

Surface Defense

Program Marine and Boat



PROTECT 

micro  be defence

AEGIS: Surface Defense Program

1 Introduction

Every boatowner struggles with mildew. Not only is it ugly, it stinks. Mildew, which is actually mold growing on fabric, plagues sails, lockers, cushions, cabin liners, life jackets, foul-weather gear —pretty much anything it can latch on to.

All mildew needs to grow is a moist environment with little ventilation, minimal light, and a food source—just about any organic matter. Before it grows, mold spores germinate on the food source. And boats offer an ample food supply: wood, paper, carpet, Sunbrella, vinyl, Dacron. When these materials become moist, it's party time for the mold spores.

How fast mold grows depends on conditions like ventilation and humidity. Spores can germinate after only 12 hours in some conditions, and some grow in 24 to 48 hours. The secret is to prevent it or catch it as early as possible, or, prevent it from taking hold in the first place.

Mold propagates with tiny spores that exist virtually everywhere and just love to grow on your boat. Removing mold and mildew can present one of the greatest challenges for today's boat owner. Heat, moisture and the many cracks and crevices on a boat, along with carpet, bedding and seat cushions, provide the perfect growing conditions for mold. Once mold has taken root on your boat, you may find it difficult to remove.



That is where Aegis fits in.

Protect your boats from harmful mold, mildew, and bacteria with our affordable eco-friendly Microbe Shield product. Initially developed for NASA, this nanotechnology is now available for your boats and accessories.

- Active on treated surfaces
- Provides long-term protection from mold on the surfaces, interior fabrics, and in the air ducts of your vehicles- 24/7.
- Eliminate odors caused by mold and mildew.
- Non-toxic; safe for children, adults and pets.
- Products registered with the EPA
- "Green" Solution



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2 Current Maintenance Practices

Today, we work to remove mold and mold stains, bleach and Vinegar and common approaches outlined here. Aegis provides a new level of defense, preventing mold and mildew from taking hold and even if it does grow on dirt and sediment in the boat, it will be easier to remove.

2.1 Chlorine Bleach

- Because chlorine bleach kills mold and mildew on contact., you might see spraying bleach around the boat as a good idea. Not so fast: While chlorine bleach is effective, cheap and easily available, it comes with some drawbacks. Though bleach works well on nonporous surfaces



such countertops and shower stalls, it has a weaker effect on porous materials such as wood or ceiling tiles. In addition, you wouldn't dream of bleaching fabric seat cushions, bedding or even safety vests, which would ruin them.

If you chose to use chlorine bleach as a mold removal strategy, read the directions carefully. Never mix bleach with other cleaners, and only use it in a well-ventilated area.

2.2 Vinegar

- You'll find many commercial cleaners in stores that promise to remove mold, mildew, and stains. They work to varying degrees of success. Read and follow the product labeling carefully. Some products that claim to remove mold stains don't actually kill growing mold.

If you choose not to use bleach or other harsh chemicals, try vinegar, a nontoxic, all-natural product that produces no harmful fumes. Best of all, it removes mold. Mix 3 parts white distilled vinegar to 2 parts water. This solution will kill most molds on contact. Sponge it onto surfaces. Let it sit for a few minutes, and wipe it dry.

Vinegar also acts as a disinfectant for the head and galley. Use it in a spray bottle and clean surfaces regularly. For difficult mold spots, spray the area and let the vinegar sit for 20 minutes,

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then wipe it away. Add 1/2 cup of vinegar to a load of laundry to remove mold and mildew from bedding and towels. It will not ruin colors like bleach will. An added benefit to boaters, vinegar removes hard-water spots. Considering the pros and cons, you'll likely find vinegar the best mold removal strategy for boats.

It is important to recognize that even-though a surface has been cleaned or disinfected, bacteria, viruses, mould, fungus, algae and yeast begin to re-inhabit those surfaces by either touch or infected water droplets. The moment a disinfectant/sanitizer has dried microbial growth can actually be accelerated by soap residue.

This is where Aegis can play a tremendously valuable role in the battle gins mold and mildew.

3 Aegis and Mold – Case study

3.1 Arthur G. James Cancer Hospital and Research Institute

This hospital, located in Columbus Ohio, suffered a catastrophic flood when a pipe burst on the 12 th floor of this new facility. 500,000 gallons of water cascaded from floor 12 to ground level. Ceilings, walls, carpeted floors, upholstered furnishings, were either soaked or exposed to high humidity. Moulds and a host of fungi and bacteria proliferated throughout the building.

The objective of remediation was to return the facility to contaminant levels consistent with the intended use as a bone marrow transplant and cancer treatment center. Despite high efficiency air filtration and chlorine based disinfectant fogging, large numbers of fungi and moulds were retrieved from the air in all areas of the hospital. 58% of test sites produced samples of microorganisms of 720 to 2800 CFU/m³ which represent the upper limit of testing equipment results.

A surface modification strategy was undertaken deploying the Aegis Microbe Shield. All accessible interior spaces (carpets, ceilings, walls, crawl spaces, furnishings, elevator shafts, mechanical and electrical chases) were treated.

The result were impressive. 45% of sites reported 0 CFU/M3, and 36 % of sites reported 1 – 5 CFU/M3 (acceptable). The initial reduction of air borne microorganisms and the sustained control of microbial levels during the 30 months post flood demonstrated the ability of the Aegis Microbe Shield to effective control the growth of microorganisms on treated surfaces.

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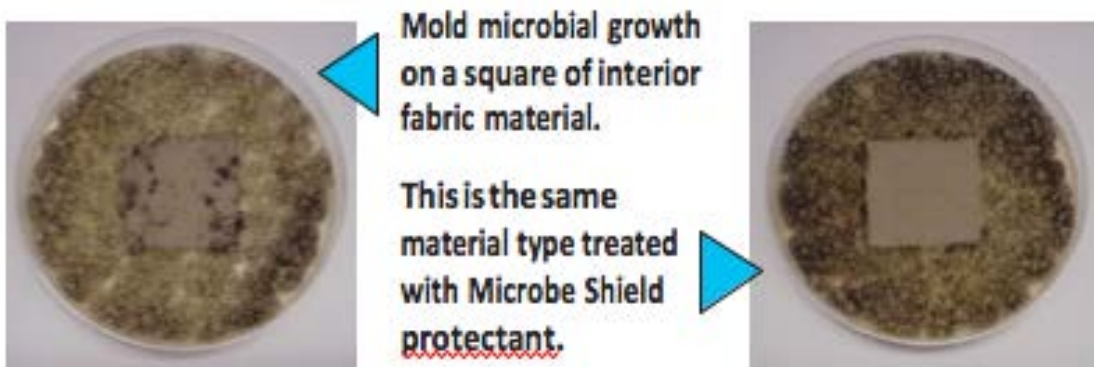
4 The AEGIS Microbe Shield

Globally registered the AEGIS Microbe Shield is the most commonly used antimicrobial in the world. From socks to medical equipment, the Aegis Microbe Shield has been used in a wide range of industries and on a broad and diverse set of materials. In each application the general concept is the same: **provide long lasting antimicrobial protection.**

The Aegis Microbe Shield is the only Health Canada registered, bonding, antimicrobial surface treatment approved for commercial applications.



It can kill up to 99.9 % of germs on contact with its unique mode of action. The shield is unique in that it alone remains on guard to Control and Prevent the growth of harmful microorganisms between traditional cleaning and disinfection practices.

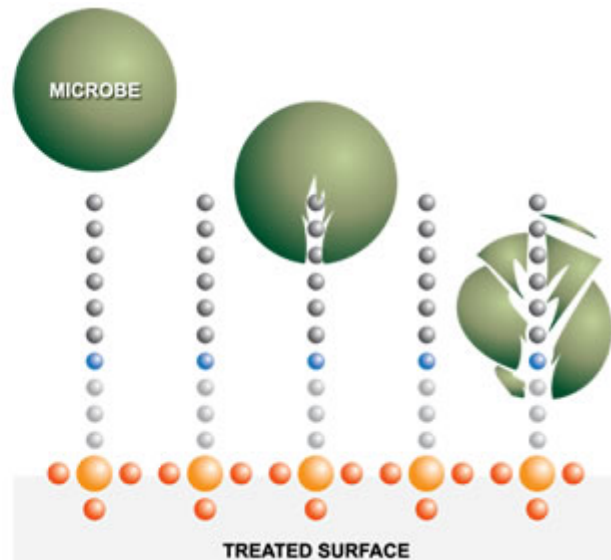


4.1 How AEGIS Works

Think of AEGIS as a microscopic sword and a treated surface acting like bed of nails or swords. AEGIS modifies treated surfaces creating an inhospitable environment for microbes including bacteria, fungus and mold – in other words microbes cannot live on surfaces protected by AEGIS.

The positive nitrogen center of the AEGIS sword attracts microbes to it and the long carbon chain punctures the cell membrane destroying the microbe on contact! This combination of stabbing and electrocution allows the technology to be fully effective as long as the surface remains intact.

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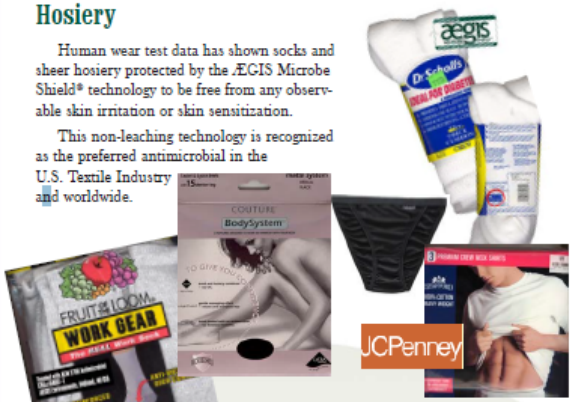




4.2 Features & Benefits

- Worldwide registrations including Health Canada and the US EPA.
- No EPA, FDA, or Health Canada regulated biocides
- Shield is safe and “green”
- Does not contain bleach or alcohol
- No off gassing of VOCs.
- AEGIS MICROBE SHIELD is colourless and odorless.
- Can’t be seen nor felt
- Will not leach from surface to skin (like most disinfectants)
- Hypoallergenic with no side effects or irritation.
- Effective solution to control and prevent germs and mould.
- Bonding antimicrobial to provide on-going protection.
- Will not cause super bugs and resistant organisms
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4.3 Safety of the Aegis Microbe Shield

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The safety profile of the Aegis Microbe Shield has been proven over and over again by the companies that incorporate it into its products as well as the list of professional sports teams that depend upon it to keep facilities free of harmful microbes. From intimate apparel to diapers to equipment that rests upon the skin of professional athletes, the Aegis Microbe Shield is seen as safe and dependable.

<p>Hosiery</p> <p>Human wear test data has shown socks and sheer hosiery protected by the AEGIS Microbe Shield® technology to be free from any observable skin irritation or skin sensitization.</p> <p>This non-leaching technology is recognized as the preferred antimicrobial in the U.S. Textile Industry and worldwide.</p>  <p>Undergarments</p> <p>Ongoing and extensive testing has shown no irritation to sensitive vaginal tissue. A successful history of use in both men and women's undergarments as well as baby diaper linings with no reports of adverse reaction.</p>  <p>Sporting Equipment</p> <p>Extensive testing of skin contact, absorption, and irritation has shown there is no evidence of skin sensitization and no adverse effect upon abraded skin.</p>  <p>Protecting the products that protect you and your environment</p> <p><small>100% ANTIMICROBIAL TREATMENT</small></p>	   
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5 Public Relations

The best defence is a good offence!

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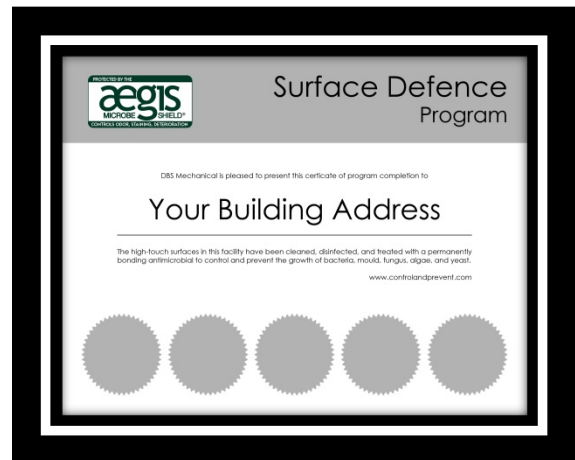
As part of the Surface Defence Program an Info Stand can be set-up in a selected high traffic area(s) of your facility to both educate the general public about infection control practices and to treat the cell phones of those who live, work, and play in the building.



Stickers for high-touch areas are also available as well as a Certificate of Completion upon request from management.



1" x 2.5" Sticker for High-touch Areas



Program Certificate of Completion

6 Aegis Boat and Marine

6.1 Scope of Work

- Clean and disinfect all high-touch surfaces.
- Treat all surfaces with the AEGIS Microbe Shield.
- Public Relations Campaign
 - Provide Stickers for treated areas.
 - Provide Certificate of Completion to boat owner.
 - Set up Info Stand in front lobby of marina.

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- Educate general public about infection control practices.
- Treat the cell phones of those who live, work, and play in the building with the AEGIS Microbe Shield.

Selected High-touch Areas included in the scope of work, but not limited to, the many cracks and crevices on a boat, along with carpet, bedding and seat cushions,

7 Partial List of Users of the Aegis Microbe Shield

**Partial List of Users
Supplemental Information
Summary Reasons for Using the
ÆGIS Microbe Shield Technology
November 13, 2014**

A wide range of reasons why any product, people mover, school, restaurant, church, hotel, transportation vehicle, hospital, commercial building or home should use the ÆGIS Microbe Shield Technology. These include:

- EPA Registered in the United States since 1976
- Used around the world in hospitals, commercial buildings, residences, schools, textiles
- A proven safe, effective science with no known product failures
- Manufactured in an ISO 9002 certified facility by one of the world's most respected companies
- Micro-polymer silane technology that molecularly bonds directly and permanently to the substrate
- Technology is not consumed by the microorganism-does not produce adaptive organisms
- Does not off gas or bleed off the surface onto which it has been applied
- Does not use heavy metals or poisons as found in most other antimicrobials

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- Physically controls and eliminates microorganisms on contact and remains on the surface to fight again
- Controls a wide range of microorganisms including bacteria, fungi, algae and yeast
- Does not migrate from the surface- will not transfer from the surface to your skin or leach into the environment
- Colorless, odorless application
- An integral part of the holistic approach to providing the best available Indoor Environmental Quality

Brands and Products using the AEGIS Microbe Shield® Technology

- Franklin Sports: Hockey Equipment (From Junior leagues to NHL), Baseball batting gloves, Soccer Equipment, Supports (jockstraps, ankle, knee and elbow braces).
- Asics Corp.: Track wear-college and professional, Running Apparel
- New Balance: Running Shoes
- Nike: Shoe. Socks
- Reebok: Adventure Shoe (lining)
- Rockport: Insole Lining
- Red Wing: Irish Setter & Vasque Boots (lining)
- Adidas: Equipment Socks (Specialty Sports)
- Russell Corp: Uniform Fabric
- Marks & Spencer: Shoes, Socks, Pantyhose, and Towels
- Kayser Roth: Socks (Timberland Mountain Athletic, Burlington, Farrah, Golden Lady)
- US Army: Running Shorts, Socks
- Exofficio: Undergarments
- Med-Gen: Athletic Support Products
- Allegiance: Surgical Drapes, Surgical Covers
- Kimberly Clark: Reusable Cleaning Wipes
- Chuck & Dwight Co., Inc.: Brillo® All Purpose Cleaning Pads
- Springs: Shower Curtains, Mattress Pads
- Burlington Industries: Clean room Garments, sport socks
- US Gypsum: Ceiling Tiles



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- Artex: Table Linens for Disney World/Commercial Laundries
- Combe International Inc.: Odor-Eaters®
- Mountville Mills: Commercial Floor Mats
- ETC. Carpet: Commercial Carpeting
- MicroTouch: Computer Touch Screens
- SC Johnson & Son: Household Products
- Elk: Roofing Shingles
- Spalding Sports Worldwide: Athletic Socks
- Schering-Plough Healthcare: Dr. Scholls® inserts
- AHP (Associated Hygienic Products): Drypers (top sheet next to baby's skin)
- Wilson Sporting Goods: Sports Socks
- Bike: Athletic Products
- Sperry Topsider: Shoes
- North American Rescue Products: Medical Litters/medical bags

Retailers Specifying Products with the AEGIS Microbe Shield Technology

(Partial Listing)

- Marks & Spencer
- Wal-Mart
- K-Mart
- Target
- J.C. Penney's
- Sears
- Dayton Hudson (Target)
- Kohl's
- Meijer
- Dunham's Discount Sports
- Big 5 Sports
- Dollar General
- Family Dollar
- Sports Authority
- Belk's Department Stores
- North American Rescue Products



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- Dillard's Department Stores

Raw Material Manufacturers Using the AEGIS Microbe Shield Technology (Partial Listing)

- Albany International: Primaloft Fiberfill
- Dupont: Dacron Fiberfill
- Wellman: Fiberfill
- Kyung Bang: Fiberfill
- Far East Textile: Fiberfill
- Foamex: PU Foam
- Time Release Tech: PU Foam
- Prime Leather: Shoe Leather, Upholstery
- Pittards: Shoe, Bag and Glove Leather
- 1HWA: Natural Yarn
- HwaLong: Nylon & Polyester Yarn
- Alamac Knits: Knitted Fabric
- Burlington: Performance Wear
- PFG: Performance Fabrics
- Synthetic Industries: Outdoor Fabrics

Businesses and Athletic Facilities Treated Using the AEGIS Microbe Shield Technology (Partial Listing)

The AEGIS Microbe Shield Technology is used to protect entire indoor environments from bacterial, yeast and algae and fungi (mold and or mildew) contamination. The chemistry found in AEGIS provides a chemical shield that protects the surfaces onto which it is applied preventing the growth of a broad range of single cell microorganisms. The AEGIS Microbe Shield Technology has been used to treat many buildings around the world which have exhibited "sick building syndrome."

Businesses:



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- Starwood Hotels & Resorts Worldwide, Inc
- Shangri-La Hotels and Resorts
- Jack in the Box Restaurants-Houston, Dallas, San Antonio, Lubbock, TX
- Ohio State University James Cancer Research Center-Columbus, OH
- The Phoenix Heart Institute-Phoenix, AZ
- Northwestern University Hospital-Chicago, IL
- Whitney Lakes Residential Development-Charleston, SC 900+ residential and retail units
- Palmetto Bank Building-Pendleton, SC
- M. D. Anderson Cancer Center-Houston, TX
- Memorial Sloan Kettering Hospital-NYC, Cancer floors, R&D wing
- Mills Mill Lofts Development-Sprinkler Riser Room & Residences-Greenville, SC
- Kyrus Building-Greenville, SC
- Mills Mill Retail Development-Coffee Shop, Greenville, SC
- Equestrian Cottage Model Home for ALLORA-Greenville, SC & Asheville, NC
- Covington/Tutman Builders-Greenville, SC
- HiLine Builders-Centralia, WA
- Brighten @ Medford Nursing Home-Medford, MA
- RiverPlace Center 1-Greenville, SC
- Stephanie's Restaurant-Doylestown, PA
- Rocky Creek Apartments for Wachovia-Greenville, SC
- Ivey Creek Apartments for Wachovia-Atlanta, GA
- Poinsett Corners-Residential & Retail Development, Greenville, SC
- BB&T Bank Building-Greer, SC
- Suntec International Convention and Exhibition Centre-Singapore
- DBS Banks-Singapore
- South Carolina Electric & Gas (SCEG) Central Laboratory-Lake Murray, SC
- Forum Galleria Shopping Centre and Office Tower-Singapore
- The Regent Hotel-Singapore
- Piedmont Rural Telephone Cooperative Headquarters-Laurens, SC
- Ocean Keys Resort-N. Myrtle Beach, SC
- W.B. Properties-Sunset Beach, NC
- St. Philips Catholic Church-Statesville, NC
- Blackwelder & Associates-Concord, NC
- Association Services [property management]-Hilton Head Island, SC
- Sea Trail Resort-Sunset Beach, NC
- BB&T, Commercial Buildings and Branch Facilities-Frederick, MD



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Athletic Facilities:

- Minnesota Vikings Training Facility-Minneapolis, MN
- Miami Heat Training and Locker Facilities-Miami, FL
- Cleveland Browns Training and Locker Room Facilities-Cleveland, OH
- Atlanta Hawks and Atlanta Thrashers athletic facilities-Atlanta, GA
- Milwaukee Bucks Training and Locker Facilities-Milwaukee, WI
- Detroit Pistons Training and Locker Room Facilities -Detroit, MI
- New Jersey Nets Training and Locker Room Facilities -Meadowlands
- Washington Redskins Locker Rooms and Training Facility-VA
- Ohio State University athletic facilities-Columbus, OH
- Washington Wizards Training and Locker Facilities-Washington, DC
- University of Illinois Locker Rooms and Training Facilities-Champaign, IL
- Southern Illinois University Locker Rooms and Training Facilities-Carbondale, IL
- University of Tulsa Locker Rooms and Training Facilities-Tulsa, OK
- Southeast Missouri State Locker Rooms and Training Facilities-Cape Girardeau, MO
- Colleton River Plantation: Nicklaus and Dye Clubhouses-Bluffton, SC
- Highlands Country Club-Highlands, NC
- Warwick Hills Country Club-Detroit, MI
- Virginia Tech-athletic facilities, Blacksburg, VA
- University of South Carolina-Athletic offices, Training and Locker Room Facilities - Columbia, SC
- Cal State Bakersfield- Training and Locker Room Facilities -Bakersfield, CA
- Swarthmore College- Training and Locker Room Facilities, Swarthmore, PA
- Thiel College- Training and Locker Room Facilities, Greenville, PA
- Winthrop University-Indoor Softball Practice Bldg-Spartanburg, SC

Schools Treated Using the AEGIS Microbe Shield Technology (Partial Listing)

- Greenville (SC) County Schools (67 sites)
- Westcliffe Elementary



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- East Gant (Cashion Elementary)
- Simpsonville Elementary
- Slater-Marietta Elementary
- Paris Elementary
- Blythe Academy
- Golden Strip Elementary-Phase I
- Berea Middle School
- Overbrook CDC
- Blue Ridge Middle School
- Stone Elementary
- Mitchell Road Elementary
- Bells Crossing Elementary
- Mauldin Elementary
- Woodland Elementary
- Augusta Circle Elementary
- Mauldin High School
- J L Mann High School
- Westcliffe Elementary
- Simpsonville Area Middle School
- Mountain View Elementary
- Riley CDC
- Sara Collins Elementary
- Cone Sans Souci
- Sue Cleveland Elementary
- Monaview Elementary
- Washington Center
- Roper Mountain Science Center
- Golden Strip Career Center
- Pelham Rd Elementary
- Tanglewood Middle School
- Grove Elementary
- Taylors Bus Center
- Tigerville Elementary
- Brook Glen Elementary
- Donaldson Career Center
- Enoree Career Center



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- Buena Vista Elementary
- Hillcrest High School
- Golden Strip Career Development Center
- Northwest Crescent Career Development Center
- Paul Lawrence Dunbar Career Development Center
- Greenview Elementary
- Sevier Middle School
- West Greenville School Ctr
- Woodmont High School
- Plain Elementary
- Blue Ridge High School
- League Middle School
- Beck Middle School
- Carolina High School
- Lakeview Middle School
- Riverside High School
- Travelers Rest High School
- Taylors Elementary
- Berea High School
- Woodmont Middle School
- Gateway Elementary
- South Area Middle
- Wade Hampton High School
- Northwood Middle School
- South Area Elementary
- Fine Arts Center
- Greenville High School
- AJ Whittenberg Elementary
- Eastside High School
- Greenville Middle School
- J. Harley Bonds Center
- Southside High School
- Port Charlotte High School and Library (FL)
- Campbell County Schools (KY)
- Limestone College, Fort Hall Dormitory-Gaffney, SC
- Xavier University, Brockman Hall lower level and Tuckers Gathering Hall-Cincinnati, OH

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- College of Charleston, Berry Dormitory-Charleston, SC
- Manatee Community College (FL)
- Baltimore City Public Schools (MD)
- Greenville Tech, Buck Mickel Center, Dental School-Greenville, SC
- Westminster Presbyterian Day School (new & existing classrooms)-Greenville, SC
- Widener College-Moll Residence Hall, New Residence Hall, Kapeleski Residence Hall, Boettner Residence Hall-Chester, PA
- University of South Carolina-Swearingen Engineering Bldg-Columbia, S

Canadian Applications (Partial List):

- Windsor Regional Cancer Centre
- Hotel Dieu, Windsor
- Metropolitan Hospital, Windsor
- St. Michaels, Toronto
- Royal Victoria, Barrie
- William Osler, Brantford
- Saint Mary's University
- Halifax Regional Municipality
- Dalhousie University
- Mount Allison University
- Atlantic Industrial Services
- Annapolis Valley Regional School Board
- L'Arche Homefires, Wolfville, NS
- Maplehurst Properties Limited, Dartmouth, NS,
- Building S-17, CFB Stadacona,
- Chignecto-Central Regional School Board, Princess Margaret Rose School
- Municipality of the County of Lunenburg, treatment of office
- Bernadine Hall, Blanchard Hall, UPEI,
- Eastern Mainland Housing Authority, senior's residences,
- Cobequid Pass Toll Plaza
- The Dominion of Canada General Insurance Company, Dartmouth, NS,
- Saint Thomas Aquinas Church, Halifax
- Operating Rooms, Centennial Building, QEII, Health Sciences, VG Site,
- Trade Centre Ltd, Halifax
- Canadian Coast Guard College, Sydney, NS,

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- United Church, Kentville, NS,
- Eric Spicer Building, Victim Services
- Top Construction Limited, Parks Canada Facility, Dartmouth,
- Marsh Adjustment Bureau
- Université Sainte-Anne,
- Convergys, 68,000 ft2 of carpets in call centre,
- Superior Propane Inc
- Emergency Medical Care Inc,
- Maison Jerome, Church Point
- ICI Canada Inc, Metro
- Kentville Police Department
- Capital District Health Authority, Dartmouth
- Halifax Regional Municipality
- Bowater Mersey Paper Company Limited
- Spring Garden St Courthouse, Cells
- Fulmar Contracting Inc
- Mount Allison University, treatment of 205 library books
- Cowie Engineering Limited
- Convoy Estates
- Halifax Christian Academy
- CIBC Premises Department, CIBC Call Centre, Trade Mart Building
- Chedabucto Education Centre, Guysborough, NS
- Dr John Hugh Gillis Regional High School
- Dalhousie University, Arts Centre, Arts Building
- Acadia University,
- Lunenburg Recycling and Composting Facility