

Civil Engineering Pocket dictionary

(Civil Engineering Terms and Definitions)

A

A A S H T O (const) n American Association of State Highway and Transportation Officials

A S T M (const) n American Society for Testing and Materials

Abnormal Failure (const) n Artificially induced malfunction/failure of a component

Abrasion (const) n Wear or removal of the surface of a solid material as a result of relative movement of other solid bodies in contact with it.

Abrasion resistance (const) n Ability of a construction element to resist mechanical abrasion such as foot traffic and wind blown particles which tend to progressively remove materials from exposed surfaces such as roofing the membranes

Absolute Pressure (gen) n Gage pressure plus atmospheric pressure

Absolute Pressure Transducer (gen) n A transducer that has an internal reference chamber sealed at or close to 0 psia (full vacuum) and normally provides increasing output voltage for increases in pressure

Absorption (soil) n The taking in or soaking up of one substance into the body of another by molecular or chemical action (as tree roots absorb dissolved nutrients in the soil).

Absorption Capacity (soil) n The amount of liquid which a solid material can absorb. Sand, as an example, can hold approximately onethird of its volume in water, or three cubic feet of dry sand can contain one cubic foot of water. A denser soil, such as clay, can hold much less water and thus has a lower absorption capacity.

Absorption Rate (soil) n The speed at which a measured amount of solid material can absorb a measured amount of liquid. Under pressure, water can infiltrate a given volume of gravel very rapidly. The water will penetrate (or be absorbed by) sand more slowly and will take even longer to saturate the same amount of clay.

Accuracy (gen) n The combined error of nonlinearity, repeatability, and hysteresis expressed as a percent of full scale output

Accuracy vs. Precision (gen) n If the actual value is 5.321 and you say that it is 5.30, then you are precise to 3 places but inaccurate by .021. If a value is represented as a bullseye on a target, a group of guesses or measurements represented by closely grouped points have a high degree of precision. If that group is near the center, it is highly accurate as well. On a bullseye, think of accuracy as how close to the center your arrow hits, and your measurement of precision as how closely you can group your shots

Acid (gen) n CE A substance that tends to lose a proton. \square A substance that dissolves in water with the formation of hydrogen ions. 3) A substance containing hydrogen which may be replaced by metals to form salts. 4) A substance that is corrosive.

Acid Rain (water) n Precipitation which has been rendered (made) acidic by airborne pollutants.

Acid Regression Stage (water) n A time period when the production of volatile acids is reduced during anaerobic digestion. During this stage of digestion ammonia compounds form and cause the pH to increase.

Acidic (water) n The condition of water or soil which contains a sufficient amount of acid substances to lower the pH below 7.0.

Acidified (water) n The addition of an acid (usually nitric or sulfuric) to a sample to lower the pH below 2.0. The purpose of acidification is to "fix" a sample so it won't change until it is analyzed.

Acidity (water) n The capacity of water or wastewater to neutralize bases. Acidity is expressed in milligrams per liter of equivalent calcium carbonate. Acidity is not the same as pH because water does not have to be strongly acidic (low pH) to have a high acidity.

Acidity is a measure of how much base must be added to a liquid to raise the pH to 8.2.

Acrylic resin (const) n One of a group of thermoplastic resins formed by polymerization of esters or amides of acrylic acid; used in concrete or masonry construction as a bonding agent or surface sealer.

Activated Carbon (water) n Adsorptive particles or granules of carbon usually obtained by heating carbon (such as wood). These particles or granules have a high capacity to selectively remove certain trace and soluble materials from water.

Activated Sludge (water) n Sludge particles produced in raw or settled wastewater (primary effluent) by the growth of organisms (including zooglyphic bacteria) in aeration tanks in the presence of dissolved oxygen. The term "activated" comes from the fact that the particles are teeming with bacteria, fungi, and protozoa. Activated sludge is different from primary sludge in that the sludge particles contain many living organisms which can feed on the incoming wastewater.

Activated Sludge Process (water) n A biological wastewater treatment process which speeds up the decomposition of wastes in the wastewater being treated. Activated sludge is added to wastewater and the mixture (mixed liquor) is aerated and agitated. After some time in the aeration tank, the activated sludge is allowed to settle out by sedimentation and is disposed of (wasted) or reused (returned to the aeration tank) as needed. The remaining wastewater then undergoes more treatment.

Adhesion (gen) n The force that resists the separation of two bodies in contact.

Admixture (const) n A material, other than aggregate, cementitious material or water, added in small quantities to the mix in order to produce some (desired) modifications, either to the properties of the mix or of the hardened product.

Adsorbate (water) n The material being removed by the adsorption process.

Adsorbent (water) n The material (activated carbon) that is responsible for removing the undesirable substance in the adsorption process.

Adsorption (water) n The gathering of a gas, liquid, or dissolved substance on the surface or interface zone of another material.

Advanced Waste Treatment (water) n Any process of water renovation that upgrades treated wastewater to meet specific reuse requirements. May include general cleanup of water or removal of specific parts of wastes insufficiently removed by conventional treatment processes. Typical processes include chemical treatment and pressure filtration. Also called TERTIARY TREATMENT.

Aeration (water) n The process of adding air to water. Air can be added to water by either passing air through water or passing water through air. In wastewater treatment, air is added to freshen wastewater and to keep solids in suspension. With mixtures of wastewater and activated sludge, adding air provides mixing and oxygen for the microorganisms treating the wastewater.

Aeration Liquor (water) n Mixed liquor. The contents of the aeration tank including living organisms and material carried into the tank by either untreated wastewater or primary effluent.

Aeration Tank (water) n The tank where raw or settled wastewater is mixed with return sludge and aerated. The same as aeration bay, aerator, or reactor.

Aerobes (water) n Bacteria that must have molecular (dissolved) oxygen (DO) to survive. Aerobes are aerobic bacteria.

Aerobic (water) n A condition in which atmospheric or dissolved molecular oxygen is present in the aquatic (water) environment.

Aerobic Bacteria (water) n Bacteria which will live and reproduce only in an environment containing oxygen which is available for their respiration (breathing), namely atmospheric oxygen or oxygen dissolved in water. Oxygen combined chemically, such as in water molecules (H₂O), cannot be used for respiration by aerobic bacteria.

Aerobic Decomposition (water) n The decay or breaking down of organic material in the presence of "free" or dissolved oxygen.

Aerobic Digestion (water) n The breakdown of wastes by microorganisms in the presence of dissolved oxygen. This digestion process may be used to treat only waste activated sludge, or trickling filter sludge and primary (raw) sludge, or waste sludge from activated sludge treatment plants designed without primary settling. The sludge to be treated is placed in a large aerated tank where aerobic microorganisms decompose the organic matter in the sludge. This is an extension of the activated sludge process.

Aerobic Process (water) n A waste treatment process conducted under aerobic (in the presence of "free" or dissolved oxygen) conditions.

Age Tank (water) n A tank used to store a known concentration of chemical solution for feed to a chemical feeder. Also called a DAY TANK.

Agglomeration (water) n The growing or coming together of small scattered particles into larger flocs or particles which settle rapidly. Also see FLOC.

Agronomic Rates (water) n Sludge application rates which provide the amount of nitrogen needed by the crop or vegetation grown on the land while minimizing the amount that passes below the root zone.

Air Binding (water) n The clogging of a filter, pipe or pump due to the presence of air released from water. Air entering the filter media is harmful to both the filtration and backwash processes. Air can prevent the passage of water during the filtration process and can cause the loss of filter media during the backwash process.

Air Gap (water) n An open vertical drop, or vertical empty space, that separates a drinking (potable) water supply to be protected from another water system in a water treatment plant or other location. This open gap prevents the contamination of drinking water by backsiphonage or backflow because there is no way raw water or any other water can reach the drinking water.

Air Lift (water) n A special type of pump. This device consists of a vertical riser pipe submerged in the wastewater or sludge to be pumped. Compressed air is injected into a tail piece at the bottom of the pipe. Fine air bubbles mix with the wastewater or sludge to form a mixture lighter than the surrounding water which causes the mixture to rise in the discharge pipe to the outlet. An airlift pump works like the center stand in a percolator coffee pot.

Air Padding (water) n Pumping dry air (dew point -40°F) into a container to assist with the withdrawal of a liquid or to force a liquified gas such as chlorine out of a container.

Air Relief (water) n A type of valve used to allow air caught in high spots in pipes to escape.

Air Stripping (water) n A treatment process used to remove dissolved gases and volatile substances from water. Large volumes of air are bubbled through the water being treated to remove (strip out) the dissolved gases and volatile substances.

Air Test (water) n A method of inspecting a sewer pipe for leaks. Inflatable or similar plugs are placed in the line and the space between these plugs is pressurized with air. A drop in pressure indicates the line or run being tested has leaks.

Algae (water) n Microscopic plants which contain chlorophyll and live floating or suspended in water. They also may be attached to structures, rocks or other submerged surfaces. Excess algal growths can impart tastes and odors to potable water. Algae produce oxygen during sunlight hours and use oxygen during the night hours. Their biological activities appreciably affect the pH, alkalinity, and dissolved oxygen of the water.

Algal Bloom (water) n Sudden, massive growths of microscopic and macroscopic plant life, such as green or bluegreen algae, which develop in lakes and reservoirs.

Algicide (water) n Any substance or chemical specifically formulated to kill or control algae.

Aliphatic Hydroxy Acids (water) n Organic acids with carbon atoms arranged in branched or unbranched open chains rather than in rings.

Alkali (water) n Any of certain soluble salts, principally of sodium, potassium, magnesium, and calcium, that have the property of combining with acids to form neutral salts and may be used in chemical water treatment processes.

Alkaline (water) n The condition of water or soil which contains a sufficient amount of alkali substances to raise the pH above 7.0.

Alkalinity (water) n The capacity of water to neutralize acids. This capacity is caused by the water's content of carbonate, bicarbonate, hydroxide, and occasionally borate, silicate, and phosphate. Alkalinity is expressed in milligrams per liter of equivalent calcium carbonate. Alkalinity is not the same as pH because water does not have to be strongly basic (high pH) to have a high alkalinity. Alkalinity is a measure of how much acid must be added to a liquid to lower the pH to 4.5.

Alluvial (water) n Relating to mud and/or sand deposited by flowing water. Alluvial deposits may occur after a heavy rainstorm.

Alluvial Deposit (water) n Sediment (clay, silt, sand, gravel) deposited in place by the action of running water.

Altitude Valve (water) n A valve that automatically shuts off the flow into an elevated tank when the water level in the tank reaches a predetermined level. The valve automatically opens when the pressure in the distribution system drops below the pressure in the tank.

Aluminum (gen) n symbol Al, most abundant metallic element in the earth's crust. The atomic number of aluminum is 13; the atomic weight is 26.9815. Aluminum is a lightweight, silvery metal. In contact with air, aluminum rapidly becomes covered with a tough, transparent layer of aluminum oxide that resists corrosion. Aluminum is never found as alone but commonly occurs as aluminum silicate or as a silicate of aluminum mixed with other metals. Expensive to refine, these silicates are not useful ores. Bauxite, an impure hydrated aluminum oxide, is the commercial source of aluminum and its compounds. A low-cost technique dating from the 1880s is still the major method of production. Aluminum weighs less than one-third as much as steel. Its high

strength-to-weight ratio makes aluminum useful in many applications

Ambient (water) n Surrounding. Ambient or surrounding atmosphere.

Ambient Compensation (const) n The design of an instrument such that changes in ambient temperature do not affect the readings of the instrument

Ambient Conditions (gen) n Conditions around a transducer (pressure, temperature, etc.)

Ambient Temperature (water) n Temperature of the surrounding air (or other medium). For example, temperature of the room where a gas chlorinator is installed.

Anaerobes (water) n Bacteria that do not need molecular (dissolved) oxygen (DO) to survive.

Anaerobic (water) n A condition in which atmospheric or dissolved molecular oxygen is NOT present in the aquatic (water) environment.

Anaerobic Bacteria (water) n Bacteria that live and reproduce in an environment containing no "free" or dissolved oxygen. Anaerobic bacteria obtain their oxygen supply by breaking down chemical compounds which contain oxygen, such as sulfate (SO₄²⁻).

Anaerobic Decomposition (water) n The decay or breaking down of organic material in an environment containing no "free" or dissolved oxygen.

Anaerobic Digester (water) n A wastewater solids treatment device in which the solids and water (about 5 percent solids, 95 percent water) are placed in a large tank where bacteria decompose the solids in the absence of dissolved oxygen.

Anaerobic Digestion (water) n Wastewater solids and water (about 5% solids, 95% water) are placed in a large tank where bacteria decompose the solids in the absence of dissolved oxygen. At least two general groups of bacteria act in balance: (1) SAPROPHYTIC bacteria break down complex solids to volatile acids, the most

common of which are acetic and propionic acids; and (2) METHANE FERMENTERS break down the acids to methane, carbon dioxide, and water.

Anaerobic Selector (water) n Anaerobic refers to the practical absence of dissolved and chemically bound oxygen. Selector refers to a reactor or basin and environmental conditions (food, lack of DO) intended to favor the growth of certain organisms over others. Also see SELECTOR.

Anchor (const) n Device providing a fixing to a solid surface

Anemometer (gen) n Instrument for measuring and/or indicating the velocity of air flow

Angle of Repose (gen) n The angle between a horizontal line and the slope or surface of unsupported material such as gravel, sand, or loose soil. Also called the "natural slope."

Angle Post (const) n Railing support at landings or other breaks in the stairs. If an angle post projects beyond the bottom of the strings, the ornamental detail formed at the bottom of the post is called the drop.

Anion (water) n A negatively charged ion in an electrolyte solution, attracted to the anode under the influence of a difference in electrical potential. Chloride ion (Cl⁻) is an anion.

Anionic Polymer (water) n A polymer having negatively charged groups of ions; often used as a filter aid and for dewatering sludges.

Anoxic (water) n Oxygen deficient or lacking sufficient oxygen.

Anoxic Denitrification (water) n A biological nitrogen removal process in which nitrate nitrogen is converted by microorganisms to nitrogen gas in the absence of dissolved oxygen.

Appurtenance (water) n Machinery, appliances, structures and other parts of the main structure necessary to allow it to operate as intended, but not considered part of the main structure.

Aqueous (water) n Something made up of, similar to, or containing water; watery.

Aquifer (water) n A natural underground layer of porous, waterbearing materials (sand, gravel) usually capable of yielding a large amount or supply of water.

Architectural Design (const) n Development of the conceptual aspects of the design, usually undertaken by an architect.

Architectural Terra Cotta (const) n (See Ceramic Veneer)

Artesian (water) n Pertaining to groundwater, a well, or underground basin where the water is under a pressure greater than atmospheric and will rise above the level of its upper confining surface if given an opportunity to do so.

Artificial Groundwater Table (water) n A groundwater table that is changed by artificial means. Examples of activities that artificially raise the level of a groundwater table include agricultural irrigation, dams and excessive sewer line exfiltration. A groundwater table can be artificially lowered by sewer line infiltration, water wells, and similar drainage methods.

Ashlar Masonry (const) n Masonry composed of rectangular units, usually larger in size than brick and properly bonded, having sawed, dressed, or squared beds. It is laid in mortar.

Asphalt (const) n Black petroleum residue, which can be anywhere from solid to semisolid at room temperature. When heated to the temperature of boiling water, it becomes pourable. It is used in roofing materials, surfacing roads, in lining the walls of water-retaining structures such as reservoirs and swimming pools, and in manufacturing floor tiles. Asphalt should not be confused with tar, a similar looking substance made from coal or wood and incompatible with petroleum derivatives

Aspirate (water) n Use of a hydraulic device (aspirator or eductor) to create a negative pressure (suction) by forcing a liquid through a restriction, such as a Venturi. An aspirator (the hydraulic device) may be used in the laboratory in place of a vacuum pump; sometimes used instead of a sump pump.

Attached Growth Processes (water) n Wastewater treatment processes in which the microorganisms and bacteria treating the wastes are attached to the media in the reactor. The wastes being treated flow over the media. Trickling filters and rotating biological contactors are attached growth reactors. These reactors can be used for BOD removal, nitrification and denitrification.

Autotrophic (water) n Describes organisms (plants and some bacteria) that use inorganic materials for energy and growth.

Average Demand (water) n The total demand for water during a period of time divided by the number of days in that time period. This is also called the average daily demand.

Axial Load (const) n Load applied along or parallel to and concentric with the primary axis

B

B O D (water) n Biochemical Oxygen Demand. The rate at which organisms use the oxygen in water while stabilizing decomposable organic matter under aerobic conditions. In decomposition, organic matter serves as food for the bacteria and energy results from its oxidation. BOD measurements are used as a measure of the organic strength of wastes in water.

B O D 5 (water) n BOD5 refers to the five day biochemical oxygen demand. The total amount of oxygen used by microorganisms decomposing organic matter increases each day until the ultimate BOD is reached, usually in 50 to 70 days. BOD usually refers to the fiveday BOD or BOD5.

B T U (gen) n British thermal units; the quantity of thermal energy required to raise one pound of water at its maximum density, 1 degree F. One BTU is equivalent to .293 watt hours, or 252 calories. One kilowatt hour is equivalent to 3412 BTU

Back Pressure (water) n A pressure that can cause water to backflow into the water supply when a user's water system is at a higher pressure than the public water system.

Backfill (soil) n $\text{\textcircled{C}}$ Material used to fill in a trench or excavation. \square The act of filling a trench or excavation, usually after a pipe or some type of structure has been placed in the trench or excavation.

Backfill Compaction (soil) n $\text{\textcircled{C}}$ Tamping, rolling or otherwise mechanically compressing material used as backfill for a trench or excavation. Backfill is compressed to increase its density so that it will support the weight of machinery or other loads after the material is in place in the excavation. \square Compaction of a backfill material can be expressed as a percentage of the maximum compactability, density or load capacity of the material being used.

Backflow (water) n A reverse flow condition, created by a difference in water pressures, which causes water to flow back into the distribution pipes of a potable water supply from any source or sources other than an intended source. Also see BACKSIPHONAGE.

Backflusing (water) n A procedure used to wash settled waste matter off upstream structures to prevent odors from developing after a main line stoppage has been cleared.

Backsiphonage (water) n A form of backflow caused by a negative or below atmospheric pressure within a water system. Also see BACKFLOW.

Backwashing (water) n The process of reversing the flow of water back through the filter media to remove the entrapped solids.

Backwater Gate (water) n A gate installed at the end of a drain or outlet pipe to prevent the backward flow of water or wastewater. Generally used on storm sewer outlets into streams to prevent backward flow during times of flood or high tide. Also called a TIDE GATE.

Bacteria (water) n Bacteria are living organisms, microscopic in size, which usually consist of a single cell. Most bacteria use organic matter for their food and produce waste products as a result of their life processes.

Baffle (water) n A flat board or plate, deflector, guide or similar device constructed or placed in flowing water or slurry systems to cause more uniform flow velocities, to absorb energy, and to divert, guide, or agitate liquids (water, chemical solutions, slurry).

Baffle (water) n A flat board or plate, deflector, guide or similar device constructed or placed in flowing water, wastewater, or slurry systems to cause more uniform flow velocities, to absorb energy, and to divert, guide, or agitate liquids (water, chemical solutions, slurry).

Balling (water) n A method of hydraulically cleaning a sewer or storm drain by using the pressure of a water head to create a high cleansing velocity of water around the ball. In normal operation, the ball is restrained by a cable while water washes past the ball at high velocity. Special sewer cleaning balls have an outside tread that causes them to spin or rotate, resulting in a "scrubbing" action of the flowing water along the pipe wall.

Baluster (const) n Vertical member supporting the railing.

Balustrade (const) n A railing composed of balusters capped by a handrail.

Batch Process (water) n A treatment process in which a tank or reactor is filled, the water is treated or a chemical solution is prepared, and the tank is emptied. The tank may then be filled and the process repeated.

Bearing (const) n The linear or a real dimension over which a higher component transmits load to a lower component

Bearing Wall (const) n A wall that supports any vertical load in addition to its own weight.

Bedding (const) n CE A layer, usually of concrete or mortar, for providing continuous support to such items as bricks, slabs, pipes.
 \square The prepared base or bottom of a trench or excavation on which a pipe or other underground structure is supported.

Bell (water) n CE In pipe fitting, the enlarged female end of a pipe into which the male end fits. Also called a HUB. \square In pUtility Management, the expanded female end of a wiped joint.

Bellmouth (water) n An expanding, rounded entrance to a pipe or orifice.

Biodegradable (water) n Organic matter that can be broken down by bacteria to more stable forms which will not create a nuisance or give off foul odors is considered biodegradable.

Biodegradation (water) n The breakdown of organic matter by bacteria to more stable forms which will not create a nuisance or give off foul odors.

Bioflocculation (water) n The clumping together of fine, dispersed organic particles by the action of certain bacteria and algae. This results in faster and more complete settling of the organic solids in wastewater.

Biological Growth (water) n The activity and growth of any and all living organisms.

Biological Process (water) n A waste treatment process by which bacteria and other microorganisms break down complex organic materials into simple, nontoxic, more stable substances.

Biomass (water) n A mass or clump of organic material consisting of living organisms feeding on the wastes in wastewater, dead organisms and other debris. Also see ZOOGLICAL FILM.

Biosolids (water) n A primarily organic solid product, produced by wastewater treatment processes, that can be beneficially recycled. The word biosolids is replacing the word sludge.

Biosurvey (water) n A survey of the types and numbers of organisms naturally present in the receiving waters upstream and downstream from plant effluents. Comparisons are made between the aquatic organisms upstream and those organisms downstream of the discharge.

Bleeding (const) n The separation of water from an unhardened mix. P: The process of diffusion of a soluble colored substance from, into, and through a paint or varnish coating from beneath, thus producing an undesirable staining or discoloration. Used similarly to refer to the transfer of soluble material from bitumen impregnated roofing materials, in lime-rich water, causing staining of soffits of concrete slab roofs

Blind Stop (const) n A thin sheet of wood machined to fit the exterior vertical edge of the pulley stile or jamb and keep the sash in place.

Blister (const) n A local separation of a surface layer causing a raised area on the surface with a cavity below, usually happening in flat roofs

Bond (const) n Adherence between materials such as bricks/mortar, or plies of felt, or between felts and other elements of roof systems, which use bitumen or other materials as the cementing agent

Bonder (const) n (See Header)

Brick (const) n A rectangular masonry building unit, not less than 75% solid, made from burned clay, shale, or a mixture of these materials.

Buildability (const) n The extent to which the design of a building facilitates ease of construction, subject to the overall requirements for the completed building.

Building Control (const) n (on site) Responsibility of government or government agency or designated professional, who by periodic checking ensures that work on site is in accordance with approved construction plans and regulations.

Building Services Design n Design of the building services elements within a construction. Normally specialist building services engineers will be responsible for this work on large projects. On smaller projects may fall within the responsibility of the architect.

Buttress (const) n A bonded masonry column built as an integral part of the wall and decreasing in thickness from bottom to top, although never thinner than the wall. It is used to provide lateral stability to the wall.

C

C Factor (water) n A factor or value used to indicate the smoothness of the interior of a pipe. The higher the C Factor, the smoother the pipe, the greater the carrying capacity, and the smaller the friction or energy losses from water flowing in the pipe. To calculate the C Factor, measure the flow, pipe diameter, distance between two pressure gages, and the friction or energy loss of the water between the gages.

C O D (water) n Chemical Oxygen Demand. A measure of the oxygen-consuming capacity of organic matter present in wastewater. COD is expressed as the amount of oxygen consumed from a chemical oxidant in mg/L during a specific test. Results are not necessarily related to the biochemical oxygen demand (BOD) because the chemical oxidant may react with substances that bacteria do not stabilize.

C S O (water) n Combined Sewer Overflow. Wastewater that flows out of a sewer (or lift station) as a result of flows exceeding the hydraulic capacity of the sewer. CSOs usually occur during periods of heavy precipitation or high levels of runoff from snow melt or other runoff sources.

Caisson (water) n A structure or chamber which is usually sunk or lowered by digging from the inside. Used to gain access to the bottom of a stream or other body of water.

Calcium Carbonate Equilibrium (water) n A water is considered stable when it is just saturated with calcium carbonate. In this condition the water will neither dissolve nor deposit calcium carbonate. Thus, in this water the calcium carbonate is in equilibrium with the hydrogen ion concentration.

Calcium Carbonate Equivalent (water) n An expression of the concentration of specified constituents in water in terms of their equivalent value to calcium carbonate. For example, the hardness in water which is caused by calcium, magnesium and other ions is usually described as calcium carbonate equivalent. Alkalinity test results are usually reported as mg/L CaCO₃ equivalents. To convert chloride to CaCO₃ equivalents, multiply the concentration of chloride ions in mg/L by 1.41, and for sulfate, multiply by 1.04.

Calibration (gen) n A procedure which checks or adjusts an instrument's accuracy by comparison with a standard or reference.

Calorie (water) n The amount of heat required to raise the temperature of one gram of water one degree Celsius.

Capillarity (fluid) n Absorption of a liquid due to surface tension _ "rising damp" in walls is caused by capillary rise of the water in small pores of the walling materials

Capillary Action (water) n The movement of water through very small spaces due to molecular forces.

Capillary Effect (water) n Also called "wicking effect." The ability of a liquid to rise above an established level to saturate a porous solid.

Capillary Forces (water) n The molecular forces which cause the movement of water through very small spaces.

Capillary Fringe (water) n The porous material just above the water table which may hold water by capillarity (a property of surface tension that draws water upward) in the smaller void spaces.

Carbonaceous Stage (water) n A stage of decomposition that occurs in biological treatment processes when aerobic bacteria, using dissolved oxygen, change carbon compounds to carbon dioxide. Sometimes referred to as "firststage BOD" because the microorganisms attack organic or carbon compounds first and nitrogen compounds later. Also see NITRIFICATION STAGE.

Carbonation (gen) n The transformation of the free alkali and alkali-earth hydroxides existent in the cement matrix into carbonates, due to a reaction with carbon dioxide available in the atmosphere.

Carcinogen (water) n Any substance which tends to produce cancer in an organism.

Carriage (const) n Rough timber supporting the steps of wood stairs.

Catalyst (water) n A substance that changes the speed or yield of a chemical reaction without being consumed or chemically changed by the chemical reaction.

Catalyze (water) n To act as a catalyst. Or, to speed up a chemical reaction.

Catch Basin (water) n A chamber or well used with storm or combined sewers as a means of removing grit which might otherwise enter and be deposited in sewers. Also see STORM WATER INLET and CURB INLET.

Cathode (water) n The negative pole or electrode of an electrolytic cell or system. The cathode attracts positively charged particles or ions (cations).

Cathodic Protection (water) n An electrical system for prevention of rust, corrosion, and pitting of metal surfaces which are in contact with water or soil. A lowvoltage current is made to flow through a liquid (water) or a soil in contact with the metal in such a manner that the external electromotive force renders the metal structure cathodic. This concentrates corrosion on auxiliary anodic parts which are deliberately allowed to corrode instead of letting the structure corrode.

Cation (water) n A positively charged ion in an electrolyte solution, attracted to the cathode under the influence of a difference in electrical potential. Sodium ion (Na^+) is a cation.

Cation Exchange Capacity (water) n The ability of a soil or other solid to exchange cations (positive ions such as calcium, Ca^{2+}) with a liquid.

Cationic Polymer (water) n A polymer having positively charged groups of ions; often used as a coagulant aid.

Caulk (water) n To stop up and make watertight the joints of a pipe by filling the joints with a waterproof compound or material.

Caulking (water) n $\text{C}\ddot{\text{E}}$ A waterproof compound or material used to fill a pipe joint. \square The act of using a waterproof compound or material to fill a pipe joint.

Cavitation (water) n The formation and collapse of a gas pocket or bubble on the blade of an impeller or the gate of a valve. The collapse of this gas pocket or bubble drives water into the impeller or gate with a terrific force that can cause pitting on the impeller or gate surface. Cavitation is accompanied by loud noises that sound like someone is pounding on the impeller or gate with a hammer.

Cavity Wall (const) n (See Hollow Wall)

Cell Test (const) n Cells of 500 feet length are constructed for various combinations of bituminous, concrete and aggregate. They represent a wide range of pavement types with varying combinations of surface, base, subbase, drainage and compaction

Cementation (water) n Ⓐ A spontaneous electrochemical process that involves the reduction of a more electropositive (noble) species, for example, copper, silver, mercury, or cadmium, by electronegative (sacrificial) metals such as iron, zinc, or aluminum. This process is used to purify spent electrolytic solutions and for the treatment of wastewaters, leachates, and sludges bearing heavy metals. Also called ELECTROLYTIC RECOVERY. □ The process of heating two substances that are placed in contact with each other for the purpose of bringing about some change in one of them such as changing iron to steel by surrounding it with charcoal and then heating it.

Cementation Tank (water) n A tank in which metal ions are precipitated onto scrap aluminum, steel or other metals. The collected metal can be sent to a smelter for recovery. This process does not require electric current.

Centralized Waste Treatment (CWT) Facility (water) n A facility designed to properly handle treatment of specific hazardous wastes from industries with similar wastestreams. The wastewaters containing the hazardous substances are transported to the facility for proper storage, treatment and disposal. Different facilities treat different types of hazardous wastes.

Centrate (water) n The water leaving a centrifuge after most of the solids have been removed.

Centrifugal Pump (water) n A pump consisting of an impeller fixed on a rotating shaft that is enclosed in a casing, and having an inlet

and discharge connection. As the rotating impeller whirls the liquid around, centrifugal force builds up enough pressure to force the water through the discharge outlet.

Centrifuge (water) n A mechanical device that uses centrifugal or rotational forces to separate solids from liquids.

Ceramic Veneer (const) n Hard-burned, non-load-bearing, clay building units, glazed or unglazed, plain or ornamental.

Cesspool (water) n A lined or partially lined excavation or pit for dumping raw household wastewater for natural decomposition and percolation into the soil.

Chain of Custody (water) n A record of each person involved in the handling and possession of a sample from the person who collected the sample to the person who analyzed the sample in the laboratory and to the person who witnessed disposal of the sample.

Charge Chemistry (water) n A branch of chemistry in which the destabilization and neutralization reactions occur between stable negatively charged and stable positively charged particles.

Chase (const) n A continuous recess in a wall to receive pipes, ducts, and conduits.

Check Valve (water) n A special valve with a hinged disc or flap that opens in the direction of normal flow and is forced shut when flows attempt to go in the reverse or opposite direction of normal flows.

Chemical Grouting (water) n Sealing leaks in a pipeline or manhole structure by injecting a chemical grout. In pipelines, the chemicals are injected through a device called a "packer." In operation, the packer is located at the leak point with the use of a television camera. Inflatable boots at either end of the packer isolate the leak point and the grouting chemicals are then forced into the leak under pressure. After allowing time for the grout to set, the packer is deflated and moved to the next location.

Chemical Process (water) n A treatment process involving the addition of chemicals to achieve a desired level of treatment. Any

given process solution in metal finishing is also called a "chemical process."

Chloramination (water) n The application of chlorine and ammonia to water to form chloramines for the purpose of disinfection.

Chloramines (water) n Compounds formed by the reaction of hypochlorous acid (or aqueous chlorine) with ammonia.

Chlorination (water) n The application of chlorine to water, generally for the purpose of disinfection, but frequently for accomplishing other biological or chemical results (aiding coagulation and controlling tastes and odors).

Chlorinator (water) n A metering device which is used to add chlorine to water.

Chlorine Demand (water) n Chlorine demand is the difference between the amount of chlorine added to water and the amount of residual chlorine remaining after a given contact time. Chlorine demand may change with dosage, time, temperature, pH, and nature and amount of the impurities in the water.

Chlorophenoxy (water) n A class of herbicides that may be found in domestic water supplies and cause adverse health effects. Two widely used chlorophenoxy herbicides are 2,4D (2,4Dichlorophenoxy acetic acid) and 2,4,5TP (2,4,5Trichlorophenoxy propionic acid (silvex)).

Chlororganic (water) n Organic compounds combined with chlorine. These compounds generally originate from, or are associated with, life processes such as those of algae in water.

Christy Box (water) n A box placed over the connection between the pipe liner and the house sewer to hold the mortar around the cleanout wye and riser in place.

Chromium (water) n A hard, brittle metallic element often used in metal alloys and as a corrosion-resistant surface coating for metal parts. Chromium is an especially toxic metal, with hexavalent chromium being appreciably more toxic than trivalent chromium. Inadequate or improper handling and disposal of chromium may

create serious environmental hazards. Also see CHROME PLATE, HEXAVALENT CHROMIUM and TRIVALENT CHROMIUM.

Ciliates (water) n A class of protozoans distinguished by short hairs on all or part of their bodies.

Circle of Influence (water) n The circular outer edge of a depression produced in the water table by the pumping of water from a well. Also see CONE OF INFLUENCE and CONE OF DEPRESSION.

Circuit Breaker (water) n A safety device in an electric circuit that automatically shuts off the circuit when it becomes overloaded. The device can be manually reset.

Cistern (water) n A small tank (usually covered) or a storage facility used to store water for a home or farm. Often used to store rainwater.

Cladding (const) n The external covering to the frame or structural walls of a building or structure. The veneer is non-loadbearing, and as such it is designed to carry only its own weight (dry and/or wet), and a limited number of loads such as wind and seism. In relationship with the structure it encloses, it can be either fully bonded or separated by an air barrier

Clarification (water) n Any process or combination of processes the main purpose of which is to reduce the concentration of suspended matter in a liquid.

Clarifier (water) n A large circular or rectangular tank or basin in which water is held for a period of time during which the heavier suspended solids settle to the bottom. Clarifiers are also called settling basins and sedimentation basins.

Cleanout (water) n An opening (usually covered or capped) in a wastewater collection system used for inserting tools, rods or snakes while cleaning a pipeline or clearing a stoppage.

Cleanout, Two-way (water) n A cleanout designed for rodding or working a snake into a pipe in either direction. Twoway cleanouts are often used in building lateral pipes at or near a property line.

Clear Well (water) n A reservoir for the storage of filtered water of sufficient capacity to prevent the need to vary the filtration rate with variations in demand. Also used to provide chlorine contact time for disinfection.

Client (const) n The person or legal entity who contracts with an individual or organization under a construction contract and pays for the works.

Coagulant (water) n A chemical that causes very fine particles to clump (floc) together into larger particles. This makes it easier to separate the solids from the liquids by settling, skimming, draining or filtering.

Coagulant Aid (water) n Any chemical or substance used to assist or modify coagulation.

Coagulate (water) n The use of chemicals that cause very fine particles to clump (floc) together into larger particles. This makes it easier to separate the solids from the liquids by settling, skimming, draining or filtering.

Coagulation (water) n The clumping together of very fine particles into larger particles (floc) caused by the use of chemicals (coagulants). The chemicals neutralize the electrical charges of the fine particles, allowing them to come closer and form larger clumps. This clumping together makes it easier to separate the solids from the water by settling, skimming, draining or filtering.

Cohesive (water) n Tending to stick together.

Coliform (water) n A group of bacteria found in the intestines of warmblooded animals (including humans) and also in plants, soil, air and water. Fecal coliforms are a specific class of bacteria which only inhabit the intestines of warmblooded animals. The presence of coliform bacteria is an indication that the water is polluted and may contain pathogenic (diseasecausing) organisms.

Collar Joints (const) n A vertical joint between wythes or a wythe and backup.

Collection Main (water) n A collection pipe to which building laterals are connected.

Collection System (water) n A network of pipes, manholes, cleanouts, traps, siphons, lift stations and other structures used to collect all wastewater and wastewater-carried wastes of an area and transport them to a treatment plant or disposal system. The collection system includes land, wastewater lines and appurtenances, pumping stations and general property.

Colloids (water) n Very small, finely divided solids (particles that do not dissolve) that remain dispersed in a liquid for a long time due to their small size and electrical charge. When most of the particles in water have a negative electrical charge, they tend to repel each other. This repulsion prevents the particles from clumping together, becoming heavier, and settling out.

Colorimetric Measurement (water) n A means of measuring unknown chemical concentrations in water by measuring a sample's color intensity. The specific color of the sample, developed by addition of chemical reagents, is measured with a photoelectric colorimeter or is compared with "color standards" using, or corresponding with, known concentrations of the chemical.

Column (const) n A compression member with width not exceeding four times the thickness, and with height more than three times the least lateral dimension.

Combined Available Chlorine (water) n The concentration of chlorine which is combined with ammonia (NH_3) as chloramine or as other chloro derivatives, yet is still available to oxidize organic matter.

Combined Available Residual Chlorine (water) n The concentration of residual chlorine which is combined with ammonia (NH_3) and/or organic nitrogen in water as a chloramine (or other chloro derivative) yet is still available to oxidize organic matter and use its bactericidal properties.

Combined Residual Chlorination (water) n The application of chlorine to water or wastewater to produce a combined available chlorine residual. The residual may consist of chlorine compounds formed by the reaction of chlorine with natural or added ammonia (NH_3) or with certain organic nitrogen compounds.

Combined Residual Chlorine (water) n The application of chlorine to water to produce combined available chlorine residual. This residual can be made up of monochloramines, dichloramines, and nitrogen trichloride.

Combined Sewer (water) n A sewer designed to carry both sanitary wastewaters and storm or surface water runoff.

Combined System (water) n A sewer designed to carry both sanitary wastewaters and storm or surface water runoff.

Combined Wastewater (water) n A mixture of storm or surface runoff and other wastewater such as domestic or industrial wastewater.

Combustible Liquid (water) n A liquid whose flashpoint is at or above 100°F (38°C). Flammable liquids present a greater fire or explosion hazard than combustible liquids. Also see FLAMMABLE LIQUID.

Commercial Contribution (water) n Liquid and liquid-carried wastes dumped by commercial establishments into the wastewater collection system. Used in this context, commercial contributions are distinct from domestic and industrial sources of wastewater contributions. Examples of high-yield commercial sources are laundries, restaurants and hotels.

Comminution (water) n Shredding. A mechanical treatment process which cuts large pieces of wastes into smaller pieces so they won't plug pipes or damage equipment. COMMINUTION and SHREDDING usually mean the same thing.

Comminutor (water) n A device used to reduce the size of the solid chunks in wastewater by shredding (comminuting). The shredding action is like many scissors cutting or chopping to shreds all the large influent solids material in the wastewater.

Commodity-Demand Method (water) n A cost allocation method used by water utilities to determine water rates for the various water user groups. This method considers the commodity costs (water, chemicals, power, amount of water use), demand costs (treatment, storage, distribution), customer costs (meter

maintenance and reading, billing, collection, accounting) and fire protection costs.

Common Services (const) n Common services are those services provided by the management contractor to each works contractor on an identical basis. They include, for example, hoisting, welfare facilities and temporary roads.

Compaction (water) n Tamping or rolling of a material to achieve a surface or density that is able to support predicted loads.

Compaction Test (water) n Any method of determining the weight a compacted material is able to support without damage or displacement. Usually stated in pounds per square foot.

Compatible Pollutants (water) n Those pollutants that are normally removed by the POTW treatment system. Biochemical oxygen demand (BOD), suspended solids (SS), and ammonia are considered compatible pollutants.

Competitive Tender (const) n See Traditional Contracting.

Complete Treatment (water) n A method of treating water which consists of the addition of coagulant chemicals, flash mixing, coagulation-flocculation, sedimentation and filtration. Also called CONVENTIONAL FILTRATION.

Compound (water) n A pure substance composed of two or more elements whose composition is constant. For example, table salt (sodium chloride, NaCl) is a compound.

Concentration Polarization (water) n ∞ A buildup of retained particles on the membrane surface due to dewatering of the feed closest to the membrane. The thickness of the concentration polarization layer is controlled by the flow velocity across the membrane. \square Used in corrosion studies to indicate a depletion of ions near an electrode. 3) The basis for chemical analysis by a polarograph.

Concentric Manhole Cone (water) n Cone tapers uniformly from barrel to manhole cover.

Concrete Block (const) n A machine-formed masonry building unit composed of portland cement, aggregates, and water.

Condensation (const) n Precipitation of liquid from its vapor resulting from lowering of the temperature under constant pressure, especially the deposition of water from warm moist air on to a relatively cold surface.

Conductance (water) n A rapid method of estimating the dissolved solids content of a water supply. The measurement indicates the capacity of a sample of water to carry an electric current, which is related to the concentration of ionized substances in the water. Also called SPECIFIC CONDUCTANCE.

Conductivity (water) n A measure of the ability of a solution (water) to carry an electric current.

Conductor (water) n ☞ A substance, body, device or wire that readily conducts or carries electric current. ☐ A pipe which carries a liquid load from one point to another point. In a wastewater collection system, a conductor is often a large pipe with no service connections. Also called a CONDUIT, interceptor (see INTERCEPTING SEWER) or INTERCONNECTOR. 3) In plumbing, a line conducting water from the roof to the storm drain or other means of disposal. Also called a DOWNSPOUT. 4) In electricity, a substance, body, device or wire that readily conducts or carries electric current.

Conduit (water) n Any artificial or natural duct, either open or closed, for carrying fluids from one point to another. An electrical conduit carries electricity.

Cone of Depression (water) n The depression, roughly conical in shape, produced in the water table by the pumping of water from a well. Also called the CONE OF INFLUENCE. Also see CIRCLE OF INFLUENCE.

Cone of Influence (water) n The depression, roughly conical in shape, produced in the water table by the pumping of water from a well. Also called the CONE OF DEPRESSION. Also see CIRCLE OF INFLUENCE.

Coning (water) n Development of a coneshaped flow of liquid, like a whirlpool, through sludge. This can occur in a sludge hopper during sludge withdrawal when the sludge becomes too thick. Part of the sludge remains in place while liquid rather than sludge flows out of the hopper. Also called coring.

Conservative Pollutant (water) n A pollutant found in wastewater that is not changed while passing through the treatment processes in a conventional wastewater treatment plant. This type of pollutant may be removed by the treatment processes and retained in the plant's sludges or it may leave in the plant effluent. Heavy metals such as cadmium and lead are conservative pollutants.

Consortia (const) n A consortium is the grouping together of three or more organizations, generally of differing skills, with the objective of carrying out a specific project.

Constructability (const) n A system for achieving optimum integration of construction knowledge in the construction process and balancing the various project and environmental constraints to achieve maximization of project goals and construction performance. (Complementary to buildability or substitutive of it?)

Construction Activity (const) n The process of creating a project or part of a project by the employment of construction resources.

Construction Contract (const) n An agreement entered into for the construction, repair, renovation or restoration of a building or civil engineering work.

Construction Costs (const) n All costs that arise from the resources used in the construction of a construction project excluding the costs of the land.

Construction Design (const) n Development of the conceptual design into the more detailed design (working drawings), undertaken by an architect, construction engineer, architectural technician, professional builder, etc.

Construction Firm (const) n See Contractor.

Construction Industry (const) n All parties in the industry engaged in designing, executing and maintaining buildings including those supplying materials.

Construction Management (const) n The overall management of the processes required to bring the site operations of a project to a satisfactory conclusion, typically carried out either by a private consultant or an employee of the project client. Is a management form of contract synonymous with management contracting except that works contractors are appointed as direct contractors to the client, rather than as subcontractors to the contract manager.

Construction Management Contract (const) n This contract is similar to a Management Contract except that the client is the employer in each works construction contract.

Construction Manager (const) n The person or firm responsible for the execution of a construction project.

Construction Materials (const) n All materials, elements and components used for the construction of projects that are incorporated in the final constructed product.

Construction Method (const) n The mode of carrying out a construction process to arrive at a finished element, operation or product.

Construction Process (const) n The designing and construction of a project from the conception of the project in a client's mind to its completion for commissioning and use.

Consultancy Service (const) n In relation to construction materials, processes and the survey and assessment of the condition of built constructions.

Consultants (const) n The client's advisers on design, cost and other matters. Such advisers might include project managers.

Contact Stabilization (water) n Contact stabilization is a modification of the conventional activated sludge process. In contact stabilization, two aeration tanks are used. One tank is for separate reaeration of the return sludge for at least four hours before it is permitted to flow into the other aeration tank to be

mixed with the primary effluent requiring treatment. The process may also occur in one long tank.

Contamination (water) n The introduction into water of microorganisms, chemicals, toxic substances, wastes, or wastewater in a concentration that makes the water unfit for its next intended use.

Continuous Process (water) n A treatment process in which water is treated continuously in a tank or reactor. The water being treated continuously flows into the tank at one end, is treated as it flows through the tank, and flows out the opposite end as treated water.

Continuous Sample (water) n A flow of water from a particular place in a plant to the location where samples are collected for testing. This continuous stream may be used to obtain grab or composite samples. Frequently, several taps (faucets) will flow continuously in the laboratory to provide test samples from various places in a water treatment plant.

Contract Administration Management (const) n Process by which a formal contract for design or construction services is administered including the issuing of instructions, change control procedures, payment and the measuring and reviewing of progress.

Contract Manager (const) n A manager appointed by a contractor to be responsible for managing a number of site contracts.

Contractor (const) n A person or organization which, as a party to a contract, is responsible for the organization, management, and execution of that construction comprised in the contract with the employer.

Contribution (water) n Waters, wastewaters or liquidcarried wastes entering a wastewater collection system.

Control Loop (water) n The path through the control system between the sensor, which measures a process variable, and the controller, which controls or adjusts the process variable.

Control System (water) n An instrumentation system which senses and controls its own operation on a close, continuous basis in what is called proportional (or modulating) control.

Conventional Filtration (water) n A method of treating water which consists of the addition of coagulant chemicals, flash mixing, coagulationflocculation, sedimentation and filtration. Also called COMPLETE TREATMENT. Also see DIRECT FILTRATION and INLINE FILTRATION.

Conventional Pollutants (water) n Those pollutants which are usually found in domestic, commercial or industrial wastes such as suspended solids, biochemical oxygen demand, pathogenic (diseasecausing) organisms, adverse pH levels, and oil and grease.

Conventional Treatment (water) n The preliminary treatment, sedimentation, flotation, trickling filter, rotating biological contactor, activated sludge and chlorination wastewater treatment processes.

Coping (const) n A cap or finish on top of a wall, pier, chimney, or pilaster to prevent penetration of water to masonry wall.

Corbel (const) n Successive course of masonry projecting from the face of a wall to increase its thickness or to form a shelf or ledge.

Corporation Stop (water) n A water service shutoff valve located at a street water main. This valve cannot be operated from the ground surface because it is buried and there is no valve box. Also called a corporation cock.

Corrosion (const) n Deterioration of a metal by chemical or electrochemical reaction with its environment (BS 3660). Occasionally used, incorrectly, to apply to non-metallic materials, eg. concrete

Corrosion (water) n The gradual decomposition or destruction of a material by chemical action, often due to an electrochemical reaction. Corrosion may be caused by (1) stray current electrolysis, (2) galvanic corrosion caused by dissimilar metals, or (3) differentialconcentration cells. Corrosion starts at the surface of a material and moves inward.

Corrosion Inhibitors (water) n Substances that slow the rate of corrosion.

Corrosive Gases (water) n In water, dissolved oxygen reacts readily with metals at the anode of a corrosion cell, accelerating the rate of corrosion until a film of oxidation products such as rust forms. At the cathode where hydrogen gas may form a coating on the cathode and slow the corrosion rate, oxygen reacts rapidly with hydrogen gas forming water, and again increases the rate of corrosion.

Corrosive Material (water) n A material which through its chemical action is destructively injurious to body tissues or other materials.

Corrosivity (water) n An indication of the corrosiveness of a water. The corrosiveness of a water is described by the water's pH, alkalinity, hardness, temperature, total dissolved solids, dissolved oxygen concentration, and the Langelier Index.

Cost control (const) n The process of controlling the cost of a project within a predetermined sum throughout its various stages from inception to completion.

Coulomb (water) n A measurement of the amount of electrical charge carried by an electric current of one ampere in one second. One coulomb equals about 6.25×10^{18} electrons (6,250,000,000,000,000 electrons).

Countercurrent Rinsing (water) n A rinsing procedure in which rinse water flows from tank to tank in a direction that is opposite to movement of parts being rinsed from tank to tank.

Coupling (water) n CE A threaded sleeve used to connect two pipes.
 \square A device used to connect two adjacent parts, such as a pipe coupling, hose coupling or drive coupling.

Coupon (water) n A steel specimen inserted into water to measure the corrosiveness of water. The rate of corrosion is measured as the loss of weight of the coupon (in milligrams) per surface area (in square decimeters) exposed to the water per day. 10 decimeters = 1 meter = 100 centimeters.

Course (const) n A continuous horizontal layer of masonry units bonded together.

Crack (const) n Linear discontinuity produced by fracture. Elongated narrow opening. Synonyms can include: break, split, fracture, fissure, separation, cleavage, in various applications

Cradle to Grave (water) n A term used to describe a hazardous waste manifest system used by regulatory agencies to track a hazardous waste from the point of generation to the hauler and then to the ultimate disposal site.

Crazing (const) n Network of surface cracks. Used generally to describe surface cracking of concrete surfaces and paint film. Also used specifically to describe the fine network cracking of ceramic glazes by, for example, differential thermal expansion between glaze and tile body, or moisture expansion of the body

Creep (const) n Slow deformation of a stressed material at temperatures which may be within or above the normal working range of the material

Cross Braces (water) n Shoring members placed across a trench to hold other horizontal and vertical shoring members in place.

Cross Connection (water) n A connection between a drinking (potable) water system and an unapproved water supply. For example, if you have a pump moving nonpotable water and hook into the drinking water system to supply water for the pump seal, a cross connection or mixing between the two water systems can occur. This mixing may lead to contamination of the drinking water.

Cryptosporidium (water) n A waterborne intestinal parasite that causes a disease called cryptosporidiosis (CRIP-toe-spo-rid-ee-O-sis) in infected humans. Symptoms of the disease include diarrhea, cramps, and weight loss. Cryptosporidium contamination is found in most surface waters and some groundwaters. Commonly referred to as "crypto."

Curb inlet (water) n A chamber or well built at the curblines of a street to admit gutter flow to the storm water drainage system. Also see **STORM WATER INLET** and **CATCH BASIN**.

Curb Stop (water) n A water service shutoff valve located in a water service pipe near the curb and between the water main and the building. This valve is usually operated by a wrench or valve key and is used to start or stop flows in the water service line to a building. Also called a curb cock.

Curie (water) n A measure of radioactivity. One Curie of radioactivity is equivalent to 3.7×10^{10} or 37,000,000,000 nuclear disintegrations per second.

Current (water) n A movement or flow of electricity. Water flowing in a pipe is measured in gallons per second past a certain point, not by the number of water molecules going past a point. Electric current is measured by the number of coulombs per second flowing past a certain point in a conductor. A coulomb is equal to about 6.25×10^{18} electrons (6,250,000,000,000,000,000 electrons). A flow of one coulomb per second is called one ampere, the unit of the rate of flow of current.

Curtain Wall (const) n A non-load-bearing exterior wall.

Curvilinear (water) n In the shape of a curved line.

Cyanide (water) n The cyanide ion (CN⁻) consists of carbon (C) and nitrogen (N). Cyanide is commonly found in metal plating wastewaters because most metal cyanides are soluble and plating occurs readily from cyanide solutions. The cyanide ion is extremely toxic and must be removed from metal wastes before discharge to the environment. Treatment of wastes containing cyanide under acidic conditions may produce extremely toxic gases which must never come in contact with people or animals.

Cycle (water) n A complete alternation of voltage and/or current in an alternating current (A.C.) circuit.

D

D O (water) n Abbreviation of Dissolved Oxygen. DO is the molecular (atmospheric) oxygen dissolved in water or wastewater.

D P D (water) n A method of measuring the chlorine residual in water. The residual may be determined by either titrating or comparing a developed color with color standards. DPD stands for N,N-diethylpphenylenediamine.

Dado (const) n A rectangular groove cut across the grain of a frame member.

Dalton (water) n A unit of mass designated as onesixteenth the mass of oxygen¹⁶, the lightest and most abundant isotope of oxygen. The dalton is equivalent to one mass unit.

Dampness (const) n Condition of being slightly wet: usually not so wet that liquid water is evident, eg. wetness caused by condensation on a porous substrate or water transmitted up a porous wall by capillarity

Datum Line (water) n A line from which heights and depths are calculated or measured. Also called a datum plane or a datum level.

Day Tank (water) n A tank used to store a chemical solution of known concentration for feed to a chemical feeder. A day tank usually stores sufficient chemical solution to properly treat the water being treated for at least one day. Also called an AGE TANK.

DCP (Dynamic Cone Penetrometer) (const) n Instrument used to measure the strength of soil and granular materials used in roadway construction

Dead End (water) n The end of a water main which is not connected to other parts of the distribution system by means of a connecting loop of pipe.

Deadend Manhole (water) n A manhole located at the upstream end of a sewer and having no inlet pipe. Also called a TERMINAL MANHOLE.

Debris (water) n Any material in wastewater found floating, suspended, settled or moving along the bottom of a sewer. This material may cause stoppages by getting hung up on roots or settling out in a sewer. Debris includes grit, paper, plastic, rubber, silt, and all materials except liquids.

Decant (water) n To draw off the upper layer of liquid (water) after the heavier material (a solid or another liquid) has settled.

Decomposition (const) n The separation of a material into elements or parts

Defect (const) n The non-conformity of the result of a test with the specification for a characteristic (ISO 2071). In Building Pathology, used sometimes almost as a synonym of 'fault' or 'failure', but preferred meaning is to indicate only a deviation from some (perceived) standard which may, but will not necessarily result in a failure

Delamination (const) n The breakdown of a material by separation of the layers of which it is composed

Design & Build (const) n Design & Build or Design & Construction is a form of construction procurement whereby the contractor who constructs the works, also undertakes all of, or a proportion of, the de-sign of the works under one contract.

Design & Construct (const) n See Design & Build.

Design & Manage (const) n An extension to management contracting in which a design responsibility is included as well as construction.

Deterioration (const) n A reduction in ability to perform up to the anticipated standard

Deviation (gen) n Divergence of the value of a quantity from a standard or reference value. Used generally to indicate a divergence from what was originally intended.

Dipstick (const) n The dipstick is an instrument used to calculate the elevation profile of the road.

Drip Cap (const) n A molding placed on top of the head casing of a window frame to direct water away from it.

Durability (const) n The quality of maintaining satisfactory aesthetic, economic, and functional performance for the useful life of the structure

Dynamic Sensors (const) n traffic triggered sensors

E

E G L (water) n ENERGY GRADE LINE

Earth Shift (soil) n The movement or dislocation of underground soil or structure. Earth shift is usually caused by external forces such as surface loads, slides, stresses or nearby construction, water movements or seismic forces.

Easement (water) n Legal right to use the property of others for a specific purpose. For example, a utility company may have a fivefoot easement along the property line of a home. This gives the utility the legal right to install and maintain a sewer line within the easement.

Eccentric Manhole Cone (water) n Cone tapers nonuniformly from barrel to manhole cover with one side usually vertical.

Economic Control (const) n Ensuring project costs are kept within budget and measuring ongoing progress of work in order to facilitate payment of contractors and sub-contractors.

Eductor (water) n A hydraulic device used to create a negative pressure (suction) by forcing a liquid through a restriction, such as a Venturi. An eductor or aspirator (the hydraulic device) may be used in the laboratory in place of a vacuum pump. As an injector, it is used to produce vacuum for chlorinators. Sometimes used instead of a suction pump.

Effective Range (water) n That portion of the design range (usually from 10 to 90+ percent) in which an instrument has acceptable accuracy. Also see RANGE and SPAN.

Effective Size (ES) (water) n The diameter of the particles in a granular sample (filter media) for which 10 percent of the total grains are smaller and 90 percent larger on a weight basis. Effective size is obtained by passing granular material through sieves with varying dimensions of mesh and weighing the material retained by each sieve. The effective size is also approximately the average size of the grains.

Effective Soil Depth (water) n The depth of soil in the leach field trench that provides a satisfactory percolation area for the septic tank effluent.

Efflorescence (const) n White salts brought to the surface of porous building materials by water movement (BS 4049)

Efflorescence (water) n The powder or crust formed on a substance when moisture is given off upon exposure to the atmosphere.

Effluent (water) n Water or other liquid - raw (untreated), partially or completely treated - flowing FROM a reservoir, basin, treatment process, or treatment plant.

Effluent Limits (water) n Pollutant limitations developed by a POTW for industrial plants discharging to the POTW system. At a minimum, all industrial facilities are required to comply with federal prohibited discharge standards. The industries covered by federal categorical standards must also comply with the appropriate discharge limitations. The POTW may also establish local limits more stringent than or in addition to the federal standards for some or all of its industrial users.

Ejector (water) n A device used to disperse a chemical solution into water being treated.

Elbow (water) n A pipe fitting that connects two pipes at an angle. The angle is usually 90 degrees unless another angle is stated. Also called an "ell."

Electrochemical Corrosion (water) n The decomposition of a material by: (1) stray current electrolysis, (2) galvanic corrosion caused by dissimilar metals, and (3) galvanic corrosion caused by differential electrolysis.

Electrodialysis (water) n The selective separation of dissolved solids on the basis of electrical charge, by diffusion through a semipermeable membrane across which an electrical potential is imposed.

Electrolyte (water) n A substance which dissociates (separates) into two or more ions when it is dissolved in water.

Element (gen) n A substance which cannot be separated into its constituent parts and still retain its chemical identity. For example, sodium (Na) is an element.

Elevation (gen) n The height to which something is elevated, such as the height above sea level.

Elutriation (water) n The washing of digested sludge with either fresh water, plant effluent or other wastewater. The objective is to remove (wash out) fine particulates and/or the alkalinity in sludge. This process reduces the demand for conditioning chemicals and improves settling or filtering characteristics of the solids.

Embedded Strain Gauge (const) n A sensor that measures static and horizontal strains in concrete and asphalt layers by means of five different models placed in various locations and orientations.

Employer (const) n See Client or Owner

Empty Bed Contact Time (water) n The time required for the liquid in a carbon adsorption bed to pass through the carbon column assuming that all liquid passes through at the same velocity. It is equal to the volume of the empty bed divided by the flow rate.

Emulsion (water) n A liquid mixture of two or more liquid substances not normally dissolved in one another; one liquid is held in suspension in the other.

Endrin (water) n A pesticide toxic to freshwater and marine aquatic life that produces adverse health effects in domestic water supplies.

Energy Design (const) n Work associated with energy systems within an overall social context, including supply systems and the development of alternative energy sources.

ENERGY GRADE LINE (EGL) (water) n A line that represents the elevation of energy head (in feet) of water flowing in a pipe, conduit or channel. The line is drawn above the hydraulic grade line (gradient) a distance equal to the velocity head ($V^2/2g$) of the water flowing at each section or point along the pipe or channel. Also see HYDRAULIC GRADE LINE.

Enteric (water) n Of intestinal origin, especially applied to wastes or bacteria.

Entrain (water) n To trap bubbles in water either mechanically through turbulence or chemically through a reaction.

Enzymes (water) n Organic substances (produced by living organisms) which cause or speed up chemical reactions. Organic catalysts and/or biochemical catalysts.

Epidemic (water) n A disease that occurs in a large number of people in a locality at the same time and spreads from person to person.

Epilimnion (water) n The upper layer of water in a thermally stratified lake or reservoir. This layer consists of the warmest water and has a fairly uniform (constant) temperature. The layer is readily mixed by wind action.

Equalizing Basin (water) n A holding basin in which variations in flow and composition of a liquid are averaged. Such basins are used to provide a flow of reasonably uniform volume and composition to a treatment unit. Also called a balancing reservoir.

Equilibrium, Calcium Carbonate (water) n A water is considered stable when it is just saturated with calcium carbonate. In this condition the water will neither dissolve nor deposit calcium carbonate. Thus, in this water the calcium carbonate is in equilibrium with the hydrogen ion concentration.

Equipment/plant (const) n All mechanical plant and machines used as a means of production on a construction site

Ester (water) n A compound formed by the reaction between an acid and an alcohol with the elimination of a molecule of water.

Estimated Flow (water) n A rough guess of the amount of flow in a collection system. When greater accuracy is needed, flow could be computed using average or typical flow quantities. Even greater accuracy would result from metering or otherwise measuring the actual flow.

Estimating (const) n The task of estimating the likely cost of construction works either on behalf of clients or on behalf of contractors bidding for work.

Estuaries (water) n Bodies of water which are located at the lower end of a river and are subject to tidal fluctuations.

Eutrophic (water) n Reservoirs and lakes which are rich in nutrients and very productive in terms of aquatic animal and plant life.

Eutrophication (water) n The increase in the nutrient levels of a lake or other body of water; this usually causes an increase in the growth of aquatic animal and plant life.

Evaporation (water) n The process by which water or other liquid becomes a gas (water vapor or ammonia vapor).

Evapotranspiration (water) n Æ The process by which water vapor passes into the atmosphere from living plants. Also called **TRANSPIRATION**. □ The total water removed from an area by transpiration (plants) and by evaporation from soil, snow and water surfaces.

Exfiltration (const) n Leakage out of a material or structure

Exfiltration (water) n Liquid wastes and liquid-carried wastes which unintentionally leak out of a sewer pipe system and into the environment.

Extrados (water) n The upper outside curve of a sewer pipe or conduit.

F

F/M Ratio (water) n Food to microorganism ratio. A measure of food provided to bacteria in an aeration tank.

Faced Wall (const) n A wall in which the masonry facing and backing are of different materials and so bonded as to exert a common reaction under load.

Facilities Management (const) n Management of the organization in operating and maintaining a completed project.

Facultative (water) n Facultative bacteria can use either dissolved molecular oxygen or oxygen obtained from food materials such as sulfate or nitrate ions. In other words, facultative bacteria can live under aerobic or anaerobic conditions.

Facultative Pond (water) n The most common type of pond in current use. The upper portion (supernatant) is aerobic, while the bottom layer is anaerobic. Algae supply most of the oxygen to the supernatant.

Failure (const) n The termination of the ability of an item to perform a required function. See defect & fault

Fast Tracking (const) n Fast tracking is a means of reducing project time by the overlapping of design and construction. Each trade's work commences as its plans and specifications are substantially completed.

Fatigue (const) n The weakening of a material caused by repeated or alternating loads; may be used in conjunction with either static or dynamic loading

Fault (const) n Any defect which impairs normal operation; 2) geologic discontinuity where seismic events start. See failure & defect

Fault (soil) n A fracture in the earth's crust that leaves land on one side of the crack out of alignment with the other side. Faults are generally a result of earth shifts and earthquakes.

Feasibility Study (const) n An initial study of a project, or method of operation, in outline form to determine the physical and economic feasibility.

Feeboard (water) n ☒ The vertical distance from the normal water surface to the top of the confining wall. □ The vertical distance from the sand surface to the underside of a trough in a sand filter. This distance is also called AVAILABLE EXPANSION.

Feedwater (water) n The water that is fed to a treatment process; the water that is going to be treated.

Filamentous Organisms (water) n Organisms that grow in a thread or filamentous form. Common types are Thiothrix and Actinomyces. A common cause of sludge bulking in the activated sludge process.

Filter Aid (water) n A chemical (usually a polymer) added to water to help remove fine colloidal suspended solids.

Final design (const) n The fully detailed project as constructed; the design on which the drawings for construction are based.

Finished Water (water) n Water that has passed through a water treatment plant; all the treatment processes are completed or "finished." This water is ready to be delivered to consumers. Also called PRODUCT WATER.

Fire Point (water) n The lowest temperature of a liquid at which a mixture of air and vapor from the liquid will continue to burn.

Fissure (const) n A crack or split

Fixed Price Contract (const) n A fixed price contract may be a lump sum contract or a measurement contract based on fixed prices for units of specific work.

Flagellates (water) n Microorganisms that move by the action of taillike projections.

Flap Gate (water) n A hinged gate that is mounted at the top of a pipe or channel to allow flow in only one direction. Flow in the

wrong direction closes the gate. Also see CHECK VALVE and TIDE GATE.

Flash Point (water) n The minimum temperature of a liquid at which the liquid gives off a vapor in sufficient concentration to ignite when tested under specific conditions.

Flight (const) n A series of steps extending from floor to floor, or from a floor to an intermediate landing or platform. Landings are used where turns are necessary or to break up long climbs.

Flights (water) n Scraper boards, made from redwood or other rotresistant woods or plastic, used to collect and move settled sludge or floating scum.

Float (Control) (water) n A device used to measure the elevation of the surface of water. The float rests on the surface of the water and rises or falls with it. The elevation of the water surface is measured by a rod, chain, rope or tape attached to the float.

Float Line (water) n A length of rope or heavy twine attached to a float, plastic jug or parachute to be carried by the flow in a sewer from one manhole to the next. This is called "stringing the line" and is used for pulling through winch cables, such as for bucket machine work or closedcircuit television work.

Float System (water) n A method of operating a water storage facility. Daily flow into the facility is approximately equal to the average daily demand for water. When consumer demands for water are low, the storage facility will be filling. During periods of high demand, the facility will be emptying.

Floc (water) n Clumps of bacteria and particulate impurities that have come together and formed a cluster. Found in flocculation tanks and settling or sedimentation basins.

Flocculation (water) n The gathering together of fine particles after coagulation to form larger particles by a process of gentle mixing.

Flotation (water) n CE The stress or forces on a pipeline or manhole structure located below a water table which tend to lift or float the pipeline or manhole structure. \square The process of raising suspended matter to the surface of the liquid in a tank where it

forms a scum layer that can be removed by skimming. The suspended matter is raised by aeration, the evolution of gas, the use of chemicals, electrolysis, heat or bacterial decomposition.

Flotsam (water) n Material floating or drifting about on the surface of a body of water.

Flow (water) n The continuous movement of a liquid from one place to another.

Flow Equalization System (water) n A device or tank designed to hold back or store a portion of peak flows for release during lowflow periods.

Flow isolation (water) n A procedure used to measure inflow and infiltration(I/I). A section of sewer is blocked off or isolated and the flow from the section is measured.

Flow Line (water) n CE The top of the wetted line, the water surface or the hydraulic grade line of water flowing in an open channel or partially full conduit. □ The lowest point of the channel inside a pipe or manhole. See INVERT. NOTE: (2) is an improper definition, although used by some contractors.

Fluidized (water) n A mass of solid particles that is made to flow like a liquid by injection of water or gas is said to have been fluidized. In water treatment, a bed of filter media is fluidized by backwashing water through the filter.

Flume (water) n An open conduit of wood, masonry, metal, or plastic constructed on a grade and sometimes elevated. Sometimes called an "aqueduct" or "channel."

Fluoridation (water) n The addition of a chemical to increase the concentration of fluoride ions in drinking water to a predetermined optimum limit to reduce the incidence (number) of dental caries (tooth decay) in children. Defluoridation is the removal of excess fluoride in drinking water to prevent the mottling (brown stains)of teeth.

Flusher Branch (water) n A line built specifically to allow the introduction of large quantities of water to the collection system so

the lines can be "flushed out" with water. Also installed to provide access for equipment to clear stoppages in a sewer.

Flushing (water) n A method used to clean water distribution lines. Hydrants are opened and water with a high velocity flows through the pipes, removes deposits from the pipes, and flows out the hydrants.

Flux (water) n A flowing or flow.

Foot Valve (water) n A special type of check valve located at the bottom end of the suction pipe on a pump. This valve opens when the pump operates to allow water to enter the suction pipe but closes when the pump shuts off to prevent water from flowing out of the suction pipe.

Force Main (water) n A pipe that carries wastewater under pressure from the discharge side of a pump to a point of gravity flow downstream.

Fracture (const) n To make or become discontinuous otherwise than by cutting. Usually of relatively brittle materials

Free Available Chlorine (water) n The amount of chlorine available in water. This chlorine may be in the form of dissolved gas (Cl_2), hypochlorous acid (HOCl), or hypochlorite ion (OCl^-), but does not include chlorine combined with an amine (ammonia or nitrogen) or other organic compound.

Free Chlorine (water) n Free chlorine is chlorine (Cl_2) in a liquid or gaseous form. Free chlorine combines with water to form hypochlorous (HOCl) and hydrochloric (HCl) acids. In wastewater free chlorine usually combines with an amine (ammonia or nitrogen) or other organic compounds to form combined chlorine compounds.

Free Oxygen (water) n Molecular oxygen available for respiration by organisms. Molecular oxygen is the oxygen molecule, O_2 , that is not combined with another element to form a compound.

Free Residual Chlorination (water) n The application of chlorine to water to produce a free available chlorine residual equal to at least

80 percent of the total residual chlorine (sum of free and combined available chlorine residual).

Friability (water) n The ability of a soil or substance to crumble under moderate or light pressure.

Friction Loss (water) n The head lost by water flowing in a stream or conduit as the result of the disturbances set up by the contact between the moving water and its containing conduit and by intermolecular friction.

Fungi (water) n Mushrooms, molds, mildews, rusts, and smuts that are small nonchlorophyllbearing plants lacking roots, stems and leaves. They occur in natural waters and grow best in the absence of light. Their decomposition may cause objectionable tastes and odors in water.

Fungus (const) n A plant growth obtaining its nutrition by breakdown of organic matter, usually associated with the presence of dampness, eg. in timber. The plants are characterized by the absence of chlorophyll.

FWD (Falling Weight Deflectometer) (const) n Instrument that determines the structural condition of each pavement layer.

G

Gage (water) n A device for checking or measuring a particular dimension of something, using specific standardized units. For example, a gage might measure the elevation of a water surface, the velocity of flowing water, the pressure of water, the amount or intensity of precipitation, and the depth of snowfall. Gages also are used to determine the location or position of equipment during installation and after operation.

Gage Pressure (water) n The pressure within a closed container or pipe as measured with a gage. In contrast, absolute pressure is the sum of atmospheric pressure (14.7 lbs/sq in) PLUS pressure within a vessel (as measured with a gage). Most pressure gages read in "gage pressure" or psig (pounds per square inch gage pressure).

Galvanize (water) n To coat a metal (especially iron or steel) with zinc. Galvanization is the process of coating a metal with zinc.

Garnet (water) n A group of hard, reddish, glassy, mineral sands made up of silicates of base metals (calcium, magnesium, iron and manganese). Garnet has a higher density than sand.

Gas (Sewer) (water) n (See SEWER GAS)

Gasification (water) n The conversion of soluble and suspended organic materials into gas during aerobic or anaerobic decomposition. In clarifiers the resulting gas bubbles can become attached to the settled sludge and cause large clumps of sludge to rise and float on the water surface. In anaerobic sludge digesters, this gas is collected for fuel or disposed of using a waste gas burner.

Gate (water) n A movable watertight barrier for the control of a liquid in a waterway.

Gauge Pipe (water) n A number that defines the thickness of the sheet used to make steel pipe. The larger the number, the thinner the pipe wall.

Geology n The science that deals with the origin, history and structures of the earth, as recorded in the rocks, together with the forces and processes now operating to modify rocks.

Germicide (water) (water) n A substance formulated to kill germs or microorganisms. The germicidal properties of chlorine make it an effective disinfectant.

Giardia (water) n A waterborne intestinal parasite that causes a disease called giardiasis (GEEareDIEuhsis) in infected humans. Symptoms of the disease include diarrhea, cramps, and weight loss. Giardia contamination is found in most surface waters and some groundwaters.

Giardiasis (water) n Intestinal disease caused by an infestation of Giardia flagellates.

GPCD (water) n Initials standing for "Gallons Per Capita Per Day."

GPD (water) n Initials standing for "Gallons Per Day."

GPM (water) n Initials standing for "Gallons Per Minute."

GPY (water) n Initials standing for "Gallons Per Year."

Grab Sample (water) n A single sample of water collected at a particular time and place which represents the composition of the water only at that time and place.

Grade (water) n ∞ The elevation of the invert (or bottom) of a pipeline, canal, culvert, or similar conduit. \square The inclination or slope of a pipeline, conduit, stream channel, or natural ground surface; usually expressed in terms of the ratio or percentage of number of units of vertical rise or fall per unit of horizontal distance. A 0.5 percent grade would be a drop of onehalf foot per hundred feet of pipe.

Grade Ring (water) n A precast concrete ring 4 to 12 inches high which is placed on top of a manhole cone to raise the manhole cover frame flush with the surface grade. Sometimes called a "spacer."

Gradient n The upward or downward slope of a pipeline.

Granular (const) n Any substance that appears to consist of separate granules or grains. Examples are sand and gravel.

Gravimetric n A means of measuring unknown concentrations of water quality indicators in a sample by WEIGHING a precipitate or residue of the sample.

Gravity Flow (water) n Water or wastewater flowing from a higher elevation to a lower elevation due to the force of gravity. The water does not flow due to energy provided by a pump. Wherever possible, wastewater collection systems are designed to use the force of gravity to convey waste liquids and solids.

Grease Trap (water) n A receptacle designed to collect and retain grease and fatty substances usually found in kitchens or from similar wastes. It is installed in the drainage system between the kitchen or other point of production of the waste and the building wastewater collection line. Commonly used to control grease from restaurants.

Greensand (water) n A mineral (glauconite) material that looks like ordinary filter sand except that it is green in color. Greensand is a natural ion exchange material which is capable of softening water. Greensand which has been treated with potassium permanganate (KMnO_4) is called manganese greensand; this product is used to remove iron, manganese and hydrogen sulfide from groundwaters.

Grinder Pump (water) n A small submersible centrifugal pump with an impeller designed to serve as a pump with grinder elements which grind solids into small pieces that pass through the pump impellers.

Grit (water) n The heavy material present in wastewater, such as sand, coffee grounds, eggshells, gravel and cinders.

Grit Catcher (water) n A chamber usually placed at the upper end of a depressed collection line or at other points on combined or storm water collection lines where wear from grit is possible. The chamber is sized and shaped to reduce the velocity of flow through it and thus permit the settling out of grit. Also called a "sand catcher." See GRIT CHAMBER and SAND TRAP.

Grit Chamber (water) n A detention chamber or an enlargement of a collection line designed to reduce the velocity of flow of the liquid to permit the separation of mineral solids from organic solids by differential sedimentation.

Grit Channel (water) n ☒ An enlargement in a collection line where grit can easily settle out of the flow. ☐ The waterway of a grit chamber.

Grit Tank (water) n A structure located at the inlet to a treatment plant for the accumulation and removal of grit.

Grit Trap (water) n A permanent structure built into a manhole (or other convenient location in a collection system) for the accumulation and easy removal of grit.

Groundwater (water) n Subsurface water in the saturation zone from which wells and springs are fed. In a strict sense the term applies only to water below the water table. Also called "phreatic water" and "plerotic water."

Groundwater Depth (water) n The distance of the groundwater table below the surface at any selected location.

Groundwater Elevation (water) n The elevation of the groundwater table above mean sea level at any selected location.

Groundwater Table (water) n The average depth or elevation of the groundwater over a selected area.

Grout (const) n A substance in a paste or liquid form which solidifies after placement or treatment. Used to fill spaces, holes or voids in other materials.

Grout (const) n Extremely fluid mixture of sand and gravel;

Grouted Masonry (const) n Masonry in which the interior joints are filled by pouring grout into them as the work progresses.

Gunite (const) n A mixture of sand and cement applied pneumatically that forms a highdensity, resistant concrete.

H

Hairline Crack (water) n A stress crack in a pipe; the crack looks like a piece of hair.

Hallow Masonry Unit (const) n Masonry with net cross-sectional area in any plane parallel to the bearing surface less than 75% of its gross cross-sectional area measured in the same plane.

Hallow Wall (const) n A wall of masonry so arranged as to provide an air space within the wall between the inner and outer wythes. A cavity wall is built of masonry units or plain concrete, or a combination of these materials, arranged to provide an air space within the wall, which may be filled with insulation, and in which inner and outer wythes are tied together with metal ties.

Hand Rod n A sewer rod that can be inserted manually (by hand) into a sewer to clear a stoppage or to prevent a stoppage from developing.

Handhole Trap (water) n A device made of pipe fittings used to prevent sewer gases escaping from the branch or lateral sewer from entering a building sewer.

Hard Water (water) n Water having a high concentration of calcium and magnesium ions. A water may be considered hard if it has a hardness greater than the typical hardness of water from the region. Some textbooks define hard water as water with a hardness of more than 100 mg/L as calcium carbonate.

Hardness, Water (water) n A characteristic of water caused mainly by the salts of calcium and magnesium, such as bicarbonate, carbonate, sulfate, chloride and nitrate. Excessive hardness in water is undesirable because it causes the formation of soap curds, increased use of soap, deposition of scale in boilers, damage in some industrial processes, and sometimes causes objectionable tastes in drinking water.

Head (water) n The vertical distance (in feet) equal to the pressure (in psi) at a specific point. The pressure head is equal to the pressure in psi times 2.31 ft/psi.

Head Loss (water) n The head, pressure or energy (they are the same) lost by water flowing in a pipe or channel as a result of

turbulence caused by the velocity of the flowing water and the roughness of the pipe, channel walls, or restrictions caused by fittings. Water flowing in a pipe loses head, pressure or energy as a result of friction losses. The head loss through a filter is due to friction losses caused by material building up on the surface or in the top part of a filter. Also see FRICTION LOSSES.

Header (Bonder) (const) n A brick or other masonry unit laid flat across a wall with end surface exposed, to bind to wythes.

Header (water) n A large pipe to which a series of smaller pipes are connected. Also called a MANIFOLD.

Headroom (const) n Minimum clear height from a tread to overhead construction, such as the ceiling of the next floor, ductwork, or piping.

Headworks (water) n The facilities where wastewater enters a wastewater treatment plant. The headworks may consist of bar screens, comminutors, a wet well and pumps.

Health and Safety Control (const) n Work on site concerned with checking the fulfillment of health and safety project provisions.

Health and Safety Management (const) n Work concerned with ensuring the fulfillment of health and safety requirements related to both general and local legislation during the design and construction stages.

Health and Safety Planning (const) n Work taking into account health and safety aspects in the conception stages (i.e. briefing, designing, construction detailing, estimating, etc.) and planning health and safety aspects of the project.

Hepatitis (water) n Hepatitis is an inflammation of the liver usually caused by an acute viral infection. Yellow jaundice is one symptom of hepatitis.

Herbicide (water) n A compound, usually a manmade organic chemical, used to kill or control plant growth.

Heterotrophic (water) n Describes organisms that use organic matter for energy and growth. Animals, fungi and most bacteria are heterotrophs.

High-line Jumpers (water) n Pipes or hoses connected to fire hydrants and laid on top of the ground to provide emergency water service for an isolated portion of a distribution system.

High-velocity Cleaner (water) n A machine designed to remove grease and debris from the smaller diameter sewer pipes with highvelocity jets of water. Also called a "jet cleaner," "jet rodder," "hydraulic cleaner," "highpressure cleaner," or "hydro jet."

Honeycombing (const) n usually used to refer to a defective condition in concrete. The concrete contains interconnecting large voids due to loss or lack of mortar

Horizontal Clip Gauge n Sensor that measures the width of concrete joint openings.

Hose Bib (water) n Faucet. A location in a water line where a hose is connected.

Hot Tap (water) n Tapping into a sewer line under pressure, such as a force main or a small-diameter sewer under pressure.

Hub (water) n In pipe fitting, the enlarged female end of a pipe into which the male end fits. Also called a BELL.

Humus Sludge (water) n The sloughed particles of biomass from trickling filter media that are removed from the water being treated in secondary clarifiers.

Hydrated Lime (water) n Limestone that has been "burned" and treated with water under controlled conditions until the calcium oxide portion has been converted to calcium hydroxide (Ca(OH)₂). Hydrated lime is quicklime combined with water. $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2$. Also called slaked lime. Also see QUICKLIME.

Hydraulic Block (water) n The movement of water in such a way that the flow of water from one direction blocks or hinders the flow of water from another direction.

Hydraulic Grade Line (HGL) (water) n The surface or profile of water flowing in an open channel or a pipe flowing partially full. If a pipe is under pressure, the hydraulic grade line is at the level water would rise to in a small vertical tube connected to the pipe. Also see ENERGY GRADE LINE.

Hydraulic Gradient (water) n The slope of the hydraulic grade line. This is the slope of the water surface in an open channel, the slope of the water surface of the groundwater table, or the slope of the water pressure for pipes under pressure.

Hydraulic Jump (water) n The sudden and usually turbulent abrupt rise in water surface in an open channel when water flowing at high velocity is suddenly retarded to a slow velocity.

Hydraulic Loading (water) n Hydraulic loading refers to the flows (MGD or cu m/day) to a treatment plant or treatment process. Detention times, surface loadings and weir overflow rates are directly influenced by flows.

Hydrogeologist (water) n A person who studies and works with groundwater.

Hydrologic Cycle (water) n The process of evaporation of water into the air and its return to earth by precipitation (rain or snow). This process also includes transpiration from plants, groundwater movement, and runoff into rivers, streams and the ocean. Also called the WATER CYCLE.

Hydrology (water) n The applied science concerned with the waters of the earth in all their states - their occurrence, distribution, and circulation through the unending hydrologic cycle of precipitation, consequent runoff, stream flow, infiltration, and storage, eventual evaporation, and reprecipitation. Hydrology is concerned with the physical, chemical, and physiological reactions of water with the rest of the earth and its relation to the life of the earth.

Hydrolysis (water) n ☒ A chemical reaction in which a compound is converted into another compound by taking up water. ☐ Usually a chemical degradation of organic matter.

Hydrophilic (water) n Having a strong affinity (liking) for water. The opposite of HYDROPHOBIC.

Hydrophobic (water) n Having a strong aversion (dislike) for water. The opposite of HYDROPHILIC.

Hydropneumatic (water) n A water system, usually small, in which a water pump is automatically controlled (started and stopped) by the air pressure in a compressed air tank.

Hydrostatic Pressure (water) n CE The pressure at a specific elevation exerted by a body of water at rest, or \square In the case of groundwater, the pressure at a specific elevation due to the weight of water at higher levels in the same zone of saturation.

Hydrostatic System (water) n In a hydrostatic sludge removal system, the surface of the water in the clarifier is higher than the surface of the water in the sludge well or hopper. This difference in pressure head forces sludge from the bottom of the clarifier to flow through pipes to the sludge well or hopper.

Hydroxide Precipitation (water) n A method of removing common metals from wastestreams by the precipitation process. The pH of the metal waste is increased to an optimum level for hydroxide metal precipitates to form for the wastes being treated. The metal precipitates are settled out of the wastestream in clarifiers and are removed from the bottom of the clarifiers as metal sludges.

Hygroscopic (water) n Absorbing or attracting moisture from the air.

Hypochlorination (water) n The application of hypochlorite compounds to water for the purpose of disinfection.

Hypochlorinators (water) n Chlorine pumps, chemical feed pumps or devices used to dispense chlorine solutions made from hypochlorites such as bleach (sodium hypochlorite) or calcium hypochlorite into the water being treated.

Hypochlorite (water) n Chemical compounds containing available chlorine; used for disinfection. They are available as liquids (bleach) or solids (powder, granules, and pellets) in barrels, drums, and cans. Salts of hypochlorous acid.

Hypolimnion (water) n The lowest layer in a thermally stratified lake or reservoir. This layer consists of colder, more dense water, has a constant temperature and no mixing occurs.



Imhoff Cone (water) n A clear, coneshaped container marked with graduations. The cone is used to measure the volume of settleable solids in a specific volume (usually one liter) of water.

Immiscible (water) n Not capable of being mixed.

Impeller (water) n A rotating set of vanes in a pump or compressor designed to pump or move water or air.

Impeller Pump (water) n Any pump in which the water is moved by the continuous application of power to a rotating set of vanes from some rotating mechanical source.

Impermeable (water) n Not easily penetrated. The property of a material or soil that does not allow, or allows only with great difficulty, the movement or passage of water.

Imported Backfill (const) n Material used for backfilling a trench or excavation which was not the original material removed during excavation. This is a common practice where tests on the original material show it to have poor compactability or load capacity. Also called BORROW BACKFILL.

Impurity (water) n A hazardous substance which is unintentionally present with another substance or mixture. (Definition from California Labor Code, Division 5, Chapter 2.5.)

Inceneration (water) n The conversion of dewatered wastewater solids by combustion (burning) to ash, carbon dioxide, and water vapor.

Indole (water) n An organic compound (C₈H₇N) containing nitrogen which has an ammonia odor.

Industrial Wastewater (water) n Liquid wastes originating from industrial processing. Because industries have peculiar liquid waste characteristics requiring special consideration, these sources are usually handled and treated separately before being discharged to a wastewater collection system.

Infiltrated Debris (water) n Sand, silt, gravel and rocks carried or washed into a collection system by infiltration water flows.

Infiltration (const) n Leakage into a material or structure; water ingress

Infiltration (water) n The seepage of groundwater into a sewer system, including service connections. Seepage frequently occurs through defective or cracked pipes, pipe joints, connections or manhole walls.

Infiltration Head (water) n The distance from a point of infiltration leaking into a collection system to the water table elevation. This is the pressure of the water being forced through the leak in the collection system.

Infiltration/inflow (water) n The total quantity of water from both infiltration and inflow without distinguishing the source. Abbreviated I & I or I/I.

Inflatable Pipe Stopper (water) n An inflatable ball or bag used to form a plug to stop flows in a sewer pipe.

Inflow (water) n Water discharged into a sewer system and service connections from sources other than regular connections. This includes flow from yard drains, foundation drains and around manhole covers. Inflow differs from infiltration in that it is a direct discharge into the sewer rather than a leak in the sewer itself.

Influent (water) n Water or other liquid - raw (untreated) or partially treated - flowing INTO a reservoir, basin, treatment process, or treatment plant.

Injector Water (water) n Service water in which chlorine is added (injected) to form a chlorine solution.

Inlet (water) n ☒ A surface connection to a drain pipe. ☐ A chamber for collecting storm water with no well below the outlet pipe for collecting grit. Often connected to a CATCH BASIN or a "basin manhole" ("cleanout manhole") with a grit chamber.

In-line Filtration (water) n The addition of chemical coagulants directly to the filter inlet pipe. The chemicals are mixed by the

flowing water. Flocculation and sedimentation facilities are eliminated. This pretreatment method is commonly used in pressure filter installations. Also see CONVENTIONAL FILTRATION and DIRECT FILTRATION.

Inoculate (water) n To introduce a seed culture into a system.

Inorganic (water) n Material such as sand, salt, iron, calcium salts and other mineral materials. Inorganic substances are of mineral origin, whereas organic substances are usually of animal or plant origin. Also see ORGANIC.

Inorganic Waste (water) n Waste material such as sand, salt, iron, calcium, and other mineral materials which are only slightly affected by the action of organisms. Inorganic wastes are chemical substances of mineral origin; whereas organic wastes are chemical substances of an animal or plant origin.

Input Horsepower (water) n The total power used in operating a pump and motor.

Insecticide (water) n Any substance or chemical formulated to kill or control insects.

Insertion Puller (water) n A device used to pull long segments of flexible pipe material into a sewer line when sliplining to rehabilitate a deteriorated sewer.

Insituform (water) n A method of installing a new pipe within an old pipe without excavation. The process involves the use of a polyesterfiber felt tube, lined on one side with polyurethane and fully impregnated with a liquid thermal setting resin.

Insoluble (water) n Something that cannot be dissolved.

Integrity (const) n In Building Pathology: soundness, with no part or element deficient in performance

Intercepting Sewer (water) n A sewer that receives flow from a number of other large sewers or outlets and conducts the waters to a point for treatment or disposal. Often called an "interceptor."

Interceptor (water) n A septic tank or other holding tank which serves as a temporary wastewater storage reservoir for a Septic Tank Effluent Pump (STEP) system. See SEPTIC TANK.

Interconnector (water) n A sewer installed to connect two separate sewers. If one sewer becomes blocked, wastewater can back up and flow through the interconnector to the other sewer.

Interface (water) n The common boundary layer between two substances such as water and a solid (metal); or between two fluids such as water and a gas (air); or between a liquid (water) and another liquid (oil).

Internal Flow (water) n Nonsanitary or industrial wastewaters generated inside of a domestic, commercial or industrial facility and being discharged into the sewer system. Examples are cooling tower waters, basement sump pump discharge waters, continuousflow drinking fountains, and defective or leaking plumbing fixtures.

Internal Friction (water) n Friction within a fluid (water) due to cohesive forces.

Interstice (water) n A very small open space in a rock or granular material. Also called a PORE, VOID, or void space. Also see VOID.

Interstitial (const) n Occurring within the thickness of some material element. usually used in the context of 'interstitial condensation' which means condensation which occurs within the thickness of a building element or within its component materials

Intrados (water) n The upper inside curve or surface of a sewer pipe or conduit.

Inversion (water) n An Insituform process in which the Insitutube or liner is turned inside out (inverted) during the installation of the liner.

Invert (water) n The lowest point of the channel inside a pipe, conduit, or canal.

Inverted Siphon (water) n A pressure pipeline used to carry wastewater flowing in a gravity collection system under a

depression such as a valley or roadway or under a structure such as a building. Also called a "depressed sewer."

Ion (water) n An electrically charged atom, radical (such as SO_4^{2-}), or molecule formed by the loss or gain of one or more electrons.

Ion Exchange (water) n A water treatment process involving the reversible interchange (switching) of ions between the water being treated and the solid resin. Undesirable ions in the water are switched with acceptable ions on the resin.

Ion Exchange Resins (water) n Insoluble polymers, used in water treatment, that are capable of exchanging (switching or giving) acceptable cations or anions to the water being treated for less desirable ions.

Ionic Concentration (water) n The concentration of any ion in solution, usually expressed in moles per liter.

Ionization (water) n \u2192 The splitting or dissociation (separation) of molecules into negatively and positively charged ions. \square The process of adding electrons to, or removing electrons from, atoms or molecules, thereby creating ions. High temperatures, electrical discharges, and nuclear radiation can cause ionization.

J, K, L

Jamb (const) n Part of a frame that surrounds and contacts the window or door it supports.

Jar Test (water) n A laboratory procedure that simulates a water treatment plant's coagulation/flocculation units with differing chemical doses and also energy of rapid mix, energy of slow mix, and settling time. The purpose of this procedure is to ESTIMATE the minimum or ideal coagulant dose required to achieve certain water quality goals. Samples of water to be treated are commonly placed in six jars. Various amounts of chemicals are added to each jar, stirred and the settling of solids is observed. The dose of chemicals that provides satisfactory settling, removal of turbidity and/or color is the dose used to treat the water being taken into the plant at that time. When evaluating the results of a jar test, the operator should also consider the floc quality in the flocculation area and the floc loading on the filter.

Jetsam (water) n Debris entering a collection system which is heavier than water. Also see GRIT.

Joint (construction -, expansion -, control -) (const) n Position where two or more building materials, components or assemblies are put together, fixed or united, with or without the use of extra jointing products

Joint (water) n A connection between two lengths of pipe, made either with or without the use of another part.

Joule (phy) n A measure of energy, work or quantity of heat. One joule is the work done when the point of application of a force of one newton is displaced a distance of one meter in the direction of the force. Approximately equal to 0.7375 ftlbs.

Key Manhole (water) n In collection system evaluation, a key manhole is one from which reliable or specific data can be obtained.

Kinetic Energy (water) n Energy possessed by a moving body of matter, such as water, as a result of its motion.

Kite (water) n A device for hydraulically cleaning sewer lines. Resembling an airport wind sock and constructed of canvas type material, the kite increases the velocity of a flow at its outlet to wash debris ahead of it. Also called a PARACHUTE.

Laminar (water) n Laminar flow is smooth or viscous flow; not turbulent flow.

Lamp Hole (water) n A small vertical pipe or shaft extending from the surface of the ground to a sewer. A light (or lamp) may be lowered down the pipe for the purpose of inspecting the sewer. Rarely constructed today.

Lamping (water) n Using reflected sunlight or a powerful light beam to inspect a sewer between two adjacent manholes. The light is directed down the pipe from one manhole. If it can be seen from the next manhole, it indicates that the line is open and straight.

Langelier Index (L.I.) (water) n An index reflecting the equilibrium pH of a water with respect to calcium and alkalinity. This index is used in stabilizing water to control both corrosion and the deposition of scale. $\text{Langelier Index} = \text{pH} - \text{pH}_s$, where: pH = actual pH of the water, and pH_s = pH at which water having the same alkalinity and calcium content is just saturated with calcium carbonate.

Lateral Break (water) n A break in a lateral pipe somewhere between the sewer main and the building connection.

Lateral Cleanout (water) n A capped opening in a building lateral, usually located on the property line, through which the pipelines can be cleaned.

Lateral Sewer (water) n A sewer that discharges into a branch or other sewer and has no other common sewer tributary to it. Sometimes called a "street sewer" because it collects wastewater from individual homes.

Laundering Weir (water) n Sedimentation basin overflow weir. A plate with Vnotches along the top to ensure a uniform flow rate and avoid shortcircuiting.

Launders (water) n Sedimentation basin and filter discharge channels consisting of overflow weir plates (in sedimentation basins) and conveying troughs.

Level Control (water) n A float device (or pressure switch) which senses changes in a measured variable and opens or closes a switch in response to that change. In its simplest form, this control might be a floating ball connected mechanically to a switch or valve such as is used to stop water flow into a toilet when the tank is full.

Lift (water) n Vertical distance water is lifted from upstream water surface up to downstream water surface (which is at a higher elevation).

Lift Station (water) n A wastewater pumping station that lifts the wastewater to a higher elevation when continuing the sewer at reasonable slopes would involve excessive depths of trench. Also, an installation of pumps that raise wastewater from areas too low to drain into available sewers. These stations may be equipped with airoperated ejectors or centrifugal pumps. Sometimes called a PUMP STATION, but this term is usually reserved for a similar type of facility that is discharging into a long FORCE MAIN, while a lift station has a discharge line or force main only up to the downstream gravity sewer. Throughout this manual when we refer to lift stations, we intend to include pump stations.

Limit state (const) n State at which performance criteria are just met

Lindane (water) n A pesticide that causes adverse health effects in domestic water supplies and also is toxic to freshwater and marine aquatic life.

Lipophilic (water) n Having a strong affinity for fats. Compounds that dissolve in fats, oils and greases.

Liquefaction (water) n The conversion of large solid particles of sludge into very fine particles which either dissolve or remain suspended in wastewater.

Liquid Vehicle (water) n Water in a collection system that is used to carry waste solids. The standard toilet provides around seven

gallons of water per flush as a vehicle to carry wastes through the pipe system.

Liquor (water) n Water, wastewater, or any combination; commonly used to mean the liquid portion when other wastes are also present.

Littoral Zone (water) n Æ That portion of a body of fresh water extending from the shoreline lakeward to the limit of occupancy of rooted plants. □ The strip of land along the shoreline between the high and low water levels.

Local Authority, Environment and Control of Construction Plans (const) n The fulfillment of statutory requirements regarding construction standards, safety and approval of construction projects and their effect on the environment.

Loss (const) n Consequences of a defect or failure, expressed in terms of costs, injuries, loss of life, etc.

Lower Flammable Limit (LFL) (water) n The lowest concentration of a gas or vapor (percent by volume in air) that burns if an ignition source is present.

Lump Sum Contract (const) n With a lump sum contract, the contractor agrees to perform the work for one fixed price, regardless of the ultimate cost.

Lump Sum Tender (const) n A tender at a fixed price to which a contractor undertakes to carry out all the work specified on the drawings and in the contract documents.

Lysimeter (water) n A device containing a mass of soil and designed to permit the measurement of water draining through the soil.

M

M or Molar (water) n A molar solution consists of one gram molecular weight of a compound dissolved in enough water to make one liter of solution. A gram molecular weight is the molecular weight of a compound in grams. For example, the molecular weight of sulfuric acid (H_2SO_4) is 98. A one M solution of sulfuric acid would consist of 98 grams of H_2SO_4 dissolved in enough distilled water to make one liter of solution.

Macronutrient (water) n A chemical element of which relatively large quantities are essential for the growth of an organism.

Macroscopic Organisms (water) n Organisms big enough to be seen by the eye without the aid of a microscope.

Mail Line (water) n Branch or lateral sewers that collect wastewater from building sewers and service lines.

Main Sewer (water) n A sewer line that receives wastewater from many tributary branches and sewer lines and serves as an outlet for a large territory or is used to feed an intercepting sewer.

Maintenance (const) n Combination of any actions carried out to retain an item in, or restore it to, an acceptable condition.

Maintenance Management (const) n Preparing ongoing programs for the planned maintenance of constructions and managing the implementation of these works.

Maintenance Projects (const) n Ongoing repair and maintenance of existing constructions increasingly being incorporated within the broader activity of facilities management.

Management (const) n Effective utilization and co-ordination of resources such as capital, plant, materials, and labor to achieve defined objectives with maximum efficiency.

Management Contract (const) n This is a contract in which management is regarded as a separate discipline and responsibility from that of construction. Construction (works) contractors contract with a management contractor, who is therefore their client or employer.

Management Contracting (const) n Is the method of carrying out a construction project whereby a contractor is appointed at the pre-construction stage and paid on a fee basis, to manage and deliver the project. The fee comprises a percentage for profit and fixed overheads. All construction work is carried out by the sub-contractors, selected and appointed in consultation with the client and his professional advisers.

Management Contractor (const) n The management contractor is appointed by the client to work alongside the design and cost consultants, providing a construction management service on a number of professional bases. The management contractor does not undertake either design or direct construction work. The design requirements are met by letting each element of the construction to specialist sub-contractor.

Management Fee (const) n An agreed sum for management services.

Management Information (const) n Information for management decision-making.

Management of Construction (const) n Embraces all those job functions necessary to plan, control and co-ordinate the design, execution and long term care of construction projects.

Management Style (const) n Approach adopted by managers in exercising authority, encouraging participation in decision-making, motivating staff, delegating authority, communication information and maintaining control.

Management Technique (const) n A means used by managers, to define and assist with the solution of a problem.

Manager (const) n A person responsible for directing and running an organization or project.

Manhole (water) n An opening in a sewer provided for the purpose of permitting operators or equipment to enter or leave a sewer. Sometimes called an "access hole" or a "maintenance hole."

Manhole Bedding (water) n The prepared and compacted base on which a manhole is constructed.

Manhole Depth (water) n The measurement from the top of the manhole opening to the invert or lowest point of the trough at the bottom of the manhole.

Manhole Vents (water) n One or a series of one-inch diameter holes through a manhole lid for purposes of venting dangerous gases found in sewers.

Manifold (water) n A large pipe to which a series of smaller pipes are connected. Also called a HEADER.

Manometer (water) n An instrument for measuring pressure. Usually, a manometer is a glass tube filled with a liquid that is used to measure the difference in pressure across a flow measuring device such as an orifice or a Venturi meter. The instrument used to measure blood pressure is a type of manometer.

Masonry (const) n A built-up construction or combination of masonry units, such as clay brick, concrete block, or stone, bonded together with mortar or other cementitious material.

Masonry (const) n The science, art, craft and trade of building in natural or artificial stone. The term is often extended to work in brick and tile. Ancient examples of immense irregular blocks of stone, laid together without mortar, have been found throughout Europe, Americas, Africa, and Asia. The ancient Greeks and Romans developed masonry techniques that are still used today. Rubble masonry uses irregular and coarsely jointed quarried or field stone. Ashlar masonry contains carefully worked stones set with fine, close joints. Either kind of masonry may be laid with or without mortar

Materials management (const) n The creation of conditions to bring about the optimum use of all materials available for the construction of a project to ensure availability at the right time and control of inventory.

Mean Cell Residence Time (MCRT) (water) n An expression of the average time that a microorganism will spend in the activated sludge process. $MCRT, \text{ days} = \frac{\text{Total Suspended Solids in}}$

Activated Sludge Process, lbs/Total Suspended Solids Removed From Process, lbs/day

Mechanical Aeration (water) n The use of machinery to mix air and water so that oxygen can be absorbed into the water. Some examples are: paddle wheels, mixers, or rotating brushes to agitate the surface of an aeration tank; pumps to create fountains; and pumps to discharge water down a series of steps forming falls or cascades.

Media (water) n The material in a trickling filter on which slime accumulates and organisms grow. As settled wastewater trickles over the media, organisms in the slime remove certain types of wastes thereby partially treating the wastewater. Also the material in a rotating biological contactor or in a gravity or pressure filter.

Meniscus (water) n The curved surface of a column of liquid (water, oil, mercury) in a small tube. When the liquid wets the sides of the container (as with water), the curve forms a valley. When the confining sides are not wetted (as with mercury), the curve forms a hill or upward bulge.

Mesh (water) n One of the openings or spaces in a screen or woven fabric. The value of the mesh is usually given as the number of openings per inch. This value does not consider the diameter of the wire or fabric; therefore, the mesh number does not always have a definite relationship to the size of the hole.

Mesophilic Bacteria (water) n Medium temperature bacteria. A group of bacteria that grow and thrive in a moderate temperature range between 68°F (20°C) and 113°F (45°C). The optimum temperature range for these bacteria in anaerobic digestion is 85°F (30°C) to 100°F (38°C).

Mesotrophic (water) n Reservoirs and lakes which contain moderate quantities of nutrients and are moderately productive in terms of

Metabolism (water) n ☒ The biochemical processes in which food is used and wastes are formed by living organisms. ☐ All biochemical reactions involved in cell formation and growth. Ž All of the processes or chemical changes in an organism or a single cell by which food is built up (anabolism) into living protoplasm and

by which protoplasm is broken down (catabolism) into simpler compounds with the exchange of energy.

Metalimnion (water) n The middle layer in a thermally stratified lake or reservoir. In this layer there is a rapid decrease in temperature with depth. Also called the THERMOCLINE.

Method Statement (const) n A statement of the construction methods and resources to be employed in executing construction work. The statement is normally closely linked to the tender program.

Methoxychlor (water) n A pesticide which causes adverse health effects in domestic water supplies and is also toxic to freshwater and marine aquatic life. The chemical name for methoxychlor is 2,2bis(pmethoxyphenol)1,1,1trichloroethane.

Methyl Orange Alkalinity (water) n A measure of the total alkalinity in a water sample. The alkalinity is measured by the amount of standard sulfuric acid required to lower the pH of the water to a pH level of 4.5, as indicated by the change in color of methyl orange from orange to pink. Methyl orange alkalinity is expressed as milligrams per liter equivalent calcium carbonate.

MG (water) n Initials for "Million Gallons."

MGD (water) n Initials for "Million Gallons Per Day."

MGY (water) n Initials for "Million Gallons Per Year."

Microbial Growth (water) n The activity and growth of microorganisms such as bacteria, algae, diatoms, plankton and fungi.

Micron (gen) n μm , Micrometer or Micron. A unit of length. One millionth of a meter or one thousandth of a millimeter. One micron equals 0.00004 of an inch.

Micronutrient (water) n A trace element or an organic compound which is essential in tiny amounts for the growth of an organism.

Microorganisms (water) n ☒ Living organisms that can be seen individually only with the aid of a microscope. ☐ Very small

organisms that can be seen only through a microscope. Some microorganisms use the wastes in wastewater for food and thus remove or alter much of the undesirable matter.

Microscreen (water) n A device with a fabric straining media with openings usually between 20 and 60 microns. The fabric is wrapped around the outside of a rotating drum. Wastewater enters the open end of the drum and flows out through the rotating screen cloth. At the highest point of the drum, the collected solids are backwashed by highpressure water jets into a trough located within the drum.

Mil (gen) n A unit of length equal to 0.001 of an inch. The diameter of wires and tubing is measured in mils, as is the thickness of plastic sheeting.

Mildew (const) n Mold whenever it occurs on fabrics, leather, etc.

Millimicron (gen) n A unit of length equal to $10^{-3}\mu$ (one thousandth of a micron), 10^{-6} millimeters, or 10^{-9} meters; correctly called a nanometer, nm.

Mineral (water) n Any substance that is neither animal nor plant. Minerals include sand, salt, iron, calcium, and nutrients.

Miscible (water) n Capable of being mixed. A liquid, solid, or gas that can be completely dissolved in water.

Mixed Liquor (water) n When the activated sludge in an aeration tank is mixed with primary effluent or the raw wastewater and return sludge, this mixture is then referred to as mixed liquor as long as it is in the aeration tank. Mixed liquor also may refer to the contents of mixed aerobic or anaerobic digesters.

Mixed Liquor Suspended Solids (MLSS) (water) n Suspended solids in the mixed liquor of an aeration tank.

Mixed Liquor Volatile Suspended Solids (MLVSS) (water) n The organic or volatile suspended solids in the mixed liquor of an aeration tank. This volatile portion is used as a measure or indication of the microorganisms present.

MLSS (water) n Mixed Liquor Suspended Solids, mg/L. Suspended solids in the mixed liquor of an aeration tank.

MLVSS (water) n Mixed Liquor Volatile Suspended Solids, mg/L. The organic or volatile suspended solids in the mixed liquor of an aeration tank. This volatile portion is used as a measure or indication of the microorganisms present.

Mold (const) n Woolly or powdery fungal growth that forms on the surface of materials in damp, stagnant atmospheres

Monomictic (water) n Lakes and reservoirs which are relatively deep, do not freeze over during the winter months, and undergo a single stratification and mixing cycle during the year. These lakes and reservoirs usually become destratified during the mixing cycle, usually in the fall of the year.

Mortar (const) n ☒ A plastic mixture cementitious materials, fine aggregates, and water. ☐ Mixture of lime and/or cement with sand and water, used either as a binding material for bricks and stone or as a plaster

Motile (water) n Capable of selfpropelled movement. A term that is sometimes used to distinguish between certain types of organisms found in water.

MPN (water) n MPN is the Most Probable Number of coliformgroup organisms per unit volume of sample water. Expressed as a density or population of organisms per 100 mL of sample water.

Mudballs (water) n Material that is approximately round in shape and varies from peasized up to two or more inches in diameter. This material forms in filters and gradually increases in size when not removed by the backwashing process.

Multi-stage Pump (water) n A pump that has more than one impeller. A singlestage pump has one impeller.

Muntin (const) n A short light bar.

Mutagenic (water) n Any substance which tends to cause mutations or gene changes prior to conception.

N

Nappe (water) n The sheet or curtain of water flowing over a weir or dam. When the water freely flows over any structure, it has a welldefined upper and lower water surface.

Negotiated Contract (const) n In a negotiated contract the client selects, at the outset, one main contractor with whom to negotiate. In essence the arrangement is the same as that for a two-stage tender.

Net Wastewater Contribution (water) n In a wastewater collection system, the net wastewater contribution consists of the liquid wastes and liquidcarried wastes transported by the pipelines or received by the pipelines. This value would be the only wastewater found in a collection system if all sources of infiltration, inflow and exfiltration were eliminated.

Net Wastewater Flow (water) n The actual wastewater flow from a collection system that reaches a wastewater treatment plant. The net wastewater flow includes the net wastewater contribution, infiltration and inflow and does not include losses through exfiltration.

Neutralization (water) n Addition of an acid or alkali (base) to a liquid to cause the pH of the liquid to move toward a neutral pH of 7.0.

Newel Post (const) n Post at which the railing terminates at each floor level.

Nitrification (water) n An aerobic process in which bacteria reduce the ammonia and organic nitrogen in water into nitrite and then nitrate.

Nitrification Stage (water) n A stage of decomposition that occurs in biological treatment processes when aerobic bacteria, using dissolved oxygen, change nitrogen compounds (ammonia and organic nitrogen) into oxidized nitrogen (usually nitrate). The secondstage BOD is sometimes referred to as the "nitrification stage" (firststage BOD is called the "carbonaceous stage").

Nitrifying Bacteria (water) n Bacteria that change the ammonia and organic nitrogen in wastewater into oxidized nitrogen (usually nitrate).

Nitrogenous (water) n A term used to describe chemical compounds (usually organic) containing nitrogen in combined forms. Proteins and nitrate are nitrogenous compounds.

NOM (Natural Organic Matter) (water) n Humic substances composed of humic and fulvic acids that come from decayed vegetation.

Nonbearing Wall (const) n A wall that supports no vertical load other than its own weight.

Nonbiodegradable (water) n Substances that cannot readily be broken down by bacteria to simpler forms.

Noncompatible Pollutants (water) n Those pollutants which are normally NOT removed by the POTW treatment system. These pollutants may be a toxic waste and may pass through the POTW untreated or interfere with the treatment system. Examples of noncompatible pollutants include heavy metals such as copper, nickel, lead, and zinc; organics such as methylene chloride, 1,1,1trichloroethylene, methyl ethyl ketone, acetone, and gasoline; or sludges containing toxic organics or metals.

Nonpoint Source (water) n A runoff or discharge from a field or similar source. A point source refers to a discharge that comes out the end of a pipe.

Nonpotable (water) n Water that may contain objectionable pollution, contamination, minerals, or infective agents and is considered unsafe and/or unpalatable for drinking.

Nonvolatile Matter (water) n Material such as sand, salt, iron, calcium, and other mineral materials which are only slightly affected by the actions of organisms and are not lost on ignition of the dry solids at 550°C. Volatile materials are chemical substances usually of animal or plant origin. Also see INORGANIC WASTE and VOLATILE MATTER or VOLATILE SOLIDS.

Nosing (const) n Projection of a tread beyond the riser below.

Novation (const) n A hybrid variation of design & build procurement where the client appoints a designer (architect) to develop a concept design and passes on that designer to the contractor.

Nutrient (water) n Any substance that is assimilated (taken in) by organisms and promotes growth. Nitrogen and phosphorus are nutrients which promote the growth of algae. There are other essential and trace elements which are also considered nutrients.

Nutrient Cycle (water) n The transformation or change of a nutrient from one form to another until the nutrient has returned to the original form, thus completing the cycle. The cycle may take place under either aerobic or anaerobic conditions.

O

O R P (water) n OxidationReduction Potential. The electrical potential required to transfer electrons from one compound or element (the oxidant) to another compound or element (the reductant); used as a qualitative measure of the state of oxidation in water treatment systems. ORP is measured in millivolts, with negative values indicating a tendency to reduce compounds or elements and positive values indicating a tendency to oxidize compounds or elements.

Obligate Aerobes (water) n Bacteria that must have atmospheric or dissolved molecular oxygen to live and reproduce.

Olfactometer (water) n A device used to measure odors in the field by diluting odors with odorfree air.

Olfactory Fatigue (water) n A condition in which a person's nose, after exposure to certain odors, is no longer able to detect the odor.

Oligotrophic (water) n Reservoirs and lakes which are nutrient poor and contain little aquatic plant or animal life.

Open Standpipe Pipe (water) n That has been placed vertically into the ground to measure the water table level.

Open Tender (const) n A tender received a result of advertising for competitive tender.

Organic (water) n Substances that come from animal or plant sources. Organic substances always contain carbon. (Inorganic materials are chemical substances of mineral origin.) Also see INORGANIC.

Organic Waste (water) n Waste material which comes mainly from animal or plant sources. Organic wastes generally can be consumed by bacteria and other small organisms. Inorganic wastes are chemical substances of mineral origin.

Organism (water) n Any form of animal or plant life. Also see BACTERIA.

Orifice (water) n An opening (hole) in a plate, wall, or partition. An orifice flange or plate placed in a pipe consists of a slot or a calibrated circular hole smaller than the pipe diameter. The difference in pressure in the pipe above and at the orifice may be used to determine the flow in the pipe.

Orthotolidine (water) n Orthotolidine is a colorimetric indicator of chlorine residual. If chlorine is present, a yellow-colored compound is produced. This reagent is no longer approved for chemical analysis to determine chlorine residual.

Osmosis (water) n The passage of a liquid from a weak solution to a more concentrated solution across a semipermeable membrane. The membrane allows the passage of the water (solvent) but not the dissolved solids (solutes). This process tends to equalize the conditions on either side of the membrane.

Outfall (water) n ☒ The point, location or structure where wastewater or drainage discharges from a sewer, drain, or other conduit. ☐ The conduit leading to the final disposal point or area.

Outfall Sewer (water) n A sewer that receives wastewater from a collection system or from a wastewater treatment plant and carries it to a point of ultimate or final discharge in the environment. See **OUTFALL**.

Outlet (water) n Downstream opening or discharge end of a pipe, culvert, or canal.

Overall Efficiency, Pump (water) n The combined efficiency of a pump and motor together. Also called the **WIRETOWATER EFFICIENCY**.

Overdraft (water) n The pumping of water from a groundwater basin or aquifer in excess of the supply flowing into the basin. This pumping results in a depletion or "mining" of the groundwater in the basin.

Overflow Manhole (water) n A manhole which fills and allows raw wastewater to flow out onto the street or ground.

Overturn (water) n The almost spontaneous mixing of all layers of water in a reservoir or lake when the water temperature becomes

similar from top to bottom. This may occur in the fall/winter when the surface waters cool to the same temperature as the bottom waters and also in the spring when the surface waters warm after the ice melts.

Owner (const) n See Client or Employer

Oxidation (water) n Oxidation is the addition of oxygen, removal of hydrogen, or the removal of electrons from an element or compound. In the environment, organic matter is oxidized to more stable substances. The opposite of REDUCTION.

Oxidation Ditch (water) n The oxidation ditch is a modified form of the activated sludge process. The ditch consists of two channels placed side by side and connected at the ends to produce one continuous loop of wastewater flow and a brush rotator assembly placed across the channel to provide aeration and circulation.

Oxidation-Reduction Potential (ORP) (water) n The electrical potential required to transfer electrons from one compound or element (the oxidant) to another compound or element (the reductant); used as a qualitative measure of the state of oxidation in water treatment systems. ORP is measured in millivolts, with negative values indicating a tendency to reduce compounds or elements and positive values indicating a tendency to oxidize compounds or elements.

Oxidized Organics (water) n Organic materials that have been broken down in a biological process. Examples of these materials are carbohydrates and proteins that are broken down to simple sugars.

Oxidizing Agent (water) n Any substance, such as oxygen (O₂) or chlorine (Cl₂), that will readily add (take on) electrons. The opposite is a REDUCING AGENT.

Oxygen Deficiency (water) n An atmosphere containing oxygen at a concentration of less than 19.5 percent by volume.

Oxygen Enrichment (water) n An atmosphere containing oxygen at a concentration of more than 23.5 percent by volume.

Ozonation (water) n The application of ozone to water for disinfection or for taste and odor control.

P

Palatable (water) n Water at a desirable temperature that is free from objectionable tastes, odors, colors, and turbidity. Pleasing to the senses.

Parachute (water) n A device used to catch wastewater flow to pull a float line between manholes. See FLOAT LINE.

Parasitic Bacteria (water) n Parasitic bacteria are those bacteria which normally live off another living organism, known as the "host."

Parshall Flume (water) n A device used to measure the flow in an open channel. The flume narrows to a throat of fixed dimensions and then expands again. The rate of flow can be calculated by measuring the difference in head (pressure) before and at the throat of the flume.

Particulate (water) n A very small solid suspended in water which can vary widely in size, shape, density, and electrical charge. Colloidal and dispersed particulates are artificially gathered together by the processes of coagulation and flocculation.

Partition (const) n An interior wall one story or less in height.

Parts Per Million (PPM) (water) n Parts per million parts, a measurement of concentration on a weight or volume basis. This term is equivalent to milligrams per liter (mg/L) which is the preferred term.

Party Wall (const) n A wall on an interior lot line used or adapted for joint service for two buildings.

Pathogenic Organisms (water) n Organisms, including bacteria, viruses or cysts, capable of causing diseases (giardiasis, cryptosporidiosis, typhoid, cholera, dysentery) in a host (such as a person). There are many types of organisms which do NOT cause disease. These organisms are called nonpathogenic.

Pathogens (water) n Pathogenic or diseasecausing organisms.

Pave Tech Van Vehicle (const) n With three cameras that record video images of the pavement surface, pavement profile, rutting and faulting. Performance (Fr.: Performance). A quantitative expression of behaviour related to use.

Peaking Factor (water) n Ratio of a maximum flow to the average flow, such as maximum hourly flow or maximum daily flow to the average daily flow.

Percolating Water (water) n Water that passes through soil or rocks under the force of gravity.

Percolation (water) n The slow passage of water through a filter medium; or, the gradual penetration of soil and rocks by water.

Periphyton (water) n Microscopic plants and animals that are firmly attached to solid surfaces under water such as rocks, logs, pilings and other structures.

Permeability (soil) n The property of a material or soil that permits considerable movement of water through it when it is saturated.

Permeate (water) n \in To penetrate and pass through, as water penetrates and passes through soil and other porous materials. \square The liquid (demineralized water) produced from the reverse osmosis process that contains a LOW concentration of dissolved solids.

Pet Cock (water) n A small valve or faucet used to drain a cylinder or fitting.

pH (water) n pH is an expression of the intensity of the basic or acidic condition of a liquid. Mathematically, pH is the logarithm (base 10) of the reciprocal of the hydrogen ion activity. The pH may range from 0 to 14, where 0 is most acidic, 14 most basic, and 7 neutral. Natural waters usually have a pH between 6.5 and 8.5.

pH Test Paper (water) n A strip of paper which is treated with several dyes that change color at narrow and different pH ranges. To determine the pH of a solution, place a drop of the solution on the test paper. Then compare the color that develops with the

colors on a chart which relates color to pH. Also see LITMUS PAPER.

Phenol (water) n An organic compound that is a derivative of benzene.

Phenolic Compounds (water) n Organic compounds that are derivatives of benzene.

Phenolphthalein Alkalinity (water) n The alkalinity in a water sample measured by the amount of standard acid required to lower the pH to a level of 8.3, as indicated by the change in color of phenolphthalein from pink to clear. Phenolphthalein alkalinity is expressed as milligrams per liter of equivalent calcium carbonate.

Photosynthesis (water) n A process in which organisms, with the aid of chlorophyll (green plant enzyme), convert carbon dioxide and inorganic substances into oxygen and additional plant material, using sunlight for energy. All green plants grow by this process.

Physical Wastewater Process (water) n Physical waste treatment processes include use of racks, screens, comminutors, clarifiers (sedimentation and flotation) and filtration. Chemical or biological reactions are important treatment processes, but NOT part of a physical treatment process.

Phytoplankton (water) n Small, usually microscopic plants (such as algae), found in lakes, reservoirs, and other bodies of water.

Pico (gen) n A prefix used in the metric system and other scientific systems of measurement which means 10^{-12} or 0.000 000 000 001.

Picocurie (water) n A measure of radioactivity. One picoCurie of radioactivity is equivalent to 0.037 nuclear disintegrations per second.

Pier (const) n An isolated column of masonry. A bearing wall not bonded at the sides into associated masonry is considered a pier when its horizontal dimension measured at right angles to the thickness does not exceed four times its thickness.

Piezo Accelerometer Sensor (const) n That measures the vertical acceleration of concrete slabs under dynamic loadings. The resulting data, when integrated twice, yields deflections

Piezometer (water) n An instrument used to measure the pressure head in a pipe, tank, or soil. It usually consists of a small pipe or tube connected or tapped into the side or wall of a pipe or tank and connected to a manometer pressure gage, water or mercury column, or other device for indicating pressure head.

Pilaster (const) n A bonded or keyed column of masonry built as a part of a wall and of uniform thickness throughout its height. It serves as a vertical beam, column, or both.

Pipe Liner (water) n A plastic liner pulled or pushed into a pipe to eliminate excessive infiltration or exfiltration. Other solutions to the problem of infiltration/exfiltration are the use of cement grouting or replacement of damaged pipe.

Pitot Tube (water) n An instrument used to measure fluid (liquid or air) velocity by means of the differential pressure between the tip (dynamic) and side (static) openings.

Plankton (water) n 1. Small, usually microscopic, plants (phytoplankton) and animals (zooplankton) in aquatic systems.

Planning (const) n The process of establishing the sequence and relationship of a series of operations prior to construction work commencing.

Pollutant (water) n Any substance which causes an impairment (reduction) of water quality to a degree that has an adverse effect on any beneficial use of the water.

Pollution (water) n The impairment (reduction) of water quality by agricultural, domestic, or industrial wastes (including thermal and radioactive wastes) to a degree that has an adverse effect on any beneficial use of water.

Polychlorinated Biphenyls (water) n A class of organic compounds that cause adverse health effects in domestic water supplies.

Polymer (water) n A long chain molecule formed by the union of many monomers (molecules of lower molecular weight). Polymers are used with other chemical coagulants to aid in binding small suspended particles to larger chemical flocs for their removal from water.

Ponding (water) n A condition occurring on trickling filters when the hollow spaces (voids) become plugged to the extent that water passage through the filter is inadequate. Ponding may be the result of excessive slime growths, trash, or media breakdown.

Porcupine (water) n A sewer cleaning tool the same diameter as the pipe being cleaned. The tool is a steel cylinder having solid ends with eyes cast in them to which a cable can be attached and pulled by a winch. Many short pieces of cable or bristles protrude from the cylinder to form a round brush.

Pore (soil) n A very small open space in a rock or granular material. Also called an INTERSTICE, VOID, or void space. Also see VOID.

Pore Water Pressure Gauge Sensors (const) n That measure static and and dynamic soil pore water pressures using two different models

Porosity (soil) n ☒ A measure of the spaces or voids in a material or aquifer. ☐ The ratio of the volume of spaces in a rock or soil to the total volume. This ratio is usually expressed as a percentage.

Positive Pressure (water) n A positive pressure is a pressure greater than atmospheric. It is measured as pounds per square inch (psi) or as inches of water column. A negative pressure (vacuum) is less than atmospheric and is sometimes measured in inches of mercury. In the metric system pressures are measured in kg/sq m, kg/sq cm or pascals (1 psi = 6,895 Pa = 6.895 kN/sq m).

Postchlorination (water) n The addition of chlorine to the plant effluent, FOLLOWING plant treatment, for disinfection purposes.

Potable Water (water) n Water that does not contain objectionable pollution, contamination, minerals, or infective agents and is considered satisfactory for drinking.

PPM (water) n Initials for "Parts Per Million." The number of weight or volume units of a minor constituent present with each one million units of the major constituent of a solution or mixture. Used to express the results of most water and wastewater analyses, but more recently milligrams per liter (mg/L) is the preferred term.

Pre-Aeration (water) n The addition of air at the initial stages of treatment to freshen the wastewater, remove gases, add oxygen, promote flotation of grease, and aid coagulation.

Prechlorination (water) n The addition of chlorine at the headworks of the plant PRIOR TO other treatment processes mainly for disinfection and control of tastes, odors, and aquatic growths. Also applied to aid in coagulation and settling.

Precipitate (water) n ☒ An insoluble, finely divided substance which is a product of a chemical reaction within a liquid. ☐ The separation from solution of an insoluble substance.

Precipitation (water) n ☒ The process by which atmospheric moisture falls onto a land or water surface as rain, snow, hail, or other forms of moisture. ☐ The chemical transformation of a substance in solution into an insoluble form (precipitate).

Precursor (water) n Natural organic compounds found in all surface and groundwaters. These compounds MAY react with halogens (such as chlorine) to form trihalomethanes (triHALoMETHhanes) (THMs); they MUST be present in order for THMs to form.

Prescriptive (water) n Water rights which are acquired by diverting water and putting it to use in accordance with specified procedures. These procedures include filing a request (with a state agency) to use unused water in a stream, river or lake.

Preservation (const) n The technology of protecting wood from deterioration by living organisms by application of chemical wood preservatives

Pressure Head (water) n The vertical distance (in feet) equal to the pressure (in psi) at a specific point. The pressure head is equal to the pressure in psi times 2.31 ft/psi.

Procurement (const) n Procurement is the amalgam of activities undertaken by the client to obtain a building or civil engineering work.

Product Water (water) n Water that has passed through a water treatment plant. All the treatment processes are completed or finished. This water is the product from the water treatment plant and is ready to be delivered to the consumers. Also called FINISHED WATER.

Professional Constructor (const) n Responsible master of that discipline which comprises the whole of the construction process as well as the essential parts thereof; possessing such skills founded on knowledge acquired through prescribed education and refined by experience, or earned equivalently as a recognized practitioner; who initiates, develops, produces or delivers, in whole or essential part, construction works at prices, times, and standards of quality which assures advantage to clients and society as a whole.

Progress Analysis (const) n Breakdown of a project in identifiable components so that it is possible to control the process of construction.

Progress Control (const) n The process of measuring actual progress against predicted planning and scheduling.

Project (const) n Combination of activities of different specialized groups, directed at a nonrpetitive result with a clear beginning and end.

Project Brief (const) n The project embodiment of the selected option for the fulfillment of a stated requirement for a facility or works.

Project Documentation (const) n Systematic arrangement of information about a project during the course of the process.

Project Management (const) n Project management is concerned with the overall planning and co-ordination of a project from inception to completion aimed at meeting the client's requirements and ensuring completion on time, within cost and to required

quality standards. Project management is typically carried out either by a private consultant or an employee of the project client.

Project Manager (const) n The person or firm appointed by the Client responsible for the planning, co-ordination and controlling of a project from inception to completion, meeting the client's requirements and ensuring completion on time, within cost and to required quality standards.

Project Supervision (const) n Supervision and approval of the work of suppliers and other organizations working on site, typically carried out either by a private consultant or an employee of the client.

Protoplasm (water) n A complex substance (typically colorless and semifluid) regarded as the physical basis of life, having the power of spontaneous motion and reproduction; the living matter of all plant and animal cells and tissues.

Protozoa (water) n A group of motile microscopic organisms (usually singlecelled and aerobic) that sometimes cluster into colonies and often consume bacteria as an energy source.

Psychrophilic Bacteria (water) n Cold temperature bacteria. A group of bacteria that grow and thrive in temperatures below 68°F (20°C).

Pump (water) n A mechanical device for causing flow, for raising or lifting water or other fluid, or for applying pressure to fluids.

Pump Station (water) n Installation of pumps to lift wastewater to a higher elevation in places where flat land would require excessively deep sewer trenches. Also used to raise wastewater from areas too low to drain into available collection lines. These stations may be equipped with airoperated ejectors or centrifugal pumps. See LIFT STATION.

Pumping Water Level (water) n The vertical distance in feet from the centerline of the pump discharge to the level of the free pool while water is being drawn from the pool.

Purge (water) n To remove a gas or vapor from a vessel, reactor or confined space, usually by displacement or dilution.

Putrefaction (water) n Biological decomposition of organic matter, with the production of foulsmelling and -tasting products, associated with anaerobic (no oxygen present) conditions.

Putrescible (water) n Material that will decompose under anaerobic conditions and produce nuisance odors.

Pyrometer (water) n An apparatus used to measure high temperatures.

Q, R

Quality Control (const) n Work undertaken by contractor, client's representative or, possibly, insurance company to ensure the quality of materials and work on site is in accordance with the agreed specifications and accepted standards.

R A S (water) n Return Activated Sludge, mg/L. Settled activated sludge that is collected in the secondary clarifier and returned to the aeration basin to mix with incoming raw or primary settled wastewater.

Rabbling (water) n The process of moving or plowing the material inside a furnace by using the center shaft and rabble arms.

Rack (water) n Evenly spaced parallel metal bars or rods located in the influent channel to remove rags, rocks, and cans from wastewater.

Rain (water) n Particles of liquid water that have become too large to be held by the atmosphere. Their diameter generally is greater than 0.02 inch and they usually fall to the earth at velocities greater than 10 fps in still air. See PRECIPITATION.

Raw Water (water) n ☒ Water in its natural state, prior to any treatment. ☐ Usually the water entering the first treatment process of a water treatment plant.

Reaeration (water) n The introduction of air through forced air diffusers into the lower layers of the reservoir. As the air bubbles form and rise through the water, oxygen from the air dissolves into

the water and replenishes the dissolved oxygen. The rising bubbles also cause the lower waters to rise to the surface where oxygen from the atmosphere is transferred to the water. This is sometimes called surface reaeration.

Recarbonation (water) n A process in which carbon dioxide is bubbled into the water being treated to lower the pH. The pH may also be lowered by the addition of acid. Recarbonation is the final stage in the lime-soda ash softening process. This process converts carbonate ions to bicarbonate ions and stabilizes the solution against the precipitation of carbonate compounds.

Receiving Water (water) n A stream, river, lake, ocean, or other surface or groundwaters into which treated or untreated wastewater is discharged.

Recharge Rate (water) n Rate at which water is added beneath the ground surface to replenish or recharge groundwater.

Reclamation (water) n The operation or process of changing the condition or characteristics of water so that improved uses can be achieved.

Recycle (water) n The use of water or wastewater within (internally) a facility before it is discharged to a treatment system. Also see REUSE.

REDOX (water) n Reductionoxidation reactions in which the oxidation state of at least one reactant is raised while that of another is lowered.

Reducing Agent (water) n Any substance, such as base metal (iron) or the sulfide ion (S^{2-}) that will readily donate (give up) electrons. The opposite is an OXIDIZING AGENT.

Reductant (water) n A constituent of wastewater or surface waters that uses either free (O_2) or combined oxygen in the process of stabilization.

Reflux (water) n Flow back. A sample is heated, evaporates, cools, condenses, and flows back to the flask.

Refractory Materials (water) n Materials difficult to remove entirely from wastewater such as nutrients, color, taste and odorproducing substances and some toxic materials.

Rehabilitate (const) n Extensive maintenance intended to bring property or building up to current acceptable condition, often involving improvements

Rehabilitation Project (const) n Work associated with the rehabilitation and refurbishment of buildings, normally the responsibility of people within the above disciplines who have developed a particular expertise in this area.

Reliquefaction (water) n The return of a gas to the liquid state; for example, a condensation of chlorine gas to return it to its liquid form by cooling.

Renovate (const) n Generally used to mean 'restore'

Repair (const) n To restore an item to an acceptable condition by the renewal, replacement or mending of decayed or damaged parts

Resident Engineer (const) n The site representative of the Engineer responsible for issuing instructions and drawings to the contractor's representative.

Residue (water) n The dry solids remaining after the evaporation of a sample of water or sludge. Also see TOTAL DISSOLVED SOLIDS.

Resistivity Probe (const) n Sensors that measure depths of freezing and thawing fronts in the pavement structure

Respiration (water) n The process in which an organism uses oxygen for its life processes and gives off carbon dioxide.

Restore (const) n To bring back an item to its original appearance or state

Restraint (const) n The partial or total restriction of movement. A device which produces this effect

Retention (water) n The part of the precipitation falling on a drainage area which does not escape as surface stream flow during a given period. It is the difference between total precipitation and total runoff during the period, and represents evaporation, transpiration, subsurface leakage, infiltration, and, when short periods are considered, temporary surface or underground storage on the area. □ The delay or holding of the flow of water and watercarried wastes in a pipe system. This can be due to a restriction in the pipe, a stoppage or a dip. Also, the time water is held or stored in a basin or wet well. This is also called DETENTION.

Retention Time (water) n The time water, sludge or solids are retained or held in a clarifier or sedimentation tank. See DETENTION TIME.

Return Activated Sludge (RAS) (water) n Settled activated sludge that is collected in the secondary clarifier and returned to the aeration basin to mix with incoming raw or primary settled wastewater.

Reverse Osmosis (water) n The application of pressure to a concentrated solution which causes the passage of a liquid from the concentrated solution to a weaker solution across a semipermeable membrane. The membrane allows the passage of the water (solvent) but not the dissolved solids (solutes). The liquid produced is a demineralized water. Also see OSMOSIS.

Riprap (const) n Broken stones, boulders, or other materials placed compactly or irregularly on levees or dikes for the protection of earth surfaces against the erosive action of waves.

Rise (const) n Distance from floor to floor.

Riser (const) n Vertical face of a step. Its height generally is taken as the vertical distance between the treads.

Rising Sludge (water) n Rising sludge occurs in the secondary clarifiers of activated sludge plants when the sludge settles to the bottom of the clarifier, is compacted, and then starts to rise to the surface, usually as a result of denitrification.

Roof Leader (water) n A downspout or pipe installed to drain a roof gutter to a storm drain or other means of disposal.

Root Mop (water) n When roots from plant life enter a sewer system, the roots frequently branch to form a growth that resembles a string mop.

Root Sewer (water) n Any part of a root system of a plant or tree that enters a collection system.

Rotameter (water) n A device used to measure the flow rate of gases and liquids. The gas or liquid being measured flows vertically up a tapered, calibrated tube. Inside the tube is a small ball or bulletshaped float (it may rotate) that rises or falls depending on the flow rate. The flow rate may be read on a scale behind or on the tube by looking at the middle of the ball or at the widest part or top of the float.

Rotary Pump (water) n A type of displacement pump consisting essentially of elements rotating in a pump case which they closely fit. The rotation of these elements alternately draws in and discharges the water being pumped. Such pumps act with neither suction nor discharge valves, operate at almost any speed, and do not depend on centrifugal forces to lift the water.

Rotifers (water) n Microscopic animals characterized by short hairs on their front end.

Rubble, Coursed (const) n Masonry composed of roughly shaped stones fitting approximately on level beds, well bonded and brought at vertical intervals to continuous level beds of courses.

Rubble, Ordinary (const) n Masonry composed of irregularly shaped stones laid without regularity of coursing, but well bonded.

Rubble, Random (const) n Masonry composed of roughly shaped stones, well bonded and brought at irregular intervals vertically to discontinuous but approximately level beds or courses.

Run (const) n Total length of stairs in a horizontal plane, including landings.

Runoff (water) n That part of rain or other precipitation that runs off the surface of a drainage area and does not enter the soil or the sewer system as inflow.

Rutting Dipstick (const) n A manually operated device used to record transverse profiles for the bituminous cells.

S

S A R (Sodium Adsorption Ratio) (water) n This ratio expresses the relative activity of sodium ions in the exchange reactions with soil. The ratio is defined as follows:

S V I (Sludge Volume Index) (water) n This is a calculation which indicates the tendency of activated sludge solids (aerated solids) to thicken or to become concentrated during the sedimentation/thickening process. SVI is calculated in the following manner: (1) allow a mixed liquor sample from the aeration basin to settle for 30 minutes; (2) determine the suspended solids concentration for a sample of the same mixed liquor; (3) calculate SVI by dividing the measured (or observed) wet volume (mL/L) of the settled sludge by the dry weight concentration of MLSS in grams/L.

Sacrificial Anode (water) n An easily corroded material deliberately installed in a pipe or tank. The intent of such an installation is to give up (sacrifice) this anode to corrosion while the water supply facilities remain relatively corrosion free.

Saddle (water) n A fitting mounted on a pipe for attaching a new connection. This device makes a tight seal against the main pipe by use of a clamp, adhesive, or gasket and prevents the service pipe from protruding into the main.

Safe Water (water) n Water that does not contain harmful bacteria, or toxic materials or chemicals. Water may have taste and odor problems, color and certain mineral problems and still be considered safe for drinking.

Safe Yield (water) n The annual quantity of water that can be taken from a source of supply over a period of years without depleting the source permanently (beyond its ability to be replenished naturally in "wet years").

Salinity (water) n ∞ The relative concentration of dissolved salts, usually sodium chloride, in a given water. □ A measure of the concentration of dissolved mineral substances in water.

Salt (water) n A compound which upon dissociation yields cations (positively charged) of a metal, and anions (negatively charged) of an acid radical.

Sand Trap (water) n A device which can be placed in the outlet of a manhole to cause a settling pond to develop in the manhole invert, thus trapping sand, rocks and similar debris heavier than water. Also may be installed in outlets from car wash areas. Also see GRIT CATCHER.

Sanitary Sewer (water) n A pipe or conduit (sewer) intended to carry wastewater or waterborne wastes from homes, businesses, and industries to the POTW (Publicly Owned Treatment Works). Storm water runoff or unpolluted water should be collected and transported in a separate system of pipes or conduits (storm sewers) to natural watercourses.

Saprophytes (water) n Organisms living on dead or decaying organic matter. They help natural decomposition of organic matter in water.

Saprophytic Organisms (water) n Organisms living on dead or decaying organic matter. They help natural decomposition of the organic solids in wastewater.

Sash (const) n A single assembly of stiles and rails made into a frame for holding glass, with or without dividing bars. It may be supplied glazed or unglazed.

Saturated Soil (soil) n Soil that cannot absorb any more liquid. The interstices or void spaces in the soil are filled with water to the point at which runoff occurs.

Saturation (water) n The condition of a liquid (water) when it has taken into solution the maximum possible quantity of a given substance at a given temperature and pressure.

Saturator (water) n A device which produces a fluoride solution for the fluoridation process. The device is usually a cylindrical container with granular sodium fluoride on the bottom. Water flows either upward or downward through the sodium fluoride to produce the fluoride solution.

Scale (water) n **CE** A combination of mineral salts and bacterial accumulation that sticks to the inside of a collection pipe under certain conditions. Scale, in extreme growth circumstances, creates additional friction loss to the flow of water. Scale may also accumulate on surfaces other than pipes. □ The marked plate against which an indicator or recorder reads, usually the same as the range of the measuring system. See RANGE.

Schedule, Pipe (water) n A sizing system of numbers that specifies the I.D. (inside diameter) and O.D. (outside diameter) for each diameter pipe. The schedule number is the ratio of internal pressure in psi divided by the allowable fiber stress multiplied by 1,000. Typical schedules of iron and steel pipe are schedules 40, 80, and 160. Other forms of piping are divided into various classes with their own schedule schemes.

Schmutzdecke (water) n A layer of trapped matter at the surface of a slow sand filter in which a dense population of microorganisms develops. These microorganisms within the film or mat feed on and break down incoming organic material trapped in the mat. In doing so the microorganisms both remove organic matter and add mass to the mat, further developing the mat and increasing the physical straining action of the mat.

Scooter (water) n A sewer cleaning tool whose cleansing action depends on the development of high water velocity around the outside edge of a circular shield. The metal shield is rimmed with a rubber coating and is attached to a framework on wheels (like a child's scooter). The angle of the shield is controlled by a chainspring system which regulates the head of water behind the scooter and thus the cleansing velocity of the water flowing around the shield.

Screen (water) n A device used to retain or remove suspended or floating objects in wastewater. The screen has openings that are generally uniform in size. It retains or removes objects larger than the openings. A screen may consist of bars, rods, wires, gratings, wire mesh, or perforated plates.

Scum (water) n **CE** A layer or film of foreign matter (such as grease, oil) that has risen to the surface of water or wastewater. □ A residue deposited on the ledge of a sewer, channel, or wet well at

the water surface. 3) A mass of solid matter that floats on the surface.

Sealing Water (water) n Water used to prevent wastewater or dirt from reaching moving parts. Sealing water is at a higher pressure than the wastewater it is keeping out of a mechanical device.

Seasonal Water Table (water) n A groundwater table that has seasonal changes in depth or elevation.

Secondary Clarifier (water) n A wastewater treatment device which consists of a rectangular or circular tank that allows those substances not removed by previous treatment processes that settle or float to be separated from the wastewater being treated.

Secondary Treatment (water) n A wastewater treatment process used to convert dissolved or suspended materials into a form more readily separated from the water being treated. Usually the process follows primary treatment by sedimentation. The process commonly is a type of biological treatment process followed by secondary clarifiers that allow the solids to settle out from the water being treated.

Sediment (water) n Solid material settled from suspension in a liquid.

Sedimentation (water) n A water treatment process in which solid particles settle out of the water being treated in a large clarifier or sedimentation basin.

Sedimentation Basin (water) n Clarifier, Settling Tank. A tank or basin in which wastewater is held for a period of time during which the heavier solids settle to the bottom and the lighter materials float to the water surface.

Seed Sludge (water) n In wastewater treatment, seed, seed culture or seed sludge refers to a mass of sludge which contains populations of microorganisms. When a seed sludge is mixed with wastewater or sludge being treated, the process of biological decomposition takes place more rapidly.

Seismic (gen) n Relating to an earthquake or violent earth vibration such as an explosion.

Select Backfill (const) n Material used in backfilling of an excavation, selected for desirable compaction or other characteristics.

Select Bedding (water) n Material used to provide a bedding or foundation for pipes or other underground structures. This material is of specified quality for desirable bedding or other characteristics and is often imported from a different location.

Selector (water) n A reactor or basin in which baffles or other devices create a series of compartments. The environment and the resulting microbial population within each compartment can be controlled to some extent by the operator. The environmental conditions (food, lack of dissolved oxygen) which develop are intended to favor the growth of certain organisms over others. The conditions thereby SELECT certain organisms.

Separate Contracts (const) n With separate contracts the client's professional adviser lets contracts for the work with a number of separate contractors. This arrangement was commonplace prior the emergence of the general contractor.

Septic (water) n A condition produced by bacteria when all oxygen supplies are depleted. If severe, the bottom deposits produce hydrogen sulfide, the deposits and water turn black, give off foul odors, and the water has a greatly increased chlorine demand.

Septic Tank (water) n A system used where wastewater collection systems and treatment plants are not available. The system is a settling tank in which settled sludge is in intimate contact with the wastewater flowing through the tank and the organic solids are decomposed by anaerobic bacterial action. Used to treat wastewater and produce an effluent that is usually disposed of by subsurface leaching.

Septic Tank Effluent Filter (STEF) System (water) n A facility where effluent flows from a septic tank into a gravity flow collection system which flows to a gravity sewer, treatment plant or subsurface leaching system. The gravity flow pipeline is called an effluent drain.

Septic Tank Effluent Pump (STEP) System (water) n A facility where effluent is pumped from a septic tank into a pressurized collection system which may flow into a gravity sewer, treatment plant, or subsurface leaching system.

Septicity (water) n Septicity is the condition in which organic matter decomposes to form foulsmelling products associated with the absence of free oxygen. If severe, the wastewater produces hydrogen sulfide, turns black, gives off foul odors, contains little or no dissolved oxygen, and the wastewater has a high oxygen demand.

Sequestration (water) n A chemical complexing (forming or joining together) of metallic cations (such as iron) with certain inorganic compounds, such as phosphate. Sequestration prevents the precipitation of the metals (iron). Also see CHELATION.

Serial Tender (const) n A serial tender is where a number of similar projects are awarded to a contractor, following a competitive tender on a master bill of quantities. This master bill forms a standing offer open for the client to accept for a number of contracts. Each contract is separate and the price for each calculated separately.

Series Operation (water) n Wastewater being treated flows through one treatment unit and then flows through another similar treatment unit. Also see PARALLEL OPERATION.

Service Pipe (water) n The pipeline extending from the water main to the building served or to the consumer's system.

Service Root (water) n A root entering the sewer system in a service line and growing down the pipe and into the sewer main.

Settlement (soil) n Downward movement of the soil or of a structure which it supports

Sewage (water) n The used household water and watercarried solids that flow in sewers to a wastewater treatment plant. The preferred term is WASTEWATER.

Sewer (water) n A pipe or conduit that carries wastewater or drainage water. The term "collection line" is often used also.

Sewer Ball (water) n A spirally grooved, inflatable, semihard rubber ball designed for hydraulic cleaning of sewer pipes. See BALLING.

Sewer Cleanout (water) n A capped opening in a sewer main that allows access to the pipes for rodding and cleaning. Usually such cleanouts are located at terminal pipe ends or beyond terminal manholes. Also called a FLUSHER BRANCH.

Sewer Gas (water) n Æ Gas in collection lines (sewers) that results from the decomposition of organic matter in the wastewater. When testing for gases found in sewers, test for lack of oxygen and also for explosive and toxic gases. □ Any gas present in the wastewater collection system, even though it is from such sources as gas mains, gasoline, and cleaning fluid.

Sewer Main (water) n A sewer pipe to which building laterals are connected. Also called a COLLECTION MAIN.

Sewerage (water) n System of piping with appurtenances for collecting, moving and treating wastewater from source to discharge.

Shear Wall (const) n A wall that resist horizontal forces applied in the plane of the wall.

Shock Load (water) n The arrival at a water treatment plant of raw water containing unusual amounts of algae, colloidal matter, color, suspended solids, turbidity, or other pollutants.

Shredding (water) n Comminution. A mechanical treatment process which cuts large pieces of wastes into smaller pieces so they won't plug pipes or damage equipment. SHREDDING and COMMUNITION usually mean the same thing.

Shrinkage (const) n Decrease in length or volume

Sidestream (water) n Wastewater flows that develop from other storage or treatment facilities. This wastewater may or may not need additional treatment.

Significant Figure (gen) n The number of accurate numbers in a measurement. If the distance between two points is measured to

the nearest hundredth and recorded as 238.41 feet, the measurement has five significant figures.

Sill (const) n The horizontal bottom of a frame.

Silting (water) n Silting takes place when the pressure of infiltrating waters is great enough to carry silt, sand and other small particles from the soil into the sewer system. Where lower velocities are present in the sewer pipes, settling of these materials results in silting of the sewer system.

Single-Stage Pump (water) n A pump that has only one impeller. A multistage pump has more than one impeller.

Siphon (water) n A pipe or conduit through which water will flow above the hydraulic grade line (HGL) under certain conditions. Water (or other liquid) is first forced to flow or is sucked or drawn through the pipe by creation of a vacuum. As long as no air enters the pipe to interrupt flow, atmospheric pressure on the liquid at the elevated (higher) end of the siphon will cause the flow to continue.

Site Co-ordination (const) n Responsibility for the co-ordination of day-to-day operations on site in accordance with the project and the predetermined program, typically carried out by an employee of the contractor.

Site Management (const) n The overall management of the processes required to bring the site operations of a project to a satisfactory conclusion, typically carried out either by private consultant or an employee of the project client.

Site Manager (const) n The person responsible on behalf of the client for controlling and coordinating all the work of others in order to bring the site operations of a project to a satisfactory conclusion.

Site works (const) n All work carried out within the site of a construction project

Skatole (water) n An organic compound (C_9H_9N) that contains nitrogen and has a fecal odor.

Slake (water) n To mix with water so that a true chemical combination (hydration) takes place, such as in the slaking of lime.

Sliplining (water) n A sewer rehabilitation technique accomplished by inserting flexible polyethylene pipe into an existing deteriorated sewer.

Slope (water) n The slope or inclination of a trench bottom or a trench side wall is the ratio of the vertical distance to the horizontal distance or "rise over run." Also see GRADE (2).

Sloughing (water) n Biological or biomass growths which break off from the fixed film media. The "sloughed" biological growth becomes suspended in the fixed film effluent and is later removed in the secondary clarifier as sludge.

Sludge (water) n The settleable solids separated from water during processing.

Sludge Age (water) n A measure of the length of time a particle of suspended solids has been retained in the activated sludge process.

Sludge Density Index (SDI) (water) n This calculation is used in a way similar to the Sludge Volume Index (SVI) to indicate the settleability of a sludge in a secondary clarifier or effluent. The weight in grams of one milliliter of sludge after settling for 30 minutes. $SDI = 100/SVI$. Also see SLUDGE VOLUME INDEX (SVI).

Sludge Digestion (water) n The process of changing organic matter in sludge into a gas or a liquid or a more stable solid form. These changes take place as microorganisms feed on sludge in anaerobic (more common) or aerobic digesters.

Sludge Gasification (water) n A process in which soluble and suspended organic matter are converted into gas by anaerobic decomposition. The resulting gas bubbles can become attached to the settled sludge and cause large clumps of sludge to rise and float on the water surface.

Sludge Volume Index (SVI) (water) n This is a calculation which indicates the tendency of activated sludge solids (aerated solids) to thicken or to become concentrated during the sedimentation/thickening process. SVI is calculated in the following manner: (1) allow a mixed liquor sample from the aeration basin to

settle for 30 minutes; (2) determine the suspended solids concentration for a sample of the same mixed liquor; (3) calculate SVI by dividing the measured (or observed) wet volume (mL/L) of the settled sludge by the dry weight concentration of MLSS in grams/L.

Sludge-Volume Ratio (SVR) (water) n The volume of sludge blanket divided by the daily volume of sludge pumped from the thickener.

Slugs (water) n Intermittent releases or discharges of industrial wastes.

Slurry (water) n A watery mixture or suspension of insoluble (not dissolved) matter; a thin, watery mud or any substance resembling it (such as a grit slurry or a lime slurry).

Smoke Test (water) n A method of blowing smoke into a closedoff section of a sewer system to locate sources of surface inflow.

Snake (water) n A stiff but flexible cable that is inserted into sewers to clear stoppages; also known as a "sewer cable."

Soap Cake or Soap Buildup (water) n A combination of detergents and greases that accumulate in sewer systems, build up over a period of time, and may cause severe flow restrictions.

Soft Water (water) n Water having a low concentration of calcium and magnesium ions. According to U.S. Geological Survey guidelines, soft water is water having a hardness of 60 milligrams per liter or less.

Soil Displacement (water) n Movement of soil from one place to another. Generally accompanies SILTING of a sewer system. Where infiltration is taking place and silt is carried into a sewer system, such silt or soil is removed from the ground around the sewer pipe and the result is soil displacement.

Soil Pipe (water) n CE A type of wastewater or service connection pipe made of a low grade of cast iron. \square In plumbing, a pipe that carries the discharge of toilets or similar fixtures, with or without the discharges from other fixtures.

Soil Pollution (water) n The leakage (exfiltration) of raw wastewater into the soil or ground area around a sewer pipe.

Soil Pressure Gauge (soil) n Sensors that measure static and dynamic stresses, both vertical and horizontal, in soils and other unbounded layers.

Soil Stabilization (water) n Injection of chemical grouts into saturated or otherwise unstable soil. The process seals out water and prevents further instability.

Solid Masonry Unit (const) n A masonry unit with net cross-sectional area in every plane parallel to the bearing surface 75% or more of its gross cross-sectional area measured in the same plane.

Solids Concentration (water) n The solids in the aeration tank which carry microorganisms that feed on wastewater.

Soluble BOD (water) n Soluble BOD is the BOD of water that has been filtered in the standard suspended solids test.

Solute (water) n The substance dissolved in a solution. A solution is made up of the solvent and the solute.

Solution (water) n A liquid mixture of dissolved substances. In a solution it is impossible to see all the separate parts.

Solvent (water) n Any substance that is used to dissolve another substance in it.

Solvent Extraction (water) n The process of dissolving and separating out particular constituents of a liquid by treatment with solvents specific for those constituents. Extraction may be liquid/solid or liquid/liquid.

Sounding Rod (water) n A T-shaped tool or shaft that is pushed or driven down through the soil to locate underground pipes and utility conduits. Also see PROBE.

Sounding Tube (water) n A pipe or tube used for measuring the depths of water.

Spall (const) n A flaky fragment, usually produced by a blow, or by the action of weather or pressure

Spalling (const) n Detachment of fragments, usually of flaky shape, from a larger mass by a blow, or by the action of weather or pressure; chipping of stone, masonry or concrete

Spandrel Wall (const) n An exterior curtain wall at the level of the outside floor beams in multistory buildings. It may extend from the head of the window below the floor to the sill of the window above.

Specific Conductance (water) n A rapid method of estimating the dissolved solids content of a water supply. The measurement indicates the capacity of a sample of water to carry an electric current, which is related to the concentration of ionized substances in the water. Also called CONDUCTANCE.

Specific Gravity (water) n \propto Weight of a particle, substance, or chemical solution in relation to the weight of an equal volume of water. Water has a specific gravity of 1.000 at 4°C (39°F). Particulates in raw water may have a specific gravity of 1.005 to 2.5. \square Weight of a particular gas in relation to the weight of an equal volume of air at the same temperature and pressure (air has a specific gravity of 1.0). Chlorine has a specific gravity of 2.5 as a gas.

Specific Yield (water) n The quantity of water that a unit volume of saturated permeable rock or soil will yield when drained by gravity. Specific yield may be expressed as a ratio or as a percentage by volume.

Splash Pad (water) n A structure made of concrete or other durable material to protect bare soil from erosion by splashing or falling water.

Split (const) n Break in a material, approximately parallel with the natural grain or cleavage of the material

Spoil (water) n Excavated material such as soil from the trench of a water main.

Spore (water) n The reproductive body of an organism which is capable of giving rise to a new organism either directly or indirectly.

A viable (able to live and grow) body regarded as the resting stage of an organism. A spore is usually more resistant to disinfectants and heat than most organisms.

Spring Line (water) n Theoretical center of a pipeline. Also, the guideline for laying a course of bricks.

Srterilization (water) n The removal or destruction of all microorganisms, including pathogenic and other bacteria, vegetative forms and spores. Compare with DISINFECTION.

Stabilization (water) n Conversion to a form that resists change. Organic material is stabilized by bacteria which convert the material to gases and other relatively inert substances. Stabilized organic material generally will not give off obnoxious odors.

Stabilize (water) n To convert to a form that resists change. Organic material is stabilized by bacteria which convert the material to gases and other relatively inert substances. Stabilized organic material generally will not give off obnoxious odors.

Stabilized Waste (water) n A waste that has been treated or decomposed to the extent that, if discharged or released, its rate and state of decomposition would be such that the waste would not cause a nuisance or odors.

Stain (const) n To discolor. An uncontrolled discoloration, usually on concrete, masonry, and wood

Stale Water (water) n STALE WATER

Standard Deviation (gen) n A measure of the spread or dispersion of data.

Standard Solution (water) (water) n A solution in which the exact concentration of a chemical or compound is known.

Stasis n Stagnation or inactivity of the life processes within organisms.

Static Head (water) n When water is not moving, the vertical distance (in feet) from a specific point to the water surface is the static head. (The static pressure in psi is the static head in feet

times 0.433 psi/ft.) Also see DYNAMIC PRESSURE and STATIC PRESSURE.

Static Lift (water) n Vertical distance water is lifted from upstream water surface up to downstream water surface (which is at a higher elevation) when no water is being pumped.

Static Pressure (water) n When water is not moving, the vertical distance (in feet) from a specific point to the water surface is the static head. The static pressure in psi is the static head in feet times 0.433 psi/ft. Also see DYNAMIC PRESSURE and STATIC HEAD.

Static Sensors (const) n Those sensors that generate data at 15 minute intervals Examples are weather sensors, etc.

Static Water Depth (water) n The vertical distance in feet from the centerline of the pump discharge down to the surface level of the free pool while no water is being drawn from the pool or water table.

Static Water Head (water) n Elevation or surface of water that is not being pumped.

Static Water Level (water) n ☒ The elevation or level of the water table in a well when the pump is not operating. ☐ The level or elevation to which water would rise in a tube connected to an artesian aquifer, basin, or conduit under pressure.

Station (water) n A point of reference or location in a pipeline is sometimes called a "station." As an example, a building service located 51 feet downstream from a manhole could be reported to be at "station 51."

Step-Feed Aeration (water) n Stepfeed aeration is a modification of the conventional activated sludge process. In step aeration, primary effluent enters the aeration tank at several points along the length of the tank, rather than all of the primary effluent entering at the beginning or head of the tank and flowing through the entire tank in a plug flow mode.

Stilling Well (water) n A well or chamber which is connected to the main flow channel by a small inlet. Waves and surges in the main

flow stream will not appear in the well due to the small diameter inlet. The liquid surface in the well will be quiet, but will follow all of the steady fluctuations of the open channel. The liquid level in the well is measured to determine the flow in the main channel.

Stitching (const) n Insertion of new bricks to replace existing damaged bricks

Stool (const) n The part of the sill inside the building.

Stop Log (water) n A log or board in an outlet box or device used to control the water level in ponds.

Storm Collection System (water) n A system of gutters, catch basins, yard drains, culverts and pipes for the purpose of conducting storm waters from an area, but intended to exclude domestic and industrial wastes.

Storm Runoff (water) n The amount of runoff that reaches the point of measurement within a relatively short period of time after the occurrence of a storm or other form of precipitation. Also called "direct runoff."

Storm Sewer (water) n A separate pipe, conduit or open channel (sewer) that carries runoff from storms, surface drainage, and street wash, but does not include domestic and industrial wastes. Storm sewers are often the recipients of hazardous or toxic substances due to the illegal dumping of hazardous wastes or spills created by accidents involving vehicles and trains transporting these substances. Also see SANITARY SEWER.

Storm Water (water) n The excess water running off from the surface of a drainage area during and immediately after a period of rain. See STORM RUNOFF.

Storm Water Inlet (water) n A device that admits surface waters to the storm water drainage system. Also see CURB INLET and CATCH BASIN.

Stratification (water) n The formation of separate layers (of temperature, plant, or animal life) in a lake or reservoir. Each layer has similar characteristics such as all water in the layer has the same temperature. Also see THERMAL STRATIFICATION.

Stray Current Corrosion (water) n A corrosion activity resulting from stray electric current originating from some source outside the plumbing system such as D.C. grounding on phone systems.

Stretch (water) n Length of sewer from manhole to manhole.

Stringers (const) n Inclined members along the sides of a stairway. The stringer along the wall is called a wall stringer. Open stringers are those cut to follow the lines of risers and treads. Closed stringers have parallel top and bottom, and treads and risers are supported along their sides or mortised into them. In wood stairs, stringers are placed outside the carriage to provide a finish.

Stringers (water) n Horizontal shoring members, usually square, rough cut timber, that are used to hold solid sheeting, braces or vertical shoring members in place. Also called **WALERS**.

Stripped Gases (water) n Gases that are released from a liquid by bubbling air through the liquid or by allowing the liquid to be sprayed or tumbled over media.

Stripped Odors (water) n Odors that are released from a liquid by bubbling air through the liquid or by allowing the liquid to be sprayed or tumbled over media.

Structural Defect (const) n A flaw or imperfection of a structure or design which was built into a project, pipeline or other collection system appurtenance.

Structural Design (const) n Design of the structural elements of large constructions, undertaken by a structural engineer. In smaller and less complex constructions this work will normally be within the responsibility of other construction professionals.

Structural Failure (water) n A condition that exists when one or more components of a system break down or fail to perform as expected. A structural failure may result from defective parts or design or may result from other circumstances that occur after the completion of construction.

Struvite (water) n A deposit or precipitate of magnesium ammonium phosphate hexahydrate found on the rotating components of centrifuges and centrate discharge lines. Struvite can be formed when anaerobic sludge comes in contact with spinning centrifuge components rich in oxygen in the presence of microbial activity. Struvite can also be formed in digested sludge lines and valves in the presence of oxygen and microbial activity. Struvite can form when the pH level is between 5 and 9.

Stuck (water) n Not working. A stuck digester does not decompose organic matter properly. The digester is characterized by low gas production, high volatile acid to alkalinity relationship, and poor liquidsolids separation. A digester in a stuck condition is sometimes called a "sour" or "upset" digester.

Submergence (water) n The distance between the water surface and the media surface in a filter.

Subsidence (water) n The dropping or lowering of the ground surface as a result of removing excess water (overdraft or overpumping) from an aquifer. After excess water has been removed, the soil will settle, become compacted and the ground surface will drop and can cause the settling of underground utilities.

Subsoil Geology (soil) n The study of soil conditions existing below the surface of the ground at any selected site.

Substrate (water) n ∞ The base on which an organism lives. The soil is the substrate of most seed plants; rocks, soil, water, or other plants or animals are substrates for other organisms. \square Chemical used by an organism to support growth. The organic matter in wastewater is a substrate for the organisms in activated sludge.

Subsurface Leaching System (water) n A method of treatment and disposal of septic tank effluent, sand filter effluent, or other treated wastewater. The effluent is applied to soil below the ground surface through open-jointed pipes or drains or through perforated pipes (holes in the pipes). The effluent is treated as it passes through porous soil or rock strata (layers). Newer subsurface leaching systems include chamber and gravelless systems, and also gravel trenches without pipe the full length of the trench.

Subsystem (water) n An extensive underground sewer system connected to the main collection system, but not considered part of the main system. An example might be the underground sewer system of a mobile home park.

Sucker Rods (water) n Rigid, coupled sewer rods of metal or wood used for clearing stoppages. Usually available in 3ft, 39in, 4ft, 5ft and 6ft lengths.

Suction Head (water) n The POSITIVE pressure [in feet (meters) or pounds per square inch] on the suction side of a pump. The pressure can be measured from the centerline of the pump UP TO the elevation of the hydraulic grade line on the suction side of the pump.

Suction Lift (water) n The NEGATIVE pressure [in feet (meters) of water or inches (centimeters) of mercury vacuum] on the suction side of the pump. The pressure can be measured from the centerline of the pump DOWN TO (lift) the elevation of the hydraulic grade line on the suction side of the pump.

Sump (water) n The term "sump" refers to a facility which connects an industrial discharger to a public sewer. The facility (sump) could be a sample box, a clarifier or an intercepting sewer.

Sump Card (water) n A 3x5 reference card which identifies the location of a sump, lists the monitoring devices located in the sump (pH for example), and indicates which treatment processes are connected to the sump.

Superchlorination (water) n Chlorination with doses that are deliberately selected to produce free or combined residuals so large as to require dechlorination.

Supernatant (water) n Liquid removed from settled sludge. Supernatant commonly refers to the liquid between the sludge on the bottom and the scum on the water surface of a basin or container.

Supersaturated (water) n An unstable condition of a solution (water) in which the solution contains a substance at a concentration greater than the saturation concentration for the substance.

Surcharge (water) n Sewers are surcharged when the supply of water to be carried is greater than the capacity of the pipes to carry the flow. The surface of the wastewater in manholes rises above the top of the sewer pipe, and the sewer is under pressure or a head, rather than at atmospheric pressure.

Surcharge Manhole (water) n A manhole in which the rate of the water entering is greater than the capacity of the outlet under gravity flow conditions. When the water in the manhole rises above the top of the outlet pipe, the manhole is said to be "surcharged."

Surface Loading (water) n One of the guidelines for the design of settling tanks and clarifiers in treatment plants. Used by operators to determine if tanks and clarifiers are hydraulically (flow) over or underloaded. Also called OVERFLOW RATE.

Surface Runoff (water) n ☒ The precipitation that cannot be absorbed by the soil and flows across the surface by gravity. ☐ The water that reaches a stream by traveling over the soil surface or falls directly into the stream channels, including not only the large permanent streams but also the tiny rills and rivulets. 3) Water that remains after infiltration, interception, and surface storage have been deducted from total precipitation.

Surfaced Defect (water) n A break or opening in a sewer pipe where the covering soil has been washed away and the opening or break is exposed on the ground surface.

Surfaced Void (water) n A dip or depression in the ground that appears when silting has taken place to a degree that a void is caused in the subsoil. Through successive caveins, the void reaches the surface of the ground.

Surfactant (water) n Abbreviation for surfaceactive agent. The active agent in detergents that possesses a high cleaning ability.

Surge Chamber (water) n A chamber or tank connected to a pipe and located at or near a valve that may quickly open or close or a pump that may suddenly start or stop. When the flow of water in a pipe starts or stops quickly, the surge chamber allows water to flow into or out of the pipe and minimize any sudden positive or negative pressure waves or surges in the pipe.

Suspended Growth Process (water) n Wastewater treatment processes in which the microorganisms and bacteria treating the wastes are suspended in the wastewater being treated. The wastes flow around and through the suspended growths. The various modes of the activated sludge process make use of suspended growth reactors. These reactors can be used for BOD removal, nitrification and denitrification.

Suspended Solids (water) n Solids that either float on the surface or are suspended in water, wastewater, or other liquids, and which are largely removable by laboratory filtering. □ The quantity of material removed from water in a laboratory test, as prescribed in STANDARD METHODS FOR THE EXAMINATION OF WATER AND WASTEWATER, and referred to as Total Suspended Solids Dried at 103-105°C.

Swab (water) n A circular sewer cleaning tool almost the same diameter as the pipe being cleaned. As a final cleaning procedure after a sewer line has been cleaned with a porcupine, a swab is pulled through the sewer and the flushing action of water flowing around the tool cleans the line.

Synergistic Reaction (water) n An interaction between two or more individual compounds which produces an injurious effect upon the body (or an organism) which is GREATER than either of the substances alone would have produced.

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T O C (water) n Total Organic Carbon. TOC measures the amount of organic carbon in water.

Tag Line (water) n A line, rope or cable that follows equipment through a sewer so that equipment can be pulled back out if it encounters an obstruction or becomes stuck. Equipment is pulled forward with a pull line.

Tap (water) n A small hole in a sewer where a wastewater service line from a building is connected (tapped) into a lateral or branch sewer.

Temporary Groundwater Table (water) n **CE** During and for a period following heavy rainfall or snow melt, the soil is saturated at elevations above the normal, stabilized or seasonal groundwater table, often from the surface of the soil downward. This is referred to as a temporary condition and thus is a temporary groundwater table. □ When a collection system serves agricultural areas in its vicinity, irrigation of these areas can cause a temporary rise in the elevation of the groundwater table.

Tender (const) n An offer which incorporates the sum of money, time and other conditions required to carry out the contract obligations in order to complete a project or a part of it consisting of specified works.

Tendering (const) n Tendering is the management and commercial function of determining the tender based upon the estimate and other details prepared by the contractor's estimator and other personnel.

Teratogenic (water) n Any substance which tends to cause birth defects after conception.

Terminal Cleanout (water) n When a manhole is not provided at the upstream end of a sewer main, a cleanout is usually provided. This is called a "terminal cleanout" or a FLUSHER BRANCH.

Terminal Manhole (water) n A manhole located at the upstream end of a sewer and having no inlet pipe. Also called a DEADEND MANHOLE.

Tertiary Treatment (water) n Any process of water renovation that upgrades treated wastewater to meet specific reuse requirements. May include general cleanup of water or removal of specific parts of wastes insufficiently removed by conventional treatment processes. Typical processes include chemical treatment and pressure filtration. Also called ADVANCED WASTE TREATMENT.

Thermal shock (const) n Force, arising out of thermal expansion or contraction, which causes disruption of a material on sudden heating or cooling

Thermal Stratification (water) n The formation of layers of different temperatures in a lake or reservoir. Also see STRATIFICATION.

Thermocline (water) n The middle layer in a thermally stratified lake or reservoir. In this layer there is a rapid decrease in temperature with depth. Also called the METALIMNION.

Thermohygrograph (const) n Device that measures and records simultaneously air temperature and relative humidity

Thermophilic Bacteria (water) n Hot temperature bacteria. A group of bacteria that grow and thrive in temperatures above 113°F (45°C). The optimum temperature range for these bacteria in anaerobic decomposition is 120°F (49°C) to 135°F (57°C). Aerobic thermophilic bacteria thrive between 120°F (49°C) and 158°F (70°C).

Thickening (water) n Treatment to remove water from the sludge mass to reduce the volume that must be handled.

Thief Hole (water) n A digester sampling well which allows sampling of the digester contents without venting digester gas.

Threshold Limit Value (TLV) (water) n The average concentration of toxic gas or any other substance to which a normal person can be exposed without injury during an average work week.

Threshold Odor (water) n The minimum odor of a water sample that can just be detected after successive dilutions with odorless water. Also called ODOR THRESHOLD.

Threshold Odor Number (TON) (water) n The greatest dilution of a sample with odorfree water that still yields a justdetectable odor.

Thrust Block (water) n A mass of concrete or similar material appropriately placed around a pipe to prevent movement when the pipe is carrying water. Usually placed at bends and valve structures.

Tide Gate (water) n A gate with a flap suspended from a freeswinging horizontal hinge, usually placed at the end of a conduit discharging into a body of water having a fluctuating surface elevation. The gate is usually closed because of outside water pressure, but will open when the water head inside the pipe is great enough to overcome the outside pressure, the weight of the flap, and the friction of the hinge. Also called a BACKWATER GATE. Also see CHECK VALVE and FLAP GATE.

Time Lag (water) n The time required for processes and control systems to respond to a signal or to reach a desired level.

Time Weighted Average (water) n The average concentration of a pollutant based on the times and levels of concentrations of the pollutant. The time weighted average is equal to the sum of the portion of each time period (as a decimal, such as 0.25 hour) multiplied by the pollutant concentration during the time period divided by the hours in the workday (usually 8 hours).

Total Contribution (water) n All water and wastewater entering a sewer system from a specific facility, subsystem or area. This includes domestic and industrial wastewaters, inflow and infiltration reaching the main collection system.

Total Dissolved Solids (TDS) (water) n All of the dissolved solids in a water. TDS is measured on a sample of water that has passed through a very fine mesh filter to remove suspended solids. The water passing through the filter is evaporated and the residue represents the dissolved solids. Also see SPECIFIC CONDUCTANCE.

Total Dynamic Head (TDH) (water) n When a pump is lifting or pumping water, the vertical distance (in feet) from the elevation of the energy grade line on the suction side of the pump to the elevation of the energy grade line on the discharge side of the pump.

Total Organic Carbon (TOC) (water) n TOC measures the amount of organic carbon in water.

Total Residual Chlorine (water) n The amount of available chlorine remaining after a given contact time. The sum of the combined available residual chlorine and the free available residual chlorine. Also see RESIDUAL CHLORINE.

Totalizer (water) n A device or meter that continuously measures and calculates (adds) a process rate variable in cumulative fashion; for example, total flows displayed in gallons, million gallons, cubic feet, or some other unit of volume measurement. Also called an INTEGRATOR.

Toxaphene (water) n A chemical that causes adverse health effects in domestic water supplies and also is toxic to freshwater and marine aquatic life.

Toxic (water) n A substance which is poisonous to a living organism.

Toxic Organic Management Plan (TOMP) (water) n A strategy for keeping track of all solvents delivered to a site, their storage, use and disposal. This includes keeping spent solvents segregated from other process wastewaters to maximize the value of the recoverable solvents, to avoid contamination of other segregated wastes, and to prevent the discharge of toxic organics to any wastewater collection system or the environment. The plan should describe measures to control spills and leaks and to ensure that there is no deliberate dumping of solvents. Also known as a SOLVENT MANAGEMENT PLAN.

Toxicity (water) n The relative degree of being poisonous or toxic. A condition which may exist in wastes and will inhibit or destroy the growth or function of certain organisms.

Traditional Contracting (const) n Is the method of construction procurement in which independent professionals (i.e. architects, engineers, quantity surveyors) are employed by the client to complete the design work. The client then enters into separate contract with a contractor to execute the designed construction. The contractor is selected on some basis of competition.

Tramp Oil (Free Oil) (water) n Oil that comes to the surface of a tank due to natural flotation.

Transmissivity (water) n A measure of the ability to transmit (as in the ability of an aquifer to transmit water).

Transpiration (water) n The process by which water vapor is released to the atmosphere by living plants. This process is similar to people sweating. Also see EVAPOTRANSPIRATION.

Trap (water) n ☞ In the wastewater collection system of a building, plumbing codes require every drain connection from an appliance or fixture to have a trap. The trap in this case is a gooseneck that holds water to prevent vapors or gases in a collection system from entering the building. ☐ Various other types of special traps are used in collection systems such as a GRIT TRAP or SAND TRAP.

Tread (const) n Horizontal face of a step. Its width usually is taken as the horizontal distance between risers.

Tremie (water) n A device used to place concrete or grout under water.

Trichloroethane (water) n An organic chemical used as a cleaning solvent that causes adverse health effects in domestic water supplies.

Trickling Filter (water) n A treatment process in which the wastewater trickles over media that provide the opportunity for the formation of slimes or biomass which contain organisms that feed upon and remove wastes from the water being treated.

Trickling Filter Media (water) n Rocks or other durable materials that make up the body of the filter. Synthetic (manufactured) media have been used successfully.

True Color (water) n Color of the water from which turbidity has been removed. The turbidity may be removed by double filtering the sample through a Whatman No. 40 filter when using the visual comparison method.

Trunk Sewer (water) n A sewer that receives wastewater from many tributary branches or sewers and serves a large territory and contributing population.

Trunk System (water) n A system of major sewers serving as transporting lines and not as local or lateral sewers.

Tube Settler (water) n A device that uses bundles of small-bore (2 to 3 inches or 50 to 75 mm) tubes installed on an incline as an aid to sedimentation. The tubes may come in a variety of shapes including circular and rectangular. As water rises within the tubes, settling solids fall to the tube surface. As the sludge (from the settled solids) in the tube gains weight, it moves down the tubes and settles to the bottom of the basin for removal by conventional sludge collection means. Tube settlers are sometimes installed in sedimentation basins and clarifiers to improve particle removal.

Tubercle (water) n A protective crust of corrosion products (rust) which builds up over a pit caused by the loss of metal due to corrosion.

Tuberculation (water) n The development or formation of small mounds of corrosion products (rust) on the inside of iron pipe. These mounds (tubercles) increase the roughness of the inside of the pipe thus increasing resistance to water flow (decreases the C Factor).

Turbid (water) n Having a cloudy or muddy appearance.

Turbidity (water) n The cloudy appearance of water caused by the presence of suspended and colloidal matter. In the waterworks field, a turbidity measurement is used to indicate the clarity of water. Technically, turbidity is an optical property of the water based on the amount of light reflected by suspended particles. Turbidity cannot be directly equated to suspended solids because white particles reflect more light than darkcolored particles and many small particles will reflect more light than an equivalent large particle.

Turbidity Meter (water) n An instrument for measuring and comparing the turbidity of liquids by passing light through them and determining how much light is reflected by the particles in the liquid. The normal measuring range is 0 to 100 and is expressed as Nephelometric Turbidity Units (NTUs).

Turbidity Units (water) n Turbidity units are a measure of the cloudiness of water. If measured by a nephelometric (deflected light) instrumental procedure, turbidity units are expressed in nephelometric turbidity units (NTU) or simply TU. Those turbidity units obtained by visual methods are expressed in Jackson Turbidity Units (JTU) which are a measure of the cloudiness of water; they are used to indicate the clarity of water. There is no real connection between NTUs and JTUs. The Jackson turbidimeter is a visual method and the nephelometer is an instrumental method based on deflected light.

Turbulent Mixers (water) n Devices that mix air bubbles and water and cause turbulence to dissolve oxygen in the water.

Turnkey (const) n A turnkey contract is one where the client has an agreement with one single administrative entity, who provides the design and construction under one contract, and frequently effects land acquisition, financing, leasing, etc.

Two-Stage Filters (water) n Two filters are used. Effluent from the first filter goes to the second filter, either directly or after passing through a clarifier.

Two-stage Tender (const) n With a two-stage tender three or four contractors with appropriate experience are first separately involved in detailed discussions with the client's professional advisers regarding all aspects of the project. Price competition is introduced in the second stage.

Two-Way Cleanout (water) n An opening in pipes or sewers designed for rodding or working a snake into the pipe in either direction. Twoway cleanouts are most often found in building lateral pipes at or near a property line.

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Ultrafiltration (water) n A membrane filter process used for the removal of some organic compounds in an aqueous (watery) solution.

Unconsolidated Formation (water) n A sediment that is loosely arranged or unstratified (not in layers) or whose particles are not cemented together (soft rock); occurring either at the ground surface or at a depth below the surface. Also see CONSOLIDATED FORMATION.

Undermined (water) n ☒ A condition that occurs when the bedding support under a pipe or manhole has been removed or washed away. Conditions leading to or causing this are believed to be the presence of excess water during backfill. Other causes are horizontal boring operations, excavations adjacent to the pipe or manhole and exfiltration or infiltration at drop joints. ☐ When flow through a broken section of pipe carries away soil around the break leaving a void or empty space, the surfaces over the void are said to be "undermined."

Undisturbed Soil (water) n Soil, at any depth, which has not been excavated or disturbed by excavation or construction.

Uniformity Coefficient (water) n The ratio of (1) the diameter of a grain (particle) of a size that is barely too large to pass through a sieve that allows 60 percent of the material (by weight) to pass through, to (2) the diameter of a grain (particle) of a size that is barely too large to pass through a sieve that allows 10 percent of the material (by weight) to pass through. The resulting ratio is a measure of the degree of uniformity in a granular material such as filter media.

Upper Explosive Limit (water) n The point at which the concentration of a gas in air becomes too great to allow an explosion upon ignition due to insufficient oxygen present.

Upper Flammable Limit (water) n The point at which the concentration of a gas in air becomes too great to sustain a flame upon ignition due to insufficient oxygen present.

Upset (water) n An upset digester does not decompose organic matter properly. The digester is characterized by low gas production, high volatile acid/alkalinity relationship, and poor

liquidsolids separation. A digester in an upset condition is sometimes called a "sour" or "stuck" digester.

Upstand (const) n Portion of roof covering turned up against a vertical surface, yet not necessarily tucked into a groove

Upstream (water) n The direction against the flow of water; or, toward or in the higher part of a sewer or collection system.

U-Tube (water) n œ A pipe shaped like a U that is constructed in a force main to raise the dissolved oxygen concentration in the wastewater. \square Utube manometers are used to indicate the pressure of a gas or liquid in a contained area, such as a pipeline or storage vessel.

Vac-All (water) n Equipment that removes solids from a manhole as they enter the manhole from a hydraulic cleaning operation. Most of the wastewater removed from the manhole by the operation is separated from the solids and returned to the sewer.

Vault (water) n A small box-like structure that contains valves used to regulate flows.

Vector (water) n An insect or other organism capable of transmitting germs or other agents of disease.

Vegetable Wastes (water) n Vegetable matter entering a collection system. This term is usually used to distinguish such types of waste from animal, industrial, commercial and other types of waste solids.

Velocity Head (water) n The energy in flowing water as determined by a vertical height (in feet or meters) equal to the square of the velocity of flowing water divided by twice the acceleration due to gravity ($V^2/2g$).

Veneered Wall (const) n A wall having a facing of masonry or other material securely attached to a backing, but not so bonded as to exert a common reaction under load.

Venturi Meter (water) n A flow measuring device placed in a pipe. The device consists of a tube whose diameter gradually decreases to a throat and then gradually expands to the diameter of the pipe.

The flow is determined on the basis of the difference in pressure (caused by different velocity heads) between the entrance and throat of the Venturi meter.

Viscosity (water) n A property of water, or any other fluid, which resists efforts to change its shape or flow. Syrup is more viscous (has a higher viscosity) than water. The viscosity of water increases significantly as temperatures decrease. Motor oil is rated by how thick (viscous) it is; 20 weight oil is considered relatively thin while 50 weight oil is relatively thick or viscous.

V-Notch Weir (water) n A triangular weir with a "V" notch calibrated in gallons per minute readings. By holding the weir in a pipe with rubber seals forcing a flow to pass through the "V," a measure of the gallonage flowing through the pipe can be read on the basis of the depth of water flowing over the weir.

Void (const) n (in the context of cellular materials, such as concrete) cavity formed either intentionally or unintentionally

Void (soil) n A pore or open space in rock, soil or other granular material, not occupied by solid matter. The pore or open space may be occupied by air, water, or other gaseous or liquid material. Also called an INTERSTICE, PORE, or void space.

Volatile (water) n ☒ A volatile substance is one that is capable of being evaporated or changed to a vapor at relatively low temperatures. Volatile substances also can be partially removed by air stripping. ☐ In terms of solids analysis, volatile refers to materials lost (including most organic matter) upon ignition in a muffle furnace for 60 minutes at 550°C. Natural volatile materials are chemical substances usually of animal or plant origin. Manufactured or synthetic volatile materials such as ether, acetone, and carbon tetrachloride are highly volatile and not of plant or animal origin. Also see NONVOLATILE MATTER.

Volatile Acids (water) n Fatty acids produced during digestion which are soluble in water and can be steamdistilled at atmospheric pressure. Also called organic acids. Volatile acids are commonly reported as equivalent to acetic acid.

Volatile Liquids (water) n Liquids which easily vaporize or evaporate at room temperature.

Volatile Matter (water) n Matter in water, wastewater, or other liquids that is lost on ignition of the dry solids at 550°C.

Volatile Solids (water) n Those solids in water or other liquids that are lost on ignition of the dry solids at 550°C.

Volumetric (water) n A measurement based on the volume of some factor. Volumetric titration is a means of measuring unknown concentrations of water quality indicators in a sample BY DETERMINING THE VOLUME of titrant or liquid reagent needed to complete particular reactions.

Volumetric Feeder (water) n A dry chemical feeder which delivers a measured volume of chemical during a specific time period.

Volute (water) n The spiralshaped casing which surrounds a pump, blower, or turbine impeller and collects the liquid or gas discharged by the impeller.

Vortex (water) n A revolving mass of water which forms a whirlpool. This whirlpool is caused by water flowing out of a small opening in the bottom of a basin or reservoir. A funnelshaped opening is created downward from the water surface.

W, X, Y, Z

W A S (water) n Waste Activated Sludge, mg/L. The excess growth of microorganisms which must be removed from the process to keep the biological system in balance.

Walers (water) n Horizontal shoring members, usually square, rough cut timber, that are used to hold solid sheeting, braces or vertical shoring members in place. Also called STRINGERS.

Wall (const) n Vertical or near-vertical construction for enclosing space or retaining earth or stored materials.

Warp (const) n Change from a straight or true plane condition

Wasteline Cleanout (water) n An opening or point of access in a building wastewater pipe system for rodding or snake operation.

Wasteline Vent (water) n Most plumbing codes require a vent pipe connection of adequate size and located downstream of a trap in a building wastewater system. This vent prevents the accumulation of gases or odors and is usually piped through the roof and out of doors.

Wastewater (water) n A community's used water and watercarried solids (including used water from industrial processes) that flow to a treatment plant. Storm water, surface water, and groundwater infiltration also may be included in the wastewater that enters a wastewater treatment plant. The term "sewage" usually refers to household wastes, but this word is being replaced by the term "wastewater."

Wastewater Collection System (water) n The pipe system for collecting and carrying water and watercarried wastes from domestic and industrial sources to a wastewater treatment plant.

Wastewater Facilities (water) n The pipes, conduits, structures, equipment, and processes required to collect, convey, and treat domestic and industrial wastes, and dispose of the effluent and sludge.

Wastewater Treatment Plant (water) n CE An arrangement of pipes, equipment, devices, tanks and structures for treating wastewater and industrial wastes. □ A water pollution control plant.

Water Audit (water) n A thorough examination of the accuracy of water agency records or accounts (volumes of water) and system control equipment. Water managers can use audits to determine their water distribution system efficiency. The overall goal is to identify and verify water and revenue losses in a water system.

Water Cycle (water) n The process of evaporation of water into the air and its return to earth by precipitation (rain or snow). This process also includes transpiration from plants, groundwater movement, and runoff into rivers, streams and the ocean. Also called the **HYDROLOGIC CYCLE**.

Water Hammer (water) n The sound like someone hammering on a pipe that occurs when a valve is opened or closed very rapidly. When a valve position is changed quickly, the water pressure in a pipe will increase and decrease back and forth very quickly. This rise and fall in pressures can cause serious damage to the system.

Water Lance (water) n A pipe on the end of a water hose that is used to hydraulically jet out solids.

Water Table (water) n The upper surface of the zone of saturation of groundwater in an unconfined aquifer.

Water vapor (const) n Creates a pressure just like any other gas. Cold air has a relatively low vapor pressure, while warm air (with larger amounts of water vapor) has a greater pressure. The difference in pressure cause the vapor to penetrate building materials in the direction from high to low vapor pressure

Watershed (water) n The region or land area that contributes to the drainage or catchment area above a specific point on a stream or river.

Wayne Ball (water) n A spirally grooved, inflatable, semihard rubber ball designed for hydraulic cleaning of sewer pipes. See **BALLING** and **SEWER BALL**.

Weather (const) n To degrade under the action of the weather. Also used to describe the inclusion of a slight slope to throw off rainwater, eg. on a sill

Weathering (const) n Action of weather in producing degradation; aging 2) Alternatively used as a noun to describe a slight construction slope designed to throw off rainwater

Weir (water) n Æ A wall or plate placed in an open channel and used to measure the flow of water. The depth of the flow over the weir can be used to calculate the flow rate, or a chart or conversion table may be used to convert depth to flow. □ A wall or obstruction used to control flow (from settling tanks and clarifiers) to ensure a uniform flow rate and avoid shortcircuiting.

Weir Loading (water) n A guideline used to determine the length of weir needed on settling tanks and clarifiers in treatment plants. Used by operators to determine if weirs are hydraulically (flow) overloaded.

Weir, Proportional (water) n A specially shaped weir in which the flow through the weir is directly proportional to the head.

Well Isolation Zone (water) n The surface or zone surrounding a water well or well field, supplying a public water system, with restricted land uses to prevent contaminants from a not permitted land use to move toward and reach such water well or well field. Also see WELLHEAD PROTECTION AREA (WHPA).

Well Log (water) n A record of the thickness and characteristics of the soil, rock and waterbearing formations encountered during the drilling (sinking) of a well.

Well Point (water) n A hollow, pointed rod with a perforated (containing many small holes) tip. A well point is driven into an excavation where water seeps into the tip and is pumped out of the area. Used to lower the water table and reduce flooding during an excavation.

Well Protection Area (water) n The surface and subsurface area surrounding a water well or well field, supplying a public water system, through which contaminants are reasonably likely to move

toward and reach such water well or well field. Also see WELL ISOLATION ZONE.

Wet Oxidation (water) n A method of treating or conditioning sludge before the water is removed. Compressed air is blown into the liquid sludge. The air and sludge mixture is fed into a pressure vessel where the organic material is stabilized. The stabilized organic material and inert (inorganic) solids are then separated from the pressure vessel effluent by dewatering in lagoons or by mechanical means.

Wet Well (water) n A compartment or tank in which wastewater is collected. The suction pipe of a pump may be connected to the wet well or a submersible pump may be located in the wet well.

Wetted Perimeter (water) n The length of the wetted portion of a pipe covered by flowing wastewater.

Wholesome Water (water) n A water that is safe and palatable for human consumption.

Winders (const) n Steps with tapered treads in sharply curved stairs.

Wire-To-Water Efficiency (water) n The combined efficiency of a pump and motor together. Also called the OVERALL EFFICIENCY.

Wrinkle (const) n Slight ridge caused by folding, rumpling or creasing. In roofing may refer to the common wrinkled pattern that forms over the joints of insulation in insulated roof systems. Similar to buckling

Wye Strainer (water) n A screen shaped like the letter Y. The water flows in at the top of the Y and the debris in the water is removed in the top part of the Y.

Wythe (const) n Each continuous vertical section of a wall one masonry unit in thickness.

Yield (const) n Permanent deformation which a material undergoes when it is stressed beyond its elastic limit

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