CITY OF KELOWNA

MEMORANDUM

Date: **April 15, 2008**
File No.: **0710-20**

To: City Manager

From: **Civic Properties Project Supervisor**

Subject: **Laurel Packinghouse Structural**

RECOMMENDATION:

THAT Council receive this report dated April 15, 2008 from the Civic Properties Project Supervisor for information;

AND THAT Council direct staff to address the structural deficiencies of the Laurel Packinghouse by returning the roof line to its original heritage configuration and investigate the option to use at least some of the remaining space under the roof for offices;

AND THAT Council direct staff to include mechanical, electrical, life safety and code compliance within the scope of the historic restoration;

AND FURTHER THAT Council direct staff to report back on a restoration plan for the Laurel Packinghouse at the completion of schematic design, including estimated construction costs, potential funding sources, exterior/interior sketches and a business case to support re-configuration of second floor offices within the remaining space available.

BACKGROUND:

The Laurel Packinghouse was originally constructed in 1917 and is one of the oldest and largest packinghouses that remain in British Columbia. When the City of Kelowna purchased the building in 1978 it was in a condition of disrepair. The plan was to demolish the building due to its run down condition and make way for development. This met with disapproval from the community and a lobby group was formed to save the Packinghouse. Their efforts were successful and with support from the Council of the day, the money set aside for demolition was re-directed to establish a Community Recovery Plan. As a result, the Laurel Packinghouse was the first site in Kelowna to receive a municipal heritage designation (Bylaw #5480) and in 1983, became the first large scale heritage restoration project for the City of Kelowna.

The renovations in 1983 resulted in restoration of the exterior, an addition of a second floor office space under a raised roof and modification of interior floor elevations to create rehearsal space, meeting rooms and a stage on the ground floor. Since then the public uses for the Laurel Packinghouse have changed to include the B.C. Orchard Industry Museum, the B.C. Wine Museum, and community rental and office spaces.

In 2005, during an inspection of the basement of the building, it was discovered that one of the supporting timbers had suffered significant dry rot. The timber was initially stabilized and ultimately replaced in 2006. The discovery of the dry rot raised concerns of further building issues and resulted in 2 further building condition assessments and a peer review:

1. A structural investigation by Elbury Dolan to ascertain the capacity of the building to resist lateral forces due to either wind or seismic events and to provide general recommendations for any remedial work that may be necessary (see Annex 1).

2. A heritage and development plan by Donald Luxton to assess the current condition of the building including all other building systems given the potential impact of report #1 and to help determine the future uses of the Laurel packinghouse (see Annex 2).

3. A peer review by CWMM Consulting Engineers Ltd. to verify the findings of the initial structural review and provide a second opinion on the recommendations made in the original report (see Annex 3).

The initial Elbury Dolan structural report and the subsequent peer review by CWMM Engineering are both consistent in their findings. Due to the roof alterations and the addition of the second floor offices in the 1980`s there is a significant deficiency in the lateral stability of the structure. Both reports also agreed that a complete structural review of the building would be required to determine the extent of the structural deficiency and engineer a solution.

The Donald Luxton report went a step further by providing a condition assessment of the mechanical, electrical, accessibility and life safety systems in the building. All systems were found to be in various stages of disrepair and in some cases at the end of their service life and in violation of code requirements. Two alternatives were considered to address the main deficiencies – 1) restore the building roof line and decommission the second floor offices, or 2) take measures to retain the second storey and current roof line.

The key factors considered in recommending between these alternatives were (1) what is best for the heritage values of the building, (2) what is cost effective and (3) what will facilitate community use of the building.

Heritage:

- From a heritage point of view the Laurel packinghouse is best interpreted and celebrated as a heritage structure first and foremost. The alteration of the roof line and addition of the second floor offices in 1983 provided a revenue stream to support the operation of the building but did not provide any heritage or historic value. But, the modified roof line did detract from the original exterior visual appearance and is compromising the existing heritage fabric of the building as evidenced by visible cracks in exterior brick walls and sagging timber trusses.

Use:

- According to the Donald Luxton report, retaining the current roof line and second floor offices will cost $870,000 more than the cost to remove the second floor and restore the original roof line. At current lease rates for the second floor offices it would take over 20 years to recover the additional costs of retaining the second floor offices.

Community Use:

- The Kelowna Museums Society has increased public use of the building by incorporating the BC Orchard Industry Museum, the BC Wine Museum and facilitating local arts and cultural

projects. This should continue and be nurtured. A more historically accurate restoration would help reinforce the Laurel Packinghouse as a tourism destination, provide opportunities for museum space and continue to encourage community use.

Taking all this into consideration, the recommendation is to return the roof line to its heritage configuration. Any additional required structural upgrades would be done to enhance and interpret the original heavy timber construction. As a compromise regarding the office use on the second floor, it is recommended that Civic Properties explore the re-use of remaining space under the roof for offices. This will provide some revenue to support building operation, and provide limited accommodation for community uses to animate the building.

FINANCIAL/BUDGETARY CONSIDERATIONS:

The estimated construction costs to address the most significant issues with the Laurel Packinghouse are estimated between $1-2 million depending on which restoration approach is adopted. The City has a budget of $233,000 which has been carried over from the 2007 budget for this project. Attempts by the City to acquire additional funding to complete the project thorough a Municipal Rural Infrastructure Fund have been unsuccessful to date. The Kelowna Museum Society has also been unsuccessful in getting funding from the Provincial Direct Gaming Access Fund.

Our funding applications are coming up short. Funding agencies have requested that we establish a clear scope of work, move forward with design, establish construction costs for this project and secure the minimum matching funding required for the grant applications.

The estimated budget required to complete schematic design for the project is approximately $70,000 and will be funded from the unspent capital budget carried over from 2007 for the Laurel Building structural repair. It is expected a capital budget submission will come forward for 2009 to cover construction costs.

TECHNICAL REQUIREMENTS:

Restorations are subject to R326/07.03.26, adopted on March 26, 2007, which requires that the "Standards and Guidelines for the Conservation of Historic Places in Canada" be referenced as a guideline in heritage conservation projects.

EXTERNAL AGENCY/PUBLIC COMMENTS:

The Kelowna Museums Society operates the Laurel Packinghouse and has been a full participant in the 2006 condition assessment of the Laurel Packinghouse and is developing a conservation plan for the future that integrates this important building back into community life.

The Kelowna Museums Society was fully consulted prior to this recommendation coming before Council and is in full agreement with a restoration plan to return the roof line to its heritage configuration and use the remaining space, particularly under the North roof and the East and West gables, for offices. Any displaced tenants will be provided ample opportunity to find new accommodation.

ALTERNATE RECOMMENDATION:
Begin a design process which includes the repair and upgrades required to retain the 1983 roof alterations and second floor office renovations to the Laurel Packinghouse.

Considerations that were not applicable to this report:

INTERNAL CIRCULATION TO:
LEGAL/STATUTORY AUTHORITY:
LEGAL/STATUTORY PROCEDURAL REQUIREMENTS:
EXISTING POLICY:
PERSONNEL IMPLICATIONS:

Martin Johansen,
Civic Properties Project Supervisor

Approved for Inclusion:

Cc: David Graham, Director of Recreation, Parks and Cultural Services
Paul Macklem, Director of Financial Services
Randy Cleveland, Civic Properties Manager
Lorna Gunn, Cultural Services Manager
Ron Forbes, Property Manager

Structural Review

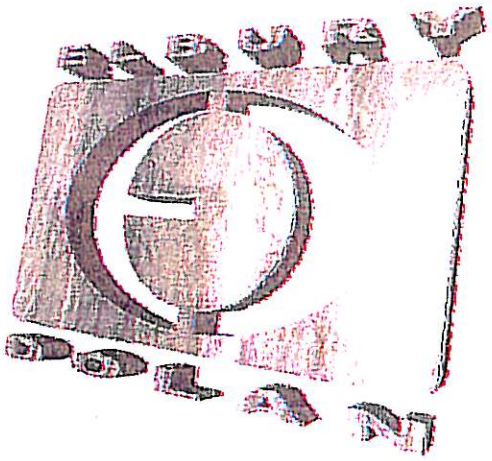
of the

Laurel Packinghouse Building

(The Wine Museum)

1304 Ellis Street, Kelowna

by



ELBURY DOLAN CONSULTING LTD.

for the

City of Kelowna

8 September 2006

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Terms of Reference

Elbury Dolan Consulting Ltd. was retained by the City of Kelowna to perform an investigation of the Laurel Packinghouse building at 1304 Ellis Street in Kelowna. The main purpose of our investigation is to ascertain the capacity of the building to resist lateral forces due to either wind or a seismic event, and to provide general recommendations for any remedial works that may be necessary to ensure that the building can safely resist such lateral loads.

Reference Materials

The original building was a single-storey structure having a full basement, built with loadbearing brick perimeter walls and heavy timber floor and roof members (i.e.: columns, beams and trusses). The main roof elements are nine pairs of north-south oriented heavy timber trusses, each spanning half the 84'-0" width of the building (See page 3). These trusses are spaced at 15'-0" on centres and are supported by brick pilasters on the outside walls and on heavy timber columns along the centerline of the building. The age of the building is unknown.

In 1983, John Woodworth Architect of Kelowna was retained to design the addition of a second storey within the roof space of the existing building. He prepared a set of drawings labeled "THE LAUREL PROJECT" and dated December 1983. The full set of drawings for this 1983 project is included as information with a set of drawings prepared in 2001 by Maltby & Hill Architects Inc. and Renaissance Architecture Planning Inc. The Maltby & Hill / Renaissance drawing set is entitled "LAUREL BUILDING MASTER PLANNING AND LOADING DOCK RENOVATIONS". No Structural Engineering drawings are included in either the 1983 or 2001 sets of documents.

Site Investigation

We conducted a site inspection of the existing building during the afternoon of Thursday, 10 August 2006. During the course of that visit, we concentrated on the type of structural systems in place, rather than on the condition of individual components of those systems. In general, we confirmed that the provisions of the 1983 Woodworth design had been completely implemented.

Discussion

The 1983 Woodworth design involved the addition of a second floor structure supported by the bottom chords of the original heavy timber trusses, and significant modification of the original roofline to allow installation of a continuous shed-type dormer and line of fenestration on each side of the original roof ridge (i.e.: one line of windows facing to the north, another to the south).

A load-path analysis was performed of the existing building, comprising an attempt to identify the path by which lateral loads are transmitted from the various superstructure elements into the foundation. We have not performed an investigation to determine the capacity of a typical heavy timber truss under the influence of gravity loads from both the original roof and the 1983 second floor, it is evident that the steel plate elements added to the bottom chord of each truss were designed to strengthen the truss to accommodate the second floor. No documentary evidence of this strengthening work was available to us at the time of this writing.

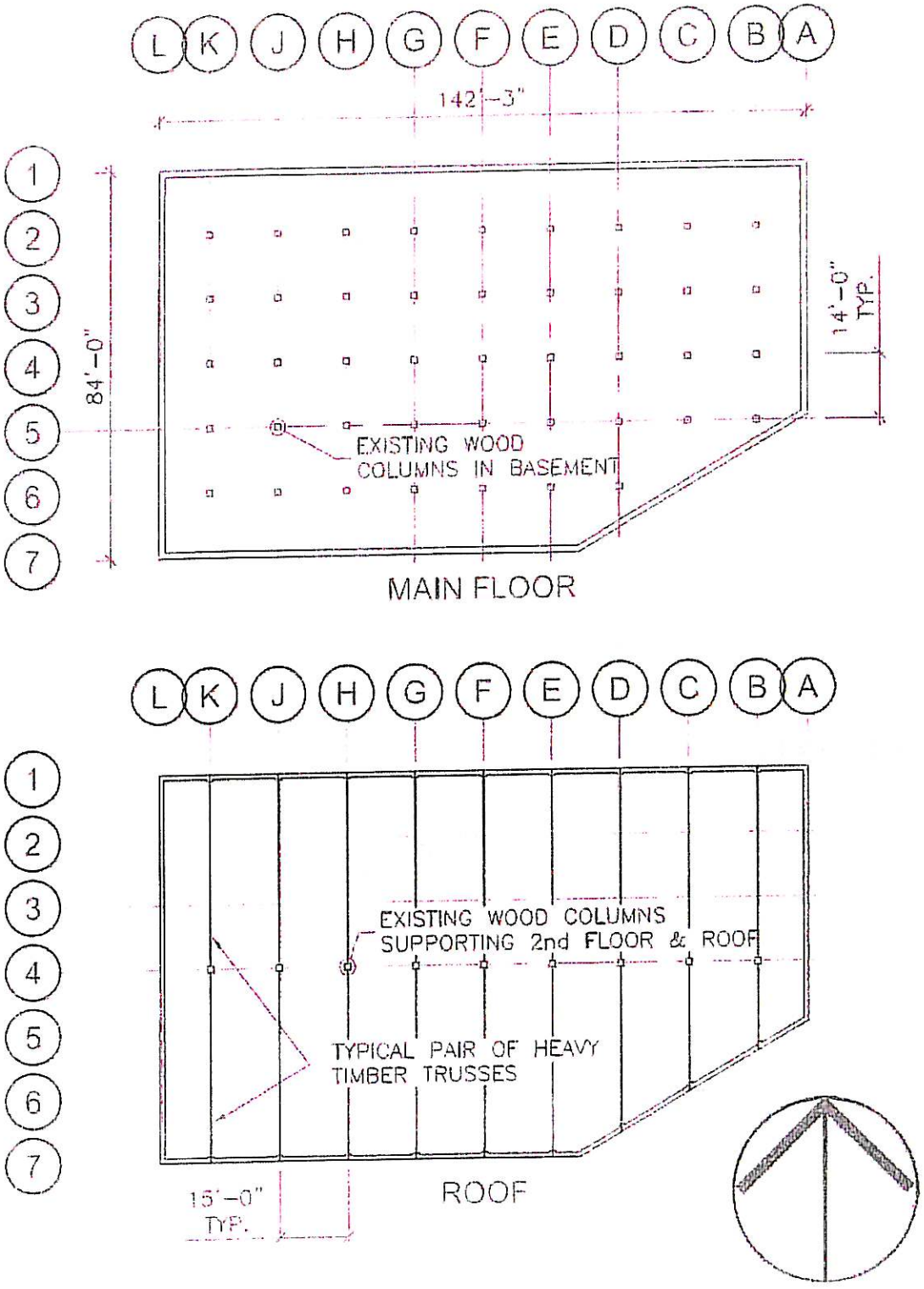
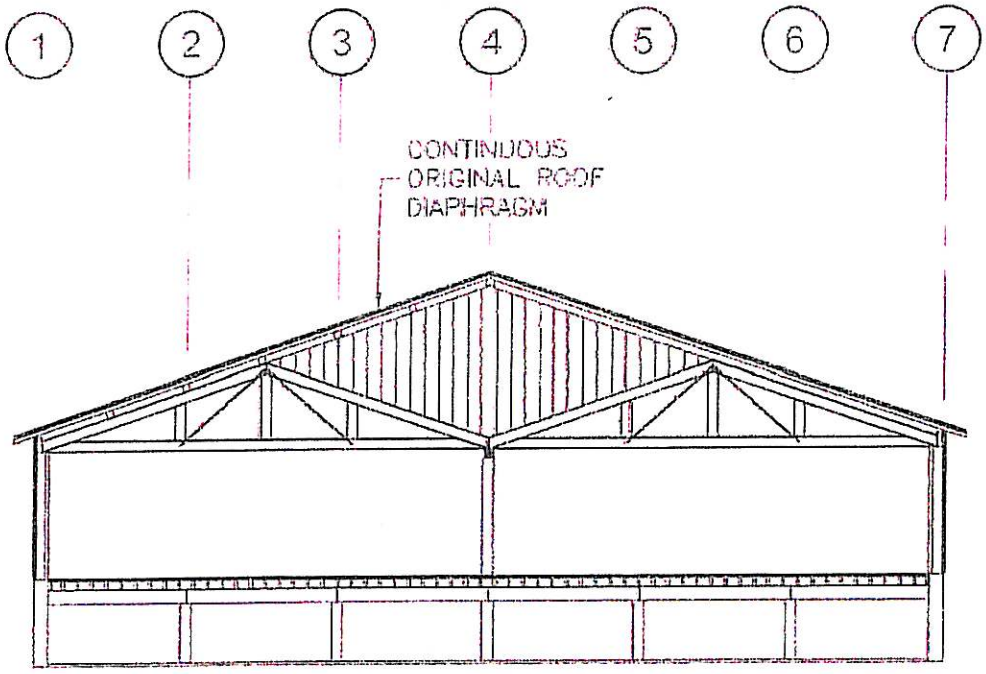

L K J H G F E D C B A
142'-3"
1 2 3 4 5 6 7
84'-0"
14'-0" TYP.
EXISTING WOOD COLUMNS IN BASEMENT
MAIN FLOOR
L K J H G F E D C B A
1 2 3 4 5 6 7
EXISTING WOOD COLUMNS SUPPORTING 2nd FLOOR & ROOF
TYPICAL PAIR OF HEAVY TIMBER TRUSSES
15'-0" TYP.
ROOF

Figure 1

Load Path Analysis

Implementation of the 1983 Woodworth design involved removal of a substantial portion of the original roof surface and replacement of that surface by a new continuous shed dormer on either side of the ridge. This work effectively eliminated the diaphragm function of the original roof surface over the extent where that original roof was removed. Outside the bounds of the new shed roof, two rows of skylights were added, one in each bay between adjacent trusses. These skylights limit the effectiveness of the remaining portion of the original diaphragm. Furthermore, the new shed roof surfaces cannot be said to act as an effective roof diaphragm, because they do not connect with any wall element that might act as a shearwall. That is, the 'outside' wall at the extremity of each shed roof is perforated by a continuous strip of fenestration, and no wall exists beneath the intersection of the 1983 shed roof surface and the original roof surface.



ORIGINAL CONDITION

Figure 2

The second floor added in 1983 cannot be said to act as a diaphragm because it does not meet or connect with any wall element below. Also, given that the second floor is discontinuous across the width of the building (i.e.: the centre corridor is higher than the floor on either side), diaphragm action is further compromised.

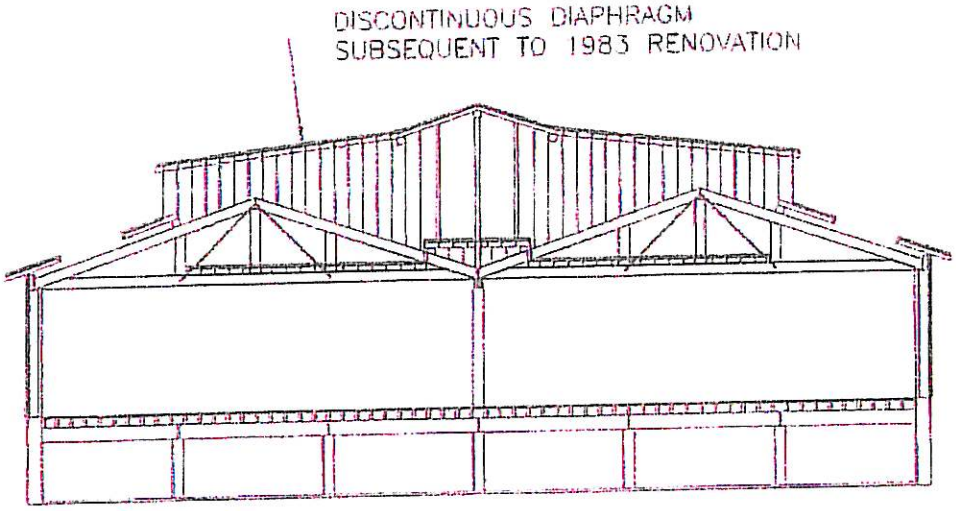


Figure 3

The upshot of this discussion is that there presently exists no well-defined path by which lateral loads in either orthogonal direction might be transmitted into the foundation. The discontinuous nature of the load path for lateral loads might best be illustrated by reference to Figures 4, 5 and 6, being three-dimensional renderings of the building in the 'before' state (Figure 4), 'after' the 1983 renovation (Figure 5), and after the 1983 renovation, with the roof removed to provide a clear view of how the second floor diaphragms are not connected to the perimeter shearwalls. It must be noted that the existing heavy-timber trusses do nothing as regards resistance to lateral loads; for lateral loads in the north-south direction, these trusses merely transfer lateral loads from the second floor diaphragm into the heavily-perforated roof diaphragm. Similarly, the shed roofs over the new (1983) second floor offices cannot be counted on to contribute anything to the stiffness of the roof diaphragm because of the continuous strip of windows. The glazing would have to act as part of the diaphragm for the shed roofs to be effective, and this is clearly not allowed.

Another aspect of the 1983 renovation which affects the structural capacity of the building was the construction of raised areas of the main floor. These raised areas, distributed throughout the area of the building, are 2'-0" above the elevation of the original main floor. While the simplest means of creating these raised areas (from a Structural standpoint) would have been to install new floor joists bearing on low walls aligned with the original beams, the actual method employed was to remove the original floor structure and raise it to the new elevation. This has had the effect of creating large perforations in the original main floor diaphragm, thereby dramatically reducing its stiffness. Given that the elevation of the original main floor is about 4'-0" above street level, the main floor diaphragm was, and remains, instrumental in transmitting lateral loads from the superstructure into the perimeter foundation walls. The performance of the main floor diaphragm may thus be seen to have been compromised by this item of renovation, although the extent of this effect is highly indeterminate.

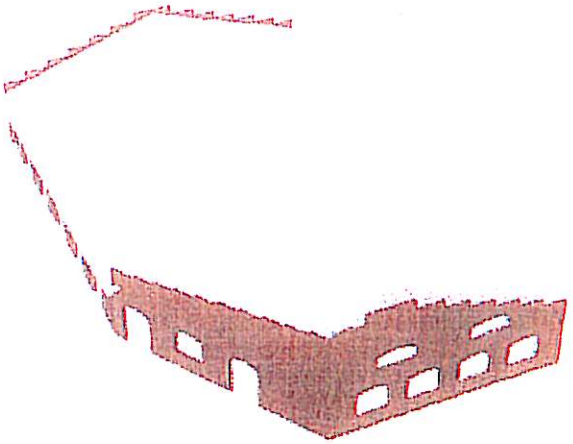


Figure 4 – Original Structure

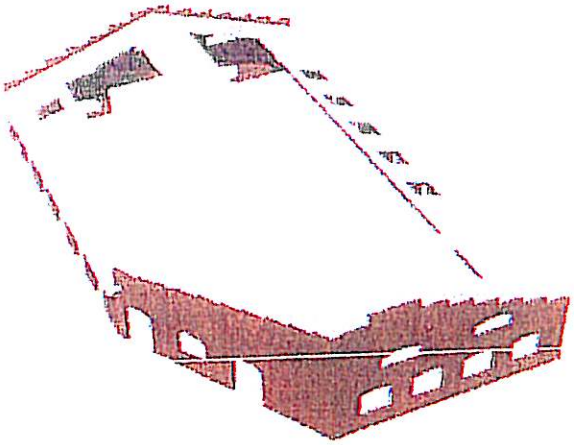


Figure 5 – Roof after 1983 renovation

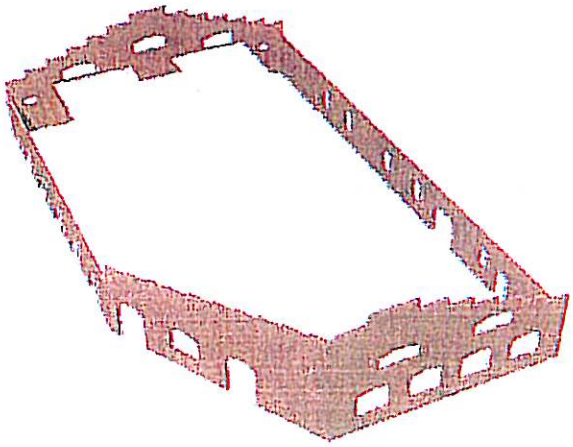


Figure 6 – Unconnected 2nd floor diaphragms

Almost as a by-product of the above discussion, it must be noted that the 1983 renovation removed the means by which lateral support was provided for the top (compression) chord of the original heavy timber trusses. This is a serious omission, since the original roof surface (now removed) was the only structural element employed to prevent buckling of the top chord.

Figure 7, taken from Section 2 on drawing A7 of the 1983 Woodworth drawings, illustrates the failure mechanism associated with buckling of the top chord of a typical heavy timber truss. While such a failure may seem unlikely in light of the passage of more than twenty years since the 1983 renovation, there presently exists nothing to prevent it. The existing detail might actually allow top-chord buckling of one truss while adjacent trusses remain unaffected (i.e.: adjacent trusses contribute no lateral restraint). Thus, local buckling failure of an individual truss might conceivably occur under the influence of a heavy snow load on that truss, even if the overall snow load on the roof were small. While such a contingency might appear remote, the means to prevent it does not exist at present.

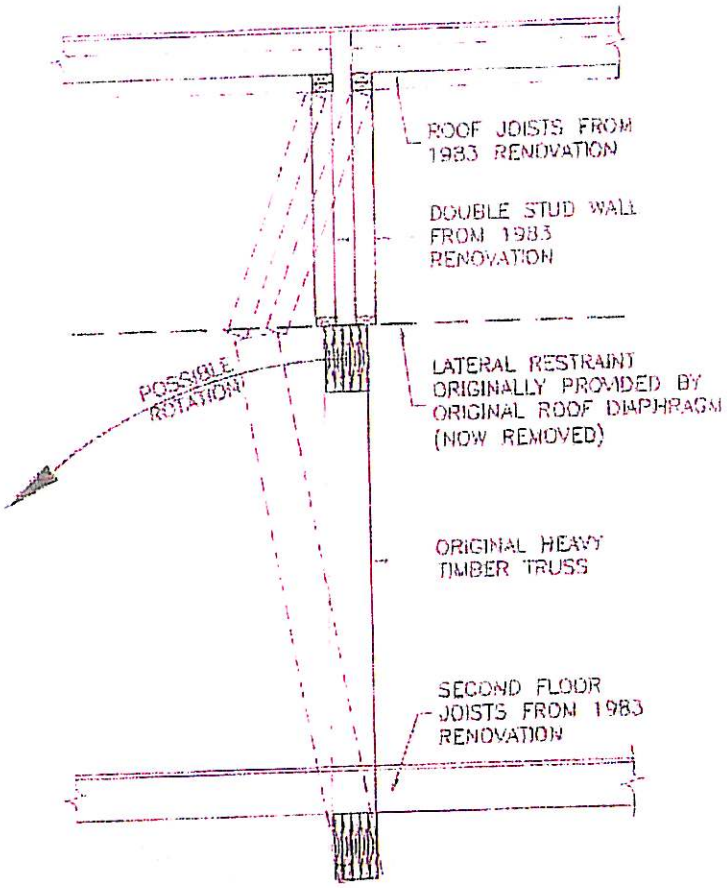


Figure 7

Recommendations

Given that the existing building incorporates no distinct load path for the transmission of lateral loads into the foundation in either orthogonal direction, our chief recommendation is that remedial works be implemented to provide such a path.

While there are several means by which a suitable lateral load path might be provided, the path eventually implemented must be chosen to minimize the impact on museum operations. As such, the layout of individual lateral-load-resisting elements must be chosen to coincide as nearly as possible with existing interior walls. Given that a large proportion of the main floor contains no interior walls, feasible locations for lateral-load-resisting elements are relatively few and of limited size. This fact reduces the applicability of wood-frame shearwalls, thereby limiting the choice to masonry, concrete or steel.

To further limit our choice among these construction materials, we consider that the installation of prefabricated steel elements would likely be much less disruptive than either masonry or cast-in-place concrete walls. Therefore, we recommend that custom-designed structural steel elements be provided to transfer all lateral loads (due to either wind or seismic events) from superstructure elements into either new foundation elements or existing perimeter masonry walls.

Considering lateral loads in the north-south direction, we recommend that four discrete steel frames be installed, each to be exactly aligned with an existing heavy timber truss, as noted on the top half of Figure 8. Given that the existing trusses ensure that the roof and second floor structures act as a unit under the influence of N-S oriented loads, each new steel frame may terminate at the underside of the existing truss. New foundations are required for each of these four frames, each new foundation to incorporate existing column footings. Two of the four frame locations shown on Figure 8 exactly coincide with existing main-to-second floor partition walls, and will not affect existing museum operations. The frame on grid line "D" between grids "2" and "3" is nearly aligned with an existing wall, a slight change in the wall will be necessary to hide this frame. The fourth frame, on grid line "K", will be exposed, but coincides with the east side of a ramp between the concourse and gallery levels and will not interfere with museum operations. We recommend that the first three frames be fabricated from HSS steel tubes, to facilitate their being incorporated into walls. In order to more closely match the industrial look of the existing building, the fourth frame may be fabricated of W-shape ("I"-beam) columns and beams, with rod X-bracing members.

Considering lateral loads in the east-west direction, we recommend the addition of such blocking, strapping and hold-downs as are required to ensure that the roof and second floor diaphragms act as a unit. Once this is accomplished, it is necessary only to transfer lateral loads from the underside of the second floor to the north and south side masonry walls. This may be accomplished by the addition of steel rod bracing at each of six locations, installed at the elevation of the truss bottom chords, as shown on the bottom half of Figure 8. The two north-south oriented shaded areas (i.e. one between grid lines "E" & "F" and one between "I" & "K") are intended to denote two discrete diaphragms, each of which includes three X-braced bays and two areas of existing wood-frame floor. The existing trusses function as continuous chords for each of these diaphragms.

In addition to these lateral-load-resisting systems, and with reference to Figure 7, we recommend that a steel brace be added to each side of the peak of each heavy timber truss, continuous between and attached to each of the bottom chord of the truss and the new (1983) high roof.

Given that this historic building is open to the public as a museum, it is imperative that life safety be maintained and the City's exposure to liability minimized. Implementation of the above recommendations will ensure that the existing building is capable of safely resisting lateral loads as specified by the British Columbia Building Code, thereby satisfying both conditions.

EBBURY DOLAN CONSULTING LTD.
Per:

Dale E. Dolan, P.Eng.

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. E. DOLAN
8 Sept 2006

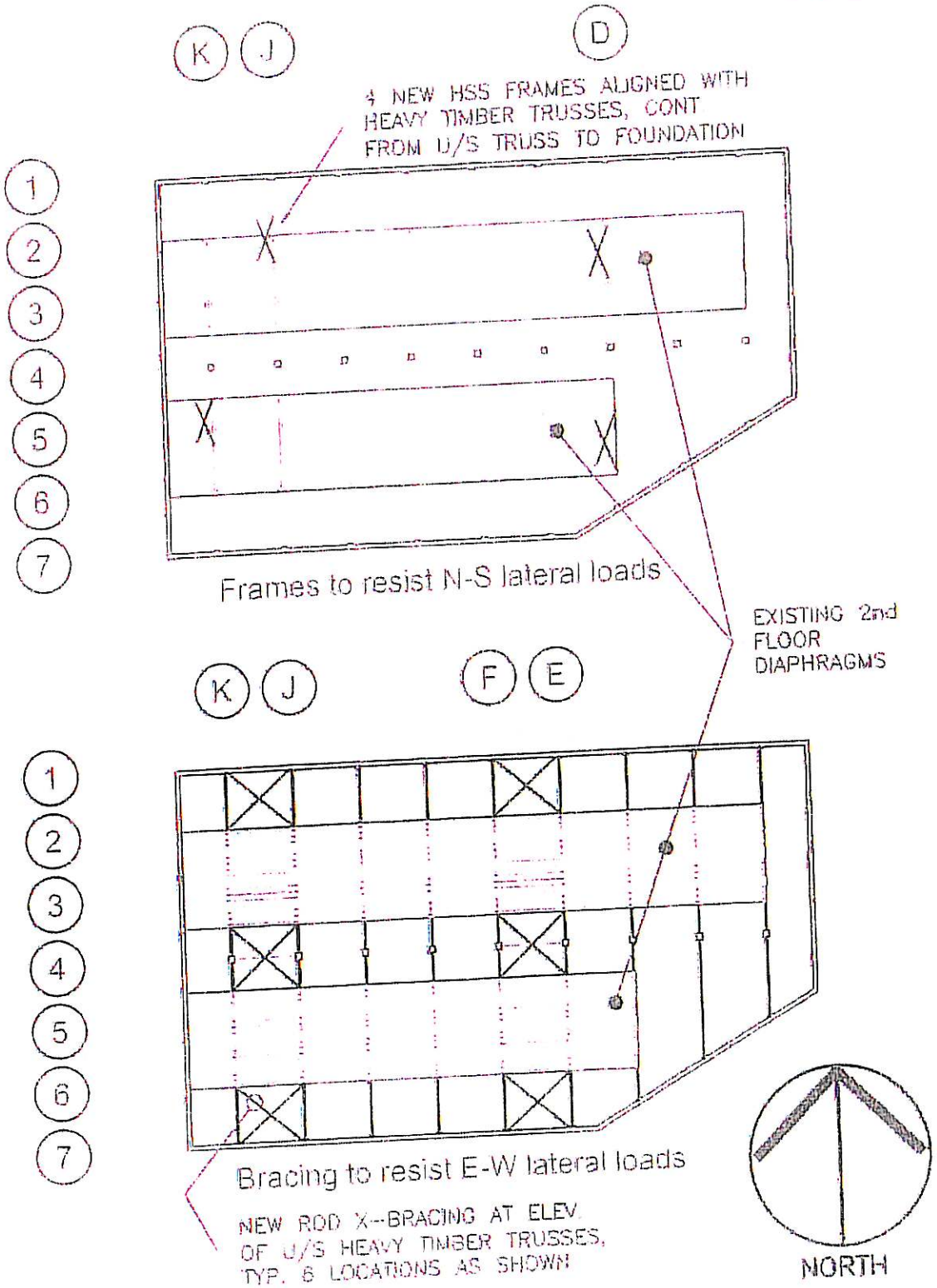

K
J
D
4 NEW HSS FRAMES ALIGNED WITH HEAVY TIMBER TRUSSES, CONT FROM U/S TRUSS TO FOUNDATION
1
2
3
4
5
6
7
Frames to resist N-S lateral loads
EXISTING 2nd FLOOR DIAPHRAGMS
K
J
F
E
1
2
3
4
5
6
7
Bracing to resist E-W lateral loads
NEW ROD X--BRACING AT ELEV. OF U/S HEAVY TIMBER TRUSSES, TYP. 6 LOCATIONS AS SHOWN
NORTH

Figure 6

ANNEX 2: Donald Luxton Report

HERITAGE & DEVELOPMENT PLAN

THE LAUREL PACKINGHOUSE

city of kelowna

SEPTEMBER 2007

DONALD LUXTON and ASSOCIATES

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1. EXECUTIVE SUMMARY

Introduction

Donald Luxton & Associates has been commissioned to develop a Heritage & Development Plan for the Laurel Packinghouse, an early twentieth century industrial brick building, situated in the downtown core of Kelowna, British Columbia. The Laurel Packinghouse provides a strong anchor to Kelowna's past, and has extremely significant value to the community and the region. Having been rescued from demolition and restored in the early 1980s, the next phase of the building's life has to be determined. For the last twenty-five years, the Laurel has been used to promote agri-tourism in the region and support community arts initiatives and other community functions.

The Laurel Packinghouse is one of the leading features of Kelowna's heritage. It has served as a catalyst for the development of heritage conservation awareness and a generator for the Cultural District, and its value to the City and the community is clearly recognised. For several decades, it has served its original mandate as a community heritage facility and museum structure, and is now at a point where it requires further renewal and investment to continue to serve the community. It is now timely to revisit the vision for the structure and ensure that it continues in a relevant role into the future. The purpose of this report is to assess the current situation and help determine a meaningful future for the Laurel, one that is best for both the building and community.

Heritage Value of the Laurel Packinghouse

The Laurel is one of the oldest and largest original fruit packinghouses that remain in British Columbia. It was an important component of the Okanagan fruit industry and represents the history of agricultural development in the area. The fruit industry was an economic driver of the area's prosperity and an important element in the economic, cultural and physical evolution of the region. The Laurel developed in conjunction with a growing network of rail and road transport, another vital ingredient in the region's evolution. Rail lines once abutted the building, as reflected in its diagonally-cut form.

The historical value of the Laurel was recognized at a very early point in the development of Kelowna's heritage program. It was the first site in Kelowna to receive municipal heritage designation (Bylaw #5480) and was the first large-scale civic restoration project. Originally slated for demolition, it was a community effort that led to its preservation and restoration. Since its rehabilitation the uses have been public, including the B.C. Orchard Industry Museum, the B.C. Wine Museum and community rental and arts office spaces. The Laurel is a prime resource for the interpretation of agricultural history and is a centre of agri-tourism in the Okanagan Valley.

Current Situation

Recently, structural, mechanical, electrical and code-compliance deficiencies have been recognised. Before piecemeal repairs and up-grading are carried out, the City of Kelowna commissioned this report to gather together information on the Laurel Packinghouse's current condition and future function to formulate a logical plan for its future that integrates the building into the community.

It has been determined that, due to the introduction of a second floor in the 1980s, there is a major deficiency in the lateral stability of the structure. There is also visible cracking that carries from the top of window openings into the foundation. Two potential methods of remediation have been examined: i) to introduce structural moment frames to provide a suitable lateral load path in the north-south direction and the fitting of horizontal cross-bracing to give east-west stability; or ii) to remove the Upper Level and re-introduce the original continuous roof diaphragm. The moment

frames would have a significant financial and visual impact on the building. This in turn raises questions about how best to balance structural requirements with heritage and functional concerns.

In addition, there are also major deficiencies in the mechanical systems and also a number of issues with the inefficiency of the current space allocation. Given the challenges facing the building fabric and current use, a fundamental decision needs to be made and that is whether to remove the Upper Level and restore the building to its original appearance or repair and upgrade the Upper Level.

A Renewed Vision for the Laurel Packinghouse

In order to determine the most appropriate future for the Laurel Packinghouse, the following key points should be considered:

1. The Laurel should continue to act as an anchor to the eastern boundary of the Cultural District.
2. The Laurel should continue to augment the functions and activities of the Cultural District, and act as a catalyst for its further development of cultural activities.
3. The Laurel should continue to provide museum space and opportunities for community use.
4. A more historically accurate restoration of the original industrial heritage character should be undertaken.
5. The surrounding site should be developed as part of the overall interpretation of agri-business.
6. The City should pursue opportunities to acquire property that would complete the northern and eastern edges of the Cultural District and develop appropriate new uses and activities that will augment the existing character and strengths of the Laurel.

Next Steps

The following are the next steps that the City should consider in determining the future of the Laurel Packinghouse:

1. The existing structural studies should be validated through additional assessments that will confirm the extent of structural deficiencies. Once complete, final decisions can be made as to the most appropriate structural remedies.
2. Once structural issues are clarified, further decisions can be made regarding space allocation and programming within the building.
3. A Restoration Plan should be developed that will facilitate improvements that reflect an appropriate industrial appearance and enhanced functionality. This should include a review of available funding sources.
4. The City should review opportunities presented by non City-owned properties to the north and east of the Laurel. There are a series of sites at the periphery of the Cultural District that have heritage potential and could provide valuable support services and programming. The addition of other sites and activities could strengthen the functionality of both the Laurel and the Cultural District as a whole.

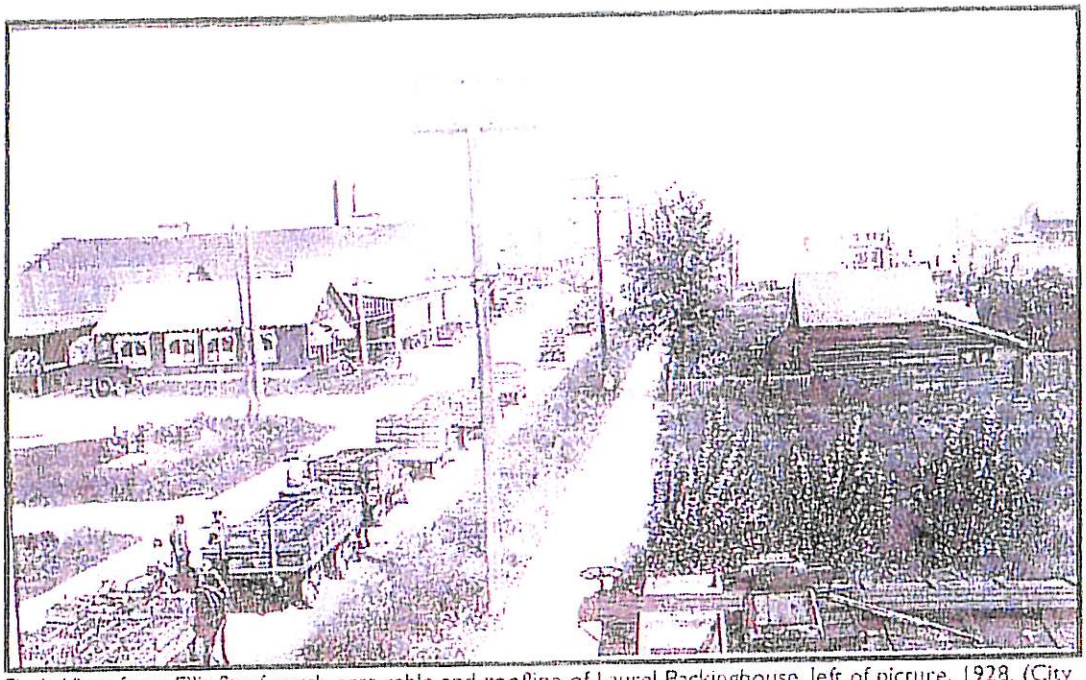

Fig 1: View from Ellis St of south-east gable and roofline of Laurel Packinghouse, left of picture, 1928. (City of Kelowna Archives KMS#6391)

2. HISTORIC DEVELOPMENT

Date of Construction: 1917-18
Original Owners & (Assumed) Architects: The British Columbia Growers Ltd
Contractor: Ward & Baldock and J. Harris
Construction Cost: $18,000

The following excerpt, taken from "Cascade-Laurel Packinghouse House" by K.W. Wilson, gives an excellent overview of the historic development of the Laurel Packinghouse

Physical Description

This Packinghouse is situated on lots number 30, 31 and 32 of Kelowna city plan number 744. The plan was surveyed by Mr R. H. Parkinson in 1909 and the description has not changed since that survey.

Although addressed as being on Ellis Street the building's loading entrances actually front Cawston Avenue. The basement and single storey rise to a 34 foot gable roof and has perimeter dimensions of 142 feet by 96 feet. Footings and the foundation are concrete, the latter walls being 12 inches thick.

The building is distinguished by brickwork evident on the external walls. At the east and west ends of the building these walls are finished by strong tiered cornices. The brick was probably manufactured in Kelowna by Kelowna Brick Works, but, as yet, this has not been confirmed.

The structural supports for the building are typical of early twentieth century construction. These supports consist of 12" by 12" and 12" by 14" girders and columns joined with 3" by 10" floor joists. The basement ceiling clears 6'8" and the first floor clears 14 feet. Access to the attic area is gained by manholes located at the east and west ends of the building.

Heating was provided by stoves and these were serviced by four chimneys. Electric lighting was available in this part of the city and was used.

To date the building has undergone nine interior or exterior changes as acknowledged by the City of Kelowna Building Department files. Following is the succession of these changes:

1. *Construction, 1917-8. The British Columbia Growers Ltd.,*
2. *Roof January 5, 1928. Kelowna Growers Exchange.*
3. *Change office location, May 15, 1937. Crown Fruit Co.*
4. *Conversion of basement to cold storage, May 30, 1938. Crown Fruit Co.*
5. *Cover of unloading door, August 29, 1941. Crown Fruit Co*
6. *Extension of existing platform May 29, 1945. Laurel Co-operative Union*
7. *Removal of office and restrooms, November 26 1959. Laurel Co-operative Union.*
8. *Build ramp to first floor, May 29, 1960. Laurel Co operative Union*
9. *Enlarge door, build ramp and washroom, March 29, 1960. Laurel Co-operative Union*
10. *Remove old shipping office, build new office and first aid room June 19, 1961. Laurel Co operative Union.*

History

In July 1917, British Columbia Growers Limited applied for and were granted a "New Building" permit for the construction of this packing house. Lots 30, 31 and 32 of Plan 744 were acquired and the contract was awarded to the local firm of Ward, Baldock and Harris. Although dated to July 1917, the building is of such a size (142' by 96' by 34' high) that one may presume construction continued into 1918.

Mr. Barney McDonald, Mr. Hamilton and Mr. Dick Jennens were the owners of this early packing company and continued operations of the facility into the 1920s. The Registrar of Companies for the Province records dissolution of the company in the fall of 1924. Disposition of the company's assets at that time could not be located and reference to the packing house cannot be found again until 1928. In January of that year another building permit was applied for -- this time to replace the roof. The owner of the building is listed as Kelowna Growers Exchange, a fruit packing company that began in 1913.

In 1928, the Crown Fruit Company began operations in Kelowna. The company appears to have been successful and by May 1937 had purchased the packing house from Kelowna Growers Exchange.

The late 1930s and early 1940s was a time that held great technological marketing changes in the entire fruit industry. The main technological change was the introduction of cold storage facilities. Not to be outdone by other local packers, the Crown Fruit Company converted the entire basement area of packing house into a cold storage facility in 1938. With this new service the company could offer the growers extended life to almost all marketable fruit.

This major technological advance was complemented by changes in the marketing of fruit products. Of these changes, the most impact was felt by the formation of a marketing organization–B.C. Tree Fruits–and by the more forward "Co-operative" packing houses. Of all the co-operatives formed from private packing businesses it was the Laurel Co-operative Union that purchased the assets of the Crown Fruit Company and thereby acquired ownership of the "Cascade-Laurel" building. At the time of purchase, the Laurel Fruit Company was in the process of becoming the Laurel Co-operative Union and was incorporated as such on February 23, 1942.

The Laurel Co-operative continued ownership of the packing house and in the early 1970s amalgamated with the Cascade Co-operative. Hence the signage on the building reads Cascade Laurel operations.

In 1978, the City of Kelowna purchased the building which by that stage, was run-down and looked unsightly with its wooden lean-tos in various stages of disrepair. The plan was to demolish it because of the condition of the building and to make way for expected city expansion. This met with unanticipated disapproval for the community who had strong social associations with it at a personal level and it was seen as a link to the Okanagan Valley's important orchard heritage. A lobby group was formed and in December 1983 after an initial study, the City Council gave them the money they had set aside for demolition to establish a Community Recovery Plan. For the following six years the building was extensively restored firstly by Gerry Allard and followed by architect John Woodworth. Its new use was for office space for local arts groups on the new upper level and community use with rehearsal space, meeting rooms and a stage on the ground floor. A market space was also planned for the building, but this was not realised.

In 1987 a new ramp and promenade was built on the south east corner of the building and two years later The British Columbia Orchard Industry Museum opened its doors on the main floor with the BC Wine Museum and VQA Wine Shop opening in 1996. During the first year of the Orchard Museum visitor numbers reached 20,000 and about 11,000 people made use of the community space on the main floor. The basement currently stores museum artefacts that do not require controlled environmental conditions.

Documents Referenced & Drawings Reviewed

Title	Author	Date	Type
Laurel Archival Photographs	Kelowna Museum Archives	Various	Photographs
Laurel Archival Photograph	BC Archives	1968	Photograph
"Cascade-Laurel Packinghouse House"	K.W. Wilson, Kelowna Centennial Museum Assoc.	1982	Document
The Laurel Project	John Woodworth Architect	1983	Drawings (23)
Re fire separation and occupancy	City of Kelowna	1983	Letter
Laurel Packing House Building, South Ramp & Promenade	Woodworth Ulrich Fne	1987	Drawings (3)
Basement of Laurel Building	Unknown	Undated	Drawings (4)
The Laurel Returns	Ursula Surtees, Canadian Parks Recreation Assoc.	1991	Document
The Wine Museum, Renovation – Proposed Changes	Unknown	1996	Drawings (3)
Drawings and Specification for The Laurel Building Loading Dock Renovations	Maltby & Hill Architects and Renaissance Planning	2001	Drawings (8) & Specification
The Laurel Packinghouse	Keith Orchiston, Operations Supervisor	2005	Document

3. STATEMENT OF HERITAGE VALUE

Note: This Statement of Significance was prepared in 2003-2004 and has not been revised.

Description of Historic Place

The historic place is the two-storey brick and timber-frame B.C. Growers Packing House, built as an early twentieth-century industrial building in 1918 and now occupied by two museums, located at 1304 Ellis Street, adjacent to Kelowna's Downtown area.

Heritage Value

The building has value as one of the oldest fruit packing houses remaining in Kelowna, which served various fruit shippers, both independent and cooperative, over the years. It has further value for its current different, but closely related heritage exhibition function, and for representing the value that the community places on conservation, on the history of the agricultural industries, and on the cultural industries. The building also has value as a good, representative example of a packing house.

The building was built in 1918 by Ward and Baldock, well known local contractors, for BC Growers Ltd. The firm owed its start to Byron McDonald, who had begun as a salesman for the Fruit and Produce Exchange in Ottawa, and came to Kelowna in 1907 to take the position of manager of the Kelowna Farmers' Exchange. In 1913, McDonald established an independent fruit shipping house, BC Growers Ltd. for which this building was constructed in 1918. The company was sold in 1923 during the move to consolidate fruit handling. McDonald became sales manager of the new Associated Growers for a year, then in 1924 he formed another independent firm, BC Orchards Ltd.

After the 1923 sale, the building came into the hands of the Kelowna Growers Exchange. By 1935, the owner was the Crown Fruit Company. During World War II, the Laurel Cooperative Union took over the building and operated it as a packing house until the 1970s.

The original packing house is representative of this building type, two storeys high, relatively unornamented (other than a stepped parapet), and built of heavy timber construction with brick exterior walls. Numerous alterations were made over the years as the business of fruit packing changed. A cold storage room was added in 1938; a cover over the loading doors in 1941; the platform was extended in 1945; and in 1960 the main door was enlarged and ramps were built to the first floor and the basement to accommodate fork lifts needed as the industry shifted from orchard boxes to bulk bins.

The industry eventually changed to the point that the building was no longer suitable for the modern technology of fruit packing. It then became the object of a very different, but nevertheless related, use. This was the first designated heritage building in Kelowna, and, after several years of extensive rehabilitation and re-modelling, it opened in May 1989 as the British Columbia Orchard Industry Museum. The prime force behind the project was Ursula Surtees, then curator of the Kelowna Centennial Museum and long an important member of the heritage community. As well as the Orchard Museum, the Laurel Building (as it is now known) provided space for a range of community arts groups (and later the Wine Museum), and was a lynch-pin in the redevelopment of the neighbourhood as Kelowna's Cultural District.

Source: City of Kelowna Planning Department, File No. 6800-07

Character-Defining Elements

The character-defining elements of the BC Growers Packing House include:

- Prominent corner location
- Two storey red brick building with large repetitive openings on the ground floor clerestory windows on the second floor, and a prominent north porch
- Unusual stepped parapet
- Long two-storey industrial type wing with raised full-length sheet roof
- Loading dock
- Segmental arches over the windows
- Wood-sash windows
- Wood shutters
- Prominent terrace and landscaped courtyard on the south side

Fig 2: North elevation in 1928, with Occidental Cannery on right. (City of Kelowna Archives KMS#850)

4. HERITAGE AUDIT

4.1 Introduction

As a protected heritage building, the Laurel retains key character-defining elements that are crucial in interpreting its heritage value. This survey of heritage elements identifies these key features and describes the extent to which they are original to the date of construction.

The original form, scale and massing of the building is still intact as expressed by its industrial appearance, asymmetrical form to accommodate the adjacent rail right-of-way, large repetitive openings, dock awnings and crow stepped gables. The corner location, is what was originally an industrial enclave, gives the building great prominence in the emerging Cultural District, ensuring it retains a high profile in the area. Loading docks originally extended out to the north and south sides of the building, as evidenced by cleats in the concrete foundation and a partial reconstruction on the north side.

Much of the original building fabric has survived, including masonry elements, heavy timber structure and wooden-sash windows. The original board-formed concrete foundation is intact, above which rise restored structural red-brick masonry walls. The interior was originally a large one story open span area with ancillary offices. The interior structure is composed of heavy timber columns with wooden roof trusses. Double-hung-wooden-sash windows on the east elevation are original. These key heritage elements define the industrial, vernacular character of this building.

There are a number of other, later alterations to the building which are non-historic in nature. These include the insertion of a second floor, visible as a shed roof dormer, and interior partitions and level changes.

4.2 Heritage Audit of the Laurel Packinghouse

The original form, scale and massing of the building is still prominent, as expressed by its asymmetrical form to accommodate train tracks, large repetitive openings, industrial appearance, dock awnings and stepped gable parapets.

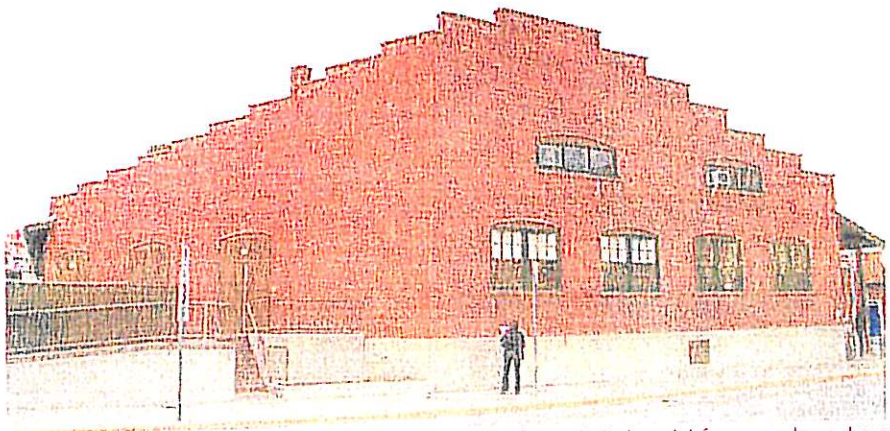

Fig 3. South-east and east elevations showing important historic industrial form, scale and massing.

The bricks of the external masonry walls are constructed of local red bricks, possibly from Kelowna Brick Works. During the 1983 rehabilitation, the walls were partially rebuilt, but the original bricks or similar salvaged bricks were used on the rebuilt areas. The outline of the change in brick is visible in some areas.

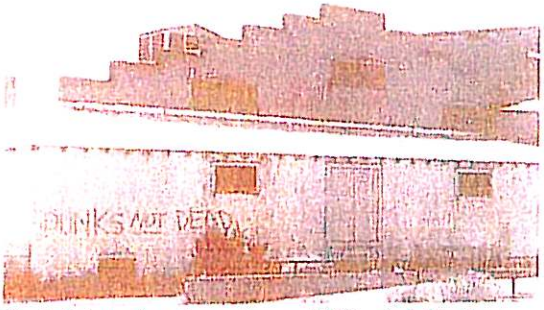

Fig 4: West elevation prior to 1983 rehabilitation
(City of Kelowna Archives KMS#4799)

Fig 5: Removed addition
(City of Kelowna Archives KMS#8371)

Fig 6: Rebuilding north-west corner
(City of Kelowna Archives KMS#8384)

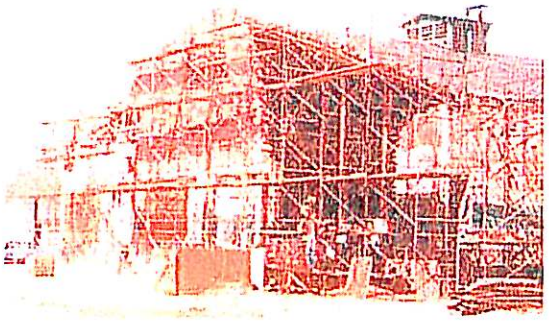

Fig 7: Rebuilding south-west corner
(City of Kelowna Archives KMS#8373)

Fig 8: West elevation with different brick types indicating sections rebuilt with old (right) and modern (left) bricks during the 1983 rehabilitation

The original basement walls of the Laurel Packinghouse are present and are constructed of board formed shuttered concrete. Horizontal lines on the walls and timber grain imprint are visible on the foundations are indicative of this construction type. Cleats from the original loading docks are also present. An early concrete apron on the south side remains. The base of walls and concrete plinth show indicate where machinery was once located.

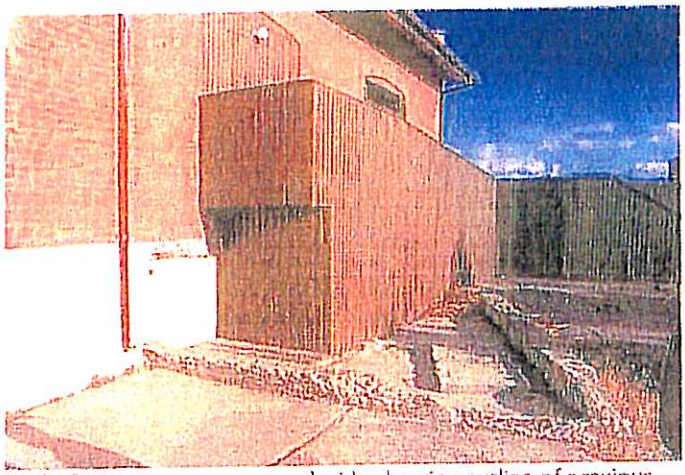

Fig 9: Concrete apron on south side showing outline of previous walls and machinery bases

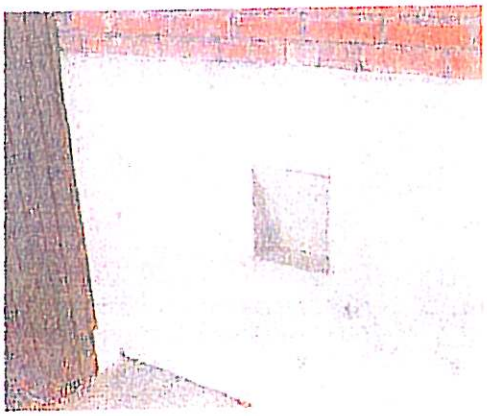

Fig 10: Cleat indicating location of original dock. North elevation

Four original windows remain - those on the Main Level of the east elevation. From archival photographs, it appears that this type was typical of the Main Level windows on the building. They are units of two six-over-six double-hung wood sashes, double-assembly, divided by a wood muntin.

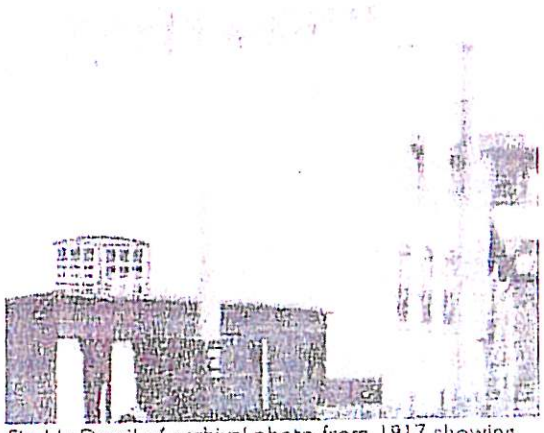

Fig 11: Detail of archival photo from 1917 showing six-over-six wood sash windows
(City of Kelowna Archives KMS#4404)

Fig 12: Original six-over-six wood sash window on east elevation

Large one square foot Douglas fir columns dominate the interior of the Packinghouse. These are placed midspan at 15 foot centres and support the original timber king post roof trusses. The bottom cord of the roof trusses are visible from the Main Level and sections of the roof trusses are exposed at the Upper Level.

Original timber supporting columns are also present in the Lower Level. This structural support system is typical of industrial buildings of the early twentieth century where the maximum internal open space is required.

Fig 13: Timber columns on Main Level during the 1983 rehabilitation
(City of Kelowna Archives KMS#8376)

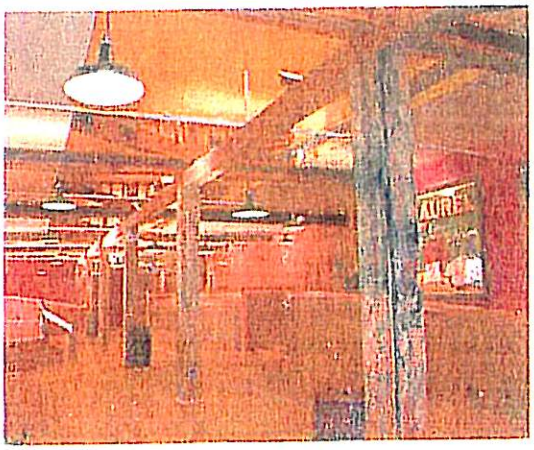

Fig 14: Existing columns and visible roof trusses

Fig 15: Original exposed roof truss on Upper Level

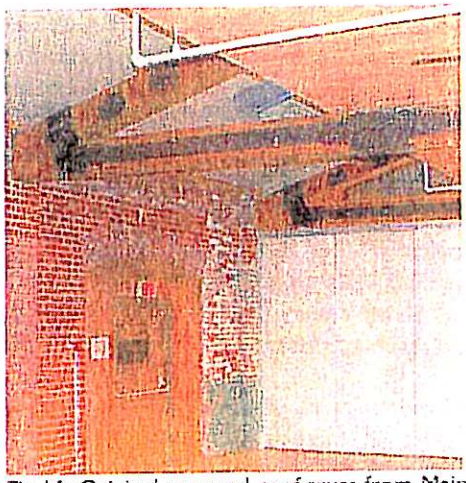

Fig 16: Original exposed roof truss from Main Level

The original floorboards on the Main Level are still present, covered by the current floor covering.

Fig 17: Original floorboards (right) under newer floor covering (left) Main Level

5. CURRENT BUILDING CONDITION

5.1 Architectural Review - Exterior

Brickwork

The brickwork is laid in common bond with five courses of stretchers to every one course of headers. The walls were extensively restored in 1983 – individual bricks replaced on all the elevations and extensive rebuilding on the west elevation, particularly in the south west corner and the higher north end. All walls were completely repointed during the 1983 rehabilitation. It can be assumed that the original mortar was lime and not cement based, due to the fact that the bricks were salvaged – lime-based mortar can be removed without damage to the substrate, whereas cement-based forms a chemical bond and is more difficult to remove without damage. Structural metal tie rods are fixed to the masonry walls at regular intervals on the east, west and south-east elevations.

Although the bricks are soft, they are generally in good condition. They appear to be relatively free of impurities such as iron, which can accelerate the deterioration. However, there were two types of decay recoded on the building. Cracks, approximately 1/8" wide have formed centrally over some arches on the north and south elevations. The cracks run through the brick and mortar. These should be further investigated because their locations may be related to the roof structure. Efflorescence, a powdery deposit of salts, was visible in one area of the north façade. This is caused by salts from within the brick/mortar dissolving in the presence of water and as the brick dries out, the salts deposit on the brickwork. It can be unsightly, but not necessarily damaging. However, in this instance the build-up of salts under the surface of the brick has caused some of the brick face to fall off (spall) due to the pressure from the salt crystals. This is an isolated incident but an indication that the mortar is not assisting moisture to evaporate, as it should.

Mortar

The brick walls are pointed with a grey mortar finished in a flush joint. The mortar dates from the 1983 rehabilitation. Its grey colour is indicative of a high cement content present in the mix. This creates a hard chemical set which is brittle and dense.

The mortar is in very good condition with the only sign of decay being in the areas of structural cracking, as mentioned above. However, its hardness may ultimately cause problems with the building. Mortar should be sacrificial i.e. it should decay before the masonry. In this case, the mortar is harder than the masonry so if one element were to decay first it would be the brickwork. Also, if the mortar were softer than the brickwork cracks would generally appear in mortar before bricks, which is easier to repair.

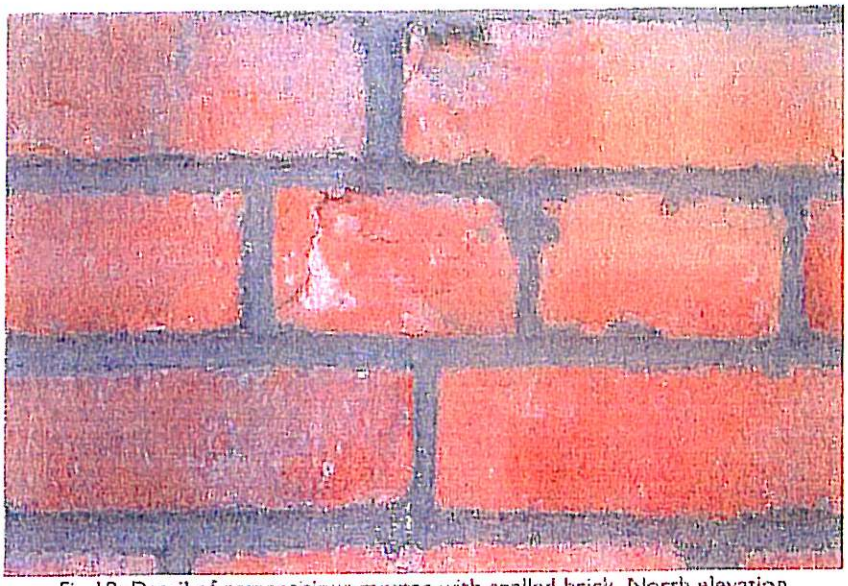

Fig 18: Detail of cementitious mortar with spalled brick. North elevation

Fig 19: Example of typical cracking through brick and mortar over window opening. South elevation

Concrete

There are some cracks in the concrete basement walls. It was noted that the cracking in the concrete walls corresponds to the cracking pattern of the brickwork above.

Copings on the stepped gables on the west, east and south-eastern corner are made of concrete. These date from the 1980s rehabilitation and prior to the rehabilitation, archival photographs show copings, although the material is undetermined.

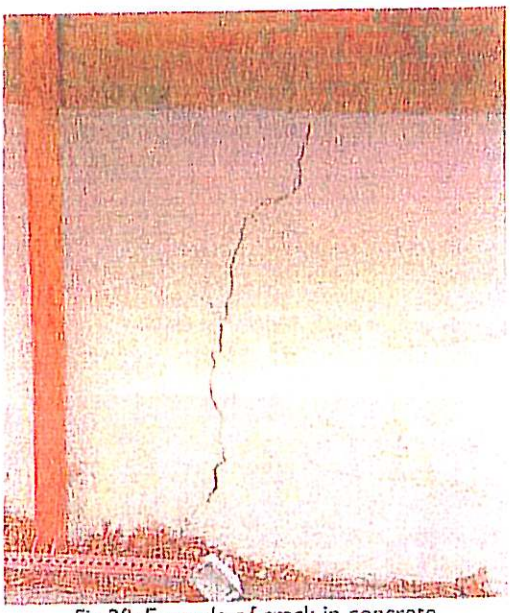

Fig 20: Example of crack in concrete

Fig 21: Replacement window

Windows & Doors

There are a number of styles of windows present on the building. Unfortunately, the only remaining original examples are those on the main level of the east elevation, as discussed earlier. The remainder of the windows were replaced as part of the 1983 rehabilitation with the windows on the second floor being replaced a second time in 2006.

The Upper Level gable windows are replacements. The fenestration was altered to accommodate the new use on the north and south elevations – windows changed to doors, opening sizes changed or blocked. Archival photographs are a useful aide in determining the original window style and fenestration.

The current principal entrance on the north side is up a short flight of steps. There is ramped access on the south east corner, designed in 1987.

Fig 22: North elevation prior to 1983 rehabilitation (City of Kelowna Archives KMS#8369)

Fig 23: Current fenestration on north elevation. Note openings blocked at west end

Roof

The current roof is a gable design, with shed-style dormer roofs and skylights on the north and south sides of the east-west ridgeline. The dormer roof was inserted as part of the 1983 rehabilitation and prior to that, the roof was single-pitch. Archival photographs show two roof-top ventilators at the ridge by 1928. These remained in place until 1982. In addition there were three small skylights and two flues present on the north side of the roof by 1928. The south side is unknown. Archival photos and documentation also show the roof covering being a smooth membrane ("Malthoid"). The present roof covering is "Duroid".

The dock awnings on the north and south sides are formed by a continuation of the main roof. The archival photographs show a similar arrangement.

Fig 24: North elevation in 1928 showing awning the entire length of the elevation (City of Kelowna Archives KMS#850)

Loading Docks

There are currently different types of wood ramps and steps attached to the building on the north, south and south east elevations. This is because the main floor is higher than street level. They date from the 1983 rehabilitation except for the dock area on the south east elevation designed in 1987. Their condition is good but they give the building a piecemeal appearance.

Originally, a loading dock was present on the north, south and west elevations. Cleats (pockets) in the concrete foundation into which the supports were placed show the extent of the dock.

Fig 25: Different dock types on the south façade with original cleats visible

Surrounding Area

On the south side of the building, there is an extended concrete apron. From its appearance, there was a building, housing machinery, attached to the ground. Unknown soil conditions.

5.2 Architectural Review - Interior

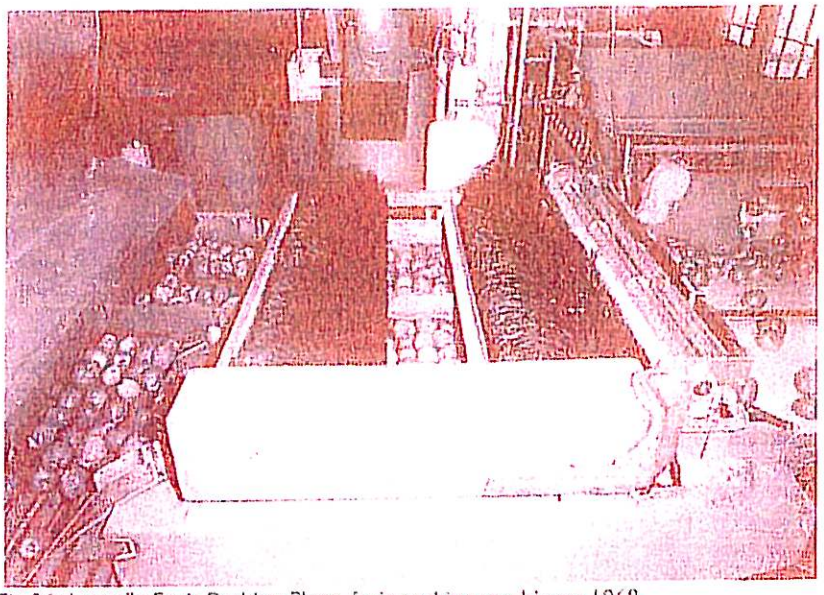

Fig 26: Laurel's Fruit Packing Plant, fruit packing machinery, 1968
(B.C. Archives Photo #I-06410)

General

The original purpose of the Laurel dictated a very functional interior, probably as one major space with some small offices. The only visual break was a row of large square wood columns supporting the roof trusses (and now the Upper Level). During the 1983 rehabilitation, the Main Level of the interior was sub-divided to make it more conducive for multi-purpose community use. The interior was also divided horizontally i.e. the introduction of different levels such as the stage area and this gave it a less industrial feel. The Main Level houses the Orchard Museum and Wine Museum, opened in 1989 and 1996 respectively. The remainder of this level is used for community meetings, events and private rental for functions etc.

The introduction of the Upper Level provided 19 office spaces and facilities. This was initially, and still is, used largely for non-profit, culturally-orientated groups. The layout of the Upper Level is split-level, which now poses challenges regarding barrier-free access. There is no elevator access to the Upper Level. The Lower Level was used for cold storage from 1938 until the 1970s. It is now used for storage of lower environmental-risk items from the Kelowna Museum. The original plan was to use it as a commercial market area, but this was not realised.

Main Level

In addition to the 1983 rehabilitation, this floor was refurbished in 1999. The floors are on two levels with ramps or steps connecting the two. The entrance, circulation area and Orchard Museum are on one level and the remaining areas i.e. the Wine Museum, stage, Woodsworth Room, washrooms, kitchen and storage are raised.

The structural columns were clad with cedar strips in the 1983 rehabilitation and this cladding was removed later. They are currently partially stripped of their paint, which is not lead-based. There appears to be no structural damage to the columns. The connections between the posts and trusses are not visible, and there are no gusset plates.

The external walls are finished with the exposed brickwork. Some sections of the wall finish remain painted as per the pre-refurbishment finish and other sections those rebuilt are unpainted. Most of the brickwork was repointed in the same type of mortar as described on the exterior. There were no obvious signs of cracking or water damage internally. All partition walls are in drywall.

The ceilings are finished in various styles and materials. Throughout the tie beams and part of the roof trusses have been left exposed and the outline of the inserted upper floor is visible. Drywall or cedar strips are the prime finishes both in good condition. In 2005 additional skylights were introduced on the stage area. The skylights were replaced in 2005 but were introduced as part of the 1983 rehabilitation. There were noted incidences where continuity of horizontal and vertical fire ratings have been penetrated due to mechanical and electrical installations or poor construction practice relating to the installation of fire rated membranes.

Facilities such as washrooms and a domestic-style kitchen were installed as part of the 1983 rehabilitation. Handicap accessible fixtures are not properly trimmed or insulated. These would benefit from being refurbished and upgraded to accommodate barrier-free access.

Fig 27: View of interior stage area showing split level

Upper Level

The upper floor is also split level – this is to accommodate the insertion of the extra floor within the roof truss framework. The corridor running east-west, is at a higher level with steps down to each office, the washroom and staircases. There are a number of barriers to the Upper Level – no elevator access, steps within the corridor to gain access to all but one office, steps to the washroom from all offices, steps within thirteen of the nineteen office spaces. The reason for the steps is that the Upper Level was added retrospectively and is accommodated within the space of the roof trusses.

As with the main floor the external walls are made of brick and left exposed. However, because this section was originally inaccessible none of the brickwork was painted. In addition, original mortar is still present. The condition of the brickwork varies. A number of structural cracks were recorded particularly on the east elevation. These were located adjacent to structural roof timbers and at window lintels. Mortar was missing in areas of cracking too. Small pockets of brickwork were missing from a few areas but not in size or quantities to have structural implications. All partition walls are in drywall which was in good condition. The ceilings are finished in drywall and are in good condition with no visible signs of water damage or ventilation issues.

Washrooms installed in 1983 refurbishment are present at the west end of the floor. These are not barrier-free.

Fig 28: Cracking of Upper Level brickwork

Lower Level

The floor is concrete and contains two floor drains, original to the building, which are 1' - 0" deep and covered with timber slats. The condition of the concrete is good.

Timber beams support the floor above and load from the roof trusses. Dry rot was identified in one supporting timber, but this was rectified.

The walls are constructed in concrete with brickwork at higher level. In some areas the concrete have been covered with a bitumen-based paint, traditionally used as a waterproofing coating. This is failing and there is a build-up of salts between the concrete and paint and a result of repeated wetting-and-drying cycles. This is to be expected in a basement and generally the condition of the walls is good. It was reported that a section to the south suffers from repeated water penetration, particularly after heavy rainfall. The condition of the brickwork above is good. There are internal partitions used for secure storage. These have been built within the past ten years and comply with all local building codes. There is a variation in ceiling height, the variation due to sections of Main Level floor joists being removed and raised. Pipes are exposed beneath the ceiling giving a lower ceiling height. Some ceilings are finished in drywall which has been fire rated. Many mechanical and electrical services enter the building at this level, and there are areas of penetration where the fire barriers have been damaged.

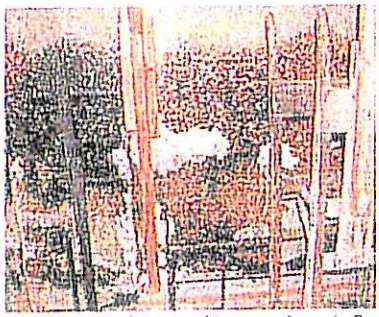

Fig 29 & 30: View of Lower Level. Removed floor joists (left) to facilitate additional headroom. Bitumen waterproofing material on walls (above).

5.3 Structural Review

An initial structural inspection and load path analysis of the building was carried out in August 2006 by Ellbury Dolan Consulting Ltd. to ascertain the type of structural systems in place, the capacity of the building to resist lateral forces and due to either wind or a seismic event and to provide general recommendations for any remedial work that may be necessary to ensure that the building can safely resist such lateral forces. A copy of the full report is located in Appendix I.

Summary Findings: Structural

- The original building was a single-storey structure with full basement, built with load bearing brick perimeter walls and heavy timber floor and roof members (i.e. columns, beams and trusses). The main roof elements are nine pairs of north-south orientated heavy timber trusses spanning half the 84ft. width of the building, spaced at 15ft centres. Each truss is supported on the brick perimeter walls and a heavy column at main floor level that is transferred to additional columns at basement level.
- In 1983, a second storey was added within the roof space of the existing building, supported by the bottom chords of the original timber trusses. There was significant modification to the original roof surface by the installation of a continuous shed-type dormer and line of fenestration on each side (north and south) of the original roof ridge.
- A load path analysis, identifying the route by which the lateral loads are transferred from superstructure elements (such as the roof and Upper Level) to the foundations of the building, indicated that the altered roof has eliminated the roof's structural diaphragm because the new dormers do not connect with any perimeter wall elements that might act as a shear wall.
- As a result of the removal of the roof diaphragm, the lateral support provided for the top chord of the original heavy timber trusses has been removed. The original roof diaphragm was the only structural element employed to prevent buckling of the roof trusses.
- The load path analysis also showed that the Upper Level is not a structural diaphragm because it is discontinuous across the building's width and does not meet or connect with any perimeter wall elements that might act as a shear wall.
- The load path analysis showed that the Main Level diaphragm has been compromised by the raised areas (e.g. stage and Woodworth Room). Instead of adding the raised area to the original floor joists (floor diaphragm), the original floor structure was removed and raised to the new elevation, resulting in the creation of perforations to the original main floor diaphragm. The original Main Level diaphragm is approx 4ft above street level and the effect of this penetration is highly indeterminate.

5.4 Mechanical Review

A Mechanical System Review was carried out by Poole & Associates in December 2006 to review the mechanical systems (plumbing, HVAC and fire sprinkling system) and comment on their compliance with building codes and their suitability in applications similar to the current use, following a refurbishment programme of the building. A copy of the full report can be found in Appendix II.

Summary Findings: Mechanical

- None of the HVAC (heating, ventilation and air conditioning) systems are providing adequate services. The systems are deficient in air moving capacity, fresh air ingestion capacity, exhaust capacity and zone temperature control. Some sections of the HVAC systems compromise the fire safety of the building by insufficient protection or penetration of the fire partitions.
- Fire protection of the building and occupants is insufficient and appears not to have been built in accordance with the 1983 scheme.
- The plumbing fixtures and the visible domestic water distribution system are low to medium quality. Upgrading work would need to comply with Plumbing Code and therefore none of the system would be reusable.
- Sanitary sewage pipes are sufficient but the service exit is above Lower Level floor. Therefore, any planning for new sanitary fixtures or floor drains in the basement would require a sewage lift station.
- Natural gas service is present in the building, entering the building at the north east corner of the Lower Level. The meter is not protected by a fence.
- The original sprinkler system was a "Dry Pipe" system which has been changed to a wet system. Therefore, areas formerly protected by the dry sprinkler system are no longer protected where the "Wet Pipe" sprinkler system is exposed to freezing conditions.
- Vertical and horizontal fire partitioning has been penetrated in areas by the installation of mechanical systems.
- Fire dampers missing from areas of heating system and Mechanical Room.
- Mechanical Room not fire rated and should be because of presence of gas fired appliances.

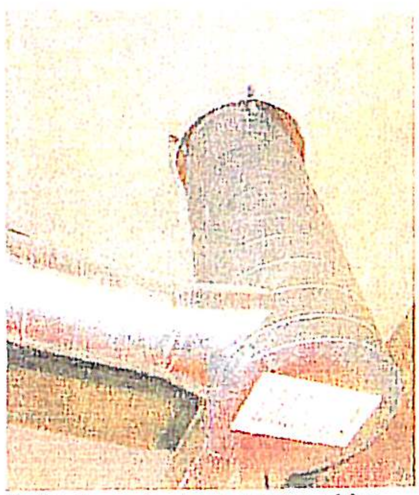

Fig 31: Example of penetration of fire partitioning between Main and Upper levels

5.5 Electrical Review

An Electrical Facility Condition Report was carried out by Falcon Engineering Ltd in January 2007 to outline the condition of the existing electrical installation with respect to possible future building upgrades and current code requirements. A copy of the full report can be found in Appendix III

Summary Findings: Electrical

- In general, the electrical system in the building is adequately sized for the current functions of the building and for most conceivable functions that the building might be used in the future. The distribution to the main switchboard is adequate, but the panel boards are residential-style and are accessible to the public. These are not recommended, but do not breach any codes. The Upper Level load centres are adequate for the current requirements, but would need to be augmented if additional air condition was installed
- Lighting is adequate, although the fixtures are old in some areas and in various states of repair.
- Emergency lighting layout and illuminated exit signs met code requirements when installed, but would require upgrading if extensive rehabilitations were undertaken.
- Outlet layout and branch circuitry are adequate. However, electrical penetrations through the floor have not been fire sealed
- The sprinkler station modification ("Dry Pipe" to "Wet Pipe") has no electric connection for either monitoring or alarm annunciation
- The fire alarm is adequate, but not optimum. The zoning within the fire alarm annunciator does not comply with current codes and the fire alarm panel is designed for the interior of a building but is located outside the building.
- Fire alarm panel is installed outside, but is not listed for exterior installation and is no longer manufactured so sourcing replacement parts may be problematic.

5.6 Building Code Review

The current situation was reviewed to determine any deficiencies from a Building Code standpoint. Overall, the code deficiencies are minor compared to other issues with the building. However, there are some deficiencies which are relevant to the safe operation of the building and will need to be addressed. Other deficiencies can be addressed as building restoration occurs.

The permitted occupancy numbers is 110 on the Lower Concourse, 133 on the Upper Concourse/Dining Area, 67 in the Woodworth Room, bringing it to a total of 310 people inside. The total number of people permitted outside is 112.

Summary Findings: Building Code

- There are a number of barriers to the Upper Level – no elevator access, steps within the corridor to gain access to all but one office, steps to the washroom from all but one office, steps within thirteen of the twenty office spaces. The reason for the steps is that the Upper Level was added retrospectively and is accommodated within the space of the roof trusses.
- The current principal entrance on the north side is up a short flight of steps. There is ramped access on the south-east corner, designed in 1987.
- The Main Level is at two heights – the Woodworth Room and Stage/Upper Dining Area and washrooms, and kitchen are accessed by a series of ramps.
- There is a disabled washroom on the Main Level and no disabled washroom on the Upper Level. Barrier free fixtures are not properly trimmed or insulated.
- There are deficiencies recorded in certain locations of emergency exit identification, illumination, exit route management and panic hardware.
- Sprinkler coverage in several areas appears to be deficient, based on current building code regulations, especially in the basement.
- Outdoor verandas, overhangs and decks may not be properly protected.
- Incidences where continuity of horizontal and vertical fire ratings have been penetrated due to mechanical and electrical installations or poor construction practice relating to the installation of fire rated membranes.

Fig 32: Exit door blocked and incorrect panic hardware

6. RECOMMENDATIONS

This study has identified the important heritage values and features of the Laurel Packinghouse. As outlined in the Executive Summary, a fundamental decision now needs to be made regarding its future to safeguard these values.

6.1 A Renewed Vision for the Laurel Packinghouse

The Laurel Packinghouse is a significant heritage asset to the city of Kelowna and Okanagan region. As Kelowna's first designated heritage building and the initial generator of the Cultural District, it has been an integral part of the city's cultural community for decades. A renewed vision for the Laurel is to continue its community use and reinforce its key role in Kelowna's Cultural District for the future. As a vital, rehabilitated and restored heritage building, it is the centre of historical interpretation of agriculture in the region. It is envisioned that the building, will be restored based on its original industrial appearance. The established community use of facilitating local arts and cultural projects should continue and be nurtured and opportunities of attracting even more visitors should be explored. This would be facilitated by the adjacent, convenient bus parking and the introduction of historically-appropriate roof ridge signage to make the Laurel Packinghouse a centre for tourism, a meeting point for tours and a place for tourist information.

The Parks Canada *Standards and Guidelines for the Conservation of Historic Places in Canada* (2004) should be used as the basis for any further intervention to the building. This document is based on the principles and practices that encourage the long-term conservation of Canada's historic places and develops standard for the conservation of the built heritage. Considering these, the intervention proposed for the Laurel Packinghouse's exterior and character-defining elements of the interior is restoration, as defined below "*The action or process of accurately revealing, recovering or representing the state of an historic place or of an individual component, as it appeared at a particular period in its history, while protecting its heritage value*".

In order to determine the most appropriate future for the Laurel Packinghouse, the following key points should be considered:

1. The Laurel should continue to act as an anchor to the eastern boundary of the Cultural District.
2. The Laurel should continue to augment the functions and activities of the Cultural District, and act as a catalyst for its further development of cultural activities.
3. The Laurel should continue to provide museum space and opportunities for community use.
4. A more historically accurate restoration of the original industrial heritage character should be undertaken.
5. The surrounding site should be developed as part of the overall interpretation of agri-business.
6. The City should pursue opportunities to acquire property that would complete the northern and eastern edges of the Cultural District and develop appropriate new uses and activities that will augment the existing character and strengths of the Laurel. This potential should be assessed within a review of the vision for the Cultural District.

6.2 Structural Mitigation

It has been determined that the due to the introduction of a second floor in the 1980s there is a major deficiency in the lateral stability of the structure. There is also visible cracking that carries from the top of window openings into the foundation. Two potential methods of remediation were examined: i) to introduce structural moment frames to provide a suitable lateral load path in the north-south direction and the fitting of horizontal cross-bracing to give east-west stability; or ii) to remove the Upper Level and re-introduce the original continuous roof diaphragm. The moment frames would have a significant financial and visual impact on the building.

Advantages of keeping the Upper Level

- Would retain the community "arts incubator" use of the building
- The combined use of office and tourist amenity animates the building with ongoing presence of people
- Groups are established in current location and disruption would be minimised

Disadvantages of keeping the Upper Level

- The lack of lateral stability will continue to compromise the existing heritage fabric e.g. brick walls (visible cracks present) and timber trusses
- Requirement to undertake significant and intrusive structural intervention to retain
- Significant City expenditure required to upgrade and repair 6,500sq ft of office and circulation space (see Anticipated Budget)
- The additional floor detracts from the original visual appearance of the Packinghouse from the exterior

Based on heritage, structural and financial factors, it is recommended that the Upper Level be removed, and the roof diaphragm re-instated. The level of intervention required to maintain the functions of the Upper Level is considered unacceptable from a heritage standpoint. Removal of the Upper Level will also allow a more accurate restoration of the original roofline.

6.3 Recommended Restoration of the Laurel Packinghouse

Our recommendations are based on an assessment of what constitutes the best approach to the historic elements of the building, what interventions are most cost-effective and what will facilitate community use of the building. It is therefore recommended that the building be restored to a state that more approximates its original appearance, and that:

- The Upper Level should be removed and the roof form should be restored, including the original monitor vent structures
- The loading docks and dock awnings should be restored based on archival evidence
- The structure should be stabilised through improvements to the lateral diaphragms
- The industrial appearance of the interior should be enhanced and interpreted

The Laurel Packinghouse should be interpreted and celebrated as a heritage structure of great significance to the community. This would be augmented by the continuation of agri-tourism initiatives in the building. By implementing this restoration proposal there would be a reduction of total floor space and a loss of rentable office space, which could potentially be replaced through new construction at another location. The restoration of the building would address the significant structural problems and other concerns identified in this document.

6.4 Summary of Other Recommendations

Exterior

- Monitor cracks in brick and concrete and continue to investigate
- Removing the cementitious mortar at this stage would be more damaging to the brick. However, if decay (efflorescence, spalling) continues or carrying out repairs, use weaker lime-based mortar
- Restore window and door styles based on archival images. Preserve existing original windows
- Remove existing attachments on north and south elevation; keep south-east ramp and promenade (if code compliant). Reinstate original loading docks, with necessary modification to comply with code. These modifications should be contemporary, simple and visually unobtrusive
- Restore original roof profile by removing shed dormers. Later skylights can be retained for internal illumination
- Introduce an historically-appropriate roof ridge sign similar to the one on this nearby building in the 1928 photograph

Fig 33: Typical industrial roof ridge sign, 1928.
(City of Kelowna Archives KMS#851)

Interior

- Restore industrial-feel of Main Level interior by restoring single level, exposing columns and roof trusses etc
- Repoint masonry, monitor cracks, reinstate missing brick units, as necessary
- Examine vertical and horizontal fire separation throughout and remedy accordingly
- Upgrade and refurbish washrooms and kitchen.
- Remove bitumen paint from basement walls. Allow moisture to evaporate. Do not seal walls.

Structural

Note: the following recommendations apply only if the Upper Level is being retained.

- Remedial work should be implemented to reintroduce north-south and east-west lateral support into the building.
- The remedial work should minimise the impact on the current and future workings/layout of the building.
- Current feasible locations for north-south lateral load resisting elements coincide with existing Main Level internal walls and could be in the form of four prefabricated steel moment frames, located between the underside of selected roof trusses and into new foundations under the Lower Level floor.
- East-west lateral load support could be re-introduced by firstly strapping the roof and Upper Level diaphragms together to act as one unit and then transferring the lateral loads from the underside of the Upper Floor to the north and south perimeter masonry walls. This could be achieved by the addition of steel rod horizontal cross bracing supports at the level of the underside of the Upper Floor.

Mechanical

- None of the mechanical systems in the building have value in a renovated or upgraded building. Replace all.
- Further study of sprinkler and fire detection systems required to determine which areas are properly protected and which require additional protection.
- Seal of all mechanical system penetrations between floors and walls

Electrical

- The electrical systems are sufficient for the present use and could be upgraded to suit a new use or if additional loads (e.g. HVAC) were to be added. However, if the building was undergoing a major refurbishment current codes would need to be applied.
- Thoroughly check and repair missing or defective elements of the emergency lighting and exit schemes.
- Maintenance of the emergency lighting and illuminated exit signs are necessary to ensure all battery packs, lamps etc are operating.
- Electrical penetrations through the floors in some areas have not been fire sealed. The sealing of all electrical system penetrations between floors is recommended.
- Fire alarm panel should be replaced and relocated inside the building.

Building Code

- Carry out a full code and accessibility review once future phases of works have been established.
- Prior to a large-scale restoration project, serious life-safety breaches should be addressed
- Barrier-free access to be addressed if the Upper Level is no longer used, otherwise there will continue to be major deficiencies.
- Thoroughly check and repair missing or defective elements of the emergency lighting and exit schemes.
- Implement regular maintenance plan including checking emergency lighting battery packs, exit routes are free of obstruction, emergency doors are in working order.
- Rectify penetrations in fire barriers.

6.5 Considerations for Future Use

This large industrial structure presents a number of options for re-use, which need to be considered within the greater scope of the now developing Kelowna Cultural District. The following physical issues need to be considered:

In order to address the future use of the Laurel Packinghouse, a decision must first be made on whether the Upper Level will be retained or removed.

- Upper Level: If the Upper Level is retained and upgraded, it will continue to require two means of access/egress. The stairwells can be retained in their existing location, or relocated. In either situation, there are minor impacts to the ground floor use. As barrier-free access cannot be provided, there is no public use that can be accommodated; if the Upper Level is retained it would therefore be appropriate to continue the existing office rental use.
- Lower Level: Without significant modifications to increase ceiling height and provide light and ventilation, the Lower Level should most appropriately continue as storage space and should not be converted for public access.

The Main Level has the greater potential for more intensive public use. The existing uses–the Orchard Museum, the Wine Museum and rentable public space–are appropriate to the building and the location. The existing historical interpretation of agriculture in the region and ties to Agri-Tourism are legitimate and vital functions.

The function of the building as a key aspect of the Kelowna Cultural District could be enhanced through a series of incremental additions:

- In addition to the nearby bus parking, the upgrading of the washrooms and provision of a small retail space would encourage the use of the building as a tourism destination point.
- The remainder of the Main Level could remain flexible for community and arts group rentable space, which could also be facilitated through the provision of an upgraded kitchen facility.
- Other opportunities would be enabled by the re-introduction of the loading docks, which were an original feature of the building. The space on the docks could be usable most of the year if roll-up weather protection is provided. A variety of community and tourist-intensive uses, such as craft and farmers' markets, could easily be accommodated. The Lower Level storage space could help support a demountable external market space and street festivals requiring short and medium-term storage.
- The surrounding area, including non-City owned sites to the north and the east, could provide further opportunities for the development of community cultural activities that could be supported by the Laurel Packinghouse.

Any proposed rehabilitation work to the Laurel Packinghouse should be scheduled to avoid disruption during peak tourist and rental season.

6.6 Next Steps

The following are the next steps that the City should consider in determining the future of the Laurel Packinghouse:

1. The existing structural studies should be validated through additional assessments that will confirm the extent of structural deficiencies. Once complete, final decisions can be made as to the most appropriate structural remedies.
2. Once structural issues are clarified, further decisions can be made regarding space allocation and programming within the building.
3. A Restoration Plan should be developed that will facilitate improvements that reflect an appropriate industrial appearance and enhanced functionality. This should include a review of available funding sources.
4. The City should review opportunities presented by non City-owned properties to the north and east of the Laurel. There are a series of sites at the periphery of the Cultural District that have heritage potential and could provide valuable support services and programming. Possible sites include those in the 1200 Block of Ellis Street including the wood-frame structure located between Ellis Street and Cannery Lane (1920s), Monashee Steel (1935); and Flashbacks Nightclub (1912). In the next block north is the former CN Rail Station (1925). The addition of other sites and activities could strengthen the functionality of both the Laurel and the Cultural District as a whole. Cawston Avenue could be wholly or partially closed to provide further public space. This potential should be assessed within a review of the vision for the Cultural District.

7. ANTICIPATED BUDGET

7.1 Option 1 – Tetain Existing Upper Level

Area	Sq ft
Lower Level:	10,800
Main Level:	10,800
Upper Level:	6,500
Total Sq ft:	28,100

Estimated Cost		$
Structural (inc footings and making-good Lower Level)	(est.)	300,000
Mechanical	$16/sq ft x 28,100	450,000
Electrical	(est.)	50,000
Making-good following Structural and M&E interventions	$15/sq ft x 28,100	420,000
Basic Functional Upgrades (washrooms, kitchens etc)	(est.)	150,000
	TOTAL	$1,870,000

7.2 Option 2 –Restore Lower & Main Levels Only

Area	Sq ft
Lower Level:	10,800
Main Level:	10,800
Upper Level:	0
Total Sq ft	21,600

Estimated Cost		$
Demolition of Upper Level & Stairwells	$18/sq ft x 6,650	120,000
Re-roofing (assume no additional structural intervention)	(est.)	120,000
Mechanical	$16/sq ft x 21,600	350,000
Electrical	(est.)	30,000
Architectural (inc making-good following Structural and M&E interventions)	$24/sq ft x 10,800	260,000
Basic Functional Upgrades (washrooms, kitchens etc)	(est.)	120,000
	TOTAL	$1,000,000

The following items are <u>not</u> included:

I. Improved accessibility to any levels
II. Alterations to interior layout or circulation
III. Revised interior layout
IV. Proposed Loading Docks
V. Exterior upgrades
VI. Exterior landscaping, signage etc
VII. Downtime of offices, museums & rentable space
VIII. Soft costs i.e. professional fees, permit and assessments costs
IX. G.S.T
X. Escalation costs at approx 20% per year

7.3 Summary

The Upper Level has an overall floor area of 6,500 sq ft. Of that 5,300sq ft is usable office space, the remaining 1,200sq ft accommodates circulation, washrooms etc. In addition the two stairwells to the Upper Level accounts for 150 sq ft of the Main Level. The Main Level and Lower Level each have a floor area of 10,800 sq ft

Option 1 -- Retain existing Upper Level
Total area: 28,100sq ft
Estimated Cost: $1,870,000
Estimated Cost per sq ft: $66.55

Option 2 -- Restore Lower & Main levels only
Total area: 21,600sq ft
Estimated Cost: $1,000,000
Estimated Cost per sq ft: $46.30

Effectively, if the rentable office space on the Upper Level is 5,300 sq ft and it is costing an estimated additional $870,000 (the difference between Option A & Option B) to stabilise the Upper Level, this calculates at costing $164 per sq ft of office space at current costs and with the exclusions noted above. From a financial standpoint this is a very high cost to retain this limited amount of space. An alternative is to provide an equivalent amount of office space at another location through new construction.

ANNEX 3: CWMM Structural Peer Review

CWMM Consulting Engineers Ltd.
200-1854 Kirschner Road, Kelowna, B.C.,
Canada V1Y 4N6
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December 12, 2007

K2983

City of Kelowna Recreation, Parks, and Cultural Services
1435 Water Street
Kelowna, B.C.
FAX (250)862-3317

Attention: Ron Forbes, Properties Manager

Dear Sir: .

Re: Laurel Packinghouse, Kelowna, B.C.
Structural Assessment of Existing Diaphragms

CWMM Consulting Engineers Ltd. was engaged to review the structural assessment report made by *Elbury Dolan Consulting Ltd.* dated 2006-09-08 and provide a second opinion of the recommendations made in that report given the large potential costs of repair. An exhaustive review of the structure is beyond the scope of this assessment, including any analysis required to validate the extent of the upgrading recommendations made by *Elbury Dolan*.

The undersigned performed a site visit on 2007-12-12 to get a better visual understanding of the structure of the building and the compromises to the integrity of its structural diaphragms that the report was addressing.

Since there are not any structural drawings available of the original building, nor any structural drawings of the 1983 renovation that modified the diaphragms, it is not clear to *CWMM* how much the 1983 renovation compromised the roof and main floor diaphragms that had been in place prior to the 1983 renovation.

All the new walls that were added to create the second floor within the existing roof space were drywalled to cover any possible structural diaphragm. *Elbury Dolan* concludes that the roof diaphragm was compromised by the almost continuous band of windows that would have interfered with the load path of the roof diaphragm. However, it is not obvious to *CWMM* that the new second floor could not have been built restore the roof diaphragm that was cut open to create the second floor space. Specific elements of the second floor walls and floor would have to have localized areas of the drywall and flooring removed in order to become conclusive on the extent of diaphragm compromise.

CWMM is in agreement with the report that the top chord of the original roof trusses has been compromised by no longer having the roof diaphragm provide out-of-plane buckling resistance to compression loads that the truss would experience under gravity loads of snow and occupancy. Drywall cracking and reported deflections of the second floor also question the integrity of the steel reinforcements and tension rods made to the heavy timber trusses during the 1983 renovation.

In reviewing the main floor diaphragm, it is clear to *CWMM* that there is compromise to the diaphragm by the very fact that the raised areas of the floor are presently abutting the brick walls instead of the concrete foundation walls that the original diaphragm would have connected to. Since brick is brittle and a poor material to provide structural integrity for the shear forces experienced by lateral loads, work would have to be done to transfer the loads from the raised floor diaphragm down to the concrete walls. Therefore, there would be no need to necessarily restore this floor diaphragm back to its original elevation.

However, a major structural deficiency needs to be addressed for the main floor with how the floor structure was raised. Instead of cutting the main floor diaphragm directly overtop of the supporting beams and raising the joist and diaphragm assembly to the new elevation and bearing the joists directly onto the original beam structure, the joists and diaphragm had a 2' to 3' wide strip cut away directly overtop of the beams. Since the joists were now too short to bear on the beam, short 2x6 members straddled the existing beam that the sections of floor assembly bear on. What this creates is a teeter-totter effect whereby instability in the floor system is risked every time a floor section on one side of a beam experiences a heavier occupancy load than the floor section on the other side of that beam. Due to some continuity of floor sheathing (diaphragm) that was established across this 2' to 3' wide strip, and that the short cantilevering 2x6 members were fastened to each edge of the beam via framing anchors, the floor hasn't failed under any of the loading variations it has experienced.

During the visual overview of some of the structural elements, the various cracks that were observed in the brick brings up the question of their origin. Although it is possible that some of the cracks occurred prior to the 1983 renovation, it is more likely that the cracks occurred after since it is expected that prior cracks would have been repaired during that renovation. Therefore, subsequent cracking in both brick and drywall would give further evidence that the roof and floor diaphragms were indeed compromised, and that the extra loading imposed on the building in creating the second floor has strained the structure beyond its ability to properly support them.

In conclusion, *CWMM* generally concurs with the report submitted by *Elbury Dolan* highlighting diaphragm compromises to the building, although the extent of required repairs is inconclusive at this point. Since the report was written, the new *2006 British Columbia Building Code* has come into effect, which means that seismic upgrading requirements have become even more stringent than the previous *1998 British Columbia Building Code*. However, it has to be noted that bylaws governing structural upgrading of heritage buildings such as this one would likely allow more leniency in complying with the *Building Code*. Nevertheless, due to the evidence of other structural compromises to the building, the extent of structural upgrading costs would certainly require more than just addressing diaphragm issues.

Should you have any questions or comments, please do not hesitate to call.

Sincerely,

CWMM CONSULTING ENGINEERS LTD.

per: Michael Weilmeier, P.Eng., Associate