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This chapter describes the process of valuing commercial and industrial structures. It begins with an overview of the data collection procedure for structures. In order to understand the process of valuing commercial and industrial structures, you need to understand the following concepts, which are described in this chapter:

- sketching a structure
- measuring and calculating areas
- using the general commercial models
- using schedules
- understanding base rates for floor levels
- determining a structure's finish type
- determining a structure's use type
- determining a structure's wall type
- using a structure's floor height
- understanding the perimeter-to-area ratio for a structure
- determining a structure's construction type
- understanding vertical and horizontal costs
- determining the number of property record cards to use for a parcel.

The rest of the chapter provides step-by-step instructions for completing the relevant sections of the commercial/industrial property record card and for determining the true tax value for a structure.

There shall be a presumption that the reproduction or replacement cost determined by the prescribed schedules is the actual reproduction or replacement cost of the subject structure for purposes of determining true tax value. However, either the assessing officials or a taxpayer shall be permitted to consider and use other relevant and reliable information to rebut such presumption and establish the actual reproduction or replacement cost, if the information was readily available to the assessor and taxpayer at the time the assessed value was set.

Methods Used to Complete the Property Record Card

This section describes methods that you use when completing the property record card for commercial and industrial structures.

Sketching a Structure

A sketch grid is provided on the property record card to make a plain view sketch of the major structures. Keep in mind the following guidelines when sketching a structure:

- If more than one major structure is listed on the same card, number each structure for identification purposes.
- Draw the structure to approximate scale.
- Draw the structure with the side facing the street towards the bottom of the sketch grid.
- Write the dimensions inside the sketch area as close to the corresponding lines as possible.
- Record the story height of the structure.
- Identify all party walls—walls held in common ownership between two structures.
- Identify all additions by name and exterior wall construction.

Figure 6-1 shows the correct way to sketch a structure and record the necessary data.

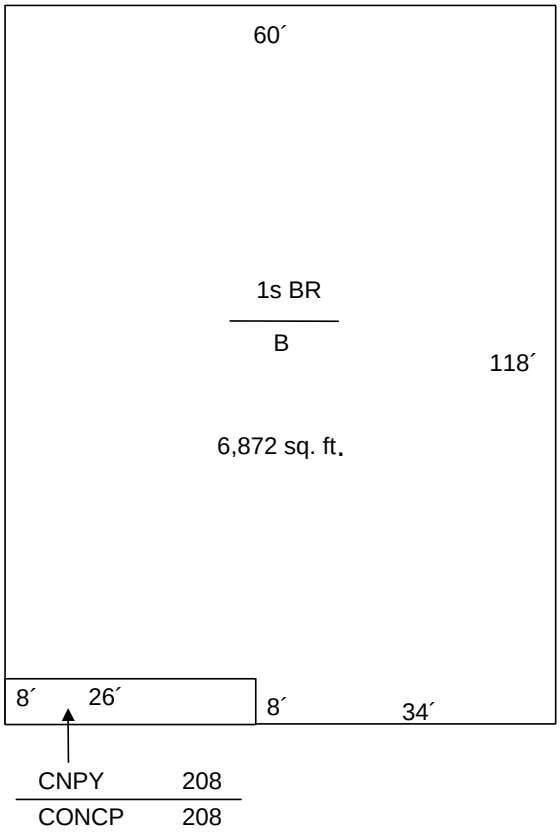

Figure 6-1. Sketch Grid

Measuring and Calculating Areas

Use the following guidelines to determine the area (square footage) of a structure:

- Measure sufficient outside dimensions of the structure to compute the gross square footage of the ground area.
- Enter all of these measurements on the sketch grid of the property record card.

Figure 6-2 and the example that follows show how to calculate the base area for a structure.

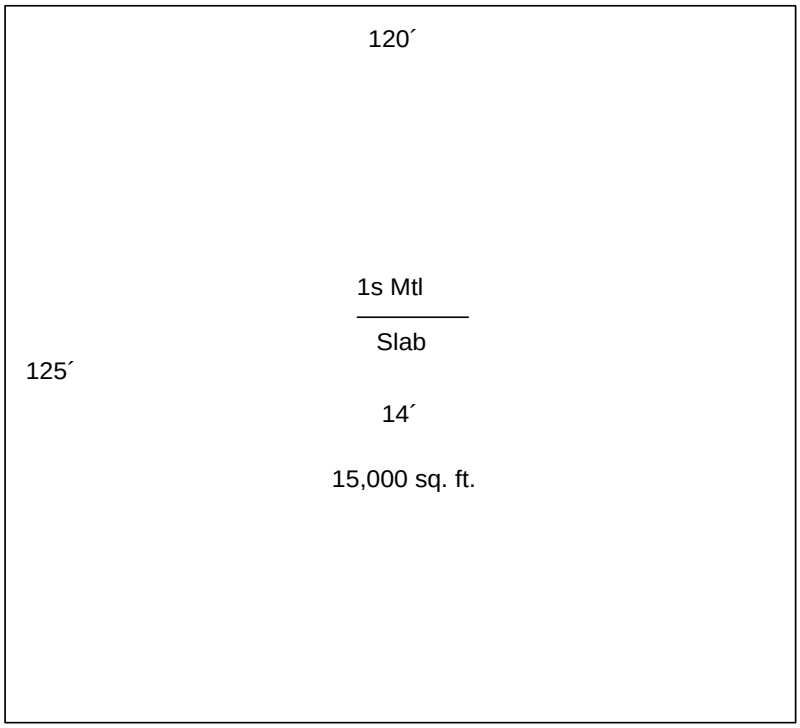

Figure 6-2. Dimensions of the Ground Area

Example: 120 x 125 = 15,000 square feet

Using the General Commercial Models

The general commercial models are conceptual tools used to assist in estimating the replacement cost new of a given structure. The models assume that there are certain elements of construction for a given use type. Select the model that best represents the subject structure. The purpose of the model descriptions included in Appendix D is to aid the user in determining if adjustments are applicable between the subject structure being valued and the model selected for use. The test of the user's estimate of replacement cost is not contingent upon the evaluation of any one construction component within the model, but rather in its approximation to the actual construction cost of the subject structure.

Example: The model for the first floor of an apartment is shown below.

(2) Model: GCM—Apartment, First

MODEL	GCM Apartments
Floor Height	10'
Finish Type	Finished divided, 8' ceiling height
Interior Finish and Mechanical Features	
Walls	Two coats of paint on drywall, wood or metal furring
Flooring	30%vinyl composition tile; 65% carpet and pad; 5% ceramic tile
Ceiling	Taped and painted drywall on wood ceiling joists or metal channel supports
Partitions	Wood frame interior construction typical of occupancy
Lighting	Average cost installation typical of apartments.
HVAC	Heating only
Heating Only	Gas fired forced air
Cooling Additive	Add for air conditioning for one unit only from the Schedule C “Add for A.C.” column. Air conditioning in multiple units is valued using the unit finish adjustment.
Plumbing	Not included. Plumbing is valued with the application of the unit finish adjustment.
Notes	Kitchen built-ins, plumbing and air conditioning are included by the application of the unit finish adjustment

Using the Schedules

The commercial and industrial cost schedules contain information for calculating the base rate of a structure. Cost schedules can be applied to an entire structure or to a portion of a structure, such as a floor or section, if the size, perimeter-to-area ratio, and construction quality are consistent. For example, the first floor of a commercial structure often has a higher quality of construction than the upper floors. This situation occurs more frequently in older structures where it is often less economically feasible to renovate the upper floors comparably to the first floor. It is also common for the first floor or lower floors to be larger in area than the upper floors. In either case, it is good practice to compute the replacement cost of individual floors or groups of floors separately.

This section provides an overview of the four types of schedules used when valuing commercial and industrial structures. Instructions for using the schedules are provided in the section ***Completing the Property Record Card*** in this chapter.

Understanding Schedule A—Base Rates

Schedule A—Base Rates provides base square foot unit rates by floor for various use and finish types. There are two types of exterior walls for GCM and GCR schedules, and a third type for a number of the GCI schedules. Additionally, there is a type 4 exterior wall type for parking garages. The rates are for a range of perimeter-to-area ratios for a specific type of construction. Adjustments are provided to account for variations in use types, wall heights, and structural framing. There are four sections in Schedule A. Instructions for determining the appropriate model for a commercial or industrial structure are provided in the section ***Using the General Commercial Models*** in this chapter. The commercial models are provided in Appendix D.

- **Schedule A.1—General Commercial Mercantile (GCM)** includes use types generally associated with mercantile districts. Because these districts are often characterized by multiple uses of the same property, a wide variety of uses are included. This model category includes banks, medical offices, apartments, shopping centers, and so forth.
- **Schedule A.2—General Commercial Industrial (GCI)** includes use types that are generally associated with industrial-related operations. This model category includes mill manufacturing, industrial offices, light and heavy manufacturing, warehouses, and so forth.
- **Schedule A.3—General Commercial Residential (GCR)** includes use types generally associated with commercially-operated residential accommodations. These types are more typical of residential-type construction than commercial-type construction. The GCR section of Schedule A is used only for structures that have up to three stories. This model category includes apartment structures, motel units, nursing homes, and so forth.

  Structures with four or more stories and use types characteristic of commercial-type construction, such as a structure containing a retail store on the first floor and apartments on the second and third floors, are priced from the GCM schedule.
- **Schedule A.4—General Commercial Kit (GCK)** does not include use type descriptions. Schedule A.4 is used to value light pre-engineered and pre-designed wood pole and metal framed structures with exterior walls of light metal or wood that are used for commercial and industrial purposes only. A format has been developed to value the base structure on a perimeter-to-area ratio basis and adjust the value based on the various individual components of the structure. Structures classified as a *special purpose design*, as defined in the glossary of this guideline, are not valued using the GCK pricing schedule.

Understanding Schedule B—Base Price Adjustment

Schedule B—Base Price Adjustment (BPA) provides adjustments to the total base unit rate obtained from Schedule A for story height variations. The adjustment is required to account for the added construction costs of supports and material handling for multiple story construction.

Understanding Schedule C—GC Base Price Components and Adjustments

GC (General Commercial) Schedule C—GC Base Price Components and Adjustments provides further adjustments to the base unit rate for a structure to account for variations between the structure and the model chosen to value the structure. Schedule C includes adjustments mainly for interior and mechanical features.

Schedule C has three sub-schedules:

- **Base Price Components and Adjustments** indicates the cost of the interior and mechanical components included in the base rate unless otherwise noted. This sub-schedule includes guidelines to help in adjusting the base rate for lighting and recommended additions for automatic sprinkler systems. All component prices in this sub-schedule are expressed as square foot rates except the column headed “Walls per LF” under the “Interior Finish” heading.
- **Unit Cost Adjustments** provides a table of unit costs for the most typical interior components. Because the base replacement cost tables for the various models include interior finish and other features, it is necessary to make cost adjustments only when an actual structure varies significantly from its model. In cases where you believe a structure’s interior construction is not typical of the selected model, determine the proper costs for the interior components, and add or subtract the difference between the cost included in Schedule C.
- **Unit Finish Adjustments** consists of tables of composite adjustments rather than individual component adjustments. These adjustments apply to apartments, motels, and hotels.

Understanding Schedule D—Plumbing

Schedule D—Plumbing consists of whole dollar values to be added per plumbing fixture unless otherwise specified. The unit finish adjustment for apartments, hotels, and motels includes an amount for a standard complement of plumbing fixtures. The residential conventional fixture rate is used only to adjust for an excessive or deficient number of plumbing fixtures when using the unit finish adjustment.

Understanding Schedule E—Special Features

Schedule E—Special Features consists of either whole dollar or square foot unit values used to calculate the whole dollar replacement cost of special features not included in the Schedule A base rates. The schedule is applied by identifying the feature and selecting the most representative price based on the descriptive criteria provided in the schedule. When you use this schedule, keep in mind:

- The frame types given for mezzanines correspond to the construction types described in Schedule A.
- The cost of elevators is given in hundreds of dollars and is based on speed in feet per minute and capacity.
- The rates for cold storage facilities apply to the total inside surface area, which is calculated as the square foot areas of the floor and ceiling plus the product of the perimeter multiplied by the height. The floor area is included only if it has insulation. The rates account for insulation applied to only one side of the partitioning and do not include the cold storage doors.
- The rates given for money vaults and record storage vaults apply to the horizontal square foot area, which is calculated as the length multiplied by the width. The rates assume an 8′ ceiling height. The rates do not include the vault door, which is valued separately.
- The rates given for the grade walls for truck wells and ramps apply to each grade wall.

Understanding Schedule F—Quality Grade and Design Factor

Schedule F—Quality Grade and Design Factor provides the grade factor percentages corresponding to the grade classifications for commercial and industrial structures. The grade factor percentage is applied to the base rate to account for variations from the model or “C” grade. The prices contained in the schedules reflect the “C” grade standards of quality and design. Information about determining the grade for commercial and industrial structures, and for using Schedule F, is provided in Appendix E.

Understanding Base Rates for Floor Levels

The base square foot rates for each floor level include the cost of the exterior walls, exterior wall openings, and interior components. Interior components consist of interior finish, partitioning, built-ins, and mechanical features typical for that particular model.

In addition, the cost of each floor level includes the cost of the following structural components:

- The basement-level price includes:
  - excavation and back-fill, the cost of which exceeds the cost of the inclusions in the first floor
  - structural floor construction of the first floor, which consists of subfloor and framing
  - stairways and access ways.
- The first-level price includes:
  - site preparation and normal foundation construction for a structure at grade level
  - concrete ground floor slab, including base and cement finish
  - roof construction consisting of roofing, insulation, decking, and framing
  - wall copings and parapets
  - utility service.
- The upper-level price includes:
  - structural floor construction consisting of subfloor and framing for each respective floor
  - stairways and access ways.

Determining a Structure's Finish Type

In Schedule A, finish type is a descriptive classification indicating the extent to which the interior finish is included in the base rate. The purpose for this classification is to simplify identification and serve as a key for adjustments to a subject structure compared to the chosen model. Table 6-1 describes the finish type options.

Table 6-1. Finish Type Options

This option	Indicates
UF	Unfinished walls, ceiling, and floors unless otherwise noted in Schedule C.
SF	Semi-finished with minimal finish in most of the interior. Generally, the interior finish consists of paint with partial tiling. Full ceiling and wall finish is confined to the office and service areas. This classification falls between "Unfinished" and "Finished Open".
FO	Finished open space with finished walls, ceiling, and floors, and a minimal amount of interior partitioning. This classification is typical of retail areas.

This option	Indicates
FD	Finished divided space with finished walls, ceiling, and floors and an abundant amount of interior partitions. This classification is typical of offices and apartments. The dividing walls are permanent. The use of moveable or portable partitions does not indicate a finished divided classification, but indicates an adjustment from Schedule C may be necessary.

Determining a Structure's Use Type

Use type is a descriptive classification indicating the commercial and industrial use model that best describes the structure. Use the models in Appendix D to help determine the use type for a structure. Once the appropriate use model is determined (GCM, GCI or GCR), refer to the corresponding Schedule A table to locate the base rates for the appropriate use type.

Note: Schedule A.4 (GCK) does not include use types as part of the base rate selection criteria.

Determining a Structure's Wall Type

Wall type is a descriptive classification indicating the exterior wall construction material used for most of the use types. Two wall type descriptions apply to most use types. However, a number of the GCI use types have a third wall type option, and the parking garage use type has a fourth wall type option. Table 6-2 describes the wall type options.

Table 6-2. Wall Type Options

This option	Indicates the wall is constructed of
1	Concrete block, stucco, tile, wood, aluminum, metal siding, or an equivalent material
2	Brick, stone, concrete, or an equivalent material
3	Aluminum, metal, or steel siding on steel framing
4	Metal, concrete, or masonry guard walls 3 feet to 4 feet high. This option applies ***only*** to open parking garages.

Using a Structure's Wall Height

Wall height is model specific and represents floor-to-floor or floor-to-roof heights. These heights are defined as the vertical distance from the top of the interior floor to either the top of the next upper interior floor or to the eave of the roof. If the actual wall height is different from the wall height listed in the use-model, an adjustment is necessary.

In the GCK schedule, any wall height adjustment is made as a percentage of the base rate rather than using an established per foot rate. In the GCR schedule, if the actual wall height is different from the wall height listed, there is no adjustment to be made.

Example: In the case of the GCM models, the wall height for a utility storage basement is 9 feet, and the wall height for a general office on the first floor is 12 feet.

Understanding Vertical and Horizontal Costs

Horizontal costs are the costs included for a structure's components that are horizontal in nature and are linked directly to the square feet of floor area in the building. These costs include, but are not limited to, the following:

- floor slabs
- structural floors
- floor covering
- ceiling covering
- roof structure
- roof covering and any insulation or extras that can be attributed directly to the square foot size of the structure.

The vertical cost components are the costs included for structural components that are vertical in nature and are valued according to linear feet of surface. These costs include, but are not limited to, the following:

- studding
- wall sheathing
- brick or wood siding
- wall insulation
- interior finish of exterior walls.

Understanding the Perimeter-to-Area Ratio for a Structure

The Perimeter-to-Area Ratio (PAR) columns ("1" through "10") on Schedule A contain the base rates for structures. To permit applying the perimeter-to-area ratios to a structure of any size, the base rates provided in Schedule A were developed for a range of perimeter-to-area wall ratios, rather than for a particular size structure.

Schedules using the perimeter-to-area ratio convert the vertical cost of a structure into a dollar amount per square foot. This conversion is accomplished by multiplying the dollar amount per square foot of wall surface by the predominant wall height for a given use type and converting this amount into a dollar per square foot of floor cost.

Example: A wall is constructed of 8-inch concrete blocks. The wall's height is 12 feet. Suppose the vertical cost per square foot of a wall surface for an 8-inch concrete block wall is $8.00. Multiply the vertical cost per square foot by the wall height ($8.00 $\times$ 12′ = $96.00). Then, multiply the result by .01 (PAR 1) and round

to the nearest 1/100 (.01) ($96.00 x .01 = $.96). The cost of the vertical wall expressed as a square foot cost for a perimeter-to-area ratio of 1 is $.96.

The perimeter-to-area ratio format is necessary to distribute the vertical costs of a model throughout the schedule. This concept is best illustrated by comparing a rectangular building with a square building of the same square footage. The rectangular building requires more perimeter walls than a square building to encompass the same amount of floor area.

Example: Both structures in Figure 6-3 are 2,500 square feet, and are constructed of the same type and quality of materials. Each structure is the same height and contains the same type of interior finish. Structure #2 has a perimeter of 250 feet and a perimeter-to-area ratio of 10 (250/2,500 sq. ft. = .10 X 100 = 10). Structure #1 has a perimeter of 200 feet and a perimeter-to-area ratio of 8 (200/2,500 sq. ft. = .08 X 100 = 8).The only difference between the two structures is the 50 feet of perimeter wall of the rectangular structure. The difference in the square foot cost between the perimeter-to-area ratio of 8 and the perimeter-to-area ratio of 10 for any use type would be the cost attributable to the increased vertical costs of the wall.

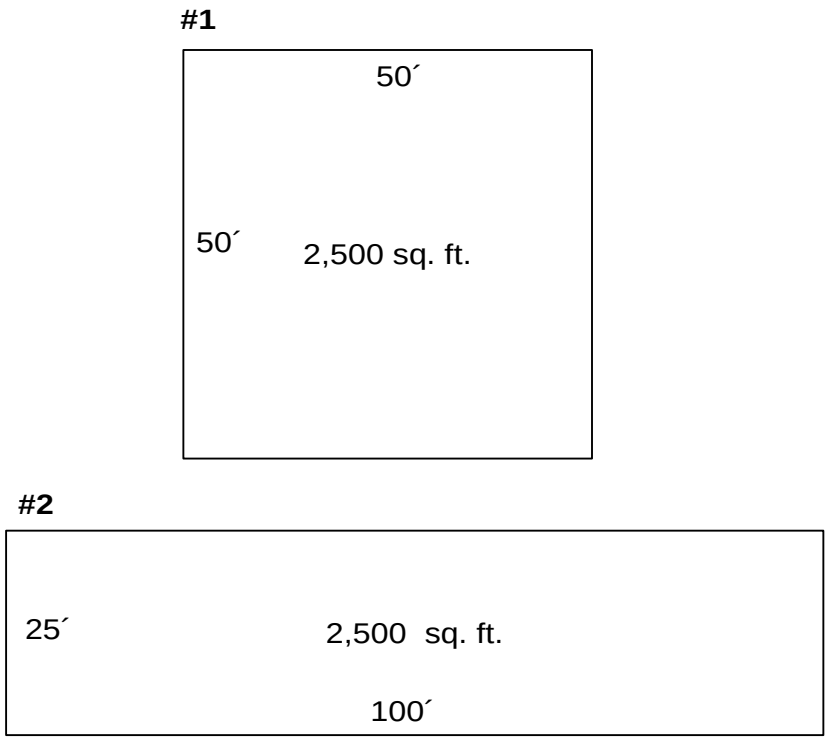

Figure 6-3. Perimeter-to-Area Ratio Adjustment

If a structure has more than one floor, care should be taken to calculate the perimeter-to-area ratio. Upper floors with the same wall dimensions and the same square foot area as the first floor will have the same perimeter-to-area ratio. For those structures where the upper floors are different then the first floor, a perimeter-to-area ratio must be calculated separately for each floor.

Example: Compare Structure #3 with Structure #4 in Figure 6-4. Both structures have identical construction and an upper floor that measures 50 feet by 50 feet.

- In Structure #3, each story has a perimeter of 200 feet, an area of 2,500 square feet, and a perimeter-to-area ratio of 8.
- In Structure #4, the first floor has a perimeter of 300 feet, an area of 5,000 square feet, and a perimeter-to-area ratio of 6. However, the second floor has the same perimeter, area, and perimeter-to-area ratio as both stories in Structure #3.

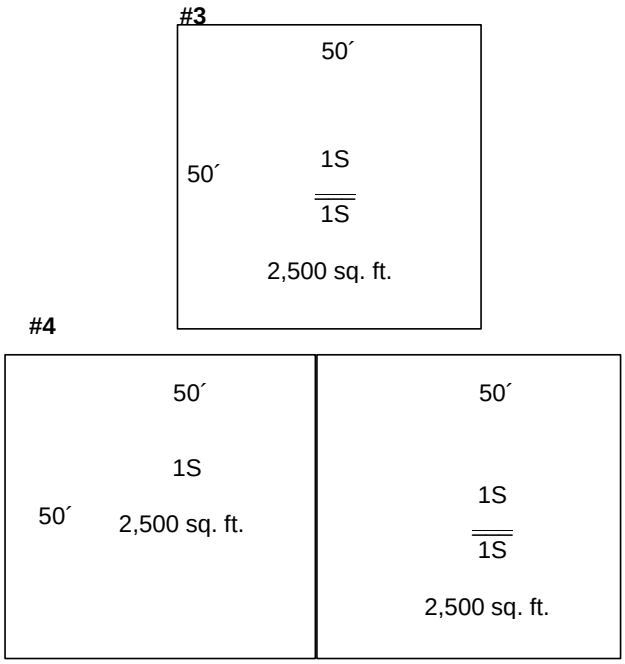

Figure 6-4. Perimeter-to-Area Ratio for a Structure with Multiple Floors

Determining a Structure's Construction Type

The base rates for the GCM and GCI schedules are based on framing that is fire resistant construction. If a structure is not constructed entirely of fire resistant material, use the framing type columns in Schedule A to determine the necessary adjustment. Then, add or subtract the amount shown in Schedule A from the base rate—subtract for wood joist and add for reinforced concrete or fireproof steel frame. Table 6-3 describes the framing type options.

The base rates in the GCR schedule are based on wood joist construction and must be adjusted for fire resistant construction.

Table 6-3. Framing Type Options

This option	Indicates
1 Wood Joist	A flat or gable roof structure of wood or composition deck and structural floors of wood subflooring on wood or steel joists supported by wood and/or timber beams and columns or wood framing.
2 Fire Resistant	A flat or low profile gable roof on steel joists or open steel framing and structural floors of concrete on metal decking and steel joists supported by steel beams and columns or load bearing walls.
3 Reinforced Concrete	A concrete slab flat roof and reinforced concrete flat slab structural roof on reinforced concrete joists supported by reinforced concrete beams and columns.
4 Fireproof Steel	A flat roof of concrete or fireproofed steel deck and reinforced concrete slab on fireproofed steel deck structural floors on steel joists supported by fireproofed steel beams and columns.

Determining How Many Property Cards to Use for a Parcel

The number of property record cards associated with a property is determined on a parcel by parcel basis. This number normally depends on either the number of structures that require a sketch area, or the number of structures and yard structures that are recorded in the “Summary of Improvements” section of the property record card.

If there is only one card associated with the parcel, the “Cell No.” cell appears as “001 of 001”. If there are four cards associated with the parcel, the “Card No.” cell for the first card appears as “001 of 004”.

Completing the Property Record Card

This section describes how to enter the data required on the commercial and industrial property record card. Figure 6-5 and Figure 6-6 show the front and back of the state's version of the card and identifies the areas of the card. Each county's version of the property record card must represent the same information as the state's version.

The front of the state's property record card is used to describe specific property data. It is also used to record the true tax value. The back of the state's property record card is used to provide details about the structure's physical characteristics, base rate information and adjustments, and other improvement information concerning the parcel.

Parcel number
Ownership
Transfer of Ownership — Date / Grantee / Sale Price
Card No. _____ of _____ — Rec. #
County
Township
Corporation
District
Section and Plat
Routing number
Neighborhood code
Property class
Property address

VALUATION RECORD

	Assessment Year	20____	20____	20____	20____	20____	20____	20____
	Reason for Change	Revaluation						
	Land							
TRUE TAX VALUE	Improvements							
	Total TTV							
ASSESSED VALUE	Land							
	Improvements							
	Total AV							

Topography: ☐ Level ☐ High ☐ Low ☐ Rolling ☐ Swampy
Pub. Utilities: ☐ Water ☐ Sewer ☐ Gas ☐ Electricity ☐ All
Street or Rd.: ☐ Paved ☐ Unpaved ☐ Proposed ☐ Sidewalk ☐ Alley
Neighborhood: ☐ Improving ☐ Static ☐ Declining ☐ _____ ☐ Blighted

LAND DATA AND COMPUTATIONS

Property Class	Land Type	Actual Frontage	Effective Frontage	Effective Depth	Depth Factor	Base Rate	Adjusted Rate	Estimated Value	Influence Factor	True Tax Value
200 MINERAL										
INDUSTRIAL										
300 Vacant land		.							---- ---- [ ] ---- ----%	
310 Food and drink processing facility		.							---- ---- [ ] ---- ----%	
320 Foundries and heavy manufacturing		.							---- ---- [ ] ---- ----%	
330 Textile, leather, wearing apparel, goods		.							---- ---- [ ] ---- ----%	
340 Light manufacturing and assembly		.							---- ---- [ ] ---- ----%	
345 Industrial office		.							---- ---- [ ] ---- ----%	
346 Research and development facility		.							---- ---- [ ] ---- ----%	
350 Industrial warehouse		.							---- ---- [ ] ---- ----%	
360 Industrial truck terminals		.							---- ---- [ ] ---- ----%	
370 Small shops		.							---- ---- [ ] ---- ----%	
380 Mine or quarry										
385 Landfill										
390 Grain elevators										
399 Other industrial structures										
COMMERCIAL	- - - -	- - - -	Acreage / Sq. Ft.	- - - -	- - - -	- - - -	- - - -	- - - -	- - -	
400 Vacant land			.						---- ---- [ ] ---- ----%	
402 4 family apartments			.						---- ---- [ ] ---- ----%	
403 20-39 family apartments			.						---- ---- [ ] ---- ----%	
403 40 or more family apartments			.						---- ---- [ ] ---- ----%	
410 Motel or tourist cabins			.						---- ---- [ ] ---- ----%	
411 Hotel			.						---- ---- [ ] ---- ----%	
412 Nursing home or private hospital			.						---- ---- [ ] ---- ----%	
415 Mobile home park			.						---- ---- [ ] ---- ----%	
419 Commercial camp ground			.						---- ---- [ ] ---- ----%	
419 Other commercial housing			.						---- ---- [ ] ---- ----%	
420 Small drached retail of less than ten thousand (10,000) square feet			.						---- ---- [ ] ---- ----%	
421 Supermarket	Total Acreage/Sq. Ft.		.					Total True Tax Land Value		
422 Discount and junior department store										
424 Full line department store										
425 Neighborhood shopping center (strip center)										
426 Community shopping center										
427 Regional shopping center										
428 Convenience market										
429 Other retail structures										
430 Restaurant, cafeteria, or bar										
431 Franchise type restaurant										
435 Drive-in restaurant										
436 Golf course, miniature course										
440 Dry clean plant or laundry										
441 Funeral home										
442 Medical clinic or offices										
443 Drive up/walk up bank only										
444 Full service banks										
445 Savings and loans										
447 Office building 2 story										
448 Office building 3 stories or more - walkup										

COMMERCIAL (cont.)
481 Commercial miniwarehouse
482 Commercial truck terminal
490 Marine service facility
495 Mines
499 Other commercial structures

Memorandum

RESIDENTIAL
0 Vacant lot
1 One-family dwelling
2 Two-family dwelling
3 Three-family dwelling
4 House trailer (real)
5 Condominium unit
0 Platted lot
1 Unplatted 0 - 9.99 acres
2 Unplatted 10 - 19.99 acres
3 Unplatted 20 - 29.99 acres
4 Unplatted 30 - 39.99 acres
5 Unplatted 40 +
599 Other residential structure

COMMERCIAL (cont.)
449 Office building 3 stories or more - elevator
450 Convenience market with gasoline sales
451 Convenience market/franchise type restaurant with gasoline sales
452 Service station
453 Car wash
454 Auto sales and service
455 Commercial garage
456 Parking lot or structure
460 Theater
461 Drive-in theater
463 Golf course or miniature course
465 Lodge hall
466 Amusement park
467 Health club
468 Ice rinks
469 Riverboat gaming resort
480 Commercial warehouse

LAND TYPE
F Front Lot
R Rear Lot
1 Comm./Ind. Land
11 Primary
12 Secondary
13 Undeveloped Usable
14 Undeveloped Unusable
2 Classified Land
3 Undeveloped Land
4 Tillable Land
5 Non-tillable Land
6 Woodland
7 Other Farmland
8 Ag Support Land
81 Legal Ditch
82 Public Road
83 Utility Trans. Towers
9 Homesite
91 Res. Excess Acres
92 Ag. Excess Acres

Influence Factors
1 Topography
2 Under Improved
3 Excess Frontage
4 Shape or Size
5 Misimprovement
6 Restrictions
7 Traffic Flow
8 View
9 Corner Influence
0 Other

State Form50056 (2-01) INDIANA COMMERCIAL & INDUSTRIAL PROPERTY RECORD CARD

Figure 6-5. Property Record Card—Front

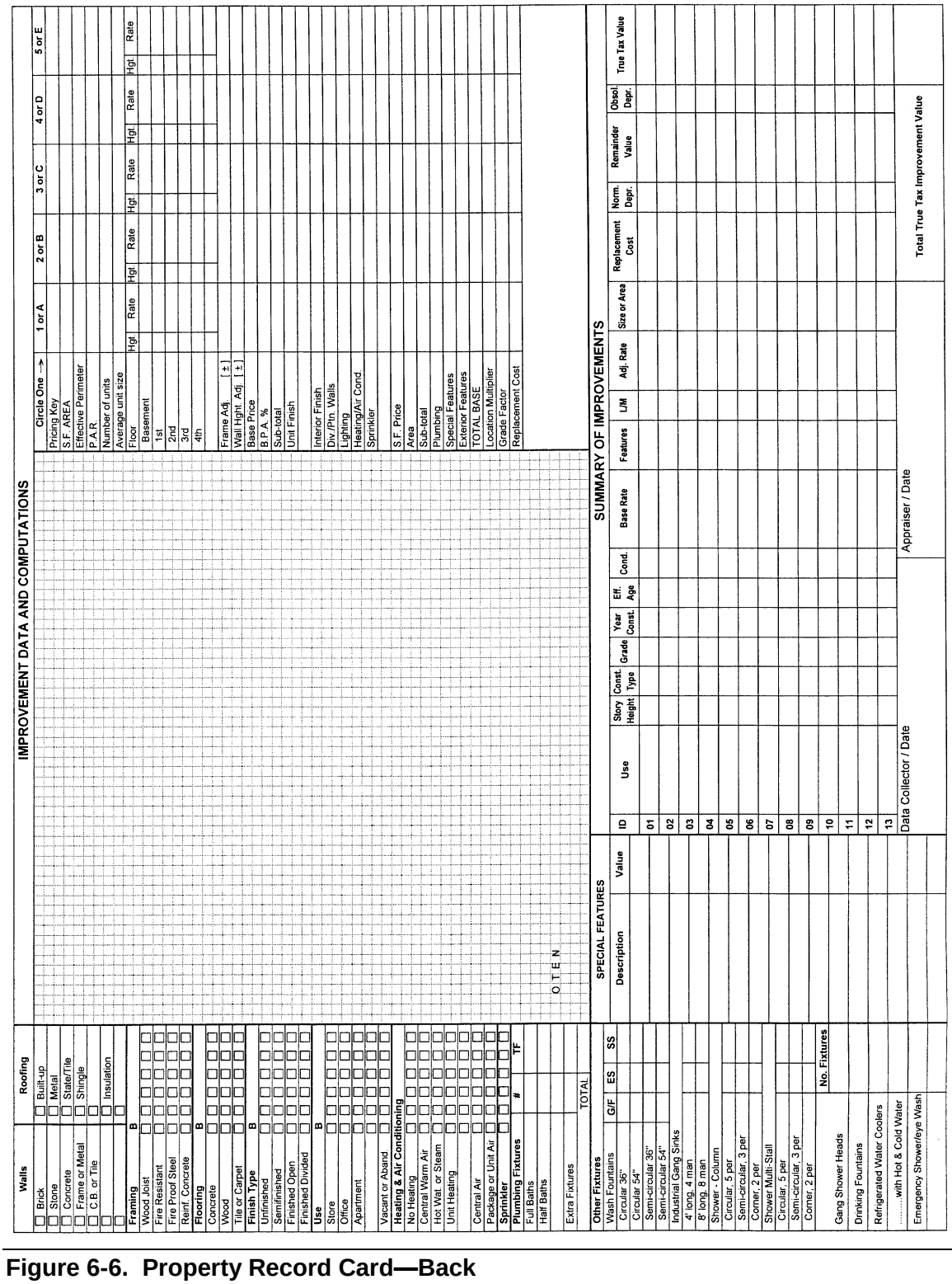

Figure 6-6. Property Record Card—Back

The sections below describe in detail how to complete each relevant section of the state's version of the property record card for a commercial or industrial

structure. The card is designed for listing up to five (5) major commercial or industrial structures or structure sections. As you read these instructions, keep in mind that your county's property record card may be slightly different.

Note: Instructions for recording the general information on the front of the property record card, completing the "Land Data and Computations" section of the card, and completing the valuation record section of the card are provided in Chapter 2.

Task 1—Recording the Construction Features and Components

Before any data can be recorded for a specific structure, the assessor must determine the most organized method of identifying the physical characteristics within the structure. This identification process is based on the number of separations necessary to evaluate and price the structure's configuration.

A construction check list is provided on the property record card to record a general description of the construction features and components of commercial and industrial structures. Space is provided to list five structures or structure sections. If more than one structure or sections of a structure are being described, assign a one character code, such as an "A" or a "B", to each structure or section in order to differentiate among them. If the structure being described is a separate floor or section of the structure, assign a two-digit code to reflect the building number as the first character and the second character as the section or floor designation. For example, an "A1" designation would identify building "A" and either the first floor or the first section ("1") of building "A". Continue this coding until all sections or floors are identified.

To record the structure's construction features and components, perform these steps:

Step 1 In the "Walls" section, place a check in the check box for the option that best describes the type of exterior wall construction.

Delineation by linear footage of exterior wall construction may be necessary to correctly identify the number of linear footage of mixed construction materials. Record the measurement in the check box provided for each type of material.

Table 6-4 describes alternative codes to enter in the space provided if the exterior wall is constructed of two or more different types of material. These codes may be used if the structure's exterior walls are clearly defined and agree with the options.

Table 6-4. Additional Wall Options

Enter	To indicate
1S	One (1) side
2S	Two (2) sides
F	Front
FR	Front and rear
R	Rear

Note: Do ***not*** include back-up materials, which are intended to be a back-up for the exterior surface, unless they are exposed as the structure's main exterior.

Step 2 In the “Roofing” section, place a check in the check box for the option that best describes the type of roofing material used on the roof. *If a roofing material other than the ones provided is used*, check the box with the blank next to it and write in the name of the material. For multiple structures or multiple sections of structures, record the character code designation in the applicable check box.

Step 3 *If the framing material is consistent throughout the structure or section of a structure*, in the “Framing” section, place a check in the check box for the option that best describes the type of framing. Follow these guidelines:

- The type of framing for the column headed basement (“B”) applies to the framing supporting the first floor.
- The type of framing indicated in the column assigned to the first floor applies to the framing supporting the roof, regardless of the story height.

Figure 6-7 shows the four framing types listed on the card.

*If the framing material is **not** consistent throughout the structure*, instead of a check, enter the percentage of each framing in the appropriate check boxes.

Step 4 In the “Flooring” section, place a check in the check box for the option that best describes the floor construction of the structure or sections of the structure.

Step 5 In the “Finish Type” section, place a check in the check box for the option that best describes the interior finish type of the structure or sections of a structure. Table 6-5 describes the interior finish options.

Table 6-5. Interior Finish Options

This option	Indicates
Unfinished	Unfinished walls, ceiling, and floors. This classification is typical of utility basements.
Semifinished	Very minimal finish in most of the interior, generally consisting of paint with partial tiling. Full ceiling and wall finish is confined to the office and service areas. This classification falls between “Unfinished” and “Finished Open”.
Finished Open	Finished open space, indicating finished walls, ceiling, and flooring, with scant partitioning. This classification is typical of retail areas.
Finished Divided	Divided space, indicating finished walls, ceiling, and flooring, with abundant partitioning. This classification is typical of offices and apartments. The division walls are permanent. The use of movable or portable partitions does not indicate a finished divided classification. In this situation, the finished open classification should be checked with the understanding that adjustments from Schedule C may be necessary.

Step 6 In the “Use” section, place a check in the check box for the option that best describes the current use of the structure or the section of the structure. *If the structure is currently vacant*, place a check in the “Vacant or Aband.” check box, in addition to the indicated use.

Step 7 In the “Heating & Air Conditioning” section, place a check in the check box for the option that best describes the type of heating and air conditioning system in the structure or the section of the structure. Follow these guidelines:

- *If the type of heating system is available only to a portion of the structure*, place a check in the check box for the type of system and write the percentage to the nearest 10% of heated floor space immediately next to the check box.
- *If no heating system is available on one or more sections in the structure*, place a check in the “No Heating” check box.
- *If air conditioning is available*, check the proper type of system, and indicate the total tonnage, if known.
- *If the type of air conditioning system is available only to a portion of structure*, place a check in the check box for the type of system and write the percentage to the nearest 10% of cooled floor space immediately next to the check box.

Step 8 In the “Sprinkler” section, place a check in the check box for the option that best describes the floor levels that are protected by sprinklers.

If sprinklers are available only to a portion of the structure or section of the structure, place a check in the check box for the type of system and write the percentage to the nearest 10% of floor space with sprinklers immediately next to the check box.

Step 9 In the “Plumbing Fixtures” section, enter the total number of full baths, half baths and extra plumbing fixtures in the structure or sections of the structure in the “#” column. Then, enter the total number of fixtures in the “TF” column.

Step 10 In the “Other Fixtures” section, enter the total number of each type of fixture for the type of composition. Table 6-6 describes the plumbing fixtures composition options.

Table 6-6. Plumbing Fixture Composition Options

This option	Indicates
G	Granito
F	Fiberglass
ES	Enameled steel
SS	Stainless steel

Step 11 In the “Special Features” section, enter descriptions of any special construction features or components not described in the construction features and components section of the property record card.

Schedule E, located in Appendix G, contains the items considered to be special features. The following items are considered to be special features:

- mezzanines
- penthouses
- mall concourse areas
- banking features
- atriums
- marquees
- certain health and recreational club facilities.
- passenger elevators
- freight elevators
- boilers
- cold storage facilities
- dock facilities
- canopies

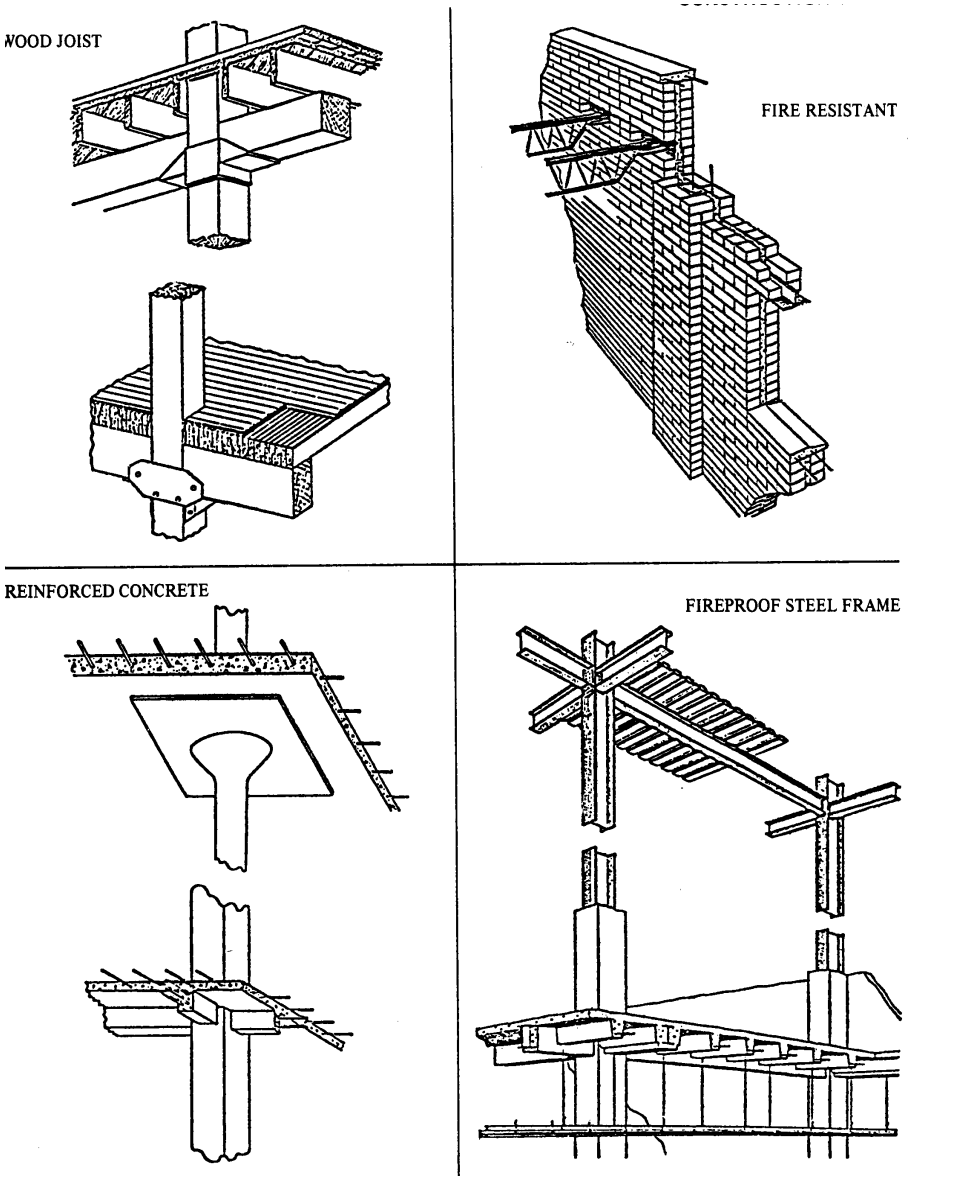

Figure 6-7. Framing Types

Example: The data collection example in Figure 6-8 represents a three story brick structure with an unfinished concrete block utility storage basement. The framing of the structure is wood joist, and all floors, excluding the basement, have wood sub-flooring with carpet. The basement floor is concrete. The interior finish type of the general retail store located on the first floor is finished open, whereas the finish type of the apartments located on the second and third floors is finished divided. The structure has a hot water heating system with package air conditioning confined to the first floor. There are six apartments with full baths on both the second and third floors, two half baths on the first floor, and a maintenance sink on each of the three floors. There is no sprinkler system. The roof is composed of a wooden deck on wooden timbers covered with a felt pad and tar mixture.

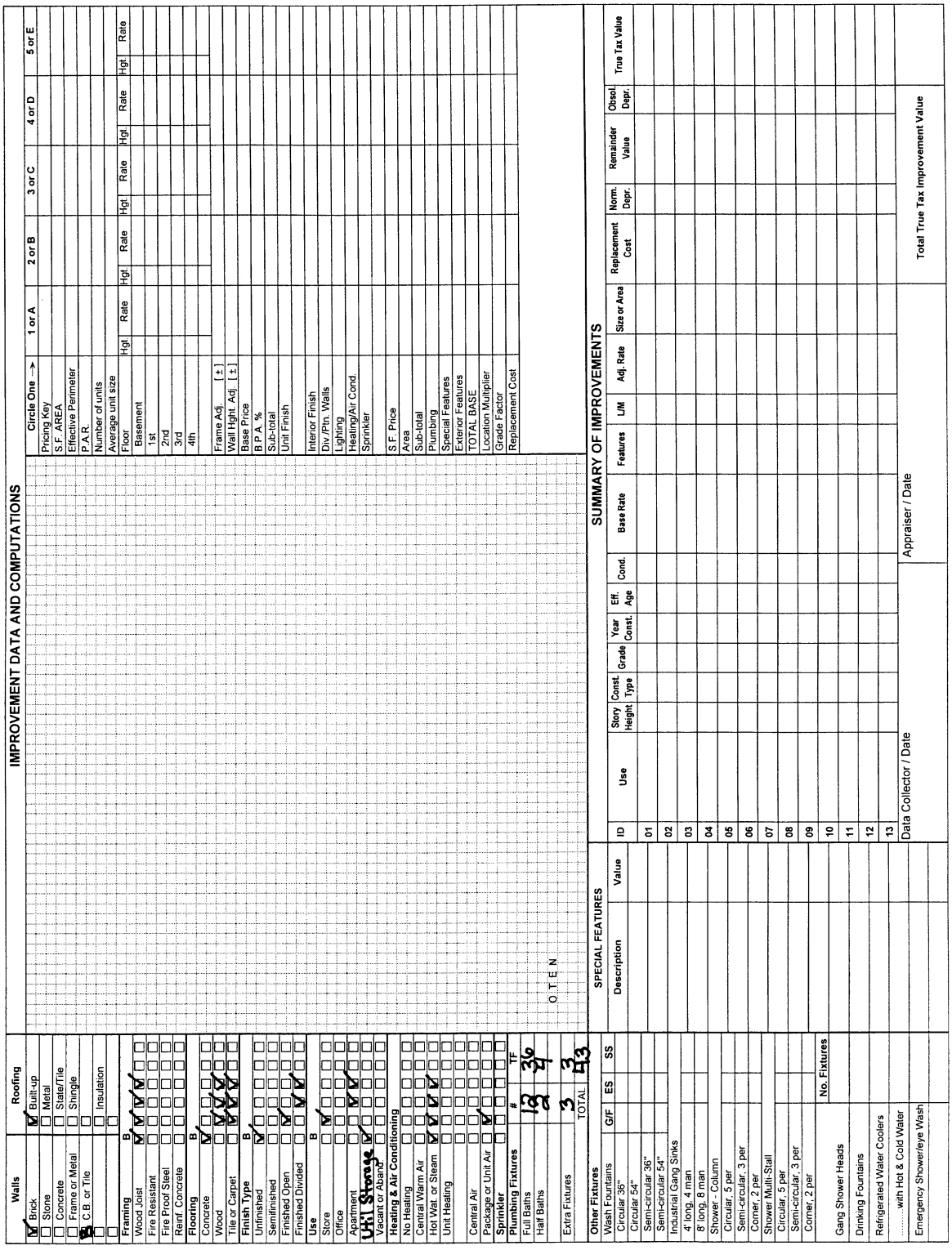

Figure 6-8. Construction Features and Components Section Example

Task 2—Completing the Sketch Grid

You record the physical characteristics of the structure on the back of the property record card. A sketch grid, shown in Figure 6-9, is provided on the property record card to make a plain view sketch of the major structures or sections of a structure. On the sketch grid, you also indicate the source of the property data collected for the property.

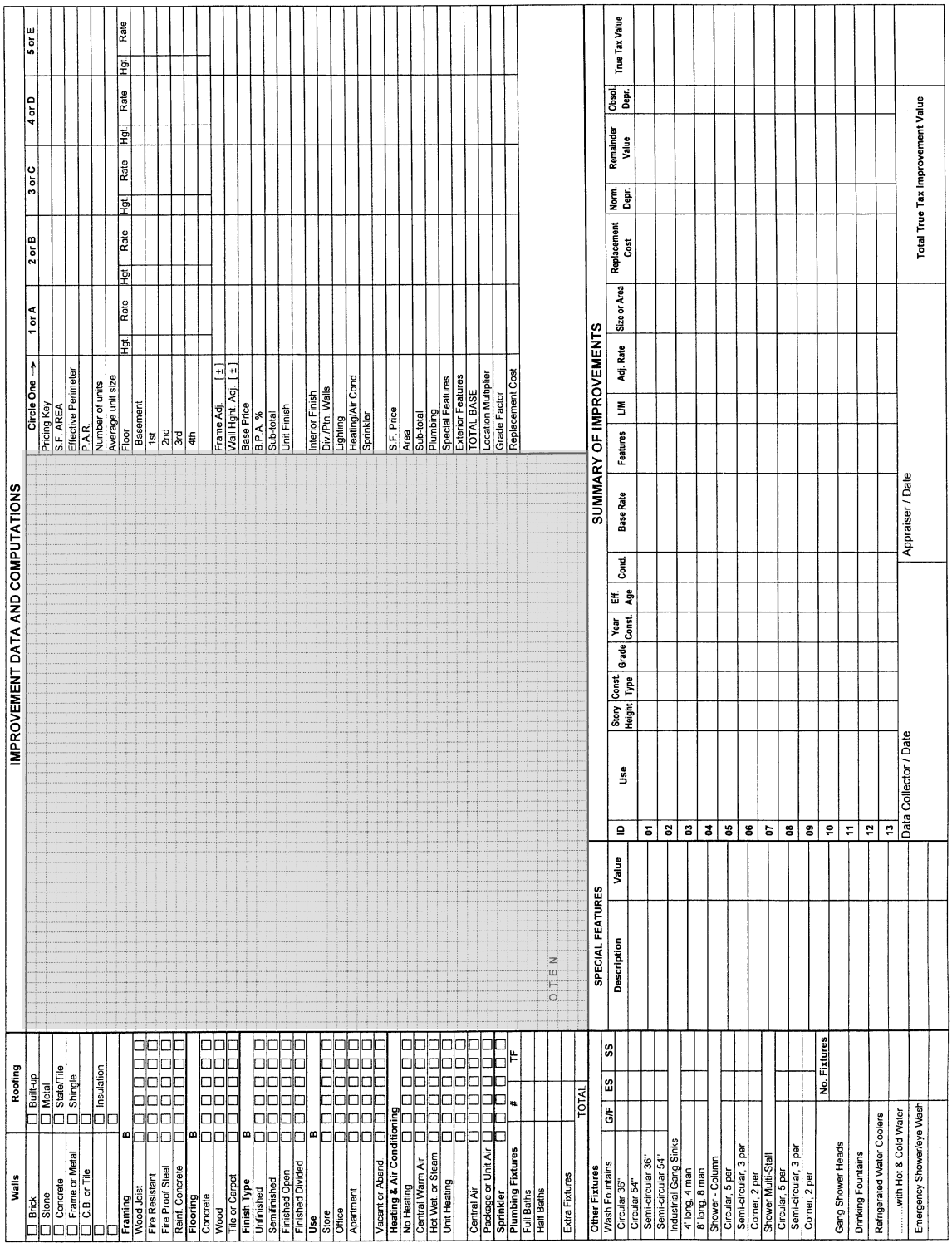

Figure 6-9. Sketch Grid Section

Complete the sketch grid for each parcel. Follow these guidelines:

- Draw the structure to approximate scale.

- Draw the structure with the side facing the street towards the bottom of the sketch grid.
- Enter sufficient outside dimensions of the structure to compute the gross square foot ground area. Guidelines are provided in the section ***Measuring and Calculating Areas*** in this chapter.
- Enter the computed gross square foot ground area of the structure on the drawing.
- Enter the proper story height of the structure on the drawing.
- Identify all party walls (walls held in common ownership) of the structure and enter the appropriate dimensions on the drawing.
- Identify all additions to the structure, such as porches, canopies, decks, and other exterior features. Then for these features, enter:
  - the outside dimensions
  - the computed gross square foot ground area
  - the story height
  - the exterior wall construction.
- To indicate the source of the property data, circle the appropriate letter or letters listed in the bottom left of the sketch grid. Table 6-7 describes the source options.

Table 6-7. Source of Property Data

This option	Indicates
O	Owner
T	Tenant
E	Estimated
N	Structure was not entered, information was obtained at the site

Example: The example in Figure 6-10 represents a one story concrete block structure that is 2,400 square feet. The width of the structure's front facing the street is 40 feet, and the side dimension of the structure is 60 feet. The floor height of the structure is 14 feet. Information about the structure was obtained from the owner.

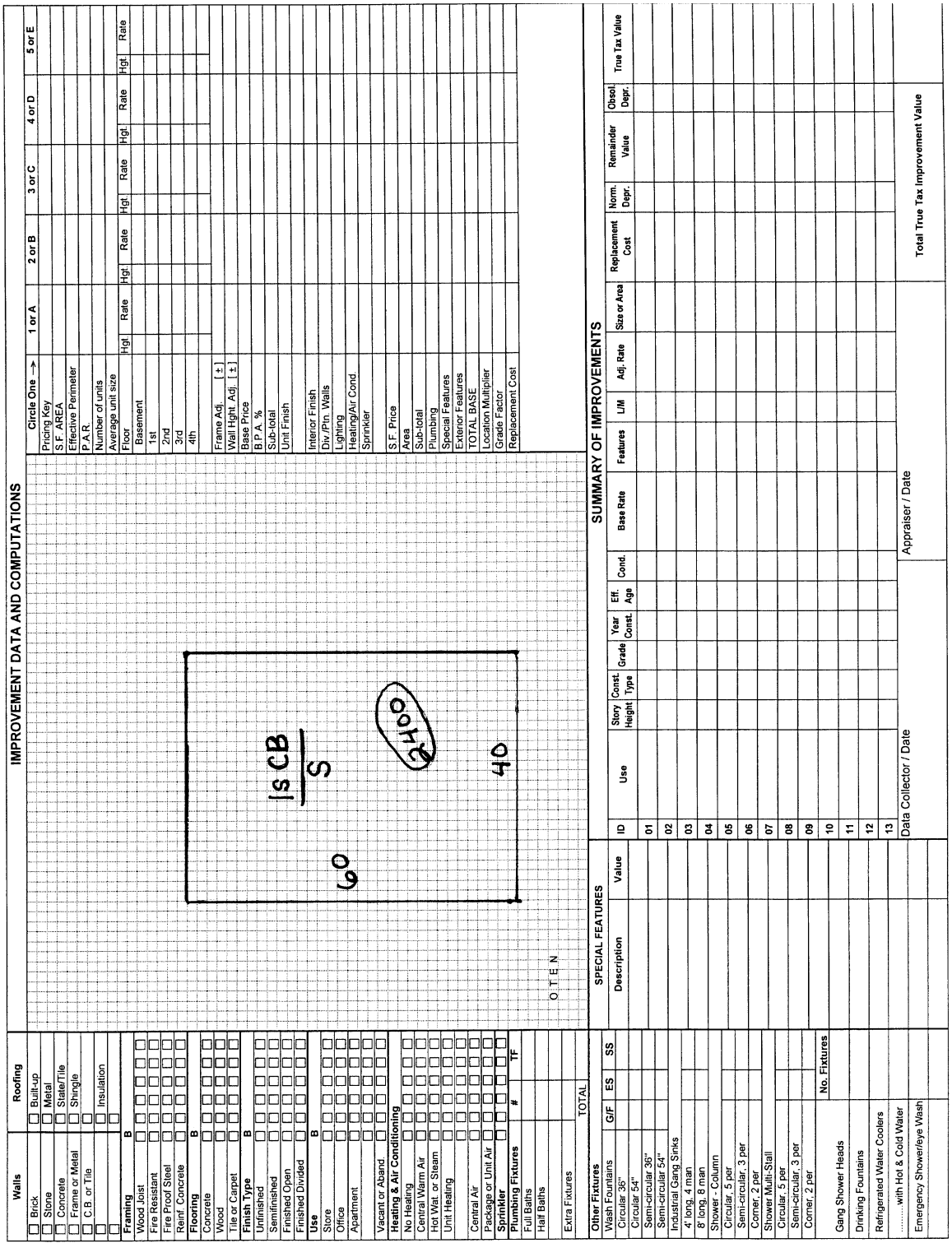

Figure 6-10. Sketch Grid Example

Task 3—Calculating the Replacement Cost for a Structure

An area is provided on the property record card to calculate the replacement cost of the structure or sections of the structure that are described on the card. The individual replacement costs can either be totaled to arrive at a single replacement cost or treated separately. Figure 6-11 shows the replacement cost calculation section.

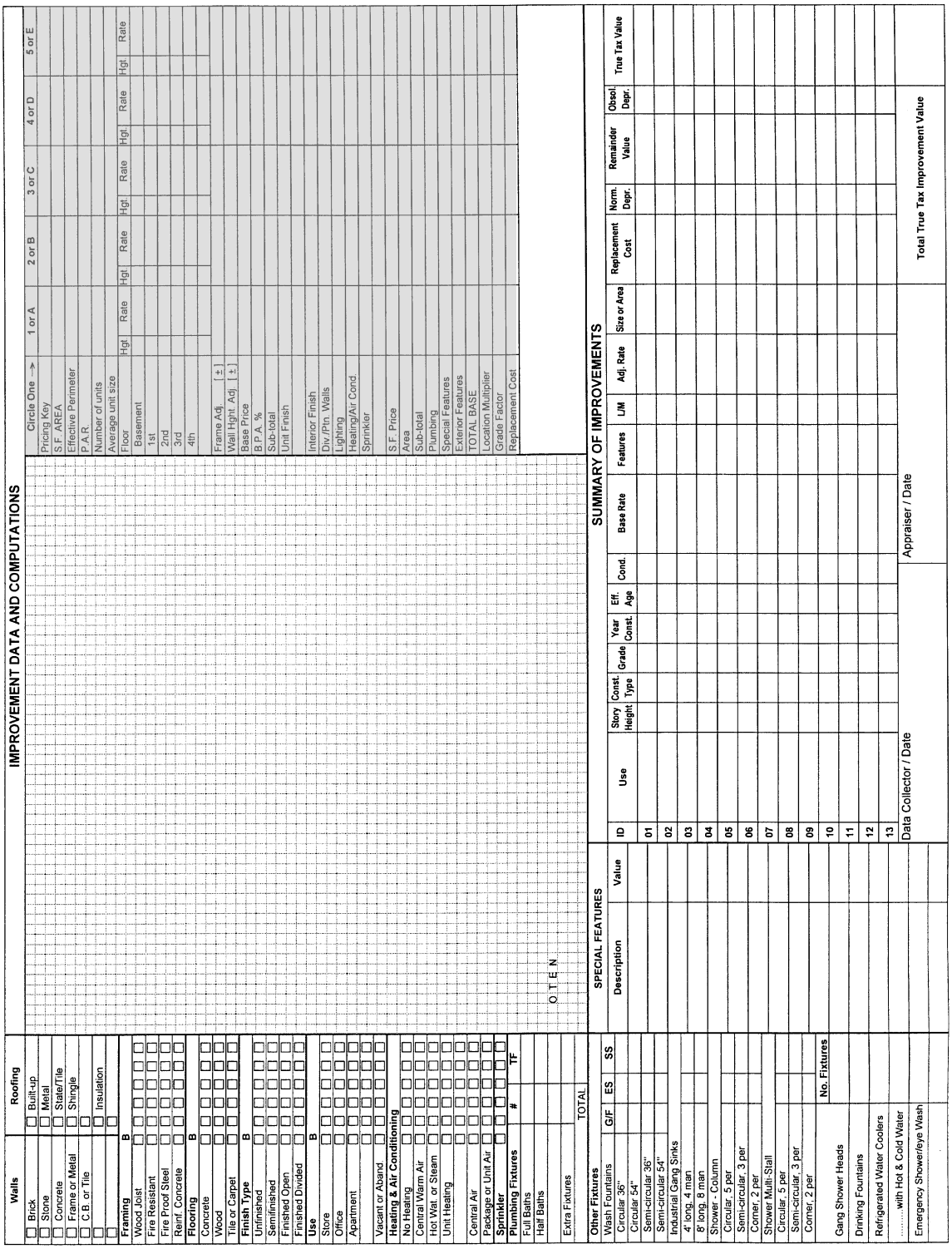

Figure 6-11. Replacement Cost Calculation Section

Calculating the Perimeter-to-Area Ratio

The perimeter-to-area ratio is used to locate the base price on Schedule A. To calculate the perimeter-to-area ratio for a structure, perform these steps:

Step 1 In the “Pricing Key” row, enter the pricing key by model number and list the general commercial pricing schedule applicable to the subject building or building section.

Step 2 In the “SQ. FT. Area” row, enter the square footage for the structure.

Step 3 In the “Effective Perimeter” row, enter the total linear feet of exterior walls for the structure.

If the structure contains a party wall, calculate the length of the perimeter wall as follows:

- For a structure with a party wall with an **unfinished interior surface**, use 50% of the length of the party wall.
- For a structure with a party wall with a **finished interior surface**, use 60% of the length of the party wall.

Step 4 Calculate the perimeter-to-area ratio (PAR) by dividing the structure’s effective perimeter, calculated in Step 3, by the structure’s total square footage:

PAR = (Effective perimeter ÷ Square footage) x 100

Round the perimeter-to-area ratio to the nearest whole number and enter it in the “P.A.R” cell.

Example: The perimeter-to-area ratio of a structure whose linear footage is 80 and square footage is 800 is:
80 ÷ 800 = .1 x 100 = 10 (rounded).

Step 5 *If the structure is an apartment, motel, or similar building for which the average unit size is used as a basis for computing the replacement cost*, enter the number of living units in the “Number of Units” cell. Then, in the “Average Unit Size” cell, enter the average unit size for the entire structure.

Note: Calculate the average unit size by dividing the total square foot area to which the unit base price is to be applied by the total number of units.

*If the structure is **not** an apartment, motel or similar building for which the average unit size is used as a basis for computing the replacement cost*, leave the “Number of Units” row and the “Average Unit Size” cell blank.

Example: The example in Figure 6-12 represents a one-story brick apartment building that is 6,000 square feet. The outside dimensions of the structure are 60 feet by 100 feet. There are six apartment units in the structure with an average size per unit of 1,000 square feet.

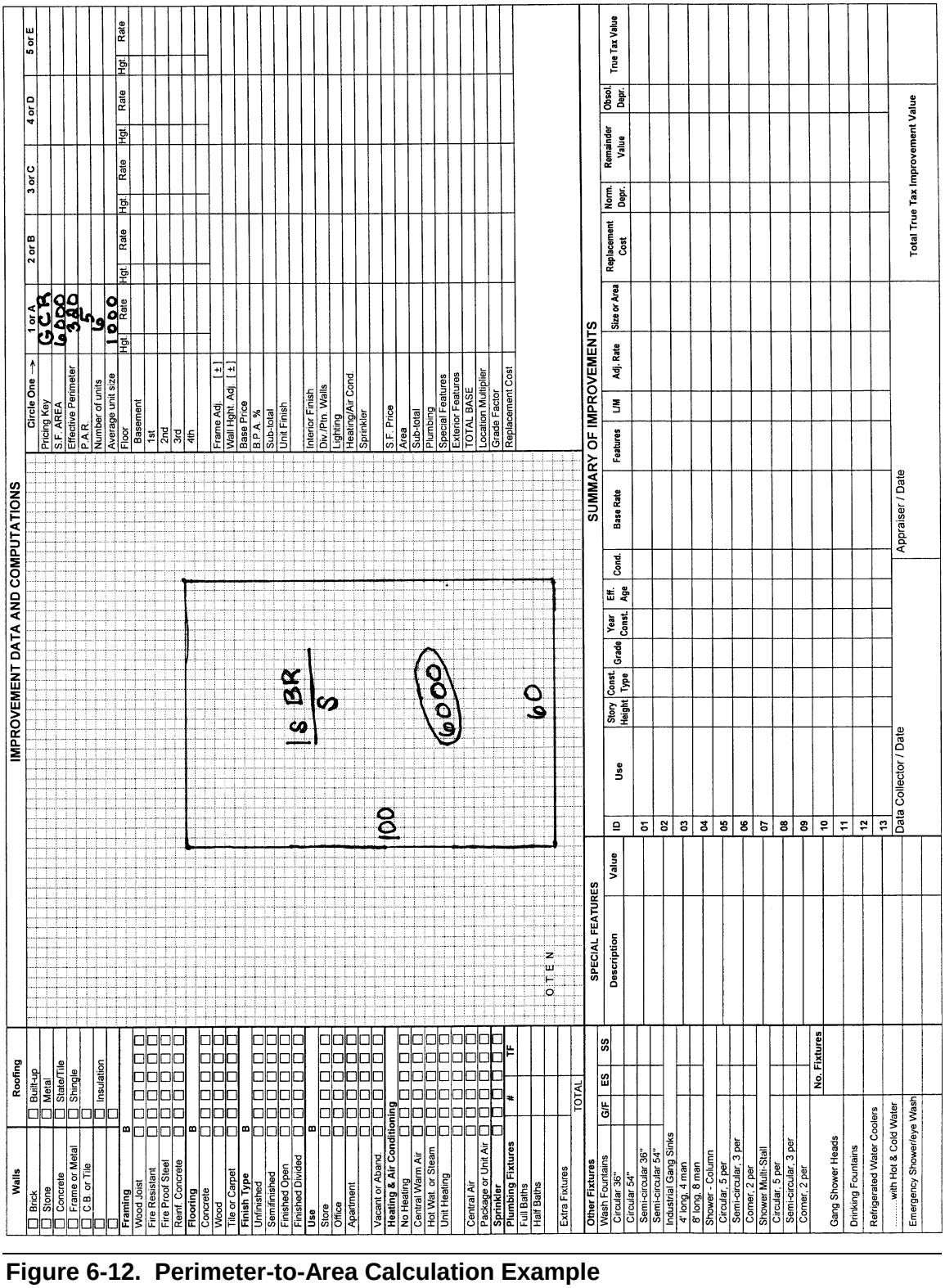

Figure 6-12. Perimeter-to-Area Calculation Example

Calculating the Base Rate of the Structure

To calculate the base rate of the structure using the appropriate Schedule A table as a guide, follow these steps:

In the "Hgt." column, enter the actual measurement of the wall height or the calculated average height of each floor level of the structure. In the "Rate" column, enter the base rate of each floor level in the structure. When calculating the base rate, follow these guidelines:

- *If the basement area is not priced as an individual building section*, a partial basement may be priced using the area percentage as compared to the area of the first floor. The applicable percentage of basement is multiplied against the basement pricing of the appropriate model.
- *If the basement area is priced as an individual building section*, a partial basement is valued by performing the steps in the section ***Calculating the Perimeter-to-Area Ratio Information*** in this chapter.
- *If the basement size exceeds the base ground floor area*, it is priced as an individual building section. However, *if the area in excess of the base ground floor area is valueless*, it may be priced as a full or partial basement.
- Blank spaces are provided to insert subbasements and upper floors.
- Any number of upper floors, including the second floor, may be grouped together if there are no significant variations in use and construction among them. In these cases, describe the floor levels, enter the measured wall height or, in case of variations, the total wall height and the total base rate, which is equal to the number of floors multiplied by the base rate for each.
- If the structure has two or more sections with varying exterior wall heights, as shown in Figure 6-13, perform the following calculations to arrive at an average wall height:
  a. Determine the percentage of the structure containing each wall height. Multiply each percentage by its corresponding wall height.
  b. Determine the average wall height for the structure by adding the results of Step a and rounding to the nearest whole number of feet.

Example: Structure #7 has an area of 2,500 square feet, of which 1,875 square feet (or 75%) of the area has a wall height of 16 feet. The remaining 625 square feet (or 25%) of the area has a wall height of 14 feet. The structure has a perimeter-to-area ratio of 10. The height of 75% of the structure's walls is 12 feet (16′ x .75= 12′). The height of 25% of the structure's walls is 3.5 feet (14′ x .25 = 3.5′). The average wall height is 15.5 feet (12 + 3.5 = 15.5). When rounded up to the nearest whole number, the average wall height is 16 feet.

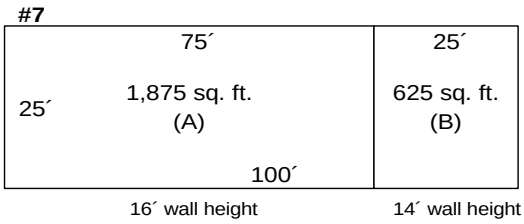

Figure 6-13. Structure with Varying Wall Heights

To calculate the base rate of the structure, perform these steps:

Step 1 Locate the appropriate “Floor” row for the area. In the “Hgt.” columns, enter the wall height of each floor in the structure.

Step 2 Identify the appropriate use model for the structure (GCM, GCI, GCR) and locate the corresponding section of Schedule A.

Step 3 Locate the structure’s base rate in Schedule A:

Note: Refer to the data entered in ***Task 5—Recording the Construction Features and Components*** in this chapter for the appropriate descriptions of the structure.

a. In the “Floor Level” column, locate the rows corresponding to the floor level.

b. In the “Fin Type” column, locate the rows within the floor level corresponding to the finish type.

c. In the “Use Type” column, locate the rows within the finish type corresponding to use type.

d. In the “Wall Type” column, locate the row within the use type corresponding to the wall type.

e. In columns “1” through “10” in the “Fire Resistant” section, locate the column corresponding to the perimeter-to-area ratio calculated in the ***section Calculating the Perimeter-to-Area Ratio*** in this chapter.

If using the GCR schedule (Schedule A.3), the perimeter-to-area ratio columns are in the “Wood Joist” section.

f. *If the perimeter-to-area ratio is greater than 10*, perform the following adjustment calculation:

1. Subtract 10 from the calculated perimeter-to-area ratio.
2. Multiply the adjustment price in the “+1” column in the same row by the result of the subtraction.
3. Add the result of the multiplication to the base rate in the “10” column.

g. Find the intersection of the row selected in Steps 4a through 4d and the column selected in Step 4e.

h. In the “Rate” cell corresponding to the applicable floor level, enter the base rate for the structure.

Example: A freestanding 20 feet by 40 feet structure has a perimeter-to-area ratio of 15. The linear footage is 120. The square footage is 800. The perimeter-to-area ratio is: 120 ÷ 800 sq. ft. = .15 x 100 = 15. The perimeter-to-floor ratio adjustment is 15 -10 = 5. The adjusted base rate is: (5 x adjustment rate) + base rate given in the “10” column.

Step 4 *If the structure has two or more use types*, as shown in Figure 6-14, perform the following calculations:

a. Determine the perimeter-to-area ratio for the structure. Instructions are provided in the section ***Calculating the Perimeter-to-Area Ratio*** in this chapter.

b. Determine each use type for each finish type in the structure.

c. Using Schedule A, determine the base rate for each use type.

d. Determine the percentage of floor space occupied for each use type by dividing the area by the total area:

% of use = Area of use ÷ Total area x 100

e. Multiply the base rate for each use type by the percentage of that use for each floor.

f. Add the results of Step d and Step e for each use type.

g. Enter the result of Step f in the “Base Rate” cell.

Example: A structure has 2,500 square feet of area of which 1,500 square feet is general office area and 1,000 square feet is utility storage area. The walls of the structure are Type #1.

The perimeter-to-area ratio is 10. The base rate for the general office space is $74.25 and the base rate of the utility storage space is $41.15. 60% of the use is general office space and 40% is utility storage space. The base rate of the structure used for general office space is: $74.25 x .60 = $44.55. The base rate of the utility storage space is: $41.15 x .40 = $16.46.

Therefore, the adjusted base rate of the structure is: $44.55 + $16.46 = $61.01.

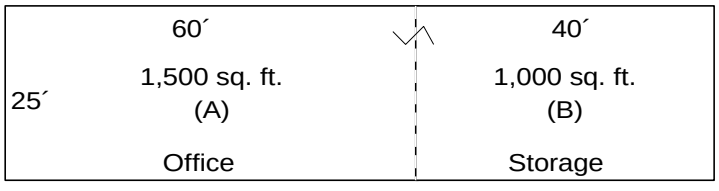

Figure 6-14. Perimeter-to-Area Ratio for a Structure with Multiple Use Types

Step 5 *If the framing material is **not** consistent throughout the structure*, as shown in Figure 6-15, perform the following steps:

a. Determine the percentage of the floor area that is ***not*** constructed of all fire resistant framing material.

b. Determine the adjustment necessary as if the entire building were constructed of the non-fire resistant material.

c. Multiply the percentage determined in Step a by the adjustment amount obtained in Step b.

d. Enter the positive or negative result of Step c in the "Frame Adj." cell.

Example: A structure has 2,500 square feet of area, of which 1,750 square feet (or 70%) is fire resistant framing. The remaining 750 square feet (or 30%) of the structure is constructed with wood joist framing. The perimeter-to-area ratio of the structure is 10. The exterior walls are "Type 1". The use is general retail. The full wood joist adjustment amount for a general retail model is $1.77. The amount of framing adjustment necessary to account for the structure's 30% wood joist framing is: $1.77 x .30 = $.531 or $.53. A negative adjustment of $.53 is entered in the "Frame Adj" cell.

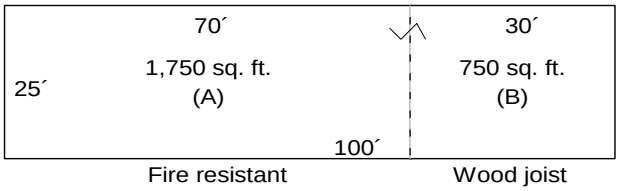

Figure 6-15. Structure with Multiple Framing Types

Step 6 *If the structure has a different wall height than the selected use model*, adjust the base price:

a. Determine the difference between the structure's wall height and that of the use model.

b. In the "Wall Hgt." section of Schedule A, locate the rows for the finish type.

c. In the "Wall Type" column, locate the row for the wall type.

d. Locate the column corresponding to the perimeter-to-area ratio for the structure.

e. Multiply the calculated wall height adjustment price by the number of feet of wall height different from the model.

f. Enter the wall height adjustment in the "Wall Ht. Adj." cell.

Note:

The wall height adjustment in the "1 through 10" columns represent adjustments for fire resistant construction. If the framing type is not fire resistant, the wall height must reflect the adjustment for wood joist, reinforced concrete, or fireproof steel for each foot of wall height difference from the model.

Step 7 *If the structure has a dock floor*, adjust the base price:

a. Determine the height of the dock floor above ground level.

b. Determine the amount of adjustment by comparing the dock floor wall type and perimeter-to-area ratio of the structure in the "Dock Floor" section.

c. Multiply the number of feet in dock floor height times the adjustment per foot.

Enter the calculated adjustment in the blank space of the pricing ladder.

Example: A truck terminal is 50 feet by 200 feet. The first floor is 4 feet above grade level. Add 4 times the amount shown for a dock floor with a perimeter-to-area ratio of 5.

Step 8 Add the base prices calculated in Step 4 or Step 5 to the adjustments calculated in Step 6, Step 7, and Step 8. Enter this sum in the "Base Price" cell.

Step 9 Calculate the adjustment based on the actual story height of the structure. The adjustment accounts for the added construction costs of supports and material handling in multiple story construction.

- When calculating the actual story height, the basement is not counted as a story, but the basement base rate is included in the total unit rate.
- The Schedule B—Base Rate Adjustment (BPA) table accommodates structures up to 34 stories. Add 1/2% to the adjustment percentage for each floor over 34 stories.

To calculate the BPA factor, perform the following steps:

a. Select the adjustment percentage corresponding to the actual story height.

b. In the "B.P.A.%" cell for the appropriate structure or sections of the structure, enter the adjustment percentage.

c. Calculate a multiplier by dividing the adjustment percentage by 100.

Example: A 16-story apartment building has a BPA factor of 107. The adjusted rate is 107% of the base unit rate.

Example: A 60 story office building has a BPA factor of 128% from Schedule B. The adjustment is calculated by taking the difference between 60 stories and 34 stories, which equals 26 stories, and multiplying by 1/2%. The result (13%) is added to the factor for 34 stories which is 115%. The adjusted rate is 128% of the base unit rate.

Step 10 Multiply the base price entered in Step 9 by the B.P.A.% from Step 10.

Step 11 Enter the result from Step 11 in the “Sub-Total” cell.

Example: The structure represented in Figure 6-16 is an old four story downtown retail structure with a full basement. Each story is described as follows:

- Basement–The basement has brick exterior walls for a height of eight feet. The interior finish and mechanical features are consistent with the utility storage model. The framing type is wood joist. An adjustment for wood joist framing and an adjustment to the wall height for one foot of wood joist is necessary to price this floor correctly.
- First Floor–The first floor is a typical retail store with a brick exterior wall height of twelve feet. The interior finish and mechanical features are consistent with the general retail model. The framing is wood joist. Adjustments are necessary for wood joist construction, and the absence of 2 feet of exterior wall height that is included in the model.
- Second, Third, and Fourth Floors–These floors have wood joist framing and a brick exterior wall height of 10 feet. There are six apartment units on each of the floors, which resemble the GCM apartment model for upper floors.

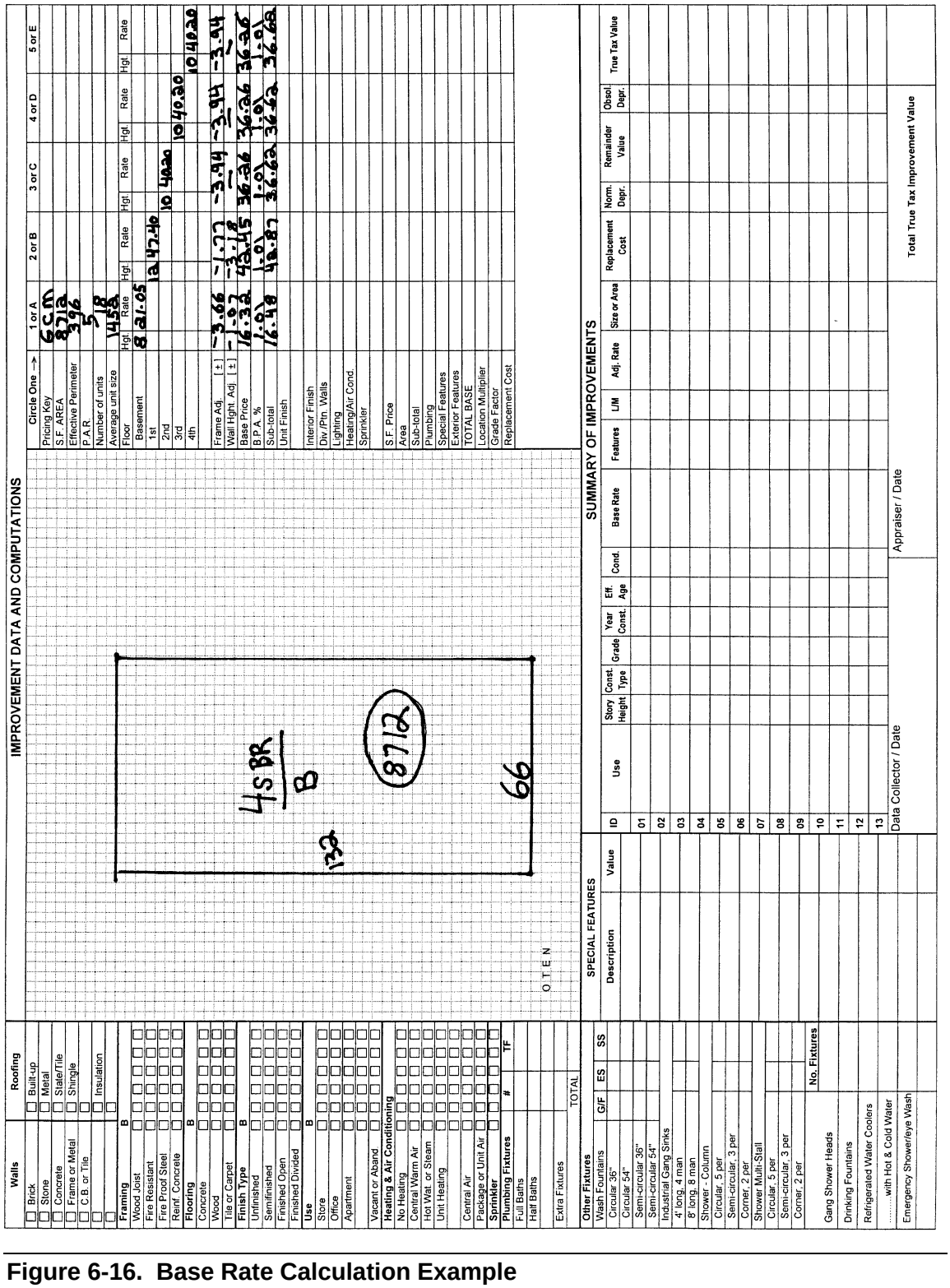

Figure 6-16. Base Rate Calculation Example

Calculating the Schedule C—GC Base Price Components and Adjustments

Use **Schedule C** to further adjust the base rate to account for variations between the structure and the model. Whereas Schedule A and Schedule B include structural adjustments, Schedule C adjusts mainly interior and mechanical features. Unless otherwise noted, the rates included in the table identified as "GC Base Price Components and Adjustments" represent the dollar amounts included in the Schedule A base prices for the interior and mechanical features in each model.

The "Unit Finish" cell on the property record card is used only when the average unit size of an apartment unit, a motel unit, or a hotel unit is necessary to calculate the adjusted rate of a structure. This adjustment is based on the average unit's size and is added on a per floor basis.

An adjustment from the "GC Base Price Components and Adjustments" table is made when a subject structure's interior finish and mechanical features deviate from the model description chosen to price the structure. The "CH" column included in this table is provided as a reference to the ceiling height within the structure, if applicable. This reference establishes the amount of finished interior wall height calculated for each model.

To calculate an adjustment from this table, perform these steps:

Step 1 In the "ID" column, locate the use model corresponding to the structure.

Step 2 In the "Floor Level" column, locate the rows corresponding to the structure's floor level.

Step 3 In the "Fin. Type" column, locate the rows corresponding to the structure's finish type.

Step 4 In the "Use Type" column, locate the row corresponding to the structure's use.

Step 5 In the "Interior Finish" cell on the Property Record Card, enter the corresponding adjustments for a lack of certain interior finish components within the structure.

Locate the "Wall per LF", "Floors per SF", and "Ceil per SF" columns in Schedule C. These component costs apply to 100% of the area unless otherwise stated in the interior finish narrative of each respective model included in Appendix D.

The "Walls per LF" (walls per linear foot) column in the Schedule C–GC Base Price Components and Adjustments table contains the ***linear*** foot rate included in the base rate for interior wall finish. This column is expressed as linear feet because it is a vertical cost.

The square foot adjustment for this linear foot rate depends on the perimeter-to-area ratio of the structure. A conversion calculation must be performed to convert the linear foot rate into a square foot rate.

To convert the linear foot rate, perform these steps:

a. Locate the perimeter-to-area ratio of the structure that you recorded in the "P.A.R." cell at the top of the Property Record Card.

b. Divide the "P.A.R." number located in Step a by 100 to arrive at a percentage.

c. Multiply the percentage obtained in Step 6 by the linear foot rate.

d. Enter the result in the "Interior Finish" cell.

Example: Suppose a 40 feet by 100 feet general retail structure has no finish on the interior walls. If the interior wall finish cost is $29.60 per linear foot in the retail model, an adjustment must be made to the base rate. Calculate the perimeter-to-area ratio for this structure: 280 ÷ 4,000 sq. ft. = .07 x 100 = 7. Next calculate the multiplier: (7 ÷ 100 = .07 or 7%). Then multiply the cost per linear foot by the multiplier: (.07 x $29.60 = $2.07). The adjustment to the base rate for an absence of interior wall finish is an adjustment of $2.07 per square foot.

The "Floors per S.F." column and the "Ceil per S.F." column represent the square foot costs included in the model's base rate for a floor finish or a ceiling finish. An absence of such a number indicates that there is no cost for these items included in the base rate.

To calculate the adjustment for an absence of either floor finish or ceiling finish in a model that includes rates for these finishes, perform this steps:

Enter the rate from the appropriate column in the "Interior Finish" cell.

Step 6 In the "Div./Ptn Walls" cell, enter any calculated adjustment for division walls and partition walls.

A partition wall is an interior load-bearing or non-load bearing wall that separates portions of a story. A division wall is very similar to a partition wall, but normally separates two or more different occupancy units rather than rooms within a single occupancy unit.

Most models include a square foot dollar amount for interior partitioning. This amount is identified in the "Ptns." column of the "Schedule C–GC Base Price Components and Adjustments" table. This square foot cost represents the typical amount of linear footage of partition walls within each specific use type. This "typical" amount of linear footage varies from use type to use type and is dependent upon specific occupancies. It is representative of the majority of buildings of its occupancy and the square foot cost is the averaged cost of all buildings of its use type and occupancy.

Through a comparison of each specific structure or section of a structure with the appropriate pricing model, you may determine that an adjustment to the base price is necessary for the amount for partitions included within the subject structure. This adjustment may be either positive or negative, depending on the model chosen when compared to the subject.

Example: A 1,000 square foot utility storage basement has no division walls or partitioning within the perimeter walls. Because there is no partitioning within the basement, the entire amount under the "Ptns"

column of the component and adjustment table is entered in the “Div. Walls/Ptns” cell as a negative adjustment.

The additional cost of division walls in multiple unit buildings is not included in the models and must be added when the Schedule C–Unit Finish Adjustment tables are not used. Further explanation of these procedures is included in the sections ***Calculating the Schedule C–Unit Cost Adjustments*** and ***Calculating the Schedule C–Unit Finish Adjustments***.

Step 7 In the “Lighting” cell on the Property Record Card, enter the adjustment for lighting.

Locate the “Adjust Lighting” column in Schedule C, which contains the range for the lighting adjustment. When selecting a lighting adjustment, keep in mind the following guidelines:

- The adjustments are based on intensity of illumination and fixture quality. An upward or downward adjustment is necessary when either or both of these variables are not normal for a particular use and quality grade. “Normal” illumination refers to the amount of illumination found in the majority of buildings of its occupancy and use type and is typically representative of buildings which meet the standard building code. “Scant” illumination refers to a building having less illumination than the majority of structures of its occupancy and use type and is typical of buildings that are below, or at the minimum, building code. “Abundant” illumination refers to a building having greater illumination than the majority of structures of its occupancy and use type and is typical of buildings that exceed the standard building code.
- For scant illumination **and** subquality fixtures, deduct the upper range limit.
- For scant illumination **or** subquality fixtures, deduct the lower range limit.
- For more abundant illumination or higher quality fixtures, add the lower range limit.

Step 8 In the “Heating and Air Cond.” cell on the Property Record Card, enter the adjustment for heating and air conditioning.

Locate the “Htg. Vent A.C.” column in Schedule C, which contains the square foot cost included in Schedule A for heating, ventilation, and air conditioning. Follow these guidelines:

- The amount shown in the “Htg. Only” column is the amount for heating included in the “Htg. Vent A.C.” column or in Schedule A when the “Htg. Vent A.C.” column is blank.
- A deduction for no heating is equivalent to the amount shown in the “Htg. Only” column.
- A deduction for no air conditioning in a model where air conditioning has been included is equal to the difference between the amount in the “Htg. Vent A.C.” column and the “Htg. Only” column.

- Air conditioning is included in the base rates for each use type that normally has air conditioning. The column marked “Add for A.C.” is included for those use types where air conditioning is not normally installed. This amount is added to the base rate when a structure has air conditioning, but the use type does not include it.

Note: There is an “Add for A.C.” rate for apartments. These rates are used only when a one-unit apartment occupies the area. When there are two or more apartments occupying the area, the air conditioning rate is described in the section ***Calculating the Schedule C—Unit Finish Adjustments***.

Step 9 *If the structure has a sprinkler system*, enter the adjustment for a sprinkler system in the “Sprinkler” cell. An allowance for sprinkler systems is not included in any of the base rates.

The “Sprk” column in Schedule C provides a number that corresponds to a sprinkler group in the Schedule’s “Sprinkler” table. Each sprinkler group contains incremented total gross square footage of area per floor covered by a sprinkler system. The intersection between the group row and the square footage column contains the adjustment.

Example: A three-story building, 60 feet by 100 feet, is totally covered by a sprinkler system. The building contains general retail on the first floor and general offices on the upper floors. The group for the first floor is shown as “4”. The group for each of the upper floors is shown as “3”. In the “Sprinkler” table, locate the row for group “4”. Locate the column for the square footage closest to 6,000. The adjustment for the first floor is under the 5,000 SQ. FT. column for Group 4. The adjustment for each upper floor is under the 5,000 SQ. FT. column for Group 3.

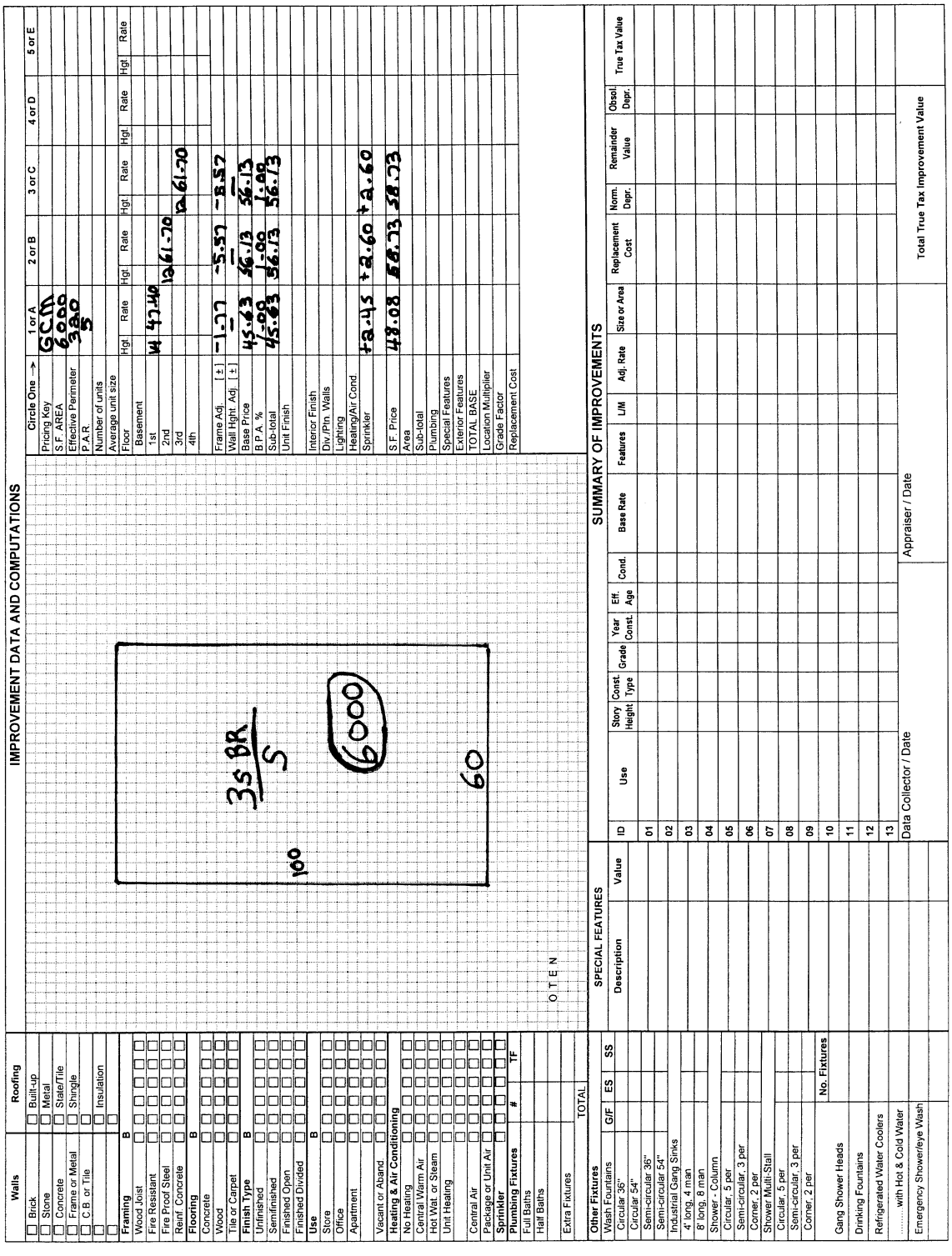

Figure 6-17. Base Rate and Components Adjustments Example

Calculating the Schedule C—Unit Cost Adjustments

The Schedule C—Unit Cost Adjustments tables provide unit costs for the most typical interior components, such as wall finish, floor finish, and partitioning. Because the base replacement cost tables for the various use models include interior finish and other features, it is necessary to make cost adjustments only when the structure's components differ significantly from the model's. In cases where the interior construction is not typical of the selected model, the assessor may determine the costs for the interior components, and add or deduct the difference between that cost estimate and the cost included in Schedule C—GC Base Price Components.

The most frequently required adjustments are for finished areas in the "UF" (unfinished) and "SF" (semi-finished) models. Normal partitioning is included in all models, but the cost of division walls in multiple unit buildings is not included and must be added. The exception is when multiple unit buildings are valued using the Schedule C—Unit Finish Adjustments tables. The cost added for division walls should include an appropriate amount for any interior finish on the division walls. A special schedule is included to calculate the square foot cost for division walls when using the general retail model for strip centers, the neighborhood shopping center model, or the regional shopping center model. The square foot rates assume all division walls are finished on both sides and there is a represented mixture of concrete block and painted drywall walls.

To record a unit cost adjustment, follow these steps:

Step 1 Locate the "Unit Cost Adjustments" section in Schedule C.

Step 2 Locate the appropriate unit cost adjustment corresponding to the structure's:

- Wall finish per square foot of wall space. This section includes walls covered with:
  - drywall, painted
  - lath and plaster, painted
  - paneling of different types
  - tile of different types.
- Floor finish per square foot of floor space. This section includes floors covered with:
  - softwood
  - hardwood
  - maple
  - asphalt tile.
- Ceiling finish per square foot of ceiling space. This section includes ceilings covered with:
  - acoustical tile, mineral fiber or organic fiber
  - drywall
  - plaster
  - plywood paneling.

- Partitioning per square foot of wall space. This section includes partitions made of:
  - framed 2″ by 4″ wood studs, covered on one side or two sides with drywall, paneling, and so forth
  - masonry, including concrete blocks, clay tile, gypsum, and so forth
  - wood or plastic folded curtain
  - modular metal.

Step 3 If the unit cost adjustment pertains to a portion of the structure's square footage, determine the percentage and multiply the percentage by the unit cost adjustment to arrive at a square foot rate for the entire structure.

Step 4 Enter any unit cost adjustment in the blank space provided in the property record card's pricing ladder.

Example: A manufacturing facility has asphalt tile on 40% of the floor area. Because no floor finish is included in the manufacturing base rate, add 40% of the unit cost for asphalt tile to the entire area of the manufacturing facility to account for this variation.

Calculating the Schedule C—Unit Finish Adjustments

Schedule C—Unit Finish Adjustments provides tables of composite adjustments to use instead of using the individual component adjustments provided in the GC Base Price Components table. These adjustments are applied to the following use types:

- apartments
- motels and hotels
- strip retail centers
- neighborhood shopping centers
- regional shopping centers.

Apartments Table

In apartments and single ownership, commercial row-type structures of four or more units, the square foot cost of partitioning, built-ins, plumbing fixtures, and central air conditioning is directly related to the average size of the living unit. The "Apartments" table provides adjustments to the apartment rate from Schedule A to account for these variations.

To determine the unit finish adjustment for apartment structures, perform these steps:

Step 1 Determine the average unit size by dividing the total square foot area to which the apartment unit base rate is to be applied by the total number of rentable units, including the units that are owner occupied:

Average unit size = Total square footage ÷ Number of rentable units

Step 2 In the “Apartments” table, find the row corresponding to the structure’s average unit size to the nearest 50 square feet.

Step 3 Locate the adjustment value corresponding to whether or not the units have central air conditioning. Note the adjustment value.

Step 4 Calculate the adjustment amount by multiplying the adjustment value by the number of stories in the structure:

Adjustment amount = Adjustment value x Number of stories

Enter the adjustment amount in the “Unit Finish” cell on the property record card.

Example: A six-story apartment building is 50 feet by 100 feet (30,000 square feet) and has 44 units. There are 8 units on each of the first four floors and 6 units on the fifth and sixth floors. The average unit size is 682 square feet. Select the proper adjustment for 700 square feet, depending on whether the unit has central air conditioning, and add that amount to the base rate. If the building is priced by base ground floor area, add the adjustment to the price determined for each floor, so that the overall addition is six (6) times the amount determined from the table.

Motels and Hotels Table

In motels and hotels, the square foot cost of built-ins, partitioning, and plumbing fixtures is directly related to the average size and arrangement of the guest rooms. The “Motels & Hotels” table is provided to adjust the motel/hotel base rate to account for these variations. There are three different arrangements for motels and hotels:

- “Strip” refers to units that are one unit deep and are accessed from the outside.
- “Back-to-back” refers to strip type units that are built in a back-to-back configuration.
- “Center hall” refers to units that are accessed by an interior corridor.

Note: The unit finish adjustment includes an amount for a standard complement of plumbing fixtures consisting of a three-fixture bathroom for each guest room. Use Schedule D—GC Plumbing to determine the plumbing adjustment for any deviation from the unit finish adjustment.

To determine the motel/hotel’s unit finish adjustment, perform these steps:

Step 1 Determine the average unit size by dividing the total square foot area to which the motel/hotel unit base rate applies by the total number of rentable units, including units that are owner occupied.

Average unit size = Total square footage ÷ Total number of rentable units

Step 2 In the “Motels & Hotels” table, find the column corresponding to the structure’s unit arrangement.

Step 3 Find the row containing the average unit size to the nearest 25 square feet. Note the adjustment value.

Step 4 Calculate the adjustment amount by multiplying the adjustment value by the number of stories in the structure.

Adjustment Amount = Adjustment value x Number of stories

Note: Service areas and guest registration, administration, and dining facilities are included in the total gross area calculated unless separated and priced from the "Hotel/Motel Service" base schedules in Schedule A.

Step 5 In the "Unit Finish" cell on the property record card, enter the adjustment amount.

Example: A two-story motel 50 feet by 200 feet (20,000 square feet) has 80 units. The average unit size is 250 square feet. Select the proper adjustment for 250 square feet, depending on the particular arrangement, and add that amount to the base square foot price. If the building is priced by base ground floor area, the adjustment is added to the price determined for each floor so that the overall addition is two (2) times the amount determined from the table.

Strip Retail Table

The "Strip Retail" table contains the adjustment rates for strip retail structures to account for division walls. The table is applicable when using the general retail model for strip centers, the neighborhood shopping center model, or the regional shopping center model. These use models do not include an amount for division walls, which form the common walls between the strip retail units.

To record the retail strip unit finish adjustment value, follow these steps:

Step 1 Perform the following calculation to determine the appropriate value in the "Strip Retail" table's "X" column:

X = Total Square footage ÷ (number of units - 1) x (1 ÷ Typical unit depth)

Step 2 Locate the "X" value from Step 1.

Step 3 Find the corresponding adjustment rate in the "Rate" column.

Step 4 In the "Div./Ptns Walls' cell, enter the adjustment.

Example: A retail strip is 200 feet by 80 feet and has 11 units. The area in square feet is 16,000.
X = 16,000 ÷ (11 - 1) x (1 ÷ 80) = 20

The adjustment rate from Schedule C is $3.10.

Calculating the Replacement Cost

After the adjustments based on square footage have been made, perform the following steps to calculate the structure's replacement cost:

Step 1 Calculate the total square foot price for the structure by adding the amount in the "Sub-total" cell below the "B.P.A.%" cell, to the values in the "Unit Finish", "Interior Finish", "Div./Ptns Walls", Lighting", "Heating/Air Cond.", and "Sprinkler" cells.

Step 2 Enter the total square foot price in the "S.F. Price" cell.

Step 3 Enter the area in square feet in the "Area" cell. This area is the same as the area entered in the "S.F. Area" cell.

Step 4 Calculate the sub-total by multiplying the square foot price from Step 2 by the area in square feet from Step 3. Then, round the result to the nearest $10.

Enter the result in the "Sub-Total" cell below the "Area" cell.

Step 5 *If the structure has individual ownership of sections or living units within the structure*, the subtotal must be apportioned among the various owners. Each separate ownership must have an individual property record card showing the apportioned subtotal value. Apportionment of the subtotal will ensure that each individual ownership is being charged for those physical characteristics attributable to its particular ownership.

To apportion the building subtotal, perform the following steps:

a. *If all of the units in the structure are the same size*, divide the subtotal from Step 4 by the number of units in the structure.

If the units in the structure are not the same size and there is no declared percentage of building ownership for each unit, determine the apportioned subtotal value for each unit. Divide each unit's square footage by the total square footage of all the units within the building. Then multiply the subtotal for the entire structure by the percentage for the unit to arrive at the value for the unit.

Step 6 Use Schedule D—GC Plumbing to determine the base rate for plumbing fixtures contained within the structure or section of a structure.

Schedule D provides whole dollar values to be added per plumbing fixture. The exception to the per fixture cost is when the unit finish adjustment for apartments, hotels, and motels is used. The unit finish adjustment includes an amount for a standard complement of plumbing fixtures located within each type of unit. After the unit finish adjustment is made, it is only necessary to add or deduct the residential fixture rate per fixture for either more or fewer fixtures than the standard complement included in the unit finish adjustment.

Step 7 In the "Special Features" cell, enter the total whole dollar value of the special features priced in the "Special Features" box.

Schedule E—Special Features provides whole dollar or square foot unit values used to calculate the whole dollar replacement cost of special features not included in the Schedule A base rates.

To apply the schedule, identify the special feature and select the most representative rate based on the descriptive criteria given. All replacement costs must be rounded to the nearest $10. Follow these general guidelines when identifying special features and selecting a rate:

- The frame types provided for mezzanines correspond to the construction types described in Schedule A. The framing options are described in Table 6-3 in this chapter.
- The cost of elevators is given in hundreds of dollars and is predicated on speed in feet per minute and on capacity. Table 6-8 describes the structure type options. Table 6-9 shows the normal relationship between the number of stops and recommended speeds for various types of structure options.

Table 6-8. Structure Type Options

This option	Indicates
Type 1	Offices, hotels, and industrial buildings
Type 2	Apartments, nursing homes, and hospitals
Type 3	Department stores

Table 6-9. Number of Stops and Recommended Speeds

Type	Number of Stops								
	4-6	7-8	9-11	12-14	15-16	17-20	21-30	31-40	41+
1	150	200	250	300	350	500	600	800	1000
2	100	150	200	250	350	400	500	600	800
3	150	200	300	350	350	400	500	600	800

- The rates for cold storage facilities apply to the total inside surface area, which is calculated as the square foot areas of the floor and ceiling plus the product of the perimeter multiplied by the height. The floor area is included only if it has insulation. The rates account for insulation applied to only one side of the partitioning and do not include the cold storage doors.
- The rates for money vaults and record storage vaults apply to the horizontal square foot area, which is calculated as the length multiplied by the width. The rates assume an 8-feet ceiling height. The rates do not include the vault door, which is valued separately.
- The rates for the grade walls of truck wells and ramps apply to each grade wall.

Example: A concrete paved truck well is 20 feet wide by 60 feet long, and 0 to 3 feet 6 inches deep with concrete grade walls on both

sides. Calculate the value by multiplying the rate for concrete paving by 20 feet to determine the linear foot cost of the paving. Next, calculate the total linear foot rate by multiplying the rate for concrete grade walls by 2 and adding the result to the calculated paving rate. Finally, calculate the correct truck well value by multiplying the total linear foot rate by 60 (length of the truck well).

Step 8 In the "Exterior Features" cell, enter the total whole dollar value of the exterior features.

Step 9 Calculate the total base by adding the results of Step 4 through Step 8 In the "Total Base" cell, enter the total base.

Note: If the base value applies to a section of a structure, total the values for each section to determine the total building value.

Step 10 In the "Location Multiplier" cell, enter the location cost multiplier found in Table G-1 in Appendix G.

Step 11 In the "Grade Factor" cell, enter the grade multiplier, which is applied to the total base value to account for variations in quality grade and design. Instructions for determining grade are provided in Appendix E.

Step 12 Calculate the replacement cost by multiplying the total base value obtained in Step 9 by the grade and location multiplier.

Replacement cost	=	Total base value	x	Grade multiplier	x	Location multiplier

Round the replacement cost to the nearest $10 and enter it in the "Replacement Cost" cell.

Task 4—Completing the Summary of Improvements Section

The "Summary of Improvements" section of the property record card, shown in Figure 6-18, provides space to record information about:

- the general structure
- commercial and industrial yard structures

This section describes how to complete the "Summary of Improvements" section for a structure.

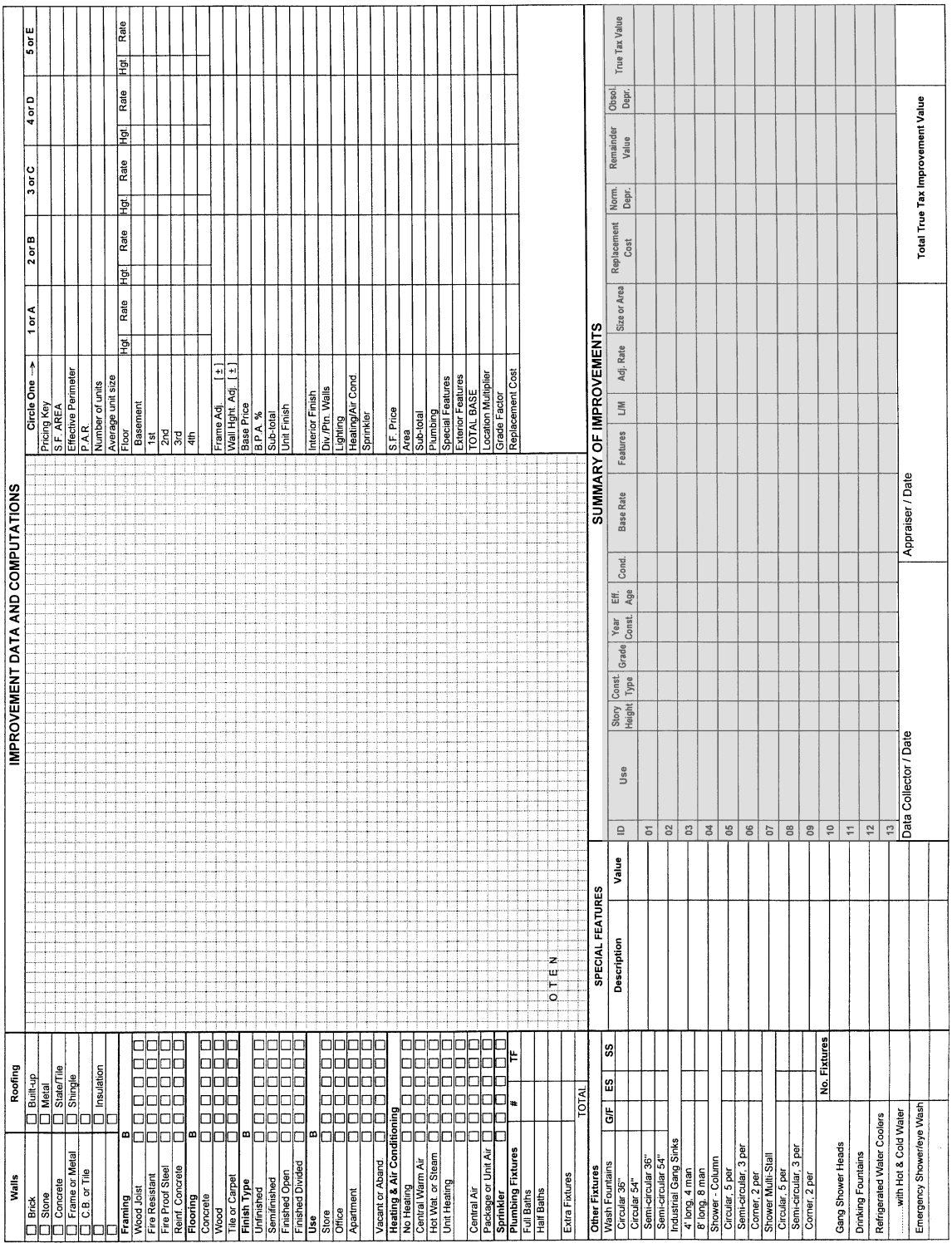

Figure 6-18. Summary of Improvements Section

To complete the “Summary of Improvements” section for the structure, perform these steps:

Step 1 In the “Story Height” column, enter the story height of the structure as it appears in the sketch grid.

Step 2 In the “Const. Type” column, enter the type of exterior wall construction used for the structure.

Step 3 In the “Grade” column, enter the grade determined in **Task 3—Calculating the Replacement Cost for a Structure** in this chapter.

Step 4 In the “Year Const.” column, indicate when the structure was originally constructed. Follow these guidelines:

- *If you are sure of the date*, enter just the date, for example “1990”.
- *If you (the assessor) must estimate the date*, enter the date followed by a question mark, for example “1985?”.
- *If the owner estimates the date*, enter the date followed by “+/-”, for example “1945+/-”.
- Enter “Old” to indicate construction prior to 1928:

Step 5 *If the structure’s age has been altered through additions*, enter the weighted age in the “Year Const” column. This representative age becomes the age for which normal depreciation is calculated. When entering a weighted age be sure to note the year constructed in the memorandum section of the property record card.

Step 6 In the “Cond.” column, enter the assigned code for the condition of the structure relative to its age. Table 6-10 describes the codes for this column. For information on assigning the condition code, see Appendix F.

Table 6-10. Condition Codes

Code	Indicated Depreciation
Excellent	All items that can or should normally be repaired or refinished have recently been corrected. In this condition, there is usually new roofing, new paint, state-of-the-art components; all of the major short-lived items are in like-new condition.
Good	There is neither any obvious sign of needed maintenance nor is everything totally new. Generally, all items are all 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 effort evident and there is a high degree of functional utility in the structure.
Average	There is some evidence of deferred maintenance, along with normal obsolescence for the structure's age. There are a few repairs needed, some refurbishing and some upgrading as well. Most of the major components, such as the furnace, plumbing, wiring, etc. are still functioning and contributing toward the utilization of the structure. The condition of this property is typical compared to other properties of the same general age.
Fair	This condition is best described as badly worn. There is a substantial amount of repair needed to restore the facility. Many items need refurbishing, overhauling, or are inadequate for the demands of today's market. There may be inadequate utilities such as wiring that is inappropriate or too light-duty for the demands of today's structures; deferred maintenance is present.
Poor	A structure that is almost worn out. It needs a substantial amount of repair, maintenance and upgrading on things such as roof structure, plumbing and utilities. This condition is typified by needing a great deal of maintenance, which has not been conducted, and/or by abuse of the property. This property is in need of a major renovation and modernization. It is probable that a change in use or reuse of this structure is in its near future. This property is nearly at the end of its actual utilization.
Very Poor	Conditions approach unsoundness, extremely undesirable, and barely useable. The building is unsound and unfit for use or there is extremely limited value in use approaching abandonment. The structure needs major reconstruction to have any affect on any economic value.

Step 7 In the “Replacement Cost” cell, enter the replacement cost calculated for the structure (also entered in the “Replacement Cost” cell in Step 11 of the section ***Calculating the Replacement Cost*** in this chapter), rounded to the nearest $10.

Step 8 In the “Eff Age” cell enter the effective age determined from Table F-2 in Appendix F.

Step 9 Determine the total life expectancy for the improvement from Table F-3 (a, b, c, or d) depending on the selection of schedules, in Appendix F.

Step 10 In the “Normal Depr.” column, enter the percentage of reduction in value due to normal depreciation determined from Table F-4 in Appendix F. Information about determining normal depreciation for a general commercial or industrial structure is provided in Appendix F.

Step 11 Determine the remainder value:

a. Subtract the percentage determined for normal depreciation (entered in the “Normal Depr.” column) from 100%.

b. Divide the result obtained in Step a by 100 to arrive at a multiplier.

c. Calculate the remainder value by multiplying the replacement cost of the structure (entered in the “Replacement Cost” column) by the multiplier obtained in Step b:

Remainder value	=	Replacement cost	x	Multiplier obtained in Step b

d. Round the remainder value to the nearest $10 and enter it in the “Remainder Value” column.

Example: The replacement cost of a structure is $80,000. The normal depreciation percentage for the structure is 30%. The remainder value is:
100% – 30% = 70% ÷ 100 = .70 x $80,000 = $56,000.

Step 12 If necessary, in the “Obsol. Depr.” column, enter the percentage of reduction in value due to abnormal functional and economic causes. Information about evaluating obsolescence depreciation for a general commercial or industrial structure is provided in Appendix F.

Step 13 Determine the true tax value:

a. *If **no** obsolescence depreciation applies to the structure*, enter the remainder value, rounded to the nearest $100, (entered in the “Remainder Value” column) in the “True Tax Value” column, and skip Step b and Step c.

If obsolescence depreciation applies to the structure, determine the percent of obsolescence by dividing the dollar amount of abnormal obsolescence by the remainder value to get an abnormal obsolescence depreciation percentage. Enter this percentage in the “Obsol. Depr.” column of the property record card.

b. Subtract the percentage determined for abnormal obsolescence depreciation (entered in the “Obsol. Dep.” column) from 100%.

c. Divide the result obtained in Step b by 100 to arrive at a multiplier.

d. Calculate the true tax value by multiplying the remainder value of the structure (entered in the "Remainder Value" column) by the multiplier obtained in Step c:

True tax value	=	Remainder value	x	Multiplier obtained in Step c

e. Round the true tax value to the nearest $100 and enter it in the "True Tax Value" column.

Example: The remainder value of a structure is $56,000. The abnormal obsolescence depreciation percentage for the structure is 20%. The true tax value is:
100% – 20% = 80% ÷ 100 = .80 x $56,000 = $44,800.

Step 14 *If the property has yard structures or other improvements to describe*, follow the instructions in Chapter 7 to complete the "Summary of Improvements" section.

If the property has no other structures or improvements to describe, sum the entries in the "True Tax Value" column and enter the total in the "Total True Tax Improvement Value" cell.

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