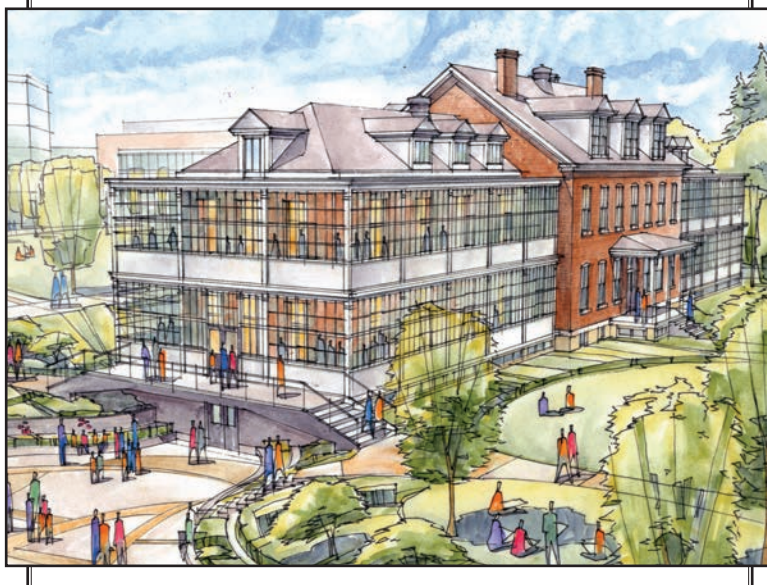


POST HOSPITAL CONCEPTUAL REUSE PLAN

Fort Vancouver National Site

April 8, 2013



CARLETON HART ARCHITECTURE PC
Architecture Planning & Development
322 nw 8th avenue, portland, oregon
t 503.243.2252 f 503.243.3261 carletonhart.com

PROJECT TEAM

FORT VANCOUVER NATIONAL TRUST

Elson Strahan, *President*

Mike True, *Chief Financial Officer,
Chief Operating Officer*

Kaare Hyde, *Facilities Manager*

CITY OF VANCOUVER

Tim Haldeman, *Director of Facilities*

Jan Bader, *Program & Policy Development*

DESIGN TEAM

CARLETON HART ARCHITECTURE

Brian Carleton, *Principal-in-Charge*

Paul Falsetto, *Project Manager*

LSW ARCHITECTURE

Casey Wyckoff, *Principal-in-Charge*

Esther Cho Liu, *Project Manager*

T.M. RIPPEY CONSULTING ENGINEERS

Doug Gannett, *Structural Engineer*

MKE & ASSOCIATES

Rick Duse, *Mechanical Engineer*

Hank Barleen, *Electrical Engineer*

ARCHITECTURAL COST CONSULTANTS

Stan Pszczolkowski, *Principal*

Terry Walton, *Estimator*

CONTENTS

1.0 EXECUTIVE SUMMARY

- Overview 1.1
- Findings and Directions 1.1
- Next Steps 1.2

2.0 PROJECT DESCRIPTION & CONSIDERATIONS

- Background 2.1
- Work Scope 2.1
- Previous Studies and Project Research 2.2
- Regulatory Issues 2.3

3.0 ASSESSMENT – POST HOSPITAL #614

- Background 3.1
- Hazardous Materials Abatement 3.3
- Architecture Assessment 3.3
- Structural Assessment 3.16
- Mechanical/Electrical/Plumbing Assessment 3.18

4.0 VISION | CONCEPTUAL DESIGN | COSTING

- Community Visioning and Building Program 4.1
- Conceptual Design, Scope, and Cost Estimate 4.2

APPENDIX – *provided as a separate document*

- FVNT Post Hospital Symposium Summary Report
LSW Architecture, June 2012
42 pages

LIMITATIONS AND USE

STATEMENT OF LIMITATIONS

Information used to develop the assessments and conclusions contained in this report has been provided by the Owner, ascertained through interviews with management and maintenance staff, and gathered through visual inspection of the project site and building. On-site inspections were limited to features that are readily visible, accessible and discernible to the assessor's eye. No materials testing or probing was done. Conclusions were drawn only from obtainable data, and sometimes required assumptions. These assumptions may not be verifiable without additional expense or destruction of materials. This report is unable to address all possible deficiencies, and some areas noted may require additional investigation and more detailed analysis to fully understand the scope of rehabilitation required.

This report is based upon on-site conditions observed and accessible at the time of inspection only. Inspection of hidden or inaccessible areas is not included as part of the assessment, unless specifically noted. This report does not imply any warranty of the site or improvements. Detailed costs of recommended improvements are typically estimated by the Owner's Contractor.

USE OF REPORT

This report has been prepared for the sole use of the party(ies) listed as members of the project team for this report. Use by any other party(ies) constitutes use without permission and no reliance shall be assumed.

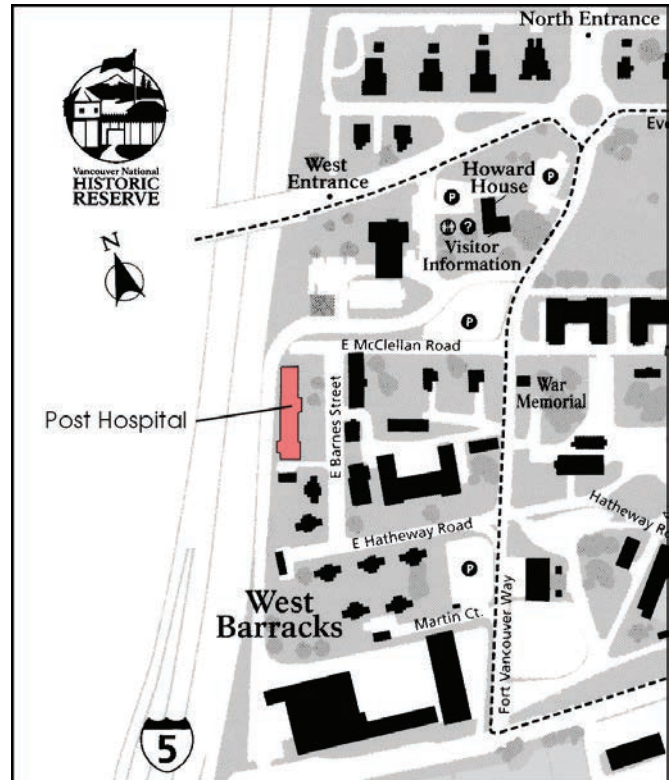
1.0 EXECUTIVE SUMMARY

OVERVIEW

The Fort Vancouver National Trust (“Trust”) commissioned Carleton Hart Architecture (“CHA”) to lead an assessment and conceptual design for the Post Hospital complex. The Trust, which manages numerous structures within the Fort Vancouver National Site, and the City of Vancouver (“City”), which owns the buildings in the West Barracks, seek to understand the design direction and associated work scope of an adaptive reuse strategy for the Post Hospital.

The initial stage of this study was the exploration of the architectural, structural and systems needs of the building, which were coalesced into an assessment report. The second stage was to organize and conduct a “Community Symposium”, which convened community members with the goal of developing a vision and use for the building. A conceptual design was generated based on this vision for the third stage of work, which addressing the rehabilitation needs of the building. Finally, a cost estimate was developed for the renovation work scope as designed and defined.

CHA’s architectural partner on this project was the Vancouver firm of LSW Architecture, who orchestrated the Community Symposium and collaborated on the design concept. Engineering services was provided by TM Rippey for structural engineering work, and MKE for mechanical, electrical and plumbing engineering services. Architectural Cost Consultants generated the conceptual construction cost estimate.



The Post Hospital and neighboring West Barracks buildings.
(map from the Fort Vancouver National Trust)

FINDINGS AND DIRECTIONS

The Post Hospital has remained mostly unoccupied since its transfer from the US Army to the City, and the effects of this extensive vacancy are starting to become evident. The building is kept locked and protected from intrusion, and has been alarmed for security and fire. Most all of the building systems (mechanical, electrical, plumbing) are in need of complete overhaul, and structural work will be required with any major renovation. On a more positive note, the building appears fundamentally sound in its base condition, and would accept renovation work and reuse quite capably.

Hazardous materials abatement was never undertaken at the Post Hospital by the Army, and this effort will add significant cost to the renovation work. There is a beneficial side to this: the aggressive abatement work seen at other West Barracks buildings was not carried out here, resulting in a higher level of material condition and overall historic integrity.



Aerial of the Post Hospital, with names designations for its constituent elements used throughout this report.

NEXT STEPS

In comparison to other West Barracks structures, the Post Hospital presents a unique challenge based on its classification as an unreinforced masonry building. A major seismic upgrade to this building will generate a significant cost multiplier yet to be seen in the West Barracks. The use of shotcrete – a common method of structural upgrade through the application of concrete to brick walls – can have a detrimental effect on historic fabric. The seismic work on the Post Hospital can be complex and intrusive, but will greatly benefit occupant safety and the long term durability of the building.



Post Hospital as it might look when viewed across the proposed Community Connector.

An issue to be considered during any renovation work on the Post Hospital is that of the proposed Columbia River Crossing project (“CRC”). The CRC could prove disruptive through its actual construction, and even through the proposed mitigation efforts. As part of this process, the required expansion of Interstate 5 comes perilously close to the building, and will need to be monitored closely for any damaging effects. The lid over the Interstate, coined the “Vancouver Community Connector”, provides mitigation for the anticipated increase in noise and air pollution, but results in a tall wall constructed immediately adjacent to the building’s west face. The advantages provided by the lid are noteworthy and worthwhile, and likely enough to offset the resulting wall construction. This wall is mentioned only to encourage innovative design and engineering efforts to reduce its effect on the Post Hospital.

Another element of the Post Hospital Complex requiring deeper exploration is that of the Annex. Due to the initial construction of Interstate 5 in 1952, the Annex was relocated from its original position west of the Main Building to its current location south of the South Wing. In doing so, the Annex itself was retained, but the integrity of the Post Hospital composition was significantly compromised. This study explores a conceptual design in which the Annex is removed and the integrity of the original complex configuration is restored.

Based on its location adjacent to Interstate 5 and within direct view of thousands of daily commuters, the Post Hospital is easily the most visible historic structure within the West Barracks. If the Community Connector is built as intended, the Post Hospital will then enfront what is sure to be a popular new space. It will also become a milestone destination in the route between the downtown core and the West Barracks. Renovation of the Post Hospital in advance of, or in coordination with the completion of the CRC project, would highlight its role as a prominent gateway element into the Fort Vancouver Historic Site.

The adaptive reuse of the Post Hospital into an arts center will instantly set a tone and personality to this portion of the West Barracks. It would provide amenities useful to surrounding buildings, such as a café. Those surrounding buildings could also provide support uses for the Post Hospital, like artist housing at the adjacent Infantry Barracks. These types of synergistic relationships that bind together viable uses with adjoining buildings start to systematically form the DNA of a true, vibrant neighborhood. This is the ultimate goal of the West Barracks: the creation of a revitalized district rooted in history and made vibrant with new uses. The renovation and reuse of the Post Hospital would represent significant movement towards this goal.

It is anticipated that this report will provide all the information considered useful by the Trust and the City to begin charting the future of the Post Hospital. It should also assist the Trust in developing a strategy for grant writing and fundraising actions.

If funding is found for the Post Hospital’s rehabilitation, then next steps would include discussion with all historic review agencies to gain tentative approval on the proposed direction. The selected Architect and Engineering team would then proceed through the multiple phases of design, leading towards Contractor bidding, awarding, and final construction.



An art gallery within a renovated Post Hospital.

2.0 PROJECT DESCRIPTION & CONSIDERATIONS

BACKGROUND

The West Barracks, home to the Post Hospital, encompasses approximately 15 acres and is bounded by Interstate 5 to the west, McClellan Road to the north, Fort Vancouver Way to the east, and 5th Street to the south. The site is comprised of 16 buildings containing 132,211 square feet of space.

In 1999 the US Army exceded this property, formally transferring ownership to the City of Vancouver in the mid-2000s. In 2004, the site was listed in the National Register of Historic Places as part of Vancouver National Historic Reserve Historic District. The City commissioned civil engineering work in the West Barracks, managed by OTAK and implemented between 2005 and 2007.

Since becoming owners, the City has engaged the Fort Vancouver National Trust – the official non-profit partner at the Reserve – in a formal partnership to redevelop the West Barracks. Through a master agreement with the City, the Trust leases and manages buildings throughout the West Barracks site. Occupied buildings in the West Barracks under Trust management currently include the Red Cross Building, the Mess Hall, the Artillery Barracks, seven NCO Duplexes, and two houses.

Potential site uses, as defined in the 2002 West Vancouver Barracks Reuse Plan and adopted by the Vancouver City Council, include education, arts, and hospitality, with some office and residential use. These

uses all coordinate well with the projected use of the Post Hospital as an arts center.

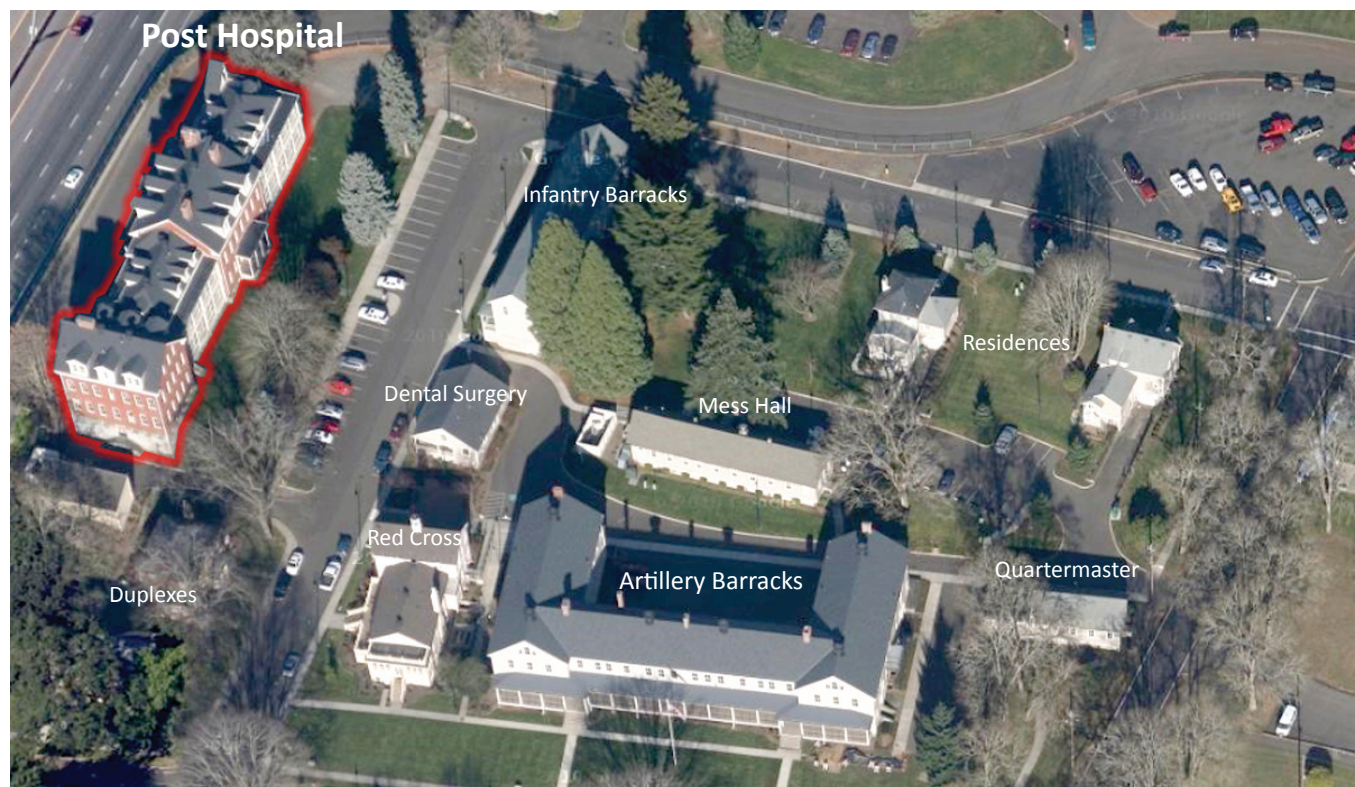
The 2006 Long Range Plan prepared by the Trust and the City mentions the potential redevelopment of the Vancouver Police Department headquarters into a performing arts center. The addition of this type of facility, in conjunction with a renovated Post Hospital, would transform the West Barracks into a true regional arts and entertainment center.

WORK SCOPE

The goal of this project was to assess the current condition of the Post Hospital, document its deficiencies, produce a vision and programmatic use developed through a community process, generate a conceptual design based upon that direction, and prepare a conceptual cost estimate for rehabilitation work.

Work commenced in the spring of 2012 with investigations into the building's condition. The Community Symposium took place on May 17th, with an open house on May 29th to present Symposium products.

Conceptual design continued through the summer months, followed by a construction cost estimate. A final presentation of design and costs was given to the FVNT Properties Committee in mid-September.



Aerial of the West Barracks

PREVIOUS STUDIES AND PROJECT RESEARCH

Over the years a number of assessment reports on West Barracks buildings have been produced, much of which was used as reference material for this report. It was not the intent of this study to duplicate the efforts of those more involved and detailed reports, but instead to update current conditions to best inform conceptual layouts and rehabilitation strategies.

The studies available for use on this report included the following:

- *Post Hospital Condition Assessment*
October 1999
Author unknown
- *West Vancouver Barracks Reuse Plan*
August 2002
E.D. Hovee & Company, author
- *Historic Structures Report for Vancouver Barracks - West Barracks*
November 15, 2002
Leavengood Architects, author
- *Historic Structures Report for the West Barracks*
December 27, 2003
Ward Tonsfeldt, author
- *Summary Closure Report Hazardous Materials Abatement – Vancouver Barracks*
December 10, 2004
US Army Corps of Engineers, Seattle District, author
- *National Register of Historic Places Nomination – Vancouver National Historic Reserve*
July 20, 2004
National Park Service, author
- *Long-Range Interpretive Plan – Vancouver National Historic Reserve*
April, 2004
National Park Service, author
- *Cultural Landscape Report – Vancouver National Historic Reserve*
October, 2005
Jones & Jones Architects and Landscape Architects, Ltd., author.
- *Long Range Plan*
August, 2006
Vancouver National Historic Reserve Long Range Planning Committee, author
- *Preliminary Seismic Assessment and Construction Cost Estimate*
2005
James G. Pierson, Inc., Consulting Structural Engineers, author



Image, circa 1904, taken soon after construction.

- *Hazardous Materials Survey – Fort Vancouver Base Hospital*
April 20, 2006
Clayton Group Services, Inc., author
- *Post Hospital Envelope Assessment*
May 2008
Carleton Hart Architecture, author

Additional research at the Fort Vancouver National Site archives produced a number of early images, along with Quartermaster reports from the 1930s, and floor plans from 1950 and 1952. Also discovered was a very rare find – the original construction specifications.

Those specifications, titled *Material and Labor Required in the Construction of a Post Hospital at Vancouver Barracks, Washington, in Accordance with Plans Prepared in the Office of the Surgeon General, U.S. Army*, were originally located in the National Archives. The ten page document provides a unique understanding into the specific requirements the contractor was to provide in the construction of the building. Although it would need to be confirmed if actual construction closely followed these specifications, it remains useful to understand the design intent behind the building's constituent elements. This report will quote these specifications where appropriate, with the understanding that for certain items, verification might be required.



Image, circa 1910, showing the maturation of the landscaping.

REGULATORY ISSUES

LAND USE AND DEVELOPMENT

The Vancouver Municipal Code (VMC) has two sections that address development in the West Barracks. Title 20 (Land Use and Development) contains regulations to manage the community's growth, preserve natural resources, and encourage good design. The applicable section for the West Barracks is Section 20.640 – The Vancouver Central Park Plan District, which is divided into a number of sub districts. Section 20.640.040 addresses the Historic Reserve Conservation District – the location of the West Barracks – and lists a number of permitted uses, which includes some of the following:

- Household living and home occupations.
- General Offices (excluding Medical Office)
- Cultural Institutions (including museums and libraries)
- Art Studios and Galleries (excluding uses that involve hazardous processes or require outdoor storage)
- Eating and Drinking Establishments
- Sales-Oriented General Retail Stores (these uses can include on-premises production of retail products offered for sale at the site including but not limited to bakery, leather shop, or ceramics or wood-working studio, but excluding such a use that involves hazardous processes or requires outdoor storage)
- Personal Service General Retail
- Commercial Lodging
- Educational Facilities such as schools and institutions of higher education
- Recreation uses.
- Parades, special community events, air shows, car shows and similar public gatherings consistent with the city's Vancouver National Historic Reserve Special Events Policy

This range of uses would cover most all viable activities currently under consideration in the West Barracks, as well as those planned for the Post Hospital.



Brick and stone exterior materials

BUILDING CODE

Building Code

The current occupancy for the Post Hospital is understood to be 'I-2', which denotes a hospital use. An occupancy change is proposed for this project to that of a 'B' (Business) occupancy, which is the most appropriate category for the projected use of the building.

According to the Washington State Building Code (IBC 2009), a change from an 'I-2' to a 'B' occupancy is considered a transition to a less restrictive category (Table 1604.5). Section 3408.1 notes that a change to any category would trigger upgrades unless the building official approves otherwise. This is tempered further by 3409.1, which allows formally designated historic buildings to not have to conform if judged by the building official to not constitute a distinct life hazard. The building official having authority to make this call is located within the City of Vancouver's Community Development Department. Members of this department were engaged to provide their requirements for a Post Hospital renovation.

Sree Thirunagari, Building Official, and Jeri Newbold, Plans Examiner, toured the Post Hospital early in the process, and met later with the Architects to review the conceptual design. Based on these discussions, six areas were noted that the City would want to see addressed in any building upgrade project. They are:

Exiting

Providing clear and safe paths of egress through and out of the building. New fire stairs would improve the existing egress system.

Structural Upgrades

"Collapse Prevention" is the minimum seismic standard to be achieved. Both in-plane and out-of-plane forces are to be addressed at the masonry walls.

Fire Protection

The building will be required to have a full sprinkler system installed to NFPA 13 standards.

Smoke Detection and Mitigation

An early smoke detection system and control of smoke spread is required.

ADA Compliance

Accessibility is to be upgraded into and throughout the building, providing access to all public spaces.

Energy Efficiency Upgrades

A higher level of energy efficiency is to be provided through work on the building's exterior envelope (walls and roof) and the use of new energy efficient mechanical and electrical systems.

HISTORIC DESIGN REVIEW

The Trust convened a meeting to review the design concept for the Post Hospital with representatives from the Washington State Department of Archeology and Historic Preservation (DAHP), and the National Park Service (NPS). Nicholas Vann from DAHP and Hank Florence, an NPS Historical Architect, were joined by members of the Properties Committee for this meeting and building tour.

At this meeting, Mr. Vann mentioned that involved seismic upgrade work would be considered an “adverse affect”, principally because of the proposed use of shotcrete. In particular, the use of shotcrete at the inside walls of the North and South Wings could affect some of the character defining features, such as the radius corners and sloped window sills. Other seismic strategies were discussed for application at these locations.

It was mentioned that the proposed removal of the Annex would also constitute an adverse affect. Mr. Vann mentioned that he would not be able to support the removal, but he could not deny it if it was to occur. Mitigation efforts would likely need to be prepared and accepted as part of the Annex’s demolition.



Representatives from the DAHP, NPS, and the Trust tour the Post Hospital

3.0 ASSESSMENT – POST HOSPITAL #614

BACKGROUND

GENERAL BUILDING INFORMATION

Name: Post Hospital #614
Location: 700 East Barnes Road
Date of Construction: 1904
Uses: hospital, meetings, currently used by Trust maintenance
Style: Colonial Revival (NRN)
Construction: unreinforced masonry: brick with a stone foundation
Configuration: Comprised of four constituent elements - “Main Building” flanked by two wings, “North Wing” and “South Wing”, with the “Annex” relocated in 1952 and attached to the South Wing.

Footprint: 10,677 square feet
Size: 2 and 3 stories + basement – 37,439 gross square feet. Areas for each individual element provided below. Floor-to-ceiling heights are taken at the Main Building, and similar elsewhere.

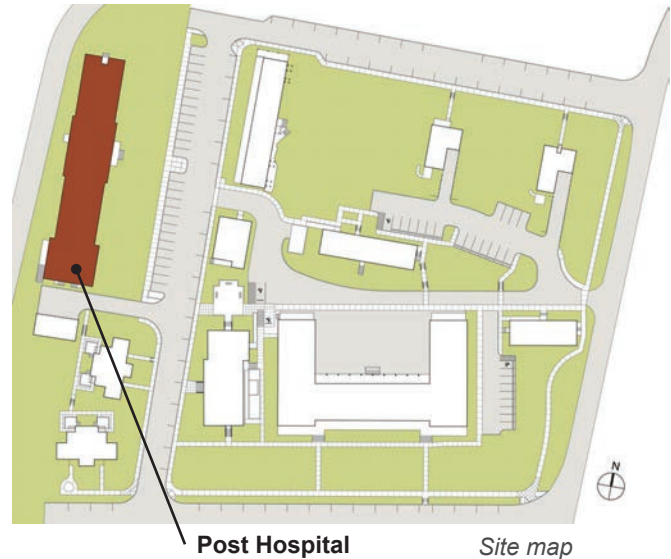
Main Building Basement 2,942 (ceiling 9'-0")
 1st Floor 2,942 (ceiling 11'-11")
 2nd Floor 2,942 (ceiling 11'-11")
 3rd Floor 2,624 (ceiling 10'-9")
total: 11,450

South & North Wing (combined areas)
 Basement 3,366
 1st Floor 5,460
 2nd Floor 5,460
 3rd Floor 2,842
total: 17,128

Annex Basement 2,275
 1st Floor 2,275
 2nd Floor 2,275
 3rd Floor 2,036
total: 8,861

Occupancy Type: 'I-2' – Hospital (based on initial use)

Historic Status: Contributing Building within the National Historic District.



The east facade of the Main Building.

TIMELINE OF MAJOR EVENTS

[based on the Tonsfeld Historic Structures Report, 2003, with recent additions]

- 1904** – Construction completed for a hospital with capacity of 48 patient beds. Reported cost of \$95,377, and included hot water and electricity.
- 1905** – Operating room remodeled.
- 1930s (early)** – Porch at the South Wing enclosed.
- 1935** – New steam heating plant installed, along with plumbing and electrical fixtures.

1936 – Construction Completion Report for Vancouver Barracks, records the following:

- The open porch at the North Wing was enclosed to provide additional space for patients. 148 windows and three entry doors were installed as part of this project.
- Tin roofs painted, exterior woodwork painted, remainder of outside brick painted.
- Installed light fixtures and lavatories.

1938 – Repair of heating plant, and general repainting.

1939 – New steam boiler and hot water generator. Conversion of storerooms into ten rooms and two corridors, including new examination and treatment rooms, and a pharmacy.

1951 – Interior of building painted.

1952 – Due to construction of Interstate 5, the Annex was relocated to a new site south of the South Wing.

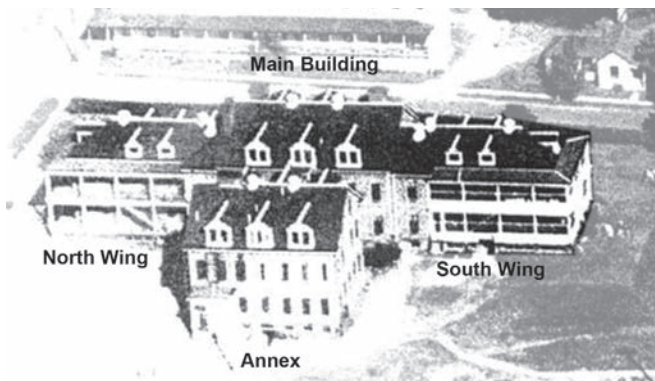
1964 – Exterior of building painted.

2004 – Building turned over from the US Army to the City of Vancouver.

ERA OF SIGNIFICANCE

Post Hospital: 1900–1919 (Historic Structures Report)

West Barracks Campus: 1849–1946 (National Register Nomination)



1934 aerial view, with the Annex shown in its original location.

CHARACTER-DEFINING FEATURES

[from Tonsfeld Historic Structures Report, 2003]

Exterior Character-Defining Features

- Building form, shape and massing, including a main rectangular building and two flanking wings with enclosed porches.
- Gable roof with louvered ventilator and boxed eave cornices.
- Gable roof, windowed dormers with pediments, corbelled top chimneys, metal ventilators.

- Exterior brick in a running bond configuration, wood siding, louvered vents under windows.
- Window and doors – windows include the 2/2 double-hung configuration, stone sills, arched brick lintels.
- Enclosed sun porches with chamfered wood posts, tongue-and-groove wood flooring, shed roof.
- Foundation elements – wood and iron mesh foundation skirt, rock-faced stone.

Exterior Features Less Sensitive to Alteration

- Location of Annex at south elevation.
- Annex features – bricked-in windows, concrete and brickwork at foundation.

Interior Character-Defining Features

- Original and intact floor plan, room volumes and proportions.
- Original wood stairs.
- Original finishes, including pressed tin ceilings, wood floors, exposed brick, trims and moldings.
- Interior doors and relights.
- Sloped window sills and radius corners in patient wards.
- Decorative metal radiators, fireplace.

Interior Features Less Sensitive to Alteration

- Wood basement stairs.
- Linoleum flooring.
- Fire doors and walls constructed to address life safety concerns.

BUILDING INTEGRITY

The Post Hospital has retained a high level of both its materials integrity and original layout. It clearly displays its original function as a building designed and occupied as an Army hospital.



Likely arrangement of the patient wards in the Hospital.

HAZARDOUS MATERIALS ABATEMENT

The Post Hospital did not receive hazardous materials abatement by the US Army due to lack of funds. The most recent hazardous materials report was prepared in 2006 for the City of Vancouver by the Clayton Group Services, Inc. titled “Hazardous Materials Survey – Fort Vancouver Base Hospital” (dated 4/20/06). According to this report, both asbestos and lead were found in the building, though it was admitted that the “sampling of known materials containing asbestos was kept to a minimum”. The hazardous materials found included the following descriptions, excerpted from report:

Asbestos Containing Materials (ACM)

(includes those materials that contain over 1% asbestos)

- asbestos pipe wrap
- floor tile and/or mastic: tan floor tile (12x12s) at the first and second floors; and red and black floor tiles (9x9s), principally in the basement; sheet vinyl in bathrooms; cove base.
- fluorescent light fixtures

Lead Paint

- highest lead content was in the exterior paint
- lead paint was also found on selective interior building components and radiators

Fluorescent Light Fixtures

- light ballasts containing PCB
- florescent light tubes containing mercury

It is assumed that this represents only a partial listing of all hazardous materials in the building. As part of this study, Steve Dilling from PBS Environmental was invited to tour the building and provide comments regarding the hazardous materials situation. Mr. Dilling warned about conditions such as lead paint on the windows, doors, tin ceilings, and the mortar wash. The perimeter of the building will need to be tested for the spread of lead dust contamination in the dirt. Mr. Dilling suggested testing for asbestos at the window glazing, the stair treads and risers, and plasterwork. The (likely) asbestos mastic applied over the wood floors will be very difficult to remove, and could require the entire removal of the finished wood flooring.

Mr. Dilling also conveyed that it might not be cost affective to remove all lead paint on building surfaces as part of the hazardous materials abatement. Only loose and peeling paint would be abated and stabilized unless directed to fully abate. It is likely that some building components coated with lead paint will remain in this building after renovation.

Hazardous materials abatement work will be a large portion of any rehabilitation project at the Post Hospital.

Combining abatement work with general demolition would achieve an economy of effort and cost. It would also allow this work to be phased earlier, if revenues can be allocated for this work.



Layers of flooring, some of which are anticipated to contain hazardous materials.

ARCHITECTURAL ASSESSMENT

SITE ASSESSMENT

Description

The Post Hospital sits on a north-south ridge that is relatively flat along its length. This ridge achieves equal level with Barnes Road at the north end. As the road slopes to the south, the site eventually reengages Barnes by manner of a severe grade change.

At the eastern portion of the site, the landscape is comprised of mowed lawn extending from sidewalk to building foundation. The site slopes eastward down to a swale before it gently rises again up to sidewalk level. A mixture of evergreen and deciduous trees have been planted within this swale zone. A curb cut at the north end of the site leads from the roadway to a graveled



The east yard, looking north.



Aerial of site.

parking area. There is no paved walkway connection between the building's main entry and the sidewalk along Barnes Road.

The western edge of the site is comprised of lawn, bare ground, and miscellaneous brambles. A discontinuous concrete pathway leads to stairs into the South Wing. There are mature deciduous trees at each end of this edge of the site. An access road borders the immediate west end of the site, segregated by a chain link fence. Beyond this road are the sunken lanes of Interstate 5. Auto emissions and sound from the freeway strongly characterize this portion of the site.

An image looking southwest and taken soon after the building was complete shows limited vegetation, and the start of a hedgerow. A pre-1930s image (before the porches were enclosed) looking northeast across the site shows a mature hedgerow, along with miscellaneous bushes and vine-like vegetation growing up the building face. An aerial of the Post Hospital and environs from 1934 and looking due east shows a rather bare site, with grass dirt patches as the primary landscaping element.

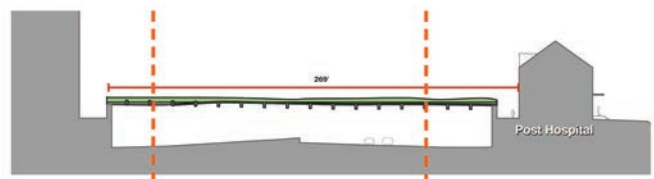
Condition

The site landscape at the eastern yard is in good condition and well maintained. The western yard is unmaintained, but relatively clear of debris.

The biggest potential change to the site is the anticipated construction work for the proposed Columbia River Crossing project (CRC). A new Interstate 5 bridge over the river will require more lanes of traffic, and require the freeway to expand towards the Post Hospital. In fact, it has been mentioned in a published document that the new roadbed will be as close as 6-inches from the northwest corner of the Post Hospital, angling away as it moves southward, to a distance of 16-feet from the southwest corner. It is not known where the point of measurement is taken for the 6-inch dimension. To be certain, the footings for the brick walls spread outwards from the face of wall, and must be taken into account to ensure stability during any adjacent construction work.

Atop the freeway expansion is to be a concrete lid, helping to mitigate against the loss of land, the increase in road noise, and air pollution concerns. The lid is to extend southward from Evergreen Boulevard to the south end of the Post Hospital, and across to 8th Street at the western edge. The final design of the lid is undecided this time, and will be governed in part by the determined height of the bridge deck and the type and amount of landscaping to be accommodated. This last element will help determine the type of lid structure employed. The deeper structure initially proposed by the CRC would result in a wall as high as ten-feet up against the Hospital, approximately halfway up its first floor. A more innovative type of structure resulting in a shallower depth will lessen the intrusion of this feature.

The CRC work will likely require the removal of the two mature trees at the north and south end of the Post Hospital site.



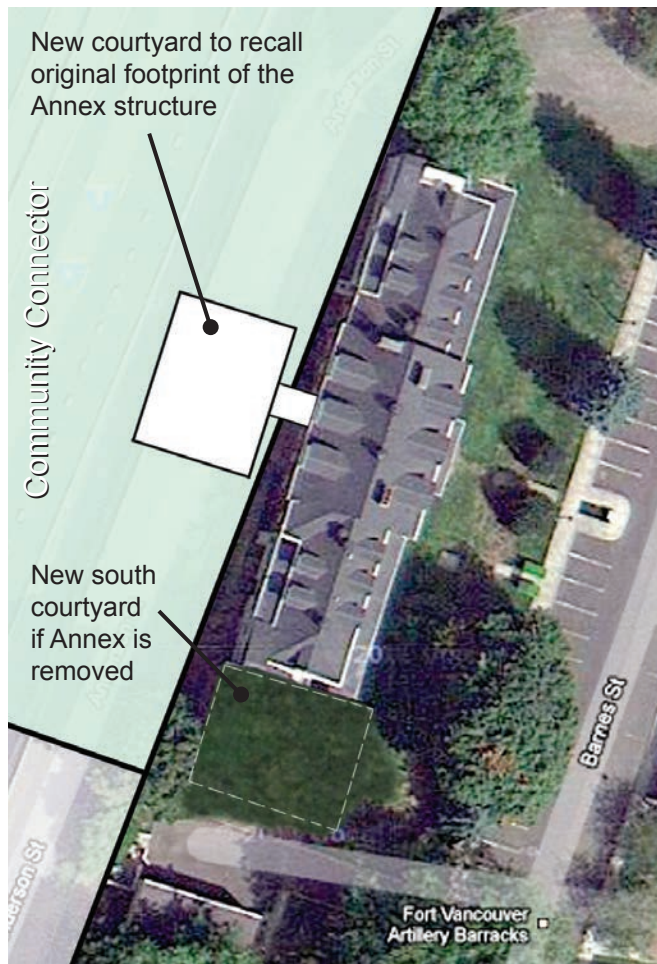
Vancouver Community Connector, plan and section.

Proposed Action

All site work conducted needs to be mindful of below grade resources. The 2003 report titled “Archeological Survey of the West Barracks Area” shows the construction fill at the southern half of the site to be at depths of 2 feet and above. The northern half of the site contains fill depths of 0.5–1.9 feet. If possible, it would be good to conduct any utility work in the southern portion of the site, to minimize disruption of undisturbed soil.

New concrete pathways, stairs, and ramps will be constructed from building exits to nearby right-of-ways. Adjacent grades should be sloped away from the building face, to address moisture intrusion. All storm sewer pipes and connections are to be camera scoped to confirm condition and adequate capacity, and all downspouts securely connected with cleanouts.

The landscaping strategy should be based on the 2005 Cultural Landscape Report for the eastern edge of the site. New plazas and courtyards should be explored for the north and south ends. The west landscape will be the most effected, and should be designed to survive with limited available daylight as a result of the proposed freeway lid.



Aerial showing what might be gained from the removal of the Annex - a new south courtyard that could either be softscaped (as shown) or hardscaped.

There is the potential to integrate the new lid design and layout into the renovated Post Hospital. The former and original footprint of the Annex (prior to its 1952 relocation) could be recalled as an “homage” to its original location. A direct connection from the lid to the Hospital could be established, and conducted in a manner that recalls the original two-story connection between the Annex and the Main building (see image, lower left).

EXTERIOR ASSESSMENT

Foundation

Description

Main Building: The stone foundation wall appears to be of Tenino sandstone, finished with a rock-faced manner and laid in an ashlar configuration. The mortar joints are beaded. The watertable is comprised of larger sections of the stone, which span across the basement openings. The window lug sills are of stone as well, and the basement stone sills are set just above finished grade. The east porch has a pier system similar to that of the Wings, and is accessed by a concrete stair.

Wings: Stone piers are finished similar to the Main Building. The gaps between the piers are infilled with metal mesh and wood framing, with three openings per bay.

Annex: As a result of its relocation, the Annex foundation is comprised of a variety of materials, both original and contemporary. The stone belt course remains, but the original stone foundation below appears sporadically, and for only a few courses. Brick was used as an infill material between the basement windows, plugging the holes created for the insertion of steel beams used in the moving process. A new foundation of concrete masonry units was created to support the building at its new location, and finished on the exterior with a parge coat. A cast-in-place concrete stair was added to the south end of the building.

The original construction specifications required concrete footings under all walls, piers, and chimneys, with predetermined (and currently unknown) depths and widths. Drainage tile was to be laid at the outside of the basement wall footings. To further control moisture migration, cement plaster was to be applied to the outside of the exterior walls from the footing up



Damage to brick and stone due to disconnected downspout.

to the surface of the ground. Simple excavation would confirm its presence.

Condition

The Tenino sandstone used principally at the Main Building and the Wings is notorious for deteriorating at a rate quicker than other stone material. This is especially true when consistent moisture is introduced, such as at downspout locations. Biological growth occurs at these locations and at the top of the watertable, adding to the potential for deterioration. With the rather delicate nature of the sandstone, these localized issues should be addressed. Overall, the stone foundations appear to be in fair condition. The stone window sills appear to be in fair-to-good condition, with occasional visible cracks, and the spalling of corners.

The variety of foundation materials employed at the Annex provide an inconsistent look to this portion of the Post Hospital complex. The parge coat has spalled off at the lower corner of the east elevation, exposing the concrete block structure. The window sills display a greater level of damage. Stone issues similar to that of the Main Building are also found.

Proposed Action

The most immediate action is to protect the foundation from moisture damage. Downspouts are to be properly reinstalled to keep stormwater away from the stone. All biological growth is to be carefully removed without damaging the substrate underneath. Any severely damaged stone is to receive a consolidation process that solidifies the stone in a visually unobtrusive manner.

As part of the reconstruction of the North and South Wing porches, the stone piers could be relieved of their load bearing function, and reapplied as a veneer over a new substructure.

At the Annex, all areas of spalled parge coating are to be patched, and all organic growth removed.



Southwest corner of the Annex.

Exterior Walls

Description

Main Building: The exterior walls are of brick laid in a running bond pattern, with no header courses on the outer wythe of brick. This suggests that the exterior brick is a veneer, and tied back to the inner brick wall by one of a few strategies. The original specifications call for the brick (and in particular the exterior wythe) to be bonded every fifth course with either blind headers or Morse steel wall ties. A confirming investigation is needed to determine which bonding strategy was actually incorporated.

Common red brick was used, which is assumed to have been manufactured by Vancouver's Hidden Brick Company. Brick sizes are typically 7-7/8" long x 3-3/4" wide x 2-1/4" tall. The walls are 15-3/4" thick, and the removal of a door jamb at the South Wing provided a view into its composition. Three of the four wythes are laid up in a normal manner, with an inner wythe laid on its side in a "rowlock stretcher" arrangement. This atypical wythe of brick is located second from the inside, and the rationale for its orientation is unknown.

The mortar joints originally had a beaded profile, much of which is no longer visible. The original specifications call for an exterior mortar mix of three parts lime putty, five parts sand, and two and a half parts red mortar color. Apparently the red mortar was to match the brick color, creating a more homogenous appearing wall.



Northwest corner of the Annex.



Close up of brick at the Main Building, showing the compromised weatherface due likely to sandblasting.

Years after its construction, a red mortar wash was applied over all brick walls. These walls appear to have been sandblasted to clean off surface and address the probable remnants from the vegetation that grew on the walls. Unfortunately, this has compromised the weatherface of the brick. Recent repointing work appears to have used a cement based mortar, which is much harder than the original mortar and inappropriate for this application.

The outlines of previous porches and stairs are visible on the walls, especially at the west elevation where there was an original two story connector to the Annex, since removed as part of the 1952 Annex relocation.

Through-wall vents exist at a number of windows, located just under the window sills. They were designed to provide fresh air into the interior rooms, with the outside air preheated by the radiators located immediately inside.

Flat brick arches span across each window head, comprise of three rows of rowlock bricks.

Wings: The brick walls are painted, which was applied over the red mortar wash.

Annex: The annex shows a greater level of repointing and brick repair than the other buildings in the complex. This is likely due to its 1952 relocation, an action that is taxing to an unreinforced masonry building of this size. These cracks occurred in high stress locations, such as window heads and sills, and their pattern is obvious through the repair work incorporating newer brick and unpainted mortar joints. The unpainted nature of the mortar joints suggests that the red mortar wash was applied sometime previous to 1952.

The location of former porches and stairs are evident via a paint shadow on the west elevation. At the north elevation where the Annex connects to the South Wing, a number of window openings have been infilled.



South Wing wall, with white paint applied over red mortar wash.

Condition

Overall, the brick walls at the Main Building are in fair condition. There are various holes and chips in the brick, but no obvious crack patterns suggestive of excessive settling. Open mortar joints occur mainly near the downspout locations. There is some staining at the intersection where the east porch roof meets the wall. The greatest change to the brick was the sand blasting of the exterior face, and subsequent application of the red mortar wash.

At the North and South Wings, the white paint applied over the brick walls is peeling, and is pulling off the outer layer of mortar wash with it. Otherwise, these walls appear to be in fair condition, due in part to their protection from the elements.

The Annex brick walls show a greater level of damage, much of which has been patched. There are open mortar joint, again occurring near downspout locations.

Proposed Action

At the Main Building and the Annex, all mortar joints are to be repointed matching the original tooling, and using a mortar composition compatible to the vintage of the brick. Any locations where the cement-based mortar was installed is to be completely removed. All chips and holes are to be patched.

Removal of the red mortar wash is to be explored, but it is expected that this action would ultimately prove damaging to the brick. If it is determined that it cannot be removed, either the mortar wash is to remain as is, or a new coating applied over it, one that is highly vapor permeable.

All areas of cracking and spalling at the stone window sills are to be patched.

At the North and South Wings, the white paint is to be removed using the gentlest means possible, while being mindful of the possibility of lead. The walls are to be further examined and repointed, as required.

Entry Porch and Stairs

Description

The east entry porch of the Main Building acted as the main entrance into the entire Hospital complex. It is approximately 25'-6" x 8'-8", with a shallow hipped roof supported by four detached piers at the front and two attached piers at the back. The wood decking rests on wood joists, which in turn bear on stone piers. The wood and metal grate infill between the columns is similar to that of the galleries. Concrete stairs with five risers ascend up to the porch, flanked by pipe hand rails that terminate to decorative metal newel posts. Three horizontal pipe rails attach to the wood columns, enclosing the porch. The wood posts have chamfered corners and decorative capital and base trim, and support a wood entablature, behind which is a built-in gutter system. The gutters drain to downspouts located outside the two attached piers.

At the south elevation of the Annex, there is a double flight of concrete stairs leading into the basement.

The South Wing has wood entry porches at its east and west elevations, and one that descends into the basement at the west. The North Wing also has stairs at its west and south elevations. Most all stairs have a concrete bottom step. There is also the remnant of a landing at the location of the former connector between the Main Building and the Annex. Below it was an access opening into the boiler room, likely acting as a coal chute.

Condition

The east entry porch suffers from advanced deterioration at most all of its essential elements. The wood decking is in very poor condition, as well as the framing members beneath. The columns have areas of rot, as does the entablature system it supports. Though the roof was not accessible for viewing, water staining along the fascia prompts the assumption that it is not performing adequately. The pipe rails require reworking to comply with guardrail height and fall restraint requirements.



East porch, the formal entry into the Post Hospital.

All the other stairs into the building show signs of rot and even failure. These will likely be reconfigured as required by any renovation work on the complex.

Proposed Action

The east porch should be reconstructed in a manner that reuses as much historic fabric as is allowable. The new porch should be structurally sound, and address weather wear and long term durability. All pipe rails are to be made code compliant. As part of this reconstruction, the porch deck should be raised up to the height of the interior finished floor, for accessibility purposes. Also, a new ADA ramp connecting to this reconstructed porch should be explored.

All other porches should be reconstructed in a manner that addresses the original design aesthetic, and be detailed for longevity and code compliance.



Northwest corner of the North Wing.

North and South Wing Galleries

Description

The original design for the North and South Wings included open air porches (or verandas) that were used as part of the patient convalescence process, providing the healing effects of fresh air and daylight. At just over 6'-8" wide, they were broad enough for the placement of chairs or gurneys, and the ability to circulate around them. The defining features of the porches included the chamfered columns with trim at the heads and base, and a pipe railing similar to that seen at other West Barracks buildings. In the 1930s, it was decided to enclose these porches, primarily to use that area to increase patient capacity. The porch of the South Wing was enclosed first in the early part of that decade, followed by the enclosure of the North Wing porch in 1936. Today, both floors of both porches can be considered "galleries", and are aesthetic mirrors of each other in terms of materials and layout.

The exterior gallery walls are now comprised of infill materials between the wood columns, resulting in five bays on the long elevations, and three at the ends. Within each bay at wainscot height is a vertical grooved board with a 3-1/4" face, secured at its perimeter with trim elements. Capping it off is a horizontal board that acts as a sill for the window system above. The system is comprised of a collection of sashes, the outer ones with six lights each, and the middle ones with four lights. The middle sashes were the operable elements, sliding horizontally for ventilation.

The gallery floors are of tongue and groove wood decking running perpendicular to the exterior wall. The ceiling is of bead board, running in the same direction as the floor. There is an obvious slope to the floor used for the purpose of drainage when the porches were exposed to the elements. The floor elevation is set between four and six inches below the interior finished floor.

Stairs connecting the two gallery floors have been located at the west side of each wing. The stairs narrows the passage around them to a width below that which current code requires. These stairs also lack the code compliant handrail system.

Condition

The exterior walls of the galleries have settled noticeably, due possibly to the additional weight the original structural framing was not designed to accommodate. Various repairs over the years have accounted for this settling, shaving down woodwork and resetting glazing to match the slopes. These irregularities have created opportunities for moisture infiltration, and its ensuing damage.

The galleries are a key component in the building egress system, and are required to address all code requirements for circulation and accessibility. This presents an issue at the west stairways, which are too narrow. These stairs also reduce the width of passage along the porch to below what is required.



Northeast corner of the North Wing.



Interior condition of the North Wing porch.

Proposed Action

Due to the advanced state of degradation and importance as a circulation path, it is proposed that both galleries be completely rebuilt from foundation to roof. The framing system will need to be reconstructed to meet code requirements. As part of this work, the floor heights of the porches should be raised to match those of the interior floors.

A new enclosure system could be designed to either replicate the current window-wall arrangement, or return the pre-1930s open porch aesthetic, while maintaining weather protection. For instance, a glazing system could be designed with minimal framing that would maintain an open look, while keeping out moisture and reducing heat transference. The pipe rail would be returned, completing the look. If maintaining the post-1930s look with the galleries is desired, then a new wall and glazing system could be created to resemble the existing, but with better sound and thermal qualities and greater durability. New utilities should be located in the walls as well, such as power outlets.

The entire west staircase at the porches of both Wings should be removed, and the vertical communication between floors handled internally with the new fire stairs.



The east roofline.

Main Roof and Roof Elements

Description

The Post Hospital has a very animated roofscape, with a number of elements considered character defining. The principal roof form over the Main Building and Annex is a gable, with three gabled dormers on each side. A number of brick chimneys and metal ventilators penetrate the roof. The North and South Wings have a hipped roof that extends directly into the brick end walls of the Main Building. Each wing has three gabled dormers on the east slope, and two on the west, all of which are smaller in size than that of the larger buildings. Along with metal ventilators, the Wing roofs also have projections at the west slopes, acting as enclosures for the egress stairs.

The roofs are covered with asphalt shingles, which were applied within the last ten years. A metal flashing strip was placed under the ridge shingles. The dormers are mostly wood clad, with slate shingles at the side walls, with what appears to be metal flashing underneath. A built up roofing system was employed for the roofs of the Galleries, due to their lower slope.

The roofs drain into a built-in gutter system in a manner common to other West Barracks buildings, such as the Artillery Barracks. The gutters drain into 4" round downspouts and into a stormwater system.

Condition

There is evidence of past water infiltration at the top floor of the Main Building, visible at locations of fallen plaster corresponding to locations where dormers side walls meet the roof. Apparently the newer roof work has remedied this issue.

The area of highest concern is at the location of the built-in gutters, which appear to have not been included in the most recent re-roofing work. This gutter type is vulnerable to internal leaks and the rotting of structural members. The prime example of this can be found at the Artillery Barracks, where a recent re-roofing project exposed severe deterioration of the gutter framing system, requiring full replacement.

The downspouts or even the storm sewer line appear to be clogged, with rainwater backing up during a recent storm. The water escaping through the downspouts has caused damage to the adjacent wall materials.

Proposed Action

Even though this roof is fairly new, renovation work to the Post Hospital will require seismic upgrades, which necessitates the creation of a structural diaphragm at all roofs. Thus, all roofing materials would need to be removed to allow the insertion of a plywood decking. A well detailed new roofing system should address the water infiltration issues. This includes the proper insertion of flashing where walls intersect with roofs.

All built-in gutter locations should be carefully deconstructed to determine the extent of damage to the framing members, and repaired. Any opportunity to increase the capacity of the gutters should be explored. All storm sewer lines should be cleared of debris, and new downspouts installed.



Built-in gutter system of the South Wing and the Annex.

Openings – Windows

Description

The windows of the Main Building, Annex, and those within the brick walls of the two Wings are typically wood, double hung, single glazed, in a 2-over-2 pattern. They are set in openings with flat arches, with a curved trim board at the head. The windows in the dormers of the Main Building and Annex are 6-over-6 hung windows. The windows in the North and South Wings are side-by-side 4-light sashes. The windows of the two Galleries have been discussed in a previous section.

Condition

Overall, the windows are in fair condition. An item of concern is that these windows have likely retained their initial coat of lead paint, which could allow particles of lead to become friable through constant operation. It is also possible that the glazing compound could contain asbestos.

Proposed Action

The windows should be tested for lead paint and any asbestos containing materials. If lead paint is confirmed and the windows are to be operable as part of the ventilation strategy, then the sashes should be removed, stripped to bare wood, and repainted. It might be possible to encapsulate the glazing compound if it is found to contain asbestos. Windows are to be returned to their original locations, and adjusted to ensure ease of operation.

Another possible manner of addressing the hazardous material issue is to not use the windows for any required ventilation, and instead fix them closed. Internal storm sashes could also be added to provide additional thermal and sound insulation.

Finally, the windows originally had external shutters, and it should be considered to return these character-defining features back to the building.



Windows at the Main Building's west elevation. Visible are the sections of infilled wall from an early connection to the Annex.

Openings – Doors

Description

At the main entry off the east porch there are paired wood doors, each with glazed panel and two wood panels below. A 6-light transom is above the opening. These doors are chained locked for security reasons, and the status of their operation is unknown. Other exterior doors are either of a similar vintage and configuration, or much simpler and without glazing.

Condition

The doors that could be tested for operation appear to be in good condition.

Proposed Action

All doors are to be patched, painted, and receive new hardware for egress and ADA compliance.

INTERIOR ASSESSMENT

Floor Plan Layout

Description

The Post Hospital complex was originally composed of a central building for offices, administration and treatment rooms (the Main Building), which was flanked by two patient wings (the North and South Wings). Behind but connected by a two-story hallway was the Annex, a structure visually similar to the Main Building and providing support services such as food preparation. In 1952, this arrangement was changed with the relocation of the Annex to the south end of the South Wing.

The Main Building contains a double loaded corridor on all of its three floors and basement, with the corridor running north-south. Stacked, single-run stair within the central hallway connects all floors, though it has become enclosed in select locations over the years. The basement originally held service spaces like the boiler room, as well as what appears to be operation rooms. Tiled walls such that a gurney would be placed against suggest that use.

The North and South Wings are two-story mirror images of each other, and have retained much of that similarity. They are comprised of large rooms accessed from the Main Building by passing through a foyer flanked by a toilet room and service rooms. The large open rooms appear to be design to accommodate six beds to a side, separated by the radiators placed under the windows. A pair of doors provides an exit out the back of the space and onto the porch, allowing direct access to sun and air for patients.

The North Wing had its foyer removed, along with all walls to the former toilet and service rooms. The support columns and tin ceilings are all that remain from this original layout. Below the patient ward in the basement is a large open room, with its original function unknown.

The Annex contains double loaded corridors on all floors, with a stacked, central single-run staircase. Its hallway was originally oriented east-west, aligning with the two-story connector to the Main Building. After its relocation, this hallway now runs north-south, and connects to the south end of the South Wing. The room division on each upper floor includes a single large room to the south, and two or more rooms to the north. A toilet room is at the end of each hallway.

The existing layout of the basement and first floor.



Condition

Besides the reorientation of the Annex, the Post Hospital Complex retains, to a high degree, its original layout. When the Annex was relocated, it lost its original north porch. Its connection to the Main Building was also eliminated, which involved converting exterior doorways to windows, and enclosing the former hallways at the first and second floors.

Proposed Action

With its current combination of large and small rooms, the Post Hospital should easily accommodate a variety of new uses. In doing so, the existing original layout of the complex should be retained at the highest level possible, so it may continue to convey its original function as a military hospital. This will have to be coordinated with all current fire and life safety codes. The most challenging items to address would be the central stairs, which are not compliant as a path of egress through and out the building. The Annex stairs reduce the hallway to a width too narrow for easy passage. More about this is described in the following section.

Stairs

Description

Within the Main Building there is a single-run staircase located along the east wall of the central hallway. The staircases begin near the center of the hallway and rise northward, with 23 risers, each just under seven inches in height. The first floor staircase is open to the space

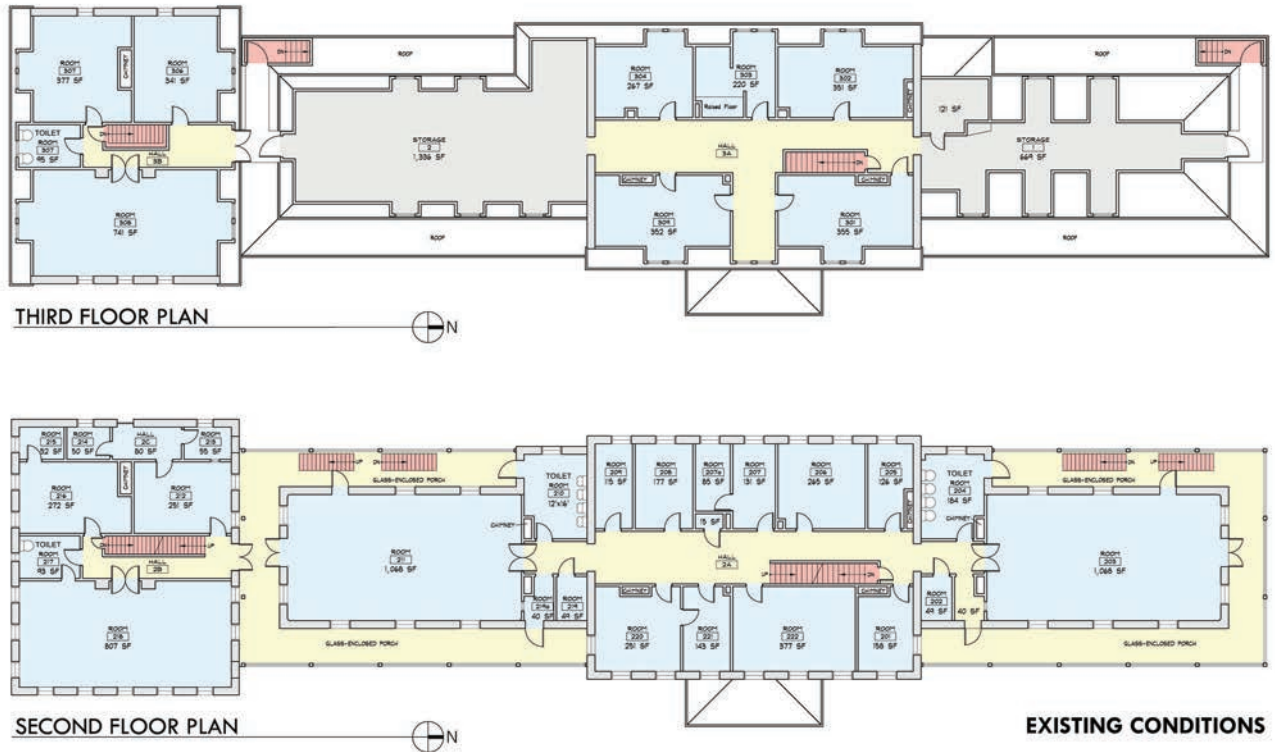
and is the most decorative with a wood newel post, handrail and pickets. The treads were originally wood, but have since been covered with a textured vinyl. The bottom tread extends beyond the newel post and into the hallway. There is a metal post connecting the second floor to the staircase about midspan, apparently for structural stability. The first floor stair was originally open to the second floor, but has subsequently been enclosed. This is true with all the other stairs within this stack.

The Annex stairway fills about half of the hallway in which it is located, and is comprised of wood members with the later addition of a vinyl covering. It has been enclosed at all levels, further confining the hallway space.



The open stair in the Main Building.

The existing layout of the second and third floors.



Condition

The first floor stairs in the Main Building are in good condition, with a number of the vinyl treads removed. Other stairs throughout the complex have had original wood elements removed as part of their enclosure.

The stacked stair configuration does not allow for a compliant path of egress, lacking continuous protection throughout the egress process. For example, from the third floor a person would have to exit the stair enclosure at each level and walk through the hallway to reenter the enclosed stair at the opposite end.

The Annex stairway has this same configuration and challenges, along with not providing the required 80-inch head height clearance below the stair above.

Proposed Action

The stair from the first to the second floor at the Main Building should be restored and fully opened between floors, retaining a character defining feature between the two principal floors. A code compliant handrail should be provided along the wall, and the proper guardrail around the opening. The remainder of the stair system should be removed, and a new code compliant fire stair created at another location that connects all floors and provides the necessary path of egress.

The entire Annex stairway should also be removed, and replaced with a new code compliant fire stair connecting all floors.



Porch stairway at second floor of the North Wing.



First floor hallway in Main Building, looking south.



Second floor room in South Wing.

Walls & Ceilings

Description

Exterior walls are composed of multi-wythe layers of brick, finished at the interior with an internal coating of a 3-layer plaster system. Window sills are sloped into the space, an original construction detail designed to minimize the collection of dust and germs. The wall corners in the patient wards are curved, also a method of reducing dust collection. Most partition walls are 2x6 rough sawn studs with plaster over wood lathe, and minimal detailing. The basement contains brick partition walls of two wythes thickness. Most all walls have a wood base, with a contemporary rubber base applied over them.

At a number of the remaining bathrooms, there is tile on the plumbing wall.

The ceilings at the first and second floors are of pressed tin, painted white. The third floor ceilings of the Main Building and Annex are of lathe and plaster. Most all ceilings have received surface mounted electrical conduit and contemporary fluorescent light fixtures.

Condition

All walls within the complex are in relatively good condition. There is peeling paint in select rooms, but with no apparent damage to the substrate underneath.

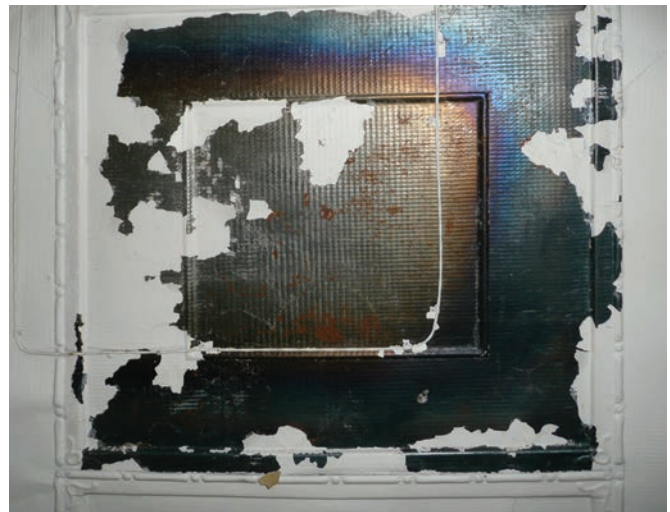
The ceiling conditions vary. The tin ceilings are in fair-to-good condition, with some panels hanging loose near the central stair. Paint has peeled in certain rooms, though no surface corrosion is evident.

Proposed Action

Retention of intact walls and ceilings should be a focus of any remodel work. Certain interior walls and ceilings might have to be affected based on the layout for new uses, but the central hallways and patient ward spaces should remain principally untouched.

The rubber base should be removed from the wood base, which in turn should be patched and repainted.

The tin ceilings will either have to have the lead paint removed and be repainted, or have that lead paint encapsulated. The final direction could depend on the need to remove the tin panels for the installation of services within the ceiling plenum. If the paint is to be removed, it should be investigated if the removal of the tin panels would expedite this process, or not.



Close up image of a tin ceiling panel.

Description

The primary finished flooring system is that of 12x12 tan vinyl tiles. There is sheet vinyl in the toilet rooms, and some red and black 9x9 tiles in the basement. Room 117 retains its fir flooring, with a dark stain. Other rooms in the Annex have a newer hardwood, or a ceramic tile. The original specifications calls for fir flooring throughout all floors (exclusive of the basement), with a layer of sound deadening felt placed between the finished floor and the subfloor. It is assumed that this wood flooring remains under the current finished flooring, though is subject to verification.

There is white hex head tile work in the entry vestibule of the original main entry to the Main Building. There

is also red tile that has been placed in the southwest corner of the Annex, at the first floor.

Condition

The 12x12 tan vinyl tile floors are in fair-to-poor condition, and should be removed as part of the hazardous materials abatement process.

Proposed Action

If the original wood floors remain underneath, they should be examined for soundness and reused, if possible. It might prove either difficult or expensive to remove from the wood the mastic used to adhere the 12x12 tiles. If they can be reused, the wood floors should be patched, sanded, and covered with a finish coat. If the original wood floors are not existing or useable, then new wood floors should be installed to match the original specifications.

Interior Openings – Doors and Relights

Description

Interior openings tend to use 5-panel doors with multi-light transoms above. Hardware tends to be round knob or push plates for swinging doors.

Condition

The doors are in fair-to-good condition, and repairable.

Proposed Action

All original doors should be cleaned, patched as required, and painted. Code compliant hardware should be provided on all doors, and might require some involved carpentry work to accommodate.



Examples of interior doors and relights.

Heating System Features

Description

There are two items used as part of the building's heating system on display in the Post Hospital. The fireplace in Room 117 is the most unique, being the only fireplace in the complex. It consists of a red brick face with a black, cast metal inset trim and door. There is a wood surround with flanking Ionic columns and an entablature acting as a mantle, all painted white. The hearth is of glazed red brick with a black trim strip.

The other heating system feature is the cast iron radiators, present in every room (though a few have been subsequently removed). The radiators have a vine pattern relief cast into each section, and are painted white. They are typically positioned under windows, and some had a through-wall fresh air grille provided under those windows.

Condition

The fireplace is in good condition, though there appears to be some white efflorescence on the brick face, and a few open mortar joints.

The radiators have not been in operation for some time, with an unknown operating condition. If the radiators at the Artillery Barracks offer any indication, these radiators likely have lead paint, and their valves will need cleaning.

Proposed Action

The fireplace should be restored to original condition, which includes cleaning all the brickwork, repointing the open joints, and repainting. The flue should be checked for any damage, and the chimney cleaned. The fireplace could be fitted with a natural gas insert system, to return its original function.

It will need to be determined if the radiators are to be part of the functioning heating system for the Post Hospital. If so, they should be stripped, repainted, and thoroughly assessed for functionality. If not (which is the current direction), they could either be removed and reused elsewhere in the West Barracks, or simply cleaned, and repainted (encapsulating the lead paint) and left in place as character-defining features.



Fireplace at Room 117.

STRUCTURAL ASSESSMENT

Overview

T.M. Rippey Consulting Engineers performed structural site observations and a framing survey for the Post Hospital. The purpose of this review was to evaluate the building's general structural condition and comment on its ability to support current code gravity and lateral (seismic) loads.

The information that follows was based upon on a limited field inspection for the purposes of observing the general physical condition of the existing structure, and identifying its framing. Although certain problem areas have been noted, an exhaustive review of every condition has not been performed for this report. This more detailed work typically occurs for the development of construction documents for permit submittal and construction.

Building Construction Description

The structure consists of 4 sections: the Main Building, the North & South Wings and the Annex Building. For matters of brevity, the term "unreinforced masonry" is abbreviated as "URM", and "unreinforced stone" as URS. Both refer to walls without the use of steel reinforcing bar.

Exterior Walls

Exterior walls consist of four-wythe brick, with the external wythe acting as a veneer (without any header courses). Walls are typically 15-3/4 thick, and have an inner wythe laid in a rowlock stretcher orientation.

Main Building

1st Floor

Framing over basement consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning 16' maximum between partially buried exterior stone walls and interior 2x6 stud walls at 16" o.c.. Joists are pocketed into the exterior URM walls without any noticeable water intrusion issues.

2nd & 3rd Floors

Framing consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning 16' max between exterior URM walls and interior 2x6 stud walls at 16" o.c.. Joists are pocketed into the URM walls without any noticeable water intrusion issues.

Roof / Attic

Framing consists of 1x6 straight sheathing over 2x8 rafters with 2x8 collar ties at 16" o.c.. The entire system spans the 44' in the east/west direction and is supported at each end by URM walls.



Exterior brick wall internal construction.

North and South Wings

(framing similar in each, unless otherwise noted)

1st Floor South Wing

Framing over basement consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning 16' maximum between partially buried exterior stone walls and interior 2x6 stud walls at 16" o.c.. Joists are pocketed into the exterior URM walls without any noticeable water intrusion issues.

1st Floor North Wing

Framing over basement consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning the full 24' between partially buried exterior stone walls. Joists are pocketed into the exterior stone walls without any noticeable water intrusion issues.

2nd Floor

Framing consists of 1x6 diagonal sheathing over 3x10 joists at 12" o.c. spanning the full 24' between URM walls. Joists are pocketed into these walls without any noticeable water intrusion issues.

3rd Floor

Framing consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning the full 24' between URM walls. Joists are pocketed into these walls without any noticeable water intrusion issues.

Roof / Attic

Framing consists of 1x6 straight sheathing over 2x8 rafters with 2x8 collar ties at 16" o.c. The entire system spans the 24' in the east/west direction and is supported at each end by URM walls.

Galleries

Exterior gallery framing consists of 1x6 diagonal sheathing over 2x8 joists at 16" o.c.. spanning 13' -6" between 4x8 beams spanning 8' between the exterior stone basement walls and front side masonry piers.



Roof framing at attic.

Although actual framing was only visible at the 1st floor level, all indications are that framing at upper levels is the same.

Annex Building

1st Floor

Framing over basement consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning 20' max between partially buried exterior stone walls and interior URM walls. Joists are pocketed into the exterior stone walls without any noticeable water intrusion issues

2nd & 3rd Floors

Framing consists of 1x6 diagonal sheathing over 2x12 joists at 16" o.c. spanning 20' max between exterior URM walls and interior 2x6 stud walls at 16" o.c.. Joists are pocketed into the URM walls without any noticeable water intrusion issues.

Roof / Attic

Framing consists of 1x6 straight sheathing over 2x8 rafters with 2x8 collar ties at 16" o.c.. The entire system spans the 42' in the east/west direction and is supported at each end by URM walls.

General Condition Summary

Main Building

In general, this building was found to be in fair condition without any obvious signs of significant structural issues. The exceptions would be the east and west side entry porches where significant dry rot in the wood framing is apparent. Replacement of affected members is recommended.

North and South Wings

In general, these two sections, with the exception of the enclosed perimeter galleries, were found to be in fair condition without any obvious signs of significant structural issues. As the exception, the galleries in both wings are in poor condition showing signs of settlement

of the exterior masonry piers at supporting beam lines and signs of possible dry rot deterioration in some beams and columns. Due to ADA problems with sloping floors, removal and replacement may be the best option. Additionally, the North Wing's north end entry stair framing shows signs of dry rot with replacement of affected members recommended.

Annex Building

In general, this building was found to be in fair condition without any obvious signs of significant structural issues.

Gravity Load Performance Summary

Based upon the site survey of framing sizes and subsequent analysis, the load carrying capacities are as follows:

Main Building

1. Although existing footings, if any, are unknown, finding no signs of settlement suggests more than enough adequacy for future loading.
2. The 1st, 2nd and 3rd floor framing in this building have a live load capacity of 100 PSF.
3. The structure's main roof rafter and collar tie system is about 60% overstressed when checked against the code required 25 PSF snow load. As such, these rafters would require doubling-up.

North and South Wings

1. Although existing footings, if any, are unknown, finding no signs of settlement along the main URM bearing wall lines suggests more than enough adequacy for future loading. Settlement at the gallery piers will require further evaluation to determine possible cause and remedy.
2. The 1st floor framing in the south wing with interior bearing walls has a live load capacity of 100 PSF.
3. The 1st floor framing in the north wing spanning the full 24' between exterior URM bearing walls has a live load capacity of 40 PSF. To accommodate an assembly level loading of 100 PSF, a doubling up of the existing joists would be required.
4. The 2nd floor framing in both wings has a live load capacity of 70 PSF. To accommodate an assembly level loading of 100 PSF, a doubling up of the existing joists would be required.
5. The 3rd floor framing in both wings has a live load capacity of 40 PSF. This should be sufficient for mechanical loading.
6. The structure's main roof rafter and collar tie system has sufficient capacity to carry the code required 25 PSF snow load.

Annex Building

1. Although existing footings, if any, are unknown, finding no signs of settlement suggests more than enough adequacy for future loading.
2. The 1st floor framing in this building has a live load capacity of 60 PSF, sufficient for office loading.
3. The 2nd and 3rd floor framing in this has a live load capacity of 65 PSF, sufficient for office loading.
4. The structure's main roof rafter and collar tie system is about 60% overstressed when checked against the code required 25 PSF snow load. As such, these rafters would require doubling-up.

Seismic Performance Summary

In general terms, it is the engineer's opinion that the building sections of this facility do provide, with proper upgrades, a code required load path for transfer of shear forces from the wood roof/floor diaphragms to the URM walls and down through URS foundation walls.

As the proposed future use will result in a less hazardous Occupancy Category than the original use (Hospital), it is anticipated that the International Building Code's provision in Section 3408.1 allowing for this change without full code compliance can be negotiated with, and approved by the Building Official. Utilizing the American Society of Civil Engineer's Seismic Evaluation of Existing Buildings guidelines (ASCE 31) as a basis for a partial upgrade, the following work would be required (refer to attached plan drawings PS-1 & PS-2 for work locations):

Partial Code Upgrade

1. All connections between wood floors/roofs and the URS & URM walls would require upgrade.
 - a. At walls running parallel to the floor or roof joist framing would require epoxied L-strap connectors at 48" o.c. lapping with 12' long floor straps nailed through sheathing into 2x4 flat blocking between each joist.
 - b. At walls running perpendicular to the floor or roof joist framing would require epoxied L-strap connectors at 48" o.c. connected to the roof rafters and floor joists.
2. All URS & URM walls in the Main and Annex Buildings would require strengthening for resistance to out-of-plane and in-plane forces by the addition of a 6" reinforced shotcrete section to their entire inside face from basement to underside of roof. As noted, some URS & URM walls in the North & South Wings would require strengthening for resistance to out-of-plane and in-plane forces by the addition of a 6" reinforced shotcrete section to their entire inside face.
3. All gallery framing in the North and South wings would require improvement of connections to the URM walls and improved beam to post connections. If the galleries are to be replaced, all new construction would cover this.
4. All URM chimneys will require bracing or removal.

MECHANICAL / ELECTRICAL / PLUMBING ASSESSMENT

Overview

MKE & Assoc. Engineering performed site observations of the mechanical, electrical and plumbing systems for the Post Hospital. The purpose of this review was to evaluate the building's current systems condition, and comment on their ability to support a rehabilitated building use.

MKE's equipment and systems evaluation was limited to areas that were accessible and visible to the eye. No equipment was utilized that viewed unseen conditions or monitored air quality. Existing equipment was given a visual review, and no testing was performed.

Mechanical Assessment

The current mechanical system has long been dormant, and an entire new system should be installed to provide an energy efficient and comfortable environment.

Consideration was initially given to retaining as much of the original heating system as possible. The radiators could have been refurbished, a new boiler installed and the piping simplified into a more logical zoning. However, it turns out that the seismic upgrades required to the exterior wall system would interfere with the placement of radiators, and that idea abandoned. Furthermore, it was decided that cooling was important for the future planned use.

This turned the focus towards a modern, energy efficient HVAC system that has minimal impact to the building finishes and historic appearance, yet could provide both heating and cooling. Large air handlers and ducted air systems would not be ideal. However, variable refrigerant flow (VRF), ductless, split system heat pumps can meet those objectives. There are several manufacturers of this equipment with Daiken and Mitsubishi being two of the larger and better known suppliers, each with their proprietary piping methods.



Existing boiler in the basement.

The following HVAC description is based upon the Mitsubishi system.

A VRF system for this facility would consist of a small bank of outdoor condensers that could be hidden at the western edge of the building and adjacent to the I-5 freeway. This location is away from the public side of the building and out of immediate view. A few pair of refrigerant lines would enter the building and be piped into a valve box (BC Controller) that consists of multiple pairs of refrigerant supply and return outlet connections. From the BC Controller, the multiple pairs of refrigerant pipe would be run individually to multiple small fan-coil units that are exposed ductless fan-coils on walls or ceilings. Visually these units tend to blend in well and have little impact to the building structure or finishes. VRF systems are capable of simultaneously heating and cooling up to 16 different spaces for each BC Controller. The preliminary thought is to have a BC Controller for each floor level to help minimize the visible piping.

Each VRF fan-coil (or terminal unit) ranges in capacity from about ½-ton to as much as 5-tons. The larger fan coils can be ducted, so for larger spaces open volume spaces, outside the public entries and halls, this option remains. Ducting some of the terminal units provides a non-intrusive means to serve the public halls from the less sensitive adjacent tenant offices.

Each ductless terminal unit is capable of bringing in a small volume of outside air. Depending on the occupancy of the building, and whether windows remain operable, there may be a more significant need for ventilation air that requires the addition of a small air handler and duct system. This air handler could be located either in the attic or in the abandoned boiler room. The cost estimate allows for such a ventilation system.

Electrical Assessment

Power Distribution Recommendations

A new 300 KVA 120/208V 3 phase, 4W transformer is to be added at the south end of the building. The transformer shall be provided by the Post Hospital as part of the switches package.

All feeders for panelboards, elevators, mechanical equipment, etc. will be copper conductors in EMT conduit.

Convenience receptacles will be provided on all walls on 10 foot centers. Receptacles shall be commercial grade. Maximum of five (5) receptacles per 20A circuit.

All branch circuits shall be copper conductors installed in concealed EMT conduit. Where appropriate, MC cables may be fished down non-insulated interior walls. Walls that are insulated or are to be structurally retrofit will require EMT conduit to be installed prior to structural fill. Some walls may require conduits to be cut in due to access issues.

Lighting Recommendations

Due to daylight available in building, an extensive photocell lighting control system is proposed. Photocells will be placed to monitor daylight and extinguish or dim selected luminaires.

The majority of luminaires in public spaces will be “period style” Rejuvenation luminaires with an energy efficient lamp source (either compact fluorescent or LED).

The emergency egress requirements will be provided via battery ballasts or a central IPS inverter. If an inverter is utilized, it will be located adjacent to the main distribution panel in on the basement level. The inverter is projected at 5 KW with 4-20 A output breakers.

Luminaires in storage, maintenance, and equipment rooms will be fluorescent strips or wraparounds with 2 T8 lamps.

Exterior luminaires will be “period style” luminaires to match the appropriate era. Luminaires installed at egress points will have emergency battery backup.

Lighting control will primarily be via local occupancy sensors and central relay panels.



Electrical panels in the Annex.

Communication Systems Recommendations

A raceway, sleeve and cable tray infrastructure will be provided to ensure low-voltage accessibility to all areas of the building.

Fire Alarm System Recommendations

A new addressable American with Disabilities Act (ADA) system will be installed. 100% coverage via smoke detectors, flow switches and fire/smoke dampers will be included. The fire alarm will assist in shutdown of HVAC equipment during a fire event.

Plumbing Assessment

The plumbing system in the building is antiquated and has been out of use for many years. All new plumbing is recommended, with copper water service and domestic distribution piping provided. New plumbing fixtures designed to conserve water should be installed. A new gas-fired water heating system also should be installed.

– page intentionally left blank –

4.0 VISION | CONCEPTUAL DESIGN | COSTING

COMMUNITY VISIONING AND BUILDING PROGRAMMING

Overview

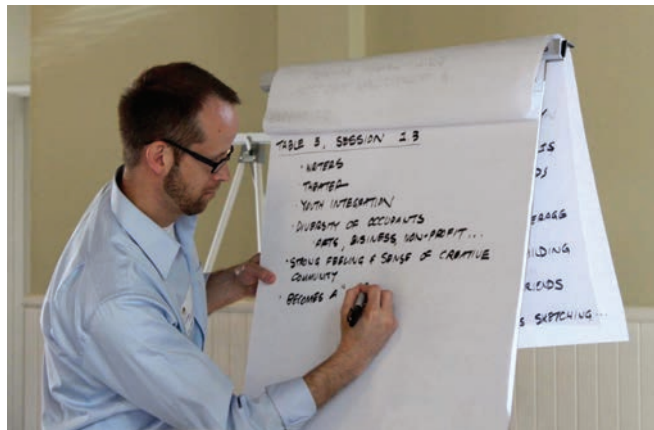
The City and the Trust requested that a formal outreach process be instituted as part of this study to engage the Vancouver community in a meaningful manner, gathering visions and directions for the reuse of the Post Hospital. This process comprised two activities with over 50 community participants.

The kickoff activity was a full day Community Symposium, held on May 17, 2012 with the focus of reinventing the historic building as an asset for the arts community. Invitees included artists, educators, non-profit members, and the local business community. Participants were provided a tour of the Post Hospital, an overview of the building's history, and insights into how the building works within the context of regional planning efforts. For a majority of the day, participants worked in table groups of approximately eight participants each, discussing and documenting their ideas on a series of thought-provoking questions. As each series was completed, table groups reported back their discussion and findings to the larger group. The event concluded with each table group developing a floor plan graphic representing a distillation of options of how the building could best be utilized to meet the needs and expectations of the art community.

On May 29, an Open House for the general public was held that offered opportunity for general feedback and comment on the ideas and concepts gained from the Symposium. The attendees included Fort Vancouver volunteers, nearby residents, symposium participants, and people from local businesses. The gathering focused on four displays: a history of the Post Hospital; documentation of the obstacles, opportunities, and strengths; lists of suggested spaces where attendees marked their favorites; and three conceptual plans coalesced from the Symposium.



Participant sharing his table group's thoughts.



Note taking.

Community Symposium Themes

The input from the participants indicated some themes for the reuse of the Post Hospital Building:

- Vibrancy and Sense of Community – A place for artists, art patrons, students, visitors, professionals and hobbyists. A hub of activity, creativity and community connections.
- Variety and Flexibility – Adaptable spaces, personal space, shared spaces, specific use spaces, quiet/loud, clean/messy.
- Mix of Uses – Studio, retail, leased, office, residential, food service, educational, gallery.
- Balancing Operations and Opportunities – Need for low cost space and the need to be financially sustainable.
- Retain Character of the Post Hospital – Preserve elements of architectural significance, the existing variety of spaces and their relationship to adjacent outdoor spaces.

Programming and Building Use

As determined through the Community Symposium, the proposed use for the Post Hospital is that of an arts center, serving professionals and amateurs alike. Education and presentation spaces will be created to accommodate classes for the general public and school-aged children. Offices for professional artists, writers and designers are to be provided, in both individual and group settings. Amenities such as a display gallery and food service are to be included as well. The building complex is to directly connect to adjacent exterior spaces, some of which may contain programmatic elements used for arts and education purposes.

An appendix document contains the full recordation of the Community Symposium and programmatic options.

CONCEPTUAL DESIGN, SCOPE, AND COST ESTIMATE

Overview

Conceptual designs were developed that unify the programmatic needs identified through the Symposium process with the facility needs derived from the condition assessment.

The understanding of the conceptual design is that any renovation work would be conducted in a manner generally deemed approvable by all involved historic review agencies. Sustainable design features are to be incorporated wherever possible. All spaces are to be universally accessible, as per the building code and City of Vancouver directives.

Proposed Change in Configuration

As mentioned previously, the Annex was relocated from its original position and abruptly attached to the end of the South Wing. This move ended up being detrimental to the original look of the Post Hospital complex, confusing the graceful composition of two wings flanking a central building. The relocation of the Annex was also conducted outside the determined period of significance for both the Post Hospital (1900–1919), and the West Barracks (1849–1946). As such, it is not considered to be an occurrence that defines and communicates the historic importance of the building and site.

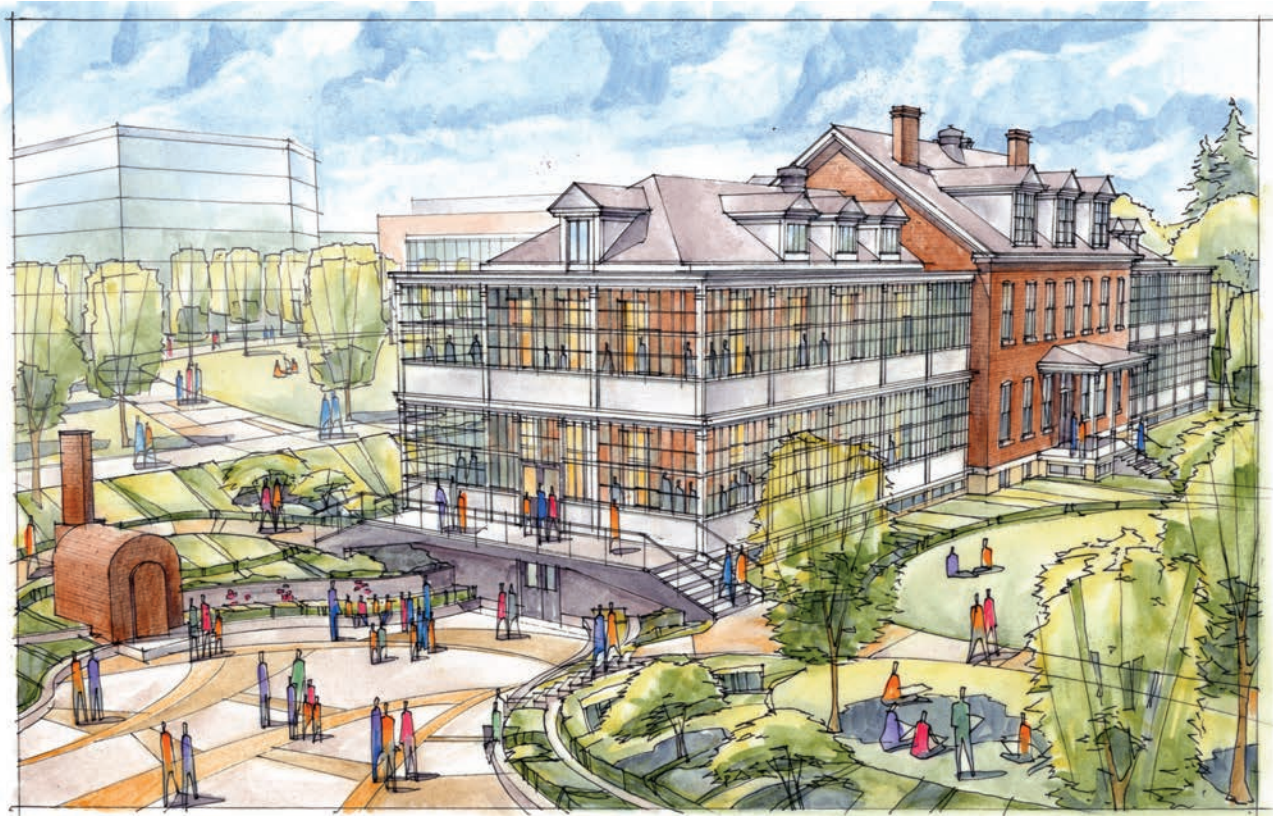
For these reasons – and for the purposes of this study – it was determined to show a building layout that does

not include the Annex. It will be assumed that the Annex will be demolished, and its constituent parts salvaged and recycled. It is understood that such a proposal is required to be reviewed by the Department of Archeology and Historic Preservation (DAHP) and the National Park Service (NPS). Early and involved discussions with these entities would be needed before this removal of historic fabric could proceed.

Site Design Concept

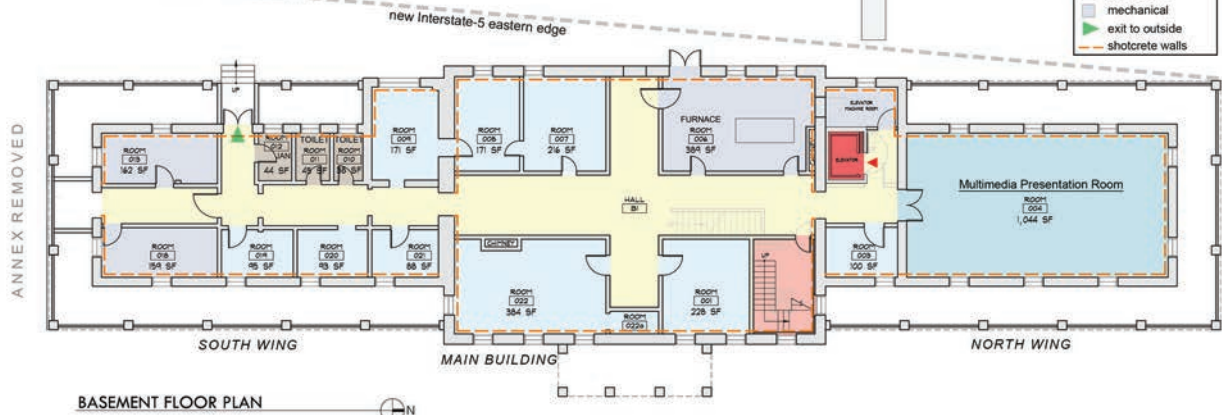
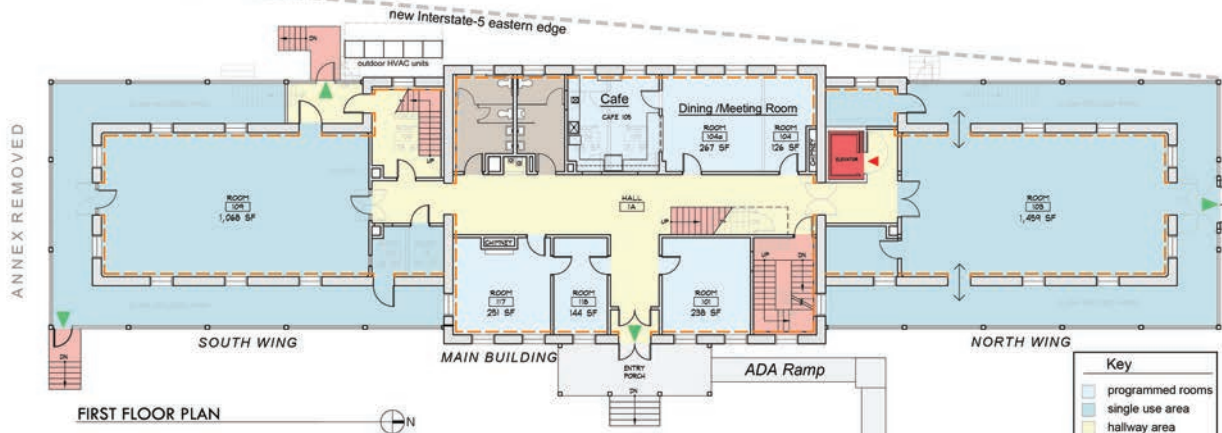
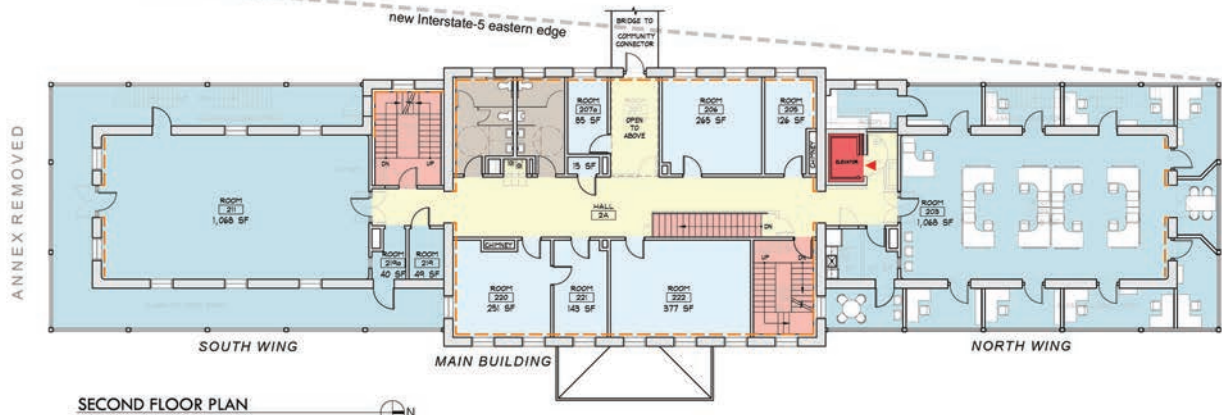
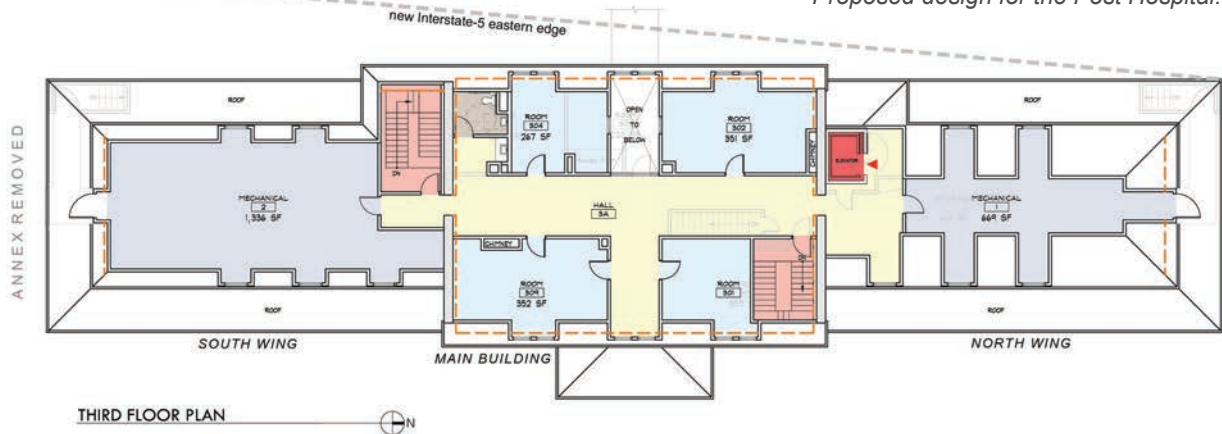
The proposed freeway lid, formally called the “Vancouver Community Connector”, would provide just that – a direct connection between the downtown Vancouver community and the West Barracks site. It also provides a new “backyard” to the Post Hospital, and the building should associate with in a direct and purposeful manner. For instance, the original footprint of the Annex could be recalled via a “homage”, using the bricks from the demolished building to create a courtyard and outdoor classroom space. A bridge element could connect this site with the Main Building, providing another point of access into the Post Hospital.

With the removal of the Annex, there is an opportunity to create a new south courtyard, which could contain artistic elements requiring an outdoor location, such as a kiln for the firing of pottery.



Southwest corner of the Post Hospital, with proposed south courtyard.

Proposed design for the Post Hospital.



Building Design Concept

The Post Hospital's configuration of larger rooms (the patient wards) and smaller rooms (those within the Main Building) provide suitable opportunity to accommodate the variety of uses noted in the building program. The conceptual design retains most all spaces as they currently (and originally) exist, with minor modifications as required for essentials such as new bathrooms, fire stairs, and an elevator.

A new ADA ramp is proposed to connect dedicated parking along Barnes Road to the main porch. The porch is to be reconstructed to provide ADA compliant access directly into the Main Building. On all three floors of the Main Building, men's and women's bathrooms have been placed at the southeast corner, efficiently stacking the plumbing system. A fire stair has been located at the northeast corner, connecting all three floors and the basement. A second fire stair has been located at the South Wing, in the space occupied by a former toilet room. An elevator has been placed in the former foyer of the North Wing, with connections to all floors. The goal is to minimize the overrun at the top of the elevator shaft, to reduce its visual effect at the roof line.

On the first floor of the Main Building, a café with an adjoining dining/meeting area has been created at the west side of the central hallway. The rooms east of the hallway could be used for administration offices, with a public lounge in Room 117, location of the historic fireplace. The North Wing will contain a gallery, which makes use of the surrounding enclosed porch by converting two windows into passageways. The South Wing will contain a classroom/meeting room, with its enclosed porch used as breakout and display space.

The basement of the complex will contain a multimedia presentation room at the North Wing, directly under the gallery space above. Other rooms within the Main Building could be used as music practice rooms, taking advantage of their brick partition walls. The South Wing

would contain bathrooms and other building service or storage spaces.

The second floor of the complex would be easily accessed via the original open stair from the first floor. A variety of rooms would be available for rental by those needing these types and sizes of spaces. The North Wing has been configured to show a layout that could provide distinct workstations rented by individuals, or used by a single firm needing a variety of internal office spaces. The South Wing could be used in a similar manner, or left open for meeting and classroom gatherings, similar to the first floor space below it.

The third floor would also contain rooms for rental. The North and South Wings would contain necessary mechanical equipment to provide the required ventilation.

Seismic Upgrade Concept

Based on the structural engineering report and the Vancouver Building Official's directive to upgrade the exterior brick walls, the initial plan is to add a layer of shotcrete to the inside of these walls. This strategy will be less intrusive within the Main Building, as the added layer could be shaped to recreate the sloped window sills. At the juncture of the tin ceilings, the corner tin molding could be moved inward, taking the place of an unembossed tin border.

An interior layer of shotcrete will be more intrusive within the North and South Wings. Knowing this, and knowing that the exterior brick at the wings is damaged, leads to an interesting direction to explore. It could be possible to remove the entirety of the brick walls around the Wings, and insert a concrete masonry unit (CMU) wall for the required structural strengthening. The CMU could be refaced at the exterior with the clean side of the original brick. This will retain the current thickness of the wall, and not intrude at either the interior of the rooms or at the area of the porch. It will also restore the original face

of the red brick, but without peeling paint or the potentially toxic red mortar wash. With the exterior porches requiring a complete reconstruction, there is the opportunity to gain easy access to these walls. This strategy was not reflected in the construction cost estimate, but is noted here to address DAHP/NPS comments about the detrimental use of shotcrete at the Wings.



New gallery at the first floor of the North Wing (left), with renovated outer porch (right).

REHABILITATION WORK SCOPE

Architectural

Exterior Work

- Exterior brick at the Main Building to be cleaned and removed of debris. A test is to be conducted to see how easily the red mortar wash can be removed from the brick face. If removal is detrimental, then it is to remain as is. Damaged brick is to be removed and replaced in-kind. Mortar joints to be tuckpointed to match the original profile, composition and color.
- The North and South Wing porches (walls, windows and decking) to be removed and completely reconstructed. The new deck's finished height is to match the adjacent finished floor level.
- As part of the seismic reinforcement, the exterior brick walls at the North and South Wings are to be removed, with new concrete masonry unit walls inserted within. The original brick is to be reconstructed at the exterior wall, with the clean side turned outward.
- Completely reconstruct the east entry porch at Main Building, with new deck, posts, roof, and stairway. The new deck height to match the adjacent finished floor level.
- New roofing throughout (after structural work as been accomplished), with new flashings, built-in gutter reconstruction, and downspouts.
- All chimneys to be repointed, as required, structurally upgraded, and capped if not in operation.
- New exterior paint throughout.
- New concrete sidewalks from building to right-of-way at east and at new west stairs.
- New ADA ramp (ideally at 1:20 slope) from north sidewalk to east entry porch.
- Proposed South Courtyard within Annex footprint, at basement level.
- An Annex "homage" at the Community Connector (I-5 lid), placed in the original footprint of the building before its 1952 relocation.
- Proposed bridge from Community Connector to second floor of Main Building

Interior Work

- Hazardous materials abatement work and general demolition to prepare for new work.
- New holeless hydraulic elevator accessing all floors.
- Insertion of two new fire stairs.
- New interior finish work at the North and South Wings (following the reconstruction of the brick walls).



Post Hospital as viewed across the Community Connector.

- Tin ceilings to be cleaned and repainted, encapsulating the existing lead paint.
- New café with associated equipment.
- Wood floors either refinished or new, with Marmoleum at kitchenettes and bathrooms.
- Compliant handrails at historic stairs.
- Insulation at attics.

Structural

Main Building

- Add 6" reinforced shotcrete to inside face, extending from basement to underside of roof.
- Create structural connections between wood floors/roofs and the reinforced exterior walls.
- Double-up roof rafters at the gabled roof.
- Internally brace all chimneys.

North and South Wings

- Add reinforcement to masonry walls, potentially by inserting new CMU shear wall within brick wall assembly as mentioned in Exterior Work scope.
- Create structural connections between wood floors/roofs and the reinforced exterior walls.
- Double-up 1st floor joists at the North Wing to accommodate an assembly level loading of 100 psf.
- Double-up 2nd floor joists in both wings to accommodate an assembly level loading of 100 psf.
- Reconstruct the galleries to address issues of settling and under capacity.

Mechanical / Electrical / Plumbing

Mechanical

- VRF system with a small bank of outdoor condensers at the western edge of the building. Terminal units provided within all areas served.

- Air handler units in the attic space above the North and South Wings provides ventilation into the large open rooms below.

Electrical

- All new panel locations and branch wiring.
- New telephone backbone and CAT 5e wiring.
- New interior and exterior lighting throughout.

Plumbing

- Upgrade water service to building.
- Replace all waste, water and vent piping throughout.
- All new fixtures (toilets, sinks, showers) throughout.

Life-Safety & Security Systems

- Install sprinkler system as per NFPA-13.
- Install new smoke detection system.
- Install new security alarm system.

COST ESTIMATE

Overview

The Direct Construction Cost for the renovation of the Post Hospital into an arts center and the removal of the Annex is estimated at \$5,877,137. This equates to \$205 per square foot for the 28,578 gsf complex (with Annex area excluded). The seemingly higher cost for this rehabilitation compared to other rehab projects in the West Barracks could be due to the extensive amount of infrastructure work required, with all new mechanical, plumbing and electrical systems. Also, the seismic work for this unreinforced masonry building is on a level not seen within the West Barracks. The cost chart below also shows the projected cost of renovating the Annex, for point of comparison. This would add almost \$1.7 million dollars to the construction costs.

Please note that this cost estimate is for **Direct Construction Costs** only, which accounts for all items covered in a General Contractor's bid. For

DIRECT CONSTRUCTION COSTS		Main Bldg. + Wings		Annex	
Component	Description	Cost	% of subtotal	Cost	% of subtotal
Demolition	structural demo	\$161,440	4.4%	\$37,745	3.5%
Haz-Mat Abatement	lead and asbestos removal	\$294,753	8.0%	\$81,293	7.5%
Concrete	mostly shotcrete application	\$529,734	14.3%	\$215,943	19.8%
Masonry	brick and stone restoration	\$253,115	6.8%	\$129,748	11.9%
Metals	structural steel, metal studs, handrails	\$134,263	3.6%	\$52,396	4.8%
Wood, Plastics, Composites	rough and finish carpentry, mill and casework	\$174,144	4.7%	\$54,461	5.0%
Thermal & Moisture	insulation, roofing, flashings	\$95,354	2.6%	\$32,148	2.9%
Openings	windows and doors	\$120,240	3.2%	\$81,807	7.5%
Finishes + Furnishings	wall, floor and ceiling finishes, window treatments	\$404,800	10.9%	\$136,273	12.5%
Specialities + Equipment	signage, accessories, appliances	\$35,966	1.0%	\$5,254	0.5%
Special Construction	entry porch, north and south wing porches	\$577,282	15.6%	\$0	0.0%
Elevator	4-stop elevator	\$97,000	2.6%	\$0	0.0%
Fire Supression	fire sprinklers	\$78,590	2.1%	\$24,368	2.2%
Plumbing	new service and fixtures	\$50,000	1.4%	\$12,500	1.1%
HVAC	heating, ventillation, air conditioning	\$340,000	9.2%	\$140,000	12.8%
Electrical	3-phase upgrade, lighting, alarm, communications	\$310,000	8.4%	\$84,000	7.7%
Earthwork, Exterior, Utilities	grading, ADA ramp, utilities routing	\$45,055	1.2%	\$2,000	0.2%
COMPONENTS SUBTOTAL		\$3,701,736	100.0%	\$1,089,936	100.0%
15% estimating contingency		\$555,260	15%	\$163,490	15%
SUBTOTAL		\$4,256,996		\$1,253,426	
Multipliers					
Index to Cons't Start		\$383,242	9%	\$112,841	
General Conditions (supervision, office, insurance, bond, etc.)		\$464,024	10%	\$136,627	
Contractor OH & Profit		\$204,170	4%	\$60,116	
SUBTOTAL		\$1,051,436		\$309,584	
TOTAL COMPONENTS + MULTIPLIERS		\$5,308,433		\$1,563,010	
State Sales Tax		\$445,908	8.40%	\$131,293	
TOTAL DIRECT CONSTRUCTION COST		\$5,754,341		\$1,694,303	
		main bldg + wings		annex	
Demolition of Annex		\$132,796			
total cost with Annex removed:		\$5,887,137		total cost with Annex included:	\$7,448,644

total project financing to be complete, it also needs to include 'Soft Costs', such as development costs and financing, architectural and engineering services, fees, permits, special inspections, etc. Soft costs have been developed for this report, and are estimated to be \$2,095,001. This cost, combined with the Direct Construction Costs, result in a total project cost estimate of \$7,982,138 (if the Annex is removed).

Basis of Estimate

Architectural Cost Consultants created a conceptual-level cost estimate for rehabilitation work based on direction from Carleton Hart Architecture and their engineers. Any civil engineering and landscape work was not part of this report's work scope, and has been estimated within the "soft cost" budget.

Pricing is based on Construction Costs as of September 2012, with the assumption that the work will be competitively bid, and the General Contractor will be paying prevailing wage rates.

Along with accounting for the General Contractor's costs (General Conditions, Bonds and Insurance, Overhead and Profit), also included is Washington State sales tax, and a 15% estimating contingency to compensate for the conceptual nature of the design. There is no cost escalation due to inflation beyond September 2012.

The full cost estimate has been provided to the Fort Vancouver National Trust, who commissioned this report.

