CITY OF VICTORIA

Planning and Land Use Committee Report
For the Meeting of June 5, 2014

Date: May 22, 2014 **From:** Murray G. Miller, Senior Heritage Planner

Subject: **606-620 Humboldt Street/801-807 Government Street**
Heritage Alteration Permit #00182
Proposal to replace the balance of the existing windows and repair the terra cotta on the Humboldt and Government Street facades
Heritage designated building
Within DPA 1 (HC) - Historic Core
Zoned: CA-3C - Old Town District

Executive Summary

The purpose of this report is to provide information, analysis and recommendations to Council regarding a Heritage Alteration Permit Application to replace the existing windows on levels 3-7 and complete the repair of the cornice and terra cotta on the Belmont office building at the corner of Government and Humboldt Streets.

The following points were considered in assessing this application:

- The subject property is within DPA 1 (HC): Historic Core, which seeks to conserve and enhance the heritage value, special character and the significant historic buildings, features and characteristics of the area.
- Consistency of the proposed work with City policy.

Over the past decade, the owners of the Belmont Building have undertaken and are continuing to undertake considerable upgrades including the rehabilitation of second floor level windows, replacement of eighth floor level windows, restoration of the main entry doors, restoring the balcony doors and turret windows, mural restoration, repairs to a 15m section of cornice including seismic strengthening of the cornice as well as overall building systems upgrades.

This proposal is to complete the balance of window replacements and repair the cornice and terra cotta. The application is consistent with City Policy and the *Standards and Guidelines for the Conservation of Historic Places in Canada*. The proposed work will contribute to the maintenance of heritage values and improve the integrity of the building envelope. The conservation work will result in a considerable positive impact on the heritage value and physical integrity of the building. Staff therefore recommend that this application be approved.

Recommendations

That Council authorize the issuance of Heritage Alteration Permit #00182, in accordance with:

1. Application and plans dated April 10, 2014 (including the Design Development Report prepared by Read Jones Christoffersen (RJC) dated September 4, 2013).

2. Terra Cotta Repair specifications dated November 15, 2013.
3. Window Salvage and Storage Plan dated May 7, 2014.
4. Development meeting all *Zoning Regulation Bylaw* requirements.

Respectfully submitted,

Murray G. Miller
Senior Heritage Planner

Deb Day, Director
Sustainable Planning and Community Development

Report accepted and recommended by the City Manager: _____
Jason Johnson

Date: May 30, 2014

MGM/ljm

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1.0 Purpose

The purpose of this report is to provide information, analysis and recommendations to Council regarding a Heritage Alteration Permit Application to replace the balance of existing windows on levels 3-7 and complete the repairs to the cornice and terra cotta.

2.0 Background

Over the past decade, the owners of the Belmont Building have undertaken and are continuing to undertake considerable upgrades including the rehabilitation of second floor level windows, replacement of eighth floor level windows, restoration of the main entry doors, restoring the balcony doors and turret windows, mural restoration, repairs to a 15m section of cornice including seismic strengthening of the cornice as well as overall building systems upgrades.

In 2012, a Heritage Alteration Permit for window replacement to accommodate energy efficient windows was approved. The windows on the second floor were different from the rest of the building and could accommodate alteration in order to accept double glazing.

In 2013, a Heritage Alteration Permit for replacement windows on the eighth floor (where the windows were in the worst condition) was approved. The restoration of the windows and doors on the balconies in a manner that was more in keeping with the original design was approved and undertaken. In addition, a Heritage Alteration Permit was issued for the repair and restoration of a 15m section of the cornice and the repair of terra cotta.

The current proposal is to replace the existing windows on levels 3-7 and complete the repair of the cornice and terra cotta.

2.1 Condition of Existing Windows - Levels 3-7

A 2013 site assessment by Vintage Woodworks showed that close to 54% of the windows were in poor condition, 41% were in fair condition and 1% was in good condition. Four percent of the units were inaccessible at the time of the assessment. The sills and bottom rails were deteriorated and many windows were being held together with screwed brackets. Windows showed evidence of considerable air leakage, birds have eaten 50-70% of the putty from the windows and wind loads have aggravated the window units by loosening the glass.

2.2 Condition of the Cornice

A 2013 site assessment by RJC showed that water ingress was deemed to be the likely cause of corrosion of nearly 50% of the steel supports. A detailed account of the condition has been provided in the Design Development Report (attached).

2.3 Condition of the Terra Cotta

From the ground level, deterioration of the terra cotta was visible. From the eighth floor window, it was noted that the joints between the cornice and the terra cotta appeared in poor condition. At this location, sealants had been applied to this area in an attempt to reduce leakage.

2.4 Description of Proposal

The current phase of conservation work includes the replacement of the windows on levels 3-7, which make up the largest portion of exterior window work; rehabilitation of the cornice and strengthening of the steel support system; and undertaking repairs to the terra cotta. The detailed scope of work is set out in the applicant's proposal dated April 10, 2014, the Design Development Report prepared by RJC dated September 4, 2013, and the Terra Cotta Repair specifications prepared by RJC, dated November 15, 2013. The applicant also submitted a Windows Salvage and Storage Plan (attached).

2.5 Heritage Advisory Panel Review

At its regular meeting of May 13, 2014, the Heritage Advisory Panel reviewed the proposed scope of work and recommended:

> *That City Council authorize the issuance of Heritage Alteration Permit #00182, in accordance with:*
>
> 1. *Application and plans dated April 10, 2014 (including the Design Development Report prepared by Read Jones Christoffersen dated September 4, 2013).*
> 2. *Terra Cotta Repair specifications dated November 15, 2013.*
> 3. *Window Salvage and Storage Plan dated May 7, 2014.*
> 4. *Development meeting all Zoning Regulation Bylaw requirements.*

2.6 Consistency with City Policy and Guidelines

2.6.1 Official Community Plan (OCP)

The proposed work is consistent with the broad objectives of Placemaking and aligns with OCP objectives in relation to City Form.

2.6.2 Downtown Core Area Plan (DCAP)

The proposed work is consistent with the Heritage and Building and Sites sections of the DCAP.

2.6.3 Standards and Guidelines for the Conservation of Historic Places in Canada

The proposed work is consistent with Sustainability Considerations in relation to determining the most appropriate solutions to energy efficiency requirements such as the installation of dual pane in-kind replacements of irreparable windows. The proposed conservation work to the steel supports of the cornice is consistent with the recommended practice of improving the detailing of roof elements and reinforcing its materials. The proposed repairs to the terra cotta are consistent with guidance regarding the in-kind repair of deteriorated parts of exterior walls.

3.0 Issues

- replacement of a character-defining element on a Heritage-Designated building
- repurposing or recycling all materials removed from the building.

4.0 Analysis

4.1 Statement of Significance

A Statement of Significance (attached) provides a description of the property, a summary of its heritage values and a list of key character-defining elements.

4.2 Replacement of a character-defining element on a designated heritage building

The applicant has worked with energy efficiency specialists SES Consultants, wood window rehabilitation specialists Vintage Woodworks, engineering consultants RJC and City staff in a phased approach to the rehabilitation of the exterior facades of the Belmont Building. This collaborative approach resulted in a solution to the challenges presented by the condition of the character-defining wood sashes involving their replacement with in-kind units.

4.3 Repurposing or recycling all materials removed from the building

The repurposing of 261 units can be a substantial undertaking that warrants the relocation and storage of units during the period that they are made available to others. The applicant has prepared a Windows Salvage and Storage Plan that deals with the removal of windows.

5.0 Conclusions

The proposal considers energy efficiency and heritage values in relation to the original wood windows. The scope of work will conserve the character-defining elements associated with the roof by improving the detailing of the cornice support structure and addresses health, safety and security considerations in relation to reinforcing the existing cornice. The selective repair of deteriorated terra cotta is considered appropriate. The repurposing of 261 wood windows reduces construction waste and is considered in environmental and conservation terms to be a more beneficial outcome than if they were discarded.

The proposal to replace the balance of the existing windows on levels 3-7 and complete the balance of repairs to the cornice and terra cotta is consistent with the heritage objectives and policies within the OCP, DCAP and the *Standards and Guidelines.*

6.0 Staff Recommendation

That Council authorize the issuance of Heritage Alteration Permit #00182, in accordance with:

1. Application and plans dated April 10, 2014 (including the Design Development Report prepared by Read Jones Christoffersen (RJC) dated September 4, 2013).
2. Terra Cotta Repair specifications dated November 15, 2013.
3. Window Salvage and Storage Plan dated May 7, 2014.
4. Development meeting all *Zoning Regulation Bylaw* requirements.

7.0 Alternate Recommendation

That Council decline the application for Heritage Alteration Permit #00182.

8.0 List of Attachments

- Map of subject property
- Aerial map
- Applicant's letter dated April 10, 2014
- Belmont Building Windows Salvage and Storage Plan
- Photos
- Statement of Significance
- Design Development Report prepared by RJC dated September 4, 2013
- Drawings dated April 10, 2014.

606-620 Humboldt Street
801-807 Government Street
Heritage Alteration Permit #00182

Designated Registered

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CITY OF VICTORIA

606-620 Humboldt Street
801-807 Government Street
Heritage Alteration Permit #00182

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CITY OF VICTORIA

Jawl Properties Ltd.

City of Victoria
1 Centennial Square
Victoria, BC V8W 1P6

April 10, 2014

Attn: Mayor and Council

Re: Heritage Alteration Permit Application for Belmont Building (614 Humboldt Street)

Dear Mayor and Council,

Please accept this application for a heritage alteration permit for the Belmont Building to replace the single glazed sash in the windows on floors 3-7 with new thermal replacement sash and to complete the cornice and terracotta restoration on the Humboldt and Government Street facades.

The Belmont Building is 102 years old and over the last decade we have been investing in substantial upgrades and repairs to ensure the building continues to age gratefully, showcasing its historic grandeur while performing in a manner that allows it to compete effectively with more modern buildings in the commercial rental market.

The following projects have recently been undertaken or are underway at the building:

- Refurbishment of 2nd floor window sash to accommodate thermal windows
- Replacement of 8th floor window sash with an identical replica and thermal windows
- Restoration of the main entry doors
- Replacement of single Juliet Balcony doors with French doors, restoring this aspect of the building to its original condition
- Restoration of all turret windows
- Roof replacement
- Restoration of both murals on the Courtney side of the building
- Replacement of Air Handling Units
- Energy Efficiency upgrades resulting in a decrease in energy consumption of 33%
- Installation of low-flow plumbing fixtures
- Installation of roof anchors
- Repairs of 50' section of cornice and terracotta siding along Gordon Street, including seismic bracing of the cornice to 2012 building code seismic standard
- Interior upgrades

The above represents investments in the building in excess of $2,000,000.

The following items are still outstanding and will require attention in the coming years:

Suite 100 - 3350 Douglas Street, Victoria, BC, Canada V8Z 3L1 Tel: (250) 475-0338 Fax: (250) 475-0339 www.jawlproperties.com

- Balance of sash and glass repairs and replacements
- Balance of cornice and terracotta rehabilitation
- Elevator replacement
- HVAC System components and distribution replacement

The above represents approximately $5,000,000 in work to be done. This does not include seismic and structural upgrades that will be necessary at some point in the building's future.

The current windows on floors 3-7 are original to the building which was built in 1912. Leaks in the frames and single pane glazing result in poor performance from an energy standpoint and create an occupant comfort issue. They are exterior glazed windows secured with putty that the birds pick at, creating a risk that windows could blow out in a severe wind event (which has occurred in the past).

Given these factors we feel it is appropriate at this time to upgrade the remaining windows in the building and are seeking a solution that will:

- Be aesthetically pleasing and sensitive to the historic nature of the building.
- Ensure occupant comfort and ease of use to support leasing of the building.
- Provide a high quality, low maintenance window system.
- Improve the energy efficiency of the building, in turn reducing its GHG footprint.

As part of a previous application in consultation with Steve Barber, Vintage Windows and Sinclair Environmental Solutions we evaluated three potential alternatives for the windows which would apply in circumstances where the sash has not deteriorated beyond the point of restoration. An analysis of each is provided below:

1. **Interior Mounted Storm Windows**

This solution would leave the exterior of the building unchanged, however would not address the maintenance issues with the current windows. Further the process of installing, removing and storing storm windows makes this an impractical solution. They would eliminate the option for tenants to use their operable windows, blinds and window sill and while they would assist with heat loss in the winter they would not impact heat gain in the summer. Finally they would be expensive given the unique profile of the existing interior molding.

2. **Laminated Glass with Low E Coating using the Existing Sash**

Laminated Glass with a Low E coating would reduce the building's heat loss through the windows on the impacted floors by 26%, reducing GHG emissions by 13 tonnes. The laminate alone will not address the maintenance issues, air leakage or safety issues. We are concerned we would be making a significant investment but still be left with poor quality windows. We are concerned about the appearance of the glass with a laminate. We have a laminate low E solar reduction coating on some of the windows in the building now and it distorts the appearance of the glass impacting the overall aesthetics of the building.

3. **Thermal Windows with a New Sash**

Typically new thermal windows could be installed into the existing sash (where the existing sash has not deteriorated beyond the point of restoration), which would be the best solution from our perspective and be preferable from a heritage standpoint. Unfortunately, the unique profile of the sash with the glazing profile at the exterior edge prevents this. Routering the existing sash to accept the new thermal glazing would degrade the structural integrity of the tenons by more than 50% making them too weak for use. It is our understanding that this condition is somewhat unique to the Belmont Building in Victoria. According to the Canada's Historic Places website Belmont Building "was the first large-scale building in Victoria to comply with new stringent fire codes through use of reinforced concrete. Architects Horton and Phillips, influenced by the Chicago School of architecture, utilized internal frame construction combined with restrained Edwardian details such as terra cotta cladding, a corner articulation, and walls of slightly recessed windows to accentuate the building's height." Perhaps this explains why Belmont Building has this unique circumstance that does not apply to many of the other buildings of its era in Victoria.

This condition did not exist on the second floor of the building and as such in 2012 the second floor window sash were restored and modified to accept thermal glazing. In a few circumstances where restoration was not feasible due to extensive deterioration of the sash, replacement thermal sash was used. The replacement sash is identical in appearance to the original sash. In 2013 approximately 70% of the 8th floor sash had deteriorated beyond the point of restoration and were replaced with replica thermal sash. The occupant experience on both these floors has been enhanced significantly and we have seen energy savings and greenhouse gas reductions as a result of these improvements.

We would now like to address the balance of the windows and are proposing to use new thermal windows and sash. Like on the 8th floor, the sash will be constructed to be an identical replica of the original sash and will be painted to match the original colour used. Further new clear glass will improve the appearance of the building compared to the current glass which has a low E coating on it. All of the jambs and frames will be restored and repaired as part of this project. The original sash lift hardware will be reused. This solution will resolve the maintenance and safety issues and has the best performance from an energy standpoint reducing heat loss through the windows on the impacted floors by 75%, representing a 36 tonne reduction in GHG emissions.

One of the Character Defining Elements of the Belmont Building is stated to be 'Chicago School elements typified by the corner tower articulation and the vertical emphasis achieved by the slight recessing of the curved and tripartite windows'. The slight recess would be replicated with the replacement sash. The appearance of the tripartite windows would be unchanged. The curved turret windows are being restored with the original sash as part of a project initiated in 2013.

All materials removed from the building will be repurposed or recycled. There is demand for old windows for backyard greenhouses and we intend to have all the windows and doors that are in suitable condition given away for this purpose. It is possible these windows could function well in a greenhouse application for 25 years, proving both ecologically sound from a 're-use' standpoint and also supporting the sustainable nature of backyard agriculture.

Upon consideration of the relevant 'Standards and Guidelines for the Conservation of Historic Places in Canada' (highlighted in grey) we offer the following comments in the right hand column:

4.3.5 - Windows, Doors and Storefronts

Recommended	Not Recommended	Applicant Comments
8 **Retaining** sound and repairable windows, doors and storefronts, including their functional and decorative elements, such as hardware, signs and awnings.	Removing or replacing windows, doors and storefronts that can be repaired. Peeling paint, broken glass, stuck sashes, loose hinges or high air infiltration are not, in themselves, indications that these assemblies are beyond repair.	The scope of the replacement is limited to the sash. The window frames will be refurbished. A condition report done in 2013 indicates that 54% of the sash is in poor condition, and 41% in fair condition.
15 **Repairing** windows, doors and storefronts by using a minimal intervention approach. Such repairs might include the limited replacement in kind, or replacement with an appropriate substitute material, of irreparable or missing elements, based on documentary or physical evidence.	Replacing an entire window, door or storefront when the repair of materials and limited replacement of deteriorated or missing elements is feasible. Failing to reuse serviceable hardware, such as sash lifts and sash locks, hinges and doorknobs.	This is consistent with our proposed approach. We will be repairing and refurbishing the window frames, replacing the sash with an identical replica and reusing sash lift hardware.
28 **Complying** with energy efficiency objectives in upgrades to character-defining doors, windows and storefronts by installing weather-stripping, storm windows, interior shades and, if historically appropriate, blinds and awnings. The energy efficiency of the building envelope and systems as a whole should be considered.	Replacing character-defining, multi-paned sashes with new thermal sashes with false muntins.	Energy efficiency upgrades have been implemented throughout the building and the façade represents the biggest weakness in the building's energy performance. Storm windows are not an acceptable solution for the reasons stated in the commentary above. False muntins are not

		proposed.
29 Working with specialists to determine the most appropriate solution to energy efficiency requirements with the least impact on the character-defining elements and overall heritage value of the historic building.	Making changes to windows, doors or storefronts without first exploring alternative energy efficiency solutions that may be less damaging to the character-defining elements and overall heritage value of the historic building.	Sinclair Environmental Solutions have been engaged with all aspects of improving the energy efficiency of the building and have overseen extensive upgrades to the mechanical and lighting systems in the building. Vintage Woodworks has assisted in helping us identify a solution that ensures the physical appearance of the building, including its Character Defining Elements, remains unchanged.
30 Maintaining the building's inherent energy-conserving features in good operating condition, such as operable windows or louvered blinds for natural ventilation.	Replacing repairable windows with new ones, without evaluating the performance and remaining service life of the existing windows.	The glass in the current windows is at the end of its service life. The putty connection to the sash has 15% of its service life remaining; the paint is at the end of its service life. The caulking of the frame to the exterior has 20% of its service life left; the sash has 20% of its service life left. The above figures are averages and in many instances location specific conditions are in worse condition. The proposed solution allows us to maintain the inherent energy conserving features

		including the operable windows and blinds (which would not be possible with storm windows).
31 Installing interior storm windows where original windows are character-defining and exterior storms are inappropriate.		Storm windows would not address the current deterioration of the windows and sash. Installing, removing and storing storm windows creates a significant logistical challenge. Tenants would lose the use of operable windows, blinds and window sills. No impact on heat gain in the summer. Cost prohibitive due to unique profile of existing molding.

Attached please find the following documentation from consultants and the tenant in regard to the windows:

- Proposal summary from Vintage Wood Works
- Diagrams of window sash replacement
- Letter from Vintage Woodworks regarding the unique nature of the sash used on floors 3-8 at Belmont.
- Window inventory and condition summary
- Energy conservation report from Sinclair Environmental Solutions
- Letter from tenant
- Building elevations
- Before and after pictures of sample unit

The balance of the façade includes terracotta tiles and a cornice, which are also in need of maintenance work to insure their integrity and prevent materials potentially falling from the building. This work has been done been on the Gordon Street frontage.

Cornice replacement for the balance of the building would follow the design, methodology and processes developed during the first phase of the project on Gordon Street and would include the removal of the existing copper sheet metal clad cornice and replacement with a new cornice structure supported by cantilevered steel outriggers. The outriggers would be bolted into the concrete floor slabs, and pass through cored holes through the unreinforced clay brick masonry back-up wall. New wood framing would be provided between the steel outriggers, and all combustible components of the new cornice assembly would be protected to achieve current code requirements for fire rating. The existing 16 ounce copper sheet metal from the original cornice would be reinstated to the soffit of the new cornice to maintain the decorative appearance from the street level, and a new roof membrane back sloped to a new gutter would be provided to the upper surface of the cornice. The cornice waterproofing would be terminated into the terra cotta façade above the roof level, protecting the new cornice structure and exterior wall from water ingress.

As identified during the initial investigative phase, years of water intrusion into the existing cornice assembly has resulted in corrosion of the embedded steel support channels, deterioration of the masonry wall, and has reduced the load carrying capacity of the existing cornice structure. The intent of the replacement project is to address the uncertainties related to the risks and limitations of the current cornice structure in a manner sympathetic to the historical appearance and significance of the building.

Terracotta restoration for the balance of the building would also follow the methodology used during the first phase along Gordon Street and would include repairing and cleaning selective areas of the façade. Full height scaffolding below the cornice would be utilized to access the façade. Cracked or fractured units would be repaired or replaced as required, and masonry joints would be re-pointed as required. The intent of the terra cotta restoration is to reinstate the integrity of the façade and refresh the exterior appearance of the building.

Enclosed please find a report produced by RJC regarding the restoration work for the cornice and terracotta.

2012 marked the 100th anniversary for the historic Belmont Building. As owners we continue to invest heavily in the building to ensure that we, as well as the people of Victoria, can be proud of it for decades to come. We want Belmont Building to be a fine example that heritage structures, when properly maintained, can exude old world beauty and charm while performing similarly to their modern counterparts. This is essential to the acquisition and retention of tenants in heritage office buildings. Tenants provide the revenues necessary to fund investment in building maintenance and restoration costs that far exceed the costs associated with newer buildings which also benefit from higher rents. This careful balance underpins the economic viability of commercial heritage buildings. We are budgeting $1,500,000 for the work outlined above. I would be happy to convene a tour to show the condition of the sash on floors 3-7 and compare the

appearance of the replacement sash to the original. If you have any questions regarding this application please feel free to contact me at karen.jawl@jawlproperties.com or at (250) 414-4172.

Sincerely,

Karen Jawl
On behalf of Jawl Properties Ltd.

Jawl Properties Ltd.

Belmont Building Windows Salvage & Storage Plan

Project Summary

Jawl Properties Ltd. has submitted an application to the City of Victoria to replace the sash and glazing in the windows at the Belmont Building. The application includes 261 windows.

Removal

Heritage Green Carpentry will be responsible for removing the existing sash with the glazing intact from the frames and moving them to the basement of the Belmont Building. The units will be moved through the interior of the building. It is anticipated that two floors of windows will be done in summer 2014, two additional floors will be done in summer 2015 and the remaining floor will be done in summer 2016.

Storage

The basement of the Belmont Building is secure and dry and has adequate space to store approximately 2-3 floors worth of windows at any given time. Should the space available not be adequate for any reason Jawl Properties will use its dry and secure Quonset Hut located in Cordova Bay for surplus storage needs.

Disposal

Jawl Properties Ltd.'s aim is to have all of the windows that are in usable condition reused. It is understood by Jawl Properties that the windows are highly suitable for re-use in a backyard greenhouse application and could function in this capacity for approximately 15-20 years. Notices will be periodically posted on Craiglist and other similar websites advertising the availability of the windows and noting a date and time when windows will be available for pick up. The frequency of these postings will be based on response to initial pick up days and the amount of inventory on hand. A notice will also be sent to people who currently work in the Belmont Building and Jawl Properties employees who have more of a connection to the building and may value having a piece of it in their own backyard. Vintage Windows is also aware of the availability of these windows and knows to direct any inquires they get for this type of windows to Jawl Properties Ltd.

At the end of the window replacement project Jawl Properties Ltd. will store any remaining windows on site for a minimum of 1 year following the last phase of the window replacement project and will continue to actively seek out people to take them through advertising on sites such as Craigslist and having a minimum of 4 scheduled pick-up times during this last one year period.

Should any windows remain at the end of the 1-year period Jawl Properties will ensure they are appropriately recycled. Similarly any components not suitable for re-use will be recycled.


Humboldt St
Currency Exchange
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Statement of Significance

Description of Historic Place

The Belmont Building is an eight-storey office building on the corner of Humboldt Street and Government Street on the southern boundary of the commercial core in the Old Town District.

Heritage Value of Historic Place

The Belmont Building (1912) is significant as a gatepost to Victoria's commercial core. The commercial façade of this prominent landmark sets the scene for the Inner Harbour entrance to Government Street. This office building is notable as an example of technologically advanced construction as it was the first large-scale building in Victoria to comply with new stringent fire codes through the use of reinforced concrete. Architects Horton & Phillips, influenced by the Chicago School of Architecture, utilized internal frame construction combined with restrained Edwardian details such as terra cotta cladding, a corner articulation and walls of slightly recessed windows to accentuate the building's height. The defined verticality of this retail and office structure contributes significantly to the backdrop of historic structures at the northeast corner of the Inner Harbour Precinct.

Character-Defining Elements

- Location of the building on the corner of Humboldt Street and Government Street
- Unimpeded views between the building and the Inner Harbour
- Vertical emphasis of the form and multi-storey massing
- Concrete frame construction
- Chicago School elements typified by the corner tower articulation and the vertical emphasis achieved by the slight recessing of the curved and tripartite windows
- Restrained Edwardian details typified by sparse decoration of the matte-glazed, cream-coloured terra cotta cladding on three façades, marked by the horizontal divisions of the plain stringcourse and simple cornice
- First floor elements related to the period of construction such as the cast iron canopy of the Humboldt Street entrance, storefront windows and interior features, such as the staircase with its Art Nouveau newel post in the lobby.

Read Jones Christoffersen
Consulting Engineers

Belmont Building - Historic Repairs

614 Humboldt Street
Victoria, BC

Design Development Report

Prepared for:

Ms. Karen Jawl
Jawl Properties
#100 - 3350 Douglas Street
Victoria, BC V8Z 3L1

Prepared by:

Read Jones Christoffersen Ltd.
Building Science and Restoration
Suite 220, 645 Tyee Road
Victoria, B.C. V9A 6X5

Issued: September 4, 2013
RJC No.: VIC.109374.0001

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1.0 INTRODUCTION

1.1 Engagement

As described in our proposal dated July 3, 2013, Read Jones Christoffersen Ltd. (RJC) has prepared this Design Brief to outline the conditions observed onsite, and establish conceptual details for the repair of the upper cornice on the North East Elevation of the building
The intent of this report is to provide the Jawl Properties (the Client) with a clear description of our design concept for repairs (providing options were available), related scope of work, and associated Opinions of Probable Cost.

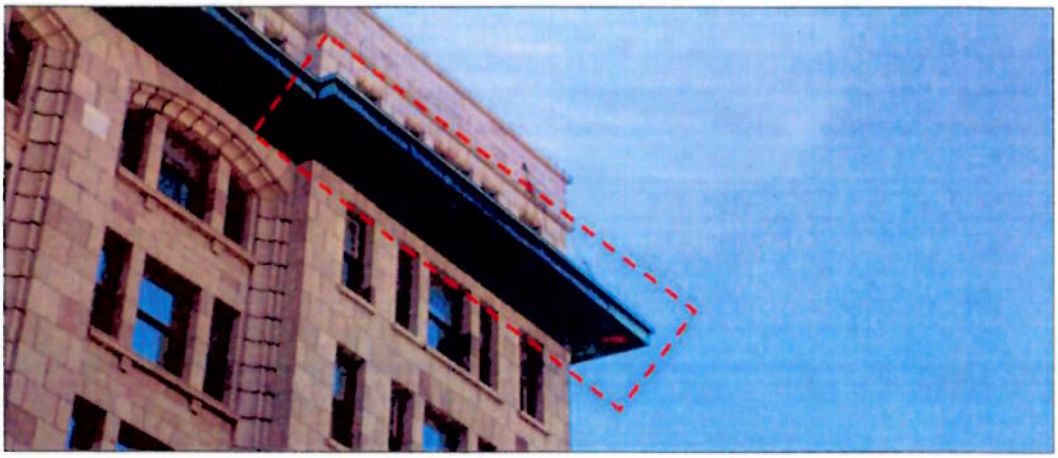


Photo 1 - North East Cornice

On July 17, 2013, RJC visited the site with Lorne James of Jawl Properties to complete a visual review of the cornice. Subsequent to this review, RJC visited the site on July 23, 2013 to review portions of removed interior wall, exposing the backside of the exterior masonry wall adjacent to the cornice.

1.2 Site and Building Description

The Belmont Building is noted to be one of Victoria's first reinforced concrete structures. Built in 1912, and standing 8-stories in height, the Belmont Building is comprised of office space with a commercial ground level. The exterior of the building is clad with Terra Cotta Masonry on multi-wythe brick masonry exterior walls. Wood windows original to the building are undergoing renewals and replacement with new frame, sash and laminated glazing.

2.0 DESIGN CONCEPTS

Considering the historic nature of this building and its heritage significance it must be understood that it is difficult to attempt to relate the performance of the building envelope assemblies to currently accepted standards as outlined in the current British Columbia Building Code. The nature of the construction of this building results in compromised energy performance, though it is the very function of this compromise that enhances the durability of the assemblies.

When registered heritage buildings are modified within the City of Victoria, approval from City Council is required. In addition to this, the *Standards and Guidelines for the Conservation of Historic Places in Canada* can be relied upon to provide informative guidance.

Within the new cornice enclosure, structural upgrades will be completed using current construction practices, materials, and design philosophies to achieve a level of performance in conformance with the 2012 British Columbia Building Code.

Through our discussion with the Client, we understand the desired replacement roof assembly on the cornice is to consist of a 2-ply modified bitumen membrane in lieu of a folded seam sheet copper assembly. The new membrane will not be visible from street level, and will transition into the exterior terra cotta masonry wall. There will be no change to the gutter location; the new assembly will slope towards the existing gutter allowing for the cornice on the north east corner of the building to transition into the existing assembly.

2.1 Cornice

2.1.1 Background Information.

RJC was notified by Jawl Properties on June 25, 2013 of a section of cornice on the North East elevation which was observed to be sagging. Grist Tile and Slate Ltd. had promptly visited the site to review the condition, and provided temporary restraint of the cornice with ropes. At this time a video was taken which was reviewed by RJC in preparation of this report.

A previous report completed April 15, 1997 by Don Church of The Church Group Consultants Ltd. (Church) was made available for review by the Client. A review of the Terra Cotta with input from Fast and Epp Structural Engineers was completed at this time. As noted within this report, the cornice was investigated and the steel outriggers at the northeast corner were noted to be corroded due to water ingress. The remaining outriggers were noted to be in fair to good condition.

During our review of the documentation provided, details completed in 1972 by Cooper, Tanner and Associates Ltd. were observed to provide structural upgrade detailing for the cornice support outriggers. However, evidence that these repairs were completed was not apparent at the locations reviewed onsite as these detail modifications were not mentioned within the report completed in 1997 by Church, and do not appear to be present in the video footage of the failed outrigger provided by Grist Tile and Slate Ltd.

2.1.2 Description of Cornice

The cornice on the 8th floor consists of a 16 ounce copper sheet with folded seams. Decorative elements of the cornice consist of profiled panel edges and modillions along the soffit, visible from below. The top surface copper sheet back-slopes to a gutter which runs adjacent to the exterior facade (Figure 1). The gutter flashing is set within the Terra Cotta masonry. Terra Cotta is not present within the cornice enclosure leaving the brick masonry exposed. The cornice is supported by "U" shaped 3" x 1.5" x approx 0.25" thick steel outriggers at 30" o/c. The outriggers are set into the brick masonry back-up. As noted in the 1997 Church report, the outriggers were determined to penetrate 8" into the brick masonry. During our review, the end

sections of the outriggers were observed to be flush with the interior face of the masonry back-up wall, and tension rods were observed to provide a tie between the outrigger and the concrete floor slab. At the corner of the cornice, an outrigger set at 45 degrees from the corner is present. The copper sheet is supported by 1" X 8" T&G decking on back sloped tapered 2" x 8" joists fastened to the outriggers. 1.5"x3/16" steel flat bar framework is bolted to the outriggers at top to form the fastening surface for exterior and base surfaces of cornice. The base of the flat bar assembly is set in brick masonry which ties the soffit of the cornice into the building.

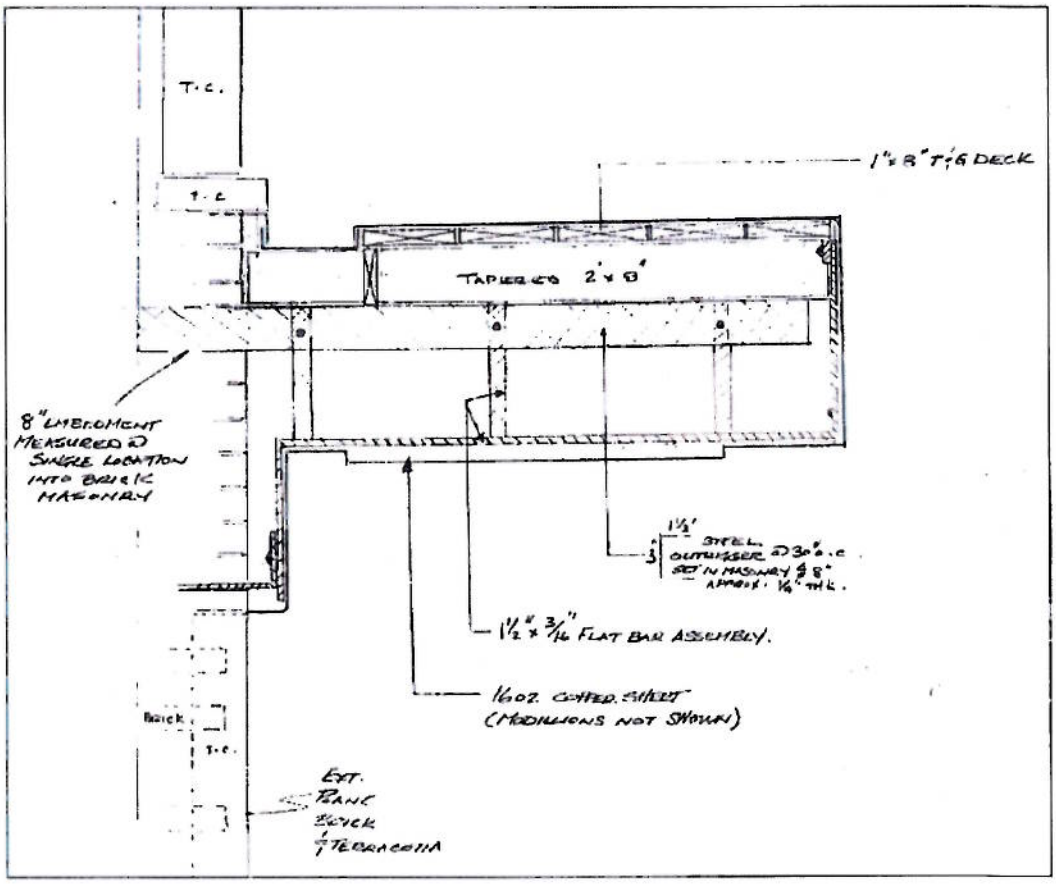


Figure 1 - Typical Cornice Section - *Source: The Church Group Consultants Ltd.*

2.1.3 Observations

RJC visited the site on July 19th to review the exterior of the cornice from the level 8 windows, and from ground level. The copper sheet was observed to be dented, and seam failures were apparent along the gutter seams and along the reglet where the cornice transitions with the exterior terra cotta facade. Based on the conditions observed onsite, it is apparent that water ingress behind the cornice is likely occurring, and it is this suspected source of water ingress which has resulted in corrosion and near failure of the steel outriggers.

In general, the cornice appears to be in a condition commensurate with its age and exposure, and the damage observed is likely attributed to maintenance activities, birds, cyclic thermal movement, and just over a century of weather exposure in a marine environment.

RJC returned to the site on July 23rd to review conditions adjacent to the cornice from the interior of the building. At this time, a section of interior wall had been removed, exposing the backside of the masonry wall.

Photo 2- Tension Rod

Photo 3- Corroded Outrigger

Photo 4- Northeast Cornice

The steel outrigger was visible to the inside, as was the reinforcing steel. The outrigger has corroded, and has experienced a loss of section of approximately 50% and spalling brick was observed adjacent to the steel outrigger section. RJC has confirmed the original reinforcing steel ties shown in the 1972 drawings prepared by Cooper, Tanner, and Associates Ltd. are present. These ties were not noted during the investigation completed by Church in 1997.

It is apparent that water has been able to penetrate the cornice for quite some time and penetrate the porous masonry brick wall, resulting in corrosion of the steel outriggers. As the steel corrodes, it expands and causes the masonry confining the steel to crack, and the masonry joints to open. This process further increases the frequency of water penetration and advances the corrosion process. The reinforcing ties attached to the channels have also corroded, and spalling masonry is present at the interior face of the masonry wall. Although not confirmed, it is suspected that the reinforcing steel ties may be embedded within the structural concrete floor slab. Section loss of approximately 50% was also observed at the tie locations.

As evident in the video provided by Grist Tile and Slate Ltd., several of the steel outriggers have lost their structural capacity; as a result, the cornice roof has sagged at the northeast corner. The 45 degree outrigger identified within the video is loose, and does not appear to be attracting load.

During our interior review, a previously attempted remedial repair to correct a sagging outrigger was observed. At this location on the northeast corner, a red-iron steel angle had been installed. The angle is welded to the end of the steel outrigger, and bolted into the floor slab. The bolt was observed to be very loose, and the effectiveness of this repair is questionable. It is anticipated that this repair may have been completed at other locations along the cornice.

2.1.4 Recommended Repair Strategy

The current assembly relies on the compressive strength of the masonry brick wall, and the tensile resistance of the embedded steel rod to restrain the steel outrigger. Over time, water has been able to penetrate the roof cornice, and enter the masonry wall. This has resulted in corrosion of the steel member, which has resulted in cracked masonry units, and failed/displaced mortar joints. Given the general condition of the masonry brick wall, it is recommended that the new system not rely on the masonry to resist compressive loads unless the wall is re-pointed, and/or re built as required. The steel outrigger section has undergone significant section loss due to corrosion, and no longer has the capacity required to resist the required design loads. Replacement of the steel outrigger is required.

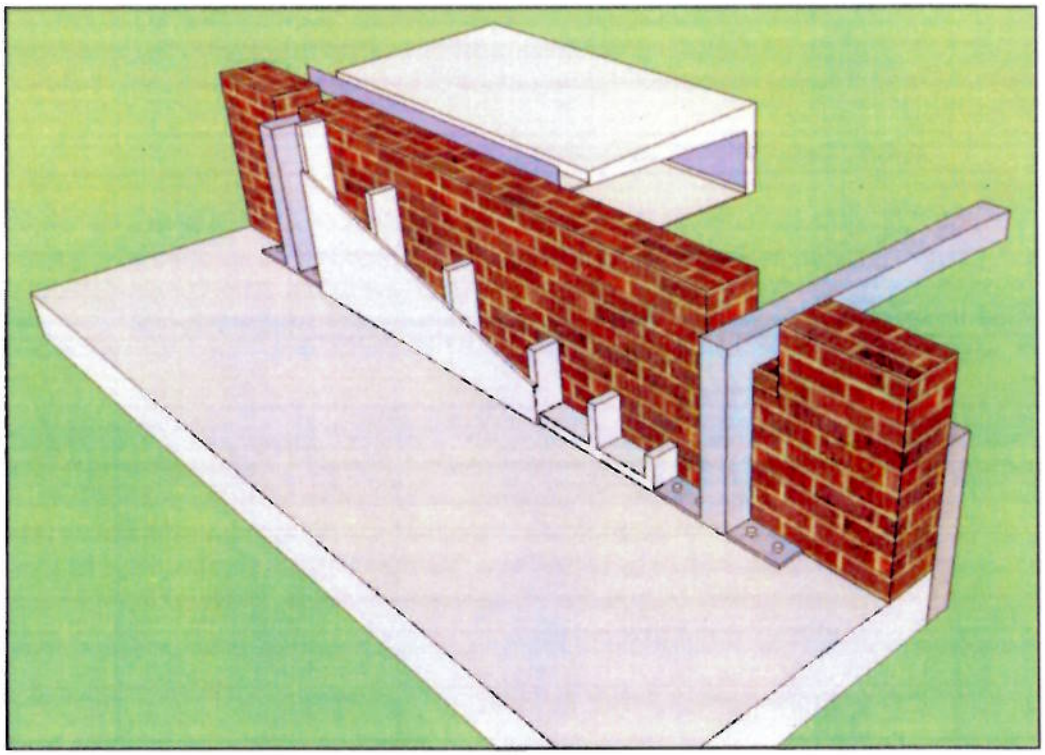


Figure 2 - Proposed Cornice System

T

he proposed replacement system consists of a fabricated steel outrigger support which would be bolted to the structural concrete slab. The steel HSS section would be approximately an 89x89x4.8, and the steel base plate would likely require 4-5/8" diameter anchor bolts. It is anticipated that the steel framing would be concealed from the interior by the existing stud wall furring as shown in Figure 2.

The outriggers would be provided at 8'-0" on centre, and would be connected to each other with steel members external to the building structure. Steel decking or plywood sheathing would be provided as the roof sheathing, and a 2-ply roof assembly would be provided to integrate into the existing terra cotta facade. Separation would be provided between all dissimilar materials (ie. Wood to metal, wood to masonry etc.). Wood or steel framing would be incorporated to achieve a profile to match the existing cornice. The new cornice could be clad with copper to match the existing profile and appearance of the original cornice.

The new steel outriggers would be installed from within the building, and the masonry removed at the penetration locations. Areas of masonry where the existing outriggers are removed would be reinstated. It is our opinion that this design approach would be more cost effective and efficient in comparison to an approach which relies on the masonry brick wall to resist load.

2.2 Terra Cotta

2.2.1 Background Information.

We understand considerations for addressing areas of terra cotta around the cornice area as required are requested at this time. A comprehensive review of the exterior of the building at the cornice location was not completed prior to the preparation of this report, however conceptual recommendations have been provided to address and repair the terra cotta facade as the repairs to the cornice are completed have been provided.

2.2.2 Description of Terra Cotta

The exterior facade of the Belmont Building consists of a terra cotta veneer supported by a red clay brick masonry back-up wall. The terra cotta units are attached to the brick masonry with wire ties. In the Church report, a comprehensive review of the terra cotta facade was completed. It is our understanding that repairs were also completed at this time.

2.2.3 Observations

From the ground level, areas of cracked, fractured, and spalling terra cotta within the area of the cornice are visible. The terra cotta does not extend up the wall into the cornice cavity (refer to Figure 1). From the 8th floor window, the terra cotta joints on the wall surface are thin, and appear to be in generally good condition. The joint where the copper sheet for the cornice is integrated into the terra cotta appears to be in poor condition. Sealants have been applied to this area in an attempt to mitigate leakage.

2.2.4 Recommended Repair Strategy

We recommend the areas of terra cotta within the vicinity of the cornice be addressed during the replacement of the cornice. This would involve selective re-pointing, cleaning, and if necessary pinning or replacement of the cracked or fractured stone as these areas are identified. All loose or spalled sections would be removed, and the voids would be patched to match the adjacent units. Where required, units could be replaced or re-set as necessary.

A more detailed assessment of the terra cotta is recommended when the northeast cornice is being replaced to better quantify the condition and details which would be encountered during a comprehensive cornice replacement on the remaining elevations.

3.0 OPINIONS OF PROBABLE COST

Opinions of Probable Cost are presented by RJC to provide the Owner with an expectation as to the magnitude of costs required to complete the repair work outlined above. The opinions provided are based on conceptual repair methods, recently obtained broad unit rates, and past experience with similar projects. A detailed estimate of costs has not been provided, as it would require the preparation of plans, details, specifications and schedules to achieve a quantified summary of estimated costs. In proceeding with the recommended repair strategy provided within this report, we anticipate the following Opinions of Probable Cost (OPCs).

- Cornice Replacement - North East Corner (+/- 60 lineal feet) $ 110,000 - $ 130,000
- Cornice Replacement - Remaining Building (+/- 320 lineal feet) $ 500,000 - $ 625,000
- Selective Terra Cotta Restoration - North East Corner *(Repair Budget)* $ 1,500 - $ 3,000

Grants are available from the City of Victoria thru the Building Incentive Program for facade restorations, structural improvements, upgrades required by building codes, and other rehabilitation costs. It is our opinion that opportunities for Grant Funding would apply to the Belmont Building. Should the Owner decide to pursue these grants, RJC would be pleased to assist as required.

4.0 CLOSING

This Report was prepared for Jawl Properties. It is not for the use or benefit of, nor may it be relied upon, by any other person or entity, without written permission of Jawl Properties.

Neither RJC, nor any company with which it is affiliated, nor any of their respective directors, employees, agents or representatives shall in any way be liable for any claim, whether in contract or in tort including negligence arising out of or relating in any way to mould, mildew, or other fungus, including the actual, alleged or threatened existence, effects, ingestion, inhalation, abatement, testing, monitoring, remediation, enclosure, decontamination, repair, or removal, or the actual or alleged failure to detect mould, mildew or other fungus.

Yours Truly,

Read Jones Christoffersen Ltd.

Prepared by:

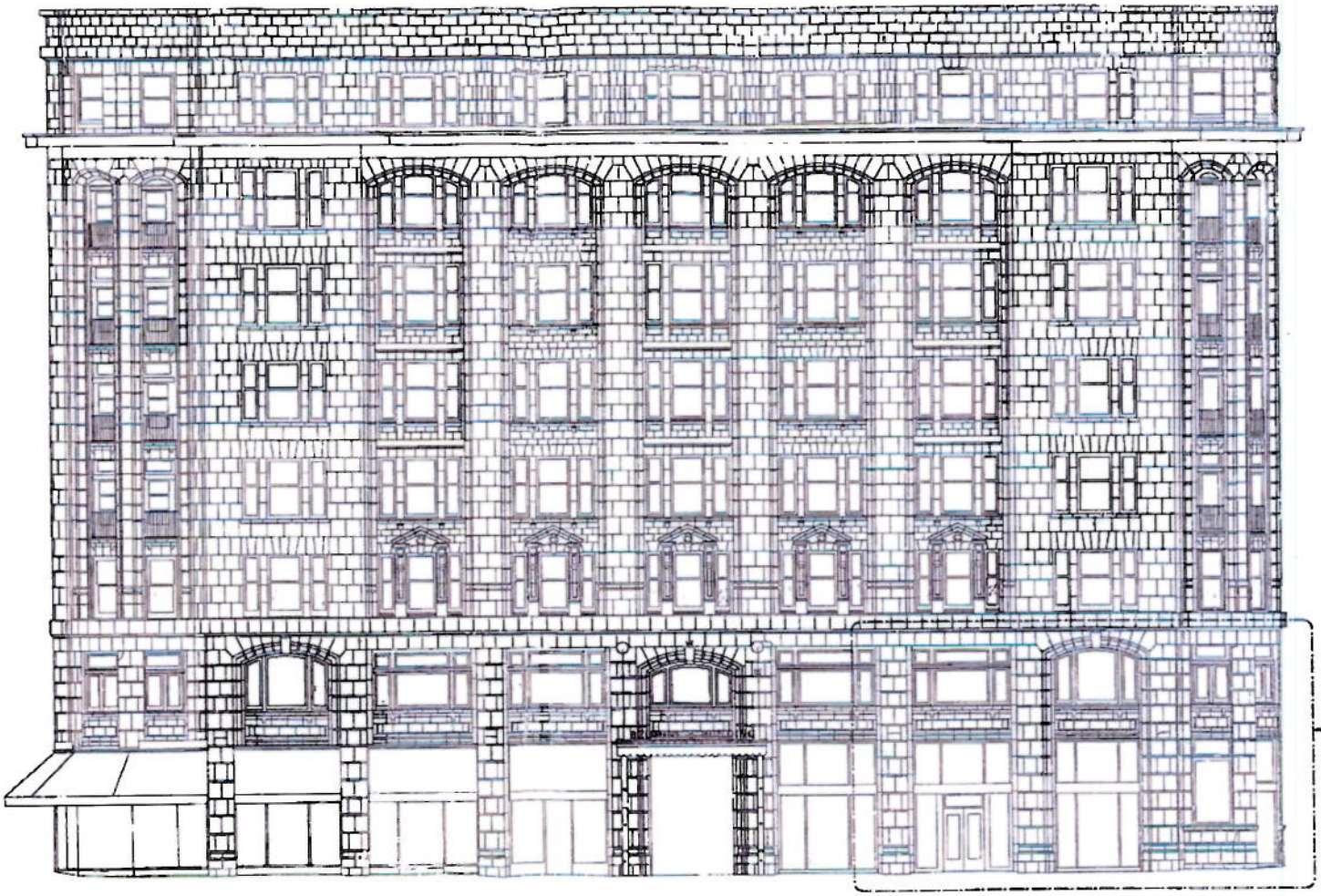
PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
K. D. PICKWICK
34143
4/9/2013

Kevin Pickwick, P. Eng, ASCT, CCCA, LEED-AP
Project Engineer

Reviewed by:

Terry Bergen, CTech, CCCA, LEED-AP
Associate, Group Leader

KP/rt



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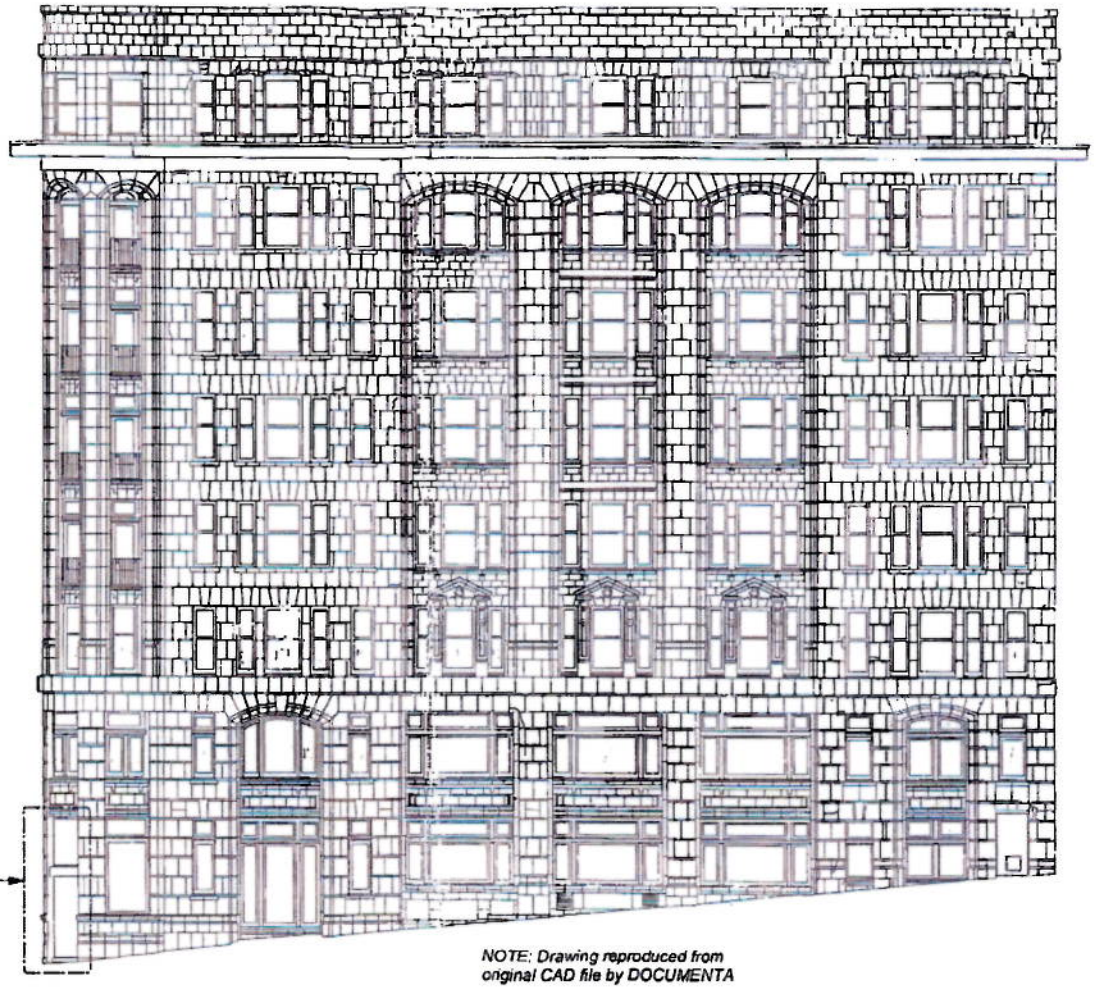
4 Humboldt St. - Existing Facade (South)
1:150



NOTE: Drawing reproduced from original CAD file by DOCUMENTA

3 Gordon St. - Existing Facade (East)
1:150

Sash Replac[illegible]nt - Box + 4" Jamb
Sa[illegible] Box + 4"

Job #		Unit #	A	Qty	18

Job Details

Name	JAWL PROPERTIES - Karen Jawl
Location	Belmont, Victoria
Email / Phone	karen.jawl@jawlproperties.com
Sales Contact	Keri

Glass Specifications

	Thermal
Glass Thickness	4 mm ½" Grey SuperSpacer Argon + Solarban 60 #3 4 mm
Glass Type	Annealed
Glass Opacity	Clear

Opening Details

Fixed Upper Sash	Open Lower Sash

Horn Details

Horn B	Length: 3 ½"

Finishing Details

Priming	In / Out	White
Finish Painting		By Heritage Green On Site

Hardware Details

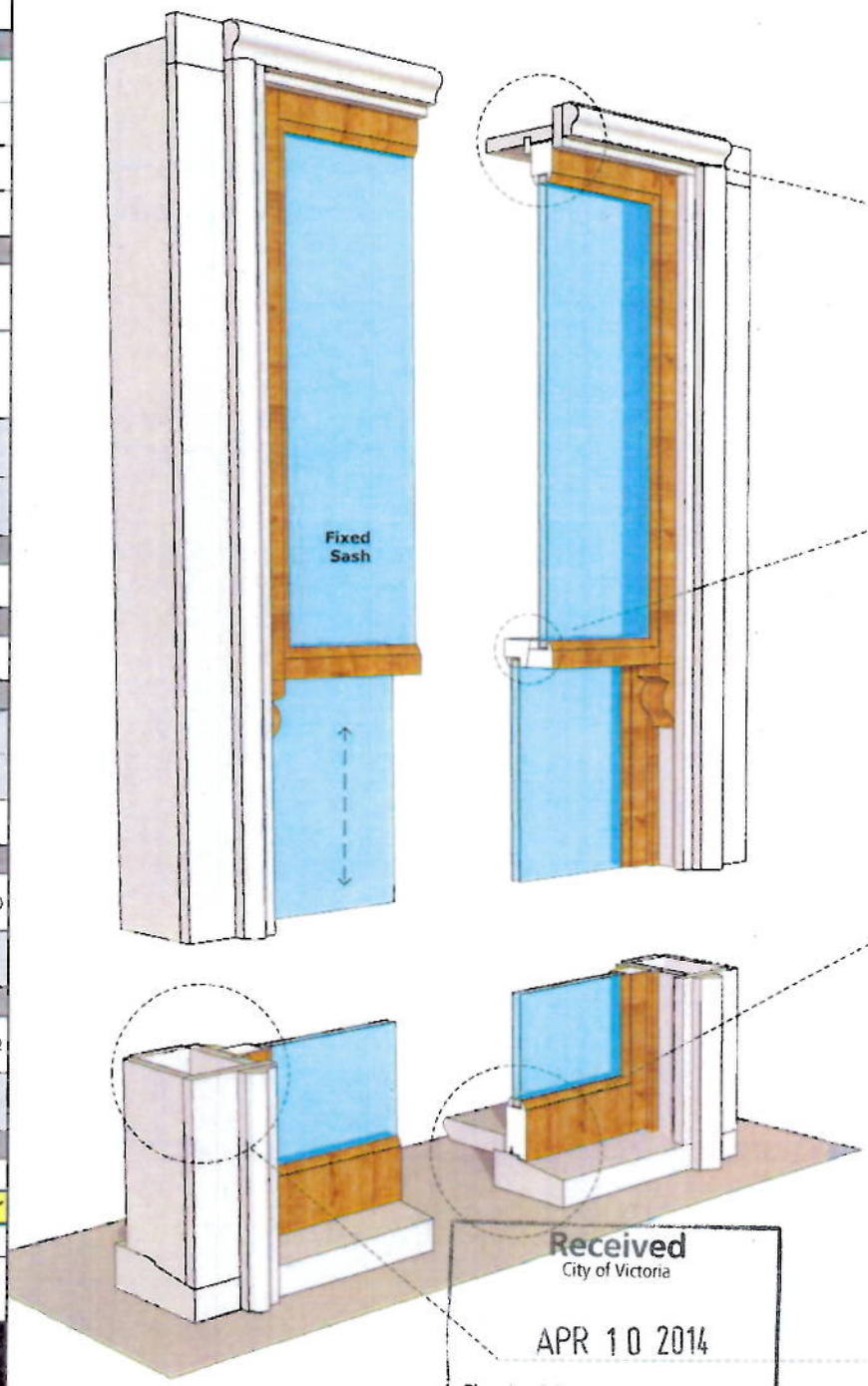
Sash Lock ORB	#716 +860	D Handle ORB	#270

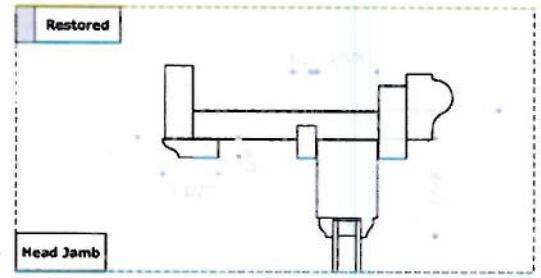
Weather Strip Details

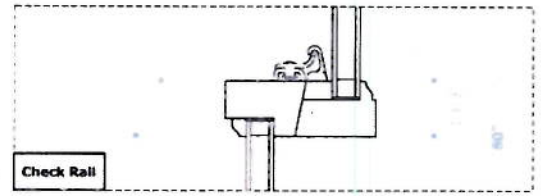
1 ⅜" Sprung Bronze	#222

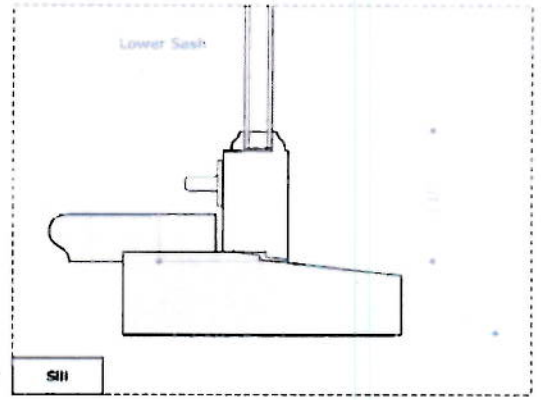
Notes	Order Progress
	QUOTE
	FOR APPROVAL ✓
	MANUFACTURE

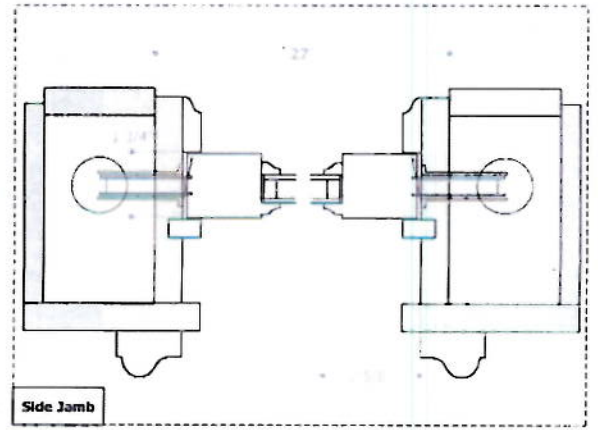
VINTAGE WOODWORKS











Sash Replacement - Box + 4" Jamb Side - Box + 4"

Job #		Unit #	B	Qty	69

Job Details

Name	JAWL PROPERTIES - Karen Jawl
Location	Belmont, Victoria
Email / Phone	karen.jawl@jawlproperties.com
Sales Contact	Keri

Glass Specifications

	Thermal
Glass Thickness	4 mm ½" Grey SuperSpacer Argon + Solarban 60 #3 4 mm
Glass Type	Annealed
Glass Opacity	Clear

Opening Details

Fixed

Horn Details

Horn B — Length: 3 ½"

Finishing Details

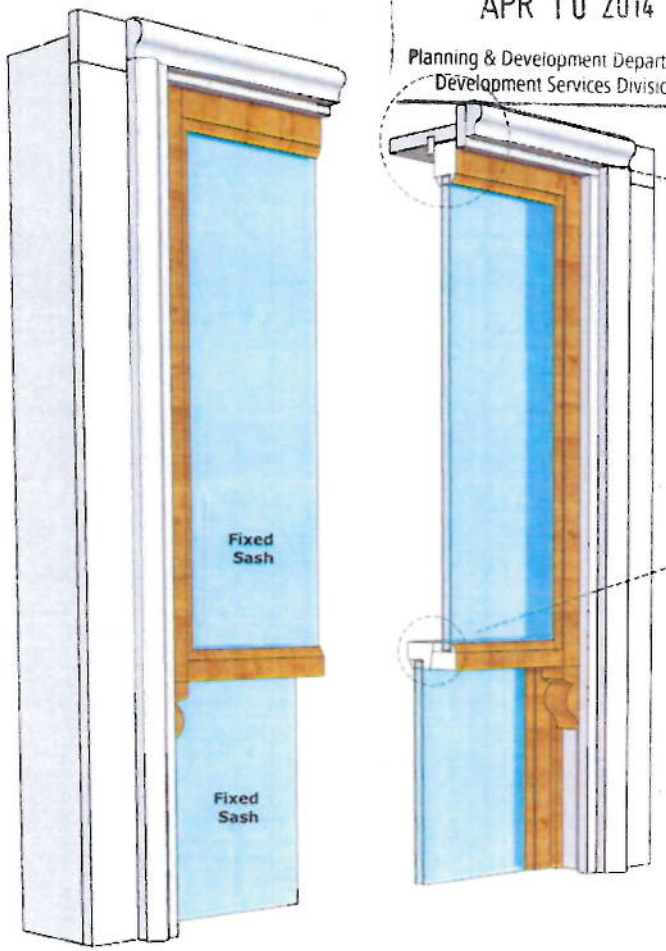
Priming	In / Out	White
Finish Painting		By Heritage Green On Site

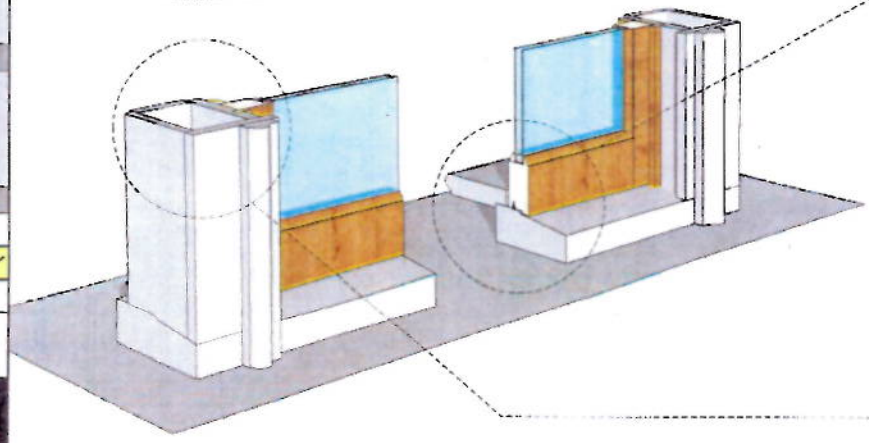
Hardware Details

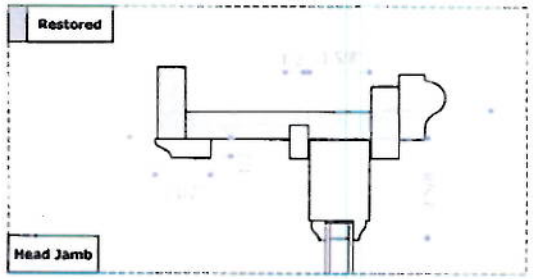
Weather Strip Details

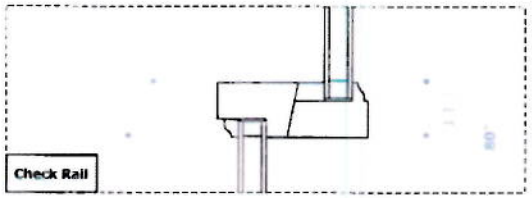
Notes	Order Progress
	QUOTE
	FOR APPROVAL ✓
	MANUFACTURE

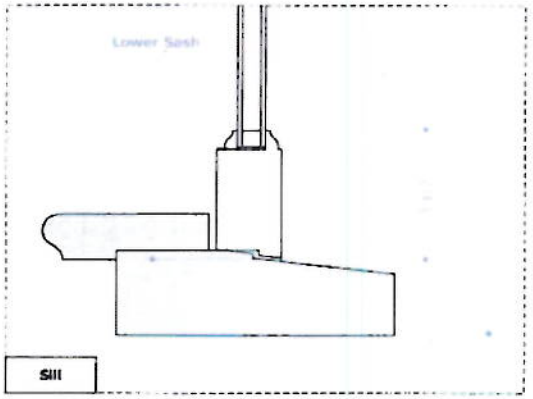
VINTAGE WOODWORKS

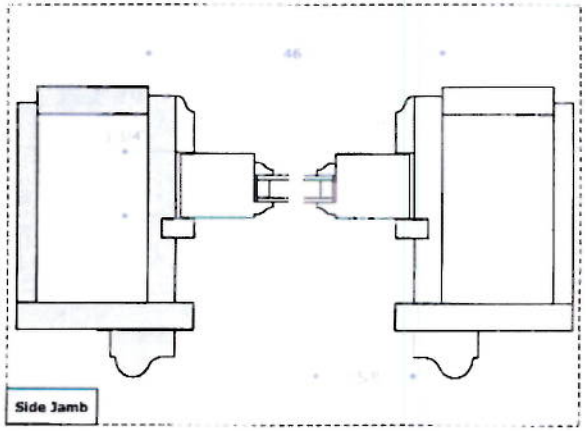












Sash Replacement - Box + 4" Jamb
Sash Box + 4"

Job #		Unit #	C	Qty	138

Job Details

Name	JAWL PROPERTIES - Karen Jawl
Location	Belmont, Victoria
Email / Phone	karen.jawl@jawlproperties.com
Sales Contact	Keri

Glass Specifications

	Thermal
Glass Thickness	4 mm ½" Grey SuperSpacer Argon + Solarban 60 #3 4 mm
Glass Type	Annealed
Glass Opacity	Clear

Opening Details

Fixed Upper Sash	Open Lower Sash

Horn Details

Horn B	Length: 3 ½"

Finishing Details

Priming	In / Out	White
Finish Painting		By Heritage Green On Site

Hardware Details

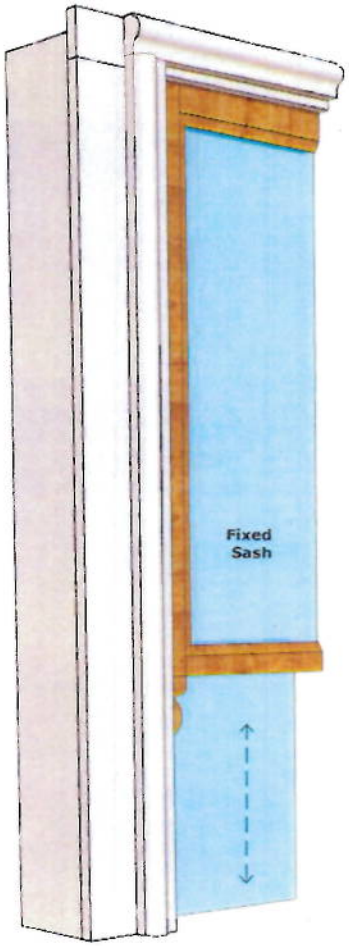
Sash Lock ORB	#716 +860	D Handle ORB	#270

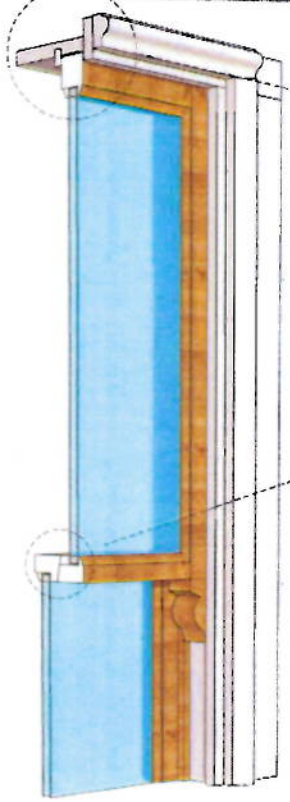
Weather Strip Details

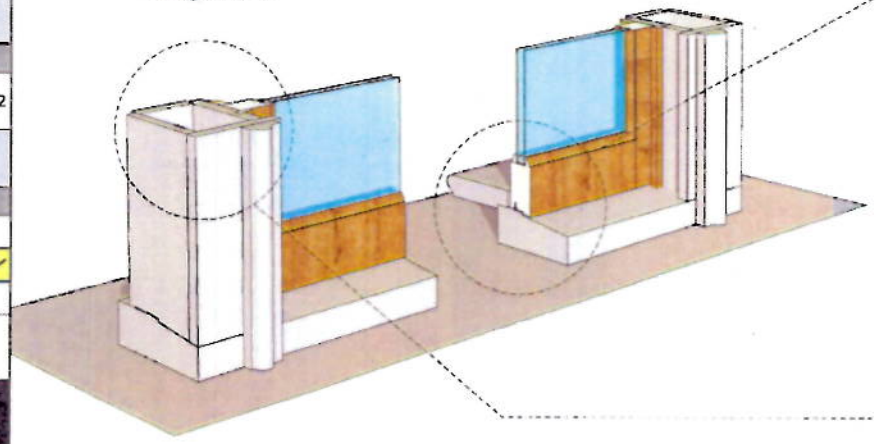
1 ⅜" Sprung Bronze	#222

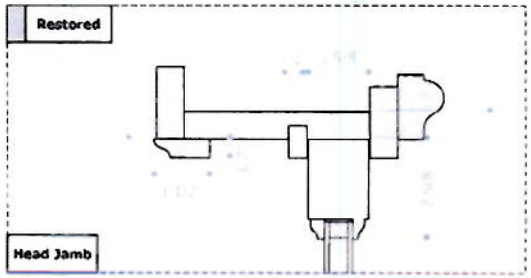
Notes	Order Progress
	QUOTE
	FOR APPROVAL ✓
	MANUFACTURE

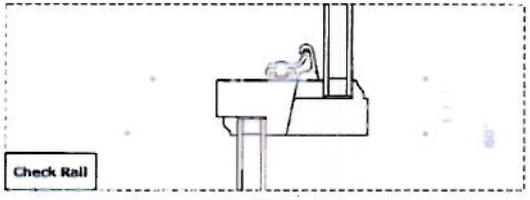
VINTAGE WOODWORKS

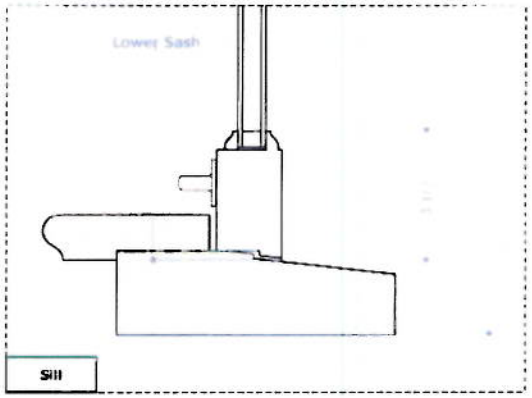


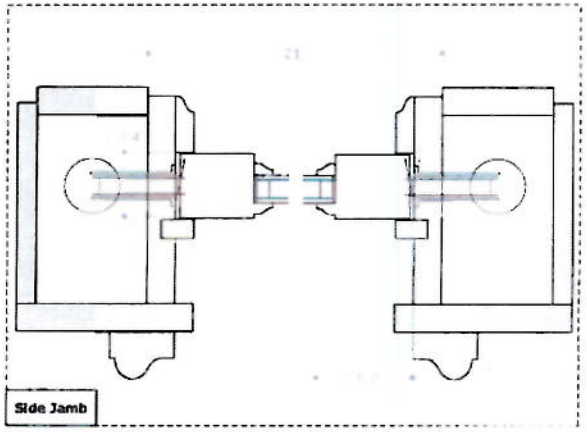












Sash Replacement - Box + 4" Jamb
SR - Box + 4"

Job #		Unit #	D	Qty	20

Job Details

Name	JAWL PROPERTIES - Karen Jawl
Location	Belmont, Victoria
Email / Phone	karen.jawl@jawlproperties.com
Sales Contact	Keri

Glass Specifications

	Thermal
Glass Thickness	4 mm ½" Grey SuperSpacer Argon + Solarban 60 #3 4 mm
Glass Type	Annealed
Glass Opacity	Clear

Opening Details

Fixed Upper Sash	Open Lower Sash

Horn Details

Horn B	Length: 3 ½"

Finishing Details

Priming	In / Out	White
Finish Painting		By Heritage Green On Site

Hardware Details

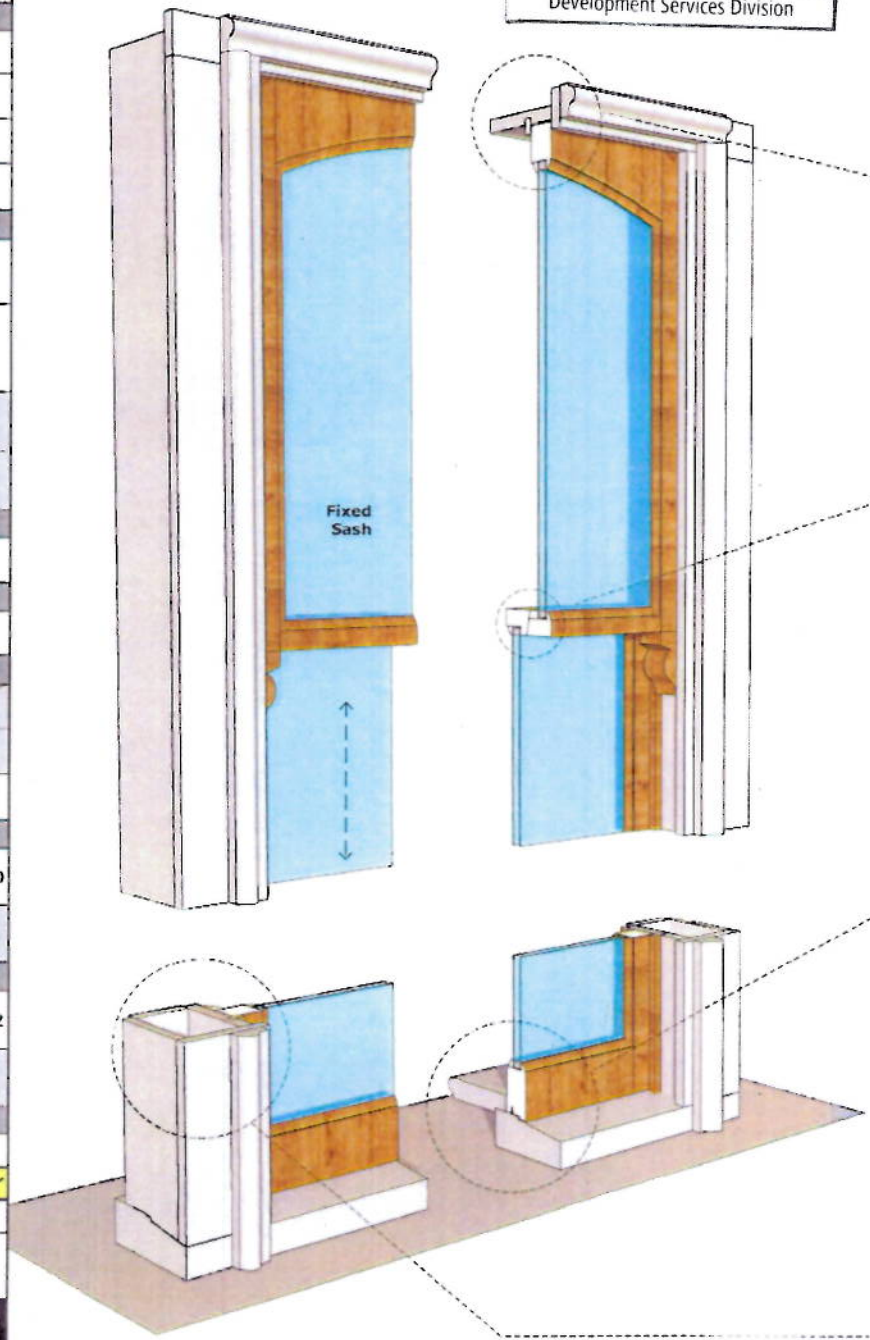
Sash Lock	#716 +860	D Handle	#270

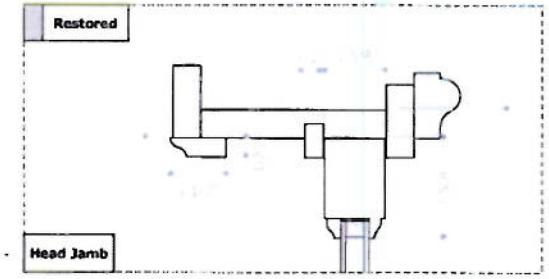
Weather Strip Details

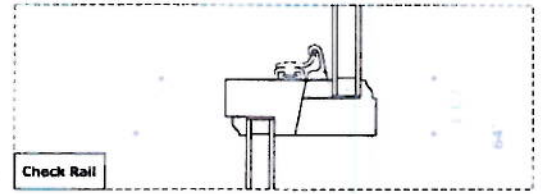
1 ⅛" Sprung Bronze	#222

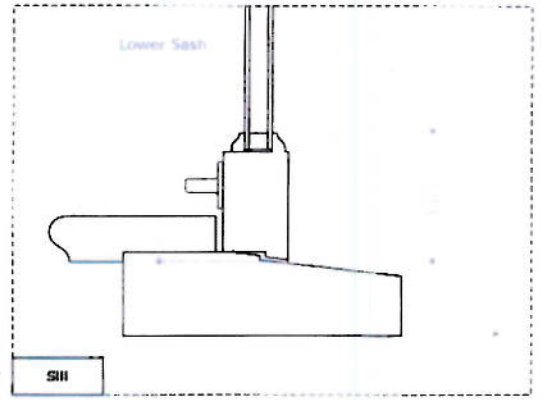
Notes	Order Progress
	QUOTE
	FOR APPROVAL ✓
	MANUFACTURE

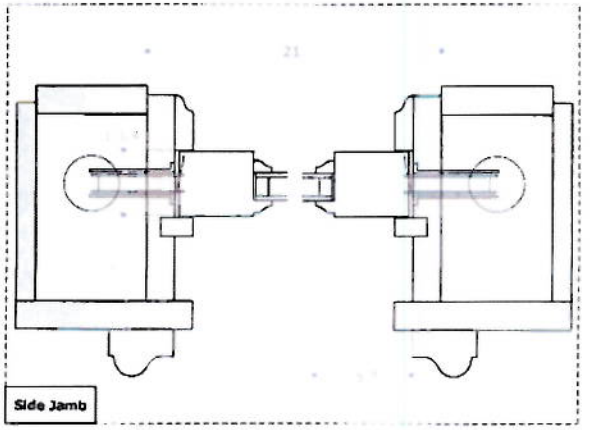
VINTAGE WOODWORKS











Sash Replacement - Box + 4" Jamb Size - Box + 4"

Job #		Unit #	E	Qty	10

Job Details

Name	JAWL PROPERTIES - Karen Jawl
Location	Belmont, Victoria
Email / Phone	karen.jawl@jawlproperties.com
Sales Contact	Keri

Glass Specifications

	Thermal
Glass Thickness	4 mm ½" Grey SuperSpacer Argon + Solarban 60 #3 4 mm
Glass Type	Annealed
Glass Opacity	Clear

Opening Details

Fixed

Horn Details

Horn B — Length: 3 ½"

Finishing Details

Priming	In / Out	White
Finish Painting		By Heritage Green On Site

Hardware Details

Weather Strip Details

Notes	Order Progress
	QUOTE
	FOR APPROVAL ✓
	MANUFACTURE

VINTAGE WOODWORKS