Preliminary Structural Assessment Memorandum

August 21, 2026

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From	Cody Cruz, SE	**Project no.**	12683907
Project name	CCHD Structural Engineering Inspection		
Subject	Preliminary Structural Conditions Assessment		

1. Introduction

1.1 Purpose of this Assessment

The purpose of this Structural Condition Assessment Memorandum is to summarize the observed structural conditions of the selected Crescent City Harbor District buildings and provide conceptual recommendations for potential repairs, retrofit measures, maintenance, and additional investigation.

This memorandum is intended to assist the Crescent City Harbor District with identifying apparent structural deficiencies, understanding potential lifecycle risks, prioritizing future repair or retrofit efforts, and planning for additional investigation, analysis, design development, and budgeting. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way or for any purpose other than as a preliminary planning-level assessment.

1.2 Methodology and Evaluation Framework

The structural condition assessment is based on investigation findings to evaluate the current condition, performance, and remaining service life of the structure. Each observed deficiency is assessed considering its extent, severity, effect on structural capacity and serviceability, potential for further deterioration, consequences of failure, life-safety implications, and impacts to operations and maintenance.

Based on this evaluation, conditions are categorized as High Severity, where immediate repair is recommended to address conditions that may compromise structural integrity or public safety; Medium Severity, where maintenance or repair is recommended to prevent continued deterioration and increased future repair costs, but where no immediate failure risk is present; Low Severity, where deficiencies have minimal structural implications and can typically be addressed through routine maintenance activities; or Severity Unknown, where available information is insufficient to determine the significance of the condition and additional investigation, testing, monitoring, or structural analysis is required.

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The assessment identifies likely deterioration mechanisms, areas susceptible to future degradation, anticipated impacts on remaining service life, and recommended triggers for future inspection, maintenance, repair, retrofit, or more detailed structural evaluation.

Where warranted, the memorandum identifies conditions that may justify further structural or seismic analysis, including evaluation under ASCE 41 Tier 1, Tier 2, or Tier 3 methodologies.

1.3 Scope and limitations

This Structural Condition Assessment Memorandum has been prepared for the following structures owned by the Crescent City Harbor District:

1) Boat Yard Building – 121 Starfish Way
2) Fish Processing Facility 1 – 161 Starfish Way
3) Fish Processing Facility 2 – 161 Starfish Way
4) Harbor District Office – 101 Citizens' Dock Rd.
5) Abalone Building – Whaler Island
6) Coast Guard Building – 100 Anchor Way
7) Storage building – Commercial boat basin parking lot

The site assessment was performed by Cody Cruz, SE, Senior Structural Engineer, and Nicolas Tortora, Graduate Engineer, during a walkthrough of the buildings on Tuesday May 19th 2026 and led by the Maintenance Foreman. The assessment was limited to screening-level visual observations of interior and exterior structural elements readily accessible at the time of the site visit.

Existing as-built drawings, original design documents, structural calculations, and other record information were not available for review; therefore, many structural member sizes, connection details, foundation configurations, reinforcement, material strengths, and original design criteria could not be verified.

Structural elements that were buried below grade, concealed by finishes, cladding, roofing, equipment, stored materials, or other obstructions could not be directly observed. The findings presented in this memorandum are based on limited visual observations, available field information, and engineering judgment. Unknown conditions not visible or accessible during the site visit could affect future repair or retrofit recommendations if discovered during additional investigation or construction.

Evaluation of existing and proposed building uses, zoning requirements, and permitting requirements for each structure is excluded from this assessment. Any future repair, retrofit, change-of-use, or occupancy-related work should be coordinated separately with the Authority Having Jurisdiction and other applicable reviewing agencies, as required.

This technical memorandum has been prepared by GHD for Crescent City Harbor District. It is not prepared as, and is not represented to be, a deliverable suitable for reliance by any person for any purpose. It is not intended for circulation or incorporation into other documents. The matters discussed in this memorandum are limited to those specifically detailed in the memorandum and are subject to any limitations or assumptions specially set out.

GHD has prepared this memorandum on the basis of information provided by the Client and others who provided information to GHD (which may also include Government authorities), which GHD has not independently verified or checked for the purpose of this memorandum. GHD does not accept liability in connection with such unverified information, including errors and omissions in the memorandum which were caused by errors or omissions in that information.

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1.4 Site Stability

The Crescent City Harbor District facilities are located in a coastal environment along the northern California coast. Based on visual observations during the site visit, the subject buildings are generally located on relatively flat developed harbor properties and are not situated on visibly steep slopes. No obvious signs of large-scale slope instability, such as major ground displacement or landslide-related distress, were observed at the time of assessment.

The site is located in a region of high seismicity, and coastal harbor sites may be susceptible to seismic-related ground hazards such as liquefaction, lateral spreading, settlement, or other ground deformation. A project-specific geotechnical investigation was not available for review, and a detailed geotechnical hazard evaluation was not performed as part of this assessment. Therefore, comments regarding site stability are limited to readily observable surface conditions.

The facilities are also located in a coastal area that may be exposed to tsunami and coastal flooding hazards. The Harbor District Office building has reportedly experienced tsunami-related flooding associated with the 1964 tsunami event. Future tsunami, storm surge, coastal flooding, or wave-related impacts should be considered as part of long-term planning and lifecycle risk evaluation.

This assessment does not include a detailed geotechnical, tsunami inundation, coastal hazard, or flood hazard evaluation. Additional specialty evaluations may be warranted if substantial structural repairs, retrofits, or improvements are pursued.

1.5 Existing Building Code Requirements

1.5.1 Applicable Code Framework

All buildings reviewed as part of this assessment are existing structures. Future repair, retrofit, alteration, replacement, addition, or change-of-use work should be evaluated under the applicable provisions of the California Existing Building Code, California Building Code, and any local amendments adopted by the Authority Having Jurisdiction.

In general, the existing building code provides the framework for work performed on existing buildings, while new structural components or replacement elements may be required to comply with the current California Building Code. The specific code requirements applicable to each building will depend on the final scope of work and the extent of proposed structural modifications.

1.5.2 Potential Structural Evaluation Triggers

Future repair or retrofit work may trigger additional structural evaluation where the proposed work affects existing gravity-load-carrying or lateral-load-resisting elements. This may include repairs, strengthening, replacement, or alteration of beams, columns, roof framing, floor framing, walls, foundations, diaphragms, shear walls, braced frames, collectors, anchorage, or structural connections. Additional evaluation may also be required where proposed work increases gravity or lateral demands, reduces the capacity of existing structural elements, modifies load paths, creates or worsens structural irregularities, or otherwise affects the ability of the structure to resist code-prescribed loads.

Additional evaluation may also be warranted where deterioration, damage, or weakening of structural components are identified. Conditions such as corrosion, section loss, decay, cracking, settlement, excessive deflection, connection deterioration, or other observed distress may require repair, replacement, or further investigation depending on the severity of the condition and the intended repair scope. Changes in building use, occupancy, risk category, loading, or operational requirements may also affect the applicable code requirements.

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1.5.3 Limitations and Future Code Review

The code considerations discussed in this section are intended to identify potential requirements that could apply to future repair, retrofit, alteration, or change-of-use work. They should not be interpreted as a determination that the existing buildings are currently required to be upgraded to current new-building code standards. Final code requirements will depend on the final scope of work, the extent of structural modifications, the condition of existing elements, and the availability of additional information.

This memorandum is not intended to serve as a complete code compliance review, structural analysis, seismic evaluation, or permit-ready repair design. Final determinations regarding code-required upgrades cannot be made until the scope of future work is defined and additional investigation, analysis, and permitting coordination are completed, where required.

A detailed seismic evaluation in accordance with ASCE 41 was not completed as part of this assessment. Seismic-related recommendations included in this memorandum are conceptual and are intended to identify potential areas where further evaluation may be warranted. If significant structural repairs, substantial alterations, changes in use, or modifications to the lateral-force-resisting system are pursued, future evaluation may include an ASCE 41 Tier 1 screening and more detailed Tier 2 and Tier 3 evaluation, if required by the project scope.

1.6 Preliminary Land Use and Permitting Considerations

The following land use and permitting considerations are provided for preliminary planning purposes based on information provided by GHD land use and permitting staff. This section is intended to summarize potential entitlement, zoning, coastal, and permitting considerations that may affect future repair, retrofit, replacement, or change-of-use work. This memorandum does not constitute a land use entitlement analysis, zoning compliance determination, Coastal Development Permit application, or final permitting strategy.

1.6.1 Coastal Zone and Costal Development Permit Considerations

The subject buildings 1) through 7) (per section 0 Where warranted, the memorandum identifies conditions that may justify further structural or seismic analysis, including evaluation under ASCE 41 Tier 1, Tier 2, or Tier 3 methodologies.

Scope and limitations) are located within the Coastal Zone. Based on preliminary land use and permitting information provided for this assessment, land use entitlements for the subject sites may fall under the permitting authority of the California Coastal Commission for Coastal Development Permit review. The permitting history for the existing buildings addressed in this memorandum is unknown.

Buildings 1) through 6) are understood to be located within the California Coastal Commission's retained jurisdiction. A boundary determination from the California Coastal Commission is recommended for Building 7) to confirm whether it is located within Coastal Commission retained jurisdiction or local permitting jurisdiction.

If the Harbor District elects to pursue entitlements for all buildings addressed in this memorandum, a consolidated Coastal Development Permit may be appropriate to authorize the proposed actions under one development authorization. This approach would require coordination with the Harbor District, Del Norte County Planning, and the California Coastal Commission. Construction, repair, retrofit, replacement, or augmentation of the buildings may also require subsequent building permits from the Del Norte County Building Department.

1.6.2 Coastal Scenic and Hazard Considerations

The Harbor District property is located within a designated Coastal Scenic area and is near known viewpoints, including Citizen's Dock and Anchor Way. As a result, exterior modifications, building replacements, signage, or other visible augmentations may be subject to design considerations identified in the Local Coastal Plan. Signage may also be subject to design requirements and size limitations.

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All buildings include the Coastal Hazard combining zone, C(H), due to their proximity to open water and potential exposure to storm surge and tsunami hazards. The site is located within the tsunami run-up zone and tsunami evacuation area. These hazards may affect future building design, construction, repair, replacement, and hazard mitigation considerations.

1.6.3 Zoning and Land Use Designations

The zoning and land use designations for the buildings are generally understood as follows: Buildings 1), 2), 3), 6), and 7) are zoned and planned Harbor Dependent Marine Commercial, HDMC-C(H). Building 4) is zoned and planned Harbor Visitor Serving Commercial, HVSC-C(H). Building 5) is zoned and planned Harbor Dependent Recreational, HDR-C(H).

Future use of the buildings should be reviewed for consistency with the applicable Del Norte County zoning code, land use designation, and coastal permitting requirements. Uses that are not principally permitted or otherwise identified under a specific zoning or land use designation may require a Conditional Use Permit or other discretionary review.

1.6.4 Existing and Proposed Uses

The existing and proposed uses of the buildings may affect future land use, zoning, coastal permitting, and building permit requirements. Any use that is legal nonconforming may require additional review if it is no longer active or has been discontinued for a duration established by Del Norte County Planning. If a prior legal nonconforming use has been discontinued, re-establishing that use may be considered a new use and may be subject to current planning, zoning, coastal permitting, and building code requirements. The status of any discontinued, inactive, or proposed new uses should be reviewed on a case-by-case basis with Del Norte County Planning and the applicable permitting agencies.

This consideration is particularly relevant to the residential or caretaker-type living spaces observed within the Abalone Building. Based on preliminary land use information provided for this assessment, the applicable use allowances do not appear to clearly identify a caretaker's unit as an allowed use unless considered Coast Guard quarters. If the Harbor District does not intend to pursue further review of this use, the living spaces should be considered for removal or conversion to a commercial or storage-related use ancillary to the primary function of the building, or to an employee-serving facility where allowed. If the Harbor District intends to maintain the living spaces, additional land use, zoning, building code, and residential construction requirements would need to be evaluated separately.

The information provided in this section is preliminary and intended to support planning-level discussion only. Future repair, retrofit, replacement, change-of-use, or occupancy-related work should be coordinated with the appropriate planning, coastal, and building permitting agencies before implementation.

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Figure 1: Project Location Map

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2. Building 1) Boat Yard Building – 121 Starfish Way

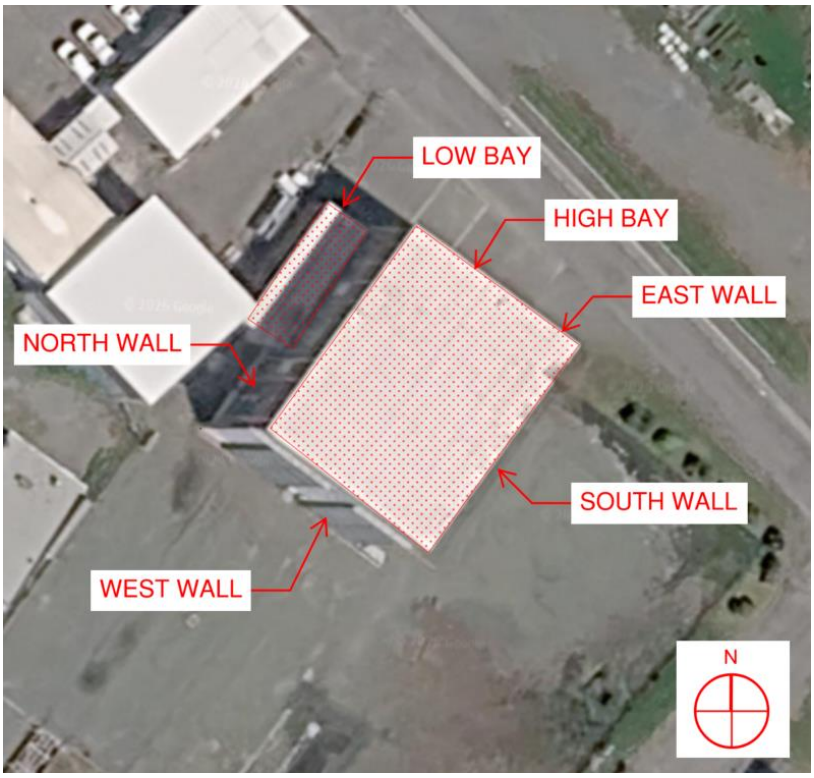

Figure 2: Boat Yard – General plan and site orientation.

The Boat Yard Building is a single-story wood-framed structure located at 121 Starfish Way near the harbor waterfront. The building generally consists of a taller high bay portion and a smaller low bay portion attached along the north side, see Figure 2. The high bay portion was reportedly originally used for construction and repair of large boats and includes large west-facing access openings, a dry dock area, and rail system for moving boats between the harbor and the interior of the building. Assessment of the dry dock area and rail systems are not included in the scope of this memorandum.

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2.1 High Bay – Roof System

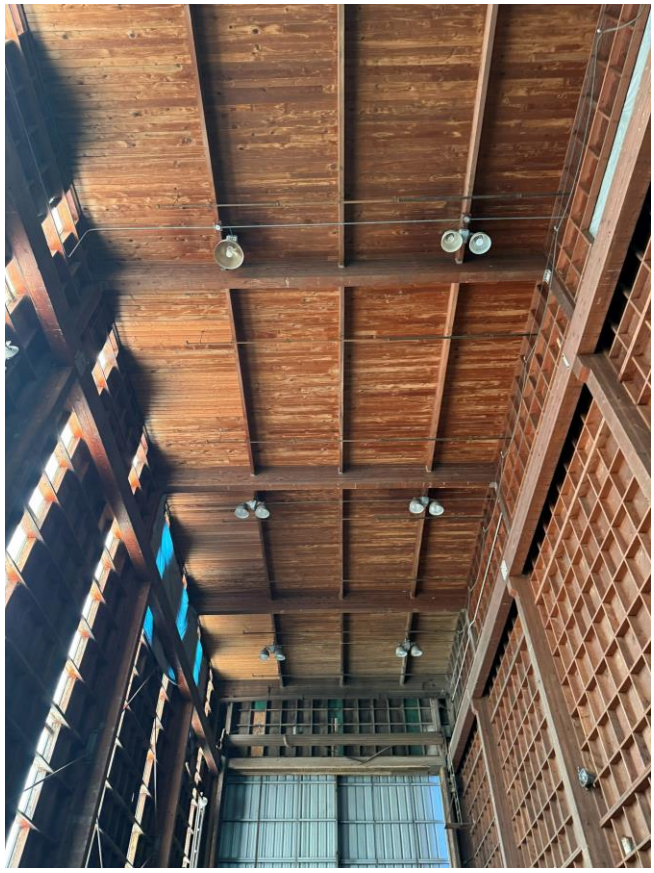

Figure 3: Boat Yard – Roof System.

The high bay roof framing and roof covering could not be safely accessed or fully visually evaluated as part of this assessment; therefore, the condition of the roof structure is unknown. Because the building is located in a coastal harbor environment and is exposed to wind-driven moisture and marine conditions, concealed deterioration may be present in roof framing, roof sheathing, connections, or related load-path elements that could not be directly observed during the site visit.

The visibly exposed interior of the roof structure includes straight tongue & groove wood decking supported by equally spaced wood beams and girders. Although there is some diaphragm capacity associated with such assemblies, their capacities are relatively low. It is possible the decking is covered with an additional layer of plywood or roof sheathing that would significantly strengthen the diaphragm capacity, but it was not accessible to document or verify its existence.

The roof structure should be evaluated during future investigation or repair planning. If deterioration, moisture-related damage, or lack of well defined diaphragm system or other load-path elements are identified, then potential improvements may include roof framing repairs, sheathing replacement, diaphragm strengthening, and improved roof-to-wall connections. Additional field verification should be performed to document the existing roof framing configuration, member sizes, connection conditions, and the extent of any concealed deterioration before repair or retrofit documents are developed.

Re-evaluation should be considered if water intrusion, roof distress, visible deflection, storm-related damage, or deterioration of adjacent wall framing is observed. Additional structural analysis and seismic evaluation may be required if future work includes significant roof framing repairs, diaphragm strengthening, or modifications to the lateral-force-resisting system.

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2.2 High Bay – Lateral Bracing System

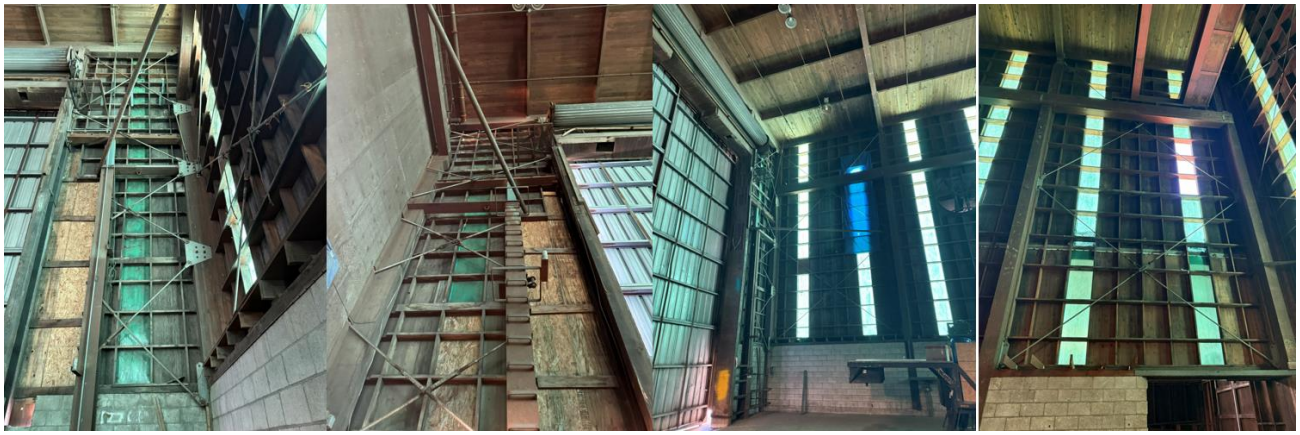

Figure 4: Boat Yard – Modified cross bracing.

The high bay portion of the Boat Yard Building includes large west-facing access openings that were reportedly provided to accommodate the movement of boats into and out of the building. The west face of the building includes exposed lateral bracing elements that appear to have been modified or altered at some point to accommodate changes to the large sliding doors, see Figure 4. Due to the size of these openings and the apparent modifications to the exterior bracing, additional evaluation may be warranted if repair, retrofit, or reuse of the building is pursued.

The apparent modifications to the bracing system should be evaluated to confirm whether the wall framing, bracing, anchorage, and connections provide a continuous load path for wind and seismic forces. Potential retrofit measures may include strengthening or replacing bracing members, improving connections, adding supplemental lateral-resisting elements, or improving anchorage around the large openings.

Re-evaluation should be considered if movement at the large access openings, connection deterioration, storm-related damage, or additional modifications to the lateral bracing system are observed. Permit-level documents may need to include structural repair details, calculations for affected members or connections, construction sequencing, material specifications, and special inspection requirements, where applicable.

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2.3 High Bay – Degrading Posts

Figure 5: Boat Yard – Damage to exterior wood post along south side of the structure.

Figure 6: Boat Yard – Corroded Hardware on north side of the structure.

The west and south sides of the high bay structure appear to be more directly exposed to prevailing coastal weathering effects. These building sides were observed to be weathered, with visible deterioration of exterior wood elements. Several exterior columns exhibited deterioration, softening, decay, or localized material loss, particularly at exposed exterior faces, see Figure 5 and Figure 6.

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Figure 7: Boat Yard – Interior column with no visible damage

The interior faces of some of these members appeared to be in better visible condition than the exterior faces, see Figure 7; however, the full extent of deterioration could not be confirmed without additional intrusive investigation. Continued decay, softening, or section loss at exterior columns and wall framing has likely reduced member capacity over time and may affect the performance of the building envelope and structural load path.

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Figure 8: Boat Yard – Interior modified post at southeast corner.

A previous localized repair was observed at a column near the southeast corner of the high bay structure, adjacent to one of the west-facing bay door openings, see Figure 8. The repair appears to include replacement of portions of the built-up wood column laminations with new 2x material. The attachment method and load transfer mechanism could not be verified during the visual assessment. It is unknown whether the replacement material was mechanically fastened, glued, or installed without a defined structural connection, and it is unknown whether temporary shoring or jacking was used during the repair.

Recommended structural improvements should focus on addressing deteriorated exterior wood elements and verifying the condition of the primary gravity and lateral load paths. Exterior columns and wall framing with observed decay, softening, or localized material loss should be further evaluated to determine whether localized repairs, such as sistering, supplemental framing, or member replacement, are required. Repair work should include durable materials and connection detailing appropriate for the coastal exposure.

Re-evaluation should be considered if additional wood decay, softening, section loss, movement, connection deterioration, or storm-related damage is observed. Selective removal of deteriorated materials may be required to confirm the extent of concealed decay and establish the limits of repair.

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2.4 High Bay – Exterior Siding and CMU Walls

Figure 9: Boat Yard – Exterior siding for high and low bay.

The high bay structure generally consists of wood-framed exterior walls, wood roof framing, large west-facing access openings, and mezzanine interior office areas constructed within the high bay structure. The first 10 feet of the high bay structure consists of CMU wall construction. A smaller low bay structure is attached to the north side of the high bay structure and is shown with light-colored siding in Figure 9.

The west and south sides of the high bay structure were observed to be weathered, with visible deterioration of exterior wood elements. Other observed conditions included missing or damaged window panels on the north side of the building, as shown in Figure 9. Missing or damaged exterior envelope components may allow moisture intrusion into concealed framing or connection locations.

Figure 10: Boat Yard – Cracked CMU wall.

Cracking was observed at the CMU wall near the northwest corner of the high bay structure, as shown in Figure 10. This area should be monitored for worsening cracking, displacement, or water intrusion, and localized CMU repair or crack sealing should be considered to reduce water intrusion and resist further cracking.

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Additional envelope repairs, including replacement of missing or damaged window panels and improved weather protection on exterior walls and openings, should be considered to reduce continued moisture-related deterioration. Selective removal of finishes, cladding, or deteriorated materials may be required to confirm concealed conditions and establish the limits of repair.

Re-evaluation should be considered if additional wood decay, water intrusion, siding deterioration, CMU distress, cracking, or storm-related damage is observed. Future repair work affecting the CMU walls, exterior siding, or wall framing may require additional field verification, repair details, and coordination with the Authority Having Jurisdiction.

2.5 High Bay – Crane Beam Support System

Figure 11: Boat Yard – Crane beam.

The building was reportedly originally used for construction and repair of large boats and includes a dry dock area and rail system that allowed boats to be moved between the harbor and the interior of the structure. Inside each of the two high bay structures, approximately 10 feet from the bottom of the roof system, is a beam crane system that runs the full length of the building, seen in Figure 11. However, the condition, configuration, and capacity of any crane beam support system were not fully evaluated as part of this screening-level visual assessment and inability to access the crane system.

If a crane beam, hoist support, or similar material-handling support system is intended to remain in use, additional field verification and structural evaluation should be performed. This evaluation should document the supporting members, connections, anchorage, load path, and any deterioration or modifications affecting the system. Existing support elements should not be relied upon for lifting or material-handling operations unless their condition and capacity are confirmed through additional investigation and analysis.

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2.6 High Bay – West Side Bay Door Hanger System

Figure 12: Boat Yard – Access Door Frame

Two large access door openings are located on the west side of the high bay structure to accommodate movement of boats into and out of the building. The doors have cantilevering support beam systems that hang of the exterior of the building, seen in Figure 12. These support systems may affect the local support and lateral load path around the openings.

The bay door hanger system and surrounding framing should be reviewed in more detail if continued use, repair, or retrofit of the building is pursued. Additional field verification should document the door support configuration, hanger connections, supporting framing, anchorage, and any deterioration or movement at the large access openings. Potential repair measures may include strengthening or replacement of door support members, improved connections, local framing reinforcement, and coordination with any bracing upgrades around the west wall openings.

Re-evaluation should be considered if movement, binding, connection deterioration, deformation, or damage is observed at the large sliding doors, door hanger components, or adjacent wall framing.

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2.7 High Bay – Mezzanine Framing

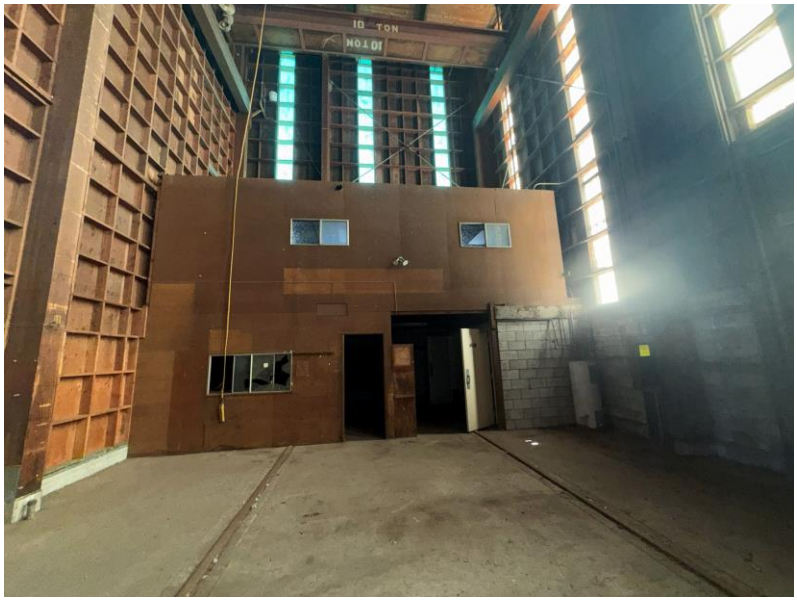

Figure 13: Boat Yard – Interior mezzanine with storage and bathrooms on the lower floor and offices above.

Interior mezzanine office areas were constructed within the high bay structure. Portions of the interior office areas are finished, shown in Figure 13, and some structural elements in these areas were concealed by wall, ceiling, or other finish materials. Where visible, portions of the interior framing did not exhibit the same level of weathering observed at the exterior building faces. However, because portions of the office areas were concealed by finishes, the condition of hidden framing, connections, and load-path elements could not be fully evaluated.

The mezzanine framing should be further evaluated if continued use, repair, retrofit, or changes in occupancy or building function are pursued. Additional field verification may be required to confirm member sizes, support conditions, connections, gravity load paths, lateral bracing, and any deterioration concealed by finishes. If deficiencies are identified, potential improvements may include localized framing repair, supplemental support, connection upgrades, or other strengthening measures.

Re-evaluation should be triggered prior to significant repair work, reuse planning, changes in occupancy or building function, or modifications to the mezzanine framing or surrounding high bay structure.

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2.8 Low Bay – Roof System

Figure 14: Boat Yard – Low Bay roof system, standing seam metal roof over wood rafters.

A smaller low bay structure is attached to the north side of the high bay structure and is visible as the light-colored siding shown in Figure 2. The low bay roof appears to consist of standing seam metal roofing supported by wood rafters, as shown in Figure 14. Based on visual observations, plywood sheathing, steel roof decking, or another continuous roof diaphragm system was not observed; however, the roof assembly should be further verified during future investigation.

If the low bay roof does not include structural sheathing, steel decking, or another a diaphragm capable of providing the required load transfer, as established by future analysis, the roof may have limited ability to transfer in-plane lateral loads to the supporting wall elements. Additional evaluation should be performed to confirm the existing roof framing, roof sheathing or decking condition, roof-to-wall connections, and the intended lateral load path for the low bay structure.

Potential improvements may include installation of structural roof sheathing directly over the existing roof rafters, diaphragm nailing or fastening, roof-to-wall connection upgrades, or other lateral-load-resisting improvements if required by future analysis. Installation of new roof sheathing would require replacement of existing standing seam metal roofing or alternate roofing membrane. Alternative improvements could include diagonal bracing from the underside of the existing roofing. If an alternate lateral system is proposed instead of roof diaphragm strengthening, the system should be developed as part of a future structural repair or retrofit design. Additional field verification should be completed before repair documents are developed.

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2.9 Low Bay – Lateral Wall System

Figure 15: Boat Yard – Low Bay lateral wall system.

The low bay structure is attached to the north side of the high bay structure. The visible wall framing appears to consist of balloon-framed wood wall construction, as shown in Figure 15. Based on the visual observations, the configuration, continuity, and adequacy of the low bay lateral-force-resisting system could not be confirmed. No visible anchor bolts were observed at the wall base in the area shown; however, the presence or absence of concealed anchorage could not be verified without additional investigation.

The sheathing and exterior wall materials shown in Figure 15 appear weathered and deteriorated, with areas of apparent wear and decay. Deteriorated sheathing may reduce the ability of the wall system to provide lateral resistance for wind or seismic loads. If the existing sheathing is intended to function as part of the lateral-force-resisting system, additional evaluation should be performed to determine whether the sheathing, nailing, framing, wall anchorage, and roof-to-wall connections provide an adequate continuous load path.

If repair, retrofit, reuse, or modification of the low bay is pursued, additional field verification should be performed to document the low bay wall framing, sheathing condition, anchorages, connections, and lateral load path. Based on the observed condition, potential retrofit measures may include removal and replacement of deteriorated sheathing and siding, installation of new plywood structural sheathing with appropriate fastening, added wall anchorage, roof-to-wall connection upgrades, or other lateral-load-resisting improvements as required by future evaluation.

Re-evaluation should be considered if wall movement, cracking, water intrusion, worsening sheathing deterioration, connection deterioration, siding deterioration, or storm-related damage is observed. Additional evaluation should also be performed if proposed work modifies the low bay roof, walls, bracing, sheathing, anchorage, or connection to the high bay structure.

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3. Building 2) Fish Processing Facility 1 – 161 Starfish Way

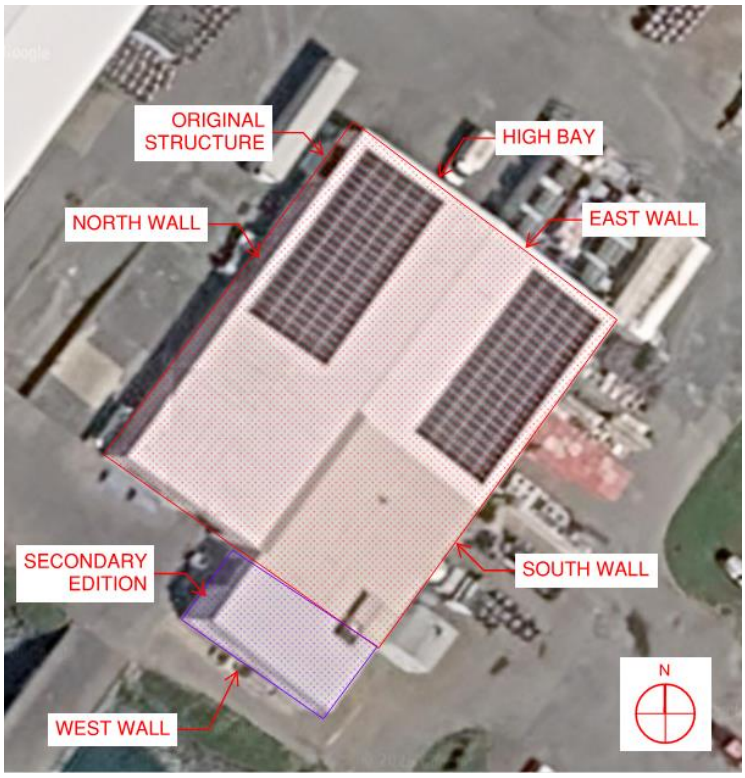

Figure 16: Fish Processing Facility 1 – General plan and site orientation

Fish Processing Facility 1 is a single-story pre-engineered metal building (PEMB) located at 161 Starfish Way see, see Figure 16. The building is currently used by a tenant for fish processing and flash-freezing operations. The building includes an original larger rectangular building section with a smaller steel-framed addition located along the west side.

The building generally consists of metal roof panels over light-gauge roof purlins supported by custom tapped wide-flange steel beams and columns. The exterior walls generally consist of corrugated metal siding over light-gauge wall girts connected to custom wide-flange steel columns. The lateral-force-resisting system appears to include rigid steel moment frames in the north-south direction and threaded rod steel X-bracing at select roof and wall bays in the east-west direction. Various interior partitions and freezer rooms have been constructed within the building, which limited visual observation of some structural components.

Where visible, the primary roof framing and underside of the metal roof panels appeared to be in generally serviceable condition, with no obvious signs of widespread corrosion, water staining, or moisture-related damage observed at the time of the site visit. Several roof and wall bracing elements appeared to remain in their original configuration; however, the full lateral-force-resisting system could not be verified because original drawings were not available.

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3.1 Roof, Metal Siding and Wall Girts

Figure 17: Fish Processing Facility 1 – Extreme deterioration in wall girts along south-west corner.

Figure 18: Fish Processing Facility 1 – Deteriorating exterior siding causing framing members to fail.

The most significant observed deterioration was located along the southwest corner of the structure. Exterior metal siding, wall girts, and other secondary framing elements exhibited visible corrosion and rust staining, see Figure 17. Some wall girt sections appeared to be heavily deteriorated, with localized areas of section loss or missing material. Openings and rusted holes in the exterior siding (Figure 18) have exposed wall framing, wall girts, and bracing elements to continued moisture and coastal exposure.

The primary lifecycle risk associated with the exterior siding, wall girts, and secondary framing is continued corrosion and section loss. Continued deterioration may reduce the capacity of affected framing over time, particularly where damaged siding, wall penetrations, or deteriorated flashing allow moisture and coastal air to reach concealed or partially protected members. Corroded wall girts, deteriorated siding, and exposed secondary framing should be further evaluated to determine the extent of section loss and whether cleaning, coating, reinforcement, supplemental framing, or replacement is required.

Repair measures should address durability in the coastal and fish processing environment. This may include replacing heavily corroded siding or girts, repairing penetrations that expose framing to moisture, providing corrosion-resistant coatings or galvanizing where appropriate, and improving detailing to reduce continued moisture exposure. Pre-engineered metal buildings are also susceptible to localized damage at corners, eaves, walls, and lower siding from vehicle or equipment impacts, and these areas should be monitored during routine maintenance.

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The metal roof system should also be included in routine lifecycle maintenance. Periodic recoating of roof panels and tightening of roof fasteners may be required to extend the service life of the roof system and reduce the potential for water intrusion. Although these items are generally maintenance-related and only nominally structural, water intrusion through roof fasteners, wall penetrations, damaged siding, or deteriorated flashing could accelerate corrosion of secondary framing, concealed steel components, and interior building elements.

Selective removal of siding, finishes, or deteriorated materials may be required to confirm concealed conditions and determine whether wall girts, bracing, columns, or adjacent framing members have experienced significant section loss. Re-evaluation should be considered if roof or wall leakage is observed, impact damage occurs, corrosion progresses, additional section loss is observed, or additional siding deterioration exposes framing or bracing elements to moisture.

3.2 Column Base Plates and Anchor Bolts

Figure 19: Fish Processing Facility 1 – Interior column base with corroding base plate, and bubbling paint.

Figure 20: Fish Processing Facility 1 – Exterior column deuterating, and paint flaking from structural members. Missing anchor bolt nuts.

Exterior columns, base plates, and anchor bolt locations along the southwest side of the structure exhibited visible corrosion and rust staining, see Figure 19 and Figure 20. The condition of concealed or embedded portions of the anchorage could not be fully evaluated through visual observation. Continued corrosion at these locations may reduce connection capacity over time and may affect the transfer of gravity, wind, or seismic loads between the steel superstructure and the foundation.

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Column base areas, base plates, anchor bolts, and adjacent framing should be further evaluated to determine the extent of corrosion and whether cleaning, coating, reinforcement, supplemental anchorage, or replacement is required. Foundation replacement at base plates and anchor bolt locations required to satisfy anchor bolt capacity and embedment requirements and to reduce continued moisture accumulation and corrosion.

Prior to development of repair or retrofit documents, additional field verification should be performed to document base plate and anchor bolt conditions, connection details, and the extent of corrosion at the affected column base locations. Re-evaluation should be considered if anchor bolt deterioration becomes more apparent, corrosion progresses, additional section loss is observed, or changes in building use or equipment loading are proposed.

3.3 Corroded and Modified Lateral Bracing

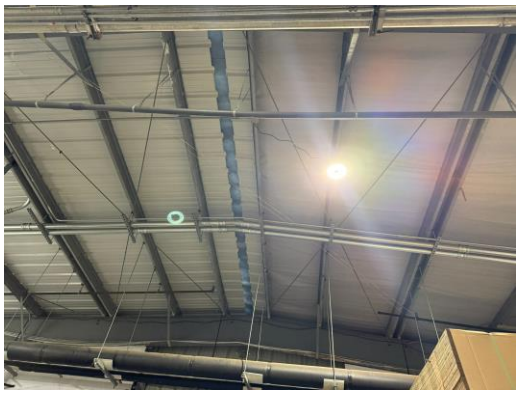

Figure 21: Fish Processing Facility 1 – Roof lateral cross bracing in original structure.

Figure 22: Fish Processing Facility 1 – Corroding Lateral Bracing.

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Figure 23: Fish Processing Facility 1 – Missing or not visible bracing from secondary edition.

The lateral-force-resisting system appears to include rigid steel moment frames and threaded rod steel X-bracing at select roof and wall bays, seen in Figure 21. Several roof and wall bracing elements appeared to remain in their original configuration where visible; however, the full lateral-force-resisting system could not be verified because original drawings were not available and some structural components were concealed by interior partitions, freezer rooms, finishes, or other obstructions. Corrosion was observed at portions of the exposed lateral bracing, as shown in Figure 22, and should be further evaluated to determine whether section loss or connection deterioration has affected the capacity of the bracing elements.

Openings have been cut into the north wall system to accommodate shipping containers and provide additional workspace, see Figure 25. An overhead door has also been added at the south side of the structure, see Figure 23. These openings may have modified the original wall framing or lateral bracing configuration. If bracing members, wall girts, columns, or connections were removed or modified to accommodate these openings, the building's lateral load path may have been reduced or interrupted.

All new wall openings and the added overhead door should be reviewed to determine whether original wall framing, or lateral bracing elements were removed, cut, or otherwise modified. If the openings affected the lateral-force-resisting system, potential retrofit measures may include supplemental bracing, framed opening reinforcement, strengthened connections, collector or chord improvements, or other measures needed to restore a continuous load path.

If the work includes repair or modification of wall bracing, columns, base connections, roof framing, or other lateral-force-resisting components, permit documents may require structural calculations, repair details, material specifications, inspection requirements, and additional structural or seismic evaluation.

3.4 West Addition and West Roll Up Door Modification

Figure 24: Fish Processing Facility 1 – North wall with roll up door.

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Fish Processing Facility 1 includes an original larger rectangular building section with a smaller steel-framed addition located along the west side. The addition and surrounding framing were not fully evaluated because original drawings were not available and portions of the building were concealed by interior partitions, freezer rooms, finishes, and processing-related improvements.

Diagonal cross bracing or other lateral force resisting system are not installed along the north and south walls of the addition. An overhead door along the north wall will limit the size and configuration of any additional lateral systems, see Figure 24. Without any lateral force resisting systems the addition depends on the strength and stiffness of the lateral systems of the original structure. Further structural evaluation is required to determine load transfer and demand/capacities of the original structure.

3.5 North Wall Shipping Container Openings

Figure 25: Fish Processing Facility 1 – Cracking finished material above shipping containers cut into the north exterior wall.

Along the east side of the building, openings have been cut into the wall system to accommodate shipping containers and provide additional workspace, see Figure 25. These openings may have modified the original wall framing or bracing configuration. Cracking and apparent deflection were observed in the finished materials around some of the modified openings, which may indicate movement or distress in the surrounding wall assembly.

Additional evaluation behind the finished surfaces would be required to determine whether the openings affected the building's lateral load path, local wall support conditions, or adjacent framing. The cracking and apparent deflection in finishes around the north wall openings should be monitored because continued movement may indicate distress in the surrounding wall framing.

If distress progresses or if additional movement is observed, selective removal of finishes should be considered to review concealed framing, connections, and bracing around the openings. Potential retrofit measures may include local framing reinforcement, supplemental bracing, connection upgrades, or repair of finish materials after the underlying structural condition is confirmed.

Re-evaluation should be considered if cracking or deflection increases around modified openings, if additional movement is observed, or if further modifications to the north wall openings are proposed.

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3.6 Interior Concrete Curb Deterioration

Figure 26: Fish Processing Facility 1 – Cracking concrete curb, with rust stains coming from the cracks.

Interior observations included localized chipping and deterioration of a concrete curb, with rust staining visible at cracks and damaged areas, see Figure 26. The rust staining may indicate corrosion of embedded reinforcement or other embedded steel components. The extent of deterioration below the visible surface could not be determined without additional investigation.

Continued moisture exposure from the fish processing environment, washdown activities, condensation, or coastal air may accelerate deterioration of exposed steel and embedded components. The deteriorated concrete curb should be further evaluated to determine whether localized concrete repair, reinforcement treatment, or replacement is appropriate.

Additional field verification should be performed to determine whether the observed deterioration is limited to surface damage or whether embedded reinforcement or other structural components have been affected. Re-evaluation should be considered if the concrete deterioration progresses, additional cracking develops, rust staining increases, or changes in equipment layout, drainage patterns, storage loads, or building use are proposed.

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4. Building 3) Fish Processing Facility 2 – 161 Starfish Way

Figure 27: Fish Processing Facility 2 – Exterior of building.

Fish Processing Facility 2 is a single-story pre-engineered metal building (PEMB) located at 161 Starfish Way, adjacent to Fish Processing Facility 1, see Figure 27. The building is currently used by a commercial crabbing tenant for crab trap storage and processing-related operations. Water and power were not supplied to the building at the time of the assessment.

The building generally consists of metal roof panels over light-gauge roof purlins supported by custom wide-flange steel beams. The exterior walls generally consist of corrugated metal siding over light-gauge wall girts connected to custom wide-flange steel columns. The lateral-force-resisting system appears to include rigid steel moment frames and steel bracing at select roof and wall bays. A newer roof has reportedly been installed on the structure, and the visible portions of the roof framing and roof system did not appear to exhibit the same level of deterioration observed in some other exposed components.

The metal columns and primary superstructure appear to bear on a continuous concrete curb around the perimeter of the building. This curb appears to provide some separation between the steel framing and exterior surface water exposure, which may have helped reduce corrosion at the base of the steel members compared to Fish Processing Facility 1. However, the condition of concealed base plates, anchor bolts, embedded steel, and foundation reinforcement could not be fully evaluated through visual observation.

4.1 Mounted and Degraded Architectural Components

Figure 28: Fish Processing Facility 2 – Degrading drop down ceiling.

Interior architectural finishes were observed to be in poor condition in several areas, seen in Figure 28. Portions of the suspended ceiling system were bent, damaged, collapsed, or missing. While these conditions appear to be primarily related to nonstructural finish systems, they may indicate ongoing moisture exposure, prior impact, deferred maintenance, or other environmental conditions that could affect concealed structural or secondary framing elements.

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Damaged, loose, partially collapsed, or otherwise unstable architectural finish materials should be removed or stabilized where they pose a safety concern or limit access for additional observation of concealed structural components. Selective removal of architectural finishes may be required to determine whether observed distress is limited to nonstructural components or whether structural framing, secondary framing, connections, or bracing elements have been affected.

After unstable or obstructing finishes are removed, additional observation should be performed to review concealed wall framing, roof framing, bracing elements, connections, and column base areas. Repair measures may include replacement or stabilization of damaged architectural finishes after structural conditions are verified, localized repair of affected framing if deterioration is discovered, and improvements to reduce future moisture-related deterioration.

4.2 Mounted and Degraded Mechanical Components

Figure 29: Fish Processing Facility – Degraded concrete slab and curb.

Localized deterioration was observed along the concrete curb or foundation area were equipment, reportedly an ice machine, previously discharged material toward a floor drain, seen in Figure 29. The affected concrete surface exhibited deterioration and apparent etching along the drainage path. Additional investigation would be required to determine whether the deterioration is limited to surface damage or whether embedded reinforcement, anchorages, or supporting concrete have been affected.

Figure 30: Fish Processing Facility 2 – Degrading mechanical refrigeration units, and refrigeration insulation.

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Mounted mechanical equipment (seen in Figure 30), abandoned equipment, or miscellaneous attached components that obstruct access to structural elements should be removed or relocated where needed to allow for full evaluation of the curb, floor slab, column base areas, and adjacent framing. Removal of equipment and associated attachments should be performed carefully to avoid damaging structural components or concealed utilities.

4.3 Unmounted Miscellaneous Materials

Figure 31: Fish Processing 2 – Interior space with crab pots.

Figure 32: Fish Processing 2 – Interior space with miscellaneous materials.

Stored crab traps, processing-related materials, and other miscellaneous contents were present within the building, as shown in Figure 30 and Figure 31. These materials limited access to some interior areas and restricted visual observation of portions of the floor, walls, column bases, perimeter curb, and bracing elements. Removal or relocation of stored materials is recommended prior to further structural evaluation so that concealed or obstructed structural elements can be reviewed.

After stored materials are removed, additional field verification should be performed to document the condition of the concrete curb, column base locations, wall girts, bracing elements, and other accessible structural components. This review should confirm whether deterioration is limited to the currently visible areas or whether additional damage is present behind, below, or adjacent to stored materials.

Maintaining clear access around the building perimeter and structural framing will also support future maintenance, inspection, and repair work. Re-evaluation should be considered if additional deterioration, corrosion, cracking, water intrusion, or impact damage is observed after stored materials are removed.

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4.4 Lateral Bracing System

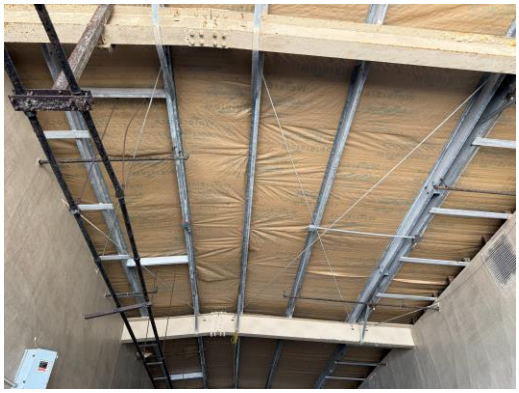

Figure 33: Fish Processing 2 – Roof cross bracing.

Where visible, portions of the roof and wall bracing systems were observed in areas not covered by interior finishes, stored materials, or equipment, as seen in Figure 33. The exposed bracing appeared to remain generally consistent and did not show obvious signs of significant modification at the time of the site visit. However, the full lateral-force-resisting system could not be verified because portions of the building were concealed or obstructed by finishes, stored materials, equipment, and other components.

The lateral bracing system should be further evaluated after stored materials, obstructing equipment, and unstable interior finishes are removed. This evaluation should document the location, continuity, condition, anchorage, and connections of the roof and wall bracing elements. The evaluation should also confirm whether bracing members remain continuous and whether any framing, connections, or bracing elements have been modified, damaged, corroded, or otherwise compromised.

Based on current visual observations, major lateral retrofit measures may not be required solely due to the visible bracing conditions. However, if future work modifies braced bays, wall openings, roof framing, column base conditions, or other load-path elements, the affected gravity and lateral load paths should be evaluated. Potential improvements may include localized connection upgrades, replacement of deteriorated secondary framing, supplemental bracing, or other measures required to maintain a continuous load path.

Re-evaluation should be considered if concrete deterioration progresses, rust staining appears at curb or column base locations, ceiling or finish damage worsens, roof leaks are observed, drainage patterns change, or changes in equipment layout, storage loads, building use, or processing operations are proposed. If repairs are limited to localized concrete restoration, finish replacement, and corrosion protection, structural permitting requirements may be limited. If the work affects column bases, anchorages, wall bracing, roof framing, or other structural load-path elements, permit-level structural details, calculations, inspection requirements, and additional evaluation may be required.

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5. Building 4) Harbor District Office – 101 Citizens Dock Rd

Figure 34: Harbor District Office - Exterior view facing east.

The Harbor District Office is a two-story wood-framed structure located at 101 Citizens Dock Road near the harbor waterfront, see Figure 34. The building is currently used as the Harbor District office and includes office areas, meeting spaces, and bathroom facilities. The building has reportedly experienced prior tsunami-related flooding associated with the 1964 tsunami event.

The building exterior generally consists of T1-11 or shiplap siding, a low-slope roof with a white PVC membrane, and an upper roof with asphalt shingles. The PVC membrane roof appears to be newer and was observed to be in generally serviceable visible condition at the time of the site visit. Because the majority of structural elements were covered by interior and exterior finishes, the condition of concealed roof framing, wall framing, floor framing, foundations, and structural connections could not be confirmed.

The assessment consisted primarily of visual review of accessible finished surfaces and exposed building components. Finished surfaces were reviewed for cracking, deflection, displacement, water staining, or other irregularities that may indicate structural distress or concealed deterioration. No comprehensive evaluation of the concealed structural framing was performed as part of this assessment. Based on visual observations, the primary areas of consideration for the Harbor District Office include the building's reported prior tsunami-related flooding, the concealed nature of the wood framing, the unknown condition of framing and connections behind finishes, and the performance of the upper floor lateral system.

5.1 Previous Tsunami Damage

The Harbor District Office has reportedly experienced prior tsunami-related flooding associated with the 1964 tsunami event. Because the structural framing was largely concealed by finishes, the condition of lower-level wall framing, floor framing, connections, fasteners, and foundation elements that may have been exposed to floodwater could not be fully evaluated during the visual assessment.

The primary lifecycle risks associated with the reported prior flooding include concealed moisture damage, wood decay, corrosion of connectors or fasteners, and deterioration of lower-level framing or finishes. Although no comprehensive destructive investigation was performed, the prior flood history increases the importance of monitoring lower-level wall framing, floor framing, connections, and interior finishes for signs of residual or ongoing moisture-related deterioration.

Recommended follow-up evaluation should focus on representative areas where concealed framing may have been exposed to prior floodwater or ongoing coastal moisture. Selective removal of finishes may be required to review framing conditions, connection details, and potential moisture-related deterioration. If moisture-damaged framing, decay, or connector corrosion is discovered during future work, localized repair, member replacement, supplemental framing, or connection upgrades may be required.

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Re-evaluation should be considered if water staining, musty odors, decay, siding deterioration, interior finish distress, settlement, cracking, or other signs of moisture-related deterioration are observed. Re-evaluation should also be triggered by future flood, tsunami, or storm-related impacts, or by repair work that exposes concealed lower-level framing.

5.2 Upper Floor Lateral System

The upper floor and roof framing systems could not be fully evaluated because the majority of structural components were concealed by interior and exterior finishes. The available observations did not confirm the configuration, continuity, or adequacy of the upper floor lateral-force-resisting system, including wall bracing, floor or roof diaphragm behavior, roof-to-wall connections, wall-to-floor connections, foundation anchorage, or related load-path elements.

No specific structural retrofit measures are recommended based solely on the limited visual observations of finished surfaces. However, additional evaluation may be warranted if future repairs, alterations, continued-use planning, or modifications to the building are pursued. Potential evaluation items may include verification of roof-to-wall connections, wall bracing, floor and roof diaphragm load paths, foundation anchorage, and lower-level framing conditions.

Recommended improvements should focus on maintaining the building envelope and reducing the potential for concealed deterioration of wood framing. Continued maintenance of the PVC membrane roof, asphalt shingle roof, siding, flashing, sealants, and drainage components should be considered to limit moisture intrusion. If future work affects framing, foundations, wall bracing, roof diaphragms, or other structural load-path elements, permit-level structural details, calculations, inspection requirements, and additional structural evaluation may be required.

Re-evaluation should be considered if new cracking, settlement, floor or roof deflection, water staining, roof leakage, siding deterioration, interior finish distress, or evidence of concealed decay is observed. Additional evaluation should also be performed if future improvements include significant structural alterations, changes in occupancy or use, or modifications to the lateral-force-resisting system.

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6. Building 5) Abalone Building – 250 Anchor Way

Figure 35: Abalone Building - Exterior view.

The Abalone Building is a single-story pre-engineered metal building located at 250 Anchor Way near the southeast portion of the property, see Figure 35. The building is partially bordered by a hillside, which appears to provide some protection from direct coastal wind exposure. The structure appears to have originally been constructed as a metal storage-type building and has since been modified to include living quarters, including bedrooms, a kitchen, and bathroom facilities.

The following subsections describe observed conditions related to the interior mezzanine and living space conversions, steel framing near the north roll-up door, and previous water damage at the north side window area. Code compliance assessments associated with the existing living spaces, including fire safety, egress, accessibility, energy code, zoning, and permitting requirements, are excluded from the scope of this structural assessment.

6.1 Interior Mezzanine and Living Space Conversions

The Abalone Building was reportedly constructed for storage use and has since been modified to include living quarters. Based on the apparent original storage-type use of the building, the structure may not have been designed for residential or living-space occupancy loads, serviceability requirements, or related code requirements. Evaluation of zoning, permitting, fire/life-safety, accessibility, energy code, and occupancy compliance associated with the living spaces is excluded from this structural assessment.

Figure 36: Abalone Building – Added living spaces along east side of the structure

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Figure 37: Abalone Building – Added living spaces along the west side of the structure.

Figure 38: Abalone Building – Added bathroom in northwest corner.

The building originally appears to have included storage shelf or mezzanine areas along the east and west sides of the building, with a more open central area. These storage mezzanine areas have since been enclosed with interior walls to create living spaces, as shown along the east side in Figure 36 and along the west side in Figure 37. Stairs were added to provide access to the enclosed mezzanine areas, and a bathroom was also added as part of the interior build-out, as shown in Figure 38. Because portions of the building have been finished or enclosed, several structural elements, connection conditions, and lateral bracing elements could not be directly observed.

The enclosed mezzanine and living space framing should be evaluated to determine whether the added framing is adequately supported and connected, and whether the original pre-engineered metal building structure has been loaded beyond its intended structural capacity. The added interior improvements may introduce gravity loads, serviceability considerations, and load-path requirements that were not part of the original storage building configuration.

The relative stiffness and interaction between the pre-engineered metal building frame, mezzanine framing, added interior walls, and any existing lateral bracing could not be confirmed through visual observation alone. If the mezzanine framing is connected to, supported by, or braced against the metal building frame, added loads and movement compatibility should be evaluated as part of future structural analysis.

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The enclosed living spaces and finishes block access to portions of the gable end framing. As a result, the presence, continuity, and condition of gable end bracing could not be verified. It is unknown whether bracing was removed, modified, concealed, or absent prior to the interior build-out. Because the gable end walls may be part of the building's lateral-force-resisting system, additional investigation should be performed to confirm whether bracing is present, continuous, adequately connected, and capable of providing a complete load path for wind and seismic forces.

The primary steel columns appear to be supported on large concrete pedestals and did not show obvious signs of significant corrosion at the time of observation. Foundation and floor support conditions could not be fully verified through visual observation. Areas that initially appeared to be asphalt appear to consist of painted concrete; therefore, the adequacy of the slab, foundation, column support, and anchorage conditions should be confirmed through additional investigation where needed.

Potential retrofit measures may include selective removal of finishes to verify concealed framing and bracing, strengthening of mezzanine framing, supplemental foundations or anchorage, added or replaced bracing, connection upgrades, and other measures required to provide a continuous gravity and lateral load path. Re-evaluation should be considered prior to continued living-space use, significant interior modifications, added loads, foundation work, or alterations to wall or roof bracing.

6.2 Steel Framing Around Roll-up Door

Figure 39: Abalone Building – Rusting roll up door frame along north side of the structure.

Localized corrosion and deterioration were observed near the roll-up door on the north side of the building, including at nearby purlins and door framing components, as shown in Figure 39. Although the primary steel columns did not show obvious signs of significant corrosion at the time of observation, the framing around the north roll-up door should be further reviewed because door openings can interrupt wall framing, local bracing, and load-path elements.

Additional field verification should be performed to document the condition of the steel framing, purlins, door jamb framing, header framing, connections, and anchorage around the north roll-up door. This review should determine whether corrosion is limited to surface rust or whether section loss, connection deterioration, or reduced member capacity is present.

Potential repair measures may include cleaning and coating of corroded steel, replacement or reinforcement of deteriorated purlins or door framing components, connection upgrades, improved weather protection, and detailing to reduce continued moisture exposure. Re-evaluation should be considered if corrosion progresses, door operation is affected, framing movement is observed, or additional deterioration develops around the roll-up door opening.

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6.3 Previous Water Damage

A previous water leak was reported at the north side of the building, where repairs were reportedly completed in kind and a window was removed. The condition of concealed framing, connections, and adjacent wall components at the repaired area could not be fully evaluated during the visual assessment.

Areas affected by prior water intrusion should be further reviewed to confirm whether moisture-related deterioration remains concealed within wall framing, purlins, connections, finishes, or adjacent structural components. If finishes or coverings are removed during future work, the exposed framing should be inspected for corrosion, decay, staining, softening, connection deterioration, or other signs of prior water damage.

Recommended repair considerations include maintaining weather-tight exterior wall and window infill conditions, improving flashing or sealant details where required, and repairing or replacing affected framing if concealed deterioration is discovered. Re-evaluation should be considered if water staining, leakage, corrosion, finish deterioration, or additional moisture intrusion is observed at the north side window repair area.

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7. Building 6) Coast Guard Building – 100 Anchor Way

Figure 40: Coast Guard Building

The Coast Guard Building is located at 100 Anchor Way near the southeast end of the harbor. The building was reportedly previously used by the United States Coast Guard and generally consists of a double-wide portable wood-framed structure supported on concrete piers with an accessible crawl space, seen in Figure 40. The site is exposed to coastal wind and rain conditions, with a rock barrier located east of the building providing some protection from direct coastal exposure.

The primary portable structure has finished interior and exterior surfaces, which limited direct observation of the structural framing. The exterior generally consists of fiber-cement siding and a metal roof, both of which appeared to be in generally serviceable visible condition at the time of assessment. The portable structure did not exhibit obvious signs of significant movement, settlement, or distress based on the visible finished surfaces reviewed during the site visit.

An attached wood-framed side garage structure is located on one west side gable end of the portable building. This attached structure appears to have been enclosed and connected to the portable structure and includes an upper platform or mezzanine deck area. The following subsections describe observed conditions related to the added side garage and mezzanine deck, the damaged roll-up door, the crawl space below the portable structure, and possible modifications to the portable building units.

7.1 Added Side Garage and Interior Mezzanine Deck

Figure 41: Coast Guard Building – Post foundation connection.

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Figure 42: Coast Guard Building – Corner post frame to double wide mobile structure.

Figure 43: Coast Guard Building – Middle post frame to double wide mobile structure.

Figure 44: Coast Guard Building – Upper platform inside west side addition.

The attached side garage structure has exposed interior framing, allowing portions of the structural system to be visually reviewed. The framing includes vertical wood posts, an upper platform or mezzanine deck, stair access, and framing connected near the double-wide portable structure. The stairs serving the upper platform have a steep rise and run and likely not compliant with local building codes. The post base connection shown in Figure 41 appears to not have 1-inch standoff between the concrete surface and the wood column base. The corner post framing connection to the double-wide portable structure is shown in Figure 42, and the middle post framing connection to the portable structure is shown in Figure 43.

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Based on visual observations, the attached side garage structure did not appear to have a clearly defined lateral-force-resisting system and may lack capacity to limit horizontal movement. Notable movement was observed when walking on the upper platform and stair system, shown in Figure 44. Temporary or makeshift blocking was also observed and appeared to have been installed to help stabilize the structure during wind exposure. Visible post base connections appeared limited, and no substantial uplift or lateral tie-down system was observed beyond standard post base hardware.

The primary concern with the added side garage and mezzanine deck is the apparent lack of a continuous and well-defined lateral load path. Continued movement of the upper platform, stairs, posts, or wall framing could increase connection looseness, reduce serviceability, and potentially worsen instability over time. Additional evaluation is recommended to determine whether the framing, bracing, anchorage, and connections are adequate for continued use.

Potential retrofit measures may include installation of a defined lateral bracing system, strengthening of the upper platform and stair framing, improved post-to-foundation anchorage, added uplift and lateral ties, and improved connections between the attached side garage structure and the main portable building. Any temporary or makeshift blocking should be removed or replaced with permanent stabilization details if continued use of the attached structure is intended. Re-evaluation should be considered if movement increases, connections loosen, framing cracks, settlement occurs, water intrusion is observed, or additional modifications are proposed.

7.2 Sheared Roll Up Door

Figure 45: Coast Guard Building – Roll up door with door torn off from the top motor.

The roll-up door at the attached side garage structure was observed to be damaged, with the door torn off from the top motor, as shown in Figure 45. The garage door opening has reportedly experienced prior issues and appears to have been modified to create a smaller opening. The upper portion of the original opening was reframed and enclosed with siding, reducing the opening height. Based on visual observations, this modification appears to have concealed the damaged upper section of the roll-up door and reduced the potential for weather intrusion. The extent of structural modification associated with this reframing could not be confirmed during the visual assessment.

The roll-up door opening should be further evaluated to determine whether the surrounding framing, header, jambs, connections, and bracing were modified or damaged. Door openings can interrupt wall framing and lateral load paths, particularly in small, attached structures with limited visible bracing. If the original framing or bracing was modified, supplemental framing or connection upgrades may be required to restore vertical support and lateral resistance around the opening meeting the criteria established during future evaluation.

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Potential repair measures may include removal or replacement of the damaged door assembly, repair or replacement of damaged framing, header or jamb reinforcement, connection upgrades, and coordination with any lateral bracing improvements recommended for the attached side garage structure. Re-evaluation should be considered if additional movement, door misalignment, framing distress, connection damage, or water intrusion is observed around the opening.

7.3 Musty Crawl Space

Figure 46: Coast Guard Building - Portable structural crawl space.

The double-wide portable structure is supported on concrete piers with an accessible crawl space, shown in Figure 46. During site observations, when near the crawl space openings, a strong musty smell seemed to come from beneath the structure. This may may indicate elevated moisture, limited ventilation, prior water intrusion, or other conditions that could contribute to deterioration of concealed wood framing, fasteners, anchorage, or support elements.

Because the main portable structure has finished interior and exterior surfaces, the condition of hidden wall framing, floor framing, pier anchorage, and crawl space components could not be fully evaluated from finished areas alone. The crawl space should be further reviewed to document pier conditions, floor framing, anchorage, moisture conditions, and any signs of decay, corrosion, biological growth, or deterioration.

Recommended follow-up may include improved crawl space ventilation or moisture control, removal of debris or organic materials if present, localized repair of deteriorated floor framing or supports if discovered, and verification of anchorage between the portable structure and supporting piers. Re-evaluation should be considered if musty odors increase, moisture is observed, floor softness or deflection develops, settlement occurs, or deterioration is discovered during future crawl space review.

7.4 Possible Modifications to Portables

The main building consists of a double-wide portable wood-framed structure. Because the portable structure has finished interior and exterior surfaces, direct observation of the framing, connections between the two portable halves, and anchorage to the supporting concrete piers was limited. No obvious signs of significant movement, settlement, or distress were observed at the visible finished surfaces during the site visit.

The attached side garage and interior mezzanine deck appear to be connected to the side of the portable structure. The framing connections between the attached garage, mezzanine deck, and portable building units could not be fully evaluated during the visual assessment. It is unknown whether the portable structure was modified to accommodate these connections or whether wall framing, sheathing, anchorage, or other load-path elements were altered during construction of the attached structure.

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Possible modifications to the portable structure should be further evaluated if future repairs, alterations, or continued-use planning are pursued. This evaluation should include review of the connection between the two portable units, crawl space framing and anchorage, wall and roof framing where accessible, and the connections between the portable structure, attached side garage, and mezzanine deck. Particular attention should be given to whether the attached side garage or upper platform imposes loads, movement demands, or lateral forces on the portable structure that were not part of the original portable building configuration.

Based on current visual observations, no major structural retrofit of the main portable structure is recommended unless concealed deterioration, anchorage deficiencies, or future alterations are identified. If future work affects the portable building units, attached side garage, mezzanine deck, foundation supports, anchorage, or lateral-force-resisting components, permit-level structural details, calculations, inspection requirements, and additional evaluation may be required.

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8. Building 7) Storage Building – xxx Starfish Way

Figure 47: Storage Building

The Storage Building is a single-story metal building located off Starfish Way near the north side of the harbor, see Figure 47. The building was reportedly last used by the Sheriff's Office for storage and has since been unoccupied. The building generally consists of a steel superstructure with steel roof and wall purlins, metal roof decking, and metal wall siding.

The building is located in a coastal harbor environment and appears to have experienced significant corrosion-related deterioration. Based on visual observations, the primary areas of concern for the Storage Building include corrosion and section loss at roof framing members, wall framing members, metal siding, column bases, base plates, anchor bolt locations, and portions of the concrete foundation curb. The extent of corrosion suggests that additional evaluation is warranted before continued use, repair, retrofit, or replacement of the structure is pursued.

Due to the extent of observed deterioration at multiple primary and secondary structural components, demolition and replacement of the building should also be considered as a practical alternative to repairing individual members. Replacing the building in kind may be more cost-effective than attempting to repair or replace numerous deteriorated purlins, base plates, column bases, anchorage components, and related steel framing elements. A final recommendation should be based on additional field verification, structural evaluation, and comparison of repair costs versus replacement costs.[

8.1 Deteriorated Roof Framing and Roof Purlins

Figure 48: Storage Building – Rusting roof eave members.

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The primary roof framing exhibited visible rust and corrosion; however, based on visual observations, the main roof girders did not show the same level of apparent section loss or localized failure observed in several of the secondary roof and wall framing members. Deterioration was more apparent at roof edge and eave framing members, including rusting roof eave members shown in Figure 48.

Continued corrosion of roof purlins, roof edge framing, and related connections had most likely reduced member capacity over time including the ability of the roof system to support gravity loads or transfer lateral loads to the supporting wall system. The condition of concealed or partially hidden roof framing components could not be fully determined through visual observation.

Further evaluation should be performed to document the extent of corrosion and section loss at roof purlins, roof edge members, connections, and adjacent roof framing. If repair is pursued, potential measures may include cleaning and coating of steel members, replacement of deteriorated roof purlins or eave members, connection repairs, localized reinforcement, roof system repairs, and corrosion protection measures appropriate for the coastal environment. If deterioration is widespread, roof system replacement should be considered as part of a broader repair or building replacement approach.

8.2 Deteriorated Wall Framing, Siding and Lateral Bracing

Figure 49: Storage Building – Rusted exterior siding.

Figure 50: Storage Building – Failing exterior siding.

Much of the interior framing was concealed by interior finishes; however, exposed locations showed significant deterioration at wall purlins, wall framing, metal siding, and related secondary framing components. The exterior siding exhibited visible rusting, corrosion, and localized deterioration, as shown in Figure 49 and Figure 53. Several wall purlin members appeared to be severely deteriorated, with portions of the steel section missing or compromised.

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The deteriorated siding and wall framing may allow continued moisture intrusion and exposure of steel framing to coastal air, which could accelerate corrosion and section loss. Where wall framing or siding deterioration occurs near bracing, connections, or openings, the condition may also affect the continuity of the wall system and the building's ability to resist wind or seismic loads.

Figure 51: Storage Building – Degraded exterior doorway framing.

The wall system should be further evaluated to determine the extent of deterioration, section loss, and concealed damage. Potential repair measures may include replacement of deteriorated wall purlins, replacement of corroded siding, repair of deteriorated doorway framing, cleaning and coating of salvageable steel members, repair of wall penetrations, and improved detailing to reduce future moisture exposure. Degraded exterior doorway framing was observed, as shown in Figure 51, and should be included in the wall system evaluation and repair scope.

If the wall system includes lateral bracing elements or bracing connections concealed by siding, finishes, or stored materials, those elements should be exposed and evaluated before repair documents are developed. If bracing or lateral load-path components are deteriorated, modified, or interrupted by openings, potential retrofit measures may include supplemental bracing, framed opening reinforcement, connection upgrades, and other measures required to restore a continuous load path.

8.3 Deteriorated Columns, Base Plates, and Anchor Bolts

Figure 52: Storage Building – Failing column post.

The bases of the primary steel columns and girder supports were significantly affected by corrosion showing signs of extreme delamination and may require substantial repair or replacement. A failing column post condition was observed, as shown in Figure 52. Base plates were also observed to be heavily corroded, with localized areas of apparent material loss.

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The visible portions of the anchor bolts exhibited rust and corrosion; however, no obvious signs of anchor bolt slip, nut displacement, or anchorage failure were observed at the time of the site visit. The condition of the embedded portions of the anchor bolts and surrounding foundation concrete could not be determined through visual observation. Concealed corrosion or deterioration below the visible surface could affect anchorage capacity.

Further evaluation should be performed to determine the extent of corrosion and section loss at column bases, base plates, anchor bolts, and adjacent foundation areas. If targeted repair is pursued, repair measures may include cleaning and coating of steel, supplemental steel reinforcement, base plate replacement or reinforcement, new anchorage, column base repair, localized foundation repair, and corrosion protection measures. Where substantial material loss is present, member replacement may be required.

8.4 Cut Concrete Foundation Curb

Figure 53: Storage Building – Cut concrete curb, and corrading reinforcement.

The building includes a concrete foundation curb that supports portions of the steel superstructure and wall framing. The curb at the added roll-up door opening appears to have been altered to facilitate the modification, seen Figure 53. The extent of the alteration and its impact on the support of adjacent framing, anchorage, and load transfer into the foundation could not be verified during the visual assessment.

Cut or modified portions of the concrete curb should be further evaluated to determine whether the remaining concrete provides adequate support and anchorage for the steel framing. Evaluation should include review of curb continuity, concrete condition, anchor bolt locations, embedment, cracking, spalling, and any exposed or corroded reinforcement or embedded steel.

If repair is pursued, potential measures may include localized concrete repair, reconstruction of cut or damaged curb sections, supplemental anchorage, repair or replacement of affected anchor bolts, and coordination with column base or wall framing repairs. If demolition and replacement of the building is pursued, the existing concrete curb should be evaluated to determine whether it can be reused, repaired, or should be replaced as part of the new building foundation system.

Re-evaluation should be considered if additional cracking, spalling, settlement, anchor bolt corrosion, wall movement, or column base deterioration is observed. Permit-level documents for repair or replacement may require structural calculations, foundation repair details, anchorage details, construction sequencing, material specifications, and inspection requirements.

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9. Matrix of Observed Conditions

The following matrixes summarize the primary observed conditions identified during the structural assessment of the Cresent City harbor District buildings. The matrix is intended to support prioritization of future evaluations, repair, planning, budgeting, and discussion of potential mitigation measures. The Severity classifications are based on visual observations, available field information, and engineering judgment at the time of the site visit. They should not be interpreted as final repair requirements or final determination of structural adequacy. Additional investigation, structural analysis, design development, and permitting review may be required before repair or retrofit work is implemented.

Priority classifications represent recommended response urgency based on visible condition, apparent structural significance, exposure, and uncertainty. They do not constitute a determination of structural adequacy or probability of failure. High Priority indicates a condition that should receive prompt engineering evaluation and, where warranted, interim access, loading, or stabilization measures. Medium Priority indicates a condition that should be addressed through planned investigation, maintenance, or repair. Low Priority indicates a condition with limited apparent structural significance that should be addressed through routine maintenance. Unknown indicates that available information is insufficient to assign a priority without additional investigation.

9.1 Basis of Rough-Order-of-Magnitude Cost Estimates

The rough-order-of-magnitude costs presented in the following matrices are preliminary planning budgets only and are not contractor estimates or construction bids. The estimates are based on limited visual information and conceptual assumptions regarding the potential scope of repair, retrofit, or replacement. Unless specifically noted otherwise, the estimates exclude engineering design, permitting, testing, temporary shoring, hazardous-material assessment and abatement, tenant relocation, escalation, contractor general conditions, contingency, and work associated with concealed or currently inaccessible conditions. The estimates should be updated after additional investigation and further definition of the recommended scope of work.

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9.2 Boat Yard Building Matrix

Severity	Issue and/or Damage	Recommended Action, Evaluation, and Potential Repair	Rough Order Cost Estimate
Unknown	Section 2.1: High Bay - Roof System	Further evaluate the existing high bay roof framing, roof sheathing/decking condition, roof-to-wall connections, and diaphragm/load-path elements. If deficiencies are identified, provide conceptual repair or retrofit recommendations, which may include roof framing repairs, sheathing replacement, diaphragm strengthening, and/or roof-to-wall connection upgrades. Consider ASCE 41 seismic evaluation if future work modifies the lateral-force-resisting system.	$270,000
Unknown	Section 2.2: High Bay - Lateral Bracing System	Further evaluate the existing lateral bracing system, including bracing members, connections, anchorage, and load path around the large west-facing access openings. Determine whether apparent modifications to the bracing system have reduced the ability of the wall framing to resist wind or seismic loads. Potential repairs may include bracing replacement, connection upgrades, supplemental lateral-resisting elements, and/or anchorage improvements. Consider ASCE 41 seismic evaluation if triggered by the proposed repair or retrofit scope.	$100,000
High	Section 2.3: High Bay - Degrading Posts	Further evaluate deteriorated high bay posts to determine the extent of decay, softening, section loss, and prior repair adequacy. Develop engineered repair details for affected posts, which may include replacement of deteriorated laminations, sistering, supplemental framing, member replacement, and new or improved post-to-concrete connections. Temporary shoring or jacking requirements should be evaluated during repair design. Consider ASCE 41 seismic evaluation if post repairs or related work affect the lateral-force-resisting system.	$180,000
Medium	Section 2.4: High Bay - Exterior Siding and CMU Walls	Evaluate exterior siding, wall framing, and CMU wall conditions to identify damaged or deteriorated components requiring repair or replacement. Replace damaged siding or sheathing where moisture intrusion or deterioration is present. Inspect CMU walls for cracking, displacement, water intrusion, and settlement-related distress. Cracks should be monitored and repaired as needed, which may include crack sealing, repointing, localized CMU repair, or additional foundation evaluation where settlement is suspected.	$300,000
Unknown	Section 2.5: High Bay - Crane Beam Support System	Further evaluate the existing crane beam support system, if intended to remain in use. Evaluation should include supporting members, connections, anchorage, load path, deterioration, and any prior modifications. Existing crane, hoist, or material-handling support elements should not be relied upon for lifting operations unless their condition and capacity are verified through additional investigation and structural analysis.	$40,000
Unknown	Section 2.6: High Bay - West Side Bay Door Hanger System	Further evaluate the west side bay door hanger system, supporting framing, hanger connections, anchorage, and adjacent wall framing. Determine whether deterioration, movement, or prior modifications have affected the support of the large sliding doors or the lateral load path around the openings. Potential repairs may include strengthening or replacement of door support members, connection upgrades, local framing reinforcement, and coordination with bracing improvements around the west wall openings.	$50,000
Unknown	Section 2.7: High Bay - Mezzanine Framing	Further evaluate the mezzanine framing system, including member sizes, support conditions, connections, gravity load path, lateral bracing, and any concealed deterioration behind finishes. If deficiencies are identified, provide repair or strengthening recommendations, which may include localized framing repair, supplemental support, connection upgrades, or other measures required for the intended use of the mezzanine areas.	$20,000
High	Section 2.8: Low Bay - Roof System	Further verify the low bay roof assembly, including whether structural sheathing, steel decking, or another diaphragm system is present. If the roof consists only of standing seam metal roofing over wood rafters and lacks a defined diaphragm capable transferring required lateral loads, then provide retrofit recommendations to establish a suitable lateral load path. Potential repairs may include removal and replacement of the roof system, installation of structural roof sheathing, diaphragm fastening, roof-to-wall connection upgrades, and new roofing appropriate for the coastal environment.	$42,000

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Severity	Issue and/or Damage	Recommended Action, Evaluation, and Potential Repair	Rough Order Cost Estimate
High	Section 2.9: Low Bay - Lateral Wall System	Further evaluate the low bay wall framing, deteriorated sheathing, siding, anchorage, and lateral load path. No visible anchor bolts were observed in the area reviewed, and the existing sheathing appears weathered and deteriorated. Potential repairs may include removal and replacement of deteriorated sheathing and siding, installation of new plywood structural sheathing with appropriate fastening, added wall anchorage, roof-to-wall connection upgrades, and other lateral-load-resisting improvements as required by future structural evaluation. Consider ASCE 41 seismic evaluation if triggered by the proposed repair or retrofit scope.	$30,000

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9.3 Fish Processing Facility 1 Matrix

Severity	Issue and/or Damage	Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
Medium	Section 3.1: Metal Siding and Wall Girts	Further evaluate the exterior metal siding, wall girts, and exposed secondary framing to determine the extent of corrosion, section loss, and moisture-related deterioration. Repair measures may include replacement of deteriorated siding and wall girts, repair of wall penetrations, cleaning and coating of exposed steel, corrosion protection, and improved detailing to reduce continued moisture intrusion. Selective removal of siding or deteriorated materials may be required to confirm concealed conditions.	$17,000
Medium	Section 3.2: Column Base Plates and Anchor Bolts	Further evaluate column base plates, anchor bolt locations, and adjacent steel framing to determine the extent of corrosion and whether embedded or concealed anchorage components have been compromised. Repair measures may include cleaning and coating of steel, supplemental anchorage, base plate repair or replacement, localized connection reinforcement, and detailing improvements to reduce moisture accumulation at column base locations.	$30,000
Unknown	Section 3.3: Corroded and Modified Lateral Bracing	Further evaluate the existing lateral bracing system, including bracing members, connections, anchorage, and load path continuity. Evaluation should confirm whether corrosion, section loss, or prior wall modifications have reduced the capacity of the bracing system or interrupted the lateral load path. Potential repairs may include replacement or strengthening of corroded bracing members, connection upgrades, supplemental bracing, framed opening reinforcement, collector or chord improvements, and additional structural or seismic evaluation if required by the final repair scope.	$25,000
Low	Section 3.4: West Addition and South Roll Up Door Modification.	Further evaluate the west addition and south roll-up door opening to determine whether original wall framing, bracing, or connections were modified. If the opening or addition affected the gravity or lateral load path, repair measures may include framed opening reinforcement, supplemental bracing, connection upgrades, or localized strengthening to maintain a continuous load path. Additional structural evaluation may be required if future repair or alteration work affects braced bays, wall framing, or other lateral-force-resisting components.	$25,000
Unknown	Section 3.5: North Wall Shipping Container Openings	Further evaluate the north wall shipping container openings and adjacent framing to determine whether original wall girts, bracing, columns, or connections were removed, cut, or otherwise modified. Selective removal of finishes may be required to review concealed framing and determine whether the observed cracking or deflection in finished surfaces is related to structural movement. Potential repairs may include local framing reinforcement, supplemental bracing, connection upgrades, framed opening repairs, or other measures required to restore a continuous load path.	$30,000
Low	Section 3.6: Interior Concrete Curb Deterioration	Further evaluate the deteriorated interior concrete curb to determine whether observed chipping, cracking, and rust staining are limited to surface deterioration or indicate corrosion of embedded reinforcement or other embedded steel components. Repair measures may include localized concrete repair, removal and replacement of deteriorated concrete, treatment of exposed or corroded reinforcement, and drainage or moisture-control improvements to reduce continued deterioration.	$5,000

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9.4 Fish Processing Facility 2 Matrix

Severity	Issue and/or Damage	Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
Medium[1]	Section 4.1: Mounted and Degraded Architectural Components	Remove or stabilize damaged, loose, partially collapsed, or otherwise unstable architectural finish materials where they pose a safety concern or limit access to structural components. After removal, further evaluate concealed wall framing, roof framing, bracing elements, connections, and column base areas to determine whether deterioration is limited to nonstructural finishes or whether structural or secondary framing components have been affected. Repair measures may include replacement or stabilization of finishes, localized framing repair, and moisture protection improvements where concealed deterioration is identified.	$206,000
Medium[1]	Section 4.2: Mounted and Degraded Mechanical Components	Remove or relocate mounted mechanical equipment, abandoned equipment, or miscellaneous attached components that obstruct access to the concrete curb, floor slab, column base areas, and adjacent framing. Further evaluate the deteriorated concrete curb or foundation area near the former equipment discharge location to determine whether deterioration is limited to surface damage or whether embedded reinforcement, anchorages, or supporting concrete have been affected. Repair measures may include localized concrete repair, removal and replacement of deteriorated concrete, treatment of exposed or corroded reinforcement, repair of drainage-related damage, and improvements to reduce continued moisture exposure.	$308,000
Medium[1]	Section 4.3: Unmounted Miscellaneous Materials	Remove or relocate stored crab traps, processing-related materials, and other miscellaneous contents that limit access to the floor, walls, column bases, perimeter curb, and bracing elements. After removal, further evaluate previously obstructed areas to confirm whether additional corrosion, cracking, water intrusion, impact damage, or deterioration is present. Maintaining clear access around structural framing and perimeter support conditions is recommended to support future inspection, maintenance, and repair work.	Presumed by Tennent
Unknown	Section 4.4: Lateral Bracing System	Further evaluate the visible and concealed roof and wall bracing systems after finishes, stored materials, equipment, and other obstructions are removed. Evaluation should document the location, continuity, condition, anchorage, and connections of the lateral bracing elements and confirm whether bracing members remain continuous and unmodified. If damaged, corroded, modified, or incomplete bracing is identified, potential repairs may include localized connection upgrades, replacement of deteriorated secondary framing, supplemental bracing, or other measures required to maintain a continuous gravity and lateral load path. Additional structural or seismic evaluation may be required if future work modifies braced bays, wall openings, roof framing, column base conditions, or other lateral-force-resisting components.	$154,000

[1] Not direct structural deficiencies, but does pose a risk to occupancy and general building safety.

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9.5 Harbor District Office Matrix

Severity	Issue and/or Damage	Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
Unknown	Section 5.1: Previous Tsunami Damage	Further evaluate representative lower-level wall framing, floor framing, connections, fasteners, and foundation elements in areas that may have been exposed to prior tsunami-related flooding. Selective removal of finishes may be required to determine whether concealed moisture damage, wood decay, corrosion of connectors or fasteners, or residual flood-related deterioration is present. If deterioration is identified, repair measures may include localized framing repair, member replacement, supplemental framing, connection upgrades, and moisture-protection improvements.	Unknown
Unknown	Section 5.2: Upper Floor Lateral System	Further evaluate the upper floor and roof lateral-force-resisting system, including wall bracing, floor and roof diaphragm load paths, roof-to-wall connections, wall-to-floor connections, foundation anchorage, and related concealed framing elements. Because the majority of structural components were concealed by finishes, selective investigation may be required to verify load-path continuity and connection conditions. If deficiencies are identified, potential repairs may include connection upgrades, supplemental bracing, diaphragm strengthening, anchorage improvements, or other measures required to provide a continuous gravity and lateral load path.	Unknown

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9.6 Abalone Building Matrix

Severity	Issue and/or Damage	Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
High	Section 6.1: Interior Mezzanine and Living Space Conversions	Further evaluate the enclosed mezzanine and living space framing to determine whether the added framing is adequately supported, connected, and compatible with the original pre-engineered metal building structure. Evaluation should include mezzanine framing, interior walls, stair framing, gravity load paths, gable end framing, concealed bracing, column support conditions, anchorage, and potential impacts to the lateral-force-resisting system. Selective removal of finishes may be required to verify concealed framing and determine whether gable end bracing is present, continuous, modified, or missing. Potential repairs may include strengthening of mezzanine framing, supplemental support or anchorage, added or replaced bracing, connection upgrades, and other measures required to provide a continuous gravity and lateral load path.	$50,000
Medium	Section 6.2: Steel Framing Around Roll-up Doors	Further evaluate the steel framing, purlins, door jamb framing, header framing, connections, and anchorage around the north side roll-up door to determine whether corrosion, deterioration, or section loss has affected the surrounding framing or local load path. Repair measures may include cleaning and coating of corroded steel, replacement or reinforcement of deteriorated purlins or door framing components, connection upgrades, improved weather protection, and detailing to reduce continued moisture exposure.	$20,000
Unknown	Section 6.3: Previous Water Damage	Further evaluate the previous water-damaged area along the north side window location to confirm whether moisture-related deterioration remains concealed within wall framing, purlins, connections, finishes, or adjacent structural components. If finishes or coverings are removed during future work, exposed framing should be reviewed for corrosion, staining, decay, softening, or connection deterioration. Repair measures may include maintaining weather-tight wall infill conditions, improving flashing or sealant details, and repairing or replacing affected framing if concealed deterioration is discovered.	$8,000

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9.7 Coast Guard Building Matrix

Severity	Issue and/or Damage	Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
High	Section 7.1: Added Side Garage and Interior Mezzanine Deck	Further evaluate the added side garage structure and interior mezzanine deck, including vertical posts, post foundation connections, mezzanine framing, stair framing, bracing, anchorage, and connections to the double-wide portable structure. Evaluation should confirm whether a continuous gravity and lateral load path exists and whether the observed movement of the upper platform and stairs indicates inadequate bracing or connection stiffness. Potential repairs may include installation of a defined lateral bracing system, strengthening of platform and stair framing, improved post-to-foundation anchorage, added uplift and lateral ties, connection upgrades, and replacement of temporary or makeshift blocking with permanent stabilization details	$25,000
Medium	Section 7.2: Sheared Roll Up Door	Further evaluate the distressed and reframed roll-up door opening, including the door support framing, header, jambs, adjacent wall framing, connections, and bracing around the opening. Evaluation should determine whether prior damage or reframing reduced local support capacity or interrupted the lateral load path of the attached side garage structure. Repair measures may include removal or replacement of the damaged door assembly, repair or replacement of damaged framing, header or jamb reinforcement, connection upgrades, and coordination with lateral bracing improvements for the attached structure.	$27,000
Medium	Section 7.3: Musty Crawl Space	Further evaluate the crawl space below the double-wide portable structure to document concrete pier conditions, floor framing, anchorage, moisture conditions, ventilation, and any signs of decay, corrosion, biological growth, or deterioration. The musty crawl space conditions may indicate elevated moisture or limited ventilation, which could affect concealed wood framing, fasteners, anchorage, or support elements. Repair measures may include moisture control improvements, improved ventilation, removal of debris or organic materials, localized repair of deteriorated floor framing or supports if discovered, and verification or improvement of anchorage between the portable structure and supporting piers.	$18,000
Unknown	Section 7.4: Possible Modifications to Portables	Further evaluate possible modifications to the double-wide portable building units, including the connection between the two portable halves, crawl space framing and anchorage, wall and roof framing where accessible, and connections between the portable structure, attached side garage, and mezzanine deck. Evaluation should determine whether the portable structure was modified to accommodate the attached garage or mezzanine deck and whether wall framing, sheathing, anchorage, or other load-path elements were altered. Potential repairs may include connection upgrades, supplemental framing, anchorage improvements, or other measures required to maintain a continuous load path between the portable units and attached structure.	Unknown

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9.8 Storage Building Matrix

Severity	Issue and/or Damage	Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
High	Section 8.1: Deteriorated Roof Framing and Roof Purlins	Further evaluate the roof framing, roof purlins, roof edge members, eave members, connections, and adjacent roof framing to determine the extent of corrosion, section loss, and remaining member capacity. Repair measures may include cleaning and coating of salvageable steel, replacement of deteriorated roof purlins or eave members, localized reinforcement, connection repairs, roof system repairs, and corrosion protection measures appropriate for the coastal environment. If deterioration is widespread, roof system replacement should be considered as part of a broader repair or building replacement approach.	Repair Not Recommended – Demo or Replace
High / Unknown	Section 8.2: Deteriorated Wall Framing, Siding, and Lateral Bracing	Further evaluate the wall framing, wall purlins, metal siding, doorway framing, and any visible or concealed lateral bracing elements to determine the extent of corrosion, section loss, and load-path interruption. Repair measures may include replacement of deteriorated wall purlins, replacement of corroded siding, repair of deteriorated doorway framing, cleaning and coating of salvageable steel, repair of wall penetrations, and improved detailing to reduce future moisture exposure. If bracing or lateral load-path components are deteriorated, modified, or interrupted by openings, potential retrofit measures may include supplemental bracing, framed opening reinforcement, connection upgrades, and other measures required to restore a continuous load path.	Repair Not Recommended– Demo or Replace
High	Section 8.3: Deteriorated Columns, Base Plates, and Anchor Bolts	Further evaluate column bases, base plates, anchor bolts, and adjacent foundation areas to determine the extent of corrosion, section loss, and anchorage deterioration. Evaluation should include review of visible steel loss and, where possible, concealed or embedded anchor bolt conditions. Repair measures may include cleaning and coating of steel, supplemental steel reinforcement, base plate replacement or reinforcement, new anchorage, column base repair, localized foundation repair, and corrosion protection measures. Where substantial material loss is present, replacement of affected members may be required. Due to the extent of deterioration, demolition and replacement of the building should also be considered as a practical alternative to member-by-member repair.	Repair Not Recommended– Demo or Replace
High	Section 8.4: Cut Concrete Foundation Curb	Further evaluate the cut or modified concrete foundation curb to determine whether the remaining concrete provides adequate support and anchorage for the steel framing. Evaluation should include curb continuity, concrete condition, anchor bolt locations, embedment, cracking, spalling, exposed reinforcement, and adjacent column or wall support conditions. Repair measures may include localized concrete repair, reconstruction of cut or damaged curb sections, supplemental anchorage, repair or replacement of affected anchor bolts, and coordination with column base or wall framing repairs. If demolition and replacement is pursued, the existing curb should be evaluated to determine whether it can be reused, repaired, or should be replaced as part of the new foundation system.	Repair Not Recommended– Demo or Replace

Table 1: Storage building replacement in kind ROM cost estimates.

Recommended Repair method or Structural Evaluation	Rough Order Cost Estimate
Demo existing building and foundation.	$80,000
Site work and utility connections.	$100,000
New pre-engineered metal building.	$1,200,000

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This Technical Memorandum is provided as an interim output under our agreement with Crescent City Harbor District. It is provided to foster discussion in relation to technical matters associated with the project and should not be relied upon in any way.