



City of Richmond

Report to Committee

To: General Purposes Committee

Date: March 29, 2018

From: John Irving, P. Eng., MPA
Director, Engineering

File: 06-2052-25-
BHSY1/Vol 01

Re: Phoenix Net Loft Preservation

Staff Recommendation

That staff be authorized to proceed with Phoenix Net Loft Preservation construction as described in the report titled "Phoenix Net Loft Preservation," dated March 29, 2018, from the Director, Engineering.

John Irving, P. Eng., MPA
Director, Engineering
(604-276-4140)

Att: 5

REPORT CONCURRENCE		
ROUTED TO:	CONCURRENCE	CONCURRENCE OF GENERAL MANAGER
Arts, Culture & Heritage	<input checked="" type="checkbox"/>	
REVIEWED BY STAFF REPORT / AGENDA REVIEW SUBCOMMITTEE	INITIALS: 	APPROVED BY CAO

Staff Report

Origin

Council approved \$11.5M to complete Phoenix Net Loft Preservation as part of the 2018 Capital Program. Staff advised Council during the capital approval process that the details of the preservation work would be reported prior to proceeding with the work.

The purpose of this report is to provide Council the details associated with preservation of the Phoenix Net Loft and to seek authorization to proceed with construction to mitigate the ongoing risk of structure loss due to the advanced state of deterioration. Programming and building use options will be the subject of subsequent reports and capital requests.

This report supports Council's 2014-2018 Term Goal #2: A Vibrant, Active and Connected City:

Continue the development and implementation of an excellent and accessible system of programs, services, and public spaces that reflect Richmond's demographics, rich heritage, diverse needs, and unique opportunities, and that facilitate active, caring, and connected communities.

2.4. *Vibrant arts, culture and heritage opportunities.*

This report supports Council's 2014-2018 Term Goal #6: Quality Infrastructure Networks:

Continue diligence towards the development of infrastructure networks that are safe, sustainable, and address the challenges associated with aging systems, population growth, and environmental impact.

6.1. *Safe and sustainable infrastructure.*

Background

The heritage value of the Phoenix Net Loft is found in its historical association to the canning and fishing industries in Steveston. The Phoenix Cannery was built by Marshall English in 1882, and the Net Loft was constructed circa 1943, later than the original cannery buildings.

The Net Loft is one of the last surviving structures associated with the Phoenix Cannery. The use, repair and storage of fishing nets was an integral part of the fishing industry, and the Net Loft has aesthetic value as a good example of a structure constructed solely as a net mending and storage facility. Its massive size, large internal space, and wood piling foundation as a response to its location on the riverfront represent its use as a net loft. It operated as a net storage and repair facility until the early 2000's when the City acquired the building from BC Packers as part of the rezoning considerations.

The Phoenix Net Loft is located on a water lot leased from the province for a 30-year period, effective as of 2017.

Analysis

Phoenix Net Loft Current Condition

The Phoenix Net Loft is comprised of two floors with areas of approximately 10,300 ft² (lower floor) and 6,900 ft² (upper floor). This facility is currently used for artifact storage and is not open to the general public.

The decks attached and adjacent to the Phoenix Net Loft have deteriorated to a point where they have collapsed.

In 2017 staff completed a comprehensive Phoenix Net Loft building condition assessment and cost estimate with the assistance of specialist heritage architects, structural engineers and heritage contractors. This assessment confirmed the building condition to be in an advanced state of deterioration.

- Approximately 90% of the 110 piles supporting the structure are rotten and require replacement.
- Significant structural members including beams, floor joists and other structural elements have rotted and require replacement.
- The roof has completely deteriorated and requires replacement.

Phoenix Net Loft Preservation

Staff worked with heritage restoration contractors to identify and explore several construction strategies to preserve the Phoenix Net Loft. Given the advanced state of deterioration, all reasonably available options are risky from a constructability perspective and present varying levels of worker and public safety risk. These options are:

- Option 1 - Leave the building in place, temporarily brace the structure and replace the rotten piles and associated rotted structural members by opening sections (holes) in the roof and floor systems.
- Option 2 - Remove the entire building system off the piles and temporarily locate on a barge (or land) while pile replacement is completed.
- Option 3 - Remove sections of the building structure in their entirety (i.e. removal of halves or thirds or at gridlines) and replace piles.
- Option 4 (recommended) - Completely deconstruct the building and store the salvaged materials on-site. The rotted piles would then be replaced followed by building reconstruction of the building in place, using as many of the original building materials as possible.

Option 4 (Recommended) is considered to be the best way to complete preservation of the Phoenix Net Loft for the following reasons:

- Moving the building in its entirety or in sections is extremely risky, expensive and complicated given the building is situated over water. Building moving specialists (Nickel Bros) were contacted and it was confirmed that the option to move the building is not a prudent course of action as it puts undue risk of causing structural failure during the moving process, it is very expensive and its location over water makes it complicated and risky to worker safety.
- Option 4 is the safest way to complete the work while Options 1, 2 and 3 represent the highest risk of structural collapse over water, and the associated worker safety exposure.
- Restoration of existing materials and prefabrication work can all be completed at ground level, at a safe location such as in the adjacent parking lot (Attachment 5).
- This option represents the least amount of risk of causing permanent damage during construction, the least amount of environmental impact and the least amount of temporary works that would have to be put in place.

Option 4 (Deconstruction/Reconstruction) Implementation Logistics

It is anticipated that the deconstruction/reconstruction process will take up to two years to complete following the contractor procurement process.

If approved, staff will request an Option 4 (Deconstruction/Reconstruction) construction implementation plan from the successful contractor following the construction tendering and award process.

Contractors bidding on the project will be required to deconstruct the Phoenix Net Loft and store salvaged materials on site for use during reconstruction. The successful bidder will be directed to store salvaged materials in the parking lot adjacent to the First Nations Bunkhouse (Attachment 5). This will impact special event layout and public parking availability. Alternate parking sites may have to be considered for Britannia's ongoing operations and during public events.

The deconstruction process will require water access with heavy construction equipment, extensive scaffolding and temporary platforms flanking the building.

As with other projects completed in the past at the Britannia site, staff will coordinate construction activities with public access throughout the entirety of the construction period. In particular, for major events such as the Maritime Festival for example, the contractor will be required to shutdown construction activities for the duration of the event and secure/clean the areas impacted prior to the opening.

Workspace Area (Attachment 5) – The parking lot adjacent to the First Nations Bunkhouse has been identified as the proposed workspace area. The contractor will use this space for storage of equipment as well as a laydown area to assess and refurbish (if necessary) building components (such as siding) removed during the deconstruction process. The laydown area will be secured with temporary fencing and there will project information and interpretive signage posted in key areas surrounding the site.

Materials Salvage - Throughout the process of deconstruction, each building component will be carefully removed and evaluated for reuse. While there is a substantial portion of the superstructure that shows a significant state of deterioration, it is anticipated that 40% to 70% of the existing building can be salvaged. Sections of the structure that are not deemed suitable for reuse, will be replaced with like materials that can be easily sourced from domestic providers and endorsed by the Steveston Historic Sites Building Committee prior to installation.

Parking – The parking lot adjacent to the First Nations Bunkhouse (Attachment 5) will be required for the contractor's work space area and for storage/refurbishment of salvaged materials. This will result in a loss of approximately 42 parking spaces for the approximate 2 year construction program.

Staff will review possibilities for alternate parking sites during the construction period including:

- Replace parallel parking with angle parking on Westwater Drive;
- Removal of street parking restrictions on Westwater Drive and Railway Avenue;
- Temporary expansion of the gravel parking lot on Westwater Drive adjacent to the Richmond Boat Builders building;
- Parking on the Homma School field during non-school days and/or non-wet weather times;
- Other possibilities for temporary parking that may be identified at a later date.

Permits – A provincial Forest, Lands Natural Resource Operations and Rural Development permit (FLNRO) and Heritage Alteration Permit (HAP) will be required.

- FLNRO Permit – FLNRO is a provincially issued permit that will be required for the Phoenix Net Loft preservation project given its proximity to the Fraser River. The intent of this permit is to provide broad environmental oversight with particular attention to the interaction of the proposed construction with the wetted environment. The FLNRO permit typically takes 6 months to acquire.
- HAP Permit – The City's Heritage Bylaw 8400 requires a permit to be issued for proposed exterior alterations to heritage buildings. In the case of the Phoenix Net Loft, that exterior alterations to heritage buildings will require a permit as directed by Council and may also require a prior recommendation from the Advisory Design Panel.

Phoenix Net Loft Preservation Opportunities

Implementation of Option 4 (Deconstruction) presents building configuration opportunities through the reconstruction process. The following items are recommended and are described in more detail below.

Building Elevation – Pile replacement presents the opportunity to raise the building to protect against flooding and sea level rise. Currently, the first floor elevation is at 2.6 metres and is prone to experience flooding during high tide/storm surge events. Staff reviewed the options of raising the building by 0.4 metre and 0.9 metre as depicted on Attachment 1.

It is recommended that the building be raised by approximately 0.9 metre which will result in a new first floor building elevation of 3.5 metres and a significantly improved level of flood protection.

2nd Floor Area – Reconstruction of the building presents an opportunity to reconstruct the 2nd floor at a lower elevation, thereby increasing the usable 2nd floor area from approximately 6,900ft² to approximately 10,300ft². A rendering showing the current and proposed 2nd floor orientation is included as Attachment 2. The option to build the 2nd floor at a lower elevation to increase the floor area is recommended.

Roof Replacement – The Phoenix Net Loft roof is not original and has deteriorated to a point where it cannot be salvaged and must be replaced during the reconstruction process. Three roof replacement material options were reviewed (standing seam zinc, corrugated tin and transite panels). A corrugated tin roof, which is the same as the Shipyards Building, is recommended. A rendering showing the roof material options is included as Attachment 3.

Future Use – There is an opportunity to select different material to replace the existing rotted wood piles. Replacement with wood piles will facilitate preservation of the Phoenix Net Loft to a condition similar to the Seine Net Loft, but lacks robustness compared to other pile systems if future uses such as a restaurant are contemplated. Use of other piles types such as concrete or steel will preserve the flexibility to convert the Phoenix Net Loft to other uses and facilitate the ability to meet current building code seismic standards. Concrete or steel piles are recommended.

Renderings of different pile types for use at the Phoenix Net Loft are included as Attachment 4.

Next Steps

Should Council support the staff recommendation, staff will proceed with a pre-qualification process to shortlist highly qualified heritage contractors (three preferred) and then proceed with formal construction tendering. Only contractors who have specific experience with restoration of heritage buildings will be considered and approval from Council will be sought prior to contractor selection. Staff will provide regular reporting to Council throughout the deconstruction/reconstruction process.

Preservation work is proposed to bring the Phoenix Net Loft to a similar condition to that of the recently preserved Seine Net Loft and in particular, it will have full public occupancy.

The construction process, as proposed, enables staff to present the program to Council for consideration.

With Council's direction, staff will explore and evaluate a variety of program options for the Phoenix Net Loft for Council's consideration that will be consistent with the forthcoming Britannia Shipyards National Historic Site Strategic Development Plan. Given the Phoenix Net Loft's heritage value and location along the South Dyke immediately adjacent to the Britannia Shipyards, possible options include additional exhibit and/or program space for Britannia Shipyards, arts and/or creative programming space, "maker lab" spaces, or other concepts to be explored. Program options are anticipated to be the subject of future reports and funding requests to Council, once building preservation work is underway.

Britannia Shipyards is launching a visitor survey that will be delivered throughout 2018. This survey will help gather valuable data about what residents and other visitors enjoy about their visit, and what they would like to see more of that can inform the planning process.

Financial Impact

Council approved \$11.5M funding to complete preservation of the Phoenix Net Loft as part of the 2018 Capital Program. The recommended construction plan can be completed within this budget.

Conclusion

The Phoenix Net Loft is in an advanced state of disrepair and it is necessary to complete significant works to ensure its preservation. Preservation works will require deconstruction of the existing building and onsite storage of salvaged materials for use during reconstruction. There are several opportunities during the reconstruction process that can be implemented to ensure other future uses of this facility.



Jim V. Young, P. Eng.
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(604-247-4610)

- Att. 1: Building Elevation
- 2: Second Floor Area
- 3: Roof Replacement
- 4: Future Use (Piles)
- 5: Materials Storage Area

BUILDING ELEVATION

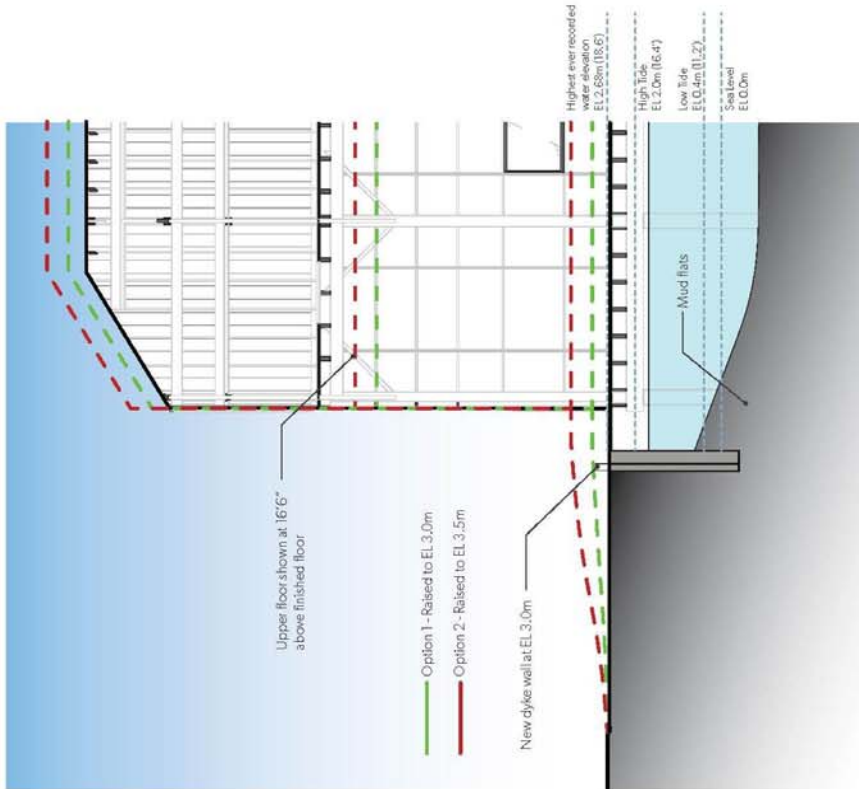
ATTACHMENT 1



OPTION 1 - FIRST FLOOR HEIGHT: EL 3.0M



OPTION 2 - FIRST FLOOR HEIGHT: EL 3.5M

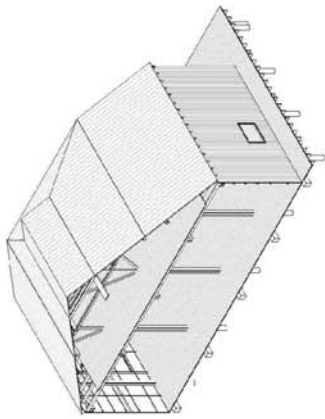


<p>O4A</p>	<p>PHOENIX NET LOFT</p>	<p>DATE 2018 . 02 . 16</p>	<p>CLIENT NAME City of Richmond</p> <p>DRAWING TITLE RAISED BUILDING HEIGHT</p> <p>DATE 2018 . 02 . 16</p> <p>CLIENT NAME City of Richmond</p> <p>DATE 2018 . 02 . 16</p> <p>CLIENT NAME City of Richmond</p>
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ATTACHMENT 2

SECOND FLOOR AREA

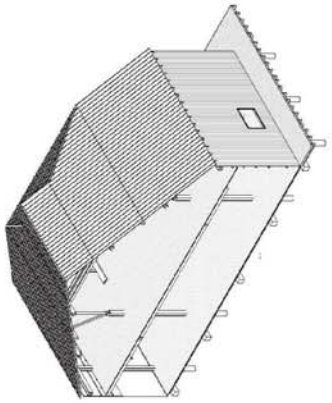
EXISTING



Available floor area

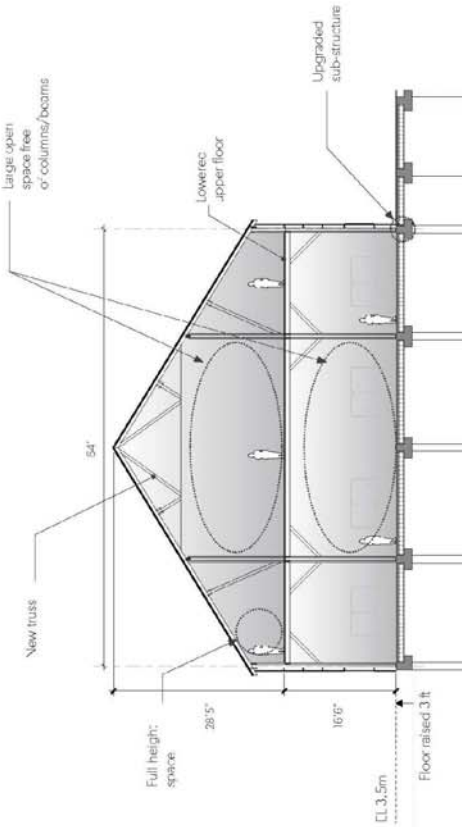
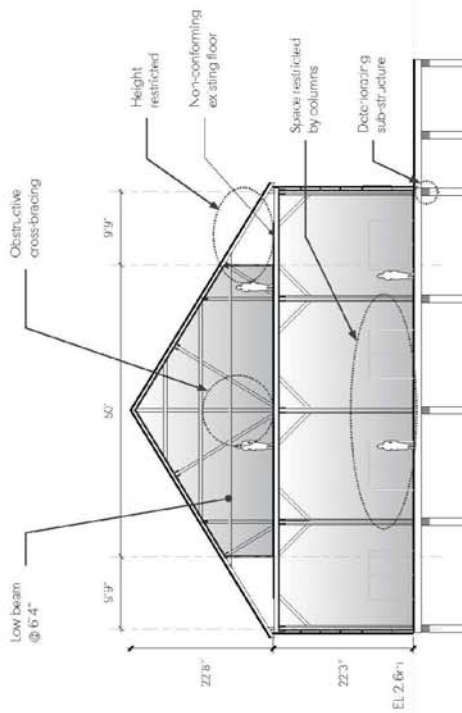
Lower	10,300 sf
Upper	6,900 sf
Total	17,200 sf

PROPOSED



Available floor area

Lower	10,300 sf
Upper	10,300 sf
Total	20,600 sf



O4A PHOENIX NET LOFT

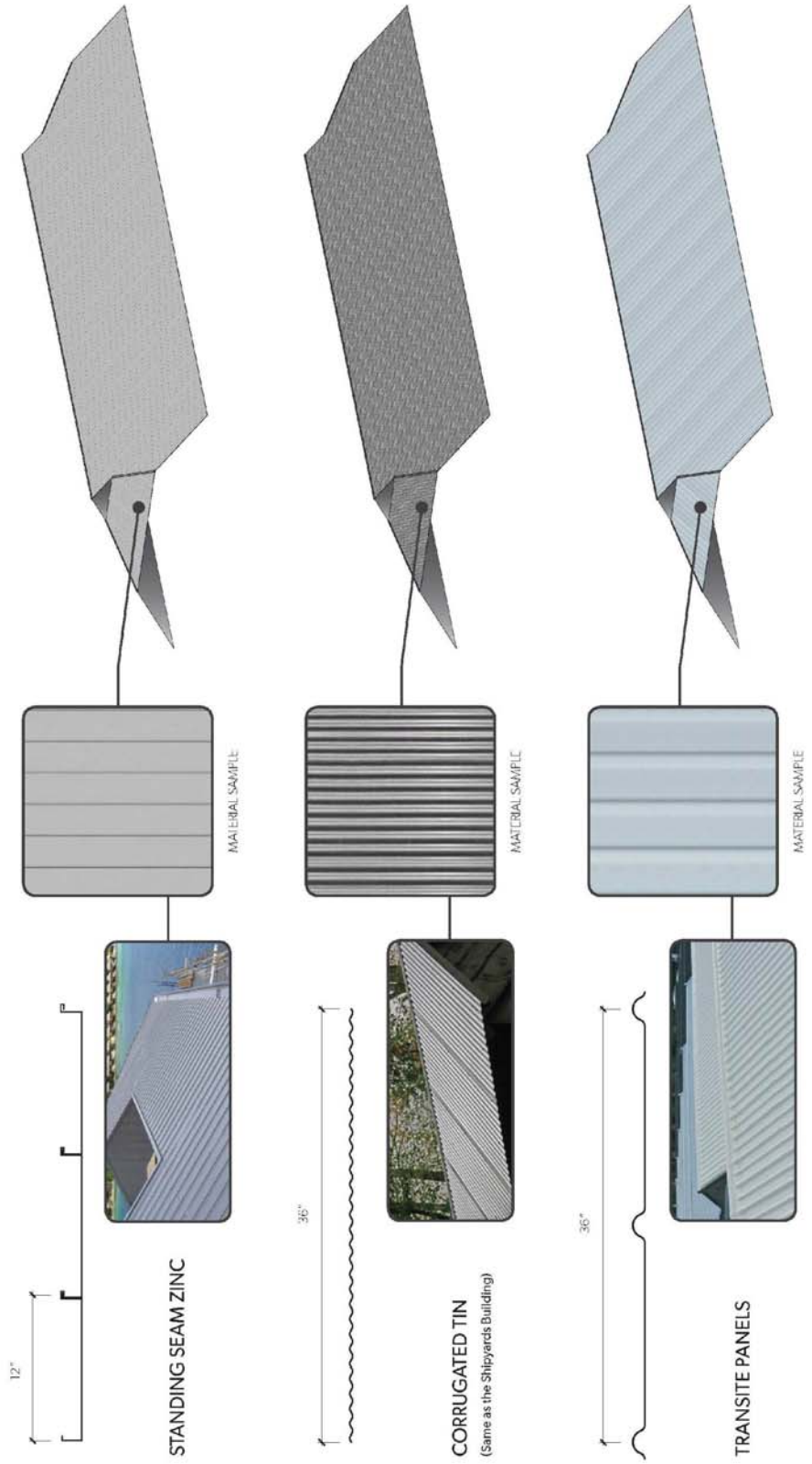
DRAWING TITLE
LOWERED SECOND FLOOR

CITY NAME
City of Richmond

DATE
2018 . 02 . 16

A2

ROOF REPLACEMENT



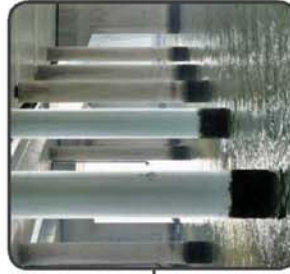
FUTURE USE (PILES)



WOOD PIERS



CONCRETE PIERS



O4A PHOENIX NETLOFT

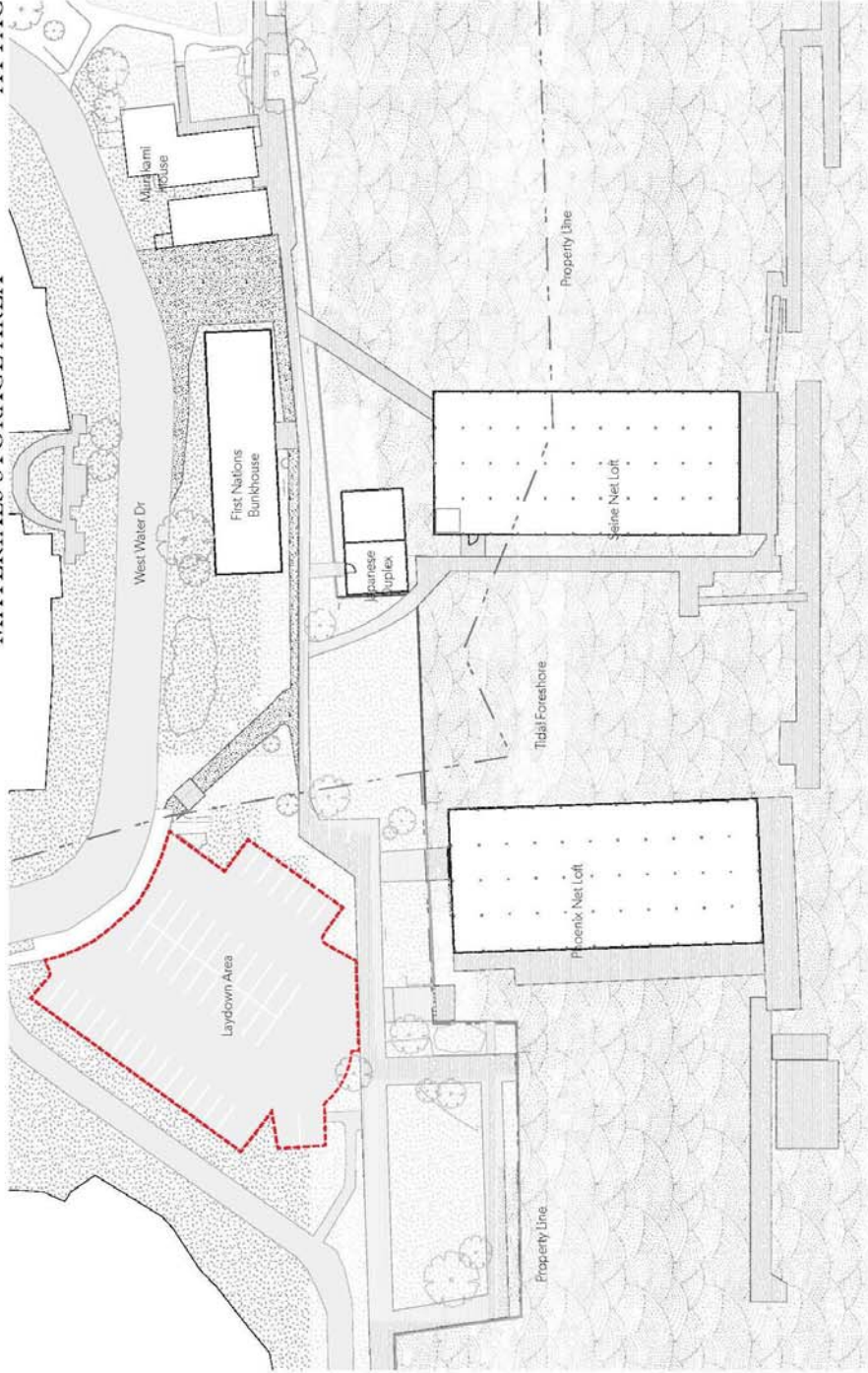
DRAWING TITLE
PIER MATERIAL OPTIONS

CLIENT NAME
City of Richmond

DATE
2018 . 02 . 16

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MATERIALS STORAGE AREA ATTACHMENT 5



O4A PHOENIX NET LOFT

DRAWING TITLE
SITE PLAN & LAYDOWN AREA

CLIENT NAME
City of Richmond

DATE
2018 - 02 - 16

A5