

8. Appendix D: Resources

8.1 WEBSITES

8.2 GLOSSARY OF TERMS

8.3 GLOSSARY OF ACRONYMS

8.4 BIBLIOGRAPHY

8.5 PROJECT TEAM

8.1 WEBSITES

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| Office of Construction and Facilities Management | http://www.va.gov/facmgt |
| Academy Journal | www.aia.org |
| Advanced Buildings | www.advancedbuildings.org/ |
| American Academy of Architecture for Health | www.aia.org/aah/aah |
| American Hospital Association | www.aha.org |
| American Indoor Air Quality Council | www.aiaqcouncil.org |
| American Planning Association Smart Growth Resources | www.planning.org/sgreader |
| American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) | www.ashrae.org |
| American Society for Testing and Materials (ASTM) | www.astm.org |
| American Solar Energy Society | www.ases.org/ |
| Academy of Neuroscience for Architecture | www.anfarch.org/ |
| American Society of Healthcare Engineering | www.ashe@aha.org |
| Building Design and Construction | www.bdcnetwork.com |
| Building Green | www.buildinggreen.com |
| BREEAM, ECD Energy and Environment Canada | www.breeamcanada.ca |
| Center for the Built Environment (CBE) | www.cbe.berkeley.edu |
| Center for Health Design | www.healthdesign.org |
| Center for Resourceful Building Technology | www.crbt.org/ |
| Center for Sustainable Systems | http://css.snre.umich.edu/ |
| Certified Forest Products Council | www.certifiedwood.org |
| Coalition for Health Environments Research (CHER) | www.cheresearch.org |
| Construction Materials Recycling Association | www.cdrecycling.org/ |
| DOE High-Performance Buildings Database | www.eere.energy.gov/buildings/database |
| Ecological Design Institute (EDI) | www.ecodesign.org/edi/ |
| Energy Efficiency and Renewable Energy Network (EERN) | www.eere.energy.gov |
| Environmental Design and Construction Magazine | www.edcmag.com/ |
| Environmental Design Research Association (EDRA) | www.edra.org |
| Federal Suppliers Guide | www.federalsuppliers.com |
| Forest Stewardship Council | http://fscus.org/ |
| Green Building Databases and Design Resources | |

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| | www.greenbuilder.com/general/GreenDBs.html |
| Greenguard..... | www.greenguard.org |
| Green Roofs..... | www.greenroofs.com |
| Green Round Table: Sustainable Architecture and Design | http://www.greenroundtable.org/ |
| Green Seal..... | www.greenseal.org |
| GreenSpec..... | www.greenspec.com |
| GSA | www.gsa.gov |
| GSA E-Library..... | www.gsaelibrary.gsa.gov |
| Green Guidelines for Health Care..... | www.gghc.org |
| Institute for Healthcare Improvement (IHI) | www.ihl.org |
| Institute of Medicine (IOM)..... | www.imu.edu |
| Lawrence Berkeley National Laboratory | http://eande.lbl.gov/btp/btp.html |
| LEED..... | www.usgbc.org/LEED/ |
| National Environmental Trust..... | http://www.environet.org/ |
| Natural Resources Defense Council..... | www.nrdc.org |
| Soil and Water Conservation Society (SWCS) | http://www.swcs.org/ |
| Sustainable Buildings Industry Council (SBIC) | http://www.sbicouncil.org/ |
| U.S. Dept. of Agriculture, BioPreferred(sm) Program..... | http://biobased.oce.usda.gov/fb4p |
| U.S. EPA Comprehensive Procurement Guideline..... | http://www.epa.gov/cpg |
| U.S. EPA Environmentally Preferable Purchasing..... | www.epa.gov/epp/ |
| U.S. Green Building Council (USGBC) | www.usgbc.org |
| Whole Building Design Guide | www.wbdg.org |
| World Green Building Council..... | http://www.worldgbc.org/ |

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8.2 GLOSSARY OF TERMS

This glossary is intended to be general in nature and includes common sustainability-related terms that may not be used in the Sustainable Design Manual but may be found in documents referenced in the Manual.

Air Changes Per Hour (ACH): Ventilation or infiltration rate that denotes the number of complete changes of the air within the volume of a given space each hour.

Air Infiltration Barrier (AIB): An AIB consists of one or more air-impermeable components, sealed at all seams and penetrations to form a continuous wrap around building walls. Air infiltration barriers can dramatically reduce the air infiltration rates through a building envelope.

Biobased Materials: Fuels, chemicals, building materials, or electric power or heat produced from biomass. Definition from Federal Green Construction Guide for Specifiers.

Biobased Content: The weight of the biobased material divided by the total weight of the product and expressed as a percentage by weight. Definition from Federal Green Construction Guide for Specifiers. Also see definition in Section 9002 of the 2002 Farm Security and Rural Investment Act and the USDA BioPreferred website.

Biomass: Organic matter available on a renewable basis. Biomass includes forest and mill residues, agricultural crops and wastes, wood and wood wastes, animal wastes, livestock operation residues, aquatic plants, fast-growing trees and plants, and municipal and industrial wastes.

Brownfields: Abandoned, idled, or underused industrial and commercial facilities/ sites where expansion or redevelopment is complicated by real or perceived environmental contamination.

Building Envelope: The elements of a building that enclose conditioned spaces through which thermal energy may be transferred to or from the exterior or to or from unconditioned spaces.

Building Integrated Photovoltaics (BIPV): Portions of a building envelope that not only provide enclosure, but also incorporate photovoltaic materials that create useful electricity.

Cogeneration: Using waste heat (1) from an industry to produce electricity, or (2) from electric utilities to produce steam for an industry or hot water for a building.

Commissioning: Commissioning is a comprehensive and systematic process to verify that the building systems perform as designed to meet the Owner's requirements. Commissioning during the construction, acceptance, and warranty phases is intended to achieve the following specific objectives: verify and document that equipment is installed and started per manufacturer's recommendations, industry accepted minimum standards, and the Contract Documents; verify and document that equipment and systems receive complete operational checkout by installing contractors; verify and document equipment and system performance; verify the completeness of operations and maintenance materials; ensure that the Owner's operating personnel are adequately trained on the operation and maintenance of building equipment. The commissioning process does not take away from or reduce the responsibility of the system designers. Definition from Federal Green Construction Guide for Specifiers.

Commissioning Agent: A contractor responsible for providing the overall coordination and management of the commissioning plan. Definition from Federal Green Construction Guide for Specifiers.

Comprehensive Procurement Guideline (CPG): The CPG program is part of EPA's continuing effort to promote the use of materials recovered from solid waste, and provides information regarding recommended recycled-content levels for CPG items.

Commissioning Plan: An overall plan that provides the structure, schedule and coordination for the commissioning process.

Constant Air Volume (CAV): Mechanical system that delivers a constant rate of air while varying the temperature of the supply air. Supply air is cooled to meet the need of the zone with highest demand, and air is reheated at the terminal units to achieve comfort.

Contaminant: Foreign and unwanted physical, chemical, biological, or radiological material in a product or in the environment.

Daylight Factor: Under totally overcast sky conditions, the percentage of light that arrives on a horizontal surface within a building compared to the amount of light arriving on an unshielded horizontal surface outside.

Daylight Sensing Control (DS): A device that automatically regulates the power input to electric lighting near fenestration to maintain the desired workplace illumination. This system takes maximum advantage of direct or indirect sunlight.

Daylighting Strategies: Methods that use natural light to minimize the need for artificial lighting during the day.

Design Energy Consumption (DECON): The computed annual energy usage of a proposed building design. Terminology used in the energy efficiency standard, ASHRAE 90.1.

Design Energy Cost (DECOS): The computed annual energy expenditure of a proposed building design. Terminology used in the energy efficiency standard, ASHRAE 90.1.

Direct Cooling: Direct cooling has four major components: keeping heat out, providing ventilation, underground construction, and evaporative cooling. Most of the strategies for keeping the heat out of a building involve avoiding direct solar gain. They include orienting the building away from intense solar exposure; using indirect daylighting instead of artificial lighting; shading roofs, walls, and windows with overhangs, wing walls, and vegetation; adjusting surface-area-to-volume ratios.

Direct Expansion (DX) Cooling: Mechanical cooling system in which the air of the space being cooled passes directly over the cooling coil (evaporator).

Direct Gain System: Uses vertical and generally south-faced glazing and materials inside to absorb heat (thermal mass). The most widely used passive solar design approach. With direct gain, the occupants are in direct contact with all five elements of the passive solar system: collector, absorber, storage, distribution, and controls.

Drip Irrigation: Above ground low-pressure watering system with flexible tubing that releases small, steady amounts of water through emitters placed near individual plants.

Energy Cost: The cost of energy by unit and type of energy as proposed to be supplied to the building, including variations such as time of day, season, and rate of usage.

Energy Cost Budget (ECB): The maximum allowable computed annual energy expenditure for a proposed building.

Energy Management System: A control system capable of monitoring environmental and system loads to adjust HVAC output in order to conserve energy while maintaining comfort.

Energy Recovery Ventilator (ERV): Draws exhaust air from the building and transfers the heat or coolness in that air to the outside air that is being pulled into the building.

Energy Star: A voluntary labeling program of the U.S. Environmental Protection Agency (EPA) and the U.S. Department of Energy that identifies energy efficient products. Qualified products exceed minimum federal standards for energy consumption by a certain amount, or where no federal standards exist, have certain energy saving features. Such products may display the Energy Star label.

Enthalpy: Total heat (both sensible and latent) present in an air-moisture mix.

Enthalpy Wheel: Heat or enthalpy wheels are rotary air-to-air heat exchangers. Adjacent supply and exhaust air counter flow streams each flow through half of the wheel. Heat wheels have a fill that transfers only sensible heat while an enthalpy wheel's fill transfers total heat.

Environmentally Preferable Products: Products and services that have a lesser or reduced effect on the environment in comparison to conventional products and services. Definition from Federal Green Construction Guide for Specifiers.

Environmentally Preferable Purchasing: EPA program that promotes federal government use of products and services that pose reduced impacts to human health and the environment.

Evaporative Cooling: The phase change of water from liquid to gas is a heat-absorbing process. The result is effective cooling of the air as water evaporates. This technique can be used to significantly reduce reliance on mechanical refrigeration, particularly in hot, dry climates.

Geothermal Reservoirs: Subsurface sources of heat that are believed to be fueled by radioactive decay occurring deep within the earth. In most areas, this heat reaches the surface in a very diffuse state; however, due to a variety of geological processes, some areas are underlain by relatively shallow geothermal resources.

Gray Water: Domestic wastewater; composed of wash water from kitchen, bathroom and laundry sinks, tubs, and washers. Does not include human waste.

Green Guide for Health Care: Green Guide for Health Care™, the healthcare sector's first quantifiable sustainable design toolkit integrating enhanced environmental and health principles and practices into the planning, design, construction, operations and maintenance of their facilities. This Guide provides the healthcare sector with a voluntary, self-certifying metric toolkit of best practices that designers, owners, and operators can use to guide and evaluate their progress towards high-performance healing environments. Definition by GGHC.

Green Roof: Vegetation cover on roof surfaces. There are two types: extensive and intensive. Extensive green roofs, also referred to as eco-roofs or living roofs, utilize a thin soil layer with horizontally spreading, low-growing vegetation cover over the entire roof surface that adds minimal loads to structure and serves as ecological stormwater management control by eliminating or delaying runoff. These also effectively reduce temperatures of the roof surface by absorbing heat from the sun, which may reduce the urban heat island effect. Intensive green roofs, also referred to as traditional roof gardens, utilize a thick soil layer or planters for vegetation (including trees and shrubs) and add substantial loads to the building structure.

Greenfield Site: Sites in both rural and urban areas, which have not experienced previous development. It also includes forestry and agricultural land and buildings, as well as previously developed sites which have blended into the natural landscape over time.

Heat Island Effect: A microclimate in which the air temperature is slightly higher than in the surrounding area. In an urban heat island, for example, the temperature in the city is 1-2°C higher than in the rural area around it.

Heat Recovery: Heat utilized that would otherwise be wasted. Sources of heat include machines, lights, process energy, and people.

Impervious Surface Area: Area that has been sealed and does not allow water to infiltrate, such as roofs, plazas, streets, and other hard surfaces.

Indirect Gain System: In indirect gain systems, sunlight strikes a thermal mass located between the sun and the space. The sunlight is absorbed by the mass, converted into thermal energy, and transferred into the conditioned spaces. Because conditioned spaces do not receive solar radiation immediately, indirect gain systems offer greater control over temperature swings and overheating. The two basic types of indirect gain systems are thermal storage walls and roof ponds.

Indoor Air Quality (IAQ): ASHRAE defines acceptable indoor air quality as air in which there are no known contaminants at harmful concentrations as determined by cognizant authorities and with which a substantial majority (80 percent or more) of the people exposed do not express dissatisfaction.

Indoor Environmental Quality (IEQ): Characteristics of the indoor climate of a building, including the gaseous composition, temperature, relative humidity, and airborne contaminant levels.

Integrated Waste Management: Using a variety of practices, including source reduction, recycling, incineration, and land filling, to minimize the amount of municipal solid waste.

Interstitial Floor: In architectural terms, the “interstitial floor” refers to an entire floor or level of a building that houses electrical, plumbing and mechanical systems (phone and network cables, heating ducts and piping, for example). Usually these systems are packed tightly in the crawlspace between floors, so the beauty of an interstitial floor is its sheer expansiveness. Maintenance personnel can walk about easily, making repairs to electrical equipment, heating ducts, plumbing, telephone, and network cables. They allow maintenance personnel to expedite service and make repairs on all the hospital’s essential systems, keeping disturbance to patients and staff to a minimum.

Isolated Gain System: In isolated gain systems, the solar collection and storage elements are separate from the spaces they provide heat. Generally south-facing solariums, greenhouses, and atriums are common examples of sun spaces in isolated gain systems.

LEED: The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ is the nationally accepted benchmark for the design, construction, and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings’ performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection, and indoor environmental quality. Definition from the U.S. Green Building Council.

Life-Cycle: All stages of development, from extraction to production, marketing, transportation, use, and disposal.

Life-Cycle Assessment (LCA): A process or framework to evaluate the environmental burdens associated with a product, process, or activity by identifying, quantifying, and assessing its energy and material usage and environmental releases, to identify opportunities for environmental improvements. Extraction and processing of raw materials, manufacturing, transportation and distribution, use/reuse/maintenance, recycling, and final disposal are all considered.

Life-Cycle Cost: A measurement of understanding the cost of a product initially, the cost to maintain the product, the life time of replacement cost.

Low-Impact Development: New development that minimizes disturbance on-site due to construction and erosion. Low-impact developments are designed to blend well into their environmental setting to preserve natural features and the maximum amount of open space.

Makeup Air: Outdoor air supplied to replace exhaust air and exfiltration.

Non-Renewable Energy: Sources of energy such as oil, coal, or natural gas that are not replaceable after they have been used.

Non-Renewable Resource: A resource that exists in a fixed amount that cannot be replenished on a human time scale. Non-renewable resources have the potential for renewal only by geological, physical, and chemical processes taking place over of millions of years. Examples include iron ore, coal, and oil. Definition from Federal Green Construction Guide for Specifiers.

Occupancy Sensor: A device that detects the presence or absence of people within an area and causes any combination of lighting, equipment, or appliances to be turned on, turned off, or adjusted accordingly.

Off-Gassing: The releasing of gasses or vapors into the air.

Passive Solar Cooling: Building design that avoids unneeded solar heat, utilizes natural ventilation, and employs thermal mass (especially in hot, dry climates) to retain coolness.

Passive Solar Heating: Building design that uses natural processes to collect, store, and distribute heat for a building. Most passively solar-heated buildings require an auxiliary heating system for periods when solar heat is unavailable or insufficient.

Payback Analysis: Evaluation of the period of time in which initial expenditures are recovered through subsequent savings. Simple payback can be calculated as follows: simple payback period = initial cost / annual savings.

Peak Electrical Demand: The peak electrical demand is the maximum instantaneous load or the maximum average load over a designated interval of time, usually 15 or 30 minutes measured by meter by the utility or power provider. Also known as peak power.

Peak Load Shedding: Peak load shedding defers system loads from peak periods to periods of low demand. The result is a flattening of the system load schedule, thus decreasing demand charges from the electric utility. Design strategies that reduce the peak load are often referred to as “peak shaving.”

Persistent Bioaccumulative Toxin (PBT): Highly toxic, long-lasting substances that can build up in the food chain to levels harmful to human and environmental health.

Pervious Paving: Paving material that allows water to penetrate to the ground below.

Photovoltaic: Capable of generating a voltage as a result of exposure to visible or other radiation. Solid-state cells (typically made from silicon) directly convert sunlight to electricity. The electricity can be used immediately, stored in batteries, or sold to a utility.

Post-Commercial Material: Material that has been recovered or otherwise diverted from the solid-waste stream during the manufacturing process. Does not include used, reconditioned, or remanufactured components. Also known as pre-consumer recycled content.

Post-Consumer Material: An end product that has completed its life cycle as a consumer item and would otherwise have been disposed of as a solid waste. Post-consumer materials include recyclables collected in commercial and residential recycling programs, such as office paper, cardboard, aluminum cans, plastics, and metals.

Post-Industrial Material: Manufacturing waste that has been cycled back into the production process. These products do not represent the significant resource savings that post-consumer products do, but are usually preferable to those that use virgin materials.

Potable Water: Water suitable for drinking.

Recovered Material: Waste materials and by-products that have been recovered or diverted from solid waste. Excludes those materials and by-products generated from and commonly reused within an original manufacturing process.

Runoff: Surface streams that appear after precipitation or irrigation. A lost resource and contributor to nonpoint source pollution.

Scheduled Switching: Scheduled switching is the most basic type of automatic lighting control. Lights are programmed to turn on or off (and brighten or dim) at prescribed times, according to the expected patterns of occupancy.

Shading Coefficient: The ratio of solar energy transmitted through a window to incident solar energy that is normal to it. Used to express the effectiveness of glazing or a shading device.

Solar Heat Gain Coefficient (SHGC): Preferred terminology for solar heat gain through glazing and fenestration. Weighted average of solar radiation penetrating glass at different angles (typically 86 percent).

Source Reduction: Any practice that reduces the amount of hazardous substance, pollutant, or contaminant prior to recycling, treatment, or disposal, and reduces the hazards to public health and the environment associated with release of these materials. Includes equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

Source Separation: Separating waste materials by type at the point of discard so that they can be efficiently recycled.

Stack Effect: Pressure-driven airflow produced by convection, by the difference between confined warm air in chimney or stack and cool air surrounding the outlet. The stack effect can be used to drive natural ventilation systems; however, it can also overpower a building's mechanical system and disrupt ventilation and circulation.

Surface-Area-to-Volume Ratio: One potential and often misleading indicator of building energy performance. The smallest ratios apply to buildings that are spherical or, more practically, squarish in shape. Disregarded is the fact that surface area can also be very useful if it

increases the potential for passive solar heating, natural ventilation, and / or daylighting of buildings.

Task Lighting: Any form of light that is focused on a specific surface or object. It is intended to provide high-quality lighting that can be directed toward a specific predetermined activity.

Thermal Envelope: The shell of a building that essentially creates a barrier from the elements. A highly insulated thermal envelope allows maximum control of interior temperature with minimal outdoor influence.

Total Lighting Power Allowance: The calculated lighting power allowed for the interior and exterior space areas of a building or facility.

U.S. Green Building Council (USGBC): The U.S. Green Building Council is the nation's foremost coalition of leaders from every sector of the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work. The U.S. Green Building Council's core purpose is to transform the way buildings and communities are designed, built and operated, enabling an environmentally and socially responsible, healthy, and prosperous environment that improves the quality of life. Source: U.S. Green Building Council.

Value Engineering: An analysis of material, processes, and products in which functions are related to cost and from which a selection may be made so as to achieve the desired function at the lowest overall cost consistent with performance.

Variable Air Volume (VAV): Mechanical system that varies the amount of air supplied to a zone while keeping the supply air temperature constant. This strategy saves fan energy and uses less reheat than in a Constant Air Volume (CAV) system.

Ventilation Air: The portion of supply air that is outdoor air plus any recirculated air that has been treated for the purpose of maintaining acceptable indoor air quality.

Voltaic Organic Compound (VOC): Chemicals that contain carbon molecules and have high enough vapor pressure to vaporize from material surfaces into indoor air at normal room temperatures (referred to as off-gassing).

Waste Heat: Heat escaping from combustion that can be captured and used for other processes.

Water Budget: The calculated amount of water a household should use based on the type and number of fixtures, landscape requirements, and number of occupants.

Water-Conserving Irrigation: Drip irrigation, soaker hoses, bubblers, and low-trajectory spray heads for water distribution; zoning irrigation for different water-demand plant types; electronic timers with five-day programming and rain override devices; irrigation schedules for early-morning watering every five to seven days; soil moisture sensors.

Water Economizer: A system by which the supply air of a cooling system is cooled directly or indirectly or both by evaporation of water or by other appropriate fluid (in order to reduce or eliminate the need for mechanical refrigeration).

Wind Turbine: A machine that generates electricity from the wind by turning a generator-connected wind propeller.

Xeriscape: Landscaping for water and energy efficiency and lower maintenance. The seven xeriscape principles are: good planning and design, practical lawn areas, efficient irrigation, soil improvement, use of mulches, low-water-demand plants, and good maintenance.

8.3 GLOSSARY OF ACRONYMS

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|-----------------|---|
| ACH | Air Changes per Hour |
| ADPSR | Architects, Designers and Planners for Social Responsibility |
| A/E | Architect / Engineer |
| AHU | Air Handling Unit |
| ASHRAE | American Society of Heating, Refrigerating and Air Conditioning Engineers |
| ASTM | American Society of Testing and Materials |
| BIM | Building Information Modeling |
| BMS | Building Management System |
| BREEAM | Building Research Establishment Environmental Assessment Method |
| CAD | Computer Aided Design |
| CARES | Capital Asset Realignment for Enhanced Services |
| CBE | Center for the Built Environment |
| CD | Construction Document |
| CFC | Chlorofluorocarbon |
| CHER | Coalition for Health Environments Research |
| CO ₂ | Carbon Dioxide |
| CPM | Critical Path Method |
| DD | Design Development |
| DOE | Department of Energy |
| EA | Energy and Atmosphere |
| EDI | Ecological Design Institute |
| EDRA | Environmental Design Research Association |
| EERN | Energy Efficiency and Renewable Energy Network |
| EO | Executive Order |
| EPA | Environmental Protection Agency |
| EPAct | Energy Policy Act of 2005 |
| EQ | Environmental Quality |
| ETS | Environmental Tobacco Smoke |
| GSF | Gross Square Foot |
| GSA | General Services Administration |
| HCFC | Hydrochlorofluorocarbon |
| HVAC | Heating, Ventilation and Air Conditioning |

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|---------------|---|
| IHI | Institute for Healthcare Improvements |
| IAQ..... | Indoor Air Quality |
| IEQ..... | Indoor Environmental Quality |
| LCA | Life Cycle Assessment |
| LEED..... | Leadership in Energy and Environmental Design |
| LEED-EB..... | LEED Existing Building |
| LEED-CI..... | LEED Commercial Interiors |
| LEED-CS | LEED Core and Shell |
| LEED-H..... | LEED Homes |
| LEED-NC | LEED New Construction |
| LEED-ND | LEED Neighborhood Development |
| MOU..... | Memorandum of Understanding |
| MR | Materials and Resources |
| NBIM | National Building Information Modeling |
| NCA | National Cemetery Administration |
| NIBS..... | National Institute of Building Sciences |
| OR..... | Operating Room |
| PBT | Persistent Bioaccumulative Toxin |
| PM..... | Project Manager |
| PV | Photovoltaic |
| REC | Renewable Energy Certificates |
| SBIC..... | Sustainable Buildings Industry Council |
| SD | Schematic Design |
| SF | Square Foot |
| SS | Sustainable Sites |
| SWCS | Soil and Water Conservation Society |
| TIL..... | Technical Information Library |
| USGBC | U.S. Green Building Council |
| VA | Department of Veterans Affairs |
| VBA..... | Veterans Benefits Administration |
| VAV | Variable Air Volume |
| VHA..... | Veterans Health Administration |
| VISN..... | Veterans Integrated Service Network |
| VOC | Voltaic Organic Compounds |

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| WBDG | Whole Building Design Guide |
| WE | Water Efficiency |

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