

ICOMOS Canada Stone Committee

Fall 1990 Newsletter

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Chairman's Message

As I sit writing this, November is just over a week away and that means that the annual congress is almost upon us. This year we shall be in Montreal for what looks to be another stimulating programme of presentations and discussions.

I note from our spring newsletter that the deadline for the fall newsletter has come and gone, so this really is an effort to reach everybody before the meeting in Montreal.

Although I will not report in detail the year's activities here, I can say that the majority of our efforts were once again directed towards the Cemeteries Act and its Regulations in Ontario and in putting on a second training course which was held in Toronto last May.

This year we need to submit our proposals for supporting funding prior to our meeting and therefore our programme of activities must be in place within the next two weeks. I, or Susann, would be pleased to hear from anyone with particular interests or suggestions for next year's programme.

There has been some discussion and interest expressed in a quarry visit to Ebel Quarries upon the Bruce Peninsula. Arriscraft's Adair marble quarry is close by at Hope Bay and could also form part of a visit. It would most probably be in the spring with the proposal to drive up from Toronto. It is about a three hour drive each way, but the opportunity would exist to stop off at interesting sites en route. Fifty percent of the travel costs to the meeting can be supported by the committee. This would assist those travelling from afar. The visit needs to be planned well in advance so let us know if you are interested.

I look forward to seeing everyone in Montreal.

Keith Blades, Chairman

Editorial Notes

Welcome to our fall newsletter. The focus of the fall issue is to provide a vehicle for communication and an update of activities of our members since the spring.

The next issue will be published in early April, 1991. The deadline for submissions for the 1991 spring newsletter will be Friday, March 8, 1991.

Our deadline this time is generated by our promise to get this issue circulated in sufficient time to precede the upcoming 1990 Annual Meeting and Congress on November 15th to 17th. A french translation will be available at the Congress and can be obtained there or from our office.

One of our regular housekeeping items is to maintain the directory at the back of the newsletter. Please verify your listing.

Consistent with all ICOMOS Canada Committees, we will continue to seek increased representation from all regions of Canada. We urge you to submit articles or notices of upcoming events.

Last, but certainly not least, a special thank you to our members for the interesting and informative articles for this issue.

William deBacker

Education and Training

Successful Cemetery Conservation Workshop Presented by Stone Committee Members

Shantz Mennonite Cemetery, located at Baden, between Kitchener and Stratford was the site of a highly successful Cemetery Conservation Workshop presented by Susann Myers and Gail Sussman, Education/Technical Advisors, Ministry of Culture and Communications. The workshop was presented to 50 participants who were keenly interested in the issues of cemetery sites and recording and documentation.

Lectures on the history of cemeteries, designation issues, legislation governing cemeteries today, the nature and deterioration of stone used in monuments and procedures for repair of damaged stones were presented.

With the cooperation of the Shantz Mennonite Church Committee and the Township of Wilmot, two adjacent cemeteries were used to provide hands-on experience in resetting leaning or fallen markers, photographing gravestones, making rubbings of markers as well as inspecting and recording cemetery sites.

Participants attended largely from southwestern Ontario, but also from as far away as Huntsville, Rideau Township and Sarnia. More than 50 additional registrants were unable to attend due to space limitations at this workshop. The Heritage Branch has received many letters requesting that the Cemetery conservation Workshop be repeated in various locations across the province, to provide information on this currently relevant topic.

press release provided by Gail Sussman

Comments on a Tour to Arriscraft

Every year one of the events organised by the Toronto Chapter of Construction Specifications Canada is a tour of a manufacturing facility. As the current chairman of the Toronto Chapter, I was fortunate enough to direct the event into a masonry related field. The tour was hosted and sponsored by Arriscraft Corporation and was combined with a joint meeting with the Buffalo Chapter of the Construction Specifications Institute in the United States.

Arriscraft Corporation produces a broad range of manufactured masonry products and also quarries and dresses both limestone and marble. Their headquarters and manufacturing operations are located on a 500 acre site on the outskirts of Cambridge, Ontario. They also own and operate a marble quarry on the Bruce Peninsula.

The attendance was comprised of about one hundred individuals, roughly one half from Canada. For the guided tour the assembly was divided into small groups and viewed the extensive manufacturing, stone cutting and finishing processes. After a delicious Oktoberfest theme luncheon, a discussion on masonry detailing was facilitated by Garth Miller of the Ontario Masonry Promotion Fund, accompanied by four large full-size mock-ups of masonry wall construction. As with many of these hands-on presentations relating to masonry, flashings and air barriers, lively discussion ensued and a good time was enjoyed by all.

To end the tour, each attendee received the current technical literature for the Arriscraft products.

If you have never toured the operations at Arriscraft Corporation and would like to do so, contact James Cassels, Vice-President of Sales, at (519) 653-3275. I know he would be delighted to host you individually or in groups.

William deBacker

Technical Section

Search for Replacement Sandstone

In providing technical assistance to a Ministry colleague recently, I have been through the process of assessing sandstones proposed by a contractor for restoration work on a Ministry-funded project. Since Keith Blades assures me that the frustrating process I've been participating in is absolutely typical, I thought that it might be worth writing up for the enjoyment of all Stone Committee members.

The original sandstone on the building concerned was Credit Valley, of a warm pinkish-red colour. That stone suffered severe damage during a major fire some years ago, as a result of which an ornamental clock tower was completely lost. The current project includes repair and replacement of original sandstone, as well as restoration of the clock tower. A source of Credit Valley sandstone salvaged from another building had met most of the project's needs, but as the project neared completion it was found that the supply was inadequate to complete the tower. An additional 3 to 4 tons of sandstone were needed, for use in very exposed locations - copings and clockface surround in the tower - and mainly to be edge-bedded.

Credit Valley sandstone is no longer being commercially quarried for dimension stone. The contractor had therefore proposed sandstone from two different suppliers, one in Quebec and the other in Nova Scotia. When I began to review the technical literature submitted by the two suppliers, however, I found that both were proposing to supply Rusticoville sandstone from Island Sandstone Quarries in Prince Edward Island. The Rusticoville information submitted by the suppliers showed the results of tests which were commissioned by the quarry and included in its glossy promotional literature. While very reluctant to even consider a sandstone for which there was no experience of durability in use, I felt that the stone deserved thorough evaluation, given the pressure to complete the half-built tower before winter.

That evaluation process included:

- A. *comparing the stone's visual characteristics (wet and dry) to the Credit Valley's.* The Rusticoville is not a good match to Credit Valley, being much more orange-red in colour and lacking banding.
- B. *reviewing the published test results.* This review indicated that, while strength tests were conducted to ASTM test standards, the absorption test was not: 7.1% absorption was shown, but no time for that absorption was given and no ASTM test standard cited. The absorption indicated was therefore meaningless.

- C. *talking to the quarry manager.* While he was very helpful about production concerns - bed heights, seasoning requirements and availability - he did not know about the geology of the stone or its performance characteristics. ("Calcareous" was a new word to him.) Well-seasoned stone of the required bed heights was available, however, and he referred me to a geologist who had been involved with the stone.
- D. *talking to the geologist.* He could discuss some of the geological characteristics of the stone - e.g. the cementing matrix. The "clay/calcite" cement mentioned in the promotional literature was apparently mainly clay, making the sandstone an argillaceous rather than a calcareous sandstone. Had it been calcareous, it would have been incompatible with the Credit Valley sandstone on the building, and would also likely have caused problems in adjacent brickwork. However, this geologist did not know how to interpret the results of the tests which had been conducted on the stone, did not understand seasoning of stone, and did not know about its durability or deterioration in use. As a geologist, his interest ended when the rock was converted to dimension stone.
- E. *talking to Martin Weaver about the durability of P E I sandstones in general.* He confirmed my worst fears, indicating that those that he had seen were not durable in polluted environments. They typically showed quite severe deterioration, including loss of binder leading to disaggregation, skin formation, salt problems and cavitation/wind scouring.

On the basis of the information collected, I strongly recommended rejection of the Rusticoville sandstone for this project. A potential source of well-seasoned Sackville sandstone was therefore investigated. Sackville sandstone with its ferruginous clayey cement is compatible geologically with Credit Valley, which has a ferruginous cement. The Sackville is generally redder in colour, however, as well as being much coarser-grained and having characteristic black mica throughout. Keith Blades warned me that Sackville sandstone also appears to be much less durable than Credit Valley (e.g. on the Provincial Legislative Building, where both have been used) and suggested that use of the Sackville in exposed locations would require careful attention to bedding and very careful, thorough flashing.

This particular situation has not been fully resolved; further sandstone sources may yet be investigated. To me, this project has pointed out the strong desirability of developing:

- a stone directory with detailed information on the common dimension stones used historically in Canada, and those currently available for repair/replacement;
- knowledge of disused Credit Valley quarries which might still provide small quantities of stone; and
- reactivation of an old quarry either in the Credit Valley or on Vert Island in Lake Superior, for commercial production of the sandstone.

Susann Myers

The Practicalities of Minimum Intervention

The stabilisation of an open arched and vaulted entrance on the West Block of the Parliament Buildings in Ottawa was as challenging a proposition as one might imagine. Complex patterns of movement had led to spreading of the masonry over the arches with the usual gaping joints and dropped voussoirs, all made worse by earlier misguided attempts at repair.

The footings and foundation wall above grade were stabilised in a straightforward manner with a weak cement:lime putty:pfa grout. It had been proposed to take down the masonry at least to the arch springings in order to rebuild everything to the original line. This meant of course, the dismantling and re-assembly of the vaulting which neither the masons nor I were particularly enthusiastic about!

However, with caution in hand, we all agreed that it would be unlikely on rebuilding to get everything back together perfectly square, given the amount of movement, so only the stonework above the voussoir was to be removed. On disassembly a completely rotten rubble core material was encountered with no bond between the inner and outer faces of the wall. Some rapidly designed shoring details were produced with bracing of the entrance in front with raking shores and restraint of the structure laterally with steel rods. With the structure braced and restrained it was then possible to remove the stones over the arches which act to counterbalance the thrust of the vaulting.

Currently the voussoirs have all been reworked to line and pinned and cramped. Resetting of the facework over the arch is proceeding. The removal of the loose core material and rebuilding and consolidation of the remainder can now be carried out. With cold temperatures rapidly approaching and the difficulty of enclosing the entrance, a temporary roof will be installed until the new lead roof can be laid in the spring.

Despite a thorough analysis and carefully thought-out scheme for remedial action, in the end site conditions and a practical approach to changing circumstances must dictate decisions. In this instance it has resulted in a far less dramatic intervention and of course a saving to the taxpayer.

Keith Blades

The Relationship Between Decayed Wood Components and Masonry: Fortress of Louisbourg, Sydney, Nova Scotia.

The Fortress of Louisbourg as it stands today is a reconstruction designed and implemented by the Canadian Parks Service, based on intensive historical and archeological research. Most of the buildings on site average about twenty years in age and most exhibit moderate to severe fungal decay in various wood components. There are three basic types of structural systems used for the reconstructed buildings at Louisbourg: masonry walls with wood framing, timber frame with wood or masonry nogging, and load-bearing vertical log (piquet) walls. However, most of these basic bearing types use both masonry and wood for certain elements such as masonry foundations and chimneys, timber frames infilled with masonry nogging, and the wood floor and roof framing assemblies in masonry structures.

The areas most affected by wood decay are within three feet above grade including the perimeter sill plate and often the entire accompanying floor framing assembly. Other areas typically effected include wood joist ends embedded in exterior masonry walls, all levels, wood framing around masonry fireplaces which are located either in end walls or centrally within the building, and timber frame containing stone nogging. An extensive multi-phase investigation of all the buildings on site is currently underway by the Heritage Conservation program to identify and assess the extent of the wood decay problems, probable causes and options for remedial action.

One of the findings of the investigation has been the relationship between masonry and wood in composite construction. Specifically, where masonry exists with access to moisture (exterior walls, projecting chimneys or parapets, foundations) in direct contact with elements (sill plates, embedded joist ends, nailer strips, summer beams, timber framing with stone nogging), the conditions for decay are present. The difficulty in arriving at this basic principle was to find the common patterns and mechanisms at work between apparently separate problems in different types of construction. There were also some notable exceptions that eventually contributed in formulating options for repairs.

As background information, the wood used on site was untreated spruce, a very decay-susceptible type of wood. The stone masonry walls were of solid field stone construction, without a central cavity. The site is extremely wet with high and continual annual precipitation, and the high water table results in many permanently flooded basements. Additionally, the debate between traditional versus contemporary interventions is still going on today. Misapplication of contemporary technology and oversights in the application of traditional methods have resulted in many of the existing problems.

The following is a list of the recurring types of problems found specifically relating to masonry construction. It should be noted that the focus of this investigation at Louisbourg was on wood deterioration, with masonry work, among other factors, contributing to the problem.

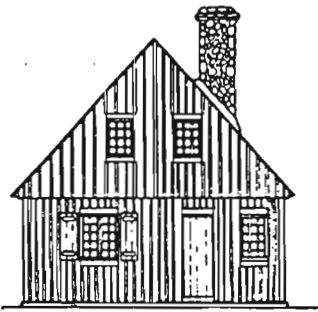
Identification of Recurring Problems:

- A. Decay of timber joist/beam ends embedded in masonry pockets, where the lowest level of floor framing is over an exposed earth floor. Usually located in exterior masonry walls/foundations, but often at interior locations as well.
- B. Decay of timber joist/beam ends at levels other than the lowest level of floor framing. Usually located at exterior masonry walls only.
- C. Decay of wood sill plates on top of masonry foundation walls. Occurs usually at exterior foundation walls but sometimes also at interior locations.
- D. Decay of timber framing containing stone nogging. Only found at exterior walls, and timbers containing brick nogging were not affected by decay.
- E. Decay of wood roof framing elements at junctions with masonry walls, especially gable walls with parapets. Elements affected include purlins, rafter sill plates, and gable end plates. At exterior masonry walls or where an exposed parapet rises above the roof line.

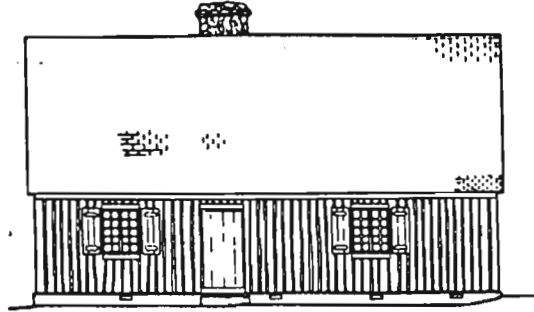
F. Efflorescence of interior plaster applied onto exterior masonry walls.

Next Issue: General causes and recommendations focusing on the design and repair of composite masonry-wood construction at Louisbourg.

Lauren Gruszecki



A.

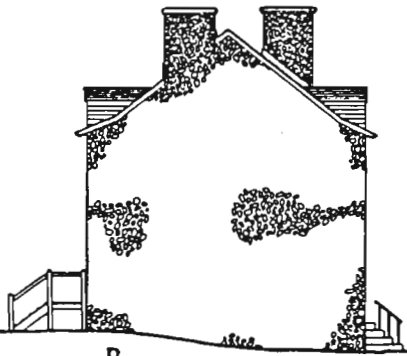


Three basic types of building construction at the Fortress of Louisbourg.

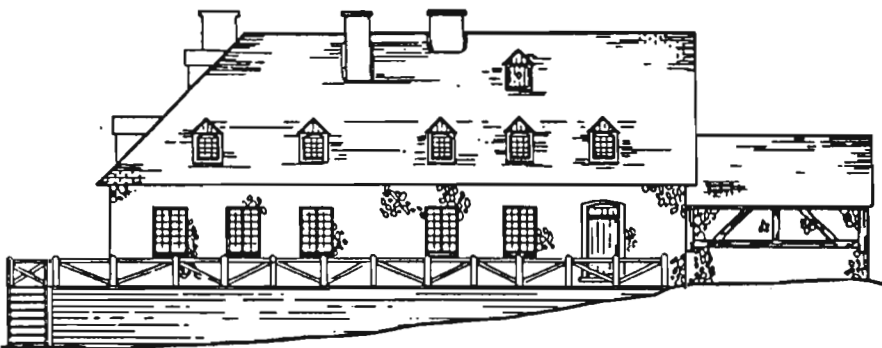
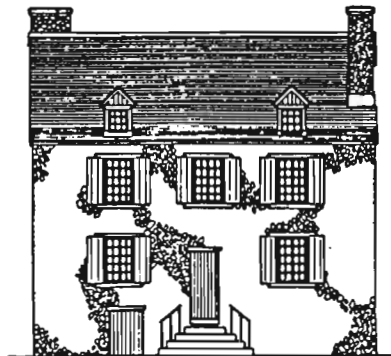
A. Grandchamp Inn - Vertical piquet (log) walls act as a loadbearing wall, masonry chimney.

B. Destouches House - Masonry walls with wood framing.

C. La Grange House & Magasin - One elevation with timber frame (charpente) and stone masonry nogging.



B.



C.



Review of the Cemeteries Act: Bill 31

Since we last reported to the Committee, there have been a number of developments which have finally led us to the submission of our second set of recommendations concerning the Regulations for the Cemeteries Act.

Our first submission to the Ministry of Consumer and Commercial Relations has dealt with the issues of:

- trust funds
- cemetery closure
- care and maintenance
- structural stabilization
- declaration of abandonment of interment rights

The Act went through third reading in the House with virtually no recognition of the concerns which had been expressed by the Heritage Community. We had been promised extensive consultation before the Regulations were drafted by the MCCR so some of the problematic issues could be addressed. It was, however, only with a process of intensive lobbying after finding that the Regulations had in fact already been written that we were asked to comment on them.

There were planned review sessions in August, and some very unsatisfactory fora which turned dramatic with the support of the Chiefs of Ontario and the influence of the Ontario Historical Society. A new review schedule was established and our Committee began a second round of talks with MCCR, with the ambition of preparing final comments which could be incorporated into the Regulations.

We were also involved with a number of intensive sessions held by the Ministry of Culture and Communications, chaired by Gail Sussman, in which our comments were sought on MCC's response to the Regulations. These meetings proved very helpful for all parties, and we were able through discussions to establish the detailed aspects of our responses for presentation to MCCR.

We have also to date been involved in a task force of heritage groups and the Ontario Association of Cemeteries called, "The Memorial Restoration Committee". The goals of this organisation are education and advocacy, with an immediate focus on grabbing the attention of the Ministry of Consumer and Commercial Relations in order to convince them of our collective strengths, and of the very real problems which exist with the proposed Legislation. The ICOMOS contingent of the Committee has expressed some dissatisfaction over the representation of some of the issues discussed by the Committee; the aims of the Committee are crucial to the success of the Heritage efforts in the field, and we should probably review our role in this group, and the mandate which we wish to pursue at these joint sessions.

As was mentioned in opening, our final comments on the Regulations are now in the hands of the Business Regulations Branch at MCCR. We will have a brief period of consultation with the Ministry, at which time they will either accept our recommendation or "agree to disagree" with our initiatives. It has been a long year of work for those involved with this process: we can only hope at this point that our efforts will bear fruit.

Jill Taylor

Member News

Lynne DiStefano: Chief Curator, Historical Museums, London

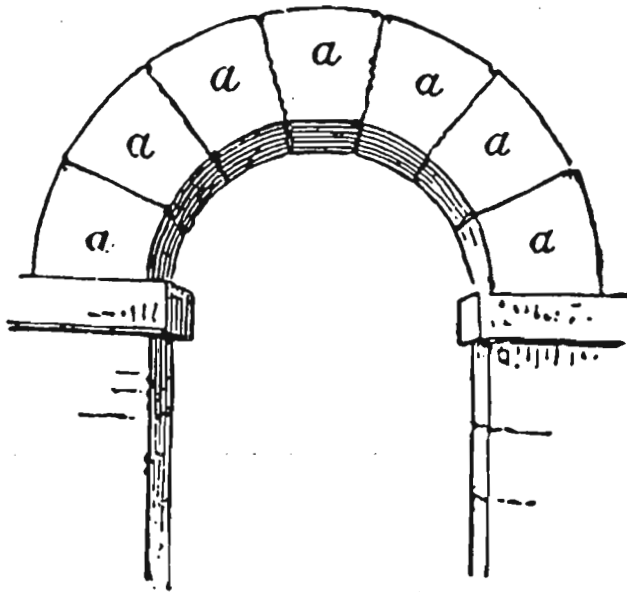
Lynne DiStefano is now the Chief Curator, Historical Museums, London Regional Art and Historical Museums in London, Ontario. Her responsibilities include the care of two historical buildings: Eldon House (1834) and Grosvenor Lodge (1853-1854). Lynne sits on the board of the Canadian Association of Professional Heritage Consultants and she is a member of the English-speaking Committee of ICOMOS Canadac.

Keith Blades: New Address

Keith Blades has moved to a new home in Almonte. Mr Blades' new address, telephone and fax numbers are listed on the attached membership directory.

Susan Algie: New Committee Member

Susan Algie has contacted Renée Leblanc at the ICOMOS secretariat, and requested to be a member of the Stone Committee. Ms Algie lives in Winnipeg and is an Historic Park Planner for the Prairie and Northern Region. Her address and telephone numbers are listed on the attached membership directory.



a, a, voussoirs

voussoir A wedge-shaped masonry unit in an arch or vault whose converging sides are cut as radii of one of the centers of the arch or vault.

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