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Date: 5/28/2024

To: Port of Anacortes
Attn: Mr. Brad Tesch
317 Commercial Ave
Anacortes, WA 98221

From: Steve Robert, Principal, P.E.
Vu-Hoang Nguyen, E.I.T

Subject: Marine Supply & Hardware Building Structural Assessment

Dear Mr. Tesch:

Facet completed the condition assessment on the Marine Supply & Hardware building and the neighboring retail store located at 202, 208, and 210 Commercial Ave in Anacortes, WA, on March 13th, 2024. The purpose of this condition assessment is to provide an assessment of the existing Marine Supply & Hardware building and determine its structural integrity for the demolishing of the Olson building renovation project. Outlined below are the goals for this report to address:

1. Review of the existing building documents, reports and as-builts provided by the Port of Anacortes.
2. Review the renovation plan of the Olson Building regarding how removal of the Bikespot will affect the marine Supply and Hardware Building.
3. Potential impacts to the Marine Supply and Hardware Building from the Olson Building construction.
4. Preparation of building structural assessment report with recommendations based on field findings and the provided existing documents from the Port of Anacortes.

The Commercial Avenue building complex is a 7,600 square foot, single story, timber framed building, constructed in the early twentieth century. The building is divided into three suites and two annexes. The north portion of the building, denoted as Suite A and Annex A, is 74’-2” x 48’x7” and is leased out to King Meadow who operates as Marine Supply & Hardware. The annex is connected and is accessed by going through Suite A. South of that is Suite B, sized 55’-0” x 49’-9”. It is also leased out to King Meadow and operates as Alley Cat Antiques. The last suite is vacant and used to be leased out to Bikespot and is denoted as Suite C. The suite is a 56’x2” x 16’-6” and is connected to an 8’-0” x 56’-0” rear addition which is denoted as Annex C.

Due to the building being over 100 years old, the structure is listed on the National Register of Historic Places. However, this is an honorary designation which means that there are no restrictions to what the Port of Anacortes is allowed to do with the building. Plans for any major alterations or demolitions to the suites or annexes must be submitted to the Anacortes Historic Preservation Board (AHPB) for review. Any comments and recommendations by the board are advisory only. Any decisions made to the property for demolition or development is decided by the owner of the building, in this case, the Port of Anacortes.

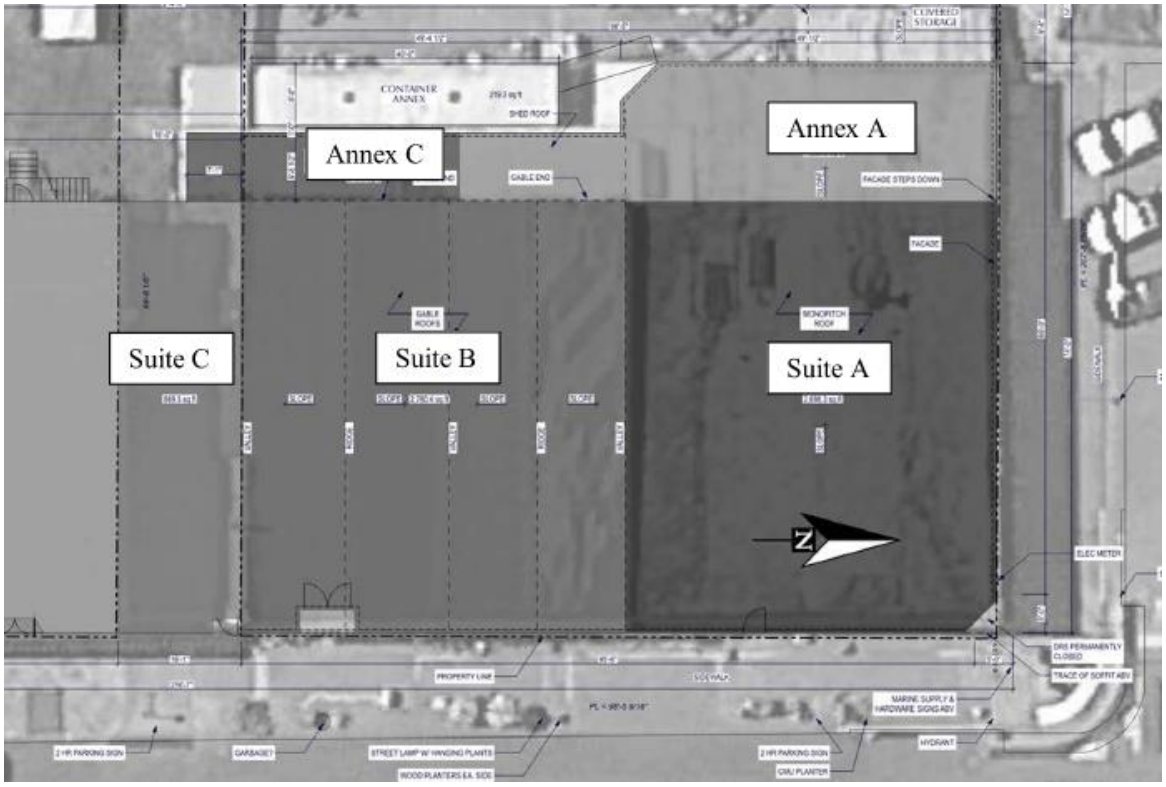

Figure 1. Layout of the Building Complex

Building Area Summary

5,346 Square Feet (Skagit County Assessor)
Suite A (Currently Marine Hardware Store) 2,675 Square Feet Measured
Suite B (Currently Alley Cat Antique) 2,743 Square Feet Measured
Suite C (Vacant, Formally Bikespot) 878 Square Feet Measured
Annex A (Currently Marine Hardware Store) 1,042 Square Feet Measured
Annex C (Vacant, Formally Bikespot) 290 Square Feet Measured

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Qualifications of Inspectors

Vu-Hoang Nguyen, E.I.T. is Senior Marine Structural Engineer and a Project Manager for Facet and has more than 16 years of experience in structural design, inspections, and construction support for marine, waterfront, and building structures. His expertise includes foundation design, structural analysis, condition assessments, fabrication inspection, project, and construction management. Vu has field engineering experience in marine structures condition assessment as well as providing quality control inspection during construction of multiple marine structures with the Port of Anacortes.

Daniel Truong, E.I.T. is a staff engineer with Facet with 3 years of experience in structural engineering design and construction for marine/waterfront structures. His experiences include project and construction management of heavy civil projects, foundation design and structural analysis. Daniel has received his Master's in Structural Engineering at the University of Washington and has worked with the design and seismic evaluation of Navy Dry Docks in Hawaii and Washington.

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Summary of Evaluation and Assessment

Each major component is assigned a rating based on the observed condition during the time of inspection and a priority for replacement or repair, if necessary. A description of the condition assessment rating system is summarized below.

Rating	Description
6 – Good	No visible damage or only minor damage noted. Structural elements may show very minor deterioration, but no overstressing observed. No repairs are required.
5 – Satisfactory	Limited minor to moderate defects or deterioration observed but no overstressing observed. No repairs are required.
4 – Fair	All primary structural elements are sound but minor to moderate defects or deterioration observed. Localized areas of moderate to advanced deterioration may be present but do not significantly reduce the load-bearing capacity of the structure. Repairs are recommended, but the priority of the recommended repairs is low.
3 – Poor	Advanced deterioration or overstressing observed on widespread portions of the structure but does not significantly reduce the load-bearing capacity of the structure. Repairs may need to be carried out with moderate urgency.
2 – Serious	Advanced deterioration, overstressing, or breakage may have significantly affected the load-bearing capacity of primary structural components. Local failures are possible, and loading restrictions may be necessary. Repairs may need to be carries out on a high-priority basis with urgency.
1 – Critical	Very advanced deterioration, overstressing, or breakage has resulted in localized failure(s) of primary structural components. More widespread failures are possible or likely to occur, and load restrictions should be implemented as necessary. Repairs may need to be carried out on a very high-priority basis with strong urgency.

Based on our visual assessment and walkthrough of the Marine Supply & Hardware building, Facet does concur with the recommendations and assessment done previously by PND Engineers on March 2021 and GHD on May 2017. The building is in non-compliance with current building codes and would endure considerable damage beyond repairs after any high wind or seismic event, in addition to potential life safety concerns. Please refer to PND and GHD's reports for more information.

Below are the key points from the reports:

- Structural framing members appear to be in fair condition and show some signs of rot, damage, or deterioration. However, they were determined to not be sufficient in transferring lateral loads from a large wind or seismic event. Seismic retrofit is recommended.

- Lack of adequate lateral force resisting system (LRFS) throughout the structure. No shear wall was found on the east perimeter façade.
- The existing foundation was found to be in poor condition, settlement was found on foundation piles underneath the building complex. Posts are supported on uncompacted native subgrade.
- Roof trusses and joists appear to be in fair condition and show some signs of rot or deterioration. Sagging is visible and was noted. There are some damp areas which could lead to dry rot. Dry rot visible on skylights and signs of previous leaks.
- Floor framing and assembly should be replaced due to its serious conditions. Per GHD, "beams, stringers, structural decking and finish flooring were found to have dry rot and are very old".

Demolition Plan

Kingworks Structural Engineer has been tasked with the renovation and demolition plan of the existing masonry Olson Building south of Suite B. Kingworks has provided two options: 1) To keep the existing east and south brick building facades while tearing down the west and north wall. The east and south facades will be braced and shored using helical anchors. 2) To demolish all 4 sides of the Olson building and remove the east and south facades which leads to no shoring being needed. In either case, Kingworks has stated that the north façade will need to be isolated from the shared wall owned by the Port's Suite C. They estimate that "a gap of approximately five inches will be required to accommodate lateral movement during seismic events without pounding. To Accomplish the separation, a new foundation and bearing wall will be required to be installed on the north side of the existing north wall. The foundation will use 2" diameter pin piles at 5' on center with a 16"x18" reinforced concrete pile cap/grade beam with the top leveled to the existing floor slab. The bearing wall will use 2"x6" at 16" on center framing with plywood sheathing".

On April 25th, 2024, Zervas Architects contacted Tiger-Pearson Construction to consult about the demolition and procedure of demo for the Olson Building. After Tiger Construction site visit with a demolition subcontractor, they, "do not think that is possible to demo the Bikespot building without causing major damage to the MS&H building. It would probably cost more than the MS&H building is worth to shore it up so that it can stay standing by itself". Tiger Construction concluded that, "it is not possible to safely take down the Bikespot without affecting the MS&H building… If the port elects to maintain use of the building in its current state, repair costs might reach 2 to 3 million dollars." The statements made from the memo are not intended to provide a recommendation but if they were selected for the demolition of the Olson building, they would "haul in their 330-grapple excavator for the work. They would begin to peel the brick/aggregate from the back wall and pull away the north wall from the top down to the ground level… The foundation walls don't seem to be extremely well built, so we could break them up with the machine…" For this demolition plan to work, the removal of the Bikespot building will be required.

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Conclusion and Recommendations

After an on-site inspection and reviewing all documents, reports, and memos regarding the existing buildings, as-builts, and the demolition plan, Facet has concluded that the demolition of the Olson Building, particularly in the context of the neighboring Bikespot and MS&H building presents complex logistical and financial challenges. Tiger-Pearson Construction's assessment highlights significant challenges in safely demolishing the neighboring Bikespot building without risking substantial damage to the adjacent MS&H building. Their conclusion underscores the complexity and potential costs involved, with repair estimates for the MS&H building ranging from 2-3 million dollars. Facet does believe that the demolition of the Bikespot suite is a challenge, however it is possible to accomplish since the walls and roof supports are lean-to types of framing.

However, the demolition activities associated with the Olson Building can potentially impact the structural integrity of the MS&H Building. Although the roof framing is isolated, the floor framing is unknown and given the proximity of the two structures, vibrations, ground settlement, and debris from demolition operations, it imposes risks to the MS&H building. The floor framing is the real unknown; and as built of the floor framing and foundation would be required for a careful analysis of demolition limits that would not affect the MS&H building.

Additionally, the need for shoring and bracing measures to support the Olson Building may exert lateral forces on the MS&H building and cause structural damage due to lack of a Lateral Force Resisting System (LRFS).

It is evident that the demolition will heavily affect the structural integrity of the MS&H building. The Port of Anacortes will need to have further discussions with the Anacortes Housing Authority on how to proceed forward and reach a well-informed decision that minimizes risks, disruption, and prioritizes the safety of the tenants operating the building.

Facet agrees with the structural report previously done by PND and GHD that outlines the current condition of the MS&H building. These reports should be used for decisions on the MS&H building during the demolition planning.

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	Photograph No. 1 **Description:** Alleyway between Bikespot shop (Suite C) and the Olson Building.
	Photograph No. 2 **Description:** Column Pile Supporting the roof of the Bikespot shop (Suite C).
	Photograph No. 3 **Description:** Annex C wall and roof framing. Connected to the marine supply and hardware store.

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	Photograph No. 4 **Description:** West wall of Annex C.
	Photograph No. 5 **Description:** Wall shared between the Bikespot (Suite C) and marine supply store (Suite B). The cable brace above is used to hold the roof framing for Suite B.
	Photograph No. 6 **Description:** Foundation underneath Annex C.

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	Photograph No. 7 **Description:** Street view, connection between Olson building and Bikespot shop.
	Photograph No. 8 **Description:** Roof of Annex A.
	Photograph No. 9 **Description:** Foundation and dividing wall underneath the marine hardware store.

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	Photograph No. 10 **Description:** Wall underneath the marine hardware store.
	Photograph No. 11 **Description:** Pile and Concrete abutment for the building complex throughout the foundation.
	Photograph No. 12 **Description:** Second view of the wall shared between the Bikeshop and marine hardware store.

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	Photograph No. 13 **Description:** Close up damages of the wall shared between the Bikeshop and Olson building.
	Photograph No. 14 **Description:** Close up of brace connected to the shared wall. Brace used to keep the roof rafter of Bikeshop supported.
	Photograph No. 15 **Description:** Skylight panel dry rot.