# GCIS Glossary of Terms

Certain terms and phrases are used in the home inspection and construction industry to define specific building conditions. If you are unfamiliar with some of the terms in our inspection report, please refer to the appropriate section of this Glossary for clarification.

## GENERAL TERMS

**ACCESSIBLE COMMON AREAS**: Refers to condominiums, co-ops and TIC's where portions of the building are owned in common. Areas inspected (other than the unit itself) may include immediately adjacent hallways, roofs, grounds and storage areas where access is provided. The inspection may also be limited to the interior of the subject unit itself.

**AHJ:** Authority Having Jurisdiction. This is a somewhat vague term, as it can refer to any number of government officials. With regard to buildings and construction, it most often refers to the Building Official or Building Inspector for the city or county where the building is located.

**ASHI**: American Society of Home Inspectors, located at 932 Lee Street, Suite 101, Des Plaines, Illinois, 60016. The largest and oldest professional organization of home inspectors whose purposes are to: (1) inform the public of the specific services that may be expected from a professional home inspection performed by a member of ASHI; (2) identify those components, systems, and conditions which are to be inspected; and (3) define and clarify certain terms, conditions, and limitations relating to home inspections performed according to the ASHI Standards. These guidelines are contained in the ASHI Standards of Practice and the Code of Ethics , which can be obtained online at www.ashi.org.

**BUILDING CODE:** Building codes are sets of rules that establish standards for the construction of residential and commercial buildings. There are different types of codes, most commonly known as Building, Plumbing, Electrical, Mechanical, Fire, Housing and so forth. These codes are developed by independent organizations comprising of Code Officials, and they are typically updated every three years. The codes are then adopted by the local jurisdiction, though each jurisdiction may choose to enhance the codes with amendments as they see fit. Building Codes are sometimes viewed as a "minimum" standard, though this is most often used as a bit of puffery by contractors who like to advertise that their work exceeds code standards. In fact, most builders use the codes as a guide to proper construction methods and materials.

**BUILDING CODES and HOME INSPECTIONS:** Home Inspectors do not, as a rule, refer to codes in the course of their work. The reason for this is that being an expert in all of the applicable codes is an unrealistic expectation. It is also not within the scope of a home inspection for the inspector to know when an alteration was made and which code was in effect at that time. (See Building Code Changes below) During the course of their inspection, Home Inspectors may point out certain items that do not conform to current codes or standards. This is usually in the context of concerns about safety. For instance, it may be noted that a guardrail in a Victorian home is too low and out of compliance with current safety standards. There may be no official requirement to upgrade the railing (unless it is being replaced), but it may be a good idea as a means of reducing a potential hazard in the home.

**BUILDING CODE CHANGES:** Since building codes change on a regular basis, buildings built to comply with the codes that were in effect at the time may no longer be in compliance with the current code. Fortunately, codes have a built-in allowance for these changes referred to as "grandfathering". As long as the item in question was in compliance with the code at the time, it is not necessary to update it each time the code changes. However, during the course of remodeling, or when a component is replaced, it is usually required to update the affected component or construction project to comply with the current codes. There are exceptions to this, often having to do with the practicality of making such updates in a

system or confined space where it is simply not possible without extraordinary additional changes. Exceptions are sometimes made out of deference to architecturally significant features. This is often the case with older stairs and guardrails.

**CONTRACTOR:** Anyone performing construction work in California that totals $500 dollars or more in labor and materials must be licensed by the California State License Board. There doesn't seem to be much that can get done in a modern home for less that $500 these days, so you should check that the person or company you hire is properly licensed for the work that they propose to do. There are many different classifications of contractors, but they fall under three general categories. A=General Engineering Contractor, B= General Building Contractor, C= Specialty Contractor. Most of the time when someone refers to a "contractor", they are talking about a General Building Contractor for comprehensive work and remodeling, or a Specialty Contractor for plumbing, electrical, heating and a number of other types of work. It is important to know that in order to call oneself a contractor, the individual or company must hold a valid license. Without a license, it is not possible to enter into a legally binding contract with a building owner in California. If you have a problem with your unlicensed "contractor", you may have little or no recourse, as you do not have a valid contract with that individual or company. The courts are not particularly sympathetic to homeowners who plead ignorance on this issue.

**DISMANTLE:** To take apart or remove any component, device or piece of equipment that is bolted, screwed, or fastened by any other means. During the course of a home inspection dismantling is generally limited to opening covers or equipment that would be dismantled by a homeowner in the course of normal household maintenance. More extensive dismantling is not required by the ASHI Standards of Practice.

**ENGINEER:** The most common types of Professional Engineers referred to in construction are:

**STRUCTURAL:** Primarily concerned with the design and evaluation of a buildings structure, which includes the foundation as well as the frame.

**GEO-TECHNICAL:** Specializes in evaluation of soil conditions and its ability to support a structure.

**CIVIL:** Specializes in site drainage, and design of environmental projects. Can also address the design and evaluation of the building structure.

**HOME INSPECTION:** Defined in California law (Business & Professions Code 7195) as "a non-invasive, physical examination, performed for a fee in connection with a transfer, as defined in subdivision (e), of real property, of the mechanical, electrical, or plumbing systems or the structural and essential components of a residential dwelling of one to four units designed to identify material defects in those systems, structures and components. 'Home inspection' also includes any consultation regarding the property that is represented to be a home inspection or any confusingly similar term."

**HOUSING INSPECTION DIVISION (HID):** A department within the San Francisco Bureau of Building Inspection responsible for code enforcement in buildings of three or more residential units.

**MATERIAL DEFECT:** As defined in California law, "a condition that significantly affects the value, desirability, habitability, or safety of the dwelling. Style or aesthetics shall not be considered in determining whether a system, structure, or component is defective."

**NON-CONFORMING**: (Also see Building Code Changes) Refers to a condition that does not meet standards of accepted building practice. This may also be in violation of local codes.

**RECOMMENDATIONS and SUGGESTIONS:** Recommendations for repair or treatment of a condition are provided to inform you about the condition of the property and the suggested course of remediation. The actual repair or treatment should be prescribed by a specialist in the appropriate trade, typically a Licensed Contractor.

**REPRESENTATIVE NUMBER**: Refers to a sampling of multiple items or a portion of a system in order to make a reasonable general conclusion about the system. To inspect a representative number would mean inspecting one such element per room, such as one electrical outlet and one set of windows in each room.

**STRUCTURAL PEST CONTROL INSPECTORS**: Commonly referred to as Termite Inspectors or Pest Control Operators (PCO). This is a separate license administered by the Department of Consumer Affairs of the state of California. The term "structural pests" refers to any wood-destroying organism, such as termites, fungus, carpenter ants, beetles and the like. Most Home Inspectors are not Pest Control Inspectors, and they are therefore prohibited from making assessments regarding the presence or absence of structural pests. Only pest control inspection companies are licensed to issue Structural Pest Control Reports (SPCR), apply pesticides and issue clearances for completed work. We always recommend a separate structural pest control inspection. Among other things, such an inspection will determine the extent of wood-destroying organisms, earth/wood contact and wood decay conditions in the structure.

**TYPICAL FOR AGE:** All components of a building can be expected to eventually wear out. Many items are evaluated to determine if the visible wear is within the norm for its estimated age. Based on the experience of the inspector, wear may be judged as typical depending on the estimated age, quality or environmental exposure of the component.

## FOUNDATION SYSTEM

**BELOW-GRADE:** See **GRADE**

**CRAWLSPACE**: Those areas generally associated with attics or sub-basements. ASHI standards do not require inspection of crawl areas less than three feet in height or where conditions are potentially hazardous.

**CURTAIN DRAIN, FRENCH DRAIN**: A drainage trench around the exterior of the foundation, typically filled with crushed stone and perforated pipe which leads water around or away from the building. There are a number of variations of this type of drain, utilizing different materials. They can be located inside or outside the foundation perimeter, and they may include a sump pump.

**EFFLORESCENCE:** Chemical (sulfate) residue associated with retaining or foundation walls, indicating presence of moisture. Generally, this is white, powdery mineral deposits found on the surface of the concrete or brick. This will not indicate the quantity of moisture present. This condition may relate to the porosity of the masonry, and it may indicate a potential for concrete corrosion. (See Moisture Deterioration)

**EXPANSIVE SOILS:** Soils with a high clay content that may expand and contract significantly as moisture levels fluctuate. This can lead to settlement of the structure unless the foundation has been specifically designed to compensate for the soil conditions. (Evaluation of soil types is beyond the scope of a Home Inspection.)

**FOOTINGS/FOUNDATIONS:** Generally constructed of concrete or masonry. The foundation supports the structure against vertical and lateral loads. Footing refers to the bottom portion of the foundation, not visible below grade.

**FOUNDATION CONDITIONS:**

This is not an exact science, particularly when dealing with older foundations. Foundations age, and standards for what is acceptable vary over time and in relation to expectations. The following broad classifications for foundation condition are commonly used, but actual conditions rarely fall neatly into a single category. Foundation conditions can vary from one location to another within the same building, and there is a wide range of judgment-calls by different inspectors. Some inspectors may consider all brick foundations as obsolete and in need of replacement. Others may see such a foundation as serving its original intended purpose and perfectly serviceable, regardless of its ability to provide earthquake bracing. What is important is understanding the overall quality, level of deterioration and the serviceability of the foundation going forward.

**Good:** Contemporary, steel-reinforced, concrete foundation. Generally of post 1949 construction. No indications of major settlement, rotation, large cracks and other signs of deterioration.

**Serviceable:** Does not meet contemporary standards of design. May be concrete or masonry, and lacks steel reinforcement or may contain deteriorated reinforcement. May have signs of minor or moderate deterioration.

Offers little resistance to lateral forces.

**Poor:** Obvious signs of advanced deterioration and/or settlement. Not designed for resistance of lateral forces. Ideally, replacement with a contemporary foundation is recommended.

**FOUNDATION TYPES:**

**Brick:** Consists of individual bricks levelled and set with mortar. Not reinforced, and subject to failure during earthquakes. Generally considered as obsolete in seismic zones 2-4, which includes all of California. Replacement or significant reinforcement should be considered for long-term durability of the structure.

**Concrete**: Poured in-place concrete. Older types typically have little or no steel reinforcement, and they generally have shallow footings that are more vulnerable to settlement.

**Concrete block, CMU**: Masonry blocks, commonly mislabeled as “cinder blocks”, set in place on poured concrete footings. Steel reinforcement can be laid into the blocks, and then the cavities are grouted (filled-in) to create a solid wall. If the CMU is unfilled (hollow block), it will have very little ability to resist earthquake damage. It is not always possible to determine if a block wall is filled without destructive testing (drilling) or specialized equipment.

**Grade beam:** Generally used in hillside locations. Deep concrete piers are connected together by concrete beams that have been formed at grade-level. This interconnected system helps to prevent slippage due to soil movement or erosion.

**Mat foundation:** Most often used in large buildings located over poor-quality soil. Includes piers beneath the slab that are connected together by means of the concrete slab.

**Post and Pier:** A non-continuous foundation of individual supports on masonry blocks or footings. Unless combined with a continuous perimeter foundation, this type of foundation is especially vulnerable to failure during earthquakes.

**Slab on grade:** Concrete slab with thickened sections below areas where load-bearing walls are placed.

**GRADE/GRADE FAULT:** Grade refers to the surface of the earth or slab. When the top of a foundation is below the grade level, this is known as a "below-grade" or "grade-fault" condition. This creates a condition of excess moisture that may lead to decay in the mudsills, due to excess moisture and the ready access by wood-destroying organisms. Correcting this condition typically requires increasing the height of the foundation by capping it with concrete and installing new mudsills and anchor bolts.

**HYDROSTATIC PRESSURE:** The pressure exerted by water under a basement floor or against the foundation wall from the outside.

**MOISTURE BARRIER:** Any material, such as treated paper or plastic, that retards the passage of moisture. . The term “barrier” is somewhat misleading, as both vapor permeable and vapor impermeable membranes are available.

**MOISTURE DETERIORATION/CONCRETE CRUMBLING:** Also known as **CONCRETE CORROSION**. A common condition in older concrete, (Typically from 1900-1930) with symptoms ranging from minor dusting or flaking of the surface of the concrete, to severe crumbling and structural failure. Although the deterioration is caused by the passage of moisture and sulfates through the concrete, the deficiency is in the original concrete mix. It may be due to inadequate cement content, contamination of the aggregate used, or excessive water in the mix. The deterioration process is very slow, and may vary considerably throughout the foundation. As it becomes very advanced, it may be necessary to replace the concrete.

**MUDSILL:** Often called “sills”, this is the plank that rests on top of the foundation. It is the interface between the foundation and the wood structure of the building, and it serves several important functions. The wall framing and floor joists rest upon the mudsills, and the connection between the mudsills and the foundation is critical for earthquake bracing. Since it is often exposed to moisture, it must consist of decay-resistant material. Traditionally, this was clear-heart redwood, but this is no longer used, as high-quality redwood is no longer available and it is not as strong as other wood species. Modern mudsills are pressure-treated with chemicals to resist wood-destroying organisms.

**ROTATION:** Foundation settlement characterized by a tilting movement. Many perimeter foundation designs have most of the weight of the building structure concentrated at the outer edge. If the foundation is not adequately supported by the soil, the uneven loading can allow it to tip (rotate) to the exterior.

**SILLS (See Mudsills)**

**SLAB/RATPROOFING:** Either the concrete floor in the basement or subarea, or the thin layer of concrete applied over the soil in the subarea. The thin coating serves to prevent rodent infestation and reduce moisture intrusion. It is not always present in older construction, but is required in new buildings. Plastic membranes may also be used to seal the soil and reduce moisture levels in the subarea.

**SPLASH BLOCK:** A concrete or fiberglass pan placed under a downspout to catch water, dissipate its force, and lead it away from the foundation wall.

**SUMP PUMP/DE-WATERING PUMP:** An automatically activated pump located below grade level to remove excess ground water**.** Sump pumps may consist of a simple “homemade” arrangement of a 5-gallon bucket with a pump connected to a garden hose. They may also be sophisticated systems with dual chambers to prevent silting, backup pumps and backup power supplies with alarm systems to let you know of a malfunction. This type of system is usually used when it is critical that the area be protected against excess moisture.

**SURFACE DRAINAGE:** The surrounding landscape should direct water away from the foundation of the house to help minimize settlement due to fluctuating moisture levels in the soil. However, sub-surface moisture conditions can vary considerably from what is visible above, and evaluation of such is typically beyond the scope of a Home Inspection.

**VENTILATION:** Vents installed in attics and crawl spaces to allow air circulation and prevent moisture build-up and subsequent decay. Ventilation requirement vary widely, depending on climate conditions, soil conditions and the type of construction. Under normal conditions in the SF Bay Area, ventilation is not a major concern.

## STRUCTURAL SYSTEM

**CELLULOSE DEBRIS:** Generally referred to as miscellaneous wood scraps, lumber, firewood or general garden debris that has the potential to attract wood-destroying organisms. Miscellaneous debris can also be attractive to small animals as nesting material.

**EARTH/WOOD CONTACT:** A separation between the wooden structure and the soil or concrete slab should be maintained. A 12" minimum separation is ideal, but this is usually not the case in older structures. Inadequate separation may lead to deterioration of the wood framing due to moisture or infestation by wood-destroying organisms. This condition is of specific concern to the Structural Pest Control Inspectors.

**EIFS:** Exterior Insulation and Finishing System. It is also sometimes referred to as synthetic stucco. This siding product has been around for many years, but its greatest use has been in commercial construction. Because of its versatility, architects often specify it for complex exteriors with multiple decorative features. In its simplest form, it consists of a layer of rigid foam insulation applied to the exterior of the structure. The foam is then covered with a reinforcing fabric and multiple layers of textured coating that also includes the final color coat. Early EIFS systems became infamous due to widespread failures that allowed water intrusion and subsequent decay in wood structures. If you have seen stories about houses that required major repairs in the hundreds of thousands of dollars, or even had to be torn down, these often

involved houses clad with EIFS. The problems with EIFS were two-fold. It is different from conventional stucco, in that its waterproof membrane is the exterior surface, and there is no waterproof membrane between the insulation and the wood framing. With conventional stucco, the moisture barrier is between the stucco and the wood. This concept seemed like a good idea, but it relied on near perfection at the time of installation. Every penetration (windows, doors, pipes, vents) in the membrane presented multiple potential failure points where water could enter. Installers require specialized training in order to ensure a completely reliable application. As the complexity of the architecture increased, the potential for failure greatly expands. As with many siding systems, the devil is in the details, and the details are no longer visible for inspection once the siding has been installed. The EIFS system has gone through significant changes in recent years, most notably the placement of a drainage plane between the foam and the structure. This ensures that any water that may pass beyond the foam is allowed to drain to the ground before contacting the wood. Modern EIFS systems are considered to be generally reliable due to these improvements.

**ENGINEERED LUMBER:** Increasingly, wood-frame buildings incorporate factory-made framing members. These are beams and joists that are made of smaller pieces of wood that have been glued together under tremendous pressures. Because they are designed and manufactured under controlled conditions, they are significantly stronger than “natural” framing of similar dimensions. Engineered lumber has allowed designers to create spaces that were previously impractical without the use of expensive steel framing. Another advantage of engineered lumber is its predictability. Every piece is just as straight and strong as the next, eliminating concerns about knots and warping or checking in conventional lumber. Because engineered lumber relies on glue, it does require greater attention to protecting it from water exposure.

**ENGINEERED SIDING:** Similar to engineered lumber, but produced in plank or sheet form. Used to clad the exterior of the building. Manufactured siding has been around for a very long time, and there have been some disastrous products on the market. Because most of it consists of wood particles glued together under pressure, it can be vulnerable to moisture-related damage. Defective products and lack of proper maintenance have resulted in infamous cases of siding failure, though most modern products today seem to have benefited from this history and are now quite serviceable. Some are better than any wood siding that is normally available.

**RAINSCREEN SIDING SYSTEMS:** Architects and designers have begun using exterior cladding systems in residential applications that were previously only seen in larger commercial projects. Siding products can be attached to the exterior with stand-offs that create an air-space between the siding and a waterproof membrane that has been applied to the building structure. This creates a capillary break that allows water to drain downward and away from the structure, reducing the potential for moisture to penetrate the exterior envelope. Once the cladding is in place, the membrane is almost completely inaccessible for visual inspection.

**SECOND MEANS OF EGRESS:** This refers to a second means of entering and exiting a sleeping room. Requirements for a second egress or stairway from bedrooms have been relaxed in recent years. Refer to Emergency Escape below.

**EMERGENCY ESCAPE:** Requirements for access to a second exit staircase above the second story in single family homes have been relaxed in recent years. However, all bedrooms are still required to have a means of emergency escape in case of fire. This is typically provided by a window of approved minimum size and location through which a first-responder can enter the room and rescue its occupants. Many older buildings do not meet contemporary requirements for emergency escape, and replacement windows that reduce the size of the window opening often violate the minimum requirements.

**HANDRAILS/GUARDRAILS:** Handrails and guardrails are required around surfaces elevated more than 30” above the ground, and on stairs of four or more steps. There are very specific minimum requirements for the design of railings in order to reduce the potential falling hazard. Often, railings in older buildings do not meet current standards, but they may be grandfathered-in as allowable, even when major remodeling is undertaken. Your inspection report may point out deteriorated or missing railings, but will not necessarily recommend replacement of railings that do not comply with all current standards. This is particularly true in cases where it is not physically possible to upgrade the railings due to space restraints or where it may compromise an architecturally significant design.

**SEISMIC REINFORCEMENT:** Measures taken to strengthen a building against the effects of earthquakes. Often, seismic reinforcement measures are not visible for inspection because they are covered by finishes. Modern buildings

are braced according to the Building Code requirements that were in place when the plans were approved. Older buildings should be retrofitted to reduce their potential for damage, but there is no guarantee of complete building safety during an earthquake. During a Home Inspection of an older building, we will look for evidence of retrofit work. It is important to know that there are virtually no commonly accepted standards for this work, and the term "retrofit" may be applied to a wide variety of things. Much of the time, retrofit work may only include a partial upgrade, applied to an area that was easily accessible, but not the rest of the building. Also, not all buildings are created equal, and they are not located on soils of equal quality. Basic retrofit features are observed and noted during a Home Inspection, and recommendations for conventional upgrades may be included. As the building becomes more complex, or if there are local soil conditions that present increased risk for damage, a Structural Engineer may be required to design an appropriate retrofit plan. The scope of work can often be determined by budgetary restraints as much as anything else.

**ANCHOR BOLTS:** Bolts placed in the foundation to secure the structure to the foundation. These have been standard construction practice since the late 1940's, but can be added in older construction. The size and spacing of the bolts may vary, depending on the size of the structure and the specifications of the structural engineer.

**FRAMING CONNECTORS:** Metal hardware used to secure framing members to each other. There is a large variety of connectors available, each designed for specific applications. Most of the time these connectors are covered from view by wall finishes.

**GARAGE DOOR BRACING:** The garage door opening and other large openings (See Soft Story, below) constitute weakened areas in a structural wall. Reinforcing these openings against lateral forces can often be accomplished by strengthening the wall adjacent to the opening plywood panels, which can be relatively inexpensive. In some buildings it may be necessary to install a steel moment-frame with welded connections. This is considerably more expensive, and it is typically not done unless there is no reasonable alternative.

**SOFT-STORY or WEAK-STORY**: Large openings in walls create weakness that leave a building more vulnerable to lateral forces. Think of how strong a cardboard box is when fully closed and taped shut. If you cut large holes in any of the sides of the box, that side is less able to resist deformation when you push it one way or the other. The taller and narrower that box is, the more dramatic this effect becomes. Buildings that have garage doors, front entry stairs, tunnel entries, or multiple and large window openings are possible soft-story buildings. Modern structural design compensates for this with engineered bracing panels (sheer walls) and steel moment-frames. Retrofitting these features into an existing structure can sometimes be simple and inexpensive, but often it can be a major expense.

**SUBAREA WALL BRACING:** Subarea walls, also known as cripple walls, may be strengthened against racking and failure by installing plywood panels on the framing. Proper installation of the plywood is essential to ensure maximum effect.

**SETTLEMENT:** Out-of-level floors and out-of-square door and window openings may be caused by settlement of the foundation or deflection of the framing. Virtually all older structures have some degree of differential settlement. There is no absolute standard of how much settlement is acceptable. If the settlement appears to be excessive, it may require further inspection by a structural engineer.

**SHEATHING:** Flat substructure that supports waterproof roof and siding membranes. In newer buildings, this is generally plywood panels or OSB sheet material. In older buildings, 1x6 or 1x8 planks were typically used. Planks installed perpendicular to the framing provide less bracing than those installed diagonally. Some older homes use gypsum lath as sheathing. This material is similar to wallboard (Sheetrock), and it has relatively little shear value. Other older stucco homes may not have any sheathing at all. They rely on metal wire to secure the stucco to the framing. This is known as line-wire stucco, and it also has very little shear value.

**STRUCTURAL MODIFICATIONS:** Apparent alterations to the original structure. Any such alterations should be performed with a building permit and may also require design by a structural engineer. During a Home Inspection, significant visible alterations may be noted, but evaluation of the structural design is outside the scope of the inspection. A review of the building permit history and, in some cases, the structural plans is recommended to verify that the work has

been done with the required permits and inspections.

**UMB or URM BUILDING: Unreinforced masonry building**. A building with structural supports consisting of unreinforced brick or other masonry blocks. URM is subject to significant damage or complete collapse as a result of earthquake movements. Unreinforced masonry may also be used in other types of structures for non-structural “in-fill” or veneer. Local jurisdictions may require reinforcement of existing URM at the owner’s expense to minimize injury or death in occupied buildings during seismic events.

**WINDOW SASH:** The portion of a fixed or movable window into which the glass is set.

**WINDOW FRAME:** The portion of the window assembly that is fixed into the wall.

## ELECTRICAL SYSTEM

**ARC FAULT CIRCUIT INTERRUPTER: (AFCI)** These are special circuit breakers that are now required for most circuits in the home, except for those also protected by GFCI breakers. (They are required for new work, but not retroactively.) They are sensitive to the irregular electrical signal produced when a faulty wire or component is arcing due to poor insulation. This type of arcing may not cause a standard circuit breaker to trip, but it can allow wires to overheat and start a fire. AFCI breakers may not be compatible with older circuit breaker panels, requiring an upgrade to modern equipment.

**BONDING:** A conductor installed to bridge non-conductive equipment in order to ensure a continuous grounded connection between metal piping and other components. This is typically seen as a conductor clamped to gas and water lines at the water heater, and at grounding rods near the main service panel. Any metal surface that becomes energized will cause a short circuit that trips a circuit breaker or fuse if the metal is properly bonded and grounded.

**CIRCUIT BREAKER:** An overcurrent device located in a service panel. Its purpose is to shut off the power to the protected circuit when there is an overload. Overloaded circuits produce excess heat and may start a fire if not shut off. Once the fault has been corrected, the breaker can be reset.

**DEADFRONTS:** Intermediate cover in electrical service panel to prevent accidental contact with wiring inside and to contain arcing or fire if there is an overload.

**DOUBLE-TAPPING:** Installation of two or more conductors on one circuit breaker or fuse. Unless the lug is designed for two conductors, the conductors may loosen and result in arcing. Double-tapping may also lower the capacity of the circuits, resulting in nuisance overloads.

**FUSE:** An overcurrent device utilizing a conductor that burns out if overloaded in order to prevent overheating of wiring and potential fires. Once the fault is corrected, the fuse must be replaced. Fuse-Stat, S-type or tamper-proof fuses are the preferred type, as they prevent the installation of fuses with incorrect current ratings.

**GFCI** or **GFI:** Ground-fault circuit interrupter. Safety devices required to be installed to protect outlets in kitchens, garages, exterior outlets and bathrooms. This device is identified by two buttons, reading "test" and "reset" respectively. Most GFCI’s are located at the receptacle, but GFCI circuit breakers are also commonly used. A GFCI provides protection against shocks in the event that current is "leaking" into an appliance or the user's body. The GFCI is designed to shut off the power to the receptacle when there is an imbalance of current of 5 milliamperes.

**GROUNDED RECEPTACLES:** Grounding provides a safety feature that forces the circuit breaker to trip (or fuse to blow) in the event of a short-circuit, such as when an appliance becomes energized due to faulty wiring. Older, two-prong receptacles are not grounded. As codes evolved, grounding was initially required in kitchens and bathrooms and eventually in all receptacles. A grounded receptacle is typically identified by the presence of the third prong. However,

replacing a two-prong receptacle with a three-prong type does not create a grounded receptacle, unless the grounding conductor is already present in the outlet box and it is properly connected to the receptacle. Normally, the grounding conductor serves no function when there is no wiring fault. One method of upgrading older two-prong outlets to three-prong is to install a GFCI receptacle. These will provide shock hazard protection without being connected to a grounding conductor. However, this will not provide surge protection for certain types of equipment (e.g. surge protectors will not work). The only approved way to upgrade an older outlet to a grounded one is to run a new cable from the panel to the outlet and install a grounding receptacle.

**JUNCTION BOXES:** Plastic or metal electrical boxes, generally housing a number of wires. Covers on these boxes are frequently not replaced after repair and/or change of wiring. The covers are important, as they help to prevent fires if there is any arcing inside the box. Missing covers for junction boxes and outlet boxes should be replaced.

**KNOB & TUBE WIRING:** Older style of wiring utilizing porcelain insulating “knobs” and “tubes” to secure individual conductors to framing members. Most of this type of wiring is not grounded, though grounded knob and tube is often found in houses built in the 1960’s. Although generally considered safe, if it has not been improperly altered or damaged, some view this type of wiring as a potential fire hazard, and recommend replacement. Some insurance companies require replacement with modern wiring.

**NON-APPROVED EXTENSION CORDS:** Extension cords that have been permanently attached to the electrical system, stapled in place, or are extra-long present a potential for overheating and fires. Installation of permanent electrical outlets is generally recommended to reduce the need for extension cords.

**OVERFUSING:** Installation of larger capacity fuses or circuit breakers than are allowed for the size of wire in that circuit. This may allow for overloading and overheating of wiring.

**PHOTO-ELECTRIC (PV) SYSTEMS:** Usually referred to as “solar panels”, these include an array of panels that convert light energy to electrical energy. Most systems are known as “grid-tied” systems, which means that they are connected to the electrical system of the home and the local utility. (PG&E) There are “off-grid” systems as well, but these are usually found only in rural areas. PV systems include the panel array, an inverter that converts the direct-current from the panels to alternating-current and a switch that allows the system to be disconnected from the house electrical system. Grid-tied systems also include “net-metering” which monitors energy production and runs the meter backwards when production exceeds usage. The credit for the value of the surplus energy is then applied to the owner’s utility account.

**SERVICE PANEL/MAIN PANEL:** This refers to electrical service control panels, i.e., fuse and/or circuit boxes at the main point of entry to the building. These panels contain branch circuitry to distribute power to the entire building.

**SERVICE SIZE/240 volt-CAPACITY:** The overall capacity (ampacity) of the electrical system. There are two important numbers to be familiar with. Most of the lights and fixtures in homes run on 120-volt circuits, but heavy-duty appliances such as ranges, stoves and ovens require 240-volts. All modern homes have 240-volt systems, though the 240-volt circuits will only be present at the specific location where such an appliance is installed. Older electrical systems that have only 120-volt capacity are obsolete and in need of an upgrade. The amperage of the system will vary depending on the demands placed upon it. Similar size houses may have electrical services of different ampacities if, for instance, one of the houses has electric heating and an electric oven/range while the other uses gas-fired appliances. Older systems are typically undersized for contemporary demands, and may need to be upgraded during remodeling.

**SUBPANEL/ DISTRIBUTION PANEL:** Secondary to the Service Panel, subpanels may be located adjacent to the main service panel or in remote locations of the house. Subpanels are often installed as part of a remodeling project to accommodate new wiring needs in kitchens and utility rooms.

**SYSTEM UPGRADE:** When it is determined that an electrical service capacity is insufficient for present or near-future demands, an upgrade of the system is recommended. A home inspection does not include load calculations to determine if the system is adequately sized. However, it is often evident that an older system is clearly inadequate for modern requirements, and a recommendation for an upgrade will be made.

**UNPROTECTED CABLE:** Non-metallic cable (often referred to as "Romex") must be protected from contact and damage by being covered with wallboard or similar materials, or it may be installed in specific allowable locations where damage is unlikely.

## PLUMBING AND HEATING SYSTEMS

**ABS/PVC DRAINS:** Plastic drain piping (2" or larger) used for water drainage or venting. Use may be restricted in certain localities. It must also be protected against damage from exposure, and it is not allowed on the exteriors of buildings except for short protrusions at the roof.

**BACKFLOW PREVENTER (BFP):** A specialized one-way check-valve in the water supply line intended to prevent cross-contamination of the municipal water supply in the unlikely event of a radical loss of pressure. These may be required at various locations, including boilers, water mains and fire sprinkler systems.

**COMBUSTION AIR:** Gas-fired appliances must have an adequate source of combustion air to support clean and efficient burning of the gas. Insufficient combustion air supply can lead to the production and emission of carbon monoxide, which is toxic. Combustion air for automatic appliances should not be drawn from sleeping rooms. When water heaters, furnaces or gas-fired clothes dryers are enclosed in closets, vents must be present to provide combustion air.

**DIELECTRIC UNIONS:** Couplings found in plumbing to isolate pipes of dissimilar metals. Isolation prevents corrosion from electrolytic action due to contact of two dissimilar metals. Different types of couplings are used. Some contain plastic isolators, and others consist of short sections of brass pipe.

**SEWAGE EJECTOR PUMP:** When the main sewer line (sewer lateral) is above the level of a drain or plumbing fixture, it is necessary to pump the waste water upward to the level of that sewer line so that it can then flow out to the sewer main beneath the street. Ejector pumps are similar to sump pumps, except that they are encased in sealed tanks and they are capable of handling solid waste. They are generally installed only when there is no other alternative, and they should be configured to serve only the fixtures that cannot be drained with the normal gravity-flow drainage system. Sophisticated systems may include battery backup and alarms that notify the homeowner when the system is not working.

**SEWER LATERAL:** Waste water from the building flows out through a pipe that typically leads to the municipal sewer system. (Unless the house is on a septic system.) The underground portion of this pipe is known as the sewer lateral. It may consist of cast iron, plastic or clay pipe. Clay sewer laterals are no longer used, but they were common in older homes, and they are highly susceptible to root intrusion, settlement, collapse and leakage. As they are underground, they are inaccessible without specialized equipment and are outside the scope of a Home Inspection. There is no standard rule for when a sewer lateral inspection is recommended, but it is generally accepted that a video inspection should be performed for laterals that are 50-years or more in age. Some communities require a sewer lateral inspection or pressure-test at point of sale.

**SEWAGE BACKWATER VALVE:** This is a one-way check-valve that may be installed in the sewer lateral to prevent waste water from flowing back into the home in the event that the main sewer line has become blocked and overwhelmed. They are only required in certain situations where a drain or plumbing fixture in the home is located below the level of the sewer vent in the sidewalk or below the level of nearest manhole cover in the street. They should be located outside the home to be fully effective.

**GALVANIZED:** Generally refers to older type of water-supply pipes. Galvanizing is a processed zinc coating to retard rusting of iron pipes. Over time, galvanized pipes become occluded due to corrosion and mineral build-up causing reduced water flow, and replacement is recommended.

**HEAT EXCHANGER:** In a gravity-flow or forced-air furnace, the firebox or chamber which contains the combustion of the fuel. The heat exchanger serves to prevent infiltration of toxic gases into the fresh air system, while providing an interface to facilitate the transfer of heat to the fresh air. If the heat exchanger becomes cracked or rusted-out, the furnace requires

replacement. Heat exchangers are often not visible for inspection without dismantling the furnace, and their inspection is beyond the scope of a standard inspection. If the furnace is old, inspection by a heating contractor is recommended.

**HEATING SYSTEMS:** Various types of heating systems are commonly used. Convection heating is the most common. These systems heat the air, which then circulates around the home. Radiant systems heat objects in the room by radiation, similar to the warmth you feel from the sun or when standing near an open fire. Many systems use a combination of the two. The most common systems are described below.

**FORCED-AIR:** Heat is typically produced by the combustion of either natural gas, propane or oil, though electric systems are also available. Air is circulated through the system by a blower inside the furnace. The heat is transferred from the flame to the room air in a heat exchanger, and the warm air is distributed to the rooms through ducts.

**HYDRONIC:** Hot water from a boiler or water heater is used to provide heat by various means. Hydronic systems have been around for many years, but they are only recently becoming common in the U.S. They can be tremendously versatile, and a single system may include different types of heating fixtures. Most often, systems include plastic tubing (PEX) placed in the floor slab or under the wood floor surface. Other systems may use baseboard convectors or fan-coil convectors installed in the walls, floors or ceilings. Any combination of these is also possible. Hydronic systems can be very simple or highly complex with multiple zones, individual room controls, and high-efficiency custom designs.

**ELECTRIC BASEBOARD:** Radiant baseboard heaters are typically the least expensive and easiest system to install, but they can be very expensive to operate due to local electrical rates. In a modern well-insulated home, they may be practical, but in an older home with drafty windows, no insulation and high ceilings they can be impractical. Installation of electric heat may require an upgrade of the electrical system to accommodate the additional electrical load.

**ELECTRIC RADIANT FLOOR HEAT:** Usually installed in bathrooms for added comfort. They may not be intended to heat the entire room. They consist of a grid of wires placed under a tile floor, and they are controlled by a local thermostat that can be programmed to operate at specified times of the day.

**ELECTRIC RADIANT CEILING HEAT:** Consists of a grid of wires installed above the ceiling wallboard. These systems gained popularity during the 1960's and 70's, but are rare today.

**WALL HEATER:** Usually gas-fired, though some electric units are available. This is an inexpensive system, but it has limited ability to distribute heat to other areas of the home. Mostly seen in older homes and apartments, but they are still available. Some units have electric fans that help to disperse the heated air.

**SPACE HEATER or CONSOLE HEATER:** An inexpensive gas-fired heater that is usually seen in older homes or apartments. They have low capacity, and they do not distribute warm air to other rooms.

**GRAVITY HEATER:** Older central heating systems, typically gas-fired. They are configured the same as a forced-air system, but they do not include a fan to move the air through the system. As air is warmed, it tends to rise, and the cold air falls due to the natural force of gravity. The system operates silently, and it does not require any electrical power to operate. The disadvantage of these systems is that they are significantly less efficient than forced-air systems, and they cannot be used to heat rooms on the lower level.

**FLOOR HEATER:** A very simple and obsolete heater mounted directly beneath the floor. Similar to a gravity heater, in that they rely on warm air rising naturally. These heaters have some inherent safety concerns, including poor venting and extremely hot surfaces that can burn bare feet and cause fires. Replacement is generally recommended.

**RADIANT WALL HEATER:** Usually located in bathrooms. Includes electric coils that heat to high temperatures. These units can easily start fires, as they are often located below or next to towel bars or robe hooks. Replacement with modern heaters that operate at lower temperatures is recommended.

**TEMPERATURE/PRESSURE RELEASE VALVE:** (TPR Valve) Safety valve found at the top or side of the water heater to prevent excessive pressure buildup and possible explosion of the water heater if the normal control valves malfunction. These valves are equipped with a drain pipe that must be properly sized and terminated in an approved location.

**TOILET SEAL:** Toilets are sealed at the floor flange with a wax ring. If the toilet bolts become loose, the seal may be damaged, allowing seepage into the floor below the toilet. Since the seal is not resilient, it must generally be replaced if the toilet has loosened to the point where movement of the toilet has deformed it.

**NON-VENTED DRAIN:** All plumbing drains are also vented to equalization of pressure in the system. Inadequate venting may result in poor drainage, "gurgling" of drains and sewer gases backing-up into the home. Poorly vented drains may function adequately, but repairs are recommended during the course of other remodeling or alterations.

**VENTING OF APPLIANCES:** Gas-fired appliances such as water heaters and furnaces must be vented to the exterior. The "vent connector" is the horizontal pipe from the appliance to the "vent" which is generally vertical and extends to the roof line. Inadequate venting may allow for accumulation of toxic gases within the building.

**WATER HEATER PLATFORM:** All sources of combustion in garages must be elevated at least 18” above the floor to reduce the potential for fire due to combustible fumes that may be present. Water heaters in garages require elevated platforms unless they are the newer FVIR (Flammable Vapor Ignition Resistant) type.

## ROOFING AND WATERPROOFING SYSTEMS

**COUNTER-FLASHING:** Generally, a metal cap or flashing which is turned downward to meet and cover another flashing turned upward in order to shed water. Commonly found where a roof membrane joins a wall.

**FLASHING:** Generally, metal strips installed along junctions of exterior surfaces to prevent water leakage through a joint.

**RAIN CAP/SPARK ARRESTORS:** Caps on top of chimneys to stop sparks from igniting adjacent roof areas, and to prevent water from entering flue.

**ROOF TYPES:** Roof systems fall under two broad categories.

**Waterproof membranes**, such as built-up asphalt, modified bitumen, elastomeric, PVC etc. There are many types of materials on the market, and sometimes it can be difficult to identify which one is present. In any case, these all function on the same principle of forming an impenetrable waterproof surface. They are generally used on low-slope (flat) roof surfaces.

**Water shedding** systems, most often consisting of asphalt/fiberglass (composition) shingles, clay tiles, metal tiles, concrete tiles or other similar materials. These roofing systems function much like feathers on a bird. They are not waterproof, but rely on their ability to shed water away from the structure. They must be used on surfaces with adequate slope to function adequately under normal weather conditions. Some systems include a waterproof membrane beneath the tile to provide a barrier against wind-driven rain.

**ROOF CONDITIONS:**

**Serviceable:** Relatively new roof with no appreciable signs of wear. May still be under warranty.
**Worn:** Typical signs of wear may include loose/missing shingles, blistering, sun scorching, lack of ultra-violet protection, cracks, poor drainage. Maintenance or repairs may be indicated.
**Poor:** Signs of advanced deterioration indicating need for replacement.

**SCUPPERS:** Catch basins normally made of metal, receiving water from gutters on roofs.

**STEP FLASHING:** The interweaving of flashing with the roofing shingles and the materials of a vertical wall surface. Required whenever a vertical wall meets the roofing surface (such as in the case of a dormer, skylight, garage or chimney).

**WINDOW GLAZING PUTTY:** The putty used to secure the window pane into the sash, and prevent water entry past the glass. With age, the putty becomes brittle and cracked and must be replaced. Replacement of the putty is generally performed when the exterior is painted.

## MISCELLANEOUS/NON-SYSTEM ITEMS

**ENERGY CONSERVATION MEASURES:** Commonly accepted upgrades and modifications to assist in the reduction of energy use in the household. These generally include attic insulation, weather-stripping of exterior doors and windows, insulation of hot water pipes and water heaters, and caulking and sealing weather-exposed areas. Water conservation devices are also part of energy conservation. In some communities, these measures are a requirement at point of sale.

**FIREGUARD SYSTEM:** Any of several fire warning or automatic extinguishing systems which may be required by local code or ordinance. These are generally inspected and maintained by a specialty contractor.

**FIREPLACE DAMPER:** A metal plate located above the firebox. Closing the damper when the fireplace is not in use reduces heat loss from the house.

**FIREPLACE FLUES:** This includes the interior of the chimney and smoke chamber of wood-burning fireplaces. Home Inspections generally include a visual inspection of the firebox and visible exterior of the fireplace. The interior is often inaccessible without specialized equipment, and a fireplace contractor is needed for a complete inspection.

**GARAGE DOOR REVERSE:** Automatic garage door openers are required to have safety features that will reverse the closing door if met with physical resistance or if the Safety-Beam is interrupted by the presence of an object or body. Earlier models lacking the Safety-Beam feature may be acceptable if they reverse under moderate pressure, but replacement is recommended for safety. Older models that lack reverse features, and any model that fails to reverse when tested should be replaced immediately, as these are a potential safety hazard.

**RETAINING WALL:** A wall constructed to restrain slippage or movement of earth. These can be masonry, wood, concrete or concrete block. Walls that are 4-feet or more in height require design by a structural engineer. Evaluation of the design, adequacy and projected service life of retaining walls is outside the scope of a Home Inspection.

**SAFETY GLASS:** Either tempered, laminated or acrylic glazing are required in tub/shower enclosures, operable doors, certain windows and skylights to prevent injury in case of breakage. Nearly all glazing in bathroom locations must now be safety glazing. Upgrading to safety glass or shielding from impact may be required. Virtually all tempered or laminated glass is required to be identified as such by the etched words "Safety Glass" in one corner of the pane. Unmarked glass should be assumed to be non-safety type. Previously, glass with embedded wire mesh was considered to be safety glass. This is no longer the case, and such glass has been found to be more hazardous than standard glass. Replacement of wired glass that has been installed in locations where safety glazing is required is recommended.

**UST:** Abandoned Underground Storage Tanks (UST) previously used for home heating oil or gasoline storage are now required by law to be removed. Any contaminated soil surrounding the tank must also be removed and disposed in an approved manner. There are specialty contractors who are equipped to detect and remove abandoned UST's.