RIDEAU CANAL
ASSESSMENT OF ENGINEERING STRUCTURES
PHASE I - HISTORICAL EVALUATION

James De Jonge
Policy and Research
Parks Canada
Ontario Region
1985
## INDEX

<table>
<thead>
<tr>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1....</td>
</tr>
<tr>
<td>3....</td>
</tr>
<tr>
<td>9....</td>
</tr>
<tr>
<td>9....</td>
</tr>
<tr>
<td>17....</td>
</tr>
<tr>
<td>20....</td>
</tr>
<tr>
<td>22....</td>
</tr>
<tr>
<td>24....</td>
</tr>
<tr>
<td>30....</td>
</tr>
<tr>
<td>32....</td>
</tr>
<tr>
<td>34....</td>
</tr>
</tbody>
</table>

Appendix A - Evaluation of Site and Structural Integrity
Appendix B - Structural History Summaries of Major Engineering Features
I INTRODUCTION

The purpose of this assessment of engineering structures is to expand upon the existing historical and archaeological preservation guidelines for the Rideau Canal as outlined in Ontario Regional Directive ORD-21. The assessment will assist in the application of the guidelines by determining the best surviving examples of the major engineering works on the canal in order to select those most suitable to receive the fullest heritage protection. The assessment is also intended to determine the level of protection that should be accorded to the remaining engineering structures and their component parts.

The assessment is being conducted in two phases. This first phase is essentially a research stage during which time historical sources were reviewed to determine the degree of structural alteration to the major engineering features. Research efforts were concentrated on features having potentially the highest structural integrity and the greatest historical significance. Those structures of marginal historical significance, as well as original structures that no longer function in their original construction context, generally were eliminated for research purposes on account of time constraints.

The engineering features were analysed under the categories of: lock chambers, dams, waste weirs, basins, bridges, embankments and lock operational equipment. The engineering resources of the Tay Branch (ca. 1884-1890) were examined as a separate category. Within these categories each feature was evaluated according to several criteria as being of either low, medium or high historical significance. The criteria used in the overall evaluation of each feature included: the level of designation by the Historic Sites
and Monuments Board of Canada; the uniqueness of the feature; the structural integrity of the feature; and the overall integrity of the site on which the feature is located. The assessment of site integrity was based upon the presence of significant heritage features, including buildings, at each lockstation and the degree to which these have been altered. It also reflects the impact of modern encroachments upon the original character of the site.

The two appendices at the end of the report are intended to provide background information for the rationale used in ranking the various structures. Appendix A provides a preliminary evaluation of the site integrity of the lockstations along the Rideau and also summarizes the overall integrity of the engineering features located at each site. Appendix B provides a more detailed history of structural modifications and repairs made to the more significant engineering features, noting unique components as well as observations made during a brief site survey in October 1984.

The list of structures generated in this report will be reviewed again during the second phase using some of the same criteria as well as additional factors including: site accessibility, interpretive potential, visitation, engineering feasibility, cost, etc. The second phase will be coordinated by planning, and will involve input from Rideau Canal staff, Regional planning, interpretation, engineering as well as research personnel.

Phase I Assessment

Most engineering features have been given an overall rating of low, medium or high. Structures with an overall rating of high at this time appear to be the most suitable to receive the fullest heritage treatment with total preservation of original fabric and construction techniques. Those structures with an overall rating
of medium generally retain significant original fabric or are located on sites with a high overall integrity. It is recommended that the remaining original fabric should be preserved wherever possible, and where replacement is necessary, first consideration should be given to using historically appropriate methods of construction. As a minimum, historic appearance will be maintained at all times. Structures in the third category with an overall rating of low include those which have been extensively repaired with often little original fabric remaining, or those which are recent replacement structures. The necessity of using historically authentic methods of repair would not be as pressing with this class of structures so long as their historic appearance is maintained.

II EXECUTIVE SUMMARY

(A) Rideau Canal - Lock Chambers

High Rating
   Smiths Falls Flight Locks 28, 29, 30
   Jones Falls Flight Locks 40, 41, 42
   Chaffeys Lock 37
   Jones Falls Detached Lock 39
   Clowes Lock 20
   Nicholsons Upper Lock 19

Medium Rating
   Nicholsons Lower Lock 18
   Kingston Mills Upper Flight Lock 47
   Kingston Mills Middle Flight Lock 48
   Long Island Lower Flight Lock 14
   Narrows Lock 35
   Edmonds Lock 25
   Kilmarnock Lock 24
Smiths Falls Detached Lock 31
Poonamalie Lock 32
Hartwells Lower Lock 9
Burritts Rapids Lock 17
Old Slys Lower Lock 26
Old Slys Upper Lock 27
Merrickville Lower Lock 21
Merrickville Middle Lock 22
Merrickville Upper Lock 23

Low Rating
Kingston Mills Lower Flight Lock 49
Kingston Mills Detached Lock 46
Hartwells Upper Lock 10
Hogsback Lower Lock 11
Hogsback Upper Lock 12
Long Island Middle Lock 15
Long Island Upper Lock 16
Upper Brewers Lower Lock 44
Upper Brewers Upper Lock 43
Newboro Lock 36
Black Rapids Lock 13
Ottawa Locks 1-8
Davis Lock 38
Lower Brewers Lock 45
Smiths Falls Lock 29(a)

(B) Rideau Canal - Dams

High Rating
Jones Falls Arch Dam
Long Island Arch Dam
Edmunds Overflow Dam
Davis Dam
Medium Rating
  Upper Brewers Dam
  Narrows Dam
  Clowes Overflow Dam
  Kingston Mills Arch Dam
  Old Slys Arch Dam
  Smiths Falls Arch Dam
  Nicholsons Overflow Dam
  Hogsback Dam

Low Rating
  Whitefish Dam (concrete)
  Poonamalie Dam (concrete)
  Kilmarnock Dam (concrete)
  Merrickville Dam (concrete)
  Burritts Rapids Dam (concrete)
  Black Rapids Dam (concrete)
  Whitehorse Shoal Dam [Manotick] (concrete)
  Manotick Dam/weir (concrete)
  Bobs Lake Dam (concrete)
  Wolfe Lake Dam (concrete)

(C) Rideau Canal - Waste Weirs

High Rating
  Edmunds Weir
  Kingston Mills Weir

Medium Rating
  Clowes Weir
  Nicholsons Weir
  Upper Brewers Weir
Low Rating (Concrete Structures)
- Lower Brewers Weir
- Jones Falls Weir
- Davis Weir
- Chaffeys Weir
- Narrows Weir
- Smiths Falls Detached Weir
- Smiths Falls Combined Weir
- Old Slys Weir
- Long Island Weir
- Black Rapids Weir
- Hogs Back Weir
- Hartwells Weir
- Poonamalie Channel Weir
- Merrickville Weir

(D) Rideau Canal - Basins

High Rating
- Jones Falls Basin
- Merrickville Upper Basin

Medium Rating
- Merrickville Lower Basin

Low Rating
- Kingston Mills Basin
- Smiths Falls Basin

(E) Rideau Canal - Bridges (owned by Parks Canada)

High Rating
- Burritts Rapids Swing Bridge
- Jones Falls Swing Bridge
Medium Rating
Jones Falls Fixed Bridge
Upper Brewers Fixed Bridge
Long Island Swing Bridge
Narrows Swing Bridge
Lower Brewers Swing Bridge
Kilmarnock Swing Bridge
Nicholsons Swing Bridge
Brass Point Fixed and Swing Bridge
Kingston Mills Fixed Bridge
Jones Falls Basin Drain Bridge

Low Rating
Chaffeys Swing Bridge
Abbott Street Swing Bridge (Smiths Falls)
Old Slys Swing Bridge
Merrickville Swing Bridge
Kingston Mills Swing Bridge
Lower Brewers Fixed Waste Weir Bridge
Jones Falls Fixed Waste Weir Bridge
Davis Fixed Waste Weir Bridge
Chaffeys Fixed Waste Weir Bridge
Narrows Fixed Waste Weir Bridge
Smiths Falls Detached Fixed Bridge
Kilmarnock Fixed Bridge
Long Island Fixed Waste Weir Bridge
Hogs Back Fixed Waste Weir Bridge
Wolfe Lake Dam Fixed Bridge
(F) Rideau Canal - Embankments

High Rating
Kingston Mills Embankments

(G) Rideau Canal - Lock Operating Equipment

Gate Opening Mechanisms
1) Crab/Floor Chain System High
2) Crab/Swing Beam System High
3) Crab/Push Bar System Medium
4) Hydraulic Low

Sluice Mechanisms
1) Gate Sluice (Rack and Pinnion) High
2) Gate Sluice (Hydraulic) Low
3) Tunnel Sluice (Rack and Pinnion) High
4) Tunnel Sluice (Crab and Chain) Medium
5) Tunnel Sluice (Hydraulic) Low

(H) Tay Canal Branch

Locks
Beveridges Lower Lock 33 High
Beveridges Upper Lock 34 High

Dams
Beveridges Dam (concrete) Low
Clay Dam/Embankment Medium

Basins
Perth Basin High

Bridges
Beckwith Street Swing Bridge High

Lock Operating Equipment
Crab/Push Bar Gate Mechanism Medium
Gate Sluice Mechanism High
III RECOMMENDATIONS: PHASE ONE

(A) Rideau Canal - Lock Chambers

There are forty-seven original lock chambers on the Rideau Canal and one additional hydraulically-operated lock at Smiths Falls which bypasses the three combined locks. Of these, ten locks were rated as being of high historical significance, sixteen as being of medium significance and twenty-two as being of low significance.

High Rating - It is recommended that structures in this category be fully preserved in their original fabric and construction context.

1) Smiths Falls Flight Locks 28, 29, 30
   These locks are no longer in use and the site has an overall low to medium integrity, but their structural integrity appears to be exceptional, with only the two lower wing walls and the two intermediate sills having been rebuilt.

2) Jones Falls Flight Locks 40, 41, 42
   These locks have a high structural integrity and are located on a site of high integrity on account of its preserved heritage character and the number of significant buildings and engineering features. The locks are three of sixteen constructed with masonry invert floors, and they retain the original style rack and pinnion sluice valve mechanisms.
3) Chaffeys Lock 37
This lock has a high structural integrity, with the upper wing walls having been rebuilt at the turn of the century using stone from the original quarry in Elgin. The weir at the site has been renewed in concrete but this does not strongly detract from the nineteenth century character of the lock station and the heritage buildings at the site.

4) Jones Falls Detached Lock 39
This lock has medium structural integrity with all four wing walls having been rebuilt on one occasion. However, the overall site integrity is exceptionally high, and the chamber has a masonry inverted floor and retains the original style rack and pinnion sluice valve mechanisms.

5) Clowes Lock 20
The lock has a high structural integrity with portions of it having been rebuilt. It is located on a site of medium to high integrity with a relatively intact overflow dam and masonry waste weir in close proximity to the lock.

6) Nicholsons Upper Lock 19
This lock has a high structural integrity with only the upper wing walls and recesses having been rebuilt on one occasion. The site has an overall medium integrity on account of the original overflow dam having been concreted, and the original weir replaced with one in stone masonry. The lock is crossed by a timber swing bridge.
Medium Rating - Structures in this category generally do not have as good an overall site and structural integrity as those structures listed in the high category. Nonetheless, they retain significant original fabric or else are located on sites having otherwise a high integrity. It is recommended that first consideration be given to preserving original fabric and repairing these structures using historically appropriate methods of construction. As a minimum, historic appearance should be maintained at all times.

1) Nicholsons Lower Lock 18
   The chamber walls and lower wing walls appear to be fairly intact, but the upper wing walls and monoliths have been rebuilt using stone masonry of a larger dimension. The site has a medium overall integrity.

2) Kingston Mills Upper Flight Lock 47
   The lock appears to be fairly intact, with possibly some repairs to the upper wing walls. However, the lower flight lock is not as strongly intact. The site has a medium overall integrity.

3) Kingston Mills Middle Flight Lock 48
   The lock appears to be very intact with only a small portion of one chamber wall rebuilt in concrete in 1960. However, the lower flight lock is not as strongly intact. The site has a medium overall integrity.
4) Long Island Lower Flight Lock 14
The lock is fairly intact with one chamber wall and one wing wall having been reconstructed. However, the two upper locks have had substantial alterations. The site has a medium overall integrity.

5) Narrows Lock 35
The upper wing walls and recesses have been rebuilt and extensive repairs made to other portions of the lock in 1922. The stone masonry does not appear to be in good condition. The site has a medium overall integrity.

6) Edmunds Lock 25
All wing walls, monoliths and chamber walls appear to have been rebuilt on at least one occasion, although the overall site integrity is medium to high.

7) Kilmarnock Lock 24
The lower wing walls, monoliths and chamber walls are original, but the upper wing walls have been rebuilt in reinforced concrete with a stone facing. The site has a medium overall integrity.

8) Smiths Falls Detached Lock 31
The upper wing walls and monoliths and the north chamber wall have been rebuilt on one occasion. The site has a low to medium overall integrity.

9) Poonamalie Lock 32
All wing walls have been rebuilt, the chamber floor concreted, and the chamber walls extensively repaired. The site has a medium overall integrity.
10) Hartwells Lower Lock 9
The lower wing walls and intermediate monoliths have been rebuilt on one occasion, but the chamber walls and floor appear very intact. However, the upper chamber is not as strongly intact. The overall site integrity is medium.

11) Burritts Rapids Lock 17
All wing walls have been rebuilt or extensively repaired on one occasion. One chamber wall was rebuilt in 1909 and the original wooden floor was concreted in 1926. The site has a medium overall integrity.

12) Old Slys Lower Lock 26
The chamber appears to be relatively intact with the exception of the intermediate monoliths which have been rebuilt in sandstone. However, the upper lock is not as strongly intact and the site integrity is low to medium.

13) Merrickville Lower Lock 21
The wing walls and monoliths have been rebuilt or extensively repaired on one occasion, and the original configuration of the site has been altered by the construction of a reinforced concrete dam and weir downstream from the original structure.

14) Merrickville Middle Lock 22
Extensive repairs have been made to the monoliths and wing walls, and the original configuration of the site has been altered.

15) Merrickville Upper Lock 23
Both upper wing walls have been rebuilt in concrete, although the remainder of the lock appears to be intact. The original configuration of the site has been altered.
16) Old Slys Upper Lock 27
The Upper wing walls and all four monoliths have been rebuilt on one occasion. The overall site integrity is low to medium on account of urban encroachment and alterations to the engineering works.

Low Rating - Structures in this class have undergone significant alterations or else have been reconstructed in concrete with a stone masonry facade resulting in a significant loss of original fabric. Historically appropriate methods of repair would not be as pressing with this group of lock chambers so long as the historic appearance is maintained.

1) Kingston Mills Lower Flight Lock 49
The lower wing walls and monoliths have been recently rebuilt and substantial repairs made to the chamber walls on several occasions. The site has an overall medium integrity.

2) Kingston Mills Detached Lock 46
The lower wing walls and monoliths have been rebuilt in concrete. The upper wing walls appear to have been renewed, both sills are concrete, and the chamber walls are extensively patched. The vicinity of the lock chamber has an overall medium integrity.

3) Hartwells Upper Lock 10
Both sills and both chamber walls are concreted, and the upper wing walls have been rebuilt in stone masonry. The site has a medium overall integrity.
4) Hogsback Lower Lock 11
Both chamber walls have been rebuilt, one in concrete. Both wing walls have been rebuilt or repaired. The site has a low overall integrity on account of urban encroachment and alterations to the major engineering works.

5) Hogsback Upper Lock 12
The approach walls above the lock are concrete. The site integrity is low on account of urban encroachment and alterations to the major engineering works.

6) Long Island Middle Lock 15
Both chamber walls have been rebuilt using concrete. The site has a medium overall integrity.

7) Long Island Upper Lock 16
The chamber walls were reconstructed in stone masonry in 1914 with a full battered surface to correct an original construction defect. The upper wing walls and recesses have been rebuilt on one occasion. The site has a medium overall integrity.

8) Upper Brewers Lower Lock 44
Both chamber walls and one wing wall have been rebuilt, the chamber floor has been concreted and the upper monoliths reconstructed in reinforced concrete with a stone facing. The site has a medium overall integrity.

9) Upper Brewers Upper Lock 43
The intermediate monoliths have been reconstructed in reinforced concrete with a stone masonry facade. The upper wing walls and monoliths have been rebuilt in stone masonry on one occasion, and one chamber wall has been rebuilt in concrete. The site has a medium overall integrity.
10) Newboro Lock 36
Nearly all of the lock appears to have been demolished and rebuilt using concrete and a stone facade when the sluice and gate opening mechanisms were converted to hydraulic operation in 1966/67. The site otherwise has a medium overall integrity.

11) Black Rapids Lock 13
Nearly all of the lock appears to have been demolished and rebuilt using concrete when the sluice and gate opening mechanisms were converted to hydraulic operation in 1969. The site has a low overall integrity.

12) Ottawa Locks 1 to 8
All eight locks will be reconstructed in concrete with a stone facade. Only the original floors of locks 1 to 3, and some original facing stone will be preserved. The site has a medium overall integrity.

13) Davis Lock 45
The entire lock has been reconstructed in reinforced concrete with a stone facade. Only some original facing stones remain. The site has a medium overall integrity.

14) Lower Brewers Lock 45
The entire lock has been reconstructed in reinforced concrete with a stone facade. Only some original facing stones remain.

15) Smiths Falls Lock 29a
This is a modern concrete structure built to bypass the original three combined locks.
(B) Rideau Canal - Dams

Twenty-one dams were evaluated during Phase I of the assessment. Of these, four dams were rated as being of high historical significance, eight as being of medium significance and ten as being of low significance.

High Rating - It is recommended that structures in this category be fully preserved in their original fabric and construction context.

1) Jones Falls Arch Dam
   This is the most outstanding of the five remaining stone arch dams of the non spillway type on the Rideau and is the only true arched keywork dam on the Rideau. It has a high structural integrity and is located on a site of exceptionally high integrity.

2) Long Island Arch Dam
   This structure is also an outstanding example of a non spillway stone arch dam and has undergone few repairs. It is located on a site of medium overall integrity.

3) Edmunds Overflow Dam
   This is the best example of the three surviving masonry spillway dams on the Rideau. It has undergone few repairs and is located on a site having a medium to high overall integrity.

4) Davis Dam
   This dam is of a unique construction with two parallel rubble masonry walls infilled with clay puddle and covered with earth. The structure is intact and the site has a medium overall integrity.
Medium Rating - Dams in this class have either undergone substantial structural modifications or else no longer function in their original construction context. Nonetheless, they retain significant original material, and first consideration should be given to preserving original fabric and repairing these structures using historically appropriate methods of construction. As a minimum, historic appearance should be maintained at all times.

1) Narrows Dam
This dam was originally built utilizing timber braces backed with stone and fill, and front sloped with clay and gravel. Large sections may have been repaired using timber cribwork during the nineteenth century.

2) Upper Brewers Dam
Like the dam at the Narrows, this one was built using timber braces backed with stone and fill, and front sloped with clay and gravel. Sections were repaired, apparently using stone and timber cribwork during the nineteenth century. The structure is partially obscured by high water levels caused by the construction of the powerhouse dam immediately downstream.

3) Clowes Overflow Dam
A section of the dam was rebuilt in 1914, and a reinforced concrete wall was placed against the upstream face of the dam in 1975/76. The site has an overall medium to high integrity.

4) Kingston Mills Arch Dam
The keywork of the dam has failed and bulged forward, and most of the structure is obscured by the basin created by the construction of the powerhouse dam immediately downstream. The site has an overall medium integrity.
5) Old Slys Arch Dam
The dam no longer functions in its original construction context on account of extensive landfill on the upstream and downstream face. The site has a low to medium overall integrity.

6) Smiths Falls Arch Dam
The dam no longer functions in its original construction context on account of extensive landfill on the upstream and downstream face. The site has a low to medium overall integrity.

7) Nicholsons Overflow Dam
The keywork of the dam has failed and portions have been pushed downstream. A reinforced concrete wall has been built on the downstream face. The site has medium overall integrity.

8) Hogsback Dam
This is the only dam on the Rideau constructed originally of timber cribwork. The dam has been altered by the construction of a succession of waste weirs at its western edge, and by an earth and concrete extension to its upstream face in 1935, but the core of the dam remains intact.

Low Rating - This category includes dams constructed in concrete during the twentieth century which represent a recent evolution of engineering structures on the Rideau. Where reconstruction is necessary, first consideration should be given to replacement in kind in order to maintain the overall appearance and configuration.
1) Whitefish Dam - Morton Creek (built ca 1980)
2) Poonamalie Dam (built ca 1971)
3) Kilmarnock Dam (built ca 1964)
4) Merrickville Dam (built ca 1914)
5) Burritts Rapids Dam (built ca 1951)
6) Black Rapids Dam (built ca 1949-1954)
7) Whitehorse Shoal Dam - Manotick
8) Manotick Dam/weir (rebuilt 1980-81)
9) Bob's Lake Dam
10) Wolfe Lake Dam/Weir

(C) Rideau Canal - Waste Weirs

Nineteen weirs were evaluated, five of which are stone masonry, and the remainder, concrete. Two were rated as being of high historical significance, three were rated as being of medium significance and sixteen as being of low significance.

High Rating - It is recommended that structures in this category be fully preserved in their original fabric and construction context.

1) Edmunds Weir
   This structure has been rebuilt on one occasion but has retained its original appearance, construction techniques and significant original fabric. It is incorporated into the overflow dam at the site which is well intact.

2) Kingston Mills Weir
   This structure has been rebuilt on one occasion but has retained original fabric, appearance and construction techniques. It is partially obscured by the basin of water created by the powerhouse dam immediately downstream.
Medium Rating - These structures have been altered from their original appearance but nonetheless retain original fabric or historically appropriate forms of construction. It is recommended that first consideration be given to preserving original fabric and repairing these structures using historically appropriate methods of construction. As a minimum, historic appearance should be maintained at all times.

1) Clowes Weir
This weir has been rebuilt on two occasions but appears to have retained its original construction techniques and appearance with the exception of the original central pier which was washed away in 1902 and not replaced.

2) Nicholsons Weir
This weir is fairly intact. It was built in 1912 to replace the original wooden waste weir at the site.

3) Upper Brewers Weir
This structure was rebuilt on one occasion in stone masonry at which time its width was increased. Some time thereafter, the sill was lowered. The weir is partly obscured by the basin created by the construction of the powerhouse dam immediately downstream.

Low Rating - This category includes weirs constructed in concrete during the twentieth century which represent a recent evolution of engineering structures on the Rideau. Where reconstruction is necessary, first consideration should be given to replacement in kind in order to maintain the overall appearance and configuration.
1) Lower Brewers Weir (built ca 1980)
2) Jones Falls Weir (built ca 1926)
3) Davis Weir (built ca 1920)
4) Chaffeys Weir (built ca 1920)
5) Narrows Weir (built ca 1975)
6) Smiths Falls Detached Weir (built ca 1921)
7) Smiths Falls Combined Weir (built ca 1958)
8) Old Sly Weir (built ca 1960)
9) Long Island Weir (built ca 1976)
10) Black Rapids Weir (built ca 1950)
11) Black Rapids Weir (built ca 1925)
12) Hogs Back Weir (built ca 1973-74)
13) Hartwells Weir (built ca 1904)
14) Poonamalie Channel Weir
15) Merrickville Weir (built ca 1914)
16) Burritts Rapids Weir (built ca 1930)

(D) Rideau Canal - Basins

Five basins were evaluated, two of which were rated as being of high historical significance, one as being of medium historical significance and two as being of low significance.

High Rating - It is recommended that every effort be made to preserve the original fabric and appearance of these structures.

1) Jones Falls Basin
The basin has largely maintained its natural character with the exception of a masonry basin sluice which dates to the turn of the century, and a masonry retaining wall on the north east side which has recently been rebuilt. The basin's remaining natural character should be preserved on account of the site's overall high integrity.
2) Merrickville Upper Basin
The original masonry basin walls have been reconstructed on one occasion, presumably using traditional techniques and much of the original materials. Every effort should be made to preserve original fabric and appearance.

Medium Rating

1) Merrickville Lower Basin
The original masonry south basin wall has been reconstructed on one occasion, presumably using traditional techniques and much of the original materials. However, a concrete wall has been built on the face of the original north basin wall. First consideration should be given to preserving the original fabric and appearance of the south wall, and to restoring the original historic appearance of the north wall.

Low Rating

1) Smiths Falls Basin
The original appearance of the basin has been altered by infill and extensive concrete walls. First consideration should be given to replacement in kind to maintain the existing appearance.

2) Kingston Mills Basin
The original dimensions of the basin have been altered, and the original masonry walls replaced with concrete. First consideration should be given to restoring the original historic appearance on account of the heritage character of the site.
The historical evaluation of bridges included those owned by Parks Canada as well as those under the jurisdiction of other agencies. The bridges owned by Parks Canada have been rated as high, medium or low in terms of their historical significance. Bridges under the jurisdiction of other agencies have been divided into two general categories. The first category includes bridges whose preservation would be of interest to Parks Canada on account of their historical significance or their contribution to the historical environment of a particular lockstation. The second category includes modern twentieth century bridges as well as bridges of some historical merit but which are not strongly associated with a particular lockstation.

**Bridges Owned By Parks Canada**

**High Rating** - It is recommended that every effort be made to preserve original fabric, construction techniques and appearance.

**Burritts Rapids Swing Bridge**
This is the oldest surviving swing bridge on the Rideau Canal, and has a unique design not found on other Canadian Canals. The original appearance and most of the original fabric have been preserved, and the site has maintained its original rural character.

**Jones Falls Swing Bridge**
This is a close replica of a type of swing bridge introduced on the Rideau around 1865, and has been reconstructed on 12 to 15 year intervals. It is the only remaining timber swing bridge on the Rideau Canal that has not had its loading capacity upgraded, and it is located at a site with a high overall integrity. The
intention to reconstruct a replica of the original bridge at Jones Falls is recommended in an approved Ontario Regional Directive (Replacement Policy for Timber Swing Bridges on the Rideau Canal).

Medium Rating - It is recommended that first consideration be given to preserving original fabric and repairing these structures using historically appropriate methods of construction. As a minimum, historic appearance should be maintained at all times.

Jones Falls Fixed Bridge
Upper Brewers Fixed Bridge
These structures are good examples of simple timber crib fixed wooden bridges. Both appear to have been replaced in kind on at least one occasion but have retained their original appearance. The Jones Falls bridge is complemented by a variety of significant engineering features at the site. The Upper Brewers bridge dates back to the construction period and is located on a site that has maintained its original rural character.

Long Island Swing Bridge
Narrows Swing Bridge
These are steel bridges of a common pony truss design which date to the turn of the century. The historical significance of these structures has decreased as they have been moved from their original locations to their present sites.

Lower Brewers Timber Swing Bridge
Kilmarnock Timber Swing Bridge
Nicholsons Timber Swing Bridge
These bridges are of the same design as the swing bridge at Jones Falls, although their loading capacity has been upgraded.
Brass Point Timber Swing and Fixed Steel Bridge
This bridge consists of four steel fixed spans dating to 1902-03 and a wooden swing span similar in design to the other wooden swing bridges on the Rideau. The wooden span has been renewed from time to time and the loading capacity upgraded. It is the only bridge of its type in Ontario.

Kingston Mills Fixed Bridge
This is a single span through truss bridge constructed in 1909.

Jones Falls Basin Drain Bridge
This is a stone masonry structure constructed in 1906.

Low Rating - This category includes concrete and steel bridges constructed during the twentieth century which represent a more recent evolution of engineering structures on the Rideau. Decisions regarding the treatment of these structures should take into consideration Parks Canada Management Guidelines 5.4.1, Identification and Treatment of Historic Bridges, prepared by ARC Branch, Policy Division in 1981. Where reconstruction is necessary, first consideration should be given to replacement in kind in order to maintain the overall appearance and configuration.

Chaffeys Swing Bridge
Abbott St. Swing Bridge
Kingston Mills Swing Bridge
Old Slys Swing Bridge
Merrickville Swing Bridge
These are steel structures of a common plate girder design constructed between 1933 and 1962.

Lower Brewers Fixed Waste Weir Bridge
Jones Falls Fixed Waste Weir Bridge
Davis Fixed Waste Weir Bridge
Chaffeys Fixed Waste Weir Bridge
Narrows Fixed Waste Weir Bridge
Smiths Falls Detached Fixed Bridge
Kilmarnock Fixed Bridge
Long Island Fixed Waste Weir Bridge
Hogs Back Fixed Waste Weir Bridge
Wolfe Lake Dam Fixed Bridge

Rideau Canal Bridges Not Under Parks Canada's Jurisdiction

Category (A) This category includes heritage bridges of considerable historical merit as well as heritage bridges which contribute to the overall historical integrity of particular lockstations on the Rideau. It is recommended that efforts be made, wherever possible, to ensure the preservation of these structures or significant component parts.

1) Plaza Bridge (Ottawa Locks)
This bridge, constructed in 1912, is a prominent architectural component of the Ottawa lockstation. The ornamentation of the structure (stone facing and sandstone balustrade) should be preserved as these components architecturally integrate the bridge with the Chateau Laurier and Union Station which date to the same period.

2) Pretoria Avenue Bridge (Ottawa)
This is a vertical lift bridge, erected 1915-1917, which is unique on the Rideau, and apparently the only bridge of its type in Canada. The bridge has been reconstructed and its design altered in recent years, although the Department contributed funds to ensure that the general appearance, mode of operation, and as much original fabric as possible were retained.
3) CNR Bascule Bridge (Smiths Falls)
This railway bridge, erected 1912-1913, is one of the oldest bascule bridges extant in Canada today as well as the oldest Canadian bascule of the Sherzer rolling lift type. It is a prominent component of the Smiths Falls Detached Lockstation and has been designated by the Historic Sites and Monuments Board of Canada.

4) CPR High Level Bridge (Old Slys)
This bridge, completed in 1858 by the Brockville-Ottawa Railway Company is the oldest railway crossing over the Rideau Canal. The piers and abutments are constructed of stone masonry and it is a prominent component of the heritage features at Old Slys lockstation.

5) Confederation Drive Bridge (Smiths Falls)
This is a low-level fixed steel structure with two Warren truss spans, constructed in 1904. It is located in the heart of the Smiths Falls Combined lockstation and complements the heritage features at the site.

6) CNR High Level Bridge (Kingston Mills)
The two abutments of this railway bridge and the stone masonry pier adjacent to the flight locks were constructed in 1890 by the Grand Trunk Railway, while the river pier is of concrete and dates to 1929 when the bridge was partially rebuilt by the Canadian National Railway. The bridge is a prominent component of the heritage features at the lockstation.

7) Stone Arch Fixed Bridge (Beckwith Street, Smiths Falls)
This bridge consists of two stone masonry arch spans constructed ca 1890 and a modern deck constructed in 1973 to accommodate four lanes of traffic. The stone arch component provides an excellent example of a type of bridge design used extensively during the nineteenth century, and complements the heritage mill building adjacent to it which dates to the same period.
Category (B) This category includes modern twentieth century bridges as well as bridges of some historical merit but which are not prominent architectural components of lockstations on the Rideau (i.e. Laurier Avenue Fixed Steel Span, Bank St. Bridge, Nicholsons Fixed Bridge). The scope and nature of Parks Canada's input into alterations to these bridges would be considered on a case by case basis.

<table>
<thead>
<tr>
<th>Location</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mackenzie King</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Laurier Avenue</td>
<td>Steel Arch Span Bridge (1901)</td>
</tr>
<tr>
<td>Queensway</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Bank Street</td>
<td>Concrete Arch Span Bridge (1914)</td>
</tr>
<tr>
<td>Bronson Avenue</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Heron Road</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Hogs Back</td>
<td>Swing Bridge</td>
</tr>
<tr>
<td>CNR (Ottawa)</td>
<td>Fixed Railway Bridge</td>
</tr>
<tr>
<td>Hunt Club Road</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Long Island</td>
<td>Fixed Bridge (spans river channel north of Manotick)</td>
</tr>
<tr>
<td>Manotick</td>
<td>Fixed Bridge (spans navigation channel)</td>
</tr>
<tr>
<td>Manotick</td>
<td>Fixed Bridge (spans river channel)</td>
</tr>
<tr>
<td>Kars</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Highway 416</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Becketts</td>
<td>Fixed Bridge</td>
</tr>
<tr>
<td>Burritts Rapids</td>
<td>Fixed Bridge (spans river channel)</td>
</tr>
<tr>
<td>Nicholsons</td>
<td>Fixed Bridge (ca 1900, spans river channel)</td>
</tr>
<tr>
<td>CPR (Merrickville)</td>
<td>Fixed Railway Bridge</td>
</tr>
<tr>
<td>Merrickville</td>
<td>Fixed Bridges (spans river channel)</td>
</tr>
<tr>
<td>Old Slys</td>
<td>Fixed Bridge (spans waste weir)</td>
</tr>
<tr>
<td>Smiths Falls</td>
<td>Fixed Bridge (spans flight locks and lock 29a)</td>
</tr>
<tr>
<td>Newboro</td>
<td>Fixed Bridge</td>
</tr>
</tbody>
</table>
CNR (Chaffeys)  Fixed Railway Bridge
Jones Falls    Fixed Bridge (upstream from arch dam)
Upper Brewers Fixed Bridge (downstream from lockstation)
Highway 401    Fixed Bridge
Kingston Causeway Trunnion Bascule Bridge (1916)

(F) Rideau Canal - Embankments

Time constraints prevented an extensive analysis of embankments. The following represents a preliminary listing and evaluation of these features.

High Rating - It is recommended that every effort be made to preserve original fabric, construction techniques and appearance.

Kingston Mills Embankments
These embankments extend a considerable distance east and west of the lockstation, and generally have maintained their original configuration and appearance. They retain the waters of Colonel By Lake.

Medium Rating - It is recommended that first consideration be given to preserving original fabric and repairing these structures using historically appropriate methods of construction. As a minimum, historic appearance should be maintained at all times.

Black Rapids  - earth embankment west side of lock
              - earth embankment between lock and dam (concrete face upstream)

Long Island   - earth embankment each side of waste weir
Burritts Rapids - earth embankment upper north side of lock
- earth embankment upper north side of dam

Nicholsons - earth embankment north side of channel above both locks

Merrickville - embankment north side of channel above upper lock
- embankment for original Royal Engineers Dam

Kilmarnock - embankment south side of Kilmarnock Island, 3 km from lock
- embankment between lock chamber and waste weir/dam

Edmonds - embankment both sides of navigation channel above lock

Old Slys - embankment from arch dam to waste weir

Poonamalie - embankment between lock and dam
- earth berm upstream of dam on west side (two sections)

Narrows - earth, clay and rock berm

Wolfe Lake - clay dam near weir

Davis - earth embankment above weir, south side of channel

Upper Brewers - embankments above upper lock on both sides of channel

Lower Brewers - embankment west of waste weir
- embankment between lock and waste weir
(G) Rideau Canal – Lock Chamber Components

Gate Opening Mechanisms

Four types of gate opening mechanisms are found on the Rideau, each introduced at a different time in response to operational concerns. These include: 1) the original crab/floor chain system introduced in 1832; 2) the crab/straight swing beam system introduced around mid nineteenth century; 3) the crab/push bar system introduced during the late nineteenth century; 4) the hydraulic systems introduced during the 1960s. Two examples of a modified form of the crab/floor chain system survive, one at Ottawa Locks and the other at Kingston Mills. Twenty-eight examples of crab/swing beam mechanisms survive and 112 examples of the crab/push bar mechanism remain. The gates at Newboro, Black Rapids and the new Combined Lock at Smiths Falls are operated by hydraulic mechanisms.

Sluice Mechanisms

Sluice mechanisms are of two basic types -- gate sluice valves located in the lower part of the gate, and tunnel sluice valves, built into the chamber walls. The gate sluice mechanisms are almost all of a rack and pinnion design that is a close facsimile of the original, with the exception of the hydraulic sluice valves on hydraulically-operated gates.

Three types of tunnel sluice valves are found on the Rideau. There are twenty examples of the original type of rack and pinnion mechanism initially installed on locks with high lifts and subsequently introduced at other sites (eight at Kingston Mills, eight at Jones Falls, two at Ottawa Locks, and one at Old Slys, Burritts Rapids and Lower Brewers). There are sixty-two examples of tunnel sluice mechanisms operated by means of a crab and endless chain, a design introduced in 1839. Finally, hydraulically-operated tunnel sluices are found at Black Rapids and Smiths Falls Combined Lock.
High Rating - It is recommended that every effort be made to preserve these features on account of their limited number and/or early introduction on the Canal.

1) Crab/floor chain gate mechanism
2) Crab/straight swing beam gate mechanism
3) Rack and pinnion tunnel sluice mechanism
4) Rack and pinnion gate sluice mechanism

Medium Rating - It is recommended that these features be retained in use wherever possible. The conversion of some examples to an earlier type of mechanism in response to interpretive or operational needs would be acceptable on account of the numerous examples of each.

1) Crab/push bar gate mechanism
2) 1839 tunnel sluice mechanism

Low Rating - This category includes hydraulically-operated mechanisms which are recent adaptations utilizing a technology not in keeping with earlier manual mechanisms more sympathetic to the canal's heritage character.

1) hydraulic gate mechanisms
2) hydraulic gate sluice mechanisms
3) hydraulic tunnel sluice mechanisms
(H) **Tay Canal Branch**

The Tay Canal Branch was constructed between 1884 and 1890 to connect the town of Perth with the Rideau system. Its major engineering features consist of two lock chambers, one dam, one basin and one bridge.

**High Rating** - It is recommended that every effort be made to preserve original fabric, construction techniques and appearance of these features.

1) Beveridges Lower Lock 33
2) Beveridges Upper Lock 34
   These locks are fairly well intact with the exception of some unspecified repairs made in the 1920s. The rural character of both sites has been largely preserved.
3) Perth Basin
   The timber crib sides of the basin have recently been reconstructed to closely approximate the original. The site has an overall high integrity.
4) Beckwith Street Swing Bridge
   This has a steel king post through truss design consisting of a swing span and a fixed span, and is the oldest swing bridge on the Rideau/Tay System. The bridge has been restored and is located at a site having an overall high integrity.
5) Rack and Pinnion gate sluice mechanism.

**Medium Rating**

1) Crab/Push Bar Gate Mechanism
   It is recommended that these features be retained in use wherever possible. The conversion of some examples to an earlier type of mechanism in response to interpretive or operational needs would be acceptable.
2) Clay Dam/Embankment (above upper lock on road to flat dam)
   It is recommended that first consideration be given to preserving original fabric and using historically appropriate methods of construction. As a minimum, historic appearance should be maintained.

Low Rating

Beveridges Flat Dam
This is a twentieth century concrete dam built to replace the original structure, and represents a recent evolution of engineering structures on the Rideau. Where reconstruction is necessary, first consideration should be given to replacement in kind in order to maintain the overall appearance and configuration.

Beveridges Fixed Bridge
Craig St. Fixed Bridge (Perth)
Drummond St. Fixed Bridge (Perth)
Gore St. Fixed Bridge (Perth)
These are modern twentieth century bridges of little historical merit which are not owned by Parks Canada. The scope and nature of Parks Canada's input into alterations to these bridges would be considered on a case by case basis.
APPENDIX A: EVALUATION OF SITE AND STRUCTURAL INTEGRITY

This appendix provides a preliminary site integrity rating for each lockstation along the Rideau Canal as well as an evaluation of the engineering resources at each site. The assessment of a site's overall integrity was based upon the number and significance of heritage features, including buildings and the extent to which these have been altered over the years. It also reflects the degree to which the original configuration and character of each site have been altered by such things as land fill, flooding or urban encroachment. The listing of engineering resources generally excludes embankments as well as engineering features not associated with a particular lockstation, such as reservoir dams and various bridges. It also excludes engineering structures not owned by Parks Canada. Information on these structures is available in the report.
OTTAWA LOCKSTATION

SITE INTEGRITY: MEDIUM
Little original fabric of the engineering works will be retained with the reconstruction of the flight locks. However, the site does have several heritage buildings including the Commissariat, the 1884 lock office and the Royal Engineers Building ruins. Also, the landscape will be enhanced as a result of plans to restore elements of the British Ordnance Period to the site.

ENGINEERING RESOURCES - Overall Rating

Ottawa Flight Locks 1-8: LOW
All eight locks will be reconstructed in reinforced concrete with a stone facade. Only the original floors of locks 1-3 will be preserved. The locks do have several significant components. They are eight of sixteen built with inverted masonry floors. They have two swing beam gate mechanisms and one of the two surviving floor chain gate mechanisms. There are also two rack and pinnion sluice mechanisms dating to the latter part of the nineteenth century.
SITE INTEGRITY: MEDIUM
The site has a good collection of heritage resources. The lower lock chamber is fairly well intact, although the upper chamber has been extensively repaired in concrete, and the waste weir has also been renewed in concrete and now drains into the canal below the lock chamber rather than across the grounds of Carleton University and into the Rideau River. The area on the west side of the locks has maintained much of its heritage character and is complemented by a renovated defensible lockmaster's house, a nineteenth century lock labourer's house and a twentieth century storehouse. There is, however, considerably more urban encroachment on the east side of the locks on account of Colonel By Drive and Carleton University.

ENGINEERING RESOURCES - Overall Rating
Hartwells Lower Lock 9: MEDIUM This chamber is fairly well intact, although the lower wing walls have been rebuilt on one occasion, the upper sill is concrete, and the intermediate monoliths may also have been rebuilt. This is one of sixteen locks built with an inverted masonry floor.

Hartwells Upper Lock 10: LOW This chamber is not as intact as the lower lock. Both chamber walls have been rebuilt in concrete, as have both sills. The upper wing walls were rebuilt in stone masonry between 1904 and 1911. The intermediate monoliths may have been rebuilt on one occasion. This lock also has an inverted masonry floor.

Hartwells Weir: LOW The weir appears to be a twentieth century replacement structure constructed of concrete. It no longer drains into the Rideau River but rather empties into the canal below the locks.
HOGSBACK LOCKSTATION

SITE INTEGRITY: LOW
The timber crib/earth dam, the locks and the waste weir have all been altered considerably over time, although the site does have several early twentieth century frame canal buildings. There is considerable urban encroachment at the site. A major highway crosses the lock, and concrete approach walls have been built immediately upstream of the lock and the bridge.

ENGINEERING RESOURCES - Overall Rating

Hogsback Lower Lock 11: LOW The lock is partially intact but its heritage value is reduced by the low overall site integrity. The lock does have an inverted masonry floor which appears to be in good condition, but both chamber walls have been rebuilt, one in concrete. Both wing walls were repaired or rebuilt in 1905.

Hogsback Upper Lock 12: LOW The chamber walls and inverted masonry floor appear to be well intact and one set of gates have swing beam mechanisms, but the upper wing walls have been replaced by concrete approach walls. The site integrity is especially low on account of the major highway bridge which spans the lock.

Hogsback Timber crib/earth dam: MEDIUM The original timber crib/earth dam, although altered by the construction of the concrete waste weir, and by concrete repairs to its upstream face in 1935, remains fairly intact and was the only dam constructed using timber cribwork.

Hogsback Waste Weir/Bridge: LOW This is a recent, twentieth century concrete structure.
BLACK RAPIDS LOCKSTATION

SITE INTEGRITY: LOW
The dam and waste weir have been replaced with modern concrete structures, and little original fabric of the lock chamber has survived. The lock office is of recent construction, although the site does benefit from a heritage frame lockmaster’s residence. There is no urban encroachment directly on the site, although there is a major highway and a major airport nearby.

ENGINEERING RESOURCES - Overall Rating

Black Rapids Lock 13: LOW Nearly all of the lock appears to have been taken down during the mechanization in 1969. There were considerable alterations prior to this as well.

Black Rapids Dam: LOW This is a concrete replacement structure built in stages between 1949 and 1954.

Black Rapids Waste Weirs: LOW There are two waste weirs at the site, both constructed of concrete. One was constructed in 1949-50 at the west end of the spillway dam, and the other, in 1925, between the dam and the lock.
LONG ISLAND LOCKSTATION

SITE INTEGRITY: MEDIUM
The stone arch dam is virtually intact and there is a nineteenth-century lockmaster's house at the site as well as a through truss swing bridge. However, the waste weir has been replaced in concrete and the upper two locks have had fairly substantial modifications. The site has maintained much of its original rural character although there are modern maintenance buildings at the site.

ENGINEERING RESOURCES - Overall Rating

Long Island Lower Lock 14: MEDIUM The lock is fairly well intact as only one chamber wall and one wing wall have been reconstructed. The upper monoliths have a thin concrete facing. The overall integrity is decreased somewhat by alterations made to the upper two flight locks.

Long Island Middle Lock 15: LOW Both sills are stone masonry, but the chamber walls have been rebuilt using concrete, and the lower monoliths have a thin concrete facing.

Long Island Upper Lock 16: LOW The chamber walls were reconstructed in stone masonry in 1914 with a full battered surface to remedy an original design flaw. The upper wing walls and recesses were rebuilt in stone in 1901. The upper sill is partially reconstructed in concrete.

Long Island Arch Dam: HIGH The dam has had no major repairs and is one of five remaining masonry arch dams of this kind on the Rideau.

Long Island Waste Weir/Bridge: LOW This is a recent replacement structure built of concrete.

Long Island Swing Bridge: MEDIUM This is one of four through truss steel swing bridges on the Rideau/Tay System. It is similar in design to the Narrows Swing Bridge. It has maintained its appearance and most of its original fabric although it is not in its original construction context, having been moved to the site about four decades ago.
BURRITTS RAPIDS LOCKSTATION

SITE INTEGRITY: MEDIUM
The rural setting of the lockstation has generally been preserved and there is a unique truss swing bridge upstream. However, the original dam upstream from the lock has been rebuilt in concrete, the lock office is of recent construction and the lock has been extensively repaired.

ENGINEERING RESOURCES - Overall Rating

Burritts Rapids Lock 17: MEDIUM All wing walls have either been rebuilt or extensively repaired on one occasion. One chamber wall was rebuilt in 1909, and the floor of the lock was concreted in 1926. The lock has a rack and pinnion sluice mechanism. This is one of eight locks built with a wooden floor.

Burritts Rapids Dam: LOW This is a concrete replacement structure built in 1951.

Burritts Rapids Waste Weir: LOW This is a concrete replacement structure built in 1930.

Burritts Rapids Swing Bridge: HIGH This is the second oldest swing bridge on the Rideau/Tay System. Erected in 1897, it is a through truss design, combining a Pratt and Fink truss. The design is unique to the Rideau and is not found on other Canadian Canals. The bridge has been slightly modified over the years to increase its strength, but has maintained its appearance and most of its original fabric. The structure has been repaired on numerous occasions on account of vehicular damage.
NICHOLSONS LOCKSTATION

SITE INTEGRITY: MEDIUM
Both lock chambers are fairly well intact. The upper lock is complemented by a timber swing bridge, and there is a defensible lockmaster's house near the lower lock. The waste weir is not the original structure but is one of five remaining masonry waste weirs on the Rideau. However, the overflow dam has been modified by the construction of a concrete retaining wall on the downstream face, and the lock offices at the upper and the lower lock are of recent construction. The rural character of the site has been well preserved and there are few modern encroachments.

ENGINEERING RESOURCES - Overall Rating

Nicholsons Lower Lock 18: MEDIUM The chamber walls and lower wing walls appear to be intact, and the site generally has maintained its original rural character. The upper wing walls and monoliths have been rebuilt in masonry although with stone of a larger dimension.

Nicholsons Upper Lock 19: HIGH The chamber walls are intact, and the lower wing walls will be reconstructed using historically authentic techniques. The upper wing walls and recesses were rebuilt in 1910, also using traditional techniques. The site has maintained its rural character and the lock is crossed by a heritage wooden king post swing bridge. The lock has one set of swing beam gate mechanisms.

Nicholsons Dam: MEDIUM This is one of three remaining masonry overflow dams on the Rideau. The fabric of the dam is generally intact although the keywork has failed, necessitating the construction of a reinforced concrete wall on the downstream face.

Nicholsons Weir: MEDIUM The existing weir was constructed in 1910 to replace the original timber weir. It is one of five remaining masonry waste weirs on the Rideau and is fairly well intact, although concrete walls have been built on the downstream side.

Nicholsons Swing Bridge: MEDIUM This is one of five remaining wooden swing bridges on the Rideau, and will be reconstructed to ensure that its historic appearance is maintained.
SITE INTEGRITY: MEDIUM - HIGH
The engineering works at the site have generally been well preserved although the overflow dam has had a reinforced concrete wall built against the upstream face, and the waste weir has been reconstructed in stone on one occasion. There is a modern lock office at the station but otherwise the site is complemented by a renovated defensible lockmaster's house. The original rural character of the site is well preserved and the engineering features demonstrate well the layout of a typical lockstation as conceived by Colonel By.

ENGINEERING RESOURCES - Overall Rating

Clowes Lock 20: HIGH  The lock is generally intact although the gate monoliths on the south side of the chamber were rebuilt in 1905. The north upper monolith has been patched with concrete, and repairs may have been made to the wing walls on occasion. The overall site integrity is good.

Clowes Dam: MEDIUM  This is one of three remaining overflow dams on the Rideau. Part of the dam was rebuilt in 1914 and a reinforced concrete wall was placed against the upstream face in 1975/76 although the original appearance and considerable original fabric have been preserved.

Clowes Weir: MEDIUM  This is one of five remaining masonry waste weirs on the Rideau. It has been rebuilt on two occasions and the original center pier has been removed. Additional repairs were made during 1985.
MERRICKVILLE LOCKSTATION

SITE INTEGRITY: MEDIUM
The original configuration of the site has been altered somewhat by the construction of a reinforced concrete dam and weir downstream from the original structure. Generally, though, the locks and basins are fairly well preserved and the site has one of four blockhouses on the Rideau and a grouping of nineteenth-century industrial buildings. This site has not suffered greatly from modern encroachments.

ENGINEERING RESOURCES - Overall Rating

Merrickville Lower Lock 21: MEDIUM Repairs were made to three monoliths and wing walls in 1973/74 although it is not clear how extensively the structural integrity of the lock was altered. The remaining monolith and wing wall (north upper) were rebuilt in 1906. The upper sill is masonry and the lower sill is concrete.

Merrickville Middle Lock 22: MEDIUM The north upper monolith and wing wall were rebuilt in 1913. The north lower monolith and wing wall were rebuilt in 1973/74. The south lower wing wall was rebuilt in 1904, and the south upper recess has been concreted. The upper sill is masonry and the lower sill appears to be concrete over wood.

Merrickville Upper Lock 23: MEDIUM Both upper wing walls have been rebuilt in concrete. The remainder of the lock does appear to be intact although it is crossed by a modern plate girder swing bridge.

Merrickville Dam: LOW This is a concrete structure built in 1914.

Merrickville Weir: LOW This is a concrete structure built ca 1914.

Merrickville Lower Basin: MEDIUM Both the north and south basin walls were rebuilt between 1903 and 1906. A concrete wall was built against the north basin wall in 1913.
Merrickville Upper Basin: HIGH The north and south basin walls were rebuilt in stone masonry between 1891 and 1900.

Merrickville Swing Bridge: LOW This is a steel plate girder swing bridge of recent construction.
KILMARNOCK LOCKSTATION

SITE INTEGRITY: MEDIUM
The lock is partially intact and is complemented by a timber swing bridge and a renovated defensible lockmaster's house but the original dam has been replaced with one in concrete. The original rural character of the site is well preserved.

ENGINEERING RESOURCES - Overall Rating

Kilmarnock Lock 24: MEDIUM The upper wing walls and monoliths have recently been rebuilt in reinforced concrete with a stone facing. The rest of the lock is intact and the lower wing walls will be rebuilt using historically authentic techniques.

Kilmarnock Dam/Bridge: LOW This is a modern structure built of concrete.

Kilmarnock Swing Bridge: MEDIUM This is one of five remaining wooden swing bridges on the Rideau, and will be reconstructed to ensure that its historic appearance is maintained.
EDMUNDS LOCKSTATION

SITE INTEGRITY: MEDIUM - HIGH
The lockstation has the best preserved overflow dam and waste weir on the Rideau, although the lock chamber has been repaired on several occasions. The rural character of the site has generally been well preserved and there is a turn of the century lock office adjacent to the lock.

ENGINEERING RESOURCES - Overall Rating

Edmunds Lock 25: MEDIUM This is one of eight locks built with a wooden floor, and there are swing beam mechanisms on the lower gates. The overall site integrity is very good, but the lock chamber has been completely rebuilt on at least one occasion and the floor has been concreted.

Edmunds Dam: HIGH The dam is well intact with few recorded alterations apart from the addition of some concrete to the upstream face. It is the best preserved of the three remaining masonry overflow dams.

Edmunds Weir: HIGH This appears to be the best preserved of the five remaining masonry waste weirs on the Rideau. It was rebuilt in 1907 and repaired in 1979 but its dimensions appear to have remained unaltered and the substructure left intact.
OLD SLYS LOCKSTATION

SITE INTEGRITY: LOW - MEDIUM
The site is complemented by an old railway crossing and a renovated defensible lockmaster's house. Much of the site's original configuration has been altered by infilling in front of the stone arch dam. The original weir has been replaced by a concrete structure, and a plate girder bridge of recent construction spans the upper lock. The upper lock is not as intact as the lower. There is some urban encroachment near the site.

ENGINEERING RESOURCES - Overall Rating

Old Slys Lower Lock 26: MEDIUM The chamber appears to be relatively intact with the exception of the intermediate monoliths which have been rebuilt in sandstone in 1907/08. The lower gates are operated by a swing beam mechanism. The overall integrity is reduced somewhat by alterations to the upper lock and the site integrity.

Old Slys Upper Lock 27: MEDIUM The upper wing walls and lower monoliths have been rebuilt on one occasion, and repairs have been made to the chamber floor which is a combination of wood and bedrock. One of the tunnel sluices has an original style rack and pinnion mechanism and the upper gates have swing beam mechanisms. The lock is crossed by a modern plate girder bridge.

Old Slys Arch Dam: MEDIUM The dam appears to be intact but no longer functions in its original construction context on account of extensive earth fill on the upstream and downstream side. It is one of five such dams remaining on the Canal.

Old Slys Weir: LOW This is a concrete structure of recent construction.

Old Slys Swing Bridge: LOW This is a plate girder swing bridge of recent construction.
SMITHS FALLS COMBINED LOCKSTATION

SITE INTEGRITY:  LOW - MEDIUM
The lockstation's original configuration has been altered over the years by modifications to various engineering features. The flight locks are no longer in use as they have been bypassed by a single lock chamber. A busy highway passes through the lockstation. The original stone arch dam has been obscured by landfill, and there is a concrete waste weir nearby. However, the flight locks are in very good condition and the area south of the locks has maintained much of its heritage character and is complemented by a renovated defensible lockmaster's house. The site also benefits from a well preserved nineteenth century milling complex.

ENGINEERING RESOURCES - Overall Rating

Smiths Falls Flight Locks 28, 29, 30:  HIGH  These locks are well intact except for the intermediate sills which have been rebuilt in concrete, and the lower wing walls which were rebuilt in stone masonry in 1912. There are swing beam gate mechanisms on the lower lock and experimental steel gates on the upper lock introduced ca 1960.

Smiths Falls Lock 29a:  LOW  This is a recent concrete lock built to bypass the original flight locks.

Smiths Falls Arch Dam:  MEDIUM  The dam appears to be intact but no longer functions in its original construction context on account of extensive earth fill on the upstream and downstream side. It is one of five such dams remaining on the Canal.

Smiths Falls Weir:  LOW  This is a twentieth century concrete structure.

Smiths Falls Basin:  LOW  The sides of the basin have largely been concreted during the twentieth century.
SMITHS FALLS DETACHED LOCKSTATION

SITE INTEGRITY: LOW - MEDIUM
There is considerable urban encroachment in the vicinity of the lockstation. A plate girder swing bridge of recent construction crosses the canal below the lock, and the original weir has been replaced by a concrete structure. The site is complemented by a frame lock office and the CNR Bascule bridge immediately upstream.

ENGINEERING RESOURCES - Overall Rating

Smiths Falls Detached Lock 31: MEDIUM The lock is fairly well intact with the exception of the upper wing walls and monoliths which were rebuilt in 1905, and the north lock wall which was reconstructed in 1973/74. The lower sill has been rebuilt in concrete.

Smiths Falls Detached Weir: LOW This is a twentieth century concrete structure.

Smiths Falls Detached Swing Bridge: LOW This is a steel plate girder swing bridge of recent construction.

Smiths Falls Detached Fixed Bridge: LOW This is a concrete/steel structure of recent construction.
POONAMALIE LOCKSTATION

SITE INTEGRITY: MEDIUM
The lockstation has maintained much of its original rural character and is complemented by a renovated defensible lockmaster's house and associated out buildings. The original dam, however, has been replaced by a modern concrete structure and the lock office is of recent construction.

ENGINEERING RESOURCES - Overall Rating

Poonamalie Lock 32: MEDIUM  The upper wing walls and recesses were rebuilt between 1909 and 1916. The lower wing walls were rebuilt in 1909. The chamber walls were extensively repaired on at least one occasion and the floor and sills of the lock have been concreted. This is one of eight locks originally constructed with a wooden floor.

Poonamalie Dam: LOW This is a concrete structure of recent construction.

Poonamalie Channel Weir: LOW This is a concrete structure built during the twentieth century.
SITE INTEGRITY: MEDIUM
The rural character in the vicinity of the upper and lower locks at Beveridges has generally been well preserved, although a highway crosses the canal cut, and a modern lock office has been built at the lower lock. The upper lock is complemented by a turn of the century storehouse, and the lower lock by the original lockmaster's house.

ENGINEERING RESOURCES - Overall Rating

Beveridges Lower Lock 33: HIGH  The Beveridges locks are part of the Tay Canal Branch built 1884-1888. The design is similar to the original Rideau locks. The lock appears relatively intact although unspecified repairs were made to the masonry in 1920.

Beveridges Upper Lock 34: HIGH  This lock also appears fairly well intact with unspecified repairs to the masonry having been made in 1920.

Beveridges Flat Dam: LOW  This is a twentieth century dam built to replace the original structure.
NARROWS LOCKSTATION

SITE INTEGRITY: MEDIUM
The site has maintained much of its original appearance although the blockhouse has been renovated and the original waste weir renewed in concrete. The site has one of four through truss steel swing bridges on the Rideau.

ENGINEERING RESOURCES - Overall Rating

Narrows Lock 35: MEDIUM The upper wing walls and recesses have been rebuilt, and extensive repairs have been made to other portions of the lock in 1922. The stone masonry does not appear to be in very good condition. There are swing beam mechanisms on one set of gates.

Narrows Dam: MEDIUM This dam was originally built utilizing a timber brace design but a large portion was repaired using timber cribwork when a breach occurred during the mid nineteenth century.

Narrows Weir/Bridge: LOW This is a structure of recent construction.

Narrows Swing Bridge: MEDIUM This is one of four through truss steel swing bridges on the Rideau/Tay System. It is similar in design to the Long Island Swing Bridge. It has maintained its appearance and most of its original fabric, although it is not in its original construction context, having been moved to the site about two decades ago.
NEWBORO LOCKSTATION

SITE INTEGRITY: MEDIUM
The site has maintained much of its original rural character although the lock has been converted to hydraulic operation and the lock office is of recent construction. The site has one of four blockhouses on the Rideau and good archaeological resources pertaining to the construction period.

ENGINEERING RESOURCES - Overall Rating

Newboro Lock 36: LOW This is one of two locks that have been converted to hydraulic operation. Nearly all of the lock appears to have been taken down during the mechanization in 1966/67. There were also considerable repairs to the upper part of the lock prior to the mechanization.
CHAFFEYS LOCKSTATION

SITE INTEGRITY: MEDIUM - HIGH
The site has maintained much of its rural character and is complemented by a renovated defensible lockmaster's house, a nineteenth century grist mill and other nineteenth-century canal buildings, although the original waste weir has been renewed in concrete and the plate girder swing bridge is of more recent construction.

ENGINEERING RESOURCES - Overall Rating

Chaffeys Lock 37: HIGH The lock is generally well intact. The upper wing walls were rebuilt in 1903 using stone from the original quarry, and repairs have been made to the chamber walls and the lower wing walls. Both gates are operated by swing beam mechanisms.

Waste Weir: LOW This is a concrete structure built around 1920 to replace the original weir.

Swing Bridge: LOW This is a steel plate girder swing bridge of fairly recent construction.

Waste Weir Bridge: LOW This is a structure of recent construction.
DAVIS LOCKSTATION

SITE INTEGRITY: MEDIUM
The site has maintained well its isolated rural character. It has a unique earth covered masonry dam, a restored nineteenth century lock office and one of the best preserved defensible lockmaster's houses on the Canal. However, the lock has been reconstructed in concrete with a stone facing and the waste weir has been renewed in concrete.

ENGINEERING RESOURCES - Overall Rating

Davis Lock 38: LOW The entire lock has been reconstructed in reinforced concrete with a stone masonry facing. One set of gates are operated by swing beam mechanisms.

Davis Dam: HIGH This is the only example of this type of dam on the Rideau. It is constructed of two parallel rubble masonry walls with a clay puddle wall in between.

Davis Weir: LOW This is a concrete structure built around 1920 to replace the original weir.

Davis Fixed Bridge: LOW This is a structure of recent construction.
SITE INTEGRITY: HIGH
The original character of this station has been well preserved. Most of the major engineering features are intact and there are several heritage buildings on the site including a restored blacksmith's shop and defensible lockmaster's house.

ENGINEERING RESOURCES - Overall Rating

Jones Falls Detached Lock 39: HIGH This lock is fairly well intact although it is likely that all four wing walls have been rebuilt or extensively repaired on one occasion. The lock is one of sixteen built with an inverted masonry floor, although concrete has been poured over this. Both sills have been reconstructed using concrete as well. However, the lock benefits from the overall heritage character of the site and the large number of intact significant resources. The lock has original style rack and pinnion sluice mechanisms.

Jones Falls Flight Locks 40, 41, 42: HIGH The flight locks are generally very well preserved. The upper monoliths and wing walls were rebuilt in 1915, some concrete facing has been placed over the intermediate sets of monoliths, and some repairs were made to the chamber walls and floors in 1973. The locks have inverted masonry floors and original style rack and pinnion sluice mechanisms.

Jones Falls Dam: HIGH This is by far the highest and most significant of the five remaining masonry arch dams of this type on the Rideau. It is virtually intact with the exception of the opening made to facilitate the installation of penstocks. It is the only true arched keywork dam on the Rideau.

Jones Falls Weir: LOW This is a concrete structure built to replace the original waste weir.
Jones Falls Basin: HIGH The natural character of the basin has generally been well maintained. A masonry dam and sluice were built at the north east side of the basin in 1906. The masonry stone wall on the north side was rebuilt in 1980/81.

Jones Falls Swing Bridge: HIGH This is one of five timber king post truss swing bridges remaining on the Rideau. Of these, it is located at the site with highest overall integrity, and was built in conjunction with the fixed bridge below the flight locks which has also been well preserved.

Jones Falls Fixed Bridge: MEDIUM The present structure bears close resemblance to the original bridge. It is one of two timber crib fixed wooden bridges on the Rideau and was built in 1883 in conjunction with the construction of the swing bridge. The substructure and superstructure have been renewed on at least one occasion.
UPPER BREWERS LOCKSTATION

SITE INTEGRITY: MEDIUM
The original rural character of the site has been well preserved although modifications have been made to the engineering resources. Both locks have had considerable repairs over the years. The original earth and timber crib dam appears to be fairly intact although the masonry waste weir has been modified over the years. The powerhouse dam immediately downstream has caused the weir and dam to be partially obscured. The site has a nineteenth century lock labourer's house but there is a modern lock office at the site.

ENGINEERING RESOURCES - Overall Rating

Upper Brewers Lock 43: LOW The upper monoliths and wing walls were rebuilt in 1911. The east chamber wall was rebuilt in concrete in 1931. The intermediate monoliths were reconstructed in reinforced concrete with a stone facing and the floor of the chamber was concreted in 1979/80. This is one of eight locks originally built with a wooden floor.

Upper Brewers Lower Lock 44: LOW Both chamber walls and one lower wing wall were rebuilt between 1911-1919. The intermediate monoliths were reconstructed in reinforced concrete with a stone facing and the floor rebuilt in reinforced concrete in 1979/80. This was one of eight locks originally built with a wooden floor.

Upper Brewers Dam: MEDIUM Like the dam at the Narrows, this one was built using a timber brace design. Portions of the dam were repaired using timber cribwork during the nineteenth century. The structure is partially obscured by high water levels caused by the construction of the powerhouse dam immediately downstream.
Upper Brewers Weir: MEDIUM This is one of five remaining masonry waste weirs on the Rideau. The weir was rebuilt in 1910/11 at which time its width was increased by 3.5 feet. The sill was lowered by four feet in 1936/37.

Upper Brewers Fixed Bridge: MEDIUM This is one of two timber crib fixed wooden bridges on the Rideau. The present structure bears close resemblance to the original bridge which has been at this location since 1830. The substructure and superstructure have been renewed on at least one occasion.
LOWER BREWERS LOCKSTATION

SITE INTEGRITY: LOW-MEDIUM
The rural character of the site has been preserved although the engineering resources have been modified. The lock has been reconstructed in concrete with a stone facing and the original waste weir has been replaced by a concrete structure. The site has retained several heritage resources including a timber swing bridge, a renovated defensible lockmaster's house, a frame storehouse and associated industrial structures.

ENGINEERING RESOURCES - Overall Rating

Lower Brewers Lock 45: LOW The lock has been reconstructed in reinforced concrete with a stone facing. The lock originally was constructed with a wooden floor. The lock has retained one set of swing beam gate mechanisms and a rack and pinnion sluice mechanism.

Lower Brewers Weir/Bridge: LOW This is a concrete structure of recent construction.

Lower Brewers Swing Bridge: MEDIUM This is one of five remaining wooden swing bridges on the Rideau and has been reconstructed to ensure that its historic appearance is maintained.
KINGSTON MILLS LOCKSTATION

SITE INTEGRITY: MEDIUM
The area around the flight locks has maintained more of its original character than the detached lock which is crossed by a fairly busy highway and a plate girder bridge of recent construction. The lockstation is complemented by an old high-level railway crossing, a restored blockhouse and a renovated lockmaster's house now used as a visitor center. The condition of the engineering works varies. The site has a stone arch dam and waste weir, although both are largely obscured by high water levels on the downstream side caused by the powerhouse dam. Two of the locks are very intact while the lower flight lock and the upper detached lock have been altered by repairs on several occasions. The basin above the locks has concrete walls which have replaced the original masonry walls.

ENGINEERING RESOURCES - Overall Rating

Kingston Mills Detached Lock 46: LOW The lower wing walls and monoliths were rebuilt in concrete in 1926. The upper wing walls appear to have been renewed on one occasion and both chamber walls have been patched with concrete. Both sills are concrete, and the lock is crossed by a plate girder swing bridge of recent construction. However, the lock does retain the original style rack and pinnion sluice mechanisms, and one set of gates has swing beam mechanisms.

Kingston Mills Upper Flight Lock 47: MEDIUM The lock appears to be very intact, apart from the upper wing walls which probably were repaired or reconstructed on one occasion. The tunnel sluices retain the original style rack and pinnion operating mechanisms. The overall integrity is reduced somewhat by alterations to the lower flight lock, the detached lock and the basin.
Kingston Mills Middle Flight Lock 48: MEDIUM The lock appears to be very intact apart from a small portion of the lock wall which was rebuilt in concrete in 1960. The tunnel sluices retain the original style rack and pinnion sluice mechanisms. The overall integrity is reduced somewhat by alterations to the lower flight lock, the detached lock and the basin.

Kingston Mills Lower Flight Lock 49: LOW Substantial repairs have been made to the lock on several occasions on account of its poor foundation. This lock does not rest on bedrock, and was one of eight originally constructed with a wooden floor. The tunnel sluices still retain the original style rack and pinnion operating mechanisms. One gate retains the original style floor-chain opening mechanisms and two others have swing beam opening mechanisms.

Kingston Mills Arch Dam: MEDIUM This is one of five remaining masonry arch dams of this kind on the Rideau. The center of the dam has bulged forward over the years necessitating the placement of rock berm on the downstream face. The dam is largely obscured by the basin of water created by the construction of the powerhouse dam immediately downstream.

Kingston Mills Waste Weir: HIGH This is one of five remaining stone masonry weirs on the Rideau. The weir was rebuilt in 1902 and will be repaired in 1986. Its dimensions appear to have remained unaltered.

Kingston Mills Basin: LOW The original dimensions of the basin have been altered and the original masonry walls replaced with concrete.

Kingston Mills Swing Bridge: LOW This is a plate girder swing bridge of recent construction.

Kingston Mills Fixed Bridge: MEDIUM This is a single span through truss bridge constructed in 1909.
Kingston Mills Embankments: HIGH These embankments extend east and west of the lockstation and retain the waters of Colonel By Lake. These are the most extensive and intact of the embankments along the canal.
APPENDIX B: STRUCTURAL HISTORY SUMMARIES OF MAJOR ENGINEERING FEATURES

As part of Phase I of the Engineering Assessment, historical research was undertaken to determine the extent of structural modification to the major engineering structures. This appendix provides brief structural histories of many of the engineering features examined during the research stage. Information is not provided for every structure because of time constraints which made it necessary to focus most attention on the designated structures: lock chambers, waste weirs and dams. Limited background information was gathered for many of the designated structures that are known to have been extensively altered or completely reconstructed in concrete (i.e. Ottawa Locks, Davis Lock) thereby enabling more time to be devoted to those structures having potentially a higher degree of structural integrity.

In terms of source materials, the Preliminary Site Study Series provided a useful starting point, and was supplemented by the published annual reports for the Canal which summarize annual repairs for the 1860-1940 period, but provide few details on the work carried out. Additional references were obtained from the Superintendent's letterbooks for the period 1860-1936. Information concerning repairs undertaken during the past three decades was obtained from departmental files located in Cornwall, Smiths Falls, Hull, and at the Public Archives of Canada. In addition to the research, brief site visits were made to all lockstations during late October 1984 for the purpose of recording variations in gate and sluice mechanisms and noting major alterations to the engineering structures, especially those made using concrete. The structural summaries were circulated to the engineering sections in Ontario Region, headquarters in Hull, and at the Rideau Canal Office in Smiths Falls in order to obtain clarification on structural modifications from those individuals involved in repairs during the past two decades.
The available historical data provides a good overview of the repairs to the engineering features, but it remains difficult at times to determine the extent to which traditional and authentic methods of repair were employed, and original materials preserved. These details of reconstruction work are usually not mentioned in the records and may have significant implications with regard to the overall integrity of the structures. In Phase II of the assessment it may be necessary to undertake a more detailed structural evaluation and inspection of those structures rated in Phase I as being of high priority or medium-high priority.
HARTWELLS LOCK 9 (Lower)

1894 - Unspecified repairs.

1895 - Upper sill rebuilt.

1911 - Lower east wing wall taken down and rebuilt.

1913 - Lower west wing wall taken down and rebuilt. New coping stones laid on both sides of chamber.

1915 - Upper sill rebuilt in concrete with steel facing.

1968/69 - Lock pressure grouted by Annett Chemicals.

ca. 1970 - Possibly a new upper sill installed after the old one popped out.


Site Notes
- masonry invert floor
- stone masonry walls
- intermediate monoliths appear to have been rebuilt using sandstone
- breastwall - concrete, upper sill concrete
- concrete steps on both sides of lock
- no signs of tooling on stonework
HARTWELLS LOCK 10 (Upper)

1904 - East upper wingwall rebuilt as far as hollow quoin.

1911 - West upper wingwall taken down and rebuilt.

1927/28 - Masonry chamber walls were taken down and reconstructed in concrete - apparently concrete blocks were used.

1967 - Lock pressure grouted.

1990-91 - Major rehabilitation of locks #9 & 10

Site Notes
- masonry invert floor
- concrete lock walls - badly spalled
- upper sill and breastwork - concrete
- concrete steps along both sides of lock
- intermediate monoliths - sandstone
HOGSBACK LOCK 11 (Lower)

1868 - West lock wall secured with iron straps and sheet piling on account of bulging.

1902 - West lock wall taken down and rebuilt by masons. Many old stones re-used as well as new headers.

1905 - West lower wing wall taken down and rebuilt. Several hollow quoins stones put in east side.

1916 - East chamber wall taken down and rebuilt in concrete with cut stone coping.


Site Notes
Masonry Invert Floor.
East chamber wall - concrete with stone coping.
Concrete stairs beside locks.
Lower and Upper Sills are stone masonry.
HOGSBACK LOCK 12 (Upper)

1916  - Center mitre sill taken down and relaid in concrete with stone facing.

1976  - Upper wing walls dismantled and repaired.
- Upper left from stop log check upstream.
- Upper right above stoplog check.

Site Notes
- stone masonry invert floor
- stone masonry chamber walls - tooling margins evident on both walls
- swing bridge located across upper monolith
BLACK RAPIDS LOCK 13

1906 - Portions of upper west wing wall taken down and rebuilt.

1911 - Lower sill renewed in concrete.

1913 - Upper east wing wall taken down and rebuilt.

1917 - Sill renewed in concrete.

1918 - Considerable portion of lock was taken down and rebuilt in cut stone masonry.

1928 - Decayed chamber walls and upper mitre sill taken down and rebuilt in concrete blocks.

1969 - Mechanization of lock - changed to hydraulic operation - nearby all of the lock appears to have been taken down - all four monoliths. Some stone salvaged for re-use. No drawings available.

Site Notes

- Considerable Concrete in chamber walls, recess walls.
LONG ISLAND LOCK 14 (Lower)

1920 - East side of lock taken down and rebuilt in cut stone.

1937 - Repairs to lock sill.

1971/72 - Lock pressure grouted - Janod Ltd.
- East wingwall of lock seems to have been partly dismantled and rebuilt.

1982 - Lock chamber pointed.
New sill at lower end.

Site Notes
- Lower sill not visible
- Upper sill - stone masonry
- Concrete parging over intermediate piers
- Rock floor in lock
- Concrete stairs between locks 14 and 15
LONG ISLAND LOCK 15 (Middle)

1863 - New stone sill.

1887 - New stone upper sill.

1929/30 - Both lock walls taken down and rebuilt in concrete blocks.

1937 - Repairs to lock sill.

1955 - Concrete steps built on west side between locks 15 and 16.

1969 - Masonry wall of east lower sluice chamber collapsed. Emergency repairs carried out.

1971/72 - Pressure grouting of lock - Janod Ltd. masonry repairs to upper sill.

1982 - Old concrete facing removed from lock walls and walls refaced with concrete. Pressure grouting between lock and arch dam.

Site Notes

- upper sill of stone masonry
- rock floor in lock
- concrete steps between locks 15 and 16
LONG ISLAND LOCK 16 (Upper)

1843 - Wing wall at the upper gate was repaired where several blocks of stone had deteriorated.

1896 - Wall at the back of upper lock was taken down and rebuilt in cement (ie. west wall that abuts into stone arch dam).

1901 - Both wing walls taken down as far back as the gate recesses and rebuilt with stone from Elgin quarry - sandstone.

1914 - Both lock walls taken down and rebuilt to remedy a construction defect. There was no batter in the walls from the fourth course to the bottom. Four lower courses rebuilt with a battered face.

1929 - Concrete core laid above upper sill to stop leakage.

1934 - Sill cut down to a solid base and rebuilt in reinforced concrete.

1937 - Repairs to lock sill.

1952 - Repairs to upper sill of lock - sluice valves repaired.

1971 - Pressure grouting of lock - Janod. Ltd.

Site Notes
- rock floor in lock
- upper sill is concrete over stone masonry
- upper wing walls are sandstone
BURRITTS RAPIDS LOCK 17

1866 - Repairs to upper breastwork.

1898 - South upper wing wall taken down and rebuilt. (Upper 5 courses)

1909 - Extensive repairs to south chamber wall and both upper wing walls - taken down and rebuilt.

1915 - Upper sill grouted. Some coping stones on lower wing walls were relaid.

1926 - Settlement occurred in lower end of lock. Entire floor was concreted, voids filled under the sill. Sunken portions of the walls were rebuilt. Chamber walls were grouted and pointed.

1969/70 - Lock dewatered and pressure grouted by Gifco Ltd. - chemical based grout. Supporting base placed underneath lower left gate.

Site Notes

Lower wing walls and upper gate piers have been patched or rebuilt with sandstone blocks.

- upper sill-stone masonry
- advanced breastwork of stone masonry
NICHOLSONS LOCK 18 (Lower)

1867 - Renewing several new sheave and coping blocks.

1913 - Upper wing walls, piers and sill of lower lock were taken down and rebuilt. Lower sill was concreted and planked. Chamber walls were grouted.

1933/34 - Upper sill replaced in reinforced concrete.

Site Notes

Bare rock floor.
No stop log grooves at upper end of lock.
Upper sill - stone masonry faced with concrete.

- very large blocks of stone used on upper gate monoliths
- stone masonry advanced breastwork
**NICHOLSONS LOCK 19 (Upper)**

1910 - Upper wing walls, upper sill and gate recesses taken down and rebuilt with new stone. Lower sill was repaired and planked.

Chamber walls grouted.

1911 - Lock grouted with Portland Cement.

1925 - Masonry of upper lock repaired.

1934 - Lower sill of timber was renewed in reinforced concrete.

1984 - Upper wing walls repointed by area crew.

1985/86 - Reconstruction of west and east lower wing walls and northern portions of gate monoliths to the hollow quoins in stone masonry.

Lower sill to be replaced in concrete.

No record of any pressure grouting.

**Site Notes**

- lower sill is concrete with wood edge
- upper sill is stone masonry
- bare rock lock floor
- swing bridge over lock with concrete abutments
MERRICKVILLE LOCK 21 (Lower)

1866 - Upper sill repaired.

1905 - Upper north wing wall and both recess walls grouted with Portland Cement.

1906 - Lower wall on north side of lock taken down and rebuilt.

1908 - Lower sill rebolted to rock and filled with concrete.

1913 - Upper wing walls, recesses and gate piers on north side of lock taken down and rebuilt.

1919 - Lock masonry grouted.

1973/74 - Northwest, Southeast and Southwest wingwalls gate recesses and monoliths taken down and rebuilt. Lower wooden sill replaced in concrete.

Lock - pressure grouted - Intrusion Prepakt. (Not certain whether the rubble back up walls were taken down or left intact, more info. needed).

Site Notes

- lock floor - rock
- upper sill - stone masonry
CLOWES LOCK 20

1871 - Small repairs to masonry.

1888 - 20 feet of eastern wingwall collapsed and was rebuilt. It was poorly bonded to the back up wall.

1900 - Pointing and grouting.

1905 - Chamber walls grouted with Portland Cement. Both piers on south side of lock were taken down and rebuilt by masons.

1912 - Lock grouted with Portland Cement.

1931 - Lower sill rebuilt in concrete with steel facing.

1937 - Repairs to lock sill and masonry.

1970/71 - Lock pressure grouted - Janod Ltd.

Site Notes

- sill not visible
- concrete gate recess at upper north gate
- random sandstone blocks and patches in upper piers
MERRICKVILLE LOCK 22 (Middle)

1904 - Lower wing walls taken down and rebuilt.

1913 - North upper wing wall, recess, gate piers rebuilt. Coping on north side relaid. Chamber walls grouted and pointed. Upper sill rebuilt, lower sill concreted and planked.

1919 - Masonry of lock grouted.

1924 - Lower sill replaced in concrete with steel plate protection.

1937 - Upper sill refaced in concrete.

1973 - Northeast wingwall, gate recess and monolith rebuilt. Lock pressure grouted by Intrusion Prepakt.

Site Notes
- bare rock lock floor
- concrete apparent in southwest gate recess and wing wall
- concrete advanced breastwork
- lower sill appears to be concrete over wood
- upper sill stone masonry
Merrickville Lock 23 (Upper)

1902 - Lock grouted - considerable leakage stopped.

1906 - Mitre sill of upper lock taken down and rebuilt.

1914 - New timber and concrete mitre sills laid in upper lock.

1915 - North upper wing rebuilt in concrete and connected with new concrete dam.

1937 - South upper wing wall rebuilt in concrete. Lower sill rebuilt in concrete.

1954 - New concrete steps built at lock 23.

1974/75 - Lock pressure grouted - Janod Ltd.

Site Notes
- upper sill stone masonry
- bare rock lock floor
- lower sill appears to be wood or else concrete with wood edge
- concrete advanced breastwork
KILMARNOCK LOCK 24

No major repairs noted until 1977/78.

1977/78 - Upper monoliths, wing walls, recesses, upper breastwall dismantled and rebuilt with concrete backing.

1985/86 - Lower wing walls, monoliths scheduled for reconstruction using original construction methods.

Site Notes
- stone tooling evident on locks
- bare rock floor
EDMUNDS LOCK 25

1841 - One of the side walls which had bulged inwardly badly was entirely reconstructed.

1906 - Both upper wing walls taken down and rebuilt with new stone.

1908 - Upper sill rebuilt with new dimension stone.

1912 - Lower wing walls, piers and gate recesses were rebuilt.

1913 - Lock masonry grouted and pointed.

1916 - Portion of the bottom of the chamber of the lock was concreted.

1924 - Bottom of chamber was relined with concrete. Lower timber was rebuilt in concrete.

1974/75 - Lock walls dismantled and rebuilt. Unsound stone replaced, cavities behind walls were filled. Upper sill dismantled and rebuilt. Upper monoliths and recess walls dismantled and rebuilt. Lock chamber pressure grouted - Janod Ltd.

1979/80 - Reinforced concrete poured around east upper wing wall in conjunction with sheet piling of embankments. Details needed on 1974/75 repairs.

Site Notes
- upper sill stone masonry
- concrete advanced breastwork
- tooling margins mark visible on west lock wall and upper wing walls
OLD SLY'S LOCK 26 (Lower)

1899 - Lower sill repaired and sheet piled.

1903 - New flight of stairs placed on slope of lower lock.

1908 - Upper sill partly rebuilt with 2 courses of stone.

1894, 1898, 1906 - Grouting done to locks.

1907/08 - Piers and gate recesses between the two locks were rebuilt in new stone.

1955 - Old timber lower sill of lock was renewed in concrete.


Site Notes
- bare rock floor
- intermediate piers rebuilt in sandstone
- upper sill stone masonry
OLD SLY'S LOCK 27 (Upper)

1827/32 - During construction, the rock floor was damaged by blasting during excavation of lock pit. Timbers were cut to fit the uneven surface of the bedrock between the gate piers. The timbers were anchored to the floor and then planked.

1868 - A breach in the bottom lower part of the lock was fitted with cribwork and stone and a new wooden floor was put in the lock.

1880 - Repairs to sill of upper lock.

1893 - New concrete bottom put in upper lock.

1907/08 - Intermediate piers and gate recesses were rebuilt in new stone.

1911/12 - Upper portion of lock taken down and rebuilt. This included a new masonry sill.

1954 - Upper sill completely rebuilt in concrete. Stop log checks lined with steel plates. Upper wing walls grouted, upper lock gate recesses were lined with concrete.

1967/68 - Lock pressure grouted - Gifco Ltd.

1980 - Upper lock repointed by area crew.

Site Notes
- upper sill stone masonry
- advance breastwork of stone
- swing bridge above lock has concrete walls abuting the upper wing walls of the lock
- intermediate piers close to lock wall have been rebuilt in sandstone. The piers on the outside of the stairwell are original limestone with tooled margins.
SMITHS FALLS COMBINED LOCKS 28, 29, 30

1867 - Gravel supplied for repairs to lock wall.

1871 - Pavement of upper lock renewed.

1910 - New flight of steps built on south side of upper lock.

1912 - Lower wing walls and gate recesses of lower lock were taken down and rebuilt. Lower sill was concreted and repaired.

1913 - Masonry of lock was pointed.

1917 - Sill between locks 29 & 30 rebuilt in concrete.

1925 - New chain and coping blocks placed on locks.

1932 - Old lower timber sill of lock 28 taken down and rebuilt in concrete.

1935 - Sill between locks 28 & 29 rebuilt in concrete.

ca. 1960 - New type of steel lock gates installed at upper end of lock 30.

1972/73 - All three locks pressure grouted Intrusion Prepakt.
  - New concrete sill constructed at lower end of lock 28.

Site Notes
  - sill between locks 29 & 30 is stamped 1917 both intermediate sills are concrete.
  - Concrete walls abut upper wing walls of lock 30.
  - upper sill is stone masonry
  - all walls-stone masonry
  - good tooled margins on many stones
SMITHS FALLS DETACHED LOCK 31

1905 - Both upper wing walls, gate recesses and hollow quoins taken down and rebuilt.

1909 - Lower sill concreted and repaired.

1926 - Timber sill replaced with concrete and steel.

1973/74 - North lock wall dismantled and rebuilt from the top of the gate sluices.
- South wall grouted and pointed.
- Lower sill rebuilt - reinforced concrete.
- Lock pressure grouted - Janod Ltd. (vertical holes in gate monoliths appear to have been reinforced with rebar).

Site Notes
- North wall has signs of tooling. Bottom courses are smaller.
- Breastwork - concrete
- Cement patch repairs to gate recess on southwest monoliths
- Excellent tooled margins on lower wing walls appear to be original
- Upper sill - stone masonry
POONAMALIE LOCK 32

1871 - Thorough repairs to upper sluices.

1879 - Repairs to masonry and five hollow quoins.

1894 - Lower wing walls repaired.

1903 - South upper wing wall taken down and rebuilt by masons.

1908/09 - Both lower wing walls taken down and rebuilt. Lower sill repaired and concreted. Upper gate recesses taken down as far as the level of the upper mitre sill.

1912/13 - Bottom of lock concreted.

1915/16 - North upper wing wall rebuilt in cut stone.
- Chamber walls extensively repaired.
- New mitre sill of timber and concrete was constructed.

1974/75 - Lock pressure grouted - Janod Ltd.
- Lock floor concreted.
- Sills reformed by removing the timber and pouring a concrete cap.

Site Notes
- tooling marks evident on stone
- upper north wingwall patched with blocks of sandstone some of which are of a different dimension
- floor has been concreted
- stone masonry appears to be in good condition
BEVERIDGES LOCK 33 (Lower)

Built 1884/88

1920 - Masonry of both locks was extensively repaired below the water line.

1951 - Portion of sandstone masonry in sidewall of lock 33 was worked out and replaced in concrete - around heel post of upper lock gates in the hollow quoin and gate recess in the lock wall.

1967/68 - New concrete entrance walls constructed above the lock. Repairs and additions to lower timber crib entrance walls and wharves. Lock was pressure grouted.

1968/69 - Pressure grouting of upper gate sill and wing wall repeated.

1989/90 - Upper wing walls and monoliths to be rebuilt with rubble masonry walls.
- Construction of cut off walls, either by extending the upper stone wing walls or by installing clay core walls.
- Repointing and pressure grouting of chamber walls and wing walls.
- Local masonry repair in these areas.

Lower sill - wood
Upper sill - concrete
BEVERIDGES LOCK 34

1920 - Masonry of both locks was extensively repaired below the water line.

1936 - Repairs made to hollow quoins.

1954 - Upper sill and part of lock masonry rebuilt in concrete.


Ca.

1976 - West upper wing wall taken down and rebuilt with concrete back-up wall.
- New stone added.

Site Notes
- concrete patches in lock
- concrete curb or ledge runs along the bottom of both lock walls 2½' to 3' high off the floor
NARROWS LOCK 35

Rock floor - no breastwork

1864 - Taking down and rebuilding wing wall and additional stone.

1875 - Protecting piers built at head of lock to save wing wall.

1879 - Repairing masonry.

1886 - Upper wing walls and recesses taken down and rebuilt.

1892 - Rebuilt wing wall of lock.

1908 - Masonry of lock taken down and repaired with new dimensions stone.

1922 - Annual report states that both upper wing walls, recesses and gate piers were taken down and rebuilt with concrete blocks made last year at Brooks Bay yard *[site inspection does not appear to coincide with this - both wing walls appear to be masonry]*

Site Notes

- masonry spalling in places
- concrete patching in gate recess areas
- north wall downstream of upper monoliths has large concrete patch
- walls appear to be all stone masonry
NEWBORO LOCK 36

1877/78 - Upper wing walls taken down and rebuilt. Back-up walls repuddled to stop leakage.

1901 - West lower wing wall rebuilt by masons.

1910 - Upper wing walls, gate recess, portions of chamber walls taken down and rebuilt. Both sills concreted and planked.

1922 - Lower sill and supporting timber cribwork underneath it were rebuilt. Lower east wing wall reconstructed with concrete blocks.

1937 - Repairs to lock sills and masonry.

1966 - Mechanization of lock. Sills of lock and gate monoliths were excavated and concreted to facilitate installation of hydraulic gates. Original batter of chamber walls changed and much masonry in wing walls was replaced with concrete blocks.

1971 - Pressure grouting of lock - Intrusion Prepakt.

1983 - New hydraulic tubing and channel covers installed.

Site Notes
- gate recesses are concrete
- concrete patching in lower west wing wall
CHAFFEY'S MILLS LOCK 37

1891 - Repairs to masonry.

1892 - Masonry of wing walls renewed.

1898 - Upper sill rebuilt. Several stones replaced in chamber and piers of lock.

1903 - Upper wing walls taken down and rebuilt by masons. Stone from Elgin Quarry used.

1915 - Extensive repairs to masonry of chamber walls and both upper and lower sills.

1937 - Repairs to lock sills and masonry probably made in concrete.

1966/67 - Concrete walls constructed below lock pressure grouted - Code Construction.


Site Notes

- swing bridge over lock - concrete abutments. Good tooled margins on lower wing walls
JONES FALLS DETACHED LOCK 39

1866 - Wing wall collapsed - rebuilt.

1900 - West lower wing wall taken down and rebuilt. Upper sill had several new pieces of stone put in and was thoroughly grouted.

1908 - Lower sill repaired.

1911 - Invert arch floor was repaired and concreted.

1915 - Upper sill repaired.

1920 - Extensive repairs to masonry of upper lock and wing walls.

1932 - The disintegrated masonry in the walls, and floor of the lock was cut out and replaced by concrete.

1970/71 - Pressure grouting - Janod Ltd.


Site Notes
- both sills are concrete
- concrete rendering over masonry floor

* It is difficult at times to discern which references in the annual reports 1860 - 1930 refer to the detached basin lock, and which refer to the upper flight lock. It is possible that there were more extensive repairs to this lock.
JONES FALLS DETACHED LOCK 40 (Upper)

1885 - Repairs to lower sill.

1904 - Lower sill rebuilt.

1908 - Lower sill of upper lock repaired.

1912 - Lower recess and bottom of the chamber of upper lock was concreted.

1913 - Repairs to masonry of upper lock.

1915 - Both upper wing walls, gate recesses, gate piers, manholes, upper sill taken down and rebuilt in cut stone.

1933 - Bottom of lock was concreted.

1972 - Lock pressure grouted - Janod Ltd. considerable repair of stone work on walls below water line - chipping, drilling, placing steel rods, filling with concrete and stone.


Site Notes

- concrete rendering on gate piers between locks 40 & 41
- sills are stone masonry
- stone staircase beside lock - tooled margins
JONES FALLS LOCK 41 (Middle)

1869 - Repairs to sill of center lock.

1880 - Repairs to sill of center lock.

1904 - Two middle sills rebuilt.

1928 - Invert arch bottom of lock 41, which was much decayed, was taken up and relaid in concrete.

1972 - Lock Pressure grouted - Janod Ltd. sluice chamber repaired.
- Replacement of deteriorated stone in lock walls.

1980/81 - Gate monoliths parged, floor patched.
- Lock chamber pressure grouted in places.

Site Notes
- masonry sills. Cement rendering on floors
- masonry staircases between lock chamber
JONES FALLS LOCK 42 (Lower)

1865 - Lower sill repaired.

1908 - Lower sill repaired - rebolted and strapped.

1911 - Lower sill repaired and concreted.

1973 - Pressure grouting - Janod Ltd.
- Repairs made to stone of gate recess and lower sill area.
- Removal and replacement of deteriorated stone.

1980/81 - Upper monoliths parged.
- Lower sill drilled and pressure grouted.
- Lock chamber pressure grouted in places.

Site Notes
- lower wing walls have good tooled margins
UPPER BREWERS LOCK 43 (Upper)

1846/47 - Breastwall and sill were dismantled and rebuilt.

1873 - New bottom laid in the lock including filling up with stone a large hole below the breastwork of the center sill washed out by water escaping below the floor of the lock.

1884 - Wing wall rebuilt.

1901 - Wing walls grouted.

1911 - Upper portion of upper lock taken down and rebuilt with new stone.

1912 - Middle sill, piers and manholes grouted with portland cement. Bottom of one manhole was grouted.

1916 - Walls of upper lock grouted and pointed - bottom of lock concreted.

1919 - Repairs to lower sill and walls.

1927 - Gate pier recess and recess piers in lock 43 were rebuilt in concrete blocks.

1931 - South of the wall of lock 43 which was badly bulged was taken down and reconstructed in concrete.

1937 - Repairs to lock sills and masonry.

1979/80 - Concrete floor poured in lock 43. Gate monoliths rebuilt in reinforced concrete with stone facing, and underpinned with piling.

Site Notes
- Original wood floor
  One of lock walls largely rebuilt with concrete. Upper sill-masonry. New monoliths have large blocks of stone.
UPPER BREWERS LOCK 44 (Lower)

1846/47 - Breastwall and sill dismantled and rebuilt.

1862 - Repairs to lower sill.

1911 - North chamber wall of lower lock was taken down and rebuilt with new stone.

1919 - South chamber wall had bulged.
- Necessary to practically rebuild the south side of the lock.
- Lower sill repaired.
- Dry stone walls below lock taken down and rebuilt.

1927 - Upper recess piers rebuilt in concrete blocks.

- Concrete sill constructed with stone facing.
KINGSTON MILLS LOCK 46 (Detached)

1900 - Upper wing walls, either of this lock or the upper flight lock were renewed.

1919 - Upper sill taken down and rebuilt in concrete. Upper portion of lock was filled with concrete. Repairs to lower sill and walls of upper lock.

1925 - Both lower wing walls, gate and recess piers were taken down and rebuilt in concrete blocks. New concrete apron constructed both above and below the lower mitre sill.

1972 - Pressure grouting - Intrusion Prepakt.

1979/80 - Pressure grouted locks, floors and sills.
- Installed new concrete floor and floor pressure relief valves.
- Concrete patchwork put on walls.

Site Notes
- lower wing walls - concrete
- concrete rendering on monoliths, gate recess
- both walls appear to have been rebuilt and patched with stone
- both sills are concrete
- swing bridge located across lock
KINGSTON MILLS LOCK 47 (Upper)

1900 - Upper wing walls, either of this lock or detached lock were rebuilt.

1972 - Lock pressure grouted - Janod Ltd.

1979/80 - Concrete floor poured over stone.
- Lock pressure grouted in places.
- Pressure relief valves constructed in floor.

Site Notes
- concrete rendering over rock floor
- upper breastwork appears to be of a newer stone
- new stone evident in west upper wing wall
- masonry sills
KINGSTON MILLS LOCK 48 (Middle)

1960 - Portion of west upper lock wall adjacent to bridge abutment was dismantled and the abutment underpinned.

Ten top courses of stone were removed - 2 to 3 stones wide. Concrete poured into opening and made to resemble stone.

1979/80 - Concrete floor poured over stone.
- Some tuckpointing and pressure grouting done.

Site Notes

- Four new sandstone blocks in lower east pier
- Stone staircase east side. Concrete staircase west side.
KINGSTON MILLS LOCK 49 (Lower)

1837 - Iron bars bolted to the wall and sill to prevent collapse.

1867 - Sunken lower sill repaired and rebolted down.

1872 - Substructure of lock underwent major renovations. Entire substructure was taken up and rebuilt with masonry and concrete and strengthened with rows of sheet piling.

1895 - Repairs to masonry of lock.

1972 - Lower entrance wing walls, gate recess walls and monoliths dismantled.

Backfill removed and replaced with better grade.

Lock pressure grouted - Intrusion Prepakt.
JONES FALLS ARCH DAM

1879 - Filling settlements in high dam.

1895 - High stone dam was repaired.

1900 - Small repairs were made to the stone dam.

1906/07 - Repairs made to big dam.

1912 - Considerable clay was placed on top of the big dam to fill up holes that appear from time to time.

Clay periodically placed on the dam - 20th century

Site Notes
- dam appears in excellent condition, small leakage at the base.
- penstocks have been out into the dam during the 20th century.
EDMUNDS OVERFLOW DAM

1864 - Gravel for dam.

1871 - Repairs to stonework of dam.

1874 - Small repairs to dam.

1893 - Gravel placed on dam.

1900 - Small repairs to dam.

1914 - Considerable repairs made to dam. All wooden blocks which had temporarily fitted the place of stones carried out by ice were replaced by stones laid in cement. The top of the dam was concreted to carry flashboards. Some clay was placed on the back of the dam.

1925 - Repairs were made to the top of the long stone dam.

1933 - The top of the dam was concreted to enable it to take standard flashboards with a three inch plank. (It is possible that the concrete was laid directly behind the dam). Prior to the concreting and the installation of steel brackets and flashboards, a series of logs 14" x 16" x 26 ft long had been laid on the dam each year to raise the water level.

Site Notes

- a few stones along the face of the dam have been dislodged or are missing
- concrete has been laid along the upstream face of the dam at some time
- there are a few concrete patches along the top of the dam
DAVIS DAM

270 feet long - extends from the upper wing wall of the lock to the waste weir.

The dam is 16 feet high, consisting of 2 rough stone walls, 3 feet apart with ruddle rammed between and then covered with earth and stone from the excavation.

Dam has required minimal maintenance. Periodic problems with leakage have been solved by placing additional clay and gravel on the face and rear of the dam.

1910 - Fill was dumped on the rear of the dam behind the storehouse.
- Cribs were built to prevent erosion.
NARROWS DAM

- Raises the level of Upper Rideau Lake by 3 feet.

Originally built utilizing timber braces backed with stone and fill. Large sections may have been repaired using timber cribwork during the nineteenth century.

1840/41 - Dam was repaired substantially with stone.
- Clay and earth periodically placed on the structure.

By described the dam in 1831 as 10 feet high, 427 feet long, with an embankment 758 feet in length.

It is not clear which part of the structure is a clay embankment and which part is considered as the dam.
UPPER BREWERS EARTH DAM

Framed timber dam backed with large blocks of stone, filled and front-sloped with clay and gravel. 18 feet high, stretches from the waste weir across the bed of the Cataraqui River.

1860 - Leak in dam repaired.

1862 - Part of dam broke away and had to be renewed.

1867 - Clay and gravel used to fill a hole in the dam.

1870 - Clay placed periodically on the dam.

1901 - Violent freshet caused a break in the dam - repaired.

1910/11 - part of dam probably cut back to facilitate the enlargement of the waste weir.

1945 - The construction of the power station below the dam resulted in a basin being formed between the dam and the power station. Consequently, little of the dam is visible. The dam is covered by grass and shrubs and appears to be part of the natural landscape.
CLOWES OVERFLOW DAM

1870 - Repairs to top of dam with coarse gravel and putting in several new stones knocked out by ice.

1876 - Gravel placed on dam.

1881 - 100 yds of gravel placed on dam.

1888 - Repairs to stone dam.

1889 - 60 loads of broken stone.

1894 - 100 yds of stone.

1895 - Leaks in dam stopped by dredge.

1905 - 40 feet of dam rebuilt, other portions of it were repaired.

1909 - Some stones carried away by ice and were put back into place.

1911 - Stone and gravel placed on dam.

1914 - After 80 years the center of the dam had been pushed downstream, thus destroying the keywork. About 160 feet of the dam was taken down and relaid in cement to its original radius.

1954 - Portion of the stone arch dam was grouted and a concrete cap put in its place.

1975/76 - Reinforced concrete wall was placed against the upstream face of the dam.

Existing masonry pressure grouted.

Missing stones from the face of the dam were replaced.
KINGSTON MILLS ARCH DAM

1862 - Stone retaining dam is bulged outward. 500 yards of coarse gravel placed in front.

1870 - Face of the dam repaired.

1948 - Concrete top place on top of the dam.

1976 - Rock berm fill placed against downstream face to prevent collapse. Future repairs planned - remove concrete cap, rebuild deteriorated portion of the stone facing above the rock berm, grout and grade.

Site Notes

- Concrete top on dam has cracked. Dam is bulged outward.
- Face of dam is hidden by basins created by the Gananoque Light and Power dam immediately downstream.
- Only a few feet of the dam is visible above the waterline.
EDMUNDS WASTE WEIR

1865 - Waste weir failed - masonry and the apron had both given way. - A wooden bulkhead was constructed inside the masonry in order to provide support.

1871 - New sill laid in foundation of waste weir, and additional repairs made.

1902 - Waste weir repaired and replanked.

1907 - Waste weir taken down and rebuilt.

1910 - Waste weir recovered and planked.

1929 - New floor was laid in the waste weir.

1979 - Foundations of downstream (south) east and west abutments were excavated. Concrete was poured around the base of each abutment to staunch leakage. - Backfill behind upstream walls of weir were excavated and a concrete wall (6" wide x 3½' deep) was poured along the backside of the walls. New impervious clay backfill was added. - Sheet piling placed from upper west weir wall, extending west to the river bank, and also from the upper east weir wall to the overflow dam. - Selected deteriorated stones in weir were chipped back and patched with concrete. - Weir was pressure grouted. - Steel stop log checks installed. - Work done by La Flamme Construction.

Site Notes
- stone masonry
- wood deck
- steel stop log checks
- concrete wall along east upstream face
KINGSTON MILLS WASTE WEIR

1865 - Bulkhead renewed.

1884 - Waste weir was renewed.

1898 - Waste weir across embankment rebuilt.

1902 - Stone waste weir was taken down and rebuilt and now nearly all the leakage that existed is staunched.

1985/86 - Upcoming repairs planned:
- replacement of the existing wood sill with concrete;
- steel stop-log check liners and seating plate of steel to be installed to provide uniform bearing surfaces;
- grouting and pointing stone masonry abutments;
- grout joint between existing steel sheet pile wall and back of east abutment.

Site Notes
- weir is all masonry
- concrete bulkhead over weir
CLOWES WASTE WEIR

1885/86 - Repairs to bywash.

1902 - The entire central pier of the weir was carried off during spring run-off. The two narrow stop log bays were replaced with a single set of oak stoplogs 33 feet in length.

The whole of the weir and the embankment were rebuilt.

The wing wall of the bulkhead was also taken down to the low water mark and rebuilt.

1907 - The waste weir was taken down and rebuilt with new stone.

1918 - Apron below the weir was worked out and rebuilt.

1927 - Floor of weir was planked.

1929 - Floor of weir was planked.

1930 - Bulkhead of weir renewed - stringers, flooring, railing and wind bearers.

1985/86 - Renovations planned:
- tuckpointing of weir walls, pressure grouting of weir, sill and apron;
- replace existing concrete sill and apron in concrete;
- new stop log gain and sill beam
- replace deteriorated masonry with new masonry;
- replace deteriorated cement patches with new cement;
- repairs to rip rap;
- reconstruct cut off masonry wall between weir and dam; and
- install drain pipes on each side of weir.

**Site Notes**

- all stone masonry
- steel stop log checks
- wooden bulkhead over weir
- both weir walls are patched with random sandstone blocks
UPPER BREWERS WASTE WEIR

1894 - Stone weir sheeted inside.

1880/81 - Bulkhead of weir renewed.

1897/98 - Bulkhead of weir renewed.

1910/11 - Waste weir taken down and rebuilt with heavy cut stone. The stoplog opening was increased in width by about 3 feet 6 inches.
- It was necessary to cut into the retaining dam itself to increase the opening.
- Prior to this, in seasons of heavy snowfall and heavy freshets it was necessary for the Brewers Weir and the Morton weir to be fully opened.

1924 - New floor built in waste weir.

1936/37 - The sill of the weir was lowered four feet to enlarge the opening.

Site Notes
- metal stop log checks in weir
- timber deck - new 1984
- concrete slab abuts lower wall of weir
- all walls of weir are masonry
NICHOLSONS WASTE WEIR

- Weir was originally constructed of timber, supported on masonry piers. Routine repairs until 1899.

1899 - Waste weir was damaged by spring ice. It was temporarily repaired and then rebuilt the following year.

1910 - Old timber weir deteriorated to the point that it was taken down and replaced with a masonry weir.
- Some time after 1910 - two concrete walls were built on the downstream sides of the weir.

1984/85 - Weir pressure grouted and pointed.
- New sill and apron installed.
- Concrete wing walls downstream refaced.
- Deteriorated stones in weir replaced.
JONES FALLS BASIN

1899  - Leakage through the basin stopped with pine sheeting.

1894  - New sluice pier built in basin.

1906  - The basin dam which was of timber and clay was taken down and 
a fine stone structure substituted. Most of the stone, with 
the exception of the coping, was taken from the two old lock 
sills which were rebuilt two years ago. An iron sluice of 
the wheel and thread pattern has been put in the dam, and the 
bottom of the opening has been lowered so that the basin can 
be lowered to a point about two feet lower than formerly.

1980/81 - Stone wall along the north shoreline of the basin was 
reconstructed with a reinforced concrete foundation below 
grade. 2 courses of stone masonry with a coping of 
concrete.
MERRICKVILLE UPPER BASIN

1830's - Oak planks placed behind walls of the basins to check leakage.

1870, 1874 - Underpinning walls in basin.

1888 - Repairs to masonry in upper and lower basin.

1891 - North wall of basin taken down and rebuilt, sluice installed for dewatering basin.

1898 - Both basins grouted and pointed.

1900/01 - South wall of upper basin failed in the spring of 1900 and was rebuilt by masons.

1911 - Tile drainage pipes were put in on the south side of the basin.

Site Notes
- walls appear in good condition
- rough faced masonry laid in horizontal courses
MERRICKVILLE LOWER BASIN

1830's - Oak planks placed behind walls of basins to check leakage.
1870, 1874 - Underpinning walls in basin.
1888 - Repairs to masonry in upper and lower basin.
1898 - Both basins grouted and pointed.
1903 - South side of lower basin taken down and rebuilt by our masons.
1906 - North wall of lower basin was underpinned and thoroughly grouted and pointed.
1908 - North wall of lower basin was grouted and pointed with Portland cement.
1913 - New concrete wall was built inside the old stone wall forming the north side of the lower basin and the coping was moved forward to the top of this new concrete wall. Earth was placed behind the wall on the north side of the basin to strengthen and widen the same.
1973 - Basin was pressure grouted in conjunction with repairs to locks 21 and 22.

Site Notes
- south wall of basin is rough faced masonry
- north wall of basin is concrete with stone coping
BECKWITH STREET SWING BRIDGE

- Erected in 1888/89.
- Oldest steel swing bridge on the Rideau/Tay System.
- Rivetted through king post Howe truss design.

c. 1917 - Turntable of bridge reconstructed or repaired.

1940 - 3 new fifteen inch floor beams were ordered to replace the existing nine inch floor beams supporting the counterweight.
- 2 new counterweight plates installed.

1941 - Swing span section of bridge was welded closed.

1984/85 - Replacement of deteriorated steel members.
- New timber deck.
- Sandblasting and painting.

- Periodic replacement of timber deck at 10 - 20 year intervals.
BURRITTS RAPIDS SWING BRIDGE

- Erected 1897, through truss design, combining a Pratt and Fink truss.
- Unique design not found on other Canadian Canals.

1900  - Small repairs.
1909  - Sundry small repairs.
1910  - Pointing masonry and piers, new flooring laid on bridge.
1915  - Bridge sandblasted and painted.
1925  - New joists and flooring laid on swing bridge, circular track replaced.
1934  - New timber floor laid.
1945  - Floor joists of bridge being replaced.
1947  - Swing span strengthened by adding heavier stringers.
1956  - New wooden deck and stringers laid.
1969  - Bridge damaged by tandem dump trucks crossing over it.
    - Short arm castor support rail was compressed to failure thus raising the west side of the bridge some 12 inches from its abutment. Severe buckling in 2 compression members in the truss on the south side of the bridge, thus several tension members deflected.
    - Circular rail was levelled and castors adjusted.
    - Short arm castor support and concrete rail footing replaced.
    - Tension tie rods below the bridge were tightened - steel deck beams brought into alignment.
    - decking, flooring, planking and curb rails were replaced.
1974  - N.W. corner of bridge and fence were damaged by a car.
    - repaired by canal forces.
1980  - Replacement of 4 I beams on long span section, and 2 I beams in each side of the pivoting tower. Diagonals of main towers were straightened. Four top chord braces strengthened at end of floor beams and tower brace on north side truss.
1982  - Abutments of Swing Bridge were repointed to the low water line.
1984  - Two separate incidents of vehicles hitting the bridge.
    - Emergency repairs carried out - bolting and straightening.
    - Damaged members to be replaced with similar members using rivetted connections.
JONES FALLS FIXED BRIDGE

- simple timber beam, continuous span structure consisting of timber stringers supported on short supplementary beams which rest on rock filled timber cribs. 6 spans - total length of bridge is 246 feet.

- Built 1883 in conjunction with the construction of the swing bridge.
- Prior to 1930 the piers were rebuilt from low water up on one occasion, perhaps in 1913.

1893 - Plan delivered to make repairs to long bridge.

1897 - Long bridge was rebuilt by our own carpenters.

1913 - Bridge was rebuilt.

1935 - Joints and planking of long timber bridge were extensively renewed.

1977 - New stringers and deck built on one span of bridge down to wood cribbing.

1978/79 - New stringers and deck built on remainder of bridge down to wood cribbing.

- Since 1935 the superstructure of the bridge has again been renewed.
- The piers may be original below the water line.
- The present structure bears a close resemblance to the original bridge.
UPPER BREWERS FIXED BRIDGE

- Simple timber beam structure of a single span with its floor joists, or stringers resting on rock filled timber crib abutments. The bridge closely resembles the timber fixed bridge which crossed the river in the same location in the year 1830.
- Substructure of the present bridge was last rebuilt in 1919/20 and the superstructure in 1934/35.

Site Notes

- crib work piers of the bridge are sagging in places
- timber beams have been placed on the deck resting on the piers of the bridge, presumably to take the pressure off the individual deck planks.
NARROWS SWING BRIDGE

- The present Narrows Bridge was originally erected in 1898 at Beveridge locks. It was moved to Narrows lock in 1961, stored there and erected in 1965.
- Rivetted steel modified Pratt through truss.

1910 - Replanked with 3 inch plank.

1914 - Swing bridge sandblasted and painted.

1935 - New floor joists installed and floor planking and guard rails renewed.

1960 - Bridge damaged after being hit by a car - $1300 for repairs 5 web members and one section of the top chord replaced. Wooden handrails repaired.

1981 - Repair work.
- Replacing 6 badly rusted floor beams, two lattice work balance wheel support beams, channel frame gear support, gusset plates and various other corroded members. These parts were replaced with new galvanized.
- Timber deck, deck stringers, hand rails, sub rails and bumpers were removed and replaced with new timber.
- Concrete ballast weight was removed and replaced.
- Bridge was sandblasted and painted grey.

- Narrows swing bridge and Long Island swing bridge are the only two examples on the Rideau Canal of a pony truss swing bridge.