

Chapter 9

Mass Appraisal of Residential Properties

This chapter provides an overview of the residential mass appraisal technique called the market-related cost approach. The market-related cost approach is a blend of the cost and direct sales comparison approaches to value.

The same principles followed in an individual appraisal are used in mass appraising, although their application may differ slightly. Appraisals made on an individual basis generally involve direct comparison between sales and subject. In mass appraisal, a large volume of data, including sales, income, expenses and construction costs, is processed. This data is developed into base unit values for each property type within an appraisal area. When the base unit is applied to a specific property and appropriately adjusted, mass appraisal takes on the nature of direct comparison. The advantage of using a mass appraisal system is that it creates accurate value estimates quickly at relatively low cost. Furthermore, only a mass appraisal system can address the question of uniformity and equity in assessments.

The steps in this chapter discuss the valuation of single-family improvements. However, they apply to all property types.

Basic Costing Procedures

The basic costing procedure of the market-related cost approach is the same as the standard cost approach, and is a process of:

- Inspecting the property;
- Properly classifying the property; and
- Applying the appropriate cost factor.

Inspecting the Property

- **Preliminary.** Receive and review an improvement appraisal card to check the accuracy of the account number, map number, and the tax code. The address and physical location of the property must also be matched to the field map.

- **Interior inspection and inventory.** Interview the owner for property information, history, and sales information. During the interior inspection, note room inventory, layout,

functional utility, and quality of materials and construction, as well as any deferred maintenance. Always record these features on the appraisal card.

- **Exterior inspection and inventory.** During the inspection of the exterior, note the quality of materials and workmanship, basic design of the house, and any items relating to its physical condition.
- **Measure residential improvement and plot diagram.** Measure the residential improvement, all outbuildings, and yard improvements such as driveways and retaining walls. Plot these measurements on a permanent diagram card, keeping the outbuildings and yard improvements in proper relationship to the residential improvement on the permanent diagram card.
- **Balance measurements.** To avoid unnecessary return trips to the property, all measurements should be balanced on the diagram card to be sure the diagram will close. Recheck notations of construction features.

Classification

After the residential improvement has been inspected, properly class the house. Classification is important to determine the proper quality cost level for the improvement.

The basis for residential improvement classification in the market-related cost approach is the publication, *Cost Factors for Residential Buildings*, 150-303-419 (Rev. 4-93), and quality class benchmarks developed for your area. The cost factor book is divided into eight quality levels (classes) of construction. (Refer to this book for base specifications and descriptions of each class.)

The class of a residential improvement is determined by comparing its construction quality (materials and workmanship) with the base specifications found in the cost factor book. For example, the base specifications call for fair quality in a class 4 house, while a class 5 house is specified to be average quality.

However, not all houses fall distinctly within a class. A house with predominantly class 5 average quality materials and workmanship, yet with a number of class 4 fair quality features, would be a class 5 minus house. A house with predominantly class 4 fair quality features and a number of class 5 average quality features would be a class 4 plus. These features include such things as cabinets, carpeting, windows, plumbing fixtures, light fixtures, and exterior covering.

To help class the house and maintain uniformity with other staff appraisers, compare the subject to benchmarked homes in your classification benchmark books. (The development of the classification benchmark books is discussed later in this chapter.)

The following three pages, taken from the *1993 Cost Factors for Residential Buildings*, show the class features, base specifications, and the cost factor tables for a class 5 house.

Conventional

insert

Class — 5

Class features

These buildings constitute an average quality home, built for speculation or on order, by the volume builder. The dwellings reflect popular combinations of styling, design, functional utility, and convenience of floor plan. These homes are acceptable to a broad portion of the market.

Exterior ornamentation such as brick veneer, railings, or cornice trim may be present. These homes will have a larger entry area, often multi-storied, with some type of outside window area to give an even more expansive feeling. Typically, windows will be larger and more numerous, with accent windows being common. Bathroom fixtures will be of average quality and may include china lavatories, and entry level designer faucets. Built-in appliances often include separate ovens and cooktops. Interior features may consist of a small amount of average quality hardwood paneling and painted or stained wainscoting.



Conventional

Class - 5 (cont.)

Item	Base Specifications
Foundation	Crawl space excavation; spread footing; continuous concrete or masonry perimeter wall; interior piers; vent openings; access opening; backfill and grading.
Exterior Wall	Stud frame construction; insulation; sheathing and average quality painted siding or equivalent construction; average quality exterior doors and windows; may have optional items such as masonry trim, window boxes, shutters, etc.
Roof	Moderate to complex design; wood frame construction; ceiling joists; average quality solid or spread sheathing; medium weight cedar shake cover; ceiling insulation; gutters and downspouts; moderate attention to roof trim
Floor	Wood frame construction; underpinning; subflooring; average quality hardwood flooring and finish or underlayment and carpet; average quality resilient cover or tile in appropriate areas.
Partitions	Wood frame construction; average quality textured plaster or drywall with painted surfaces, wallpaper, veneer paneling or wainscoting; average quality doors, hardware and trim; painted or stained average quality softwood millwork; similar material for ceiling cover and interior cover of exterior wall
Interior Components	Quantity of cabinetry proportionate to overall house size; cabinets of average quality plywood with hardwood veneer or hardboard with painted or stained finish; average quality plastic or tile countertops and backsplash; wardrobe, linen, and utility closets with shelving; average quality hardware; moderate width stairway of single or double angles with landings, hardwood rail with painted softwood spindles, and average quality carpet or hard wood tread cover.
Electrical	Entry service; multi-circuit panel; nonmetallic sheathed cable wiring; adequate number of convenience outlets; average quality light fixtures; range and dryer outlets; may have special appliance and equipment outlets
Plumbing	Rough-in plumbing costs only
Heating-Cooling	None in base specifications
Exterior Components	Average quality open front entry porch integrated with house design, adequate to cover entry area; concrete or wood steps and floor

Conventional

Class — 5

Cost Factor Tables

One Story Base Factors (Floor Area — Cost Per Sq. Ft.)

	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600	1,700	1,800	1,900	2,000
0	\$81.48	77.39	74.11	71.44	69.21	67.32	65.70	64.30	63.07	61.99	61.02	60.16	59.39
10	81.02	77.03	73.82	71.20	69.00	67.14	65.55	64.17	62.95	61.88	60.93	60.08	59.31
20	80.58	76.68	73.54	70.96	68.80	66.97	65.40	64.04	62.84	61.78	60.84	60.00	59.24
30	80.15	76.33	73.26	70.73	68.61	66.81	65.26	63.91	62.73	61.69	60.76	59.92	59.17
40	79.72	75.99	72.98	70.50	68.41	66.64	65.11	63.79	62.62	61.59	60.67	59.84	59.10
50	79.31	75.66	72.71	70.27	68.22	66.48	64.97	63.66	62.51	61.49	60.58	59.76	59.03
60	78.91	75.34	72.45	70.05	68.04	66.32	64.83	63.54	62.40	61.40	60.50	59.69	58.96
70	78.52	75.02	72.19	69.83	67.85	66.16	64.70	63.42	62.30	61.30	60.41	59.61	58.89
80	78.13	74.72	71.93	69.62	67.67	66.00	64.56	63.30	62.19	61.21	60.33	59.54	58.82
90	77.75	74.41	71.68	69.41	67.49	65.85	64.43	63.18	62.09	61.11	60.24	59.46	58.75

	2,100	2,200	2,300	2,400	2,500	2,600	2,700	2,800	2,900	3,000
0	\$58.69	58.06	57.47	56.93	56.44	55.99	55.57	55.18	54.82	54.48
10	58.62	57.99	57.41	56.88	56.39	55.95	55.53	55.14	54.78	54.45
20	58.55	57.93	57.36	56.83	56.35	55.90	55.49	55.10	54.75	54.41
30	58.49	57.87	57.30	56.78	56.30	55.86	55.45	55.07	54.71	54.38
40	58.42	57.81	57.25	56.73	56.26	55.82	55.41	55.03	54.68	54.35
50	58.36	57.75	57.19	56.68	56.21	55.77	55.37	54.99	54.64	54.32
60	58.30	57.69	57.14	56.63	56.17	55.73	55.33	54.96	54.61	54.29
70	58.23	57.64	57.09	56.58	56.12	55.69	55.29	54.92	54.58	54.25
80	58.17	57.58	57.04	56.54	56.08	55.65	55.25	54.89	54.54	54.22
90	58.11	57.52	56.98	56.49	56.03	55.61	55.22	54.85	54.51	54.19

Second Floor Factors (Floor Area — Cost Per Sq. Ft.)

	400	500	600	700	800	900	1,000	1,100	1,200	1,300	1,400	1,500	1,600
0	\$57.25	53.15	50.42	48.46	47.00	45.86	44.95	44.20	43.58	43.06	42.61	42.22	41.87
10	56.75	52.83	50.19	48.30	46.87	45.76	44.87	44.14	43.53	43.01	42.56	42.18	41.84
20	56.27	52.52	49.97	48.14	46.75	45.66	44.79	44.07	43.47	42.96	42.52	42.14	41.81
30	55.82	52.22	49.76	47.98	46.63	45.57	44.71	44.01	43.42	42.91	42.48	42.11	41.78
40	55.38	51.93	49.56	47.83	46.51	45.47	44.63	43.94	43.36	42.87	42.44	42.07	41.75
50	54.97	51.66	49.36	47.68	46.40	45.38	44.56	43.88	43.31	42.82	42.40	42.04	41.72
60	54.57	51.39	49.17	47.54	46.28	45.29	44.48	43.82	43.26	42.78	42.37	42.01	41.69
70	54.19	51.13	48.99	47.40	46.17	45.20	44.41	43.76	43.21	42.73	42.33	41.97	41.66
80	53.83	50.89	48.81	47.26	46.07	45.12	44.34	43.70	43.16	42.69	42.29	41.94	41.63
90	53.48	50.65	48.63	47.13	45.96	45.03	44.27	43.64	43.11	42.65	42.25	41.91	41.60

	1,700	1,800	1,900	2,000
0	\$41.57	41.31	41.07	40.85
10	41.54	41.28	41.04	40.83
20	41.52	41.25	41.02	40.81
30	41.49	41.23	41.00	40.79
40	41.46	41.21	40.98	40.77
50	41.44	41.18	40.95	40.75
60	41.41	41.16	40.93	40.73
70	41.38	41.13	40.91	40.71
80	41.36	41.11	40.89	40.69
90	41.33	41.09	40.87	40.67

Applying Appropriate Cost Factors

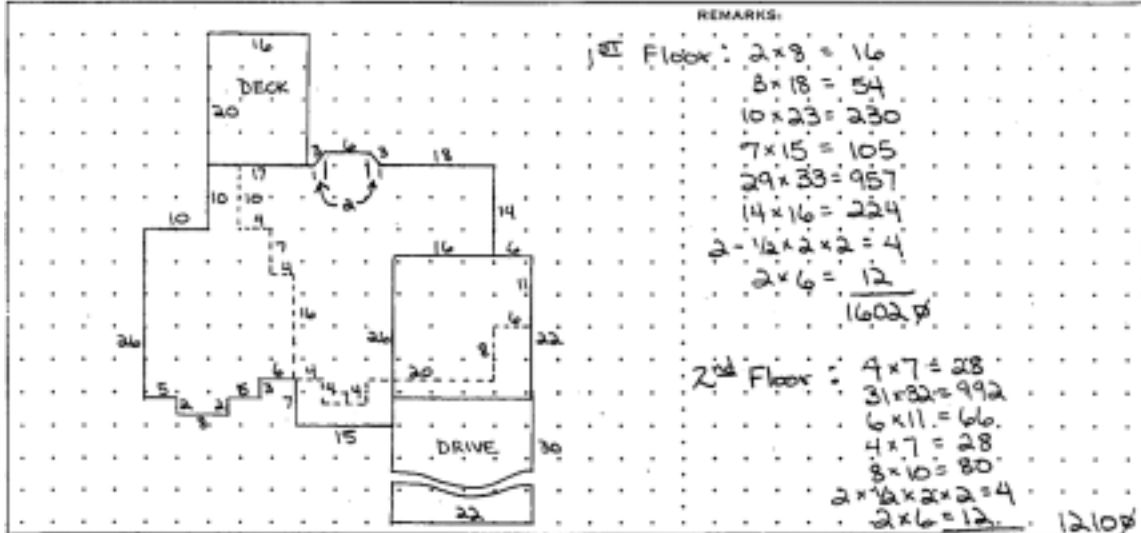
Once the proper house classification has been established, the next step is to develop the replacement cost new. In the following example, a class 5 house is used.

Improvements description:

- The home being appraised is a two-level 2,812 square foot, class 5 house with attached double-car garage.
- The first floor is 1,602 square feet consisting of a living room, dining room, kitchen, breakfast nook, family room, half bath, utility room, and den.
- The second floor is 1,210 square feet consisting of three bedrooms and two baths.
- The garage is 484 square feet and partially covered by the second floor.
- Other improvements include a driveway, wood deck, and a lawn sprinkling system.

The following page is an example of a completed department-supplied residential appraisal card for the above property.

BUILDING DIAGRAM AND OUTBUILDINGS



NO.	TYPE USE	DESCRIPTION					DIMENSIONS	AREA S.F. BASE ADJ. BASE	REPL. COST LUMP SUM TOTAL	QUAL. INDEX % IMP.	REPL. COST	DEP. % PHYS. % USE % GOOD %	DEPRECIATED REPLACEMENT NET COST	
		FOUND	FLOOR	ROOF	WALLS	MISS.								
5	SHAKE CLASS 5 DECK FR. BUILT 22	C	C	SHAKE	LP	FINISH	23' x 23'	484	7996					
				M.E.D.		OPERERS	x	13.27	640	125				
							28300	x	16.52	8636		10795	97	10470
1	DRIVE		C				22' x 30'	660					60	
							x			125			100	
								1.55	1023		1279	60	770	
2	DECK	PIER	CEDAR				16' x 30'	320	2048					
							x		380	125				
								6.40	2428		3035	90	2730	
3	SPRINKLERS						5000	5000	2250					
									500	1.25				
								.45	2750		3438	97	3330	
4							x							
							x							
							x							
5							x							
							x							
6							x							
							x							
							x							
7							x							
							x							
							x							
8							x							
							x							
							x							
TOTAL DEPRECIATED REPLACEMENT COST—OUTBUILDINGS AND OTHER IMPROVEMENTS (TRANSFER TO VALUE SUMMARY)												6830		

For more detailed instruction on use of cost factors, refer to the General and Special Instructions sections of *Cost Factors for Residential Buildings*.

Preappraisal Set-up

The foundation of the market-related cost approach is the preappraisal set-up. This section follows the step-by-step procedure to set up the residential mass appraisal program. The valuation of land has been discussed in Chapter 8, the Mass Appraisal of Land.

The steps for preappraisal set-up (following established land base) are:

- Establish a base appraisal date;
- Define neighborhood boundaries;
- Gather improved sales data;
- Establish class benchmarks;
- Compute a LCM;
- Develop depreciation benchmarks;
- Develop a depreciation schedule based on actual age;
- Develop adjustments to base depreciation schedule;
- Post information on the field maps.

Establish the Base Appraisal Date

The main significance of the base appraisal date is that it provides a predetermined point in time to which all time adjustments can be aimed. For instance, all the sales used in the preappraisal set-up for the LCM and depreciation studies should be adjusted to the base appraisal date to reflect either inflationary or recessionary trends in the market.

Establish the Neighborhood

A neighborhood is a group of properties that share important characteristics. A neighborhood is typically a distinct group of properties that is often identified by a geographic (physical) boundary, or a group of properties that reacts in a similar manner to market influences. Refer to Chapter 8 for more discussion on this topic.

Collect Improved Sales Data

Once the reappraisal area has been identified, the collection of sales data begins. Since the collection of data for unimproved land and sites has been covered in Chapter 8, this chapter will focus on the collection of improved sales data. The improved sales collection should include single-family residences, duplexes, triplexes, fourplexes, and manufactured homes.

Improved sales for the reappraisal area are collected and verified. Verification should be made with one of the principals of the sale (the buyer or the seller) or the real estate agent.

Verification of information should include:

- Confirming the sales price.
- Determining if the sale was an arm's-length transaction.
- Identifying date of sale.
- Identifying the terms.
- Finding out if buyers and sellers are knowledgeable about the market.
- Discovering if there are any problems with the sale or property.
- Determining if the sale is new construction. If so, obtain construction costs to use in the LCM study.
- Asking if there were any additions or improvements made to the property after the sale.
- Asking permission to inspect the property.

All verified sales should be inspected (interior and exterior), measured, and inventoried. All rental information should be collected to develop gross monthly rent multipliers.

Now that all the sales data has been collected, it is time to organize, develop, and integrate the data into the reappraisal set-up process.

Quality Class Benchmarks

A cost factor book, such as the *Cost Factors for Residential Buildings* published by the Oregon Department of Revenue, serves as the basis for the market-related cost approach to value. The beginning point for using a cost manual for the appraisal of large numbers of improvements is the establishment of base standards or benchmarks.

A benchmark is a reference point from which all other properties are measured.

Quality class benchmarks are established so appraisers can be consistent in estimating the quality level of construction of various improvements. These quality class benchmarks must correspond with the base standards described in the cost factor book being used.

Class benchmarks do not need to be sold properties or new construction. They are selected only for their ability to illustrate quality of construction. These properties must be inspected and an accurate description of the improvements made. Enough representative buildings for each type and quality class must be selected.

The benchmarks should be established using a standard format that includes exterior and interior color photos and a brief description of quality items. These forms are then combined into a notebook to be used by all appraisers assigned to the appraisal areas.

The supervising or lead appraiser should field review all quality class benchmarks to ensure uniformity is achieved.

The class benchmarks must be developed before starting the LCM study.

Each appraiser should have a copy of the benchmarks available for review in the field.

Following is an example of a class 5 quality benchmark for a residential improvement:



Typical Class 5 Interior Features



Local Cost Modifier (LCM)

A LCM is a market-derived modifier. Since the *Cost Factors for Residential Buildings* is based on the Portland area as of a specified date, it is imperative that the data be modified to reflect the location and base appraisal date of your appraisal area. A properly developed LCM is important since it establishes the replacement cost level used to measure all depreciation. A LCM must be developed and documented for all factor books used in your reappraisal area, including backup sources such as *Marshall Valuation Services*.

You can obtain building construction costs from local contractors. Information such as labor and material costs help determine the cost modifier applied to cost factor books. Costs of minor improvements, such as decks, fences, swimming pools, and spas, can provide essential data for keeping appraisals accurate and uniform. It is important to maintain a list of contacts for such information so the data can be updated annually.

A local cost modifier will also need to be developed for farm buildings. Actual construction costs will be more readily obtainable for these buildings than sales of property where the costs can be abstracted. Again, make sure all items of cost are included, both direct and indirect. Refer to the general instruction pages of the *Cost Factors for Residential Buildings* for lists of these costs. These studies can be incorporated into the appraisal of new construction (red tags) for January 1 of each year.

To develop and document a LCM, follow these procedures:

1. Select a representative sample of the type and class of new property sales from the current appraisal area. These sold properties should be typical of the current market, and not reflective of abnormal discounts, unusual financing, or other atypical influences. Older, pre-existing properties cannot be used in the study.
2. Determine the sales price of the property.
3. Time adjust the sale to the base appraisal date.
4. Determine the improvement residual by subtracting the estimated current land value which must include an increment for the on-site development (OSD).
5. Subtract current market costs of minor improvements such as decks, drives, patios, and garden sheds from the improved sales price.

6. Develop a replacement cost new estimate for the improvement of each sale using the appropriate cost factor book.
7. Divide the improvement residual by the replacement cost new estimate.

The result is the local cost modifier for this sale.

Use a LCM worksheet to organize the sales data. A LCM worksheet should include:

- Account number;
- Property address;
- Improvement class;
- Improvement characteristics;
- Condition rating;
- Sale terms;
- Sale date;
- Time adjustment;
- Market land value;
- Improvement residual;
- RCN estimate;
- Sales price per square foot estimate;
- LCM indicator; and
- Color photograph.

The following page provides an example of a LCM worksheet.

Local Cost Modifier Worksheet

Acct # _____ Map # _____ LCM # _____
 SITUS _____

Class _____
 Yr Bilt _____
 1st Fl Sf _____
 2nd Fl Sf _____
 Attic _____
 Unfin Bsmt _____
 Fin Bsmt _____
 Total Fin _____
 Bedrooms _____
 Baths _____
 Bilt In _____
 Heat _____
 F.P. _____
 Garage _____
 Carport _____
 Other _____

LAND IMP. TOTAL % GOOD _____

VALUE: _____

Rating: Phy: P F A G E Funct: P F A G E Appear: P F A G E
 Financing: Type _____ Int Rate _____ Dn Pymt _____ Yr Mrtg _____ Points _____
 Verified _____ With Whom _____ Int Insp _____ Ind of Good Sale _____

Appr Zone _____ Prop Class _____ Zone _____
 Land Sch _____ Size _____

Buyer/Seller Comments: _____

Remarks: _____

Appraiser _____ Date _____

Sales Date _____ \$ _____
 P.P. \$ _____
 M.H. \$ _____
 Other \$ _____
 Total Reductions \$ _____
 Adj Sales Price \$ _____
 Adj for Time: Mult _____ \$ _____
 Land Value \$ _____ \$ _____
 On Sites \$ _____ \$ _____
 Total Land \$ _____
 Building Residual \$ _____
 + \$ _____
 Cost Factor Estimate
 At 100% \$ _____
 SALE PRICE/S.F. \$ _____

= LCM

At the time you develop LCMs, most of the sales data collection of new construction should already be accomplished. When reviewing new construction, try to include interior and exterior photos to aid in classifying improvements. This practice will save having to reinspect and reverify them.

An adequate number of sales for a LCM study will vary from county to county and appraisal area to appraisal area. There should be enough sales information to determine a reasonable LCM conclusion. A countywide study for some property classifications may be necessary.

Now that the sales prices have been verified, develop a time trend to adjust all sales to the base appraisal date. The time adjustment studies should be conducted as close to the base appraisal date as possible. Time adjustments can be made using either resale properties or a sales analysis of similar properties. Changes in the price of similar properties over time are compared to determine a monthly rate of increase or decrease expressed as a percentage. If resales are not available, the trends can be determined by the assessor's sales ratio study.

Example

Sales Information

Sale No. 1	Sale No. 2	Sale No. 3
1,500 sq. ft.	1,500 sq. ft.	1,500 sq. ft.
1 story	1 story	1 story
new traditional builder XYZ	new traditional same builder	new traditional same builder
stock floor plan	same floor plan	same floor plan
DOS 1/15/01	DOS 7/20/01	DOS 4/10/02
SP \$128,000	SP \$135,000	SP \$147,800

Analysis

The percent difference between Sale 1 and Sale 2 is 5.5 percent. The time difference is six months, or .91 percent per month.

The percent difference between Sale 2 and Sale 3 is 9.5 percent and the time difference is 9 months, or 1.05 percent per month.

The percent difference between Sale 1 and Sale 3 is 15.5 percent. The time difference is 15 months, or 1.03 percent per month.

It could be concluded that the sales time adjustment is stabilized at 1 percent per month. Sale prices should be time trended 1 percent per month from the time of sale to the base appraisal date.

The more sales used in such studies, the higher the degree of accuracy.

When deducting the land value from the sale, make sure the amount of landscaping included in the OSD represents only what was included in the sale. If additional improvement has been added after the sale, the improvement residual would be artificially low.

With all the LCM worksheets completed and the time trends applied, it is time to compute the LCM. There are two ways to compute it.

The first method divides the total adjusted improvement sales prices by the total improvement replacement cost to develop a weighted mean LCM indicator.

Building No.	Actual Cost of New Structure	Factor Book Cost Estimate
1	\$106,300	\$ 95,500
2	53,000	53,500
3	80,500	71,900
4	216,100	203,600
5	37,700	35,500
6	<u>166,000</u>	<u>162,600</u>
TOTALS	\$659,600	\$622,600

$\$659,600$ (Actual Cost) \div $\$622,600$ (Factor Book Cost Estimates) = 1.06 Local Cost Modifier

The second and preferred method of analyzing the sales extends the information on a spreadsheet. Organize the spreadsheet to include:

- Account number of the sale;
- Adjusted sale price;
- Market land value;
- Sales price of improvements;
- Replacement cost new;

- Indicated LCM;
- Class;
- Square feet;

- Indicated cost per square foot of the improvements only; and
- LCM indicators/class.

Following is an example of a LCM spreadsheet.

Local Cost Modifier Study

CLASS: _____ AA: _____ APPRAISAL DATE: _____ MONTHLY TIME ADJUSTMENT: _____

SALE #	LOCATION	SALE PRICE	SALE DATE	TIME ADJ.	ADJ. SALE PRICE	SITE VALUE	LINDSC & OSD	BLDG CLASS	LESS MINOR IMPS	HOUSE VALUE	HOUSE SIZE	RCN	LOM
3	15 07 78B 2200	58,380	10-02	1.06	61,880	12,000	2,500	3	1,500	45,880	1,008	43,000	1.07
6	15 07 78B 2500	65,077	8-02	1.07	69,630	15,000	2,500	3	1,800	50,330	1,245	48,780	1.03
7	15 07 78B 2800	63,877	5-02	1.10	70,265	14,000	2,500	3	1,750	52,015	1,165	49,670	1.05
8	15 07 78C 800	64,335	12-02	1.05	67,552	14,500	2,500	3	1,650	48,902	1,109	45,650	1.07
								3		197,127		187,100	1.05
10	15 21 22AA 10900	78,000	6-02	1.09	85,020	16,000	3,500	4	2,100	63,420	1,545	56,610	1.12
5	15 21 22AB 1500	98,880	4-03	1.02	100,858	20,000	6,000	4	1,950	72,908	1,748	62,950	1.16
11	15 21 22AB 3500	104,250	2-03	1.03	107,377	16,000	4,500	4	2,000	84,877	1,600	72,039	1.18
13	15 21 22BA 2600	110,850	8-02	1.07	118,610	25,000	4,500	4	2,050	87,060	1,800	72,750	1.20
								4		308,265		264,349	1.17
1	15 23 08CA 600	155,000	2-03	1.03	159,650	30,000	8,000	5	2,000	119,650	2,000	84,110	1.42
17	15 23 08CA 2900	167,800	8-02	1.07	179,546	37,000	6,000	5	2,250	134,296	2,450	99,820	1.35
20	15 23 08CB 3600	161,870	10-02	1.06	171,603	35,000	6,000	5	2,300	128,303	2,416	102,480	1.25
21	15 23 08CB 11200	149,800	5-02	1.10	164,780	25,000	4,000	5	1,950	133,830	2,145	90,760	1.47
								5		516,079		377,170	1.37

This second method allows you to analyze an array of sales. You can select the mean or median of the study when there are extreme sales that could distort the weighted mean. The spreadsheet also allows you to sort and group the sales for more varied studies.

Individual modifiers for each improvement class may be necessary. For example, you may find that the modifier for new class 4 houses is 1.10 while the modifier for class 5 houses is 1.20.

If sales information is limited, there are alternatives to measuring market levels and developing modifiers.

Other important market information sources include:

- Local building costs;
- Material prices and labor rates;
- Price comparison of builders' model homes;
- Interviews with builders and realtors on cost trends; and
- Neighboring counties' LCM studies.

The information gathered should include a cross-section of the market, and a variety of builders and sources should be contacted. You can obtain useful information from contractors by providing them with models of houses and asking what it would cost to build them. Cross-checking between contractors and tracking changes from year to year provides support to your LCM conclusions.

The worksheets on the following two pages are examples for tracking building costs. The first page is used to record the sources and prices for the listed items. This page also concludes the typical price or wage rate for each item. The second page tracks concluded typical prices and wage rates over time. This gives you a basis to analyze trends in building costs.

Local Cost Modifier Analysis—Source Comparison

Date: _____

Data Sources:				Conclusions
Dimension Lumber / MBF: Standard, (#2) and better, random length				
2 x 4	_____	_____	_____	_____
2 x 6	_____	_____	_____	_____
2 x 8	_____	_____	_____	_____
2 x 10	_____	_____	_____	_____
2 x 12	_____	_____	_____	_____
Utility Grade				
2 x 4	_____	_____	_____	_____
Ready-mix concrete / Cu. Yd. 2500#, 5 sack mix	_____	_____	_____	_____
Sheathing				
7/16" waferwood	_____	_____	_____	_____
1/2" plywood	_____	_____	_____	_____
Siding, T-1-11 5/8"	_____	_____	_____	_____
Roofing / sq.				
Medium wt. Composition Shingle	_____	_____	_____	_____
#1 Medium Split Wood Shakes	_____	_____	_____	_____
Insulation, fiberglass				
3 1/2" R15	_____	_____	_____	_____
6" R21	_____	_____	_____	_____
Sheetrock gypsum board				
4 x 8 x 1/2"	_____	_____	_____	_____
4 x 8 x 5/8"	_____	_____	_____	_____
Carpet, installed				
Medium nylon "high-low"	_____	_____	_____	_____
Nylon "cut pile"	_____	_____	_____	_____
Labor rates (union scale if it prevails)				
Carpenter	_____	_____	_____	_____
Electrician	_____	_____	_____	_____
Laborer	_____	_____	_____	_____
Painter	_____	_____	_____	_____
Plumber	_____	_____	_____	_____
Roofer	_____	_____	_____	_____
Concrete Finisher	_____	_____	_____	_____

Local Cost Modifier Analysis—Trend Comparison

Date: _____

	Year: 19____	19____	19____	19____
	Costs	Costs / % Diff	Costs / % Diff	Costs / % Diff
Dimension Lumber / MBF:				
Standard, (#2) and better, random length				
2 x 4	_____	_____	_____	_____
2 x 6	_____	_____	_____	_____
2 x 8	_____	_____	_____	_____
2 x 10	_____	_____	_____	_____
2 x 12	_____	_____	_____	_____
Utility Grade				
2 x 4	_____	_____	_____	_____
Ready-mix concrete / Cu. Yd.				
2500#, 5 sack mix	_____	_____	_____	_____
Sheathing				
7/16" waferwood	_____	_____	_____	_____
1/2" plywood	_____	_____	_____	_____
Siding, T-1-11 5/8"				
_____	_____	_____	_____	_____
Roofing / sq.				
Medium wt. Composition Shingle	_____	_____	_____	_____
#1 Medium Split Wood Shakes	_____	_____	_____	_____
Insulation, fiberglass				
3 1/2" R15	_____	_____	_____	_____
6" R21	_____	_____	_____	_____
Sheetrock gypsum board				
4 x 8 x 1/2"	_____	_____	_____	_____
4 x 8 x 5/8"	_____	_____	_____	_____
Carpet, installed				
Medium nylon "high-low"	_____	_____	_____	_____
Nylon "cut pile"	_____	_____	_____	_____
Labor rates (union scale if it prevails)				
Carpenter	_____	_____	_____	_____
Electrician	_____	_____	_____	_____
Laborer	_____	_____	_____	_____
Painter	_____	_____	_____	_____
Plumber	_____	_____	_____	_____
Roofer	_____	_____	_____	_____
Concrete Finisher	_____	_____	_____	_____

Depreciation Benchmarks

The next step in the preappraisal set-up is to establish market depreciation modifiers for the reappraisal area (depreciation benchmarks and depreciation schedules).

Accrued depreciation is the difference between the replacement cost new and the present value of an improvement. It measures the loss of value from all sources that have occurred over the life of an improvement. Depreciation can be divided into three categories:

- Physical deterioration;
- Functional obsolescence; and
- External obsolescence (externalities).

Accrued depreciation: The loss of value from cost new to present value. Accrued depreciation includes loss in value from physical deterioration, functional, and external obsolescence.

Physical deterioration: The loss in value due to wear and tear and physical deterioration.

Functional obsolescence: the loss in value resulting from defects in design. It can also be caused by changes that, over time, have made some aspect of the structure (such as its materials or design) obsolete by current standards. An example of functional obsolescence is having to pass through one bedroom to access a second bedroom.

External obsolescence: A loss in value due to influences outside the property lines. An example of external obsolescence is an industrial plant located near a residential property.

When using the market-related cost approach, develop a market depreciation (remaining percent good) that does not separate these categories of depreciation. Extraordinary properties may require special analysis.

To accurately and uniformly measure market depreciation, you must develop depreciation benchmarks. These benchmarks should be established by neighborhood in an appraisal area. The supervising appraiser is responsible for conducting and documenting the study. Depreciation benchmarks should be documented by improvement type and by class.

Percent Good

After classifying the house and estimating replacement cost new, estimate the remaining percent good. Percent good is the key to the market-related cost approach. The percent good

ties the cost approach to the market by measuring the remaining percent good after all forms of depreciation have been determined.

To create a depreciation benchmark, follow these steps:

1. If necessary, adjust the sales price for such things as time, personal property, and additions after the sale.
2. Estimate the market land value using the developed land schedule for each property being studied.
3. Measure and compute replacement cost using locally modified cost factors. Note any functional or external obsolescence.
4. Subtract the market land value and OSD from the adjusted sales price to arrive at an indicated total improvement value.
5. Subtract the depreciated minor building values (driveways, patios, sheds, etc.) to find the house and attached garage value only.
6. Divide the residual house and garage value by the replacement cost new to arrive at the percent good indicated by the market.

Example of measuring percent good:

Adjusted sale price	\$150,000
Land value (including OSD)	<u>– 50,000</u>
Total improvement residual	\$100,000
Depreciated value of minor improvements	<u>– 2,500</u>
Residual house and garage	\$ 97,500
RCN house and garage	\$112,450
Percent good ($\$97,500 \div \$112,450$)	87%

The 87 percent good in this example represents the remaining percent good of the improvement after the market has accounted for physical depreciation and functional and external obsolescence.

To properly document benchmarks, a depreciation benchmark form is recommended. Two examples of depreciation benchmark worksheets that contain the necessary information for depreciation benchmark use are on the following pages.

Depreciation Benchmark Example

Benchmark No. _____ Confirmed Yes No Date _____
 Account _____ Confirmed With _____
 Address _____ Appraiser _____

IMPROVEMENT DESCRIPTION	LAND DESCRIPTION
House Class _____	Lot or Acreage Size _____
G.F. Sq. Ft. Area _____ Year Built _____	Description _____
Remodeled _____ Actual Age _____	_____
Rooms: <input type="checkbox"/> LW <input type="checkbox"/> DIN <input type="checkbox"/> KIT <input type="checkbox"/> FAM <input type="checkbox"/> BDRM <input type="checkbox"/> BATH <input type="checkbox"/> UTIL	_____
Upstairs: _____ S.F. Fin. _____ BDRM _____ BATH _____	_____
Bsmt: _____ S.F. Fin. _____ REC _____ BDRM _____ BATH _____ UTIL _____	Yard/Site Impr. P F A G E
Bsmt: _____ S.F. Unfin. or Rough-In _____	Remarks _____
Fireplaces _____ Sgl. Stacked Backed _____ Wood Stove _____	_____
Garage Class _____ S.F. Size _____ B.I. ATT. DET.	_____
Other Imps.: _____	_____

Date of Sale _____ Sale Price \$ _____
 Trended to _____ @ _____ % Per Mo. x No. of Mo. _____ = Adj. Sale Price \$ _____

Rating for Actual Age	Land Value _____ + Site Impr. _____ - \$ _____
Physical P F A G E	Residual to Building Improvements = \$ _____
Functional P F A G E	Depr. Value of Other Improvements - \$ _____
Appearance P F A G E	Residual Value Attributable to House = \$ _____
Remarks _____	Replacement Cost of New House \$ _____
_____	Indicated % Good From the Market \$ _____
_____	Effective Age _____ Years = _____ % Depr. Per Year
	Appraiser Observed % Good = _____

PHOTO	LAND RESIDUAL	
PHOTO	Adj. Sale Price _____	
	Depr. Impr. Value - \$ _____	
	Residual to Land = \$ _____	
	On Site Dev. - \$ _____	
	Bare Land Residual = _____	
	ON SITE DEV. RESIDUAL	
	Adj. Sale Price \$ _____	
	Depr. Impr. Value - \$ _____	
	Residual to Land = \$ _____	
	Bare Land Value - \$ _____	
On Site Dev. Residual = _____		

RMV AND FINAL RATIO

Land \$ _____ OSD \$ _____ Imps \$ _____ Total \$ _____
 Ratio of RMV to Adjusted Sale Price _____
 Remarks _____

Depreciation Benchmark Example

Acct # _____ Map # _____ Sale or Benchmark # _____
 SITUS _____

	Class _____ Mn Fl Sf _____ Yr Bit _____ Bedrm _____ Bath _____ Bit In _____ Heat _____ Firepl _____ Basmt _____ Upper _____ Attic _____ Garage _____ Carport _____ Other _____ Misc _____
--	---

LAND IMP. TOTAL % GOOD _____

VALUE: _____

Rating: Phy: P F A G E Funct: P F A G E Appear: P F A G E
 Financing: Type _____ Int Rate _____ Dn Pymt _____ Yr Mrtg _____ Points _____
 Verified _____ With Whom _____ Int Insp _____ Ind of Good Sale _____

Appr Zone _____ Prop Class _____ Zone _____ Land Sch _____ Size _____ Buyer/Seller Comments: _____ _____ Remarks: _____ _____ Comparable Sales 1. _____ 2. _____ 3. _____ 4. _____ Appraiser _____ Date _____	Sales Date _____ \$ _____ P.P. \$ _____ M.H. \$ _____ Other \$ _____ Total Reductions \$ _____ Adj Sales Price \$ _____ Adj for Time: Mult _____ \$ _____ Land Value \$ _____ Building Residual \$ _____ Garage Value \$ _____ Other Imp \$ _____ Ind House Value \$ _____ + Repl Cost New \$ _____ SALE PRICE/S.F. \$ _____
--	--

Ind Percent Good

Depreciation Schedules

Once the depreciation benchmarks are completed, the indications of market value (percent good) must be combined into a depreciation schedule. To produce an accurate depreciation schedule, use only benchmarks of properties that are typical to the neighborhood. Sales of properties that exhibit a high degree of deferred maintenance, unusual functional obsolescence, that have been recently remodeled, or had a change of use should not be included in this portion of the study.

There are two methods to develop depreciation schedules.

In the first method, tabulate the preliminary depreciation benchmarks to give a range for each class, type, and age (see Benchmark Summary example following the depreciation schedule). After the spreadsheet has been completed, choose the proper percent good for each actual age grouping. From this base information, a depreciation schedule for all actual ages can be developed.

The second and preferred method is developed by plotting the percent goods on a graph (see the following depreciation graph example). The vertical axis represents percent good and the horizontal axis represents actual age. After the typical sales are plotted on the graph, draw the depreciation curve to represent the centerline of the plotted sales.

From this graph, a depreciation schedule can be developed. An example of a depreciation schedule follows:

Depreciation Schedule

Average Condition

Actual Year Built	Chronological Age	% Remaining Good
2002	0	100
2001	1	98
2000	2	97
1999	3	95
1998	4	94
1997	5	92
1996	6	91
1995	7	89
1994	8	89
1993	9	88
1992	10	87
1991	11	86
1990	12	86
1989	13	85
1988	14	85
1987	15	84
1986	16	84
1985	17	83
1984	18	83
1983	19	82
1982	20	82

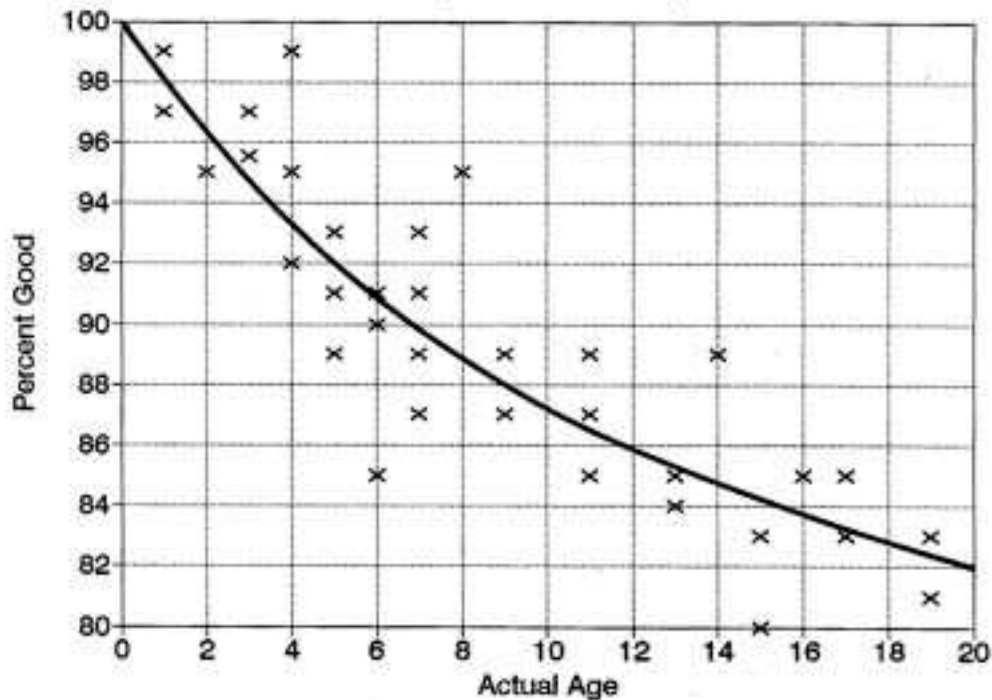
Benchmark Summary

Area _____

Date _____

BENCH MARK	CLASS	FLOORS	ADJ SALES PRICE	LOT VALUE	OTHER IMP'S	HOUSE VALUE	RCN HOUSE	ACTUAL AGE	INDICATED % GOOD
19	4	2	115,000	22,000	6,500	86,500	90,104	2	96
6	4	2	94,550	21,500	5,000	68,050	70,155	2	97
16	4	1	96,800	22,000	4,850	69,950	70,657	2	99
22	4	1	105,250	20,000	3,500	81,750	86,968	4	94
18	4	1	87,900	19,500	3,800	64,600	70,989	5	91
3	4	2	79,500	18,750	4,500	56,250	61,141	5	92
20	4	1	92,600	16,500	4,450	71,650	77,880	5	92
5	4	1	75,000	16,800	4,600	53,600	60,910	8	88
17	4	1	78,000	19,200	5,000	53,800	59,778	8	90
2	4	1	84,000	20,000	2,400	61,600	71,628	10	86
21	4	1.5	68,000	16,000	3,400	48,600	55,862	10	87
8	4	1	72,000	16,000	4,400	51,600	59,310	10	87
4	4	1	80,000	18,800	8,400	52,800	59,326	10	89
10	4	1	78,000	14,800	1,800	61,400	71,395	11	86
11	4	1	70,000	14,400	4,320	51,280	62,434	12	83
12	4	1	72,400	14,800	0	57,600	67,765	12	85
7	4	2	67,280	13,000	1,720	53,560	62,279	12	86
1	4	1	79,600	16,800	4,400	58,400	66,364	12	88
9	4	1	68,800	16,000	2,000	50,800	60,476	15	84
13	4	1	74,000	16,000	2,500	55,500	66,071	15	84
14	4	1	67,000	12,000	2,000	53,000	64,634	18	82
15	4	1	66,000	12,000	0	54,000	64,286	18	84

Depreciation Graph



The next step is a quality control measure. Make an appraisal of the sales used in the depreciation study applying the indicated percent good from the new depreciation schedule. This will give a new appraised value that, when divided by the sales price, provides a ratio comparison between the new appraised value and the sales price.

New Appraised Value ÷ Sales Price = Ratio

These ratios can be used to ensure schedules are performing properly.

Adjustments

Once the typical depreciation schedules are complete, the nontypical sales are plotted and compared to establish their relationship to the base schedule. When plotting the nontypical sales, differentiate these sales so they are easily recognized.

One such adjustment would be for houses with more or less than typical maintenance. This adjustment is referred to as effective age. Effective age is derived from how the market reacts to properties that are different from the typical house in the neighborhood.

The steps to develop an adjustment are:

1. Plot nontypical sales on a scatter graph.
2. Select a representative point from the nontypical sales.
3. Establish the relationship from the normal depreciation schedule to the selected representative point.

For example, a 30-year-old house has been recently remodeled and reconditioned. Our comparison of 30-year-old recently remodeled houses to the base depreciation schedule shows that these houses sell the same as 20-year-old houses. The actual age is still 30 years, but the effective age is 20 years. In other words, the condition of this property is like a 20-year-old house and is selling like a 20-year-old house. Effective age allows an appraiser to group remodeled and/or reconditioned homes into the proper age grouping.

Another adjustment to the base depreciation schedule might be location. For instance, in one area of a neighborhood, drug trafficking caused a severe decline in property values. The decline in values was so great that it caused market depreciation to fall far below normal levels. In this case, it is appropriate to develop an area or location adjustment. This allows the continued use of the neighborhood base depreciation schedule in the affected area. Develop the area or location adjustment by following the three steps described above.

Posting Field Maps

Post pertinent information on the field maps so the appraisers and supervisors have an index to benchmarks and market data. In this way, each appraiser and supervisor will have a ready, visual display for the market data on each field map.

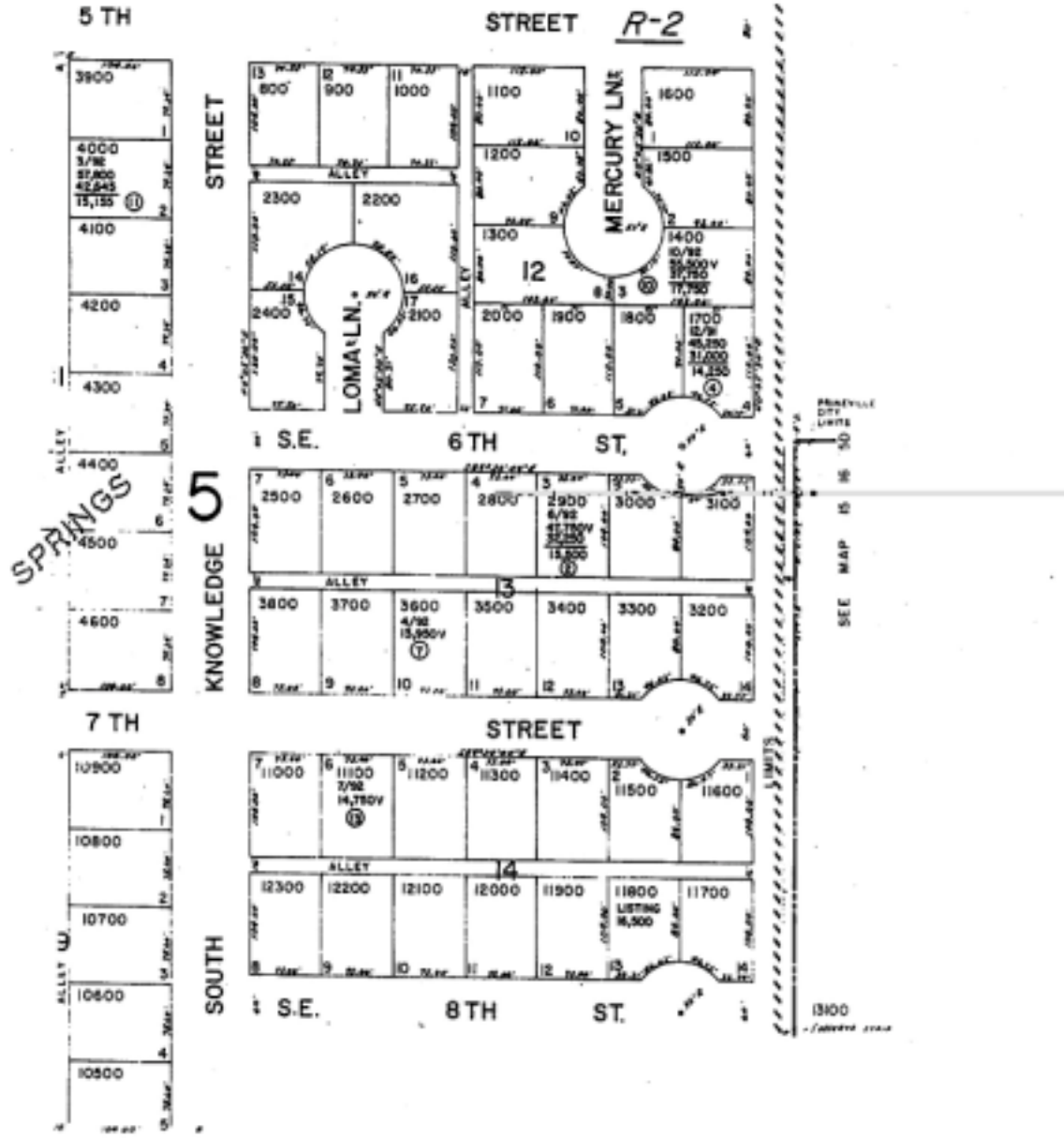
The information posted on the maps includes the benchmarks, all sales, recent asking prices, offers, zoning, road information, statistical building class, depreciation (percent good), and any other appraisal data deemed necessary. This data helps establish equity and uniformity. It also serves as an effective review tool.

Place an improvement symbol for each property on the field map to reflect the proper relationship to the property boundaries.

Portion of Field Map

NW 1/4 SE 1/4 SEC. 5 T15S R16E W.M.
CROOK COUNTY
1" = 100

See Map 15 16 5A



Yellow	—	Asking
Green	—	Improved
Red	—	Bare Land
V	—	Verified
○	—	Sale Number

Reappraisal

Now that land values, land schedules, LCMs, class benchmarks, and depreciation benchmarks have been developed and the field maps are posted, the preappraisal set-up is complete. To begin the appraisal, you should be equipped with the following items:

- Neighborhood land schedule;
- Class benchmark book;
- Depreciation guide;
- Field map;
- Neighborhood map;
- Preloaded appraisal card or data entry card;
- Measuring tape;
- Identification or business cards;
- Camera and film;
- Clip board;
- Pencil and ruler.

Physically inspect each property. This should include an interior inspection when possible, and an exterior inspection that includes a walk around the structure.

Inspection Levels

If a ratio analysis for a given market area results in a failure to meet statistical criteria as set forth by OAR 150.308.234, then some level of re-valuation will be required to correct the deficiency.

Below are some of the reasons a market area may be falling outside the standards.

- Years since last reappraisal;
- Level of new construction;
- Local changes;
- Higher than normal appeal activity;
- Inconsistent or incorrect classification of buildings or land;

- Changes in the neighborhood such as deferring maintenance, gentrification, in-fill use or

zoning;

- The need to redefine neighborhood boundaries and establish new benchmarks;
- Change in market preferences for factors such as house style/age, lot size, neighborhood characteristics, traffic patterns, etc;
- Changes in building costs because of changes in code requirements, new materials/designs, etc;
- Changes in market perception from positive or negative factors; and
- Composite index on RMV.

Correcting appraisal deficiencies when appraisal standards are not met generally requires some level of physical inspection of the property. Different levels of inspection will be required depending upon the reason(s) found for the deficiency. Following are generally accepted definitions for the various levels of inspections:

- Level 1. A full inspection is made with an attempt to make a full interior inspection.
- Level 2. An exterior inspection is made. No attempt at an interior inspection is made unless a major change to the property is detected.
- Level 3. A street inspection is conducted. (Drive-by inspection only, unless a major change to the property is detected.)
- Level 4. No on-site inspection is made. Market data is analyzed to determine changes in the market and the properties are adjusted to RMV. Values are modified by applying line adjustments or by recalculation of the basic tables developed from reappraisal studies. No attempt at an interior inspection is made unless a major change to the property is detected.

Quality Control Measures

After appraising a map group of property accounts, give all completed work to the supervisor. The supervisor conducts a field review of the appraisals to ensure that accuracy and uniformity is maintained within the map group, as well as among appraisers and all other map groups. At this point, the final responsibility for uniformity and equity rests with the supervisor.

The supervisor's field review should be conducted as soon as possible after receiving the completed appraisals. Adjustments or corrections can be made before the appraiser completes other map groups.

In conducting the field review, the supervisor must check appraisals in relation to the benchmarks and land and depreciation schedules should be developed for the neighborhood. This will require an occasional interior and exterior physical inspection to review accuracy of property data, improvement classification, percent good selection, and land base factors. If errors are found, more properties should be inspected. The errors should be documented and reviewed with the appraiser so that corrective action can be taken.