OAR 150-308-0280

(a) ***Example 1*:**

A manufacturing plant has a boiler that produces process steam. This boiler produces steam inefficiently by current standards. A new replacement boiler with a 20 year life is available that would produce the same amount of steam and save $37,000 per year in fuel costs. The existing boiler had a 20 year expected life when it was new and has a remaining life of 10 years. The reproduction cost new as of the appraisal date of the subject boiler is $500,000. The cost new as of the appraisal date of the more efficient replacement boiler is $700,000 if installed during new construction. The cost to retrofit the new boiler in the existing plant as of the appraisal date, including the cost to remove the existing boiler and purchase and install the new boiler is $750,000. There is no salvage value for the existing boiler.

This indicates an excess cost to cure of $50,000.

The value of the loss equals $136,410 which is the present value of the excess fuel costs capitalized at 10% for 10 years with a tax rate of 40%.

The calculation of functional obsolescence:

(A) Estimate the physically depreciated reproduction cost of the property with a deficiency

Reproduction cost new of the subject boiler as of the appraisal date	$500,000
Less physical depreciation of the subject boiler (50% X $500,000)	- 250,000
Equals the depreciated reproduction cost of the subject boiler	$250,000

(B) Less, the physically depreciated cost of the replacement property for property with a deficiency

Replacement cost new of the replacement boiler as of the appraisal date	$700,000
Less physical depreciation of the replacement boiler (50% X $700,000)	-350,000
Equals the physically depreciated cost of the replacement property	$350,000

(C) Plus, the lesser of the cost to cure or the value of the loss

The cost to cure	$750,000	
Or the value of the loss, if less	$136,410	+$136,410

Functional obsolescence in the reproduction cost approach equals $250,000 - $350,000 + $136,410 = $36,410

The market value indicator for the existing boiler from the reproduction cost approach is: Market Value = Reproduction cost new less physical depreciation less functional obsolescence Market Value = $500,000 – $250,000 – $36,410 = $213,590

(b) ***Example 2***.

An industrial building has a 40-foot eave height. The market standard for the highest and best use of this kind of building is an eave height of 32 feet. The building has an effective age of 25 years and an estimated remaining life of 15 years. The reproduction cost new of the subject building is $400,000 as of the appraisal date. The cost new of the replacement building with a 32-foot eave height is $320,000 as of the appraisal date. The excess height of the subject building results in an additional $6,600 per year for heat compared to the cost to heat the replacement building.

The value of the loss is $30,120, which is the present value of the excess heating costs capitalized at 10% for 15 years with a tax rate of 40%. Preliminary estimates of the cost to cure indicate that the cost would far exceed the value of the loss of $30,120.

The calculation of functional obsolescence:

(A) Estimate the depreciated reproduction cost of the property with a superadequacy		
Reproduction cost new of the subject building as of the appraisal date		$400,000
Less physical depreciation of the subject building ($400,000 X 62.5%)		- 250,000
Equals the depreciated reproduction cost of the subject building		$150,000
(B) Less, the physically depreciated cost of the replacement property		
Replacement cost new of the replacement building as of the appraisal date		$320,000
Less physical depreciation of the replacement building ($320,000 X 62.5%)		-200,000
Equals the physically depreciated cost of the replacement building		$120,000
(C) Plus, the lesser of the cost to cure or the value of the loss		
The cost to cure	greater than $30,120	
Or the value of the loss, if less	$ 30,120	+ 30,120

Functional obsolescence equals $150,000 - $120,000 + $30,120 = $60,120.

The market value indicator for the existing building from the reproduction cost approach is: Market Value = Reproduction cost new less physical depreciation less functional obsolescence Market Value = $400,000 – $250,000 – $60,120 = $89,880

(c) ***Example 3***:

A sawmill lacks an automatic lumber sorter. As of the appraisal date, the lumber is sorted using a manual sorter. By installing an automatic sorter the mill would reduce the labor cost by $263,000 per year. As of the appraisal date, the sawmill, excluding the manual sorting equipment, has a reproduction cost new of $8,000,000 and is 50% physically depreciated. The existing manual sorting equipment has a reproduction cost new of $40,000 and is 75% depreciated. The cost new of a

replacement automatic sorter as installed on the appraisal date during the construction of a new mill is $1,000,000. The cost to cure including the cost of purchasing the new replacement sorter, installing it in the subject mill, removing the existing manual sorting equipment less the salvage value of the existing manual sorting equipment is $1,100,000. This indicates an excess cost to cure of $100,000. The subject sawmill has an estimated remaining life of 15 years.

The value of the loss is $1,200,000, which is the present value of the excess operating cost capitalized at 10% for 15 years with a tax rate of 40%.

The calculation of functional obsolescence:

In subsection (1)(d)(A), a simplified formula for calculating functional obsolescence is identified. That formula applies in this situation, curable functional obsolescence caused by a deficiency requiring a substitution or modernization. The formula is:

Functional obsolescence = physically depreciated reproduction cost of the property with a defect plus the excess cost to cure.

Functional obsolescence = $10,000 + $100,000 = $110,000.

The market value indicator for the subject sawmill from the reproduction cost approach is: Market Value = Reproduction cost new less physical depreciation less functional obsolescence

Reproduction Cost New		
Sawmill without sorter		= $8,000,000
Manual Sorter		$ 40,000
Total Reproduction Cost New		$ 8,040,000
Physical Depreciation		
Sawmill without sorter	$ 8,000,000 X 50%	= $ 4,000,000
Manual Sorter	$ 40,000 X 75%	$ 30,000
Total Physical Depreciation		$ 4,030,000
Market Value (total mill)	= $8,040,000 - $4,030,000 - $110,000	= $3,900,000

The market value indicator for the subject property from the replacement cost approach is:

Market Value = Replacement cost new less physical depreciation less cost to cure (or value of the loss, if less)

Replacement Cost New	
Sawmill without sorter	= $ 8,000,000
Replacement (Automatic) Sorter	$ 1,000,000
Total Replacement Cost New	$ 9,000,000

Physical Depreciation			
Sawmill without sorter	$ 8,000,000 X	50%	= $4,000,000
Replacement (Automatic) Sorter	$ 1,000,000 X	0%	$ 0
Total Physical Depreciation			$4,000,000
The Cost to Cure (or Value of the Loss, if less)			$1,100,000
Market Value (Total Mill) = $ 9,000,000 - $4,000,000 - $1,100,000			= $3,900,000

(d) ***Example 4*:**

This example is identical to Example 3 except the functional obsolescence is cured by installing a used machine.

A used automatic sorter can be purchased that would make this mill as efficient as the replacement mill. The cost of the used automatic sorter as installed during the construction of a new mill is $700,000. The used automatic sorter has a remaining life of 15 years. The cost to cure including the cost of purchasing the sorter, installing it in the subject mill, removing the existing manual sorting equipment less the salvage value of the existing manual sorting equipment is $800,000. This indicates an excess cost to cure of $100,000.

The calculation of functional obsolescence:

(A) Estimate the depreciated reproduction cost of the property with a deficiency requiring a substitution

Reproduction cost new of the existing manual sorter	$ 40,000
Less physical depreciation of the existing manual sorter	- $ 30,000
Equals the depreciated reproduction cost of the existing manual sorter	$ 10,000

(B) Less, the physically depreciated cost of the replacement property for the property with a deficiency requiring a substitution

Replacement cost new of the automatic sorter	$1,000,000
Less physical depreciation of the automatic sorter (from used market)	$ -300,000
Equals the depreciated replacement cost of the automatic sorter	$ 700,000

(C) Plus, the lesser of the cost to cure or the value of the Loss

The cost to cure	$ 800,000	$800,000
Or the value of the loss, if less	$1,200,000	

Functional obsolescence equals $10,000 - $700,000 + $800,000 = $110,000

The market value indicator for the subject sawmill from the reproduction cost approach is:

Market Value = Reproduction cost new less physical depreciation less functional obsolescence

Reproduction Cost New

Sawmill without sorter		= $8,000,000
Manual Sorter		$ 40,000
Total Reproduction Cost New		$8,040,000
Physical Depreciation		
Sawmill without sorter	$ 8,000,000 X 50%	= $4,000,000
Manual Sorter	$ 40,000 X 75%	$ 30,000
Total Physical Depreciation		$4,030,000
Market Value (total mill)	= $8,040,000 - $4,030,000 - $110,000	= $3,900,000

The market value indicator for the existing building from the replacement cost approach is:

Market Value = Replacement cost new less physical depreciation less cost to cure (or value of the loss, if less)

Replacement Cost New		
Sawmill without sorter		= $8,000,000
Replacement (Automatic) Sorter		$ 1,000,000
Total Reproduction Cost New		$ 9,000,000
Physical Depreciation		
Sawmill without sorter	$ 8,000,000 X 50%	= $4,000,000
Replacement (Automatic) Sorter	$ 1,000,000 X 30%	$300,000
Total Physical Depreciation		$ 4,300,000
Market Value (Total Mill)	= $ 9,000,000 - $4,300,000 - $800,000	= $3,900,000

(e) ***Example 5***:

A food processing plant lacks sufficient on-site cold storage. As a result the plant is required to rent storage space in an off-site cold-storage facility. Consequently, the plant has additional expenses for transporting products between the processing plant and the off-site cold-storage facility. The plant would save $150,000 per year in transportation costs. If the plant had sufficient on-site cold-storage space, the plant would save an additional $350,000 per year due to the difference between renting space ($450,000 per year) and operating an on-site cold-storage facility ($100,000 per year). The plant is expected to operate for 25 years from the date of the appraisal and the plant will continue to require cold-storage space as long as it operates. The plant site has sufficient land to construct an on-site cold-storage space. The estimated new cost to construct the on-site cold-storage space as of the appraisal date is $3,000,000. This is the same as the cost to construct the cold-storage space during new construction. Therefore, the excess cost to cure equals zero.

The value of the loss equals $2,723,110 which is the present value of the $500,000 annual excess costs capitalized at 10% for 25 years with a tax rate of 40%.

The calculation of functional obsolescence:

(A) Estimate the depreciated reproduction cost of the property with a deficiency requiring an addition

No cold-storage facility is included in the reproduction cost approach. This step equals $0.

(B) Less, the depreciated cost of the replacement property

Replacement cost new of the replacement cold-storage space		$3,000,000
Less physical depreciation of the replacement cold-storage space		- 0
Equals the depreciated cost of the replacement cold-storage space		$3,000,000

(C) Plus, the lesser of the cost to cure or the value of the loss

The cost to cure, or	$3,000,000	
The value of the loss, if less	$2,723,110	$ 2,723,110

Functional obsolescence in the reproduction cost approach equals $0 - $3,000,000 + $2,723,110 = -$276,890. The calculation of functional obsolescence yields a negative number. This is an indication that the investment in on-site cold-storage space is not financially justified. The plant is better off spending the annual costs associated with off-site storage rather than investing in a $3,000,000 storage facility. Since the number is less than or equal to zero, there is no functional obsolescence due to the lack of cold-storage space at this plant. No adjustment for functional obsolescence should be made to the depreciated reproduction cost of the subject property.

(f) ***Example 6***:

A manufacturing plant lacks the necessary pollution control equipment to clean the water discharged from the plant. The government agency responsible for overseeing the enforcement of environmental law is requiring the plant to install this equipment or face legal action. All other plants in this industry are required to meet the same discharge standards required of this plant. The company has developed a plan to retrofit this equipment in the plant. This functional obsolescence is considered curable because the plant will not be able to continue to operate without the new pollution control equipment. The cost to cure is $600,000 which includes $100,000 retrofit cost. This equipment when installed during new construction as of the appraisal date is $500,000.

The calculation of functional obsolescence using the simplified formula in subsection (1)(d)(B) of this rule:

Functional obsolescence equals the Excess Cost to Cure.

The excess cost to cure is the cost to cure ($600,000) less the cost to install the replacement equipment during new construction ($500,000). The functional obsolescence in the reproduction cost approach equals $100,000.