

BUILDING INSPECTION HANDBOOK

(Excerpts from HomeTech Information Systems, Inc., Bethesda, MD)

The Building Inspection

The building inspection is being conducted in accordance with nationally recognized standards of practice and is for the purpose of identifying major deficiencies, which might affect your decision whether to purchase.

It is important for you to understand exactly what your professional building inspector is able to do for you and what the limitations are in the inspection and analysis. The inspection is of readily accessible areas of the building and is limited to visual observations only. The inspector may not move furniture, lift carpeting, remove panels or dismantle any items or equipment.

An inspection is intended to assist in evaluation of the overall condition of a building. The inspection is based on observation of the visible and apparent condition of the building and its components on the date of the inspection.

The results of the home inspection are not intended to make any representation regarding latent or concealed defects that may exist, and no warranty or guaranty is expressed or implied.

The Inspection Report

Throughout the report where the age of appliance, roofs, etc., is stated, the age shown is approximate. It is not possible to be exact, but an effort is made to be as accurate as possible based on the visible evidence.

When any item in the report is reported to be "Satisfactory", the meaning is that it should give generally satisfactory service within the limits of its age and any defects or potential problems noted during the inspection.

Problems with the Building

Homebuyers, after settlement and occupying the building, sometimes overlook important information and warnings contained in their reports. This can result in failure of equipment or other damage, which could have been prevented if the inspector's advice and recommendations had been followed.

After occupancy, all buildings will have some defects, which are not identified in the inspection report. If a serious problem occurs that you feel the report did not give you sufficient warnings of, call the inspector. A phone consultation may be helpful to you in deciding what corrective measures to take and the inspector may be able to advise you in assessing proposals offered by contractors for remedying the problem.

Basements or Crawl Space Dampness

Basement dampness is frequently noted in houses and the conditions that cause it are usually capable of determination by an experienced home inspector. Often, however, in houses that are being offered for sale, the visible signs on the interior of a basement which would indicate a past or present water problem are concealed. For example, an area may be painted over, or basement storage may be piled against a wall where a problem has occurred. If there has been a dry period before the time of the inspection, signs of past water penetrations may not be visible. In such cases, the inspector may not be able to detect the signs of basement dampness or water penetration.

Elimination of basement dampness, whether slight or extensive, can usually be accomplished by one or both of the following actions: realigning gutters and extending down-spouts to discharge some distance from the house; and grading in the vicinity of the house so that the slope goes away from the house rather than toward it.

In most soils, a minimum recommended slope away from the house is a 5-inch drop over a 5-foot distance (one inch per foot).

Expensive solutions to basement dampness problems are frequently offered, and it is possible to spend many thousands of dollars for such unsatisfactory solutions as a system for pumping out water that has already entered the basement or the area around or under it. Another solution sometimes offered is the pumping of chemical preparations into the ground around the house. This has been found not to be of value.

Independent experts recommend solutions that prevent water from entering the basement around or under the building, and their solutions can be as simple as purchasing a splash block for \$5 and placing it under a downspout outlet, or the purchasing of a load of fill dirt for building up the grade around the house.

Crawl spaces require the same care and water control as basements. Cross ventilation is necessary and installation of a plastic vapor barrier over a dirt floor is strongly recommended.

If you have a basement dampness problem that persists in spite of efforts you have made in solving it, call the inspector for further consultations and advice.

Insect Boring Activity and Rot

If there is an inaccessible basement or crawl space, there is a possibility that past or present termite activity and/or rot exists in this area. Since no visual inspection can be made, it is not possible to make a determination of this damage if it exists.

Insect Boring Inspection

We recommend you contact a qualified exterminator should you desire more information or a possible examination of the building and/or a warranty.

Testing the Air Conditioning System

If the outside temperature has not been at least 65 (F) degrees for the past 24 hours, an air conditioning system cannot be checked without possibly damaging the compressor. In this situation, it is suggested that the present owner of the property warrant the operational status of the unit on a one-time start-up and cool-down basis when warmer weather allows.

Air Conditioning Compressor/Condensing Unit

The major components of an air conditioning condensing unit are the compressor and the condensing coil. A compressor has a normal life of 8-15 years; a condensing coil may last longer. The estimated age of a condensing unit is taken from the specification plate. Sometimes the compressor, which is not visible, may have been replaced since the original installation.

Electric Furnace

Electric furnaces have a normal life of 15-20 years, although at times the heating elements have to be replaced.

Oil and Gas Fired Furnaces

Oil and gas fired forced air furnaces have a normal life of 15 to 20 years.

Heat Exchanger

The heat exchanger in a gas or oil furnace is partially hidden from view; it cannot be fully examined and its condition determined without being disassembled. Since this is not possible during a visual inspection, it is recommended that a service contract be placed on the unit and a service call made prior to settlement to check the condition of a heat exchanger.

Air Filter

Air filters should be changed or cleaned every 30 to 60 days to provide proper air circulation throughout the house and help protect the heating and cooling system.

Humidifier

Since it is not possible during a visual inspection to determine whether the humidifier is operating properly, it is recommended that it be serviced at the same time as the furnace, and be cleaned regularly.

Cast Iron Boiler

Cast iron hot water boilers have a normal life of 30 to 50 years.

Steel Boiler

Steel hot water boilers have a normal life of 15 to 30 years.

Circulating Pump

Circulating pumps have a normal life of 10 to 15 years.

Heat Pump

Outside units have a normal life of 6 to 10 years. Heat pumps operate best when serviced at least once a year. Adequate airflow is more critical than with other forced air systems; it is important that the filter be kept clean. It is not advisable to shut off supply grilles to rooms except as required to balance heat a cooling.

Heat pumps cannot be checked on the heat cycle if the outside temperature has been over 65 (F) degrees within the past 24 hours. The total heating capacity of a heat pump system varies with outside temperature conditions.

Electric Baseboard Heater

Electric baseboard heaters have a normal life of 10 to 15 years.

Wells

Examples of wells are not included in the visual inspection. It is recommended that you have well water checked for purity by the local health authorities and, if possible, a check on the flow of the well in periods of drought.

Septic Systems

The check of septic system is not included in visual inspection. You should have the local health authorities or other qualified experts check the condition of a septic system. In order for the septic system to be checked, the house must have been occupied within the last 30 days.

Water Pipes

Galvanized water pipes rust from the inside out and may have to be replaced within 20 to 30 years. This is usually done in two stages: horizontal piping in the basemen first, and vertical pipes throughout the house later as needed.

Copper pipes usually have more life expectancy and may last as long as 60 years before needing to be replaced.

Hose Bibbs

During the winter months it is necessary to make sure the outside faucets are turned off. This can be done by means of a valve located in the basement. Leave the outside faucets open to allow any water standing gin the pipes to drain, preventing them form freezing. Hose bibbs cannot be tested when turned off.

Water Heater

The life expectancy of a water heater is 8 to 12 years. Water heaters generally are not replaced unless they leak.

The heating element in an electric water heater may require replacing prior to the end of life expectancy of the heater itself.

Leg Tubs

If the bathroom has a leg tub, it is probable that the water lines are made of lead. In many jurisdictions, the lead waster pipes must be changed to copper or PVC pipes when remodeling work is performed in the bathroom.

Ceramic Tile

Bathroom tile installed in a mortar bed is excellent. It is still necessary to keep the joint between the tile and the tub/shower caulked or sealed to prevent water spillage from leaking through and damaging the ceilings below.

Ceramic tile is often installed in mastic. It is important to keep the tile caulked or water will seep behind the tile and cause deterioration in the wallboard. Special attention should be paid to the area around faucets, other tile penetrations and seams in corners and along the floor.

Stall Shower

The metal shower pan in a stall shower has a probable life of 8 to 10 years. Although a visual inspection is made to determine whether a shower pan is currently leaking. It cannot be stated with certainty that no defect is present or that one may not soon develop. Shower pan leaks often do not show except when the shower is in actual use with a person standing in it.

Power usage of major appliances and mechanical equipment

Electric range	30-50 amps
Electric dryer	25-40 amps
Electric hot water heater	25-30 amps
Electric central a/c	30 amps
Room a/c	7-20 amps
Electric heater	50-75 amps
Electric heat pump	50-75 amps

Dishwashers and Disposals

Dishwashers and disposals have a normal life of 5 to 12 years.

Ranges, Ovens and Refrigerators

Ranges, ovens, cook tops and refrigerators have normal life of 15 to 20 years.

Clothes Washers and Dryers

Clothes washers and dryers cannot be inspected properly without a load of laundry, so these appliances are not tested other than to determine whether they are operating.

A washer or dryer has an average life of 6 to 12 years.

When hooking up a dryer, it must be kept vented to the exterior to prevent excessive moisture from building up in the house.

Washers and dryers often are not included in a sales contract, or are included in “as is” condition.

Smoke Detectors

If no smoke detectors are presently installed in the building, it is recommended that smoke detectors be installed at least in the ceiling of the basement near the mechanical equipment, as well as in the hallway ceiling outside sleeping rooms.

Carbon monoxide detectors are now required by some jurisdiction when the house contains any gas-burning appliances or has an attached garage. These devices should be placed and maintained in accordance with the manufacturer’s directions.

Smoke detectors installed in the house should be checked every 2 to 3 weeks to insure that they are functioning.

Ground Fault Circuit Interrupters

Ground fault circuit interrupters (GFCIs) are recommended on all outdoor outlets and on interior outlets in wet areas such as bathrooms and kitchen counter areas. GFCIs should be tested monthly to insure they are functioning.

Aluminum Wiring

Houses built after 1960 may have aluminum lower branch wiring. Initially, this wiring was pure aluminum, which proved unstable and subject to surface corrosion when placed in direct contact with dissimilar metals at fixture and outlet connections.

Later, aluminum alloy was used and although its performance was much better, special care and special connections must be used to prevent corrosion, overheating, arcing and fire. The practice of using aluminum alloy wiring was generally stopped around 1973; however, its uses has continued on a limited basis.

Fireplace

It is important that a fireplace be cleaned on a routine basis to prevent the buildup of creosote in the flue, which can cause a chimney fire.

Masonry fireplace chimneys are normally required to have a terra cotta flue liner or 8 inches of masonry surrounding each flue in order to be considered safe and to conform with most building codes.

During a visual inspection it is common to be unable to detect the absence of a flue liner either because of stoppage at the firebox, a defective damper, or lack of access from the roof.

Asbestos and other Environmental Hazards

Asbestos fiber in some form is present in many homes, but it is often not visible or cannot be identified without testing.

If there is reason to suspect that asbestos fiber may be present and it is of particular concern, a sample of the material in question may be removed and examined in a testing laboratory. However, detecting or inspecting for the presence or absence of asbestos is not a part of the inspection.

Also excluded from this inspection and report are the possible presence of danger from lead in water, radon gas, mold, mildew, lead paint, urea formaldehyde, EMF (electromagnetic fields), toxic or flammable chemicals and all other similar or potentially harmful substances and environmental hazards.

Plaster on Gypsum Lath (Rock Lath)

Plaster on gypsum lath will sometimes show the seams of the 16" wide gypsum lath, but this does not indicate a structural fault. The scalloping appearance can be leveled with drywall joint compound, or drywall can be laminated over the existing plaster on the ceiling.

Nail Pops

Drywall nail pops are due in part of normal expansion and contraction of the wood members to which the gypsum lath is nailed, and are usually only of cosmetic significance.

Wood flooring

Always attempt to clean wood floors first before making the decision to refinish the floor. Wax removers and other mild stripping agents plus a good waxing and buffing will usually produce satisfactory results. Mild bleaching agents help remove deep stains. Sanding removes some of the wood in the floor and can usually be done safely only once or twice in the life of the floor.

Animal odors and stains are common in older homes. These problems cannot be positively identified in a general or visual inspection.

Carpeting

Where carpeting has been installed, the materials and condition of the floor underneath cannot be determined.

Access to the Attic

If there are no attic stairs or pull down, the attic may be inaccessible and therefore un-inspected. Lacking access, the inspector will not be able to inspect the attic insulation, framing, ventilation or search for evidence of current or past roof leaks.

Inspection of Roof

Many roofs are hazardous to walk on and in most cases can be satisfactorily inspected from the ground with or without binoculars or from a window with a good view of the roof. Persons walking on them may seriously damage some roofs, such as asbestos cement, slate, clay or concrete tile, shingles and shakes. Accordingly, the home inspector will base the inspection report on visible evidence, which can be seen without walking on the roof.

The condition of a built-up or flat metal roof often cannot be determined unless it is possible for the home inspector to closely inspect its surface. Access to the roof from within the building is sometimes possible, but in many cases an additional inspection may be scheduled with special ladders to reach the roof from the outside.

“Satisfactory” Roof Covering

When the report indicates that a roof is “satisfactory,” that means it is satisfactory for its age and general usefulness. A roof, which is stated to be satisfactory, may show evidence of past or present leaks or may soon develop leaks. However, such a roof can be repaired and give generally satisfactory service within the limits of its age.

Asphalt and Fiberglass Shingles

In cold and temperate climates, asphalt and fiberglass shingle roofs have a normal life of 15 to 20 years. In the South and Southwest, they have a normal life of 12 to 15 years. If a new roof is required, it may be installed over the original roof unless prohibited by local building codes. If two layers of roofing have already been installed, most building codes require both layers to be removed before installing a new roof covering.

Roll Roofing

Selvage or asphalt roll roofing is an inexpensive type of roof with a life of 5 to 10 years.

Built-Up Roof

Four-ply build-up roofs have a normal life of 15 to 20 years if they drain properly. If there is standing water on the roof, the rate of deterioration is doubled.

One-ply flexible sheet membrane roofs have a normal life of 15 to 20 years.

Wood Shingles and Shakes

Wood shingles and shakes have more insulating value than other roofs. Wood shingles have a normal life of 12 to 15 years, and shakes have a normal life of 15 to 20 years.

Slate Roof

Slate roofs have a normal life of 30 to 75 years depending upon the grade of slate. Slate roofs no need annual maintenance, and it are necessary to replace defective individual slates and tar ridges as required from time to time.

If improperly installed, the nails fastening slates may rust through; individual slates can be lifted and re-laid with copper salting nails. When one set of nails rusts through, it is likely it will happen soon to other slates, so lifting and relaying of all the slates may be required in the near future.

Clay Tile Roof

A clay tile roof has a normal life of 30 to 50 years, but individual pieces can become cracked or broken or the nails rust out. Tiles may have to be replaced periodically.

Asbestos Cement Shingles

Asbestos cement shingles have a normal life of 30 to 50 years, but they are brittle and individual shingles should be replaced as needed. In many states removal of asbestos cement shingles must be according to EPA standards.

Metal Roof

Metal roofs have a very long life if the exposed metal is kept coated with paint. When a metal roof has been tarred, it is impossible to determine the condition of the metal under the tar. While there may be no evidence detected of any ongoing leaks, it is possible the roof has rusted through and will need replacement in the near future.

Sidewalks and Driveway

Spalling concrete cannot be patched with concrete because the new will not bond with the old. Water will freeze between the two layers, or the concrete will break up from movement or wear. Replacement of the damaged section is recommended.

Window Wells

The amount of water that enters a window well from falling rain is generally slight, but water will accumulate in window wells if the yard is improperly graded.

Plastic window well covers are useful in keeping out leaves and debris, but they do block ventilation and light.

Retaining Walls

Retaining walls deteriorate because of excessive pressure build-up behind them, generally due to water accumulation. Excavating a trench behind the retaining wall and filling it with coarse gravel can improve often conditions. Drain holes through the wall will then be able to relieve the water pressure.

Retaining walls sometimes suffer from tree root pressure or from general movement of topsoil down the slope. Normally these conditions require rebuilding the retaining wall.

The inspector will only inspect a retaining wall if it is likely that any defect noted may adversely affect the building.

Exterior Wood Surfaces

All surfaces of untreated wood need regular applications of oil based paint or special chemicals to resist rot. Porch or deck columns and fence posts, which are buried in the ground and made of untreated wood, will rot within a year or two.

All posts and wood members with ground contact should be of treated wood or constructed of wood, which has natural resistance to rot, such as redwood. Decks should always be nailed with galvanized or aluminum nails.

Roof and Surface Water Control

Roof and surface water must be controlled to maintain a dry basement. This means keeping gutters cleaned out and aligned, extending downspouts, installing splash blocks, and building up the grade so that roof and surface water are diverted away from the building.

A positive grade of approximately 1 inch per foot slope for at least 5 feet from the foundation walls is recommended. Where trees, air conditioning units and other obstructions do not permit the recommended slope, surface drains can be used instead. Failure to control surface water will usually result in a wet basement.

Trees, Shrubbery and Fencing

There is no inspection of trees, shrubbery, vegetation and fencing unless any defect noted may adversely affect the building.

Outbuildings

With the exception of a detached a garage or carport and the driveway leading to them, outbuildings are not inspected.

Price Ranges of Repair and Replacement Items

The prices below include a range based on a typical metropolitan area. Individual prices from contractors can vary substantially from these ranges, depending on the quality of the materials and workmanship, economic conditions of the area and the contractors submitting bids.

ITEM	UNIT	ESTIMATED PRICE
French Drain (up to 140 LF)		
French Drain (up to 140 LF)Install French drain and sump in basement floor along inside of footings, with sump pump discharging to outside	each	4,000 - 8,300
Cut New Weep Hole in Retaining Wall		
Dig square hole behind retaining wall, cut weep hole, ground in PVC drain pipe, crushed stone to within 6" of grade, backfill and replace sod, height of grade above weep hole		
	24"	each 102 - 220
	60"	each 162 - 351
Repoint Brick Joints		
Cut out joints in brick wall and repoint	SF	2.42 - 10.50
Replace Concrete Patio		
Remove existing concrete patio and replace with new concrete patio	SF	7.65 - 15.11

Mud jacking		
Raise existing settled concrete walkway or slab to original level by lifting with pumped concrete grout	SF	8.75 - 13.90
	min	1,100 - 1,744
Underpin Foundation Wall		
Dig out not over 12 feet below grade and pour reinforced concrete under existing defective footing	LF	262 - 560
	min	2,500 - 3,500
Remove Drain Obstruction		
Remove obstruction from basement areaway drain	each	189 - 308
Replace Stucco Siding		
Remove defective stucco from wall and patch with 3 coats of new stucco	SF	9.75 - 15.77
Replace Water Heater		
Remove existing water heater and replace with new water heater		
Gas - 30 gallon	each	367 - 505
40 gallon	each	397 - 544
Electric - 40 gallon	each	447 - 609
82 gallon	each	631 - 835
Replace Heat Pump		
Remove existing electric heat pump and replace with new medium efficiency electric heat pump		
2 ton	each	3,500 - 5,000
3 ton	each	5,500 - 6,500
5 ton	each	7,500 - 9,000
Replace the following:		
Replace Electric Furnace	each	2,000 - 4,000
Replace Gas Furnace	each	2,000 - 5,000
Replace Hot Water Boiler	each	3,800 - 5,000
Replace A/C Compressor	each	2,000 - 4,000
Replace Humidifier	each	560 - 690
Install Electrostatic Air Cleaner	each	540 - 890
Service Heating & Cooling System	each	125 - 260
Replace Laundry Tub	each	385 - 528
Add Ground Fault Circuit Interrupter (GFCI) in bathroom	each	134 - 189
Replace Shower Pan		
Replace shower pan with vinyl or rubber pan, including tearing out & patching tiles	each	1,500 - 4,000
Replace Water Pipes		
Replace horizontal water pipes in basement with new copper water pipes	each	1,200 - 2,000

Heavy Up Electric Service			
	150 Amps	each	1,079 - 1,520
	200 Amps	each	1,690 - 2,350
Replace Kitchen Appliances			
clothes washer		each	480 - 775
clothes dryer		each	480 - 860
refrigerator		each	630 - 3,800
kitchen stove		each	600 - 4,500
disposal		each	145 - 380
dishwasher		each	490 - 1,650
Drop Waste for installation of disposal or dishwasher			
		each	160 - 285
Ventilation			
Install attic ventilation fan		each	295 -695
Install hood vent over stove		each	350 -510
Install exhaust fan in bath vented to outside		each	285 -375
Remodeling and Renovation			
Remodel kitchen		each	7,000 - 39,000
Remodel bathroom		each	4,000 - 26,000
Renovate 2-3 story townhouse, complete gut job		each	81,000 - 190,000
Convert basement into legal rental unit		each	25,000 - 80,000
Chimney			
Clean chimney of 1 or 2 story house		each	95 - 140
Install Portland cement flue liner in existing straight chimney		each	1,500 -2,500
For each angle in chimney, ADD		each	335
Insulation			
Install insulation between open joists or between rafters in attic		SF	0.75 - 2.19
Install blown-in fiberglass insulation behind existing siding , including drilling and plugging, no painting		SF	2.30 - 4.00
Asbestos Abatement			
Encapsulate asbestos pipe covering with sealants		each	1,500 - 8,000
Remove asbestos from pipes in basement		each	2,500 - 10,000
Remove asbestos from ceiling		each	3,000 - 8,700
Roofing and Gutters			
Install new fiberglass roof shingles over existing roof			
	20 year	SF	1.39 - 3.08
	40 year	SF	1.73 - 3.61
Tear off existing roof and install new fiberglass shingle roof			
	20 year	SF	1.90 - 4.86
	40 year	SF	2.24 - 5.39
Tear off existing roof an install new 4-ply slag roof			
		SF	7.00 - 13.00

Remove and replace up to 10 roof shingles		
	slate	total 340 - 900
	clay tile	total 275 - 590
	cedar shingles	total 116 - 246
Replace existing gutters and downspouts with new aluminum gutters and downspouts	LF	5.00 - 10.50
Doors		
Remove exterior wall and install 6-0 x 6-8 aluminum sliding door unit	each	1,450 - 1,900
Remove interior wall and install archway	each	800 - 1,100
Install deadbolt lock in door	each	45 - 95
Install garage door operator		
1 car set	each	230 - 290
2 car set	each	245 - 305
Windows		
Install storm windows	each	72 - 120
Install wood replacement double hung window	each	410 - 720
Install aluminum or vinyl replacement window	each	375 - 595
Floors and Ceilings		
Install new drywall ceiling over plaster	SF	2.11 - 3.74
Sand and finish hardwood	SF	2.25 - 5.70
Ceramic Tiles (up to 30 SF)		
Remove ceramic tile bathroom floor and install new ceramic tile floor with tile costing \$2.00 SF retail	SF	18.00 - 50.00