ENGINEERS, INC.

December 9, 2024 PND 242085

Mr. Matthew Sill, P.E.
Port Engineer
City and Borough of Juneau
155 South Seward Street
Juneau, Alaska 99801

Subject: Aurora Harbor Office Site Visit

Dear Mr. Sill,

Per your request, PND Engineers, Inc. (PND) performed a site visit at the Aurora Harbor office building, located in Juneau, AK to observe the existing conditions of the structure of the office building and the adjacent garage. This letter summarizes the methods and observations developed from the site visit.

Currently, the building supports the City and Borough of Juneau Docks and Harbors (CBJ D&H) harbormaster operations at Aurora Harbor. The office is a single-story light frame timber construction with a cold roof attic. The wall stud spacing and stud size was not exposed and was not determined while on site. The roof structure consists of timber trusses spaced 2'-0" o.c. with plywood sheathing underneath the metal roofing. The waterfront side (west) eave of the roof extends over a concrete walkway. The eave is supported by a series of timber posts. Both the west and east edges of the roof are vented. A ridge vent is present along the ridge of the roof. The exterior stud walls are clad in T-111 siding panels on all sides of the building.

Observations of the adjacent garage were also made during the site visit. The building is currently used as a mechanic shop and storage space for harbor operations. The light frame construction style is similar to the main office. The floor consists of a concrete slab with an overframed wood floor covering half of the square footage of the garage.

The intent of the site visit was to document and report known and observed structural and architectural deficiencies. Structural evaluations of the structures were not part of the scope of this work.

Photos from the site visit have been provided in Appendix A to document the observed conditions while on-site. Appendix B contains the architectural report developed by JWY which contains a more in-depth discussion of architectural issues.

Site Visit:

A site visit was performed by PND principal engineer Mark Sams P.E, S.E., PND staff engineer Nicholas Kulow EIT, Jensen Yorba Wall (JYW) partner Dan Fabrello, and CBJ D&H staff on Wednesday, October 2, 2024. The purpose of the visit was to identify and document existing building issues that have been identified by staff or were observed during the site visit.

The site visit included walkthroughs of the office space and the attic of the main building and the adjacent garage. The site visit coincided with rainy and windy weather in the hopes of observing any leaks during the visit. All areas of concern were visually examined where exposed and accessible. The attic space was accessed by a pull done stair from the ceiling of the first floor. Observations in the attic were made from standing on plywood over framing on the roof trusses which extended the full length of the roofline. The wall structure was not accessible behind finishes during the visit. The exteriors and roofs of both the office and garage were visually observed from the ground.

Observations:

The site visit produced observations from both structural and architectural perspectives. Structural items are provided by PND below and a full list of architectural items are identified and discussed in the attached architectural report from JYW found in Appendix B.

The roof framing of the office is in generally fair condition, with mold and rot limited to areas of localized, moisture concentrations from venting. However, framing member deterioration observed may reduce the structural capacity of the framing members from the design intent. The waterfront eave timber posts are deteriorated at the base connections due to both biological decay and abrasion.

The structure of the garage is in generally poor condition. The roof lacks sheathing below the metal roofing where the underside of the roof was observed. One roof truss has a reduced section at the wall bearing point and the lateral force resisting system appeared inadequate.

The following list summarizes the significant observations made from the site visit at the office and garage buildings.

1. Since the site visit coincided with rainy and windy weather, some active leaks were observed within the attic space between sheathing panels. Further moisture infiltration was indicated by the presence of water stains, mold accumulation and early stages of rot. It was reported by staff that during some rain events, a roof leak penetrates the ceiling near the electrical and communications boxes and drains along the floor to the floor drain (this was not actively occurring during our site visit but evidence of the leak was observed on the walls and floor).
2. Venting of the office space terminates in the attic space and is not routed to the exterior of the building. Significant mold growth was observed on the nearby sheathing and trusses. See the architectural report in appendix B for moisture meter records.
3. The attic space has strong air circulation through the roof vents.
4. Both bathroom vents had ductwork leading through the attic to the exterior. However, neither vent was properly insulated in the attic space, leading to condensation and moisture build-up. This water damage was visible in the bathrooms on the upper corners and walls in the form of bubbled, cracked, and stained paint due to apparent moisture dripping off the vent pipes.
5. A roof penetration for the bathroom plumbing vent was sheared off, likely allowing moisture to enter the building envelope and exacerbate the bathroom ceiling water damage.
6. The rear canopy structure has three shortened columns that were connected to the canopy beam by a single bolt with nailed connections. Rott and abrasion were present at all column bases. The

connection bracket between the post and the eave beam was small and likely does not have the capacity for the design wind uplift on the eave.

7. Within the garage, the lateral force resisting system consisted of a timber 2x4 diagonal member. The brace meets the top plate at the center of the structure with the braces mirrored about the center of the structure. The brace is nailed to the inside of the stud wall. No sheathing was present on the roof, significantly limiting the lateral load capacity of the structure.
8. A substantial gouge in a garage roof truss member was present on the bearing surface between the bottom flange of the truss and stud wall top plate.
9. A large roof leak above the garage oil heater was observed, correlating with the heater's roof vent penetration.
10. Damage was observed on both the office and garage exterior eves and siding with visible large holes, significant rot, and extensive water staining. The front office building roof gutter was completely torn from the eve fascia.
11. CBJ D&H staff directed attention to an exterior electrical conduit reportedly directing rainwater inside the office. This process was not observed despite the rainy weather.
12. CBJ D&H staff mentioned that snow would occasionally blow into the office from the attic, especially in windy conditions. This action was not observed, but is plausible due to the high airflow observed in the attic space during the windy conditions during the site visit. The high air circulation can carry dry, low-density snow through the eave vents and into the attic space.
13. CBJ D&H staff stated the floor drains currently backup when the sewer system is overwhelmed. When not backing up, the floor drains have sewer gases backing up into the office. The staff has temporary plugged the drains with activated charcoal to prevent the smell in the office. It was unclear if the drains have traps. Since this area is now used as an office space vs the originally intended garage, the floor drains are likely not seeing enough water to maintain full traps if traps are present.

Findings:

The existing structures are in fair to poor condition. The humidity and moisture in the structure is allowing conditions conducive to biological growth and decay in timber components. With the numerous and widespread water leaks into the structure, structural components exposed to the wet environment will see reduced service life as deterioration advances. The leaking sewer gases from the floor drains is a significant health concern for staff working at the facility. The temporary improvised charcoal filters placed in the floor drains are not a long-term solution and may not be effective for stopping all gases, particularly odorless gasses, that can still have health effects for staff. The below findings provide discussion regarding specific observations.

Moisture infiltration in the attic space of the office structure is deteriorating the plywood sheathing with staining and mold growth observed. The moist environment in the attic is partially mitigated by the amount of natural ventilation due to the roof vents. Due to the strong ventilation, moisture in the form

of snow, is reported to be carried into the attic which does not allow the roof framing members to dry out in the winter.

The lateral force resisting system is nonexistent in the garage, the limited bracing and the lack of a diaphragm do not provide a positive load path for lateral loads to transfer to the foundation/ground. The damaged roof truss member has compromised bearing strength and has a reduced snow load capacity. This truss should be monitored in the winter for crushing of the bottom cord member when snow is present. Snow should be removed from the roof prior to the truss member beginning to crush at the bearing point. The snow load on this structure is somewhat mitigated due to the lack of insulation present under the roofing allowing building heat to melt snow from the underside of the roof.

On the exterior of the building, the widespread damage and deterioration of the exterior siding and the lack of a roof gutter at the front of the office building increases moisture exposure. The siding is weathering with the continued exposure to the environment with the existing paint failing. This failure will allow moisture to penetrate further into the siding components, accelerating decay. The columns supporting the waterfront eave of the office building have a reduced capacity due to the section loss present and the lack of connection resistance to wind uplift forces on the eave.

Both the structural and architectural reports have indicated many deficiencies that effect the overall condition of the harbormaster offices at Aurora Harbor. It is apparent that these buildings have exceeded their useful life and are in need of replacement to provide a safe and healthy place for both staff and harbor patrons. Based on the current conditions it would be recommended for CBJ D&H to look at replacement vs renovation. This would allow a single new facility to be constructed to meet the current and future needs of the staff and patrons.

Hopefully this report meets your needs. PND and JYW can provide additional proposals to assist CBJ D&H design work, if desired, to design repairs for long term maintenance of the existing structures. We are also able to provide proposals for planning, permitting and design assistance for replacement structures. Please contact me if you have any questions or wish to discuss the report further.

Sincerely,
PND Engineers, Inc. | Juneau Office

Mark Sams, P.E., S.E | Senior Engineer/ Principal

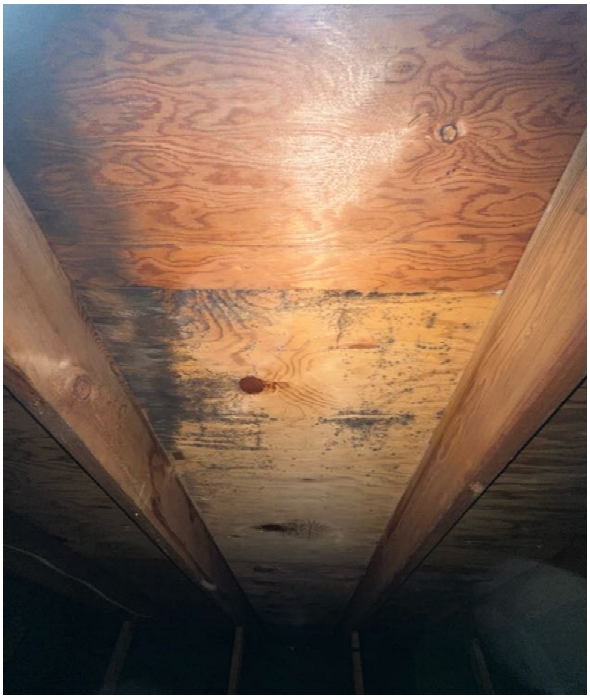
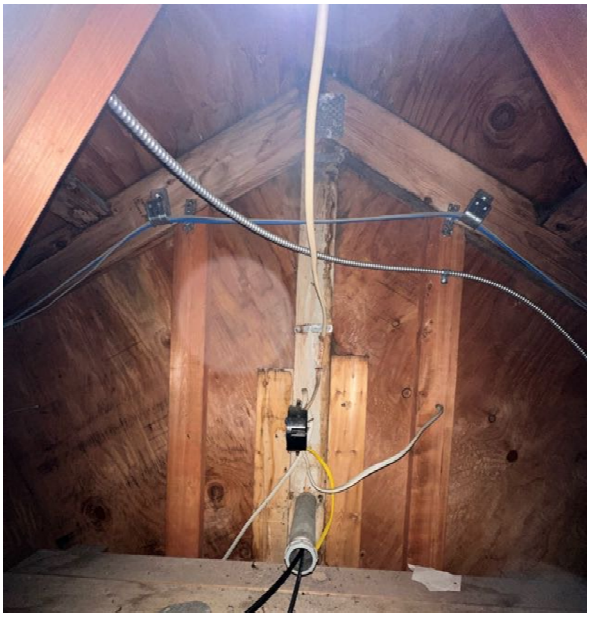
Encl: Appendix A: Reference Photographs

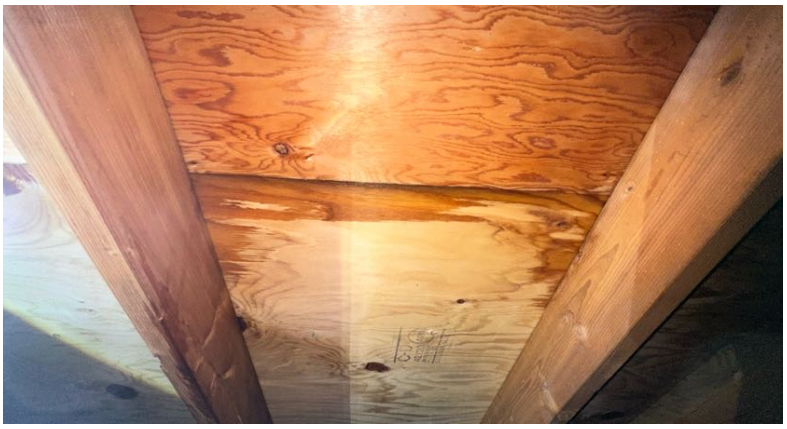
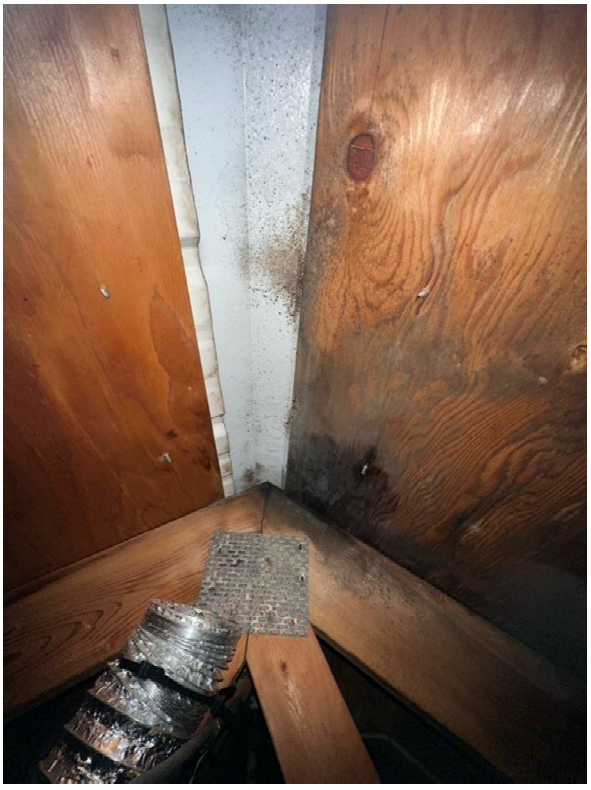
Appendix B: JYW Architectural Report

Appendix A:

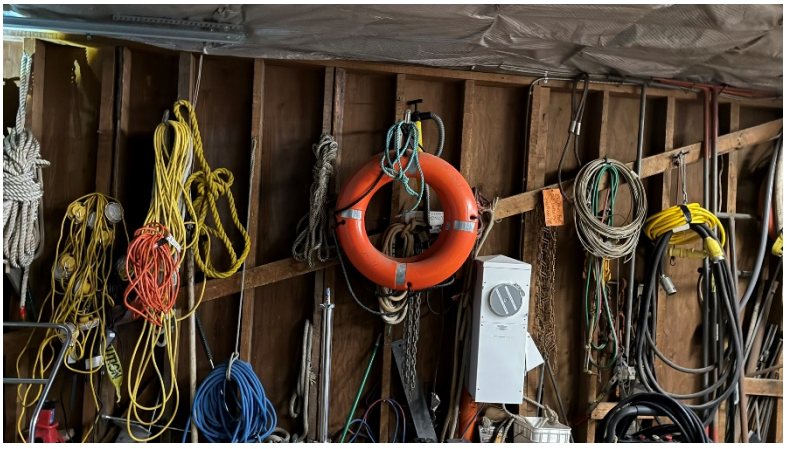
Reference Photographs

	**Photograph 1** **Description** View of the northwest corner of the office building with failing paint on the T-111 siding.
	**Photograph 2** **Description** View of the southwest corner of the garage with failing paint, rotting trim and rotting T-111 panels.

	**Photograph 3** **Description** Mold accumulation on the roof sheathing along bearing points with the roof truss, indicating roof leaks.
	**Photograph 4** **Description** Water stains on the southern gable wall.

	**Photograph 5** **Description** Active leaks between roof sheathing boards
	**Photograph 6** **Description** Ductwork ventilating directly into the attic, causing significant moisture accumulation and mold near the ridgeline. This image also shows the ridgeline vent.

	**Photograph 7** **Description** Water damage present in the bathroom ceiling in the southwest corner.
	**Photograph 8** **Description** Uninsulated vent directly connecting the administration area to the attic, bridging the insulation above the office ceiling and discharging warm moist air in the attic space.

	**Photograph 9** **Description** Poorly insulated restroom fan ducts that are loosely wrapped with batt insulation.
	**Photograph 10** **Description** Single 2x4 brace acting as the lateral force resisting member in the garage. T-111 siding is shown on the exterior side of the studs.

	**Photograph 11** **Description** Unsheathed roof in the garage.
	**Photograph 12** **Description** A garage roof truss bearing point with missing material.

Photograph 13

Description

View of the bathroom plumbing roof vent that was sheared off, allowing for potential infiltration of moisture through the roof envelope.

Photograph 14

Description

View of the connection between the timber post and the roof eave girder. Connection has very little uplift capacity from the small nails located close to the edge of the timber members.

Photograph 15

Description

View of the rotted base of a timber post supporting the roof eave.

Photograph 16

Description

Eave facia with failed paint with gutter is no longer present.

Photograph 17

Description

Electrical conduit box on the southern wall that reportedly allows water to leak into the interior office space.

Appendix B:

Architectural Report

Jensen Yorba Wall Inc.

522 West 10th Street, Juneau, Alaska 99801 907.586.1070 jensenyorbawall.com

CBJ Docks and Harbors – Aurora Harbor Office & Outbuilding/Garage Condition Assessment

Juneau, Alaska

10/8/2024

Jensen Yorba Wall, Inc.
Dan Fabrello

Purpose

CBJ has tasked PND Engineers, Inc. and Jensen Yorba Wall, Inc. to perform a limited condition survey of the existing Aurora Harbormasters Office Building and Outbuilding/Garage in Juneau, AK. This report is intended to provide a description of the existing conditions observed during the limited site visit. Findings from the investigation will be used to identify solutions to repair or replace the structures. Solutions provided in this report should be evaluated and incorporated into future design documents that are not part of this report.

Aurora Harbor Office & Outbuilding

Description

Jensen Yorba Wall Construction Administrator/ Partner Dan Fabrello visited the site Wednesday October 02, 2024. Weather: 45 degrees, overcast with light rain, light breeze. The site visit was conducted in coordination with CBJ Harbors Staff, CBJ Building Maintenance and PND Engineers. The visit consisted of a quick tour to get acquainted with the facility buildings and layout and then review the existing conditions.

The Harbormaster Office building is a wood framed structure, manufactured wood trusses, exterior cladding T1-11 wood siding and roofing of exposed fastener metal roofing on 1/2" plywood roof sheathing. The Harbormaster building appears to have been renovated in the past. The building appears to have been a harbor office for public harbor business with an attached vehicle parking and maintenance garage. The garage doors have been framed in and the old garage space converted to harbor staff offices, meeting area, staff breakroom and laundry all in one open space. The public harbors business office and toilets remain on the South side of the building. Both the interior spaces and attic spaces where reviewed during the site visit. The interior spaces in general lack proper accessibility requirements and lighted exits at both the public and staff areas. There are signs of water damage at walls and ceiling as well as signs of water intrusion into light fixtures. The floor drains in the harbor staff office space (old garage), emit sewer gas as the drains and configuration were not designed or intended for a finished office space environment. The attic space was accessed through the ceiling access ladder located in the renovated harbor office space. The attic space underside of plywood sheathing shows signs of water damage and mold. There are miscellaneous exhaust fans in the office ceiling spaces below that are not connected to the exterior and exhaust directly into the attic space. The bathroom plumbing vent through the roof is broken at the roof line which will allow sewer gases to enter the attic space. The bathroom exhaust vent ducts are plastic flexible dryer type ducts with soffit vent louvers installed as the duct through wall hood, both the plastic duct and louvers are not compliant with venting requirements. Line voltage wiring through attic space are not properly supported and, in some locations, there are open j-boxes. The attic insulation consists of a mix of blown-in insulation and loose laid batt insulation. It's recommended the blown-in insulation be tested for the presence of asbestos-containing material as well as test the gypsum drywall, joint compound and taped joints throughout the facility. In general, the interior and exterior of the building are in poor condition.

The Outbuilding/Garage is a framed structure with rough sawn wood framing, roof is site-built trusses, exposed fastener metal roofing without roof sheathing. Floor construction consists of large timber Cant beams on grade with rough sawn floor planks as the finished flooring. The finished floor is uneven and has excessive gaps between the planks. Exterior of the building is clad with

T1-11 wood siding and exposed wood trim that are water damaged and deteriorating. The Outbuilding does not appear to have a concrete foundation and is bearing on wood Cants on grade. The Outbuilding has been remodeled in the past with a portion of the Outbuildings floor cut out, a garage door was added, and a concrete slab placed for use as a parking and maintenance garage. In the Northeast corner of the garage space is located a large waste oil burner for heating the building. The interior and exterior of the building are in poor condition. The doors accessing the building do not meet accessibility requirements. There is a concrete containment foundation adjacent to the Outbuilding that contains large waste oil tanks and an EPDM bladder to control potential oil spills.

Condition

As noted above, both the buildings reviewed at Aurora Harbor are wood framed and wood clad sided buildings with exposed fastener metal roofing. There are active leaks in the Harbor Building Office structure. There are signs of water damage to wall finishes and lights in the interior. The exterior of both structures is in poor condition with water damage and dry rot. Life safety and accessibility issues are present at both structures. The existing Harbormaster Office building as well as the Outbuilding/Garage have outlived their useful life.

Prognosis

Both buildings are at the end of useful life.

Recommendations

Recommendation for Aurora Harbor Office

Modernization include:

- Replacement of structures.

Considerations during design and construction to include:

- Consolidate two buildings into one comprehensive building to serve the harbor patrons and harbor staff needs.

Aurora Harbor Office

Aurora Harbor Office: General view of builiding from Southeast corner.

Aurora Harbor Office: General view of building from Southwest corner.

Aurora Harbor Office: General view of building from Northeast corner.

Aurora Harbor Office: General view of building from Northwest corner.

Aurora Harbor Office: Vent pipe between North and South bathrooms severed at roofline.
General view of East side exterior water damage. Excessive wood decay present.

Aurora Harbor Office: General view of East side exterior water damage. Excessive wood decay present.

Aurora Harbor Office: Missing gutters has contributed to trim and siding water damage and wood decay.

Aurora Harbor Office: Wood decay along base of siding. Appurtenances along face of structure sticking out into accessible isle.

Aurora Harbor Office: Enlarged view of typical wood decay at siding.

Aurora Harbor Office: Wood decay present at eaves were gutters remain intact.

Aurora Harbor Office: Bathroom vents with non complient vent louvers, typical.

Aurora Harbor Office: Various abandoned wiring present around building outside of j-boxes.

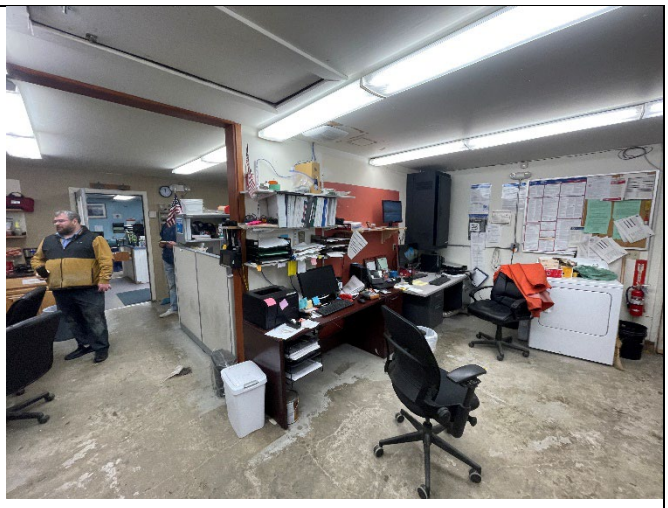
Aurora Harbor Office: Asphalt paving and concrete sidewalk not aligned and is a tripping and accissibility hazard.

Aurora Harbor Office: Concrete sidewalk damaged and crackin along Northwest corner. Thresholds heights into office on the North end are not compliant with accessibility requirements.

Aurora Harbor Office: Base of existing exterior canopy columns show signs of water damaged and are deteriorating.

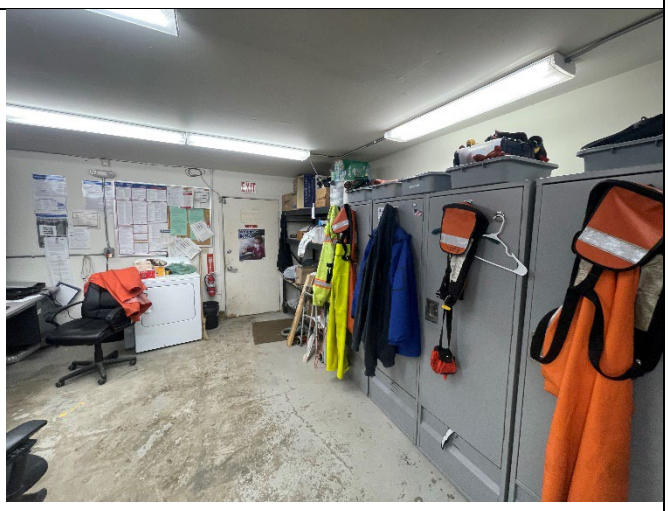
Aurora Harbor Office: Tops of colums do not appear to be appopriate use of the type of post bracket. The use of an adjustable bracket also relays that its use may be due to structural movement of the columns that should be addressed.

Aurora Harbor Office: General view of reconfigured garage into Harbor staff offices, meeting area, breakroom and laundry.



Aurora Harbor Office: General view of reconfigured garage into Harbor staff offices, meeting area, breakroom and laundry.

Aurora Harbor Office: General view of reconfigured garage into Harbor staff offices, meeting area, breakroom and laundry.



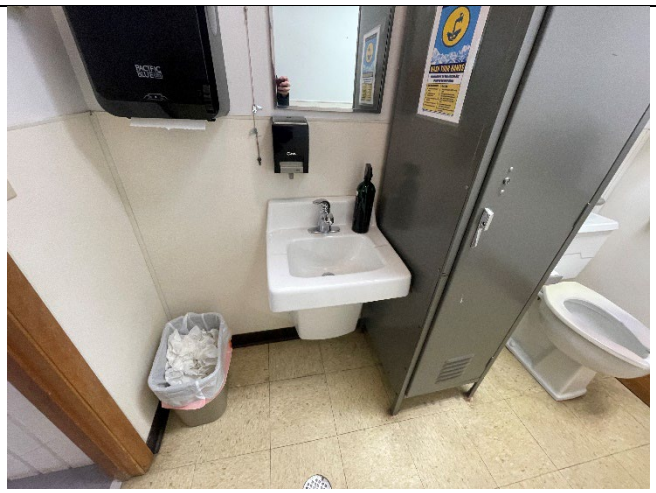
Aurora Harbor Office: Accessibility requirements at exits are non complient. Exit signage not illuminated.

Aurora Harbor Office: Various fans in converted garage to Office area and main front office area have miscellaneous ceiling mounted exhaust fans that are piped into attic without proper roof or soffit vents.

Aurora Harbor Office: Typical floor drains in the office (old garage area) smell of sewer gases.

Aurora Harbor Office: Front main office area accessibility requirements should be evaluated further.

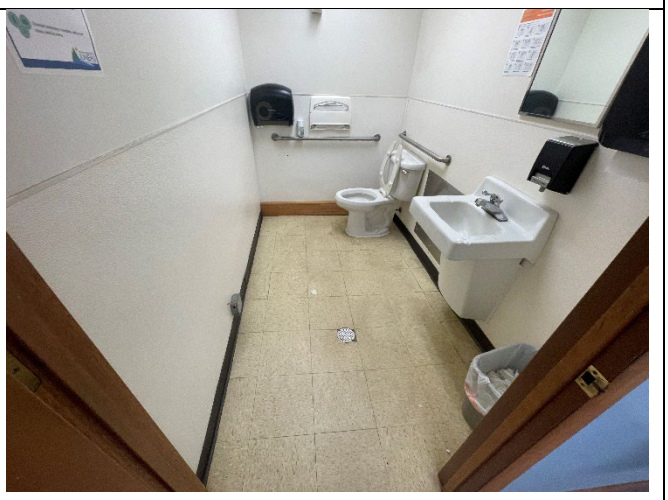
Aurora Harbor Office: Front main office area accessibility requirements should be evaluated further. Exit signage is not illuminated.



Aurora Harbor Office: South bathrooms off of the front main office does not meet accessibility requirements at toilet and lav.

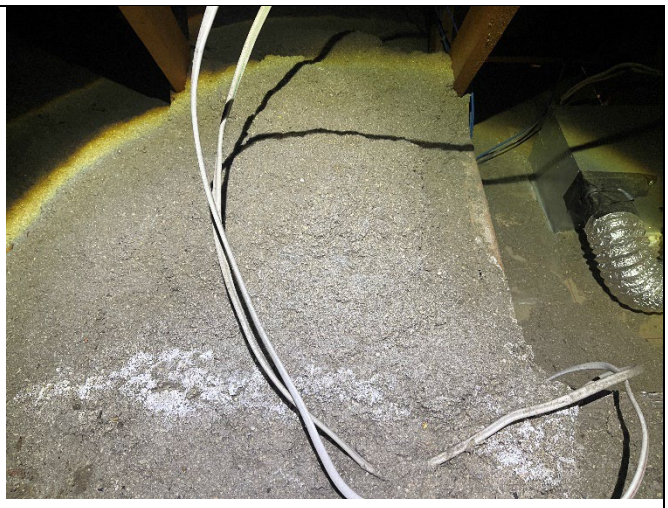
Aurora Harbor Office: South bathroom water damage at ceiling and walls from broken vent pipe through the roof.

Aurora Harbor Office: South bathroom water damage at wall from broken vent pipe through the roof. Enlarged view of South bathrooms not meeting accessibility requirements at toilet.

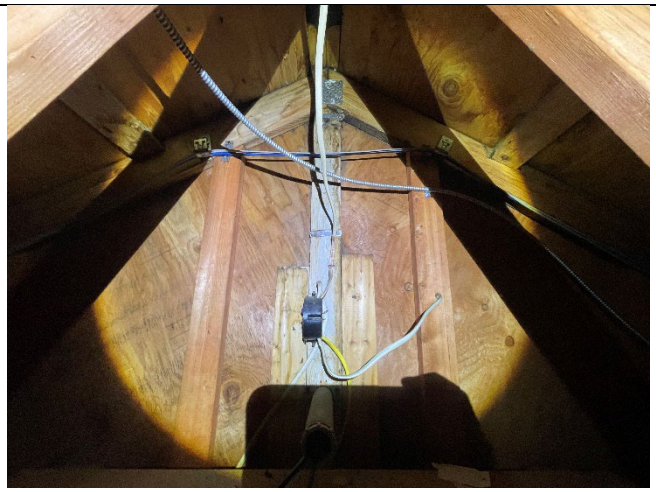


Aurora Harbor Office: North bathrooms in the facility do not meet accessibility requirements.

Aurora Harbor Office: Signs of water intrusion in light fixtures above the main office area.

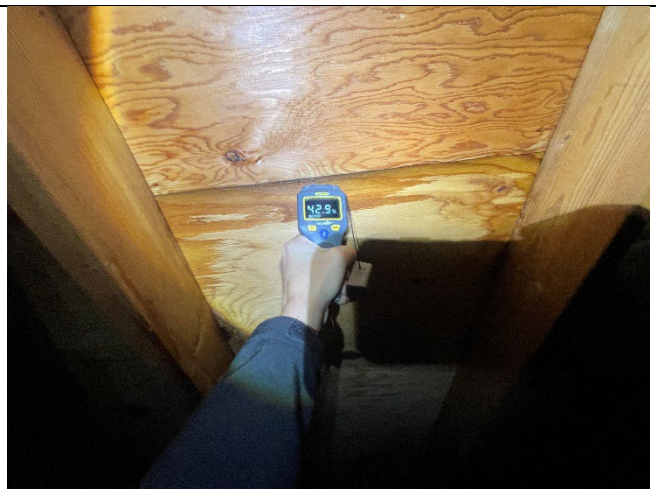


Aurora Harbor Office: misc loose wires common throughout attic space.



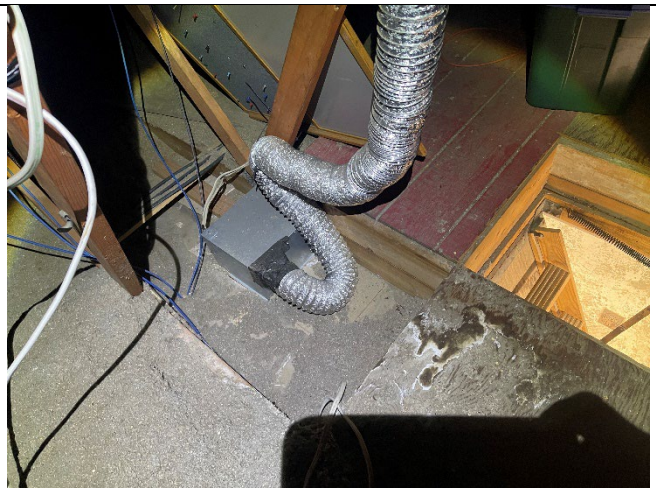
Aurora Harbor Office: misc loose wires and open j-boxes common throughout attic space.

Aurora Harbor Office: Many areas of underside of roof deck have active water intrusion and high moisture levels.



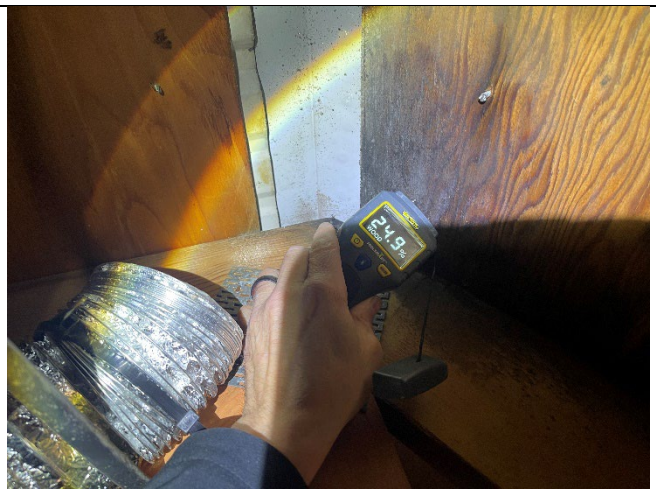
Aurora Harbor Office: Many areas of underside of roof deck have active water intrusion and high moisture levels.

Aurora Harbor Office: Many areas of underside of roof deck have active water intrusion and high moisture levels.



Aurora Harbor Office: View of misc exhaust fan not properly vented.

Aurora Harbor Office: View of misc exhaust fan not properly vented.



Aurora Harbor Office: View of misc exhaust fan not properly vented. High moisture content in plywood sheathing and mold present on deck and framing.

Aurora Harbor Office: View of misc broken bathroom vent through the roof at the main entry bathrooms. Vent is venting into attic space.

Aurora Harbor Office: View of unconnected exhaust fan from main entry office into attic space.

Aurora Harbor Office: Blown-in insulation should be tested for presence of ACM.

Aurora Harbor Office: Gypsum and any joint compound present should be tested for presence of ACM both attic and office areas.

This cell left blank.

Aurora Harbor Office Outbuilding/Garage

Aurora Harbor Outbuilding/Garage: General view of West side of building. In general the building has oulived its useful life and is heavily water damaged. The exterior envelope has many signs of water damage and wood decay. The structure does not meet accessibility requirements.

Aurora Harbor Outbuilding/Garage: General view of water damaged and decay.

Aurora Harbor Outbuilding/Garage: General view of Southwest door. Access does not meet accessibility requirements.

Aurora Harbor Outbuilding/Garage: General view of West end of building.

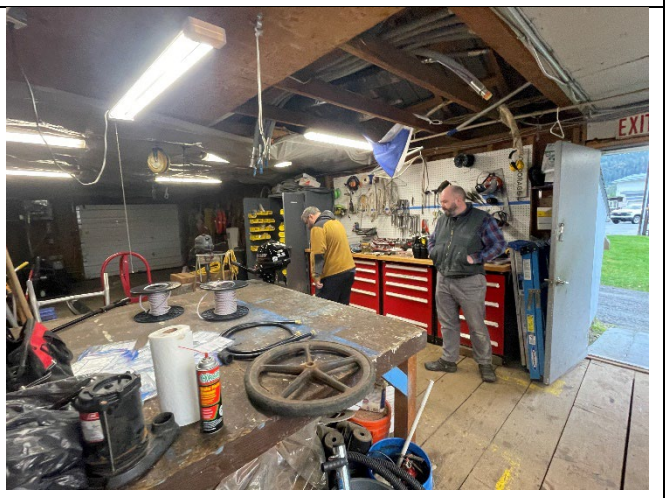
Aurora Harbor Outbuilding/Garage: General view of Northwest door. Access does not meet accessibility requirements.

Aurora Harbor Outbuilding/Garage: General view of North side of outbuilding.

Aurora Harbor Outbuilding/Garage: View of waste oil storage area on North side of outbuilding.

Aurora Harbor Outbuilding/Garage: Waste oil burner boiler stack has large amounts of mastic placed around perimeter to aid in reducing water infiltration.

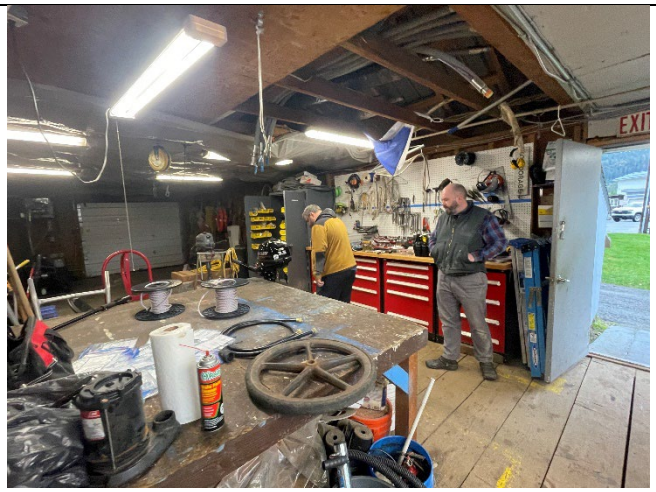
Aurora Harbor Outbuilding/Garage: General view of Outbuilding, doors do not meet accessibility requirements. Exit signs are not illuminated.



Aurora Harbor Outbuilding/Garage: General view of Outbuilding, doors do not meet accessibility requirements. Exit signs are not illuminated.

Aurora Harbor Outbuilding/Garage: General view of roughsawn framed walls and trusses.

Aurora Harbor Outbuilding/Garage: General view of roughsawn framed walls and trusses.



Aurora Harbor Outbuilding/Garage: General view of Outbuilding, doors do not meet accessibility requirements. Exit signs are not illuminated.

Aurora Harbor Outbuilding/Garage: General view of interior floor transitions at Outbuilding interior. Area does not meet accessibility requirements.

 Aurora Harbor Outbuilding/Garage: View of waste oil burner in Garage area of Outbuilding.	This cell left blank.

End of Report.