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Understanding the Concept of Construction Quality

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

Construction quality, and the resultant quality grade assigned, is a composite characteristic. It describes the cumulative effects of workmanship, the costliness of materials, and the individuality of design used in constructing an improvement. Although the construction quality of individual components of an improvement may vary, the overall construction quality tends to be consistent for the entire structure.

Workmanship quality can easily be observed in an inspection of the property. Good quality workmanship is evidenced by plumb vertical surfaces, level horizontal surfaces, properly located and installed mechanical systems, and an overall pride in workmanship.

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

Design is also an indicator of quality of construction. Although most commercial and industrial structures are designed primarily for utility and not for looks, in some occupancies (e.g. office buildings) the importance of appearance and amenities is equal to the importance of pure utility. The fenestration and ornamentation plus the overall layout and design of the building should be considered in determining quality grade.

The costs given in this manual are for improvements that demonstrate a construction quality that is typical of the majority of improvements that will be valued.

Understanding Quality Grades

For each of the types of commercial and industrial improvements, a model has been defined to summarize the elements of construction quality that are typical of the majority of that type improvement. This typical model has been assigned a "C" quality grade. The characteristics of these typical models can be thought of as construction specifications for an improvement that was built with average quality materials and workmanship and has average design characteristics.

A "B" grade model and an "A" grade model have been defined to summarize the elements of improvements that use higher quality, hence more costly, building materials and workmanship than the typical model. A "D" grade model and an "E" grade model have been defined to summarize the elements of improvements

that use lower quality, hence lower cost, building materials and workmanship than the typical model

When considering quality grade, keep in mind that the grades are relative rankings of the cost of the materials, workmanship, and design used in construction. Quality grade does not indicate an improvement is inferior or superior to an improvement assigned a different grade.

This appendix describes the construction elements for each quality grade for each type of commercial and industrial improvement. It also provides pictures and descriptions of actual improvements to illustrate the various quality grades.

Understanding Quality Grade Factors

The replacement cost of an improvement is calculated by taking the base price of the improvement, adjusting it for various construction elements that add or deduct value, and then multiplying this adjusted cost by a percentage based on the improvement's grade. This percentage, known as a Quality Grade Factor, adjusts the costs in this manual for variations in construction quality.

The quality grade factor for an improvement assigned a "C" grade is 100% since these were the quality grades assigned the models used to develop the costs published in this manual. In other words, a "C" quality grade has no affect on the costs taken from this manual. The quality grade factors for the other quality grades reflect an increase in costs above those costs given in the tables of this manual for quality grades higher than the typical and a decrease in costs for quality grades lower than the typical, as shown in Table E-1.

Table E-1. Quality Grade Factors

Quality Quality		
Grade	Grade Factor	
A	160%	
В	120%	
С	100%	
D	80%	
Е	40%	

Assigning Quality Grades

When trying to determine grade, the assessor compares the materials and workmanship used in the subject structure to the construction specifications given in the grade classification tables and the pictures of graded structures. The assessor should emphasize the quality of materials and workmanship used in the construction of the structure when conducting this analysis and place less reliance on the pictures of graded structures. The assessor selects the grade that the subject structure most closely resembles. Most commercial and industrial structures fall between the "D" and "B" grade classifications, clustering heavily around the "C" grade classification.

However, some structures may have construction characteristics that fall into more than one grade classification. To assign a grade to these properties that deviate, the assessor must weigh the components that deviate from the grade selected for the subject property to determine whether an intermediate grade level is appropriate. The assessor should steer away from using intermediate grades if at all possible. Most structures will be designed and constructed using materials and workmanship that are typical for a specific grade without the need to assign intermediate grades. Thus, the assessor must use careful judgment when assigning the grade for a structure.

Example: The assessor has determined that the primary grade for a commercial bank is "C". However, the bank has marble floors throughout the lobby and public areas that account for 50% of the total floor area. Since the "C" grade model allows for floor finishes of 75% carpet and 25% terrazzo, the assessor decides to assign this structure an intermediate grade, higher than the "C" base grade, but lower than "B".

Assigning Intermediate Quality Grades

Some improvements may have construction characteristics that deviate from the base quality grade specifications. To assign a quality grade to these structures, the assessor must weigh the components that deviate from the base quality grade selected for the subject to determine whether an intermediate quality grade, or an entirely higher or lower full quality grade, is appropriate. The assessor should steer away from using intermediate quality grades if at all possible. Most improvements will be designed and constructed using materials, workmanship, and design that are typical for the base quality grade assigned to the subject without the need to assign intermediate quality grades. Thus, the assessor must use careful judgment when assigning any quality grade that varies from the base quality grade.

The following guidelines apply when assigning an intermediate quality grades:

• "+ 2" indicates a quality grade that falls halfway between two full quality grades (AA, A, B, C, D, E). The quality grade factor for this intermediate quality grade is halfway between the percentages for the two full quality grades immediately above and below it.

For example, a quality grade of "C + 2" indicates that the overall construction quality is halfway between "C" and "B". It would have a quality grade factor of 110% meaning the assessor has determined that the construction quality of the improvement has caused its cost new to be 10% higher than those given in the cost schedules in this manual.

- "+ 1" indicates a quality grade slightly higher than the full quality grade immediately below it. The quality grade factor for this intermediate quality grade is one quarter of the interval between the percentages for the two full quality grades immediately above and below it.
 - For example, a grade of "C+1" indicates that the overall construction quality is one quarter of the way between "C" and "B". It would have a quality grade factor of 105% (one quarter of the way between 100% and 120%). This means the assessor has determined that the construction quality of the improvement has caused its cost new to be 5% higher than those costs given in the schedules in this manual.
- "— 1" indicates a quality grade slightly lower than the full quality grade immediately above it. The quality grade factor for this intermediate quality grade is one quarter of the interval between the percentages for the two full quality grades immediately above and below it.
 - For example, a grade of "C 1" indicates that the overall construction quality is one quarter of the way between "C" and "D". It would have a quality grade factor of 95% (one quarter of the way between 100% and 80%). This means the assessor has determined that the construction quality of the improvement has caused its cost new to be 5% lower than those costs given in the schedules in this manual.
 - "E-1" is the only intermediate quality grade below "E". It represents a reduction of ten percentage points from the "E" quality grade factor.

Note: Levels below E and above A do not apply to special use commercial properties

Grade Factor Percentages

Table E-2 shows the quality grade factors as percentages for the full and intermediate quality grades.

Table E-2. Quality Grade Factors for Commercial and Industrial Improvements

GRADE	FACTO R		
AAA	360%		
AAA-1	330%		
AA+2	300%		
AA+1	270%		
AA	240%		
AA-1	220%		
A+2	200%		
A+1	180%		
A	160%		

GRADE	FACTO R		
A-1	150%		
B+2	140%		
B+1	130%		
В	120%		
B-1	115%		
C+2	110%		
C+1	105%		
С	100%		
C-1	95%		

GRADE	FACTO R
D+2	90%
D+1	85%
D	80%
D-1	70%
E+2	60%
E+1	50%
E	40%
E-1	30%

Quality Grade Specification Tables

Table E-3 provides a list of the typical construction materials and design elements found in each full construction quality grade. This table is designed to assist the local assessing official in determining the appropriate quality grade to assign to commercial and industrial structures in his/her jurisdiction.

These descriptions **are not** detailed construction specifications of any particular structure. They are intentionally general to emphasize the most prominent elements of all structures within a given quality grade. Because a structure does not have a particular element listed in the table, does not mean it cannot fit into the respective quality grade. Likewise, if a structure has something more than is listed in a particular quality grade, it does not necessarily mean it fits into a higher quality grade.

As stated earlier in this discussion of construction quality; although the construction quality of individual components of an improvement may vary, the overall construction quality tends to be consistent for the entire structure.

	"AAA" Grade	"AA" Grade	"A" Grade	"B" Grade	"C" Grade	"D" Grade	"E" Grade
General Design, craftsmanship, attention to detail, appointments, finishes, and materials of the highest quality	craftsmanship,	Architecturally attractive	Architecturally attractive	Architecturally attractive	Moderately attractive	Devoid of any architectural detail	Devoid of any architectural detail
	Custom built of the best quality materials and workmanship	Custom built of superior materials and workmanship	Constructed with good quality materials and workmanship	Constructed with average quality materials and workmanship	Constructed at the lowest possible cost but meets minimum codes	Constructed with below standard materials, usually seconds, and poor workmanship	
Interior finish	Very finest quality	Best quality	High quality	Good quality	Average quality	Moderate Quality	Unfinished
Built-in features	Substantial number and of the very finest quality; all the modern conveniences are provided	Extensive and of best quality	A few extras of high quality	Only those necessary for the type of occupancy	Only those necessary for the type of occupancy	Minimal	None
Lighting and plumbing	Very finest quality and well designed layouts	Best quality	High quality	Good quality	Standard quality	Moderate quality	Minimal of low quality
Climate control system	Large capacity	Large capacity	Adequate capacity	Adequate capacity	Standard quality	Moderate quality	Low quality or none
	Well insulated	Well insulated	Some insulation	Some insulation		heating	
	Zoned	Zoned	Zoned	Zoned			
Design	Architecturally designed by a well known architect; one-of-a-kind structure	Architecturally designed Extensive architectural treatments	Architecturally designed Moderate architectural treatment	Contractor designed Moderate architectural treatment	Owner or contractor designed Minimal architectural treatment	Built from stock plans No architectural treatment	Unskilled, inexperienced, do-it-yourself construction Deficient in finishes

Photographs of Graded Commercial and Industrial Structures

The following photographs illustrate the grade classifications for general commercial and industrial structures. These photographs are provided to help the assessor determine the grade of actual structures.

Important: These photographs are only an indication of grade and not a determination of the actual grade of the structure shown. The grade determination must be based on individual inspection of the type of materials, design, and quality of workmanship of the subject structure.



Grade C Country Club



Grade C Row Type Residential Schedule A



Grade B Country Club



Grade C GCR Apt. Building or Res. Schedule A (depending on design)



Grade C Row-Type: Individual unit ownership- Residential Schedule A Single structure ownership- GCR Apt. Building



Grade D Row Type: Individual unit ownership- Residential Schedule A
Single structure ownership- GCR Apt. Building



Grade A Apartment Building



Grade A Apartment Building



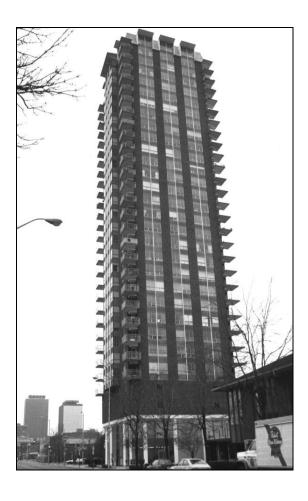
Grade C Apartment Building



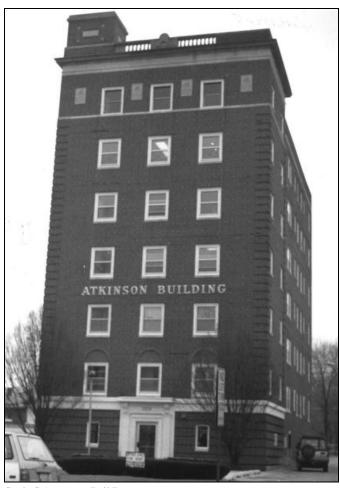
Grade C Apartment Building



Grade B Apartment Building



Grade C Apartment Building



Grade C Apartment Building



Grade C Apartment Building



Grade C Apartment Building



Grade C Apartment Building



Grade C Apartment Building



Grade B Apartment Building



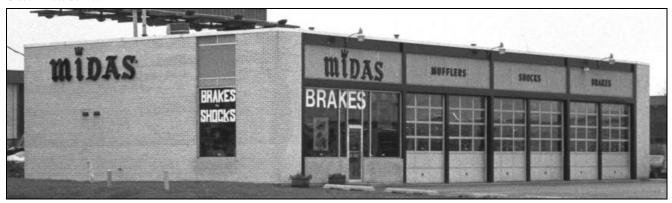
Grade B Auto Service



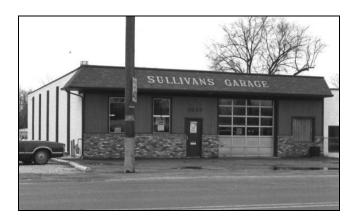
Grade B Auto Service



Grade B Auto Service



Grade C Auto Service



Grade C Auto Service



Grade D Auto Service



Grade C Auto Showroom



Grade C Auto Service



Grade C Pre-Engineered Kit Structure



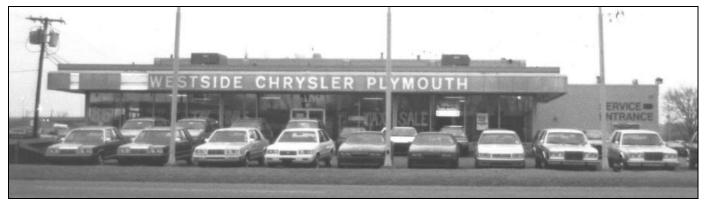
Grade C Auto Showroom





Grade C Small Car Sales

Grade C Auto Sales Office



Grade C Auto Showroom



Grade C Showroom and Sales



Grade A Bank



Grade B Bank



Grade B Bank



Grade B Bank



Grade B Bank





Grade C Bowling Alley

Grade D Bowling Alley



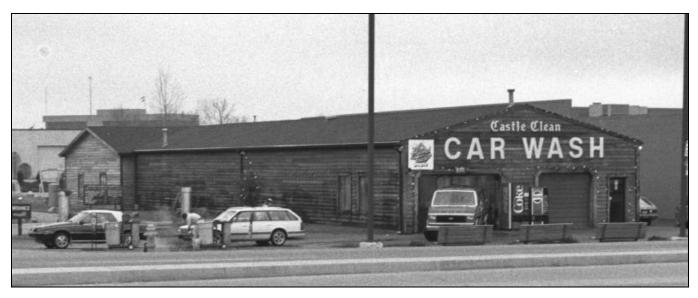
Grade C Bowling Alley



Grade C Car Wash (Auto)



Grade C Car Wash (Do- it-yourself)



Grade C Car Wash (Auto)



Grade C Convenience Store



Grade C Convenience Store



Grade B Department Store



Grade B Department Store



Grade B Department Store



Grade B Department Store



Grade C Discount Store



Grade C Discount Store



Grade C Discount Store



Grade C Discount Store



Grade C Discount Store



Grade C Discount Store



Grade A Funeral Home, Residential Type



Grade A Funeral Home, Residential Type



Grade A Funeral Home, Designed

Grade B Funeral Home, Residential Type



Grade B Funeral Home, Residential Type



Grade B Funeral Home

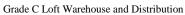


Grade B Industrial Office



Grade C Loft Warehouse







Grade C Loft Factory



Grade C Loft Industrial Facility



Grade C Industrial Facility



Grade C Loft Industrial Facility



Grade C Light Industrial Facility





Grade C Industrial Office

Grade C Industrial Facility



Grade C Office and Light Warehouse



Grade C Light Warehouse



Grade C Industrial Facility



Grade C Light Industrial Facility



Grade C Light Warehouse



Grade C Office and Light Warehouse



Grade C Pre-Engineered Kit Structure



Grade C Medical Office



Grade C Medical Office



Grade C Medical Office



Grade C Medical Office



Grade C Medical Office





Grade B Motel

Grade B Hotel/Motel



Grade B Hotel/Motel



Grade B Motel



Grade C Motel



Grade C Motel



Grade C Motel



Grade C Motel



Grade C Nursing Home



Grade C Nursing Home



Grade C Nursing Home



Grade C Nursing Home



Grade C Nursing Home





Grade A Office







Grade A Office Grade A Office

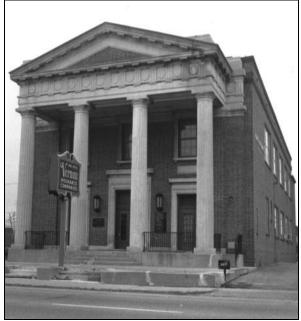




Grade A Office



Grade A Office



Grade A Office Grade A Office

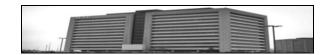


Grade A Office



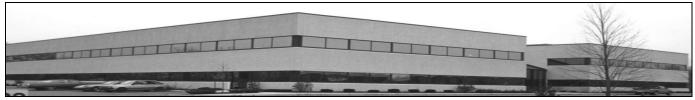
Grade B Office





Grade B Office

Grade B Office



Grade B Office



Grade B Office





Grade B Office



Grade B Office



Grade B Office



Grade B Office



Grade B Office



Grade B Office



Grade B Office



Grade C Office



Grade C Office



Grade C Office



Grade C Child Care, General Office



Grade C Office



Grade C Parking Garage





Grade C Parking Garage

Grade C Racquet and Handball Court



Grade C Health Club



Grade D Health Club



Grade B Restaurant



Grade B Restaurant



Grade C Restaurant



Grade C Restaurant



Grade B Restaurant



Grade C Restaurant



Grade D Dining/Lounge



Grade D Restaurant



Grade C General Retail



Grade C General Retail





Grade C Downtown Commercial

Grade C Downtown Commercial



Grade C General Retail



Grade C General Retail



Grade C General Retail



Grade C General Retail



Grade C General Retail



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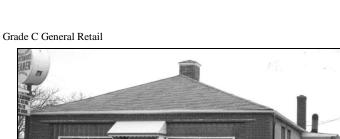
Grade C General Retail



Grade C General Retail



Grade D General Retail



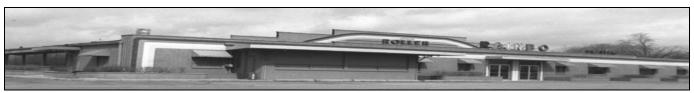
Grade C General Retail



Grade D General Retail



Grade D General Retail



Grade C Roller Rink



Grade B Neighborhood Shopping Center



Grade C Neighborhood Shopping Center



Grade C Neighborhood Shopping Center



Grade C Regional Shopping Center



Grade C Neighborhood Shopping Center







Grade C Cashier Booth (Service Station Schedule)



Grade C Supermarket



Grade C Supermarket



Grade C Supermarket



Grade C Supermarket



Grade C Supermarket



Grade C Supermarket





Grade A Theater

Grade C Theater



Grade B Theater



Grade B Theater



Grade C Theater



Grade C Truck Terminal



Grade C Truck Terminal



Grade C Truck Terminal



Grade C Truck Terminal

Assigning Grades to Commercial and Industrial Yard Structures

The Cost Schedules for Commercial and Industrial Yard Structures, provided in Appendix G, reflect the specifications for "C" grade structures.

Determining Grade Factor Percentages for Commercial and Industrial Yard Structures

Table E-4 shows the grade factor percentages for the whole and intermediate grades for commercial and industrial yard structures.

Table E-4. Percentage Multipliers for Commercial and Industrial Yard Structures

	E	+1	+2	-1	D	+1	+2	-1	C	+1	+2	-1
30	40	50	60	70	80	85	90	95	100	105	110	115
	Е				D				C			

В	+1	+2	-1	A	+1	+2	-1	AA	+1	+2	-1	AAA
120	130	140	150	160	180	200	220	240	270	300	330	360
В				A				AA				AAA

Assigning Grades to Special Use Commercial Properties

Table E-5 summarizes the major differences between the grade classifications for fast food restaurants. Table E-6 summarizes the major differences between the grade classifications for gasoline service stations.

Table E-5. Grade Classifications for Fast Food Restaurants

	"A" Grade	"B" Grade	"C" Grade	"D" Grade	"E" Grade
General	Elaborate architectural styling High quality materials and workmanship	Customized architectural styling Good quality materials and workmanship	Moderate architectural styling Good quality materials and workmanship	Simple and conventional styling Average quality materials and workmanship	Simple styling Poor quality materials and workmanship
Roof	A-frame, mansard, or multiple pitch with extensive overhangs Wood shakes, slate, porcelain enamel, shingles heavy grade or specialized asphalt shingles	Gambrel, gabled, mansard, or flat with generous overhangs Asphalt shingles, stone chip, or composition tar and gravel	Flat, shed, or gable with normal overhangs Asphalt shingle, or composition tar and gravel	Flat or shed roof with normal overhangs Composition tar and gravel roofing material	Shed with normal overhangs Composition tar and gravel roofing
Roof decking	Insulated wood or steel decking and framing with laminated wood frame or steel frame supporting beams and columns, composition on pre-stressed concrete barrel shell, or double "T" roof construction	Insulated wood or steel decking and framing or pre-stressed concrete barrel shell roof construction	Insulated wood or steel decking and framing roof construction	Insulated wood decking and framing roof construction	Wood decking and framing
Exterior walls	Decorative stone, wood, ceramic glazed face brick, plate glass, or a combination	Face brick, ceramic tile, plate glass, insulated enameled steel, or a combination	Wood siding, baked acrylic paneling, face brick, plate glass, or painted concrete blocks, or a combination	Wood siding, painted concrete blocks, minimal plate glass, or combination	Wood siding, painted concrete block, minimal plate glass, or a combination
Interior finish*	High quality Exposed stone, exposed brick, high grade porcelain enamel, or wood paneling	Good quality Exposed brick, wood or porcelain enamel paneling, or ceramic tile	Good quality Wood or baked acrylic paneling, plaster, drywall, partial ceramic tile, or a combination	Average quality Wood paneling, drywall, or painted concrete block	Poor quality Painted concrete block
Flooring and Ceiling	Ceramic or quarry tile flooring Acoustical tile, porcelain enamel, plaster, exposed beam and may be a	Ceramic or quarry tile flooring Acoustical tile, porcelain enamel, or plaster ceiling	Quarry tile or vinyl asbestos tile flooring Acoustical tile, plaster, or drywall ceiling	Asphalt or vinyl asbestos tile flooring Drywall ceiling	Asphalt tile flooring Drywall ceiling

	"A" Grade	"B" Grade	"C" Grade	"D" Grade	"E" Grade
	cathedral ceiling				
Lighting and plumbing	Lighting fixtures in dining and serving area are ornamental High quality fixtures and finish in restrooms	Lighting fixtures in dining and serving area are ornamental Good quality fixtures and finish in restrooms	Lighting fixtures in dining and serving area are functional, such as recessed fluorescent Good quality fixtures	Lighting fixtures in dining and serving area are functional, such as fluorescent lights Fair quality fixtures	Lighting fixtures in dining and serving area are functional, such as fluorescent lights Poor quality fixtures
		10011001110	and finish in restrooms	and finish in restrooms	and finish in restrooms
Climate control system	Combined heating and air conditioning system	Combined heating and air conditioning system	Combined heating and air conditioning system	Forced air heating system	Forced air heating system
Design	Unique design with emphasis on the roof and exterior walls Construction members may be exposed to contribute to the architectural effect	Conventional and attractive design, possibly false roof facade, and parapets	Conventional design	Devoid of any architectural features	Devoid of any architectural features

Table E-6. Grade Classifications for Gasoline Service Station

	"A" Grade	"B" Grade	"C" Grade	"D" Grade
General	High quality materials and workmanship	Good quality materials and workmanship	Average quality materials and workmanship	Fair quality materials and workmanship
Roof	Double pitch, flat type, or hip style Asphalt shingles or composition tar and gravel	Double pitch or flat Asphalt shingles or composition tar and gravel	Flat type Composition tar and gravel	Flat or shed Roll roofing material
Roof decking	Insulated wood or steel decking and framing	Insulated wood or steel decking and framing	Insulated wood or steel decking and framing	Insulated wood decking and framing
Exterior walls	Face brick or enamel brick on masonry back-up, or insulated sandwich type porcelain enameled steel	Part face brick, porcelain enamel facing, or insulated sandwich type porcelain enameled steel	Part acrylic paneling, common brick, or good quality concrete block	Concrete block
Interior finish*	Good quality in office and sales areas Ceramic tile on the walls of restrooms		Limited to a finished ceiling in office and sales area Ceramic tile on walls of restrooms	Unfinished

	"A" Grade	"B" Grade	"C" Grade	"D" Grade
Flooring and Ceiling	Ceramic, quarry, or other high quality tile flooring Good quality ceiling in office and sales areas Finished ceiling in service bays	Asphalt tile flooring Good quality ceiling in office and sales areas Unfinished ceiling in service bays Ceramic tile on walls and floor of restrooms	Asphalt tile flooring Finished ceiling in office and sales area Unfinished ceiling in service bays Ceramic tile on floor of restrooms	Unfinished

Determining Grade Factor Percentages for Special Use Properties

Table E-7 shows the grade factor percentages for the whole and intermediate grades for special use properties.

Note: Levels below E and above A do not apply to special use commercial properties

Table E-7. Percentage Multipliers for Commercial and Industrial Special Use Properties

Е	+1	+2	-1	D	+1	+2	-1	C	+1	+2	-1
40	50	60	70	80	85	90	95	100	105	110	115
Е				D				С			

В	+1	+2	-1	A
120	130	140	150	160
В				A

Photographs of Graded Special Use Properties

The following photographs illustrate the grade classifications for special use properties. These photographs are provided to help the assessor determine the grade of actual structures.

Important: These photographs are only an indication of grade and not a determination of the actual grade of the structure shown. The grade determination must be based on individual inspection of the type of materials and quality of workmanship of the subject parcel.



Grade B Fast Food



Real Property Assessment Guidelines

Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food

Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade B Fast Food



Grade C Fast Food



Grade C Fast Food



Grade C Fast Food



Grade C Fast Food



Grade C Fast Food



Grade C Fast Food



Grade C Fast Food



Grade A Service Station



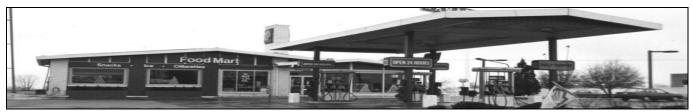
Grade A Service Station



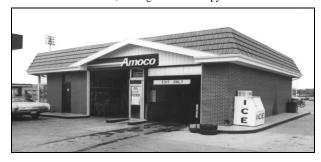
Grade A Service Station



Grade B Service Station, Good Grade Canopy



Grade A Service Station, Average Grade Canopy



Grade B Service Station



Grade B Service Station



Grade B Service Station



Grade B Service Station



Grade B Service Station



Grade C Cashier Booth/Canopy



Grade C Service Station, Good Grade Canopy



Grade C Service Station



Grade C Public Restroom Building



Grade C Service Station





Grade C Service Station

Grade D Service Station