

ALBERTA
2001 METAL BUILDINGS
COST
MANUAL

Updated to 2018

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SECTION 1 INTRODUCTION

1-0 The Alberta Metal Buildings Cost Manual

Improvements

Alberta Municipal Affairs has produced this manual as a service to municipalities and other property assessment stakeholders. The manual establishes typical replacement costs for metal buildings and properties based on 2001 replacement costs. These buildings are primarily used in the oil and gas industry.

The benchmark to establish costs for the *Alberta 2001 Metal Buildings Cost Manual* are typical 2001 replacement costs in the Edmonton area. The manual uses the full cost pricing of all typical building components including conventional mark-up. If supply and demand for buildings are relatively equal, the cost approach should establish a cost base given short-run fluctuations in supply and demand.

The cost approach is used to provide an equitable comparison of similar buildings. However, the results may not represent the specific construction costs or actual costs incurred by a property owner.

Buildings are classified by type and quality. Basic characteristics such as location, age, actual condition and depreciation can be analyzed, compared and verified. Normal physical/functional depreciation factors are applied using the Anticipated Age Life Table included in this manual. Additional depreciation or appreciation factors will be indicated by market data.

1-1 Metric Measurement Conversion Factors

Imperial to Metric		Metric to Imperial	
Length			
1 in	= 25.4 mm	1 mm	= 0.039 37 in
1 ft	= 0.3048 m	1 m	= 3.280 84 ft
1 ft	= 304.8 mm	1 m	= 1.093 61 yd
1 yd	= 0.9144 m	1 km	= 49.7097 chain
Area			
1 in ²	= 645.16 mm ²	1 mm ²	= 0.001 55 in ²
1 ft ²	= 0.092 903 m ²	1 m ²	= 10.7639 ft ²
1 yd ²	= 0.836 127 m ²	1 m ²	= 1.195 99 yd ²
Volume, Capacity			
1 in ³	= 16.3871 cm ³	1 mm ³	= 61.0237 x 10 ⁻⁶ in ³
1 ft ³	= 0.028 316 8 m ³	1 m ³	= 35.3147 ft ³
1 yd ³	= 0.764 555 m ³	1 m ³	= 1.307 95 yd ³
Mass			
1 oz	= 28.3495 g	1 g	= 0.035 274 oz
1 lb	= 0.453 592 kg	1 kg	= 2.204 62 lb
1 cwt (long)	= 50.802 3 kg	1 tonne	= 19.684 1 cwt
1 cwt (short)	= 45.359 2 kg	1 tonne	= 22.0462 cwt (short)
1 long ton	= 1.016 05 tonne	1 tonne	= 0.984 207 long ton
1 short ton	= 0.907 185 tonne	1 tonne	= 1.102 311 short ton

1-2 Classification - General

Classification of improvements such as use, design, kind and quality of materials and grade or quality of workmanship factors is key to the valuation process. The *Alberta 2001 Metal Buildings Cost Manual* enables the assessor to systematically determine the value of common improvements using predetermined rate schedules for model types and quality categories. Improvements and depreciation factors are categorized for metal building models and quality. Improvements, kinds and quality of the materials and the level of workmanship in the improvements are used to classify metal building model types.

Metal buildings can be categorized into a relatively small number of construction classes. The factors that determine a particular class category will usually apply across a broad spectrum of building uses of the same quality of construction. In general, the commercial portions of the manual consist of a range of classes ranging from economy to expensive. Across this range of classes, there is a consistent progression in quality of materials, dimensions, quality of mechanical and electrical installations, etc. If the designed use and the actual use differ, the rates to be used in estimating the replacement cost new are determined, in most instances, by design. Occupancy and use influence the final value.

The framing and floor construction of a metal building are the major factors in the classification process. Each classification contained in the Manual is predicated on a set of material and workmanship specifications, selected through analysis of the existing inventory of metal building structure and considered to be most representative of a particular quality level or benchmark.

The floor construction of steel warehouse classes is generally concrete slab at grade level or steel skids with steel decking. Roof construction consists of either self-framing exterior metal or a combination of steel joists, girders, beams and spandrels with metal cladding.

The type of framing construction should not be the sole criterion for establishing the classification of a building. Even though a building may be constructed of load bearing or a combination of load bearing and non-load bearing walls, some buildings are of custom or expensive quality because of the quality of the framing system itself and the general quality of other building components such as exterior finish, doors and windows, interior finish and electrical and mechanical systems.

1-3 Base Rates

In this manual, base rates, installation rates, adjustments and unit costs are based on typical 2001 construction replacement costs in the Edmonton area. Typical quantities and qualities for material and labour are used to establish unit costs, which are then used to determine base rates. Replacement costs for various classes are derived from base rates for various classes and qualities of improvements. The replacement cost concept implicitly eliminates all functional obsolescence from the value given; therefore, only physical depreciation and economic obsolescence need to be subtracted to obtain replacement cost new less depreciation.

Typical overhead and profit margins are included in the unit costs in this manual. Architectural and/or engineering fees have been incorporated in the base rates and adjustment rates for each building model. Therefore, additional fees are not required. Overhead expenses include (but are not limited to) the following:

- 1) Temporary site offices and buildings
- 2) Material handling and warehousing
- 3) Hoarding, barricades, guardrails, signs and signals, etc.
- 4) Temporary site services such as water, light and power, telephone and sanitary facilities
- 5) Site cleanup such as building, windows, site, rubbish removal, etc.
- 6) Inspection and testing
- 7) Site staff
- 8) Site protection and first aid
- 9) Construction equipment such as tools, pumps, scaffolding, etc.
- 10) Building permits, fire, liability and property insurance
- 11) Head office expenses including staff, rent, utilities, insurance, licences, property and business taxes, sales promotion, loss of opportunity interest, financing, legal fees, etc.

Base Rates (con't)

Manual base rates are expressed as linear equations with one constant and one variable. The building base costs can then be calculated using the following formula:

$$\text{Base Cost} = \text{Constant} + (\text{Area} \times \text{Area Rate m}^2)$$

For example: the base cost for a 144 m² Model 615, Quality 04 building is calculated as:

$$\text{Base Cost} = \$27,760 + (144 \text{ m}^2 \times \$325)$$

$$\text{Base Cost} = \$27,760 + \$46,800$$

$$\text{Base Cost} = \$74,560$$

1-4 Wall Height

Improvements in this manual are based on a specific height. An adjustment to actual height will be required. For wall heights that vary from the heights specified in the manual, cost variations have been provided. These wall cost variations will affect only exterior walls but not increase or decrease costs of items such as heating, plumbing, electrical, etc.

1-5 Architectural and Engineering Fees

Fees for normal services as shown, are included within all costs in this manual to the extent that the architect or prime consultants consider them to be normal to a specific building type.

The fee is usually calculated as a percentage of cost of the work including contractor's overhead and profit but not including land costs.

When specialty, highly complex or nonconforming structures or improvements are encountered, the fee percentage rates may be considerably higher.

Additional fee charges will be incurred when there is a requirement for services in excess of the normal, or the work is of such a nature that the services of a special consultant is deemed necessary.

1-6 Perimeter/Area Ratio Adjustment

If an improvement is classified as a metal warehouse, its total base cost may be increased or decreased in accordance with the following procedures:

- (1) Compute the perimeter/area ratio of the improvement in accordance with the formula provided below,

$$\frac{(\text{Perimeter of Improvement})^2}{\text{Area of Improvement}} = \text{Perimeter/Area Ratio}$$

- (2) Determine the size range in which the area of the improvement falls and the corresponding factor for the perimeter/area ratio of the subject improvement in accordance with the table provided below,

Size Range	Floor Area	Factor
1	(0 - 49 m ²)	1.00
2	(50 to 249 m ²)	0.77
3	(240 - 699 m ²)	0.58
4	(700 - 1999 m ²)	0.35

- (3) Compute the perimeter/area ratio factor of the improvement in accordance with the formula provided as follows,

$$(\text{Perimeter/area ratio} - 18) \times 0.0175 \times \text{size range factor} = \text{perimeter /area ratio factor}$$

- (4) Multiply the total base cost of the improvement by the factor established under subsection (3) to determine the amount of the perimeter/area ratio adjustment, and
- (5) Add or deduct the amount computed under subsection (4) to the total base cost.

If an improvement is circular or is a polygon with 5 or more equal sides, adopt a Perimeter/Area Ratio of 20.0. Perimeter/area ratio adjustment does not apply if the perimeter/area ratio is other than 18.0 and the indicated increase is considered to be the result of poor design of the improvement.

See section 1-10 for an example application of the Perimeter/Area Ratio Adjustment.

1-7 Perimeter Design Adjustment

If an improvement is classified as a metal warehouse and has a perimeter wall floor plan design containing six or more intersections the total base cost of the improvement may be increased in accordance with the following procedures:

- (1) Determine the number of perimeter wall intersections, both internal and external, and select the corresponding factor in accordance with the following table,

Number of Intersections	Factor
4 - 6	0.00
7 - 15	0.01
16 - 32	0.02
33 - 50	0.03
51 - 70	0.04

- (2) Multiply the total base cost of the improvement, by the factor determined under subsection (1), and

- (3) Add the product of subsection (2) to the total base cost.

Perimeter design adjustment does not apply if the number of perimeter wall intersections is greater than six and the indicated increase is considered to be the result of poor design of the improvement.

See section 1-10 for an example application of the Perimeter Design Adjustment.

1-8 Overall Structural Height Adjustment

If an improvement is classified as a Metal Warehouse and has an overall structural height greater than 3.0 metres above grade, the cost of the improvement may be increased in accordance with the following procedures:

(1) The total base cost of the improvement may be increased or decreased by adding or deducting any costs attributable to a perimeter/area ratio adjustment, a perimeter design adjustment, and any costs attributable to additions, deletions, variations or substitutions to, in or of any of the components of the improvement not included in the computation of the total base cost,

(2) Multiply the cost computed in accordance with subsection (1) by the appropriate overall structural height factor for the adjusted height (actual wall height - 3m) of the improvement to determine the amount attributable to the overall structural height adjustment, as follows:

$$(\text{Actual Wall Height} - 3\text{m}) \times 0.00267 = \text{Overall Structural Height Factor}$$

(3) Add the amount computed in accordance with subsection (1) to the cost computed in accordance with subsection (2).

See section 1-10 for example applications of the Overall Structural Height Adjustment.

1-9 SEQUENTIAL ADJUSTMENT FORMAT

A. Base Cost (including finish modules) A \$____

B. Wall Height Adjustments B ± \$____

C. Total Base Cost (A + B) C \$____

D. Perimeter/Area Ratio Adjustment

$$\frac{(\text{Perimeter})^2}{\text{Area}} = \text{Ratio}$$

Determine the appropriate Size Range Factor in accordance with the Size Range Table.

$$(\text{Perimeter/Area Ratio} - 18) \times 0.0175 \times \text{Size Range Factor} = \text{Factor}$$

$$((\text{Total Base Cost (C)}) \times \text{Factor} = \text{P/A Ratio Adjustment} \quad D \pm \$____$$

E. Perimeter Design Adjustment
Number of intersection
Select appropriate factor from table

$$((\text{Total Base Cost (C)}) \times \text{Factor} = \text{Perimeter Design Adjustment} \quad E \pm \$____$$

F. Other Adjustments

Add or deduct component variations and
other cost adjustments, excluding Special Equipment F ± \$____

G. Subtotal (C + D + E + F) **Subtotal** G \$____

H. Overall Structural Height Adjustment

Building levels:

Above grade: deduct 3.0 m

Actual Height: measurement from floor of lowest level to roof of highest level

$$\text{Wall height} - 3\text{m} \times 0.00267 = \text{Overall Structural Height Factor}$$

$$((\text{Subtotal (G)}) \times \text{Factor} = \text{Height Adjustment} \quad H + \$____$$

J. Special Equipment/Unit Cost Variations

Special Equipment Cost J + \$____

K. 2001 Replacement Cost New (G + H + J) K \$____

1-10 Format Example Calculation

Example: Rigid frame warehouse 6m wide 24m long, 4.9m height, 8 intersections
2 extra entrance doors, and 3 ton crane with a floor area coverage of 6m by 18m.

Classification Model 615 Quality 04 Structure 61

A. Base Cost (including finish modules)

$$\$27,760 + (144 \text{ m}^2 \times \$325) = \text{Base Cost}$$

$$\$27,760 + \$46,800 =$$

A \$74,560

B. Wall Height Adjustments

$$4.9\text{m} - 6.0\text{m} = -1.1\text{m difference}$$

$$((144 \text{ m}^2 \times \$7) + \$1400) \times -1.1 =$$

B - \$ 2,649

C. Total Base Cost (A + B)

C \$71,911

D. Perimeter/Area Ratio Adjustment

$$\frac{(\text{Perimeter})^2}{\text{Area}} = \text{Ratio}$$

Area

$$\frac{(60\text{m})^2}{144 \text{ m}^2} = 25$$

$$144 \text{ m}^2$$

Size Range Factor Size Range 2 0.77

(Ratio - 18) X 0.0175 X Size Range Factor = perimeter /area ratio factor

$$(25 - 18) \times 0.0175 \times 0.77 = +.094$$

((Total Base Cost (C)) x Factor = P/A Ratio Adjustment

$$\$71,911 \times +0.094 =$$

D + \$6,760

E. Perimeter Design Adjustment

Actual 8 intersections

Select appropriate Factor from table =0.01

((Total Base Cost (C)) x Factor = Perimeter Design Adjustment

$$\$71,911 \times .01 =$$

E + \$ 719

F. Other Adjustments

$$2 \text{ extra entrance doors } 2 @ \$540 = \$1,080$$

3 ton crane with floor area coverage of 6m by 18m

$$((6\text{m} \times 18\text{m}) \times \$36.99) + \$13,876 = \$17,871$$

Other cost adjustments

F + \$18,951

G. Subtotal (C + D + E + F)

Subtotal

G \$98,341

H. Overall Structural Height Adjustment
Above grade: deduct 3.0 m

Actual Height: measurement from floor of lowest level to roof of highest level

Wall height - 3m) X 0.00267 = Overall Structural Height Factor

$$(4.9\text{m} - 3\text{m}) \times 0.00267 = 0.005$$

((Subtotal (**G**)) x Factor = Height Adjustment
\$98,341 X .005 =

H + \$492

J. Special Equipment

Special equipment cost/ unit cost variations

J + \$ ____

K. 2001 Replacement Cost New (G + H + J)

K \$98,833

1-11 Base Year Modifiers

The replacement cost new of an improvement, in the year of assessment, is determined as follows:

- 1) Calculate the 2001 replacement cost new of improvements using Schedule 1 and 2, and
- 2) Multiply the 2001 replacement cost new by the factor for the year of the assessment.

Base Year Modifier Factor Table (2001 = 1.000)

Classification Schedule (2)

Year of Assessment	Factor
2001	1.00
2002	1.04
2003	1.10
2004	1.16
2005	1.37
2006	1.55
2007	1.75
2008	1.90
2009	1.88
2010	1.91
2011	1.97
2012	2.02
2013	2.07
2014	2.13
2015	2.14
2016	2.15
2017	2.21
2018	2.29

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1-12 Depreciation

The replacement cost new of the improvement shall be decreased by an amount that is attributable to depreciation. Depreciation is defined as a loss in value from any cause.

The level of maintenance, changes in technology, advances in design and construction materials and changes in economic conditions influence the amount of depreciation of an improvement.

In a mass appraisal system, normal depreciation (both deterioration and normal functional obsolescence) is handled through the application of standard age life tables and standard remaining life tables. The uniformity and consistency achieved by the use of standard schedules and rates to calculate replacement cost new is complemented by standard tables to measure depreciation.

Classification of an improvement determines both the replacement cost rates and the depreciation tables that are applicable. The amount of normal depreciation is determined by the effective age judged to be appropriate for the improvement. The standard depreciation tables in section 1-17 are guides for determining the amount of depreciation attributable to normal physical deterioration and functional obsolescence. Abnormal depreciation including economic obsolescence, which is not reflected in the standard depreciation tables, is potential additional loss in value that may be applicable to an improvement.

1-13 Age Life Tables

Age life tables are presented as guides to assist in the consistent determination of normal depreciation.

Age Life Table:

Model	Class Of Construction	Anticipated Age Life
610	Self Framing Metal Warehouses	40
615	Rigid Frame Metal Warehouses	50
876	Relocatable Metal Warehouses	40

1-14 Condition, Desirability and Utility (CDU) Ratings

A CDU rating is the overall condition, desirability and utility rating of a building or structure. The S-curve tables have been modified to permit assessors, in most instances, to use chronological age rather than estimating effective age. The tables show, for each year of age life, a range of five CDU ratings that recognize various levels of overall condition, desirability and utility of an improvement.

CDU Rating Description	Rating
Superior condition, very attractive and highly desirable components new or as good as new.	Excellent
Slight evidence of deterioration in minor components, well maintained, attractive, desirable, and high utility.	Good
Normal deterioration for age, moderate maintenance, somewhat less attractive, average to good utility, minor repairs or rehabilitation of some components required.	Average
Discernible deterioration, deferred maintenance requiring rehabilitation and/or replacement, reduced utility with signs of structural decay.	Fair
Deterioration to a point where major repairs and/or replacements are required.	Poor

1-15 GLOSSARY

This glossary defines the more common terms used when considering depreciation as the concept is used in this manual.

Abnormal depreciation

Abnormal depreciation is the loss in fair actual value over and above a loss attributable to deterioration and obsolescence as measured in the remaining life tables. Abnormal depreciation is unique to a property and is the result of unexpected changes in the circumstances of the property.

Anticipated age life

Anticipated age life is the period of time over which an improvement is depreciated. Anticipated age life represents the estimated useful life span of an improvement as exemplified by improvements with similar physical and functional characteristics. It is the sum of the age, chronological or effective, and the remaining life of the improvement.

Condition, Desirability and Utility (CDU)

(CDU) is the overall condition, desirability and utility rating of a building or structure.

Depreciation

Depreciation is a loss in value from any cause. More particularly, for assessment purposes, depreciation is considered to be the loss in value from physical deterioration and from obsolescence. Total depreciation is the difference between replacement cost new and market value at the same date.

Effective age

The estimated age of an improvement is based on its present condition, design features and architectural amenities. Effective age may be less than actual age, actual age, or greater than actual age based on the interrelationship of the above cited criteria when compared to other improvements of like functions within a specific anticipated age life group.

Functional obsolescence

Functional obsolescence is the loss in fair actual value that results from factors inherent in the improvement. Inadequate design, structural inadequacy or super adequacy and outmoded style are potential causes of functional obsolescence.

Normal depreciation

Normal depreciation is the loss in fair actual value arising from those factors that lead to the normal deterioration and functional obsolescence of an improvement. The depreciation tables in the manual reflect normal depreciation.

Physical life

Physical life is the number of years the improvement is expected to remain in existence; physical life may exceed economic life.

Replacement cost new

Replacement cost new is the cost to replace an improvement with a modern unit in new condition and of equivalent utility. Replacement costs in the manual are predicated on typical construction costs for the year 2001.

1-16 Remaining Life: Buildings and Structures

Buildings and structures should be depreciated according to the standard Remaining Life tables set out in section 1-17. The following implicit assumptions are built into the tables:

- The tables measure only normal physical deterioration and normal functional obsolescence.
- During the initial period of its age life the building is usually well maintained and the annual rate of depreciation is minimal.
- As the building ages, physical deterioration and functional obsolescence increase the annual rate of depreciation.
- Near the end of the economic life of the building, the annual rate of depreciation declines and approaches zero at the point when its salvage value is reached.

APPLICATION OF REMAINING LIFE TABLES

To apply the tables and determine the percentage of remaining life, the assessor must:

- Identify the appropriate anticipated age life.
- Determine the chronological age.
- Select the appropriate CDU rating.

The indicated percent remaining factor is applied to the replacement cost new of the improvement to obtain an estimate of depreciated replacement cost.

1-17 Remaining Life Tables:

Buildings & Structures (Expressed As Percentage Remaining)

20-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	98	98	96	95	94
2	96	95	93	92	90
3	94	93	90	88	86
4	92	90	87	85	83
5	89	87	84	82	80
6	86	84	81	78	76
7	83	81	77	75	72
8	79	77	74	71	68
9	77	73	71	68	65
10	74	71	68	64	61
11	72	67	64	61	57
12	70	65	61	57	54
13	68	62	58	54	50
14	66	60	55	51	45
15	64	58	53	47	41
16	62	56	50	44	36
17	61	54	48	41	31
18	59	52	46	38	27
19	58	50	44	35	23
20	57	49	42	32	20
21	55	48	40	30	
22	54	46	39	28	
23	53	45	37	26	
24	53	44	36	24	
25	52	43	35	23	

25-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	98	97	96	95
2	97	96	94	93	91
3	96	94	92	90	88
4	94	92	89	88	85
5	92	90	87	85	83
6	90	88	84	82	80
7	87	85	82	80	78
8	84	83	80	77	74
9	82	80	77	74	71
10	79	77	74	71	68
11	77	74	72	68	65
12	75	72	69	65	62
13	73	69	66	63	59
14	71	67	64	60	56
15	70	65	61	57	54
16	68	63	59	55	50
17	67	61	56	52	47
18	65	59	54	49	44
19	64	57	52	47	40
20	62	56	50	44	36
21	61	54	48	41	32
22	60	53	47	39	28
23	59	51	45	37	25
24	58	50	43	35	22
25	57	49	42	32	20
26	55	48	41	30	
27	54	47	39	29	
28	54	46	38	27	
29	53	45	37	25	
30	53	44	36	24	
31	52	43	35	23	

30-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	98	97	96
2	98	97	95	94	93
3	96	95	93	92	90
4	95	94	91	89	88
5	94	92	89	87	85
6	92	90	87	85	83
7	90	88	85	83	81
8	88	86	83	80	78
9	86	84	81	78	76
10	84	82	78	76	73
11	81	80	76	74	71
12	79	77	74	71	68
13	78	75	72	69	66
14	76	73	70	67	63
15	74	71	68	64	61
16	73	68	65	62	59
17	71	67	63	60	56
18	70	65	61	57	54
19	69	63	59	55	51
20	67	61	57	53	48
21	66	60	55	51	45
22	65	58	54	48	42
23	63	57	52	46	39
24	62	56	50	44	36
25	61	55	49	42	33
26	60	53	47	40	30
27	59	52	46	38	27
28	58	51	44	36	25
29	57	50	43	34	22
30	57	49	42	32	20
31	56	48	41	31	
32	55	47	40	29	
33	54	46	39	28	
34	54	45	38	27	
35	53	45	37	25	
36	53	44	36	24	
37	52	43	35	23	

35-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	98	97	96
2	98	97	96	95	93
3	97	96	94	93	91
4	96	95	92	91	89
5	94	93	90	89	87
6	93	92	89	87	85
7	92	90	87	85	83
8	90	88	85	83	81
9	88	87	83	81	79
10	87	85	81	79	77
11	85	83	80	77	75
12	83	81	78	75	72
13	81	79	76	73	70
14	79	77	74	71	68
15	78	75	72	69	66
16	76	73	70	67	64
17	75	71	68	65	62
18	73	70	67	63	60
19	72	68	65	61	58
20	71	66	63	59	56
21	70	65	61	57	54
22	69	64	59	55	52
23	67	62	57	53	50
24	66	61	56	52	47
25	65	59	54	50	44
26	64	58	53	48	42
27	63	57	51	46	39
28	62	56	50	44	36
29	61	55	49	42	33
30	60	54	47	40	30
31	59	53	46	39	28
32	58	52	45	37	26
33	58	51	44	35	24
34	57	50	43	34	22
35	57	49	42	32	20
36	56	48	41	31	
37	55	47	40	29	
38	55	46	39	28	
39	54	46	38	27	
40	54	45	37	26	
41	53	45	37	25	
42	53	44	36	24	
43	52	43	35	23	
44	52	42	35	22	

40-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	98	98	97
2	98	98	96	96	94
3	97	97	95	94	92
4	96	96	93	92	90
5	95	94	91	90	88
6	94	93	90	88	86
7	93	92	88	86	84
8	92	90	87	85	83
9	90	89	85	83	81
10	89	87	84	82	80
11	87	86	82	80	78
12	86	84	81	78	76
13	84	82	79	77	74
14	83	81	77	75	72
15	81	79	76	73	70
16	79	77	74	71	68
17	78	75	73	70	66
18	77	73	71	68	65
19	75	72	70	66	63
20	74	71	68	64	61
21	73	69	66	63	59
22	72	67	64	61	57
23	71	66	63	59	55
24	70	65	61	57	54
25	69	64	59	56	52
26	68	62	58	54	50
27	67	61	56	52	48
28	66	60	55	51	45
29	65	59	54	49	43
30	64	58	53	47	41
31	63	57	51	45	39
32	62	56	50	44	36
33	61	55	49	42	34
34	61	54	48	41	31
35	60	53	47	39	29
36	59	52	46	38	27
37	58	51	45	36	25
38	58	50	44	35	23
39	57	50	43	34	21
40	57	49	42	32	20
41	56	48	41	31	
42	55	48	40	30	
43	55	47	39	29	
44	54	46	39	28	
45	53	45	38	27	

40-Year Age Life — Cont'd

Age	Exc	Good	Aver	Fair	Poor
46	53	45	37	26	
47	53	44	37	25	
48	52	44	36	24	
49	52	43	35	23	
50	52	43	35	23	
51	52	42	34	22	
52	51	42	34	22	
53	51	42	34	21	
54	51	42	33	21	
55	51	41	33	20	
56	50	41	33		
57	50	41	32		
58	50	41	32		
59	50	40	32		
60	50	40	32		
61	49	40	31		
62	49	40	31		
63	49	40	31		
64	49	39	31		
65	48	39	31		
66	48	39	30		
67	48	39	30		
68	48	39	30		
69	48	39	30		
70	48	39	30		

45-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	98	98	97
2	99	98	97	96	95
3	98	97	95	94	93
4	97	96	94	92	91
5	96	95	92	91	89
6	95	94	91	89	88
7	94	93	90	88	86
8	93	91	88	86	84
9	92	90	87	85	83
10	91	89	86	83	81
11	89	87	84	82	80
12	88	86	83	80	78
13	87	85	82	79	76
14	85	83	80	77	75
15	84	82	78	76	73

45-Year Age Life — Cont'd

Age	Exc	Good	Aver	Fair	Poor
16	82	80	77	74	71
17	81	79	75	73	70
18	79	77	74	71	68
19	78	76	73	70	67
20	77	74	71	68	65
21	76	73	70	67	63
22	75	71	69	65	62
23	74	70	67	64	60
24	73	68	65	62	59
25	72	67	64	61	57
26	71	66	62	59	55
27	70	65	61	57	54
28	69	64	60	56	52
29	68	62	59	54	50
30	67	61	57	53	48
31	66	60	56	51	46
32	65	59	55	50	44
33	65	58	54	48	42
34	64	57	52	47	40
35	63	57	51	45	38
36	62	56	50	44	36
37	61	55	49	43	34
38	61	54	48	41	32
39	60	53	47	40	30
40	59	53	46	38	28
41	59	52	45	37	26
42	58	51	44	36	24
43	58	50	43	34	23
44	57	50	43	33	21
45	57	49	42	32	20
46	56	48	41	31	
47	56	48	41	30	
48	55	47	40	29	
49	55	46	39	28	
50	54	46	39	27	
51	54	45	38	26	
52	53	45	37	25	
53	53	44	36	25	
54	53	44	36	24	
55	52	43	35	23	
56	52	43	35	23	

50-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	98	98	97
2	99	98	97	96	95
3	98	97	96	94	93
4	97	96	94	93	91
5	96	95	93	92	90
6	96	94	92	90	88
7	95	93	90	89	87
8	94	92	89	88	85
9	93	91	88	86	84
10	92	90	87	85	83
11	91	89	86	84	82
12	90	88	84	82	80
13	89	87	83	81	79
14	87	85	82	80	78
15	86	84	81	78	76
16	84	83	80	77	74
17	83	82	78	75	72
18	82	80	77	74	71
19	80	79	75	72	69
20	79	77	74	71	68
21	78	75	73	70	67
22	77	74	72	68	65
23	76	73	70	67	64
24	75	72	69	65	62
25	74	71	68	64	61
26	73	69	66	63	59
27	72	68	65	61	58
28	71	67	64	60	56
29	71	66	62	59	55
30	70	65	61	57	54
31	69	64	60	56	52
32	68	63	59	55	50
33	67	62	57	53	49
34	67	61	56	52	47
35	66	60	55	51	45
36	65	59	54	49	44
37	64	58	53	48	42
38	64	57	52	47	40
39	63	57	51	45	38
40	62	56	50	44	36
41	61	55	49	43	34
42	61	54	48	41	32
43	60	53	48	40	30
44	60	53	47	39	28
45	59	52	46	38	27

50-Year Age Life — Cont'd

Age	Exc	Good	Aver	Fair	Poor
46	59	51	45	37	25
47	58	50	44	36	24
48	58	50	43	35	22
49	57	49	43	33	21
50	57	49	42	32	20
51	56	48	41	31	
52	55	48	41	30	
53	55	47	40	29	
54	54	47	39	29	
55	54	46	39	28	
56	54	46	38	27	
57	53	45	38	26	
58	53	44	36	25	
59	53	44	36	25	
60	53	44	36	24	

55-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	99	98	98
2	99	98	97	97	96
3	98	97	96	96	94
4	97	97	95	94	93
5	97	96	94	93	91
6	96	95	93	91	90
7	95	94	92	90	88
8	94	93	90	89	87
9	94	92	89	88	86
10	93	91	88	86	84
11	92	90	87	85	83
12	91	89	86	84	82
13	90	88	85	83	81
14	89	87	84	81	79
15	88	86	83	80	78
16	87	84	81	79	76
17	86	83	80	78	75
18	84	82	79	76	74
19	83	81	78	75	72
20	82	79	77	74	71
21	81	78	76	72	69
22	79	77	74	71	68
23	78	76	73	70	67
24	77	75	72	69	66
25	76	74	71	67	64

55-Year Age Life — Cont'd

Age	Exc	Good	Aver	Fair	Poor
26	76	73	70	66	63
27	75	71	68	65	62
28	74	70	67	64	60
29	73	69	66	62	59
30	72	68	65	61	58
31	71	67	64	60	56
32	70	66	62	59	54
33	70	65	61	57	53
34	69	64	60	56	52
35	68	63	59	55	51
36	68	62	58	54	49
37	67	61	57	52	48
38	66	60	56	51	46
39	65	60	55	50	45
40	65	59	54	48	43
41	64	58	53	47	41
42	64	57	52	46	40
43	63	57	51	45	38
44	62	56	50	44	36
45	62	55	49	43	34
46	61	54	49	42	33
47	61	54	48	41	31
48	60	53	47	40	30
49	60	53	46	38	28
50	59	52	46	37	27
51	59	51	45	36	25
52	58	51	44	35	24
53	58	50	43	34	22
54	57	49	43	33	21
55	57	49	42	32	20
56	56	48	42	31	
57	56	48	41	30	
58	55	47	40	29	
59	55	47	40	28	
60	55	46	39	28	
61	54	46	38	27	
62	54	45	38	26	
63	54	45	37	26	
64	53	44	37	25	
65	43	44	36	25	
66	53	44	36	24	
67	53	43	35	24	
68	52	43	35	23	
69	52	43	35	23	

60-YEAR AGE LIFE

Age	Exc	Good	Aver	Fair	Poor
0	100	100	100	100	100
1	99	99	99	98	98
2	99	99	98	97	96
3	98	98	96	95	94
4	98	97	95	94	93
5	97	96	94	93	92
6	96	95	93	92	90
7	96	95	92	90	89
8	95	94	91	89	88
9	94	93	90	88	86
10	94	92	89	87	85
11	93	91	88	86	84
12	92	90	87	85	83
13	91	89	86	84	82
14	90	88	85	83	81
15	89	87	84	82	80
16	88	86	83	80	78
17	87	85	82	79	77
18	86	84	81	78	76
19	85	83	79	77	74
20	84	82	78	76	73
21	83	81	77	75	72
22	81	80	76	74	71
23	80	79	75	73	69
24	79	77	74	71	68
25	78	76	73	70	67
26	78	75	72	69	66
27	77	74	71	68	65
28	76	73	70	67	63
29	75	72	69	65	62
30	74	71	68	64	61
31	73	69	67	63	60
32	73	68	65	62	59
33	72	67	64	61	57
34	71	67	63	60	56
35	71	66	62	58	55
36	70	65	61	57	54
37	69	64	60	56	52
38	69	63	59	55	51
39	68	62	58	54	50
40	67	61	57	53	48
41	67	60	56	52	47
42	66	60	55	51	45
43	65	59	55	49	44
44	65	58	54	48	42
45	64	58	53	47	41

60-Year Age Life — Cont'd

Age	Exc	Good	Aver	Fair	Poor
46	63	57	52	46	39
47	63	56	51	45	38
48	62	56	50	44	36
49	62	55	50	43	35
50	61	55	49	42	33
51	61	54	48	41	31
52	60	53	47	40	30
53	60	53	47	39	28
54	59	52	46	38	27
55	59	52	45	37	26
56	58	51	44	36	25
57	58	50	44	35	23
58	57	50	43	34	22
59	57	50	43	33	21
60	57	49	42	32	20
61	56	49	41	32	
62	56	48	41	31	
63	55	48	40	30	
64	55	47	40	29	
65	55	47	39	29	
66	54	46	39	28	
67	54	46	38	27	
68	54	45	38	27	
69	53	45	37	26	
70	53	45	37	25	
71	53	44	36	25	
72	53	44	36	24	
73	52	44	36	24	
74	52	43	35	23	
75	52	43	35	23	

SECTION 2 METAL WAREHOUSE IMPROVEMENTS

Metal Warehouse Improvement Classification Key

Classification Coding

Model Type		Quality		Structure	
<div><div></div><div></div><div></div></div>		<div><div></div><div></div></div>		<div><div></div><div></div></div>	
Code	Description	Code	Description	Code	Description
610	Self Framing Metal Warehouse	00	Poor	60	Main Level Structure
615	Rigid Frame Metal Warehouse	01	Economy	61	Main Level & Concrete Slab
876	Relocatable Metal Warehouse	02	Substandard		
		03	Fair		
		04	Standard		
		05	Semi Custom		
		06	Custom		

2-1 SELF- FRAMING METAL WAREHOUSE

MODEL TYPE 610- SELF- FRAMING METAL WAREHOUSE- STANDARD QUALITY (04)

GENERAL DESCRIPTION

Architect Fees: 4.1% Wall Heights
Exterior Wall -Main 3.0m

COMPONENT DESCRIPTION -BASE STRUCTURE

Site preparation
Concrete slab -125 mm reinforced concrete slab w/ thickened edge
Wall and roof construction -galvanized steel self-framing panels
Insulation –fiberglass batt, average foil faced batt, sprayed mineral fiber, or equivalent
Interior metal liner
Two metal exterior doors
Metal double glazed windows
Plumbing basic -average
Heating -average heating with gas fired units or forced air
Electrical basic -average wiring
Electrical fixtures -standard lighting for warehouse

BASE RATES (in dollars)

		Size 1 (0-49)		Size 2 (50-249)	
SIZE RANGES –M2					
Structure Code	Structure	K	AR	K	AR
61	Main Level & Concrete Slab	12,300	230	12,300	256

ST Code 61 designates the base structure of a main level with a concrete slab on grade.

Installation Rates

Size Ranges -m2	Size 1 (0-49)		Size 2 (50-249)	
	K	AR	K	AR
Heating	1,570		1,610	9
Plumbing basic	1,210		1,210	2
Electrical	1,590	6	1,690	10

Metal Exterior Door
each \$ 440

Windows
total \$ 540

Calculated Adjustments

Height

per metre of height – add or deduct

Size Ranges -m2	Size 1 (0-49)		Size 2 (50-249)	
	K	AR	K	AR
Component				
Wall Cost	580	28	1,700	11

Plumbing
per fixture – add \$ 990

Unit Cost Adjustments

Translucent Panels For Roof	
panel area per sq. metre	\$ 72
Translucent Panels For Walls	
panel area per sq. metre	\$ 105
Window, Dbl Glazed	
per sq. metre	\$ 188
Horizontal Sliding Door	
door area per sq. metre	\$ 279
Insulated Sect. O.H. Door	
door area per sq. metre	\$ 522
Insulated Roll-Up Door	
door area per sq. metre	\$ 1,000
Electric O.H. Door Operator	
each	\$ 730

Unit Cost Adjustments (in dollars) (con't)

Steel Stud/Drywall Partition c/w entrance door	
wall area per sq. metre	\$ 91
Ridge vent, intake louvers,	
per metre -add	\$ 73

Size Ranges –m2		Size 1 (0-49)		Size 2 (50-249)	
		K	AR	K	AR
Painted Roof And Wall Panels	add	340	13	340	13
16" Dia. Reinforced Conc. Piles	add	900	21	1,450	7
Reinforced Conc. Grade Beam	add	980	57	3,700	20
Exhaust Fans And Intake Louvers	add	760		540	4
Electric Unit Heater	add	1,530		1,530	
Explosion Proof Light Fixtures	add	930	29	1,040	21

GENERAL INFORMATION

This classification is provided with heat and lighting, which is adequate for storage purposes only.

Adjustments to heating and/or electrical should be considered where usages other than storage occur.

The Base Cost of a building is calculated by applying appropriate Total Base Rates to the building's floor areas.

Total Base Cost is produced when the Base Cost is combined with applicable height adjustments.

Determine floor areas from exterior measurements.

For perimeter area ratio adjustments, see section 1.6.

For perimeter design adjustments, see section 1.7.

For overall structural height adjustments, see section 1.8.

No adjustment for Architect Fees must be made against any cost adjustments attributable to variations from model type specifications.

2-2 RIGID FRAME METAL WAREHOUSE

Model Type 615-RIGID FRAME METAL WAREHOUSE- FAIR Quality (04)

General Description

Architect Fees: 4.1% Wall Heights
Exterior Wall -Main 6.0m

CODE COMPONENT DESCRIPTION -BASE STRUCTURE

Site preparation
Piles -reinforced concrete
Grade beams -reinforced concrete or equivalent
Concrete slab -125 mm reinforced concrete slab
Framing -light gauge steel rigid frame with steel grits
Wall and roof finish -shallow rib corrugated steel panels
Insulation -fiberglass batt, average foil faced batt, sprayed mineral fiber, fiberglass rigid board or equivalent
Two metal exterior doors
Metal double glazed windows
Plumbing Basic -fair
Electrical Basic -fair wiring
Electrical Fixtures -economy lighting

BASE RATES (in dollars)

Size Ranges -m2		Size 2 (0-249)		Size 3 (250-699)		Size 2 (700-1999)	
Structure Code	Structure	K	AR	K	AR	K	AR
61	Main Level & Concrete Slab	27,760	325	46,290	263	69,550	245

ST Code 61 designates the base structure of a main level with a concrete slab on grade.

Installation Rates

Size Ranges -m2	Size 2 (0-249)		Size 3 (250-699)		Size 4 (700-1999)	
	K	AR	K	AR	K	AR
Heating	1,010	15	4,120	2	5,000	3
Plumbing basic	1,400		2,000		2,000	
Electrical	2,130	7	2,250	10	2,250	10
Metal Exterior Door each	\$ 540					
Windows total	\$ 540					

CALCULATED ADJUSTMENTS

Height

per metre of height – add or deduct

Size Ranges -m2	Size 2 (0-249)		Size 3 (250-699)		Size 4 (700-1999)	
	K	AR	K	AR	K	AR
Component						
Wall Cost	1,400	7	1,400	9	2,290	7
Plumbing per fixture – add	\$ 990					

Unit Cost Adjustments

Translucent Panels For Roof panel area per sq. metre	\$ 72
Translucent Panels For Wall panel area per sq. metre	\$ 105
Window, Dbl Glazed per sq. metre	\$ 188
Horizontal Sliding Door door area per sq. metre	\$ 570
Insulated Sect. O.H. Door door area per sq. metre	\$ 590
Insulated Roll-Up Door door area per sq. metre	\$ 1,180
Electric O.H. Door Operator each	\$ 760

Unit Cost Adjustments (con't)

Steel Stud/Drywall Partition c/w entrance door wall area per sq. metre	\$ 91
Ridge vent, intake louvers, per m -add	\$ 73

Size Ranges -m2		Size 2 (0-249)		Size 3 (250-699)		Size 4 (700-1999)	
		K	AR	K	AR	K	AR
Painted Roof And Wall Panels	add	530	7	680	7	1,000	7
Interior Wall Liner Panel 2.4 metres height	add	1,360	9	1,560	6	2,060	4
Interior Wall And Roof Liner Panel	add	1,550	35	3,400	39	3,400	35
Exhaust Fans And Intake Louvers	add	480	5	1,000	4	3,550	1
Electric Unit Heater	add		16	5,060		5,060	
Explosion Proof Light Fixtures	add	1,040	21	1,800	18	3,050	14
Manual 3 Ton Crane C/W Foundation And Structural Upgrade	add*	13,880	37	17,000	39		
Manual 5 Ton Crane C/W Foundation And Structural Upgrade	add*	15,100	44	24,890	36		

* apply to floor area coverage of crane

GENERAL INFORMATION

This classification is provided with heat and lighting, which is adequate for storage purposes only.

Adjustments to heating and/or electrical should be considered where usages other than storage occur.

The Base Cost of a building is calculated by applying appropriate Total Base Rates to the building's floor areas.

Total Base Cost is produced when the Base Cost is combined with applicable height adjustments.

Determine floor areas from exterior measurements.

For perimeter area ratio adjustments, see section 1.6.

For perimeter design adjustments, see section 1.7.

For overall structural height adjustments, see section 1.8.

No adjustment for Architect Fees must be made against any cost adjustments attributable to variations from model type specifications.

2-3 RELOCATABLE METAL WAREHOUSE

MODEL TYPE876- RELOCATABLE METAL WAREHOUSE – STANDARD QUALITY (04)

General Description

Architect Fees: 4.1% Wall Heights
Exterior Wall -Main 2.4m

CODE COMPONENT DESCRIPTION -BASE STRUCTURE

Site preparation
Steel beam skid mounted
Floor steel checker plate
Wall and roof construction -galvanized steel self-framing panels
Insulation –fiberglass batt, average foil faced batt, sprayed mineral fiber, fiberglass rigid board or equivalent
Interior metal liner
One metal exterior door

BASE RATES (in dollars)

		Size 2 (0-249)	
Size Ranges -m2			
Structure			
Code	Structure	K	AR
61	Main Level & Metal Skid Floor	3,090	477

ST Code 61 designates the base structure of a main level with checker plate floor on skids.

Installation Rates

Metal Exterior Door
each \$ 440

Calculated Adjustments

Height

per metre of height – add or deduct

Size Ranges -m2

Size 2 (0-249)

Component

K

AR

Base wall Construction

340

32

Unit Cost Adjustments

Translucent Panels For Roof

panel area per sq. metre \$ 72

Translucent Panels For Wall

panel area per sq. metre \$ 105

Window, Dbl Glazed

per sq metre \$ 188

Horizontal Sliding Door

door area per sq. metre \$ 279

Insulated Sect. O.H. Door

door area per sq. metre \$ 522

Insulated Roll-Up Door

door area per sq. metre \$ 1,000

Electric O.H. Door Operator

each \$ 730

Fluorescent light fixture

each \$ 100

Ridge vent, intake louvers,

per metre -add \$ 73

Unit Cost Adjustments (con't)

Size Ranges -m2		Size 2 (0-249)	
		K	AR
Painted Roof And Wall Panels	add	340	13
Reinforced Concrete Piles	add	900	21
Concrete Slab On Grade W/ Thickened Edge	add	440	84
Serrated Grating Floor	add	90	4
Exhaust Fans And Intake Louvers	add	270	19
Gas Fired Unit Heater	add	840	45
Electric Unit Heater	add	940	22
Basic Building Electrical	add	800	43
Explosion Proof Light Fixtures	add	930	29

GENERAL INFORMATION

This classification is not provided with mechanical installations such as heat and lighting.

Adjustments to heating and/or electrical should be considered.

The Base Cost of a building is calculated by applying appropriate Total Base Rates to the building's floor areas.

Total Base Cost is produced when the Base Cost is combined with applicable height adjustments.

Determine floor areas from exterior measurements.

For perimeter area ratio adjustments, see section 1.6.

For perimeter design adjustments, see section 1.7.

For overall structural height adjustments, see section 1.8.

No adjustment for Architect Fees must be made against any cost adjustments attributable to variations from model type specifications.

