

**APPENDIX 3.**  
**RESTORATION OF HISTORIC BUILDINGS**  
**BY**  
**LES BATTEN**  
**MARITIME CANSTONE INC.**



## RESTORATION OF HISTORIC BUILDINGS

by Les Batten, Maritime Canstone Inc.

Much of our building heritage is of stone. In fact, in the Atlantic Provinces and, to a lesser degree, in other parts of Canada and the United States, a large number of the heritage buildings are built of Nova Scotia sandstone.

A high proportion of these buildings, especially those built in the 1800s and early 1900s are in need of restoration. Fortunately society recognizes the value of protecting and preserving these heritage properties for future generations.

The restoration of historic buildings is only one of many ways to conserve these buildings. There are five forms of conservation. They are preservation, consolidation, reconstruction, reproduction and restoration. A brief explanation of these forms follows.

The object of **prescrvation** is to maintain the building in its existing state. Repairs should only be carried out to prevent further decay. This type of conservation is usually applied to historic ruins.

**Consolidation** involves the application of a chemical, or adhesive, to the building to ensure the stability of the face in the short term. It is usually used to retain the façade at its present standard until the resources are available for restoration.

**Reconstruction** enables the movement or rebuilding or both of endangered or unstable historic buildings.

**Reproduction** is the copying of details or buildings to maintain the integrity of a particular area or site. Reproductions of the carvings on a building can sometimes be justified if the original has been obliterated by wear and sufficient data are available for that carving to be reproduced in its original detail.

The art of **restoration** is intended to return the building to its original concept and restore only what is necessary (a) to achieve the stability of the structure, (b) to achieve the aesthetic value of the building, and (c) to enhance the usage of the building.

During restoration, details and features are renewed. Their reinstatement relies on respect for the original design and material used, plus the use of the original drawings if they are available.

Replacement of these details must follow the original design, but also be identifiable, on close examination, from the original in order to correctly retain the architectural significance. It should not be the intention of the restorer to falsify the fact of repair; indeed, it should be said that, any contribution, from any period, must be respected if that addition or restoration can be considered to be of historical value.

Many churches, cathedrals, stately homes and public buildings have, in their lifetimes, been subject to alterations and improvements which have now become historic in their own right. It is very doubtful if the removal of these additions to reveal underlying architectural features can be justified. It would need very careful evaluation and in-depth consultation before this type of project is embarked upon.

The aesthetic value of historic buildings demands that as much as possible of the original artisans' work, plus the patina of age associated with old buildings, be retained for all to see.

To achieve the optimum results on any restoration program it is essential to have a team of restorers who bring together the required multidisciplinary skills. This team should include a cross-section of abilities and be headed by an historical architect. His/her duties should include the ordering of priorities and co-ordination of the various professionals and craftspeople. An ideal team would include engineers, contractors, suppliers, craftspeople from the various disciplines, possibly a landscape architect, as well as historians, archeologists and geologists. All of these disciplines are needed to achieve the best results.

Unfortunately skilled craftspeople are in short supply, and there has been little evidence of formal training for the professionals required for restoration projects. Also, the reduced use of stone in building

construction in the last 50 years has caused quarries to close because of lack of orders. This has made once common building stone either unavailable or too costly for restoration projects.

## RESTORATION PROJECTS

During any large restoration project a series of preliminary functions must be carried out. These are: initial inspection, proposal, acceptance, appointments, site preparations, drawings, cleaning, detailed inspection, stone preparation, stone fixing and site clearance.

**Initial inspection** is carried out to determine: (a) the amount of restoration required, (b) the importance of certain façades, (c) the urgency of remedial work, and (d) the method of approach. These inspections are best carried out using scaffolding or hydraulic platforms to enable a close and thorough survey.

A **proposal** document is submitted to the client for approval and should contain all the information gleaned from the initial inspection. It should contain recommendations for materials, labour, scope of work, project time, and be accompanied by some photographic evidence of the necessity for restoration.

The client will **accept** the proposal submitted before ongoing preparations can continue, usually after counter proposals have been considered and negotiations completed.

Following acceptance of the proposal, **appointments** with the architect, project manager, subcontractors, suppliers, plus other professionals as required must be made, or approved, by the client.

During **site preparation**, site offices are set up, discussions held with property owners or users to designate areas for storage of material, to highlight problem areas, to agree to the proposed sequence of work, the limits of the site, and the various services that will be required.

Scale **drawings** should be provided by the architectural services to cover all elevations where restoration is required.

Scaffolding should be erected and **cleaning** carried out, if desired, prior to detailed inspection.

Using the scale drawings provided, a **detailed inspection** of the façade should be carried out by the architect, project manager and perhaps the client. Stones selected for restoration are recorded.

The project manager and his team provide detailed shop drawings corresponding to the information on the master drawings; these are submitted to the workshop for **stone preparation**.

Manufactured stones are delivered to site to be **fixed** in the positions designated on the master drawing.

On completing the restoration, temporary sheds, offices, scaffolding and rubbish need to be removed and the **site returned to original use**.

## RESTORATION OF PROVINCE HOUSE, HALIFAX

To illustrate the foregoing, this section describes the restoration of Province House, Halifax, Nova Scotia, which was undertaken between 1985 and 1990.

### Introduction

Province House was built over a period of eight years and opened in 1819. Its design is thought to have been influenced by the Adams brothers, the leading exponents of the Palladian (or Georgian) style. It is classic in its dimensions, with its length being twice its width and with the opposite elevations being identical. One of the many outstanding features of this building is the extremely intricate and beautifully carved coat of arms, an outstanding example of the architectural carver's art. It was executed by David Kinnear who is responsible for other fine works in Halifax. Added to its fine architectural value, it has a unique place in both the social and political history of Canada, indeed, a building worthy of restoration (Fig. A3-1).

Proposals for the project were sought from various sources, and, after extensive negotiations which



Figure A3-1. Province House, Halifax, Nova Scotia

included a Federal Manpower search for competent Canadian experience, it was decided to accept a proposal from an English company. A provision of this award was the inclusion of a training program to teach 12 Nova Scotia apprentices the art of stone restoration, with the intention of having a workforce available to carry out further restoration projects without the necessity of overseas input.

### Project

The contract began in March 1983. Subcontractors were selected for the scaffolding and cleaning and the scaffolding was erected in June.

Cleaning was carried out under the direct supervision of the project manager to a specification determined by the contractor, and agreed on by the client.

The method of cleaning was arrived at after very careful consideration of the budget, the material to be cleaned, and various tests to determine the least damaging method. Every cleaning method has its drawbacks and all cleaning projects need to be evaluated on their own merit. It is sometimes necessary to use several different methods.

Cleaning historic buildings should only be undertaken after careful evaluation of the reasons why

and the consequences of the cleaning. The success of any type of cleaning relies heavily on the skills of the equipment operators. It is therefore very important for architects and contractors to carefully assess the cleaning companies before awarding the cleaning contract. The need to clean the building is not just for aesthetic reasons, but also to determine the amount of restoration required. This is almost impossible to accurately assess until the dirt has been removed.

With these evaluations completed it was decided to use an adapted wet head to clean Province House. Upon completion of the cleaning, an inspection was made by the architect and the project manager to determine which stones needed replacement, and to mark the drawings during scaffolding work. The elevations were divided into sections and marked one section at a time. Stones were given a letter and a number to identify them on the working drawings. When the operation was complete, the stones selected for renewal were marked on the master drawing, with one copy each, for the site and the workshop.

The next phase was to provide job cards for each stone that needed manufacturing. In conjunction with this, full sized drawings of mouldings for cornice stone, arch stone, column bases and any other stone that could not be identified by measurement were provided.

Descriptions on the job cards give both dimensions and a picture and are intended to give to the banker mason all the information required to manufacture the finished article. The reference marks correspond to the master drawing and are inscribed on each stone for identification.

### Training

The Province House Restoration Project contract required that the project manager establish a training program to teach stone restoration masonry to interested Nova Scotians.

In order to give the correct training in stone restoration, it is necessary to have both theory and hands-on practical training, over a period of time. Three years of theory and four years of practical work are needed. To this end a program to train 12 apprentices was established.

A workshop was set up during 1985 and basic stone cutting machinery was purchased from Scotland in the United Kingdom and installed in the workshop in readiness for the start of the cutting program in 1986. In November 1985 12 people were selected to become the pilot group of apprentices. Negotiations were carried out with the Nova Scotia Department of Education to allocate teachers and space at the Nova Scotia Institute of Technology, for the purpose of classroom training to cover science (building), mathematics, geometry, communications and blue print reading.

In addition to this the Nova Scotia Department of Mines and Energy gave both classroom and field training in basic geology. The craftspeople imported from England taught the stone masonry subjects.

February 3, 1986, marked the start of the training period for the apprentices and also the start of the physical restoration. One of the first tasks was for apprentices to become familiar with masonry tools. Stone was provided during the month of February for this purpose, hand cutting being the order of the day.

In the month of March production began and stones required for the replacement of the chimney stack and the restoration of the cornice were prepared.

Site work began in April with the cutting out of stones, followed by the fixing of these stones in May. This sequence of events continued throughout the year.

During the detailed inspection, it was noted that a number of stones had originally been fixed with the bedding planes running vertically. Face bedding, as this is called, allows water to penetrate these bedding planes, separating them and causing layering. Freeze-

thaw cycles and salt expansion cause pressure which is usually enough to dislodge some of these layers. This is known as exfoliation.

During the last 30 years an attempt was made to halt this breakdown by the application of a cementitious compound. Unfortunately, this type of repair can accelerate the decay if improperly carried out. A very hard cement-sand coating was used and the inevitable crazing of the surface occurred. This allowed water to penetrate the body of the stone.

Water, which is a primary cause of decay in stone because of the many impurities contained in it, will attempt to migrate back to the surface of the stone. Unfortunately, any surface coating causes a barrier and, as the water evaporates behind this barrier, the resulting salt crystals expand and push the cement face off. This in turn provides pockets for retention of acidic rain allowing ongoing decay of the stone.

These factors accounted for at least 90% of the required restoration on Province House. The remaining 10% was attributed to weathering, i.e. attrition that occurs through erosion, chemical action, frost damage or stress.

Stone required for the restoration was obtained from the Wallace Quarries Ltd. Quarry, Cumberland County. This stone varies slightly from the original stone used in the building of Province House, which also came from Wallace, but from a now abandoned quarry (Wallace River Quarries (Battye Quarry)). The slight difference in colour will create just enough visual evidence of the restoration to identify it without being obtrusive.

The Province House Restoration Project was completed in 1990. The finished product is a credit to the original builders and to the many skilled masons who carried out the restoration work. Not only has a valuable building been restored to its original beauty, but a new industry has emerged in the region. The skilled masons who have moved to Nova Scotia for this project, combined with the apprentices trained over the course of the project, have the skill and the knowledge to carry out other much needed restoration work on stone buildings throughout the region.