Valuation Manual
Tangible Capital Assets

Newfoundland and Labrador Municipalities

PSAB Working Committee
Department of Municipal Affairs

Newfoundland Labrador

Purpose of Manual

This valuation manual has been designed and compiled for one-time use only. The valuation methods described in this manual can be used to value infrastructure controlled by the municipality at December 31, 2007.

Beginning on January 1, 2008, all municipal infrastructure purchased, constructed or received by way of contribution must be recorded at actual cost or, in the case of contributed infrastructure, at the fair value of the contributed infrastructure at the time of contribution.

2007 Cost Information

The 2007 replacement and reproduction cost information contained in this manual was compiled by the Engineering Division of the Department of Municipal Affairs from a sample of municipal contracts awarded by both the Eastern and Western Regional offices. While it is understood that regional pricing disparities in municipal tenders awarded throughout the province do exist, the pricing information contained in this manual is to be used for the entire island portion of the province.

It has also been observed that infrastructure construction prices in the Labrador portion of the province are significantly in excess of those incurred on the island portion of the province. To recognize this price differential, it is recommended that all infrastructure pricing in this manual be increased by **30%** when being applied to infrastructure located in Labrador.

Contact Information

For further assistance on how to use this manual, or for questions on content, please contact:

General PSAB Line:	1-877-729-4393
E-mail:	PSAB@gov.nl.ca
Anthony Keeping	
PSAB Project Manager	(709) 729-3247
E-mail:	AnthonyKeeping@gov.nl.ca
Sheila Tulk	
PSAB Coordinator	(709) 729-4393
E-mail:	SheilaTulk@gov.nl.ca

For questions relating to infrastructure or the 2007 replacement or reproduction cost information, contact the Engineering Division of your Regional Office.

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1. Introduction

1.1 Purpose of this Guideline

This manual is prepared as a useful and practical reference tool for Town Clerks or CAOs in Newfoundland and Labrador to value assets prior to 2007. However, this is not intended to be the final authoritative source for the valuation of tangible capital assets ("TCA"). Municipalities are strongly encouraged to become familiar with the PS 3150 recommendations and discuss their Public Sector Accounting Board (PSAB) Generally Accepted Accounting Principles (GAAP) compliance and requirements with their auditors.

1.2 How to use this manual

This manual will provide valuation and amortization examples of various tangible capital assets listed in the asset classes within the "General Tangible Capital Assets Listing" from the "Newfoundland and Labrador PSAB Implementation: Reference Manual Tangible Capital Assets". When valuing and amortizing your TCA, it is intended that you replace the cost and acquisition year information of the TCA used in the example with that of the asset you are valuing. By following the same steps as indicated in the example, you will be able to work through the calculation to determine the estimated original TCA cost, the accumulated amortization and net book value of that asset as of December 31, 2007, for inclusion in your initial TCA inventory listing.

1.3 Background

TCA are a significant economic resource of municipalities and a key component in the delivery of many municipal government programs. Effective January 1st, 2009, all municipalities in Newfoundland and Labrador will be required to comply with the accounting pronouncements of the Public Sector Accounting Board ("PSAB"). These pronouncements will require all municipalities to document, value and amortize the TCA that they own and control. The recording and amortization of TCA represents the last major difference in PSAB GAAP between local and senior governments. Beginning on January 1, 2009 there will be "One GAAP for all levels of Governments", federal, provincial and municipal.

During the period of June 1st, to September 30th, 2008, municipalities have been accumulating initial inventory lists of the TCA which they possessed as of December 31, 2007. It is important to remember that your initial inventory listing should only include those assets held and controlled as at December 31, 2007. For these assets, there are a variety of valuation methods that can be employed. Each of these will be discussed later in this manual. However, TCA constructed or acquired during 2008 will have to be valued at actual acquisition or construction costs.

1.4 What are TCA?

The first step in this process has been to identify and list your municipalities Tangible Capital Assets (TCA). The Canadian Institute of Chartered Accountants ("CICA") Public Sector Accounting Handbook (PS 3150.05) defines TCA as non-financial assets having physical substance that:

- Are used in the production or supply of goods and services
- Have useful economic lives extending beyond one year
- Are to be used on a continuing basis; and
- Are not for sale in the ordinary course of operations.

TCA include such diverse items as equipment, computers, computer software, vehicles, buildings, land, roads, bridges, water and sewer systems, dams and canals.

TCA do not include intangible assets such as goodwill and copyrights, natural resources, crown lands that have not been purchased by the municipality and land held for resale.

Works of art and historical treasures that are worth preserving perpetually also would not be recognized as TCA. Works of art and historical treasures would include:

- Library collections
- Museum collections
- Paintings and sculptures
- Statues, monuments and plaques
- Antiques
- Arts and craft
- Historic buildings which are not being used to provide municipal services

Your municipality's TCA listing should include:

- A unique identifier for each asset listed
- A description of the asset
- The asset class to which the TCA belongs
- Year of acquisition or reconstruction
- Expected useful life at the time of acquisition
- Significant improvements made to the TCA since acquisition and the useful life of the improvement
- Estimated residual value, if any, on disposal

1.5 Valuation of your TCA

Now that the municipality has completed its initial tangible capital asset inventory listing, it is time to value those assets. However, before we discuss the various methods of valuing your TCA, we should examine the four guiding principles of the valuation of historical TCA.

1.6 The Guiding Principles to the Valuation of TCA

1st Principle:
The historical valuation of TCA is a process of making reasonable estimates and assumptions about the original TCA costs to meet audit requirements. Everyone, including the auditors, must understand that the initial valuation process is not an exercise in precision.

2nd Principle:
It is much more important to be accurate on a go-forward basis than it is to obtain exact costs for older assets. To facilitate the accuracy of TCA valuation on a go-forward basis, TCA

constructed or acquired during 2008 and thereafter will have to be valued at actual acquisition or construction cost.

3rd Principle:
It is not necessary to obtain cost information on TCA that have been in use beyond their estimated useful lives. These assets will be fully amortized at December 31, 2007.

However, as these assets are currently beyond their estimated useful lives, replacement of these assets should be considered immediately. If these assets are not replaced, at a minimum these assets should be examined to assess their current condition and to determine whether they remain capable of functioning effectively in their current capacity. In order to estimate future budgeting requirements, it would still be beneficial to value these fully amortized TCA. This valuation information could then be used in the budgeting decision at the time of the future replacement of these assets.

4th Principle:
The cost precision required for long-lived assets (buildings, infrastructure, etc.) decreases proportionately with the length of time the asset has been in use. Municipalities should be able to obtain detailed and precise cost information for buildings and infrastructure constructed in the recent past. However, if an asset has been in use for a lengthy period of time then the availability of cost information may be reduced. This is not critical, as the effect of older assets on the statements of financial position and operations will be of a short duration. Reasonable assumptions and estimates are sufficient for older long-lived assets.

1.7 Methods of Valuing TCA

Historical cost is the most appropriate method to value TCA because it is the most objective. It is the cash cost of acquiring an asset plus the additional costs to put the asset into service. Historical cost valuation requires municipalities to examine their past financial records to the extent they exist, in an attempt to identify the actual historical cost of the TCA included in their initial TCA listing.

Every municipality should perform an analysis of their capital funds to identify the historical cost of their listed TCA. This is a relatively simple way of identifying possible assets while at the same time obtaining information about the cost.

Consider the useful lives of the various asset classes when searching through the capital fund information for TCA acquisition costs. Many TCA could still be in use but be fully amortized at December 31, 2007. The useful life of an asset will indicate how far back a municipality should review the capital fund information to identify the cost of TCA held at December 31, 2007. It is not necessary to review the capital fund for TCA that have already exceeded their recommended useful lives. These TCA may have already been disposed of, or if still held, will have a net book value of nil in the municipality's financial statements. As the accumulated amortization and the cost of fully amortized TCA will offset, a reasonable estimate of the original cost of these assets will suffice.

Examples include:

Vehicles (useful life of 5 years) – January 1, 2003
Machinery & heavy equipment (15 years) – January 1, 1993
Computer hardware & software (4 years) – January 1, 2004

The donation of TCA to municipalities occurs on a regular basis. Property developers often install the municipal infrastructure and build the streets and parks for new subdivisions and then donate these TCA to the local government. As the historical costs of these donated assets will not be known, these TCA should be valued using one of the valuation methods discussed below. In the future, these donated or contributed TCA should be recorded at their fair value at the date of contribution. Fair value may be estimated using market or appraisal values or, for a more accurate representation of fair value, developers should be required to provide audited financial statements that indicate the values of the TCA that have been donated to the municipality. These audited financial statements will then act as the independent third party evidence that the municipality's auditors will rely on when auditing the municipality's TCA.

Because historical cost information may be incomplete, there are three alternative methods that can be used to estimate the historical cost of a TCA:

1. Discounted reproduction cost - is the cost of replacing a TCA with a substantially similar one, or the price of replacing the TCA in its present physical form and discounting the value to the date of original construction or acquisition.

2. Discounted replacement cost - is the cost of replacing a TCA with one that has substantially the same functionality but has a different physical form, or uses current technology and discounting the value to the date of original construction or acquisition.

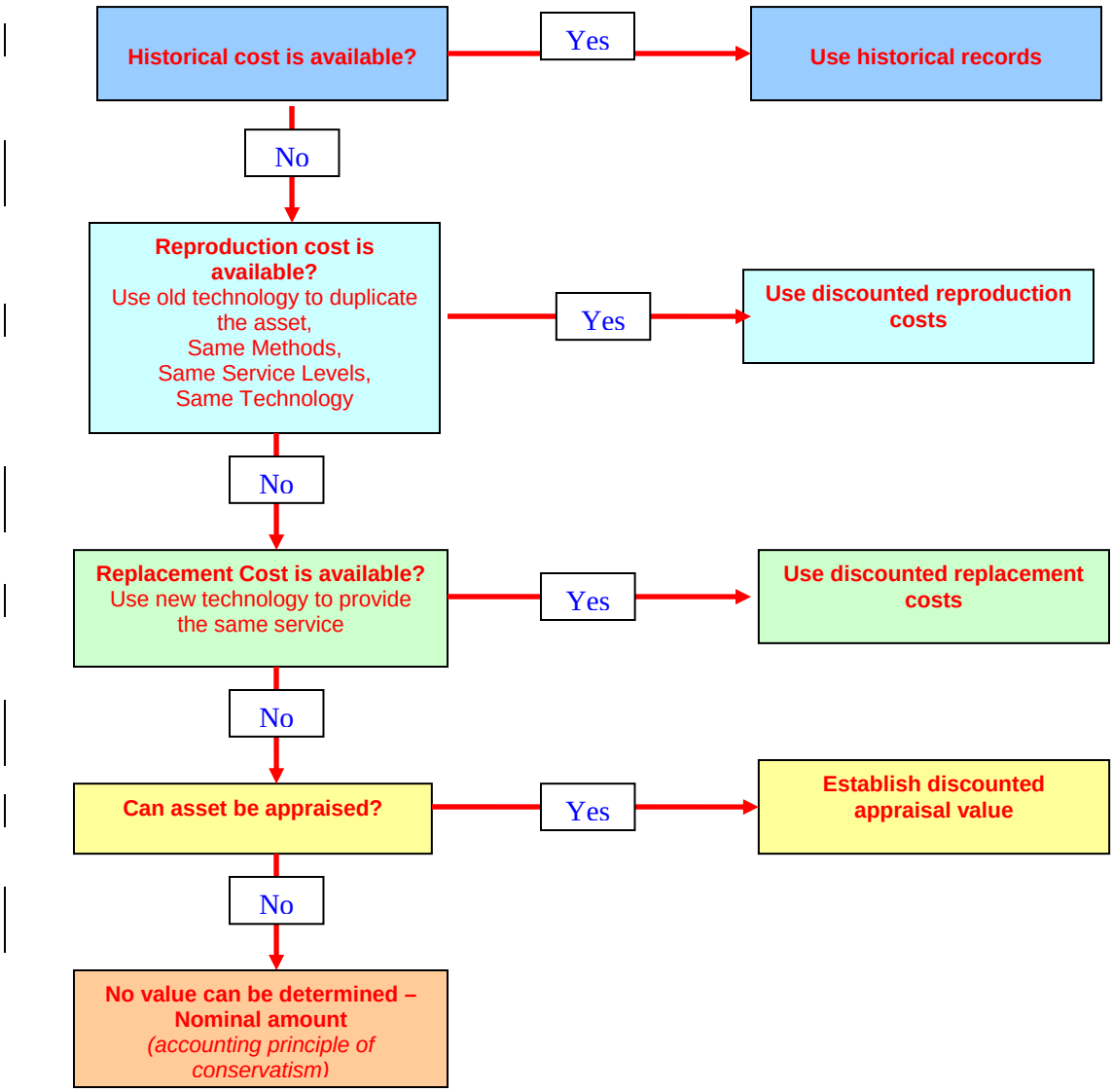
3. Discounted appraisal value - the current appraisal value of a parcel of land or building discounted to the date of the original construction or acquisition. Municipalities may already have appraisal values for insurance or property tax assessment purposes.

Nominal values should only be used if a municipality does not have historical cost information for the TCA or when cost information on comparable assets, to calculate the discounted reproduction, replacement or appraisal cost, is not available.

For NL municipalities, it is recommended to use the following overall valuation approach:

- Always use historical cost whenever the information is readily available;
- Use discounted replacement or reproduction cost if information on the historical cost is not available;
- Use discounted appraisal cost if discounted replacement or reproduction cost information is not available. The discounted appraisal cost should only be used for items that have a verifiable appraisal value, such as land or buildings. The appraisal must be completed by a qualified appraiser.
- Use nominal values if there is no information at all.

The Ontario Municipal Benchmarking Initiative (OMBI) has created a valuation decision tree to guide municipalities in the process of completing the initial valuation of their capital assets.



1.8 Year of Acquisition or Construction and Discount Rates

It may not always be possible to remember the exact year of acquisition or construction of a TCA. An examination should be made of the general ledger and the municipality's minute books and discussions conducted with past councilors or town clerks to attempt to determine as accurately as possible when a TCA was acquired or constructed. It is also important to remember that if an asset is well beyond its useful life it is not necessary to accurately determine its acquisition date, as the net book value of that asset in the municipality's financial statements will be nil. Also, the older a TCA the less significant it is that the year of acquisition or construction be exact. If a TCA was acquired during the 80's and it can be narrowed down to a four year council term, choose the midpoint. Due to discounting current costs back to the estimated acquisition date and then amortizing that cost forward to December 31, 2007 the effect of the estimated date being off by a year to two is minimal. It is more important to be accurate with the acquisition dates of TCA acquired or constructed in the last five years.

The year of acquisition is an important piece of information as it will determine the discounting factor that is applied to the TCA when calculating the discounted replacement, reproduction or appraisal cost as previously discussed. Every year has a unique discount rate. There are various discount rates that can be used to discount replacement, reproduction and appraisal values back to estimate the original costs of TCA. However, for consistency purposes, it is recommended that NL municipalities use the Canadian Consumer Price Index (See Appendix A).

1.9 Amortization

Once TCA have been valued using historical costs, discounted replacement, reproduction or appraisal values, the accumulated amortization for the period from which the TCA was entered into service up until December 31, 2007 must be calculated. All TCA, **except land**, have limited useful lives and, therefore, the cost of the TCA must be amortized over the period that the TCA is expected to provide services to the public. The cost of a TCA has to be amortized in a rational and systematic manner over the useful life of the asset. Where it is expected that the residual (i.e. scrap) value of the TCA upon final disposal will be significant, the residual value should be factored into the calculation of amortization.

When calculating amortization, the cost of a TCA, less any material or significant residual value, should be amortized over the useful life of the TCA. Amortization costs should be accounted for as an expense in the statement of operations.

The difference between the initial cost of a TCA and its accumulated amortization to date is its unamortized balance or net book value (NBV).

In order to promote consistency and comparability across municipalities, the Department of Municipal Affairs recommends that all municipalities use the straight-line method to calculate amortization. This method is the simplest to calculate and assumes that the use of the asset is constant over its useful life. Straight-line amortization is calculated by dividing a TCA original cost, less its residual value, if any, by its estimated useful life in years. If a specific in-service date cannot be ascertained for a TCA, then 6 months of amortization should be recorded in the year of acquisition. In other words, the date of acquisition is July 1st.

A significant amount of municipal infrastructure was originally built in the 50's, 60's & 70's. For many smaller municipalities there has been very little in the way of capital replacement or expansion projects since that time. The infrastructure in these municipalities is still being used but is fully amortized at December 31, 2007. The inclusion or omission of this infrastructure from a municipality's inventory list of TCA would have no effect on the balance sheet at December 31, 2007 or future income statements. However, infrastructure assets such as roads, streets, water systems and sewers represent significant capital investments and are used to provide essential services to the public. Because of this, they should be included in a municipality's inventory listing of TCA at December 31, 2007 even though their inclusion has no effect on the surplus or future operating results. Their inclusion as part of a municipality's listing of TCA will provide beneficial information for future capital investment planning and replacement purposes.

1.10 Useful Life

In order to properly amortize TCA, municipalities must determine an estimate of the useful life of that TCA. The length of the useful life for a TCA will depend on the asset quality and its intended use. In order to promote consistency and comparability across municipalities, the Department of Municipal Affairs has provided the useful life information for all TCA contained in the "General Tangible Capital Assets Listing" in the "Reference Manual Tangible Capital Assets". It is recommended that Municipalities use a useful life not greater than the recommended maximum in the Tangible Capital Asset Reference Manual.

However, if a municipality can substantiate to the satisfaction of their auditor that, in their experience, the useful life that they obtain from a particular TCA is in excess of the useful life indicated in the Reference Manual, then the municipality is permitted to use the extended useful life. It is expected that situations where this will arise will be rare.

2. Road Infrastructure

2.1 Roads

Road infrastructure represents a significant investment on the part of municipalities. Roads are generally expensive to build and maintain and, along with water quality, are at the forefront of public opinion when judging the performance of a government. Because of this, roads are usually given a high priority during budgeting and funding allocation discussions.

Roads can be either paved or gravel and can be classified according to their expected level of use. Common classifications of roads are residential, collector and main thoroughfare.

The valuation of all roads is a similar process. The road is comprised of the road grade or bed, the asphalt surface, sidewalks, curbs and gutters. The only substantial difference in road valuation is for gravel roads which are discussed in section 2.1D.

For TCA purposes, road infrastructure can be subdivided into various components. There is the land contained under the road, the road grade and the road surface. Even the road surface can be further subdivided into smaller components; the asphalt surface, sidewalks, curbs and gutters. This manual will address each of these components individually.

2.1A Residential Roads

Residential roads are access ways through urban areas where the predominant land use is for housing. Traffic volumes on residential roads are generally low as it is mainly the residents living in the area who will be using the road. Because of this, residential roads have an average useful life of 20 years, which is the longest useful life of any type of road. Road C on the Above Ground Infrastructure map (See Appendix C) would be an example of a residential road. It has limited access and would not be used for through traffic.

Many residential roads are not constructed by the municipality. In many cases, developers construct the road under the supervision of the municipality as part of the development of a subdivision. When the construction in the subdivision is complete, the developer will lay the final recap on the road and then contribute the road to the municipality. It is at the time of

contribution that the municipality becomes responsible for the road and must record it in the municipality's accounting records.

For residential roads that have been contributed by developers or constructed by the municipality and the original construction invoice or contract cannot be located, the residential road should be valued using the discounted reproduction cost method. This cost method is used to calculate the estimated original cost, accumulated amortization and net book value for the road for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost of the road, the municipality will have to determine the year the road was acquired or constructed in order to apply the appropriate CPI discounting factor to the 2007 road construction costs provided.

For example, a municipality resurfaced Road C (See Appendix C) during 1994. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of acquisition or construction to December 31, 2007 for Road C must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the surface area of the road as pavement costs are provided in dollars per square meter. To calculate the m^2 of surface area, a municipal employee will have to measure the length of the road and its width at various points along the road. As this process does not have to be exact the surface area can then be calculated by multiplying the length of the road by the average of the various widths recorded. Road C in the Above Ground Infrastructure map has a pre-calculated surface area of 4,973.29 m^2. Once the surface area of the road has been calculated, the infrastructure unit price cost information per m^2 of paving should be determined (See Appendix B). This per m^2 unit cost is then multiplied by the road surface area to arrive at the 2007 reproduction cost of the paving.

2007 Reproduction Cost:

Road Surface Area	4,973.29	m^2
2007 Reproduction Unit Cost	$ 37.00	$/m^2$
2007 Reproduction Cost	$ 184,012	

This 2007 cost is then discounted back to 1994 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 184,012	
1994 Discounting factor	76.86%	(from Appendix A)
	141,432	
Estimated GST paid (7%)	9,900	(See Appendix H)
Estimated RST paid (12.84%)	18,160	
GST rebate received (4%)	(5,657)	
Estimated original cost	$ 163,835	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", residential roads have a useful life of 20 years. Therefore, the annual amortization on the residential road is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 163,835	/	20 years	=	$ 8,192 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the residential road is calculated as:

1994 (1/2 year)	$ 4,096
1995 - 2007 (13 years) (13 years x $8,192/yr)	106,496
Accumulated Amortization	$ 110,592

The amounts that would be recorded in the municipality's TCA inventory listing for Road C pavement at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Road C			
Pave C	$ 163,835	$ 110,592	$ 53,243

2.1B Collector Roads

Collector roads are access ways to urban areas where the primary function of the road is to "collect" traffic from the residential areas for traffic flow purposes and provide direct access to main thoroughfares. Traffic volume on collector roads is moderate as most traffic is related to residents living in the area on the connected residential streets. Because of this, collector roads tend to have an average useful life of 15 years, which is a shorter useful life than residential roads. Road A on the Above Ground Infrastructure map (See Appendix C) is an example of a collector road. It "collects" traffic from the connected residential streets and provides access to the main thoroughfare that runs through the municipality.

Most collector roads are constructed by the municipality either through their own resources or as part of a cost shared capital works program with the provincial government. In either instance, it is the municipality who is responsible for the snow clearing and road maintenance and it is the municipality who must record the road in its TCA listing. The road is recorded at its gross cost in the municipality's accounting records even if it was constructed under a shared capital works project.

For collector roads that have been constructed under a shared capital works project and for municipally constructed roads, where the original construction invoice or contract cannot be

located, the collector road should be valued using the discounted reproduction cost method. The valuation process is identical to the process for valuing residential roads.

The discounted reproduction cost method is used to calculate the estimated original cost, accumulated amortization and net book value of a collector road for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original construction cost, the municipality will have to determine the year the road was constructed in order to apply the appropriate CPI discounting factor to the 2007 road construction costs provided.

For example, a municipality resurfaced Road A (See Appendix C) during 1998. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of resurfacing to December 31, 2007 for Road A must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the surface area of the road as pavement costs are provided in dollars per square meter. To calculate the m^2 of surface area, a municipal employee will have to measure the length of the road and its width at various points along the road. As this process does not have to be exact the surface area can then be calculated by multiplying the length of the road by the average of the various widths recorded. Road A in the Above Ground Infrastructure map has been segmented into three separate assets (See 2.5: Segmentation of Network Systems). For inclusion in the initial TCA inventory all three assets will be valued and amortized. Road A has three separate pre-calculated surface areas of 5,730.52 m^2, 1,008.42 m^2 and 2,120.15 m^2. Once the surface area of the road has been calculated, the infrastructure unit price cost information per m^2 of paving should be determined (See Appendix B). This per m^2 unit cost is then multiplied by the road surface area to arrive at the 2007 reproduction cost of the paving.

2007 Reproduction Cost:

	Pave A1	**Pave A2**	**Pave A3**
Road Surface Area	5,730.52 m^2	1,008.42 m^2	2,120.15 m^2
2007 Reproduction Unit Cost	$ 37.00/m^2	$ 37.00/m^2	$ 37.00/m^2
2007 Reproduction Cost	$ 212,029	$ 37,312	$ 78,446

This 2007 cost is then discounted back to 1998 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 212,029	$ 37,312	$ 78,446
1998 Discounting factor	81.88%	81.88%	81.88%
	173,609	30,551	64,232
Estimated HST paid (15%)	26,041	4,583	9,635
GST rebate received (4%)	(6,944)	(1,222)	(2,569)
Estimated original cost	$ 192,706	$ 33,912	$ 71,298

For HST and GST rebate information, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", collector roads have a useful life of 15 years. Therefore, the annual amortization on each segment of the collector road is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Road A					
Pave A1	$ 192,706	/	15 years	=	$ 12,847 / year
Pave A2	$ 33,912	/	15 years	=	$ 2,261 / year
Pave A3	$ 71,298	/	15 years	=	$ 4,753 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the collector road segments is calculated as:

	Pave A1	**Pave A2**	**Pave A3**
Annual Amortization	$ 12,847	$ 2,261	$ 4,753
1998 (1/2 year)	$ 6,424	1,131	2,377
1999 - 2007 (9 years) Annual Amortization	12,847 x 9 yrs	2,261 x 9 yrs	4,753 x 9 yrs
(9 years x $ Annual/year)	115,623	20,349	42,777
Accumulated Amortization	$ 122,047	$ 21,480	$ 45,154

The amounts that would be recorded in the municipality's TCA inventory listing for Road A pavement at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Pave A1	$ 192,706	$ 122,047	$ 70,659
Pave A2	$ 33,912	$ 21,480	$ 12,432
Pave A3	$ 71,298	$ 45,154	$ 26,144

2.1C Main Thoroughfare Roads

Main thoroughfare roads are the main access ways through a municipality. These roads typically have very high traffic volumes. In larger municipalities, these roads are typically multilane in each direction due to the high traffic volumes. The traffic flow is a mixture of residential commuters and business access. In most smaller municipalities the main thoroughfare will be the responsibility of the Province and as such the road will not appear in the municipality's TCA inventory listing. Examples of main thoroughfares would include Columbus Drive (St. John's), Topsail Road (St. John's & Mount Pearl) and O'Connell Drive (Corner Brook). Due to the high traffic volumes main thoroughfare roads have the shortest useful life of any type of road, which is 12 years. The main thoroughfare road on the Above Ground Infrastructure map (See Appendix C) is a Provincial road and would not be included in the municipality's TCA inventory listing. To provide a sample calculation Road B on the Above Ground Infrastructure map (See Appendix C) will be treated as a main thoroughfare road for the purposes of this example only.

Due to the cost of main thoroughfare roads, they are almost always constructed as part of a cost shared capital works program with the provincial government. However, for main thoroughfare roads that fall under municipal control it is the municipality who must record the road in its TCA listing. The road is recorded at its gross cost in the municipality's accounting records even if it was constructed under a shared capital works project.

For previously constructed main thoroughfare roads where the original construction invoice or contract cannot be located, the road should be valued using the discounted reproduction cost method. The valuation method is identical to the process for valuing both residential and collector roads. This valuation method is used to calculate the estimated original cost, accumulated amortization and net book value of the road for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost, the municipality will have to determine the year the road was constructed in order to apply the appropriate CPI discounting factor to the 2007 road construction costs provided.

For example, a municipality constructed Road B (See Appendix C) during 2000. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for Road B must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the surface area of the road as pavement costs are provided in dollars per square meter. To calculate the m^2 of surface area, a municipal employee will have to measure the length of the road and its width at various points along the road. As this process does not have to be exact, the surface area can then be calculated by multiplying the length of the road by the average of the various widths recorded. Road B in the Above Ground Infrastructure map has a pre-calculated surface area of 8,581.65 m^2. Once the surface area of the road has been calculated, the infrastructure unit price cost information per m^2 of paving should be determined (See Appendix B). This per m^2 unit cost is then multiplied by the road surface area to arrive at the 2007 reproduction cost of the paving.

2007 Reproduction Cost:

Road B Surface Area	8,581.65	m^2
2007 Reproduction Unit Cost	$ 37.00	$/m^2$
2007 Reproduction Cost	$ 317,521	

This 2007 cost is then discounted back to 2000 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 317,521	
2000 Discounting factor	85.56%	(from Appendix A)
	271,671	
Estimated HST paid (15%)	40,751	(See Appendix H)
GST rebate received (4%)	(10,867)	
Estimated original cost	$ 301,555	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", main thoroughfare roads have a useful life of 12 years. Therefore, the annual amortization of the Road B pavement is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 301,555	/	12 years	=	$ 25,130/year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Road B pavement is calculated as:

2000 (1/2 year)	$ 12,565
2001 - 2007 (7 years) (7 years x $25,130/yr)	175,910
Accumulated Amortization	$ 188,475

The amounts that would be recorded in the municipality's TCA inventory listing for Road B pavement at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Road B			
Pave B	$ 301,555	$ 188,475	$ 113,080

2.1D Gravel Roads

In the case of gravel roads there can be one or two TCA components, depending on how the municipality classifies the driving surface of the gravel road. A two component road is comprised of the road grade and driving surface, whereas a one component road is comprised of only the road grade. The driving surface of a gravel road is comprised of a granular topping material, mainly maintenance grade 3 or class A material. This is applied to a thickness of approximately 50 - 100 mm. This material provides a smoother driving surface and usually lasts four to five years before it is eroded, graded off or plowed into the ditches.

In addition to the rebuilding of the driving surface in five year intervals, there is some regular annual maintenance required on a gravel road. This typically consists of the addition of granular material to the gravel road to keep it topped up. Also, the road is graded to bring the granular material back from the sides where, due to traffic movement, it tends to get pushed off over the course of the year. The regular annual maintenance on the road in the form of adding additional aggregate to the surface and/or grading will be classified as repairs and maintenance. These maintenance procedures are usually completed to keep the road in a usable condition and, therefore, are not a betterment. Unless there is a substantial reconstruction of a gravel road, the only time a gravel road becomes a capital item is during the initial construction or during the road surface rebuild in five year intervals. At these times, the cost of the construction is capitalized and amortized over its useful life. When there is a substantial reconstruction of a gravel road or a road surface rebuild, two TCA transactions occur. The original gravel road or surface is deemed to be disposed of, which results in the cost and accumulated amortization of that TCA being removed from the accounting records. The reconstruction costs for the road or road surface are then capitalized and amortized over their estimated useful lives. The costing and amortization of a gravel road (road grade) is further discussed in section 2.1E.

Due to the difficulty in separating the costs of rebuilding the road surface at five year intervals from the annual maintenance that is performed, it may not be possible for a municipality to accurately account for each of these processes. If the costs of each of the processes cannot be readily determined, then these costs should both be treated as repairs and maintenance expense. If the costs associated with the road surface rebuild are significant and readily determinable they can be capitalized and valued in accordance with the procedures outlined in Appendix B. The amount capitalized would then be amortized over five years.

In instances where the calculation of the rebuilding of a gravel road surface is required, the cost of rebuilding that surface is calculated based upon the number of cubic meters of granular material that is added to the road. To do this, the municipality is required to measure the section of the gravel road surface that was rebuilt and calculate the surface area. Once the surface area has been calculated, the depth of the granular material added is measured. Multiplying the surface area of the section times the depth of the granular material will provided the number of m^3 of granular material that was added.

To then calculate the 2007 replacement cost, the number of m^3 of granular material is multiplied by the cost per m^3 of granular material as indicated above. The 2007 replacement cost is then discounted based upon the appropriate CPI discounting factor. The final step to calculate the estimated original cost is the addition of the HST net of the rebate for the GST portion.

Since the useful life of a gravel road surface is limited to five years it is not necessary to value the road surface of any gravel road that has not had a road surface rebuild in the last five years.

For example, a municipality constructed Road D (See Appendix C) during 1988. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for Road D must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to determine the number of lanes that comprise the gravel road as the cost provided for the construction of gravel roads is on a per lane m basis. Road D in the Above Ground Infrastructure map is a two lane road with a pre-calculated center line length of 679.95 m. Once the center line length of the road has been calculated, the infrastructure unit price cost information per lane meter should be determined (See Appendix B). This per lane meter unit cost is then multiplied by the center line length to arrive at the 2007 reproduction cost for the road.

2007 Reproduction Cost:

Road D Center Line Length	679.95	m
2007 Reproduction Unit Cost	$ 100	/ Lane m
	67,995	
Road D: Two lanes	x 2	
2007 Reproduction Cost	$ 135,990	

This 2007 cost is then discounted back to 1988 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 135,990	
1988 Discounting factor	63.86%	(from Appendix A)
	86,843	
Estimated RST paid (12%)	10,421	(See Appendix H)
Estimated original cost	$ 97,264	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", road grades have a useful life of 30 years. Therefore, the annual amortization of the gravel road is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 97,264	/	30 years	=	$ 3,242 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the gravel road is calculated as:

1988 (1/2 year)	$ 1,621
1989 - 2007 (19 years) (19 years x $3,242/yr)	61,598
Accumulated Amortization	$ 63,219

The amounts that would be recorded in the municipality's TCA inventory listing for the Road C road grade at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Road D			
Gravel Road	$ 97,264	$ 63,219	$ 34,045

2.1E Road Grade (Bed)

A road grade is constructed underneath every road. The actual amount of construction required for a road grade is dependent upon the area where the construction is occurring. If the road grade is in a fairly level area and its height is in proportion to the surrounding area the construction costs will be minimal. If the road grade is required to be built up over the level of the surrounding area then the construction costs may be significant.

Where the road grade has been built up over the surrounding area, the valuation of the road grade should be calculated in an identical manner to that of the construction of a gravel road as indicated in section 2.1D.

Where the road grade is in a fairly level area and its height will be in proportion to the surrounding area, then the construction costs will be minimal and the road grade can be valued at a nominal value of $1.

An additional consideration that must be applied to road grades is that of age. The road grade does not necessarily have the same age as the paved surface of the road. Road grades have a longer useful life than the asphalt surface. As a result, a road could be resurfaced two or three times over the existing road grade. It is important for a municipality to determine if the last resurfacing of the road was limited to the paved surface itself or if it involved the substantial removal and reconstruction of the road grade. Where the last resurfacing involved the substantial removal and reconstruction of the road grade, then both the road grade and the paved surface will have the same construction year. In instances where the last resurfacing of the road was limited to the paved surface itself, the municipality will have to determine the construction date of the road grade as it will be earlier than the date of the resurfacing. The significance of the difference dates relates to the application of the CPI discounting factor. For roads where the pavement was resurfaced in a different year than the road grade was constructed, each will be discounted using a different CPI rate.

To complete this example, the manual will use the roads from sections 2.1A, 2.1B and 2.1C and calculate the discounted reproduction cost, accumulated amortization and net book value of the road grade for each of these roads.

For example, a municipality resurfaced Road A (collector) during 1998, constructed Road B (main thoroughfare) during 2000 and resurfaced Road C (residential) during 1994 (See Appendix C). The road grades Road A and Road C were constructed during 1983 and 1974, respectively. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for each road grade must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to determine the number of lanes that comprise the road grade as the cost provided for the construction of road grades is on a per lane meter basis. All roads in the Above Ground Infrastructure map are two lane roads. The center line lengths for Roads A1, A2, A3, B and C are 475.51 m, 67.52 m, 159.84 m, 555.95 m and 339.50 m, respectively. Once the center line length of the road has been calculated, the infrastructure unit price cost information per lane m should be determined (See Appendix B). This per lane meter unit cost is then multiplied by the center line length to arrive at the 2007 reproduction cost for the road.

However, in our example, Road C was constructed in 1974 in a fairly level area and its height was in proportion to the surrounding area. The construction of the road grade consisted of the application of six to eight inches of aggregate to a pre-existing road that had been in use since before the incorporation of the municipality. As the construction costs for this road grade were minimal, the road grade will be valued at a nominal value of $1.

The calculations for the remaining road grades are as follows:

2007 Reproduction Cost:

	Grade A1	**Grade A2**	**Grade A3**	**Grade B**
Road Center Line length	475.51 m	67.52 m	159.84 m	555.95 m
2007 Unit Cost ($100/Lane M)	$ 100 /m	$ 100 /m	$ 100 /m	$ 100 /m
	47,551	6,752	15,984	55,595
Roads A & B: Two lanes	x 2	x 2	x 2	x 2
2007 Reproduction Cost	$ 85,102	$ 13,504	$ 31,968	$ 111,190

The 2007 cost is then discounted back to the year on construction using the Canadian CPI table (See Appendix A).

Estimated Cost:

Year of Construction	1983	1983	1983	2000
2007 Reproduction Cost	$ 85,102	$ 13,504	$ 31,968	$ 111,190
CPI Discounting factor	52.11%	52.11%	52.11%	85.56%
	44,347	7,037	16,659	95,134
Estimated HST paid (15%)	-	-	-	14,270
Estimated RST paid (12%)	5,322	844	1,999	-
GST rebate received (4%)	-	-	-	(3,805)
Estimated original cost	$ 49,669	$ 7,881	$ 18,658	$ 105,599

For HST, RST and GST information, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", road grades have a useful life of 30 years. Therefore, the annual amortization on each road grade is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Grade A1	$ 49,669	/	30 years	=	$ 1,656 / year
Grade A2	$ 7,881	/	30 years	=	$ 263 / year
Grade A3	$ 18,658	/	30 years	=	$ 622 / year
Grade B	$ 105,599	/	30 years	=	$ 3,520 / year
Grade C	$ 1	/	30 years	=	$ 1 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the road grades is calculated as:

	Grade A1	**Grade A2**	**Grade A3**
Annual Amortization	$ 1,656	$ 263	$ 622
1983 (1/2 year)	$ 828	132	311
1984 - 2007 (24 years)			
Annual Amortization	1,656	263	622
	x 24 yrs	x 24 yrs	x 24 yrs
(24 years x $ Annual /year)	39,744	6,312	14,928
Accumulated Amortization	$ 40,572	$ 6,444	$ 15,239

	Grade B
Annual Amortization	$ 3,520
2000 (1/2 year)	1,760
2001 - 2007 (7 years)	
(7 years x $3,520/yr)	24,640
Accumulated Amortization	$ 26,400

	Grade C
Annual Amortization	$ 1
1974 (1/2 year)	1
1975 - 2007 (29.5 years) (29.5 years x $0/yr)	-
Accumulated Amortization	$ 1

The amounts that would be recorded in the municipality's TCA inventory listing for road grades at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Grade A1	$ 49,669	$ 40,572	$ 9,097
Grade A2	$ 7,881	$ 6,444	$ 1,437
Grade A3	$ 18,658	$ 15,239	$ 3,419
Grade B	$ 105,599	$ 26,400	$ 79,199
Grade C	$ 1	$ 1	$ -

2.2 Curb and Gutter

A curb is the raised edge where a sidewalk, road median or road shoulder meets the unraised street surface. The curb may be separated from the street surface by a gutter. The gutter is a depression which runs alongside the street, to divert rain and street-cleaning water away from the street and into a storm drain. The curb and gutter are typically made from concrete. The purpose of the curb and gutter is twofold; first to permit proper drainage of the road surface and secondly for safety, to keep motorists from driving onto the median or sidewalk.

There are two types of curbs: the basic curb where the pavement abuts the curb without a gutter and the combined curb and gutter, where both the curb and gutter are installed as a single component of infrastructure.

Many original curbs and gutters are not constructed by the municipality. In many cases, developers install the curb and gutter as a component of the road construction when developing a subdivision. When construction is complete and the subdivision is contributed to the municipality, the infrastructure becomes the responsibility of the municipality and must be recorded in the municipality's accounting records.

For curbs and gutters that have been contributed by developers or constructed by a municipality and the original construction invoice or contract cannot be located, the curb and gutter should be valued using the discounted reproduction valuation method. This valuation method is used

to calculate the estimated original cost, accumulated amortization and net book value for a TCA for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost, the municipality will have to determine the year that the curb and gutter was acquired from the developer or constructed in order to apply the appropriate CPI discounting factor to the 2007 curb and gutter construction costs provided.

For example, a municipality installed the curb and gutter along Fleet Street (See Appendix E) during 1987. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for the curb and gutter must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the curb and gutter as reproduction costs are provided in dollars per meter. This may require a municipal employee to physically inspect municipal streets and measure all curbs and gutters installed. Fleet Street in the Curb and Sidewalk Infrastructure map has pre-calculated curb and gutter lengths of 333.55 m and 307.17 m. Once the length has been measured, the infrastructure unit price cost information per M should be determined (See Appendix B). This per meter unit cost is then multiplied by the curb and gutter length to arrive at the 2007 reproduction cost.

Curb & Gutter

2007 Reproduction Cost:

	Fleet C&G 1	**Fleet C&G 2**
Curb & Gutter length	333.55 m	307.17 m
2007 Reproduction Unit Cost	$ 70.00 /m	$ 70.00 /m
2007 Reproduction Cost	$ 23,349	$ 21,502

This 2007 cost is then discounted back to 1987 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 23,349	$ 21,502
1987 Discounting factor	61.43%	61.43%
	14,343	13,209
Estimated RST paid (12%)	1,721	1,585
Estimated original cost	$ 16,064	$ 14,794

For RST information, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", curbs and gutters have a useful life of 30 years. Therefore, the annual amortization of the curbs and gutters is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Fleet C&G1	$ 16,064	/	30 years	=	$ 535 / year
Fleet C&G2	$ 14,794	/	30 years	=	$ 493 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the curbs and gutters is calculated as:

	Fleet C&G 1	**Fleet C&G 2**
Annual Amortization	$ 535	$ 493
1987 (1/2 year)	268	247
1988 - 2007 (20 years)		
Annual Amortization	535	493
(20 years x $ Annual /year)	x 20 yrs	x 20 yrs
	10,700	9,860
Accumulated Amortization	$ 10,968	$ 10,107

The amounts that would be recorded in the municipality's TCA inventory listing for Fleet Crescent curbs and gutters A at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Fleet C&G1	$ 16,064	$ 10,968	$ 5,096
Fleet C&G2	$ 14,794	$ 10,107	$ 4,687

Curb Only

For example, a municipality installed a curb only along Day Place (See Appendix E) during 1988.

2007 Reproduction Cost:

	Day Curb
Curb length	266.05 m
2007 Reproduction Unit Cost	$ 30 /m
2007 Reproduction Cost	$ 7,982

This 2007 cost is then discounted back to 1988 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 7,982	
1988 Discounting factor	63.86%	
	5,097	
Estimated RST paid (12%)	612	(See Appendix H)
Estimated original cost	$ 5,709	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", curbs have a useful life of 30 years. Therefore, the annual amortization on the Day Place curb is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Day Curb	$ 5,709	/	30 years	=	$ 190 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Day Place curb is calculated as:

	Day Curb
Annual Amortization	$ 190
1988 (1/2 year)	95
1989 - 2007 (19 years)	
Annual Amortization	190
(19 years x $ Annual/year)	x 19 yrs
	3,610
Accumulated Amortization	$ 3,705

The amounts that would be recorded in the municipality's TCA inventory listing for the curb on Day Place at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Day Curb	$ 5,709	$ 3,705	$ 2,004

2.3 Sidewalks

A sidewalk is a path for pedestrians that is situated alongside a road. The most common type of sidewalk consists of a poured concrete ribbon with cross-lying strain relief grooves at set intervals. The strain relief grooves act to minimize damage from temperature fluctuations, which can crack longer segments. The intervals also accommodate moderate changes in grade. However, freeze-thaw cycles and tree root growth can eventually result in damage which limits the useful life of a sidewalk.

Similar to curbs and gutters, many original sidewalks are not constructed by the municipality. In many cases developers install the sidewalk as a component of the road construction when developing a subdivision. When construction is complete and the subdivision is contributed to the municipality, the sidewalk maintenance becomes the responsibility of the municipality and must be recorded in the municipality's accounting records.

For sidewalks that have been contributed by developers or constructed by a municipally and the original construction invoice or contract cannot be located, the sidewalks should be valued using the discounted reproduction valuation method. This valuation method is used to calculate the estimated original cost, accumulated amortization and net book value for a TCA for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost of the sidewalk, the municipality will have to determine the year that the sidewalk was acquired from the developer or constructed in order to apply the appropriate CPI discounting factor to the 2007 sidewalk construction costs provided.

For example, a municipality installed the sidewalks along Smith Drive (See Appendix E) during 1985. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for the sidewalks must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the sidewalk as the 2007 reproduction costs are provided in dollars per meter. This may require a municipal employee to physically inspect municipal streets and measure all sidewalks installed. Smith Drive in the Curb and Sidewalk Infrastructure map has pre-calculated sidewalk lengths of 66.43 m, 65.20 m and 64.43 m. Once the length has been measured, the infrastructure unit price cost information per M should be determined (See Appendix B). This per meter unit cost is then multiplied by the sidewalk length to calculate the 2007 reproduction cost.

2007 Reproduction Cost:

	Smith Walk 1	**Smith Walk 2**	**Smith Walk 3**
Sidewalk length	66.43 m	65.20 m	64.43 m
2007 Reproduction Unit Cost	$ 120.00 /m	$ 120.00 /m	$ 120.00 /m
2007 Reproduction Cost	$ 7,972	$ 7,824	$ 7,732

This 2007 cost is then discounted back to 1985 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 7,972	$ 7,824	$ 7,732
1985 Discounting factor	56.50%	56.50%	56.50%
	4,504	4,421	4,369
Estimated RST paid (12%)	540	531	524
Estimated original cost	$ 5,044	$ 4,952	$ 4,893

For RST information, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", sidewalks have a useful life of 30 years. Therefore, the annual amortization of each segment of the sidewalk on Smith Drive is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Smith Walk 1	$ 5,044	/	30 years	=	$ 168 / year
Smith Walk 2	$ 4,952	/	30 years	=	$ 165 / year
Smith Walk 3	$ 4,893	/	30 years	=	$ 163 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the sidewalk segments is calculated as:

	Smith Walk 1	**Smith Walk 2**	**Smith Walk 3**
Annual Amortization	$ 168	$ 165	$ 163
1985 (1/2 year)	$ 84	83	82
1986 - 2007 (22 years) Annual Amortization	168 x 22 yrs	165 x 22 yrs	163 x 22 yrs
(22 years x $ Annual /year)	3,696	3,630	3,586
Accumulated Amortization	$ 3,780	$ 3,713	$ 3,668

The amounts that would be recorded in the municipality's TCA inventory listing for Smith Drive sidewalks at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Smith Walk 1	$ 5,044	$ 3,780	$ 1,264
Smith Walk 2	$ 4,952	$ 3,713	$ 1,239
Smith Walk 3	$ 4,893	$ 3,668	$ 1,225

2.4 Traffic Lights and Controls

The costs for traffic lights have risen dramatically over the last year. During 2006 and 2007 the cost to install a four pole set of traffic lights was approximately $100,000. During 2008, this cost has increased to $230,000 - $250,000. Because the 2006 and 2007 costs are more indicative of historical costs for traffic lights, these costs will be used to value traffic lights existing at the December 31, 2007 inventory date.

The cost of a set of traffic lights includes the actual invoice costs for the poles, traffic signals, pedestrian signals and traffic controller. It also includes the site preparation costs, concrete base and electrical work. The most significant cost associated with each set of traffic lights is the electrical work. For the purpose of valuing a set of traffic lights, these costs have been allocated to the poles and controller and are included in the total cost of each component.

For traffic lights that have been constructed by a municipally and the original construction invoice or contract cannot be located, the traffic lights should be valued using the discounted replacement valuation method. This valuation method is used to calculate the estimated original cost, accumulated amortization and net book value for a TCA for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost the municipality will have to determine the year that the traffic lights were installed in order to apply the appropriate CPI discounting factor to the 2007 traffic light replacement costs provided.

For example, a municipality installed a set of traffic lights during 2001 on the corner of Pearl Street and Admiral Drive. The traffic light operated on one traffic controller and was configured as follows:

11 Meter Pole on NE corner, containing:
- Two 3 light signals
- One 4 light signal
- One pedestrian signal

11 Meter Pole on SW corner, containing:
- Two 3 light signals
- Two pedestrian signals

3 Meter Pole on SE corner, containing:
- Two pedestrian signals

3 Meter Pole on N island, containing:
- Two 3 light signals

3 Meter Pole on NW corner, containing:
One pedestrian signal

At December 31, 2007, the discounted replacement cost, the accumulated amortization and the net book value from the date of installation to December 31, 2007 for the traffic lights must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to identify all components that are included in the set of traffic lights. The 2007 replacement costs provided for traffic lights recognizes that each set of traffic lights will be configured differently and will have its own unique components. This will require a municipal employee to physically inspect all traffic lights and document the configuration, as was done above. The individual component costs are then compiled based on the traffic light configuration to arrive at the 2007 replacement cost.

2007 Replacement Cost:

	Unit Cost	No. of Units	Total Cost
PS&AD TC			
Traffic Controller	$ 21,500	1	$ 21,500
PS&AD NE			
11 Meter Pole	$ 14,000	1	$ 14,000
Two 3 light signals	550	2	1,100
One 4 light signal	650	1	650
One pedestrian signal	750	1	750
			$ 16,500
PS&AD SW			
11 Meter Pole	$ 14,000	1	$ 14,000
Two 3 light signals	550	2	1,100
Two pedestrian signals	750	2	1,500
			$ 16,600
PS&AD SE			
3 Meter Pole	$ 3,500	1	$ 3,500
Two pedestrian signals	750	2	1,500
			$ 5,000
PS&AD NI			
3 Meter Pole	$ 3,500	1	$ 3,500
Two 3 light signals	550	2	1,100
			$ 4,600
PS&AD NW			
3 Meter Pole	$ 3,500	1	$ 3,500
One pedestrian signal	750	1	750
			$ 4,250

This 2007 cost is then discounted back to 2001 using the Canadian CPI table (See Appendix A).

Estimated Cost:

	PS&AD NW	PS&AD NI	PS&AD SE	PS&AD SW
2007 Reproduction Cost	$ 4,250	$ 4,600	$ 5,000	$ 16,600
2001 Discounting factor	87.71%	87.71%	87.71%	87.71%
	3,728	4,035	4,386	14,560
Estimated HST paid (15%)	559	605	658	2,184
HST rebate received (4%)	(149)	(161)	(175)	(582)
Estimated original cost	$ 4,138	$ 4,479	$ 4,869	$ 16,162

	PS&AD NE	PS&AD TC
2007 Reproduction Cost	$ 16,500	$ 21,500
2001 Discounting factor	87.71%	87.71%
	14,472	18,858
Estimated HST paid (15%)	2,171	2,829
HST rebate received (4%)	(579)	(754)
Estimated original cost	$ 16,064	$ 20,933

For information on HST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the “General Tangible Capital Assets Listing” contained in the “Reference Manual Tangible Capital Assets”, traffic lights have a useful life of 15 years. Therefore, the annual amortization on each traffic light is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
PS&AD TC	$ 20,933	/	15 years	=	$ 1,396 / year
PS&AD NE	$ 16,064	/	15 years	=	$ 1,071 / year
PS&AD NW	$ 4,138	/	15 years	=	$ 276 / year
PS&AD NI	$ 4,479	/	15 years	=	$ 299 / year
PS&AD SE	$ 4,869	/	15 years	=	$ 325 / year
PS&AD SW	$ 16,162	/	15 years	=	$ 1,077 / year

When calculating accumulated amortization on historical TCA only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the traffic lights is calculated as:

	PS&AD NW	PS&AD NI	PS&AD SE
Annual Amortization	$ 276	$ 299	$ 325
2001 (1/2 year)	$ 138	150	163
2002 - 2007 (6 years) Annual Amortization	276 x 6 yrs	299 x 6 yrs	325 x 6 yrs
(6 years x $ Annual /year)	1,656	1,794	1,950
Accumulated Amortization	$ 1,794	$ 1,944	$ 2,113

	PS&AD NE	PS&AD TC	PS&AD SW
Annual Amortization	$ 1,071	$ 1,396	$ 1,077
2001 (1/2 year)	$ 536	698	539
2002 - 2007 (6 years) Annual Amortization	1,071 x 6 yrs	1,396 x 6 yrs	1,077 x 6 yrs
(6 years x $ Annual /year)	6,426	8,376	6,462
Accumulated Amortization	$ 6,962	$ 9,074	$ 7,001

The amounts that would be recorded in the municipality's TCA inventory listing for traffic lights at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
PS&AD TC	$ 20,933	$ 9,074	$ 11,859
PS&AD NE	$ 16,064	$ 6,962	$ 9,102
PS&AD NW	$ 4,138	$ 1,794	$ 2,344
PS&AD NI	$ 4,479	$ 1,944	$ 2,535
PS&AD SE	$ 4,869	$ 2,113	$ 2,756
PS&AD SW	$ 16,162	$ 7,001	$ 9,161

2.5 Segmentation of Network Systems

Linear infrastructure assets, such as roads and water & sewer systems, are TCA that are arranged into a continuous and connected network. A municipality should consider breaking down their network systems into segments. Municipalities will have to decide on how to identify a segment.

Network systems are normally segmented in terms of location, age and type of material. Examples of segmentation include:

- Unit of measure (1 km, 500 m, 100 m is a segment)
- Geographic reference points (GPS coordinates)
- Starting & end point (streets: distance between intersections)
- Age (based on the date of construction)
- Material (pipes: plastic & ductile iron)

When recording network systems for the first time, the approach commonly used by municipalities is to record the network as a single asset. The value of that asset will gradually diminish due to amortization and disposals through asset replacement. Because the initial listing is one asset, the average age of the network is chosen as the age for the network. On a go-forward basis, a detailed asset listing should be kept as the original pool is replaced and expanded.

However, PSAB recommends that a reasonable amount of segmentation be utilized when accounting for infrastructure networks. A reasonable level of segmentation for a municipality's initial TCA listing would be to use project phases for water and sewer systems or individual roads to identify individual segments. Each phase or road represents a separate construction project completed on a specific section of the infrastructure network. The infrastructure in each phase would have a similar; age, useful life, type of material and expected date of replacement. Each road would have common characteristics such as number of lanes, width of sidewalks and whether gutters were used. If the municipality wanted to subdivide a phase or road into smaller segments, it could do so at a later date, as long as no major capital replacements are planned. If major capital replacements are planned in the near future, segmentation of the phase or road affected should be completed prior to the start of the capital project. By further segmenting its phases and roads, a municipality can effectively reclassify some projects that would have been deemed to be repairs and maintenance as capital items. By having smaller segments it is more likely that a replacement will result in the disposal of an old asset and the addition of a new asset. By recording the infrastructure network as one asset, in large phases or long roads, most replacement projects will be repairs and maintenance as they would not result in reduced operating costs, increased physical output or service capacity, extend the useful life or improve the quality of service of the overall network, phase or road asset. If the planned capital replacement is only affecting one existing phase or road, further segmentation could be completed for that phase or road, with the remaining phases and roads to follow at a later date.

The actual amount of segmentation utilized by a municipality will be completely up to the discretion of the municipality. The proper level of segmentation is a balance between the usefulness of information and the cost of acquiring and maintaining it. A point to remember is the more the municipality segments its infrastructure networks, the larger the number of TCA that it will have to track and amortize.

3. Wastewater and Storm Water Collection and Drainage Systems

3.1 Underground Infrastructure (Pipes)

Depending on the percentage of a community that is serviced with water distribution and wastewater collection systems, the cost of installing the underground infrastructure to provide these services can represent a significant investment on the part of municipalities. The two major differences between roads and underground infrastructure are that, unlike roads, underground infrastructure is not visible and it has a much longer useful life. Therefore, in the absence of service interruptions, replacement of underground infrastructure would not constitute a high priority during budgeting and funding allocation discussions. This can lead to significant budgetary shortfalls in the future when a system failure results in a substantial amount of underground infrastructure having to be replaced at the same time. To further compound this problem, the replacement of underground infrastructure will usually result in the destruction and replacement of the road under which the underground infrastructure is located.

To avoid situations where a road has recently been replaced and now must be cut through to replace underground infrastructure, it is very important that municipalities monitor both above and below ground infrastructure at the same time. It may be found that economies of scale can be utilized by combining the replacement of both infrastructures in the same year as each nears the end of its useful life.

When people think of below ground infrastructure they tend to think of pipes. While the pipes are a substantial component of the below ground infrastructure, there are also flow valves, manholes, laterals and lift stations – each with its own unique cost and useful life characteristics. For simplicity, the pricing of a meter of pipe provided in this manual contains all of these other items within the installed per meter cost. In the future, when a municipality replaces its wastewater or storm water collection systems they are encouraged to separately account for each of these components.

The valuation of all pipes is a similar process. The key measurements are the length, age and type of pipe being valued. When a municipality has determined these three key characteristics, the municipality can than look up the valuation and discounting information in this manual and calculate the estimated reproduction cost, the accumulated amortization and net book value of each asset at December 31, 2007.

Substantially, all wastewater and storm water collection systems installed in Newfoundland are comprised of plastic (PVC and HDPE) and metal corrugated pipes, respectively. Examples indicating the calculations of estimated reproduction cost, accumulated amortization and net book values at December 31, 2007 are provided in this manual for each type of pipe system. However, the calculations for all other types of pipes are very similar and merely requires the replacement of the pricing, length and age information used in the example with that of the actual pipe to be valued and amortized by the municipality.

This section of the manual addresses wastewater and storm water systems. The water distribution system will be explained later in Section 4.

3.1A Plastic: PVC

In Phase 5D there are two separate segments identified. Each will be separately valued and amortized.

For example, a municipality constructed Phase 5D (See Appendix D) of 200 mm PVC pipes during 1995. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 Phase 5D must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the wastewater pipes in Phase 5D, as the 2007 reproduction costs of pipes are provided in dollars per meter. If the engineering drawings are not available, a municipal employee will have to measure the length of the pipes by using the manholes as a guide. If the engineering drawings are available, the drawings will contain the length of pipe in the phase and the lengths for each individual segment. The next task is to determine the type of pipe that was installed during construction of the phase. The municipality's Maintenance Manager may know this information from having to inspect pipes or install laterals into the main line. Otherwise, this information may be determined from the municipality's engineering drawings. The final information required is the age of the infrastructure. If the engineering drawings are used, then the installation date will be contained on the drawings. Otherwise, the Town Clerk will have to rely on the Maintenance Manager or previous mayors/councilors to determine an estimate of when the phase was installed. Phase 5D in the Below Ground Infrastructure map has two separate pre-calculated lengths of 290 m and 140 m (See 2.5 Segmentation of Network Systems). Both segments will be valued and amortized for inclusion in the initial TCA inventory. Once the length of the pipe network has been calculated, the infrastructure unit price cost information per meter of PVC pipe should be determined (See Appendix B). This per meter unit cost is then multiplied by the length of each segment in the PVC pipe network length to arrive at the 2007 reproduction cost for the pipe network.

2007 Reproduction Cost:

	Waste 5D.1	**Waste 5D.2**
Phase 5D PVC length	290 M	140 M
2007 Reproduction Unit Cost	$ 346 /M	$ 346 /M
2007 Reproduction Cost	$ 100,340	$ 48,440

This 2007 cost is then discounted back to 1995 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 100,340	$ 48,440
1995 Discounting factor	78.57%	78.57%
	78,837	38,059
Estimated GST paid (7%)	5,519	2,664
Estimated RST paid (12.84%)	10,123	4,887
GST rebate received (4%)	(3,153)	(1,522)
Estimated original cost	$ 91,326	$ 44,088

For information on GST and RST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", PVC pipes have a useful life of 60 years. Therefore, the annual amortization on each segment of the PVC pipe network is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Waste 5D.1	$ 91,326	/	60 years	=	$ 1,522 / year
Waste 5D.2	$ 44,088	/	60 years	=	$ 735 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the PVC pipe network segments is calculated as:

	Waste 5D.1	**Waste 5D.2**
Annual Amortization	$ 1,522	$ 735
1995 (1/2 year)	$ 761	368
1996 - 2007 (12 years)		
Annual Amortization	1,522	735
	x 12 yrs	x 12 yrs
	18,264	8,820
Accumulated Amortization	$ 19,025	$ 9,188

The amounts that would be recorded in the municipality's TCA inventory listing for the Phase 5D PVC pipe network segments at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Phase 5D			
Waste 5D.1	$ 91,326	$ 19,025	$ 72,301
Waste 5D.2	$ 44,088	$ 9,188	$ 34,900

3.1B Corrugated Steel

Section 3.1A used the discounted reproduction cost method to calculate the estimated original cost, accumulated amortization and net book value for an entire phase for inclusion in the municipality's TCA inventory listing at December 31, 2007. It is also permissible to segment a phase if the information is available. As previously indicated in an earlier section, PSAB

recommends that municipalities utilize a reasonable amount of segmentation when accounting for infrastructure networks. However, the actual amount of segmentation utilized by a municipality will be completely up to the discretion of the municipality. The proper level of segmentation is a balance between the usefulness of the information and the cost of acquiring and maintaining it. In Phase 4C there are three separate segments identified. Each will be separately valued and amortized.

The Below Ground Infrastructure map in Appendix D does not contain a storm water drainage system. For the purpose of providing an example of the calculations required to value and amortize a storm water drainage system, this section will treat the wastewater system in Phase 4C as a storm water drainage system. The actual calculation steps to value and amortize a wastewater versus a storm water system are identical. It is only the replacement cost information that will change.

For example, a municipality constructed Phase 4C (See Appendix D) of 300 mm corrugated steel pipes during 1985. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for Phase 4C must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the storm water pipes in Phase 4C as the 2007 reproduction costs of pipes are provided in dollars per meter. If the engineering drawings are not available, a municipal employee will have to measure the length of the pipes by using the storm drains as a guide. If the engineering drawings are available for the phase, the drawings will contain the length of pipe in the phase and the lengths for each individual segment. The next task is to determine the type of pipe that was installed during construction of the phase. The municipality's Maintenance Manager may know this information from having to repair leaks or remove debris from the main line. Otherwise, this information may be determined from the municipality's engineering drawings. The final information required is the age of the infrastructure. If the engineering drawings are used, then the installation date will be contained on the drawings. Otherwise, the Town Clerk will have to rely on the Maintenance Manager or previous mayors/councilors to determine an estimate of when the phase was installed. Phase 4C in the Below Ground Infrastructure map has three separate pre-calculated lengths of 559, 569 & 84 m (See 2.5: Segmentation of Network Systems). For inclusion in the initial TCA inventory, all three assets will be valued and amortized. Once the length of the pipe network has been calculated, the infrastructure unit price cost information per meter of corrugated steel pipes should be determined (See Appendix B). This per meter unit cost is then multiplied by the length of each segment in the storm water pipe network length to arrive at the 2007 reproduction cost for the pipe network.

The municipality has adopted the policy of valuing all storm drains as separate assets from the storm water collection pipe network. Therefore, when valuing the pipe network, the municipality will use the lower cost per meter price that does not include the cost of constructing the storm drains.

2007 Reproduction Cost:

	Storm 4C.1	**Storm 4C.2**	**Storm 4C.3**
Phase 4C DI length	559 m	569 m	84 m
2007 Reproduction Unit Cost	$ 58 /m	$ 58 /m	$ 58 /m

2007 Reproduction Cost	$ 32,422	$ 33,002	$ 4,872

This 2007 cost is then discounted back to 1985 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 32,422	$ 33,002	$ 4,872
1985 Discounting factor	56.50%	56.50%	56.50%
	18,318	18,646	2,753
Estimated RST paid (12%)	2,198	2,238	330
Estimated original cost	$ 20,516	$ 20,884	$ 3,083

For information on RST, please see Appendix H.

Accumulated Amortization:

The useful life information for corrugated steel pipes is not included in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets". However, it has been determined that corrugated steel pipes have a useful life of 20 years. Therefore, the annual amortization on each segment of the corrugated steel pipe network is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Storm 4C.1	$ 20,516	/	20 years	=	$ 1,026 / year
Storm 4C.2	$ 20,884	/	20 years	=	$ 1,044 / year
Strom 4C.3	$ 3,083	/	20 years	=	$ 154 / year

However, in this example the storm water collection system was installed in 1985, 22 years ago. The original corrugated steel storm pipes installed in this phases are now beyond their useful lives and will be fully amortized. Therefore, the calculation of accumulated amortization is not required. If the corrugated steel pipes had a portion of their useful lives remaining, accumulated amortization would be calculated in exactly the same manner as the calculation of accumulated amortization for PVC pipes (See Section 3.1A: Plastic: PVC).

The amounts that would be recorded in the municipality's TCA inventory listing for the corrugated steel pipe network segments at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Phase 4C			
Strom 4C.1	$ 20,516	$ 20,516	$ -
Storm 4C.2	$ 20,884	$ 20,884	$ -
Storm 4C.3	$ 3,083	$ 3,083	$ -

3.2 Ditching

In many rural areas, municipalities do not have storm drainage systems as part of their municipal infrastructure. Instead, these municipalities rely on a series of ditches to control surface water run-off. While ditching is not a piece of infrastructure that is installed, it is created through the use of heavy machinery. Even though ditching does not have any parts that can wear out, it does have a finite useful life. Ditching gradually gets filled in through the adding of shoulders to roads, the process of grading these shoulders and also from the growth of shrubs and grass within the ditch itself. All of these elements act to slowly fill in a ditch so that the ditching has to be redone in the future.

For example, a municipality constructed the ditches along both sides of Road D (See Appendix C) during 1999. At December 31, 2007, the discounted replacement cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for the Road D ditches must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the ditches along Road D as the 2007 replacement cost of ditching is provided in dollars per meter. To calculate the length of the ditches along the road, a municipal employee will have to measure the length of the road. The age of the ditches (date the ditches were originally dug) will also be required. Road D in the Above Ground Infrastructure map has a pre-calculated length of 679.95 m (See 2.5: Segmentation of Network Systems). The ditches along both sides of Road D will be valued and amortized for inclusion in the initial TCA inventory. Once the length of the ditch has been calculated, the infrastructure unit price cost information per meter of ditching should be determined (See Appendix B). This per meter unit cost is then multiplied by the length of each segment of the ditch to arrive at the 2007 replacement cost for the ditch.

2007 Reproduction Cost:

	Ditch DW		Ditch DE	
Length of Ditching	679.95	m	679.95	m
2007 Reproduction Unit Cost	$ 9.00	/m	$ 9.00	/m
2007 Reproduction Cost	$ 6,120		$ 6,120	

This 2007 cost is then discounted back to 1999 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 6,120	$ 6,120
1999 Discounting factor	83.32%	83.32%
	5,099	5,099
Estimated HST paid (15%)	765	765
GST rebate received (4%)	(204)	(204)
Estimated original cost	$ 5,660	$ 5,660

For information on HST and GST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", ditching has a useful life of 50 years. Therefore, the annual amortization on each segment of the Road D ditches is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Ditch DW	$ 5,660	/	50 years	=	$ 113 / year
Ditch DE	$ 5,660	/	50 years	=	$ 113 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Road D ditches is calculated as:

	Ditch DW	**Ditch DE**
Annual Amortization	$ 113	$ 113
1999 (1/2 year)	$ 57	57
2000 - 2007 (8 years) Annual Amortization	113 x 8 yrs	113 x 8 yrs
	904	904
Accumulated Amortization	$ 961	$ 961

The amounts that would be recorded in the municipality's TCA inventory listing for Road D ditches December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Road D			
Ditch DW	$ 5,660	$ 961	$ 4,699
Ditch DE	$ 5,660	$ 961	$ 4,699

3.3 Manholes and Storm Drains

A manhole is the top opening to an underground utility vault that provides an access point for making connections and performing maintenance on underground wastewater connections and storm drains. It is protected by a manhole cover, which is a metal plug designed to prevent accidental or unauthorized access to the manhole. Manholes are generally found in streets and

occasionally under sidewalks. They are usually in circular shape to prevent an accidental fall of the cover into the hole.

A storm drain is designed to drain excess rain and ground water from paved streets, parking lots, and sidewalks. Storm drains vary in design from small residential dry wells to large municipal systems. A storm drain is fed by gutters located on most streets and residential roads. Storm drains can also be found in areas which experience heavy rainfall or flooding and in coastal towns which experience regular storms.

The cost of manholes and storm drains can be included in the value of the underground wastewater or storm water pipe network, or each can be valued and amortized separately as an individual component of that network. How manholes and storm drains are valued affects the valuation of the underground network itself, therefore, care should be taken when valuing each system to ensure that the appropriate costs are used in relation to the decision of whether to value these components separately or as an all inclusive network.

If valued separately manholes and storm drains with an average height of 2 - 2.5 m have a 2007 replacement cost of $5,000 each.

For example, a municipality constructed Phase 3B and Phase 4C of the wastewater collection system (See Appendix D) during 1980 and 1985, respectively. To value the manholes in these phases, the municipality will have to calculate the discounted replacement cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 The manholes will be then included in the municipality's initial TCA inventory listing as a separate TCA from the network system.

Phase 3B contains four manholes and phase 4C contains four manholes. For each phase, the valuation only has to be calculated on one manhole as each manhole in that phase will have the same discounted replacement cost and accumulated amortization.

The calculations below are for manholes; however, the calculations for storm drains are completed in exactly the same manner.

The 2007 replacement cost of a manhole or storm drain is $5,000.

This 2007 cost is then discounted back to the year of construction using the Canadian CPI table (See Appendix A).

Estimated Cost:

	Phase 3B	**Phase 4C**
2007 Reproduction Cost	$ 5,000	$ 5,000
Discounting factor (3B: 1980, 4C: 1985)	39.46%	56.50%
	1,973	2,825
Estimated RST paid (12%)	237	339
Estimated original cost	$ 2,210	$ 3,164

For information on RST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", manholes have a useful life of 40 years. Therefore, the annual amortization on each manhole is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Phase 3B	$ 2,210	/	40 years	=	$ 55 / year
Phase 4C	$ 3,164	/	40 years	=	$ 79 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the manholes is calculated as:

	Phase 3B	**Phase 4C**
Annual Amortization	$ 55	$ 79
Year of Construction (1/2 year) (3B: 1980, 4C: 1985)	$ 28	40
Phase 3B: 1981 - 2007 (27 years) Phase 4C: 1986 - 2007 (22 years) Annual Amortization	55 x 27 yrs	79 x 22 yrs
	1,485	1,738
Accumulated Amortization	$ 1,513	$ 1,778

The amounts that would be recorded in the municipality's TCA inventory listing for manholes at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Phase 3B			
Manhole 3B.1	$ 2,210	$ 1,513	$ 697
Manhole 3B.2	$ 2,210	$ 1,513	$ 697
Manhole 3B.3	$ 2,210	$ 1,513	$ 697
Manhole 3B.4	$ 2,210	$ 1,513	$ 697

Phase 4C			
Manhole 4C.1	$ 3,164	$ 1,778	$ 1,386
Manhole 4C.2	$ 3,164	$ 1,778	$ 1,386
Manhole 4C.3	$ 3,164	$ 1,778	$ 1,386
Manhole 4C.4	$ 3,164	$ 1,778	$ 1,386

3.4 Lift Stations

Lift stations are a component of wastewater collection systems and are designed to collect wastewater that is fed from underground gravity pipelines (pipes that are laid at an angle so that wastewater can flow in one direction under gravity). Wastewater is fed into and stored in an underground wet well. The wet well is equipped with electrical instrumentation to detect the level of wastewater present. When the wastewater level rises to a predetermined point, a pump will be started to lift the wastewater upward through a pressurized pipe system –, called a wastewater force main – from where the wastewater is discharged into a gravity manhole. From here, the cycle starts all over again until the wastewater reaches a treatment plant. By this method, lift stations are used to move wastewater to higher elevations.

For example, in 1987 a municipality constructed a lift station to move wastewater from a residential subdivision located in a river valley, up and out of the valley into the gravity flow wastewater system. The lift station was constructed with a wastewater pumping capacity of 50 liters / second and was powered by a 15 hp pump.

At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of acquisition or construction to December 31, 2007 for the lift station must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to determine whether the lift station is classified as small, medium or large. The wastewater flow capacity and pump hp should be compared to the classification information for lift stations (See Appendix B: Infrastructure Unit Price Information). The lift station capacity of 50 liters / second is within the range for a medium sized lift station that is designed for wastewater flows from 21 or 75 liters / second.

The 2007 reproduction cost of a medium sized lift station is $120,000.

This 2007 cost is then discounted back to 1987 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 120,000	
1987 Discounting factor	61.43%	(from Appendix A)
	73,716	
Estimated RST paid (12%)	8,846	(See Appendix H)
Estimated original cost	$ 82,562	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", lift station have a useful life of 40 years. Therefore, the annual amortization on the lift station is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 82,562	/	40 years	=	$ 2,064 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the lift station is calculated as:

1987 (1/2 year)	$ 1,032
1988 - 2007 (20 years) (20 years x $2,064/yr)	41,280
Accumulated Amortization	$ 42,312

The amounts that would be recorded in the municipality's TCA inventory listing for the lift station at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Lift Station	$ 82,562	$ 42,312	$ 40,250

In this example, the lift station was treated as a single TCA with a useful life equivalent to that of the lift station itself. It is also permissible to further subdivide the lift station into its component parts. Lifts stations contain several pumps, each with a useful life of approximately 15 years. By treating the lift station as a single asset each time a pump is replaced, it will be a repairs and maintenance expense. This is because the cost of the original pump is included in the cost of the lift station, and is being amortized over the 40 year useful life of the lift station. If a municipality chose to separately account for the pumps in the lift station, the lift station structure would be amortized over 40 years and the cost of the pumps would be amortized over 15 years. By further subdividing the lift station into its component parts, each time a pump was replaced it would be a capital transaction that would result in the disposal of the old pump and the capitalization and amortization of the acquisition and installation costs of the new pump. Either method of accounting for the lift station and the pumps is acceptable under PSAB.

3.5 Infrastructure: Single Asset versus the Component Approach

Infrastructure networks are not limited to the network of underground pipes but are actually comprised of many components. Wastewater and storm water collection systems are comprised of manholes, storm drains, catch basins, lift stations and sewer outfalls. Likewise, a water distribution system is made up of tanks, pumps, hydrants, generators, filtration systems, water treatment systems and meters. Network systems can be accounted for as a single asset or as separate components.

Under the single asset approach, the entire network system is accounted for as ONE TCA. As the individual components are replaced, they are expensed. The estimated useful life of the network for the purposes of the calculation of amortization is an average of the useful life of the entire system. This approach is less expensive and simpler as there are fewer assets to record, value and amortize, and does not require detailed records and estimates of useful lives.

Under the component approach, the network system is broken down into major components. It does not mean that every component is separately identified, only the material components, such as the installation date, age, useful life and expected replacement date is recorded for each component. As well, the value, accumulated amortization and net book value of each component are recorded in the TCA inventory listing. The component approach provides better information for asset management as the municipality is able to determine the expected replacement date and anticipated replacement cost of each component. This information can then be integrated into the municipality's capital asset life cycle management and budgeting processes.

How a municipality accounts for its infrastructure assets will also affect what is considered to be a capital replacement versus repairs and maintenance and the amount of amortization recorded by the municipality. Under the single asset approach, as components are replaced they are expensed. This results in higher amounts of repairs and maintenance expense being recorded and a lower amortization expense. Using the component approach, the inverse is true. The approach adopted will also affect a municipality's operating and capital budgets. Municipalities are only permitted to borrow for capital purposes. By using the single asset approach, many projects that would otherwise be capital would be classified as repairs and maintenance and as such would have to be funded out of current operations. By using the component approach, these same projects could be classified as capital, thereby increasing the municipality's capacity to complete capital replacement. This is due to the fact that external financing could be utilized to complete the necessary capital projects.

While it is easier for a municipality to account for their TCA under the single asset approach, the component approach provides better information for the management of TCA and a greater financial capacity to complete the necessary TCA replacements. The ultimate decision of whether to account for each component as a separate asset should be determined by the usefulness of the resulting information to the municipality versus the benefit of collecting and maintaining the information.

The single asset and component approach are both acceptable under PSAB. PSAB prefers the component approach but permits municipalities to choose the method that is most appropriate for their circumstances. The Department of Municipal Affairs recommends that NL municipalities use the component approach to the extent possible.

4. Water Distribution Systems

4.1 Water Distribution Pipes

When people think of water distribution systems they tend to think of pipes. While the pipes are a substantial component of the water distribution systems, there are also flow valves, fire hydrants and laterals each with its own unique cost and useful life characteristics. For simplicity, the cost of a meter of pipe provided in this manual contains all of these other items

within the installed per meter cost. In the future, when a municipality replaces its water distribution system they are encouraged to separately account for each of these components.

The valuation of all pipes is a similar process. The key measurements are the length, age and type of pipe being valued. When a municipality has determined these three key characteristics, the municipality can than look up the valuation and discounting information in this manual and calculate the estimated reproduction cost, the accumulated amortization and net book value of each segment at December 31, 2007.

Common types of pipes installed in water distribution systems are reinforced concrete, ductile and cast iron and plastic (PVC and HDPE). Examples indicating the calculations of estimated reproduction cost, accumulated amortization and net book values at December 31, 2007 are provided in this manual for reinforced concrete, ductile iron and PVC pipe systems. However, the calculations for all other types of pipes are very similar and merely requires the replacement of the cost, length and age information used in the example with that of the actual pipe to be valued and amortized by the municipality.

Most of the underground infrastructure installed in a municipality was not constructed by the municipality. In many cases, developers construct the water distribution system under the supervision of the municipality as part of the development of a subdivision. When the construction in the subdivision is complete, the developer will contribute the infrastructure in the subdivision to the municipality. It is at the time of contribution that the municipality becomes responsible for the infrastructure and its related maintenance and must record the infrastructure in the municipality's accounting records.

For water distribution infrastructure that has been contributed by developers or constructed by the municipality and the original construction invoice or contract cannot be located, the water distribution infrastructure should be valued using the discounted reproduction cost method. This valuation method is used to calculate the estimated original cost, accumulated amortization and net book value for that infrastructure for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost, the municipality will have to determine the year the infrastructure was acquired from the developer or constructed in order to apply the appropriate CPI discounting factor to the 2007 construction costs provided.

This section of the manual addresses water distribution infrastructure. Wastewater and storm systems were explained in Section 3.

4.1A Reinforced Concrete Pipe (RCP)

For example, a municipality constructed Phase 1A (See Appendix D) of 200 mm reinforced concrete pipe during 1972. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of acquisition or construction to December 31, 2007 for Phase 1A must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the water pipes in Phase 1A as the 2007 reproduction costs of pipes are provided in dollars per meter. If a municipality's engineering drawings are not available, a municipal employee will have to measure the length of the water pipe network by using the fire hydrants as a guide. If the engineering drawings are available, the drawings will contain the length of pipe in the phase and the lengths for each individual segment. The next task is to determine the type of pipe that was installed during construction of the phase. The

municipality's Maintenance Manager may know this information from having to repair leaks or install laterals into the main line. This information may also be determined from the municipality's engineering drawings. The final information required is the age of the infrastructure. If the engineering drawings are used, then the installation date will be contained on the drawings. Otherwise, the Town Clerk will have to rely on the Maintenance Manager or previous mayors/councilors to determine an estimate of when the phase was installed. Phase 1A in the Below Ground Infrastructure map has a pre-calculated length of 2,535 m, comprised of two segments of 198 m and 2,337 m. Once the length of the pipe network has been calculated, the infrastructure unit price cost information per meter of reinforced concrete pipe should be determined (See Appendix B). This per M unit cost is then multiplied by the pipe network length to arrive at the 2007 reproduction cost for the reinforced concrete pipe network.

2007 Reproduction Cost:

Phase 1A RCP length	2,535 m
2007 Reproduction Unit Cost	$ 252 /m
2007 Reproduction Cost	$ 638,820

This 2007 cost is then discounted back to 1972 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 638,820	
1972 Discounting factor	19.64%	(from Appendix A)
	125,464	
Estimated RST paid (12%)	15,056	(See Appendix H)
Estimated original cost	$ 140,520	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", reinforced concrete pipe has a useful life of 60 years. Therefore, the annual amortization of the Phase 1A reinforced concrete pipe is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 140,520	/	60 years	=	$ 2,342 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the reinforced concrete pipe network is calculated as:

1972 (1/2 year)	$ 1,171
1973 - 2007 (35 years)	
(35 years x $2,342/year)	81,970
Accumulated Amortization	$ 83,141

The amounts that would be recorded in the municipality's TCA inventory listing for the Phase 1A reinforced concrete pipe water network at December 31, 2007 is as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Phase 1A RCP Network	$ 140,520	$ 83,141	$ 57,379

4.1B Ductile Iron & Cast Iron (DI)

Section 4.1A used the discounted reproduction cost method to calculate the estimated original cost, accumulated amortization and net book value for an entire phase for inclusion in the municipality's TCA inventory listing at December 31, 2007. It is also permissible to segment a phase if the information is available. As previously indicated in an earlier section, PSAB recommends that municipalities utilize a reasonable amount of segmentation when accounting for infrastructure networks. However, the actual amount of segmentation utilized by a municipality will be completely up to the discretion of the municipality. The proper level of segmentation is a balance between the usefulness of the information and the cost of acquiring and maintaining it. In Phase 4C there are three separate segments identified. Each will be separately valued and amortized.

For example, a municipality constructed Phase 4C (See Appendix D) of 200 mm ductile iron pipes during 1985. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for Phase 4C must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the water pipes in Phase 4C as the 2007 reproduction costs of pipes are provided in dollars per meter. If a municipality's engineering drawings are not available, a municipal employee will have to measure the length of the water pipe network by using the fire hydrants as a guide. If the engineering drawings are available, the drawings will contain the length of pipe in the phase and the lengths for each individual segment. The next task is to determine the type of pipe that was installed during construction of the phase. The municipality's Maintenance Manager may know this information from having to repair leaks or install laterals into the main line. This information may also be determined from the municipality's engineering drawings. The final information required is the age of the infrastructure. If the engineering drawings are used, then the installation date will be contained on the drawings. Otherwise, the Town Clerk will have to rely on the Maintenance Manager or previous mayors/councilors to determine an estimate of when the phase was installed. Phase 4C in the Below Ground Infrastructure map has three separate pre-calculated lengths of 728 m, 471 m & 47 m (See 2.5: Segmentation of Network Systems). All three TCA will be individually valued and amortized for inclusion in the initial TCA inventory listing. Once the length of the pipe network has been calculated, the infrastructure unit price cost information per meter of ductile iron pipe should be determined (See Appendix B). This per meter unit cost is then multiplied by the length of each segment in the ductile iron pipe network to arrive at the 2007 reproduction cost for the pipe network.

The municipality has adopted the policy of valuing all fire hydrants as separate assets from the water distribution pipe network. Therefore, when valuing the pipe network the municipality will

use the lower cost per meter price that does not include the cost of constructing the fire hydrants.

2007 Reproduction Cost:

	Water 4C.1	Water 4C.2	Water 4C.3
Phase 4C DI length	728 m	471 m	47 m
2007 Reproduction Unit Cost	$ 227 /m	$ 227 /m	$ 227 /m
2007 Reproduction Cost	$ 165,256	$ 106,917	$ 10,669

This 2007 cost is then discounted back to 1985 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 165,256	$ 106,917	$ 10,669
1985 Discounting factor	56.50%	56.50%	56.50%
	93,370	60,408	6,028
Estimated RST paid (12%)	11,204	7,249	723
Estimated original cost	$ 104,574	$ 67,657	$ 6,751

For information on RST see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the “General Tangible Capital Assets Listing” contained in the “Reference Manual Tangible Capital Assets”, ductile iron pipes have a useful life of 30 years. Therefore, the annual amortization on each segment of the ductile iron pipe network is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Water 4C.1	$ 104,574	/	30 years	=	$ 3,486 / year
Water 4C.2	$ 67,657	/	30 years	=	$ 2,255 / year
Water 4C.3	$ 6,751	/	30 years	=	$ 225 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of each segment of the Phase 4C ductile iron pipe network is calculated as:

	Water 4C.1	Water 4C.2	Water 4C.3
Annual Amortization	$ 3,486	$ 2,255	$ 225
1985 (1/2 year)	$ 1,743	1,128	113
1986 - 2007 (22 years) Annual Amortization	3,486 x 22 yrs	2,255 x 22 yrs	225 x 22 yrs
(22 years x $ Annual /year)	76,692	49,610	4,950
Accumulated Amortization	$ 78,435	$ 50,738	$ 5,063

The amounts that would be recorded in the municipality's TCA inventory listing for each segment of the Phase 4C ductile iron pipe network at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Phase 4C			
Water 4C.1	$ 104,574	$ 78,435	$ 26,139
Water 4C.2	$ 67,657	$ 50,738	$ 16,919
Water 4C.3	$ 6,751	$ 5,063	$ 1,688

4.1C Plastic: PVC & HDPE

In Phase 5D there are two separate segments identified. Each will be separately valued and amortized.

For example, a municipality constructed Phase 5D (See Appendix D) of 200 mm PVC pipes during 1995. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for Phase 5D must be calculated and included in the municipality's December 31, 2007 initial TCA inventory listing.

The first step is to calculate the length of the water pipes in Phase 5D as the 2007 reproduction costs of pipes are provided in dollars per meter. If a municipality's engineering drawings are not available, a municipal employee will have to measure the length of the water pipe network by using the fire hydrants as a guide. If the engineering drawings are available, the drawings will contain the length of pipe in the phase and the lengths for each individual segment. The next task is to determine the type of pipe that was installed during construction of the phase. The municipality's Maintenance Manager may know this information from having to repair leaks or install laterals into the main line. This information may also be determined from the municipality's engineering drawings. The final information required is the age of the infrastructure. If the engineering drawings are used, then the installation date will be contained on the drawings. Otherwise, the Town Clerk will have to rely on the Maintenance Manager or

previous mayors/councilors to determine an estimate of when the phase was installed. Phase 5D in the Below Ground Infrastructure map has two separate pre-calculated lengths of 324 m & 103 m (See 2.5: Segmentation of Network Systems). Both segments will be valued and amortized for inclusion in the initial TCA inventory. Once the length of the pipe network has been calculated, the infrastructure unit price cost information per meter of PVC pipe should be determined (See Appendix B). This per meter unit cost is then multiplied by each segment in the PVC pipe network length to arrive at the 2007 reproduction cost for the pipe network.

2007 Reproduction Cost:

	Water 5D.1	**Water 5D.2**
Phase 5D PVC length	324 m	103 m
2007 Reproduction Unit Cost	$ 195 /m	$ 195 /m
2007 Reproduction Cost	$ 63,180	$ 20,085

This 2007 cost is then discounted back to 1995 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 63,180	$ 20,085
1995 Discounting factor	78.57%	78.57%
	49,641	15,781
Estimated GST paid (7%)	3,475	1,105
Estimated RST paid (12.84%)	6,374	2,026
GST rebate received (4%)	(1,986)	(631)
Estimated original cost	$ 57,504	$ 18,281

For information on HST, RST and GST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", PVC pipes have a useful life of 25 years. Therefore, the annual amortization on each segment of the PVC pipe network is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Water 5D.1	$ 57,504	/	25 years	=	$ 2,300 / year
Water 5D.2	$ 18,281	/	25 years	=	$ 731 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Phase 5D PVC water pipe network is calculated as:

	Water 5D.1	Water 5D.2
Annual Amortization	$ 2,300	$ 731
1995 (1/2 year)	$ 1,150	366
1996 - 2007 (12 years) Annual Amortization	2,300 x 12 yrs	731 x 12 yrs
	27,600	8,772
Accumulated Amortization	$ 28,750	$ 9,138

The amounts that would be recorded in the municipality's TCA inventory listing for the Phase 5D PVC water pipe network at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Phase 5D			
Water 5D.1	$ 57,504	$ 28,750	$ 28,754
Water 5D.2	$ 18,281	$ 9,138	$ 9,143

4.2 Pumping Station

The energy that a water distribution system needs to deliver the water is called pressure. That energy is transferred to the water, therefore becoming water pressure. Water pressure can be generated by pumping, by gravity fed from a water source (such as a reservoir or a water tower) or, in the case of smaller systems, by compressed air. The users of the water supply require a sufficient water pressure to maintain the safety of the water supply. If a water supply is not pressurized sufficiently water may not reach the upper floors of a building, may not spray from a tap with sufficient flow or, in a hilly area, parts of gravity flow water supply system may be subject to negative pressures. Where naturally occurring gravity based water pressure is insufficient, municipalities construct pumping stations to deliver water at a constant pressure. This enables the water distribution system to operate efficiently at elevations higher than the original source of the gravity based system, and in periods of increased demand.

For example, in 1985 a municipality constructed a pumping station as a component of Phase 4C (See Appendix D) to increase the water pressure from the existing level within the gravity based water distribution system. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of acquisition or construction to December 31, 2007 for the pumping station must be calculated and included in the municipality's initial TCA inventory listing.

The 2007 reproduction cost of a municipal pumping station is $50,000.

This 2007 cost is then discounted back to 1985 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 50,000	
1985 Discounting factor	56.50%	(from Appendix A)
	28,250	
Estimated RST paid (12%)	3,390	(See Appendix H)
Estimated original cost	$ 31,640	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", pumping stations have a useful life of 40 years. Therefore, the annual amortization on the pumping station is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 31,640	/	40 years	=	$ 791 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization of the pumping station is calculated as:

1985 (1/2 year)	$ 396
1986 - 2007 (22 years) (22 years x $791/yr)	17,402
Accumulated Amortization	$ 17,798

The amounts that would be recorded in the municipality's TCA inventory listing for the pumping station at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Pumping Station 4C	$ 31,640	$ 17,798	$ 13,842

4.3 Fire Hydrants

A fire hydrant is an active source of water for fire protection, and appears in most urban, suburban and rural areas with municipal water service. Fire hydrants enable firefighters to tap into the municipal water supply to extinguish a fire. A hose is attached to the fire hydrant and the valve is opened to provide a powerful source of water, on the order of 350 kPa (50 lb / in²).

In areas subject to freezing temperatures, only a portion of the hydrant is above ground. The valve is located below the frost line and connected via a riser to the above-ground portion. A

valve rod extends from the valve itself up through a seal at the top of the hydrant, where it can be operated with the proper wrench. This design is known as a "dry barrel" hydrant, in that the barrel, or vertical body of the hydrant, is normally dry. A drain valve underground opens when the water valve is completely closed; which allows all water to drain from the hydrant body to prevent the hydrant from freezing. Dry-barrel hydrants typically have multiple outlets, with a single stem operating all the outlets simultaneously. Most fire hydrant valves are not designed to throttle the water flow; they are designed to be operated full-on or full-off.

The cost of fire hydrants can be included in the value of the underground water distribution network, or a hydrant can be valued and amortized separately as an individual component of that network. How fire hydrants are valued affects the valuation of the underground network itself, and therefore care should be taken when valuing each system to ensure that the appropriate costs are used in relation to the decision of whether to value these components separately or as an all inclusive network.

If valued separately fire hydrants with a length of 2.1 m have a 2007 replacement cost of $3,000 per hydrant.

For example, a municipality constructed Phase 3B and Phase 4C of the water distribution system (See Appendix D) during 1980 and 1985, respectively. To value the fire hydrants in these phases the municipality will have to calculate the discounted replacement cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 of the fire hydrants at December 31, 2007. The fire hydrants will be then included in the municipality's initial TCA inventory listing as separate TCA from the network system.

Phase 3B contains four fire hydrants and phase 4C contains three fire hydrants. For each phase the valuation only has to be calculated on one fire hydrant, as each fire hydrant in that phase will have the same discounted replacement cost and accumulated amortization.

The 2007 replacement cost of a fire hydrant is $3,000.

This 2007 cost is then discounted back to the year of construction using the Canadian CPI table (See Appendix A).

Estimated Cost:

	Phase 3B	**Phase 4C**
2007 Reproduction Cost	$ 3,000	$ 3,000
Discounting factor (3B: 1980, 4C: 1985)	39.46%	56.50%
	1,184	1,695
Estimated RST paid (12%)	142	203
Estimated original cost	$ 1,326	$ 1,898

For information on RST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", fire hydrants have a useful life of 15 years. Therefore, the annual amortization on each fire hydrant is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Phase 3B	$ 1,326	/	15 years	=	$ 88 / year
Phase 4C	$ 1,898	/	15 years	=	$ 127 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known.

However, in this example the water distribution phases were installed in 1980 and 1985, 27 and 22 years ago respectively. The original fire hydrants installed during these phases are now beyond their useful lives and will be fully amortized. Therefore, the calculation of accumulated amortization is not required. If the fire hydrants had a portion of their useful lives remaining, accumulated amortization would be calculated in exactly the same manner as the calculation of accumulated amortization for manholes (See Section 3.3: Manholes and Storm Drains).

The amounts that would be recorded in the municipality's TCA inventory listing for fire hydrants at December 31, 2007 are as follows:

Asset Description	**Cost**	**Accumulated Amortization**	**Net Book Value**
Phase 3B			
Hydrant 3B.1	$ 1,326	$ 1,326	$ -
Hydrant 3B.2	$ 1,326	$ 1,326	$ -
Hydrant 3B.3	$ 1,326	$ 1,326	$ -
Hydrant 3B.4	$ 1,326	$ 1,326	$ -
Phase 4C			
Hydrant 4C.1	$ 1,898	$ 1,898	$ -
Hydrant 4C.2	$ 1,898	$ 1,898	$ -
Hydrant 4C.3	$ 1,898	$ 1,898	$ -

5. Labrador Infrastructure Reproduction Cost Mark-Up

It has been observed that infrastructure construction prices in the Labrador portion of the province are significantly in excess of those incurred on the island portion of the province. To recognize this price differential it is recommended that all infrastructure pricing in this manual be increased by 30% when being applied to infrastructure located in Labrador. This 30% mark-up should not be applied to land or buildings, as these are priced at appraisal prices which are already reflective of the area in which the property is located.

To provide examples of the how the 30% cost mark-up should be included in the valuation calculation, two examples, road surface valuation and PVC pipe valuation, are provided below.

5.1 Residential Roads (Labrador Cost Mark-up Included)

Residential roads are access ways through urban areas where the predominant land use is for housing. Traffic volumes on residential roads are generally low as it is mainly the residents living in the area who will be using the road. Because of this, residential roads tend to have the longest useful life of any type of road with an average useful life of 20 years. Road C on the Above Ground Infrastructure map (See Appendix C) would be an example of a residential road. It has limited access and would not be used for through traffic.

Many residential roads are not constructed by the municipality. In many cases developers construct the road under the supervision of the municipality as part of the development of a subdivision. When the construction in the subdivision is complete, the developer will lay the final recap on the road and then contribute the road to the municipality. It is at the time of contribution that the municipality becomes responsible for the road and must record it in the municipality's accounting records.

For residential roads that have been contributed by developers or constructed by the municipality and the original construction invoice or contract cannot be located, the residential road should be valued using the discounted reproduction cost method. This cost method is used to calculate the estimated original cost, accumulated amortization and net book value for that road for inclusion in the municipality's TCA inventory listing at December 31, 2007. To calculate the estimated original cost of the road, the municipality will have to determine the year the road was acquired or constructed in order to apply the appropriate CPI discounting factor to the 2007 road construction costs provided.

For example, a municipality resurfaced Road C (See Appendix C) during 1994. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of acquisition or construction to December 31, 2007 for Road C must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the surface area of the road as pavement costs are provided in dollars per square meter. To calculate the m^2 of surface area, a municipal employee will have to measure the length of the road and its width at various points along the road. As this process does not have to be exact the surface area can then be calculated by multiplying the length of the road by the average of the various widths recorded. Road C in the Above Ground Infrastructure map has a pre-calculated surface area of 4,973.29 m^2. Once the surface area of the road has been calculated, the infrastructure unit price cost information per M^2 of paving should be determined (See Appendix B). This per M^2 unit cost is then multiplied by the road surface area to arrive at the 2007 reproduction cost of the paving.

2007 Reproduction Cost:

Road Surface Area	4,973.29	m^2
2007 Reproduction Unit Cost	$ 37.00	$/m^2$
	184,012	
Labrador Cost Mark-Up	x 1.30	
2007 Reproduction Cost	$ 239,216	

This 2007 cost is then discounted back to 1994 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 239,216	
1994 Discounting factor	76.86%	(from Appendix A)
	183,861	
Estimated GST paid (7%)	12,870	(See Appendix H)
Estimated RST paid (12.84%)	23,608	
GST rebate received (4%)	(7,354)	
Estimated original cost	$ 212,985	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", residential roads have a useful life of 20 years. Therefore, the annual amortization on the residential road is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 212,985	/	20 years	=	$ 10,649 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the residential road is calculated as:

1994 (1/2 year)	$ 5,325
1995 - 2007 (13 years) (13 years x $10,649/yr)	138,437
Accumulated Amortization	$ 143,762

The amounts that would be recorded in the municipality's TCA inventory listing for Road C pavement at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Road C			
Pave C	$ 212,985	$ 143,762	$ 69,223

5.2 Plastic: PVC & HDPE (Labrador Cost Mark-up Included)

In Phase 5D there are two separate segments identified. Each will be separately valued and amortized.

For example, a municipality constructed Phase 5D (See Appendix D) of 200 mm PVC pipes during 1995. At December 31, 2007, the discounted reproduction cost, the accumulated amortization and the net book value from the date of construction to December 31, 2007 for Phase 5D must be calculated and included in the municipality's initial TCA inventory listing.

The first step is to calculate the length of the water pipes in Phase 5D as the 2007 reproduction costs of pipes are provided in dollars per meter. If a municipality's engineering drawings are not available, a municipal employee will have to measure the length of the water pipe network by using the fire hydrants as a guide. If the engineering drawings are available, the drawings will contain the length of pipe in the phase and the lengths for each individual segment. The next task is to determine the type of pipe that was installed during construction of the phase. The municipality's Maintenance Manager may know this information from having to repair leaks or install laterals into the main line. This information can also be determined from the municipality's engineering drawings. The final information required is the age of the infrastructure. If the engineering drawings are used, then the installation date will be contained on the drawings. Otherwise, the Town Clerk will have to rely on the Maintenance Manager or previous mayors/councilors to determine an estimate of when the phase was installed. Phase 5D in the Below Ground Infrastructure map has two separate pre-calculated lengths of 324 m & 103 m (See 2.5: Segmentation of Network Systems). Both segments will be valued and amortized for inclusion in the initial TCA inventory. Once the length of the pipe network has been calculated, the infrastructure unit price cost information per meter of PVC pipe should be determined (See Appendix B). This per meter unit cost is then multiplied by each segment in the PVC pipe network length to arrive at the 2007 reproduction cost for the pipe network.

2007 Reproduction Cost:

	Water 5D.1	Water 5D.2
Phase 5D PVC length	324 m	103 m
2007 Reproduction Unit Cost	$ 195 /m	$ 195 /m
	63,180	20,085
Labrador Cost Mark-Up	x 1.30	x 1.30
2007 Reproduction Cost	$ 82,134	$ 26,111

This 2007 cost is then discounted back to 1995 using the Canadian CPI table (See Appendix A).

Estimated Cost:

2007 Reproduction Cost	$ 82,134	$ 26,111
1995 Discounting factor	78.57%	78.57%
	64,533	20,515
Estimated GST paid (7%)	4,517	1,436
Estimated RST paid (12.84%)	8,286	2,634
GST rebate received (4%)	(2,581)	(821)
Estimated original cost	$ 74,755	$ 23,764

For information on GST and HST, please see Appendix H.

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", PVC water pipes have a useful life of 25 years. Therefore, the annual amortization on each segment of the PVC pipe network is calculated as:

	Original Cost	/	Useful Life	=	Annual Amortization
Water 5D.1	$ 74,755	/	25 years	=	$ 2,990 / year
Water 5D.2	$ 23,764	/	25 years	=	$ 951 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Phase 5D PVC water pipe network is calculated as:

	Water 5D.1	**Water 5D.2**
Annual Amortization	$ 2,990	$ 951
1995 (1/2 year)	$ 1,495	476
1996 - 2007 (12 years)		
Annual Amortization	2,990	951
	x 12 yrs	x 12 yrs
	35,880	11,412
Accumulated Amortization	$ 38,870	$ 11,888

The amounts that would be recorded in the municipality's TCA inventory listing for the Phase 5D PVC water pipe network at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Phase 5D			
Water 5D.1	$ 74,755	$ 38,870	$ 35,885
Water 5D.2	$ 23,764	$ 11,888	$ 11,876

6. Land and Buildings

Each parcel of land and building is a unique asset. Attempting to apply a standardized replacement or reproduction cost to a parcel of land or a building will not result in an accurate valuation of that asset. The question then arises: if a municipality does not have the historical cost information for a parcel of land or a building, then how can it be valued?

For TCA such as land and buildings that have a “fair value” or a “market value”, it is possible to use the discounted appraisal method to value the TCA.

6.1 Description of Discounted Appraisal Method

The discounted appraisal method values the TCA today and then discounts today’s value back to the year in which the asset was initially purchased or constructed to help estimate the original cost. The discounted appraisal value is mainly used for land and buildings. To use the discounted appraisal value, the municipality will be required to obtain valuation reports from qualified appraisers or valuators to support the value recorded. The municipality’s auditor will also want to review the valuation report as part of their audit procedures in attesting to the values recorded in the financial statements.

6.2 Buildings

The easiest way to explain the use of the discounted appraisal method with respect to buildings is by way of an example.

In 1982, a municipality constructed a steel framed Town Hall located at 77 Main Street. Their records retention policy is only to keep capital files for a period of seven years. The municipality must now record a value for the Town Hall for their initial TCA inventory at December 31, 2007.

The first step is to have an appraisal completed on the Town Hall. The appraisal can be completed by the Municipal Assessment Agency (“MAA”) or a privately engaged property valuation firm. The MAA assessed the value of the Town Hall at $350,000 at the valuation base date of January 1, 2005. Because the MAA assessed the building with a base date of January 1, 2005, the discounting factor used to discount this value can not be from the 2007 base year CPI table. The values in the CPI table must be converted to a 2005 base year to accurately discount the assessed value.

A formula must be used in order to convert the 1982 discount factor to a 2005 base date amount from the current 2007 base date amount. This formula is:

	(2007 CPI / 2005 CPI) x 1982 CPI
=	(100.00% / 95.96%) x 49.24%
=	1.0421 x 49.24%
=	51.31%

The 2005 base date appraisal value is then discounted back to 1982 using the revised discounting factor calculated above.

Estimated Cost:

2007 Appraisal Value	$ 350,000	
1982 Discounting factor	51.31%	
	179,585	
Estimated RST paid (12%)	21,550	(See Appendix H)
Discounted Appraisal Cost	$ 201,135	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", steel frame buildings have a useful life of 40 years. Therefore, the annual amortization on the Town Hall is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 201,135	/	40 years	=	$ 5,028 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Town Hall is calculated as:

1982 (1/2 year)	$ 2,514
1983 - 2007 (25 years) (25 years @ $5,028 / year)	125,700
Accumulated Amortization	$ 128,214

The amounts that would be recorded in the municipality's TCA inventory listing for the Town Hall at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Town Hall 77 Main Street	$ 201,135	$ 128,214	$ 72,921

6.3 Land

The calculation of the discounted appraisal method with respect to land is similar to that of buildings, with the exception that land is not amortized.

In 1993, a municipality purchased a block of vacant land to use as a Municipal Park. The only work done subsequent to the purchase was to thin out the trees and to construct a series of boardwalk and asphalt walking trails throughout the park. The municipality's records retention policy is to only keep capital files for a period of seven years. The municipality must now record a value for the Municipal Park for their initial TCA inventory at December 31, 2007.

The municipality intends to value the land using the discounted appraisal method. The series of boardwalk and asphalt walking trails will be valued separately. The valuation of the boardwalk and walking trails will be completed in the same manner as was done for sidewalks in section 2.3. The first step in the park valuation is to have an appraisal completed on the Municipal Park land. The MAA assessed the value of the Municipal Park land at $180,000 at the valuation base date of January 1, 2005. Because the MAA assessed the land with a base date of January 1, 2005, the discounting factor used to discount this value can not be from the 2007 base year CPI table. The values in the CPI table must be converted to a 2005 base year to accurately discount the assessed value.

A formula must be used in order to convert the 1993 discount factor to a 2005 base date factor from the current 2007 base date factor. This formula is:

(2007 CPI / 2005 CPI) x 1993 CPI
= (100.00% / 95.96%) x 76.77%
= 1.0421 x 76.77%
= 80.00%

The 2005 base date appraisal value is then discounted back to 1993 using the revised discounting factor calculated above.

Estimated Cost:

2007 Appraisal Value	$ 180,000	
1993 Discounting factor	80.00%	
	144,000	
Estimated GST paid (7%)	10,080	
Estimated RST paid (12.84%)	18,490	(See Appendix H)
GST rebate received (4%)	(5,760)	
Discounted Appraisal Cost	$ 166,810	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", land has an indefinite useful life and is therefore not amortized.

The amounts that would be recorded in your TCA inventory listing at for the Municipal Park land December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Municipal Park 125 Cook Street	$ 166,810	$ -	$ 166,810

7. Heavy Equipment and Vehicles

7.1 Asset Description

Heavy equipment and vehicles consist of all types of machinery and equipment used in the construction and maintenance of roads, the provision of waste management and fire protection services. For examples of TCA included in this class, please refer to the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets".

7.2 Asset Valuation

Heavy equipment and vehicles should be valued at historical cost whenever possible. A detailed examination should be conducted of the municipality's capital fund files to determine when the municipality's heavy equipment was purchased and at what original cost. Due to the extended useful lives of this type of TCA, the TCA may have been owned by the municipality for a longer period than the municipality retains its capital fund files. If the municipality is unable to determine the original cost of heavy equipment and vehicles, the original cost of these TCA should be estimated using a discounted replacement cost approach.

To aid in the calculation of the discounted replacement cost for heavy equipment and vehicles, the 2007 replacement costs for the most common types of heavy equipment and vehicles has been provided (See Appendix F). If a municipality has a piece of heavy equipment that is not on the list provided but cost information has been provided for a similar piece of heavy equipment, use the cost information for the similar piece. For example, if a municipality owns a Terex backhoe and Terex equipment is not included but John Deere and New Holland are, then apply the cost information for either the John Deere or New Holland backhoe to estimate the original cost of the Terex backhoe.

7.3 Valuation using Historical Cost

When the original invoices for heavy equipment and vehicles purchased are available, they should be used to value the TCA. The invoice will also contain the acquisition date, which is necessary to calculate the accumulated amortization and net book value for the TCA for inclusion in the municipality's inventory listing as of December 31, 2007.

For example, a municipality purchased a Caterpillar 938G Rubber Tire Loader during 2002 with an invoice cost of $191,900. It would be included in the December 31, 2007 inventory listing at the following values.

Cost:

Invoice cost	$ 191,900	
HST paid (15%)	28,785	(See Appendix H)
HST rebate received (4%)	(7,676)	
Original cost	$ 213,009	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", heavy equipment and machinery has a useful life of 15 years. Therefore, the annual amortization on the Caterpillar Loader is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$213,009	/	15 years	=	$14,200 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was entered into service will not always be known. The accumulated amortization on the Caterpillar Loader is calculated as:

2002 (1/2 year)	$ 7,100
2003 - 2007 (5 years x $14,200 / year)	71,000
Accumulated Amortization	$ 78,100

The amounts that would be recorded in the municipality's TCA inventory listing for the Caterpillar 938G Loader at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
Caterpillar 938G Rubber Tire Loader Serial #: 4YS02630	$ 213,009	$ 78,100	$ 134,909

7.4 Valuation using Discounted Replacement Cost

When the original invoices for heavy equipment and vehicles are not available, the discounted replacement cost method should be used to value the TCA. This method allows for the discounting of the current replacement cost of similar equipment to calculate the estimated original cost, the accumulated amortization and the net book value at which the TCA will be included in the municipality's inventory listing at December 31, 2007. To calculate the estimated original cost, the municipality will have to determine the year of acquisition for the TCA in order to apply the appropriate CPI discounting factor to the 2007 replacement costs.

For example, a municipality purchased a John Deere 310G Backhoe during 1998 and is unable to locate the original invoice. The municipality should refer to the heavy equipment price list

provided (See Appendix F) and look up the 2007 cost of a John Deere backhoe. The 2007 cost is then discounted back to 1998 using the Canadian CPI table included in Appendix A. After referring to the heavy equipment price list, a John Deere Backhoe is not included. However, four different backhoes are included:

Case	Backhoe Loader	CAT 420 Equivalent	$ 95,000
Caterpillar	Backhoe	Model 420	$ 88,000
JCB	Backhoe	4 x 4 x 4	$ 87,392
New Holland	Backhoe		$ 81,050

So that the price of the John Deere backhoe is not overstated, the comparable model selected for the purpose of discounting the current replacement cost is the lowest price alternative, the New Holland Backhoe with a replacement cost of $81,050.

The estimated original price of the John Deere 310G Backhoe for inclusion in the December 31, 2007 inventory listing is calculated as follows:

Estimated Cost:

2007 replacement cost	$ 81,050	
1998 Discounting factor	81.88%	(from Appendix A)
	66,364	
Estimated HST paid (15%)	9,955	(See Appendix H)
HST rebate received (4%)	(2,655)	
Original cost	$ 73,664	

Accumulated Amortization:

As per the useful life information indicated in the "General Tangible Capital Assets Listing" contained in the "Reference Manual Tangible Capital Assets", heavy equipment and machinery has a useful life of 15 years. Therefore, the annual amortization on the John Deere Backhoe is calculated as:

Original Cost	/	Useful Life	=	Annual Amortization
$ 73,664	/	15 years	=	$ 4,911 / year

When calculating accumulated amortization on historical TCA, only ½ of the annual amortization should be recorded in the year of acquisition as the exact date that the TCA was put into service will not always be known. The accumulated amortization of the John Deere Backhoe is calculated as:

1998 (1/2 year)	$ 2,456
1999 - 2007 (9 years) (9 years x $4,911 / year)	44,199
Accumulated Amortization	$ 46,655

The amounts that would be recorded in the municipality's TCA inventory listing for the John Deere Backhoe at December 31, 2007 are as follows:

Asset Description	Cost	Accumulated Amortization	Net Book Value
John Deere 310G Backhoe Serial #: T0310GX897512	$ 73,664	$ 46,555	$ 27,109

8. TCA Continuity Schedule

8.1 Initial TCA Continuity Schedule

A TCA Continuity Schedule is used to track all of a municipality's individual TCA at December 31, 2007, and additions and disposals of TCA subsequent to the compilation of your initial inventory listing. The TCA Continuity Schedule is also the primary document to which auditors will refer when auditing the municipality's TCA inventory and valuation. As municipalities do not disclose information on individual assets in their financial statements, the information on individual TCA is rolled up into a Summary Schedule. The information on the Summary Schedule can be used to prepare the required TCA disclosures for the financial statements.

The information that should be compiled in your municipality's TCA continuity schedule is the description of the asset, the cost, the date put into use, annual amortization, accumulated amortization and the net book value of the asset at period end. There should be a separate worksheet for each TCA class. In the case of any TCA disposals during 2008, the amount of the proceeds received on disposal and the resulting gain or loss on disposal should also be calculated in the continuity schedule (See Appendix G).

8.2 TCA Continuity Schedule: December 31, 2008 and Beyond

Municipalities are required to track TCA additions and disposals during 2008 just as if PSAB was already implemented. **Do not record your 2008 TCA additions and disposals in the General Ledger.** Municipalities should continue to use their current accounting practices during 2008.

A TCA Continuity Schedule can be used to track your 2008 additions and disposals. For additions, input the description of the asset and the date acquired or entered into service during the year. The Continuity Schedule will include the asset as an addition during fiscal 2008.

For disposals, input the disposal date and record the asset as being a disposal of 2008 in the Continuity Schedule. Entries should also be made in the Continuity Schedule to reverse out the accumulated amortization to the date of disposal of a TCA.

The TCA Continuity Schedule should indicate the total of the additions and disposals for each asset class during the year.

9. Financial Statement Presentation & Disclosure

Financial statement presentation and disclosure requirements for TCA are briefly discussed here for information purposes only.

9.1 Valuation of Assets Acquired or Constructed during 2008

For TCA held at December 31st, 2007, there were four methods by which these TCA could be valued: historical cost, discounted replacement cost, discounted reproduction cost and discounted appraisal cost. For TCA acquired or constructed during 2008, the valuation of those TCA must be recorded at the actual cost paid. However, actual cost is not limited to the stated contract or invoice price. Additional costs directly attributable to the TCA relating to the acquisition, transportation to its eventual working location and installation of the TCA in the condition necessary for its intended use can also be capitalized and form part of the cost of the TCA.

9.2 Financial year End December 31, 2008

Municipalities are not required to include their TCA information in their financial statements for the fiscal year ending December 31, 2008. However, when a municipality has inventoried, valued and amortized some but not all categories of its TCA, the information on the completed categories should be disclosed in the notes to the financial statements. The municipality should also disclose the categories of TCA that have not yet been completed.

Public Sector Accounting Guideline PSG-7 requires municipalities to disclose the following for each major category of TCA and in total:

- costs at the beginning and end of the period;
- additions during the period;
- disposals during the period;
- the amount of any write-downs during the period;
- the amount of amortization expense recorded for the period;
- accumulated amortization at the beginning and end of the period; and
- net book value (net carrying amount) at the beginning and end of the period.

The municipality is also required to disclose the following information about its TCA:

- the method used for determining the cost of each major category of TCA;
- the amortization method used, including the amortization period or rate for each major category of TCA;
- the net book value of TCA not being amortized because they are under construction or development or have been removed from service;
- the nature and amount of contributed TCA received during the period;
- the nature and use of any TCA that have been recorded at nominal values;
- the nature of the works of art and historical treasures held by the municipality; and
- the amount of capitalized interest included in TCA additions during the period.

This additional information is normally disclosed in a TCA note to the financial statements

A sample note format is as follows:

1. Tangible Capital Assets

   Effective January 1, 2008, "*Municipality Name*" (the "municipality") adopted Accounting Guideline 7 (PSG-7) of the Public Sector Accounting Handbook with respect to the disclosure of tangible capital assets of local governments. PSG-7 provides transitional guidance on presenting information related to tangible capital assets until Section PS 3150 - Tangible Capital Assets of the Public Sector Accounting Handbook comes into effect on January 1, 2009.

   Prior to January 1, 2008, the municipality recorded tangible capital assets including assets held under capital leases at cost in the period they were acquired on the Statement of Financial Position and as an expenditure within the capital fund. The capital assets recorded on the Statement of Financial Position were not amortized.

   During 2008, the Municipality continued to work towards compliance with the new recommendations for accounting for tangible capital assets. As of December 31, 2008, the municipality has prepared a complete listing and values for "*insert categories that have been completed*". A complete listing of assets and values for "*insert categories that have been completed"* is currently underway and is expected to be completed by "insert date" to comply with section PS 3150.

   As of January 1, 2008, capital assets including assets held under capital leases are recorded at cost in the period they are acquired and recorded as an expenditure within the capital fund. Contributed assets related to road, water distribution and wastewater collection systems are capitalized and are recorded at their estimated fair value upon acquisition. Works of art for display in municipal property are not included as capital assets. Certain capital assets for which historical cost information is not available has been recorded at current fair market or replacement value, discounted by the relevant inflation factor.

   The Municipality has adopted a policy that states that it "*does / does not*" capitalize interest as part of the cost of its capital assets.

   Certain assets such as "*list assets*" have been recorded at nominal values as the determination of a fair market value for these types of assets is not appropriate.

A Municipality would use a TCA Continuity Schedule (See Appendix G), if they completed the listing and valuation for one or more classes of assets, to indicate the estimated cost, accumulated amortization and net book value at the beginning and end of the period.

It also indicates the additions, disposals, write-downs and amortization for the year ended December 31, 2008. These amounts are not recorded in the Municipality's financial statements but are for disclosure purposes made in pursuant to the recommendations of PSG-7 as recommended by PSAB.

9.3 Financial year End December 31, 2009 and thereafter

A municipality's TCA are required to be included in their financial statements for the year ending December 31, 2009. These financial statements will also have to report the comparative TCA figures for the year ended December 31, 2008. Therefore, while a municipality does not have to include its TCA in their 2008 financial statements, the municipality must ensure that the information has been compiled and is readily available for 2009. The easiest way to ensure a municipality's 2008 TCA information will be available is to update the December 31, 2007 initial TCA inventory listing for all TCA transactions occurring during 2008. At the end of 2008, amortization of the TCA for the 2008 fiscal year should be calculated. While these TCA entries do not have to be recorded in your general ledger they should be recorded in your TCA Summary and Continuity Schedules.

Beginning with the fiscal year ending December 31, 2008, the amount of any write-downs and amortization expense will be recorded in the municipality's Statement of Operations and in the Statement of Changes in Net Debt. The amount of any additions and disposals during the period will be recorded in the Statement of Changes in Net Debt. The costs, accumulated amortization and net book value (net carrying amount) of TCA at the beginning and end of the period will be recorded in summary form on the Statement of Financial Position with more detailed disclosures included in the notes to the financial statements in a supporting schedule.

A municipality's December 31, 2009 financial statements will include the required TCA disclosures (See 9.2) as well as a detailed summary schedule included in the notes to the financial statements in the following format:

	2009			2008		
	Cost	Accum Amort	Net Book Value	Cost	Accum Amort	Net Book Value
Land	$ 166,810	$ -	$ 166,810	$ 166,810	$ -	$ 166,810
Buildings	201,135	133,242	67,893	201,135	128,214	72,921
Roads	1,042,378	702,109	340,269	1,042,378	639,623	402,755
Curbs, Gutters & Sidewalks	51,456	37,655	13,801	51,456	35,941	15,515
Traffic Signals & Controllers	66,645	33,332	33,313	66,645	28,888	37,757
Wastewater & Storm Water Systems	292,111	133,320	158,791	292,111	128,316	163,795
Water System	437,925	296,191	141,734	437,925	284,061	153,864
Heavy Equipment & Vehicles	286,673	143,766	142,907	286,673	124,655	162,018
	$2,545,133	$1,479,615	$1,065,518	$2,545,133	$1,369,698	$1,175,435

10. Role of the Auditor

Because every auditor must maintain professional independence, there are certain limitations on how your auditor can be involved. Your auditor **can** assist in developing your work plans and by reviewing your methodology and the working papers prepared to implement the requirements of PS 3150. However, your auditor **cannot** be directly involved in the valuation or data gathering process.

You should keep your auditor informed throughout the process. Discuss the requirements, impact and expected outcomes of PS 3150 with your auditor as soon as possible, as ongoing communication will help avoid problems as the project progresses. It is also beneficial to have your auditor perform their required audit procedures on each stage of the TCA inventory list as it is completed. This could avoid a potential problem with the final TCA valuation by detecting any errors at an early stage. For example, if an incorrect formula is used to value a TCA, then the corresponding amortization of that TCA will also be incorrect. By having your auditor complete their audit procedures on your valuation calculations prior to calculating amortization this situation could be avoided. In some cases it may not be possible to have your auditor involved at each stage due to time constraints or auditor availability; however, your auditor's inclusion should be considered.

It is imperative that municipalities keep copies of all their supporting documentation and calculations for the initial costing of their TCA at December 31, 2007. Your auditors will rely on this information to formulate their audit opinion on the opening TCA balances for fiscal 2009. Municipalities should collect and file all supporting documentation and calculation data in a capital asset register. For every TCA, the capital asset register should contain the unique TCA identification number, a description of the TCA, the acquisition date and the valuation information. If the value of the TCA was calculated using discounted replacement cost, discounted reproduction cost or discounted appraisal cost, the calculations should be available for the auditor's inspection. Also, if the TCA was valued using discounted appraisal cost then a copy of the valuation should be included in the capital asset register. If the TCA was valued using historical cost, then a copy of the invoice should be included.

The amount of the additional audit fee for work on the TCA inventory will be affected by the quality and amount of work completed by the municipality.

Glossary

Accumulated Amortization:
Accumulated amortization is the total of amortization expenses to date on a tangible capital asset or group of tangible capital assets.

Amortization:
Amortization is a systematic and logical process of recognizing the expense associated with using a tangible capital asset during a fiscal period. Amortization is often thought as "depreciation".

Asset Class:
An asset class is a grouping of tangible capital assets that are similar in nature and useful life. "Buildings" is an example of an asset class. Asset classes form the basis for the general ledger accounts and the summary presentation of tangible capital assets by major groupings in the financial statements.

Betterment:
A betterment is a cost incurred that either increases the capacity, extends the useful life, or reduces the operating costs of a tangible capital asset.

Capital Lease:
A capital lease is a lease with terms and conditions that substantially transfers all the "benefits and risks" of ownership to the lessee (i.e. the municipality), without necessarily transferring legal ownership.

Capitalization:
Capitalization is the process of recording an eligible expenditure as a tangible capital asset, or including it as part of the cost of a tangible capital asset.

Capitalization Threshold:
The capitalization threshold is a minimum dollar amount that a government will use in determining whether an expenditure should be capitalized as a tangible capital asset addition or expensed in the current year.

Capitalized Interest:
Capitalized interest is the interest and carrying charges owed on the debt to external parties that is included as part of the cost. Only interest that is directly attributable to the development and construction of a tangible capital asset can be capitalized. The capitalization of interest ends when construction ceases or the asset is put into use.

Component:
A component is a tangible capital asset that forms part of a larger and wider tangible capital asset. Components are normally associated with infrastructure assets. The paved road surface is one component of the entire road and street infrastructure, which also includes the right of way (i.e. land), grade, street signs, etc. A water pump is one component of the water supply system. The component approach to tangible capital assets is the opposite of the single asset approach.

Cost:
Cost is the **gross** amount of consideration directly attributable to acquire, construct, develop or better a tangible capital asset.

Fair Value:
Fair value is the amount of consideration that would be agreed upon in an arms length transaction between knowledgeable, willing parties who are under no compulsion to act.

Financial Assets:
Financial assets are assets that could be used to discharge existing liabilities or finance future operations and are not for consumption in the normal course of operations. Financial assets include cash, accounts receivable, temporary investments, and portfolio investments. Tangible capital assets are non-financial assets.

Intangible Assets:
Intangible assets are assets that have no physical form or substance. Goodwill, patents and copyrights are examples of intangible assets. PSAB does not recognize intangible assets. Intangible assets should not be included with tangible capital assets. Software licenses are tangible capital assets.

Infrastructure:
Infrastructure assets are tangible capital assets that are normally comprised of a number of components to form complex network systems. Infrastructure assets are different from general capital assets in terms of access and consumption. The public has unlimited access to infrastructure assets and the benefits of the asset are consumed directly by the public. The government normally restricts public access to general capital assets. General capital assets are used by the government to provide services to the public. Infrastructure assets include roads, streets, bridges, water systems, sewers and surface water control devices such as dams, canals, levies and erosion control devices.

Materiality:
Materiality is a concept frequently used by auditors. Materiality is the point, expressed in dollar values, where a misstatement or the aggregate of all misstatements in the financial statements would influence the decision of a person who is relying on the financial statements. Material misstatements in financial statements can arise from departures from GAAP, errors, fraud, inappropriate accounting estimates and omissions of necessary information.

Net Book Value:
The net book value of a tangible capital asset is the cost, less the accumulated amortization and the amount of any write-downs.

Operating Lease:
An operating lease is a lease in which the lessor does not transfer substantially all the benefits and risks incident to ownership of property.

Network System:
Network system is a term used to refer to infrastructure that has “linear” assets arranged in a continuous or connected network. Network systems normally mean roads, water and wastewater systems.

Residual Value:
Residual value is the estimated net realizable value of a tangible capital asset at the end of its useful life. The colloquial term for residual value is “scrap” value.

Segmentation:
Segmentation is the process of breaking down network systems into homogenous groups that are similar in terms of age, material or geography. Segmentation reduces the number of possible identifiable individual assets into a manageable number for valuation. For example, the road system within a large town could literally be a patchwork of segments of various lengths and age. The streets in the town could be segmented into various pools and amortized using an average age. Newly constructed streets and resurfacing would be recorded on an asset-by-asset basis.

Tangible Capital Assets:
Tangible capital assets are non-financial assets having physical substance that:

- are used to provide goods and services;
- have an economic life beyond one year;
- are used on a continuous basis; and
- are not for sale in the ordinary course of operations.

Useful Life:
Useful life is the estimate of the period over which a tangible capital asset is expected to be used by the government. The life of a tangible capital asset may extend beyond the useful life of tangible capital asset to a government. Other than land, the life of a tangible capital asset is finite and is normally the shorter of the physical, technological, commercial or legal life. Useful life does not necessarily need to need measured in units of time. Useful life can also refer to the number of units of production that can be obtained from a tangible capital asset by the government.

Write-down:
A write-down is a reduction in the cost of an asset to reflect a decline in the asset’s value. A tangible capital asset should be written down whenever the benefits associated with the asset are less than its net book value. A write-down can never be reversed.

APPENDIX A - Canadian Consumer Price Index

Canadian Consumer Price Index
Historical Summary
(1914 - 1940)

Year	All-items
	2007=100
1914	5.38%
1915	5.47%
1916	6.01%
1917	7.09%
1918	7.98%
1919	8.79%
1920	10.22%
1921	8.97%
1922	8.25%
1923	8.25%
1924	8.07%
1925	8.16%
1926	8.25%
1927	8.16%
1928	8.16%
1929	8.25%
1930	8.16%
1931	7.35%
1932	6.73%
1933	6.37%
1934	6.46%
1935	6.55%
1936	6.64%
1937	6.91%
1938	6.91%
1939	6.91%
1940	7.17%

Note: Annual average indexes are obtained by averaging the indexes for the 12 months of the calendar year.

Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue nos. 62-001-X, 62-010-X and 62-557-X. Last modified: 2007-06-21.

APPENDIX A - Canadian Consumer Price Index

Canadian Consumer Price Index
Historical Summary
(1941 - 1967)

Year	All-items
	2007=100
1941	7.62%
1942	7.89%
1943	8.07%
1944	8.16%
1945	8.25%
1946	8.43%
1947	9.24%
1948	10.58%
1949	10.94%
1950	11.21%
1951	12.38%
1952	12.74%
1953	12.56%
1954	12.65%
1955	12.65%
1956	12.83%
1957	13.27%
1958	13.63%
1959	13.72%
1960	13.90%
1961	14.08%
1962	14.26%
1963	14.44%
1964	14.71%
1965	15.07%
1966	15.70%
1967	16.23%

Note: Annual average indexes are obtained by averaging the indexes for the 12 months of the calendar year.

Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue nos. 62-001-X, 62-010-X and 62-557-X. Last modified: 2007-06-21.

APPENDIX A - Canadian Consumer Price Index

Canadian Consumer Price Index
Historical Summary
(1968 - 1994)

Year	All-items
	2007=100
1968	16.86%
1969	17.67%
1970	18.21%
1971	18.74%
1972	19.64%
1973	21.17%
1974	23.50%
1975	26.01%
1976	27.89%
1977	30.13%
1978	32.83%
1979	35.87%
1980	39.46%
1981	44.39%
1982	49.24%
1983	52.11%
1984	54.35%
1985	56.50%
1986	58.83%
1987	61.43%
1988	63.86%
1989	67.09%
1990	70.31%
1991	74.26%
1992	75.34%
1993	76.77%
1994	76.86%

Note: Annual average indexes are obtained by averaging the indexes for the 12 months of the calendar year.

Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue nos. 62-001-X, 62-010-X and 62-557-X. Last modified: 2007-06-21.

APPENDIX A - Canadian Consumer Price Index

Canadian Consumer Price Index
Historical Summary
(1995 - 2007)

Year	All-items
	2007=100
1995	78.57%
1996	79.73%
1997	81.08%
1998	81.88%
1999	83.32%
2000	85.56%
2001	87.71%
2002	89.69%
2003	92.20%
2004	93.90%
2005	95.96%
2006	97.85%
2007	100.00%

Note: Annual average indexes are obtained by averaging the indexes for the 12 months of the calendar year.

Source: Statistics Canada, CANSIM, table 326-0021 and Catalogue nos. 62-001-X, 62-010-X and 62-557-X. Last modified: 2007-06-21.

APPENDIX B - Infrastructure Unit Price Information

The 2007 replacement and reproduction cost information contained in this manual was compiled by the Engineering Division of the Department of Municipal Affairs from a sample of municipal contracts awarded by both the Eastern and Western Regional offices. While it is understood that regional pricing disparities in municipal tenders awarded throughout the province do exist, the pricing information contained in this manual is to be used for the entire island portion of the province.

It has also been observed that infrastructure construction prices in the Labrador portion of the province are significantly in excess of those incurred on the island portion of the province. To recognize this price differential, it is recommended that all infrastructure pricing in this manual be increased by 30% when being applied to infrastructure located in Labrador.

All prices include an allocation of project engineering fees.
HST has **not** been included in any prices.

Water Distribution Systems

Water Main prices include trenching, bedding, typical fittings and valves. Two separate prices have been provided: one including hydrants and the other excluding hydrants. For municipalities wanting to record hydrants as separate components of the water distribution system, the municipality should value their underground pipe network using the lower price that excludes the cost of hydrants. Hydrants can range from 100 m to 175 m apart. For cost reduction purposes it has been estimated that the average distance between hydrants is 120 m with an average cost of $3,000 per hydrant. Therefore, the cost reduction per M amounted to $25 / m.

Pipe Type	Pipe Size	Including Hydrants Cost / m	Excluding Hydrants Cost / m
PVC (type K municipex)	50 mm	$105 / m	N / A
PVC	100 mm	$156 / m	N / A
PVC	150 mm	$172 / m	$147 / m
PVC	200 mm	$195 / m	$170 / m
PVC	250 mm	$258 / m	$233 / m
PVC	300 mm	$267 / m	$242 / m
Ductile Iron (DI)	150 mm	$222 / m	$197 / m
Ductile Iron (DI)	200 mm	$252 / m	$227 / m
Ductile Iron (DI)	250 mm	$272 / m	$247 / m
Ductile Iron (DI)	300 mm	$275 / m	$250 / m
Ductile Iron (DI)	350 mm	$284 / m	$259 / m
Reinforced Concrete (RCP)	150 mm	$222 / m	$197 / m
Reinforced Concrete (RCP)	200 mm	$252 / m	$227 / m
Reinforced Concrete (RCP)	250 mm	$272 / m	$247 / m
Reinforced Concrete (RCP)	300 mm	$275 / m	$250 / m
Reinforced Concrete (RCP)	350 mm	$284 / m	$259 / m
Fire Hydrants	2.1 M	$3,000	

APPENDIX B - Infrastructure Unit Price Information

Wastewater Collection Systems

Wastewater main prices include trenching, bedding, typical fittings, and manholes. Two separate prices have been provided: one including manholes and the other excluding manholes. For municipalities wanting to record manholes as separate components of the wastewater collection system, the municipality should value their underground pipe network using the lower price that excludes the cost of manholes. Manholes are a standard distance of 120 m apart. For cost reduction purposes it has been estimated that the average cost of a manhole is $5,000. Therefore, the cost reduction per M is $42 / m.

Pipe Type	Pipe Size	Including Manholes Cost / m	Excluding Manholes Cost / m
PVC	150 mm	$280 / m	$238 / m
PVC	200 mm	$346 / m	$304 / m
PVC	250 mm	$366 / m	$324 / m
PVC	300 mm	$381 / m	$339 / m
PVC	400 mm	$440 / m	$398 / m
PVC	450 mm	$494 / m	$452 / m
PVC	600 mm	$625 / m	$583 / m

Manholes: $5,000

Storm Water Collection Systems

Storm water main prices include trenching, bedding, typical fittings and storm drains. Two separate prices have been provided: one including storm drains and the other excluding storm drains. For municipalities wanting to record storm drains as separate components of the storm water collection system, the municipality should value their underground pipe network using the lower price that excludes the cost of storm drains. For simplicity purposes storm drains have been estimated as being a distance of 120 m apart, similar to manholes. For cost reduction purposes it has been estimated that the average cost of a storm drain is $5,000. Therefore, the cost reduction per M is $42 / m.

Pipe Type	Pipe Size	Including Storm Drains Cost / M	Excluding Storm Drains Cost / M
Corrugated Steel	300 mm	$100 / M	$58 / M
Corrugated Steel	450 mm	$125 / M	$83 / M
Corrugated Steel	600 mm	$145 / M	$103 / M
Corrugated Steel	750 mm	$210 / M	$168 / M
PVC	200 mm	$186 / M	$144 / M
PVC	250 mm	$198 / M	$156 / M
PVC	300 mm	$206 / M	$164 / M
PVC	400 mm	$238 / M	$196 / M
PVC	450 mm	$267 / M	$225 / M
PVC	600 mm	$338 / M	$296 / M

Storm Drains $5,000

APPENDIX B - Infrastructure Unit Price Information

Culverts

Culvert prices include removal of the old culvert.

Pipe Type	Pipe Size	Cost / m
Metal Corrugated	400 mm	$125 / m
Metal Corrugated	450 mm	$137 / m
Metal Corrugated	500 mm	$145 / m
Metal Corrugated	600 mm	$156 / m
Metal Corrugated	900 mm	$184 / m

Other Items

Item	Cost
Curb & Gutter	$70 / m
Curb Only	$30 / m
Sidewalks	$120 / m
- based on 1,500 mm width and includes the cost of bedding materials.	
Ditching	$9 / m
Gabion	$202 m^3
Guide Rail	$74 / m
Paving	$37 / m^2
- Paving prices include scarifying and reshaping.	
Road Grade	$100 / lane m
Gravel Road - Driving Surface	$9.52 / m^3
Rip Rap	$111 / m^3

Traffic Signals & Controllers:

Traffic Controller	$ 21,500
Pedestrian Signals	$ 750
Traffic Signal: 3 Light	$ 550
Traffic Signal: 4 Light	$ 650

APPENDIX B - Infrastructure Unit Price Information

Other Items (con't)

Traffic Signal Poles:

3 Meter Pole	$ 3,500
9 Meter Pole	$ 12,500
11 Meter Pole	$ 14,000

Lift Stations

Small:	Less than or equal to 7.5 hp pumps, flows less than or equal to 20 liters / second and normally single phase power.	$ 80,000
Medium:	Pumps greater than 7.5 hp but equal to or less than 18 hp pumps, flows 21 liters / second to 75 liters / second and normally 3 phase power.	$ 120,000
Large:	Greater than 18 hp pumps, flows 80 liters / second to 250 liters / second, 3 phase power required.	$ 160,000

Note: The cost of lift station construction includes the supply and installation of concrete chamber and all associated apparatus (i.e. mechanical and electrical and any backfill material were applicable.)

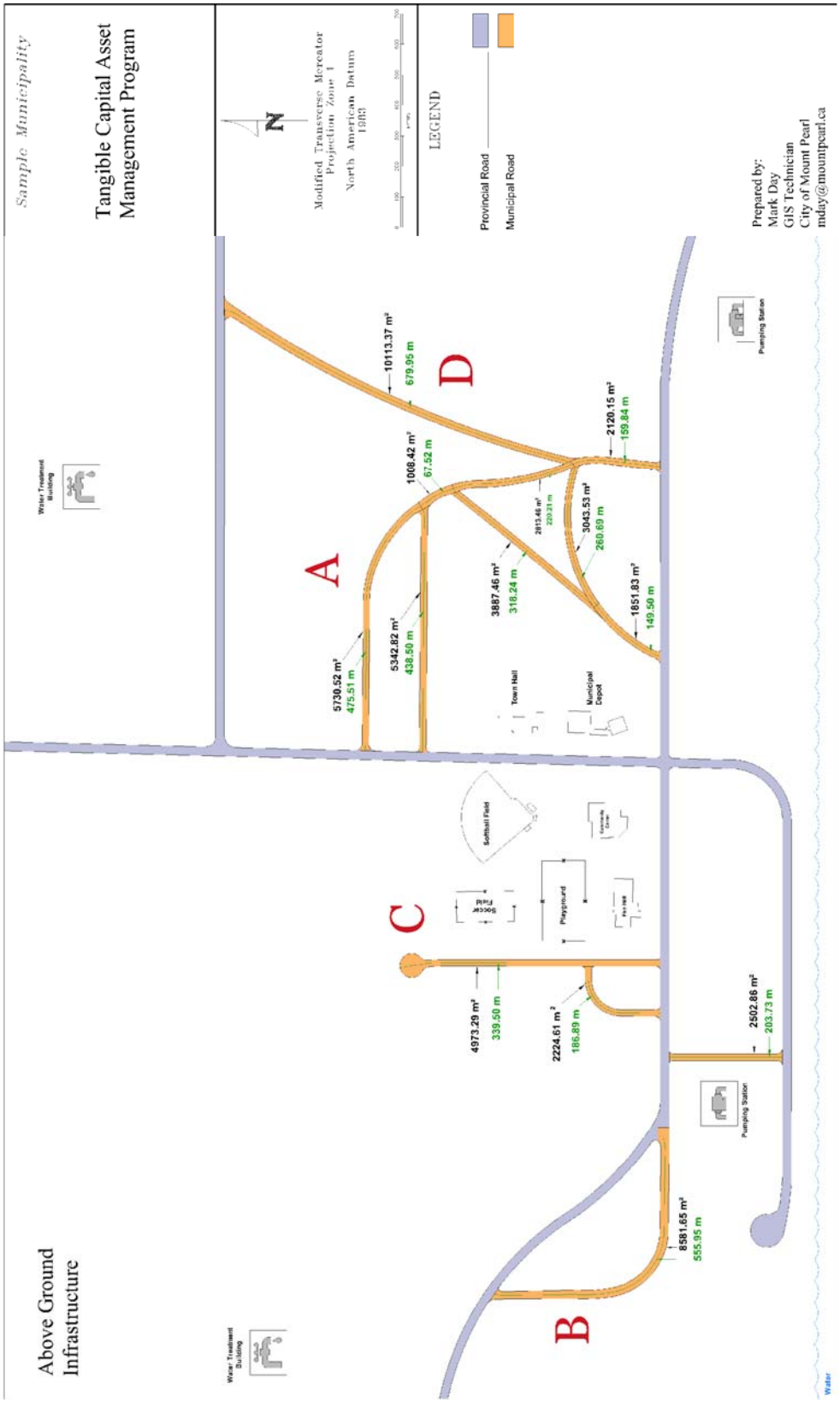
Pumping Stations $ 50,000

Note: The cost for pumping stations includes the supply and installation of mechanical and electrical equipment, the concrete chamber and all connections.

Additional Queries

For specific questions relating to infrastructure or to obtain estimates of the 2007 replacement or reproduction cost information for infrastructure assets that have not been included on this list, contact the Engineering Division of your area Regional Office.

APPENDIX C - Above Ground Infrastructure Map

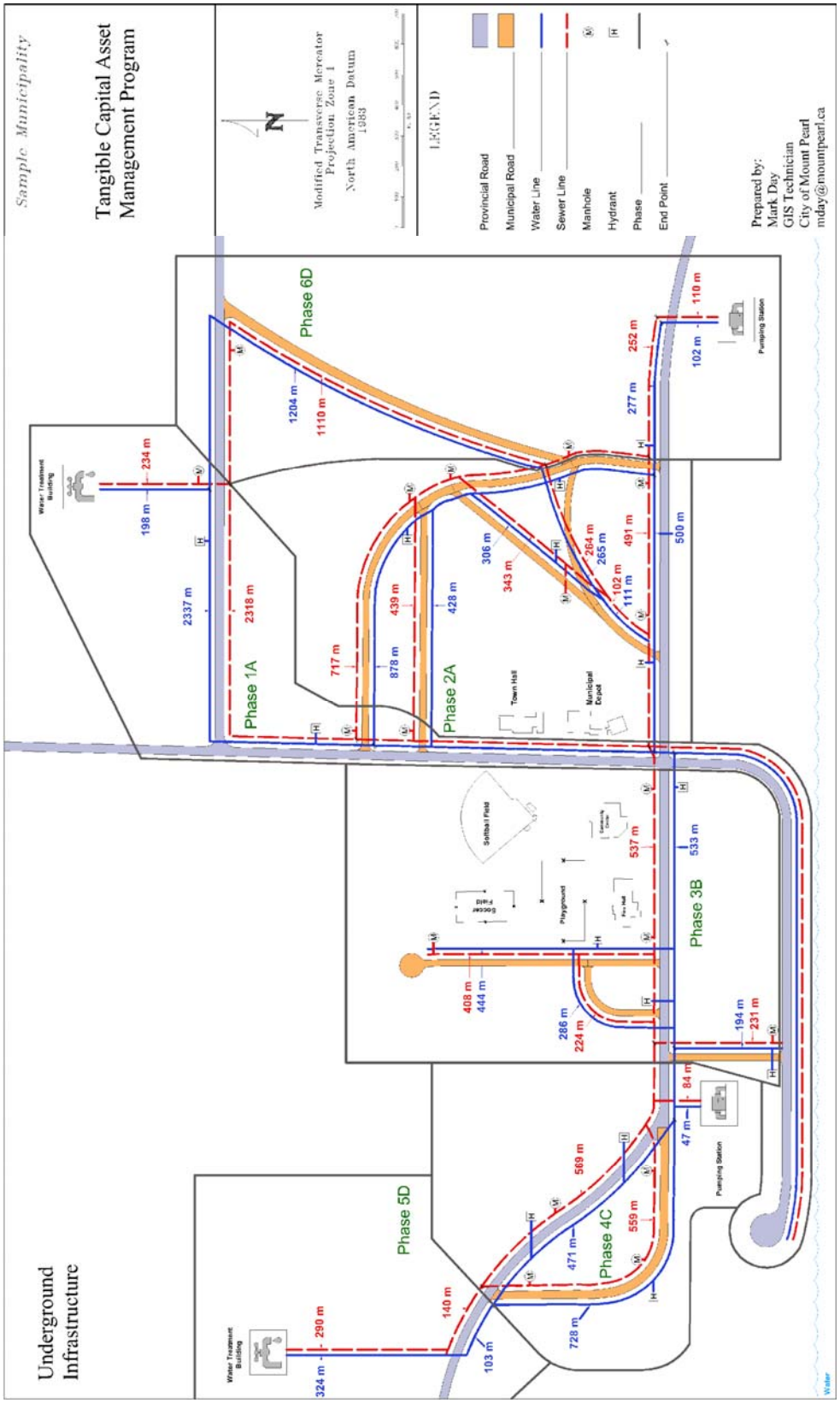


APPENDIX C - Above Ground Infrastructure Map

The Above Ground Infrastructure map indicates the road surface areas and center line lengths for the purpose of valuing each road.

The main roads through the municipality mapped are the responsibility of the Province, therefore, the surface areas of these roads has not been calculated as the road will not appear in the municipality's TCA listing.

APPENDIX D - Below Ground Infrastructure Map



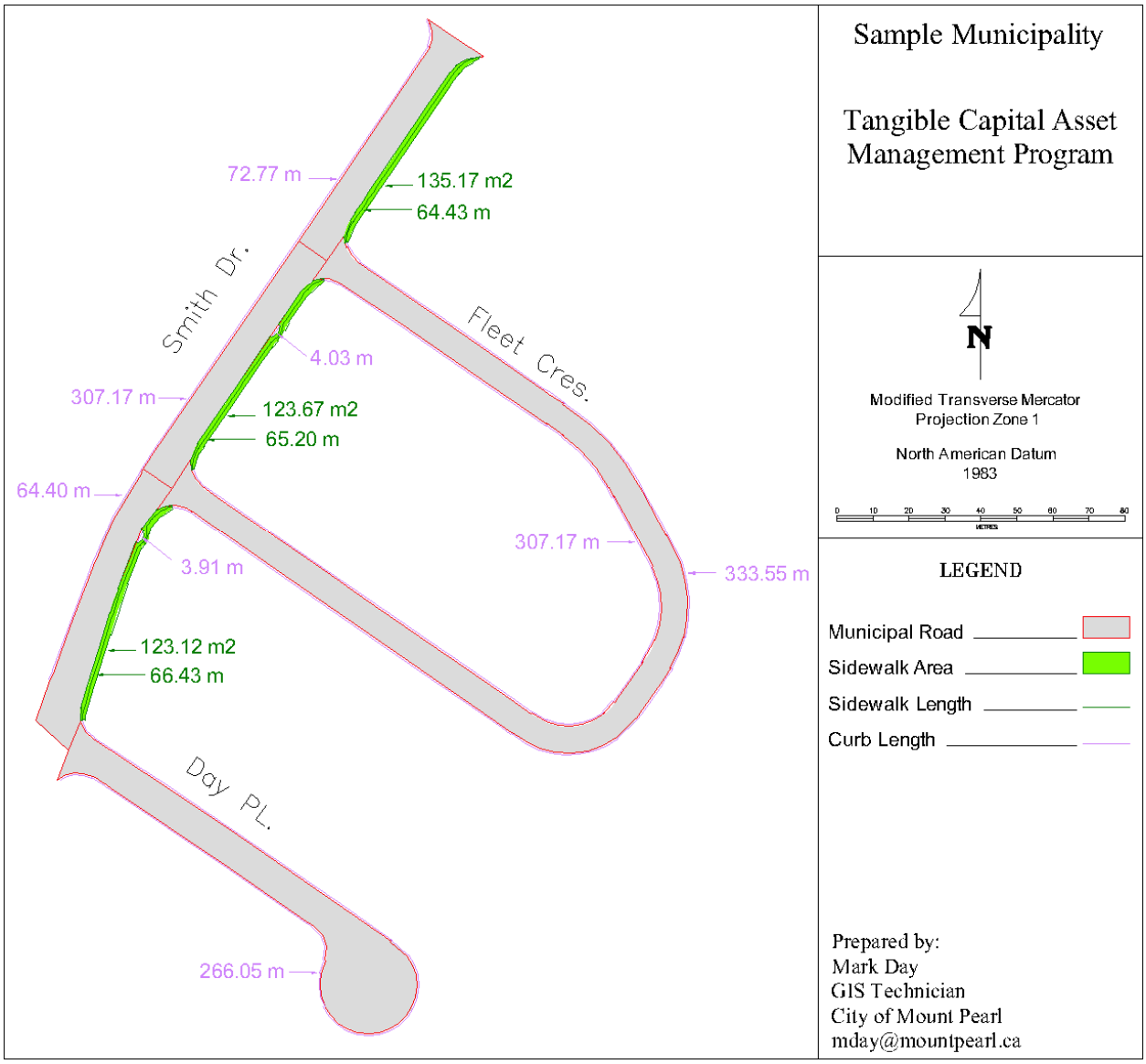
APPENDIX D - Below Ground Infrastructure Map

The Below Ground Infrastructure Map is based on a small town that does not have a storm water collection system. Because of this, only two types of pipes (water and sewer) are indicated on the map. For the purposes of showing examples of calculations, the manual will use the sewer line as both wastewater and storm collection systems.

The installation dates of the various phases that have been indicated on the map are as follows:

Phase 1A	1972
Phase 2A	1976
Phase 3B	1980
Phase 4C	1985
Phase 5D	1995
Phase 6D	2001

APPENDIX E - Curb and Sidewalk Infrastructure Map



APPENDIX F - Heavy Equipment and Machinery Price List

Assembled by the Department of Municipal Affairs
All retail costs do not include applicable sales tax.

			2007 Retail Cost
Case	Backhoe Loader	CAT 420 equivalent	$ 95,000
Case	Excavator	CX210B 20 Ton	$ 155,000
Case	Wheel Loader	5213 (930 CAT equivalent)	$ 140,700
Caterpillar	Grader	Model 140	$ 228,000
Caterpillar	Backhoe	Model 420	$ 88,000
Caterpillar	Excavator	Model 320	$ 165,000
Caterpillar	Wheel Loader	Model 930	$ 165,000
Caterpillar	Wheel Loader	Model 938	$ 199,690
CHE	Brine Production unit		$ 10,786
Ford	Crew Cab & Chassis Truck with Hydraulic Arm		$ 90,647
Ford	3 Ton Crew Cab Stake Body Truck		$ 58,726
Ford	Stake Body Truck	with Hydraulic Arm	$ 87,871
HTC	Shoulder Spreader	2000	$ 35,965
Husqvarna	Asphalt Concrete Saw		$ 12,521
International	Tandem Axle Plow Truck		$ 164,728
International	Stake Body Truck	with Hydraulic Arm	$ 81,616
International	4 Door Cab & Chassis Truck with Hydraulic Arm		$ 90,647
International	Aquatech Sewer Jet	SJ1650	$ 90,647
International	6x4 Cab & Chassis Dump Truck		$ 129,903
JCB	Backhoe	4 x 4 x 4	$ 87,392
John Deere	Grader		$ 204,000
John Deere	Grader	with snow attachments and plow harness	$ 176,650
John Deere	Loader	with snow attachments	$ 236,700
Labrie	Garbage Truck	Side Loading	$ 205,269
Larue	Snow Blower Attachment		$ 157,900
MadVac	Vacuum Collector Unit		$ 43,260
New Holland	Excavator	88 HP	$ 143,401
New Holland	Grader	with snow attachments	$ 183,233
New Holland	Tractor	with Tiger Mower brush cutter	$ 86,780
New Holland	Commercial Mower	MC28	$ 18,903
New Holland	Backhoe		$ 81,050

APPENDIX F - Heavy Equipment and Machinery Price List

Sterling	Float & Tractor		$ 187,435
Sterling	Tandem Axle Plow Truck		$ 172,220
Sterling	Garbage Truck	Rear Load	$ 148,344
Tailift	Electric Forklift		$ 29,500
Toyota	Forklift		$ 39,700
Vohl	Snow Blower		$ 183,000
VT 650	Street Sweeper	on Ford chassis	$ 198,353
Weldco Beales	Reversible Blade for Loader		$ 22,476

Fire Trucks:

	Pumper (triple combination)	$ 280,000
	Single cab; with a 3 person capacity; 800 imperial Gal tank, 1050 IGPM pump, 35000 GVWR chassis, 300 hp diesel, automatic transmission, class A injection foam system, and other features. Unit must comply with standard “CAN/ULC – S515 – 04”, Standard for Automobile Fire Fighting Apparatus.	
	Pumper (triple combination)	$ 250,000
	Crew Cab; with a 5 person capacity; 800 imperial Gal tank, 1050 IGPM pump, 35000 GVWR chassis, 300 hp diesel, automatic transmission, class A injection foam system, and other features. Unit must comply with standard “CAN/ULC – S515 – 04”, Standard for Automobile Fire Fighting Apparatus.	
	Firefighting Tanker	$ 230,000
	Single cab; with a 3 person capacity; 1500 imperial Gal tank, 400 IGPM pump, 35000 GVWR chassis, 250 hp diesel, automatic transmission, class A injection foam system, and other features. Unit must comply with standard “CAN/ULC – S515 – 04”, Standard for Automobile Fire Fighting Apparatus.	

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Summary Sheet
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Land	166,810	-	-	-	166,810	-	-	-	166,810	166,810
Buildings	201,135	-	-	-	201,135	128,214	5,028	133,242	67,893	72,921
Roads	1,042,378	-	-	-	1,042,378	639,623	62,486	702,109	340,269	402,755
Curbs, Gutters & Sidewalks	51,456	-	-	-	51,456	35,941	1,714	37,655	13,801	15,515
Traffic Signals & Controllers	66,645	-	-	-	66,645	28,888	4,444	33,332	33,313	37,757
Wastewater & Storm Water Systems	292,111	-	-	-	292,111	128,316	5,004	133,320	158,791	163,795
Water System	437,925	-	-	-	437,925	284,061	12,130	296,191	141,734	153,864
Heavy Equipment & Vehicles	286,673	-	-	-	286,673	124,655	19,111	143,766	142,907	162,018
	2,545,133	-	-	-	2,545,133	1,369,698	109,917	1,479,615	1,065,518	1,175,435

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Roads
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Pave C	163,835	-	-	-	163,835	110,592	8,192	118,784	45,051	53,243
Pave A1	192,706	-	-	-	192,706	122,047	12,847	134,894	57,812	70,659
Pave A2	33,912	-	-	-	33,912	21,480	2,261	23,741	10,171	12,432
Pave A3	71,298	-	-	-	71,298	45,154	4,753	49,907	21,391	26,144
Pave B	301,555	-	-	-	301,555	188,475	25,130	213,605	87,950	113,080
Gravel Road D	97,264	-	-	-	97,264	63,219	3,242	66,461	30,803	34,045
Grade A1	49,669	-	-	-	49,669	40,572	1,656	42,228	7,441	9,097
Grade A2	7,881	-	-	-	7,881	6,444	263	6,707	1,174	1,437
Grade A3	18,658	-	-	-	18,658	15,239	622	15,861	2,797	3,419
Grade B	105,599	-	-	-	105,599	26,400	3,520	29,920	75,679	79,199
Grade C	1	-	-	-	1	1	-	1	-	-
	1,042,378	-	-	-	1,042,378	639,623	62,486	702,109	340,269	402,755

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Curbs, Gutters & Sidewalks
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Fleet C&G 1	16,064	-	-	-	16,064	10,968	535	11,503	4,561	5,096
Fleet C&G 2	14,794	-	-	-	14,794	10,107	493	10,600	4,194	4,687
Day Curb	5,709	-	-	-	5,709	3,705	190	3,895	1,814	2,004
Smith Walk 1	5,044	-	-	-	5,044	3,780	168	3,948	1,096	1,264
Smith Walk 2	4,952	-	-	-	4,952	3,713	165	3,878	1,074	1,239
Smith Walk 3	4,893	-	-	-	4,893	3,668	163	3,831	1,062	1,225
	51,456	-	-	-	51,456	35,941	1,714	37,655	13,801	15,515

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Traffic Signals & Controllers
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
PS&AD TC	20,933	-	-	-	20,933	9,074	1,396	10,470	10,463	11,859
PS&AD NE	16,064	-	-	-	16,064	6,962	1,071	8,033	8,031	9,102
PS&AD NW	4,138	-	-	-	4,138	1,794	276	2,070	2,068	2,344
PS&AD NI	4,479	-	-	-	4,479	1,944	299	2,243	2,236	2,535
PS&AD SE	4,869	-	-	-	4,869	2,113	325	2,438	2,431	2,756
PS&AD SW	16,162	-	-	-	16,162	7,001	1,077	8,078	8,084	9,161
	66,645	-	-	-	66,645	28,888	4,444	33,332	33,313	37,757

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Wastewater & Storm Water Collection Systems
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Waste 5D.1	91,326	-	-	-	91,326	19,025	1,522	20,547	70,779	72,301
Waste 5D.2	44,088	-	-	-	44,088	9,188	735	9,923	34,165	34,900
Storm 4C.1	20,516	-	-	-	20,516	20,516	-	20,516	-	-
Storm 4C.2	20,884	-	-	-	20,884	20,884	-	20,884	-	-
Storm 4C.3	3,083	-	-	-	3,083	3,083	-	3,083	-	-
Ditch DW	5,660	-	-	-	5,660	961	113	1,074	4,586	4,699
Ditch DE	5,660	-	-	-	5,660	961	113	1,074	4,586	4,699
Manhole 3B.1	2,210	-	-	-	2,210	1,513	55	1,568	642	697
Manhole 3B.2	2,210	-	-	-	2,210	1,513	55	1,568	642	697
Manhole 3B.3	2,210	-	-	-	2,210	1,513	55	1,568	642	697
Manhole 3B.4	2,210	-	-	-	2,210	1,513	55	1,568	642	697
Manhole 4C.1	3,164	-	-	-	3,164	1,778	79	1,857	1,307	1,386
Manhole 4C.2	3,164	-	-	-	3,164	1,778	79	1,857	1,307	1,386
Manhole 4C.3	3,164	-	-	-	3,164	1,778	79	1,857	1,307	1,386
Lift Station	82,562	-	-	-	82,562	42,312	2,064	44,376	38,186	40,250
	292,111	-	-	-	292,111	128,316	5,004	133,320	158,791	163,795

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Water Distribution System
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Phase 1A RCP	140,520	-	-	-	140,520	83,141	2,342	85,483	55,037	57,379
Water 4C.1	104,574	-	-	-	104,574	78,435	3,486	81,921	22,653	26,139
Water 4C.2	67,657	-	-	-	67,657	50,738	2,255	52,993	14,664	16,919
Water 4C.3	6,751	-	-	-	6,751	5,063	225	5,288	1,463	1,688
Water 5D.1	57,504	-	-	-	57,504	28,750	2,300	31,050	26,454	28,754
Water 5D.2	18,281	-	-	-	18,281	9,138	731	9,869	8,412	9,143
Pumping Station 4C	31,640	-	-	-	31,640	17,798	791	18,589	13,051	13,842
Hydrant 3B.1	1,326	-	-	-	1,326	1,326	-	1,326	-	-
Hydrant 3B.2	1,326	-	-	-	1,326	1,326	-	1,326	-	-
Hydrant 3B.3	1,326	-	-	-	1,326	1,326	-	1,326	-	-
Hydrant 3B.4	1,326	-	-	-	1,326	1,326	-	1,326	-	-
Hydrant 4C.1	1,898	-	-	-	1,898	1,898	-	1,898	-	-
Hydrant 4C.2	1,898	-	-	-	1,898	1,898	-	1,898	-	-
Hydrant 4C.3	1,898	-	-	-	1,898	1,898	-	1,898	-	-
	437,925	-	-	-	437,925	284,061	12,130	296,191	141,734	153,864

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Land & Buildings
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Buildings										
Town Hall										
77 Main St.	201,135	-	-	-	201,135	128,214	5,028	133,242	67,893	72,921
Land										
Municipal Park										
125 Cook St.	166,810	-	-	-	166,810	-	-	-	166,810	166,810

APPENDIX G - TCA Summary Sheet and Continuity Schedule

TCA Continuity Schedule
Heavy Equipment & Vehicles
December 31, 2008

Asset	Estimated Cost Beg of year	Additions	Disposals	Write-downs	Cost End of Year	Accum Amort Beg of Year	Amort during Year	Accum Amort End of Year	2008 NBV	2007 NBV
Caterpillar P38G Rubber Tire Loader 4YS02630	213,009	-	-	-	213,009	78,100	14,200	92,300	120,709	134,909
John Deere 310G Backhoe GX897512	73,664	-	-	-	73,664	46,555	4,911	51,466	22,198	27,109
	286,673	-	-	-	286,673	124,655	19,111	143,766	142,907	162,018

APPENDIX H - PST, GST and HST Rate and Rebate Schedule

Year	HST	GST	RST	Municipal Rebate
Jan 1, 2008	13%			5%
July 1, 2006	14%			6%
Jan 1, 2004	15%			7%
Apr 1, 1997	15%			4%
Jan 1, 1991		7%	12.84%	4%
Prior to 1991			12%	

Prior to 1991 the provincial Retail Sales Tax ("RST") rate was 12%.

On January 1, 1991, the Government of Canada implemented the 7% Goods and Services Tax ("GST"). The implementation of the 7% GST combined with the 12% RST increased total sales taxes in Newfoundland to 19.84%. The .84% increase was due to the fact that RST was calculated after GST had been applied to the goods or services purchased. To provide some level of tax relief to municipalities the Government of Canada provided a rebate of 4% of the GST back to municipalities.

On April 1, 1997, Newfoundland adopted the Harmonized Sales Tax ("HST"). Implementation of the HST was achieved through the reduction of the provincial RST rate to 8% from 12% and ended the policy of charging RST on the amount of GST paid.

On January 1, 2004, the Government of Canada increased the municipal rebate of HST to 7% eliminating the federal portion of the HST paid by municipalities.

On July 1, 2006, the Government of Canada reduced both the rate of HST charged and the municipal rebate by 1% to 6%.

On January 1, 2008, the Government of Canada reduced both the rate of HST charged and the municipal rebate by 1% to 5%.

Note:

The cost information contained in this manual for infrastructure and equipment and machinery is provided before the application of any form of sales tax. Once a municipality has discounted the 2007 cost information to arrive at the discounted value of the TCA, the appropriate sales taxes that were in place at the time of acquisition or construction should be added to the discounted value to arrive at the total estimated original cost.

APPENDIX H - PST, GST and HST Rate and Rebate Schedule

For example, a municipality purchased a Caterpillar 930G Rubber Tire Loader in 1998. The 2007 replacement cost for that TCA is $165,000.

2007 replacement cost	$ 165,000	
1998 Discounting factor	81.88%	(from Appendix A)
	135,102	
Estimated HST paid (15%)	20,265	
HST rebate received (4%)	(5,404)	
Estimated Original cost	$ 149,963	

For example, a municipality repaved a residential road in 2001. The surface area of the road was 1,200 m^2. The 2007 reproduction cost for that TCA is $37 / m^2, for a total reproduction cost of $44,400.

2007 reproduction cost	$ 44,400	
2001 Discounting factor	87.71%	(from Appendix A)
	38,943	
Estimated HST paid (15%)	5,841	
HST rebate received (4%)	(1,558)	
Estimated Original cost	$ 43,226	

For example, a municipality installed 150 M water main of 200 mm reinforced concrete pipe during 1982. The 2007 reproduction cost for that TCA is $252 / m, for a total reproduction cost of $37,800.

2007 reproduction cost	$ 37,800	
1982 Discounting factor	49.24%	(from Appendix A)
	18,613	
Estimated RST paid (12%)	2,234	
Estimated Original cost	$ 20,847	