

Appendix 2: Glossary

- Absorption**—The process by which incident light energy is converted to another form of energy, usually heat.
- Acid leachate**—Water that has become acidic after seepage through landfills; potentially very damaging to fish habitats and drinking water supplies.
- Active noise cancellation (ANC)**—Reducing a sound field through the interaction of a primary sound source with an actively controlled identical secondary sound that is 180 degrees out of phase.
- Adaptation**—In lighting design, the process by which the human visual system becomes accustomed to more or less light, resulting from a change in the sensitivity of the eye to light.
- Adsorption**—Adhesion of the molecules of a gas, liquid, or dissolved substance to a surface.
- Allergen**—A substance capable of causing an allergic reaction because of an individual's sensitivity to that substance.
- Ambient lighting**—Lighting in an area from any source that produces general illumination, as opposed to task lighting.
- Ancillary Materials**—All those additional inputs, materials, items, and things necessary to complete the process and result in the "Primary Output." (*J.A. Tshudy, Part IV, Section C*)
- Artificial sky**—An enclosure that simulates the luminance distribution of a real sky for the purpose of testing physical daylighting models (e.g., a hemispherical-dome or mirror-box artificial sky).
- A-Weighting**—System of modifying measured sound-pressure levels to simulate the response of the human ear to different sound frequencies.
- Bacteria sink**—Porous material that allows the growth of biological contaminants within the material.
- Baffle**—A single opaque or translucent element used to diffuse or shield a surface from direct or unwanted light.
- Bakeout**—A process used to remove VOCs by elevating the temperature in an unoccupied, fully furnished, and ventilated building.
- Ballasts**—Electrical "starters" required by certain lamp types, especially fluorescents.
- Bioaerosol**—An aerosolized particle originating from a living thing.
- Biodiversity**—The tendency in ecosystems, when undisturbed, to have a great variety of species forming a complex web of interactions. Human population pressure and resource consumption tend to reduce biodiversity dangerously; diverse communities are less subject to catastrophic disruption.
- Bioengineering**—The use of living plants, or a combination of living and non-living materials, to stabilize slopes and drainage ways.
- Biological contaminants**—These include bacteria, viruses, molds, pollen, animal and human dander, insect and arachnid excreta.
- Blackwater**—Wastewater generated from toilet flushing. Blackwater has a higher nitrogen and fecal coliform level than graywater. Some jurisdictions include water from kitchen sinks or laundry facilities in the definition of blackwater.
- Blown-in batt**—A method of installing loose insulation in wall cavities, using a powerful blower and a fabric containment screen.
- Brightness**—The subjective perception of relative luminance in a space or on a surface.
- Building**—The complete, outfitted, and furnished "Structure," operational in every way, and ready for immediate occupancy and use. (*J.A. Tshudy, Part IV, Section C*)
- Building commissioning (Cx)**—The startup phase of a new or remodeled building. This phase includes testing and fine-tuning of the HVAC and other systems to assure proper functioning and adherence to design criteria. Commissioning also includes preparation of the system operation manuals and instruction of the building maintenance personnel.
- Building pressurization**—The air pressure within a building relative to the air pressure outside. Positive building pressurization is usually desirable to avoid infiltration of unconditioned and unfiltered air. Positive pressurization is maintained by providing adequate outdoor makeup air to the HVAC system to compensate for exhaust and leakage.
- Building-Related Illnesses (BRI)**—Clinically verifiable diseases that are attributed to a specific source or pollutant within a building and are more serious than Sick Building Syndrome (SBS) condition. The symptoms of the disease persist after the occupant leaves the building, unlike SBS in which the occupant experiences relief shortly after leaving the building.
- Candela (cd)**—The SI unit of luminous intensity (formerly called the "candle"). One candela equals one lumen per steradian—a specific measure of luminous intensity, in a given direction.
- Ceiling cavity**—The cavity formed by the ceiling, the plane of the luminaires, and the wall surfaces between them.
- Checkdam**—Low dam of stone, wood, or other material used for holding and spreading runoff and sediment in a swale.
- Clerestory**—That part of a building rising above the roofs or other parts, whose walls contain windows specifically intended to provide lighting to the interior.
- Closed-loop control**—A control system that utilizes measurement of a controlled variable for feedback. Based on the measured feedback, the control system alters its output in an attempt to force the controlled variable to reach a given setpoint.
- CO₂-based high-limit ventilation control**—A ventilation strategy that monitors the CO₂ concentration in a building zone or in the return air duct from the zone. If the CO₂ concentration approaches a predetermined high limit, the outdoor airflow controller is reset to provide additional ventilation. This process supplements standard ventilation-control strategies by providing additional ventilation for unexpected occupancy.
- Coefficient of utilization (CU)**—The ratio of light energy (lumens) from a source, calculated as received on the workplane, to the light energy emitted by the source alone.
- Color (temperature of a source)**—In general terms, a means of defining the relative whiteness of a light source, specifically the absolute temperature (degrees Kelvin) of a blackbody radiator having a chromaticity equal to that of the light source.
- Commission Internationale de l'Eclairage (CIE)**—International lighting commission whose standards, procedures, and definitions are in general use in Europe, but less widely accepted in North America.
- Constructed wetland**—Any of a variety of designed systems that approximate natural wetlands, use aquatic plants, and can be used to treat wastewater or runoff.
- Construction**—That complete sequence or series of activities and actions that begin with the building "Site" and results in the completed "Structure." (*J.A. Tshudy, Part IV, Section C*)
- Contrast sensitivity**—The ability to detect the presence of luminance differences.
- Co-product**—All those things that result from the process that undergo some further processing to be converted to materials or things that have subsequent use and/or value. (*J.A. Tshudy, Part IV, Section C*)
- Cradle-to-grave analysis**—Analysis of the impact of a product from the beginning of its source gathering processes, through the end of its useful life, to disposal of all waste products. Cradle-to-cradle is a related term signifying the recycling or reuse of materials at the end of their first useful life.

Critical zone—Any location in a building with contaminant sources sufficiently strong enough that proper control of ventilation, with no margin for error, is crucial for maintaining the immediate comfort of occupants. Critical zones may include conference rooms, smoking rooms, cafeterias, washrooms, auditoriums, or anywhere occupancy can rapidly change.

Cullet—Crushed, waste glass that is returned for recycling.

Cut-off angle—The critical viewing angle beyond which a source can no longer be seen because of an obstruction (such as a baffle or overhang).

Daylight factor (DF)—The ratio of daylight illumination at a given point on a given plane, from an obstructed sky of assumed or known illuminance distribution, to the light received on a horizontal plane from an unobstructed hemisphere of this sky, expressed as a percentage. Direct sunlight is excluded for both values of illumination. The daylight factor is the sum of the sky component, the external reflected component, and the internal reflected component. The interior plane is usually a horizontal workplane. If the sky condition is the CIE standard overcast condition, then the DF will remain constant regardless of absolute exterior illuminance.

Decibel (dB)—Unit of sound level or sound-pressure level. It is ten times the logarithm of the square of the sound pressure divided by the square of reference pressure, 20 micropascals.

Demand-controlled ventilation (DCV) (CO₂ based)—A ventilation-control strategy in which the concentration of CO₂ is the measured variable that is controlled to a setpoint by modulating outdoor airflow. With this strategy, only human source contaminants are considered. CO₂DCV will not comply with either procedure of ASHRAE Standard 62-1989.

Densitometer—A photometer for measuring the optical density (the opposite of transmittance) of materials.

Detention—In stormwater management, ponding of runoff in pools and basins for water-quality improvement and flood prevention.

Direct component—That portion of light energy, from sources such as the sky or sun, that reaches a specified location without any significant diffusion.

Direct sunlight (beam sunlight)—That portion of daylight arriving at a specified location directly from the sun, without diffusion.

Disuse—That complete sequence and series of activities and actions that eliminate the “Building” in its present form. There are basically two options: (1) demolition and return of the “Building,” “Site,” and all of its components to the natural environment; and (2) renovation. The renovation option essentially leads back to the beginning of the building life cycle model or to some intermediate stage within that model. (*J.A. Tshudy, Part IV, Section C*)

Economizer controls—HVAC system controls that operate mixed air dampers to mix return and outdoor air to obtain air of a temperature appropriate for “free cooling.” Economizer controls are used during periods when outdoor air requires less cooling energy input than return air.

Efficacy—In lighting design, a measure of the luminous efficiency of a specified light source, expressed in lumens per watt. For daylighting, this is the quotient of visible light incident on a surface to the total light energy on that surface. For electric sources, this is the quotient of the total luminous flux emitted by the total lamp power input.

Electromagnetic spectrum—A continuum of electric and magnetic radiation encompassing all wavelengths from electricity, radio, and microwaves at the low-frequency end of the spectrum, to infrared, visible light, and ultraviolet light in the midrange, to x-rays and gamma rays at the high-frequency end.

Embodied energy—The total energy that a product may be said to “contain,” including all energy used in growing, extracting, and manufacturing it and the energy used to transport it to the point of use. The embodied energy of a structure or system

includes the embodied energy of its components plus the energy used in construction.

Emission rate—Determined by placing a material or furniture into a small or large stainless-steel environmental chamber and measuring the release of volatile vapors from the item over a specified time period. Measured in mg/m²/hr (micrograms per square meter per hour) or mg/m²/hr (milligrams per square meter per hour).

Emissivity—By Kirchoff's Law, for a given wavelength of the electromagnetic spectrum, emissivity of a surface equals its absorptivity and is the reciprocal of its reflectivity.

Energy—All those energy materials and sources required to carry out and complete the process or series of activities for which they are inputs. (*J.A. Tshudy, Part IV, Section C*)

Environmental chamber—A stainless-steel, nonreactive testing device with a known air volume and dynamically controlled air change rate, temperature, and humidity.

Environmental releases—All those outputs and things that result from the process that have no further use or value and are disposed of, emitted, released, lost, or otherwise returned to the environment. (*J.A. Tshudy, Part IV, Section C*)

Equivalent sphere illumination (ESI)—The level of sphere illumination that would produce task visibility equivalent to that produced by a specific lighting environment. The presence of veiling reflections on a task surface reduces the ESI.

Erosion-control fabrics—Clothlike materials used to prevent soil loss. They include geotextiles and fabrics used in silt fences.

Evapotranspiration system—One of the most common forms of wastewater drain fields. This type of system utilizes both evaporation and plant transpiration to dispose of wastewater.

External reflected component—That part of illuminance measured inside a space, on a given plane (or of a calculated daylight factor), that is due to contribution of light reflected from external surfaces.

Feedstocks—The raw material used in manufacturing a product, such as the oil or gas used to make a plastic.

Fenestration—Any opening, or arrangement of openings, in a building (normally filled with glazing) that admits daylight and any devices in the immediate proximity of the opening that affect light distribution (such as baffles, louvers, draperies, overhangs, light shelves, jams, sills, and other light-diffusing materials).

Fiber optics—Optical, clear strands that transmit light without electrical current; sometimes used for outdoor lighting.

Finger-jointed—High-quality lumber formed by joining small pieces of wood glued end to end, so named because the joint looks like interlocked fingers.

Floor cavity ratio—A number indicating floor cavity proportions calculated from length, width, and height. The floor cavity is formed by the workplane, the floor, and the wall surfaces between them.

Flushout—A process used to remove VOCs from a building by operating the building's HVAC system at 100 percent outside air for a specific period of time.

Fly ash—The fine ash waste collected from the flue gases of coal combustion, smelting, or waste incineration.

Formaldehyde—A gas used widely in production of adhesives, plastics, preservatives, and fabric treatments and commonly emitted by indoor materials that are made with its compounds. It is highly irritating if inhaled and is now listed as a probable human carcinogen.

Fungi—Parasitic lower plants (including molds and mildew) lacking chlorophyll and needing organic material and moisture to germinate and grow.

Furnishing and outfitting—That complete sequence or series of activities and actions that begin with the “Structure” and results in the completed “Building.” (*J.A. Tshudy, Part IV, Section C*)

Generally regarded as safe (GRAS)—A designation given to products (originally foods) that have been in use for many generations without apparent toxic effects.

Geotextiles—Cloth or clothlike materials intended for use in the soil, usually for filtering or containing soil water. Some types are used to prevent or control erosion.

Glare—The effect produced by luminance within one's field of vision that is sufficiently greater than the luminance to which one's eyes are adapted; it can cause annoyance, discomfort, or loss in visual performance and visibility.

Glare index—A value for predicting the presence of glare as a result of daylight entering an area. The glare index is affected by the size and relative position of fenestration, orientation to the sun, sky luminance, and interior luminances. The glare index is similar to the index of sensation and the discomfort glare rating, which are used for electric lighting applications.

Graywater—Wastewater that does not contain toilet wastes and can be reused for irrigation after simple filtration. Wastewater from kitchen sinks and dishwashers may not be considered graywater in all cases. See *Blackwater*

Ground light—Visible radiation from the sun and sky, reflected by exterior surfaces below the plane of the horizon. See *External reflected component*.

High-efficiency particulate air (HEPA) filter—A designation for very fine air filters (usually exceeding 98 percent atmospheric efficiency) typically used only in surgeries, clean rooms, or other specialized applications.

Humus—Decomposed organic material that is an essential component of fertile soil; produced through composting.

Hydrogen sulfide—A very odorous, toxic, and explosive gas produced by some bacteria in the absence of oxygen. It produces acids on contact with water.

Hypersensitivity—Extremely high sensitivity of an individual to certain substances.

I joists—A manufactured wood product so named because its section looks like an upper case I. The top and bottom chord are lumber or laminated wood, and the vertical web is plywood or oriented strand board.

Illuminance—The density of the luminous flux incident on a surface, expressed in footcandles or lux. This term should not be confused with illumination (i.e., the act of illuminating or state of being illuminated).

Impact isolation class (IIC)—A single-number rating system designed to provide a comparison between different floor/ceiling constructions for structure-borne impact transmission between vertically adjoining spaces. The IIC is calibrated so that comparable ratings for sound transmission class (STC) give equivalent degrees of protection. The IIC is measured with a standardized tapping machine to generate impact noise, measuring it in the space below at the one-third octave bands between 100 and 3150 hertz. The IIC is calculated using the ASTM E989-84 "Standard Classification for Determination of Impact Isolation Class."

Indoor air quality (IAQ)—According to the U.S. Environmental Protection Agency and National Institute of Occupational Safety and Health, the definition of good indoor air quality includes (1) introduction and distribution of adequate ventilation air; (2) control of airborne contaminants; and (3) maintenance of acceptable temperature and relative humidity. According to ASHRAE Standard 62-1989, indoor air quality is defined 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 Air Quality Procedure—One of two procedures listed in ASHRAE Standard 62-1989 to determine appropriate ventilation rates for buildings. The IAQ Procedure provides a method of measuring and controlling outdoor airflow in order to keep

harmful substances diluted to acceptable levels. It is inherently a more rigorous strategy than the Ventilation Rate Procedure because it considers all contaminants. Implementation of this procedure is difficult because of monitoring costs and insufficient knowledge about acceptable concentration levels for the thousands of combinations of potential indoor contaminants.

Infiltration—In stormwater management, entry of runoff into the soil.

Integrated pest management (IPM)—An environmentally sound system of controlling landscape pests, which includes well-timed nontoxic treatments and understanding of the pests' life cycles.

Interior furnishings—Those temporary or semi-permanent systems and components which are generally required for the normal utilization of the "Building" for its intended purpose. Examples, interior design elements, paint, furniture, some types of flooring, ceilings, and walls, etc. (*J.A. Tshudy, Part IV, Section C*)

Invasive vegetation—An exotic plant adapted to very similar growing conditions as those found in the region to which it is imported. Because such a species usually has no natural enemies (pests, diseases, or grazers), it flourishes, disrupting the native ecosystem and forcing out native plant species, resulting in habitat loss, water-table modification, and other serious problems.

Inverse square law—In lighting design, the law that states that the illuminance at a point on a surface varies proportionately with the intensity of a point source, and inversely to the square of the distance between that source and that surface.

Irradiance (E)—The amount (or density) of light energy incident on a surface.

Laminated veneer lumber—A manufactured wood product similar to plywood but made in thick sections with all the grain oriented one way for use as beams.

Lead ventilation—Ventilation of an unoccupied building space immediately prior to its occupancy. Lead ventilation is performed to dilute contaminants from building and HVAC sources to acceptable levels by the time occupants arrive.

Legionnaires' Disease—A sometimes fatal lung infection caused by the *Legionella* bacteria, first identified at a Legionnaires convention in Philadelphia in 1976.

Level spreaders—A stormwater management device installed parallel to a slope that changes concentrated flow to sheet flow.

Life-cycle—The consecutive, interlinked stages of a product, beginning with raw materials acquisition and manufacture and continuing with its fabrication, manufacture, construction, and use, and concluding with any of a variety of recovery, recycling, or waste management options.

Life-cycle assessment (LCA)—A concept and a method to evaluate the environmental effects of a product or activity holistically, by analyzing the entire life cycle of a particular product, process, or activity. Life-cycle assessment is typically described in three complementary phases: inventory analysis, impact assessment, and improvement assessment.

Life-cycle cost (LCC) of material—The costs accruing throughout the service life of a material. Life-cycle costs address the capital costs involved in production, maintenance, and disposal, and can also include other environmentally related capital costs and societal costs.

Light adaptation—The process by which the retina becomes adapted to a luminance greater than about 1.0 footlambert.

Light shelf—A horizontal device positioned (usually above eye level) to reflect daylight onto the ceiling and to shield direct sunlight from the area immediately adjacent to the window. The light shelf may project into the room, beyond the exterior wall plane, or both. The upper surface of the shelf may be specular or nonspecular but should be highly reflective (that is, having 80 percent or greater reflectance).

Lignin—The naturally occurring polymer in wood that binds the cellulose fibers together.

Louver—A series of baffles used to shield a light source from view at certain angles or to absorb unwanted light. The baffles are usually arranged in a geometric pattern.

Lumen (lm)—The luminous flux emitted (within a unit solid angle or one steradian) by a point source having a uniform luminous intensity of one candela.

Lumen method (daylighting)—A method of estimating the interior illuminance from window daylighting at three locations within a room, based on empirical studies.

Luminaire—A complete electric lighting unit, including housing, lamp, and focusing and/or diffusing elements; informally referred to as fixture.

Luminance—Luminous intensity of a surface in a given direction.

Luminous flux—The rate of flow of light, analogous to the rate of flow of a fluid.

Material Safety Data Sheets (MSDSs)—OSHA-required documents supplied by manufacturers of potentially hazardous products. MSDSs contain information regarding potentially significant airborne contaminants, precautions, steps for inspection, health effects, odor description, volatility, expected contaminants from combustion, reactivity, and procedures for cleanup.

Matte surface—Surface from which the reflection is predominantly diffuse, with or without a negligible specular component.

Mineral fibers—Very fine insulation fibers made from glassy minerals that have been melted and spun and are hazardous to inhale.

Mixed air—The mixture of outdoor air and return air in an HVAC system. When filtered and conditioned, mixed air becomes supply air.

Monitor—A raised section of roof that includes a vertically (or near-vertically) glazed aperture, for the purpose of daylight illumination.

Native vegetation—A plant whose presence and survival in a specific region is not due to human intervention. Certain experts argue that plants imported to a region by prehistoric peoples should be considered native. The term for plants that are imported and then adapt to survive without human cultivation is *naturalized*.

Natural cooling—Use of environmental phenomena to cool buildings, e.g., natural ventilation, evaporative cooling, and radiative cooling.

Nit (nt)—Unit of luminance equal to one candela per square meter.

No-build option—In planning and design, a decision that a site is best used by not building structures or systems on it. Used as a scenario against which the true environmental cost-effectiveness of building concepts can be evaluated.

Noise criteria (NC)—Series of curves of octave-band sound pressure levels from 63 to 8000 Hertz. They are commonly used in the United States to rate interior noise levels.

Noise reduction (NR)—The simple loss of sound level that occurs in passing through a medium. Most often noise reduction refers to a single octave or one-third octave-band noise.

Noise reduction coefficient (NRC)—Average of the sound absorption coefficient of the four octave bands 250, 500, 1,000, and 2,000 Hertz rounded to the nearest 0.05.

Non-point-source pollution—Runoff contamination from an overall site or land use and not discharged from a single pipe, such as sediment from construction sites, oils from parking lots, or fertilizers and pesticides washed from farm fields.

Obsolete building—A “Building” that for one reason or another has reached the end of its current useful life. (*J.A. Tshudy, Part IV, Section C*)

Octave band—A group of frequencies whose lower boundary is one-half of the upper boundary. In acoustics, the first nine octave bands are identified by their center frequencies of 31.5,

63, 125, 250, 500, 1,000, 2,000, 4,000, and 8,000 Hertz. The 31.5 band is also referred to as the band number 0, and 63 Hertz is band number 1.

Offgas/outgas—A process of evaporation or chemical decomposition through which vapors are released from materials.

Open-web wood joists—Wood joists built as flat trusses, using small-dimension lumber for web pieces. These are also available with stamped steel webs.

Orientation—The relation of a building and its associated fenestration and interior surfaces to compass direction and, therefore, to the location of the sun.

Oriented strand board (OSB)—A manufactured wood sheet product made from large flakes of wood pressed together with glue, usually a dry phenolic type. OSB is used for structural sheathing and subfloors.

Oxidizer—Any agent or process that receives electrons during a chemical reaction.

Passive solar design—Designing a building’s architectural elements to collect, store, and distribute solar resources for heating, cooling, and daylighting.

Perlite—A lightweight, expanded mineral bead; highly flame-resistant and with good insulating value.

Phenolic laminate—A high-pressure laminated sheet made from paper and phenol formaldehyde resin, commonly used for furniture and kitchen cabinet surfaces.

Photocells—Light-sensing cells used to activate controllers at dawn or dusk.

Photometer—An instrument for measuring photometric quantities, such as luminance, luminous intensity, luminous flux, and illuminance.

Photovoltaic—Generation of electricity from the energy of sunlight, using photocells.

Plasticizers—Chemicals added to soft plastics to preserve their flexibility. These agents offgas slowly, eventually rendering the plastic brittle.

Point method—A method of estimating the illuminance at various locations in a building, using photometric data.

Polyethylene terephthalate (PET)—A polyester plastic used widely in soft drink bottles.

Polymers—Any molecule chain made up from repeated elements, for example, plastics and adhesives.

Polypropylene—A common flexible plastic usually spun into fiber for rope and woven goods.

Post-consumer recycled material—A reclaimed waste product that has already served a purpose to a consumer, such as used newspaper, and has been diverted or separated from waste management systems for recycling.

Powder coating—A durable finishing method for metals using a dry, powdered plastic that is heat-fused onto the surface. No solvent is required and practically no waste produced.

Pre-consumer recycled material—A material that is removed from source gathering or production processes (such as scrap, breakage, or returned inventory) and returned to the original manufacturing process or an alternative process. Pre-consumer recycled materials have not yet reached a consumer for the intended use.

Pressure dose—A method of pumping wastewater to subsurface leaching fields in which soils or slopes are a limiting factor. Typical leach fields operate with gravity.

Primary input—A thing or things that represent the key or fundamental elements that are operated upon by the process and lead to the “Primary output” of the process. For a specific life cycle analysis, the “Primary inputs” of each process in the life cycle sequence need to be clearly defined in terms of what, when, and where. In general, the “Primary input” of one process will be

the “Primary output” of the previous process. (*J.A. Tshudy, Part IV, Section C*)

Primary output—The thing, item, or article that represents the intended goal of the process. For a specific life cycle analysis, the “Primary outputs” of each process in the life cycle sequence need to be clearly defined in terms of what, when, and where. (*J.A. Tshudy, Part IV, Section C*)

Radiant energy (radiation)—Energy traveling in the form of electromagnetic waves, measured in units of energy such as joules, ergs, or kilowatthours.

Rainscreen—A method of constructing walls in which the cladding is separated from a membrane by an airspace that allows pressure equalization to prevent rain from being forced in. Often used for high-rise buildings or for buildings in windy locations.

Recycled material—Material that would otherwise be destined for disposal but is diverted or separated from the waste stream, reintroduced as material feed-stock, and processed into marketed end-products.

Reflectance—The ratio of reflected light flux to incident light flux.

Reflected glare—Glare resulting from specular reflection of high luminances in polished, or glossy, surfaces in the field of view. See also *Veiling reflection*.

Reflection—The process by which incident light flux leaves a surface, or medium, from the incident side, without a change in frequency.

Releasable adhesives/dry adhesives—A dry, tacky adhesive that holds a carpet or other finish in place but can be easily removed. After removal it leaves no residue and can be reattached.

Remanufacturing—Industrial process in which worn-out products are restored to “like-new” condition.

Renewable—A renewable product can be grown or naturally replenished or cleansed at a rate that exceeds human depletion of the resource.

Renewable energy technologies—Active, passive, and photovoltaic strategies integrated into building design.

Return air—Air that has circulated through a building as supply air and has been returned to the HVAC system for additional conditioning or release from the building.

Reverberation time (R_T)—The amount of time it takes for sound to decay 60 decibels in a given space. It is a function of room volume and amount of sound absorption provided by surface finishes in the room. Optimum levels are determined based on room volume and space usage.

Rhinitis—Inflammation of nasal mucous membrane.

Room cavity—The cavity formed by the plane of the luminaires, the workplane, and the wall surfaces between these two planes.

Room criteria (RC)—Similar to NC and NR, but from 16 to 8,000 Hertz and more recent. RC also rates noise for rumble or hiss.

Room ratio (RR)—A number indicating room proportions, or the ratio of room length to width. Room ratio is equal to 5.0/room cavity ratio.

Sediment basin—A depression in the soil that is placed to retain sediment and debris on-site.

Shallow trench system—A type of drain field used in conjunction with a graywater system that allows for shallow placement of distribution pipes and use of the graywater for irrigation.

Shear braces—A bracing system, usually using metal brackets or straps, which eliminates most structural wall sheathing.

Sick Building Syndrome (SBS)—According to the EPA and NIOSH, Sick Building Syndrome is defined as “situations in which building occupants experience acute health and/or comfort effects that appear to be linked to time spent in a particular building, but where no specific illness or cause can be identified. The complaints may be localized in a particular room or zone, or may be spread throughout the building.” Occupants experience relief of symptoms shortly after leaving the building.

Sinks—Surfaces that tends to capture volatile compounds from air and release them later. Carpets, gypsum board, ceiling tiles, and upholstery are all sinks.

Site—The natural location intended for the “Building,” altered, modified, and prepared to the point where “Construction” activities for the “Structure” can be initiated. (*J.A. Tshudy, Part IV, Section C*)

Site selection and preparation—That complete sequence or series of activities and actions that begins with the natural environment and results in some specific geographic location defined in terms of boundaries, and altered and modified to the point where it has become the building “Site” ready for “Construction” to begin. (*J.A. Tshudy, Part IV, Section C*)

Skylight—A relatively horizontal, glazed roof aperture for the admission of daylight.

Slipforms—Concrete forms that are advanced for another pour after the concrete has set.

Sludge composting—Process of composting treated municipal sewage waste with organic matter for use as a soil amendment.

Sodium silicate—A liquid used in asbestos encapsulation, concrete and mortar waterproofing, and high-temperature insulations (also called “water glass”). This substance is nontoxic when cured but caustic when wet.

Solar altitude—In solar analysis, the vertical angular distance of a point in the sky above the horizon. Altitude is measured positively from the horizon to the zenith, from 0 to 90 degrees.

Solar azimuth—In solar analysis, the horizontal angular distance between the vertical plane containing a point in the sky (usually the sun) and true south.

Solar radiation—The full spectrum of electromagnetic energy including visible light from the sun. When solar radiation strikes a solid surface or a transparent medium such as air or glass, some of the energy is absorbed and converted into heat energy, some is reflected, and some is transmitted. All three of these effects are important for effective passive solar design.

Sound power level—Reported in decibels, it is 10 times the logarithm to the base of 10 of the ratio of the total sound power in watts to a reference power of 10^{-12} watts.

Sound pressure level (SPL)—Reported in decibels, it is 20 times the logarithm to the base 10 of the ratio of sound pressure to a reference pressure of 20 micropascals.

Sound transmission class (STC)—A single-number rating designed to provide a comparison between the noise losses of different structures for building-design purposes. The STC is calculated from the noise reduction at the 16 one-third octave bands between 125 and 4,000 Hertz. The American Society for Testing and Materials has published a standard, ASTM E413-73, “Standard Classification for Determination of Sound Transmission Class.”

Sound—Minute changes in air pressure of 2×10^{-10} to 2×10^{-3} of an atmosphere at the rates of from 20 to 20,000 times per second.

Spectrophotometer—An instrument for measuring the transmittance and reflectance of surfaces and media as a function of wavelength.

Stressed skin—A structural panel with the sheathing permanently bonded to the frame or core to increase its strength.

Structure—The completed building envelope on the “Site,” externally and internally complete, including all operating systems ready for its “Interior furnishings.” (*J.A. Tshudy, Part IV, Section C*)

Sun-bearing angle—The solar azimuth angle relative to the horizontal direction a building surface is facing. Often referred to as the “relative solar azimuth.”

Superabsorbent materials—Various artificial materials capable of holding several times their own weight in water. Used in granular form, these are mixed with earth to increase the amount of water held in the soil, the length of time it is held before drying, and its availability to plants. Humus serves this purpose.

Superplasticizers—Chemical additives for concrete that increase the fluidity of the mix without excess water.

Supply air—The total quantity of air supplied to a space of a building for thermal conditioning and ventilation. Typically, supply air consists of a mixture of return air and outdoor air that is appropriately filtered and conditioned.

Sustainable—The condition of being able to meet the needs of present generations without compromising those needs for future generations. Achieving a balance among extraction and renewal and environmental inputs and outputs, as to cause no overall net environmental burden or deficit. To be truly sustainable, a human community must not decrease biodiversity, must not consume resources faster than they are renewed, must recycle and reuse virtually all materials, and must rely primarily on resources of its own region.

Synergy—Action of two or more substances to achieve an effect of which each is individually incapable. As applied to toxicology, two exposures together (for example, asbestos and smoking) are far more risky than the combined individual risks.

Thinset—A modified portland cement and sand mortar used for tile setting. May contain an acrylic additive for strength.

“Tight” buildings—Buildings that are designed to let in minimal infiltration air in order to reduce heating and cooling energy costs. In actuality, buildings typically exhibit leakage that is on the same order as required ventilation; however, this leakage is not well distributed and cannot serve as a substitute for proper ventilation.

Topsoil—The uppermost soil horizon (layer), containing the highest amounts of organic material; depth varies greatly from region to region.

Transmission loss (TL)—Noise reduction corrected for wall area and room absorption.

Transmission—The process by which incident flux leaves a surface, or medium, on a side other than the incident side, without change in frequency.

Transmittance—The ratio of transmitted flux to incident flux; measured by a transmissometer.

Trombe wall—A south-facing masonry wall that is covered with glass spaced a few inches away. Sunlight passing through the glass is transformed into heat at the wall’s surface, which either migrates into the building interior or is thermosiphoned to interior spaces through vents.

Ultraviolet radiation (UV)—Any radiant energy within the wavelength range of 0.001 to 0.38 micron; high-energy components of light capable of damaging materials and increasing skin cancer risk.

Unit factors—An estimate of the environmental costs (for example, raw materials, energy pollution, and solid waste) associated with a unit of a material, such as a ton of steel or a cubic yard of concrete.

Urethanes—A family of plastics (polyurethanes) used for varnish coatings, foamed insulations, highly durable paints, and rubber goods.

Use and operation—That complete and ongoing sequence and series of activities and actions that are required and occur during the life of a “Building” from the point where occupancy and operation begin to the point where it becomes obsolete, and as a result, is no longer occupied or used. (*J.A. Tshudy, Part IV, Section C*)

Variable-air-volume (VAV)—A method of modulating the amount of heating or cooling effect that is delivered to a building by the HVAC system. The flow of air is modulated rather than the temperature. VAV systems typically consist of VAV boxes that throttle supply airflow to individual zones, some mechanism to control supply-fan flow to match box demand, and the interconnecting ductwork and components.

Veiling luminance—Luminance superimposed on the retinal image that reduces its contrast.

Veiling reflection—Specular reflection superimposed upon diffuse reflection from an object that partially, or totally, obscures the details to be seen by reducing the contrast. Controlled by distributing the source over a larger area, relocating the source out of the reflected field of view, changing the task surface specular reflectance (or tilt), or relocating the observer.

Vermiculite—A naturally occurring silicate mineral that can be expanded by heating into a noncombustible insulating pellet.

Visual angle—The angle subtended by an object, or detail, at the point of observation.

Visual performance—The quantitative assessment of the performance of a visual task, taking into consideration speed and accuracy.

Volatile organic compound (VOC)—Chemical compounds based on carbon and hydrogen structures that are vaporized at room temperatures. VOCs are one type of indoor air contaminant. Although thousands have been identified in indoor air, only a few are well understood and regulated.

Water budget—The estimated water use within a facility. Flow rates of fixtures and appliances, occupancy, and landscape needs are calculated.

Water harvesting—Collection of both runoff and rainwater for various purposes, such as irrigation or fountains.

Water reclamation—Reuse of effluent from wastewater treatment facilities through irrigation, land application, or other recycling methods.

Watershed—Area of land that, as a result of topography, drains to a single point or area.

Wetland—In stormwater management, a shallow, vegetated, ponded area that serves to improve water quality and provide wildlife habitat.

White noise—Sound that has constant energy per frequency.

Window-to-floor ratio—The ratio of total, unobstructed window glass area to total floor area served by the windows, expressed as a percentage. This value can also be further subdivided by solar orientation (such as south-facing window-to-floor ratio).

Workplane—The plane at which work is usually done and on which the illuminance is specified and measured. Unless otherwise indicated, this is assumed to be a horizontal plane, 30 inches (0.76 meter) above the floor.

Xeriscape™—A trademarked term referring to water-efficient choices in planting and irrigation design. It refers to seven basic principles for conserving water and protecting the environment. These include: (1) planning and design; (2) use of well-adapted plants; (3) soil analysis; (4) practical turf areas; (5) use of mulches; (6) appropriate maintenance; and (7) efficient irrigation.

Zenith—The point on the skydome directly overhead, the 90-degree solar altitude angle.

SUSTAINABLE BUILDING TECHNICAL MANUAL

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