

2013-14 STUDENT ORGANIZATION SUSTAINABILITY INITIATIVE (GREEN RFP) FUNDING PROPOSAL

**Part I- General Information:**

<b>Name of Student Organization</b>	Office of Energy and Sustainability
<b>Contact/Responsible Person</b>	<b>Seth Harrison &amp; Pamela Block</b>
<b>Contact Office Held/Title</b>	<b>Marketing and Awareness Team Intern</b>
<b>Contact Email Address</b>	<b>sethh@vt.edu</b>
<b>Contact Telephone Number</b>	<b>804-516-6790</b>

**Part II- Project Cost Information**

Estimated Cost of this Proposal	\$6,200.00	See III.C. below
Estimated Savings -	\$4,045.89 (1 YEAR)	See III.D. below
<b>Net Cost of this Proposal =</b>	<b>\$2,154.11</b>	

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**A. Please describe your sustainability initiative and attach supporting documentation.**

It is estimated that around 20,000 students per week travel through the Surge Space Building on Virginia Tech's campus for class and various other activities. Surge is a 23,304 sq. ft building with only 12 classrooms in it. That being said, it is one of the more highly trafficked academic facilities on campus. Within the building, there are two bathrooms total. Regardless of the small number, they are the two biggest bathrooms in an academic building on campus according to Director of Custodial Services Wyatt Sasser. The men's restroom is a 950 sq. ft space with 4 trashcans, 4 paper towel dispensers, and 17 stalls (9 Stalls, 8 Urinals), and 16 washbasins within. The women's restroom is a 957 sq. ft space with 4 trashcans, 4 paper towel dispensers, 17 stalls, and 16 washbasins within. Since there is so much student traffic, we believe a building with such a high student use should show initiative in sustainability efforts.

When using these bathrooms, it is readily apparent that we have an excessive waste issue. The trashcans are always overflowing onto the floor with paper towels littered all over the restroom floor as clearly shown in Appendix F. In attempt to save resources and cut back on waste generated in bathroom's on Virginia tech's campus they have switched from C-fold towels (2,400 sheets per case) to multi-fold towels (4,000 sheets per case) and then to a Continuous Roll (4,800 sheets per case); which they now have. Refer to Appendix D to see a graph of total cases of paper towels ordered for Surge Space Building over the past 4 semesters. The purpose of this request for proposal is for the implementation of XLERATOR Hand Dryers in the bathrooms of Surge Space Building that will eliminate the need for paper towels, which will greatly reduce our waste generation.

There are many different types of Hand Dryers available to install in restrooms, so why XLERATOR? It uses 80% less energy and delivers a 95% cost savings versus paper towels, while creating a more hygienic bathroom. XLERATOR is the best machine for the cost. The specifications of these machines are outlined in Appendix G. The facts were backed that XLERATOR would be the correct choice for this project when Director of Custodial Services, Wyatt Sasser, pointed out that there is a ceramic coating in the Surge bathrooms that is protecting the gypsum behind that would be perfect for mounting these hand drying machines without effecting the infrastructure of the building. In Appendix E, there is a letter of support from Director Wyatt Sasser as he has much experience with the hand dryer machines. The proposal is for 8 total machines; 4 in each bathroom, two being on each end of the bathroom. Refer to Appendix G to see possible locations for the hand dryers. Something to also consider is the psychological aspect for fear of not getting the proper sanitation using other types of hand dryers such as the "Todo" which, unlike the XLERATOR, collects the water off one's hands after they stick them down in the clam shaped device. Also to reinsure the sanitation of the XLERATOR hand dryers, there is the option to install the new certified HEPA Filtration systems (Appendix A). Another option that is possible if needed is the installation of different nozzle attachments for sound purposes if this was to become an issue.

Below is a list of some of the certifications of the XLERATOR Hand Dryers:

Certifications for the Xlerator hand dryer:

- LEED® (Leadership in Energy & Environmental Design)- All hand dryers save trees and are a great source reduction alternative, but the XLERATOR® also saves energy! This has earned XLERATOR users qualification for LEED credits in two categories:
  - EA (Energy & Atmosphere) Prerequisite 2 - Minimum Energy Performance
  - EA Credit 1 - Optimize Energy Performance (now a mandatory credit for all LEED certified facilities)
- GreenSpec® -Because XLERATOR® meets a number of GreenSpec standards (energy conservation, low maintenance requirements and waste reduction), *it was the first hand dryer to be GreenSpec listed.*
- Greener Product - demonstrates that a product has been evaluated against the LEED, LEED for Homes and NAHB green building standards using internationally recognized third-party certification organizations, laboratory test results and/or other supporting documentation.
- Green Business Bureau-Green Business Bureau Certification provides web based certification coupled with in-person verification of an organization's green accomplishments.

There have been many case studies done on the XLERATOR hand dryers by groups such as the U.S. Department of Transportation, U.S Green Building Council, U.S Department of Agriculture as well as franchises such as the New England Patriots and large businesses like Home Depot.<sup>1</sup> All of them to have the same reoccurring theme: significant cost savings, cleaner and more hygienic restrooms, reduced carbon footprint as well as more efficient hand drying. Referring to Appendix B, one can see all of the Federal Agencies using XLERATOR Hand Dryers currently.

**B. How does this initiative help to achieve the goals of the Virginia Tech Climate Action Commitment Resolution and Sustainability Plan?**

This proposal can help to achieve the goals of the VT Climate Action Commitment Resolution and Sustainability Plan by:

- Showing sustainable initiative; being a sustainable leader as far as building sustainability. This is in line with the Climate Action's first commitment to, "...*be a leader in Campus Sustainability...*"
- Setting a good example—Surge can act as a model for other buildings across campus
- Reducing the amount of paper towels used, this proposal will aid in the reduction of green house gas emissions. Less paper towels means less deforestation, less waste & hauling/transportation of waste (approximately 1.026 fewer tons of paper towels trash from Surge alone)

This proposal coincides with a plethora of various sections throughout Virginia Tech's Climate Action Commitment Resolution and Sustainability Plan. On page 90 in section D-2 it states that Virginia Tech wants to "Promote new research in energy efficiency and sustainability using the university campus as a laboratory and using undergraduate research" (Energy & Sustainability Committee 90). In this case, Surge Space Center is our laboratory as we are exploring the opportunity of expanding the school's sustainability initiative by working on this small cost-saving environmental project that will hopefully with time will be able to serve as a model for the rest of the bathrooms on campus. When looking at page 93 Section XI, the document describes Future Energy and GHG Emissions Scenarios within Virginia Tech. "The wide array of measures presented above illustrates the opportunity not only to improve the design and operation of Virginia Tech's physical infrastructure toward greater efficiency and less reliance on carbon energy, but also to change the culture of the institution toward greater awareness of the impacts of our actions..." The implementation of the hand dryers will do exactly this; improve the design and operation of Virginia Tech's physical infrastructure toward greater efficiency, as students will realize the less amount of waste, and hopefully the money that is being saved. In figure 21 on page 94 of the Sustainability Plan, it discusses possible scenarios on a graph on how Virginia Tech can act as a university in regards to sustainability in the future. In order for Virginia Tech to be an exemplar in campus sustainability we will have to have a "combination of positive internal change and external forces would positive Virginia Tech to be a leader for the Commonwealth and the nation, driving down energy use and emissions and creating a more livable and enjoyable campus environment." (Energy & Sustainability Committee 94 Section 8). As shown in Appendix C, the installations of the hand dryers will our carbon footprint by 77.11%. This is a significant reduction in emissions as well as the reduction in waste makes it more livable and enjoyable campus environment in the bathrooms of Surge Space Building. At the end of Page 94 is the Virginia Tech Climate Action Commitment (VTCAC). It states that the VTCAC is "a commitment to take necessary steps to achieve specific targets for energy savings and GHG emission reductions" (Energy & Sustainability Committee 94-XII) I firmly believe that this is necessary step in order to reduce GHG emissions and even come close to the "emission reduction target of 80% below 1990 levels"(Energy & Sustainability Committee 95).

**C. What is the cost of your proposal? Please describe in adequate detail the basis for your cost estimate.**

The XLERATOR hand dryer machines will cost on average around \$400.00 per machine. By installing 8 of the machines, we will incur a total machine supply cost of \$3,200.00 dollars. When installing these machines, we will also have an electrical supply cost as well seeing that they will need to have access to the circuit breaker in order to be powered. When talking to Bryce Lytton, the head electrician that was contacted by Wyatt Sasser (told by his bosses), he estimated that in electrical supplies alone, there would be a cost of \$3,000.00. There would be a total supply cost of \$6,200.00.

To install the XLERATOR hand drying machines, there will be two types of installation fees: first being the installation of the electrical parts and second being the installation of the actual machine itself. One important aspect of this proposal that is not included on this application is the cost of installation. This was due to assumption that the installation would be done in house at no fee. Re-calculations might be necessary if there were to be costs involved with both types of installation: electrical and of the machines themselves.

Attached in Appendix C there is a detailed cost analysis of the implementation of these machines that was done by using the facilities savings calculator on Excel's website (XLERATOR brand). Keep in mind that no installation fees were needed but in Appendix C, we used 375 in the installation cost to include the \$3,000 in electrical materials (\$3,000/8). Also in the cost analysis the rate of \$0.10 per kWh was used, which also could vary. Some of the important items on the cost analysis sheet that need to be acknowledged are:

- Virginia Tech uses 376,800 paper towel sheets on average costing \$4,140.09 annually for two bathrooms in Surge Space Building
- The implementation of XLERATOR hand dryers would eliminate 1,661 pounds of paper towels annually.
- The implementation of XLERATOR hand dryers would reduce our carbon footprint by 77.11%.

**D. Will your proposal produce cost savings for the University? If so, how much? Please describe in adequate detail the basis for your savings estimate.**

A majority of the cost savings are outlined in Appendix C

By installing XLERATOR hand dryers, we will eliminate the need for a custodian to allocate time to taking out the garbage, changing the liners as frequently, and most importantly time spent changing paper towel rolls. According to the Director of Custodian Services, the custodians that work in Surge Space Building are contracted workers that are paid \$19.50 per hour. Director Sasser also stated that on average his custodians can clean 450 sq. ft per man hour. In translations, this means that it will take 2.11 man-hours to clean the men's restroom, and 2.13 man-hours to clean the women's restroom. Director Sasser also estimated that it should take no longer than 15 minutes to take all of the trash in a single bathroom outside, as well as replace the liners (travel time to and from trash dumpster included). He also stated that it should take no longer than an additional 15 minutes to change all of the paper towel dispensers (travel time to and from closet included). This would total to be 30 minutes of labor that would be reduced per bathroom, or an hour total between both bathrooms. This proves to be a \$19.50 savings in labor cost per bathroom cleaning.

**E. Is this funding request an Ongoing or One-Time change (please check one)?**

**One-time**

**Ongoing**

**F. Is funding available for this request from another source? If yes, describe the funding (source, amount, etc.)**

At this point in time, there is no funding available to the current knowledge.

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**Part IV- Requestors/Reviewers**

Prepared By Seth Harrison

Date:  
10/18/2013

Reviewed By (Name of Appropriate University Official)

Date

Reviewed By (Name of Office of Energy and Sustainability Representative)

Date

**Appendices:****Appendix:****Document:**

- |   |  |
|---|--|
| A | HEPA Filtration System Spec Sheet                                  |
| B | List of Federal Agencies using XLERATOR Hand Dryers                |
| C | Cost/Savings Results Calculator for XLERATOR Hand Dryers           |
| D | Graph of Cases of Paper Towels ordered from 2011-2012              |
| E | Letter of Support from Director of Custodian Services Wyatt Sasser |
| F | Pictures of the Men and Women's Restrooms in Surge Space Building  |
| G | Performance Based Specification Sheet for XLERATOR Hand Dryers     |
| H | Possible Locations for XLERATOR Hand Dryers                        |

## Appendix A:

### New Certified XLERATOR® HEPA Filtration System Delivers 99.97% Pure Air



**XLERATOR with HEPA Filtration System is the only high-speed hand drying system that certifies each filter, ensuring it meets stringent HEPA performance standards of 99.97% filtration; features a washable pre-filter for reliable performance and longer life; easily retrofits into existing units**

**East Longmeadow, MA – October 11, 2012** – Excel Dryer, Inc. announced today that its best-selling XLERATOR® high-speed, energy-efficient hand dryer is now available with a certified HEPA Filtration System. XLERATOR offers the only certified HEPA filtration system proven to remove 99.97% of potentially present bacteria and particulates from the air in the room, and the only one with a washable pre-filter for reliable performance and extended filter life. XLERATOR with HEPA settles the debate about hand dryer hygiene by delivering clean, filtered, purified air as only XLERATOR can – fast and efficiently. The HEPA filtration system is now available as an optional XLERATOR feature, or can easily be retrofitted into existing units.

“Excel Dryer is the only hand dryer manufacturer that tests and certifies each HEPA filter to ensure it meets stringent HEPA filtration performance standards,” said William Gagnon, VP of marketing, Excel Dryer, Inc. “The certification provides independent assurance that each filter efficiently captures airborne particles 0.3 micron and larger – the size range of potential bacteria particulates that may exist in the air.”

The HEPA Filtration System easily retrofits into existing units or can be purchased with a new high-speed, energy-efficient XLERATOR hand dryer.

“The new HEPA Filtration System is suited for any market, but responds particularly well to the hygiene requirements of many health care, education and food processing facilities,” added Gagnon.

Excel Dryer continues to innovate with new XLERATOR accessories including the XChanger® Combination Kit – an ADA-compliant paper towel dispenser retrofit kit, adjustable air speed and sound control for sound-sensitive areas, anti-microbial Wall Guards, and a 1.1 inch noise reduction nozzle. All XLERATOR accessories retrofit quickly and easily into existing XLERATOR hand dryers.

XLERATOR is the original, patented, high-speed, energy efficient hand dryer and has become the New Industry Standard. XLERATOR is the only hand dryer to be MADE in USA CERTIFIED™, the first hand dryer to be GreenSpec® Listed and helps facilities qualify for multiple LEED® (Leadership in Energy and Environmental Design) credits by the U.S. Green Building Council. A peer reviewed ISO 14040 Life Cycle Assessment of XLERATOR confirmed it reduces the carbon footprint of hand drying by 50-70% when compared to traditional hand dryers and paper towels.

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## Appendix B:

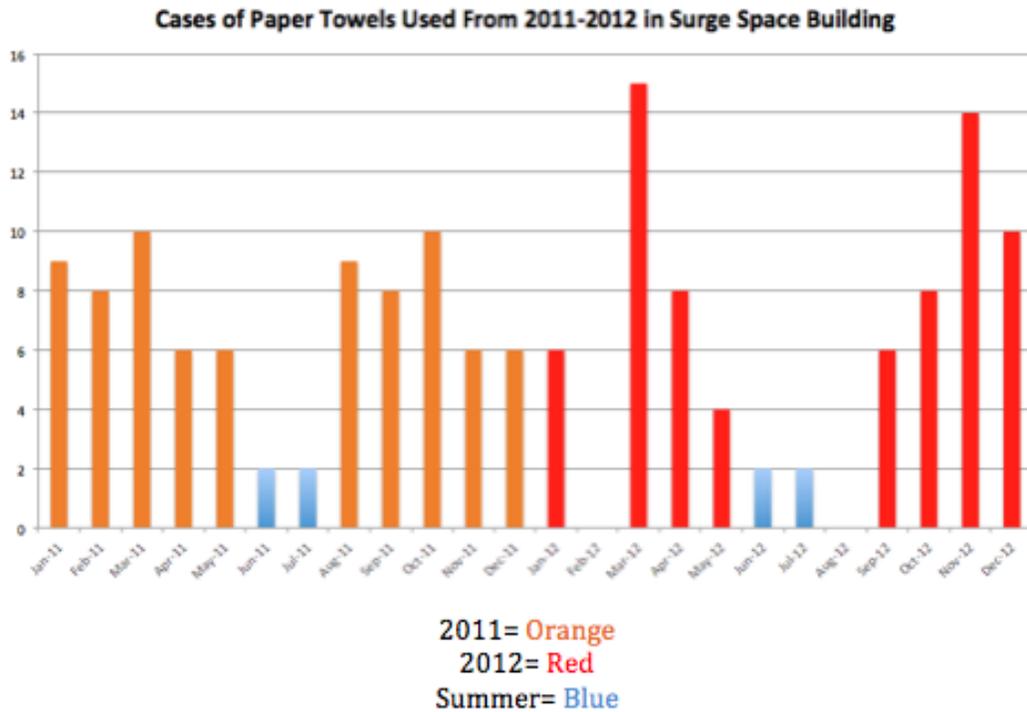
### Federal Agencies Using XLERATOR Hand Dryers:

- Department of Defense
- U.S. Army
- U.S. Marine Corps
- U.S. Navy
- U.S. Air Force
- National Guard
- U.S. Coast Guard
- Department of Energy
- Department of Agriculture
- Department of Transportation
- Department of the Interior
- U.S. Embassies

## Appendix C:

PAPER TOWEL COSTS		
<b>1. Number of Cases of Paper Towels Used Annually</b>	<input type="text" value="78.5"/>	
<b>2. Cost per Case Delivered (Include Freight and Tax)</b> (typically \$15.00 - \$25.00/case)	<input type="text" value="35.16"/>	
<b>3. Number of Towels per Case</b> For example: 2,400/case for C-fold towels 4,000/case for Multi-fold towels 4,800 linear ft/case for Roll Towels	<input type="text" value="4,800"/>	
<b>4. Your KWH Rate</b> (typically \$.10 per KWH)	<input type="text" value=".10"/>	<b>Calculate</b>
<b>5. Total Paper Towel Costs per Year</b>	<input type="text" value="\$2,760.06"/>	
<b>Handling Cost</b> (50% of item Total Paper Towel Costs - Includes the cost of generating requisitions and purchase orders, receiving, storing, servicing towel dispensers, collecting and disposing of used towels.)	<input type="text" value="\$1,380.03"/>	
<b>TOTAL COST OF USING PAPER TOWELS PER YEAR</b>	<input type="text" value="\$4,140.09"/>	
HAND DRYER COSTS		
<b>6. Number of Paper Towels Used Annually</b> (Item 1 multiplied by total sheets per case)	<input type="text" value="376,800"/>	
<b>7. Number of Hand Drying Annually</b> (Item 6 divided by 2.5 towels per hand dry)	<input type="text" value="150,720"/>	<b>XLERATOR®</b>
<b>8. Hours of Hand Dryer Usage</b> (Item 7 divided by 120 hand dries per hour) (Use 240 hand dries per hour for XLERATOR®)	<input type="text" value="1,256"/>	<input type="text" value="628"/>
<b>9. Cost of Electricity per Hour</b> (2.2 KW multiplied by your KWH rate) (Use 1.5 KW for XLERATOR®)	<input type="text" value="\$0.22"/>	<input type="text" value="\$0.15"/>
<b>10. TOTAL ANNUAL HAND DRYER COSTS</b> (Line 8 multiplied by Line 9)	<input type="text" value="\$276.32"/>	<input type="text" value="\$94.20"/>
<b>11. YOUR ANNUAL SAVINGS (Item 5 minus Item 10)</b>	<input type="text" value="\$3,863.77"/>	<input type="text" value="\$4,045.89"/>
<b>COMPUTE YOUR % SAVINGS (Item 11 divided by Item 5)</b>	<input type="text" value="93.33%"/>	<input type="text" value="97.72%"/>
XLERATOR® ENVIRONMENTAL SAVINGS		
<b>Annual Climate Change Benefits (kg CO<sub>2</sub> Eq. reduced)</b>	<input type="text" value="3153.076 kgs."/>	
<b>Pounds of Paper Towel Waste Eliminated</b>	<input type="text" value="1,661 lbs."/>	
<b>Percent Reduction of Carbon Footprint</b>	<input type="text" value="77.11%"/>	
<b>THIS IS THE CO<sub>2</sub> SAVINGS EQUIVALENT TO</b>		
<b>Trees Saved</b>	<input type="text" value="31.13 trees"/>	
<b>Cubic Meters in Landfill Saved</b>	<input type="text" value="5.49 m."/>	
<b>Gallons of Water Saved</b>	<input type="text" value="36,628 gals."/>	
<b>Emissions Saved from # Gallons of Gasoline</b>	<input type="text" value="34.68 gals."/>	
Source of conversion = USEPA		
CALCULATE YOUR PAYBACK		
<b>Cost of Each Dryer</b>	<input type="text" value="400"/>	
<b>Installation Cost</b> (Typically \$125 - \$200/dryer)	<input type="text" value="375"/>	
<b>Number of Hand Dryers Purchased</b> (*See Note Below)	<input type="text" value="8"/>	<b>Calculate</b>
<b>12. Total Purchase Price</b>	<input type="text" value="\$6,200.00"/>	<b>XLERATOR®</b>
<b>13. Savings Multiple</b> (Item 11 divided by Item 12)	<input type="text" value="0.62"/>	<input type="text" value="0.65"/>
<b>PAYBACK PERIOD IN MONTHS</b> (12 Months Divided by Item 13)	<input type="text" value="19.35"/>	<input type="text" value="18.46"/>

## Appendix D:



## Appendix E:



**Sasser, J. Wyatt** <jsasser@vt.edu>  
to pamelala93, sethh, Denny ▾

5:25 PM (11 minutes ago) ☆



The dryers will run in the neighborhood of \$400.00 each. Concerning installation cost, again I refer to Denny.

I would like to say that we have these dryers installed in the new Visitor's Center per my request during the construction process. We also have hand dryers in the new Center for the Arts which again I requested. I guess you can see I am in favor of expanding hand dryers on campus because I firmly believe they save money, reduce the clutter in the restrooms therefore keeping them cleaner and reduces waste that is taken to the landfill. With 15 second dry time they should not be an inconvenience to our patrons. I wish you luck on your project. I think it is a worthwhile endeavor.

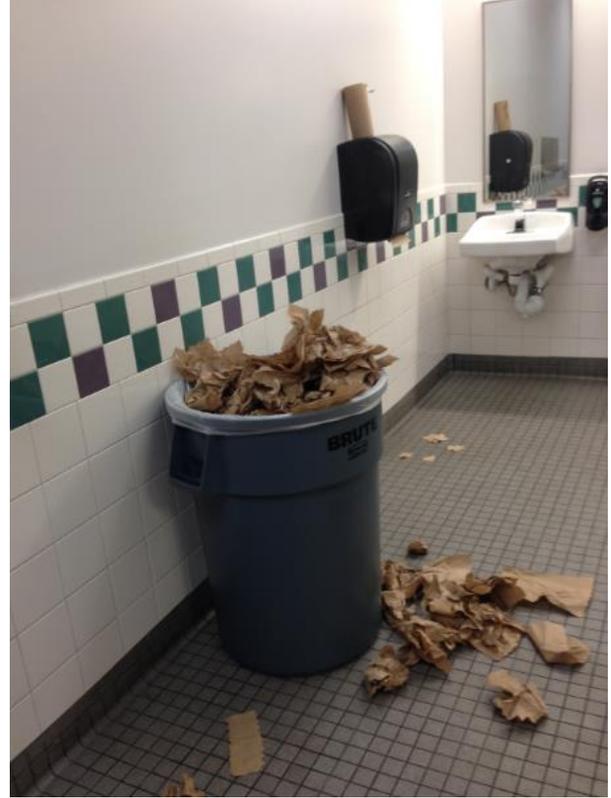
Wyatt.

Director of Housekeeping, Facilities  
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**Appendix F: (a)**



**(b)**



## Appendix G:

### **Performance Based Specification**

[New Updated BIM/CAD Files Online](#)

#### **Based on Excel Dryer XLERATOR Hand Dryer Model XL-SB:**

- **Hand Dryer:** High Speed, energy efficient, electric hand dryer; surface mounted; entire dryer internally grounded.
- **Warranty Period:** 5 years; limited warranty.
- **Manufacturing** - MADE IN USA Certified, verify certification number.
- **Sound Level** – Operational sound level less than 80 dB.
- **Motor and Blower:** 5/8 HP, 20,000 RPM. Air flow rate: 19,000 linear feet per minute.
- **Heater:** 900 watts mounted inside blower housing to be vandal proof with Air Temperature of 135 degrees F measured at average hand position of 4 inches below air outlet.
- **Controls:** Completely sealed control board and optics, automatic operation, activated by infrared optical sensor.
- **Size:** 11-3/4" wide by 12-11/16" high by 6-11/16" deep.
- **Cover:** Stainless Steel [More Options Available Online](#)
- **Finish:** Brushed [More Finishes Available Online](#)
- **Green:** GreenSpec Listed, Qualifies for LEED Credits.

#### **Optional Additions:**

- **Certified HEPA Filtration System:** Type A HEPA Filter Certified for 99.97% reduction of bacteria and particulates at 0.3 µ MPPS per IEST-RP-CC001.3
- **Noise Reduction Nozzle:** 1.1 inch radius noise reduction nozzle lowers usage decibel level by 9 dB and reduces air deflection noise.
- **Recess Kit:** ADA compliant recess kit is fabricated of 22 GA 18-8 type 304 stainless steel with #4 satin finish with 16 GA18-8 type 304 stainless steel dryer mounting plate. All welded construction. 16-3/8 inches (416 mm) wide by 26 inches (660 mm) high by 3-3/8 inches (86 mm) deep.

Source: [www.exceldryer.com/pdfs/PerformanceSpecification.doc](http://www.exceldryer.com/pdfs/PerformanceSpecification.doc)

**Appendix H:**

Possible Locations for the XLERATOR Hand Dryers:

