Santa Barbara Airport

August 24, 2023

City of Santa Barbara

Conditions and Further Use Analysis Study for the General Western Aero Hangars, Buildings 248 & 249.

Location:

Santa Barbara Airport, Santa Barbara, California 93117

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Job #2204

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Objective

These Hangar buildings 248 and 249 located in the northeast corner of the Santa Barbara Municipal Airport were last evaluated by Lenvik & Minor Architects in 2001. The Airport's objective at that time was to evaluate **A)** Restoration in the same location, which was housing small aircraft. **B)** Adaptive reuse of the Hangars as an aviation museum, visitors center, conference rooms, and children's educational center relocating them to Hartley Place.

In this report, the Airport asks LMA Architects to evaluate the following four Options:

Option-1: Drawings, 4x5 photo and Historical documentation per City requirements of the existing hangers before demolishing them and paving the area for open field aircraft storage.

Option-2: Restoration/rehabilitation of both hangars at their current location and continue use as airplane storage. If the airport elects to an alternative use such as Aviation Facilities, that would be a study outside the scope of this report.

Option-3: Relocation of both hangars outside the floodway, but still in the 100yr flood plain and rehabilitate for a new use (TBD).

Option-4: Deconstruction of 248 and use the available salvaged historic materials to rehabilitate hangar 249. A sub-category 4(a) would restore in place 249 and remain airplane storage. The 248 and surrounding area would be paved for outdoor airplane storage. A sub-category 4(b) would salvage parts of 248 to rehabilitate 249 and relocate it to another site for a new use (TBD). After the relocation of 249 and removal of 248 the area would be paved for outdoor airplane storage.

Analysis Approach Included:

- Both of the existing buildings were reviewed for historical significance (Section I),
    - architectural existing conditions are included in (Section I).
- Structural updates to the analysis done in 2001 of the existing buildings. This 2023 analysis (Section II) adds the concrete substructure and updates the review relative to the current California Building Code in use (2022).
- City input on the options.
- Cost estimates of the four options. Certain assumptions were made and optional "adds" considered using the estimator's best judgement not having preliminary proposed plans to assess.
- Synthesis of the options analysis.
- Habitability of the existing buildings analysis.
- The project team consists of LMA Architects (Jeff Gorrell) as the lead, with sub-team members: Applied Earthworks Historians (Colleen Hamilton & Lea Kolesky), Praxis Engineering (Jens Amlie), The Tryon Company (Trent Lyon - Cost Estimator).

Site visits were made to view the condition of the existing buildings. Review of the City Zoning Ordinance, Airport Design guidelines, Airport specific plans and meetings with City Staff was done to determine in general terms, the compliance of the various options with those documents.

The various site and building options were also reviewed for general conformance with the California Building Code 2022 edition and the CALDAG Accessibility guidelines.

Overview: The Airport Zoning, in general, falls under Title 29 of the Santa Barbara Municipal Code. The N.E. corner of the airport property where the existing Hangars 248 & 249 are located is zoned SP6-AIA Airport Industrial Area Specific Plan, A-F Airport Facilities Zone and S-D-3 Overlay. The (Coastal Overlay Zone) involves a Coastal Development permit to ensure that the development is consistent with the City's Certified Local Coastal Program and the Coastal Act.

Background: The Lenvik & Minor's 2001 report objectives **A)** Restoration **B)** Adaptive reuse moving to another airport location. **C)** Document then Demo. The Hangars must be on the *National Register of Historic Places* (NRHP) register to get relief from the California Building Code (Mr. Estrella), Head Building Official. Flood control requirements were made by (Mr. Paley Flood Control District). According to the City Historian (Mrs. Palmer) at that time, eligibility only does not preclude the buildings from being demolished. However, they are on the Local Historic Landmarks Commissions potential list which makes them eligible to go by the California Historical Building Code, should they be saved.

In 2001, Mrs. Palmer pointed out that buildings constructed during World War two and considered historically more significant in her opinion than the Hangar buildings have been approved for demolition. Buildings 239, 241, 246, 247, 251 & 260 completed their archive documentation for a cost of roughly $46,000 in 1998 and were awaiting demolition. Mrs. Palmer reviewed and approved those buildings for demolition at staff level, some of which were eligible for the National Register. She believed airport Hangars 248 & 249 could be demolished if the applicant could prove that reasonable efforts were made to relocate, reconstruct, or do an adaptable reuse of the buildings. If these solutions proved to be economically unreasonable, then demolition would become likely. If demolished, the buildings would have to meet the same archive documentation as the World War two buildings had to comply with.

The airplane hangars are considered non-essential airplane storage and can still be at grade level per Jeff Paley's Flood Control Letter of September 11, 2001, he did recommend a floodwall however, at least at the Base Flood Elevation (BFE). At that time, it was 15 feet.

Option Considerations: There are four options the Airport wants considered:

(1) Photo document and full demolition of both hangars.

(2) Restoration/rehabilitation of both hangars at their current location and continue using them as non-essential airplane storage.

(3) Relocation of both hangars and rehabilitation in a new location with a different adaptive use; like option **4(b).**

(4) Deconstruction of 248 and use of salvaged historic materials to rehabilitate hangar 249. The Historians recommend Option 4 see Section I. LMA agrees given the extremely deteriorated condition of hangar 248. Hangar 249 could be restored in a more historically correct fashion utilizing salvaged historic materials from 248. Option **4(a)** would continue as a non-essential hangar storage for airplanes, no bathrooms. Or Option **4(b**) would relocate hangar 249 incorporating salvaged material from 248 to another location on airport property for another use, perhaps as an aviation museum, or an education center (TBD under a separate scope, if selected).

Note: The 2022 California Uniform Building Code (CBC) would govern at this writing. Should the buildings be eligible to follow the California Historic Building Code (CHBC) per the City Historian, certain alternatives to the prevailing code could be implemented at the discretion of the local building officials. Some of those alternatives are as follows:

Accessibility: Chapter 8-6 (CHBC); Alternatives List – Appendix A, Chapter 8-6, Table 1 (CHBC)

· Structural: Chapter 8-7 (CHBC)

- (706.2 CHBC) Broad judgment may be exercised regarding the strength and performance of materials not recognized by prevailing code requirements. See Chapter 8-8 (CHBC) Archaic Materials and Methods of Construction.
- (8-705.1 CHBC) Gravity Loads - Evaluations shall be made looking primarily for conditions where failure of support may be imminent. Where no distress is evident, the structure may be assumed to have withstood the test of time.
- (8-706.1 CHBC) Lateral Loads -There are some exceptions within this section.

· Mechanical Plumbing & Electrical: Chapter 8-9 (CHBC)

- (8-901.5 CHBC) Exempt from compliance with energy conservation standards.
- (8-902.4 CHBC) Heat - Producing and cooling equipment shall comply with prevailing

code requirements governing equipment safety, except that the enforcing agency may accept alternatives which do not increase the safety hazard.

Plumbing: Chapter 8-903 (CHBC)

- (8-903.1 CHBC) General Regulations. Requirements of the prevailing code concerning general regulations be complied with, except that the enforcing agency shall accept alternatives which do not increase the safety hazard.
- (8-903.9 CHBC) Building sewer systems shall comply with applicable requirements of the prevailing code.

Electrical: Chapter 8-904 (CHBC)

- (8-904.1.3 CHBC) The enforcing agency shall approve any alternative to these regulations which achieves equivalent safety.
- (8-904.2.7 CHBC) Lighting load calculations for services and feeders may be based on actual loads as installed in lieu of the "watts per square foot" method.
- (8-904.1.4 CHBC) Archaic wiring methods that do not appear in present codes may remain and may be extended if they do not cause greater safety hazard.

Means of Egress: Chapter 8-5 (CHBC)

- (8-502.1 CHBC) General - Except as provided in this section, exits shall conform or be made to conform to the provisions of prevailing code.

Fire Protection: Chapter 8-4 (CHBC); Local fire authorities to determine NFPA-9 categories; LMA suggested to Fire Dept. (Aron Lynn) Group II, Type V applies. Fire Dept.'s decision is pending. They will require an option selected and preliminary plans to review to determine the fire suppression system in consultation with the NFPA, CBC, and CHBC. A critical decision by Fire Dept. will be whether they consider the option selecting a remodel or new construction.

- (8-410.1 CHBC) Every historical building which does not conform to the construction requirements specified in prevailing code for the occupancy or use and which constitutes a distinct fire hazard shall be provided with an approved automatic fire extinguishing system, as deemed appropriate by the enforcing agency.
- (8-403 CHBC) Interior Wall and Ceiling Finish - Interior wall and ceiling finish shall conform to the provisions of prevailing code. Existing nonconforming materials used in such finishes may be surfaced with an approved fire-retardant paint to lower the rating of the natural finish to within reasonable proximity of the required rating.

Options Explored:

Option 1

Provide drawings and 4 x 5 photo documentation per City requirements before demolishing the buildings and paving the area for open field aircraft storage.

Construction Cost Estimate: (See Section III)

Photos of the existing buildings (See Section VIII)

Option 2

Restoration of both buildings with some replication for use in situ with the addition of a concrete flood wall, major structural upgrade, new finishes, and add exterior asphalt paving for open yard non-essential airplane storage, vehicle parking, minor electrical for essential lighting only, and no plumbing. The new floodwall would be approximately seven feet high. The existing finish floor elevation is estimated at 14 feet (Brad Klinzing e-mail 05/04/23). The current Building & Safety Base Flood Elevation (BFE) is 19.2 feet and recommends the Design Flood Elevation (DFE) (top of floodwall) if no change of use, be 19.2 feet. If a change of use, the (DFE) would be higher, see the (BFE) Building Department determination in Section V.

Construction Cost Estimate: (See Section III)

Photos of Existing Buildings: (See Section VIII)

Regulation Review:

Zoning: A-F (Aircraft & Airport-related uses adjacent to the flight line) and S-D-3 (Coastal Overlay Zone).

The A-F zone allows uses such as:

A) Aircraft chartering and leasing.

B) Aircraft parking, tie-down, and aircraft hangars and shelters.

C) Aircraft rescue and firefighting.

Parking required: 2023 Airport zoning Title 29 Chapter 29.90.012 & the July 1997 Airport specific plan:

Open Plane Storage Yard - 100'x200'est. 20,000s.f. @ 1/5,000 s.f. =	4	Cars
- (1) Bicycle for every 7-parking spaces		
Hangar Plane Storage Warehouse - 9,600 s.f. @ 1/2,000 s.f. =	5	Cars
Total Cars	9	Cars

2022 California Building Code: (Fire Department and California Historical Code) will alter the CBC code sections (TBD) once an option is selected and preliminary plans produced.

- Group "S-1" Section 311.2.1 Aircraft Hangar (storage & repair), and 412.3 Aircraft Hangars.
  - Floors are required to be non-absorbent (412.3)
- Construction Type "VB" Non-Rated (Table 504.4 height, 506.2 area, 601 rated elements, 602 separation distance)
- Occupancy and Exiting (Sec. 311.2, Table 1004.6, 1006.2.1):
  - A) Aircraft Hanger-Storage & Repair). 4,800 s.f./500=9.6 occ.
    - [1- exit reqd.] (Table 1006.2.1)- (non-sprinklered) 100' travel distance. Occ 10<30
- Sprinklers:
  - See Fire Protection in the California Historic Building Code (CHBC descriptions.

Option 3

- Refurbish hangars 248 & 249, re-locating them to another airport location outside the floodway, but still within the 100 yr. flood zone. They would be refitted for adaptive reuse such as an aviation museum or education center (TBD).

- Construction Cost Estimate: (See Section III) The estimate is hypothetical until a use decision is made by the airport and a concept and preliminary design is produced.
- Photos of Existing Buildings: (See Section VIII)

Regulation Review:

Zoning: Title 18 Airport, depends on the location selected by the airport.

Parking Required: Section 29.90.012. The amount of parking and bike will depend on the square footage of each use (TBD).

Building Code: See Option 2 above for specifics.

Occupancy: (TBD)

- Group "A-3" (Section 303.4)
- Group "E" (Section 305.1)
- Group "B" (Section 304)
- Plumbing Fixtures: 2023 CBC (uses TBD)
- Fire Protection:

  Potentially foam suppression system and finish materials considerations. Fire Dept. (Aaron Lynn) requires an option selected and preliminary plans to review to determine the level of fire protection in consultation with the NFPA-9; CBC, CHBC.

Option 4

Has two categories:

4(a) takes salvageable material from 248 to use to restore 249 to remain and function in situ. See Option 2 for a similar description.

4(b) would salvage material from 248 to be used in reconstructing 249 at a different airport site and different use. See Option 3 for additional code information.

August 30, 2022

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Subject: **Habitability of Hangar No. 248 and 249, Santa Barbara Airport, Santa Barbara CA**

To whom it may concern:

As described through the structural observation addendum report, the primary threat that is considered a main concern to the subject buildings are lateral loads, wind or seismic. Wind loads will govern design in their existing conditions. Unfortunately, there is no way to identify the load capacity since the existing roof and wall system are not recognized as having any lateral resistance by the current California Building Code. However, in our professional judgement, the buildings do not need to be evacuated at this time. This is based on the history of the buildings being able to withstand considerable wind loads from various directions over the last 70 plus years. The report submitted indicates various upgrades to the subject buildings that would bring them up to comfort level of current codes.

Section I

Santa Barbara Airport
General Western Hangars Project Constraints Analysis, Santa Barbara, California

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August 2023

MANAGEMENT SUMMARY

The City of Santa Barbara (City) is considering four project options that have the potential to impact the General Western hangars, also known as Buildings 248 and 249, at the Santa Barbara Airport, Santa Barbara, California. Project options include demolition or rehabilitation and reuse of the hangars. Applied EarthWorks, Inc. (Æ) Architectural Historians prepared this analysis under contract to LMA Architects (LMA). The analysis of these historic structures evaluates the four proposed project options for consistency with the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOI Standards) and recommends a preferred project option. While specific recommendations for consistency with the SOI Standards cannot be made until a project option is selected, various relevant observations are provided where they agree or conflict with the SOI Standards.

The General Western hangars are recommended eligible for inclusion in the National Register of Historic Places (NRHP) under Criterion A and the California Register of Historical Resources (CRHR) under Criterion 1 for their association with events that have made a significant contribution to the broad patterns of aviation history on a local and regional level. The hangars are listed in the City of Santa Barbara's Historical Resource Inventory as City Landmarks under Criteria 1 and 3e. As such, the hangars are historical resources for the purposes of the California Environmental Quality Act (CEQA). Proposed improvement/demolition of the hangars has the potential to result in substantial adverse changes in the significance of historical resources and must comply with CEQA and the City Historic Structures Ordinance (Chapter 22.22).

The four project options considered herein are: (1) full demolition of both hangars; (2) restoration/rehabilitation of both hangars at their currently location; (3) relocation of both hangars and rehabilitation in a new location; and (4) deconstruction of one hangar and use of salvaged historic materials to rehabilitate the remaining hangar. Æ recommends Option 4 as it provides a meaningful compromise between the most extreme options of full demolition and complete restoration in place. Where possible, this analysis considers mitigation measures that would reduce impacts to less than significant level as required by CEQA. The hangars are currently at risk of loss of integrity and structural instability due to degradation and incremental flood damage. Æ recommends taking immediate preservation measures, including flood risk management, to prevent further degradation and ensure that both hangars are protected until a project option is selected.

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INTRODUCTION

Under contract to LMA Architects (LMA), Applied EarthWorks, Inc. (Æ) staff prepared an impact analysis of four project options proposed for the historic General Western hangars at the Santa Barbara Airport in Santa Barbara, California. Also known as Buildings 248 and 249, the hangars are recommended eligible for listing in the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR) (Architectural Resources Group [ARG] 2001:1). The hangars are listed in the City of Santa Barbara's Historical Resource Inventory as City Landmarks under Criteria 1 and 3e, and considered historic resources under the California Environmental Quality Act (CEQA, Morlet and Hamilton 2014a:48–49). As an element of the Airport Master Plan Program EIR (Airport Master Plan) completed in 2017 recommendations were made for retention of the two General Western Aero Hangars (Buildings 248 and 249) that were originally recommended for demolition (Coffman Associates 2017:ES-5). The current analysis was completed by Æ Senior Architectural Historians Amber Long (M.A.) and Carlos van Onna (M.A.) and Æ Associate Architectural Historian Lea Kolesky (B.A.), who all meet the Secretary of the Interior's Professional Qualifications Standards in the fields of history and architectural history. Æ Managing Principal and Principal Architectural Historian M. Colleen Hamilton (M.A.) provided oversight and technical review of this document. She also meets the SOI Professional Qualifications Standards.

1.1 PROJECT DESCRIPTION

There are four proposed project options considered herein that have the potential to impact the hangars: (1) full documentation and demolition of both hangars; (2) restoration/rehabilitation of both hangars in their current location; (3) relocation of both hangars and rehabilitation in a new location; and (4) deconstruction of one hangar and salvage of historic materials to use in rehabilitation of the remaining hangar.

The hangars were previously evaluated in *Determinations of Eligibility for Historic Resources at the Santa Barbara Municipal Airport* (Triem and Stone 1995), a study that inventoried all buildings and structures at the Santa Barbara Airport. The study concluded that the two hangars were recommended eligible for listing in the NRHP under Criterion A for their association with early aviation history in California. In 2001, Architectural Resources Group confirmed the earlier evaluation of NRHP eligibility and recommended that the hangars are eligible for listing in the CRHR under Criterion 1 for their association with military history and the history and establishment of the Santa Barbara Airport (ARG 2001). Reports evaluating the structural conditions of the hangars were completed by LMA in 2002 (Lenvik & Minor Architects 2002) and Praxis Engineering in 2022 (Praxis Engineering 2022). Æ staff reconsidered eligibility of the hangars in 2014 and also recommended them eligible under Criteria A/1 (Morlet and Hamilton 2014b). Recommendations for retention, stabilization, and mothballing per the National Park Service Preservation Brief 31 were outlined in the Airport Master Plan (Coffman Associates 2017:ES-15).

Æ staff completed a site visit on July 21, 2022. The Primary Contractor, City staff, Santa Barbara Airport staff, and representatives from Praxis Engineering and the Tyron Company were also on

site. During the site visit, the hangars were found to have suffered further deterioration but still retained integrity. Information compiled in previous reports was used to analyze the potential impacts of the project options for consistency with the Secretary of the Interior's Standards for the Treatment of Historic Properties (SOI Standards) (Grimmer 2017). The project options must also comply with CEQA and the City of Santa Barbara 's Historic Structures Ordinance (Chapter 22.22).

1.2 REGULATORY SETTING

Projects with the potential to impact the hangars are subject to CEQA regulations because they have been previously recommended eligible for listing in the NRHP and CRHR and hence are historical resources. Therefore, all work on the hangars must conform to the City's Historic Resource Ordinance and Design Guidelines and be consistent with the SOI Standards (City of Santa Barbara 2021:16).

CEQA requires public agencies to evaluate the impacts of their projects on the environment and includes significant historical resources as part of the environment. Public agencies must treat any cultural resource as significant unless the preponderance of evidence demonstrates that a resource is not historically or culturally significant (Title 14, California Code of Regulations [CCR], Section 15064.5). Under CEQA, the term *historical resource* includes but is not limited to, any object, building, structure, site, area, place, record, or manuscript that is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals (Public Resources Code [PRC] Section 5020.1[j]). Historical resources may be designated as such through four different processes:

(1) Official designation or recognition by a local government pursuant to local ordinance or resolution (PRC 5020.1[k]);

(2) A local survey conducted pursuant to PRC 5024.1(g)(4)—if the survey is 5 or more years old at the time of its nomination for inclusion in the California Register, the survey is updated to identify historical resources which have become eligible or ineligible due to changed circumstances or further documentation and those which have been demolished or altered in a manner that substantially diminishes the significance of the resource;

(3) The property is listed in or eligible for listing in the National Register of Historic Places (NRHP); and

(4) The property has been found eligible for listing in the CRHR by a lead agency as part of the CEQA compliance process (PRC 5024.1, 14 CCR 4852).

1.2.1 National Register of Historic Places

The criteria for inclusion in the NRHP are found in Title 36, Code of Federal Regulations, Section 60.4.

> The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody distinctive characteristics of a type, period, or method of construction, or represents the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important in prehistory or history.

To be included in the NRHP a resource must not only possess historic significance but also the physical means to convey such significance—that is, it must possess integrity. Integrity refers to the degree to which a resource retains its original character. To facilitate this assessment, the National Park Service ([NPS] 1997:44–45) provides the following definition of the seven aspects of integrity:

1. Location is the place where the historic property was constructed or the place where the historic event occurred;
2. Design is the combination of elements that create the form, plan, space, structure, and style of a property;
3. Setting is the physical environment of a historic property;
4. Materials are the physical elements that were combined or deposited during a particular period and in a particular pattern or configuration to form a historic property;
5. Workmanship is the physical evidence of the crafts of a particular culture or people during any given period in history or prehistory;
6. Feeling is a property's expression of the aesthetic or historic sense of a particular period of time; and
7. Association is the direct link between an important historic event or person and a historic property.

Assessing the integrity of a significant historic property depends on an understanding of the components or features that give it significance. For this reason, the issue of integrity is addressed only after significance has been established. Moreover, cultural resources that are not significant per NRHP criteria are by definition not eligible for listing and do not require an integrity assessment.

1.2.2 California Register of Historical Resources

Section 15064.5(a)(3) of the CEQA Guidelines states that a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing in the CRHR (PRC 5024.1; 14 CCR 4852):

> (1) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
>
> (2) Is associated with the lives of persons important in our past;
>
> (3) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
>
> (4) Has yielded, or may be likely to yield, information important in prehistory or history.

In addition to meeting one or more of the significance criteria, the resource must retain enough of its historic character or appearance to be recognizable as a historical resource and to convey the reason for its significance. This is evaluated by examining the same seven aspects of integrity identified by NPS and itemized above. In addition, the California Office of Historic Preservation (2011:2) specifies:

> Integrity is the authenticity of a historical resource's physical identity evidenced by the survival of characteristics that existed during the resources period of significance. . . . Alterations over time to a resource or historic changes in its use may themselves have historical, cultural or architectural significance.

Resource integrity is further "based on significance: why, where, and when a property is important" (NPS 1997:45). Only after significance is fully established is the issue of integrity addressed. Ultimately, the question of integrity is answered by whether or not the property can communicate those aspects for which it is significant.

1.2.3 City of Santa Barbara

The City's Historic Resource Ordinance and Design Guidelines are codified in Chapter 30.157 and Chapter 30.220, respectively, of the City's Municipal Code. The Historic Resource Ordinance lays out the requirements for designation as a local Landmark, Structure of Merit, or for inclusion on the Historic Resources Inventory. Per Section 30.157.025, the Historic Landmarks Commission (HLC) may designate a property as a historic resource if it meets one of the following significance criteria:

> (1) It is associated with events that have made a significant contribution in our past;
>
> (2) It is associated with the lives of persons significant in our past;
>
> (3) It embodies the distinctive characteristics of a type, period, architectural style or method of construction, or represents the work of a master, or possesses high artistic or historic value, or represents a significant and distinguishable collection whose individual components may lack distinction;

(4) It yields, or may be likely to yield, information important in prehistory or history; or

(5) Its unique location or singular physical characteristic represents an established and familiar visual feature of a neighborhood.

In addition to meeting one or more of the significance criteria, the resource must retain enough of its historic character or appearance to be recognizable as a historical resource and to convey the reason for its significance. This is evaluated by examining seven aspects of integrity as defined by NPS and outlined in Section 1.2.1 above.

Per Section 30.220.020 of the City's Municipal Code, the HLC must approve any exterior alteration, relocation, or demolition, including demolition by neglect of a historic resource. The HLC will approve a proposed treatment of historical resources that satisfy the City's updated Historic Resource Design Guidelines, adopted by the City Council on May 25, 2021. The Design Guidelines clarify local ordinances, provide guidance on acceptable modifications, and offer restoration and rehabilitation treatment options. The City's Design Guidelines are informed by the SOI Standards established by the U.S. Secretary of the Interior.

1.2.4 Final Program Environmental Impact Report on the Proposed Airport Master Plan SCH#2014061096

The Airport Final Program EIR completed in 2017 itemized Impact CR-1 which proposed to pursue a management plan for the General Western Aero hangars that would mothball and stabilize the buildings in their existing location until such time as they could be relocated outside of the floodplain (Coffman 2017:ES-15-16). The Management Plan was to include nomination to the National Register of Historic Properties (sic), seek approval to move the hangars out of the floodway to a location that would preserve the integrity of the historic properties; consult with interested parties; and determine a treatment plan to restore, preserve, and rehabilitate the buildings per the SOI Standards. The impact measure was never implemented, and the buildings continued to deteriorate.

1.2.5 Secretary of the Interior's Standards for Treatment of Historic Properties

In addition to national, state, and local regulations, the proposed projects must adhere to the SOI Standards. The SOI Standards outline four options for the treatment of historic properties, including Preservation, Rehabilitation, Restoration, and Reconstruction. The prescribed treatments as outlined by the SOI Standards are hierarchical in nature. Regardless of a project's intended use of the Standards, their application should be considered in the following order: first, retention; then, repair; and, finally, replacement with in-kind or like materials.

This document is intended to serve as a guide for selecting and implementing a proposed project approach in the treatment of the hangars. In this instance, the SOI Standards for Preservation, Rehabilitation, and Restoration will be considered and addressed accordingly. Reconstruction will not be addressed in this document as it is not applicable to the proposed project options. NPS defines Reconstruction as:

> the act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location [Grimmer 2017:225].

Although the work required to rehabilitate the hangars may be extensive and require the replacement of material, none of the proposed projects involve wholesale replication of nonextant structures through new construction. The other treatments per the SOI Standards are defined below.

1.2.5.1 Standards for Preservation

NPS defines Preservation as "the act or process of applying measures necessary to sustain the existing form, integrity, and materials of a historic property" (NPS 2022a). Preservation work generally refers to repair and ongoing maintenance, including preliminary measures to protect and stabilize a property. Preservation should be considered as the first priority treatment whenever possible. The eight Standards for Preservation are as follows:

1. A property will be used as it was historically, or be given a new use that maximizes the retention of distinctive materials, features, spaces, and spatial relationships. Where a treatment and use have not been identified, a property will be protected and, if necessary, stabilized until additional work may be undertaken.

2. The historic character of a property will be retained and preserved. The replacement of intact or repairable historic materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve existing historic materials and features will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. The existing condition of historic features will be evaluated to determine the appropriate level of intervention needed. Where the severity of deterioration requires repair or limited replacement of a distinctive feature, the new material will match the old in composition, design, color and texture.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

1.2.5.2 Standards for Rehabilitation

NPS defines Rehabilitation as "the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values" (NPS 2022b). As with the Standards for Preservation, historic building materials and character-defining features are preserved, protected and maintained. The Rehabilitation Standards allow for the replacement of extensively deteriorated, damaged, or missing features using either the same material or compatible substitute materials. Rehabilitation allows for alterations deemed necessary for the continuing or new use of the historic building providing alterations retain as much original historic material as possible and do not impact character-defining features of the structure. These alterations can include additions or related new construction if it is compatible yet distinct from the historic materials and does not detract from key elevations. The 10 Standards for Rehabilitation are as follows:

1. A property will be used as it was historically or be given a new use that requires minimal change to its distinctive materials, features, spaces and spatial relationships.

2. The historic character of a property will be retained and preserved. The removal of distinctive materials or alteration of features, spaces and spatial relationships that characterize a property will be avoided.

3. Each property will be recognized as a physical record of its time, place and use. Changes that create a false sense of historical development, such as adding conjectural features or elements from other historic properties, will not be undertaken.

4. Changes to a property that have acquired historic significance in their own right will be retained and preserved.

5. Distinctive materials, features, finishes, and construction techniques or examples of craftsmanship that characterize a property will be preserved.

6. Deteriorated historic features will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials. Replacement of missing features will be substantiated by documentary and physical evidence.

7. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

8. Archeological resources will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work will be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportion, and massing to protect the integrity of the property and its environment.

10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

1.2.5.3 Standards for Restoration

NPS defines Restoration as "the act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period" (NPS 2022c). This treatment should be utilized when the expressed goal of a project is to make a building appear as it did during its most significant time in history. In order to ensure that a project does not create a false sense of history, Restoration requires adequate documentation of a property's appearance during its established period of significance. The 10 Standards for Restoration are as follows:

1. A property will be used as it was historically or be given a new use that interprets the property and its restoration period.

2. Materials and features from the restoration period will be retained and preserved. The removal of materials or alteration of features, spaces and spatial relationships that characterize the period will not be undertaken.

3. Each property will be recognized as a physical record of its time, place and use. Work needed to stabilize, consolidate and conserve materials and features from the restoration period will be physically and visually compatible, identifiable upon close inspection and properly documented for future research.

4. Materials, features, spaces and finishes that characterize other historical periods will be documented prior to their alteration or removal.

5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize the restoration period will be preserved.

6. Deteriorated features from the restoration period will be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature will match the old in design, color, texture and, where possible, materials.

7. Replacement of missing features from the restoration period will be substantiated by documentary and physical evidence. A false sense of history will not be created by adding conjectural features, features from other properties, or by combining features that never existed together historically.

8. Chemical or physical treatments, if appropriate, will be undertaken using the gentlest means possible. Treatments that cause damage to historic materials will not be used.

9. Archeological resources affected by a project will be protected and preserved in place. If such resources must be disturbed, mitigation measures will be undertaken.

10. Designs that were never executed historically will not be constructed.

The following discussion applies these Standards to each of the four options being considered for treatment of the historic hangars.

1.3 REPORT ORGANIZATION

This report documents the results of the analysis of the four proposed project options. Chapter 1 has introduced the project description, outlined and described the regulatory setting, and summarized the report organization. Chapter 2 reviews the eligibility of the hangars and summarizes the existing structural analysis. Chapter 3 outlines, describes, and analyses the four potential project options. A summary of the findings and recommendations is included in Chapter 4, and bibliographic references are provided in Chapter 5.

2
REVIEW OF ELIGIBILITY AND STRUCTURAL ANALYSIS

2.1 SUMMARY OF ELIGIBILITY

The hangars are at the northeast corner of the Santa Barbara Airport within a discontiguous part of the City, surrounded by the city of Goleta in Santa Barbara County. General Western Aero Corporation constructed both hangars in 1931, and additions were made through 1944. The hangars measure 80 feet wide and 60 feet deep and rest on poured-in-place concrete slabs within an active floodway of San Pedro Creek (Praxis Engineering 2022:1, 4). Wood stud walls are topped by a curved corrugated sheet metal roof supported by 2 × 8 wood purlins, which are in turn supported by bowstring-type redwood trusses (Praxis Engineering 2022:1). The timber frame structures are utilitarian in design, and lightweight construction principles are embodied in their material composition and construction techniques (Lenvik & Minor Architects 2002:I:5). Originally known as the General Western Airport, the General Western Aero Corporation began site improvements at the Goleta airfield in 1931. United Airlines began service from the airport in September 1936, becoming the first major national airline to serve the area with commercial air passenger service to Santa Barbara. Further improvement of the airfield occurred following the City's selection of the site for use as a municipal airport in 1940. Construction efforts supported by the U.S. Army Corp of Engineers continued through 1941 (ARG 2001:2).

Building 248, the east hangar, was built first and used as the headquarters of the Flying Service. Building 249, the west hangar, was used as a machine shop, assembly plant, and factory of the Meteor aircraft. Building 249 was also used as a flight school for the Santa Barbara Flying Service from 1936 to 1942 and again from 1946 to 1961 (Morlet and Hamilton 2014b:21). Shortly after the hangars were built, the General Western Aero Corporation constructed the airport's Administration Building, a small two-story office tower between the hangars that was demolished circa 1971. Following the completion of the new airport terminal on the opposite side of the airport in 1942, United Airlines vacated the hangars, which were subsequently occupied by the U.S. Marine Corps. The Marine Corps used the hangars until 1945 (ARG 2001:2).

Listed in the City of Santa Barbara's Historical Resource Inventory as City Landmarks under Criteria 1 and 3e, the hangars are also recommended eligible for listing on the NRHP and CRHR under Criterion A/1 for their significance as the first buildings on site at what would become the Santa Barbara Airport. They are representative of the history and development of the Santa Barbara Airport as well as the development of early aviation commerce at the local level. The hangars remained in constant use from the time of their construction until relatively recently when they were relegated to access storage. The hangars have two periods of significance: 1931–1942 and 1942–1945. The first period is related to the early history of aviation activity at what would become the Santa Barbara Airport. The second period is related to military usage of the hangars as part of the U.S. Marine Corps Air Station at Santa Barbara.

The hangars have not been previously found eligible for listing at the national, state, or local level under Criterion B/2. Although there is historic photographic evidence that the hangars were

used by significant figures in aviation, the level of association with the lives of historically significant individuals required for listing under Criterion B/2/2 is not fully documented.

For example, Amelia Earhart is known to have flown to the Santa Barbara Airport (Figure 1), but the degree of this association has not been explored. The hangars are most directly associated with Albin Peterson and Louis F. Vremsak, owners and founders of the General Western Aero Corporation, and Burton and Jessie Bundy, owners and operators of the Santa Barbara Flying Service (Morlet and Hamilton 2014b:46). While these individuals do have a documented association with the hangars, research has not revealed any relevant biographical information that would speak to their historic significance. The hangars do not appear to be closely associated with historically significant individuals and are not recommended eligible at the local, state, or national level under Criterion B/2/2.

Figure 1 Undated photo of Amelia Earhart in front of the hangars (Modugno 2023).

At the local level, the hangars are rare examples of architecture of the early aviation era. The vernacular-style utilitarian hangars are a rare example of early airplane hangars in Santa Barbara and are recommended eligible for listing as City Landmarks under City Criterion 3e for their "exemplification as the best remaining architectural type" (Morlet and Hamilton 2014a:48). Despite their rarity at the local level, the hangars are a variation of common aircraft shelter and do not embody the distinctive characteristics of a type, period, or method of construction, or represent the work of an important creative individual, or possess high artistic values when evaluated at the state and national level. There are other extant examples of airplane hangars in California constructed during the same era of early aviation, including three hangars at Rockwell Field in San Diego; three hangars at Chrissy Field in San Francisco; and several hangars at McClellan Airfield in Sacramento (Morlet and Hamilton 2014a:46-47). The hangars at Rockwell Field are extant contributors to the NRHP-listed Naval Air Station, San Diego, Historic District, and are the only permanent World War I-era hangars in California (Mikesell 2000:1-13). The

Chrissy Field hangars are extant contributors to the Presidio of San Francisco National Historic Landmark District, and the McClellan Airfield hangars are extant contributors to the NRHP-listed Sacramento Air Depot Historic District. All three examples retain sufficient integrity to convey their historic significance.

Unlike the hangars, which were initially constructed as temporary buildings for commercial use, the hangars at Rockwell Field, Chrissy Field, and McClellan Airfield were all purpose-built by the military as permanent buildings. Further, these other examples of hangars retain clear character-defining features associated with architectural styles or significant methods of construction. The hangars at Rockwell Field and Chrissy Field were designed in the Mission Revival and Spanish Colonial Revival styles, respectively, while the "Great Repair Hangar" at McClellan Airfield is significant for its complex engineering (Goodwin et al. 1995:142, 212; Mikesell 2000:7-13). This massive, reinforced concrete and steel structure is representative of permanent prewar construction at military bases (Mikesell 2000:7-14). Additionally, the hangars at Rockwell Field were designed by a nationally significant architect, Albert Kahn (Goodwin et al. 1995:212); the utilitarian vernacular-style hangars are not associated with a known architect, engineer, or designer. In comparison to the other known extant examples of airplane hangars, the hangars do not rise to the level of significance required to be recommended eligible for listing at the national or state level under Criterion C/3. The hangars remain architecturally significant at the local level and are recommended eligible for listing as City Landmarks under Criterion 3e.

2.1.1 Integrity

Previous evaluations found that the hangars retained a fairly high degree of integrity on both the exterior and interior (ARG 2001:16; Morlet and Hamilton 2014b:48). The hangars retain sufficient integrity of location, design, materials, workmanship, feeling, and association to convey their historic significance. Setting is the only aspect of integrity that had been negatively impacted. Although the hangars remain in their original location, which "marks the inception of all airport activity and the genesis of the airport" (ARG 2001:2), both the 2001 evaluation by ARG and the 2014 evaluation by *Æ* state that the integrity of setting has been negatively impacted as the site no longer conveys its historic use or importance because the airport's operational focus shifted to a new terminal in 1942 (ARG 2001:2,15; Morlet and Hamilton 2014b:47-48). Additionally, both reports argue that the demolition of the original Administration Building tower further contributes to a change in the historic setting "because the three buildings together visually explained the historic significance of the establishment of the Santa Barbara Airport" (ARG 2001:16). The ARG report also cites encroachment of the San Pedro channel and "increased and haphazard vegetation" as negative impacts on the setting of the hangars. *Æ* concurs with the previous integrity determinations, which were visually confirmed during the July 2022 site visit. Despite the impacts on the setting aspect of integrity, the hangars retain sufficient integrity under the other six aspects of integrity to convey historic significance and remain recommended eligible for listing on the NRHP, CRHR, and the City's Historic Resource Inventory under Criterion A/1/1.

2.1.2 Character-Defining Features

The hangars exhibit many characteristics of utilitarian Streamline moderne architecture, which was a prevailing style at the time of construction. Popular from the 1920s to the 1940s,

Streamline moderne was influenced by the design techniques commonly applied to ships, trains, and automobiles. Utilitarian versions of the style were commonly applied to factories and industrial buildings as a way to achieve a mass-produced effect embodying the new machine era (ARG 2001:13). The interior and exterior character-defining features for both hangars are detailed in the following sections (ARG 2001:13–14).

2.1.2.1 Building 248 (East Hangar)

Character-defining features of Building 248 include the following:

Overall Site:

- original location marking the inception of all airport activity and genesis of the airport
- creekside location in the floodway
- paved area in front of the hangar

Exterior:

- arched façade
- two pairs of large sliding aircraft doors clad in flush-seam galvanized sheet metal with steel-framed windows, originally guided on sets of upper and lower iron tracks but now inoperable
- pedestrian door set into sliding aircraft door
- standing-seam galvanized sheet metal siding
- side-by-side 4-over-3 steel-framed windows, some awning type
- an arch of faded/ghosted signage of serif-type letters that reads “General Western Aero Corp Ltd.”
- corrugated sheet metal roofing
- timber gutters
- ghosted gabled roofline on the east elevation

Interior:

- clear-span interior and large spatial volume
- king-post redwood trusses and exposed framing
- iron truss clips and square-headed bolts

- exposed underside of corrugated sheet metal roofing
- steel-framed windows
- poured-in-place concrete floor
- shallow vaulted ceiling measuring approximately 30 feet at the highest point

2.1.2.2 Building 249 (West Hangar)

Character-defining features of Building 249 include the following:

Overall Site:

- original location marking the inception of all airport activity and genesis of the airport
- creekside location in the floodway
- paved area in front of the hangar

Exterior:

- arched façade
- two pairs of large sliding aircraft doors clad in flush-seam galvanized sheet metal with steel-framed windows guided on sets of upper and lower iron tracks
- pedestrian doors set into sliding aircraft doors
- standing-seam galvanized sheet metal siding
- side-by-side 4-over-3 steel-framed windows, some awning type
- band of steel-framed windows at the rear elevation
- an arch of faded/ghosted signage of serif-type letters that reads “General Western Aero Corp Ltd.”
- corrugated sheet metal roofing
- timber gutters
- rear addition reusing the original windows and siding

Interior:

- clear-span interior and large spatial volume
- king-post redwood trusses and exposed framing

- iron truss clips and square-headed bolts
- exposed underside of corrugated sheet metal roofing
- steel-framed windows, some awning type
- poured-in-place concrete floor
- shallow vaulted ceiling measuring approximately 30 feet at the highest point
- one-story rear addition, partially below ground level with raised floor

2.2 SUMMARY OF STRUCTURAL ANALYSIS

The following is a brief summary of the structural analysis completed by LMA in 2002 and Praxis Engineering in 2022 (Lenvik & Minor Architects 2002; Praxis Engineering 2022:1). The intent of these studies was to determine what would be required to stabilize and bring the hangars back to code.

2.2.1 Building 248

In 2022 Praxis Engineering observed that Building 248 is in poor structural condition. It sits on a downward slope within the San Pedro Creek floodway, and the exterior walls are subject to water exposure. The current finished floor height is below the existing Base Flood Elevation (BFE), resulting in deterioration at the base of the walls and sill plates. The southwest section of the roof has failed along the 80-foot wood trusses. The west side of the roof is damaged from deflection (Praxis Engineering 2022:4).

All roof rafters, walls, metal sheathing, and associated connections will need to be removed and either reinstalled following repair or replaced following the reset of the trusses. A reset is required as the two primary roof trusses can no longer support the applied loads. For stability of the trusses, additional members should be sistered on or vertical supports should be added (Praxis Engineering 2022:4).

The walls of the hangar no longer connect the foundation to the roof. Flood control measures will require the installation of concrete walls under existing walls to a height between 12 feet and 24 feet above the BFE, depending on the proposed usage of the hangar (see Section 4.1.4.1 for further discussion of the guidance provided by the City's Building and Safety Division). Per the City's Building and Safety Division, the BFE for the hangars is 19.2 feet (City of Santa Barbara 2023). The new walls will need new anchorage as well as additional rod bracing or plywood sheathing to support seismic and gravity loads. While the foundation is in good condition overall, adjustments will be needed to support the new concrete stem walls that are required for flood control (Praxis Engineering 2022:4–5). Further, the hangar must be adequately stabilized before being lifted. Other potential stability issues may be exacerbated by construction, such as vibrations from jackhammering, and will need to be addressed prior to the commencement of work.

2.2.2 Building 249

Modifications to Building 249 include the addition of an outlook station with an exterior stairway in 1936 and the construction of a one-story 15 by 60 foot addition on the west side in the late 1930s. In 1944, the U.S. Marine Corps built a one-story 40 by 50 foot addition on the west side of the hangar; a one-story 20 by 36 foot addition at the north side of the hangar; and a one-story wing connecting the hangar to the Administration Building. The outlook station and stairway were removed at an unknown date and the wing connecting the hangar to the Administration Building was likely removed following the demolition of the Administration Building in 1971 (ARG 2001:12).

Building 249 is in fair structural condition. It is also on a downward-sloping site within the San Pedro Creek floodway, and the exterior walls are subject to water exposure. However, the lower portion of the northerly wall has a concrete flood wall that protects the hangar from deterioration, failures, and fatigue caused by water exposure as seen at Building 248 (Praxis Engineering 2022:7). The walls on the gabled ends require bracing with added members to span between the braces. Praxis Engineering recommends using a beam parallel to the wall anchored to the wall with braces or horizontal rod braces (Praxis Engineering 2022:8).

A portion of one truss and its support column have failed. All roof rafters, walls, metal sheathing, and associated connections will need to be removed and either reinstalled following repair or replaced following the reset of the trusses and their supporting column. A reset is required as the two primary roof trusses can no longer support the applied loads. Additional structural members should be sistered onto the trusses or vertical supports added for stability (Praxis Engineering 2022:7).

Per the City's Building and Safety Division, the BFE for the hangars is 19.2 feet (City of Santa Barbara 2023). If there is no change in use, the DFE will equal the BFE of 19.2 feet (see Section 4.1.4.1 for further discussion of the guidance provided by the City's Building and Safety Division). A use change will result in new flood elevation requirements. To achieve these new requirements, the walls will need to be shored and cut to the appropriate height, with new anchoring added to support the seismic and gravity loads. Additional roof bracing or plywood sheathings should be added for support (Praxis Engineering 2022:8).

The foundation is in good condition overall; however, adjustments may be required to support any new concrete stem walls necessary for flood control. Additionally, epoxy injection is recommended to stabilize existing cracks in the concrete slab (Praxis Engineering 2022:4–5). From a historic preservation perspective, the poured-in-place concrete floors are character-defining features, so the existing concrete should be retained and repaired wherever possible. Where patching is required, the new concrete should be differentiated from the historic concrete, altering the texture so the new is subtly different from the old. It is crucial that new maintenance issues relating to an uneven slab, such as pooling water, be avoided. If the original elevations of the slabs cannot be confirmed, the elevations can be changed and leveled as required for flood adaptations. The extent of the damage to the slab will inform the best path forward.

2.2.2.1 Structural Analysis Recommendations

Praxis Engineering concluded that both hangars could be restored for continued use as airplane hangars; however, the addition of support columns and footings under existing trusses would reduce the maximum allowable wingspan of airplanes stored in the hangars. Additionally, the required repairs for Building 248 were more extensive than what would typically be financially feasible. The use of materials salvaged from Building 248 to repair Building 249 would result in reduced material costs and salvaged historical value (Praxis Engineering 2022:8). Although wingspan issues would not apply, restoring the hangars in place for a different use would have the same financial concerns. Further, a change in use at either hangar would require various plumbing and electrical upgrades that would be an additional financial consideration.

The option to relocate and restore the hangars would have similar concerns as restoring them in place. While structural deficiencies and flood control concerns could be addressed through this treatment option, the financial costs of dismantling and rebuilding the hangars would be significant (Praxis Engineering 2022:8).

3
PROJECT OPTION ANALYSIS

The future use of the hangars has not been determined; therefore, this section will address historic preservation concerns in a general manner, as they relate to the continued use as airplane hangars or adaptive reuse for other purposes including relocation and demolition.

3.1 OPTION 1—DEMOLITION

Option 1 proposes the demolition of both hangars following thorough documentation. Demolition would result in complete loss of historic materials. The hangars would no longer retain any aspects of historic integrity, and the hangars would no longer be able to convey their historic significance. Therefore, full demolition of a historic property is not consistent with the SOI Standards and cannot be mitigated to a less than significant impact under CEQA. This option would be a Class I impact: a significant impact to the environment that remains significant even after mitigations measures are applied (Coffman Associates 2017:ES-8).

Under this option, an Environmental Impact Report (EIR) would have to be prepared by a qualified environmental consultant using an SOI-qualified architectural historian certified by the City or the existing Airport Final Program EIR would need to be updated. During the EIR public review period, the public would have an opportunity to review the EIR and submit comments. For demolition to be approved, the EIR would need to disclose that the structures have been recommended as eligible for the NRHP and CRHR under Criterion A/1. The EIR would need to explore alternatives that would preserve the resources. If found to be eligible, and with preservation possible, decision-makers could choose to adopt a Statement of Overriding Considerations where demolition would be a potentially significant impact (Class I) but other considerations, such as safety or excessive cost to stabilize, would warrant proceeding with demolition. The EIR would need to address plans for public interpretation of the historic hangars on site following their removal. This interpretation plan could involve signage, electronic storyboards, or the installation of an NPS-style informational panel.

If demolition is approved, the highest level of documentation of the hangars would be required. This requirement could be satisfied through the preparation of Historic American Buildings Survey (HABS)/Historic American Engineering Record (HAER) documentation, which would include large-format archival-quality photography of exteriors and interiors, measured drawings, written descriptions of the hangars, and development of a historic context. The use of photogrammetry or light detecting and ranging (LiDAR) technology may also be appropriate approaches for documenting the historic significance of the hangars prior to demolition. These techniques, or a combination thereof, would create a permanent record of the physical features and historic context of the hangars. Even with the level of documentation effort described above, the substantial loss of these significant historical resources would not be mitigated to a less than significant level under CEQA. It would result in a Class I, significant environmental impact.

Æ does not recommend Option 1 based on the additional cost and environmental review requirements and resulting loss of significant historical resources. Option 1 would be both

prohibitively costly and time-consuming and would not meet the SOI Standards or requirements of CEQA.

3.2 OPTION 2—RESTORE AND REUSE

Restoration and/or rehabilitation of both hangars in situ is the proposed Option 2. Although Building 249 is in better condition than Building 248 overall, extensive work is required on both hangars to address issues related to their diminished historic and structural integrity. This work must meet the SOI Standards.

The appropriate SOI Standards used to guide the project will depend on the details of the final project. If the hangars are restored to their period of significance and remain in use as airplane hangars at their current location, the project would follow the SOI Standards for Restoration (see Section 3.2.1). If the hangars are altered for adaptation to new use, the Standards for Rehabilitation would be used instead (see Section 3.2.2). Restoration of both structures would be the only CEQA-Class III, less than significant impact of the options proposed.

3.2.1 Option 2a—Restoration

Using the Restoration Standards, Option 2a would result in two airplane hangars that are accurately restored to their established periods of significance, 1931–1942 and/or 1942–1945. There is abundant historic photographic evidence of the hangars that would aid in restoration. If historic materials cannot be repaired and require replacement in-kind, Option 2a may result in a negative impact on the historic integrity of materials, depending on the degree to which replacement of materials is needed. If there is a loss of historic materials, it would not result in a complete loss of integrity because fully restoring the hangars would strengthen the hangars' ability to convey their integrity of feeling and association. The integrity of setting and location would not be further impacted by this option, assuming relocation is not required.

3.2.2 Option 2b—Rehabilitation

Using the Rehabilitation Standards, Option 2b would rehabilitate the hangars for a new use. As described above in Option 2a, a negative impact on the historic integrity of materials may occur if the hangars' original historic materials cannot be repaired. The degree to which replacement is needed would be a factor. Ideally, all rehabilitation work would be done in a sensitive manner that results in a minimal impact on aspects of workmanship, materials, and design following the SOI Standards. This option does require consideration of the cumulative effect of loss of integrity, as altering the hangars for use as anything other than airplane hangars could result in loss of association, character-defining features, and, potentially, reduction in feeling. Per NPS Technical Preservation Services Bulletin 55, industrial buildings can be rehabilitated for new usage, so long as the proposed new use is compatible with the building's historic character (Grimmer 2009:1). To be consistent with the SOI Standards, a rehabilitation project for adaptive reuse must retain the historic building's industrial character through the preservation of character-defining features, distinctive finishes, and craftsmanship. It would be important to retain the wide-open space of the interior of the hangars. Assuming relocation is not a consideration, the integrity of setting and location would not be impacted by this option. This option would result in a Class III, less than significant impact.

Overall, Option 2 would be a suitable option from a historic preservation perspective because it would result in the majority of the historic building materials being retained and repaired and all repairs would follow the SOI Standards. Due to the current conditions of the hangars, however, executing Option 2 would be costly and likely not economically feasible. Additionally, this option would not directly address ongoing concerns related to flooding. See Section 4.1.4.1 for further discussion of flood adaptation measures required to stabilize and protect the hangars from future flood-related damage.

3.3 OPTION 3—RELOCATE, RESTORE, AND REUSE

A project that proposes relocation and rehabilitation of both hangars would follow the SOI Rehabilitation Standards. While relocation outside the floodway would protect the hangars from sustaining damage from future flooding, there are many other drawbacks to this proposed option.

NPS guidance states that "[p]roperties listed in the National Register should be moved only when there is no feasible alternative for preservation" (Curtis 1979:14). In the event that relocation is the only alternative to preservation, early consultation with the State Historic Preservation Officer, and potentially the Advisory Council on Historic Preservation, is highly recommended to ensure all applicable procedures are followed. If the correct steps are followed, NRHP-listed buildings can retain their status during and after relocation. If necessary, a building can be renominated following relocation if its status was removed in the process (Curtis 1979:14-15). Because NRHP-eligible buildings should generally be treated as if they were already listed, this guidance applies to the hangars.

For the purposes of CEQA, the California Office of Historic Preservation states that relocation may mitigate below a level of significance:

> Relocation of an historical resource may constitute an adverse impact to the resource. However, in situations where relocation is the only feasible alternative to demolition, relocation may mitigate below a level of significance provided that the new location is compatible with the original character and use of the historical resource and the resource retains its eligibility for listing on the California Register (14 CCR Section 4852(d)(1)) [Office of Historic Preservation 2023].

Pending approval of the HLC, relocation could be possible if the appropriate procedures are followed. Per CEQA this would be a Class III, less than significant impact. There would, however, still be a potential to negatively impact the hangars' eligibility for inclusion in the NRHP due to the risks that relocation poses to historical integrity. Any potential relocation efforts should be guided by a master planning document prepared by or with the involvement of an SOI-qualified architectural historian. Maximizing the hangars' potential to retain their NRHP eligibility will depend on thorough preparation and documentation as well as careful collaboration between preservation professionals and technical experts.

If relocation was approved, relocation would require the involvement of skilled professionals experienced with moving historic buildings, specifically either partial disassembling or fully deconstructing and reassembling structurally sensitive building elements. An alternate site must also be identified before moving either hangar. The receiving site must be located outside the floodway. Because the historic significance of the hangars is directly tied to the development of

the Santa Barbara Airport, selecting a new site within the airport boundaries is imperative to preserve as much of the setting and association aspects of integrity as possible. Nonetheless, relocation of the hangars is certainly preferable to total demolition.

Due to severe structural concerns, the hangars are likely unable to be moved in their current condition. Trained professionals would need to evaluate the options for stabilization as well as partial disassembly or full deconstruction before moving and reassembly of the hangars at their new site. A detailed strategy would need to be developed and reviewed. Before the implementation of a move, the study of the logistics of such a move and full HABS/HAER documentation would be needed. A Historic Preservation Management Plan (HPMP) should also be developed to guide the entire relocation process. Each step of the moving process would require extensive cataloging of parts of the building, and monitors would be required during the entire process to ensure that the historic materials were treated appropriately. If either or both of the hangars were unable to be immediately reconstructed at the new locations, the historic materials would need to be safely secured and stored in a climate-controlled environment in the interim to prevent further deterioration potentially affecting successful reassembly.

From a historic preservation perspective, Option 3 would still be problematic because it could potentially result in a substantial, if not complete, loss of integrity of location, setting, feeling, and association, and at least partial loss of integrity of material and workmanship. Negative impacts on historic integrity of materials may occur if the hangars' original historic materials cannot be repaired and must be replaced. As previously discussed in Option 2, this option requires consideration of the cumulative effect of integrity losses. Additionally, rehabilitating both hangars would be extremely costly. The added costs associated with preparation of an HPMP, recording the hangars according to HABS/HAER standards prior to relocation, reassembly, and possible temporary storage also make Option 3 cost prohibitive.

3.4 OPTION 4—PARTIAL DECONSTRUCTION, RESTORATION, AND REUSE

Buildings 248 and 249 were conceptualized at the same time and are nearly identical in workmanship, material, and design. While both hangars require repair and structural stabilization, Building 248 is visibly and structurally in worse condition. During the first walk-through of the site, team members discussed the need for an atypical approach to this unique scenario. The deconstruction of Building 248 and the reuse of its historic materials to rehabilitate Building 249 was discussed, and the option was supported by the project team.

Building 248 is in poor condition and requires more substantial repair work and flood adaptation measures than are needed at Building 249. The damage to Building 248 is so far advanced that the majority of its historic materials cannot be repaired and instead will need to be removed and replaced. This would negatively impact the hangar's integrity, particularly the aspects of workmanship, materials, and design. Depending on the extent of material replacement and the cumulative impacts on integrity, a rehabilitated Building 248 may only marginally convey its historic significance. By carefully dismantling Building 248 and reusing its salvageable historic materials to rehabilitate Building 249, the project would result in one hangar that fully represents the historic significance of the two hangars, jointly preserving this rare local building type and representing the hangars' period of historic significance.

Option 4 is a compromise that simultaneously satisfies the goals of the City and Santa Barbara Airport and meets historic preservation compliance. It may also gain acceptance from the general public, as opposed to total loss of both hangars. This option would involve the careful and strategic dismantling of Building 248 to reuse the building's historic materials in adaptive reuse to rehabilitate Building 249. Option 4 would follow the Rehabilitation Standards where possible; however, altering Building 249 for use as anything other than an airplane hangar has the potential to negatively impact the property's historic integrity of association and feeling if character-defining features related to the building's historic use are not retained. Further, there would only be one hangar as opposed to two. Regardless of the future use, however, this project option would be a Class I or II impact resulting in preparation of either a Mitigated Negative Declaration (MND) or project specific EIR prior to implementation. The salvage of historic materials for reuse to restore the other building could be proposed in the environmental document as mitigation measures to reduce impacts. These mitigation measures would lessen the impact but would not qualify as a less than significant impact. Total demolition of both structures could not be fully mitigated. Until an alternate reuse is identified, it is unclear whether this would be a Class I or Class II impact.

Option 4 would involve the total loss of Building 248, but the materials would be salvaged for reuse in rehabilitating Building 249 wherever possible. The rehabilitation of Building 249 using salvaged materials resulting in its stabilization and continued use would serve as an overall positive counterbalance (mitigation) to the loss of Building 248. Further, the loss of one hangar, which is nearly identical in appearance and design to the hangar that would be retained and rehabilitated, is preferable to the total loss of both historic hangars.

Option 4 would also result in a more sustainable project as this approach would reuse material that would typically be discarded as waste following demolition. Rather than using entirely new material, the rehabilitation of Building 249 would be completed using as much of the salvaged historic fabric of Building 248 as possible. The process of reusing materials following deconstruction is an approach that can result in positive aesthetic, environmental, and financial impacts on a project, and can offer a unique opportunity to retain the cultural or historical value of a property (Melton 2020:25). To reduce the carbon impacts of a construction project, the American Institute of Architects recommends prioritizing the salvage of materials like brick, metals, concrete, and wood (Strain n.d.).

If this approach is favored and deconstruction of Building 248 is approved for salvage of materials, thorough documentation of the hangar would be required through the preparation of HABS/HAER documentation, which would include large-format archival photography of exteriors and interiors, measured drawings, written descriptions of the building, and development of a historic context. The use of photogrammetry or LiDAR technology may also be appropriate for documenting Building 248 and aid in the rehabilitation effort. These techniques, or a combination thereof, would create a permanent record of the physical features and historical significance of the demolished hangar. The information gathered through this documentation process would then be used to create informational materials to be displayed at the site of the demolished hangar and/or in the rehabilitated hangar. Informational materials could include a brochure, signage, or NPS-style pedestal panel that explains the historic significance of the hangars and details the rehabilitation project to prevent a false sense of history. Additionally, the brochure and signage could document the relation of the Administration Building demolished in

1971, further documenting the site's original usage and appearance. Preparing an HPMP and appropriate HABS/HAER documentation of the deconstructed hangar, reusing the historic materials salvaged, and creating explanatory materials such as a brochure or signage could serve as mitigation measures justified in an MND or project specific EIR as required under CEQA.

As described in Sections 3.2 and 3.3, a full restoration of both hangars, while desirable, would be extremely costly and likely require extensive reconstruction of Building 428. Further, impacts to integrity would occur. Salvaging and reusing as much historic material as possible from Building 248 to rehabilitate Building 249 provides a more cost-effective alternative to a full restoration of both structures. The SOI Standards for Rehabilitation recommends the reuse of salvaged materials "where these features are missing or are too deteriorated to repair," provided that they are not reused in a manner that conveys a false sense of history (Grimmer 2017:132).

Following HABS/HAER documentation and the development of an HPMP, trained professionals would need to partially disassemble or fully deconstruct Building 248 and catalog the sections or pieces of the hangar that can be reused. An SOI-qualified preservation architect and/or architectural historian would be required to monitor the entire deconstruction and construction process to ensure the historic materials are treated and used appropriately. All character-defining features of Building 249 must be documented and preserved. Building 249 and 248 are very similar, and preservation of one structure will preserve the character-defining features of both structures. The salvaged historic materials would need to be safely secured and stored in a climate-controlled environment until they are ready to be reused.

The spatial relationship between the two hangars would be lost in Option 4 and it would negatively impact Building 249's integrity of setting and feeling, but this impact was realized when the Administration Building was demolished in 1971. Negative impacts on the historic integrity of materials may occur if the historic materials from Building 248 cannot be reused, or if existing historic materials from Building 249 cannot be repaired due to degradation. All rehabilitation work must be done in a sensitive manner that results in a minimal impact on aspects of workmanship, materials, and design of the hangar to be preserved. Overall, the loss of one structure and the stabilization and retention of the other would reduce the total impact of loss, mitigating the loss of the other.

Despite its advantages, executing Option 4 would not inherently address ongoing concerns related to flooding. Flood adaptation measures would need to be taken to stabilize and protect the hangars both in the short and long term. In addition to flood adaptations, all immediate preservation concerns must be addressed through protection and stabilization efforts. See Section 4 for further discussion of flood adaptations and immediate preservation concerns.

4
SUMMARY AND RECOMMENDATIONS

Æ completed a site inspection, reviewed existing documentation, and analyzed four project options for the hangars at the Santa Barbara Airport. The City is considering three project options:

- Full demolition of both hangars,
- Restore and reuse both hangars in place, and
- Relocate, restore, and reuse both hangars.

Following site visitation and taking into consideration historic preservation concerns, land-use priorities, and economic feasibility, a fourth project option was recommended:

- Deconstruction of one hangar and restore and reuse of the second hangar in place.

Overall, Option 4 is a compromise that represents a suitable and realistic preservation approach. It is also more economically feasible and sustainable than the other proposed options. Reusing existing historic materials from a building that is beyond repair, Option 4 rehabilitates one historic hangar for reuse while simultaneously giving "new life" to what is no longer a viable structure. The two hangars were built at roughly the same time and share design elements and character-defining features.

Option 4 represents a multistep preservation approach that achieves a compromise between all interested parties. The complexity of this project will require the involvement of highly skilled and trained professionals who have experience working on historically significant buildings and are familiar with the SOI Standards as well as the California Historic Building Code (CHBC). This assumes that the City's Historic Resource Guidelines will be followed in the final project selection.

Regardless of the final option chosen, a team of trained professionals with historic preservation experience should work closely with contractors and engineers to undertake the necessary work utilizing the SOI Standards for preservation, rehabilitation, and restoration. These preservation professionals should be involved with all aspects of the project throughout the planning, design, partial disassembly, full deconstruction, and construction process to ensure consistent and ongoing compliance with all applicable regulations and guidelines. If designed and implemented appropriately the project could result in a Class II, less than significant impact.

4.1.1 Material Considerations

The 2022 Praxis Engineering report recommends many repairs or replacements of historic materials, including all roof rafters, walls, metal sheathing, and associated connections (Praxis Engineering 2022:7). All work should be completed per the SOI Standards, which establishes that the repair of historic features is always preferred over replacement. However, if repair of historic materials is not possible due to deterioration and replacement is required, the SOI

Standards allow for replacement as long as "the new feature will match the old in design, color, texture and, where possible, materials" (Grimmer 2017:76). Further, the re-creation of missing features requires substantiation via historical documentation and physical evidence.

4.1.2 Structural Concerns

The Praxis Engineering report recommends the addition of new structural elements to add support and stability to Building 249, including the sistering of additional members to the primary roof trusses or the addition of vertical supports for stability (Praxis Engineering 2022:7). These structural modifications are necessary because the two existing primary roof trusses can no longer support the applied loads.

Leaving known structural issues untreated is not consistent with the SOI Standards (Grimmer 2017:121). Per the Standards for Rehabilitation, weakened structural members can be paired or sistered with a new member, braced, or otherwise supplemented and reinforced (Grimmer 2017:122). To remain consistent with the SOI Standards, the new structural reinforcement must be installed in a manner that minimizes its impact on the historic fabric and overall character-defining features of the building (Grimmer 2017:123).

4.1.3 Life and Safety Concerns

Structural deficiencies in both hangars need to be addressed because the hangars are not currently structurally sound or safe to occupy. It is pertinent that life and safety concerns are addressed regardless of which project option is selected. Per the Standards for Rehabilitation, the impact of meeting life-safety codes must be considered, including public health, occupational health, life safety, electrical, seismic, structural, and building codes that will have an effect on both exterior and interior spaces, character-defining features, and finishes (Grimmer 2017:23). Even the most limited treatment approach taken under the Standards for Preservation would allow for "limited and sensitive upgrading of mechanical, electrical, and plumbing systems and other code-required work to make properties functional" (Grimmer 2017:27).

Installation of fire sprinkler and alarm systems, for example, must be done according to the SOI Standards as well as the CHBC. The CHBC offers flexible alternative code requirements for historic buildings. The CHBC would apply to work on the hangars as they are recommended eligible for listing in the NRHP, CRHR, and listed in the City's Historical Resource Inventory. Use of the CHBC allows for certain alternatives to the City's prevailing code but does not negate the need to comply with life and safety requirements as well as the Americans with Disability Act. Additionally, relief from the Uniform Building Code or flood control requirements indicate that the hangars be officially listed in the NRHP as exemptions do not apply to properties that have only been identified as being potentially eligible for listing (Lenvik & Minor Architects 2002:3). Use of the CHBC may not be available under Option 3 if the hangars are found ineligible for listing following relocation.

Æ recommends engaging with City officials early in the project planning phase to ensure all code requirements can be satisfied without negatively impacting the historic hangars' character-defining features (Grimmer 2017:23). This proactive approach will help to streamline the permitting process, reducing costs and lead time.

4.1.4 Flood Adaptation and Immediate Protection/Stabilization

If project Option 2 or 4 are selected and the hangars remain in place, flood adaptations must be made to prevent further damage to the hangars. Flood adaptations may not be required under project Option 3 if the hangars are relocated outside the floodway. Regardless of which option is selected, however, immediate preservation concerns must be addressed through appropriate protection and stabilization efforts.

4.1.4.1 Flood Adaptation

To protect the hangars from further deterioration, flood adaptation must be addressed in both the short and long term. Regardless of which project option is selected, all flood adaptation measures should be undertaken following the SOI's *Guidelines on Flood Adaptation for Rehabilitating Historic Buildings* (Guidelines), developed specifically to provide technical preservation guidance for historic properties at risk of flooding. The Guidelines are applied in conjunction with the SOI Standards. The Guidelines do not replace applicable federal, state, and local code requirements and regulations, which must be considered when planning flood adaptation projects (Eggleston et al. 2021:12).

The hangars are in a floodway, and measures must be taken to ensure they are not at risk of deterioration due to future flooding events. Any proposed flood control treatments should minimize changes to the building's historic character and limit impacts to character-defining features. Per the Guidelines, the ideal adaptation treatment will reduce the risk of flood damage as much as possible without destroying significant materials, features, or spaces (Eggleston et al. 2021:4). The goal should always be to minimize the impacts on a building's historic character to the greatest extent possible while adapting the building to be more resilient (Eggleston et al. 2021:24).

A potential treatment for the hangars is site and landscape improvements and adaptations. These adaptations can include floodwalls, basic regrading, and complex stormwater management systems (Eggleston et al. 2021:32). Per the Praxis Engineering report, the use of a concrete flood wall has been a successful flood mitigation technique at Building 249; therefore, further use of this treatment measure should be explored (Praxis Engineering 2022:7). Expanded use of concrete walls as flood walls would be an effective solution at the site, largely due to their limited potential for negative impacts on the integrity of the historic hangars. Flood walls can be built against the hangars if they are constructed in a manner that removal would not harm the historic fabric and that does not visually alter or obscure character-defining features. Walls constructed away from the hangars and completely detached from the historic fabric would also be acceptable. Regardless of attached or detached construction, the flood walls must be constructed using methods and materials that are easily differentiated from the historic fabric but are compatible with their appearance in terms of scale, massing, color, and texture. The use of French drains or sluice gates may be more appropriate flood control interventions and should also be considered.

The City is currently considering constructing a concrete stem wall as a flood adaptation measure. The required height of the stem wall is based on the Design Flood Elevation (DFE), which is calculated by the City's Building and Safety Division. The hangars are currently considered Design Class 1 structures, but the actual DFE and design classification will be

dependent on the final use of the hangars (City of Santa Barbara 2023). The DFE and design classifications for potential reuse options are as follows:

1. Restore in place, use as a hangar for essential aircraft or vehicles: Design Class 4, 21.2 foot DFE

2. Restore in place, use as a museum: Design Class 3, 21.2 foot DFE

3. Restore in place, use as an office or as a hangar for non-essential aircraft or vehicles: Design Class 2, 20.2 foot DFE

4. Relocation, any use: Design Class and DFE cannot be determined as a new BFE calculation for the proposed location will be required.

As the existing grade is 15 feet above grade, the concrete stem wall would need to be 6.2 feet tall for potential reuse Options 1 and 2, and 5.2 feet tall for potential reuse Option 3. The construction of a 5.2- or 6.2-foot-tall concrete stem wall could be differentiated from the historic hangars but would likely not be visually compatible. To remain consistent with the SOI Standards, the new stem walls must have a minimal impact on the historic fabric and overall character-defining features of the building (Grimmer 2017:123). While a proposed design has not been reviewed for consistency with the SOI Standards, the required height of the new stem walls would negatively impact the massing, size, scale, and architectural features of the hangars. Any flood adaptations that are visually intrusive or otherwise negatively impact the hangars' character-defining features should be avoided, including the proposed concrete stem wall. If the only possible flood adaptation measures that can be completed while the hangars remain in place damage the historic materials or negatively impact the character-defining features, relocation outside the floodway but within the boundaries of the Santa Barbara Airport would be preferred.

Additional treatment options include dry floodproofing, which establishes a watertight seal on the exterior of the foundation and seals all interior spaces below the established flood risk level. Elevating the building on a new foundation, or elevating the interior only, are also options but require structural adaptations that may not be financially feasible. These treatments, while effective at flood mitigation, can result in significant changes to a building that negatively impact historic materials, appearance, and character-defining features and should be thoroughly studied before being selected for incorporation in the project design (Eggleston et al. 2021:46).

Relocating or demolishing a historic building for flood management purposes would be the most extreme options. If the hangars must be substantially altered in order to be flood-proofed in their current location, relocation outside the floodway should be explored. Relocation requires a significant amount of planning and has many technical limitations and can potentially impact the hangars' eligibility for the NRHP or the CRHR as previously discussed in Section 3.3. Per the Guidelines, moving a historic building for flood management purposes requires that: (1) the building be structurally stable to either move safely, or be feasibly partially disassembled or fully dismantled and reassembled on the new site; and (2) that the receiving site must be located outside the established flood risk area while remaining similar in character to the building's original setting (Eggleston et al. 2021:115). Demolition is never a recommended treatment as it

is not consistent with the SOI Standards or Guidelines and should only be considered if no other options are possible (Eggleston et al. 2021:126).

These permanent treatment options can be extremely effective but require a great deal of lead time to implement. Further damage from flooding can be mitigated in the short-term using temporary protective measures, such as sandbags and flood-wrapping systems. These treatments are generally low cost and typically have a low impact on a property's historic character as they do not involve permanent changes to a property. Temporary protective measures are intended for shallow floods of limited duration. Additionally, they require time and people to deploy them and may not be appropriate if flooding at the property occurs without sufficient warning. Flood patterns at the site must be considered to determine which, if any, temporary treatment is appropriate (Eggleston et al. 2021:26–27). Nonetheless, temporary flood measures should be implemented as a stabilization effort to deter further deterioration of the two hangars and their materials.

4.1.4.2 Immediate Protection and Stabilization

From initial conception to completion, the overall process for a historic preservation project can take years. In the meantime, immediate measures to protect and stabilize the hangars must be taken to prevent further deterioration. The Standards for Preservation guide these preventative actions, commonly known as mothballing.

As outlined in NPS Preservation Brief 31, "Mothballing Historic Buildings," these protective measures are used to "de-activate" a property for an extended period of time and help to protect vacant or unused historic buildings until they can be rehabilitated for new uses (Park 1993:1). These include waterproofing to eliminate leaks and other moisture penetration, securing the buildings from unauthorized entry, and ensuring that interior spaces are adequately ventilated. Mothballing measures are intended to be temporary and as easily reversible as possible. They function as immediate forms of stabilization that are intended to support an eventual rehabilitation or restoration project. For the hangars, a comprehensive mothballing effort would ideally include a combination of the following treatments:

- Taking appropriate flood adaptation measures.
- Documenting the character-defining features and physical condition of the property.
- Preparing a condition assessment of the property with emphasis on foundations, structural systems, exterior materials, roofs and gutters, porches and steps, windows and entries, interior finishes, stairways, mechanical systems, and site drainage.
- Structural stabilization of roofs, walls, foundations, and interior framing.
- Controlling or exterminating pests.
- Securing the exterior envelope to eliminate leaks or other potentially damaging moisture penetration.
- Securing openings against intruders.

- Ensuring adequate interior ventilation by installing vents in covered window and door openings, interior fans, or minimal heating equipment.
- Inspecting and deactivating or modifying utility systems.
- Developing a maintenance and monitoring plan.

In summary, Rehabilitation and Restoration is a lengthy process. Æ is recommending Option 4 as it provides a meaningful compromise between the most extreme options of full demolition and complete restoration in place. While Option 4 will require the deconstruction of one of the hangars, the preservation of the second hangar ensures the continued preservation of this building type at the Santa Barbara Airport. Repurposing salvaged historic materials from the demolished hangar to rehabilitate the remaining hangar will ensure compliance with the SOI Standard. While repair is always the preferred treatment, implementing Option 4 would result in replacements made using in-kind materials. This salvage approach guarantees the retention of important character-defining features such as sliding aircraft doors, redwood trusses, windows, galvanized sheet metal siding, and corrugated sheet metal roofs. Further, this approach will reduce material costs to render the project more economically feasible. A careful and methodological salvage promotes preservation as it can give a "second life" to historic materials that would otherwise become construction waste (Eggleston et al. 2021:125). In the meantime, as preservation planning ensues, the hangars are at risk of integrity loss and structural instability due to degradation and flood damage. Æ recommends taking immediate preservation measures, including mothballing and flood protection, to protect both hangars while project options are being considered.

5
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Section II

Tryon COMPANY

Comparative Development Estimates

General Western Aero Hanger Restoration Feasibility Study

May 20, 2023

	DEVELOPMENT BUDGET	COST EXTENSIONS						
		Document & Demo	Repair / Restore In Place		Repair / Restore Elsewhere		Consolidate In Place	
			Hanger 248	Hanger 249	Hanger 248	Hanger 249	Site	Hanger 249
1.0	**LAND RELATED COSTS**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
2.0	**ARCHITECTURE, ENGINEERING & CONSULTANTS**	**$ 41,273**	**$ 147,982**	**$ 113,009**	**$ 466,933**	**$ 347,959**	**$ 115,403**	**$ 113,009**
3.0	**FEES & PERMITS**	**$ 7,913**	**$ 77,852**	**$ 59,453**	**$ 118,460**	**$ 88,276**	**$ 13,160**	**$ 59,453**
4.0	**CONSTRUCTION COSTS:**							
4.1	General Requirements	$44,500	144,915	110,667	387,852	289,027	$8,668	110,667
4.2	Demolition, Off-SIte, Site Work & Utilities	214,948	52,534	40,119	335,602	250,091	468,724	40,119
4.3	Concrete	-	78,518	59,962	465,891	59,131	-	59,962
4.4	Masonry	-	-	-	-	-	-	-
4.5	Metals	-	7,435	5,678	19,457	14,499	-	5,678
4.6	Wood & Plastic	-	84,519	64,545	196,052	146,098	-	64,545
4.7	Thermal & Moisture Protection	-	78,113	59,653	224,450	167,260	-	59,653
4.8	Doors & Windows	-	14,102	10,770	63,226	47,116	-	10,770
4.9	Finishes	-	2,276	1,738	36,564	27,247	3,621	1,738
4.10	Specialties	-	359	274	1,700	1,267	374	274
4.11	Equipment	-	-	-	-	-	-	-
4.12	Furnishings	-	-	-	-	-	-	-
4.13	Special Construction	-	196,923	150,384	319,826	238,335	-	150,384
4.14	Conveying Systems	-	-	-	-	-	-	-
4.15	Mechanical Systems	1,148	35,017	26,741	78,944	58,829	2,198	26,741
4.16	Electrical Systems	1,303	44,961	34,335	97,103	72,361	1,772	34,335
	Subtotal Direct Cost	$ 261,899	$ 739,674	$ 564,866	$ 2,226,667	$ 1,371,263	$ 485,355	$ 564,866
	Contractor's Fee @ 8%	20,952	59,174	45,189	178,133	109,701	38,828	45,189
	Estimating Contingency @ 15%	42,428	119,827	91,508	360,720	222,145	78,628	91,508
	Total Construction Costs	$ 325,278	$ 918,675	$ 701,563	$ 2,765,521	$ 1,703,109	$ 602,811	$ 701,563
	Per Gross Building Square Foot							
5.0	**FURNITURE, FIXTURES & EQUIPMENT**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
6.0	**FINANCE COSTS**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
7.0	**DEVELOPMENT CONTINGENCY**	**$18,723**	**$ 57,225**	**$ 43,701**	**$ 167,546**	**$ 124,855**	**$36,569**	**$ 43,701**
	TOTAL DEVELOPMENT COST	**$ 393,187**	**$ 1,201,735**	**$ 917,727**	**$ 3,518,460**	**$ 2,264,199**	**$ 767,942**	**$ 917,727**
	Per Square Foot	$ 40.96	$ 250.36	$ 191.19	$ 733.01	$ 471.71	$ 159.99	$ 191.19
	SCENARIO TOTALS	**$ 393,187**	**$**	**2,119,462**	**$**	**5,782,659**	**$**	**1,685,669**
	Per Square Foot	$ 40.96	$	220.78	$	602.36	$	351.18

October 19, 2022

Jeff Gorrell
Lenvik and Minor
829 De La Vina, Suite 205
Santa Barbara, CA 93101

Subject: **Addendum visual structural observation and analysis of Hangars No. 248 and 249, Santa Barbara Airport, Santa Barbara, CA**

To whom it may concern:

The purpose of this report is to provide an addendum to existing 2002 report prepared by Structural Engineer, Robert F. Swalley, dated August 23, 2001 (Swalley's report). Swalley's report analysis and recommendations still apply to today's conditions and should be considered for future use of the building, unless superseded by recommendations in this report. The observation and recommendations on this report were based on California Building Code 2019 & California Historical Building Code 2019.

Building 248 & 249 Existing Structure System

The hangar Building No. 248 and 249 are located in Santa Barbara Airport in the city of Santa Barbara. The buildings are located near the northeast corner of the airport property. Building 248 and 249 are both aircraft hangar type structures that are 80' wide and 60' deep and consist of wood stud walls with a curved roof supported by bowstring type wood trusses at the front and two (2) intermediate locations in the building, spaced approximately 20' on center. The trusses support 2"x8" wood purlins which in turn support sheet metal roofing.

Description of Building 248

The roof and wall sheathing of the structure consist of 16-gauge and 20-gauge metal siding, respectively. The wood utilized in the trusses, purlins and walls appears to be clear graded structural redwood. The floor is concrete slab on grade that appears to be flat and is supported by continuous footing around the perimeter of the building with larger pad footing at the truss bearing locations. See figure 1, and Appendix I, for reference of Building 248 framing plan.

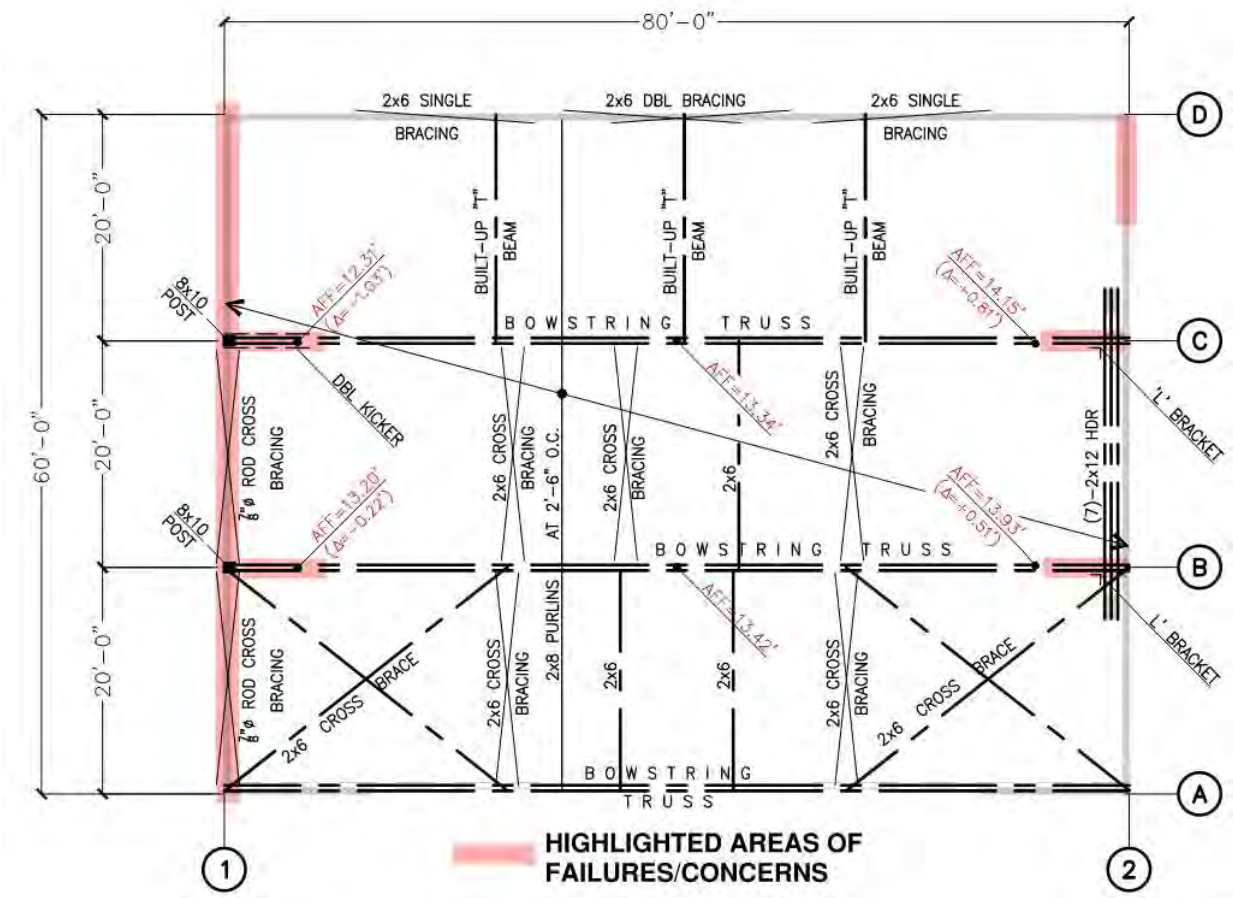


FIG. 1 BUILDING 248 FLOOR PLAN

Gravity

1. Roof Sheathing: The current roof sheathing consists of 16 gauge metal roofing with unknown attachments. The sheathing appears to be able to support current general dead load & live loads for this type of structure and be used to protect the building from exterior weathering.

   The sheathing does not show visual signs of corrosion or excessive local deflections, excluding at locations where other members of the structure has failed. The sheathing does not meet current diaphragm standards; however, it has performed over the lifespan of the building and for historical preservation can be used even though it is not an approved code diaphragm.

2. Roof Purlins: The current roof purlins consist of 2"x8" redwood members at 30" on center with blocking. The purlins are notched to bear upon on the bowstring trusses. The purlins appear to be able to support current dead & live loads for this type of structure.

   The purlins do not show any visual signs of deterioration, deflection and/or failure but may need additional visual review if reused. The roof that has settled in excess of 24" will no longer be structural stable and will need to be completely replaced back to a location

where the deflection no longer exceeds 2”-4”. All associated members affected by this failure will need to be removed and replaced, unless approved by engineer of record during demolition.

3. Bowstring Type Truss: The current truss spans approximately 80 feet. The gable truss at the door spans approximately 50 feet. The truss consists of (2)-2”x6” top chord, (2)-2”x12” bottom chord with two (2) splice connections, and 3”x6” web members. All web members are bolted to truss at top and bottom chords. On the easterly side (grid line 2 per figure 1) the truss sits on a header type structure compromised of (7)-2”x12” built up beam. On the westerly side (grid line 1 per figure 1) the truss sits on 8”x10” post. The post on northerly side (grid line C per figure 1) contains (2)-2”x6” kickers, and the other have been removed. For an elevation view of the truss, please see Appendix III. The gable truss at the door sits on approximately 15 feet long bearing walls on each end.

   The intermediate trusses (grid line B and C) have failed on each end of the 20 ft of the total span. The failures are comprised of deflection and bolt shear which have compromised the members axially. The failure has contributed to splitting web and bottom chord elements. The trusses if let be, will continue to fail in other locations without reinforcing other members. Regarding the gable truss, due to half the tributary load and shorter span; this truss is less of a concern and is subject to further analysis.

4. Stud Walls: The current stud walls consist of 2”x6” redwood members at 24” on center. In addition, the northerly gable of the building consists of 2”x6” redwood members at 24” on center.

   In some areas the studs show visual deterioration at lower portion of wall, which have caused voids between the studs and bottom sill plate, specifically at the northerly portion of the easterly wall. The studs no longer have bearing and will contribute to future failures and settling if not repaired. In addition, the allowable bending stress for walls are exceeded based on the existing heights.

5. Concrete Footings: No excavations were made to determine depth, size, and condition of footings. Swalley’s Report gives a brief substructure review and description of concrete.

   No substantial differential settlement was noted. The slab was relatively uncracked. No new observations or determinations from the original report appear to be required.

Lateral

1. In-Plane Loading:
   In the north and south load direction, the hangar utilizes two spans of 7/8” diameter rod cross bracing on the westerly wall (grid line 1). Due to obstruction of existing “wall type header”, no system was observed on the easterly wall (grid line 2). The roof utilizes 2”x8” purlins to transfer and resist in plane loading.

   In the east and west direction, the hangar utilizes 2”x6” let in braces on the northerly and southerly walls. The roof utilizes 2”x8” blocking to transfer and resist in plane loading.

There were no failures or fatigue observed on any of these lateral components. However, the current code does not allow for this type of lateral bracing system, for the exception of the diagonal rods.

2. Out-of-Plane Loading:
   In the north and south load direction, the roof utilizes 2”x6” cross bracing and built up “T” beams to support the north and south wall.

   There were no failures nor fatigue observed on any of these lateral components.

   In resisting loads in the east and west direction, the hangar utilizes the wood bowstring type truss to transfer loads.

   The metal siding from the westerly wall of the building has collapsed and failed. The purpose of the metal siding is to protect the inside of the building from outside environment: and work as a cladding and not a structural sheathing. In addition, there is deflection and separation (approximately 8”) between the point of connection of top of wall and roof. The easterly wall connection shows a similar deflection at northerly portion of the wall as well.

Flood

Building is located on a downward sloping site that is located within a floodway. The site naturally slopes toward the south, toward the front of the hangar. Exterior walls are in a floodplain and subject to water exposure. Per city staff and architect, the current finished floor is below the existing Base Flood Elevation (BFE).

As a result, it has caused deterioration on lower portion of walls and bottom sill plates.

Conclusions for Building 248

Building 248 is generally in poor construction based on our visual observation. Calculations were performed to check the viability of the major structural components and the following items were concluded.

The roof in the southwest portion of the structure has failed along with the 80’ span wood trusses. The roof deflection is over a very large area and has caused additional damage to a majority of the west side of the roof. All the roof purlins, walls, metal sheathing and associated connections will need to be removed and either reinstalled or replaced for this portion of the building after the trusses have been reset to their original elevations

The two primary roof trusses in the middle of the building can no longer support the loads applied. The current members that are overstressed and are all the top chord members, the bottom chord end two members along with the diagonal web members in the end two bays. These members cannot support the current loads without additional members sistered on or added vertical supports. The current trusses will need to be shored up, re-leveled, failed members replaced and have new columns and footings added at the second node (roughly 20’ from the exterior wall) each side. For calculations of truss analysis, please see Appendix IV.

The walls of the structure no longer span from the foundation to the roof in all locations and with the new flood elevations will need to have concrete walls installed under the existing walls to a height that complies with current local code. The foundation must be designed to prevent flotation, collapse, and lateral movement from loads such as fast-moving water, breaking waves, floating debris, erosion, and high winds, seismic and wind forces. Additional review and analysis will be required for proper material specification and sizing. This will require the walls to be shored and cut to the appropriate height and have new anchorage added to support the seismic and gravity loads. In addition, in locations where the walls have let in bracing it should be considered to have additional rod bracing added or plywood sheathing added to the walls to support the in plane seismic loads. In the cases where the walls are no longer plumb the walls will need to be plumbed and the tops of the walls rebuild to have continuous double top plates, blocking and bracing to the metal roof diaphragms on all sides.

The foundations appear to be in good condition but will need to be adjusted to support new concrete stem walls that will resist flood loading below the required BFE. This will require the addition of a perimeter footing and reinforcing that extend up through the existing slab and footing up to the recommended height.

The gabled end walls will need to have additional bracing added along with some additional members to span between these braces. This will be a beam parallel to the wall anchored to the wall with additional braces or horizontal rod braces.

Description of Building 249

The roof and wall sheathing of the structure consist of 16-gauge and 20-gauge metal siding, respectively. The wood utilized in the trusses, purlins and walls appears to be clear graded structural redwood. The floor is concrete slab on grade that appears to be flat and is supported by continuous footing around the perimeter of the building with larger pad footing at the truss bearing locations. The hangar consists of a short concrete retaining wall at the northeasterly portion of the building. See figure 2, and Appendix II, for reference of Building 249 framing plan.

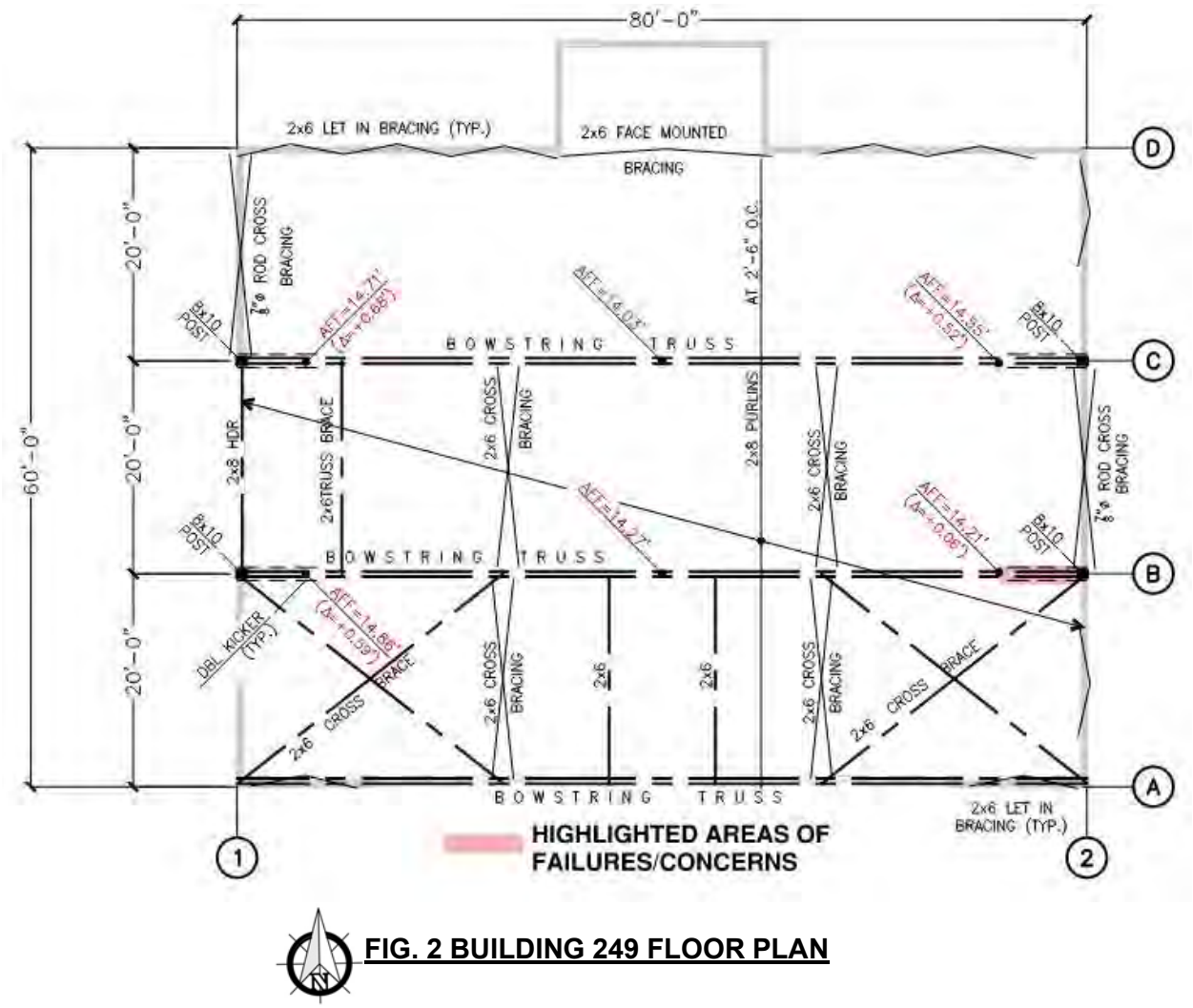


FIG. 2 BUILDING 249 FLOOR PLAN

Gravity

1. Roof Sheathing: The current roof sheathing consists of 16-gauge metal roofing with unknown attachments. The sheathing appears to be able to support current general dead load & live loads for this type of structure and be used to protect the building from exterior weathering.

   The sheathing does not show visual signs of corrosion or excessive local deflections. The sheathing does not meet current diaphragm standards; however, it has performed over the lifespan of the building and for historical preservation can be used even though it is not an approved code diaphragm.

2. Roof Purlins: The current roof purlins consist of 2"x8" redwood members at 30" on center with blocking. The purlins are notched to bear upon on the bowstring trusses. The purlins appear to be able to support current dead & live loads for this type of span and roof materials.

The purlins do not show any visual signs of deterioration, deflection and/or failure but may need additional visual review if reused.

3. Bowstring Type Truss: The current intermediate truss spans approximately 80 feet. The gable truss at the door spans approximately 50 feet. The truss consists of (2)-2”x6” top chord, (2)-2”x12” bottom chord with two (2) splice connections, and 3x6 web members. All web members are bolted to truss at top and bottom chords. The intermediate trusses sit on 8x10 post on each end. Each post contains (2)-2”x6” kickers. For an elevation view of the truss, please see Appendix III. The gable truss at the door sits on approximately 15 feet long bearing walls on each end.

   An intermediate truss (grid line B) has failed on the easterly end of the 20 ft. The failures are comprised of deflection and bolt shear which have compromised the members axially. The failure has contributed to splitting web and bottom chord elements. In addition, it has also caused a complete post failure due to splitting of bolt shear and transfer of loads to the column that were not intended in the original design. The trusses if let be, will continue to fail in other locations without reinforcing other members with the inevitable complete and total collapse. Regarding the gable truss, due to half the tributary load and shorter span; this truss is less of a concern and is subject to further analysis.

4. Stud Walls: The current stud walls consist of 2”x6” redwood members at 24” on center. In addition, the northerly gable of the building consists of 2”x6” redwood members at 24” on center.

   The stud walls and stud gable do not show any visual signs of deterioration, deflection and/or failure. However, the allowable bending stress for walls are exceeded based on the existing heights.

5. Concrete Footings: No excavations were made to determine depth, size, and condition of footings. Swalley’s Report gives a brief substructure review and description of concrete.

   No substantial differential settlement was noted. The slab was extensively cracked with some spalling. No new observations or determinations from the original report appear to be required.

Lateral

3. In-Plane Loading:
   In the north and south load direction, the hangar utilizes one span of 7/8” diameter rod cross bracing on the westerly wall (grid line 1). The easterly wall (grid 2) consists of a combination of 7/8” diameter rod cross bracing and 2”x6” let in braces. The roof utilizes 2”x8” purlins to transfer and resist in plane loading.

   In the east and west direction, the hangar utilizes 2”x6” let in braces on the northerly and southerly walls. The roof utilizes 2”x8” blocking to transfer and resist in plane loading.

   There were no failures or fatigue observed on any of these lateral components. However, the current code does not allow for this type of lateral bracing system, for the exception of the diagonal rods.

4. Out-of-Plane Loading:
   In the north and south load direction, the roof utilizes 2”x6” cross bracing to support the north and south wall.

   In resisting loads in the east and west direction, the hangar utilizes the wood bowstring type truss to transfer loads.

   There were no failures nor fatigue observed on any of these lateral components.

Flood

Building is located on a downward sloping site that is located within a floodway. The site naturally slopes toward the south, toward the front of the hangar. Exterior walls are in a floodplain and subject to water exposure. However, the lower portion of the northerly wall consists of a concrete retaining wall.

There were no deterioration, failures, nor fatigue observed that could be caused by water exposure.

Conclusions for Building 249

Building 249 is in a general fair structural condition based on our visual observation. Calculations were performed to check the viability of the major structural components and the following items were concluded.

A portion of the truss has failed along with its supporting column. All of the roof purlins, walls, metal sheathing and associated connections will need to be removed and either reinstalled or replaced for this portion of the building after the trusses and column have been reset to their original elevations.

The two primary roof trusses in the middle of the building can no longer support the current allowable loads. The current members that are overstressed are the following: all the top chord members, the bottom chord end two members, and the diagonal web members in the end two bays. These members cannot support the current loads without additional members sistered on or added vertical supports. The current trusses will need to be shored up, re-leveled, the failed members replaced and have new columns and footings added at the second node (roughly 20’ from the exterior wall) each side. For calculations of truss analysis, please see Appendix IV.

The walls of the structure will need to be verified with the new flood elevations that the existing concrete walls comply with the current local code required height above BFE. The foundation must be designed to prevent flotation, collapse, and lateral movement from loads such as fast-moving water, breaking waves, floating debris, erosion, and high winds, seismic and wind forces. If needed, this will require the walls to be shored and cut to the appropriate height and have new anchorage added to support the seismic and gravity loads. In addition, in locations where the walls have let in bracing it should be considered to have additional rod bracing added or plywood sheathing added to the walls to support the in plane seismic loads. In the cases where the walls are no longer plumb the walls will need to be plumbed and the tops of the walls rebuild to have continuous double top plates, blocking and bracing to the metal roof diaphragms on all sides.

The foundations appear to be in good condition; however, they will need to be adjusted to support new concrete stem walls that will resist flood loading below the BFE. This will require the addition of a perimeter footing and reinforcing that extend up through the existing slab and footing up to the recommended height. In addition, per Swalley's report, epoxy injection is recommended for existing cracks in the slab.

The gabled end walls will need to have additional bracing added along with some additional members to span between these braces. This will be a beam parallel to the wall anchored to the wall with additional braces or horizontal rod braces.

Recommendations for Building 248 and 249

The structure was reviewed for general structural performance and uses for the following three uses:

1. Restore in place as same use
2. Relocate and reuse
3. Restore in place for new use

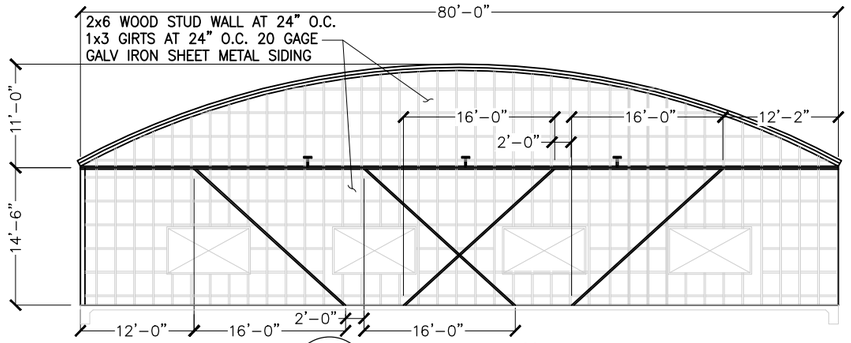
The restore in place option with continued reuse as an airplane hangar is feasible for both buildings with the following notes. The added columns and footings under the existing trusses will minimize the size of airplane or wingspan that may be placed in the hanger due to the locations. The repairs for Building 248 are more extensive than what would typically be financially feasible. The airport will need to evaluate the overall cost of the repairs along with limited use to see if reuse is an option. However, Building 249 may have much less costs associated and if the materials were taken from Building 248 and reused in Building 249 a large amount of material costs may be salvaged along with any historical value.

The relocate and reuse option has very similar concerns as the restore in place with the added cost of dismantling and rebuilding in a new location. The advantages to this option would be that all structural concerns could be addressed in a manner that makes the structure more stable and have more long-term durability and stability.

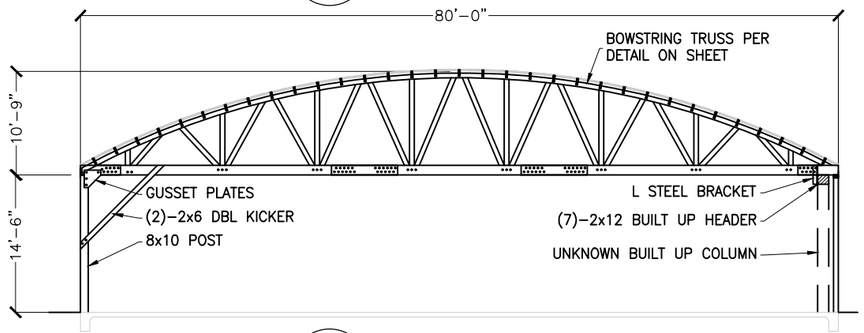
The option for restore in place and use for other than an airplane hangar will have the same limitations as the reuse without the added disadvantage of limited wing spans. The added supports can be integrated into the design such that the historic nature of the structures will not be lost while adding the much-needed structural integrity. We see the use of material from Building 248 on Building 249 equally advantageous in this option.

APPENDIX I

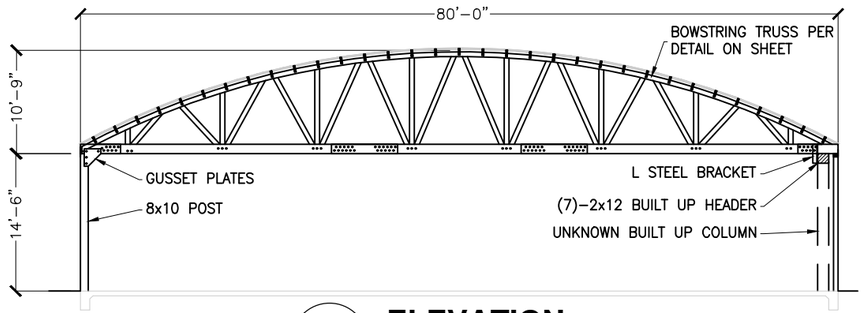
BUILDING 248



D **ELEVATION**
NTS



C **ELEVATION**
NTS



B **ELEVATION**
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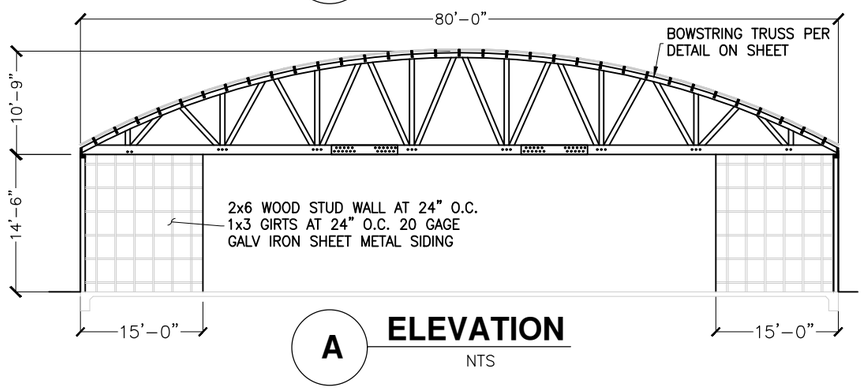

A **ELEVATION**
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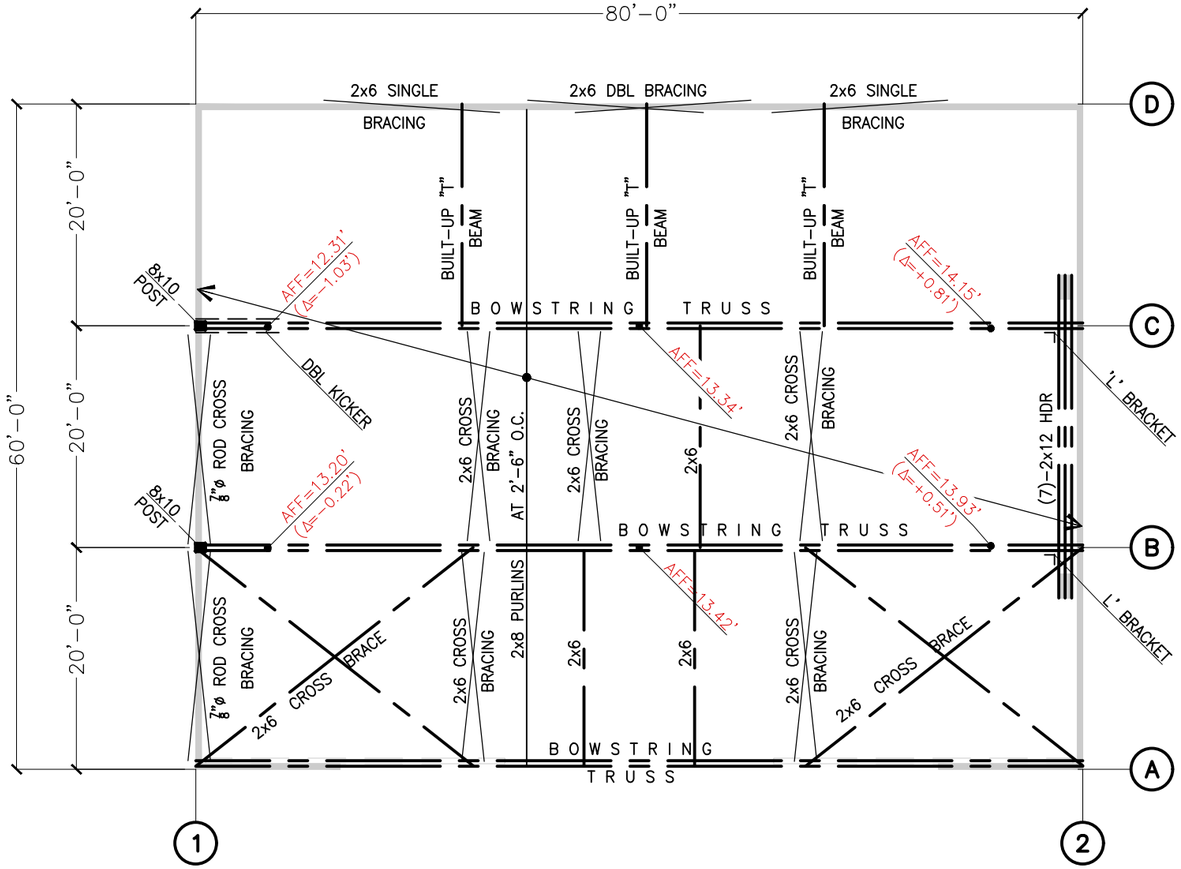


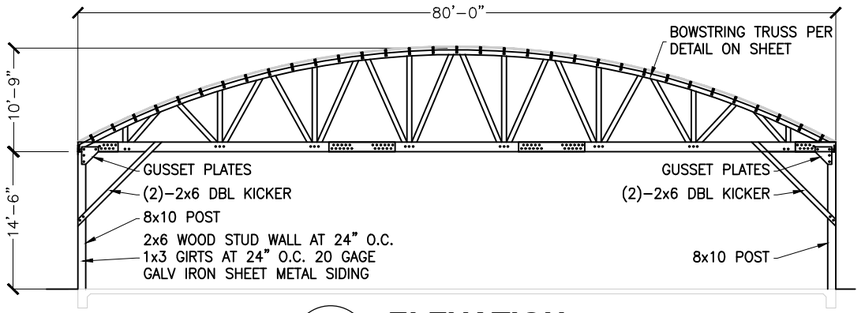
1 **FRAMING PLAN-BLDG 248**
N.T.S.

PRAXIS Engineering
1009 Morro Street, Suite 205
San Luis Obispo, CA 93401
(805) 489-9900 | www.praxis-eng.com

Project:	SANTA BARBARA AIRPORT CITY OF SANTA BARBARA AIRPORT HANGAR BUILDING NO. 248 & 249
Title:	EXHIBIT (PLAN & ELEV)
Drawn:	
Checked:	
Approved:	
Project No.:	22072
Drawing No.:	
Scale:	
Date:	10/4/2022

APPENDIX II

BUILDING 249



C **ELEVATION**
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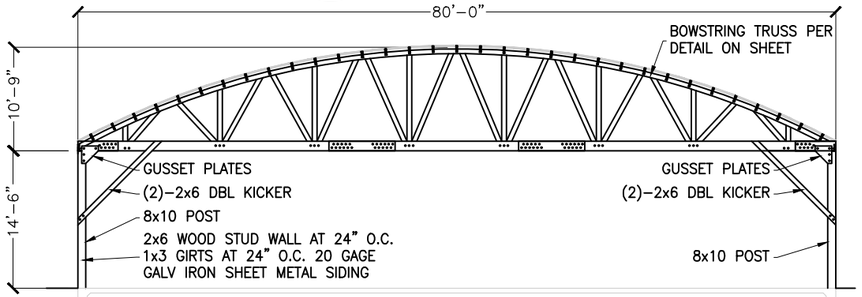

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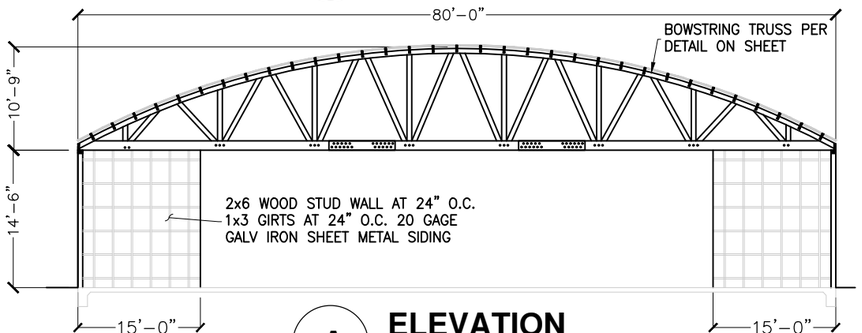
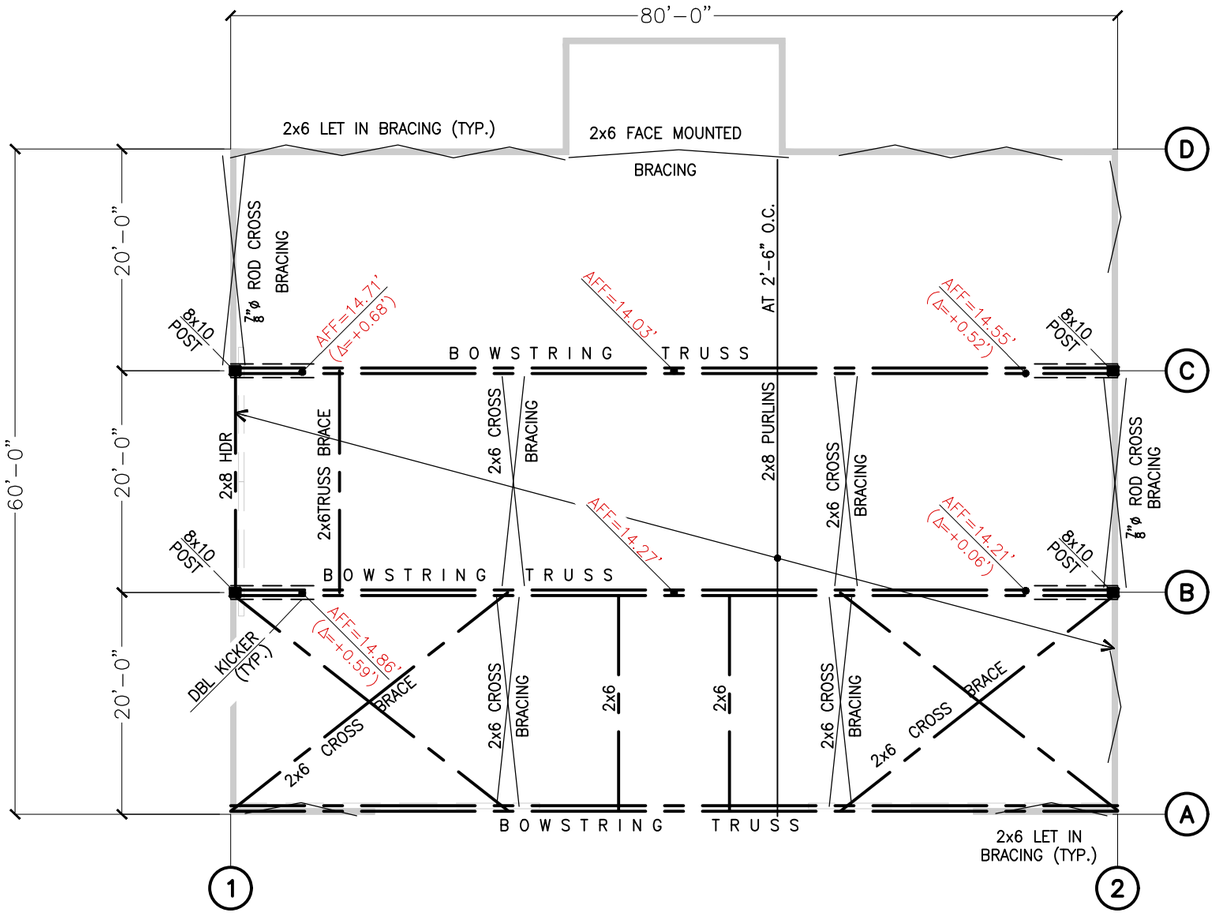


A **ELEVATION**
NTS



1 **FRAMING PLAN-BLDG 249**
N.T.S.

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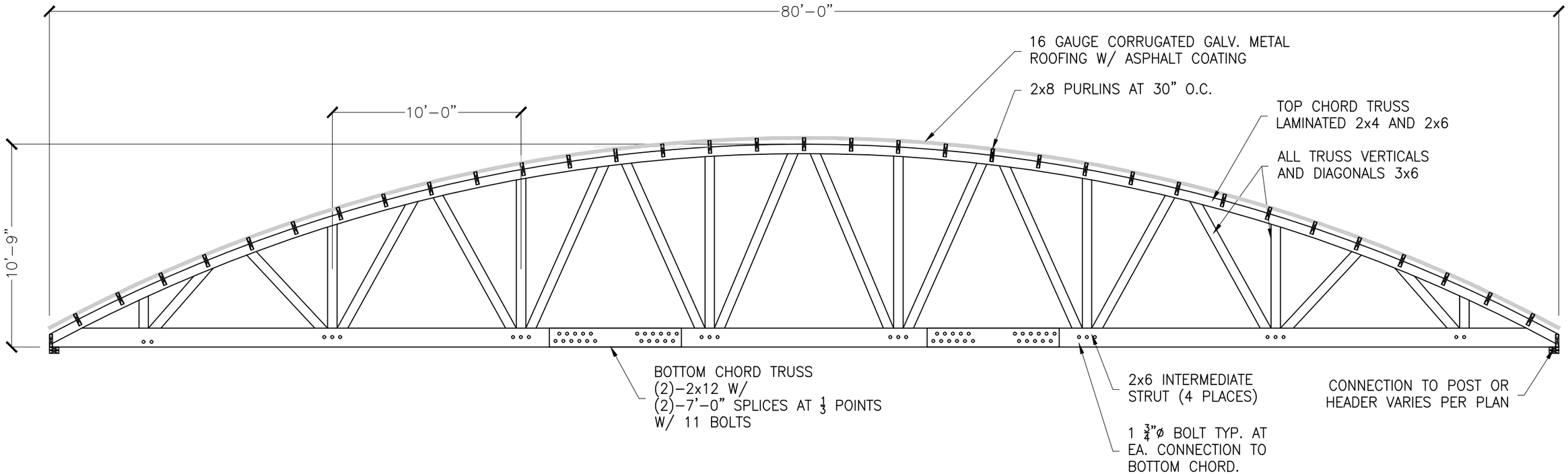
San Luis Obispo, CA 93401
(805) 489-9900 | www.praxis-eng.com

Project: SANTA BARBARA AIRPORT CITY OF SANTA BARBARA AIRPORT HANGAR BUILDING NO. 248 & 249				Drawing No.:
Title: EXHIBIT (PLAN & ELEV)				Scale:
Drawn:	Checked:	Approved:	Project No.: 22072	Date: 624 of 1136

APPENDIX III

TYPICAL BOWSTRING TRUSS



1 BOWSTRING TRUSS ELEV.

N.T.S.

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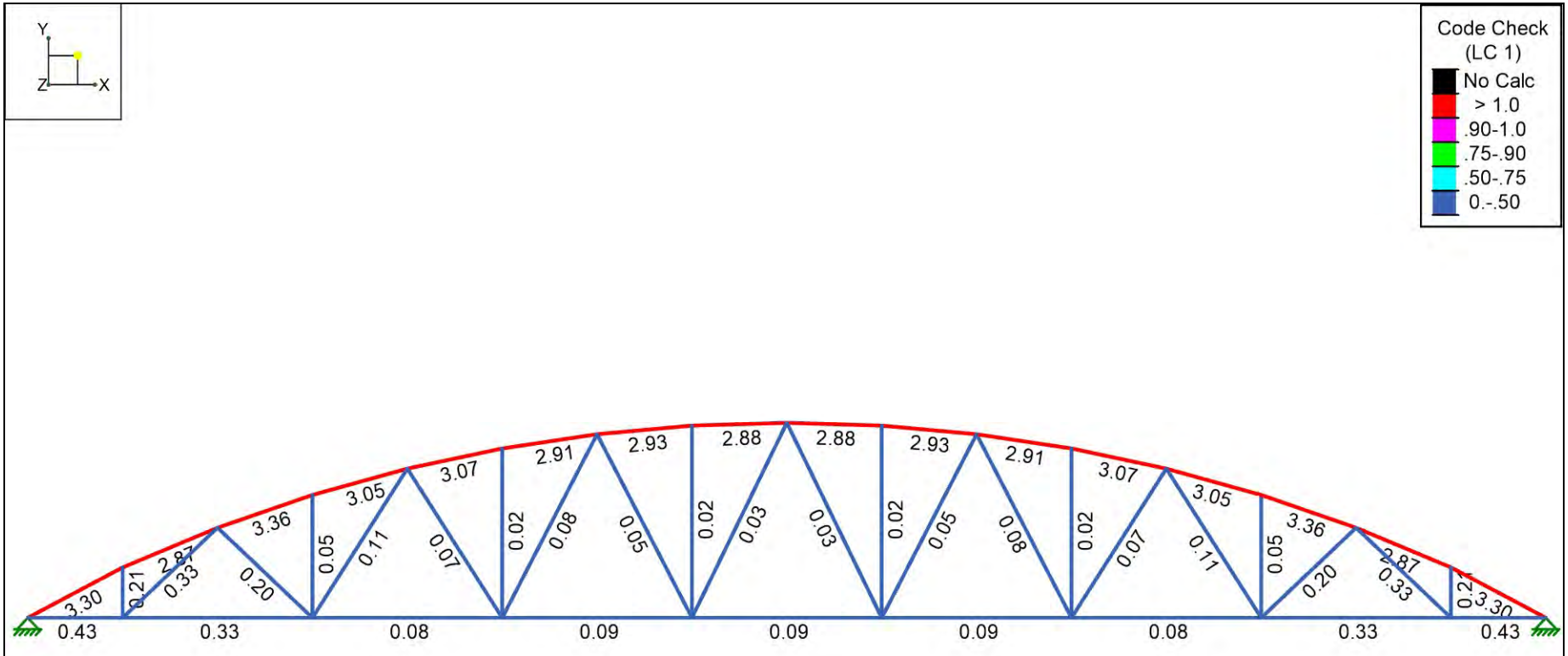
Project: SANTA BARBARA AIRPORT CITY OF SANTA BARBARA AIRPORT HANGAR BUILDING NO. 248 & 249				Drawing No.:
Title: EXHIBIT (PLAN & ELEV)				Scale:
Drawn:	Checked:	Approved:	Project No.: 22072	Date: 6/6/2023

APPENDIX IV

RISA SOFTWARE - TRUSS ANALYSIS



Member Code Checks Displayed
Results for LC 1, Deflection 1

<Licensed Company>	EXISTING CONDITION (WITH NO KICKER BRACE) APPLIES TO BLDG 248-LINE B	BLDG 248-2
YosimarRamos		Oct 04, 2022
		TRUSS ANALYSIS-BLDG 248-B.r3d

Wood Properties

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.1			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E_DF_BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E_DF_UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E_SP_BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E_SP_UNBAL	na			1	0.3	0.3	0.035
9	1.3E-1600F_VERSALAM	SCL	Boise Cascade	1.3E-1600F_VERSALAM	na			1	0.3	0.3	0.035
10	1.35E LSL_SolidStart	SCL	Louisiana Pacific	1.35E LSL_SolidStart	na			1	0.3	0.3	0.035
11	1.3E_RIGIDLAM LVL	SCL	Roseburg Forest Products	1.3E_RIGIDLAM LVL	na			1	0.3	0.3	0.035
12	2.0E_DF Parallam PSL	SCL	TrusJoist	2.0E_DF Parallam PSL	na			1	0.3	0.3	0.035
13	LVL_PRL_1.5E_2250F	Custom	N/A	LVL_PRL_1.5E_2250F	na			1	0.3	0.3	0.035
14	LVL_Microlam_1.9E_2600F	Custom	N/A	LVL_Microllam_1.9E_2600F	na			1	0.3	0.3	0.035
15	PSL_Parallam_2.0E_2900F	Custom	N/A	PSL_Parallam_2.0E_2900F	na			1	0.3	0.3	0.035
16	LSL_TimberStrand_1.55E_2325F	Custom	N/A	LSL_TimberStrand_1.55E_2325F	na			1	0.3	0.3	0.035
17	Redwood	Solid Sawn	Visually Graded	Redwood	No.1			1	0.3	0.3	0.035

Wood Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	TOP CHORD	2-2X6FS	Beam	Rectangular Double	Redwood	Typical	24	32	72	75.125
2	BOTT CHORD	2-2X12FS	Beam	Rectangular Double	Redwood	Typical	48	64	576	202.295
3	VERT	3X6FS	Column	Rectangular	Redwood	Typical	18	13.5	54	37.079
4	DIAGONAL	3X6FS	VBrace	Rectangular	Redwood	Typical	18	13.5	54	37.079

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.2	-0.2	0	%100
2	M2	Y	-0.2	-0.2	0	%100
3	M3	Y	-0.2	-0.2	0	%100
4	M4	Y	-0.2	-0.2	0	%100
5	M5	Y	-0.2	-0.2	0	%100
6	M6	Y	-0.2	-0.2	0	%100
7	M7	Y	-0.2	-0.2	0	%100
8	M8	Y	-0.2	-0.2	0	%100
9	M9	Y	-0.2	-0.2	0	%100
10	M10	Y	-0.2	-0.2	0	%100
11	M11	Y	-0.2	-0.2	0	%100
12	M12	Y	-0.2	-0.2	0	%100
13	M13	Y	-0.2	-0.2	0	%100
14	M14	Y	-0.2	-0.2	0	%100
15	M15	Y	-0.2	-0.2	0	%100
16	M16	Y	-0.2	-0.2	0	%100

Member Distributed Loads (BLC 2 : LL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.4	-0.4	0	%100
2	M2	Y	-0.4	-0.4	0	%100
3	M3	Y	-0.4	-0.4	0	%100
4	M4	Y	-0.4	-0.4	0	%100
5	M5	Y	-0.4	-0.4	0	%100

Member Distributed Loads (BLC 2 : LL) (Continued)

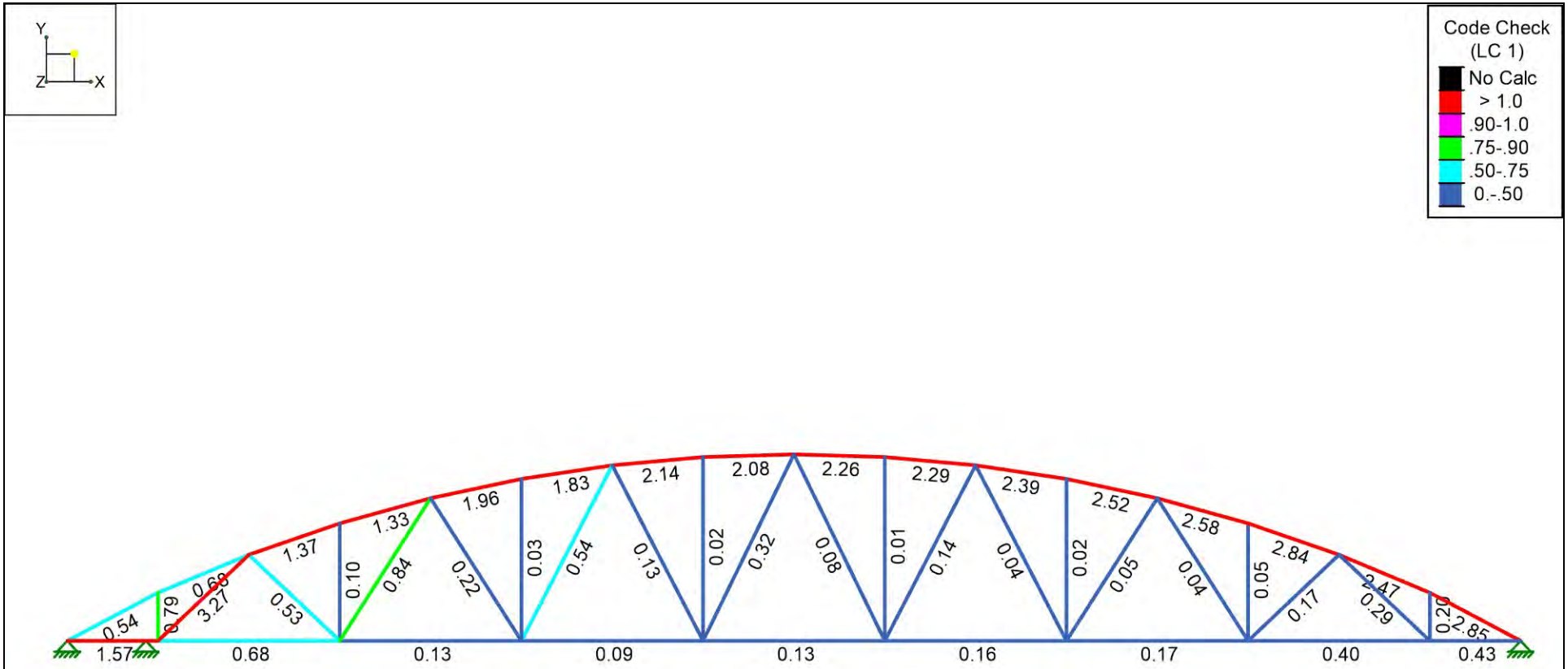
	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
6	M6	Y	-0.4	-0.4	0	%100
7	M7	Y	-0.4	-0.4	0	%100
8	M8	Y	-0.4	-0.4	0	%100
9	M9	Y	-0.4	-0.4	0	%100
10	M10	Y	-0.4	-0.4	0	%100
11	M11	Y	-0.4	-0.4	0	%100
12	M12	Y	-0.4	-0.4	0	%100
13	M13	Y	-0.4	-0.4	0	%100
14	M14	Y	-0.4	-0.4	0	%100
15	M15	Y	-0.4	-0.4	0	%100
16	M16	Y	-0.4	-0.4	0	%100

Envelope AWC NDS-18: ASD Member Wood Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
1	M1	2-2X6FS	3.303	0	3	0.221	0	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-3
2	M2	2-2X6FS	2.873	5.418	3	0.24	5.418	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-3
3	M3	2-2X6FS	3.364	0	3	0.226	0	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-3
4	M4	2-2X6FS	3.054	5.188	3	0.229	5.188	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-3
5	M5	2-2X6FS	3.073	0	3	0.218	0	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
6	M6	2-2X6FS	2.915	5.056	3	0.219	5.056	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
7	M7	2-2X6FS	2.926	0	3	0.216	0	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
8	M8	2-2X6FS	2.876	5.002	3	0.217	5.002	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.9-3
9	M9	2-2X6FS	2.876	0	3	0.217	0	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.9-3
10	M10	2-2X6FS	2.926	5.021	3	0.216	5.021	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
11	M11	2-2X6FS	2.915	0	3	0.219	0	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
12	M12	2-2X6FS	3.073	5.111	3	0.218	5.111	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
13	M13	2-2X6FS	3.054	0	3	0.229	0	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-3
14	M14	2-2X6FS	3.364	5.289	3	0.226	5.289	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-3
15	M15	2-2X6FS	2.873	0	3	0.24	0	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-3
16	M16	2-2X6FS	3.303	5.658	3	0.221	5.658	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-3
17	M17	2-2X12FS	0.43	5	3	0.092	0	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-3
18	M18	2-2X12FS	0.332	0	3	0.051	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-3
19	M19	2-2X12FS	0.081	5.521	3	0.013	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
20	M20	2-2X12FS	0.091	4.062	3	0.014	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
21	M21	2-2X12FS	0.086	5	3	0.011	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
22	M22	2-2X12FS	0.091	5.938	3	0.014	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
23	M23	2-2X12FS	0.081	4.479	3	0.013	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
24	M24	2-2X12FS	0.332	10	3	0.051	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-3
25	M25	2-2X12FS	0.43	0	3	0.092	5	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-3
26	M26	3X6FS	0.214	0	3	0.038	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-1
27	M27	3X6FS	0.055	0	3	0.007	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.9-1
28	M28	3X6FS	0.024	8.907	3	0.001	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.9-1
29	M29	3X6FS	0.019	10.111	3	0	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.9-1
30	M30	3X6FS	0.019	10.111	3	0	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.9-1
31	M31	3X6FS	0.024	8.907	3	0.001	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.9-1
32	M32	3X6FS	0.055	0	3	0.007	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.9-1
33	M33	3X6FS	0.214	0	3	0.038	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-1
34	M34	3X6FS	0.325	0	3	0.042	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-3
35	M35	3X6FS	0.196	0	3	0.034	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
36	M36	3X6FS	0.108	0	3	0.009	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.6.3
37	M37	3X6FS	0.075	9.304	3	0.013	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
38	M38	3X6FS	0.082	0	3	0.01	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
39	M39	3X6FS	0.049	10.875	3	0.01	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
40	M40	3X6FS	0.03	11.413	3	0.009	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.9-3
41	M41	3X6FS	0.03	11.413	3	0.009	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.9-3

Envelope AWC NDS-18: ASD Member Wood Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
42	M42	3X6FS	0.049	10.875	3	0.01	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
43	M43	3X6FS	0.082	0	3	0.01	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
44	M44	3X6FS	0.075	9.304	3	0.013	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
45	M45	3X6FS	0.108	0	3	0.009	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.6.3
46	M46	3X6FS	0.196	0	3	0.034	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
47	M47	3X6FS	0.325	0	3	0.042	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-3



Member Code Checks Displayed
Results for LC 1, Deflection 1

<Licensed Company>	EXISTING CONDITION (WITH KICKER BRACE ON ONE END) APPLIES TO BLDG 248-LINE C	BLDG 2481
YosimarRamos		Oct 04, 2022
		TRUSS ANALYSIS-BLDG 248-C.r3d

Wood Properties

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.1			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E_DF_BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E_DF_UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E_SP_BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E_SP_UNBAL	na			1	0.3	0.3	0.035
9	1.3E-1600F_VERSALAM	SCL	Boise Cascade	1.3E-1600F_VERSALAM	na			1	0.3	0.3	0.035
10	1.35E LSL_SolidStart	SCL	Louisiana Pacific	1.35E LSL_SolidStart	na			1	0.3	0.3	0.035
11	1.3E_RIGIDLAM LVL	SCL	Roseburg Forest Products	1.3E_RIGIDLAM LVL	na			1	0.3	0.3	0.035
12	2.0E_DF Parallam PSL	SCL	TrusJoist	2.0E_DF Parallam PSL	na			1	0.3	0.3	0.035
13	LVL_PRL_1.5E_2250F	Custom	N/A	LVL_PRL_1.5E_2250F	na			1	0.3	0.3	0.035
14	LVL_Microlam_1.9E_2600F	Custom	N/A	LVL_Microllam_1.9E_2600F	na			1	0.3	0.3	0.035
15	PSL_Parallam_2.0E_2900F	Custom	N/A	PSL_Parallam_2.0E_2900F	na			1	0.3	0.3	0.035
16	LSL_TimberStrand_1.55E_2325F	Custom	N/A	LSL_TimberStrand_1.55E_2325F	na			1	0.3	0.3	0.035
17	Redwood	Solid Sawn	Visually Graded	Redwood	No.1			1	0.3	0.3	0.035

Wood Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	TOP CHORD	2-2X6FS	Beam	Rectangular Double	Redwood	Typical	24	32	72	75.125
2	BOTT CHORD	2-2X12FS	Beam	Rectangular Double	Redwood	Typical	48	64	576	202.295
3	VERT	3X6FS	Column	Rectangular	Redwood	Typical	18	13.5	54	37.079
4	DIAGONAL	3X6FS	VBrace	Rectangular	Redwood	Typical	18	13.5	54	37.079

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.2	-0.2	0	%100
2	M2	Y	-0.2	-0.2	0	%100
3	M3	Y	-0.2	-0.2	0	%100
4	M4	Y	-0.2	-0.2	0	%100
5	M5	Y	-0.2	-0.2	0	%100
6	M6	Y	-0.2	-0.2	0	%100
7	M7	Y	-0.2	-0.2	0	%100
8	M8	Y	-0.2	-0.2	0	%100
9	M9	Y	-0.2	-0.2	0	%100
10	M10	Y	-0.2	-0.2	0	%100
11	M11	Y	-0.2	-0.2	0	%100
12	M12	Y	-0.2	-0.2	0	%100
13	M13	Y	-0.2	-0.2	0	%100
14	M14	Y	-0.2	-0.2	0	%100
15	M15	Y	-0.2	-0.2	0	%100
16	M16	Y	-0.2	-0.2	0	%100

Member Distributed Loads (BLC 2 : LL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.4	-0.4	0	%100
2	M2	Y	-0.4	-0.4	0	%100
3	M3	Y	-0.4	-0.4	0	%100
4	M4	Y	-0.4	-0.4	0	%100
5	M5	Y	-0.4	-0.4	0	%100

Member Distributed Loads (BLC 2 : LL) (Continued)

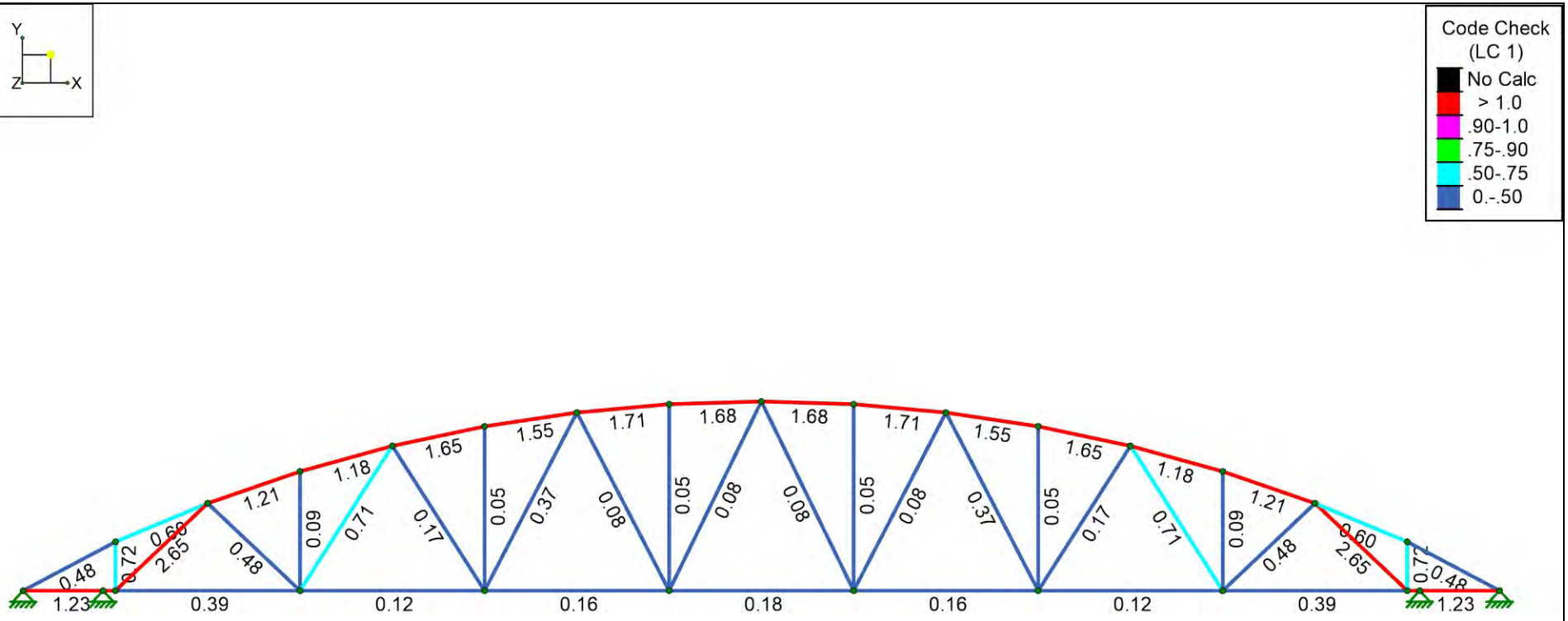
	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
6	M6	Y	-0.4	-0.4	0	%100
7	M7	Y	-0.4	-0.4	0	%100
8	M8	Y	-0.4	-0.4	0	%100
9	M9	Y	-0.4	-0.4	0	%100
10	M10	Y	-0.4	-0.4	0	%100
11	M11	Y	-0.4	-0.4	0	%100
12	M12	Y	-0.4	-0.4	0	%100
13	M13	Y	-0.4	-0.4	0	%100
14	M14	Y	-0.4	-0.4	0	%100
15	M15	Y	-0.4	-0.4	0	%100
16	M16	Y	-0.4	-0.4	0	%100

Envelope AWC NDS-18: ASD Member Wood Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
1	M1	2-2X6FS	0.542	0	3	0.223	0	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-1
2	M2	2-2X6FS	0.677	0	3	0.284	0	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-1
3	M3	2-2X6FS	1.367	0	3	0.202	0	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-3
4	M4	2-2X6FS	1.333	0	3	0.203	5.188	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-3
5	M5	2-2X6FS	1.956	0	3	0.217	0	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
6	M6	2-2X6FS	1.834	5.056	3	0.212	5.056	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
7	M7	2-2X6FS	2.138	0	3	0.217	0	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
8	M8	2-2X6FS	2.085	5.002	3	0.213	5.002	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.9-3
9	M9	2-2X6FS	2.26	0	3	0.217	0	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.9-3
10	M10	2-2X6FS	2.289	5.021	3	0.214	5.021	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
11	M11	2-2X6FS	2.393	0	3	0.219	0	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
12	M12	2-2X6FS	2.518	5.111	3	0.216	5.111	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
13	M13	2-2X6FS	2.582	0	3	0.227	0	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-3
14	M14	2-2X6FS	2.842	5.289	3	0.223	5.289	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-3
15	M15	2-2X6FS	2.473	0	3	0.236	0	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-3
16	M16	2-2X6FS	2.848	5.658	3	0.22	5.658	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-3
17	M17	2-2X12FS	1.574	4.375	3	2.049	4.375	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-3
18	M18	2-2X12FS	0.681	10	3	0.042	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.6.3
19	M19	2-2X12FS	0.125	10	3	0.016	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.6.3
20	M20	2-2X12FS	0.086	6.042	3	0.014	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
21	M21	2-2X12FS	0.13	5.313	3	0.012	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
22	M22	2-2X12FS	0.16	6.25	3	0.014	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
23	M23	2-2X12FS	0.167	4.688	3	0.012	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
24	M24	2-2X12FS	0.404	10	3	0.049	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
25	M25	2-2X12FS	0.431	0	3	0.089	5	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-1
26	M26	3X6FS	0.794	0	3	0.371	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-3
27	M27	3X6FS	0.099	0	3	0.018	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.9-3
28	M28	3X6FS	0.033	0	3	0.004	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.6.3
29	M29	3X6FS	0.02	0	3	0.002	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.6.3
30	M30	3X6FS	0.015	10.111	3	0.002	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.9-1
31	M31	3X6FS	0.018	8.907	3	0.002	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.9-1
32	M32	3X6FS	0.047	0	3	0.008	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.9-1
33	M33	3X6FS	0.199	0	3	0.041	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-1
34	M34	3X6FS	3.267	6.888	3	0.022	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-3
35	M35	3X6FS	0.534	6.888	3	0.023	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
36	M36	3X6FS	0.837	0	3	0.017	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.6.3
37	M37	3X6FS	0.217	9.304	3	0.008	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
38	M38	3X6FS	0.544	0	3	0.01	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
39	M39	3X6FS	0.127	10.875	3	0.007	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
40	M40	3X6FS	0.323	0	3	0.01	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.6.3
41	M41	3X6FS	0.079	11.413	3	0.007	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.9-1

Envelope AWC NDS-18: ASD Member Wood Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
42	M42	3X6FS	0.14	0	3	0.01	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
43	M43	3X6FS	0.041	3.172	3	0.008	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
44	M44	3X6FS	0.047	9.304	3	0.013	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-3
45	M45	3X6FS	0.038	0	3	0.008	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.6.3
46	M46	3X6FS	0.166	0	3	0.031	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
47	M47	3X6FS	0.286	0	3	0.039	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-3



Member Code Checks Displayed
Results for LC 1, Deflection 1

<Licensed Company>	EXISTING CONDITION (WITH KICKER BRACE ON BOTH ENDS) APPLIES TO BLDG 249-LINE B & C	EXISTING1
YosimarRamos		Sep 09, 2022
		TRUSS ANALYSIS-2.r3d

Wood Properties

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.1			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E_DF_BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E_DF_UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E_SP_BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E_SP_UNBAL	na			1	0.3	0.3	0.035
9	1.3E-1600F_VERSALAM	SCL	Boise Cascade	1.3E-1600F_VERSALAM	na			1	0.3	0.3	0.035
10	1.35E LSL_SolidStart	SCL	Louisiana Pacific	1.35E LSL_SolidStart	na			1	0.3	0.3	0.035
11	1.3E_RIGIDLAM LVL	SCL	Roseburg Forest Products	1.3E_RIGIDLAM LVL	na			1	0.3	0.3	0.035
12	2.0E_DF Parallam PSL	SCL	TrusJoist	2.0E_DF Parallam PSL	na			1	0.3	0.3	0.035
13	LVL_PRL_1.5E_2250F	Custom	N/A	LVL_PRL_1.5E_2250F	na			1	0.3	0.3	0.035
14	LVL_Microlam_1.9E_2600F	Custom	N/A	LVL_Microllam_1.9E_2600F	na			1	0.3	0.3	0.035
15	PSL_Parallam_2.0E_2900F	Custom	N/A	PSL_Parallam_2.0E_2900F	na			1	0.3	0.3	0.035
16	LSL_TimberStrand_1.55E_2325F	Custom	N/A	LSL_TimberStrand_1.55E_2325F	na			1	0.3	0.3	0.035
17	Redwood	Solid Sawn	Visually Graded	Redwood	No.1			1	0.3	0.3	0.035

Wood Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	TOP CHORD	2-2X6FS	Beam	Rectangular Double	Redwood	Typical	24	32	72	75.125
2	BOTT CHORD	2-2X12FS	Beam	Rectangular Double	Redwood	Typical	48	64	576	202.295
3	VERT	3X6FS	Column	Rectangular	Redwood	Typical	18	13.5	54	37.079
4	DIAGONAL	3X6FS	VBrace	Rectangular	Redwood	Typical	18	13.5	54	37.079

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.2	-0.2	0	%100
2	M2	Y	-0.2	-0.2	0	%100
3	M3	Y	-0.2	-0.2	0	%100
4	M4	Y	-0.2	-0.2	0	%100
5	M5	Y	-0.2	-0.2	0	%100
6	M6	Y	-0.2	-0.2	0	%100
7	M7	Y	-0.2	-0.2	0	%100
8	M8	Y	-0.2	-0.2	0	%100
9	M9	Y	-0.2	-0.2	0	%100
10	M10	Y	-0.2	-0.2	0	%100
11	M11	Y	-0.2	-0.2	0	%100
12	M12	Y	-0.2	-0.2	0	%100
13	M13	Y	-0.2	-0.2	0	%100
14	M14	Y	-0.2	-0.2	0	%100
15	M15	Y	-0.2	-0.2	0	%100
16	M16	Y	-0.2	-0.2	0	%100

Member Distributed Loads (BLC 2 : LL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.4	-0.4	0	%100
2	M2	Y	-0.4	-0.4	0	%100
3	M3	Y	-0.4	-0.4	0	%100
4	M4	Y	-0.4	-0.4	0	%100
5	M5	Y	-0.4	-0.4	0	%100

Member Distributed Loads (BLC 2 : LL) (Continued)

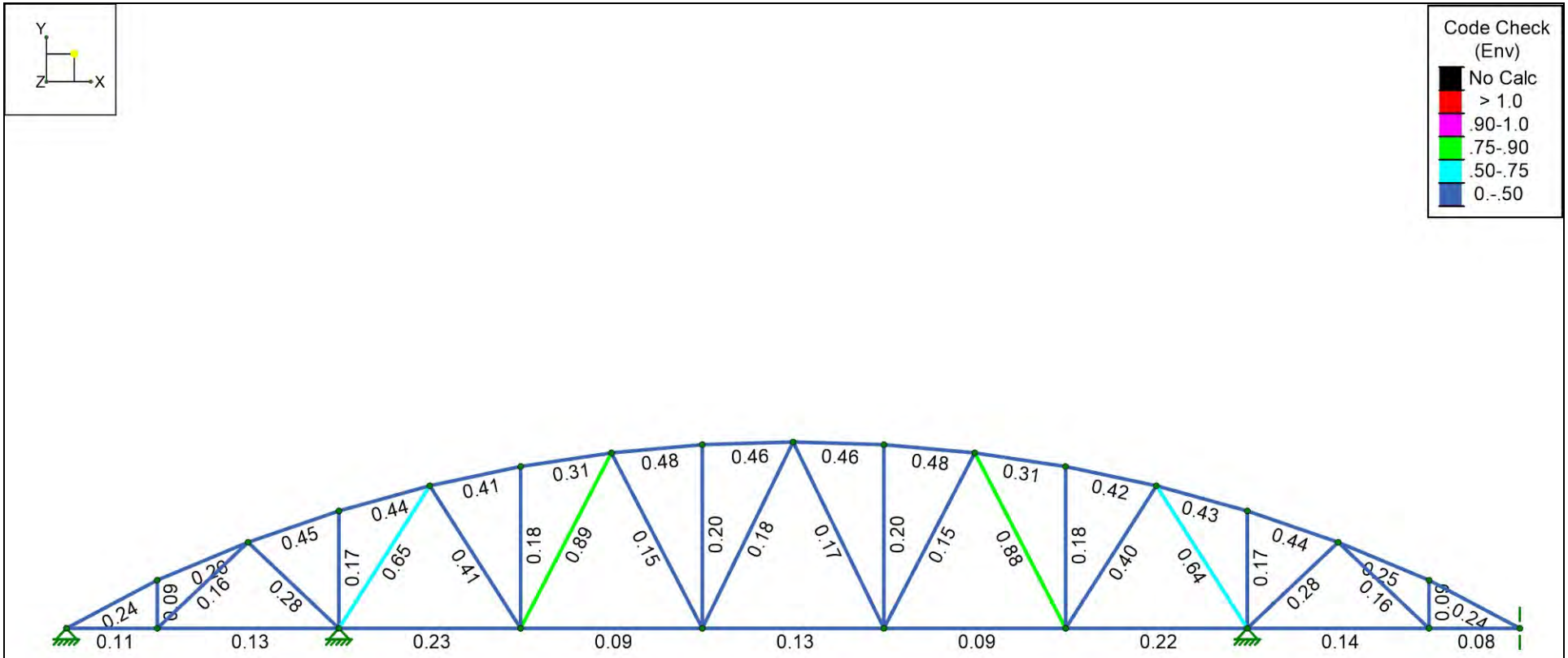
	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
6	M6	Y	-0.4	-0.4	0	%100
7	M7	Y	-0.4	-0.4	0	%100
8	M8	Y	-0.4	-0.4	0	%100
9	M9	Y	-0.4	-0.4	0	%100
10	M10	Y	-0.4	-0.4	0	%100
11	M11	Y	-0.4	-0.4	0	%100
12	M12	Y	-0.4	-0.4	0	%100
13	M13	Y	-0.4	-0.4	0	%100
14	M14	Y	-0.4	-0.4	0	%100
15	M15	Y	-0.4	-0.4	0	%100
16	M16	Y	-0.4	-0.4	0	%100

Envelope AWC NDS-18: ASD Member Wood Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
1	M1	2-2X6FS	0.478	0	3	0.221	0	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-1
2	M2	2-2X6FS	0.598	0	3	0.276	0	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-1
3	M3	2-2X6FS	1.207	0	3	0.201	0	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-3
4	M4	2-2X6FS	1.178	0	3	0.203	5.188	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-3
5	M5	2-2X6FS	1.649	0	3	0.215	0	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
6	M6	2-2X6FS	1.55	5.056	3	0.212	5.056	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
7	M7	2-2X6FS	1.714	0	3	0.215	0	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
8	M8	2-2X6FS	1.679	5.002	3	0.214	5.002	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.9-3
9	M9	2-2X6FS	1.679	0	3	0.214	0	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.9-3
10	M10	2-2X6FS	1.714	5.021	3	0.215	5.021	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
11	M11	2-2X6FS	1.55	0	3	0.212	0	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
12	M12	2-2X6FS	1.649	5.111	3	0.215	5.111	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
13	M13	2-2X6FS	1.178	5.188	3	0.203	0	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-3
14	M14	2-2X6FS	1.207	5.289	3	0.201	5.289	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-3
15	M15	2-2X6FS	0.598	5.418	3	0.276	5.418	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-1
16	M16	2-2X6FS	0.478	5.658	3	0.221	5.658	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-1
17	M17	2-2X12FS	1.228	4.375	3	1.861	4.375	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-3
18	M18	2-2X12FS	0.388	10	3	0.038	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.6.3
19	M19	2-2X12FS	0.119	2.813	3	0.016	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
20	M20	2-2X12FS	0.159	5.625	3	0.013	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
21	M21	2-2X12FS	0.177	5	3	0.011	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
22	M22	2-2X12FS	0.159	4.375	3	0.013	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
23	M23	2-2X12FS	0.119	7.188	3	0.016	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
24	M24	2-2X12FS	0.388	10	3	0.038	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.6.3
25	M25	2-2X12FS	1.228	0.625	3	1.861	0.625	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-3
26	M26	3X6FS	0.719	0	3	0.336	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-3
27	M27	3X6FS	0.086	0	3	0.015	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.9-3
28	M28	3X6FS	0.053	0	3	0.002	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.6.3
29	M29	3X6FS	0.053	0	3	0.001	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.6.3
30	M30	3X6FS	0.053	0	3	0.001	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.6.3
31	M31	3X6FS	0.053	0	3	0.002	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.6.3
32	M32	3X6FS	0.086	0	3	0.015	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.9-3
33	M33	3X6FS	0.719	0	3	0.336	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-3
34	M34	3X6FS	2.65	6.888	3	0.02	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-3
35	M35	3X6FS	0.476	6.888	3	0.022	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
36	M36	3X6FS	0.706	0	3	0.016	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.6.3
37	M37	3X6FS	0.174	9.304	3	0.008	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
38	M38	3X6FS	0.372	0	3	0.009	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
39	M39	3X6FS	0.077	10.875	3	0.008	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
40	M40	3X6FS	0.078	0	3	0.008	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.6.3
41	M41	3X6FS	0.078	0	3	0.008	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.6.3

Envelope AWC NDS-18: ASD Member Wood Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
42	M42	3X6FS	0.077	10.875	3	0.008	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
43	M43	3X6FS	0.372	0	3	0.009	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
44	M44	3X6FS	0.174	9.304	3	0.008	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
45	M45	3X6FS	0.706	0	3	0.016	9.304	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.6.3
46	M46	3X6FS	0.476	6.888	3	0.022	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
47	M47	3X6FS	2.65	6.888	3	0.02	6.888	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-3



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

<Licensed Company>	PROPOSED CONDITION	PROPOSED1
YosimarRamos		Sep 09, 2022
		TRUSS ANALYSIS-3.r3d

Wood Properties

	Label	Type	Database	Species	Grade	Cm	Ci	Emod	Nu	Therm. Coeff. [1e⁵°F⁻¹]	Density [k/ft³]
1	DF	Solid Sawn	Visually Graded	Douglas Fir-Larch	No.1			1	0.3	0.3	0.035
2	SP	Solid Sawn	Visually Graded	Southern Pine	No.1			1	0.3	0.3	0.035
3	HF	Solid Sawn	Visually Graded	Hem-Fir	No.1			1	0.3	0.3	0.035
4	SPF	Solid Sawn	Visually Graded	Spruce-Pine-fir	No.1			1	0.3	0.3	0.035
5	24F-1.8E DF Balanced	Glulam	NDS Table 5A	24F-1.8E_DF_BAL	na			1	0.3	0.3	0.035
6	24F-1.8E DF Unbalanced	Glulam	NDS Table 5A	24F-1.8E_DF_UNBAL	na			1	0.3	0.3	0.035
7	24F-1.8E SP Balanced	Glulam	NDS Table 5A	24F-1.8E_SP_BAL	na			1	0.3	0.3	0.035
8	24F-1.8E SP Unbalanced	Glulam	NDS Table 5A	24F-1.8E_SP_UNBAL	na			1	0.3	0.3	0.035
9	1.3E-1600F_VERSALAM	SCL	Boise Cascade	1.3E-1600F_VERSALAM	na			1	0.3	0.3	0.035
10	1.35E LSL_SolidStart	SCL	Louisiana Pacific	1.35E LSL_SolidStart	na			1	0.3	0.3	0.035
11	1.3E_RIGIDLAM LVL	SCL	Roseburg Forest Products	1.3E_RIGIDLAM LVL	na			1	0.3	0.3	0.035
12	2.0E_DF Parallam PSL	SCL	TrusJoist	2.0E_DF Parallam PSL	na			1	0.3	0.3	0.035
13	LVL_PRL_1.5E_2250F	Custom	N/A	LVL_PRL_1.5E_2250F	na			1	0.3	0.3	0.035
14	LVL_Microlam_1.9E_2600F	Custom	N/A	LVL_Microllam_1.9E_2600F	na			1	0.3	0.3	0.035
15	PSL_Parallam_2.0E_2900F	Custom	N/A	PSL_Parallam_2.0E_2900F	na			1	0.3	0.3	0.035
16	LSL_TimberStrand_1.55E_2325F	Custom	N/A	LSL_TimberStrand_1.55E_2325F	na			1	0.3	0.3	0.035
17	Redwood	Solid Sawn	Visually Graded	Redwood	No.1			1	0.3	0.3	0.035

Wood Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in²]	Iyy [in⁴]	Izz [in⁴]	J [in⁴]
1	TOP CHORD	2-2X6FS	Beam	Rectangular Double	Redwood	Typical	24	32	72	75.125
2	BOTT CHORD	2-2X12FS	Beam	Rectangular Double	Redwood	Typical	48	64	576	202.295
3	VERT	3X6FS	Column	Rectangular	Redwood	Typical	18	13.5	54	37.079
4	DIAGONAL	3X6FS	VBrace	Rectangular	Redwood	Typical	18	13.5	54	37.079
5	NEW	2-2X12FS	VBrace	Rectangular	Redwood	Typical	48	64	576	202.295

Member Distributed Loads (BLC 1 : DL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.2	-0.2	0	%100
2	M2	Y	-0.2	-0.2	0	%100
3	M3	Y	-0.2	-0.2	0	%100
4	M4	Y	-0.2	-0.2	0	%100
5	M5	Y	-0.2	-0.2	0	%100
6	M6	Y	-0.2	-0.2	0	%100
7	M7	Y	-0.2	-0.2	0	%100
8	M8	Y	-0.2	-0.2	0	%100
9	M9	Y	-0.2	-0.2	0	%100
10	M10	Y	-0.2	-0.2	0	%100
11	M11	Y	-0.2	-0.2	0	%100
12	M12	Y	-0.2	-0.2	0	%100
13	M13	Y	-0.2	-0.2	0	%100
14	M14	Y	-0.2	-0.2	0	%100
15	M15	Y	-0.2	-0.2	0	%100
16	M16	Y	-0.2	-0.2	0	%100

Member Distributed Loads (BLC 2 : LL)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
1	M1	Y	-0.28	-0.28	0	%100
2	M2	Y	-0.28	-0.28	0	%100
3	M3	Y	-0.28	-0.28	0	%100
4	M4	Y	-0.28	-0.28	0	%100

Member Distributed Loads (BLC 2 : LL) (Continued)

	Member Label	Direction	Start Magnitude [k/ft, F, ksf, k-ft/ft]	End Magnitude [k/ft, F, ksf, k-ft/ft]	Start Location [(ft, %)]	End Location [(ft, %)]
5	M5	Y	-0.28	-0.28	0	%100
6	M6	Y	-0.28	-0.28	0	%100
7	M7	Y	-0.28	-0.28	0	%100
8	M8	Y	-0.28	-0.28	0	%100
9	M9	Y	-0.28	-0.28	0	%100
10	M10	Y	-0.28	-0.28	0	%100
11	M11	Y	-0.28	-0.28	0	%100
12	M12	Y	-0.28	-0.28	0	%100
13	M13	Y	-0.28	-0.28	0	%100
14	M14	Y	-0.28	-0.28	0	%100
15	M15	Y	-0.28	-0.28	0	%100
16	M16	Y	-0.28	-0.28	0	%100

Envelope AWC NDS-18: ASD Member Wood Code Checks

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
1	M1	2-2X6FS	0.237	5.658	3	0.204	5.658	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-1
2	M2	2-2X6FS	0.255	5.418	3	0.211	5.418	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-1
3	M3	2-2X6FS	0.451	5.289	3	0.204	5.289	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-1
4	M4	2-2X6FS	0.442	0	3	0.213	0	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-1
5	M5	2-2X6FS	0.414	0	3	0.224	0	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
6	M6	2-2X6FS	0.31	5.056	3	0.204	5.056	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
7	M7	2-2X6FS	0.482	0	3	0.214	0	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
8	M8	2-2X6FS	0.461	0	3	0.211	5.002	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.6.3
9	M9	2-2X6FS	0.463	5.002	3	0.211	0	y	3	0.479	0.585	1.005	1.008	0.16	4.744	0.998	0.484	3.6.3
10	M10	2-2X6FS	0.483	5.021	3	0.214	5.021	y	3	0.478	0.585	1.005	1.008	0.16	4.753	0.998	0.483	3.9-3
11	M11	2-2X6FS	0.313	0	3	0.204	0	y	3	0.476	0.585	1.005	1.008	0.16	4.77	0.998	0.481	3.9-3
12	M12	2-2X6FS	0.416	5.111	3	0.224	5.111	y	3	0.473	0.585	1.005	1.008	0.16	4.796	0.997	0.478	3.9-3
13	M13	2-2X6FS	0.433	5.188	3	0.213	5.188	y	3	0.468	0.585	1.005	1.008	0.16	4.832	0.997	0.473	3.9-1
14	M14	2-2X6FS	0.443	0	3	0.204	0	y	3	0.462	0.585	1.005	1.008	0.16	4.879	0.997	0.467	3.9-1
15	M15	2-2X6FS	0.252	0	3	0.211	0	y	3	0.454	0.585	1.005	1.008	0.16	4.938	0.997	0.459	3.9-3
16	M16	2-2X6FS	0.236	0	3	0.204	0	y	3	0.439	0.585	1.005	1.008	0.16	5.046	0.997	0.443	3.9-3
17	M17	2-2X12FS	0.108	0.156	3	0.011	5	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-1
18	M18	2-2X12FS	0.133	10	3	0.036	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-3
19	M19	2-2X12FS	0.232	10	3	0.031	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.6.3
20	M20	2-2X12FS	0.092	6.354	3	0.014	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
21	M21	2-2X12FS	0.134	5	3	0.011	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
22	M22	2-2X12FS	0.094	3.75	3	0.014	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-1
23	M23	2-2X12FS	0.225	10	3	0.031	10	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.6.3
24	M24	2-2X12FS	0.141	0	3	0.035	0	y	3	0.197	0.45	0.769	0.775	0.16	9.487	0.992	0.219	3.9-3
25	M25	2-2X12FS	0.083	5	3	0.012	0	y	3	0.448	0.45	0.772	0.775	0.16	6.708	0.996	0.497	3.9-1
26	M26	3X6FS	0.091	0	3	0.046	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-3
27	M27	3X6FS	0.171	0	3	0.006	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.6.3
28	M28	3X6FS	0.185	0	3	0.011	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.6.3
29	M29	3X6FS	0.201	0	3	0.002	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.6.3
30	M30	3X6FS	0.2	0	3	0.002	10.111	y	3	0.193	0.585	0.997	1.008	0.16	8.994	0.99	0.195	3.6.3
31	M31	3X6FS	0.184	0	3	0.011	8.907	y	3	0.244	0.585	0.999	1.008	0.16	8.441	0.991	0.247	3.6.3
32	M32	3X6FS	0.169	0	3	0.006	6.462	y	3	0.429	0.585	1.001	1.008	0.16	7.19	0.994	0.433	3.6.3
33	M33	3X6FS	0.093	0	3	0.047	2.649	y	3	0.909	0.585	1.005	1.008	0.16	4.603	0.998	0.918	3.9-3
34	M34	3X6FS	0.163	4.879	3	0.008	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
35	M35	3X6FS	0.281	0	3	0.009	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.6.3
36	M37	3X6FS	0.405	0	3	0.01	0	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
37	M38	3X6FS	0.89	0	3	0.011	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
38	M39	3X6FS	0.153	0	3	0.007	0	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
39	M40	3X6FS	0.179	0	3	0.007	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.6.3
40	M41	3X6FS	0.168	0	3	0.007	11.413	y	3	0.153	0.585	0.996	1.008	0.16	9.555	0.989	0.154	3.6.3

Envelope AWC NDS-18: ASD Member Wood Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc[ft]	Dir	LC	Fc' [ksi]	Ft' [ksi]	Fb1' [ksi]	Fb2' [ksi]	Fv' [ksi]	RB	CL	CP	Eqn
41	M42	3X6FS	0.15	0	3	0.007	0	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.9-1
42	M43	3X6FS	0.878	0	3	0.011	10.875	y	3	0.168	0.585	0.997	1.008	0.16	9.327	0.989	0.169	3.6.3
43	M44	3X6FS	0.401	0	3	0.01	0	y	3	0.225	0.585	0.998	1.008	0.16	8.627	0.991	0.228	3.9-1
44	M46	3X6FS	0.28	0	3	0.008	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.6.3
45	M47	3X6FS	0.162	4.663	3	0.007	0	y	3	0.386	0.585	1.001	1.008	0.16	7.423	0.994	0.39	3.9-1
46	M48	2-2X12FS	0.647	0	3	0.008	9.304	y	3	0.223	0.45	0.769	0.775	0.16	9.151	0.992	0.248	3.6.3
47	M49	2-2X12FS	0.641	0	3	0.007	9.304	y	3	0.223	0.45	0.769	0.775	0.16	9.151	0.992	0.248	3.6.3

APPENDIX V

PHOTOS

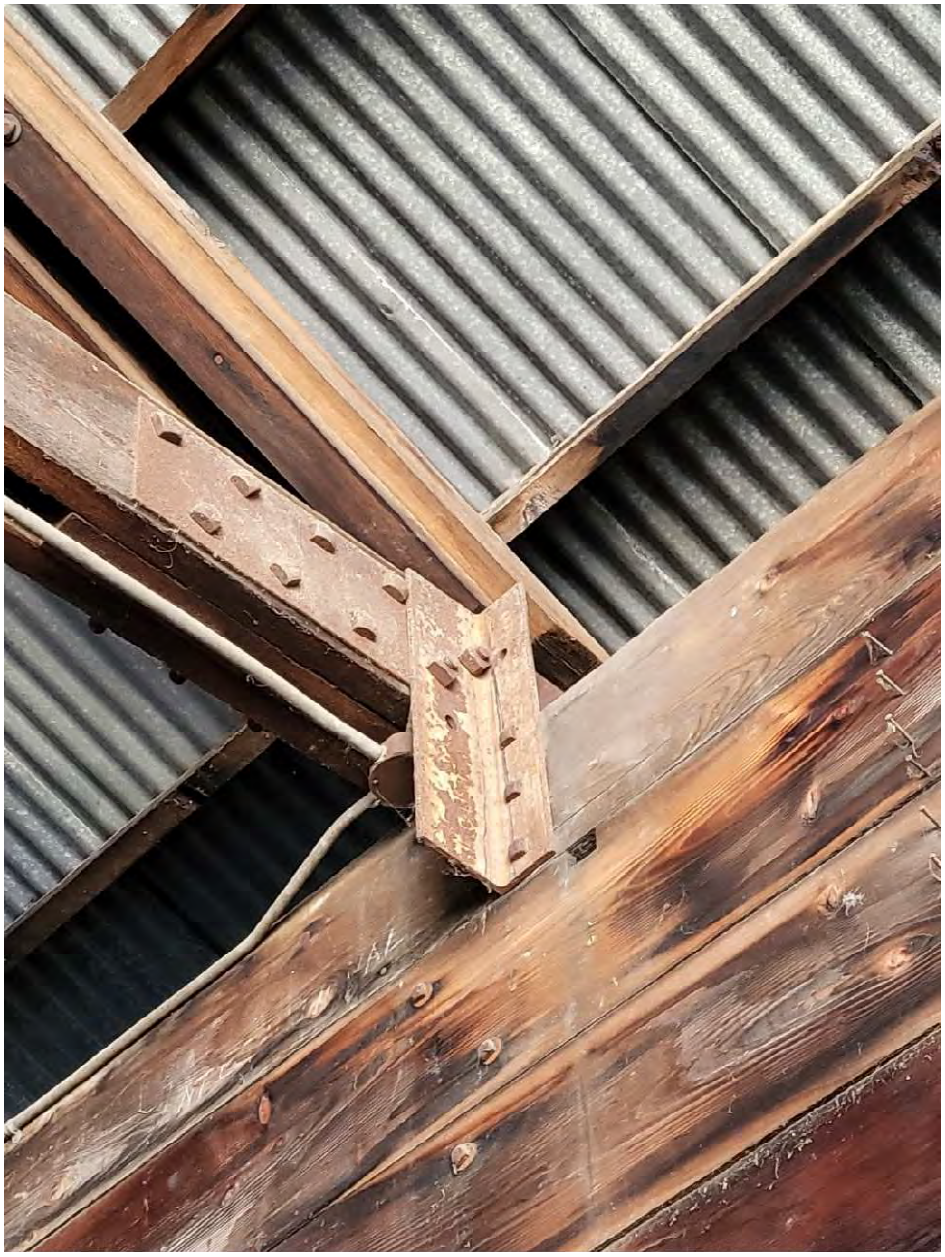
BUILDING 248 – DETERIORATION AT LOWER PORTION OF STUD WALL

BUILDING 248 – WALL CLADDING FAILURE

BUILDING 248 – HEADER TYPE STRUCTURE

BUILDING 248 – ROOF CONNECTION DISPLACEMENT

BUILDING 248 – BOWSTRING TRUSS



BUILDING 248 – BOWSTRING TRUSS EASTERLY CONNECTION

BUILDING 248 – BOWSTRING TRUSS WESTERLY CONNECTION 1

BUILDING 248 – BOWSTRING TRUSS WESTERLY CONNECTION 2

BUILDING 249 – BOWSTRING TRUSS TYPICAL CONNECTION

BUILDING 249 – TRUSS CONNECTION FAILURE

BUILDING 249 – LET IN WOOD BRACES

BUILDING 249 – ROD DIAGONAL BRACES

Section III

Tryon
COMPANY

May 20, 2023

Mr. Jeff Gorrell
Lenvik & Minor Architects
829 De La Vina, Suite 205
Santa Barbara, CA 93101

Re: City of Santa Barbara - General Western Aero Hanger Restoration Feasibility Study
Restoration / Relocation Cost Analysis

Dear Mr. Gorrell:

Tryon has prepared comparative cost estimates for four different scenarios related to the General Western Aero Hangers 248 &249 located at the Santa Barbara Airport. Our estimates are based upon the findings and recommendations of Applied Earthworks, Inc., in their draft report dated February 2023, and of Praxis Engineering, in their report dated October 19, 2022.

The scenarios we have priced are as follows:

Document & Demo

- Photo-Document & As-Built-Plan-Document Buildings
- Obtain Demolition Permits
- Demolish Structures
- Demolish Related Paving, Retain Walls & Foundations
- Remove & Cap Utilities
- Clear & Rough-Grade Site

Repair / Restore in Place

- Fumigate Per Hydrex Pest Control
- Remove & Replace All Perimeter Termite-Infested and Dry-Rotted Framing
- Revise Wood Sill Connection:
    - Shore & Brace Building
    - Excavate & Temporarily Remove Flood Control Berm at North & East Side of Building
    - Construct New Poured Concrete Flood Control Wall Outboard of Existing Building, Restore Berm Outboard of New Flood Control Wall
    - Demolish Existing Concrete Retaining Wall Poured Against Existing Structures, Cut Out Sill Plates, and Related Damaged Framing
    - Install Continuous Perimeter Concrete Stem Wall (To Eliminate Wood Contacting Grade)
    - Reframe Plates and Walls as Required

    - Install Sill Plate Anchor Bolts
    - Install French Drain System at All Retaining Wall Conditions
- Structural Upgrade per Praxis Engineering Report
    - Remove Roof, Repair Termite-Infested, Dry-Rotted & Damaged Framing, Install Rough Hardware and Repair/Restore Corrugated Metal Roof in Accordance with State Restoration Standards
    - Reinforce Trusses & Install Connection Reinforcement Hardware per Structural Engineer
- Clean Concrete Floors, Epoxy Inject Cracks and Seal Concrete
- Replace Concrete Only Where Necessary
- Repair Widows & Glazing
- Repair Exterior Sheet-Metal Siding, Replacing Only as Required
- Repair Doors, Hanger Doors and Related Hardware
- Install New Electric Service/Breaker Panel, Distribution, Power Outlet Devices & Lighting Systems
- New Fire Sprinkler Systems
- Construction One New Unisex Toilet in Each Hanger
- Weed Treat, Patch and Asphalt-Overlay Existing Paved Area
- Repair / Replace Chain Link Fencing as Required
- Install Code-Required Signage

Relocate, Repair & Restore

- Fumigate Per Hydrex Pest Control
- Photo-Document & As-Built-Plan-Document Buildings
- Dismantle & Relocate Building Components:
    - Obtain Demolition Permits
    - Dismantle Structures, Salvage Materials for Reuse Where Possible
    - Demolish Existing Paving, Retaining Walls & Foundations
    - Remove & Cap Utilities
    - Clear & Rough-Grade Site
    - Relocate Usable Building Components to New (Unnamed) Site
- Rough-Grade New Site
- Construct New Street Access and Site Paving (8,400 SF), Including Site Lighting & Landscaping
- Install New Utility Services (Power, Sewer, Water & Communications)
- Reconstruct Historic Buildings:
    - New Foundations and Perimeter Stem Walls
    - Concrete Floors & Sealer
    - Replace All Termite-Infested and Dry-Rotted Materials
    - Perform All Structural Upgrades (outlined in previous scenario)
    - New Electrical & Lighting Systems
    - New Fire Sprinkler System
    - New Fire Alarm Systems

Consolidate (Demo & Salvage Portions of Hanger 248, Restore Hanger 249) in Place

- Photo-Document & As-Built-Plan-Document Hanger 248
- Demolish / Salvage Portions of Hanger 248 and Clear/Grade Site Area
- Same Scope for Hanger 249 as in Repair / Restore in Place

Cost Estimates:

Our estimated costs for the four scenarios are:

Document & Demo Hanger 248 & 249	$	393,187
Repair & Restore in Place:		
Hanger 248	$	1,201.735
Hanger 249	$	917,727
Relocate, Repair & Restore:		
Hanger 248	$	3,518,460
Hanger 249	$	2,264,199
Consolidate (Restore Hanger 249 Only) in Place	$	1,685,669

Please feel fere to contact me if you have any questions or if you would like to meet and discuss our cost estimates in more detail.

Sincerely,

Trent W. Lyon

Attachment

Section IV

WOOD DESTROYING PESTS AND ORGANISMS INSPECTION REPORT

This is an inspection report only -- not a Notice of Completion

ADDRESS OF PROPERTY INSPECTED

BUILDING NO.	STREET	CITY	ZIP	COUNTY CODE	DATE OF INSPECTION	NUMBER OF PAGES
1699	FIRESTONE RD. #248	GOLETA	93117	42	09/12/01	6

RECEIVED
SEP 27 2001
City of Santa Barbara
Airport Department

HYDREX PEST CONTROL CO.

Hydrex Pest Control Company
2940 De La Vina Street
Santa Barbara, Ca. 93105
(805) 687-6644

Affix stamp here on Board copy only

A LICENSED PEST CONTROL OPERATOR IS AN EXPERT IN HIS/HER FIELD. ANY QUESTIONS RELATIVE TO THIS REPORT SHOULD BE REFERRED TO HIM/HER.

REGISTRATION #	REPORT #	STAMP #	ESCROW #
PR 0979	42685		

ORDERED BY: CITY OF SANTA BARBARA AIRPORT P.O. BOX 1990 SANTA BARBARA CA 93102-1990

REPORT SENT TO: CITY OF SANTA BARBARA AIRPORT P.O. BOX 1990 SANTA BARBARA CA 93102-1990

PROPERTY OWNER: CITY OF SANTA BARBARA AIRPORT P.O. BOX 1990 SANTA BARBARA CA 93102-1990

PARTY IN INTEREST: CITY OF SANTA BARBARA AIRPORT P.O. BOX 1990 SANTA BARBARA CA 93102-1990

ORIGINAL REPORT ☒ LIMITED REPORT ☐ SUPPLEMENTAL REPORT ☐* REINSPECTION REPORT ☐* *Original Stamp #

GENERAL DESCRIPTION: Two story, airplane hangar, slab foundation, wood siding and aluminium hot mop roof & metal.

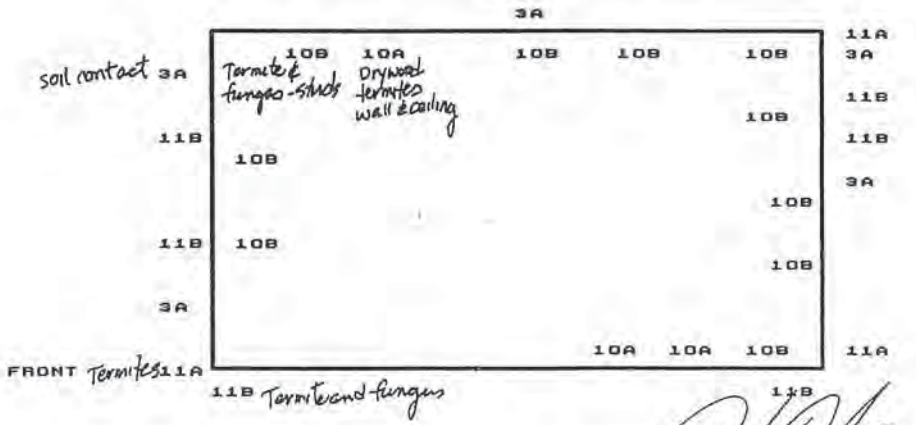
INSPECTION TAG POSTED: Interior wall.

OTHER INSPECTION TAGS: None.

			Inaccessible Areas	Not Inspected	Further Inspection	Subterranean Termites	Dry Wood Termites	Fungus or Dry Rot	Other Wood Pests	Dampwood Termites	Earth - Wood Contacts	Faulty Grade Levels	Cellulose Debris	Excessive Moisture	Shower Leaks
1. SUBSTRUCTURE AREA	SLAB														
2. STALL SHOWER	NONE														
3. FOUNDATIONS	INSPECTED SEE BELOW	See 3A										X			
4. PORCHES - STEPS	NONE														
5. VENTILATION	N/A														
6. ABUTMENTS	NONE														
7. ATTIC SPACES	NONE														
8. GARAGES	NONE														
9. DECKS - PATIOS	NONE														
10. OTHER - INTERIOR	INSPECTED SEE BELOW	See10A, 10B					X	X							
11. OTHER - EXTERIOR	INSPECTED SEE BELOW	See11A, 11B						X							

DIAGRAM AND EXPLANATION OF FINDINGS (This report is limited to structure or structures shown on diagram)

DIAGRAM NOT TO SCALE



Inspected by JOHN ORTEGA License No. FR22706 Signature

NOTE: Questions or problems concerning the above report should be directed to the manager of the company. Unresolved questions or problems with services performed may be directed to the Structural Pest Control Board at (916) 263-2533, or (800) 737-8188.

You are entitled to obtain copies of all reports and completion notices on this property filed with the Board during the preceding two years upon payment of a $2.00 search fee to: The Structural Pest Control Board, 1418 Howe Ave., Ste. 18, Sacramento, California 95825-3204.

2nd PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

1699	FIRESTONE RD. #248	GOLETA
BLDG. NO.	STREET	CITY
	09/12/2001	42685
STAMP NO.	DATE OF INSPECTION	CO. REPORT NO.

A. Certain areas are recognized by the industry as inaccessible and/or for other reasons not inspected. These include but are not limited to: inaccesible and/or insulated attics or portions thereof, attics with less than 18" clear crawl space, the interior of hollow walls; spaces between a floor or porch deck and the ceiling below; area where there is no access without defacing or tearing out lumber, masonry or finished work; areas behind stoves, refigerators or beneath floor coverings, furnishings; areas where encumberances and storage, conditions or locks make inspection impractical, portions of the subarea concealed or made inaccessible by ducting or insulation, area beneath wood floors over concrete, and areas concealed by heavy vegetation. Areas or timbers around eaves were visually inspected from ground level only. Although we make visual examinations, we do not deface or probe window/door frames or decorative trims. Unless otherwise specified in this report, we do not inspect fences, sheds, dog houses, detached patios, detached wood decks, wood retaining walls or wood walkways. We assume no responsibility for work done by anyone else, for damage to structure or contents during our inspection, or for infestation, infection, adverse conditions or damage undetected due to inaccessibility or non-disclosure by owner/agent/tenant.

B. Slab floor construction has become more prevalent in recent years. Floor covering may conceal cracks in the slab that will allow infestation to enter. Infestations in the walls may be concealed by plaster so that a diligent inspection may not disclose the true condition. These areas are not practical to inspect because of health hazards, damage to the structure; or inconvenience. They were not inspected unless described in this report. We recommend further inspection if there is any question about the above noted areas. Ref: Structural Pest Control Act, Article 6, Section 8516(b), paregraph 1990(1). Amended effective March 1, 1974. Inspection is limited to disclosure of wood destroying pests or organisms as set forth in the Structural Pest Control Act, Article 6, Section 8516(b), Paragraph 1990-1991.

C. A re-inspection will be performed, if requested within four (4) months from date of original inspection, on any corrective work that we are regularly in the business of performing. If CERTIFICATION is required, then any work performed by others must be CERTIFIED by them. There is a re-inspection fee.

D. This company is not responsible for work completed by others, recommended or not, including by Owner. Contractor bills should be submitted to Escrow as certification of work completed by others.

E. This report includes findings related to the presence/non-presence of wood destroying organisms and/or visible signs of leaks in the accessible portions of the roof. The inspector did not go onto the roof surface due to possible physical damage to the roof, or personal injury. No opinion is rendered nor guarantee implied concerning the water-tight integrity of the roof or the condition of the roof and roofing materials. If interested parties desire further information on the condition of the roof, we recommend that they engage the services of a licensed roofing contractor.

F. Second story stall showers are inspected but not water tested unless there is evidence of leaks in ceiling below. Ref: Structural Pest Control Rules and Regulations, Sec. 8516G. Sunken or below grade showers or tubs are not water tested due to their construction.

G. During the course of/or after opening walls or any previously concealed areas, should any further damage or infestation be found, a supplementary report will be issued. Any work completed in these areas would be at Owner's direction and additional expense.

H. During the process of treatment or replacement it may be necessary to drill holes through ceramic tiles or other floor coverings; These holes will then be sealed with concrete. We will exercise due care but assume no responsibility for cracks, chipping or other damage to floor coverings. We do not re-lay carpeting.

I. We assume no responsibility for damage to any Plumbing, Gas or Electrical lines, etc., in the process of pressure treatment of concrete slabs or replacement of concrete or structural timbers.

J. When a fumigation is recommended we will exercise all due care but assume no responsibility for damage to Shrubbery, Trees, Plants, TV Antennas or Roofs. A FUMIGATION NOTICE will be left with, or mailed to the Owner of this property, or his designated Agent. Occupant must comply with instructions contained in Fumigation Notice. During fumigation and aeration, the possibility of burglary exists as it does any time you leave your home. Therefore, we recommend that you take any steps that you feel necessary to prevent any damage to your property. We also recommend that you contact your insurance agent and verify that you have insurance coverage to protect against any loss, damage or vandalism to your property. The company does not provide any onsite security except as required by state or local ordinance and does not assume any responsibility for care and custody of the property in case of vandalism, breaking or entering.

K. Your termite report and clearance will cover EXISTING infestation or infection which is outlined in this report. If Owner of property desires coverage of any new infestation it would be advisable to obtain a Control Service Policy which would cover any new infestation for the coming year.

L. If you should have any questions regarding this report, please call or come by our office any weekday between 8:00 a.m. and 5:00 p.m. We also provide information about additional services for the control of Household Pests such as Ants and Fleas, etc.

M. I agree to pay reasonable attorney's fees if suit is required by this COMPANY to enforce any terms of this contract, together with the costs of such action, whether or not suit proceeds to judgement.

N. The total amount of this contract is due and payable upon completion of work unless otherwise specified. A finance charge computed at a Monthly rate of 1.5% of the unpaid balance (annual percentage rate of 18%) will be added to all accounts past due.

O. If this report is used for escrow purposes then it is agreed that this inspection report and Completion, if any, is part of the ESCROW TRANSACTION. However, if you received written or verbal instructions from any interested parties involved in this escrow (agents, principals, etc.) to not pay our invoice at close of escrow, you are instructed by us not to use these documents to satisfy any conditions or terms of your escrow for purposes of closing the escrow. Further, you are instructed to return all of our documents and the most current mailing address you have on file for the property owner.

P. Owner/agent/tenant acknowledges and agrees that inspection of the premises will not include any type of inspection for the presence or non-presence of asbestos and that this report will not include any findings or opinions regarding the presence or non-presence of asbestos in, upon or about the premises, we recommend that you contact a contractor specifically licensed to engage in asbestos related work. Further, should we discover the presence of asbestos during our inspection of the premises or should our inspection of the premises cause a release of asbestos dust or particles, owner/agent/tenant shall be solely responsible for the cleanup, removal and disposal of the asbestos and the cost thereof. Owner/agent/tenant hereby agrees to waive any and all claims against this Company which are in any way related to the presence of asbestos on the premises and further agrees to indemnify and hold this company harmless from any and all claims of any nature asserted by any third party, including this Company's employees, which is in any way related to the presence of asbestos on the premises.

HYDREX PEST CONTROL WEST COAST --- License No. PR 0979

3rd PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

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"NOTICE" REPORTS ON THIS STRUCTURE PREPARED BY OTHER REGISTERED TERMITE COMPANIES SHOULD LIST THE SAME FINDINGS (I.E. TERMITE AND OTHER WOOD DESTROYING INFESTATIONS TO INCLUDE DAMAGE ETC.). HOWEVER RECOMMENDATIONS TO CORRECT THE INFESTATIONS AND/OR DAMAGE MAY VARY FROM COMPANY TO COMPANY. YOU HAVE THE RIGHT TO SEEK A SECOND OPINION.

NOTICE TO OWNER

UNDER THE CALIFORNIA MECHANICS LIEN LAW ANY STRUCTURAL PEST CONTROL OPERATOR, CONTRACTOR, SUBCONTRACTOR, LABORER, SUPPLIER OR ANY PERSON WHO CONTRACTS TO DO WORK FOR YOU AND WHO HELPS TO IMPROVE YOUR PROPERTY BUT IS NOT PAID FOR THEIR WORK OR SUPPLIES HAS THE TO ENFORCE A CLAIM AGAINST YOUR PROPERTY. THIS MEANS YOUR PROPERTY COULD BE SOLD BY A COURT OFFICER AND THE PROCEEDS OF THE SALE USED TO SATISFY THE INDEBTNESS. THIS COULD HAPPEN EVEN IF YOU PAID YOUR PRIMARY CONTRACTOR IN FULL IF THE SUBCONTRACTOR, LABORORS OR SUPPLIERS REMAIN UNPAID.

TO PRESERVE THEIR RIGHT TO FILE A CLAIM OR LIEN AGAINST YOUR PROPERTY, CERTAIN CLAIMANTS SUCH AS SUBCONTRACTORS AND SUPPLIERS ARE REQUIRED TO PROVIDE YOU WITH A DOCUMENT ENTITLED "PRELIMINARY NOTICE" PRIME CONTRACTORS AND LABORORS FOR WAGES DO NOT HAVE TO PROVIDE THIS NOTICE. A PRELIMINARY NOTICE IS NOT A LEIN AGAINST YOUR PROPERTY. ITS PURPOSE IS TO NOTIFY YOU OF THEIR RIGHT TO FILE IN THE CASE THAT THEY ARE NOT PAID.

FOUNDATIONS:

Item 3A: A faulty grade condition was noted to the foundation of the structure. The stucco siding was in contact with the soil and is in dis-repair.

REC: Owner to employ a licensed tradesman to inspect and repair as necessary.

****** This is a Section 2 Item ******

OTHER - INTERIORS:

Item 10A: Evidence of drywood termites was noted in the wall & ceiling of the interior.

REC: Tarp and fumigate the structure with an approved fumigant in accordance with the manufactures label. See the "OCCUPANT'S CHEMICAL NOTICE" section of this report for more information on the material being used. The fumigation is guaranteed for 2 years and can be extended with an annual premium of 11% of the original agreement.

****** This is a Section 1 Item ******

Item 10B: Drywood termite & fungus damage was noted to the window frame 2x6, 2x4 studs, & mudsill.

REC: With the customer's agreement Hydrex Pest Control will repair, reinforce or remove and replace the damaged area in accordance with state and local building codes. Areas of repair are guaranteed for 1 year and are non-renewable.

****** This is a Section 1 Item ******

OTHER - EXTERIORS:

Item 11A: Evidence of drywood termites was noted in the framing of the exterior.

REC: Tarp and fumigate the structure with an approved fumigant in accordance with the manufactures label. See the "OCCUPANT'S CHEMICAL NOTICE" section of this report for more information on the material being used. The fumigation is guaranteed for 2 years and can be extended with an annual premium of 11% of the original agreement.

****** This is a Section 1 Item ******

4th PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

1699	FIRESTONE RD. #248	GOLETA
BLDG. NO.	STREET	CITY
	09/12/2001	42685
STAMP NO.	DATE OF INSPECTION	CO. REPORT NO.

OTHER - EXTERIORS:

Item 11B: Drywood termite & fungus damage was noted to the 2x6 beam, fascia & siding in the exterior.

REC: With the customer's agreement Hydrex Pest Control will repair, reinforce or remove and replace the damaged area in accordance with state and local building codes. Areas of repair are guaranteed for 1 year and are non-renewable.

****** This is a Section 1 Item ******

IF; DURING THE COURSE OF CONSTRUCTION DAMAGE IS FOUND TO EXTEND INTO PREVIOUSLY INACCESSIBLE AREAS OR AREAS CONCEALED BY FURNITURE, PERSONAL ITEMS ETC., THE TECHNICIAN WILL CALL FOR AN INSPECTION AND A SUPPLIMENTAL REPORT WILL BE ISSUED WITH NEW FINDINGS AND ADDITIONAL COSTS.

PESTICIDES ARE THE PRODUCTS THAT HYDREX PEST CONTROL USES TO CONTROL THE TARGET PEST LISTED IN YOUR INSPECTION. WHEN USED PROPERLY, PESTICIDES MAKE A BETTER LIFE FOR ALL OF US. THEY HELP CONTROL DISEASE CARRIERS THUS PROTECTING YOUR HEALTH AND PROPERTY AND POSE NO THREAT TO MAN OR THE ENVIRONMENT. YOUR HYDREX TECHNICIAN IS A STATE CERTIFIED APPLICATOR AND IS CONSTANTLY BEING UPGRADED BY OUR TRAINING SESSIONS. IF YOU HAVE ANY QUESTIONS PLEASE CALL THE FOLLOWING NUMBER. 1-800-284-7985.

STATE LAW REQUIRES THAT YOU BE GIVEN THE FOLLOWING INFORMATION. "CAUTION, PESTICIDES ARE TOXIC CHEMICALS. STRUCTURAL PEST CONTROL OPERATORS ARE LICENCED AND REGULATED BY THE STRUCTURAL PEST CONTROL BOARD AND APPLY PESTICIDES WHICH ARE REGISTERED AND APPROVED BY FOR USE BY CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURAL, THE UNITED STATES ENVIRONMENTAL DEPARTMENT OF FOOD AND AGRICULTURE AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. REGISTRATION IS GRANTED WHEN THE STATE FINDS THAT, BASED ON EXISTING SCIENTIFIC EVIDENCE, THERE ARE NO APPRECIABLE RISKS IF PROPER USE CONDITIONS ARE FOLLOWED OR THAT THE RISKS ARE OUT-WEIGHED BY THE BENEFITS. THE DEGREE OF RISKS DEPENDS UPON THE DEGREE OF EXPOSURE SO EXPOSURE SHOULD BE MINIMIZED.

IF, WITHIN 24 HOURS FOLLOWING APPLICATION, YOU EXPERIENCE SYMPTOMS SIMILAR TO COMMON SEASONAL ILLNESS COMPARABLE TO THE FLU, CONTACT YOUR PHYSICIAN OR POISON CONTROL CENTER AT 800-662-9886 AND YOUR PEST CONTROL OPERATOR IMMEDIATELY.

FOR FURTHER INFORMATION CONTACT ANY OF THE FOLLOWING:

HYDREX PEST CONTROL COMPANY 800-284-7985

COUNTY HEALTH DEPARTMENT (HEALTH QUESTIONS)
SANTA BARBARA 805-346-8410
SAN LUIS OBISPO 805-781-5500

COUNTY AGRICULTURAL COMMISSION (APPLICATION)
SANTA BARBARA 805-934-6200
SAN LUIS OBISPO 805-781-5910

STRUCTURAL PEST CONTROL BOARD (REGULATORY INFORMATION)
1422 HOWE AVENUE, SUITE 3 SACRAMENTO, CA 95825-3280 916-263-2533

IF, DURING THE COURSE OF CONSTRUCTION DAMAGE IS FOUND TO EXTEND INTO PREVIOUSLY INACCESSIBLE AREAS OR AREAS CONCEALED BY FURNITURE, PERSONAL ITEMS ETC., THE TECHNICIAN WILL CALL FOR AN INSPECTION AND A SUPPLIMENTAL REPORT WILL BE ISSUED WITH NEW FINDINGS AND ADDITIONAL COSTS.

5th PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

1699	FIRESTONE RD. #248	GOLETA
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	09/12/2001	42685
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IF A FUMIGATION IS RECOMMENDED AND PERFORMED ON THE STRUCTURE THE OWNER OR AGENT MUST BE SURE TO COMPLY WITH ALL PREPARATIONS AND NOT RE-ENTER THE STRUCTURE UNTIL IT HAS PROPERLY BEEN CLEARED AND CERTIFIED FOR RE-OCCUPANCY. PLEASE SEE THE "OCCUPANT'S CHEMICAL NOTICE" SECTION OF THIS REPORT FOR MORE INFORMATION ON THE MATERIAL BEING USED.

OCCUPANT'S CHEMICAL NOTICE

HYDREX PEST CONTROL WILL USE THE FOLLOWING PESTICIDE CHEMICAL(S) SPECIFIED BELOW FOR THE CONTROL OF WOOD DESTROYING ORGANISMS IN THE LOCATIONS DETAILED ON THE GRAPH AND IN THIS REPORT.

1. THE PEST OR ORGANISM TO BE CONTROLLED IS:
___ Subterranean Termites _X_ Drywood Termites ___ Beetles
_X_ Fungus and/or Dryrot ___ Other ___ (Specify)

2. THE PESTICIDE TO BE USED IS:
_X_ Vikane (Sulfuryl Floride)
_X_ Chloropicrin
___ Dursban TC (Chlorpyrifos) 1%
___ Dragnet SFR (Permethrin) .5%
___ Equity (Chlorpyrifos) 1%
___ Premise (Imidaclorprid) 1%
___ Timbor (Disodium Octaborate Tetrahydrate) 10%
___ Cytoc (Cyfluthrin) .1%
___ Invader (Baygon) 1%
___ Strikeforce (Chlorpyrifos) .5%
___ Other ___ ___%

FUMIGATION WARRANTY: HYDREX PEST CONTROL WARRANTS THE STRUCTURES LISTED THE ORIGINAL AGREEMENT FOR THE INFESTATION THAT WAS SPECIFICALLY DESIGNATED AS THE TARGET PEST. OUR GUARANTEE IS LIMITED TO THE CONTROL AND TREATMENT OF THE INFESTATION AND DOES NOT INCLUDE DAMAGE CAUSED BY THE INFESTATION OR PREPARATION AND RELOCATION OF OCCUPANTS SHOULD A RE-FUMIGATION BE NECESSARY.

LOCAL TREATMENT WARRANTY: HYDREX PEST CONTROL WARRANTS THE SIR LISTED ON THE ORIGINAL AGREEMENT FOR THE INFESTATION THAT WAS SPECIFICALLY DESIGNATED AS THE TARGET PEST. OUR GUARANTEE IS LIMITED TO THE CONTROL AND TREATMENT OF THE INFESTATION AND DOES NOT INCLUDE DAMAGE CAUSED BY THE INFESTATION OR PREPARATION FOR TREATMENT. LOCAL TREATMENT IS GUARANTEED TO THE AREA(S) OF THE INFESTATION ORIGINALLY DESIGNATED ON THE WOOD DESTROYING ORGANISMS (WDO) REPORT AND TERMITE AGREEMENT.

REPAIR WARRANTY: HYDREX PEST CONTROL WARRANTS THE AREA(S) OF TH STRUCTURE(S) LISTED ON THE ORIGINAL AGREEMENT FOR THE SPECIFIC REPAIRS DESIGNATED ON THE WOOD DESTROYING ORGANISMS (WDO) REPORT AND TERMITE AGREEMENT. IF DURING THE CONSTRUCTION OR AFTER OPENING PREVIOUSLY INACCESSIBLE AREAS, DAMAGE IS FOUND TO EXTEND FURTHER, THEN ANOTHER WDO REPORT WILL BE FILED AND ANY WORK COMPLETED SHALL BE DONE AT THE OWNER OR AGENT'S DIRECTION AND EXPENSE. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL BUILDING CODES AND SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF COMPLETION.

6th PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

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SECTION 1		SECTION 2	FURTHER INSPECT.
10A:	$3,500.00	3A: OTHERSEXPE	
10B:	TIME&MATER		
11A:	SEE 10A		
11B:	TIME&MATER		

WOOD DESTROYING PESTS AND ORGANISMS INSPECTION REPORT

This is an inspection report only -- not a Notice of Completion

ADDRESS OF PROPERTY INSPECTED

BUILDING NO.	STREET	CITY	ZIP	COUNTY CODE	DATE OF INSPECTION	NUMBER OF PAGES
1699	FIRESTONE RD. #249	GOLETA	93117	42	09/12/01	6

RECEIVED
SEP 27 2001
City of Santa Barbara Airport
7511

HYDREX PEST CONTROL CO.

Hydrex Pest Control Company
2940 De La Vina Street
Santa Barbara, Ca. 93105
(805) 687-6644

Affix stamp here on Board copy only

A LICENSED PEST CONTROL OPERATOR IS AN EXPERT IN HIS/HER FIELD. ANY QUESTIONS RELATIVE TO THIS REPORT SHOULD BE REFERRED TO HIM/HER.

REGISTRATION #	REPORT #	STAMP #	ESCROW #
PR 0979	42679		

ORDERED BY: CITY OF SANTA BARBARA AIRPORT P.O. BOX 1990 SANTA BARBARA CA 93102-1990

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PARTY IN INTEREST: CITY OF SANTA BARBARA AIRPORT P.O. BOX 1990 SANTA BARBARA CA 93102-1990

ORIGINAL REPORT [X] LIMITED REPORT [ ] SUPPLEMENTAL REPORT [ ]* REINSPECTION REPORT [ ]* *Original Stamp # Date

GENERAL DESCRIPTION: Two story, airplane hangar, slab foundation, wood siding and aluminium hot mop roof & metal.

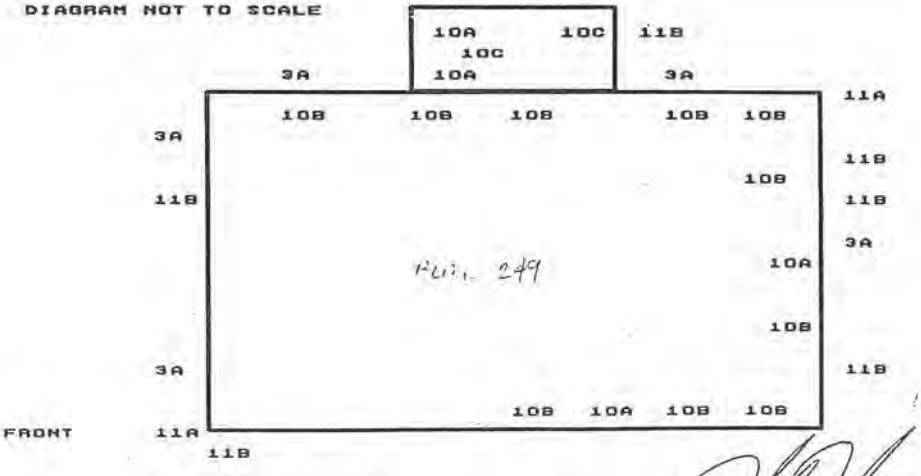
INSPECTION TAG POSTED: Interior wall.

OTHER INSPECTION TAGS: None.

				INACCESSIBLE AREAS	NOT INSPECTED	FURTHER INSPECTION	SUBTERRANEAN TERMITES	DRYWOOD TERMITES	FUNGUS OR DRY ROT	OTHER WOOD BEETS	DAMPWOOD TERMITES	EARTH • WOOD CONTACTS	FAULTY GRADE LEVELS	CELLULOSE DEBRIS	EXCESSIVE MOISTURE	SHOWER LEAKS
1. SUBSTRUCTURE AREA	SLAB															
2. STALL SHOWER	NONE															
3. FOUNDATIONS	INSPECTED	SEE BELOW	See 3A										X			
4. PORCHES – STEPS	N/A															
5. VENTILATION	N/A															
6. ABUTMENTS	NONE															
7. ATTIC SPACES	NONE															
8. GARAGES	NONE															
9. DECKS – PATIOS	NONE															
10. OTHER – INTERIOR	INSPECTED	SEE BELOW	See10A-10C					X	X							
11. OTHER – EXTERIOR	INSPECTED	SEE BELOW	See11A,11B					X	X							

DIAGRAM AND EXPLANATION OF FINDINGS (This report is limited to structure or structures shown on diagram)

DIAGRAM NOT TO SCALE



Inspected by JOHN ORTEGA License No. FR22706 Signature

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NOTICE TO OWNER

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FOUNDATIONS:

Item 3A: A faulty grade condition was noted to the foundation of the structure. The stucco siding was in contact with the soil and is in dis-repair.

REC: Owner to employ a licensed tradesman to inspect and repair as necessary.
****** This is a Section 2 Item ******

OTHER - INTERIORS:

Item 10A: Evidence of drywood termites was noted in the wall & ceiling of the interior.

REC: Tarp and fumigate the structure with an approved fumigant in accordance with the manufactures label. See the "OCCUPANT'S CHEMICAL NOTICE" section of this report for more information on the material being used. The fumigation is guaranteed for 2 years and can be extended with an annual premium of 11% of the original agreement.
****** This is a Section 1 Item ******

Item 10B: Drywood termite & fungus damage was noted to the window frame 2x6, 2x4 studs, mudsill & pier posts in the interior.

REC: With the customer's agreement Hydrex Pest Control will repair, reinforce or remove and replace the damaged area in accordance with state and local building codes. Areas of repair are guaranteed for 1 year and are non-renewable.

****** This is a Section 1 Item ******

Item 10C: Water stains were noted to the ceiling & wall. They appear to be from a previous problem.

REC: Owner to call for periodic inspection.
****** This is a Section 2 Item ******

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STAMP NO.	DATE OF INSPECTION	CO. REPORT NO.

OTHER - EXTERIORS:

Item 11A: Evidence of drywood termites was noted in the framing of the exterior.

REC: Tarp and fumigate the structure with an approved fumigant in accordance with the manufactures label. See the "OCCUPANT'S CHEMICAL NOTICE" section of this report for more information on the material being used. The fumigation is guaranteed for 2 years and can be extended with an annual premium of 11% of the original agreement.

****** This is a Section 1 Item ******

Item 11B: Drywood termite & fungus damage was noted to the door & door jamb, beam, 2x6, plywood sheathing & fascia in the exterior.

REC: With the customer's agreement Hydrex Pest Control will repair, reinforce or remove and replace the damaged area in accordance with state and local building codes. Areas of repair are guaranteed for 1 year and are non-renewable.

****** This is a Section 1 Item ******

IF, DURING THE COURSE OF CONSTRUCTION DAMAGE IS FOUND TO EXTEND INTO PREVIOUSLY INACCESSIBLE AREAS OR AREAS CONCEALED BY FURNITURE, PERSONAL ITEMS ETC., THE TECHNICIAN WILL CALL FOR AN INSPECTION AND A SUPPLIMENTAL REPORT WILL BE ISSUED WITH NEW FINDINGS AND ADDITIONAL COSTS.

PESTICIDES ARE THE PRODUCTS THAT HYDREX PEST CONTROL USES TO CONTROL THE TARGET PEST LISTED IN YOUR INSPECTION. WHEN USED PROPERLY, PESTICIDES MAKE A BETTER LIFE FOR ALL OF US. THEY HELP CONTROL DISEASE CARRIERS THUS PROTECTING YOUR HEALTH AND PROPERTY AND POSE NO THREAT TO MAN OR THE ENVIRONMENT. YOUR HYDREX TECHNICIAN IS A STATE CERTIFIED APPLICATOR AND IS CONSTANTLY BEING UPGRADED BY OUR TRAINING SESSIONS. IF YOU HAVE ANY QUESTIONS PLEASE CALL THE FOLLOWING NUMBER. 1-800-284-7985.

STATE LAW REQUIRES THAT YOU BE GIVEN THE FOLLOWING INFORMATION. "CAUTION, PESTICIDES ARE TOXIC CHEMICALS. STRUCTURAL PEST CONTROL OPERATORS ARE LICENCED AND REGULATED BY THE STRUCTURAL PEST CONTROL BOARD AND APPLY PESTICIDES WHICH ARE REGISTERED AND APPROVED BY FOR USE BY CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURAL, THE UNITED STATES ENVIRONMENTAL DEPARTMENT OF FOOD AND AGRICULTURE AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. REGISTRATION IS GRANTED WHRN THE STATE FINDS THAT, BASED ON EXISTING SCIENTIFIC EVIDENCE, THERE ARE NO APPRECIABLE RISKS IF PROPER USE CONDITIONS ARE FOLLOWED OR THAT THE RISKS ARE OUT-WEIGHED BY THE BENEFITS. THE DEGREE OF RISKS DEPENDS UPON THE DEGREE OF EXPOSURE SO EXPOSURE SHOULD BE MINIMIZED.

IF, WITHIN 24 HOURS FOLLOWING APPLICATION, YOU EXPERIENCE SYMPTOMS SIMILAR TO COMMON SEASONAL ILLNESS COMPARABLE TO THE FLU, CONTACT YOUR PHYSICIAN OR POISON CONTROL CENTER AT 800-662-9886 AND YOUR PEST CONTROL OPERATOR IMMEDIATELY.

FOR FURTHER INFORMATION CONTACT ANY OF THE FOLLOWING:

HYDREX PEST CONTROL COMPANY 800-284-7985

COUNTY HEALTH DEPARTMENT (HEALTH QUESTIONS)
SANTA BARBARA 805-346-8410
SAN LUIS OBISPO 805-781-5500

COUNTY AGRICULTURAL COMMISSION (APPLICATION)
SANTA BARBARA 805-934-6200
SAN LUIS OBISPO 805-781-5910

STRUCTURAL PEST CONTROL BOARD (REGULATORY INFORMATION)
1422 HOWE AVENUE, SUITE 3 SACRAMENTO, CA 95825-3280 916-263-2533

5th PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

1699	FIRESTONE RD. #249	GOLETA
BLDG. NO.	STREET	CITY
	09/12/2001	42679
STAMP NO.	DATE OF INSPECTION	CO. REPORT NO.

IF, DURING THE COURSE OF CONSTRUCTION DAMAGE IS FOUND TO EXTEND INTO PREVIOUSLY INACCESSIBLE AREAS OR AREAS CONCEALED BY FURNITURE, PERSONAL ITEMS ETC., THE TECHNICIAN WILL CALL FOR AN INSPECTION AND A SUPPLIMENTAL REPORT WILL BE ISSUED WITH NEW FINDINGS AND ADDITIONAL COSTS.

STATE LAW REQUIRES THAT YOU BE GIVEN THE FOLLOWING INFORMATION. "CAUTION, PESTICIDES ARE TOXIC CHEMICALS. STRUCTURAL PEST CONTROL OPERATORS ARE LICENCED AND REGULATED BY THE STRUCTURAL PEST CONTROL BOARD AND APPLY PESTICIDES WHICH ARE REGISTERED AND APPROVED BY FOR USE BY CALIFORNIA DEPARTMENT OF FOOD AND AGRICULTURAL, THE UNITED STATES ENVIRONMENTAL DEPARTMENT OF FOOD AND AGRICULTURE AND THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY. REGISTRATION IS GRANTED WHRN THE STATE FINDS THAT, BASED ON EXISTING SCIENTIFIC EVIDENCE, THERE ARE NO APPRECIABLE RISKS IF PROPER USE CONDITIONS ARE FOLLOWED OR THAT THE RISKS ARE OUT-WEIGHED BY THE BENEFITS. THE DEGREE OF RISKS DEPENDS UPON THE DEGREE OF EXPOSURE SO EXPOSURE SHOULD BE MINIMIZED.

IF A FUMIGATION IS RECOMMENDED AND PERFORMED ON THE STRUCTURE THE OWNER OR AGENT MUST BE SURE TO COMPLY WITH ALL PREPARATIONS AND NOT RE-ENTER THE STRUCTURE UNTIL IT HAS PROPERLY BEEN CLEARED AND CERTIFIED FOR RE-OCCUPANCY. PLEASE SEE THE "OCCUPANT'S CHEMICAL NOTICE" SECTION OF THIS REPORT FOR MORE INFORMATION ON THE MATERIAL BEING USED.

OCCUPANT'S CHEMICAL NOTICE

HYDREX PEST CONTROL WILL USE THE FOLLOWING PESTICIDE CHEMICAL(S) SPECIFIED BELOW FOR THE CONTROL OF WOOD DESTROYING ORGANISMS IN THE LOCATIONS DETAILED ON THE GRAPH AND IN THIS REPORT.

1. THE PEST OR ORGANISM TO BE CONTROLLED IS:
___ Subterranean Termites _X_ Drywood Termites ___ Beetles
_X_ Fungus and/or Dryrot ___ Other ___ (Specify)

2. THE PESTICIDE TO BE USED IS:
_X_ Vikane (Sulfuryl Florida)
_X_ Chloropicrin
___ Dursban TC (Chlorpyrifos) 1%
___ Dragnet SFR (Permethrin) .5%
___ Equity (Chlorpyrifos) 1%
___ Premise (Imidaclorprid) 1%
___ Timbor (Disodium Octaborate Tetrahydrate) 10%
___ Cytoc (Cyfluthrin) .1%
___ Invader (Baygon) 1%
___ Strikeforce (Chlorpyrifos) .5%
___ Other ___ ___%

FUMIGATION WARRANTY: HYDREX PEST CONTROL WARRANTS THE STRUCTURES LISTED THE ORIGINAL AGREEMENT FOR THE INFESTATION THAT WAS SPECIFICALLY DESIGNATED AS THE TARGET PEST. OUR GUARANTEE IS LIMITED TO THE CONTROL AND TREATMENT OF THE INFESTATION AND DOES NOT INCLUDE DAMAGE CAUSED BY THE INFESTATION OR PREPARATION AND RELOCATION OF OCCUPANTS SHOULD A RE-FUMIGATION BE NECESSARY.

LOCAL TREATMENT WARRANTY: HYDREX PEST CONTROL WARRANTS THE STR LISTED ON THE ORIGINAL AGREEMENT FOR THE INFESTATION THAT WAS SPECIFICALLY DESIGNATED AS THE TARGET PEST. OUR GUARANTEE IS LIMITED TO THE CONTROL AND TREATMENT OF THE INFESTATION AND DOES NOT INCLUDE DAMAGE CAUSED BY THE INFESTATION OR PREPARATION FOR TREATMENT. LOCAL TREATMENT IS GUARANTEED TO THE AREA(S) OF THE INFESTATION ORIGINALLY DESIGNATED ON THE WOOD DESTROYING ORGANISMS (WDO) REPORT AND TERMITE AGREEMENT.

REPAIR WARRANTY: HYDREX PEST CONTROL WARRANTS THE AREA(S) OF TH STRUCTURE(S) LISTED ON THE ORIGINAL AGREEMENT FOR THE SPECIFIC REPAIRS DESIGNATED ON THE WOOD DESTROYING ORGANISMS (WDO) REPORT AND TERMITE AGREEMENT. IF DURING THE CONSTRUCTION OR AFTER OPENING PREVIOUSLY INACCESSIBLE AREAS, DAMAGE IS FOUND TO EXTEND FURTHER, THEN ANOTHER WDO REPORT WILL BE FILED AND ANY WORK COMPLETED SHALL BE DONE AT THE OWNER OR AGENT'S DIRECTION AND EXPENSE. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH LOCAL BUILDING CODES AND SHALL BE GUARANTEED FOR ONE YEAR FROM THE DATE OF COMPLETION.

HYDREX PEST CONTROL WEST COAST — License No. PR 0979

6th PAGE OF STANDARD INSPECTION REPORT ON PROPERTY AT:

1699	FIRESTONE RD. #249	GOLETA
BLDG. NO.	STREET	CITY
	09/12/2001	42679
STAMP NO.	DATE OF INSPECTION	CO. REPORT NO.

SECTION 1 SECTION 2 FURTHER INSPECT.

10A: $3,675.00 3A: OTHERSEXPE
10B: TIME&MATER 10C:
11A: SEE 10A
11B: TIME&MATER

Section V

Building & Safety Division

Base Flood Elevation (BFE) Determination

Please Reproduce in the Plans & Provide the Owner a Copy

Date of Evaluation: March 21, 2023
Owner's Applicant: Bradley Klinzing
E-Mail Address: bklinzing@santabarbaraca.gov

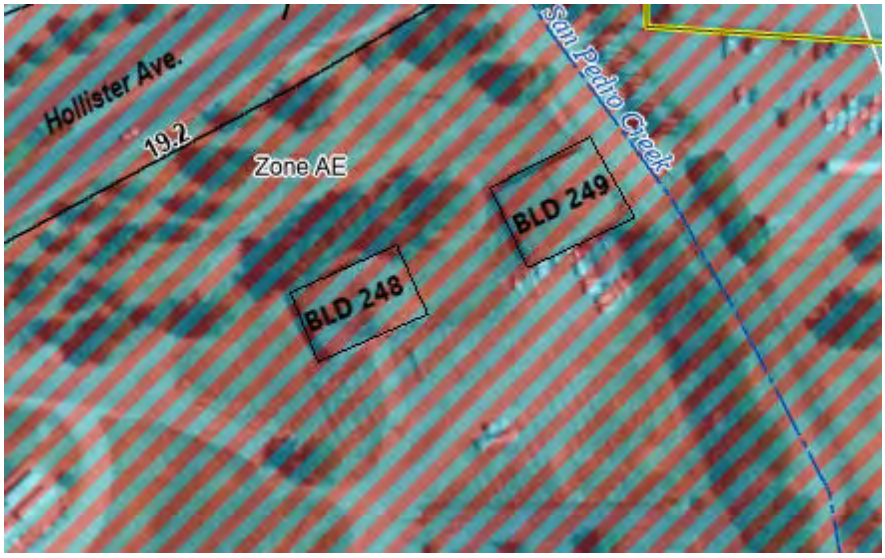
Building Permit #: BLD2023-00684
Structure Address: SBA General Western Aero Hangars
Assessor Parcel #: 073-450-003

Santa Barbara County Panel: 1362 of 1780
FEMA NFIP Community: City of Santa Barbara
Number•Panel•Suffix: 060335•1362•H (Insurance use)

Map Panel #: 06083C1362H (to order map)
Effective Date: 9/28/2018
Map Revised: 6/03/2021 (LOMR 21-09-0037P)

Building Use ☒ Non-Residential ☒ Existing ☒ Historical

FIRM Zone(s) ☐ SFHA AE ☒ SFHA AE Floodway ☒ Pre-FIRM (1928)
BFE Source: ☒ Digital FIRM Map ☐ FIS Profile ☐ Approximate A Zone

FEMA **Flood Water Elevations** **NAVD 1988 Datum** **BLD 248 BFE = 19.2'** **BLD 249 BFE = 19.2'** **BFE = Base Flood Elevation** **Flood Insurance Use**	

STRUCTURE(S) shown represent the existing buildings to be elevated or floodproofed (as proposed by the applicant).

NON RESIDENTIAL STRUCTURES may be required to elevate or floodproof the building to or above the DFE. Garages are required to be floodproofed. All new work shall comply with FEMA flood mitigation requirements to floodproof or elevate new or relocated mechanical, electrical & plumbing elements. Water resistant materials are required below the DFE.

FLOOD DESIGN ELEVATION is dependent on final usage proposed by the applicant. The BFE given above is the Design Flood Elevation (DFE) for these structures at their current location with no proposed usage change (i.e. Design Class 1 structure). For the other potential re-uses:

- Restore in place, use as hangar = Design Class 4 = 21.2' DFE
- Restore in place, use as museum = Design Class 3 = 20.2' DFE
- Restore in place, use as office = Design Class 2 = 20.2' DFE
- Relocation would require new BFE determination for proposed location.

BUILDING PERMITS are required before any new work, addition, or remodeling of structures occur in a Special Flood Hazard Area (SFHA) - City of Santa Barbara Municipal Code MC 22.24. Prior to issuing any development permits involving activities in a regulatory floodway such as this, the community must obtain a No Rise Certification stating the proposed development will not impact the pre-project base flood elevations, floodway elevations, or floodway data widths. It is recommended that the Airport consult with a civil engineer with past experience with this floodplain.

Reference: NFIP regulations (44 CFR parts 59-78), S.B. City Municipal code §22.24.040, 22.24.180; ASCE 24-14, & ASCE 7-16 Chapter 5.

_____

Raina French, Project Engineer

(805) 564-5383 RFrench@SantaBarbaraCA.gov

Public Works Department, Engineering Division

630 Garden Street, Santa Barbara, CA 93102

Section VI

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Page 1 of 2

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 3B
Other Listings _____
Review Code ____ Reviewer _____ Date _____

P1. Resource Identifier: *Building No. 248, General Western Aero Corp. Hangar, Santa Barbara Aviation*

P2. Location: a. County *Santa Barbara* and (Address and/or UTM Coordinates. Attach Location Map as required.)

b. Address:

City *Goleta CA* Zip *93117*

c. UTM: USGS Quad *Goleta* ☐ 7.5' ☐ 15 Date Zone mE/ mN

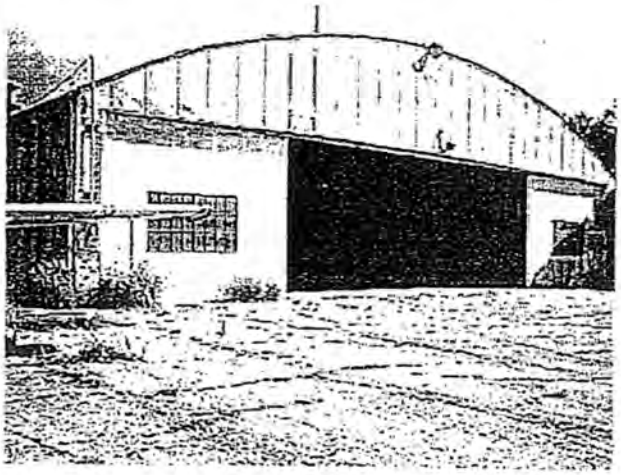
d. Other Locational Data (Enter Parcel #, legal description, directions to resource, and/or any other locational data if appropriate)
Parcel No.

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This 60 by 80 foot hangar is rectangular in plan, and constructed on a concrete slab foundation. The roof shape is defined by a segmental arch truss springing from 16 foot high walls, creating a clear span of 80 feet, roughly 30 feet in height at the center point. The exterior siding material is continuous sheetmetal strips roughly 3 feet wide laid vertically over wood stud walls. A pair of large, sliding hangar doors opening south are faced with sheetmetal. Eight by 3 light steel mullioned fixed windows are centered on both of the door panels. Four panels of similar windows run along the northern facade, evenly spaced and located only slightly above grade. These windows are presently covered by plywood sheets. The roofing material is corrugated metal. Clear evidence can be found in the interior and exterior of the hangar to suggest that a one-story, medium-pitched gable-roofed structure was previously attached to the midpoint of eastern facade. The truss and eaves from this intersecting gable end, and two, 6 over 6 wood sash windows remain extant in the interior. A portion of the roofline remains clearly visible from the exterior, although the windows are hidden by metal panels. This addition appears to have been constructed between 1936 and 1942, and was probably removed in 1942, when San Pedro Creek was re-aligned and channelized immediately to the east of the hangar. Some evidence of the original, painted General Western Aero signs can still be identified on the southern facade, over the hangar doors. Located 100 feet to the west is another, very similar hangar constructed during the same year.

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District

P5. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P6. Date Constructed/Age
☐ Prehistoric ☒ Historic ☐ Both
1931 F

P7. Owner and Address
Santa Barbara Municipal Airport
601 Firestone Road
Goleta, CA 93117

P8. Recorded by
Mitch Stone/Judith Triem
San Buenaventura Research Assoc.
627 East Pleasant Street
Santa Paula CA 93060

P9. Date Recorded: *6/24/94*

P10. Type of Survey:
☒ Intensive ☐ Reconnaissance ☐ Other
Describe:

P11. Report Citation: (Provide full citation or enter "none")
San Buenaventura Research Associates. Historic Resources Report, Santa Barbara Municipal Airport. City of Santa Barbara, 1995.

Attachments
☐ NONE ☒ Building, Structure, and Object Record ☐ District Record ☐ Artifact Record
☐ Map Sheet ☐ Linear Resource Record ☐ Milling Station Record ☐ Photograph Record
☐ Continuation Sheet ☐ Archaeological Record ☐ Rock Art Record ☐ Other: (List)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # _____
HRI # _____

BUILDING, STRUCTURE, AND OBJECT RECORD

B1. Resource Identifier: *Building No. 248, General Western Aero Corp. Hangar, Santa Barbara Aviation*
B2. Historic Name: *General Western Aero Corp. Hangar, Building No. 248*
B3. Common Name: *Old Hangar, Building No. 248*
B4. Address:
City: *Goleta CA* County *Santa Barbara* Zip *93117*
B5. Zoning: B6. Threats: *redevelopment of site*
B7. Architectural Style: *utilitarian industrial*
B8. Alterations and Date(s):

B9. Moved? ☒ No ☐ Yes ☐ Unknown Date: Original Location:
B10. Related Features:

B11. Architect: *unknown* Builder: *unknown*
B12. Resource Attributes (List attributes and codes) *HP39 - Other (Aircraft-related)*
HP8 - Industrial Building
B13. Significance: Theme: *Aviation, Military* Area: *Santa Barbara-Goleta*
Period of Significance: *1918-42; 1942-5* Property Type: *Hangar* Applicable Criteria: *A*
(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Address integrity.)

The period of aviation activity at Santa Barbara Airport occurring prior to the take-over of the site by the US Marine Corps in 1942 was brief but crucial to the future development of civilian aviation facilities in the Santa Barbara area. The initial pioneering efforts of Gordon Sackett and Roy Stetson beginning in 1928 left little in terms of a physical legacy, but did serve to establish the Goleta Slough vicinity as the site for future airport development.

The General Western Aero Corporation constructed two hangars in 1931 (of which this is one) near the corner of Hollister and Fairview avenues. Shortly thereafter, a small, two-story office and tower were constructed between the hangars. General Western, a company founded a few years earlier in Burbank, operated a factory for the construction of light monoplanes and a flying school out of these hangars until 1933, when they succumbed to the Great Depression and alleged mismanagement. Probably less than six of their 'Meteor' aircraft were ever built. In 1936 the hangars were leased by Burton and Jesse Bundy, who operated the Santa Barbara Flying Service in this location for several decades thereafter. Later that same year, these hangars, in addition to the small tower, became the home of United Airlines when the company established their commercial air passenger service to Santa Barbara in 1936. In 1940 the City of Santa Barbara officially selected the Goleta Slough site for the establishment of a municipal airport, and the voters approved a bond financing measure the following year. Construction proceeded throughout 1941, with the US Army Corp of Engineers providing assistance with the filling and leveling of the slough. United Airlines vacated the old hangars in 1942, when a new terminal was completed. The General Western hangars were taken over by the United States Marine Corp from 1942 to 1945. The precise role they played in the base's mission is uncertain.

B14. References:

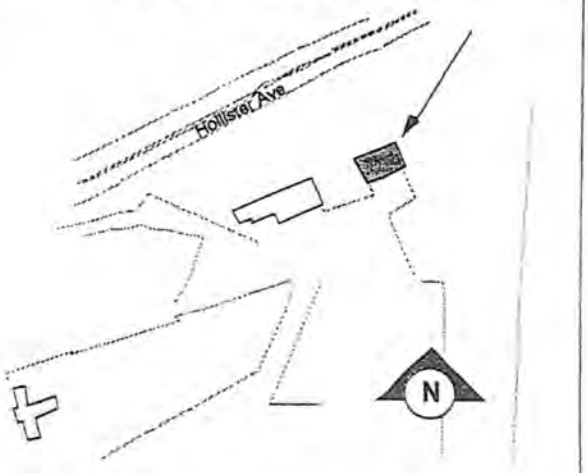
Coombs, Gary B. and Ackerman, Michael E. *Meteor's Tale: The General Western Hangers.* Goleta, California: Kimberly Press, 1991.

Various maps, plans and documents held by the Santa Barbara Airport.

B15. Evaluator: *J. Triem, M. Stone*
Date of Evaluation: *10/28/94*

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Page 1 of 2

Primary # _____
HRI # _____
Trinomial _____
NRHP Status Code 3B

Other Listings _____
Review Code ____ Reviewer _____ Date _____

P1. Resource Identifier: *Building No. 249, General Western Aero Hangar*

P2. Location: a. County *Santa Barbara* and (Address and/or UTM Coordinates. Attach Location Map as required.)

b. Address: *158 Firestone Road*

City *Goleta CA* Zip *93117*

c. UTM: USGS Quad *Goleta* ☐ 7.5' ☐ 15 Date Zone mE/ mN

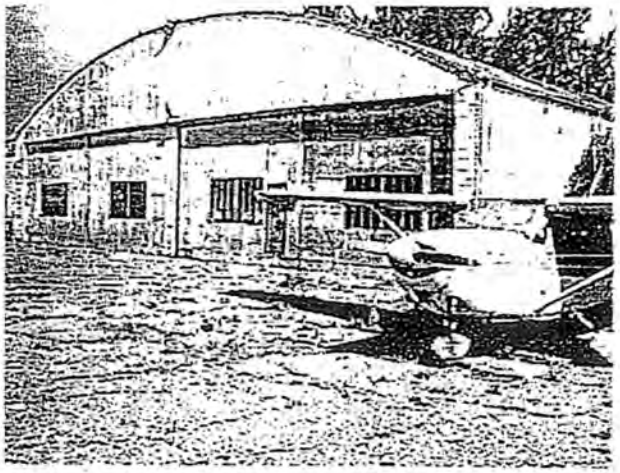
d. Other Locational Data (Enter Parcel #, legal description, directions to resource, and/or any other locational data if appropriate)
Parcel No.

P3. Description (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

This 60 by 170 foot hangar and attached shop building is roughly 'I' shaped in plan, and constructed on a concrete slab foundation. The main body of the building is the 60 by 80 foot hangar, with a roof shape defined by a segmental arch truss springing from 16 foot high walls, creating a clear span of 80 feet, roughly 30 feet in height at the center point. The exterior siding material is continuous sheetmetal strips roughly 3 feet wide laid vertically over wood stud walls. A pair of large, sliding hangar doors opening south are faced with sheetmetal. Eight by 3 light steel mullioned fixed windows are centered on both of the door panels. Two panels of similar windows are located on the northern facade, and one on the eastern facade, and located only slightly above grade. These windows are presently covered by plywood sheets. The roofing material is corrugated metal. A one-story shed roofed lean-to wing roughly 20 feet in depth and 60 feet in length is attached to the western facade. This portion of the building appears to have been constructed between 1936 and 1942. Attached to the lean-to is a 70 by 40 foot, one-story, 'I' shaped wing with a very low gable roof, medium wood drop siding and paired, 6 over 6 wood sash windows. It was constructed circa 1943. Another, small one-story lean-to is attached to the northern facade of the hangar also appears to have been constructed between 1936 and 1942. The hangar was at one time attached to the tower to the east by means of a small, one-story addition constructed circa 1943. This portion of the building was removed when the tower was demolished during the 1970s. Some evidence of the original, painted General Western Aero signs can still be identified on the southern facade, over the hangar doors. Located 100 feet to the east is another, very similar hangar constructed during the same year.

P4. Resources Present ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District

P5. Photograph or Drawing (Photograph required for buildings, structures, and objects)



P6. Date Constructed/Age
☐ Prehistoric ☒ Historic ☐ Both
1931 F

P7. Owner and Address
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601 Firestone Road
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P8. Recorded by
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627 East Pleasant Street
Santa Paula CA *93060*

P9. Date Recorded: *6/24/94*

P10. Type of Survey:
☒ Intensive ☐ Reconnaissance ☐ Other
Describe:

P11. Report Citation: (Provide full citation or enter "none")
San Buenaventura Research Associates. Historic Resources Report, Santa Barbara Municipal Airport. City of Santa Barbara, 1995.

Attachments ☐ NONE ☐ Building, Structure, and Object Record ☐ District Record ☐ Artifact Record
☐ Map Sheet ☐ Linear Resource Record ☐ Milling Station Record ☐ Photograph Record
☒ Continuation Sheet ☐ Archaeological Record ☐ Rock Art Record ☐ Other: (List)

State of California — The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

Primary # _____
HRI # _____

BUILDING, STRUCTURE, AND OBJECT RECORD

B1. Resource Identifier: *Building No. 249, General Western Aero Hangar*
B2. Historic Name: *General Western Aero Corp. Hangar, Building No. 249*
B3. Common Name: *Old Hangar, Building No. 249*
B4. Address: *158 Firestone Road*
City: *Goleta CA* County *Santa Barbara* Zip *93117*
B5. Zoning: B6. Threats: *redevelopment of site*
B7. Architectural Style: *utilitarian industrial; World War Two Military "T" Building*
B8. Alterations and Date(s): *additions to north and west (between 1936-42); addition to west (circa 1943); connection to tower on east (circa 1943), removed.*

B9. Moved? ☒ No ☐ Yes ☐ Unknown Date : Original Location:

B10. Related Features:

B11. Architect: *unknown* Builder: *unknown*
B12. Resource Attributes (List attributes and codes) *HP39 - Other (Aircraft-related)*
HP8 - Industrial Building
B13. Significance: Theme: *Aviation, Military* Area: *Santa Barbara-Goleta*
Period of Significance: *1918-42; 1942-5* Property Type: *Hangar* Applicable Criteria: *A*
(Discuss importance in terms of historical or architectural context as defined by theme, period and geographic scope. Address integrity.)

The period of aviation activity at Santa Barbara Airport occurring prior to the take-over of the site by the US Marine Corp in 1942 was brief but crucial to the future development of civilian aviation facilities in the Santa Barbara area. The initial pioneering efforts of Gordon Sackett and Roy Stetson beginning in 1928 left little in terms of a physical legacy, but did serve to establish the Goleta Slough vicinity as the site for future airport development.

The General Western Aero Corporation constructed two hangars in 1931 (of which this is one) near the corner of Hollister and Fairview avenues. Shortly thereafter, a small, two-story office and tower were constructed between the hangars. General Western, a company founded a few years earlier in Burbank, operated a factory for the construction of light monoplanes and a flying school out of these hangars until 1933, when they succumbed to the Great Depression and alleged mismanagement. Probably less than six of their 'Meteor' aircraft were ever built. In 1936 the hangars were leased by Burton and Jesse Bundy, who operated the Santa Barbara Flying Service in this location for several decades thereafter. Later that same year, these hangars, in addition to the small tower, became the home of United Airlines when the company established their commercial air passenger service to Santa Barbara in 1936. In 1940 the City of Santa Barbara officially selected the Goleta Slough site for the establishment of a municipal airport, and the voters approved a bond financing measure the following year. Construction proceeded throughout 1941, with the US Army Corp of Engineers providing assistance with the filling and leveling of the slough. United Airlines vacated the old hangars in 1942, when a new terminal was completed. The General Western hangars were taken over by the United States Marine Corps from 1942 to 1945. The precise role they played in the base's mission is uncertain.

B14. References:

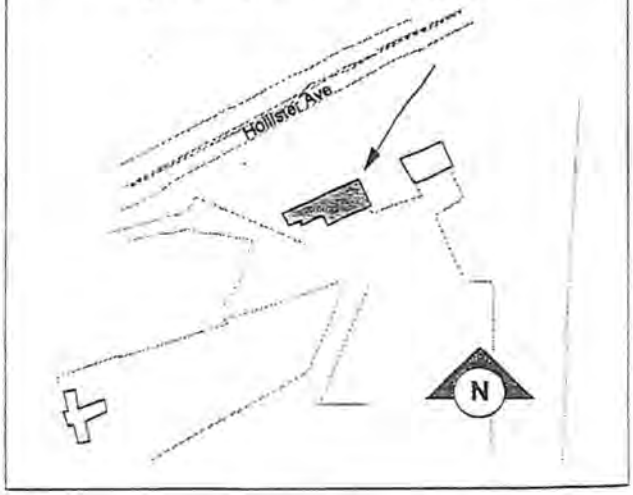
Coombs, Gary B. and Ackerman, Michael E. *Meteor's Tale: The General Western Hangers*. Goleta, California: Kimberly Press, 1991.

Various maps, plans and documents held by the Santa Barbara Airport.

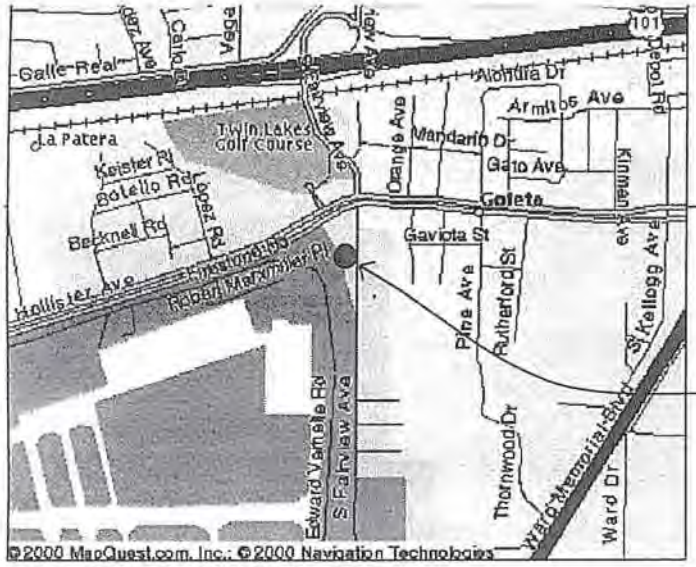
B15. Evaluator: *J. Triem, M. Stone*
Date of Evaluation: *10/28/94*

(This space reserved for official comments.)

(Sketch Map with north arrow required.)



Section VII



Vicinity Map (N.T.S.)

Hollister Avenue To Downtown Goleta →

Site

San Pedreo Creek Channel Change

180'-0" (+/-)

6"-12" Dia Pines (locations Approx.)

Addition

Bldg. 249

Bldg. 248

100'-0"

See options for A.C. paving allowances

Chain link fence

To Firestone St.

N

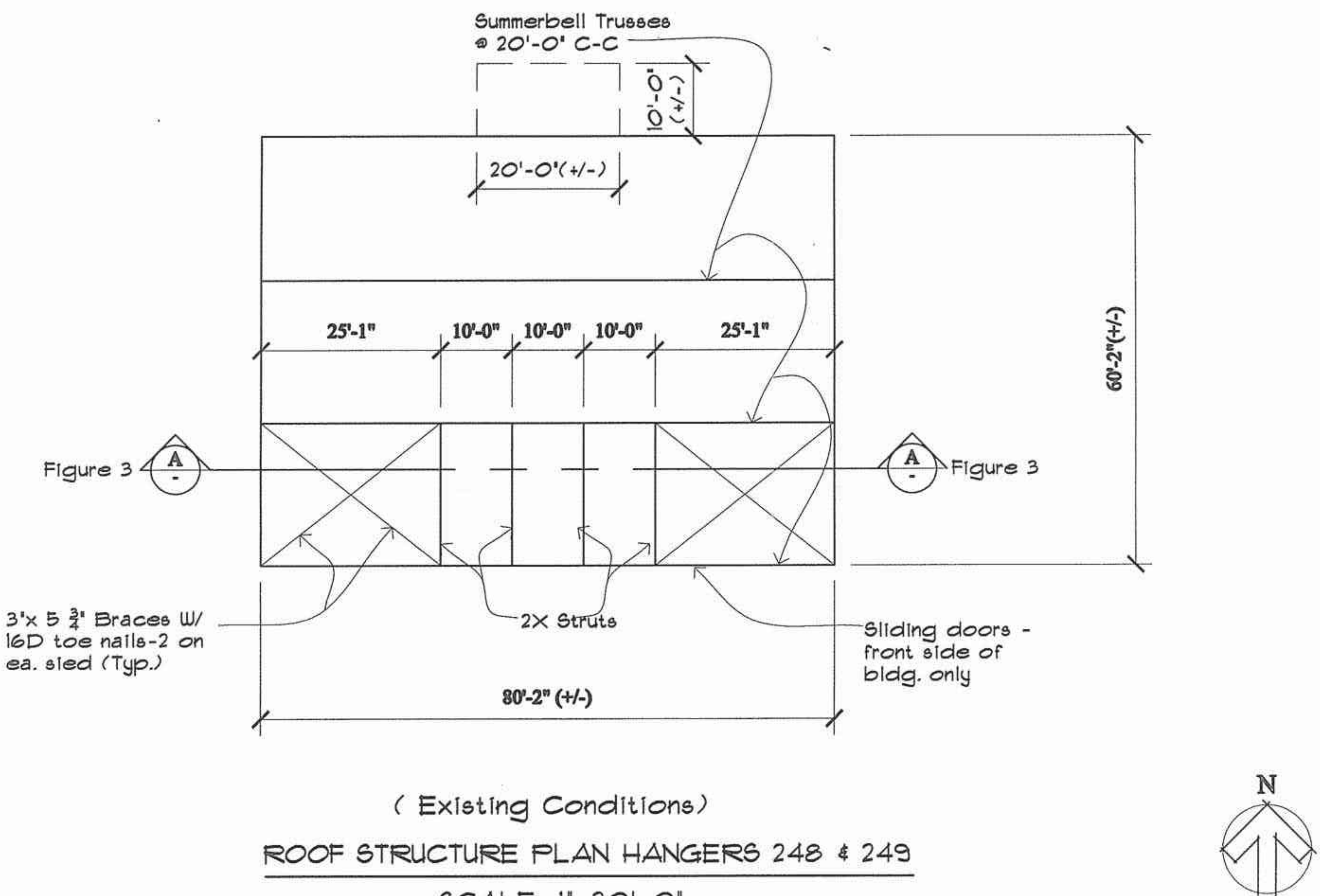
Plot Plan (Existing Conditions)

SCALE: 1"=50'-0"

= Photos in Appendix

FIGURE 1

12096/1136



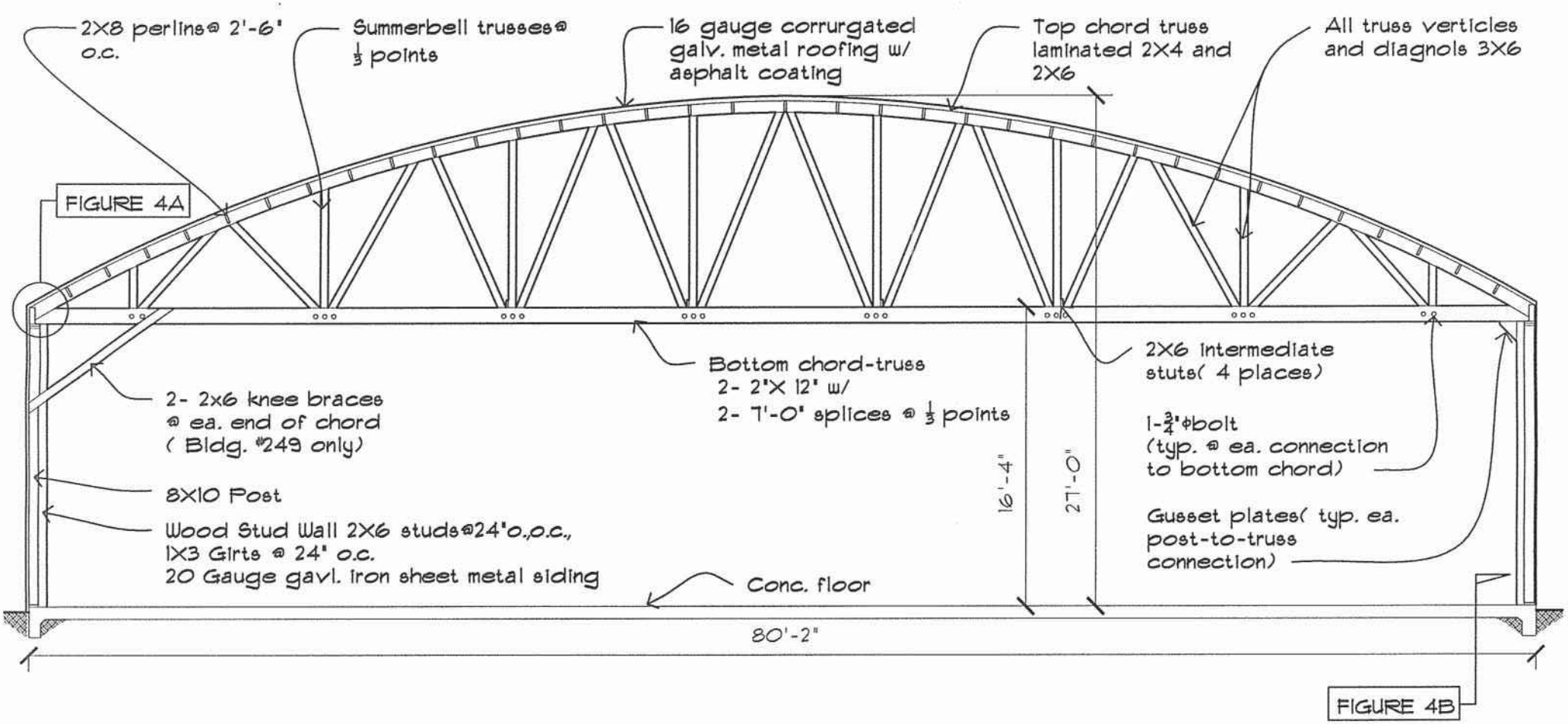
(Existing Conditions)

ROOF STRUCTURE PLAN HANGERS 248 & 249

SCALE: 1"=20'-0"

FIGURE 2

Note: All Wood Members
California Redwood



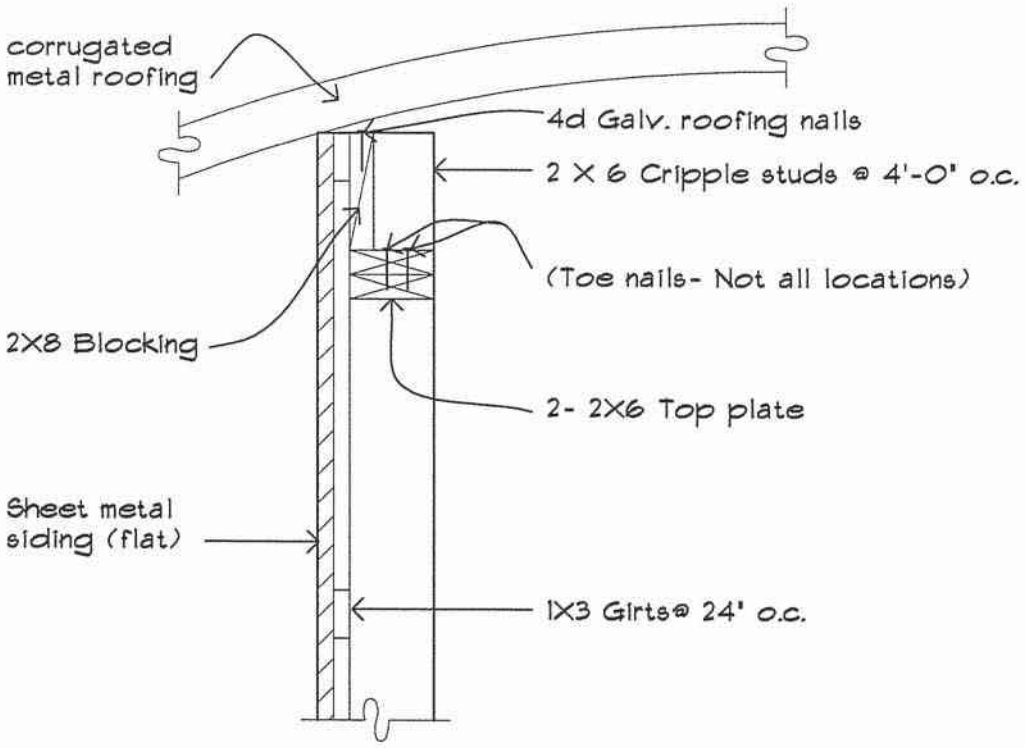
(Existing Conditions)

Section A.A.

SCALE: 1"=8'-0"

FIGURE 3

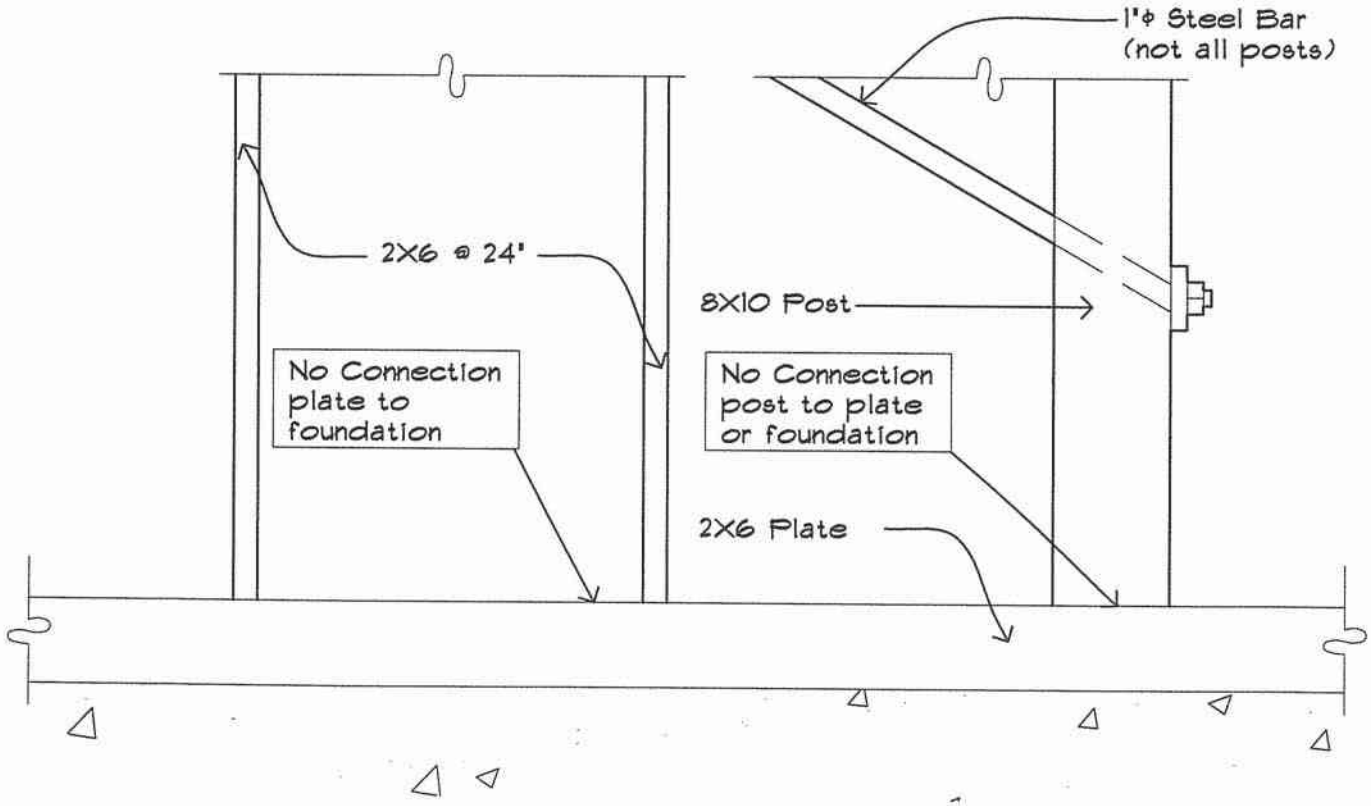
12/22/96 11:36



SECTIONDETAIL @ TOP OF N-S WALLS

SCALE: 1"=1'-0"

FIGURE 4A



(Existing Conditions)

WALL DETAIL@ BOTTOM (N-S Walls)

SCALE: 1"=1'-0"

FIGURE 4B

Section VIII

e 

#1 **Bldg. 249 View from S.E.** **Job# 2204**

#2 **Bldg. 249 View from East** **Job# 2204**

#3 **Bldg. 249 View from N.E.** **Job# 2204**

#4 **Bldg. 249 View from S.W.** **job# 2204**

#5 **Bldg. 249 View from S.W. Corner** **Job# 2204**

#6 **Bldg. 249 View from West end of addition** **Job# 2204**

#7 **Bldg. 248 View from South** **Job# 2204**

#8 **Bldg. 248 View from S.W.** **Job# 2204**

#9 **Bldg. 248 View from West** **Job# 2204**

#10 **Bldg. 248 View from N.W.** **Job# 2204**

#11 **Bldg. 248 View from N.E.** **Job# 2204**

#12 **Bldg. 248 View from East** **Job# 2204**