



Residential Inspections

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Assessment Division
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Disclaimer

- The Department recognizes there are many ways and methods for inspecting residential properties.
- This presentation is meant to provide a framework for inspecting residential and should not be construed as the **only** method for inspection.
- All pages and appendices mentioned in this class (unless otherwise noted) are from the 2011 Real Property Manual – Book 1.
- Viewer discretion is advised.



Goal

- To provide a general framework for new assessors, vendors, and deputies regarding the field inspection of new residential dwellings or reassessment/verification of an existing residential structure.



Structure of Class

- The structure of this class will be as a data collector gathering information about new construction and reassessing a dwelling.
- Most information will be based on data collection however some valuation principles will be discussed.



Who Goes Out?

- Data Collector - A person under the employment of an assessing official or under contract for an assessing official, that collects objective and subjective characteristics of a particular parcel and/or improvement. This person does not necessarily assign a value to a parcel and/or improvement.



Qualifications and Experience

- Although it is not required by law, a data collector is recommended to have at least a Level I certification (Level II, if inspecting commercial property) before undertaking field assignments.
- However, if the data collector will also assign the value to an improvement or parcel, the person must be Level III certified (IC 36-2-16-8).
- It is recommended that a new data collector shadow a certified data collector for an extended period for practical experience.
- These recommendations should minimize “rookie” errors in the beginning.



Qualifications and Experience

- The data collector also should have a fairly good grasp of the 2011 Real Property Manual depending on which class of property they are collecting information (Book 1 – Residential and Book 2 – Commercial).
- Ignoring this information could lead to disastrous results (e.g. loss of productivity and appeals due to errors).



Out in the Field - Procedures and Tasks



Preparing for Field Visit

- Useful equipment to have:
 - Tape Measure/Rolling Wheel
 - Property Record Card
 - Writing Instrument
 - Government Identification
 - Distance Laser
 - Grid Paper
 - Tablet with CAMA System



Be Conspicuous

- Make it obvious you are there for a specific and legal purpose.
- Having a reflective vest, easily seen identification, and proper government markings on vehicles can put the taxpayer and neighbors at ease.
- Please note: The Department of Local Government Finance does not conduct property inspections or make property assessments – this is for illustrative purposes only.

DLGF County Assessor's Office

100 N Senate Ave, N-1058B

Indianapolis, IN 46204

317-232-3777

Data Collection Team



Plan of Attack

- “When there’s no plan, there’s no attack. No attack, no victory” Joe Flaherty, *One Crazy Summer (1986)*.
- Reassessment or large number of parcels to be inspected.
- Have a detailed route to finish parcels that:
 - (1) Uses the least amount of time and resources.
 - (2) Is logical from start to finish.



Knock, Knock...Who's There?

- IC 6-1.1-4-15(b) states, “In order to determine the assessed value of buildings and other improvements, the township or county assessor or the assessor's authorized representative may, after first making known the assessor's or representative's intention to the owner or occupant, enter and fully examine all buildings and structures which are located within the township or county and which are subject to assessment”.
- Knock on the door or ring the doorbell to notify the taxpayer who you are and your purpose.
- If the taxpayer is not home, leave a door hanger or some other type of notice that you were there.
- If the taxpayer is home, **pleasantly** introduce yourself and try to acquire information about the property.



Knock, Knock...Who's There?

- If, after meeting the taxpayer, they ask you to leave then do so.
- Trespassing (IN Code 35-43-2-2).
- The same goes for potentially hazardous situations.



Skull and Crossbones. Digital Image. *Old Book Illustrations*. 1808. Web. 2 February 2017. <oldbookillustrations.com>



Knock, Knock...Who's There?

- If the taxpayer is willing and available, ask questions regarding the property's interior and floorplan.
- Helpful when determining foundations, bathrooms, and drawing layout.
- Never lead the taxpayer to a particular answer: e.g. instead of confirming how many bathrooms, ask how many bathrooms they have (reassessment).



Materials

- The following are examples of what the Porter County Assessor's Office used in the past when out doing reassessment and drawings.



Materials

CYCLICAL REASSESSMENT CHECKLIST

Date / /

Field Agent: _____	Picture Numbers: _____ to _____
Parcel # 64-____-____-____-____.000-0	Owner Name: _____
Property Access: <input type="checkbox"/> Spoke w/Taxpayer & Examined Property <input type="checkbox"/> Left Door Hanger & Examined Property <input type="checkbox"/> No Access to Property	

PORTER COUNTY ASSESSOR

EXTERIOR

Exterior: Frame/Aluminum/Vinyl Concrete Block
 Brick : # of Increments L¹ I²
 Stone Metal

Air Conditioning: Yes No Removed

Fireplace: Yes No # of Openings

Type: Ventless (No Stack) Frame Stack
 Masonry Stack Metal Stack

Condition Change: New Good Average Fair Poor

INTERIOR

Crawl: Yes No Slab: Yes No

Basement: Yes No Unfinished Finished
 Finished Percentage: _____

Recreation Room Type:
 RC-1: Floor and Ceiling
 RC-2: Floor, Ceiling and Interior Walls
 RC-3: Floor, Ceiling, Interior Walls and Partitioning
 RC-4: Floor, Ceiling, Interior Walls, Partitioning and Built-Ins

Attic w/permanent stairs: Yes No Unfinished Finished

Bathroom Count: Full (3 Fixtures) Half (2 Fixtures)

Bedroom Count: _____

Extra Fixtures (Laundry Tub, Bathroom Double Sink, etc.) _____

Measurements of New Exterior Features:

Patio _____ Balcony _____ Room Addition _____

Shed _____ Barn _____ Det. Garage _____

In-Ground Pool _____ Above Ground Pool _____

Pool Apron _____ Wood Deck _____

Wood Patio _____

Comments:



Door Hanger

WE'RE SORRY WE MISSED YOU

We Are In The Process of Collecting Data
And More Information is Needed To **En-**
sure An Accurate Parcel Record

Please Complete The Information Below,
Then Detach The Card And **Return**
It To The Address On The Other Side



OR

Submit your information online by
visiting the Assessor's website at

JON M. SNYDER
PORTER COUNTY ASSESSOR
155 INDIANA AVENUE, SUITE 211
VALPARAISO, IN 46383 219-465-
3460 85985-

In accordance with Indiana Code 6-1.1-4-15
the county assessor or the assessor's
authorized representative is assigned
the duty to fully examine all property
subject to assessment.

Visit the Assessor's website at
www.PorterCountyAssessor.com
to get answers to your questions

Parcel # 64-____-____-____.000-0
Address: _____

Please answer each section below:

Central Air Conditioning? ___ Yes ___ No	Fireplace? ___ Yes ___ No How Many? ___
Finished Basement? ___ Yes ___ No	
What is the Finished Percentage? _____ %	
Flooring: ___ Tile ___ Carpet ___ Concrete	
Ceiling: ___ Drop Ceiling ___ Drywall	
Walls: ___ Paneling ___ Drywall	
Is it finished with the same quality as the main floor? ___ Yes ___ No	
Total # of Bathrooms: ___ Full Baths ___ 3/4 Baths ___ 1/2 Baths	Attic w/Permanent Stairs? ___ Yes ___ No
Total # of Bedrooms: _____	What is the Finished Percentage? _____ %
Foundation Type Basement ___ Crawl ___ Slab ___	Bonus Room? ___ Yes ___ No
	What is the Finished Percentage? _____ %
Number of Additional Plumbing Fixtures? ___ Whirlpool Tub ___ Jet Tub ___ Laundry Tub ___ Utility Sink ___ Bar Sink ___ Double Sink (Bathroom)	



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Internet

The screenshot shows a web browser window with the address bar displaying "www.portercountyassessor.com". The website header includes the text "PORTER COUNTY ASSESSOR'S OFFICE" and a navigation menu with links for "About", "Staff", "Porter County", "FAQ", "Contact", and "Door Hanger", along with a Facebook icon. The main content area features a large image of a farm with a red barn and silos. To the right of the image is a dark grey panel with the text "Welcome. We are here to assist you." and two prominent buttons: "Start a Parcel Search" (with an eye icon) and "Fill Out Your Door Hanger" (with a door hanger icon). Below these buttons is a search bar labeled "Search Site" with a magnifying glass icon.



Determining Appropriate Descriptions and Measuring Dwellings



Measuring the Dwelling

- Measure the main dwelling, attached/detached garage, and any exterior features first.
- Measure any outbuildings, yard structures, or farm structures second.
- Take pictures for reference (avoid license plates).
- Caution: the taxpayer may object.



Determining Story Description

- Generally determined by the slope and pitch of the roof. Descriptions found in 2011 Real Property Assessment Manual Book 1 – Chapter 3, Table 3-1, Page 8-10.



Determining Story Description

The base residential cost schedules used to calculate the replacement cost of a dwelling are listed by floors. Use the explanations in Table 3-1 to determine which story description is appropriate for a dwelling.

Table 3-1. Story Descriptions

Story Description	Figure
<p>One-story dwelling, generally referred to as a ranch style home, has the following characteristics:</p> <ul style="list-style-type: none"> all rooms on one floor all rooms located below the square of the house at the eave line low-pitch roof with a slope of about 1/6. 	
<p>One-story dwelling with an attic has the same characteristics as a one-story dwelling, and also has the following characteristics:</p> <ul style="list-style-type: none"> a roof slope of about 1/4 or 1/3 permanent stairway to a usable, floored attic. 	
<p>One-story with a finished attic has the same characteristics as a one-story dwelling, and also has the following characteristics:</p> <ul style="list-style-type: none"> a roof slope of about 1/4 or 1/3 permanent stairway to an attic with interior finish. 	
<p>One and one-half story has the following characteristics:</p> <ul style="list-style-type: none"> full first floor area and a full second floor area usable second floor area less than the first floor area second floor exterior wall height of 4 or 5 feet second floor ceiling follows the slope of the roof. 	

One and one-half story has characteristics similar to those of a one-story dwelling with a finished attic, and also has the following characteristics:

- a roof slope of about 1/3 to 1/2
- large dormer on one side of the roof, and may have 1 or 2 smaller dormers on the opposite side of the roof.



One and one-half story has characteristics similar to those of a one-story dwelling with a finished attic, and also has the following characteristics:

- high-pitch roof with a slope of about 5/8 or 3/4
- small dormers on one or both sides of the roof.



Story Description

Figure

One and three-fourths story has the following characteristics:

- full first floor area
- second floor exterior wall height of 6 or 7 feet
- part of the second floor ceiling follows the slope of the roof.



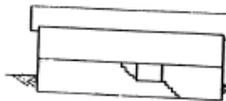
Two-story has the following characteristics:

- two full floors of living area
- first floor usually at grade level.



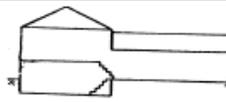
Bi-level has the following characteristics:

- 2-level design
- first floor partially below grade
- entry or foyer at a level between the first and second floor.



Tri-level has the following characteristics:

- split-level design of 3 levels or more, exclusive of any basement
- first floor partially below grade and partially at grade level
- second floor on top of the first floor level.





Question

- How do we treat the bottom level of a bi-level or tri-level?
 - This largely depends how far the bottom level is below the frost-line. If the majority of the bottom level is below the frost-line, you can consider it a basement. If the majority of the bottom level is above the frost-line, you can consider it the first floor.



Exterior Construction

- There are nine (9) types of exterior construction reference in 2011 Real Property Assessment Manual Book 1:
 - Type 1 – Frame (wood siding) or Aluminum
 - Type 2 – Stucco (either on wood or masonry)
 - Type 3 – Tile
 - Type 4 – Concrete Block
 - Type 5 – Metal
 - Type 6 – Concrete
 - Type 7 – Brick
 - Type 8 – Stone
 - Type 9 – Mixed Frame



Mixed Frame/Masonry

- Determined by how much brick is on each floor of the improvement.
- Each floor has six (6) possible increments on each floor: two on the front, one on each side, and two on the back.
- E.g. a one story house that has one increment of brick on the front and one on the back, it has two increments of brick. This can be also described as a type 92 exterior construction.



Question

- What about multiple floors with mixed frame?

Each floor has a possible six (6) increments of brick, so each floor is treated individually.

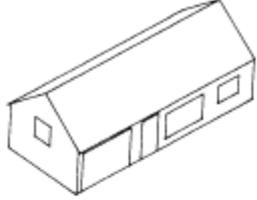
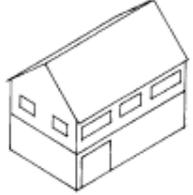
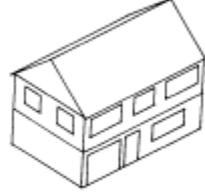
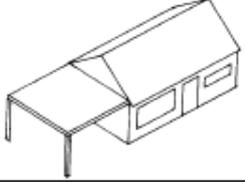
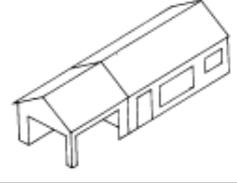


Garages

- Note if there is a detached or attached garage and the type.
- Types of garages are found in the 2011 Real Property Assessment Manual Book 1 – Chapter 3, Table 3-2, Pages 11-12.



Garages

Garage/Carport Types	Figure		
<p>Attached garage has the following characteristics:</p> <ul style="list-style-type: none"> ■ completely enclosed structure ■ one or more walls in common with the dwelling ■ measurable dimensions. 		<p>Basement garage has the following characteristics:</p> <ul style="list-style-type: none"> ■ located on the basement level ■ entrance on the basement level. 	
<p>Integral garage has the following characteristics:</p> <ul style="list-style-type: none"> ■ part of the dwelling with living area on two or more surfaces ■ dimensions that are not easily measurable from the exterior. <p>Note: Many homes have garages with dimensions that are not easily measurable from the exterior because the area immediately behind the garage is a finished living space. In other types of homes, the living space may be on the floor above the garage. In either case, the garage is included in the base area calculation. After the dwelling is priced, the area of the integral garage is estimated using its car capacity and is deducted from the base area of the dwelling.</p>		<p>Shed-type carport has the following characteristics:</p> <ul style="list-style-type: none"> ■ flat roof, independent of the dwelling's roof ■ open sides and ends 	
Garage/Carport Types	Figure		
<p>Integral roof extension type carport has the following characteristics:</p> <ul style="list-style-type: none"> ■ roof that is a continuation of the basic roof structure of the dwelling ■ open sides and ends. 			



Attics, Basements, and Crawlspace

- Attics are above the regular floors however they are primarily used for storage but can be finished; apparent from the field by viewing windows and floor size.
- Basements and crawlspaces are below the frost level (however a basement can be partially above the frost level).
- Can be difficult to measure if square footage is not similar to first floor.



Attics, Basements, and Crawlspace

- Attics and basements can be finished or unfinished (and can be partially finished).
- In order to be considered finished, the basement or attic must have a similar interior finish as the other living spaces.
- If there is some type of finish to the basement; however, it does not match the other living spaces, it should be noted as a basement recreation room.



Basement Recreation Rooms

- If a dwelling has one, note it and what type of room it is (Chapter 3, page 28):

Table 3-11. Basement Recreation Room Codes

This code	Indicates the presence of
Rec 1	Flooring and ceiling finish
Rec 2	Flooring, ceiling, and interior wall finish
Rec 3	Flooring, ceiling, interior wall finish, and partitioning
Rec 4	Flooring, ceiling, interior wall finish, partitioning, and built-ins



Interior Adjustments

- Can be difficult to see from field visit unless taxpayer is willing to give information.
- Adjustments include: Unfinished interior (exposed wall studs), no central heat, no electricity, *add for central air, add for basement recreation room, and add for loft.

*The dwelling base prices in Appendix C – Sch. A, do not include central air; also, wall air conditioner units do not qualify as central air.



Fireplaces

- The primary focus for a data collector with fireplaces is two things: what kind of stack (steel or masonry), and how many openings (how many floors)?
- Easily seen from exterior.



Question

- What about stack-less fireplaces that use natural gas but still have a mantle for the opening? What about if a stack opening is sealed from use?
 - Current cost schedules do not account for these types of improvements. Sound valuation is most likely the best approach.



Plumbing

- Five fixtures (one toilet, one sink, one bath/shower, one water heater, and one kitchen sink) included in base prices for residential dwellings.
- Any additional fixtures or bathrooms need to be accounted for as an adjustment.
- Any specialty fixture (e.g. tub with jets) needs to be accounted for as well; however, an addition to the base price needs to be made as well.



Exterior Features

- Exterior features are improvements that are connected to the dwelling.
- These include, but are not limited to: decks, patios, stoops, and other improvements.
- Those items contained in the exterior features cost schedule but not connected to the dwelling, are considered yard improvements and not part of the homestead.



Question

- What about exterior features that are connected by a stairway, would they be an exterior feature and part of the homestead?
 - Since a stairway is not assessed as a part of the total square footage of an exterior feature, then it is not connected for assessment purposes. Therefore, an exterior feature connected only by a stairway would not be a part of the homestead.



Yard Improvements

- Structures that are not attached to the dwelling but are permanent improvements to the real estate.
- Such as pools, sheds, tennis courts, and agricultural buildings.
- Geothermal and Solar devices are considered yard improvements as well.
- These are catalogued just like the main improvements; however, they are not usually drawn.



Question

- I am sometimes confused on whether to catalogue a certain item as a yard improvement, like whirlpools without a water source in the backyard, or just leave it as personal property; is there any guidance on this?
 - As it is with most things, it depends. The most important thing in this situation is that there is consistency with yard improvements that are in a gray area. Meaning that if one taxpayer has a whirlpool and it is picked up by the data collector, then all taxpayers that have a similar style whirlpool should have theirs catalogued as well. However, it should be noted that on page 7 of the 2011 Real Property Assessment Manual – Book 1 App. C, there is cost information for this item.

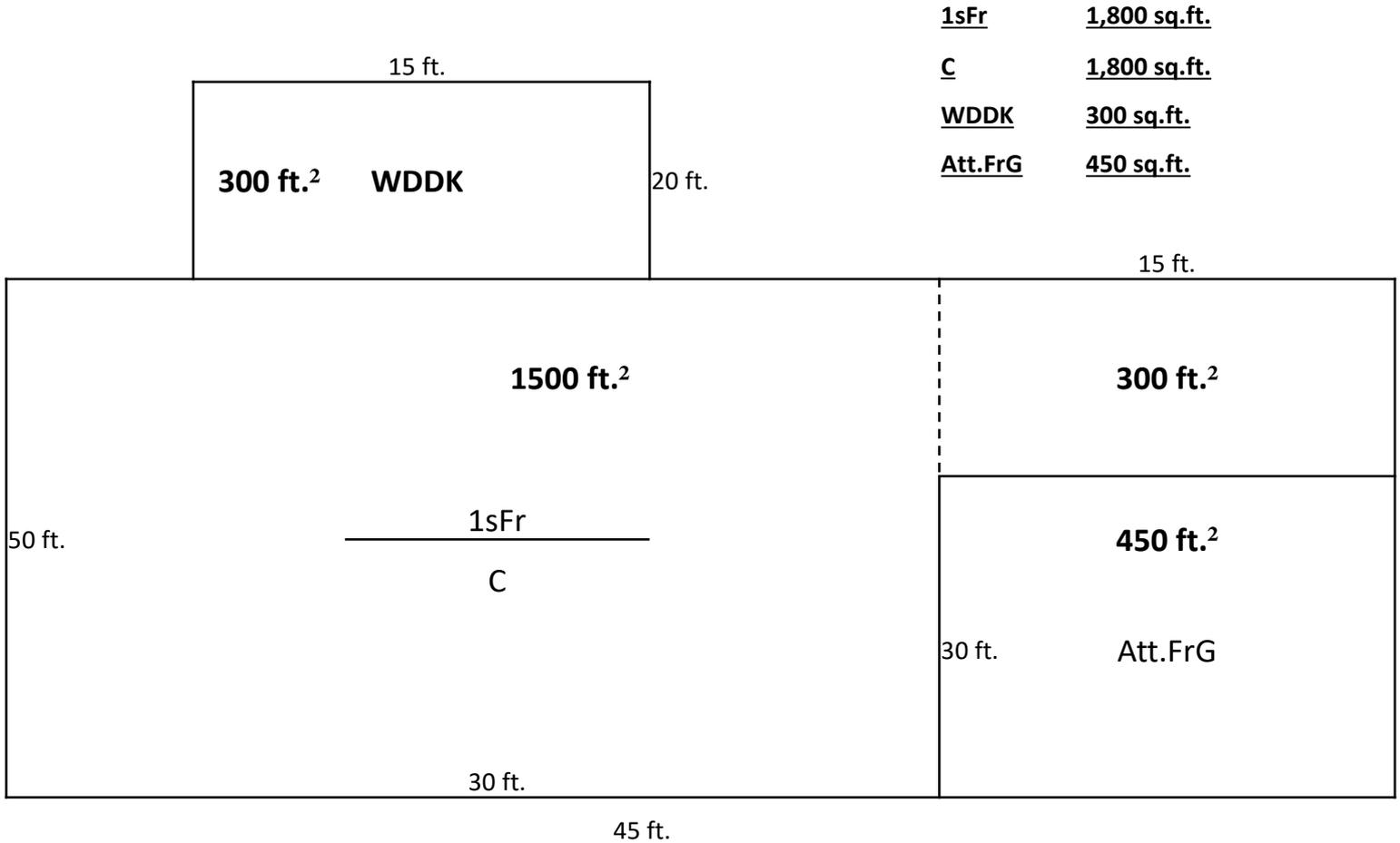


Drawing the Improvement

- Having a drawing of the main improvement is important to the overall accuracy of the PRC.
- CAMA systems can value an improvement without a drawing; however, it is preferred to have a drawing.
- Use graph paper or a tablet (whichever is available or preferred) to take measurements and draw the improvement to scale.



Example





Geothermal Systems

- Heating systems that use the Earth's stored heat or ground water to heat and cool dwellings.
- Can be independent or combined (a.k.a. split system) with existing fossil fuel heat source.
- Are able to be deducted from assessed value if certified by IDEM and file necessary paperwork (Form SES/WPD).
- No heat adjustment required however if a split system, heat is not deducted.
- Chapter 3, pages 64 – 69.



Types of Geothermal Systems

Geothermal Heating and Cooling System Types

The geothermal heating and cooling system cost schedules contain rates for both closed loop and open loop geothermal systems:

- **“Closed loop”** system is a geothermal heating and cooling system that uses a continuous loop of special pipe that is buried in the ground or sunken into a pond or river. This pipe, that contains a liquid medium of a pressurized antifreeze solution, is connected to the indoor geothermal heat pump to form a sealed, underground loop. The antifreeze solution is circulated throughout the loop where low temperature heat is transferred from the ground or water to the antifreeze solution. This low temperature heat is used by the geothermal heat pump to warm the refrigerant within the unit. The two (2) variations of a closed loop system are:
 - **Horizontal** loop systems consist of a series of trenches that are dug throughout the land surrounding the structure. These trenches are normally four (4) to six (6) feet deep and up to four hundred (400) feet long, depending upon how many pipes are located within the trench. The normal placement of pipe within the trench is to install a run of pipe at the five (5) foot level and cover it up with dirt. At the three (3) foot level of the trench, a second run of pipe is looped back over the first run and another layer of soil is added to fill-in the trench. This overlapping method allows more length of pipe to be used per linear foot of excavated trench. As a general rule for horizontal loop systems, it requires approximately five hundred (500) to six hundred (600) linear feet of underground piping to service one (1) ton of system capacity.
 - **“Vertical”** loop systems are similar to horizontal loop systems except that the loop is installed downward instead of horizontally throughout the yard. In a vertical loop, holes are bored into the ground and U-shaped loops of pipes are inserted into the holes. After the installation of the system is



Types of Geothermal Systems

complete, the created holes are backfilled with a sealing solution. As a general rule for vertical loop systems, it requires approximately one hundred twenty five (125) to one hundred fifty (150) linear feet of underground piping to service one (1) ton of system capacity.

- **Open loop** system is a geothermal heating and cooling system that uses ground water from a conventional well as the heat source for the system. The water is pumped into the geothermal heat pump unit where heat is extracted. The extracted heat is used by the heat exchanger to warm the refrigerant with the unit. This extracted heat is used by the heat exchanger to warm the refrigerant within the unit. After the water has passed through the geothermal heat pump unit, it is discharged in one (1) of the following ways:
 - The **open discharge system** simply involves releasing the water into a river, stream, pond, ditch, or drainage tile.
 - The **return well system** involves the drilling of a second well that is used to return the ground water to the ground aquifer.

Many geothermal heat pump units are equipped with an internal auxiliary electric heat plant to ensure that the heat is sufficient during periods of repair or extremely cold weather. The unit is designed as an integral part of a geothermal heating and cooling system, and the presence of this small auxiliary heat plant within the geothermal heat pump unit does not alter the qualifications for a deduction as a geothermal heating and cooling device.

Certain types of geothermal heat pump units are installed in conjunction with existing fossil fuel furnaces located within a structure. These types of configurations are commonly referred to as split systems. The geothermal heat pump unit uses the existing furnace's distribution system to distribute hot and cold air throughout the structure. The geothermal portion of a split system may qualify for the geothermal deduction under IC 6-1.1-12-34. However, the structure's base furnace and its distribution system shall be valued and assessed as part of the real property assessment. The "no heat" adjustment for geothermal heating described in Chapter 3 does not apply for a split system. If a split system exists in a particular structure, the applicable rates to value the geothermal portion of the system are taken from the cost schedules labeled "without distribution system".



Geothermal System

Data Collections Codes for Geothermal Systems

Table 3-14. Data Collection Codes for Geothermal Systems

This code	Indicates
HCLSWD	A horizontal closed loop system with a distribution system.
HCLSWOD	A horizontal closed loop system without a distribution system.
VCLSWD	A vertical closed loop system with a distribution system.
VCLSWOD	A vertical closed loop system without a distribution system.
ODOLSWD	An open discharge open loop system with a distribution system.
ODOLSWOD	An open discharge open loop system without a distribution system.
RWOLSWD	A return well open loop system with a distribution system.
RWOLSWOD	A return well open loop system without a distribution system.



Geothermal System

SCHEDULE G.1 (continued)
Residential Yard Improvements

Geothermal Heating and Cooling System Base Rate

HORIZONTAL CLOSED LOOP SYSTEMS

System Tonnage	HCLSWD	HCLSWD
	w/distribution	w/o distribution
2 Ton	10400	9100
2.5 Ton	13300	11200
3 Ton	16300	13600
3.5 Ton	19100	15900
4 Ton	22000	18100
5 Ton	27200	22600
6 Ton	32400	27000

VERTICAL CLOSED LOOP SYSTEMS

System Tonnage	VCLSWD	VCLSWD
	w/distribution	w/o distribution
2 Ton	12400	10900
2.5 Ton	15700	13700
3 Ton	20600	17800
3.5 Ton	22600	19100
4 Ton	25600	22400
5 Ton	32200	27400
6 Ton	38400	33000

OPEN DISCHARGE OPEN LOOP SYSTEMS

System Tonnage	ODOLSWD	ODOLSWD
	w/distribution	w/o distribution
2 Ton	8900	7600
2.5 Ton	11300	9300
3 Ton	13800	11100
3.5 Ton	16300	12800
4 Ton	18700	14600
5 Ton	22900	18200
6 Ton	27000	21800

RETURN WELL OPEN LOOP SYSTEMS

System Tonnage	RWOLSWD	RWOLSWD
	w/distribution	w/o distribution
2 Ton	9700	8600
2.5 Ton	12200	10300
3 Ton	14700	12100
3.5 Ton	17000	13700
4 Ton	19600	15500
5 Ton	23700	19000
6 Ton	27900	22600



Question

- How do I determine what kind of geothermal system (tonnage, horizontal or vertical system, distribution) a taxpayer has from the field?
 - It is quite difficult to get that information while in the field. The most likely place you'll find it in the field is from the taxpayer themselves however and the device is in the interior and underground. Tonnage can be estimated by the amount of square footage the dwelling is currently (about 600 – 700 sq. ft. per ton). Checking permits (if the county has a system) would help as well plus IDEM (Indiana Department of Environmental Management) has information regarding each system if the taxpayer filed for a deduction on the system.



Question

- How do these improvements appear on the property record card if it is a split system?
 - The geothermal system should be valued under the Summary of Residential Improvements section of the PRC. It is depreciated similarly to a dwelling with its own effective age, grade, and condition rating (however condition should reflect the dwelling).



Solar Energy Systems

- An energy system that uses the sun's rays to provide electricity to a dwelling (for our particular cause, solar heating and cooling).
- Valued similar to geothermal; however, the valuation can be on an independent system basis or component basis.
- Can be deducted using Form SES/WPD; however, the system must have at least a collection unit, storage medium, and a distribution unit plus it must not be a passive system.
- Chapter 3, pages 59 – 64.



Types of Basic Solar Systems

- A **liquid solar system** uses liquid as the transfer agent between the various components of the system. The solar collection unit, normally located on the roof of the structure, is connected to the remainder of the system by a series of pipes. The liquid contained within the system is pumped through the collection unit where heat collected from the sun's rays is transferred to the liquid. This heated liquid is periodically pumped to the storage medium—an insulated storage tank in a liquid system. As the liquid is pumped through a heat exchanger, which removes heat from the liquid, the heat is transferred to air or water for distribution throughout the structure.
- An **air system** operates in a similar manner to a liquid system but the transfer agent is warm air and the storage medium is pebbles or rocks. Through the use of a system of pipes, air is blown through the collection unit where heat is transferred to the air. The heated air is blown through a series of pipes to the storage vessel that contains pebbles or rocks. Heat, transferred to the rocks from the circulated air, is stored within the rocks for future use. This heat is then transferred to either air or water by a series of pipes for distribution throughout the structure.



Types of Solar Systems (DLGF)

Solar Heating and Cooling System Types

Table 3-13 lists the types of solar heating and cooling systems.

Table 3-13. Solar Heating and Cooling Systems

This type	Indicates
Type A	A solar collection unit of thirty (30) square feet, a storage medium consisting of either a one hundred twenty (120) gallon tank for a liquid system or a storage vessel with a rock surface area of four hundred (400) square feet for an air system, and an elaborate contractor installed distribution unit that requires minimum occupant
	involvement on a day-to-day basis. This type of system virtually runs itself through the use of sophisticated monitoring equipment. This type of system is normally designed for and incorporated into the structure at the time of construction.



Types of Solar Systems (DLGF)

Type B	A solar collection unit of twenty-five (25) square feet, a storage medium consisting of either an eighty (80) gallon tank for a liquid system or a storage vessel with a rock surface area of three hundred (300) square feet for an air system, and a contractor installed distribution unit that requires limited occupant involvement in the day-to-day operation of the system.
Type C	A solar collection unit of twenty (20) square feet, a storage medium consisting of either a sixty (60) gallon tank for a liquid system or a storage vessel with a rock surface area of two hundred (200) square feet for an air system, and a contractor installed distribution unit that relies on the occupant to make internal adjustments within the system during the day-to-day operation of the system.
Type D	A homemade solar collection unit of less than twenty (20) square feet and a storage medium of either a forty (40) gallon tank for a liquid system or a storage vessel with a rock surface area of two hundred (200) square feet or less for an air system. The Type D system uses the structure's existing base heating and cooling system as the distribution unit for the system. The Type D distribution unit's cost included in the cost schedules reflect the additional cost incurred to hook-up the solar portion of the system to the base heating system included in the structure's calculation of replacement cost.



Components of Solar Systems

Residential - Type Solar Heating and Cooling Systems

INDEPENDENT SOLAR SYSTEM (COMPLETE) RATES

Type	Liquid System	Air System
A	17900	21000
B	11000	13000
C	7000	8300
D	1800	2300

COMPONENT COSTS OF INDEPENDENT SOLAR SYSTEM

SOLAR COLLECTION UNITS

Type	SF	Per Unit
A	30	1800
B	25	900
C	20	500
D	minimal	300

SOLAR STORAGE MEDIUMS

Liquid Storage

Type	Gallons	Per Tank
A	120	500
B	80	300
C	60	100
D	40	100

Rock Storage

Type	Surface SF	Per Container
A	400	3600
B	300	2300
C	200	1400
D	Under 200	600

SOLAR DISTRIBUTION UNITS

(Includes the cost of pipe loops, transfer pumps, heat exchangers, air handlers, blowers, ducts, controls and control panels associated with either a liquid or air system.)

Type	
A	15600
B	9900
C	6400
D (integrated with existing base system.)	1400



Question

- How do I determine what kind of solar system a taxpayer has from the field?
 - Just like geothermal, it can be difficult to discern this information from the field. Most of the information will like come from three places: the taxpayer, permits, and county auditor applications (SES/WPD). However, components (such as the solar panels) can be easily identified from the exterior so there is some information that can be identified from the field.



Adjustments



Assigning Quality Grades

Construction quality is a central concept in the approaches used to value dwelling units and residential and agricultural yard improvements. The quality of the material and workmanship used in constructing an improvement, together with its design elements, will influence its cost new.

Construction quality, and the resultant quality grade assigned, is a composite characteristic. It describes the cumulative effects of workmanship, the costliness of materials, and the individuality of design used in constructing an improvement.

Although the construction quality of individual components of an improvement may vary, the overall construction quality tends to be consistent for the entire residence. This is true because a builder will normally install components that tend to be of consistent quality and that will compliment each other.



Assigning Quality Grades

Workmanship quality can easily be observed in an inspection of the property. Good quality workmanship is evidenced by plumb vertical surfaces, level horizontal surfaces, perfectly mitered trim joints, smooth interior surfaces on walls and ceilings, properly located and installed mechanical systems, and an overall pride in workmanship.

Material quality is also easily observable during an inspection of the property. Primary indicators of material quality are type and spacing of framing members, type and grade of interior and exterior finishing materials, type and grade of plumbing and electrical fixtures, and type and grade of mechanical systems.



Assigning Quality Grades

Design is also an indicator of quality of construction. Improvements using simple or standard floor plans, little or no exterior decorative millwork, and basic interior trim are indicative of average and low quality improvements. Examples of higher quality designed improvements are those that have custom designed floor plans, higher pitched roofs with more than one roof line, decorative exterior millwork and masonry, and detailed interior design characteristics.

2011 Real Property Assessment Manual – Book 1, page 3, Appendix A.



Assigning Quality Grades

- Easily the most subjective of all adjustments made by assessors.
- Percentage adjustment applied to a dwelling to account for the quality of workmanship, materials, and design not found in the base prices of the cost manual.
- Can be as low as 40% (Grade E-1), or as high as 360% (Grade AAA), and are found in Sch. F of App. C in the 2011 Real Property Assessment Manual.



Assigning Quality Grades

- The average quality grade, which is the basis for the base prices of the cost tables, is Grade C (100%).
- The following slides describe what is typical for each quality grade (not intermediate) structure (found in 2011 Real Property Manual App. A – pages 10 – 14).
- This should not be used as what requirements are needed exactly for a quality grade.



Assigning Quality Grades

Table A-3. Quality Grade Specifications for Dwelling Units (Grades “AAA” through “E”)

	“AAA” Grade	“AA” Grade	“A” Grade	“B” Grade	“C” Grade	“D” Grade	“E” Grade
Foundation	10” or 12” reinforced poured concrete; 10” or 12” concrete blk	10” or 12” reinforced poured concrete; 10” or 12” concrete blk	8” poured concrete or 8” concrete block	8” poured concrete or 8” concrete block	8” poured concrete or 8” concrete block	8” concrete block	8” concrete block or concrete block piers
Slab on Grade	6” reinforced concrete slab on sand or gravel base	6” reinforced concrete slab on sand or gravel base	4” concrete slab on gravel base	4” concrete slab on gravel base	4” concrete slab on gravel base	4” concrete slab on gravel base	4” concrete slab on gravel base
Structural floors	Wood or steel joists and sub floor sized & spaced to support additional interior components; foamed concrete surfacing	Wood or steel joists and sub floor sized & spaced to support additional interior components; may include foamed concrete surfacing	¾” plywood sub floor on 2”x8” or 2”x10” wood joists or wood I-joist	¾” plywood sub floor on 2”x8” or 2”x10” wood joists or wood I-joist	¾” plywood sub floor on 2”x8” or 2”x10” wood joists or wood I-joist	¾” plywood on 2”x8” wood joists	½” or ¾” plywood on 2”x8” wood joists



Assigning Quality Grades

Table A-3. Quality Grade Specifications for Dwelling Units (Grades “AAA” through “E”)

	“AAA” Grade	“AA” Grade	“A” Grade	“B” Grade	“C” Grade	“D” Grade	“E” Grade
Exterior Walls							
Framing	2”x6” or 2”x8” studs 16” o.c. with partial or total steel frame to allow for long spans in larger rooms	2”x6” or 2”x8” studs 16” o.c. with partial steel frame to allow for long spans in larger rooms	2” x 6” or 2”x4” studs 16” o.c. with insulation board	2” x 6” or 2”x4” studs 16” o.c. with insulation board	2” x 6” or 2”x4” studs 16” o.c. with insulation board	2” x 4” studs 24” o.c.	2” x 4” studs 24” o.c.
Frame Sdg.	Wood shakes or cedar/steel/vinyl lap siding or stucco on lath	Wood shakes or cedar/steel/vinyl lap siding or stucco on lath	Wood shakes or cedar/steel/vinyl lap siding or stucco on lath	Wood shakes or cedar/steel/vinyl lap siding	Composite, alum., plywood, or vinyl siding	Composite, alum., plywood siding or textured plywood	Composite lap siding or textured plywood
Masonry Sdg.	Very finest select brick, cut stone, marble, granite or equal	Select brick, cut stone, marble, granite or equal	Brick or stone veneer	Brick or stone veneer	Brick or stone veneer	No masonry veneer	No masonry veneer
Doors	Solid core wood or insulated steel doors, sidelights; transoms very finest quality hardware	Solid core wood or insulated steel doors, sidelights, high quality hardware	Solid core wood or insulated steel doors, sidelights, high quality hardware	Solid core wood or insulated steel doors, sidelights	Solid core wood or insulated steel doors, sidelights	Wood or steel doors	Wood doors
Windows	Very finest quality casement or double hung, energy efficient windows	High quality casement or double hung, energy efficient windows	Casement or double hung wood or vinyl clad with energy efficient glass	Casement or double hung wood or vinyl clad with energy efficient glass	Double hung wood or vinyl	Wood, aluminum, or vinyl	Wood, aluminum, or vinyl



Assigning Quality Grades

Table A-3. Quality Grade Specifications for Dwelling Units (Grades “AAA” through “E”)

	“AAA” Grade	“AA” Grade	“A” Grade	“B” Grade	“C” Grade	“D” Grade	“E” Grade
Roof							
Design	Custom design with many ridges and valleys with a pitch up to 6:12	Custom design with many ridges and valleys with a pitch up to 6:12	Multi-gable, hip & high pitch	Gable, hipped, or gambrel; moderate to high pitch	Gable, hipped, or gambrel; moderate pitch	Gable; moderate to low pitch	Gable; moderate to low pitch
Framing	Heavy wood rafters or custom trusses	Heavy wood rafters or custom trusses	Rafters or trusses	Rafters or trusses	Rafters or trusses	2"x4" trusses	2"x4" trusses
Sheathing	¾" or thicker plywood or boards	¾" or thicker plywood or boards	7/16" or thicker plywood or boards	7/16" or thicker plywood or boards	7/16" or thicker plywood or composition board	7/16" plywood or comp. board	Composition board
Cover	Wood shake, slate, or clay tile	Wood shake, slate, or clay tile	Wood shake or fiberglass shingles	Fiberglass or cedar shingles	Fiberglass or composition shingles	Fiberglass or composition shingles	Fiberglass or composition shingles
Soffits	Wide overhangs up to 3'	Wide overhangs up to 3'	12"-24" overhangs	12"-24" overhangs	12"-24" overhangs	12" or less overhang	No overhangs
Flashing	Copper	Copper or galvanized	Copper, galv., or aluminum	Copper, galv., or aluminum	Aluminum	Aluminum	Aluminum
Gutters	Designed and constructed to be an integral part of residence	5" or 6" wood, steel, or alum made as an integral part of roofline	5" or greater wood, steel, or alum.	5" or greater steel or aluminum	Aluminum or plastic	Aluminum or plastic	Aluminum or no gutters



Assigning Quality Grades

Table A-3. Quality Grade Specifications for Dwelling Units (Grades “AAA” through “E”)

	“AAA” Grade	“AA” Grade	“A” Grade	“B” Grade	“C” Grade	“D” Grade	“E” Grade
Interior Finish							
Flooring	Very finest quality or custom carpet and resilient cover, hardwood, terrazzo, ceramic, marble, granite	Best quality or custom carpet and resilient cover, hardwood, terrazzo, ceramic, marble, granite	Marble, ceramic tile hardwood, high-grade carpet and resilient flooring	Ceramic tile, good-grade vinyl, hardwood, good-grade carpet	Builders grade carpet and vinyl	Builders grade carpet and vinyl	Low grade carpet or vinyl
Wall Covering	Decorative drywall or plaster w/paint and/or very finest grade cover and/or hardwood panels	Decorative drywall or plaster w/paint and/or best grade cover and/or hardwood paneling	Drywall or plaster w/paint and/or high grade cover	Drywall or plaster w/paint and/or good grade cover	Drywall with paint	Drywall with paint	Inexpensive painted or textured drywall, printed hardboard
Interior Finish (continued)							
Doors	Very finest quality raised-panel solid hardwood w/finest quality hardware	Best quality raised-panel solid hardwood w/best quality hardware	Six panel or solid core doors; stained or painted w/high quality hardware	Six panel wood or composition doors, stained or painted w/good quality hardware	Six panel or slab wood or composition doors, stained or painted, average quality hardware	Hollow core wood doors; stained or painted	Hollow core wood doors; stained or painted
Trim	Decorative hardwood with	Decorative hardwood with	Oak, poplar, or pine 3-1/2”+ baseboard,	Oak, poplar, or pine 3-1/2”+ baseboard,	Pine 3-1/2” baseboard, 2-1/2”	Ranch base and	Ranch base and



Assigning Quality Grades

Table A-3. Quality Grade Specifications for Dwelling Units (Grades “AAA” through “E”)

	“AAA” Grade	“AA” Grade	“A” Grade	“B” Grade	“C” Grade	“D” Grade	“E” Grade
	extensive use throughout; installed w/excellent workmanship	extensive use throughout; installed w/excellent workmanship	2-1/2”+ casing, crown molding, chair rail, wainscoting	2-1/2”+ casing, crown molding, chair rail, wainscoting	casing	casing	casing
Cabinets	Very finest quality wood, resin, or baked enamel finish w/finest quality hardware; counter top of best quality plastics, ceramic, granite, or marble	Best quality wood, resin, or baked enamel finish w/best quality hardware; counter top of best quality plastics, ceramic, granite, or marble	High quality wood & hardware; counter top of laminate plastic, ceramic, or cultured marble	Good quality wood & hardware; counter top of laminated plastic or ceramic	Standard grade box cabinets w/standard hardware; counter top of laminated plastic	Standard grade box cabinets w/standard hardware; counter top of laminated plastic	Standard grade box cabinets w/standard hardware; counter top of laminated plastic
Built-ins	Bookcases, shelves, mantles, cabinets, desks, kitchen island, pantry, entertainment centers, wet bar, walk-in closets with built-in features, exercise room, large linen closets; vaulted or custom ceilings	Bookcases, shelves, mantles, cabinets, desks, kitchen island, pantry, entertainment centers, wet bar, walk-in closets; custom ceiling designs	Bookcases, mantles, entertainment centers, china cabinets	Bookcases and mantles	Mantles	---	---
Stairways	Very finest hardwood including handrail system; may be carpeted; may be curved	Oak, poplar, or other finish grade lumber including handrail system; may be carpeted; may be curved	Oak, poplar, or other finish grade lumber including handrail system; may be carpeted; may be curved	Oak, poplar, or other finish grade lumber including handrail system; may be carpeted	Oak, poplar, or other finish grade lumber including handrail system; may be carpeted	Pine; painted, stained or carpeted	Pine; painted, stained or carpeted
Bath Finish	Very finest quality ceramic tile, plastic laminates or marble	Best quality ceramic tile, plastic laminates or marble	High quality ceramic tile or marble	Good quality ceramic tiled bath	Ave. quality ceramic tile or fiberglass tub enclosure	Fiberglass tub enclosure	No finish over drywall in bath
Service	200 amp	200 amp	200 amp	100 or 200 amp	100 amp	60 or 100 amp	60 amp
Wiring	Conduit	Conduit	Romex cable	Romex cable	Romex cable	Romex cable	Romex cable
Outlets	Abundant outlets that are well-positioned	Abundant outlets that are well-positioned	Abundant outlets	Abundant outlets	Adequate outlets	Adequate outlets	Few outlets
Fixtures	Very finest quality; custom light treatments; High value	Best quality; under counter and cabinetry lighting High value	High grade fixtures	Good grade fixtures	Average grade fixtures	Average or inexpensive fixtures	Inexpensive fixtures



Assigning Quality Grades

Table A-3. Quality Grade Specifications for Dwelling Units (Grades “AAA” through “E”)

	“AAA” Grade	“AA” Grade	“A” Grade	“B” Grade	“C” Grade	“D” Grade	“E” Grade
	chandeliers throughout	chandelier					
Heating							
Equipment	Large capacity central forced air or steam; may include more than one heating plant; insulated ductwork or piping	Large capacity central forced air or steam; may include more than one heating plant; insulated ductwork or piping	Central forced air or steam	Central forced air or steam	Central forced air	Central forced air	Central forced air or space heaters
Thermostat	Zoned	Zoned	Zoned	Central	Central	Central	Central
Plumbing							
Piping	Copper or iron	Copper or iron	Copper or iron	Copper or iron	Copper, iron, or plastic	Plastic	Plastic
Kitchen Fixtures	Very finest quality porcelain or stainless steel; multiple sinks; very finest quality faucets	Best quality porcelain or stainless steel; multiple sinks; best quality faucets	High quality porcelain or stainless steel sink; high quality faucets	Better quality porcelain or stainless steel sink; better quality faucets	Average quality porcelain or stainless steel sink; average quality faucets	Stainless steel sink; average quality faucets	High quality pedestal sink or vanity; high quality faucets
Bathroom Fixtures	Very finest quality tiled shower stall; sunken tub; jacuzzi; bidet, vanities or pedestal sinks	Best quality tiled shower stall; sunken tub; jacuzzi; bidet, vanities or pedestal sinks	High quality pedestal sink or vanity; high quality faucets and fixtures	Good quality pedestal sink or vanity; good quality faucets and fixtures	Average quality vanity; average quality faucets and fixtures	Average quality vanity; average quality faucets and fixtures	Wall hung lavatory; average quality faucets and fixtures
Vanity Tops	Very finest quality marble, ceramic, or equal	Best quality marble, ceramic, or equal	Marble, ceramic, high quality plastic laminates	Cultured marble, ceramic, better quality plastic laminates	Cultured marble, ceramic, average quality plastic laminates	Plastic laminates	---
Design Characteristics							
	One-of-a-kind, architecturally designed for an individual; specifies very finest quality workmanship, fenestration, appointments, finishes, and considerable attention to detail	Architecturally designed with attention to detail	Individual custom design with attention to detail	Custom built	Tract type	Tract type	Tract type
	Numerous cuts,	Numerous cuts,	Numerous cuts,	Few cuts, angles,	Rectangular or with	Rectangular	Rectangular



Assigning Quality Grades

"AAA" Grade	"AA" Grade	"A" Grade	"B" Grade	"C" Grade	"D" Grade	"E" Grade
angles, and offsets	angles, and offsets	angles, and offsets	and/or offsets	minor offsets		
Stresses uniqueness, height and irregularity	Stresses uniqueness, height and irregularity	Stresses height and irregularity	Stresses horizontal & symmetrical	Stresses eye appeal w/standard colors	Meets minimum building code	May not meet minimum bldg. code



Assigning Quality Grade

- Should not be changed in the field, more research is necessary.
- For purposes of sales disclosure verification, if multiple dwellings have a considerable change in grade, all dwellings in the neighborhood should probably be reviewed for consistency due to sales chasing problems.
- Use of MLS (Multiple Listing Service) for quality grade changes: extreme caution recommended.



Assigning Condition Ratings

The condition and the economic life of a structure can be changed by maintenance and modernization. A residential structure has at the day it was brand new and first occupied an estimated total economic life. By changing, maintaining, or modernizing the structure, the age of the structure is effectively lowered, thereby the total economic life is extended. This change in economic life is reflected in the condition rating assigned to the structure.



Assigning Condition Ratings

The effective age of the structure, as used in this manual, is expressed by the condition rating assigned to the structure. Generally, similar structures tend to depreciate at about the same rate over their economic lives. The way in which the owners maintain them can influence the pace of their depreciation. If structure “A” is maintained better than comparable structure “B” then the effective age of structure “A” will be less than that of structure “B”. It is the condition of the structure that is the key to determining the effective age. Effective age may also be changed in a residential structure when remodeling takes place and the structure is updated, renovated, or when additional area is added which increases the structures functional utility.

2011 Real Property Assessment Manual – Book 1 – Appendix B, Page 5



Assigning Condition Ratings

- Chronological Age – The actual age of a structure from when it was built to the current year.
- Effective Age – The age of a structure as compared to other structures performing like functions.

Could be the same as Chronological Age however very little change, in terms of renovation, would occur.



Assigning Condition Ratings

Table 3-12. Condition Ratings

CONDITION RATING	EXPLANATION OF CHARACTERISTICS
Excellent	The structure is in near perfect condition. It is very attractive and is highly desirable. It meets all current design requirements as set forth by the buyers and sellers in the market. Generally, any item that could be or would be normally repaired or refurbished has been corrected. There are generally no functional inadequacies of any consequence and all of the short-lived items are in like new condition.
Good	Minor deterioration visible in the building. It is more attractive and more desirable than the average building of its chronological age. Generally, all items are well maintained and many of them have been overhauled and repaired as they have shown signs of wear. There is very little deterioration or obsolescence evident and there is a high degree of functional utility in the parcel and in the structure.
Average	Normal wear and tear is apparent in the building. It has average attractiveness and desirability. There are typically minor repairs that are needed along with some refinishing. In this condition, most of the major components are still viable and are contributing to the overall utility and value of the property.



Assigning Condition Ratings

Fair	Marked deterioration is evident in the structure. It is rather unattractive or undesirable but still quite useful. This condition indicates that there are a substantial number of repairs that are needed. Many items need to be refurbished, overhauled, or improved. There is deferred maintenance that is obvious.
Poor	Definite deterioration is obvious in the structure. It is definitely undesirable or
	barely useable. Extensive repair and maintenance are needed on painted surfaces, the roof, and the plumbing and heating systems. There may be some functional inadequacies or substandard utilities. There is extensive deferred maintenance.
Very Poor	Conditions in the structure render it unusable. It is extremely unfit for human habitation or use. There is extremely limited market value in use and it is approaching abandonment. The structure needs major reconstruction to have any effective economic value.



Assigning Condition Ratings

- Should not be applied in the field unless overwhelming evidence is apparent; most condition changes require further research.
- Use of MLS for condition changes(Multiple Listing Service): extreme caution advised.



Question

- How do I determine effective age when a new addition is added to a residential improvement?
- The new addition's age is added by using a weighted average of the existing square footage plus the new addition.
- Example: I have a 2,500 sq. ft. where 2,000 sq. ft. of the house was built in 1984 and had a 500 sq. ft. addition built after January 1, 2018.
- Assign each part of percentage of the total square footage (2,000 sq. ft. is 80% and 500 sq. ft. is 20%) and multiply by the year built then add the two together.

$$.80 \times 1984 = 1587.2$$

$$.20 \times 2018 = 403.6$$

1990.8 or 1991 Effective Age Year



Question

- What would you recommend using to make effective age changes that occur by way of significant renovation or rehabilitation?
 - There are multiple ways to correct the effective age with objective data. Some use a modified sales comparison approach to add value for a specific renovation (e.g. new carpet adds \$5,000 to the sales price), or some even use the Percent Complete schedule in the Manual to make adjustments.



Percent Complete

- Some improvements, if doing new construction, may not be complete as of the date of inspection.
- Real Property Assessment Manual – Book 1 provides percentage deductions based on the completeness of the dwelling.



Percent Complete

PERCENTAGE OF COMPLETION

The following is a guideline for estimating the percent completion for a typical, average-quality, single-family residence.

Excavation, forms, water/sewage hook up, and concrete	14%
Rough framing	21%
Windows, exterior door, and floor cover	5%
Rough-in plumbing, insulation, and electrical service	16%
Exterior	6%
Interior drywall and ceiling finish	8%
Built-in cabinets, interior doors, trim, etc.	13%
Plumbing fixtures	5%
Floor covers and built-in appliances	6%
Light fixtures, painting, and decorating	6%
TOTAL	100%



Percent Complete

- Indicate at what stage the dwelling is complete on your notes.
- Work frontwards or backwards to determine the percentage adjustment.
- E.g. a dwelling is built to the point where the plumbing fixtures are about to be installed. The adjustment would be 83% due to subtracting 17% for the no light fixtures, painting, or decoration; no floor covers or appliances; and no plumbing fixtures installed yet.



Finishing Up

- Determine if depreciation is accurate.
- All relevant data is noted, pictures taken, organize files for storage or digitizing.
- Return to base or move to next parcel.



Helpful Tips

- Establish standard operating procedures (SOP).
- Group meetings for consistency and uniformity.
- Train above and below your job level.



Questions?



Thanks

- A big thank you to Porter County Assessor's Office for reference material.



Contact

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