Frames,Loc:79,Human Resources Organizational Development & OH&S ND
S	0122	A	Floor,Mastic,Loc:80,Financial Services ND
S	0122	B	Floor,Mastic,Loc:80,Financial Services ND
S	0122	C	Floor,Mastic,Loc:79,Human Resources Organizational Development & OH&S ND
S	0122	D	Floor,Mastic,Loc:79,Human Resources Organizational Development & OH&S ND
S	0122	E	Floor,Mastic,Loc:79,Human Resources Organizational Development & OH&S ND
S	0122	F	Floor,Mastic,Loc:79,Human Resources Organizational Development & OH&S ND
S	0122	G	Floor,Mastic,Loc:79,Human Resources Organizational Development & OH&S ND
S	0123	A	Structure,Deck,Caulking,White On Concrete Structure,Loc:79,Human Resources Organizational Development & OH&S a.)ND b.)ND
S	0123	B	Structure,Deck,Caulking,White On Concrete Structure,Loc:79,Human Resources Organizational Development & OH&S a.)ND b.)ND
S	0123	C	Structure,Deck,Caulking,White On Concrete Structure,Loc:79,Human Resources Organizational Development & OH&S a.)ND b.)ND
S	0124	A	Structure,Paint,On Concrete Deck,Loc:79,Human Resources Organizational Development & OH&S a.)ND b.)ND c.)ND
S	0124	B	Structure,Paint,On Concrete Deck,Loc:79,Human Resources Organizational Development & OH&S a.)ND b.)ND c.)ND
S	0124	C	Structure,Paint,On Concrete Deck,Loc:79,Human Resources Organizational Development & OH&S a.)ND b.)ND c.)ND

25

APPENDIX II-B

Lead Analytical Certificates

Your Project #: 0336577.015
Site Location: TRAFALGAR CAMPUS
Your C.O.C. #: N/A

Attention: Leslie Heywood

Pinchin Ltd
151 York Boulevard
Suite 200
Hamilton, ON
CANADA L8R 3M2

Report Date: 2024/09/17
Report #: R8323818
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4S8596
Received: 2024/09/16, 11:33

Sample Matrix: Solid
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Metals in Paint	4	2024/09/17	2024/09/17	CAM SOP-00408	EPA 6010D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: 0336577.015
Site Location: TRAFALGAR CAMPUS
Your C.O.C. #: N/A

Attention: Leslie Heywood

Pinchin Ltd
151 York Boulevard
Suite 200
Hamilton, ON
CANADA L8R 3M2

Report Date: 2024/09/17
Report #: R8323818
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C4S8596
Received: 2024/09/16, 11:33

Encryption Key

Bureau Veritas
17 Sep 2024 17:38:03

Please direct all questions regarding this Certificate of Analysis to:
Nilushi Mahathantila, Project Manager
Email: Nilushi.Mahathantila@bureauveritas.com
Phone# (905) 817-5700

==========

This report has been generated and distributed using a secure automated process.
Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

Bureau Veritas Job #: C4S8596
Report Date: 2024/09/17

Pinchin Ltd
Client Project #: 0336577.015
Site Location: TRAFALGAR CAMPUS
Sampler Initials: AL

ELEMENTS BY ATOMIC SPECTROSCOPY (SOLID)

Bureau Veritas ID		ACXR99		ACXS00		ACXS01		
Sampling Date		2024/09/13 08:00		2024/09/13 08:00		2024/09/13 08:00		
COC Number		N/A		N/A		N/A		
	UNITS	L0015, AQUA BLUE ON DRYWALL,LOC:80,FINANCIAL SERVICES	RDL	L0016, WHITE ON DRYWALL,LOC:80,FINANCIAL SERVICES	RDL	L0017, WHITE/ORANGE ON POURED CONCRETE,LOC:80,FINANCIAL SERVICES	RDL	QC Batch
Metals								
Lead (Pb)	%	<0.00023	0.00023	0.0051	0.00022	0.011	0.00016	9642587

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas ID		ACXS02		
Sampling Date		2024/09/13 08:00		
COC Number		N/A		
	UNITS	L0018, BROWN/BLUE ON METAL DOOR AND WINDOW FRAMES,LOC:80,FINANCIAL SERVICES	RDL	QC Batch
Metals				
Lead (Pb)	%	<0.0018	0.0018	9642587

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

Bureau Veritas 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvna.com

GENERAL COMMENTS

Sample ACXR99 [L0015, AQUA BLUE ON DRYWALL,LOC:80,FINANCIAL SERVICES] : Metal Analysis: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ACXS00 [L0016, WHITE ON DRYWALL,LOC:80,FINANCIAL SERVICES] : Metal Analysis: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ACXS01 [L0017, WHITE/ORANGE ON POURED CONCRETE,LOC:80,FINANCIAL SERVICES] : Metal Analysis: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ACXS02 [L0018, BROWN/BLUE ON METAL DOOR AND WINDOW FRAMES,LOC:80,FINANCIAL SERVICES] : Metal Analysis: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Results relate only to the items tested.

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Bureau Veritas Job #: C4S8596
Report Date: 2024/09/17

Pinchin Ltd
Client Project #: 0336577.015
Site Location: TRAFALGAR CAMPUS
Sampler Initials: AL

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	Recovery	UNITS	QC Limits
9642587	JGC	Matrix Spike	Lead (Pb)	2024/09/17		NC	%	75 - 125
9642587	JGC	QC Standard	Lead (Pb)	2024/09/17		98	%	75 - 125
9642587	JGC	Method Blank	Lead (Pb)	2024/09/17	<0.00010		%	
9642587	JGC	RPD	Lead (Pb)	2024/09/17	7.4		%	35

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

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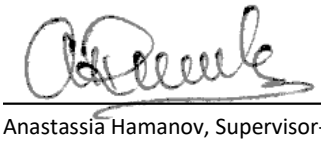
Bureau Veritas Job #: C4S8596
Report Date: 2024/09/17

Pinchin Ltd
Client Project #: 0336577.015
Site Location: TRAFALGAR CAMPUS
Sampler Initials: AL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:



Anastassia Hamanov, Supervisor-Afternoon Shift

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.

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C4S8596
2024/09/16 11:33

BUREAU VERITAS

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD

Invoice Information	Report Information (if differs from invoice)	Project Information (where applicable)	Turnaround Time (TAT) Required
Company Name: Pinchin Ltd.	Company Name:	Quotation #:	☐ Regular TAT (5-7 days) Most analyses
Contact Name: Adam Lazette / Leslie Heywood	Contact Name:	P.O. #/ AFE#:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Address: 151 York Blvd., Suite 200	Address:	Project #: 0336577.015	Rush TAT (Surcharges will be applied)
Hamilton, Ontario		Site Location: Trafalgar Campus	☒ 1 Day ☐ 2 Days ☐ 3-4 Days
Phone: 613.449.0399 Fax:	Phone: Fax:	Site #:	
Email: alazette@pinchin.com / lheywood@pinchin.com	Email:	Site Location Province: _____ ON	Date Required: Sept 16 2024
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY		Sampled By: _____ Adam Lazette	Rush Confirmation #:

Regulation 153	Other Regulations
☐ Table 1 ☐ Res/Park ☐ Med/ Fine	☐ CCME ☐ Sanitary Sewer Bylaw
☐ Table 2 ☐ Ind/Comm ☐ Coarse	☐ MISA ☐ Storm Sewer Bylaw
☐ Table 3 ☐ Agri/ Other	☐ PWQO Region _____
☐ Table _____	☐ Other (Specify) _____
FOR RSC (PLEASE CIRCLE) Y / N	☐ REG 558 (MIN. 3 DAY TAT REQUIRED)
	☐ REG 406 Table _____

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCs F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	Lead (Pb) in Paints	PCBs	HOLD- DO NOT ANALYZE
L0015, Aqua Blue On Drywall,Loc:80,Financial Services	2024-09-13	8:00	BULK								X			
L0016, White On Drywall,Loc:80,Financial Services	2024-09-13	8:00	BULK								X			
L0017, White/orange On Poured Concrete,Loc:80,Financial Se	2024-09-13	8:00	BULK								X			
L0018, Brown/blue On Metal Door And Window Frames,Loc:8	2024-09-13	8:00	BULK								X			

LABORATORY USE ONLY

CUSTODY SEAL Y / N		COOLER TEMPERATURES
Present	Intact	
✓	✓	

COOLING MEDIA PRESENT: Y / N

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #
	2024-09-13	12:00		2024/09/16	11:33	

Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas' standard Terms and Conditions. Signing of this Chain acceptance of our terms available at https://www.bvna.com/coc-terms-and-conditions

NONT-2024-09-3077

APPENDIX II-C

PCB Analytical Certificates

AEVITAS INC. (AYR)
ANALYTICAL CHEMISTRY DEPARTMENT
75 WANLESS COURT, AYR, ONTARIO, N0B 1E0, CANADA
WWW.AEVITAS.CA

Certificate of Analysis

Adam Lazette / Leslie Heywood

Pinchin Ltd. (Hamilton)
151 York Blvd., Suite 200, Hamilton, ON L8R 3L4

Date of Issue: Sep 19, 2024

Report Description: ***2 solid samples were submitted for the following chemical analysis***

Project Name:	Trafalgar Campus	**Date Sampled:**	Sep 13, 2024
Project No.:	336577.015	**Date Tested:**	Sep 18, 2024
Site Location:		**Sampled by:**	

Report Number: 24-1175

No.	Analyte	Result	Units	MDL	Comments	Technique / Test Method
1	*Sample ID.:* ***P0006 Putty, black glazing on interior window frames, Loc: 80***					
	PCBs in Solid	**<0.2**	mg/Kg	0.2		LAB-M06 (EPA 3550C/8082A modified)
2	*Sample ID.:* ***P0007 Caulking, white on concrete structure, Loc:79***					
	PCBs in Solid	**<0.2**	mg/Kg	0.2		LAB-M06 (EPA 3550C/8082A modified)

Results apply to the sample(s) as received.

Approved By:

Son C.H. Le, *(Chem.)*
Lab Manager
Phone: (519) 740-1333 Ext.: 1030
Fax: (519) 740-2320
Email: SonLe@aevitas.ca

The Analytical Chemistry Laboratory of Aevitas Inc. (Ayr) is accredited for specific tests in accordance with the recognized International Standard ISO/IEC 17025:2017, by the Canadian Association for Laboratory Accreditation (CALA) Inc. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated April 2017). The laboratory quality management system of Aevitas Inc. (Ayr) also operates in accordance with the principles of ISO 9001.

All Analytical data is subject to uncertainty which, may vary with sample matrices, sample preparation techniques and instrumental parameters. As a general guideline, uncertainty may be expressed as approximately +/- 50% of the reported value at or near the Method Detection Limit (MDL) and +/-10% or less, of the reported result that is greater than 10 times the MDL. Method Detection Limits are defined as approximately 3 times the standard deviation value (at 99% confidence level), which is obtained from replicate analysis of a low-level standard as per the Ontario MOE - MISA Protocol for the Sampling and Analysis of Industrial / Municipal Wastewater (2016). MDL determination is based on undiluted samples with relatively low matrix interferences. Where dilutions are required, the reported MDL value will be scaled proportionally.

All testing procedures follow strict guidelines and quality assurance / quality control (QA/QC) protocols. QA/QC data is available for review at any time upon client's request.

APPENDIX III
Methodology

1.0 GENERAL

An inspection was conducted to identify the type of Hazardous Building Materials incorporated in the structure and its finishes.

Information regarding the location and condition of hazardous building materials encountered and visually estimated quantities were recorded. The locations of any samples collected were recorded on small-scale plans. As-built drawings and previous reports were referenced where provided.

Sample collection was conducted in accordance with our Standard Operating Procedures.

1.1 Asbestos

The inspection for asbestos included friable and non-friable asbestos-containing materials (ACM). A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure.

A separate set of samples was collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of material. The homogeneous materials were determined by visual examination and available information on the phases of construction and prior renovations.

Samples were collected at a rate that is in compliance with the requirements of local regulations and guidelines. The sampling strategy was also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start / finish date of construction and associated usage of ACM. In some cases, manufactured products such as asbestos cement pipe were visually identified without sample confirmation.

The asbestos analysis was completed using a stop-positive approach. Only one result meeting the regulated criteria was required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos. The laboratory stopped analyzing samples from a homogeneous material once a result equal to or greater than the regulated criteria is detected in any of the samples of that material. All samples of a homogeneous material were analyzed if no asbestos is detected. In some cases, all samples were analyzed in the sample set regardless of result.

The analysis was performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

Analytical results were compared to the following criteria.

Jurisdiction*	Friable	Non-Friable
BC	0.5%[1]	0.5%
Alberta	Any Amount[2]	Any Amount[2]
Saskatchewan	>0.5%[1]	>1%
Manitoba	0.1%[1]	1%
Ontario	**0.5%**	**0.5%**
Nova Scotia	0.5%[1]	0.5%
New Brunswick, Prince Edward Island, Newfound and Labrador	1%	1%
Yukon, Nunavut, Northwest Territories	1%	1%
Federal	1%	1%

* If there is a conflict between federal and provincial criteria, the more stringent will apply.

Where building materials are described in the report as “non-asbestos” or “does not contain asbestos”, this means that either no asbestos was detected by the analytical method utilized in any of the multiple samples or, if detected, it is below the lower limit of an asbestos-containing material in the applicable regulation. Additionally, these terms are used for materials which historically are known to not include asbestos in their manufacturing.

1.2 Lead

Samples of distinctive paint finishes, and surface coatings present in more than a limited application, where removal of the paint is possible was collected. The samples were collected by scraping the painted finish to include base and covering applications.

Analysis for lead in paints or surface coatings was performed in accordance with EPA Method No. 3050B/Method No. 7420; flame atomic absorption.

Analytical results were compared to the following criteria.

Jurisdiction*	Units (%)	Units (ppm) / (mg/kg)
BC	None	None
Alberta	0.009	90
Saskatchewan	0.009	90

[1] Or any amount if vermiculite
[2] The Government of Alberta in their guideline document entitled the “Alberta Asbestos Abatement Manual” (August 2019), defines an Asbestos-Containing Material as a product or building material that contains asbestos in any quantity or percentage.

Manitoba	0.009	90
Ontario	**0.1**	**1000**
Nova Scotia	0.009	90
New Brunswick	0.009	90
Prince Edward Island	0.009	90
Newfoundland	0.009	90
Yukon	0.009	90
Nunavut, Northwest Territories	0.1	1000
Federal	0.009	90

* If there is a conflict between federal and provincial criteria, the more stringent will apply.

Other lead building products (e.g. batteries, lead sheeting, flashing) were identified by visual observation only.

1.3 Silica

Building materials known to contain crystalline silica (e.g. concrete, cement, tile, brick, masonry, mortar) were identified by visual inspection only. Pinchin did not perform sampling of these materials for laboratory analysis of crystalline silica content.

1.4 Mercury

Building materials, products or equipment (e.g. thermostats, barometers, pressure gauges, lamp tubes), suspected to contain mercury was identified by visually inspection only. Dismantling of equipment suspected of containing mercury was not performed. Sampling of these materials for laboratory analysis of mercury content was not performed.

1.5 Polychlorinated Biphenyls

The potential for light ballast and oil filled transformers to contain PCBs was based on the age of the building, a review of maintenance records and examination of labels or nameplates on equipment, where present and accessible. The information was compared to known ban dates of PCBs and Environment Canada publications.

Dry type transformers were presumed to be free of dielectric fluids and hence non-PCB.

Caulking, sealants, or paints were sampled and submitted for PCB analysis following EPA 3550C/8082A.

Fluids (mineral oil, hydraulic, Aroclor or Askarel) in transformers or other equipment were not sampled for PCB content.

1.6 Visible Mould

The presence of mould or water damage was determined by visual inspection of exposed building surfaces. If any mould growth or water damage was concealed within building cavities it was not addressed in this assessment.

Template: Methodology for Hazardous Building Materials Assessment, HAZ, January 26, 2023

APPENDIX IV

Location Summary Report

HMIS
HAZARDOUS MATERIALS INVENTORY SYSTEM

LOCATIONS LIST

PINCHIN
1.855.PINCHIN www.pinchin.com

Client:Sheridan College
Building Name: B Wing
Survey Date: 2024-09-13
Building Phases: A: 1970

Site: 1430 Trafalgar Road, Oakville, ON

Last Re-Assessment:

Location No.	Name or Description	Area ft²	Floor No.	Bldg. Phase	Notes
79	Human Resources Organizational Development & OH&S, room no. B237-A-B-C-D-E-F-G	2030	2	A	
80	Financial Services, room no. B244-A-B-C	2514	2	A	
124	Human Resources, room no. B255-A-B-C	650	2	A	

APPENDIX V

Hazardous Materials Summary Report / Sample Log

HMIS
HAZARDOUS MATERIALS INVENTORY SYSTEM

HAZARDOUS MATERIALS SUMMARY / SAMPLE LOG

PINCHIN
1.855.PINCHIN www.pinchin.com

Client:Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing** **Survey Date: 2024-09-13**

HAZMAT	Sample No	System/Component/Material/Sample Description	Locations	Bldg. Phase	LF	SF	EA	%	Type	Positive	Friability
Asbestos	V0020	Wall | | Drywall And Joint Compound | Wall, All, Drywall Compound, Loc. 78., Loc., 80., Loc. 82	79,80	A	0	4544	0	0	Chrysotile	Yes	NF
Asbestos	S0120 ABCDEFG	Ceiling, Wall | Bulkhead | Drywall And Joint Compound |	79,80,124	A	0	5944	0	0	Chrysotile	Yes	NF
Asbestos	S0121 ABC	Wall | Window Frame | Putty | Black Glazing On Interior Door Window Frames	79,80,124	A	250	0	0	0	None Detected	No	
Asbestos	S0122 ABCDEFG	Floor | | Mastic |	79,80,124	A	0	5194	0	0	None Detected	No	
Asbestos	S0123 ABC	Structure | Deck | Caulking | White On Concrete Structure	79,80	A	0	800	0	0	None Detected	No	
Asbestos	S0124 ABC	Structure | Deck | Paint | On Concrete Deck	79,80	A	0	800	0	0	None Detected	No	
Asbestos	V0000	Ceiling | | Ceiling Tiles (lay-in) | 2x4 Random Pinholes, Dated 10/30/97 & 07/23/03	79,80,124	A	0	2597	0	0	Non Asbestos	No	
Asbestos	V0000	Ceiling | | Ceiling Tiles (lay-in) | 2x4 Rough Surface, Fibreglass Composition	79,80,124	A	0	2597	0	0	Non Asbestos	No	
Asbestos	V0000	Wall | Window | Sealant | Black Sealant On Exterior Windows	80,124	A	400	0	0	0	Non Asbestos	No	
Asbestos	V0000	Wall | Window | Sealant | Black Rubber On Exterior Windows	79	A	300	0	0	0	Non Asbestos	No	
Paint	V0009	Structure | Concrete (poured) | Off-white On Deck	79,80	A	0	800	0	0		No	-
Paint	L0015	Wall | Drywall And Joint Compound | Aqua Blue On Drywall	79,80	A	0	800	0	0		No	-
Paint	L0016	Wall | Drywall And Joint Compound | White On Drywall	79,80,124	A	0	9588	0	0		No	-
Paint	L0017	Wall | Concrete (poured) | White/orange On Poured Concrete	79,80	A	0	900	0	0	Lead (Low)	Yes	-
Paint	L0018	Wall | Metal | Brown/blue On Metal Door And Window Frames	79,80,124	A	0	710	0	0		No	-
PCB	P0006	Caulking | Black Glazing Putty On Interior Door Window Frames	79,80,124	A	250	0	0	0	-	No	-
PCB	P0007	Caulking | White On Concrete Structure	79,80	A	0	800	0	0	-	No	-
PCB	V0000	Caulking	79,80,124	A	700	0	0	0	-	No	-
Hg	V9500	Light Fixture	79,80,124	A	0	0	0	100	Presumed Hg	Yes	-
Hg	V0000	Thermostat	79,80,124	A	0	0	0	100	-	No	-

Legend:

Sample number	
S####	Asbestos sample collected
L####	Paint sample collected
P####	PCB sample collected
M####	Mould sample collected
V####	Material visually similar to numbered sample collected
V0000	Known non Hazardous Material
V9000	Material is visually identified as Hazardous Material
V9500	Material is presumed to be Hazardous Material
[Loc. No.]	Abated Material

Units	
SF	Square feet
LF	Linear feet
EA	Each
%	Percentage

NF	Non Friable material.
F	Friable material
PF	Potentially Friable material

APPENDIX VI

HMIS All Data Report

Client: Sheridan College
Location: #79 : Human Resources Organizational Development & OH&S
Survey Date: 2024-09-13

Site: 1430 Trafalgar Road, Oakville, ON
Floor: 2

Building Name: B Wing
Room #: B237-A-B-C-D-E-F-G
Last Re-Assessment: 0000-00-00

Area (sqft): 2030

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling		Ceiling Tiles (lay-in), 2x4 rough surface, fibreglass composition			C	Y		1015			SF	V0000	Non-Asbestos		None	
Ceiling		Ceiling Tiles (lay-in), 2x4 random pinholes, dated 10/30/97 & 07/23/03			C	Y		1015			SF	V0000	Non-Asbestos		None	
Duct		Fibreglass		Foil Face	C	N										
Duct		Not Insulated			C	N										
Floor		Concrete (poured)		Carpet	D	N		2030			SF					
Floor		Mastic		Carpet	D	N		2030			SF	S0122CDE FG	None Detected	N.D.	None	
Mechanical Equipment	Not Found															
Piping		Fibreglass	Fitting	Paper	C	N										
Piping		Fibreglass	Straight	Paper	C	N										
Structure	Deck	Concrete (poured)			C	N										
Structure	Deck	Concrete (poured)		Paint	C	N										
Structure	Deck	Paint, On concrete deck			C	N		600			SF	S0124ABC	None Detected	N.D.	None	
Structure	Deck	Caulking, White on concrete structure			C	N		600			SF	S0123ABC	None Detected	N.D.	None	
Wall		Drywall and joint compound		Paint	A	Y		2030(7)			SF	V0020	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall		Drywall and joint compound		Paint	A	Y		2030(7)				S0120DE	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall		Masonry			A	Y										
Wall	Window	Sealant, black rubber on exterior windows			A	Y		300			LF	V0000	Non-Asbestos		None	
Wall	Window Frame	Putty, Black glazing on interior door window frames			A	Y		140				S0121BC	None Detected	N.D.	None	

Client: Sheridan College
Location: #79 : Human Resources Organizational Development & OH&S
Survey Date: 2024-09-13

Site: 1430 Trafalgar Road, Oakville, ON
Floor: 2

Building Name: B Wing
Room #: B237-A-B-C-D-E-F-G
Last Re-Assessment: 0000-00-00

Area (sqft): 2030

PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard
Wall	Drywall and joint compound	500		SF	V0015	Aqua blue on drywall	Pb: <0.00023 %	No
Wall	Drywall and joint compound	3560		SF	V0016	White on drywall	Pb: 0.0051 %	No
Wall	Concrete (poured)	600		SF	V0017	White/orange on poured concrete	Pb: 0.011 %	Lead (Low)
Wall	Metal	300		SF	L0018	Brown/blue on metal door and window frames	Pb: <0.0018 %	No
Structure	Concrete (poured)	600		SF	V0009	Off-white on deck	Pb: 0.0043 %	No

Client: Sheridan College
Location: #79 : Human Resources Organizational

Site: 1430 Trafalgar Road, Oakville, ON
Floor: 2

Building Name: B Wing
Room #: B237-A-B-C-D-E-F-G

Area (sqft): 2030

Development & OH&S
Survey Date: 2024-09-13

Last Re-Assessment: 0000-00-00

MERCURY				
Component	**Quantity**	**Unit**	**Sample**	**Hazard**
Light Fixture	100	%	V9500	Presumed
Thermostat	100	%	V0000	

Client: Sheridan College
Site: 1430 Trafalgar Road, Oakville, ON
Building Name: B Wing
Location: #79 : Human Resources Organizational Development & OH&S
Floor: 2
Room #: B237-A-B-C-D-E-F-G
Area (sqft): 2030
Survey Date: 2024-09-13
Last Re-Assessment: 0000-00-00

PCB						
Component	**Quantity**	**Unit**	**Sample**	**Sample Description**	**Amount**	**PCB**
Caulking	600	SF	P0007	White on concrete structure	<0.2 mg/kg	No
Caulking	140	LF	V0006	Black glazing putty on interior door window	<0.2 mg/kg	No
Caulking	300	LF	V0000	black rubber sealant on exterior windows		No

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #80 : Financial Services **Floor: 2** **Room #: B244-A-B-C** **Area (sqft): 2514**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

ASBESTOS

System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling		Ceiling Tiles (lay-in), 2x4 rough surface, fibreglass composition			C	Y		1257			SF	V0000	Non-Asbestos		None	
Ceiling		Ceiling Tiles (lay-in), 2x4 random pinholes, dated 10/30/97 & 07/23/03			C	Y		1257			SF	V0000	Non-Asbestos		None	
Duct		Fibreglass		Foil Face	C	N										
Duct		Not Insulated			C	N										
Floor		Concrete (poured)		Carpet	D	N		2514			SF					
Floor		Mastic		Carpet	D	N		2514				S0122AB	None Detected	N.D.	None	
Mechanical Equipment	Not Found															
Piping		Fibreglass	Fitting	Paper	C	N										
Piping		Fibreglass	Straight	Paper	C	N										
Structure	Deck	Concrete (poured)			C	N										
Structure	Deck	Concrete (poured)		Paint	C	N										
Structure	Deck	Paint, On concrete deck			C	N		200			SF	V0124	None Detected	N.D.	None	
Structure	Deck	Caulking, White on concrete structure			C	N		200			SF	V0123	None Detected	N.D.	None	
Wall		Drywall and joint compound		Paint	A	Y		2514(7)			SF	V0020	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall		Drywall and joint compound		Paint	A	Y		2514(7)				S0120ABC	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall	Window	Sealant, Black sealant on exterior windows			A	Y		300			LF	V0000	Non-Asbestos		None	
Wall	Window Frame	Putty, Black glazing on interior door window frames			A	Y		50			LF	S0121A	None Detected	N.D.	None	

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #80 : Financial Services **Floor: 2** **Room #: B244-A-B-C** **Area (sqft): 2514**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

PAINT

System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard
Wall	Drywall and joint compound	300		SF	L0015	Aqua blue on drywall	Pb: <0.00023 %	No
Wall	Drywall and joint compound	4728		SF	L0016	White on drywall	Pb: 0.0051 %	No
Wall	Concrete (poured)	300		SF	L0017	White/orange on poured concrete	Pb: 0.011 %	Lead (Low)
Wall	Metal	300		SF	L0018	Brown/blue on metal door and window frames	Pb: <0.0018 %	No
Structure	Concrete (poured)	200		SF	V0009	Off-white on deck	Pb: 0.0043 %	No

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #80 : Financial Services **Floor: 2** **Room #: B244-A-B-C** **Area (sqft): 2514**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

MERCURY				
Component	**Quantity**	**Unit**	**Sample**	**Hazard**
Thermostat	100	%	V0000	
Light Fixture	100	%	V9500	Presumed

Client: Sheridan College
Location: #80 : Financial Services
Survey Date: 2024-09-13

Site: 1430 Trafalgar Road, Oakville, ON
Floor: 2

Building Name: B Wing
Room #: B244-A-B-C
Last Re-Assessment: 0000-00-00

Area (sqft): 2514

PCB						
Component	**Quantity**	**Unit**	**Sample**	**Sample Description**	**Amount**	**PCB**
Caulking	50	LF	P0006	Black glazing putty on interior door window f	<0.2 mg/kg	No
Caulking	300	LF	V0000	black rubber sealant on exterior windows		No
Caulking	200	SF	V0007	White on concrete structure	<0.2 mg/kg	No

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #124 : Human Resources **Floor: 2** **Room #: B255-A-B-C** **Area (sqft): 650**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

ASBESTOS																
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard	Friable
Ceiling		Ceiling Tiles (lay-in), 2x4 rough surface, fibreglass composition			C	Y		325			SF	V0000	Non-Asbestos		None	
Ceiling		Ceiling Tiles (lay-in), 2x4 random pinholes, dated 10/30/97 & 07/23/03			C	Y		325			SF	V0000	Non-Asbestos		None	
Ceiling	Bulkhead	Drywall and joint compound		Paint	C	Y		100(7)			SF	S0120F	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Duct		Fibreglass		Foil Face	C	N										
Duct		Not Insulated			C	N										
Floor		Concrete (poured)		Carpet	D	N		650			SF					
Floor		Mastic		Carpet	D	N		650			SF	V0122	None Detected	N.D.	None	
Mechanical Equipment	Not Found															
Piping		Fibreglass	Fitting	Paper	C	N										
Piping		Fibreglass	Straight	Paper	C	N										
Structure	Deck	Concrete (poured)			C	N										
Wall		Drywall and joint compound		Paint	A	Y		1300(7)			SF	S0120G	Chrysotile	0.5-5%	Confirmed Asbestos	NF
Wall	Window	Sealant, Black sealant on exterior windows			A	Y		100			LF	V0000	Non-Asbestos		None	
Wall	Window Frame	Putty, Black glazing on interior door window frames			A	Y		60			LF	V0121	None Detected	N.D.	None	

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #124 : Human Resources **Floor: 2** **Room #: B255-A-B-C** **Area (sqft): 650**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Hazard
Wall	Drywall and joint compound	1300		SF	V0016	White on drywall	Pb: 0.0051 %	No
Wall	Metal	110		SF	V0018	Brown/blue on metal door and window frames	Pb: <0.0018 %	No

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #124 : Human Resources **Floor: 2** **Room #: B255-A-B-C** **Area (sqft): 650**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

MERCURY				
Component	Quantity	Unit	Sample	Hazard
Light Fixture	100	%	V9500	Presumed
Thermostat	100	%	V0000	

Client: Sheridan College **Site: 1430 Trafalgar Road, Oakville, ON** **Building Name: B Wing**
Location: #124 : Human Resources **Floor: 2** **Room #: B255-A-B-C** **Area (sqft): 650**
Survey Date: 2024-09-13 **Last Re-Assessment: 0000-00-00**

PCB						
Component	**Quantity**	**Unit**	**Sample**	**Sample Description**	**Amount**	**PCB**
Caulking	100	LF	V0000	black rubber sealant on exterior windows		No
Caulking	60	LF	V0006	Black glazing putty on interior door window f	<0.2 mg/kg	No

Legend:

Sample number	
S####	Asbestos sample collected
L####	Paint sample collected
P####	PCB sample collected
M####	Mould sample collected
V####	Material is visually identified to be identical to S####
V0000	Known non hazardous material
V9000	Material visually identified as a Hazardous Material
V9500	Material is presumed to be a hazardous material

Units	
SF	Square feet
LF	Linear feet
EA	Each
%	Percentage
LF	Linear feet

Other	
A	Access
V	Visible
AP	Air Plenum
F	Friable material
NF	Non Friable material
PF	Potentially Friable material
Pb	Lead
Hg	Mercury
As	Arsenic
Cr	Chromium

Access	
A	Accessible to all building occupants
B	Accessible to maintenance and operations staff without a ladder
C	Accessible to maintenance and operations staff with a ladder. Also rarely entered, locked areas
D	Not normally accessible

Condition	
Good	No visible damage or deterioration
Fair	Minor, repairable damage, cracking, delamination or deterioration
Poor	Irreparable damage or deterioration with exposed and missing material

Visible	
Y	The material is visible when standing on the floor of the room, without the removal or opening of other building components (e.g. ceiling tiles or access panels).
N	The material is not visible to view when standing on the floor of the room and requires the removal of a building component (e.g. ceilings tiles or access panels) to view and access. Includes rarely entered crawlspaces, attic spaces, etc. Observations will be limited to the extent visible from the access points.
L	The material is partially visible to view when standing on the floor of the room and requires the removal of a building component (e.g. ceiling system or access panels) to view completely and access. Includes partially viewed access points to crawlspaces, attic spaces, etc. without entering. Observations are limited to the extent visible from the access points.

Air Plenum	
Yes or No	The material is in a return air plenum or in a direct airstream or there is evidence of air erosion (e.g. duct for heating or cooling blowing directly on or across an ACM). This field is only completed where Air Plenum consideration is required by regulation.

Colour Coding	
	The material is a hazardous material, either by analytical results or by visible identification.
	The material is presumed to be a hazardous material, based on visual appearance, and was not sampled due to limited access or the non-destructive nature of sampling.

Action

(1)	**Clean up of ACM Debris**	**(2)**	**Precautions for Access Which may Disturb ACM Debris**	**(3)**	**ACM removal**
(4)	**Precautions for Work Which may Disturb ACM in Poor Condition**	**(5)**	**Proactive ACM removal (Minimum repair required for fair condition)**	**(6)**	**ACM repair**
(7)	**Management program and surveillance**				

Site Review Report

Project Information

Date: October 22, 2024	Pinchin Representative: Adam Lazette	Report Number: 1 Pinchin File: 336577.017
Project Name: Asbestos Abatement - Rooms B244, B237, and B255	Site Address: 1430 Trafalgar Road, Oakville, Ontario	
Client: Sheridan College		Client File Number: P01955
Contractor: Alliance Environmental		Arrival on Site: 4:30pm Number of Workers: 4

Distribution:

cc:	Nicole Whiteside	Sheridan College	nicole.whiteside@sheridancollege.ca
	Lisa Tucker	Sheridan College	lisa.tucker@sheridancollege.ca
	James Burns	Alliance Environmental	JBurns@allianceenvironmental.com
	Dean Power	Alliance Environmental	Dean.Power@allianceenvironmental.com

Description of Work in Progress

Material	Work Area	Work in Progress	Type of Review	Status
Asbestos	Work Area: B244, B244B and B244C (HMIS Location 80)	Type 2 removal and disposal of drywall bulkheads and walls finished with asbestos-containing joint compound.	Clean Site Preparation	Acceptable
			Bulk Removal and Air Monitoring	Acceptable

Discussion Points and Action Items	Pinchin found the containment setup to be acceptable. The contractor was given approval to commence with the contaminated work.

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
424116	Occupied	Corridor, adjacent to B244	October 22, 2024, 4:45 PM	15.2	180	2,736	0.002
424117	Occupied	Corridor, adjacent to B244	October 22, 2024,	15.2	180	2,736	0.004

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
			4:45 PM				
415690	Occupied	Corridor, adjacent to B244	October 22, 2024, 4:45 PM	15.2	180	2,736	0.003
415700	Field Blank	Field Blank	-	-	-	-	<5.5 fibres detected

f/cc - fibre per cubic centimetre
Calibration of air sampling pump checked before and after sample collection.

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

Other	Acceptable	Pinchin performed a clean site preparation review prior to the Type 2 removal and disposal of drywall bulkheads and walls with asbestos-containing joint compound (Photos 1 and 2). The containment setup was found to be acceptable. Pinchin performed a bulk removal and air monitoring review during the Type 2 removal and disposal of drywall bulkheads and walls with asbestos-containing joint compound. The work being completed was found to be acceptable.
Site Isolation & Facilities/Equipment	Acceptable	Site isolation was acceptable and consisted of an enclosure constructed with polyethylene sheeting and tape. A combined worker and decontamination (decon) facility was located at the entrance to the work area. The contractors were observed to have proper equipment which included a vacuum with HEPA filters, amended water, airless sprayers, lockdown agent, tape, rags, hand tools, ladders, etc. Two (2) negative air units were observed to be exhausting air indoors. Negative air units were D.O.P tested on Oct 21, 2024 (Photo 3). An asbestos warning sign was posted on the entrance on the exterior flap of the decon facility (Photo 4).
Personal Protective Equipment	Acceptable	All workers performing the contaminated work were observed wearing the proper PPE, which includes full body disposable coveralls with a hood and elastic cuffs and at a minimum a half-face respirator with P100 filters.
Waste Handling	Acceptable	All asbestos-containing waste is to be placed in yellow asbestos labelled bags and double bagged prior to removal from the work area.
Samples and Testing	Acceptable	Pinchin collected three occupied air samples outside of the enclosure. One field blank was also collected for quality control purposes. All the samples were collected using high volume pumps calibrated to a

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

		minimum of 15.2 litres of air per minute and ran for 180 minutes, collecting an average of 2,736 litres of air. Phase Contrast Microscopy (PCM) analysis of the collected air samples showed all sampled to be below the criteria of 0.01 fibres per cubic centimeter of air. PCM analysis of the field blank showed <5.5 fibres. PCM analysis was performed following the NIOSH 7400 method.

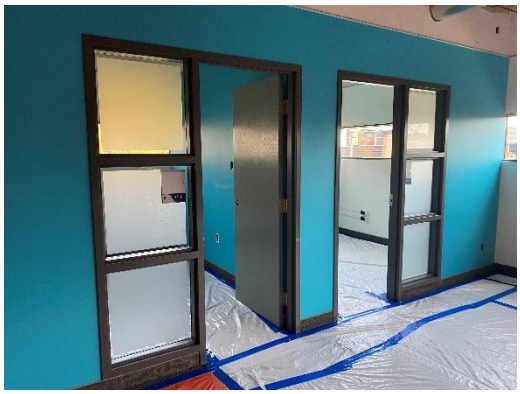

Photo 1

Photo 2

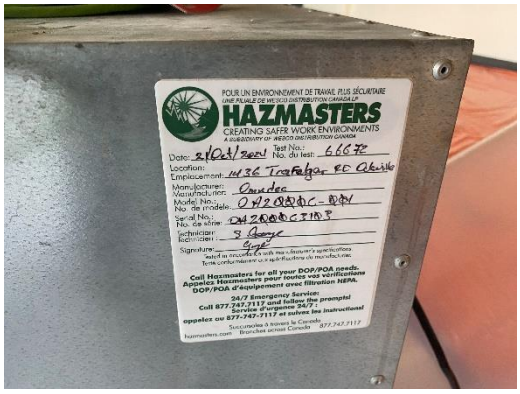

Photo 3

Photo 4

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Template: Site Review Report Template HAZ, January 8, 2024

Site Review Report

Project Information

Date: October 25, 2024	Pinchin Representative: Adam Lazette	Report Number: 2 Pinchin File: 336577.017
Project Name: Asbestos Abatement - Rooms B244, B237, and B255	Site Address: 1430 Trafalgar Road, Oakville, Ontario	
Client: Sheridan College		Client File Number: P01955
Contractor: Alliance Environmental		Arrival on Site: 7:30pm Number of Workers: 4

Distribution:

cc:	Nicole Whiteside	Sheridan College	nicole.whiteside@sheridancollege.ca
	Lisa Tucker	Sheridan College	lisa.tucker@sheridancollege.ca
	James Burns	Alliance Environmental	JBurns@allianceenvironmental.com
	Dean Power	Alliance Environmental	Dean.Power@allianceenvironmental.com

Description of Work in Progress

Material	Work Area	Work in Progress	Type of Review	Status
Asbestos	Work Area: B244, B244B and B244C (HMIS Location 80)	Type 2 removal and disposal of drywall bulkheads and walls finished with asbestos-containing joint compound.	Visual Clearance	Acceptable
			Clearance Sampling	Acceptable

Discussion Points and Action Items	Pinchin found the work completed to be acceptable.

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
415688	Clearance	Enclosure	October 25, 2024, 8:30 PM	15.2	60	912	0.004
424115	Clearance	Enclosure	October 22, 2024, 8:30 PM	15.2	60	912	0.006

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
424112	Clearance	Enclosure	October 22, 2024, 8:30 PM	15.2	60	912	0.006
415672	Field Blank	Field Blank	-	-	-	-	<5.5 fibres detected

f/cc - fibre per cubic centimetre
Calibration of air sampling pump checked before and after sample collection.

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

Other	Acceptable	Pinchin performed a visual clearance and clearance sampling review following the Type 2 removal and disposal of drywall bulkheads and walls with asbestos-containing joint compound (Photos 1 and 2). The work performed was found to be acceptable.
Site Isolation & Facilities/Equipment	Acceptable	Site isolation remained acceptable at the time of the site review. The Work Area consisted of an enclosure constructed with polyethylene sheeting and tape. A combined worker and decontamination (decon) facility was located at the entrance to the work area.
Waste Handling	Acceptable	All asbestos waste had been removed from the Work Area prior to this site review.
Samples and Testing	Acceptable	Pinchin collected three clearance air samples outside of the enclosure. One field blank was also collected for quality control purposes. All the samples were collected using high volume pumps calibrated to a minimum of 15.2 litres of air per minute and ran for 60 minutes, collecting an average of 912 litres of air. Phase Contrast Microscopy (PCM) analysis of the collected air samples showed all sampled to be below the criteria of 0.05 fibres per cubic centimeter of air. PCM analysis of the field blank showed <5.5 fibres. PCM analysis was performed following the NIOSH 7400 method.

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

Photo 1

Photo 2

Site Review Report

Project Information

Date: October 28, 2024	Pinchin Representative: Adam Lazette	Report Number: 3 Pinchin File: 336577.017
Project Name: Asbestos Abatement - Rooms B244, B237, and B255	Site Address: 1430 Trafalgar Road, Oakville, Ontario	
Client: Sheridan College		Client File Number: P01955
Contractor: Alliance Environmental		Arrival on Site: 5:30pm Number of Workers: 2

Distribution:

cc:	Nicole Whiteside	Sheridan College	nicole.whiteside@sheridancollege.ca
	Lisa Tucker	Sheridan College	lisa.tucker@sheridancollege.ca
	James Burns	Alliance Environmental	JBurns@allianceenvironmental.com
	Dean Power	Alliance Environmental	Dean.Power@allianceenvironmental.com

Description of Work in Progress

Material	Work Area	Work in Progress	Type of Review	Status
Asbestos	Work Area: Corridor (HMIS Location 77)	Type 2 glove bag removal and disposal of pipe fittings and straight sections of piping with asbestos-containing thermal insulation.	Other	Acceptable

Discussion Points and Action Items	Pinchin and the Contractor reviewed the ceiling space in the Corridor (HMIS Location 77) and did not identify any asbestos-containing thermal insulation around pipe fittings or straight sections of piping within the Work Area.

Observations – Work Area 1: Corridor (HMIS Location 77)

Other	Acceptable	Pinchin and the Contractor reviewed the ceiling space in the Corridor (HMIS Location 77) and referenced the drawings, but did not identify any asbestos-containing thermal insulation around pipe fittings or straight sections of piping within the Work Area. All insulation observed was non-asbestos fibreglass with foil or paper jacketing (Photo 1).
Cleaning	Acceptable	The Work Area was vacuumed and cleaned after reviewing the ceiling space.

Observations – Work Area 1: Corridor (HMIS Location 77)

Photo 1

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Template: Site Review Report Template HAZ, January 8, 2024

March 23, 2017

Sheridan College
1430 Trafalgar Road
Oakville, Ontario N3H 4R6

E-mail: kelly.kwon@sheridancollege.ca

Attention: Kelly Kwon
Occupational Health and Safety Specialist

Re: Asbestos-Containing Materials Reassessment
B-Wing, Trafalgar Campus, 1430 Trafalgar Road, Oakville, Ontario
Pinchin File: 200417.003

Sheridan College retained Pinchin Ltd. (Pinchin) to conduct an asbestos-containing building materials reassessment of B-Wing, Trafalgar Campus, 1430 Trafalgar Road, Oakville, Ontario. This reassessment was performed for the purpose of long-term management of asbestos and not for construction or renovation purposes. Additional intrusive investigations and testing may be required prior to construction or renovation.

Evan Faubert of Pinchin performed the reassessment on February 27, 2017. The previous reassessment was performed on March 1, 2016. The complete findings for this site are documented on the HMIS online database.

1.0 SCOPE

The scope of the re-assessment survey includes building materials containing friable and non-friable asbestos-containing materials (ACM) that were identified in the original assessment report or previous reports. The re-assessment is subjected to the same exclusions as the original assessment.

2.0 METHODOLGY

Pinchin made reference to the existing ACM report(s) for the site and HMIS data. Pinchin inspects all accessible areas where ACM were previously identified. As per the original assessment, concealed locations such as ceiling spaces above solid ceilings, shafts and chases are accessed via existing access panels. Pinchin does not conduct demolition of walls, solid ceilings, structural items, interior finishes or exterior building finishes, to determine the presence of concealed materials.

3.0 FINDINGS

For full information on location, condition, access, etc. of ACM refer to report "*HMIS Confirmed Asbestos & Presumed Asbestos Material*" present in Appendix I.

Refer to the original assessment reports for excluded/not sampled presumed ACM, these materials are not listed in HMIS.

The following areas of the building were not accessible due to access limitations:

- Location 13: Room B17 - Records Storage
- Location 15: Room B15 - Men's Locker Room
- Location:102: Room B334 - Office
- Location 109: Room 364 - Office

3.1 Friable ACM

All of the friable ACM was found to be in good condition with the exception of damaged ACM listed in Section 4.0 below.

3.2 Non-Friable ACM

All of the non-friable ACM was found to be in good condition.

4.0 RECOMMENDATIONS

Perform a re-assessment of asbestos materials on an annual basis. Perform the next re-assessment of ACM prior to February 2018 to remain in compliance.

Perform the remedial work outlined in the table below to comply with existing regulations, due to the condition and location of the material:

Location, Quantity/Material and Recommended Procedure	Photographs
Location 112: 1 damaged elbow fitting on green pipe near entrance, Type 2 repair	
Location 117: 1 damaged elbow fitting on white pipe near door to roof, Type 2 repair	

5.0 LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third

party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

6.0 CLOSURE

Should you have any questions or concerns regarding the contents of this letter, please contact the undersigned.

Yours truly,

Pinchin Ltd.

Prepared by:

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Reviewed by:

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J:\200000s\0200417.000 SheridanCollege2017Projects\0200417.003 SheridanCollege,AnnualReassessment\Deliverables\Reassessment Letters\Trafalgar\200417.003 Asbestos Reassessment Letter B Wing, Trafalgar Campus Sheridan College March 22, 2017.docx

Template: Master Letter Template, January 3, 2017

APPENDIX I

CONFIRMED AND PRESUMED ASBESTOS REPORT

Client: Sheridan College **Site:** Trafalgar Campus

Building Number(s):

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 1 **Location Name: Machinery Room 7** **Floor: B** **Room #: BB24** **Square ft: 904**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Mechanical Equipment		Mastic	Joint		B	Y	200	(7)					LF	S0026	Confirmed Asbestos	Non-Friable

Note: Abatement of tanks and damaged fittings completed as part of Dec 2015 work. Pinchin File #104462.008. Abatement of fittings associated with heat exchanger upgrades completed March 2016, Pinchin file #104462.026. Abatement of remaining parging cement on pipe fittings and parging cement firestopping completed December 2016, Pinchin File: 115297.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 2 **Location Name: Men's Washroom** **Floor: B** **Room #:** **Square ft: 77**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0002	Confirmed Asbestos	Non-Friable

Note: Parging cement on pipe fittings abated in December 2016, Pinchin File: 115297.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 5 **Location Name: Daycare Office** **Floor: B** **Room #: B22** **Square ft: 373**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound		N/A	A	Y	100	(7)					%	S0002	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 6 **Location Name: Storage** **Floor: B** **Room #: 22A** **Square ft: 58**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	58	(7)					SF	S0003	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0002	Confirmed Asbestos	Non-Friable

Note: Parging cement on pipe fittings abated in December 2016, Pinchin File: 115297.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 11 **Location Name: Parking Services Office and Storage** **Floor: B** **Room #: B 19** **Square ft: 983**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0002	Confirmed Asbestos	Non-Friable

Note: Abatement of fittings completed March 2016, Pinchin file #104462.032. Parging cement firestopping abated in December 2016, Pinchin File: 115297.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 12 **Location Name: Maintenance Room** **Floor: B** **Room #: B 18** **Square ft: 1439**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			B	Y	100	(7)					%	V0002	Confirmed Asbestos	Non-Friable
Duct		Mastic			C	Y	100	(7)					%	S0024	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 13 **Location Name: Records Storage** **Floor: B** **Room #: B 17** **Square ft: 722**
No access to room

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					

Note: 2017 Reassessment Pinchin project#200417.003 Dec 2015 - removed 2 fittings Pinchin File 104462.008

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 14 **Location Name: Cafeteria Locker Room** **Floor: B** **Room #: B 16** **Square ft: 396**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable

Note: VSF is non-asbestos based on the date of installation. Parging cement on pipe fittings abated in December 2016, Pinchin File: 115297.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 15 **Location Name: Men's Locker Room - Cafeteria** **Floor: B** **Room #: b 15** **Square ft: 226**
No access to room

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					

Note: 2017 Reassessment pinchin project #200417.003 VSF is non-asbestos based on dated of installation. Parging cement on pipe fittings abated in December 2016, Pinchin File: 115297.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 16 **Location Name: Office** **Floor: B** **Room #: B 15** **Square ft: 295**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound		N/A	A	Y	100	(7)					%	V0002	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 19 **Location Name: East Corridor** **Floor: B** **Room #:** **Square ft: 2431**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable
Piping		Parging Cement	Fitting		C	N	20	(7)					EA	V0001	Confirmed Asbestos	Friable
Other	Fire Stop	Parging Cement	Not Applicable	N/A	C	N	10	(7)					SF	S0005	Confirmed Asbestos	Friable

Note: 2017 Reassessment pinchn proj#200417.003 (See Note Loc. 13, AT-01).

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 21 **Location Name: Building Operations & Ministry/Brand Strategy** **Floor: B** **Room #: BB13** **Square ft: 2071**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 22 **Location Name: Facilities Maintenance** **Floor: B** **Room #: BB 11** **Square ft: 1710**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	C	N	5	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: Abated drywall during 2014 renovation.

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 23 **Location Name: Media Arts Room** **Floor: B** **Room #: BB 10** **Square ft: 320**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	10	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: RENO: locations 23 & 24 have been merged

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 26 **Location Name: Janitor Storage** **Floor: B** **Room #: BB 32** **Square ft: 377**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	C	Y	30	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: 2017 Reassessment pinchin proj#200417.003 Dec 2015 removed 5 fittings and VFT removed and replaced. Pinchin File #104462.008

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 27 **Location Name: Security Office** **Floor: B** **Room #: BB 31** **Square ft: 234**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	C	Y	8	(7)					EA	V0001	Confirmed Asbestos	Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 29 **Location Name: Office Space** **Floor: B** **Room #: BB28/BB29** **Square ft: 757**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound		N/A	A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	10	(7)					EA	V0001	Confirmed Asbestos	Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	8	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 30 **Location Name: Office** **Floor: B** **Room #: BB 27** **Square ft: 381**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	C	N	10	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 31 **Location Name: Classrooms** **Floor: B** **Room #: BB 26** **Square ft: 1950**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	35	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: Reno: locations 31 & 32 have been merged (all one room now) Walls all New- Renovation August 2007

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 33 **Location Name: Service Tunnels** **Floor: B** **Room #:** **Square ft: 1557**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	B	Y	200	(7)					EA	S0001	Confirmed Asbestos	Friable

Note: Dec 2015 repaired 5 fittings. Pinchin File #104462.008. June 2016 removed 7 fittings Pinchin file#115297.001

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 36 **Location Name: Pipe Chase & Janitor Closet** **Floor: 1** **Room #:** **Square ft: 124**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	B	Y	10	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: Dec 2015 repaired 1 fitting. Pinchin File #104462.008

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 38 **Location Name: Corridor** **Floor: 1** **Room #:** **Square ft: 7312**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Ceiling	All	Drywall and joint compound	Not Applicable	N/A	C	Y	100	(7)					%	S0015	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	25	(7)					EA	V0001	Confirmed Asbestos	Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 39 **Location Name: Grenville Copy Centre** **Floor: 1** **Room #:** **Square ft: 800**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable
Piping	All	Parging Cement	Not Applicable	Canvas	C	Y	5	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 40 **Location Name: Student Services** **Floor: 1** **Room #: B104/B106** **Square ft: 3629**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 41 **Location Name: Office Area** **Floor: 1** **Room #: B101-B103** **Square ft: 5460**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor		VAT and Mastic Adhesive			A	Y	150	(7)					SF	V0003	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0013	Confirmed Asbestos	Non-Friable

Note: Ceiling Tile At-08 was not sampled, due to manufacture date of Dec. 2004. VFT in Kitchen.

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 42 **Location Name: Grassroots** **Floor: 1** **Room #:** **Square ft: 241**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 45 **Location Name: Tim Horton's** **Floor: 1** **Room #:** **Square ft: 826**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	Ceramic Tiles	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 46 **Location Name: Sound Stage** **Floor: 1** **Room #: B 122** **Square ft: 1390**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)	10	(7)			LF	V0013	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 47 **Location Name: Auditorium** **Floor: 1** **Room #: B 124** **Square ft: 1056**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Ceiling	All	Drywall and joint compound	Not Applicable	N/A	C	Y	100	(7)					%	V0015	Confirmed Asbestos	Non-Friable
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0015	Confirmed Asbestos	Non-Friable
Piping	N/A	Parging Cement	Fitting	N/A	C	N	X						%	V9500	Presumed Asbestos	Friable

Note: Ceiling space inaccessible due to elevated height.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 48 **Location Name: Auditorium** **Floor: 1** **Room #: B 125** **Square ft: 1430**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Ceiling	All	Drywall and joint compound	Not Applicable	N/A	C	Y	100	(7)					%	V0015	Confirmed Asbestos	Non-Friable

Note: Ceiling space inaccessible due to elevated height.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 49 **Location Name: Equipment Pick-up Area** **Floor: 1** **Room #: B 122a** **Square ft: 82**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	82	(7)					SF	V0003	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 50 **Location Name: Media Equipment Storage** **Floor: 1** **Room #: B 122d** **Square ft: 593**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 51 **Location Name: Classroom** **Floor: 1** **Room #: B 115** **Square ft: 720**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 52 **Location Name: Classroom** **Floor: 1** **Room #: B115 a** **Square ft: 634**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 53 **Location Name: Viewing Room** **Floor: 1** **Room #: b115 B** **Square ft: 225**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0013	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 54 **Location Name: Editing Room** **Floor: 1** **Room #: B115e** **Square ft: 201**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor		VAT and Mastic Adhesive			A	Y	201	(7)					SF	V0003	Confirmed Asbestos	Non-Friable
Ceiling	Bulkhead	Drywall and joint compound	Not Applicable	N/A	D	Y	100	(7)					%	V0015	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	C	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Note: Ceiling Tile not Sampled (AT-06) due to manufacture date, May 2001.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 55 **Location Name: Offices** **Floor: 1** **Room #: B115 c** **Square ft: 385**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Ceiling	All	Drywall and joint compound	Not Applicable	N/A	C	Y	385	(7)					SF	S0015	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	C	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 56 **Location Name: Production Office** **Floor: 1** **Room #: B115d** **Square ft: 201**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	201	(7)					SF	S0016	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)	4	(7)			LF	V0013	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 57 **Location Name: Storage for Sound Studies** **Floor: 1** **Room #: B122b** **Square ft: 154**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	82	(7)					SF	V0003	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 58 **Location Name: Projection Room** **Floor: 1&2** **Room #: B 122c** **Square ft: 139**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	39	(7)					SF	S0003	Confirmed Asbestos	Non-Friable
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 60 **Location Name: Offices** **Floor: 1** **Room #: B116-B118** **Square ft: 1200**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	A	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 61 **Location Name: Offices** **Floor: 1** **Room #: B119, B120** **Square ft: 209**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Ceiling	All	Drywall and joint compound	Not Applicable	N/A	A	Y	200	(7)					SF	S0015	Confirmed Asbestos	Non-Friable
Walls	A	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 62 **Location Name: Office** **Floor: 1** **Room #: B121** **Square ft: 106**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 63 **Location Name: Corridor (Media)** **Floor: 1** **Room #:** **Square ft: 853**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)	4	(7)			%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 64 **Location Name: Office/Drop In Centre** **Floor: 1** **Room #: B 114** **Square ft: 649**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 65 **Location Name: Bookstore** **Floor: 1** **Room #: B136** **Square ft: 5950**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	5	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 66 **Location Name: Bookstore Stock & Office** **Floor: 1** **Room #: B 138** **Square ft: 876**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V9500	Presumed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	5	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 67 **Location Name: Bookstore Corridor & Storage** **Floor: 1** **Room #:** **Square ft: 504**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable
Piping		Parging Cement			C	Y	4	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: Dec 2015 repaired 1 fittings. Pinchin File 104462.008.

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 68 **Location Name: Office** **Floor: 1** **Room #: B 141** **Square ft: 259**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 69 **Location Name: Box Office** **Floor: 1** **Room #: B 126** **Square ft: 175**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	2	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 70 **Location Name: Aboriginal Initiatives** **Floor: 1** **Room #: B 127** **Square ft: 303**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	8	(7)					EA	V0001	Confirmed Asbestos	Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 71 **Location Name: Health Clinic** **Floor: 1** **Room #: B 129** **Square ft: 342**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	242	(7)					SF	V0003	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0013	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	20	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 72 **Location Name: Janitor's Closet and Electrical Room** **Floor: 1** **Room #: B 130** **Square ft: 143**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	B	Y	10	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: Dec 2015 removed 1 fittings. Pinchin File 104462.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 77 **Location Name: East Corridor** **Floor: 2** **Room #:** **Square ft: 1112**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0020	Confirmed Asbestos	Non-Friable

Note: Ceiling Tile AT-01 not Sampled, due to Manufactured date of August 2001

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 78 **Location Name: Electrical/Storage** **Floor: 2** **Room #: B 251** **Square ft: 280**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	280	(7)					SF	V0003	Confirmed Asbestos	Non-Friable
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0020	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 79 **Location Name: Human Resources Organizational Development & OH&S** **Floor: 2** **Room #: B255/B237** **Square ft: 2030**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0020	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 80 **Location Name: Financial Services** **Floor: 2** **Room #: B 244** **Square ft: 2514**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0020	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 82 **Location Name: Human Resources/Payroll** **Floor: 2** **Room #: B 237** **Square ft: 2479**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	96	(7)	4	(7)			%	S0020	Confirmed Asbestos	Non-Friable

Note: 2017 Reassessment pinchin proj#200417.003 - 10 LF of damaged drywall at corner near B237 entrance

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 83 **Location Name: Administration Offices** **Floor: 2** **Room #: B200** **Square ft: 6000**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)	1	(7)			SF	S0020	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	N	35	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 84 **Location Name: President's Boardroom** **Floor: 2** **Room #: B 228** **Square ft: 917**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	Carpet	A	Y	100	(7)					%	S0020	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 85 **Location Name: Electrical Closet** **Floor: 2** **Room #: B200e** **Square ft: 92**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0020	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	6	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: No floor in adjacent chase.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 86 **Location Name: Men's & Women's Washrooms** **Floor: 2** **Room #: B200 a** **Square ft: 226**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0020	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 90 **Location Name: Janitor's Closet** **Floor: 3** **Room #:** **Square ft: 46**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 91 **Location Name: Classrooms and Office** **Floor: 3** **Room #:** **Square ft: 4217**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 92 **Location Name: Offices** **Floor: 3** **Room #:** **Square ft: 189**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Note: Ceiling Tile AT-01 not Sampled, due to Manufacture date of August 2001

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 93 **Location Name: Men's Washroom** **Floor: 3** **Room #:** **Square ft: 113**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	Ceramic Tiles	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 94 **Location Name: Pipe Chase/Electrical Closet** **Floor: 3** **Room #:** **Square ft: 37**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Note: Reno: The following locations are now merged into one room (95, 103, 104, 105 & 107)

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 95 **Location Name: Corridor** **Floor: 3** **Room #:** **Square ft: 3580**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0024	Confirmed Asbestos	Non-Friable

Note: this location is now merged with 103, 104, 105 and 107

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 96 **Location Name: Photocopy Room** **Floor: 3** **Room #: B302** **Square ft: 241**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 97 **Location Name: Classroom** **Floor: 3** **Room #: B3011** **Square ft: 987**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 98 **Location Name: School of Business Offices** **Floor: 3** **Room #: B 326** **Square ft: 2532**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 100 **Location Name: Return Air Shaft** **Floor: 3** **Room #:** **Square ft: 68**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 101 **Location Name: Womens Washroom** **Floor: 3** **Room #:** **Square ft: 181**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 102 **Location Name: Office** **Floor: 3** **Room #: B 334** **Square ft: 693**
No access to room

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					

Note: 2017 Reassessment Pinchin proj#200417.003

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 108 **Location Name: Office** **Floor: 3** **Room #: B342** **Square ft: 598**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 109 **Location Name: Office** **Floor: 3** **Room #: B364** **Square ft: 166**
No access to room

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					

Note: 2017 Reassessment Pinchin proj#200417.003

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 110 **Location Name: Electrical Room** **Floor: 3** **Room #: B340** **Square ft: 80**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound	Not Applicable	N/A	A	Y	100	(7)					%	S0024	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 112 **Location Name: Machinery Room # 4** **Floor: 4** **Room #: B 401** **Square ft: 2752**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	C	Y	25	(7)	1	(6)			EA	V0001	Confirmed Asbestos	Friable
Mechanical Equipment	Heating Water Tank	Parging Cement	Not Applicable	Canvas	B	Y	200	(7)					SF	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 113 **Location Name: Elevator Machinery Room** **Floor: 4** **Room #:** **Square ft: 112**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	B	Y	4	(7)					EA	V0001	Confirmed Asbestos	Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 114 **Location Name: Corridor** **Floor: 4** **Room #:** **Square ft: 383**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	35	(7)					EA	V0001	Confirmed Asbestos	Friable
Other	Fire Stop	Parging Cement	Not Applicable	N/A	B	Y	1	(7)					SF	S0005	Confirmed Asbestos	Friable

Note: June 2016 removed 4 fittings Pinchin file#115297.001

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 115 **Location Name: Machinery Penthouse 5** **Floor: 4** **Room #:** **Square ft: 1714**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	B	Y	45	(7)					EA	V0001	Confirmed Asbestos	Friable

Note: Dec 2015 removed 5 fittings. Pinchin File 104462.008. Abatement of fittings associated with heat exchanger upgrades completed March 2016, Pinchin file #104462.026.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 116 **Location Name: South Stairwell** **Floor: 4** **Room #:** **Square ft: 414**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0024	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 117 **Location Name: Machinery Room # 6** **Floor: 1** **Room #:** **Square ft: 1200**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Piping	All	Parging Cement	Fitting	Canvas	B	Y	74	(7)	1	(6)			EA	V0001	Confirmed Asbestos	Friable

Note: Dec 2015 removed 4 fittings. Pinchin File 104462.008.

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 118 **Location Name: Projection Room** **Floor: 2** **Room #: B224** **Square ft: 200**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Floor	All	VAT and Mastic Adhesive	Not Applicable	N/A	A	Y	143	(7)					SF	V0003	Confirmed Asbestos	Non-Friable
Piping	All	Parging Cement	Fitting	Canvas	C	Y	1	(7)					EA	V0001	Confirmed Asbestos	Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 119 **Location Name: Administration Offices** **Floor: 2** **Room #:** **Square ft: 1000**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound			A	Y	100	(7)					%	V0020	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 120 **Location Name: Administration Offices** **Floor: NA** **Room #:** **Square ft: 1200**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound			A	Y	100	(7)					%	V0020	Confirmed Asbestos	Non-Friable

Confirmed Asbestos and Presumed Asbestos Report

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 121 **Location Name: Administration Offices** **Floor: NA** **Room #:** **Square ft: 100**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls	All	Drywall and joint compound			A	Y	100	(7)					%	V0020	Confirmed Asbestos	Non-Friable

Building #: **Building Name: B Wing** **Surveyor: Heather Obruchkov** **Survey Date: 2007-08-22**
Reassessment Date:2017-02-27 **Reassessment Surveyor: Evan Faubert**
Location #: 122 **Location Name: West Corridor** **Floor: B** **Room #:** **Square ft: 1000**

System	Component	Material	Item	Covering	Access	Visible	Condition, Quantity & Action						Units	Sample	Hazard	Friability
							Good		Fair		Poor					
Walls		Drywall and joint compound			A	Y	100	(7)					%	V0002	Confirmed Asbestos	Non-Friable

Note: Parging cement on pipe fittings abated in December 2016, Pinchin File: 115297.008.

Client: Sheridan College **Site:** Trafalgar Campus

Building Number(s):

Confirmed Asbestos and Presumed Asbestos Report

Legend:

Action				Access		Condition		Sample Number	
(1)	Clean Up of ACM Debris	(2)	Precautions for Access Which may Disturb ACM Debris	A	Accessible to all building occupants	Good	No visible damage or deterioration.	S####	Sample collected
(3)	ACM removal	(4)	Precautions for Work Which may Disturb ACM in Poor Condition	B	Accessible to maintenance and operations staff without a ladder	Fair	Minor, repairable damage, cracking or deterioration.	V####	Material is visually identified to be identical to S###
(5)	Proactive ACM removal (Minimum repair required for fair condition)	(6)	ACM repair	C	Accessible to maintenance and operations staff with a ladder. Also rarely entered, locked areas	Poor	Irreparable damage or deterioration with exposed and missing material	V0000	Known non-asbestos material
(7)	Management program and surveillance			D	Not normally accessible or without demolition	NOTE: See report for full definitions of action, access and condition		V9000	Material is visually identified to contain asbestos
								V9500	Material is presumed to contain asbestos
NOTE: Actions in round brackets ( ) are auto-calculated. Actions in square brackets [ ] are manual								Note: Presumed various materials identified in the report are ACM if not sampled.	

Units SF - Square feet LF - Linear feet EA - Each % - Percentage

November 8, 2024

Sheridan College
130 Trafalgar Road
Oakville, Ontario, L6H 2L1

Re: Asbestos Abatement Completion Letter
Room B244
1430 Trafalgar Road, Oakville, Ontario
Pinchin File: 336577.017

This letter has been provided to document that the asbestos abatement project conducted at the above referenced site is complete.

The following documents relevant to this project have been issued under separate cover:

- Hazardous Building Materials Assessment, dated September 20, 2024, Pinchin File No. #336577.015.

The scope of work involved the following:

- Removal and disposal of drywall bulkheads and walls finished with asbestos-containing joint compound following Type 2 procedures.

The abatement work was carried out between October 22, 2024 to October 28, 2024 by Alliance Environmental (Contractor) under contract to the Owner.

HMIS information has been updated to reflect the post-abatement conditions.

The abatement work was performed successfully in compliance with the scope of work and acceptable standards.

The site review reports and air sample results have been attached for your records.

TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties.

Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

CLOSURE

Should you have any questions or concerns regarding the contents of this letter, please contact the Project Manager at 289.237.4294 or lheywood@pinchin.com.

Yours truly,

Pinchin Ltd.

Prepared by:	Reviewed by:
Angela Coric, HBESc., EPt.	Leslie Heywood, BEng Mgt.
Project Coordinator	Senior Project Manager

Encl: Appendix I - Site Review Reports

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Template: Asbestos Abatement Completion Letter (Short Version), HAZ, July 2, 2024

APPENDIX I
Site Review Reports

Site Review Report

Project Information

Date: October 22, 2024	Pinchin Representative: Adam Lazette	Report Number: 1 Pinchin File: 336577.017
Project Name: Asbestos Abatement - Rooms B244, B237, and B255	Site Address: 1430 Trafalgar Road, Oakville, Ontario	
Client: Sheridan College		Client File Number: P01955
Contractor: Alliance Environmental		Arrival on Site: 4:30pm Number of Workers: 4

Distribution:

cc:	Nicole Whiteside	Sheridan College	nicole.whiteside@sheridancollege.ca
	Lisa Tucker	Sheridan College	lisa.tucker@sheridancollege.ca
	James Burns	Alliance Environmental	JBurns@allianceenvironmental.com
	Dean Power	Alliance Environmental	Dean.Power@allianceenvironmental.com

Description of Work in Progress

Material	Work Area	Work in Progress	Type of Review	Status
Asbestos	Work Area: B244, B244B and B244C (HMIS Location 80)	Type 2 removal and disposal of drywall bulkheads and walls finished with asbestos-containing joint compound.	Clean Site Preparation	Acceptable
			Bulk Removal and Air Monitoring	Acceptable

Discussion Points and Action Items	Pinchin found the containment setup to be acceptable. The contractor was given approval to commence with the contaminated work.

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
424116	Occupied	Corridor, adjacent to B244	October 22, 2024, 4:45 PM	15.2	180	2,736	0.002
424117	Occupied	Corridor, adjacent to B244	October 22, 2024,	15.2	180	2,736	0.004

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
			4:45 PM				
415690	Occupied	Corridor, adjacent to B244	October 22, 2024, 4:45 PM	15.2	180	2,736	0.003
415700	Field Blank	Field Blank	-	-	-	-	<5.5 fibres detected

f/cc - fibre per cubic centimetre
Calibration of air sampling pump checked before and after sample collection.

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

Other	Acceptable	Pinchin performed a clean site preparation review prior to the Type 2 removal and disposal of drywall bulkheads and walls with asbestos-containing joint compound (Photos 1 and 2). The containment setup was found to be acceptable. Pinchin performed a bulk removal and air monitoring review during the Type 2 removal and disposal of drywall bulkheads and walls with asbestos-containing joint compound. The work being completed was found to be acceptable.
Site Isolation & Facilities/Equipment	Acceptable	Site isolation was acceptable and consisted of an enclosure constructed with polyethylene sheeting and tape. A combined worker and decontamination (decon) facility was located at the entrance to the work area. The contractors were observed to have proper equipment which included a vacuum with HEPA filters, amended water, airless sprayers, lockdown agent, tape, rags, hand tools, ladders, etc. Two (2) negative air units were observed to be exhausting air indoors. Negative air units were D.O.P tested on Oct 21, 2024 (Photo 3). An asbestos warning sign was posted on the entrance on the exterior flap of the decon facility (Photo 4).
Personal Protective Equipment	Acceptable	All workers performing the contaminated work were observed wearing the proper PPE, which includes full body disposable coveralls with a hood and elastic cuffs and at a minimum a half-face respirator with P100 filters.
Waste Handling	Acceptable	All asbestos-containing waste is to be placed in yellow asbestos labelled bags and double bagged prior to removal from the work area.
Samples and Testing	Acceptable	Pinchin collected three occupied air samples outside of the enclosure. One field blank was also collected for quality control purposes. All the samples were collected using high volume pumps calibrated to a

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

		minimum of 15.2 litres of air per minute and ran for 180 minutes, collecting an average of 2,736 litres of air. Phase Contrast Microscopy (PCM) analysis of the collected air samples showed all sampled to be below the criteria of 0.01 fibres per cubic centimeter of air. PCM analysis of the field blank showed <5.5 fibres. PCM analysis was performed following the NIOSH 7400 method.

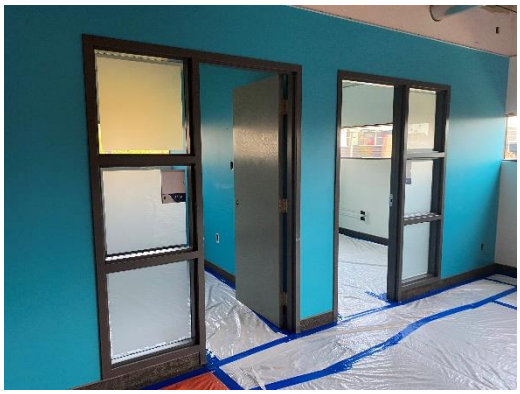

Photo 1

Photo 2

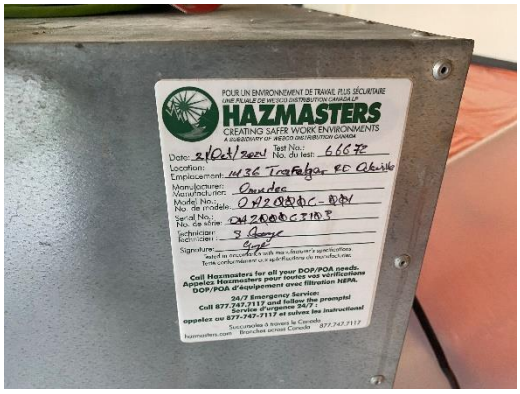

Photo 3

Photo 4

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Template: Site Review Report Template HAZ, January 8, 2024

Site Review Report

Project Information

Date: October 25, 2024	Pinchin Representative: Adam Lazette	Report Number: 2 Pinchin File: 336577.017
Project Name: Asbestos Abatement - Rooms B244, B237, and B255	Site Address: 1430 Trafalgar Road, Oakville, Ontario	
Client: Sheridan College		Client File Number: P01955
Contractor: Alliance Environmental		Arrival on Site: 7:30pm Number of Workers: 4

Distribution:

cc:	Nicole Whiteside	Sheridan College	nicole.whiteside@sheridancollege.ca
	Lisa Tucker	Sheridan College	lisa.tucker@sheridancollege.ca
	James Burns	Alliance Environmental	JBurns@allianceenvironmental.com
	Dean Power	Alliance Environmental	Dean.Power@allianceenvironmental.com

Description of Work in Progress

Material	Work Area	Work in Progress	Type of Review	Status
Asbestos	Work Area: B244, B244B and B244C (HMIS Location 80)	Type 2 removal and disposal of drywall bulkheads and walls finished with asbestos-containing joint compound.	Visual Clearance	Acceptable
			Clearance Sampling	Acceptable

Discussion Points and Action Items	Pinchin found the work completed to be acceptable.

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
415688	Clearance	Enclosure	October 25, 2024, 8:30 PM	15.2	60	912	0.004
424115	Clearance	Enclosure	October 22, 2024, 8:30 PM	15.2	60	912	0.006

Asbestos Air Samples Collected and Results, as Available

Samples were analyzed in accordance with NIOSH 7400 Method, Issue 3, June 14, 2019

Sample No.	Sample Type	Location Description	Start Time	Average Flow Rate (L/min)	Duration (Minutes)	Air Volume (L)	Reportable Result (f/cc)
424112	Clearance	Enclosure	October 22, 2024, 8:30 PM	15.2	60	912	0.006
415672	Field Blank	Field Blank	-	-	-	-	<5.5 fibres detected

f/cc - fibre per cubic centimetre
Calibration of air sampling pump checked before and after sample collection.

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

Other	Acceptable	Pinchin performed a visual clearance and clearance sampling review following the Type 2 removal and disposal of drywall bulkheads and walls with asbestos-containing joint compound (Photos 1 and 2). The work performed was found to be acceptable.
Site Isolation & Facilities/Equipment	Acceptable	Site isolation remained acceptable at the time of the site review. The Work Area consisted of an enclosure constructed with polyethylene sheeting and tape. A combined worker and decontamination (decon) facility was located at the entrance to the work area.
Waste Handling	Acceptable	All asbestos waste had been removed from the Work Area prior to this site review.
Samples and Testing	Acceptable	Pinchin collected three clearance air samples outside of the enclosure. One field blank was also collected for quality control purposes. All the samples were collected using high volume pumps calibrated to a minimum of 15.2 litres of air per minute and ran for 60 minutes, collecting an average of 912 litres of air. Phase Contrast Microscopy (PCM) analysis of the collected air samples showed all sampled to be below the criteria of 0.05 fibres per cubic centimeter of air. PCM analysis of the field blank showed <5.5 fibres. PCM analysis was performed following the NIOSH 7400 method.

Observations – Work Area 1: B244, B244B and B244C (HMIS Location 80)

Photo 1

Photo 2

Site Review Report

Project Information

Date: October 28, 2024	Pinchin Representative: Adam Lazette	Report Number: 3 Pinchin File: 336577.017
Project Name: Asbestos Abatement - Rooms B244, B237, and B255	Site Address: 1430 Trafalgar Road, Oakville, Ontario	
Client: Sheridan College		Client File Number: P01955
Contractor: Alliance Environmental		Arrival on Site: 5:30pm Number of Workers: 2

Distribution:

cc:	Nicole Whiteside	Sheridan College	nicole.whiteside@sheridancollege.ca
	Lisa Tucker	Sheridan College	lisa.tucker@sheridancollege.ca
	James Burns	Alliance Environmental	JBurns@allianceenvironmental.com
	Dean Power	Alliance Environmental	Dean.Power@allianceenvironmental.com

Description of Work in Progress

Material	Work Area	Work in Progress	Type of Review	Status
Asbestos	Work Area: Corridor (HMIS Location 77)	Type 2 glove bag removal and disposal of pipe fittings and straight sections of piping with asbestos-containing thermal insulation.	Other	Acceptable

Discussion Points and Action Items	Pinchin and the Contractor reviewed the ceiling space in the Corridor (HMIS Location 77) and did not identify any asbestos-containing thermal insulation around pipe fittings or straight sections of piping within the Work Area.

Observations – Work Area 1: Corridor (HMIS Location 77)

Other	Acceptable	Pinchin and the Contractor reviewed the ceiling space in the Corridor (HMIS Location 77) and referenced the drawings, but did not identify any asbestos-containing thermal insulation around pipe fittings or straight sections of piping within the Work Area. All insulation observed was non-asbestos fibreglass with foil or paper jacketing (Photo 1).
Cleaning	Acceptable	The Work Area was vacuumed and cleaned after reviewing the ceiling space.

Observations – Work Area 1: Corridor (HMIS Location 77)

Photo 1

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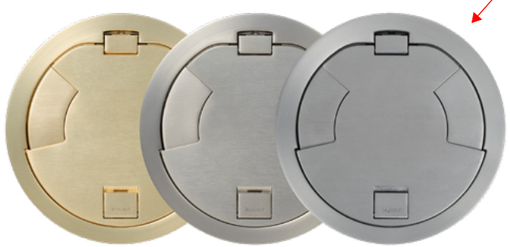

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VERSION 5.01

MARCH 24, 2020

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REVISIONS:

1.0 April 02, 2008

1.1 Initial Draft Creation IT Master Guideline

2.0 February 15, 2010

2.1 Revisions to IT
- 2.1.1 Additions of Classroom Types
- 2.1.2 Additions of Detail Sketches
- 2.1.3 Addition of Paging Systems Section

3.0 February 11, 2011

3.1 Revisions to IT

4.0 March 31, 2012

4.1 Reformat of Entire Document
4.2 Revisions to IT
- 4.2.1 Removal of Division 27 Samples
- 4.2.2 Updates to Classroom Types
- 4.2.3 New Detail Sketches
- 4.2.4 Updates to Paging Systems
- 4.2.5 Fibre Upgrades

4.3 Addition of Audio Visual IT Requirements Section
4.4 Addition of Security IT Requirements Section

May 15, 2012
4.5 Revision of Audio Visual IT Requirements Section
4.6 Revision to Paging Requirements Section

October 15, 2012

4.7 Revisions to IT
- 4.7.1 Revisions to Plug Types
- 4.7.2 Additions to Plug Types
- 4.7.3 Revisions to Breakout/Study Rooms
- 4.7.4 Revisions to Meeting Rooms
- 4.7.5 Revisions to Classrooms

November 28, 2012

4.8 Revisions to IT
- 4.8.1 Redefining Plug Types
- 4.8.2 Revisions to Meeting Rooms

5.0 August 25, 2013

5.0 Revision to IT
- 5.0.1 Update of all Codes, Standards, & Acronyms
- 5.0.2 Revisions to Administrative Staff & Titles
- 5.0.3 Addition of Copper Patch Cords
- 5.0.4 Addition of Fibre Patch Cords
- 5.0.5 Revision to 20A Plug Configuration
- 5.06 Update for Inclusion of all Revised Detail Sketches

TABLE OF CONTENTS:

1.0 FOREWORD:

The sole purpose of this document is to guide Telecommunication Consultants in their design requirements when producing Tender Drawings and Specifications for contractors bidding various projects and expansions that Sheridan Institute of Technology and Advanced Learning may be undertaking.

Its main focus will be the IT infrastructure, components, installation recommendations, testing procedures and parameters. With telecommunications cabling being utilized in so many other disciplines, we are expanding version 5.0 of the Master Guidelines for Communications Infrastructure to include cabling for Paging, Audio Visual (A/V), and Security components.

All detail drawings or images that pertain to only one section of the master outline will be listed and included at the end of that section.

Manufacturer cut sheet samples will be provided at the end of the document in appendix 14.3

2.0 ACKNOWLEDGEMENTS:

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Other Sources

BICSI (Building Industry Consulting Service International)

3.0 DEFINITIONS:

ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
BICSI	Building Industry Consulting Services International
CEC	Canadian Electrical Code
CLECs	Competitive Local Exchange Carriers
CRTC	Canadian Radio & Television Telecommunications Commission
CUL	Canadian Underwriters Laboratories, Inc.
ICEA	Insulated Cable Engineer's Association
ICT	Information Communication Technology (IT)
IDF-1	Intermediate Distribution Frame Type 1 – Communications Closet
IDF-2	Intermediate Distribution Frame Type 2 – Co-Locate Closet
IEEE	Institute of Electrical and Electronics Engineers
MCC	Main Cross Connect
MCR	Main Computer Room
MDF	Main Distribution Frame
NEC	National Electric Code
NEMA	National Electrical Manufacturer's Association
NFPA	National Fire Protection Agency
POP	Point of Presence
SIREN	Sheridan Incident Reporting & Emergency Notification
SITAL	Sheridan Institute of Technology and Advanced Learning
TIA	Telecommunications Industry Association

4.0 APPLICABLE STANDARDS:

Unless specifically indicated otherwise in this document, all telecommunications infrastructure shall be design in accordance with the following standards including all appropriate addendums and revisions:

ANSI/TIA-455	Test Procedures for Fibre Optics, Cables and Transistors
ANSI/TIA-568-C.0-2008	Generic Commercial Building Telecommunications Cabling Standard
ANSI/TIA-568-C.1-2009	Commercial Building Telecommunications Cabling Standard
ANSI/TIA-568-C.2-2009	Balanced Twisted Pair Telecommunications Cabling and Components Standard
ANSI/TIA-568-C.3-2008	Optical Fibre Cabling Components Standard
ANSI/TIA-568-C.4-2011	Broadband Coaxial Cabling and Components Standard
ANSI/TIA-569-C-2012	Telecommunications Pathways and Spaces Cabling Standard
ANSI/TIA-598-D	Optical Fibre Colour Coding (Draft)
ANSI/TIA-604-3	FOCIS 3 Fibre Optic Connector Intermateability Standard
ANSI/TIA-604-5-D	Fiber Optic Connector Intermateability Standard, Type MPO
ANSI/TIA-604-10-B	FOCIS 10B Fiber Optic Connector Intermateability Standard Type LC
ANSI/TIA-606-B	Administrative Standard for Commercial Telecommunications Infrastructure
ANSI/TIA-607-B-2011	Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises
ANSI/TIA-758-B-2012	Customer Owned Outside Plant Telecommunications Infrastructure Standard
ANSI/TIA-862-A-2011	Building Automation Systems Cabling Standard
ANSI/TIA-942-2005	Telecommunications Infrastructure Standard for Data Centres
ANSI/TIA-1005-2009	Telecommunications Infrastructure Standard for Industrial Premises

ANSI/TIA-1152-2009	Requirements for Field Test Instruments and Measurements for Balanced Twisted-Pair Cabling
ANSI/BICSI-002-2011	Data Centre Design and Implementation Best Practices
ANSI/ICEA S-83-596	Fibre Optic Premises Distribution Cable
ANSI/ICEA S-83-640	Fibre Optic Outside Plant Communications Cable
ANSI/IEEE-110-1992	Powering and Grounding Sensitive Electronic Equipment.
ANSI/NECA/BICSI 568-2006	Standard for Installing Commercial Building Telecommunications Cabling
ANSI/NECA/BICSI-568	Standard for Installing Commercial Building Telecommunications Cabling
ANSI/NFPA 70	National Electrical Code.
ANSI/NFPA 70-1987	Standard for Paging Punch Block and Cable Sizing Requirements
ANSI Z136.2	American Standards for the Safe Operation of Fiber Optic Communications Systems Utilizing Laser Diode and LED Sources
BICSI	Network Design Reference Manual, 7th Edition
BICSI	Network Systems and Commissioning (NSC) Reference, 1st Edition
BICSI AVDRM	AV Design Reference Manual, 1st Edition
BICSI DCDI	Data Center Design and Implementation Best Practices
BICSI ESS	Electronic Safety and Security Design Reference Manual, 2nd Edition
BICSI ITSI	Information Transport Systems Installation Methods Manual, 6th Edition
BICSI OPDRM	Outside Plant Design Reference Manual, 5th Edition
BICSI WDRM	Wireless Design Reference Manual, 3rd Edition
BICSI TCIM	Telecommunications Cabling Installation Manual

BICSI TDMM	Telecommunications Distribution Methods Manual, 12th Edition
CISCA	Recommended Test Procedures for Access Floors
CSA C22.1	Canadian Electric Code Part 1 Ontario Hydro Electric Safety Code
CSA C22.2 No. 182.4-M90	Plugs, Receptacles, and Connectors for Communications Systems
CSA C22.2 No. 214-94	Communications Cables
CSA C22.2 No. 232-M	Fibre Optic Cables
ICEA S 104 696	Insulated Cable Engineers Association
IEEE Std. 446	Recommended Practice for Emergency and Standby Power Systems for Industrial and Commercial Applications
IEEE Std. 1100	Recommended Practice for Powering and Grounding Electronic Equipment
NECA/BICSI 607-2011	Standard for Telecommunications Bonding and Grounding Planning and Installation Methods for Commercial Buildings
NFPA-75	Protection of Electronic Computer Data Processing Equipment.
NFPA-297	Guide on Principles and Practices for Communication Systems.
NRC-CNRC	National Building Code of Canada
(RUS) 7 CFR 1755.900	Rural Utilities Service
TIA TSB-155-A-2006	Guidelines for the Assessment and Mitigation of Installed Category 6 Cabling to Support 10BASE-T
TIA TSB-162-2006	Telecommunications Cabling Guidelines for Wireless Access Points
TIA TSB-184-2009	Guidelines for Supporting Power Delivery Over Balanced Twisted-Pair Cabling
TIA TSB-185-2009	Environmental Classification (MICE) Tutorial
TIA TSB-190-2011	Guidelines on Shared Pathways and Shared Sheaths

5.0 TELECOMMUNICATIONS DESIGN GUIDELINES

5.1 DESIGN DELIVERABLES

5.1.1 Programming;

With specific input from Information Communication Technologies, generate outlet schedule based on functional use summary of the needs/program statement.

- Provide preliminary area requirements for entrance facility and telecommunication rooms.
- Identify extent of site work necessary to bring services to building.
- Provide $/sq.ft. budgetary number.
- Where wireless networks are to be the primary connection to the network, either a Sheridan IT person or an independent consultant with demonstrated expertise in wireless systems shall be commissioned to provide access point layout, equipment selection and input on other construction methods that may affect wireless transmissions.

5.1.2 Schematic Design:

Concept Sketches showing preliminary telecommunications rooms and sizes and zone plan showing areas served by rooms.

- Preliminary backbone riser diagrams showing interrelationships
- Concept sketch showing major pathways for backbone and horizontal cabling

5.1.3 Design Development:

Preliminary drawings identifying device layouts for typical spaces

- Preliminary drawing showing main cable tray layouts
- Preliminary drawing showing communication backbone riser.
- Preliminary drawing showing communication grounding riser.

5.1.4 Construction Documents:

Identify all device locations on scaled plan drawings

- Identify outlet configurations by unique symbol and/or schedule
- Identify all intended pathways and raceways for horizontal and backbone cable.
- Provide enlarged telecommunications room plans indicating placement of racks, cable runway, wall-mounted systems, and ground bus locations.
- Provide rack elevations indicating all patch panel placement, cable management, structural supports, ground connections and space allocated for owner provided network electronics and any owner supplied UPS/power conditioners.

- Provide backboard elevations indicating space allocated for wall fields, equipment, etc.
- Indicate location and provide details for all grounding apparatus.
- Provide CSI format specifications for cable, connectors, cable management hardware, etc.

5.1.5 Construction:

Review shop drawings for cable, connectors, and hardware for:

- Administration compliance with project specifications and Sheridan Institute of Technology & Advanced Learning requirements
- Make periodic construction visits to observe the installation for conformance to project specifications and proper installation practices.
- Perform final punch list including follow-up to verify punch list items have been completed.

5.1.6 Prequalified Manufacturer/Vendor:

Sheridan Institute of Technology & Advanced Learning has mandated that only Belden/CDT shall be an acceptable manufacturer. Any other bid submissions or alternates for cost savings shall not be viewed and any such submissions shall disqualify the bidder. Any bidding Contractor must be a CSV in good standing with Belden/CDT. A copy of certification is required with every bid submission.

5.1.7 Prequalified Contractors:

Sheridan Institute of Technology & Advanced Learning has mandated that only the following Contractors shall be invited to the bid. Any alternates or sub-contract work is not acceptable. The list is closed at:

- Cable Assembly Systems Limited.
  4 Sharp Road, P.O. Box 607
  Brantford, ON N3T 5P9
  Tel: 519-759-4401
  Fax: 519-759-4931

- CaTech Systems Limited
  201 Whitehall Drive, Unit 4
  Markham, ON L3R 9Y3
  Tel: 905-944-0000
  Fax: 905-944-4844

- The State Group Inc.
  3206 Orlando Drive.
  Mississauga, ON L4V 1R5
  Tel: 905-293-07419
  Fax: 905-293-7548

5.2 FINAL DOCUMENTATION DELIVERABLES:

5.2.1 Testing and Documentation:

Testing Criteria:

- Comply minimally with EIA/TIA testing requirements
- Provide certification from manufacturer.
- Testing shall demonstrate compliance with manufacturer's stated performance.

Documentation:

- Provide warranty certificate upon completion.
- Provide hard copy of summary test results.
- Provide bound hardcopy of test results (ONLY for fewer than 25 drops).
- Provide electronic copy of both summary and test results (for all jobs)

As-builts:

- The Cabling Contractor is required to provide as-built drawing(s) of the cable installation. It shall include all horizontal cabling required to service the space as defined on the drawings.

- The as-built drawing(s) shall include all additional cables (i.e. change notices) installed during the project.

- The as-built drawings shall reflect all termination locations, labeling, elevation detail of final rack layout for horizontal cabling (digital photos are acceptable), elevation details of backboards (digital photos are acceptable), and all cabletray and support structure routing.

- Upon completion of the installation the Cabling Contractor shall provide eight (8) copies of the as-built drawing(s) to the Client. As-built drawings must be forwarded to Client's office **within 5 business days** of the completion of the

project. An additional copy of the as-built drawing is to be posted on the wall in the main distribution rooms

- All changes to drawings shall be engineer drafted standards.

5.2.2 Package Requirements:

Communications Contractor must provide 5 burned CD's with the following information:

- UTP Test Results in Microsoft Excel format or in a format that is easily interpreted by any text reader (i.e. '.txt' extension). DO NOT submit paper test results for projects greater than 25 drops. Testing requirements are outlined further in this document.

- Fibre Test results in Microsoft Excel format or in a format that is easily interpreted by any text reader (i.e. '.txt' extension). DO NOT submit paper test results for projects greater than 25 drops. Testing requirements are outlined further in this document.

- Digital pictures in '.jpg' or '.gif' format. Pictures shall include all relevant information such as top/bottom picture of all racks and cabinets (both front and rear), backboard elevations of all main backboards, all secondary backboards and all riser backboards that are utilized, as well as consolidation points (if applicable).

- Enough room shall be left on the CD for Client to burn as-built drawings onto them.

5.2.3 Warranty and Certification Requirements

- The manufacturer is required to provide minimum 20-year parts and labour Warranty for the entire Structured Cabling Platform, including both UTP copper and fibre. Response time for Warranty items is to be 24 hours. The Cabling Contractor may be required to repair deficient cabling system components outside regular working hours. Bidders are to include a statement of Warranty terms and conditions with their response.

- The Warranty for the Performance Cabling must be such that the cable meets or exceeds the requirements of EIA/TIA-568-A and EIA/TIA-568-A-5 'Transmission Performance Specifications for 100 Ohm 4-pair Category Cabling' including all Standards stated in this Contract.

- If a Warranty issue arises for the cabling the Warrantor must make arrangements to undertake the repair or replacement of Warranty issues within 24 hours of notification. This may require the repair/replace of cabling components outside regular working hours. Bidders are to include a statement of Warranty terms and conditions with their response.

- The Cabling Contractor shall forward the Structured Cabling Platform certification request form(s) to the proper authority and ensure that a Plaque or Certificate is issued to the Project Manager along with the Structured Cabling Platform user manual. The successful bidder will provide a certification number within two weeks of award of this project. Please note that the Plaque/Certificate must have the Project Managers Client name on the Plaque/Certificate.

- The Cabling Contractor will provide letter(s) of Certification within two weeks of substantial completion of the project to the Communications Consultant. This document will include the following: verification of the performance of the installed system, identification of the installation by location and project number and a copy of the Warranty.

- Upon award of contract, the Cabling Contractor shall forward copies of the Structured Cabling Platform certification request for Certification form complete with certification number(s) for the project to Communications Consultants office within 7 days of the award of contract. Provide a copy of the form with Specification submission.

- Upon request and at no additional cost to the Project Manager the Cabling Contractor must provide a manufacturer's technical representative to conduct an on-site visit to ensure complete technical compliance.

- The Cabling Contractor must ensure that a Warranty plaque and letter of certification is issued to the Project Managers Client along with a user manual for the Warranty. The letter must be issued within 2 weeks of substantial completion of the project. This document will include the following: verification of the performance of the installed system, identification of the installation by location and project number and a copy of the Warranty to the Communications Consultant.

- The Cabling Contractor must supply a sample (at the time of bidding) of the Warranty including all related terms and conditions. This sample will be the standard to which the Warranty will be held. No changes will be accepted unless it is deemed to benefit the Project Managers Client. Any proposed changes to the Warranty must be submitted in writing to the Project

Manager/their representative for review. The changes will then be accepted or declined by the Project Authority at their discretion. This is to remain valid for the entire Warranty period.

6.0 SYSTEM AND PERFORMANCE:

6.1 Data System:

Designed to support 1Gbps Ethernet to the desktop over UTP copper cable.

- Intra-building backbone shall support 10Gbps Ethernet
- Inter-building backbone shall support DWDM (Dense Wave Division Multiplexing)

6.2 Voice System:

Specific design to be coordinated with Sheridan Institute of Technology & Advanced Learning Information Communication Technologies. Typically Sheridan College uses VoIP and all cable pulls terminate in the same patch panels.

6.3 Wireless Networks:

Specific design to be coordinated with Sheridan Institute of Technology & Advanced Learning Information Communication Technologies.

6.4 Paging Networks:

Specific design to be coordinated with Sheridan Institute of Technology & Advanced Learning Information Communication Technologies.

6.5 Audio Visual Networks:

Specific design to be coordinated with Sheridan Institute of Technology & Advanced Learning Audio Visual Department.

6.6 Security Networks:

Specific design to be coordinated with Sheridan Institute of Technology & Advanced Learning Security Department.

7.0 SITE AND SERVICE CONSIDERATIONS

7.1 CABLE PATHWAYS

7.1.1 Entrance Cable Pathways:

It is strongly recommended that diverse entrances including multiple conduits from multiple carriers are established at Sheridan Institute of Technology and Advanced Learning Campus Locations. For existing buildings with existing carrier entrance facilities it is strongly recommended that a diverse carrier method be established to eliminate single point of failure.

For buildings with existing carrier entrance facilities where Sheridan Institute of Technology and Advanced Learning is not the sole building tenant, it is strongly recommended that diverse conduit pathways be established between the existing entrance facility and Sheridan Institute of Technology and Advanced Learning main communications room.

Typically, provide minimum of two (2) banks of three (3) 4" (100mm) conduits from nearest telecommunications manhole, tunnel, etc. into service entrance facility. The quantity /size of conduits can vary depending on project requirements. These can be defined on a project-to-project basis. It is also encouraged that the service provider be pressed to extend the demarcation directly to the Sheridan Institute of Technology and Advanced Learning's main communications room.

- Provide three 1 ¼" inner ducts in one of the service entrance conduits.
- Coordinate with Information Communication Technologies for further definition of design requirements.
- Minimum of 1 240V dedicated circuit.
- Minimum of 1 120V dedicated circuit.

REFERENCE FIGURE 01 – INCOMING CONDUIT BANK

7.1.2 Inter-Building Cable Pathways:

It is strongly recommended that two diverse cable pathways between Sheridan Institute of Technology and Advanced Learning occupied buildings be established. These pathways should be physically separated from each other as much as it is practical to prevent a single disaster from affecting both pathways.

Where the intra-building cable pathways enter each building a Sheridan Institute of Technology and Advanced Learning controlled building entrance room is required, as electrical protection devices need to be installed as close to the point of entry as possible. A telecommunications grounding busbar should be located within this room.

Sizes and quantities of intra-building conduit depend on the individual requirements of each project.

REFERENCE FIGURE 02 – CAMPUS ENVIRONMENT

7.1.3 Intra-Building Cable Pathways:

These pathways typically consist of conduit, sleeves and cable tray or ladder rack.

- Between Sheridan Institute of Technology and Advanced Learning Main Communications Room (MCR) and the Intermediate Distribution Frame (IDF) a.k.a. Communications Closet or Co-Locate Closet. There must be two (2) diverse cable pathways established. Typically these would be conduit paths. Quantity of conduits varies according to project requirements.
- Between two communications closets on the same floor there should be a cable pathway installed.
- Within a communications closet or main communications room that does not have raised floor, an overhead raceway is required. This raceway is typically ladder rack or cable tray.
- Sleeves or slots should be installed from the wall mounted telecommunications outlet boxes to above the access ceiling. Typically a 1-gang outlet box with a single faceplate is required for the wall mounted telecommunication outlet; with a minimum of one (1") conduit stub-up. When utilizing Deco adapters, locations with more than 3 outlets at a single location must go to a 2-two gang outlet box with a dual faceplate and the minimum conduit size shall increase to 1-1/4". If utilizing Belden/CDT cover plates, utilize 4-port cover over single gang box.
- In the offices, flexible conduit is required from the modular furniture feed point (either wall or floor) to the modular furniture. This pathway can be either flexible conduit, spiral wrap, split loom tubing, or loom tubing. It must be cut to length and cover the entire length of the exposed cable. It must be secured at both ends as not to expose cable when furniture is bumped or moved. The communications contractor typically installs this.
- In offices for case goods (non modular furniture), a typical 1-gang outlet can be utilized.
- Where case goods are utilized, and communications outlet is located behind furniture, communications contractor must label with a small, removable, coloured sticky dot on the ceiling directly above the location of the outlet.
- All empty conduits must have a pull string (or rope) installed with a minimum breaking tension of 200 lbs.
- All conduits must be reamed at both ends to avoid any sharp edges that may cut or damage cable being installed. Any conduit not de-burred must be reported immediately to the acting GC. Failure to do so will place onus on the communications contractor for any damaged cable.
- All conduits must be grounded as per local codes.

- Conduits may not be routed adjacent to hot water or steam lines or through areas where flammable materials are installed.
- Bends in the conduit are undesirable and must be kept to a minimum. The minimum inside bend radius permitted is six (6) times the inside diameter of the conduit for conduits smaller than two (2") inches. And ten (10) times the inside diameter of conduits larger than two (2") inches.
- Pull boxes must be installed when there are more than two (2) 90º bends in the conduit run, there is a reverse in the conduit run, or the run exceeds one hundred (100') feet.
- Conduits must be aligned on opposite ends of the pull box. Adjacent side (90º) stub ins on pull boxes are not permitted.
- Pull boxes must be in a strait section of conduit run and are not permitted to be used in lieu of a turn, bend, or corner.
- Pull boxes for communications should not be used for any other type of cabling (i.e. security, paging, sound masking).
- Pull boxes outside of Sheridan Institute of Technology and Advanced Learning spaces are undesireable and should be avoided.
- The preference for Sheridan Institute of Technology and Advanced Learning is to have all wiring closets stacked vertically for ease of cable pulls between floors. This is a recommendation and not a requirement.

7.1.4 Intra Building Pathway Requirements:

Backbone:

- Provide minimum of four (4) 4" sleeves through floors in stacked rooms. Cap any unused conduits. All populated conduits shall be fire stopped according to local codes.
- Where rooms are not stacked, provide minimum (4) 4" conduits continuous between rooms, or as required. Cap any unused conduits. All populated conduits shall be fire stopped according to local codes.
- Connect Communications Closets on same floor with a minimum of two (2) 4" conduits.
- Conduit between rooms shall have no more than (2) 90 degree bends without pull box. Pull boxes shall be sized per the amount of conduits.
- Sleeves shall consist of GRS conduit with bushings and stub above the floor a minimum of 4".
- Horizontal backbone routing shall only be through secure cabletray or 4" conduit. No substitutions shall be allowed.

REFERENCE FIGURE 03 – INTERFLOOR CORE REQUIREMENTS

7.1.4a Breakout Room Pathways Requirements:

Four (4) Person Breakout Room:

- Provide two (2) 1¼" conduits, one (1) from each 2-gang back box at wall locations on the two short walls of the room to the centre of the table location.
- At the wall, the conduit shall be bushed, reamed and left with a grommetted bushing as not to damage any future cabling being installed.
- At the table, the conduit shall be stubbed up a minimum of 12" from the slab. This conduit shall be bushed and reamed only not to leave sharp edges but otherwise left unfinished as it will be cut on site to accommodate specific requirements.
- Routing of conduit can be in slab or in conduit if located in ceiling space below.
- All penetrations must be fire-stopped according to code.

Six (6) Person Meeting Room:

- Provide two (2) 2" conduits, one (1) from each 2-gang back box at wall locations on the two short walls of the room to the centre of the table location.
- At the wall, the conduits shall be bushed, reamed and left with a grommetted bushing as not to damage any future cabling being installed.
- At the table, the conduits shall be stubbed up a minimum of 12" from the slab. These conduits shall be bushed and reamed only not to leave sharp edges but otherwise left unfinished as it will be cut on site to accommodate specific requirements.
- Routing of conduits can be in slab or in conduit if located in ceiling space below.
- All penetrations must be fire-stopped according to code.

Eight (8) Person Meeting Room:

- Provide two (2) 2" conduits, one (1) from each 2-gang back box at wall locations on the two short walls of the room to the centre of the table location.
- At the wall, the conduits shall be bushed, reamed and left with a grommetted bushing as not to damage any future cabling being installed.
- At the table, the conduits shall be stubbed up a minimum of 12" from the slab. These conduits shall be bushed and reamed only not to leave sharp edges but otherwise left unfinished as it will be cut on site to accommodate specific requirements.
- Routing of conduits can be in slab or in conduit if located in ceiling space below.
- All penetrations must be fire-stopped according to code.

Ten to Twelve (10-12) Person Meeting Room:

- Provide two (2) 2” conduits, one (1) from each 2-gang back box at wall locations on the two short walls of the room to the centre of the table location.
- At the wall, the conduits shall be bushed, reamed and left with a grommetted bushing as not to damage any future cabling being installed.
- At the table, the conduits shall be stubbed up a minimum of 12” from the slab. These conduits shall be bushed and reamed only not to leave sharp edges but otherwise left unfinished as it will be cut on site to accommodate specific requirements.
- Routing of conduits can be in slab or in conduit if located in ceiling space below.
- All penetrations must be fire-stopped according to code.

Fourteen Plus (14+) Person Meeting Room:

- Provide two (2) 2” conduits, one (1) from each 2-gang back box at wall locations on the two long walls and the wall where the television shall reside to the centre of the table location.
- At the wall, the conduits shall be bushed, reamed and left with a grommetted bushing as not to damage any future cabling being installed.
- At the table, the conduits shall be stubbed up a minimum of 12” from the slab. These conduits shall be bushed and reamed only not to leave sharp edges but otherwise left unfinished as it will be cut on site to accommodate specific requirements.
- Routing of conduits can be in slab or in conduit if located in ceiling space below.
- All penetrations must be fire-stopped according to code.

7.1.5 Minimum Fill Capacities:

- The following tables are to be referenced for all cable maximum fill ratios for communications cables routed through EMT conduit. If not referenced in tender specification, ownership of overfill recommendations and costs associated to remedy shall fall on the consultant and/or contractor.
- Please note that the conduit fill ratios do not apply to RMC, Inner duct, or Corlon style pathways. Consultant must reference internal diameter of these pathways and use the conduit fill formula listed below.
- Conduits under one (1”) are not allowed without written expression from Sheridan Institute of Technology and Advanced Learning IT Department.
- Keep in mind when designing and utilizing fill charts below that recommended fill ratios will vary depending on the number of cables. This easy fill table should always be referenced once number of cables are determined for a conduit run or drop location:

Number of Conductors	1	2	>2
Percentage Fill	53%	31%	40%

If you cannot find the corresponding table, please utilize the conduit fill formula:

Aconduit x (1 – 1 x 0.4) / Acable, where A = pi * d2 / 4

For 4-pair copper cabling please utilize the following tables:

4-pair Category 5E (typical cable O.D. 0.22”)

Trade Size	3/4”	1”	1-1/4”	1-1/2”	2”	2-1/2”	3”	4”
Inside ϕ	.824”	1.049”	1.380”	1.610”	2.067”	2.469”	3.068”	4.026”
Maximum	-	7	12	16	22	36	50	-

4-pair Category 6 (typical cable O.D. 0.24”)

Trade Size	3/4”	1”	1-1/4”	1-1/2”	2”	2-1/2”	3”	4”
Inside ϕ	.824”	1.049”	1.380”	1.610”	2.067”	2.469”	3.068”	4.026”
Maximum	-	6	10	15	20	30	40	-

4-pair Category 6A (typical cable O.D. 0.29”)

Trade Size	3/4”	1”	1-1/4”	1-1/2”	2”	2-1/2”	3”	4”
Inside ϕ	.824”	1.049”	1.380”	1.610”	2.067”	2.469”	3.068”	4.026”
Maximum	-	3	6	7	14	17	20	-

For multi pair Category 5 copper backbone cables please utilize the following tables:

25-pair Category 5 - (typical cable O.D. 0.39”)

Trade Size	3/4”	1”	1-1/4”	1-1/2”	2”	2-1/2”	3”	4”
Inside ϕ	.824”	1.049”	1.380”	1.610”	2.067”	2.469”	3.068”	4.026”
Maximum	-	1	2	3	6	8	12	24

50-pair Category 5 - (typical cable O.D. 0.58”)

Trade Size	3/4”	1”	1-1/4”	1-1/2”	2”	2-1/2”	3”	4”
Inside ϕ	.824”	1.049”	1.380”	1.610”	2.067”	2.469”	3.068”	4.026”
Maximum	-	-	1	1	3	3	6	12

100-pair Category 5 - (typical cable O.D. 0.78")

Trade Size	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Inside ϕ	.824"	1.049"	1.380"	1.610"	2.067"	2.469"	3.068"	4.026"
Maximum	-	-	-	1	2	3	6	7

For Fibre Optic Cables please utilize the following tables:

12 Strand Fibre Optic Cable (typical cable O.D. 0.25")

Trade Size	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Inside ϕ	.824"	1.049"	1.380"	1.610"	2.067"	2.469"	3.068"	4.026"
Maximum	-	5	9	14	18	27	36	-

24 Strand Fibre Optic Cable (typical cable O.D. 0.48")

Trade Size	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"
Inside ϕ	.824"	1.049"	1.380"	1.610"	2.067"	2.469"	3.068"	4.026"
Maximum	-	2	5	7	9	16	20	-

7.1.6 Horizontal, Accessible Ceiling Spaces:

- Provide cable trays for bundles of cable exceeding 24 cables.
- Provide J-Hooks for cable bundles of 24 and below.
- Route main cable runs through accessible corridor spaces and drop off into each room from the main runs.
- Do not route main cable trays or cable bundles through classrooms or offices.
- Maintain 18" minimum between cable tray fluorescent lighting.

7.1.7 Manholes & Handholes:

Provide additional manholes and/or hand holes to minimize cable pulls to 400', and two 90 degree bends.

- Where required, provide 4'w x 8'l x 4'd manholes
- Where required, provide 24"w x 42"d x 36"l "Quazite" hand holes. (locate hand holes in green space only)

7.1.8 Communications Cable Tray:

- It is mandatory that any new build or retrofit for cabletray be coordinated with all electrical and mechanical drawings and signed off for clear and unrestricted access for ease of use once installed. Minimum clearances around

cabletray must be maintained as well. (i.e. two (2') at the sides and one (1') above where possible).

- All cable trays shall be WBT PW (Pewter Powder Coated Finish) or BL (Black Powder Coated Finish) Series; or Sheridan Institute of Technology and Advanced Learning approved equivalent. WBT tray is made from documented recycled steel; it offers over 400% increase in cable support and 68% reduction in cabling pressure/strain over traditional round wire trays. It is a continuous, rigid, T-welded steel wire mesh cable management system with the following requirements:

  REFERENCE FIGURE 04 – WBT MONOMESH TRAY

- Mesh system permits continuous ventilation of cables and maximum dissipation of heat.
- Wire mesh welded at all intersections.
- Wire Diameter: 0.197-inch (5mm) minimum on all mesh sections.
- All mesh sections must have at least one (1) bottom longitudinal wire along entire length.

UL Classification and CUL Listed:

- 2" deep straight sections in 6, 8, 12, 16, 18, 20 and 24 inch widths
- 4" deep straight sections in 6, 8, 12, 16, 18, 20 and 24 inch widths
- 6" deep straight sections in 8, 12, 16, 18, 20, 22, and 24 inch widths
- 8" deep straight sections in 8, 12, 16, 18, and 20" inch widths

Notes: Sheridan Institute of Technology and Advanced Learning preferences 2 and 4 inch depths and 8, 12, and 18 inch widths.
Specify pewter Powder Coated Finish or Black Powder Coated Finish. Stainless Steel (304L and 316S) is also available but Stainless steel wire is used primarily in corrosive environments and food processing facilities.
Stainless steel does not require additional surface treatment. Consult WBT representative for assistance in selecting finish for specific applications (if required).

Nominal Dimensions:

- Mesh: 2 x 4 inches (50 x 100 mm).
- Straight Section Length: 118 inches (3,000 mm).
- Non-Standard widths and depths are available upon request.

Notes: Refer to drawings for size requirements at various locations. Other sizes are only for reference and must be pre-approved for installation due to interference issues. They must also be installed in multiples to add up to the minimum width required on drawings.

Refer to drawings fro sizes required

Fittings:

- Field fabricated, (in accordance with manufacturer's instructions), from straight sections.

Hardware:

- Hardware, including splice connectors and support components available from manufacturer.

Accessories:

- Covers: Solid covers, pre-galvanized steel, width to match tray.

Grounding:

- Grounding Clip is available for continuous ground of cable management system. [aluminum]
- Grounding of the Cabletray shall be the responsibility of the Communications Contractor.

Installation:

- Communications Contractor shall supply and install all required cable tray for horizontal distribution as outlined on drawings.
- All Cable trays and fittings shall conform to ANSI NFPA 70, Article 318-Cable Trays.
- Supply and install all sections of tray including required coupling/joining hardware, support and attachment hardware, and dropouts (waterfalls) where required.
- The radii on all fittings shall match tray width.
- The inside of the cable tray must be free of burrs, sharp edges, or projections, which can damage the cable insulation.
- Supply and install all required rods for support of cabletray structure. Cabletray shall be supported on trapeze clips and a support must be placed within 2 feet (600mm) on each side of any connection to a fitting.
- All metallic cable trays must be grounded. Clearly mark any tray that is used as an equipment grounding conductor, as specified in ANSI/NFPA 70, Section 318-3 (c).
- Communications Contractor must follow routing laid out on the Communications drawings for all cable tray in the computer room and on the floors.
- All cabletrays must be installed above bulkheads where possible.

7.1.9 Communications Cable Support - All Other Locations

- For bundles of up to 16 cables utilise Erico Part Number CAT12, UPC Number 33178 J-hook assemblies. All cabling shall be separated into separate bundles

on each side of the rod. There shall be a maximum of 2 hooks per rod. These are to be supplied and installed by Communications Contractor.

- For bundles between 16 and 24 cables utilise Erico Part Number CAT21, UPC Number 30015 J-hook assemblies. All cabling shall be separated into separate bundles on each side of the rod. There shall be a maximum of 2 hooks per rod. These are to be supplied and installed by Communications Contractor.
- All J-hooks shall be supported by Erico Cablecat UPC Number 30245, CATHBA Angled Hanger Bracket. These are to be supplied and installed by Communications Contractor.
- All horizontal cabling designated as floor monuments shall be routed through underslab conduits (supplied and installed by Div.16) and through the floor into floor boxes and furniture feed points (supplied and installed by Div.16).

REFERENCE FIGURE 05 – ERICO J-HOOK DETAIL

7.1.10 Grounding:

- Well-designed grounding systems reduce the risk of damage to telecommunications equipment from stray voltages. The communications grounding system shall be used for the communications ONLY. Bonding and grounding conductors shall be C.U.L listed for the purposes intended. All bonding conductors shall be insulated copper with green insulation.
- The minimum inside bend radius of a grounding conductor shall be eight (8) times the diameter of that conductor. Bonding conductors should not be placed in ferrous metal conduit.
- Telecommunications grounding for each room type shall be defined in that section.

REFERENCE FIGURE 06 – COPPER GROUNDING BUSBAR

7.1.11 Telecommunications Main Grounding Busbar:

- The telecommunications main grounding busbar (TMGB) is the dedicated extension of the building grounding system for telecommunications. It serves as the master ground bar or central point for the telecommunications grounding system. The TMGB shall be mounted in the main Sheridan Institute of Technology and Advanced Learning communications room of a building. The TMGB shall be connected to the building's service equipment power ground for the building with an insulated stranded cable at least 3/0 AWG in size. This conductor should be continuous in length (no splices) and as straight as possible. Each building shall have a telecommunications main grounding busbar.
- All telecommunications grounding busbars (one in each communications closet or co-location space) will connect to the telecommunications main grounding busbar via the telecommunications bonding busbar (TBB).
- This busbar must be sized to handle a minimum of thirty (30) connections and be 6mm thick and 100mm high. It shall be pre-drilled with standard NEMA spacing.

- The TMGB must be installed on two (2") inch insulating spacers.
- All connections to the TMGB must be made using 2 hole lugs and silver epoxy. Connecting hardware must be at least 6mm copper or copper alloy and tin plated bolts and nuts.
- Do not route bonding backbone within 18" of electrical feeders.

7.1.12 Telecommunications Bonding Backbone:

- The telecommunications bonding backbone (TBB) connects the telecommunications main grounding busbar with each of the telecommunication grounding busbars. There will be one telecommunication grounding busbar in each telecommunication closet.
- The telecommunication bonding backbone shall be insulated stranded copper, 3/0 AWG in size.
- Splices should be kept to a minimum and where necessary should be located in accessible telecommunications spaces.
- Provide a 3/0 AWG insulated copper bonding backbone from the main ground bus in the service entrance facility (MDF) to the intermediate rooms (IDF) with 6 AWG jumper to TGB's.

7.1.13 Telecommunications Grounding Busbar:

- One (1) telecommunications grounding busbar will be located in each telecommunications closet. See the communications closet section for more information.
- Bond all equipment, racks, cabinets, etc to ground busbar in each telecommunications room with 6 AWG insulated ground conductor.
- Minimum performance shall be 2ohms.

7.2 TELECOMMUNICATIONS ROOM FUNCTIONS:

7.2.1 Main Distribution Frame (MDF)
AKA: Main Cross Connect

Main Cross Connect will provide telecommunications services to a building or campus environment. It is a distribution frame on one part of which terminate the permanent outside lines entering the central office building and on another part of which terminate the subscriber line multiple cabling, trunk multiple cabling, etc.

- Provide minimum of one (10' x 12') MDF telecommunications room per building.
- This room is the connection point to all other building in a campus environment.

- This room is where all entrance protectors are located.
- The room is typically lined with plywood.
- This room is located on the exterior wall of the building closest to the Main Computer room facility in the campus environment.
- A grounding system must be provided as outlined in the grounding section.

7.2.2 Main Computer Room (MCR)

The Main Computer Room is the Central Location for all computer services in a campus environment and all other buildings in a campus environment shall connect to this room through their own MCC location.

Room sizes for MDF's, MCR's and IDF's listed in this document are for reference only. All consultants and contractors must adhere to architectural drawings for each project.

The Main Computer Room at larger facilities must be a minimum of 12' x 20' in size.

REFERENCE FIGURE 07 – 12' x 20' COMPUTER ROOM LAYOUT

The Main Computer Room at smaller facilities must be a minimum of 7' x 12' in size.

REFERENCE FIGURE 08 – 7' x 12' COMPUTER ROOM LAYOUT

The Main Computer Room a remote sites must be a minimum of 7' x 8' in size.

REFERENCE FIGURE 09 – 7' x 8' COMPUTER ROOM LAYOUT

7.2.2.1 Main Computer Room General:

- The Main Communication Room must be a maximum of 500' (horizontal and vertical run combined) from the furthest Communications Closet that the Room serves.
- In campus environments these Main Rooms serving the building may be further but distances must be defined to ensure fiber lengths are accurate.
- The Main Communications Room may not be located on the exterior of the building.
- The Main Communications Room may not have windows.
- Equipment racks within the room must have at least four (4') feet clearance in front and from a wall mounted cable termination field and three (3') feet on the rear and clearance from any other wall or obstruction.
- Entrance doors to the closet should swing inward still maximizing the usable space within the room.
- Entrance doors shall have direct access to hallways (i.e. never through a classroom, office or other building services utility rooms.

- Entrance doors shall not have any windows.
- Door and a half width shall be a minimum of 54" wide and 84" high. This shall comprise of two doors, one a full width 36" door and the other a ½ width 18" width door.
- There shall be no door sill in the entrance doorway.

- Doors should be fitted with automatic closers and have either card access or keypad access only.
- The closet shall not be adjacent to any washrooms, janitor's closets, or kitchen spaces. Generally, no plumbing piping, fixtures, or HVAC equipment that could produce leaks or where water may permeate into the room should be located within the confines of the communications closets.
- The closet shall not be directly below or adjacently below any of the rooms defined above.
- No water pipes except for sprinklers shall pass through the ceiling space of the communications closet.
- The Main Communications Room size will vary from campus to campus and sizes shall be defined by Sheridan Institute of Technology and Advanced Learning IT department. The minimum size for this room shall be twelve (12') feet by twenty (20') feet.
- Main Computer Room should be centrally located within the physical area that they serve.
- The Main Computer Room may be stacked with Communication closets wherever possible.
- Adjust room sizes accordingly for additional systems (video, security, access control, etc.)
- Main Computer Room shall feed all fibre and copper backbone to Communications Closets or Co-Locate Closets.

7.2.2.2 Main Computer Room Ceilings:

- Main Computer Room does not require, nor is it recommended that they have finished ceilings. Closets without finished ceilings must have fireproofing encapsulated to reduce dust in the room.
- The minimum clear ceiling height in the Main Computer Room is 9'-6" clear from the finished floor The only suspended fixture permitted below the 9'-6" clear is the communications cable tray, should it be required. Heights and clearances for this are defined in this document.
- Sprinkler heads within the Main Computer Room should be provided with protective cages to prevent accidental operation.

REFERENCE FIGURE 10 – TYPICAL SPRINKLER CAGES

7.2.2.3 Main Computer Room Floors:

- Main Computer Room requires the installation of anti-static Vinyl Composite Tile (VCT).
- Floors should be level, free of high/low spots that would interfere with floor mounting bolts for equipment such as racks or cabinets.

7.2.2.4 Main Computer Room Walls

- Walls should be 'slab-to-slab' partitions to satisfy one (1) hour fire rating or as local code requires in achieving that one (1) hour fire rating.

- Each wall of the closet (facing accessible ceiling areas) shall have either sleeves or a framed slot installed above the general ceiling height to allow cable to enter the closet overhead, while making the installation of the fire stop materials possible once cabling is installed.

- One wall of the Main Computer Room will have a telecommunications plywood backboard. This shall be in sheets of 4'-0" x 8'-0" x ¾" fire rated plywood stamped accordingly. The use and space on this backboard shall be reserved to backbone cabling, sound masking, or paging. All plywood shall be G1S, free of any imperfections and mounted good side out. If raising of backboard is required, it shall be done on wood 2" x 6" x 8'-0" studs mounted on 16: centers to create a vertical cable chase behind the plywood. Horizontal bracing or blocking is not allowed.
- On another, either adjacent or opposite wall there shall be a requirement for a security backboard. This shall be one (1) sheet of 4'-0" x 8'-0" x ¾" fire rated plywood stamped accordingly. The use and space on this backboard shall be reserved for security cabling and/or building environmental controls as required. All plywood shall be G1S, free of any imperfections and mounted good side out. If raising of backboard is required, it shall be done on wood 2" x 6" x 8'-0" studs mounted on 16" centers to create a vertical cable chase behind the plywood. Horizontal bracing or blocking is not allowed.
- Drywall walls within the room are to be pained a light color to enhance room lighting.

7.2.2.5 Main Computer Room Heating, Cooling and Ventilation:

- The Main Computer Room will require 24/7 climate control.
- The air conditioning unit will maintain a positive pressure in the room with a minimum of one air change per hour.
- The air conditioning units shall be located outside the communications closet where possible and the air conditioned air shall be ducted into the closet.
- Room temperature shall be maintained at 18ºC to 24ºC.
- Air conditioning unit should be backed up by the emergency power generator where available but should not be on the UPS system.
- If air conditioning is inside room, all condensate pipes must be routed to a drain located outside the room.

7.2.2.6 Main Computer Room Power:

- Each Main Computer Room shall have a UPS supplied by Sheridan Institute of Technology and Advance Learning. All rack circuits and plugs shall be on building EPS (Emergency Power System) or Generator. The UPS panel will support equipment only and not lighting circuits or air conditioning equipment, as those should be on a panel backed up by the generator.
- Air Conditioning within any IT space should be backed up on building EPS or Generator.

- All electrical panels within the Main Computer Room should support power within the Main Computer Room only. There should be no panels mounted in the Main Computer Room that support any equipment/lighting outside of the closet.
- All active equipment in the Main Computer Room must be connected to building EPS (generator power) if it is available.
- There should only be one (1) utility electrical receptacle on each wall that does not have plywood on it or a door on it. These receptacles are not on the UPS panel and do not require generator back up.
- The Main Computer Room shall contain freestanding racks or cabinets that will require UPS power for LAN switches. If raised floor is installed in the facility, they can be under the raised floor. Type and quantity shall be defined for each project.
- UPS receptacles in the Main Computer Room should be identified as such to distinguish them from other receptacles.
- All receptacles reserved for power on the racks shall be mounted at the bottom, back of the rack at the right hand side (not on vertical cable management).

Power shall be located at the bottom of the racks on the right hand side as not to impede the mounting of equipment. It shall not impede the cable management.

REFERENCE FIGURE 11 – C.R. RACK CROSS SECTION

7.2.2.7 Main Computer Room Lighting:

- Lighting intensity within the Main Computer Room should be a minimum of 50 foot candles measured at three (3') feet above the finished floor. Additional lighting should be provided over the wall field termination plywood. Low ratio frequency emission fluorescent lighting should be used.
- Lighting should be powered from a separate power source than the critical network equipment. Lighting should be on back up generator power but not on UPS.
- Lighting should be located a minimum 12" from the front and rear of the rack as not to obstruct cabletrays and access to cabletrays. Lighting should be mounted a minimal 12" above the highest point on the cabletray.

7.2.2.8 Main Computer Room Grounding and Bonding:

- All Main Computer Room shall have a telecommunications grounding busbar (TGB). The TGB shall be 6mm thick and 5ohm high and sufficient width to accommodate fifteen (16) lugs. The TGB shall connect to the telecommunications bonding backbone (TBB) with a minimum 3/0 AWG copper cable. See grounding section of this document for more information on the telecommunication bonding backbone.
-
- All racks and cabinets including metal cable termination frames within the Main Computer Room shall have their frames individually (NOT serially)

connected to the telecommunication grounding busbar via a 6 AWG insulated copper grounding conductor.

- All conduit, ladder rack or cabletray in the Main Computer Room shall be bonded to the telecommunication grounding busbar via a 6 AWG insulated copper grounding conductor. The conduit and ladder rack or cabletray may be serially connected to the TGB. Grounding strips should be used to connect separate sections of ladder rack or cabletray to ensure continuity.
- Metallic cable sheathe should be connected to the telecommunication grounding busbar using 14 AWG insulated copper conductors.
- Typically, the telecommunication grounding busbar will be mounted at the lower right corner of the plywood cable termination wall field. The bar should be mounted on insulated stand-offs as defined in the grounding section.

7.2.2.9 Main Computer Room Rack Requirements

- Middle Atlantic RL10-45 racks are made of 11-gauge steel and are 10-32 tapped to standard EIA spacing. They also come standard with U markings and rack screws. All racks can easily be ganged together with or without cable managers.
- Included, are provisions for bolting units to the floor and standard mounting widths are all available. Optionally, Power bars and cable managers are easily fitted to suit the end use.
- All racks shall be **black** only. Upon request, custom colors and sizes are available.
- Additional components shall be required including VDC10-45 10” vertical managers when ganging racks and VDC6-45 on each side. Vertical or zero U power bars will also be required but must be verified with each project.
- Standard Features Include:
  - Heavy gauge steel, Welded or knockdown
  - Universal EIA hole spacing
  - Various heights available
  - Only 19” mounting is required, with rack height of 45U
  - Ganging capabilities with or without vertical cable managers
  - Available tapped both sides
  - Optional heavy duty kits increase footprint to 36”

REFERENCE FIGURE 12 – RACK ELEVATION DETAIL A

REFERENCE FIGURE 13 – RACK ELEVATION DETAIL B

7.2.2.10Main Computer Room Cabinet Requirements

- Middle Atlantic MRK-4436 cabinets are made with 11-gauge steel and have a static weight capacity of 10,000 lbs. They come with 10-32 tapped to standard EIA spacing. Additional rear Z rails are required
- The tops are configurable for any scenario.
- All cabinets shall be black only. Upon request, custom colors and sizes are available.
- Additional requirements for cabinets shall be defined for each individual project.

7.2.3 Intermediate Distribution Frame Type I (IDF I)
AKA: Communications Closets

Communications Co-Locate Closets will provide the IT services to the general area in which the closet is located. Each floor of each Sheridan Institute of Technology and Advanced Learning occupied building must have at least one (1) communications closet or communications co-locate closet. Cabling serving offices, classrooms, other services on a particular floor must be terminated in a communications closet or communications co-locate on the same floor.

REFERENCE FIGURE 14 – 5' x 8' I.T. CLOSET

REFERENCE FIGURE 15 – 7' x 6' I.T. CLOSET

REFERENCE FIGURE 16 – I.T. CLOSET CROSS SECTION 'A'

REFERENCE FIGURE 17 – I.T. CLOSET CROSS SECTION 'B'

REFERENCE FIGURE 18 – 4.5'x 6' SHALLOW I.T. CLOSET

7.2.3.1 Communications Closet General:
- Each closet must be a maximum of 235' (horizontal run) from the furthest telecommunications outlet that the closet serves. The remaining 60' is reserved for vertical cable run and patch cords. Please note that these lengths are for cable distance, NOT drawing scale distance.
- Equipment racks within the room must have at least four (4') feet clearance from a wall mounted cable termination field and three (3') feet of clearance from any other wall or obstruction.
- Entrance doors to the closet should swing outward where possible maximizing the usable space within the room.
- Entrance doors shall have direct access to hallways (i.e. never through a classroom, office or other building services utility rooms.
- Entrance doors shall not have any windows.
- Door width shall be a minimum of 36" wide and 84" high.
- There shall be no door sill in the entrance doorway.
- Doors should be fitted with automatic closers and have either card access or keypad access only.

- The closet shall not be adjacent to any washrooms, janitor's closets, or kitchen spaces. Generally, no plumbing piping, fixtures, or HVAC equipment that could produce leaks or where water may permeate into the room should be located within the confines of the communications closets.
- The closet shall not be directly below or adjacently below any of the rooms defined above.
- No water pipes except for sprinklers shall pass through the ceiling space of the communications closet.
- The minimum closet size is 8'-0" x 10'-0" (80 sq. ft.). These are minimum width x length requirements (i.e. a room with 4'-0" x 20'-0" is not acceptable)
- Communications closets should be centrally located within the physical area that they serve.
- Stack rooms wherever possible.
- Provide one room for every 100 to 20,000 sq.ft. and less than 295 ft. in length of cable.
- Adjust room sizes accordingly for additional systems (video, security, access control, etc.)

7.2.3.2 Communications Closet Ceilings:

- Communications closets do not require, nor is it recommended that they have finished ceilings. Closets without finished ceilings must have fireproofing encapsulated to reduce dust in the room.
- The minimum clear ceiling height in the communications closet is 9'-6" clear from the finished floor The only suspended fixture permitted below the 9'-6" clear is the communications cable tray, should it be required. Heights and clearances for this are defined in this document.
- Sprinkler heads within the room should be provided with protective cages to prevent accidental operation.

7.2.3.3 Communications Closet Floors:

- Communications closets require the installation of anti-static Vinyl Composite Tile (VCT).
- Floors should be level, free of high/low spots that would interfere with floor mounting bolts for equipment such as racks or cabinets.

7.2.3.4 Communications Closet Walls

- Walls should be 'slab-to-slab' partitions to satisfy one (1) hour fire rating or as local code requires in achieving that one (1) hour fire rating.
- Each wall of the closet (facing accessible ceiling areas) shall have either sleeves or a framed slot installed above the general ceiling height to allow cable to enter the closet overhead, while making the installation of the fire stop materials possible once cabling is installed.
- One wall of the Communications Closet will have a telecommunications plywood backboard. This shall be in sheets of 4'-0" x 8'-0" x ¾" fire rated plywood stamped accordingly. The use and space on this backboard shall be reserved to backbone cabling, sound masking, or paging. All plywood shall be

G1S, free of any imperfections and mounted good side out. If raising of backboard is required, it shall be done on wood 2" x 6" x 8'-0" studs mounted on 16: centers to create a vertical cable chase behind the plywood. Horizontal bracing or blocking is not allowed.

- On another, either adjacent or opposite wall there shall be a requirement for a security backboard. This shall be one (1) sheet of 4'-0" x 8'-0" x ¾" fire rated plywood stamped accordingly. The use and space on this backboard shall be reserved for security cabling and/or building environmental controls as required. All plywood shall be G1S, free of any imperfections and mounted good side out. If raising of backboard is required, it shall be done on wood 2" x 6" x 8'-0" studs mounted on 16" centers to create a vertical cable chase behind the plywood. Horizontal bracing or blocking is not allowed.
- Drywall walls within the room are to be pained a light color to enhance room lighting.

7.2.3.5 Communications Closet Heating, Cooling and Ventilation:

- All communications closets will require 24/7 climate control.
- The air conditioning unit will maintain a positive pressure in the room with a minimum of one air change per hour.
- The air conditioning units shall be located outside the communications closet where possible and the air conditioned air shall be ducted into the closet.
- Room temperature shall be maintained at 18ºC to 24ºC.
- Air conditioning unit should be backed up by the emergency power generator where available but should not be on the UPS system.
- If air conditioning is inside room, all condensate pipes must be routed outside the room.
- The relative humidity in the room must be kept at 40%

7.2.3.6 Communications Closet Power:

- Each communications closet shall have a UPS supplied by Sheridan Institute of Technology and Advance Learning. All rack circuits and plugs shall be on building EPS (Emergency Power System) or Generator. The UPS panel will support equipment only and not lighting circuits or air conditioning equipment, as those should be on a panel backed up by the generator.
- All electrical panels within the telecommunications closet should support power within the communications closet only. There should be no panels mounted in the closet that support any equipment/lighting outside of the closet.
- There should only be one (1) utility electrical receptacle on each wall that does not have plywood on it or a door on it. These receptacles are not on the UPS panel and do not require generator back up.
- The communications closet shall contain free standing racks or cabinets that will require UPS power for LAN switches. If raised floor is installed in the facility, they can be under the raised floor. Type and quantity shall be defined for each project.

- UPS receptacles in the room should be identified as such to distinguish them from other receptacles.
- All receptacles reserved for power on the racks shall be mounted at the bottom, back of the rack at the right hand side (not on vertical cable management).

7.2.3.7 Communications Closet Lighting:

- Lighting intensity within the room should be a minimum of 50 foot candles measured at three (3') feet above the finished floor. Additional lighting should be provided over the wall field termination plywood. Low ratio frequency emission fluorescent lighting should be used.
- Lighting should be powered from a separate power source than the critical network equipment. Lighting should be on back up generator power but not on UPS.
- Lighting should be located a minimum 12" from the front and rear of the rack as not to obstruct cabletrays and access to cabletrays. Lighting should be mounted a minimal 12" above the highest point on the cabletray.
- Lighting should not interfere, cross or be installed perpendicular to the cable tray within the room.

7.2.3.8 Communications Closet Grounding and Bonding:

- All telecommunications closets shall have a telecommunications grounding busbar (TGB). The TGB shall be 6mm thick and 5omm high and sufficient width to accommodate fifteen (16) lugs. The TGB shall connect to the telecommunications bonding backbone (TBB) with a minimum 3/0 AWG copper cable. See grounding section of this document for more information on the telecommunication bonding backbone.
- All racks and cabinets including metal cable termination frames within the closet shall have their frames individually (NOT serially) connected to the telecommunication grounding busbar via a 6 AWG insulated copper grounding conductor.
- All conduit, ladder rack or cabletray in the communications closet shall be bonded to the telecommunication grounding busbar via a 6 AWG insulated copper grounding conductor. The conduit and ladder rack or cabletray may be serially connected to the TGB. Grounding strips should be used to connect separate sections of ladder rack or cabletray to ensure continuity.
- Metallic cable sheathe should be connected to the telecommunication grounding busbar using 14 AWG insulated copper conductors.
- Typically, the telecommunication grounding busbar will be mounted at the lower right corner of the plywood cable termination wall field. The bar should be mounted on insulated stand-offs as defined in the grounding section.

7.2.3.9 Communications Closet Rack Requirements

- Middle Atlantic RL10-45 racks are made of 11-gauge steel and are 10-32 tapped to standard EIA spacing. They also come standard with U markings and rack screws. All racks can easily be ganged together with or without cable managers.

- Included, are provisions for bolting units to the floor and standard mounting widths are all available. Optionally, Power bars and cable managers are
- easily fitted to suit the end use.
- All racks shall be black only. Upon request, custom colors and sizes are available.
- Additional components shall be required including VDC10-45 10" vertical managers when ganging racks and VDC6-45 on each side. Vertical or zero U power bars will also be required but must be verified with each project.
- Standard Features Include:
  - Heavy gauge steel
  - Welded or knockdown
  - Universal EIA hole spacing
  - Various heights available
  - Only 19" mounting is required, with rack height of 44U
  - Ganging capabilities with or without vertical cable managers
  - Available tapped both sides
  - Optional heavy duty kits increase footprint to 36"

7.2.4 Intermediate Distribution Frame Type II (IDF II)
AKA: Communications Co-Locate Closets

Communications co-locate closets will provide the IT services to the general area in which the closet is located. Each floor of each Sheridan Institute of Technology and Advanced Learning occupied building must have at least one (1) communications closet or communications co-locate closet. Cabling serving offices, classrooms, other services on a particular floor must be terminated in a communications closet or communications co-locate on the same floor.

7.2.4.1 Communications Co-Locate Closet General:

- Each co-locate closet must be a maximum of 235' (horizontal run) from the furthest telecommunications outlet that the co-locate closet serves. The remaining 60' is reserved for vertical cable run and patch cords. Please note that these lengths are for cable distance, NOT drawing scale distance.
- All co-locate closets will utilize four post, two section, front and rear lockable and vented cabinets.
- Equipment cabinets within the room must have at least four (4') feet clearance from a wall mounted cable termination field and three (3') feet of clearance from any other wall or obstruction.
- Entrance doors to the co-locate closet should swing inward where possible maximizing the usable space within the room.
- Entrance doors shall have direct access to hallways (i.e. never through a classroom, office or other building services utility rooms.
- Entrance doors shall not have any windows.
- Door width shall be a minimum of 36" wide and 84" high.
- There shall be no door sill in the entrance doorway.

- Doors should be fitted with automatic closers and have either card access or keypad access only.
- The co-locate closet shall not be adjacent to any washrooms, janitor's closets, or kitchen spaces. Generally, no plumbing piping, fixtures, or HVAC equipment that could produce leaks or where water may permeate into the room should be located within the confines of the co-locate closets.
- The co-locate closet shall not be directly below or adjacently below any of the rooms defined above.
- No water pipes except for sprinklers shall pass through the ceiling space of the co-locate closet.
- The minimum IT portion of the co-locate closet size is 8'-0" x 10'-0" (80 sq. ft.). These are minimum width x length requirements (i.e. a room with 4'-0" x 20'-0" is not acceptable)
- Co-locate closets should be centrally located within the physical area that they serve.
- Stack rooms wherever possible.
- Provide one co-locate closet for every 100 to 20,000 sq.ft. and less than 295 ft. in length of cable.
- Adjust room sizes accordingly for additional systems (video, security, access control, etc.)

7.2.4.2 Communications Co-Locate Closet Ceilings:

- Co-locate closets do not require, nor is it recommended that they have finished ceilings. Co-locate closets without finished ceilings must have fireproofing encapsulated to reduce dust in the room.
- If in row cooling is not being used at a co-locate closet, only then will a dropped T-bar ceiling be acceptable as a return air plenum.
- The minimum clear ceiling height in the communications closet is 9'-6" clear from the finished floor. The only suspended fixture permitted below the 9'-6" clear is the communications cable tray, should it be required. Heights and clearances for this are defined in this document.
- Sprinkler heads within the room should be provided with protective cages to prevent accidental operation.

7.2.4.3 Communications Co-Locate Closet Floors:

- Co-locate closets require the installation of anti-static Vinyl Composite Tile (VCT).
- Floors should be level, free of high/low spots that would interfere with floor mounting bolts for equipment such as racks or cabinets.

7.2.4.4 Communications Co-Locate Closet Walls

- Walls should be 'slab-to-slab' partitions to satisfy one (1) hour fire rating or as local code requires in achieving that one (1) hour fire rating.
- Each wall of the co-locate closet (facing accessible ceiling areas) shall have either sleeves or a framed slot installed above the general ceiling height to

allow cable to enter the closet overhead, while making the installation of the fire stop materials possible once cabling is installed.

- One wall of the co-locate closet will have a telecommunications plywood backboard. This shall be in sheets of 4'-0" x 8'-0" x ¾" fire rated plywood stamped accordingly. The use and space on this backboard shall be reserved to backbone cabling, sound masking, or paging. All plywood shall be G1S, free of any imperfections and mounted good side out. If raising of backboard is required, it shall be done on wood 2" x 6" x 8'-0" studs mounted on 16: centers to create a vertical cable chase behind the plywood. Horizontal bracing or blocking is not allowed.
- On another, either adjacent or opposite wall there shall be a requirement for a security backboard. This shall be one (1) sheet of 4'-0" x 8'-0" x ¾" fire rated plywood stamped accordingly. The use and space on this backboard shall be reserved for security cabling and/or building environmental controls as required. All plywood shall be G1S, free of any imperfections and mounted good side out. If raising of backboard is required, it shall be done on wood 2" x 6" x 8'-0" studs mounted on 16" centers to create a vertical cable chase behind the plywood. Horizontal bracing or blocking is not allowed.
- Drywall walls within the room are to be pained a light color to enhance room lighting.

7.2.4.5 Communications Co-Locate Closet Heating, Cooling and Ventilation:

- All co-locate closets will require 24/7 climate control.
- The air conditioning unit will maintain a positive pressure in the room with a minimum of one air change per hour.
- The air conditioning units shall be located outside the communications closet where possible and the air conditioned air shall be ducted into the closet.
- Room temperature shall be maintained at 18ºC to 24ºC.
- Air conditioning unit should be backed up by the emergency power generator where available but should not be on the UPS system.
- If air conditioning is inside room, all condensate pipes must be routed outside the room.
- The relative humidity in the room must be kept at 40%

7.2.4.6 Communications Co-Locate Closet Power:

- Each co-locate closet shall have a UPS supplied by Sheridan Institute of Technology and Advance Learning. All rack circuits and plugs shall be on building EPS (Emergency Power System) or Generator. The UPS panel will support equipment only and not lighting circuits or air conditioning equipment, as those should be on a panel backed up by the generator.

- All electrical panels within the co-locate closet should support power within the co-locate closet only. There should be no panels mounted in the closet that support any equipment/lighting outside of the closet.
- There should only be one (1) utility electrical receptacle on each wall that does not have plywood on it or a door on it. These receptacles are not on the UPS panel and do not require generator back up.
- The co-locate closet shall contain free standing cabinets that will require UPS power for LAN switches. If raised floor is installed in the facility, they can be under the raised floor. Type and quantity shall be defined for each project.
- UPS receptacles in the room should be identified as such to distinguish them from other receptacles.
- All receptacles reserved for power on the cabinets shall be mounted inside the IT section of the cabinet.

7.2.4.7 Communications Co-Locate Closet Lighting:

- Lighting intensity within the co-locate closet should be a minimum of 50 foot candles measured at three (3') feet above the finished floor. Additional lighting should be provided over the wall field termination plywood. Low ratio frequency emission fluorescent lighting should be used.
- Lighting should be powered from a separate power source than the critical network equipment. Lighting should be on back-up generator power but not on UPS.
- Lighting should be located a minimum 12" from the front and rear of the rack as not to obstruct cabletrays and access to cabletrays. Lighting should be mounted a minimal 12" above the highest point on the cabletray.
- Lighting should not interfere, cross or be installed perpendicular to the cable tray within the room.

7.2.4.8 Communications Co-Locate Closet Grounding and Bonding:

- All co-locate closets shall have a telecommunications grounding busbar (TGB). The TGB shall be 6mm thick and 5omm high and sufficient width to accommodate fifteen (16) lugs. The TGB shall connect to the telecommunications bonding backbone (TBB) with a minimum 3/0 AWG copper cable. See grounding section of this document for more information on the telecommunication bonding backbone.
- All cabinets including metal cable termination frames within the closet shall have their frames individually (NOT serially) connected to the telecommunication grounding busbar via a 6 AWG insulated copper grounding conductor.
- All conduit, ladder rack or cabletray in the communications closet shall be bonded to the telecommunication grounding busbar via a 6 AWG insulated copper grounding conductor. The conduit and ladder rack or cabletray may be serially connected to the TGB. Grounding strips should be used to connect separate sections of ladder rack or cabletray to ensure continuity.
- Metallic cable sheathe should be connected to the telecommunication grounding busbar using 14 AWG insulated copper conductors.

- Typically, the telecommunication grounding busbar will be mounted at the lower right corner of the plywood cable termination wall field. The bar should be mounted on insulated stand-offs as defined in the grounding section.

7.2.4.9 Communications Co-Locate Closet Cabinet Requirements

- Middle Atlantic MRK-4436 cabinets are made with 11-gauge steel and have a static weight capacity of 10,000 lbs. They come with 10-32 tapped to standard EIA spacing. Additional rear Z rails are required
- The tops are configurable for any scenario.
- All cabinets shall be black only. Upon request, custom colors and sizes are available.
- Co-Locate cabinets must have lockable secured doors both front and rear.

8.0 ROOM FUNCTION:

All classrooms will receive a whiteboard. The sizes and number of whiteboards will vary depending on room size and function. Exact size will be defined by the consultant and/or contractor and supplied only by the successful communications contractor. Mounting heights and sizes are defined in the reference sketch.

REFERENCE FIGURE 19 – WHITEBOARD DETAILS

8.1 STANDARD CLASSROOM

Function: Standard classrooms are designed with seating for 48, 36 or 24 students. These students sit at desks that can be moved or reconfigured. The podium where all the teaching equipment will be held will also be re-locatable. There will be no dedicated AV cabling in these rooms, instead all Audio/Video/Control signals will be sent over the network using any of the data jacks in the floor monuments and received by the projectors or sound system using devices that are also connected to our network.

REFERENCE FIGURE 20 – STANDARD CLASSROOM

8.2 SPLIT CLASSROOM

Function: Split classrooms are paired side by side with a moveable wall separating the two of them. Individually, Split rooms are designed the same way as standard rooms. However when the moveable wall is opened the two rooms become one, thus making the podiums act differently. One podium will act as the “master” and be able to take control of the Audio Visual equipment in both rooms. The other podium becomes the “slave” and can no longer control any of the equipment in either room. There will be no whiteboards or projectors mounted onto the moveable wall.

REFERENCE FIGURE 21 – SPLIT CLASSROOM

8.3 MEETING ROOMS

Function: Meeting rooms accommodate up to 14+ people at rectangular or wedge-shaped tables located in the center of the room. These rooms are similar to the group study rooms where the technology is used for presentation purposes but also may be used for video conferencing. These rooms are equipped with a minimum of one LCD screen mounted on the wall near the end of the table. The control device shall be mounted in or on the table to give the users the capability to control and display the LCD. All AV cabling for this room will run from the LCD to the table, so that there is easy access to display any laptop/tablet on the screen.

REFERENCE FIGURE 22 – 4-6 PERSON BREAKOUT ROOM

REFERENCE FIGURE 23 – 8 PERSON BREAKOUT ROOM

REFERENCE FIGURE 24 – 10-12 PERSON BREAKOUT ROOM

REFERENCE FIGURE 25 – 14+ PERSON BREAKOUT ROOM

8.4 LABS

Function: Labs accommodate multiple groups of students at lab style desks in rows. The number of students will depend on the size of the Lab. Depending on function of the lab, these desks may accommodate between two (2) and four (4) students each and not necessarily facing the front of the class. Labs are specialized classrooms. They are set up like a standard classroom but will have to accommodate specialized equipment on a case by case basis. They should include all the base functionality of a classroom with special needs layered on top.

REFERENCE FIGURE 26 – LAB

8.5 BREAKOUT/GROUP STUDY ROOMS

Function: These rooms are designed to allow a small group of students to meet and work collaboratively at a peninsula-style table that is connected to one of the walls. These rooms are equipped with an LCD screen on the opposite wall of the desk for presenting, as well as a wall jack and control device on the same wall to give the students the capability to control and display a laptop/tablet.

REFERENCE FIGURE 27 – BREAKOUT/GROUP STUDY ROOM

8.6 LECTURE HALLS

Function: Auditoriums and lecture halls are intended for large class sizes or special events. These rooms will have tiered seating and state of the art technology. Long throw projectors will be needed to allow for a large bright image to be displayed. All AV equipment will be stored in an AV room located in the back of the auditorium or in the podium at the front of the room.

REFERENCE FIGURE 28 – LECTURE HALL

REFERENCE FIGURE 29 – LECTURE HALL DETAILS

8.7 ADMINISTRATION OFFICES

Function: The need for AV in office spaces is the same as open or public spaces. Strategically placed LCDs are installed for digital signage purposes. The sizes of screens and placement height will vary throughout.

8.8 PUBLIC SPACES

Function: The need for AV in public spaces is very minimal at the college. Usually this only entails strategically placed LCDs around the campus for digital signage use. The sizes of screens and placement height will vary throughout.

8.9 PLUG CONFIGURATIONS

Plug configuration will vary throughout the Sheridan spaces. They are listed below with requirements for each one.

REFERENCE FIGURE 30 – OUTLET TYPES

Type A – Convenience Location

2-gang back box and cover plate (by Division 16)
1/2" conduit for electrical wiring
1" conduit to ceiling space for communications wiring
Internal barrier between electrical and communications
One (1) 15A duplex receptacle
Two (2) Category 6 Modular outlets on Decora strap
One (1) blank insert
Mounted at 12" A.F.F.

REFERENCE FIGURE 31 – TYPE 'A'

Type B – Printer Location

2-gang back box and cover plate (by Division 16)
1/2" conduit for electrical wiring
1" conduit to ceiling space for communications wiring
Internal barrier between electrical and communications
One (1) 20A duplex receptacle
One (1) Category 6 Modular outlet on Decora strap
Two (2) blank inserts
Mounted at 12" A.F.F.

REFERENCE FIGURE 31 – TYPE 'B'

Type C – Projector Location

2-gang back box and cover plate (by Division 16)
1" conduit for communications wiring
Internal barrier between electrical and communications
One (1) 15A duplex receptacle
One (1) Category 6 Modular outlet on Decora strap
Two (2) blank inserts
Mounted at 111" A.F.F.

REFERENCE FIGURE 32 – TYPE 'C'

Type D – Podium Location

3-gang back box and cover plate (by Division 16)
1" conduit for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Two (2) Category 6 Modular outlets on Decora strap
- one of the 2 drops requires to be a purple jack.

One (1) blank inserts
Mounted in floor monument 6' off each wall and/or centre of room as defined on classroom sketches

REFERENCE FIGURE 32 – TYPE 'D'

Type E – Wireless Access Point Location

1-gang back box and cover plate (by Division 16)
One (1) Category 6 Modular outlet on Decora strap
Two (2) blank inserts
Mounted above finished ceiling

REFERENCE FIGURE 33 – TYPE 'E'

Type F – Above Ceiling Outlet

3-gang back box and cover plate (by Division 16)
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Three (3) Category 6 Modular outlets on Decora strap
Mounted above finished ceiling outside of classroom as defined on classroom sketches

REFERENCE FIGURE 33 – TYPE 'F'

Type G – Wall Mount Phone Location

1-gang back box and cover plate (by Division 16)
1" conduit to ceiling space for communications wiring
One (1) Category 6 Modular outlets on Decora strap
Two (2) blank inserts
Mounted at 48" A.F.F.

REFERENCE FIGURE 34 – TYPE 'G'

Type H – Lecture Capture Camera Location

2-gang back box and cover plate (by Division 16)
1/2" conduit for electrical wiring
1" conduit to ceiling space for communications wiring
Internal barrier between electrical and communications
One (1) 15A duplex receptacle
One (1) Category 6 Modular outlet on Decora strap
Two (2) blank inserts
Mounted at 12" under finished ceiling

REFERENCE FIGURE 34 – TYPE 'H'

Type J – LCD Location

2-gang recessed back box and cover plate (by Division 16)
1/2" conduit for electrical wiring
1" conduit to ceiling space for communications wiring
Internal barrier between electrical and communications
One (1) 15A duplex receptacle
One (1) Category 6 Modular outlet on Decora strap
Two (2) blank inserts
Mounted at 72" A.F.F.

REFERENCE FIGURE 35 – TYPE 'J'

Type K – Spider Mfg. PHA2 Table Location

PHA2 Spider box mounted in table
1" conduit for communications wiring
Internal barrier between electrical and communications
One (1) 15A duplex receptacle
Two (2) Category 6 Modular outlets on Decora strap
Four (4) blank inserts

REFERENCE FIGURE 35 – TYPE 'K'

Type L – Under Table Surface Mount Location

3-gang surface mount box and cover plate (by Division 16)
1" conduit for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Two (2) Category 6 Modular outlets on Decora strap
One (1) blank insert
Mounted to underside of table

REFERENCE FIGURE 36 – TYPE 'L'

Type M – Podium Lecture Stand Location

3-gang back box and cover plate (by Division 16)
1/2" conduit to floor monument for electrical wiring
2" conduit to A/V Control Room for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Three (3) Category 6 Modular outlets on Decora strap
Mounted inside podium

REFERENCE FIGURE 36 – TYPE 'M'

Type N – Lecture Hall Projector Location

3-gang back box and cover plate (by Division 16)
1/2" conduit for electrical wiring
2" conduit A/V Control Room for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Two (2) Category 6 Modular outlets on Decora strap
One (1) blank insert
Mounted above finished ceiling

REFERENCE FIGURE 37 – TYPE 'N'

Type P – A/V Closet Location

4-gang back box and cover plate (by Division 16)
1/2" conduit for electrical wiring
Two (2) 1" conduits to ceiling space for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacle
Four (4) Category 6 Modular outlets on Decora strap
Two (2) blank inserts

REFERENCE FIGURE 37 – TYPE 'P'

Type Q – Spider Mfg. PHA2 Table Location

PHA2 Spider box mounted in table
1" conduit for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Four (4) Category 6 Modular outlets on Decora strap
Two (2) blank inserts

REFERENCE FIGURE 38 – TYPE 'Q'

Type R – Spider Mfg. PHA2 Table Location

PHA2 Spider box mounted in table
2 @ 1" conduits for communications wiring
Internal barrier between electrical and communications
One (1) 15A duplex receptacles
Two (2) Category 6 Modular outlets on Decora strap
Two (2) blank inserts

REFERENCE FIGURE 38 – TYPE 'R'

Type S – Wall Mount Clock Location

1-gang back box and cover plate (by Division 16)
1" conduit for communications wiring
One (1) Category 6 Modular outlets on Decora strap
Two (2) blank inserts
Mounted at 12" Above Door Frame at classroom entrance

REFERENCE FIGURE 39 – TYPE 'S'

Type T – Sheridan TV Outlet

3-gang back box and cover plate (by Division 16)
1" conduit for communications wiring
Internal barrier between electrical and communications
Two (2) 15A duplex receptacles
Two(2) Category 6 Modular outlets on Decora strap
One (1) Blank insert
Mounted 108" A.F.F.
Locations will be defined during design phase

REFERENCE FIGURE 39 – TYPE 'T'

9.0 INFRASTRUCTURE FOR I.T.

9.1 CABLING – FIBRE

All fibre optic related sketches will be in the format of cut sheets attached to the appendices this document.

9.1.1 Inter Building

- Minimum 24 strand 8.3/125µ single mode fibre terminated on LC connectors (glass fiber as manufactured by corning, jacketed under Corning) between hub buildings
- Provide 30’ slack loop in manhole.
- Provide 15’ slack loop in telecommunications room.

9.1.1.1 Single Mode Fibres

.1 Low-Water-Peak Single-Mode Fiber (SMF-28e®)

- Primary Application: Industry standard fiber used to support campus and building backbone cabling systems comprising local area networks (LANs).
- The cabled optical fiber shall support industry-standard multi-gigabit Fibre Channel physical interface specifications.

.2 Outdoor Loose Tube (ALTOS®) All-Dielectric Gel-Free Cable, 2-288 Fibers

- Outside plant cable for outdoor duct or aerial overlash installation.
- Cable shall be Corning Cable Systems part number _ _ _ _ U4-T41_ _ D20

.3 Outdoor Loose Tube (ALTOS®) Armored Gel-Free Cable, 2-288 Fibers

- Rugged outside plant cable for direct burial, outdoor duct or aerial overlash installation.
- Cable shall be Corning Cable Systems part number _ _ _ _ U C-T41_ _ D20.

.4 Indoor/Outdoor Loose Tube (FREEDM®) Gel-Free Cable, 2-288 Fibers

- Campus and building backbone in lieu of transitioning from unlisted cable to NEC listed cable
- Cable shall be Corning Cable Systems part number _ _ _ _ UF-T41_ _ D20.

9.1.1.2 Rack Mountable Hardware

.1 Closet Connector Housing (CCH)

- Provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables, and the opto-electronics.
- Housing shall be Corning Cable Systems Part number CCH-01U or CCH-02U or CCH-03U or CCH-04U, according to the required fiber capacity.

.2 LANscape® Solutions Connector Panels

- The panels are used with field-installable connectors or in applications where the pre-connectorized cables are routed directly from the equipment to the piece of interconnect hardware.
- Housing shall be Corning Cable Systems Part number CCH-01U or CCH-02U or CCH-03U or CCH-04U, according to the required fiber capacity.
- **P**anel part number shall be Corning Cable Systems CCH-CPXX-YY (where the XX is the fiber count and the YY is the adapter code). Example YY code is A9 --- LC Duplex for SM fiber.

9.1.1.3 Fiber Optic Connectors

.1 No-Epoxy and No-Polish (Unicam)

- LC UniCam® Standard Single-Mode Connector (duplex format required)
- Rapid termination of interbuilding indoor/outdoor and outdoor optical fiber cables that contain single-mode optical fiber.
- Single-Mode LC Connector shall be Corning Cable Systems part number 95-200-99.

9.1.1.4 Fiber Optic Cable Fan-Out Kits

.1 Buffer Tube Fan-Out Kits

- Indoor Buffer Tube Fan-Out Kits
- Furcation of optical fiber stranded loose tube cables to terminate individual fibers with field-installable connectors.
- Corning Cable Systems Buffer Tube Fan-Out Kit part numbers are the following:
  i. FAN-BT25-06 Buffer-Tube Fan-Out Kit with (6) 25in color-coded tubes
  ii. FAN-BT47-06 Buffer-Tube Fan-Out Kit with (6) 47in color-coded tubes
  iii. FAN-BT25-12 Buffer-Tube Fan-Out Kit with (12) 25in color-coded tubes
  iv. FAN-BT47-12 Buffer-Tube Fan-Out Kit with (12) 47in color-coded tubes

9.1.1.5 Single Mode Fiber Optic Patch Cords

.1 Single-mode 2-fibre Patch Cord

- Patch Cord connectors shall be measured for insertion loss with the following values for each connector: typical of 0.1 dB and a maximum of 0.3 dB dB and guaranteed reflectance of less than or equal to -55 dB for UPC. Manufacturer shall be ISO 9001 and TL 9000 registered. Connectors shall be single mode LC UPC. Connector ferrule material shall be ceramic. Optical fiber cable type shall be zipcord construction suitable for use in indoor spaces and shall contain a riser-rated or plenum-rated jacket. Patch Cord shall be constructed with reverse-pair positioning as per TIA TSB-125. Patch Cord shall contain single-mode fibers compliant with TIA/EIA 568-B.3 and applicable TIA/EIA-604 document. Patch Cord jacket color shall be yellow. Patch Cord shall be available in different lengths. Manufacturer shall manufacture both cable and connectors used to manufacture patch cord.
- Patch Cord shall be made by Corning Cable Systems with the following part number: 040402R5120xxxM, where 'xxx' is the length in metres.
- Required cords:
  i. 110% coverage based on fibre count to room, where;
    - 80% are 5m in length
    - 30% are 10m in length

9.1.2 Intra Building

- Minimum 12 strand 50/125µ multi-mode and 12 strand multimode (glass fiber as manufactured by corning, jacketed under Belden/CDT) between hub and endpoint buildings.
- Provide 15' slack loop in each telecommunications room.
- Single, composite cable is preferred.

9.1.2.1 Multimode Fiber

.1 Pretium™ 300 - 850 nm Laser-Optimized 50 µm Multimode Fiber for 300 m @ 10GbE

- Industry-standard multimode fiber supports 10 Gb/s serial transmission for a guaranteed distance of 300 m using 850 nm VCSEL sources. Fiber supports current network requirements from 10 Mb/s to 622 Mb/s using LED-based protocols and enables cost-effective migration to laser-based protocols such as 10 Gigabit Ethernet, Gigabit Ethernet and 10 Gigabit Fibre Channel (10GFC). Bandwidth-intensive applications and congested backbone links requiring scalability are cost-effectively supported through premises intrabuilding and interbuilding optical fiber cable plant including local area networks (LANs), storage area networks (SANs) and data centers.

- The cabled optical fiber shall support industry-standard multi-gigabit Fibre Channel physical interface specifications.

.2 Pretium™ 550 - 850 nm Laser-Optimized 50 µm Multimode Fiber for 550 m @ 10GbE
- Industry-standard multimode fiber supports 10 Gb/s serial transmission for a guaranteed distance of 550 m using 850 nm VCSEL sources. Fiber supports current network requirements from 10 Mb/s to 622 Mb/s using LED-based protocols and enables cost-effective migration to laser-based protocols such as 10 Gigabit Ethernet, Gigabit Ethernet and 10 Gigabit Fibre Channel (10GFC). Bandwidth-intensive applications and congested backbone links requiring scalability are cost-effectively supported through premises intrabuilding and interbuilding optical fiber cable plant including local area networks (LANs), storage area networks (SANs) and data centers.
- The cabled optical fiber shall support industry-standard multi-gigabit Fibre Channel physical interface specifications.

9.1.2.2 EDGE Plug & Play

.1 EDGE Universal Preconnectorized MTP Indoor Trunk Cable Assembly
- 12 fiber MTP® Connectors pre-terminated on both ends for termination into pre-assembled connector modules and/or MTP adapter panels
- A representative part number shall be G7575xxyPNDDUzzzF, where “xx” is replaced with 12, 24, 36, 48, 96 or E4 (144) strand counts), “y” is replaced with “T” for OM3 50/125 or “Q” for OM4 50/125 and the length is designated in “yyy” feet.

.2 EDGE Universal Preconnectorized MTP Indoor Trunk Cable Assembly
- 12 fiber MTP® Connectors pre-terminated on both ends for termination into pre-assembled connector modules and/or MTP adapter panels
- A representative part number shall be G7575xxyPNDDUzzzF, where “xx” is replaced with 12, 24, 36, 48, 96 or E4 (144) strand counts), “y” is replaced with “T” for OM3 50/125 or “Q” for OM4 50/125 and the length is designated in “yyy” feet.

9.1.2.3 Modules

.1 Low Loss Plug & Play Universal Systems Closet Connector Housing (CCH) Modules
- Low loss modular patching for Data Center environments where pair wise polarity is maintained by the design of the module and trunk cable assemblies used. Modules allow quick connector changes in the front plane without re-termination of the backbone cable. The low loss Universal modules are mated to both ends of a Universal Trunk Cable

Assembly completing a Corning Cable Systems Universal Wiring System where pair-wise polarity is ensured.

- Modules shall be Corning Cable Systems part number EDGE-UM12-05-93x, where "x" is replaced with "T" for OM3 or "Q" for OM4

9.1.2.3 Multi-mode Fibre Optic Patch Cords

.1 Low- Loss 850-nm Laser-Optimized 50/125 µm 2-Fiber Patch Cord

- Patch Cord connectors shall be measured for insertion loss with the following values for each connector: typical of 0.2 dB and maximum of 0.3 dB. Connector reflectance shall be less than or equal to -20 dB. Boot color shall be aqua. Manufacturer shall be ISO 9001 and TL 9000 registered. Connectors shall be multimode LC. Available optical fiber cable types shall be suitable for use in indoor spaces and be listed as OFNR. Patch Cord shall contain OM3 50/125 um 850 nm laser-optimized, EMB multimode fiber and shall comply with TIA/EIA-568-B.3 and applicable TIA/EIA-604 document. Patch Cord jacket and connector color shall be aqua. The manufacturer shall have an in-depth knowledge, and more than 10 year history, of manufacturing optical fiber Patch Cords. Manufacturer shall manufacture both cable and connectors used to manufacture Patch Cord. Patch Cord shall be available in different lengths.
- Patch Cord shall be made by Corning Cable Systems with the following part number: 050502T5120xxxM, where 'xxx' is the length in metres
- Required cords:
  i. 110% coverage based on fibre count to room, where;
    - 80% are 5m in length
    - 30% are 10m in length

9.2 CABLING – COPPER

All copper related sketches will be in the format of cut sheets attached to the appendices this document.

9.2.1 Horizontal Cabling

9.2.1.1 Category 6 (FT6) UTP cable. (refer to standard specifications)

- Terminate on patch panel on rack.
- Cable shall be white and jacks shall be blue.
- Provide cable and connectors only from Sheridan Institute of Technology & Advanced Learning preferred manufacturers (Belden/CDT). Alternates will not be acceptable.

9.2.1.2 Category 6 (FT6) UTP Patch Cord.

.1 GigaFlex PS6+ Modular Cord

- The GigaFlex PS6+ Modular Cords are 4-pair 23 AWG UTP modular cords designed for the use with the Belden IBDN Systems 2400 and 4800LX, providing bandwidths of 250 MHz and 500 MHz, respectfully. The GigaFlex PS6+ Modular Cords have been designed to provide mated-connection performance that exceeds the Category 6 requirements.
- The GigaFlex PS6+ Modular Cord's patented design, with a very small footprint, makes them fully compatible with any of the highest density hubs with RJ45 jack connections.
- Patch Cord shall be made by Belden/CDT with the following part number: AX3500xx, where 'xx' defines the length and colour.
- Required cords:
  i. 130% coverage based on copper count to room, where;
    - 110% are 1'-0" in length, blue in colour
    - 20% are 7'-0" in length, black in colour

9.2.1.3 Multi-pair Category 5 (FT6) UTP cable (a.k.a. pigtails)

- Minimum 25-pair cable
- Terminate on plywood backboard on BIX frame at one end.
- Terminate on 1U 24-port patch panel on the rack at other end.
- Cable shall be gray and patch panel jacks shall be black.
- Design adequate slack loops in closets to relocate if racks move in future.
- Provide cable and connectors only from Sheridan Institute of Technology & Advanced Learning preferred manufacturers (Belden/CDT). Alternates will not be acceptable.
  (1) Provide 1 patch cord per cable run.
  (2) Ten (10'-0") foot cord for active end.
  (3) Provide 1- pair cross-connect wire.
  (4) Designate FT4/FT6 to meet code requirements.

9.3 REQUIREMENTS BASED ON ROOM FUNCTION

Rooms:
Please refer to individual room type detail sketches for drop counts and types.

General:
Unless noted otherwise, a typical outlet shall consist of (1) cable run unless otherwise specified.

- Every enclosed space shall be provided with a minimum of (1) cable run.

REFERENCE FIGURE 40 – VERTICAL CONDUIT REQUIREMENT

10.0 INFRASTRUCTURE FOR PAGING

All paging related sketches will be in the format of cut sheets attached to the appendices this document.

Related Sheridan Institute of Technology and Advanced Learning Guidelines

- Sheridan Institute of Technology and Advanced Learning Technical Guidelines.
- Tender Specification by Consultant related to current project.

Coordination Requirements

- Sheridan Institute of Technology and Advanced Learning Information Communication Technologies

Description

- This section covers requirements for Paging Control Systems. The Paging Control System is installed by successful contractor. General Requirements for this system for Consultants and Contractors will be provided by consultant.
- These guidelines provide reference to particular types, grades and models of products. In general, the references include both generic descriptions and specific product details. These references shall not be construed as a directive to sole-source products from any particular vendor except where this is specifically stated.
- Paging shall include the following:
    - .1 Telephone Access Modules
    - .2 Indoor Speakers
    - .3 Outdoor Speakers

10.1 EQUIPMENT

All equipment will be defined by Consultant, supplied and carried by Communications Contractor.

Main module to consist of a Viking FXI-1 universal paging interface. Features are listed below.

10.2 CABLING

All cabling for paging system is defined under speaker requirements. Any cabling required for network are defined in IT section of this document.

10.3 REQUIREMENTS BASED ON TELECOMMUNICATION ROOM FUNCTION

10.3.1 Main Computer Room

- Telephone Access Modules are designed to provide telephone access to most commonly available paging systems. Provides telephone and paging system connections, input and modular page port connector, as well as mode setting switches and adjustment control.
- All main paging modules shall be located in the main computer room where possible.
- The paging system must be connected to the PABX station port.
- The typical installation shall be a Viking FXI-1 with the following features:
  a. Integrate your paging system with virtually any POTS, Centrex, Digital or IP phone system
  b. Suppress background music during paging
  c. Provides contact closure to activate paging system if not provided by the phone system
  d. Add pre-announce tone to your paging system
  e. Features
  f. Select: FXO (loop start), FXS (ring trip) or paging port (VOX relay) interface mode
  g. No power supply required in FXS interface mode
  h. Up to 6 units can be powered from one adapter in the FXO or VOX mode
  i. 26V DC talk battery for interfacing with FXO or unused phone system line input/trunk port
  j. Floating 600 ohm paging output with volume control
  k. Normally open or closed relay for external paging amp activation or interfacing the paging amp with an external background music source
  l. 800 Hz pre-announce page tone (on/off)
  m. Compatible with 24 to 48 volt FXS operation
  n. Calling party control (CPC) detection for immediate disconnect
  o. Busy signal detect disconnect
  p. 2.5 to 5 second VOX silence disconnect timer
  q. Programmable VOX trigger sensitivity
  r. 16 or 36 second default disconnect timer
  s. Screw terminal block connections
  t. Wall mount housing: (2) #6x3/4 panhead screws included

10.3.2 Communications Hub Room

- Additional Viking FXI-1 can be installed in Hub Rooms but all main paging modules shall be located in the main computer room where possible.
- The paging system must be connected to the PABX station port.
- The typical installation shall be a Viking FXI-1

10.3.3 Co-Locate Hub Room

- Additional Viking FXI-1 can be installed in Co-locate Hub Rooms but all main paging modules shall be located in the main computer room where possible.
- The paging system must be connected to the PABX station port.
- The typical installation shall be a Viking FXI-1

10.4 REQUIREMENTS BASED ON LOCATION FUNCTION

10.4.1 Indoor Paging

2 conductor 16 AWG or 18AWG cable. (refer to standard specifications)

- Terminate on BIX frame located on the backboard.
- Provide cable and connectors only from Sheridan Institute of Technology & Advanced Learning preferred manufacturers (Belden/CDT). Alternates will not be acceptable.
- All intra building zones shall be wired back to a central location on a single floor closet regardless of number of floors in the building.
- ONLY split termination if maximum distance requirements are exceeded.

10.4.2 Outdoor Paging

Category 6 (FT6) UTP cable. (refer to standard specifications)

- Terminate on BIX frame located on the backboard.
- Provide cable and connectors only from Sheridan Institute of Technology & Advanced Learning preferred manufacturers (Belden/CDT). Alternates will not be acceptable.
- All outdoor paging cables shall be enclosed in minimum 1” EMT conduit entire length of run.
- All intra building zones shall be wired back to a central location on a single floor closet regardless of number of floors in the building.
- ONLY split termination if maximum distance requirements are exceeded.

10.4.3 Indoor Speakers

Typical requirements for indoor paging speakers shall consist of:

- Arnscott part number A460K (speaker)
- Arnscott part number SE40SB (enclosure)
- Arnscott part number G70W (grill)
- Arnscott part number A70-4 (transformer)

REFERENCE FIGURE 41 – INDOOR SPEAKERS

10.4.4 Outdoor Speakers

Typical requirements for outdoor paging speakers shall consist of:

- Bogen part number SPT15A

REFERENCE FIGURE 42 – INDOOR SPEAKERS

11.0 INFRASTRUCTURE FOR SECURITY

All Security related sketches will be provided by the security vendor on a project to project requirement.

Related Sheridan Institute of Technology and Advanced Learning Guidelines

- Sheridan Institute of Technology and Advanced Learning Technical Guidelines.
- Tender Specification by Consultant related to current project.

Coordination Requirements

- Sheridan Institute of Technology and Advanced Learning Electronic Systems and Secure Access (ESSA).

Description

- This section covers requirements for Access Control Systems. The Access Control System is installed by ESSA. General Requirements for this system for Consultants and Contractors will be provided by consultant.
- These guidelines provide reference to particular types, grades and models of products. In general, the references include both generic descriptions and specific product details. These references shall not be construed as a directive to sole-source products from any particular vendor except where this is specifically stated.
- IP based system that monitors both live and recorded events for security access shall include the following:
    - .1 IP cameras.
    - .2 Power transformers.
    - .3 Card Readers

11.1 EQUIPMENT

All equipment will be defined, supplied and carried by Sheridan Security, Parking & Emergency Preparedness.

11.2 CABLING

For all Security installations the following wiring specifications apply

- All cables runs must be free of breaks and splices
- Use only stranded conductor
- Multi-pair cables must have individually shielded pairs
- IP Cameras: PoE fed over FT6 PLENUM RATED CATEGORY 6 cable
- Interior PTZ housings: 1 pair #16 stranded copper shielded cable
- Exterior PTZ housings: 1 pair #12 stranded copper shielded cable
- RM-4 to controller: 3 pair individually shielded #18 stranded copper cable
- Relay (for lock) to Lock Power Supply: 1 pair #18 stranded copper cable

- Lock to RM-4: 2 pair individually shielded #18 stranded cable
- D.C. to RM-4: 2 pair #22 Stranded copper cable
- REX to RM-4: 2 pair #22 Stranded copper cable
- READER to RM-4: 6 conductor #22 shielded copper cable

11.3 REQUIREMENTS BASED ON TELECOMMUNICATION ROOM FUNCTION

11.3.1 Main Computer Room

11.3.2 Communications Hub Room

11.3.3 Co-Locate Hub Room

11.4 REQUIREMENTS BASED ON DOOR FUNCTION

11.4.1 Single Door

.1 Card Reader

- Install junction box with a ¾" conduit leading to RM-4
- Reader is to be placed on the wall adjacent to the knob. Not hinge side.
- Bottom of reader positioned between 38" and 40" above floor level
- Edge of reader positioned at least 2" from the door frame

.2 Electric Lock

- Install ¾"conduit to RM4 enclosure (Share with Reader conduit if on same wall)
- Commercial Grade
- ¾" keeper depth
- 12/24VDC operating range
- Fail Secure
- Built in LBM required (Latch Bolt Monitor)

.3 Door Contact

- Share conduit with REX module
- 1k DEOL (1k ohm Double end of line Normally Closed configuration)
- Tied in series with LBM
- Mounted on top of door frame not the side
- Center of D.C. must be drilled from 1.5" to 3.5" from edge of door (Latch side)
- Contact and Magnet must be lightly glue into place using silicone

.4 Request to Exit

- Install ¾" conduit from top of door frame (Latch Side) to RM-4 Enclosure
- Mount REX to top edge of door frame on secure side
- Should be mounted above door knob/handle
- Aim REX to view 3' away from the base of the door

.5 RM-4 Door Control Module

- Must be located within 10' of door (suggested but can reach 20'-25')
- A separate relay (arm-1 or comparable) must be mounted with RM-4
- Mount in ceiling above door (if drop tiles are available)
- Mount above door on drywall (For locations with no nearby drop-tiles)
- Secure in small steel enclosure (White 6"x8" KEYED Enclosure)
- Conduits from Door Lock/Reader and REX/D.C lead into enclosure and a single conduit leads out back to main controller in closet.

11.4.2 Double Doors

Requirements match those of the Standard however some additions/modifications exist.

.1 Card reader conditions reflect those of the double door

.2 Electric Lock

- Independent conduit for Lock is to be placed on the non-swing door
- Transfer hinge must be installed to route power and status to lock
- Conditions b.1. – b.vi. apply

**NOTE:* *for a.i. CONDUIT CANNOT BE SHARED WITH READER AS THEY NO LONGER SHARE the SAME WALL IN THIS SCENARIO*

.3 Door Contact

- Install door contact on both doors (Following conditions c.i. – c.vi)

.4 Request to exit conditions reflect those of the Standard Door Requirements

.5 RM-4 conditions reflect those of the Standard Door Requirements

12.0 INFRASTRUCTURE FOR AUDIO VISUAL

12.1 EQUIPMENT

The room will be equipped with a standard, easy-to-use instructor interface. The audio/video (A/V) system will be controlled by a control system with the control panel mounted on the instructor station. System parameters can be monitored, administered, and controlled over the campus network. The A/V equipment will be located in an equipment rack inside of the instructor station.

It is important for Sheridan Institute of Technology and Advanced Learning to implement a standard operating protocol so faculty can depend on a standard, familiar interface in each classroom.

The audio system (exact type to be determined by room requirements) will be designed to fit the room's environment with an appropriate speaker system (with instructor speech reinforcement as required). The program sources are the same as for the video system. Large classrooms and auditoriums will have audience microphone capability provided throughout the student seating area.

The room will incorporate speech reinforcement with a wired or wireless microphone included on an as-needed basis according to room requirements. A line-level audio output jack (RCA) will be available on the front of the equipment rack for interfacing hearing assist or other equipment.

12.2 CABLING

The room will be equipped with Gigabit Ethernet connectivity. The junction box for AV connectivity shall be a Panduit PZICEA and shall come with four data jacks and a 15A duplex receptacle mounted inside the housing as a minimum.

Wireless Access Points in the classroom shall provide 802.11b wireless networking capability.

12.3 DEVICES

12.3.1 Hardware Devices

All hardware devices shall be defined, supplied, and installed by others on a project to project basis.

12.3.2 I/O Connections

All I/O connections shall be defined, supplied, and installed by others on a project to project basis.

12.4 REQUIREMENTS BASED ON ROOM FUNCTION

12.4.1 General

12.4.1.1 Instructor Station

The room will be equipped with a special lectern/instructor stations and shall be specified by others on a case-by-case basis. These lectern/instructor stations shall be relocatable to any position in the room.

12.4.1.2 A/V Power Requirements

A 20A un-switched dedicated circuit shall be provided for the A/V system, with duplex outlets located in the cabling junction box and at a dedicated wall projector locations. A green wire ground shall be required on all new wall projector locations.

12.4.1.3 A/V Conduit Requirements

Access to wiring connections shall be at the cabling junction box.

12.4.1.4 Cabling Junction Box

The room will be equipped with a Panduit Ceiling Mounted Media Rack.

- Designed to accept up to 2 RU of active electronics as deep as 17.5" and up to 6 RU of standard 19" passive connectivity (PZICEA only)
- Designed to accept up to 8 RU standard 19" passive connectivity (PZICE only)
- Thermal management design optimizes air flow for improved heat dissipation; ideal for high heat load PoE enabled switch applications
- Mount in 2' x 2', 2' x 4', and 2' x 6' drop ceilings
- 50 pound door weight capacity
- Include doorplate, equipment mounting bracket, integrated horizontal cable slack manager
- AC power ready – receptacle not included (PZICEA only)
- Includes low decibel 60 CFM fan (PZICEA only)

12.4.1.5 Data Requirements

The room will be equipped with Gigabit Ethernet connectivity. The cabling junction box shall house four data jacks as a minimum.

12.4.1.6 Wireless Requirement

Wireless access points in each classroom shall provide wireless networking capability. A requirement for a minimum of four (4) wireless nodes in each classroom (1 per quadrant) shall be required.

12.4.1.7 Telephone

A wall-mounted campus phone, with restricted ringing and calling capabilities, shall be located near the instructor station at ADA recommended height. The main function of the phone shall be communication with the Classroom Support Hotline.

12.4.1.8 Audio System

The monaural audio system (exact type to be determined by room requirements) will be designed to fit the room's environment with an appropriate speaker system (with instructor speech reinforcement as required). The program sources are the same as for the video system. Large classrooms and auditoriums will have audience microphone capability provided throughout the student seating area.

The room will incorporate speech reinforcement with a wired or wireless lavaliere microphone included on an as-needed basis according to room requirements. A line-level audio output jack (RCA) will be available on the front of the equipment rack for interfacing hearing assist or other equipment.

12.4.1.9 Control System

All functionality for the control system in standard classrooms shall be able to control Automated screens (where applicable), lighting, and blinds.

12.4.2 Large Classroom Supplemental Information

12.4.2.1 Projection Capability

Large classrooms, lecture halls, and auditoriums require additional Projection Capable Classroom technology infrastructure, which will be individually specified on a case-by-case basis. Requirements may include:

- Increased data connectivity/bandwidth
- Separate AV booth
- Additional AV equipment closets
- Dual projection systems
- Additional I/O modules and systems

- Additional internal future growth conduit
- Auto-tracking cameras
- Auto-balancing sound system
- Audience microphone locations
- Secondary instructor station(s)

12.4.2.2 Control System

The networking option will consist of an integrated controller located in the instructor station. An eight-button panel will be located on the instructor station. The control system will have an optional network connection to allow remote support from Classroom Technical Services. The following functions will be programmed into the system:

- Video projector power control
- Projector source selection
- Volume control
- Video mute
- Audio mute

A level of automation will be programmed into the system in order to simplify room operation for the user. In order to save video projector lamp life, the system will be programmed to shut down after a specified amount of time with no user activity. The room will also be programmed to prevent system operation after hours. The system operation can be controlled by day or by week at OCM-specified access times.

12.4.2.3 Monitoring Option

The networked control system option allows the OCM Classroom Support Hotline operator to monitor and troubleshoot the operating characteristics of the room technology and to assist the instructor with any problems. Remote control and operation of the room equipment is enabled to facilitate the remote resolution of problems during actual classroom teaching activity. The control systems communication protocols permit 24-hour monitoring of system parameters and enhance proactive problem solving to eliminate system down time. A software-based automated management program oversees the operating parameters of the classroom systems, sends repair and maintenance alerts, and allows monitoring and analysis of system operation.

12.4.2.4 Standard Classroom

- Whiteboards to be mounted 39” AFF to the bottom of the whiteboard.
- One duplex and 1 data jack located behind each projector wall locations.

- The noise criteria (NC) should be NC25 and Reverberation Time (RT) should be between 0.6 and 0.7 sec
- Walls between classrooms should be designed to STC-60 standard and walls between classrooms and washrooms should be designed to STC-50 standard.
- Ambient noise to the room should not exceed 25db
- Zoned lighting is needed to darken the area near the projectors to eliminate any fading of the projected image.
- Blackout blinds are needed to control the amount of ambient light coming into the room.
- All lighting and blinds should be controllable using low voltage relay device that our room controllers can connect too.
- All lighting shall be independently controlled from either a wall switch or at the lectern location (quasi 3-way functionality)

12.4.2.5 Split Classroom

- Whiteboards to be mounted 39” AFF to the bottom of the whiteboard.
- One duplex and 1 data jack located behind each projector wall locations.
- The noise criteria (NC) should be NC25 and Reverberation Time (RT) should be between 0.6 and 0.7 sec
- Walls between classrooms should be designed to STC-60 standard and walls between classrooms and washrooms should be designed to STC-50 standard.
- Ambient noise to the room should not exceed 25db
- Zoned lighting is needed to darken the area near the projectors to eliminate any fading of the projected image.
- Blackout blinds are needed to control the amount of ambient light coming into the room.
- All lighting and blinds should be controllable using low voltage relay device that our room controllers can connect too.
- All lighting shall be independently controlled from either a wall switch or at the lectern location (quasi 3-way functionality)

12.4.2.6 Meeting Rooms

- Blocking or reinforced walls are needed to support LCD TV.
- Two duplex and 2 data jacks located behind each LCD.
- All power and data behind LCD’s will be recessed into the wall.
- One (1), Two (2) or Three (3) 2” RMC conduits are needed from wall locations to the meeting table. These are defined in each meeting room type.
- Depending on ceiling height all meeting room LCDs should be mounted 4’ AFF to the bottom of the LCD

- System control touch panels should be mounted in the table for all meeting rooms.
- Data and Power to be delivered to Spider box at table. Reference to room size must be made for quantities.
- Data at ceiling location for Wireless Access Point. Reference to room size must be made for quantities.

12.4.2.7 Labs

Labs will be treated the same as standard classrooms and may require project specific requirements that will be provided if necessary.

12.4.2.8 Breakout/Group Study Rooms

- Blocking or reinforced walls are needed to support each LCD TV.
- Two duplex and 2 data jacks located behind each LCD.
- All power and data behind LCD's will be recessed into the wall.
- 2" RMC conduit is needed from LCD location to the other wall where input wall plate will be terminated. There should be a break in the conduit where the touch panel will be located above the table.
- Depending on ceiling height all group study LCDs should be mounted 4' AFF to the bottom of the LCD
- System control touch panels should be mounted 4' AFF

12.4.2.9 Auditoriums/Lecture Halls

- 2" RMC conduit is needed from podium location in front of room to AV room located at the back of the auditorium
- Blackout blinds are needed to be able to control the ambient light.
- Zoned lighting is needed to darken the area near the projectors to eliminate any fading of the projected image.
- The noise criteria (NC) should be NC25 and Reverberation Time (RT) should be between 0.6 and 0.7 sec

12.4.2.10 Administration Offices

- Blocking or reinforced walls are needed to support each LCD TV.
- Two duplex and 2 data jacks located behind each LCD.
- All power and data behind LCD's will be recessed into the wall.

12.4.2.11 Public Spaces

- Blocking or reinforced walls are needed to support each LCD TV.
- Two duplex and 2 data jacks located behind each LCD.
- All power and data behind LCD's will be recessed into the wall.

13.0 APPENDICES

13.1 LABELLING CONVENTIONS

13.1.1 Numbering Format:

The new numbering format is based on the CAN/CSA-T568-93 standard with minor adaptations for Sheridan's environment.

Format: [campus]-[tc designation]-[rack][panel position]-[jack position]

Detail:

[campus]
Single character value; range: A through Z.
Denotes the Campus.
Currently defined values would be:
- "D" for Davis Campus;
- "S" for Skills Training Centre;
- "T" for Trafalgar Campus;
- “M” for Mississauga Campus.

[tc designation]
Variable-length character value
Refer to *Telecommunication Closet Designations*.

[rack]
Single character value; range: 1 through Z.
Each data rack in a TC will be assigned a unique value in the range.

[panel position]
Double-digit numeric value; range: 01 through 44.
Panel Position in rack identified by top of panel in rack in vertical units. Numbering begins at 01 closest to the floor. Refer to *Default TC Rack Layouts*.

[jack position]

Double-digit numeric value; range: 01 through 24 or 48.
This identifies the jack position within the panel based on manufacturer numbering. 1U panels will number 01 through 24, 2U panels 01 through 48, etc.

[daisy-chain] (for indoor paging speakers)

Double-digit alpha-numeric value; range: A-Z and 1-5.

This identifies the indoor speaker location based on the chain identifier (A) and the speaker in the chain (3). Both the BIX frame and speaker will have matching identifiers for easy recognition.

[home run] (for outdoor paging speakers)

Double-digit alpha-numeric value; range: labeled identical to closest outside door location. (i.e. P3 or D7).

This identifies the outdoor speaker location based on the closest exterior door with an existing tag. Both the BIX frame and speaker will have matching identifiers for easy recognition.

13.1.2 Label Configuration:

There are two allowable configurations for labels. In both cases, only 10 characters will be required in the jack labeling; the campus designation will be inferred and used in documentation only. However, the full 12 characters would be entered in the switch port description to ensure the jack has a unique reference across the entire network.

For the workstation end, a double line layout would be used to conserve space. The single line layout can be used on single jack faceplates where space permits.

Single Line:

[tc designation]-[rack]-[U-position]-[panel position]-[jack position]

Double Line:

[tc designation]-[rack]-[U-position]
[panel position]-[jack position]

There will be no need for jack labeling in the TC. There will be labels required for the rack and the vertical units, but since the patch panels come pre-numbered by the manufacturer, generated labels are not required.

Examples:

B103-134-26	This drop terminates in TC-B103, on the 1st rack, in the patch panel at 34U, in the 26th jack position. (label on faceplate)
SC112-1 42-44	This drop terminates in TC-SC112, on the 1st rack, in the patch panel at 42U, in the 44th jack position. (label on faceplate)
D-C205-125-06	This drop is at the Davis Campus, terminates in TC-C205, on the 1st rack, in the patch panel at 25U, in the 06th jack position. (port description field on switch)
BR-D7	Brampton Campus – Door Location, would reference an outdoor speaker at the Brampton campus near door B4.
T-A3	Trafalgar Campus - would reference a chain of speakers 'A' in this example, with the 3rd speaker in the chain being identified.

14.0 DETAIL DRAWINGS

All Detail Drawings pages included herein are defined in the document. Page numbers are not included as the drawings themselves and number of drawings may be revised during periodic Master Document updates.

15.0 MANUFACTURER CUT SHEETS

All Manufacturer Cut Sheet pages included herein are NOT defined in the document; they are a simple reference only. Page numbers are not included as the manufacturers themselves and number of drawings may be revised during periodic Master Document updates.

Contractor shall be responsible to supply manufacturer cut sheets or catalogue technical papers for all recommended products to the Consultant and Client for approval prior to commencing the project.

The following pages are samples only for:

Belden/CDT
Corning
WBT
APC
Middle Atlantic
Viking
Bogen
Arnscott

TECHNICAL AND ENVIRONMENTAL SPECIFICATIONS

CHARACTERISTICS & TECHNICAL PERFORMANCE

	Standard	Tarkett value
Type of product	-	Wall base
Length	-	4 ft (1.2 m), 100 ft (30.5 m), 120 ft (36.6 m)
Heat stability	ASTM F1514	$\Delta E \leq 8.0$
Total thickness	ASTM F386	0.125 " (3.18 mm)
Profile	-	Please refer to the product page.
Length per box	-	120 ft (36.58 m), 100 ft (30.48 m)
Pattern	-	Solid
Commercial warranty	-	2 year limited
Chemical Resistance	ASTM F925	Good
Light Stability	ASTM F1515	$\Delta E \leq 8.0$
Flammability	ASTM E648 (CRF)	Class 1 ($\geq$ 0.45 W/cm²)
Smoke Density	ASTM E662	< 450
Flame Spread/Smoke Density	ASTM E84	Class B < 450 smoke

SUSTAINABILITY, ENVIRONMENT & INDOOR AIR QUALITY

	Standard	Tarkett value
Total recycled content	-	14 %
ReStart®	-	Yes
Phthalate - free	-	Phthalate-free
Floorscore certified	-	Yes
Recycled Content - Production Waste	-	14 %

RESILIENT WALL BASE
INSTALLATION & MAINTENANCE INSTRUCTIONS

Cove and Toeless Profiles

INTRODUCTION

These instructions are written as a guide to be used by professional installers when installing Tarkett products. These instructions, combined with our adhesives and flooring products, create a system. Utilizing this system will ease the installation process and provide the customer with a completed product that will perform to its intended purpose. Always visit www.tarkettna.com for the most current installation and maintenance instructions. Technical videos and tip sheets are also available. Contact Tarkett Technical Services at (800)-899-8916 with any questions.

HANDLING AND STORAGE

1. All Tarkett products must be stored in an indoor, climate controlled space and be protected from the elements. Temperature must be maintained between 65°F (18.3°C) and 85°F (29.4°C) with a relative humidity between 40% and 60%.
2. All cartons must be stored on a dry, flat, level surface. Cartons must be carefully stacked squarely on top of one another and never be stored on edge. Take caution not to over stack the cartons and never double stack pallets. Always protect carton corners from damage by tow-motors and other traffic.
3. Care must be taken not to stretch the wall base when removing it from the cartons or while unrolling the coils. **The wall base will not shrink, but it will relax to its original length, if stretched.** To assist with the installation process, coils should be unrolled and allowed to relax for a minimum of 24 hours prior to installation.
4. Tarkett flooring and adhesives must be site conditioned at room temperature for 48 hours prior to, during, and after installation. Room temperature must be maintained between 65°F (18.3°C) and 85°F (29.4°C) and the ambient relative humidity must be between 40% and 60%. We strongly recommend the permanent HVAC system be fully operating. **NOTE:** If a system other than the permanent HVAC source is utilized, it must provide proper control of both temperature and humidity to recommended or specific levels for the appropriate time duration as stated above.
5. Once the installation is completed, the service temperature of the space must never fall below 55°F (12.8°C).
6. In areas that are exposed to intense or direct sunlight, the product must be protected during the conditioning, installation, and adhesive curing periods, by covering the light source.
7. Tarkett products are not recommended for exterior use. Exposure to excessive UV rays can result in fading, degradation, and/or color variation.
8. The highest quality of materials and workmanship is employed in the manufacture of Tarkett Flooring and careful inspection is made before shipment. A quality installation is the responsibility of the installer. It is the installer's responsibility to verify the accuracy of the order and to ensure the materials are checked for damage, defects, and satisfactory color match. An authorized Tarkett distributor or Tarkett representative must be notified of any defects before installation proceeds. **Tarkett will not pay for labor or material costs claimed on installed materials with visual defects.**
9. Tarkett cannot accept responsibility for any loss or damage that may result due to processing or working conditions and/or workmanship outside our control.
10. Users are advised to confirm the suitability of this product by their own tests.

GENERAL SUBFLOOR PREPARATION

1. **All walls** must be permanently dry, clean, smooth, and structurally sound. The surface must be free of all dust, loose particles, solvents, paint, grease, oil, wax, alkali, sealing/curing compounds, old adhesive, and any other foreign material, which could affect the installation and adhesive bond to the substrate. Permanent and non-permanent markers, pens, crayons, paint, or similar marking tools used to mark the substrate or the back of the wall base material will cause migratory staining. Substrate contamination or markings that bleed through the wall base material causing discoloration or staining are excluded from the Tarkett Limited Warranty. All substrate contaminants must be mechanically removed prior to the installation of the flooring material. **NOTE: Do not use liquid solvents or adhesive removers.**

   Minimum temperature of the substrate must be 60˚F (15.6 ˚C). Substrate temperature should be a minimum of 5˚F higher than the dew point temperature.

   Fill all depressions, cracks, and other surface irregularities with a good quality patching compound appropriate for this purpose.
2. **Do not install** Johnsonite Resilient Wall Base over vinyl wallcoverings.
3. **Do not install** Johnsonite Resilient Wall Base over non-porous surfaces with Tarkett 960 Wall Base Adhesive. Utilize Tarkett 946 Premium Contact Adhesive following the non-porous application instructions for all non-porous surface installations.
4. Never install Johnsonite Resilient Wall Base on surfaces that will be exposed to drastic temperature changes or moisture.
5. **Terrazzo and Ceramic wall** surfaces must be thoroughly sanded to remove all glaze and waxes. Remove or replace all loose tiles and clean the grout lines. Use a Portland cement based leveling compound to fill all grout lines and other depressions.
6. **Steel** wall surfaces must be mechanically abraded to assist with the adhesive bond. The wall must be cleaned to remove all dirt, rust and other contaminants. When applying adhesive the non-porous installation instructions must be followed

INSTALLATION

1. **Adhesive Application:** See adhesive chart below and follow adhesive label instructions for proper use.
2. **Installation Procedures:**

   a. Allow coiled wall base to lay flat for at least 24 hours, between 65° and 85°F (18.3° and 29.4°C) with HVAC system operating, prior to installation.

b. For installations on porous wall surfaces, apply Tarkett 960 Wall Base Adhesive to the ribbed surface (back) of the wall base with a 1/8" square-notched trowel. The adhesive should cover 80% of the back surface. Leave a 1/4" (6.35mm) uncovered space at the top of the wall base to prevent the adhesive from oozing onto the wall above the base when installed.

c. For installations on non-porous wall surfaces (i.e.: metal, epoxy paint, ceramics, etc.) apply Tarkett 946 Premium Contact Adhesive to both the wall surface and the back of the wall base. Allow adhesive to thoroughly dry to the touch.

NOTE: Once contact is made to the wall surface, the wall base cannot be moved.

d. Position wall base on wall surface and roll with a small hand roller. **Always roll back to starting point to prevent stretching the wall base.**

e. Use a clean white cloth dampened with water to remove wet adhesive from wall base, substrate, floor covering and tools.

f. Dried adhesive may require the use of denatured alcohol applied to a clean white cloth. (Follow manufacturer's precautions when using denatured alcohol.)

CORNER INSTALLATION

1. **Factory Made Outside Corners:**

a. Install factory made corners before installing wall base.

b. Trowel adhesive to ribbed back of wall base corner.

c. Position corner in place and roll to ensure proper adhesive bond.

d. Attention should be given to a tight and even fit to the corner.

NOTE: Tarkett 946 Premium Contact Adhesive may be used to ensure a faster setup at the corner.

2. **Field-Made Inside Corners:**

a. Install wall base and terminate into the corner.

b. Position another piece of wall base on opposing wall, without adhesive, approximately 1" from the installed piece.

c. Utilize dividers; place one pin at the top of the installed piece and one pin at the top of the uninstalled piece. Carefully, move the dividers downward in a straight vertical motion, allowing the pin of the dividers to follow the profile of the installed piece. At the same time, place adequate pressure on the pin to transfer and/or scribe the profile onto the surface of the uninstalled piece.

d. Use a utility knife to cut the scribe line on the uninstalled wall base, apply adhesive, and position the trimmed section into place.

3. **Field-Made Outside Corners**

a. Stop application of adhesive to wall base approximately 18" (45cm) from the outside corner of the wall.

b. Position the wall base at the corner and pencil line the back of the wall base where the bend is required.

c. Lay the wall base on the floor with the back up. Utilizing a top-set or pull-type gouge tool, make a shallow notch along the pencil line.

d. Note: The notch depth should not exceed one-quarter the total thickness of the wall base.

e. Reposition the wall base corner on the wall. The corner of the wall should fit snugly into the notched recess on the back of the wall base.

f. Apply adhesive and roll firmly into place.

NOTE: Tarkett 946 Premium Contact Adhesive may be used to ensure a faster setup at the corner.

ADHESIVE CLEAN UP

Excess adhesive should be removed during the installation process.

960™ Wall Base Adhesive

946™ Premium Contact Adhesive

- Use a clean white cloth dampened with water to remove wet adhesive from floor covering and tools.
- Dried adhesive may require the use of denatured alcohol applied to a clean white cloth. (Follow manufacturer's precautions when using denatured alcohol.)

MAINTENANCE

1. Wait 72 hours after installation before performing initial cleaning.
2. A regular maintenance program must be started after the initial cleaning.
3. Tarkett Resilient Wall Base is maintained with regular wiping using a wet, clean, soft, white cloth.
4. A mild detergent may be added to the water.
5. Coarse scrubbing media or harsh cleaning chemicals may damage the surface of the wall base.

ADHESIVE SELECTION CHART

Products	Adhesive	Application and Coverage		Moisture / pH Limits			Notes
		Porous	Non-Porous	RH%	$CaCl_2$	pH	
Cove and Toeless	960 Wall Base Adhesive	1/8 x 1/8 x 1/8 SQ 4" = 200-250 lf. 6" = 100-150 lf. 2.5" = 300-350 lf.	USE 946 PREMIUM CONTACT ADHESIVE	N/A	N/A	N/A	**POROUS ONLY**
Cove and Toeless	946 Premium Contact Adhesive	Applied with Brush or Roller 1 qt. unit 24 – 36 sq. ft. 1 gal. unit 144 – 215 sq. ft.	Applied with Brush or Roller 1 qt. unit 24 – 36 sq. ft. 1 gal. unit 144 – 215 sq. ft.	N/A	N/A	N/A	Coverage based on both sides

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COOPER LIGHTING - METALUX®

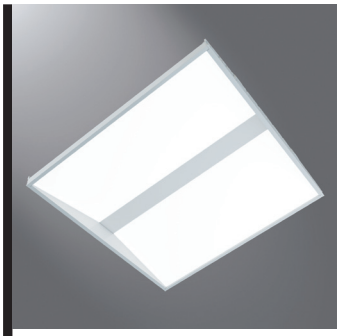
energy solutions

DESCRIPTION

The Encounter™ redefines ambient lighting by being the first fixture to blend modern contemporary styling with the innovative WaveStream™ technology to deliver exceptional performance and superior energy savings. Encounter's highly efficient LED system with advance optical design delivers an unparalleled combination of optimal light uniformity for enhanced visual comfort and superior efficiency for greater energy savings.

Encounter is compatible with all of today's popular ceiling systems and available in a variety of configurations for application versatility. Its perfect balance of form and function make it an ideal choice for commercial office spaces, schools, hospitals, retail and other indoor ambient applications.

Catalog #		**Type**
Project		
Comments		**Date**
Prepared by		



22EN LED

2' X 2' TROFFER LED MODULE

Specification Grade Troffer

SPECIFICATION FEATURES

Construction
Shallow 3-1/4" deep housing is extruded aluminum frame and injected molded composite end plates. End plates are securely attached with screws for strength and rigidity and the elimination of gaps. End plates have accessory grid-lock feature for safety and convenience. Four auxiliary fixture end suspension points are provided. Large access plate for supply connection.

Controls
The Encounter LED is Powered by Fifth Light, with standard a 0-10V continuous dimming driver that works with any 0-10V control/ dimmer. Or, go digital with the Digital Addressable Lighting Interface (DALI) drivers, dimmable down to 1% using the HD option. Combine with energy-saving products like occupancy sensors, daylighting controls, and lighting relay panels from Cooper Controls (www.coopercontrol.com) to maximize energy savings.

Electrical
Long-life LED system coupled with electrical driver to deliver optimal performance. LED's available in 3000K, 3500K or 4000K with a typical CRI ≤ 85. Projected life is 60,000 hours at 85% lumen output. Electronic drivers are available for 120-277V applications.

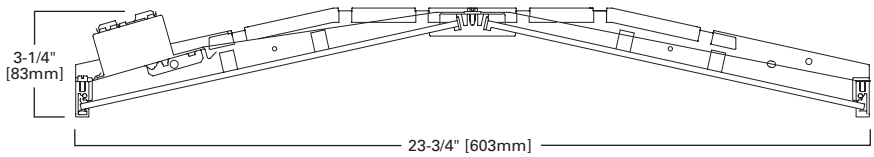
Driver Access
Drivers can be accessed via plenum.

Finish
Durable frame has high reflectance baked matte white enamel finish for luminous uniformity.

Optics
Precision formed optical assembly with positively retained high optical grade acrylic lenses provide a directed optical distribution using WaveStream technology.

Compliance
Components are UL recognized. Indoor luminaires are cULus and CSA listed for 25° C ambient environments, RoHS compliant, and comply with IESNA LM-79. LEDs comply with LM-80 standards. DesignLights™ Consortium Qualified. Refer to www.designlights.org Qualified Products List under Family Models for details.

Warranty
Five year warranty.



powered by fifthlight technology

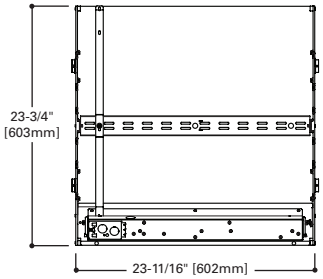
CERTIFICATION DATA

cULus - 1598 and 2043**
Damp Location Listed
CSA
IC Rated
LM79/LM80 Compliant
ROHS Compliant
DesignLights™ Consortium Qualified
Title 24

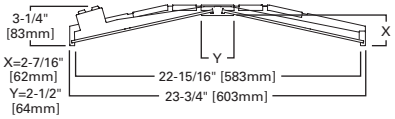
*See Drywall Frame Kit Accessory in Ordering Information section.
**Fixture construction is suitable for use in Air-handling and plenum rated spaces in accordance with Section 300.22 (C) of the National Electrical Code, Section 4.3.11.2.6.5 of NFPA 90A and Section 602.2.1.4 of ICC.

LINEAR DISCONNECT
Safe and convenient means of disconnecting power

MOUNTING DATA



LAMP CONFIGURATIONS



CEILING COMPATIBILITY

G
Grid/Lay-in Standard

F
Drywall Frame Kit

Ceiling Type	Trim Type
Exposed Grid	G
Concealed T	G or T
Slot Grid	G or T
Flange	*

Cooper Lighting by EATON

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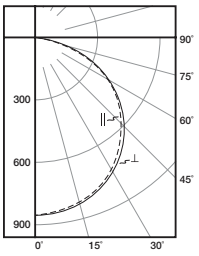
PHOTOMETRICS



22EN-LD1-25-UNV-L835-CD1-U
Electronic Driver
Linear LED 3500K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.3 x mounting height
Lumens: 2537
Input Watts: 25.5W
Efficacy: 100 LPW
Test Report: 22EN-LD1-25-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	850	850	850
5	847	847	850
10	836	836	842
15	818	820	828
20	795	796	808
25	764	767	780
30	727	730	746
35	686	688	706
40	637	640	658
45	586	588	606
50	529	531	547
55	469	465	483
60	401	396	414
65	332	324	343
70	260	255	253
75	185	178	152
80	114	96	104
85	42	43	44
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

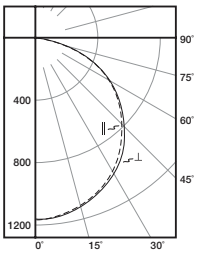
rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	104	99	95	106	101	97	94	97	94	91	93	90	88	90	87	85	83
2	98	90	83	77	96	88	82	76	85	79	74	81	77	73	78	74	71	69
3	90	79	71	64	87	77	70	63	74	68	62	71	66	61	69	64	60	58
4	82	70	61	54	80	68	60	54	66	59	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	45	57	50	45	55	49	44	42
6	69	56	47	40	67	55	46	40	53	45	40	51	45	39	50	44	39	37
7	64	51	42	35	63	50	41	35	48	41	35	47	40	35	45	39	34	32
8	60	46	37	32	58	45	37	31	44	37	31	43	36	31	42	35	31	29
9	56	42	34	28	54	42	34	28	40	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	38	31	26	37	30	25	36	30	25	36	30	25	23

Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	667	26.3
0-40	1100	43.4
0-60	1976	77.9
0-90	2537	100.0
0-180	2537	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	2229	2237	2305
55	2200	2181	2265
65	2113	2062	2183
75	1923	1850	1580
85	1296	1327	1358



22EN-LD1-34-UNV-L835-CD1-U
Electronic Driver
Linear LED 3500K
Spacing criterion: (II) 1.2 x mounting height, (⊥) 1.3 x mounting height
Lumens: 3424
Input Watts: 34.9W
Efficacy: 98 LPW
Test Report: 22EN-LD1-34-UNV-L835-CD1-U.IES

Candlepower

Angle	Along II	45°	Across ⊥
0	1156	1156	1156
5	1152	1150	1156
10	1136	1137	1144
15	1111	1112	1123
20	1078	1079	1094
25	1035	1037	1055
30	984	986	1007
35	927	929	952
40	861	865	887
45	791	791	815
50	715	712	738
55	630	626	649
60	542	534	558
65	449	439	463
70	346	342	345
75	247	238	204
80	152	129	139
85	57	58	58
90	0	0	0

Coefficients of Utilization

Effective floor cavity reflectance 20%

rc	80%				70%				50%			30%			10%			0%
rw	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	104	99	95	106	101	97	94	97	94	91	93	91	88	90	87	85	83
2	98	90	83	77	96	88	82	76	85	79	75	81	77	73	78	75	71	69
3	90	79	71	64	87	77	70	63	74	68	62	72	66	61	69	64	60	58
4	82	70	61	54	80	68	60	54	66	59	53	63	57	52	61	56	51	49
5	75	62	53	46	73	61	52	46	59	51	46	57	50	45	55	49	45	42
6	69	56	47	40	67	55	46	40	53	45	40	51	45	39	50	44	39	37
7	64	51	42	36	63	50	41	35	48	41	35	47	40	35	45	39	35	33
8	60	46	38	32	58	45	37	31	44	37	31	43	36	31	42	35	31	29
9	56	42	34	28	54	42	34	28	41	33	28	39	33	28	38	32	28	26
10	52	39	31	26	51	38	31	26	37	30	26	37	30	25	36	30	25	23

Zonal Lumen Summary

Zone	Lumens	%Fixture
0-30	904	26.4
0-40	1489	43.5
0-60	2669	77.9
0-90	3424	100.0
0-180	3424	100.0

Luminance Data

Angle in Deg	Average 0-Deg cd/sm	Average 45-Deg cd/sm	Average 90-Deg cd/sm
45	3009	3009	3100
55	2955	2936	3044
65	2858	2794	2947
75	2567	2474	2120
85	1759	1790	1790

LUMEN MAINTENANCE

Ambient Temperature	TM-21 Lumen Maintenance (60,000 hours)	Theoretical L70 (Hours)
25°C	> 85%	>163,000

ENERGY AND PERFORMANCE DATA BY CATALOG NUMBER

Stock or MTO*	Catalog Logic	Delivered Lumens	Watts	Efficacy (LPW)
MTO	22EN-LD1-19-UNV-L830-CD1-U	1903	18.8	101
MTO	22EN-LD1-19-UNV-L835-CD1-U	1936	18.7	104
MTO	22EN-LD1-19-UNV-L840-CD1-U	1955	18.8	104
MTO	22EN-LD1-25-UNV-L830-CD1-U	2487	25.5	97
Stock	22EN-LD1-25-UNV-L835-CD1-U	2537	25.5	99
Stock	22EN-LD1-25-UNV-L840-CD1-U	2627	25.5	103
MTO	22EN-LD1-30-UNV-L830-CD1-U	2907	30.3	96
MTO	22EN-LD1-30-UNV-L835-CD1-U	3002	30.4	99
MTO	22EN-LD1-30-UNV-L840-CD1-U	3072	30.3	102
MTO	22EN-LD1-34-UNV-L830-CD1-U	3276	34.8	94
Stock	22EN-LD1-34-UNV-L835-CD1-U	3424	34.9	98
Stock	22EN-LD1-34-UNV-L840-CD1-U	3466	34.8	100
MTO	22EN-LD1-39-UNV-L830-CD1-U	3799	41.6	91
MTO	22EN-LD1-39-UNV-L835-CD1-U	3915	41.7	94
MTO	22EN-LD1-39-UNV-L840-CD1-U	4018	41.7	96
MTO	22EN-LD1-43-UNV-L830-CD1-U	4207	47.4	89
MTO	22EN-LD1-43-UNV-L835-CD1-U	4396	47.6	92
MTO	22EN-LD1-43-UNV-L840-CD1-U	4452	47.4	94

*Made to order (MTO) requires a four week lead time.

ORDERING INFORMATION

SAMPLE NUMBER: 22EN-LD1-34-UNV-L835-CD1-U

Rating
Blank=Standard
ATW-SW4=Chicago Rated [10]

Series [9]
22EN=2' x 2' Encounter Series

Lamp Type
LD1=LED 1.0

Stock Lumen Outputs
25=2500 Lumens [4]
34=3400 Lumens

MTO Lumen Outputs [8]
19=1900 Lumens [4]
30=3000 Lumens
39=3900 Lumens
43=4300 Lumens

Optics
Blank=Standard

Voltage [1]
347V=347 Volt [7]
UNV=Universal Voltage 120-277

Options
Emergency
EL=Emergency Installed, 700 Lumens [5]
EL14=Emergency Installed, 1400 Lumens [2], [5]
EL10W=Emergency Installed, 10 Watts [11]

CCT
L830=3000K
L835=3500K
L840=4000K

Flex
Multiple Configurations Available

Driver Type
CD=0-10V Dimming Driver (Standard)
SD=Step-dim Driver [6]
5LTD=Fifth Light DALI Driver (10% - 100% Dimming) [3]
5LTHD=Fifth Light DALI Driver (1% - 100% Dimming) [3]

Number of Drivers
1=1 Driver

Packaging
U=Unit Pack
PALC=Job Pack, in carton

ACCESSORIES

T3A END E.Q. BRACKET PARTS BAG (Standard with fixture)
DF-22-W=2' x 2' Drywall Frame Kit
MS-SR-22=2' x 2' Surface Mount Kit

NOTES: [1] Products also available in non-US voltages and frequencies for international markets. [2] Must specify voltage (120V or 277V) when selecting EL option. [3] For a complete listing of Fifth Light Technology products and other solutions from Cooper Controls, visit www.coopercontrol.com. [4] 1900 and 2500 lumen option are not available with a Fifth Light DALI (5LTD) driver. [5] EL test switch and light must be remote mounted. EL700 option requires standard switch box. [6] Step-dim driver not available with 1900, 2500 and 3000 lumen option. [7] 347V emergency option not available. [8] Made-to-order (MTO) requites four week lead time. [9] DesignLights™ Consortium Qualified (all lumen packages). Refer to www.designlights.org Qualified Products List under Family Models for details. [10] Chicago rated version does not allow for row mounting. [11] For delivered lumens, take lumens per watt of desired fixture and multiply by 10 watts (100 lp/W x 10 = 1000 lumens delivered).

Specifications & dimensions subject to change without notice. Consult your Cooper Lighting Representative for availability and ordering information.

SHIPPING DATA

Catalog No.	Wt.
22EN-LD1-25	14 lbs.
22EN-LD1-34	14 lbs.

Cooper Lighting by EATON

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Cleveland, OH 44122
United States
Eaton.com

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Peachtree City, GA 30269
P: 770-486-4800
www.cooperlighting.com