Attachment 3F

Binder of Special Studies

Historic Resource Potential Impact Study

POTENTIAL IMPACT STUDY

GOLETA COMMUNITY CENTER

GOLETA, CALIFORNIA

[16128]

PREPARED FOR:
City of Goleta
Neighborhood Services and Public Safety Department
130 Cremona Drive, Suite B
Goleta, CA 93117

PAGE & TURNBULL
imagining change in historic environments through design, research, and technology

FEBRUARY 2017

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INTRODUCTION

INTRODUCTION

The City of Goleta Neighborhood Services and Public Safety Department (the City) engaged Page & Turnbull to prepare a Historic Resource Evaluation (HRE) Part 1 and Part 2 for the Goleta Community Center site, located at 5679 Hollister Avenue (APN 071-130-009) in Goleta, California (**Figure 2**). The City manages the site and is considering various options for the three permanent buildings it oversees. The intent of the HRE Part 1 was to determine if any of the three building are historic resources for the purposes of the California Environmental Quality Act (CEQA). If so, the HRE Part 2 is intended analyze the potential impacts to historic resources as a result of options under consideration by the City.

In December 2016, Page & Turnbull completed the HRE Part 1 and determined only the Main Building, constructed as the Goleta Union School in 1927, is considered a historic resource under CEQA (**Figure 1**). An HRE Part 2 would be needed to evaluate potential impacts to the Main Building if a proposed project was undergoing CEQA review. Currently, the City is studying options for the Main Building and no specific project has been developed. To assist the City with its decision making, Page & Turnbull prepared this Potential Impact Study to outline historic preservation considerations for the three options, or scenarios, identified by the City.

Figure 1. Main Building north facade at main entrance, looking south.

The three project scenarios are:

- Scenario 1 – Voluntary Upgrades, a targeted project to address known seismic, fire/life-safety, and disabled access deficiencies;
- Scenario 2 – Full Rehabilitation, a comprehensive exterior and interior rehabilitation with new building systems for continued Community Center use; and
- Scenario 3 – Demolition of the Main Building and construction of a new Community center, with and without retaining the Main Building's front façade

No project scopes or schematic designs have been developed for the three project scenarios. Instead, the City has several reports prepared by other consultants in recent years to evaluate existing site conditions and deficiencies, and recommend improvements to the Community Center property. The reports provided enough information for Scenario 1 to understand where potential impacts may occur; more detail project plans would be needed to conduct a project-level review for an HRE Part 2. Page & Turnbull summarized relevant information from the previous seismic, fire and life safety, and disabled access reports, identified how they potentially impact character-defining features, and listed preservation considerations for when a full project is developed. The goal is to help craft a project that would have less than significant impacts under CEQA.

For Scenario 2, information provided by the City was not enough to understand where potential impacts may occur. Rather, Page & Turnbull outlined how best to develop a comprehensive rehabilitation of the Main Building for continued use as a community center. We highlight best practices and approaches to guide future development of a preservation-sensitive rehabilitation project.

In terms of demolition, we considered full demolition and outlined three options for demolition that retain a portion of the front façade. All of the demolition options would result in an unavoidable adverse impact under CEQA. We discuss mitigation measures common for demolitions and offer estimate cost ranges, but none of the mitigation measures would reduce the loss of the Main Building to less than significant levels.

METHODOLOGY

To develop the Potential Impact Study, Page & Turnbull reviewed the following reports provided to us by the City.

- "Facilities Reserve Study," EMG, September 2010
- "AHERA Asbestos Survey," Kaselaan and D'Angelo Associates, Inc., October 1990
- "ASCE 31-03, Tier 1 Evaluation Report," Crosby Group, April 2013
- "Building A - Probably Cost for Priority 1 and 2 + ADA Issues, Crosby Group, February 2013
- "Fire & Life Safety Assessment," Crosby Group, April 2013
- "Accessibility Assessment," Crosby Group, April 2013
- "Spatial Layout from Goleta Civic Center Feasibility Study," RNT Architects Inc., February 9, 2015
- "Feasibility Study Statement of Probable Cost," Cumming, March 2015
- "Construction Cost Evaluation, Conceptual Cost Model," Jones & Jones, April 2015
- "Sewer Assessment," C-Below Subsurface Company, October 2016
- "Hazardous Materials Survey Report," Partner Engineering, November 2016
- "Property Condition Report," Partner Engineering, December 2016

Page & Turnbull staff conducted two site visits to the Goleta Community Center in August 2016 to observe and document the existing conditions of the building and site. All photographs in this document are by Page & Turnbull from August 2016 unless otherwise noted.

Our review focuses on historic preservation issues only, applying the *Secretary of the Interior's Standards Treatment for Historic Properties* (SOI Standards) and its Guidelines (SOI Guidelines) to highlight items that should be considered when working with a historic property.

Page & Turnbull did not conduct a code analysis for any of the project scenarios, but we noted areas where the California Historic Building Code may apply.

The City has stated that the current program at Main Building would not change under Scenario 1 or Scenario 2. Therefore Page & Turnbull's discussion assumes continued use as a community center.

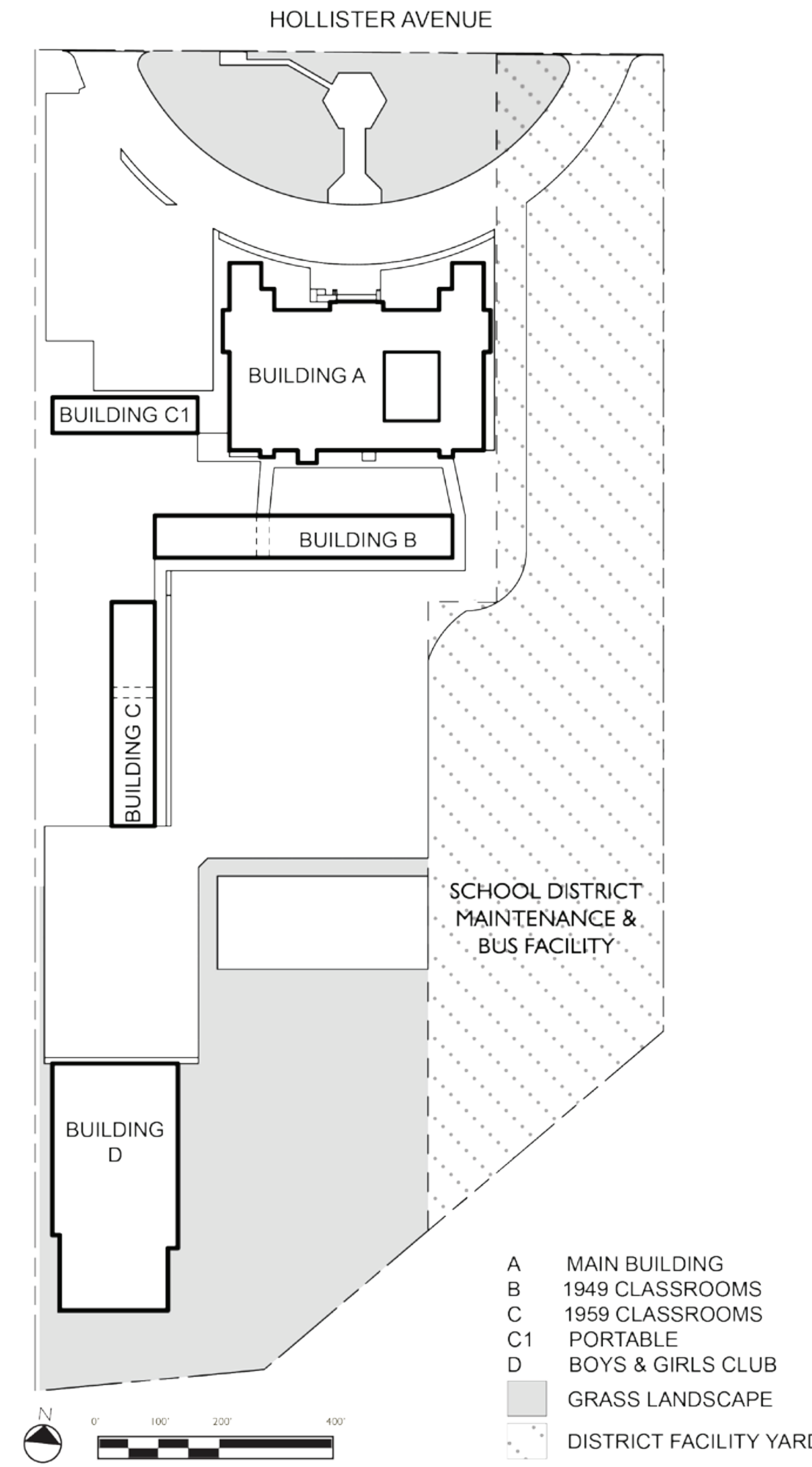

Figure 2. Above: Aerial View of the Goleta Community Center Site, which is the unshaded area within the solid outline. Source: Google Maps, 2016, edited by Page & Turnbull.
Figure 3. Right: Site Plan of the Goleta Community Center. Source: RNT Architects, adapted by Page & Turnbull.

Note: The above figures are oriented with North up. The Main Building floor plans in the study are oriented with North down to better relate to the building's circulation.

HRE PART I SUMMARY

Page & Turnbull evaluated the three permanent buildings in the HRE Part 1 (**Figure 3**):

- Main Goleta Community Center Building (Main Building or Building A), the 1927 reinforced concrete building originally constructed as the Goleta Union School;
- Head Start Building (Building B), constructed in 1949-50 as additional classrooms in the Modern "finger" plan type typical of postwar California schools; and
- Rainbow School Building (Building C), constructed in 1959 also as additional classrooms and in a later mid-century finger plan.

Also on the site but not evaluated are the Boys and Girls Club (Building D) at the property's southwest corner; a modular portable building (Building C1) near Building C that is used as part of the Rainbow School; and the Goleta Union School District's maintenance facility and bus yard that shares the legal parcel with the Goleta Community Center.

Of the three buildings evaluated, the HRE Part 1 found only the Main Building to be eligible for listing in the National Register of Historic Places (National Register) and the California Register of Historical Resources (California Register) for its role in the consolidation of Goleta's education system and the growth of the town center as the area matured in the early 20th century (Criterion A/1). The building is the work of a notable local architect and engineer, Louis N. Crawford and originally a good example of Mediterranean Revival architecture, but alterations to the building have removed key features that have impacted its ability to meet Criterion C/3 for its architecture. Nonetheless, the Main Building has sufficient integrity under Criterion A/1 to be eligible for the National Register and California Register. Its Period of Significance is from its original completion date in 1927 to 1958, when additional schools opened and it was no longer the union school.

Although the postwar classroom buildings on the property (Buildings B and C) are competently designed by Soule and Murphy and their successor firm Howell, Arendt, Mosher and Grant, respectively, they do not appear to be individually eligible for the National Register or California Register under any criteria. In addition, there does not appear to be a historic district at the site, as only Buildings A and B fall within the period of significance for the Goleta Union School.

Overall, only the 1927 original Goleta Union School building (Main Building) appears to be eligible for listing in the National Register and California Register and as such, is considered a historic resource for the purpose of CEQA.

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HISTORIC INFORMATION

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BRIEF HISTORY[1]

The 1927 Main Building was originally constructed for the Goleta Union School to replace three existing schools with one modern, centrally located school building. The original school buildings for the areas called Goleta (1869), La Patera (1877), and Cathedral Oaks (1876) were typically wood-framed, small-scale schoolhouses that served the children of farming families in different parts of Goleta Valley. The distances in the mostly rural region made it impractical for a centralized school in either Goleta or La Patera, the two town centers that developed in 1869. A bus system established in 1924 provided a reliable and fast way to get to and from school. With students commuting regularly to the consolidated school, the area around the town centers became more prominent and helped to concentrate growth toward La Patera as the two towns eventually merged.

The relatively small populations of the three districts placed a high importance on education and had desires for their children beyond farm work. They ambitiously agreed to combine and tax themselves to build a modern, concrete, fire- and earthquake-safe school. Santa Maria-based architect Louis N. Crawford was selected to design the new building. This was among one of Crawford's earliest schools; he also designed schools in Santa Maria, Arroyo Grande, Cambria, Morro Bay, and other Central California communities.

Construction on the Mediterranean Revival-style Goleta Union School started in late 1926 and was completed by June 1927. The reinforced concrete building had red clay tile roofs and a prominent front portico. (**Figure 4**) On the inside, it had eight classrooms, a central auditorium, and two open-air patios. The school started with about a hundred students in the first through eighth grades. Around 1946, the west patio was enclosed with a roof to create a lunch room for the expanding student population, which had increased to 250 students and included a kindergarten class.

The school continued to grow and added a classroom building behind the Goleta Union School building in 1949-1950 designed by the Santa Barbara firm Soule and Murphy. Another modern classroom building was added in 1959 on the site, but by that time, new neighborhood schools were opening to relieve the overcrowding at Goleta Union.

The site continued to be an elementary school until it closed at the end of the school year in 1975. School enrollment had started to decline in the 1970s, and the 1927 building needed to undergo a costly structural upgrade in order to meet the state's earthquake standards under the Field Act. After it closed, the County of Santa Barbara agreed to convert the building into the Goleta Valley Community Center. The building underwent a renovation that included removing the red clay tile roof and adding the disable access ramp to the front. Volunteers helped to clean, paint, and do other improvements. The community center opened in 1978 and continues to occupy the building.

1 Summarized from Page & Turnbull, "Goleta Community Center Historic Resource Evaluation Part 1," December 16, 2016.

Figure 4. Early undated photograph of Goleta Union School. Source: Goleta Historical Society, school files.

HISTORIC SIGNIFICANCE

The HRE Part 1 determined that the Main Building at the Goleta Community Center meets Criterion A/1 (Events) for individual listing in the National Register and California Register as Goleta's first consolidated school that helped to further develop its town center.

The Main Building may have been eligible for the National Register and the California Register under Criterion C/3 (Architecture) as the work of architect Louis N. Crawford and as an example of Mediterranean Revival architecture as applied to an institutional building. However, alterations to the building have removed key features of the original design, such as the red-tile roof, one of two open patios, and original wood windows at the east and west facades, so that the building no longer has design integrity to be eligible for the National Register or California Register under Criterion C/3. The building could potentially regain its eligibility under this criterion if its missing or altered features, particularly the red-tile roof, was restored per the Secretary of Interior's Standards for the Treatment of Historic Properties.

Restoration of the missing features is not required, as the building has sufficient integrity to convey its significance as the Goleta Union School under Criterion A/1.

The essential physical features that enable the building to convey its historic integrity and should be preserved include:

- **Character-defining features**, which are those elements or architectural components that establish the visual character of the property.
- **Significant spaces,** which are rooms or spaces that are important to a property because of their size, height, proportion, configuration, and function.

These are outlined below and in the significance diagram.

SIGNIFICANCE DIAGRAM

Significance diagrams are floor plans that categorizes spaces based on their historic significance and are identified to retain historic character-defining features.

Primary Significance: Areas with the greatest and most intact historic features and details that characterize the property. The materials are often of a high quality and little-to-no alterations have occurred. Maintenance and preservation of these areas should be the highest priority.

Secondary Significance: Areas that contribute to the overall historic character of the property, but where some alterations have taken place. Generally, volumes and space layouts are maintained. Remaining historic materials and characteristics should be preserved and restored where possible, and new construction should be compatible with the historic.

Not Significant: Areas that are non-significant in relationship to the rest of the building or have been heavily altered to the point where little-to-no historic materials or features remain. Alterations to these areas may be undertaken as long as changes do not affect adjoining primary and secondary spaces.

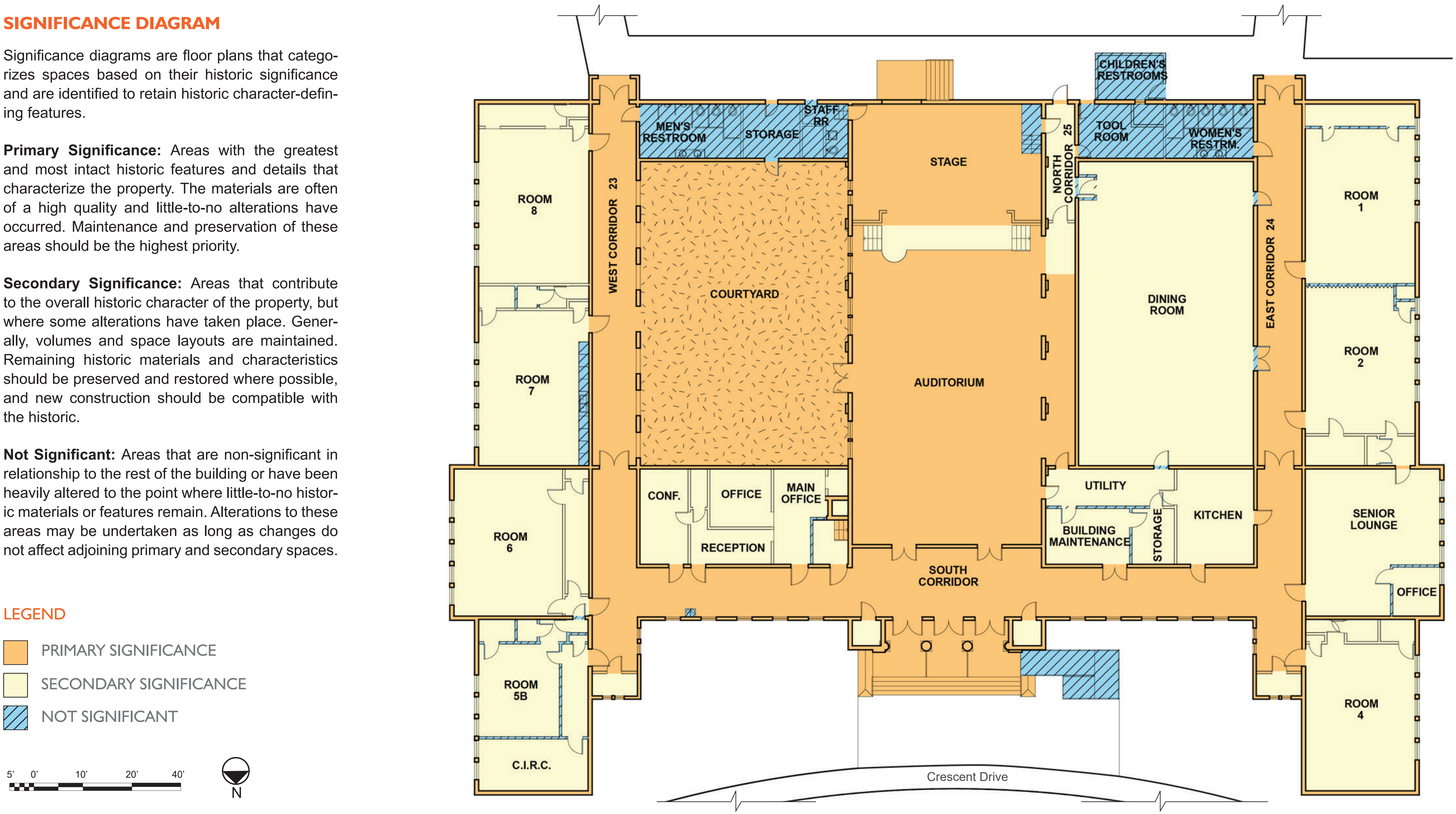

Figure 5. Adapted from Current Floor Plan, Main Building, 2016, RNT Architects.

Figure 6. West façade in east patio, looking west at Auditorium.

Figure 7. East patio, looking east at arched corridor.

CHARACTER-DEFINING FEATURES AND SIGNIFICANT SPACES

The character-defining features and significant spaces of the identified Main Building include the following:

EXTERIOR:

- One-story massing with taller central massing
- Exterior bilateral symmetry
- H-plan layout with three linear wings and east patio
- Front gable at central massing
- East and west wings with hipped, cross-gabled, and flat roofs
- Overhanging eaves and exposed rafters
- Reinforced concrete walls with cement plaster finish
  - Water table and extended sill lines
  - Decorative arched pattern in cement plaster
- Proportioning and rhythm of fenestration patterns
  - Wood windows and frames, including in the east and (originally) west patios
- Central monumental portico with:
  - Columns
  - Entry bays with multi-light doors and transoms
  - Stepped approach
- Two-sided bell tower
- Exterior corridor with arched openings at east patio

INTERIOR:

- General organization of classroom spaces in east and west wings and auditorium in the central wing
- Corridors connecting along the south, east and west
  - Plastered walls with chair rail
  - Decorative plaster brackets and archways
  - Multi-light doors and transoms leading to east exterior and west (originally exterior) corridors
  - Arched openings along the west corridor (originally exterior)
- Decorative beams at entry
- Decorative concrete door surround in the enclosed dining room (originally west patio)
- Wood paneled doors with and without transoms throughout
- Wood floors, where extant
- Auditorium features
  - Exposed ceiling and trusses
  - Arched west corridor
  - Stage surround
  - Concrete balcony
  - Wood floor

SITE/LANDSCAPE:

- Centered location set back from Hollister Avenue.
- Semi-circular driveway
- Landscaped area inscribed by semi-circular driveway at street front
- Tall flag pole in the landscaped area
- Open space flanking the east and west sides of the building

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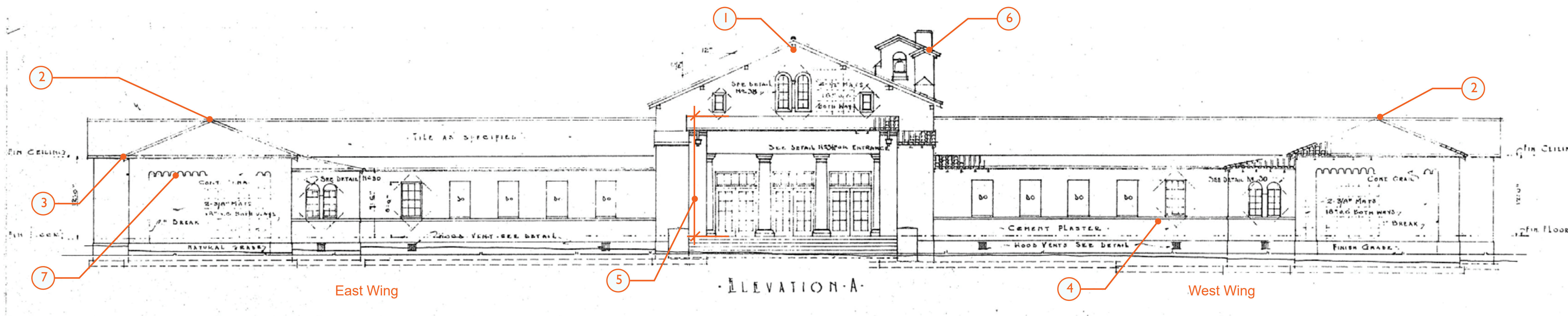

Figure 8. North Elevation, Original Drawing, 1927.

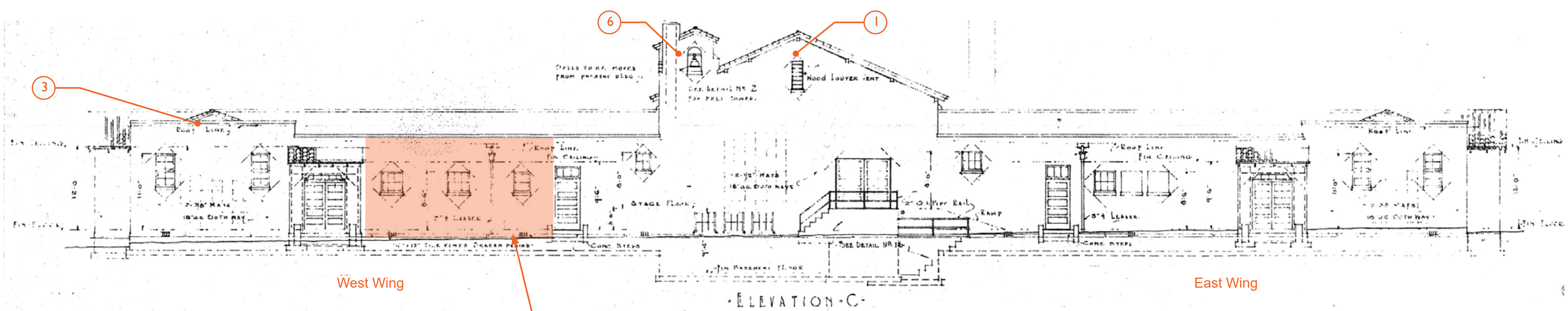

Figure 9. South Elevation, Original Drawing, 1927.

Note: A one-story addition was added at an unknown date.

SELECT CHARACTER-DEFINING FEATURES

1. Front Gable at Central Massing
2. Hip Roof with Cross-Gable at Wings
3. Flat roof at Wings
4. Overhanging Eaves
5. Water table and extended sills
6. Monumental portico
7. Two-Sided Bell Tower
8. Arched pattern in plaster
9. Corridor with arched openings

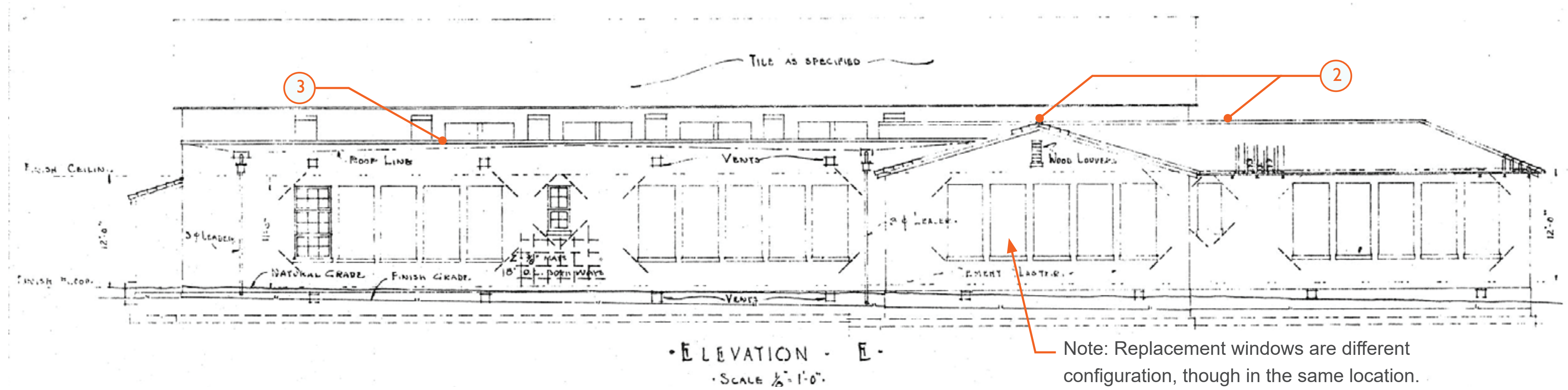

Figure 10. East Elevation, Original Drawing, 1927. The east and west elevations are similar in composition.

Figure 11. Auditorium, looking south. Note exposed ceiling and trusses and decorative stage surround.

Figure 12. Entry corridor in front of Auditorium, looking southwest. Note the decorative beams.

Figure 13. Decorative concrete door surround in Dining Room.

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RELEVANT CODES & STANDARDS

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CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)

The California Environmental Quality Act (CEQA) is state legislation (Pub. Res. Code §21000 et seq.), which provides for the development and maintenance of a high quality environment for the present-day and future through the identification of significant environmental effects. CEQA applies to "projects" proposed to be undertaken or requiring approval from state or local government agencies. In accordance with CEQA Guidelines Section 15378, a "Project" is defined as "… the whole of an action, which has the potential for resulting in either a direct change in the environment, or a reasonably foreseeable indirect physical change in the environment" and which involves an activity directly undertaken by a public agency, an activity that requires public agency assistance or entitlement, or an activity that requires discretionary approval by a public agency. Historic resources are considered to be part of the environment. In general, the lead agency must complete the environmental review process as required by CEQA.

A building may qualify as a historic resource if it falls within at least one of four categories listed in CEQA Guidelines Section 15064.5(a), which are defined as:

1. Listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register.
2. Included in a local register of historical resources, or identified as significant in an historical resource survey meeting the requirements of section 5024.1 (g) of the Public Resources Code.
3. Meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852).
4. Determined by the lead agency to be a historic resource, even if it is not listed in, or determined to be eligible for listing in the California Register, not included in a local register of historical resources, or identified in an historical resources survey.

Properties listed or formally determined eligible for listing in the National Register of Historic Place (National Register) are listed automatically in the California Register. As such, they are considered historic resources under CEQA. As such, they are considered historic resources under CEQA.

THRESHOLD FOR SIGNIFICANT IMPACTS

CEQA stipulates that a project with an effect that may cause a substantial adverse change in the significance of a historical resource may have a significant effect on the environment. Substantial adverse change is defined as: "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historic resource would be materially impaired." The significance of a historical resource is materially impaired when a project "demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance" and that justify or account for its inclusion in, or eligibility for inclusion in, the California Register.

Thus, a project may cause a substantial change in a historic resource but still not have a significant adverse effect on the environment as defined by CEQA as long as the impact of the change on the historic resource is determined to be less-than-significant, negligible, neutral or even beneficial. Projects that comply with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for Preserving, Rehabilitating, Restoring, and Reconstructing Historic Buildings* (the SOI Standards and SOI Guidelines) benefit from a regulatory presumption that they would have a less-than-significant adverse impact on a historic resource.

A project would have a significant impact on historic resources if it would result in a substantial adverse change in the significant of a historic resource. A substantial adverse change in significance occurs if the project involves:

- Demolition of a significant resource;
- Relocation that does not maintain the integrity and significance of a significant resource;
- Conversion, rehabilitation, or alteration of a significant resource which does not conform to the SOI Standards and SOI Guidelines; or
- Construction that reduces the integrity or significance of important resources on the site or in the vicinity.

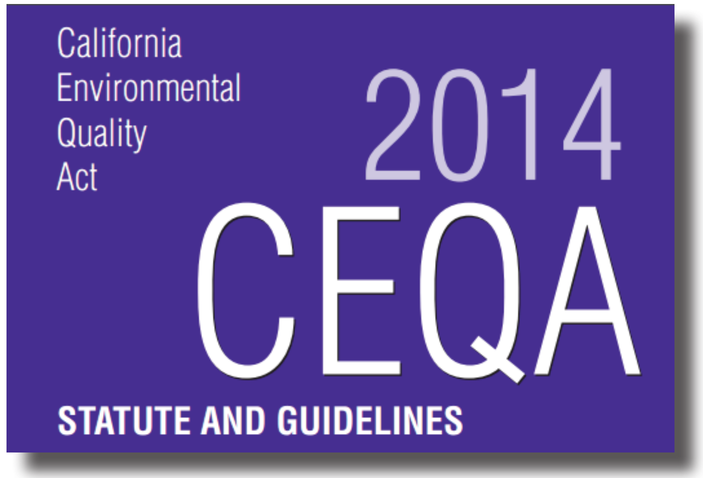
RELEVANCE TO CURRENT STUDY

The historic preservation considerations in this report reflect best practices, but also takes into account CEQA's threshold for significant impacts. Under CEQA, projects that comply with the SOI Standards are presumed to have a less than significant adverse impact to historic resources.

Alternatively, if SOI Standards-compliance cannot be established, projects that retain the historic resource's eligibility for at least the California Register may also avoid significant adverse impacts to historic resources. This evaluation is done on a case-by-case basis and depends on the historic resource, and how much a proposed project will impact its historic character.

As none of the scenarios provide sufficient detail to perform a project-level CEQA review, this study does not evaluate proposed projects for significant impacts to historic resources under CEQA. However, it provides:

- Guidance in Scenario 1 to develop a SOI Standards-compliant voluntary upgrade project.
- Approaches in Scenario 2 to design a full rehabilitation project that will be SOI Standards-compliant or at least retain the building's eligibility for the California Register.
- Preliminary evaluation in Scenario 3 of demolition options, and possible mitigation measures under CEQA.



SECRETARY OF INTERIOR'S STANDARDS FOR THE TREATMENT OF HISTORIC PROPERTIES

The *Secretary of the Interior's Standards for the Treatment of Historic Properties* are "a series of concepts about maintaining, repairing, and replacing historic materials, as well as designing new additions or making alterations," that promote best practices to help protect historic and cultural resources.[1] They provide a framework for making decisions about work or changes to a historic property. In addition, the SOI Standards are the benchmark by which Federal agencies and many local government bodies evaluate rehabilitative work on historic properties. The Standards offer four approaches to the treatment of historic properties: Preservation, Rehabilitation, Restoration, and Reconstruction.

The appropriate treatment to use will depend on the project or project component. For example, if restoration is proposed for a lost element, the Restoration Standard may be used for that component. Typically, the Rehabilitation Standards is the most widely used and offer the greatest flexibility; it is the SOI Standard referenced in this study.

Rehabilitation is defined 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.[2]

1 "The Secretary of the Interior's Standards" and "The Treatment of Historic Properties," National Park Service Technical Preservation Services, U.S. Department of the Interior, accessed January 29, 2017, https://www.nps.gov/tps/standards.htm.
2 "Rehabilitation as a Treatment," National Park Service Technical Preservation Services, U.S. Department of the Interior, accessed January 29, 2017, https://www.nps.gov/tps/standards/four-treatments/treatment-rehabilitation.htm.

THE STANDARDS FOR REHABILITATION[3]

1. A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.
2. **The historic character of a property shall be retained and preserved. The removal of historic materials or alteration of features and spaces that characterize a property shall be avoided.**
3. Each property shall 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 architectural elements from other buildings, shall not be undertaken.
4. Most properties change over time; those changes that have acquired historic significance in their own right shall be retained and preserved.
5. **Distinctive features, finishes, and construction techniques or examples of craftsmanship that characterize a property shall be preserved.**
6. **Deteriorated historic features shall be repaired rather than replaced. Where the severity of deterioration requires replacement of a distinctive feature, the new feature shall match the old in design, color, texture, and other visual qualities and, where possible, materials. Replacement of missing features shall be substantiated by documentary, physical, or pictorial evidence.**
7. **Chemical or physical treatments, such as sandblasting, that cause damage to historic materials shall not be used. The surface cleaning of structures, if appropriate, shall be undertaken using the gentlest means possible.**
8. Significant archaeological resources affected by a project shall be protected and preserved. If such resources must be disturbed, mitigation measures shall be undertaken.
9. **New additions, exterior alterations, or related new construction shall not destroy historic materials that characterize the property. The new work shall be differentiated from the old and shall be compatible with the massing, size, scale, and architectural features to protect the historic integrity of the property and its environment.**
10. New additions and adjacent or related new construction shall 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.

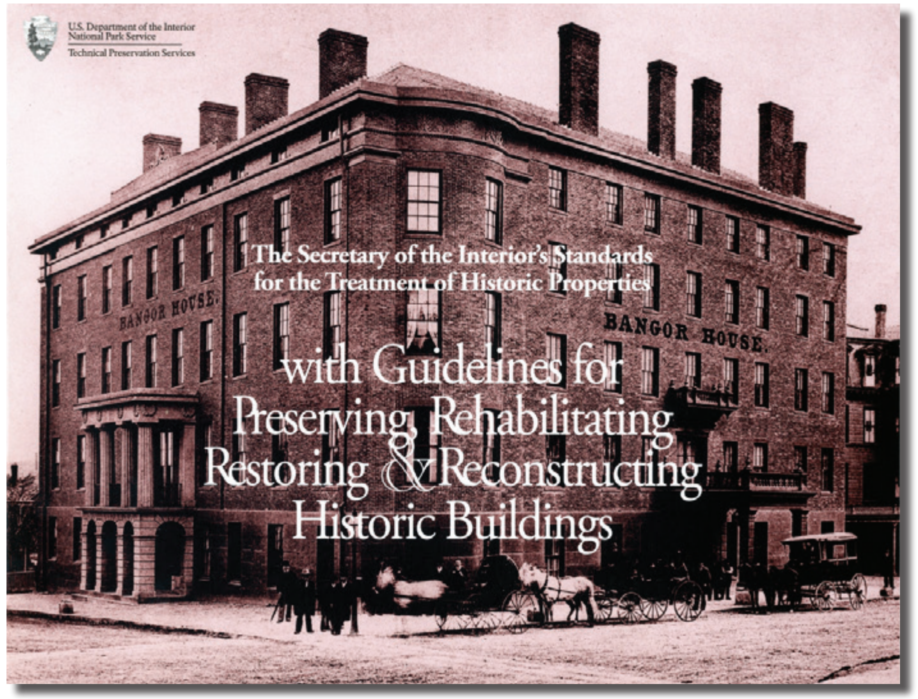
3 "Standards for Rehabilitation," National Park Service Technical Preservation Services, U.S. Department of the Interior, accessed January 29, 2017, https://www.nps.gov/tps/standards/four-treatments/treatment-rehabilitation.htm.

RELEVANCE TO CURRENT STUDY

Of the 10 Standards for Rehabilitation, Standards 2, 5, 6, 7, and 9 are most applicable to the scenarios in this report (bolded).

In Scenario 1, Standards 2, 5, and 6 are most relevant to maintain the Main Building's historic character and distinctive features and spaces when planning voluntary upgrades. Under Standard 2, the upgrades should avoid changing the building's historic character by limiting the visibility of the upgrades and changes. Under Standard 5, the character-defining features should be retained, and new interventions should be additive. The general approach should follow Standard 6 to repair or modify where possible before moving to replacement. If historic features are replaced, they should be replaced in kind to match the feature.

The SOI Standards do not apply to demolition in Scenario 3.



GUIDELINES FOR TREATMENT OF HISTORIC PROPERTIES

The SOI Standards are supplemented by the *Guidelines for Treatment of Historic Properties* (SOI Guidelines) that offer general design and technical recommendations in applying the SOI Standards to a specific property. There are Guidelines for each of the four SOI Standard treatments that outline a general hierarchical process for the treatment of historic materials and features. For the Rehabilitation Guidelines, the hierarchy of treatment pertaining to historic buildings is:

- Priority 1: Identify, retain, and preserve historic materials and features that are important in defining the buildings historic character.
- Priority 2: Protect and maintain historic materials and features that are important and must be retained in the process of a Rehabilitation Project.
- Priority 3: Repair historic materials and features when warranted due to physical deterioration.
- Priority 4: When the level of deterioration or damage of materials precludes repair, re-place an entire character-defining feature in kind. If using the same kind of material is not technically or economically feasible when replacing features deteriorated beyond repair, then a compatible substitute material may be considered.

The Rehabilitation Guidelines also offer specific recommended (and not recommended) approaches to exterior and interior elements of a building, such as storefronts, porches, windows, structural systems, significant spaces, and finishes, as well as certain common mate-rials. Guidelines are also offered for mechanical systems, site work, and energy efficiency.

CALIFORNIA HISTORICAL BUILDING CODE

Repairs, alterations, and additions need to conform with applicable state and municipal codes and standards required by law. All work to the building must comply with the California Building Code (CBC) and other applicable State codes adopted by the Authority Having Jurisdiction (AHJ).

Since the Main Building has been determined eligible for the National Register and California Register, it qualifies to take advantage of the California Historical Building Code (CHBC), Title 24, Part 8 of the California Code of Regulations. The CHBC is intended for use by AHJ when reviewing code compliance for a qualified historic building to ensure its preservation. As stated in the CHBC Section 8-101.2:

The CHBC is intended to provide solutions for the preservation of qualified historical buildings or properties, to promote sustainability, to provide access for persons with disabilities, to provide a cost-effective approach to preservation, and to provide for reasonable safety of the occupants or users. The CHBC requires enforcing agencies to accept solutions that are reasonably equivalent to the regular code (as defined in Chapter 8-2) when dealing with qualified historical buildings or properties.

Rather than strict compliance with current codes, the CHBC requires the AHJ to accept alternative provisions that provide a reasonable level of safety to occupants. The CHBC includes the following code topics that are typically triggered during the repair and alteration of a historic building:

- Use and Occupancy (Chapter 8-3)
- Fire Protection (Chapter 8-4)
- Means of Egress (Chapter 8-5)
- Accessibility (Chapter 8-6)
- Structural Regulations (Chapter 8-7)
- Archaic Materials and Methods of Construction (Chapter 8-8)
- Mechanical, Plumbing and Electrical (Chapter 8-9)

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SCENARIO 1

SCENARIO 1: VOLUNTARY UPGRADES

Scenario 1 seeks to address only the recommended seismic; fire and life safety; and disabled access deficiencies identified in previous reports. Goleta staff indicated that the building program and use as a community center would not change under Scenario 1. As such, there are no requirements to correct the identified deficiencies; if the existing use is maintained, the current conditions can continue.

Generally, the deficiencies outlined in the previous reports are relatively minor and the Main Building does not appear to have unsafe or hazardous conditions that need immediate correction. However, the City may choose voluntarily to address certain issues as a matter of best practice or to reduce known risks.

Often upgrades for seismic; fire and life safety; and disabled access can be accomplished without significantly impacting a historic building. The key is to design and construct the project in compliance with the SOI Standards and follow the approach hierarchy outlined in the SOI Guidelines. With that in mind, Page & Turnbull's recommendations for Scenario 1 seek to guide the City in developing a SOI Standards-compliant project.

SEISMIC ASSESSMENT

Page & Turnbull reviewed two previous reports to understand seismic deficiencies and recommended retrofit strategies:

- "ASCE 31-03, Tier 1 Evaluation Report," Crosby Group, April 2013
- "Property Condition Report," Partner Engineering, December 2016

In April 2013, Crosby Group completed an ASCE 31-03 Tier 1 Seismic Evaluation. The Crosby Group report identified components that currently do not comply with ASCE 31-03 and categorized the deficiencies by priority (**Figure 14**). Priority 1 items are considered to be of greatest risk to life-safety and are limited to deficiencies in the Auditorium, including inadequate truss-to-wall connections; non-compliant roof diaphragms; and inadequate connection of roof diaphragms to walls. Priority 2 items include strengthening roof diaphragms at the remainder of the building and improving the connection between diaphragms and walls throughout the Main Building; these items are addressed as part of a full rehabilitation as described in Scenario 2. The Crosby Group report provided conceptual-level retrofit details.

In October 2016, Partner Engineering and Science completed a visual screening of the Main Building based on ASCE 41-13, an updated version of ASCE 31-03. Partner Engineering's assessment noted the same seismic deficiencies at the Auditorium. It also identified concerns at the barrel-vault framing over the Dining Room (called Assembly Room in the Partner Engineering report). The barrel-vault roof enclosed an originally open-air patio, similar to the existing East Patio, and was constructed on a wood cripple wall placed on top of the Main Building's original exterior concrete walls. Based on Partner Engineering's field investigations, it appears that the wood cripple walls need to be attached to the concrete walls; the wood cripple walls require plywood sheathing; and the barrel-vault roof diaphragm requires strengthening. As a note, the Partner Engineering report identified a crack in the basement foundation wall that is an immediate repair item.

GENERAL HISTORIC PRESERVATION CONSIDERATIONS

- The previous reports use industry-standard seismic screening and evaluation tools to identify potential seismic deficiencies. Both reports note that seismic retrofits proposed in undated plans by Arendt, Mosher, Grant, Pedersen and Phillips Architects have not been completed.
- The recommended seismic strengthening proposed generally supplement the existing connections. This is an appropriate approach that minimizes loss of historic fabric.
- Asphalt shingle roof cladding replaced the original clay tile roof and is not considered a character-defining feature, though the overall gable roof shape is character-defining.
- The barrel vault roof and its cripple walls are not original to the building. They may have been constructed circa 1946, when the HRE Part 1 identified a roof to enclose the original patio. It is not considered a character-defining feature, so further discussion of the barrel-vault and cripple walls have been excluded from our analysis. If the City chooses to retain and repair the barrel-vault roof, the repairs should seek to minimize impacts to the Main Building's concrete walls.
- The basement foundation wall is not readily visible and is not considered a character-defining feature. Its repair would not have an impact on the historic status of the building.

Below are more detailed discussion of the three upgrade components to address Crosby Group's Priority 1 deficiencies.

STRENGTHEN EXISTING ROOF DIAPHRAGM

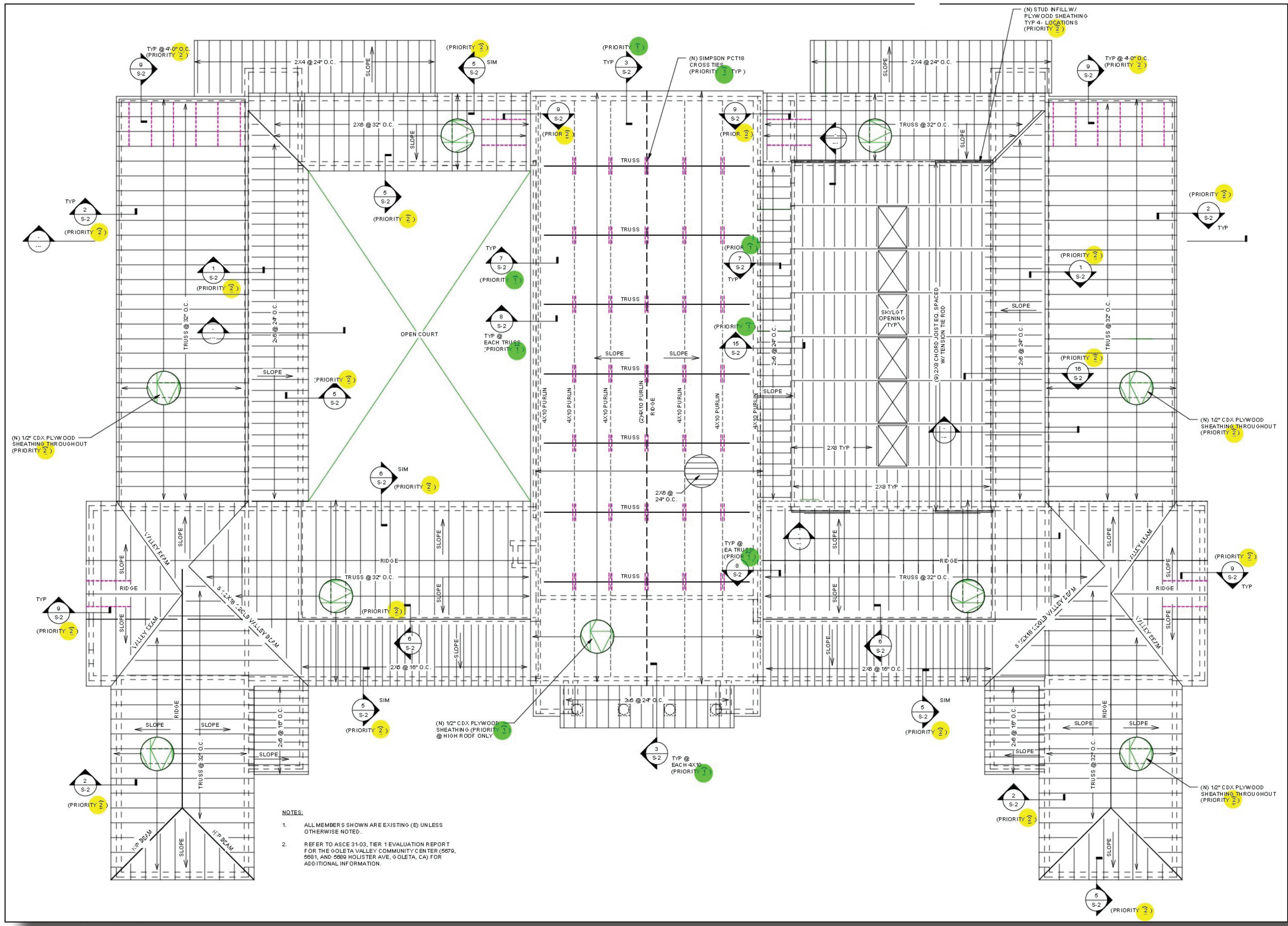
A compliant roof diaphragm is a key seismic strengthening provision as it helps prevent the exterior walls from falling outward during a seismic event. Retrofit typically includes adding plywood sheathing over existing roof sheathing and strengthening the connection between the roof and the walls.

<u>Potential Impacts to Historic Features</u>

The Auditorium's interior ceiling is exposed 2 inch x 6 inch tongue and groove sheathing and trusses that are character-defining and should remain visible and unaltered (**Figure 15**). On the exterior, the Auditorium's gable roof has overhanging eaves and exposed wood rafters at the east and west sides; the east side is visible in the East Patio.

<u>Preservation Considerations</u>

- The new plywood should be added from the top or roof side to keep the Auditorium's exposed ceiling visible. The plywood proposed is typically 1/2 inch thick and should not impact the visual quality of the gable roof form, exterior eaves or exposed wood rafters.
- Nailing of new plywood sheathing from the top should consider the spacing of existing structural members and engage the existing 2 inch x 6 inch rafters below.
- Coordinate the roof diaphragm with roof edge details, like drip edges and gutters, to minimize the thickness of the roof edge.



LEGEND

- PRIORITY 1 ITEM
- PRIORITY 2 ITEM

5' 0' 10' 20' 40'

N

Figure 14. Seismic Assessment for Building A, Adapted from Crosby Group, ASCE 31-03 Tier 1 Evaluation Report, Goleta Valley Community Center, report (2013).

Figure 15. Auditorium, annotated with key framing elements.

1. Exposed 2x6 Wood Tongue and Groove Sheathing
2. 6x8 Truss Member, Typical
3. 4x10 Purlins, Typical
4. 2x6 Rafters, Typical
5. 4x beam on 2x sill at East and West Walls

STRENGTHEN CONNECTION OF ROOF TO NORTH AND SOUTH EXTERIOR WALLS

Proposed strengthening of connections are supplemental to existing roof-to-wall connections. Connection of the roof diaphragm to the north and south walls will require work at the Auditorium's exterior concrete walls and at the exposed interior framing, including roof purlins and rafters. The Crosby Report shows threaded rods attached to new steel strap anchors at both sides of the 4 inch x 10 inch purlins at the interior. The strap anchors will extend about 2 feet from the wall. At the exterior north and south walls, small holes will be drilled into the concrete walls where the threaded rods are tied to a new steel plate mounted flush with the exterior concrete wall. The steel plates are approximately 3 inch x 8 inch x 3/8 inch thick.

In addition to the new steel straps connected to the 4 inch x 10 inch purlins, additional wood blocking and connectors are proposed for the two bays immediate adjacent to the north and south walls at the interior. New 2x blocking would be placed between the rafters and clipped to the top of the 4x purlin with small metal connectors. A 2x is also proposed to run perpendicular to the purlins at the interior face of the concrete wall. This 2x will be anchored to the concrete wall and will act as additionally nailing for the new plywood roof diaphragm.

<u>Potential Impacts to Historic Features</u>

As proposed, the strength connections will be minimally visible at both the interior and exterior of the Auditorium. At the interior, the strap anchors will not be visible from inside the Auditorium. The additional wood blocking and connectors will not have a visual impact on the interior of the Auditorium.

At the exterior, the steel plates may be slightly visible. It appears their proposed locations are below the false rafter tails at the roofline. Based on the details provided, the steel plates are small enough, limited in number, and placed such that they will be minimally visible.

<u>Preservation Considerations</u>

- The wood blocking and metal connectors should be finished (painted) to match adjacent surfaces.
- When drilling into or through the exterior concrete walls, size the hole no larger than needed to make the repair. Patch and finish holes to match adjacent construction so that the repairs are minimally visible.
- Steel plates at the exterior should be painted or stuccoed to match the surrounding exterior wall.

STRENGTHEN CONNECTIONS OF ROOF FRAMING TO EAST AND WEST EXTERIOR WALLS

Crosby Group's schematic level plans indicate supplemental attachment of the wood trusses to the top of the east and west concrete walls. The wood trusses are located at 12 to 16 feet on-center. New 3/8 inch steel plates, anchored through the top of the sill plate into the top of the concrete wall, will provide lateral support to the trusses. The plate will be welded to the side of the existing steel connectors at the base of the truss.

Strengthening is also required for the framing located between trusses. Framing consists of 2 inch x 6 inch rafters attached to existing 4x beams located between trusses. The 4x beams are placed on 2x top plates that sit on top of the exterior concrete walls. Existing connections between these members are not adequate to transfer the loads of the roof diaphragm into the walls.

<u>Potential Impacts to Historic Features</u>

The additional connectors proposed for connecting the wood trusses to the east and west walls are supplemental and will be hidden from view on the interior.

For strengthening of the framing between the trusses, supplemental connectors between the rafters and 4x beam and the 4x beam and sill plate are small and will not have a visual impact on the character-defining features of the Auditorium. The improved anchorage of the top plate to the concrete walls may require removal, salvage and re-installation of the 4x wood beam in order to gain access to the top plate.

<u>Preservation Considerations</u>

- While removing, salvaging, and reinstalling portions of the 4x wood beam would not be considered a significant impact on Main Building, alternative concepts for strengthening the sill plate to the top of the concrete wall should be explored.
- The metal connectors should be finished (painted) to match adjacent surfaces

FIRE & LIFE SAFETY ASSESSMENT

Page & Turnbull reviewed two previous reports to understand fire and life safety and recommended upgrades:

- "Fire & Life Safety Assessment," Crosby Group, April 2013
- "Property Condition Report," Partner Engineering, December 2016

The Crosby Group report used the California Building Code (CBC) current in 2013 to evaluate the Main Building; the Fire Code was not used. They assigned occupancy classifications to the building based on its use at the time of evaluation. The report determined that the building's 8 to 10 inch concrete walls exceed the required 5 inches for a 2-hour fire rating, and no upgrades were needed. Likewise, the building's current exiting – number of exits, locations, widths, and panic hardware—satisfied CBC requirements and no recommendations were included. The report noted that the original wood doors, door frames, and windows were not labeled with a fire rating and it is not known if they meet the required 1-1/2-hour fire rating for the occupancy classifications. According to the Crosby Group, the doors and windows may need to be updated if additions or alterations are made to certain spaces.

The Crosby Group report also noted the building lacked a fire alarm system and an automatic fire sprinkler system.

The Partner Engineering report noted a fire alarm system, but is it not clear if the alarm system is in the Main Building; Page & Turnbull did not see a fire alarm in the Main Building during the August site visits.

GENERAL HISTORIC PRESERVATION CONSIDERATIONS

- Overall, it appears the Main Building has no fire and life-safety deficiencies for its current use.
- Future changes to the building's use may trigger mandatory code requirements and upgrades depending on the use and the related occupancy classification.
- The CBC has been updated since the Crosby Group report was conducted. An updated assessment may be useful.
- The lack of fire rating on original wood doors, frames, and windows is not unusual for the time of their construction. They are likely solid wood and would retain some fire-resistive properties; they can be removed and tested for a fire rating if needed. However, Section 8-302.3 of the CHBC allows existing, character-defining doors to remain in place when the historic building is provided with an automatic fire sprinkler system.
- The fire alarm system and automatic fire sprinkler system are not required if there is no change in use and no major alterations to the building. They can be installed as a practical first step or planned as part of a full building rehabilitation. See Scenario 2 for a discussion of installing a fire alarm system and automatic fire sprinkler system.

Figure 16. Wood paneled doors and corridors are character-defining features that can be adapted with ADA-compliant hardware.

ACCESSIBILITY ASSESSMENT

Page & Turnbull reviewed two previous reports to understand disabled access and recommended upgrades:

- "Accessibility Assessment," Crosby Group, April 2013
- "Property Condition Report," Partner Engineering, December 2016

The 2013 Crosby Group report assessed the Goleta Community Center for its compliance with Section 1134B of the 2010 California Building Code (2010 CBC), which is California's interpretation of the federal Americans with Disabilities Act (ADA) to promote a barrier-free environment in public facilities. The purpose of ADA is to ensure all individuals, including those with special needs, are able to access an equivalent amount of public spaces without physical, communication, or procedural barriers. Areas that are not considered public spaces, such as employee spaces and the balcony in the Auditorium currently used for storage, were not assessed. The report observed a limited number of deficiencies relating to the Main Building and related site features and provides recommended corrections (**Figure 17**).

Partner Engineering performed a minimum ASTM Tier II ADA survey of the site with a limited visual survey and measurements at key locations. Its 2016 report included an updated checklist of accessibility items that notes the same items as the Crosby Group's 2013 assessment. It also observed the lack of handrails with proper extensions at sections of the main steps to the front entrance and the lack of cane protection for the drinking fountain as non-compliant.

Below are more detailed discussions of the proposed upgrades to correct disabled access deficiencies identified in the Crosby Group and Partner Engineering reports as they relate to the Main Building and related site features.

SITE

The Crosby Group proposed a compliant path-of-travel from the bus stop that includes restriping of parking spaces, tactile warning devices, new asphalt for maximum cross slope, and a centered crosswalk across the circular drive. Curb cuts aligning with the centered crosswalk are proposed.

Potential Impacts to Historic Features

The circular driveway and landscaped area between the drive and Hollister Avenue are character-defining features of the site. Recent additions to the site, such as the gazebo and paved patio, are not character-defining.

Preservation Considerations

Most of the site modifications would not impact character-defining features. However, the proposed curb cut at the sidewalk in front of the main entrance may be visually obtrusive.

- A disabled access ramp currently exists to the west of the main steps, and can remain in place.
- Rather than provide a new centered curb cut for the cross walk at the circular drive, consider designing the compliant path of travel to use the existing curb cut to the west that is closer to the disabled access ramp into the building. This would require fewer changes to the site.
- Alternatively, consider mirroring the existing curb cut on the east side of the main entrance to maintain symmetry at the front of the building.

LEGEND

- 20: PROVIDE NEW DOOR CLOSER
- 21: NEW DOOR LEVER HARDWARE
- 22: NEW DOOR FRAME AND REVERSE SWING
- 23: PROVIDE GUARDS AT DRINKING FOUNTAIN
- 24: PROVIDE ADA-COMPLIANT COUNTER
- 25: PROVIDE NEW THRESHOLD
- 36: LOWER THERMOSTAT BOX

5' 0' 10' 20' 40'

N

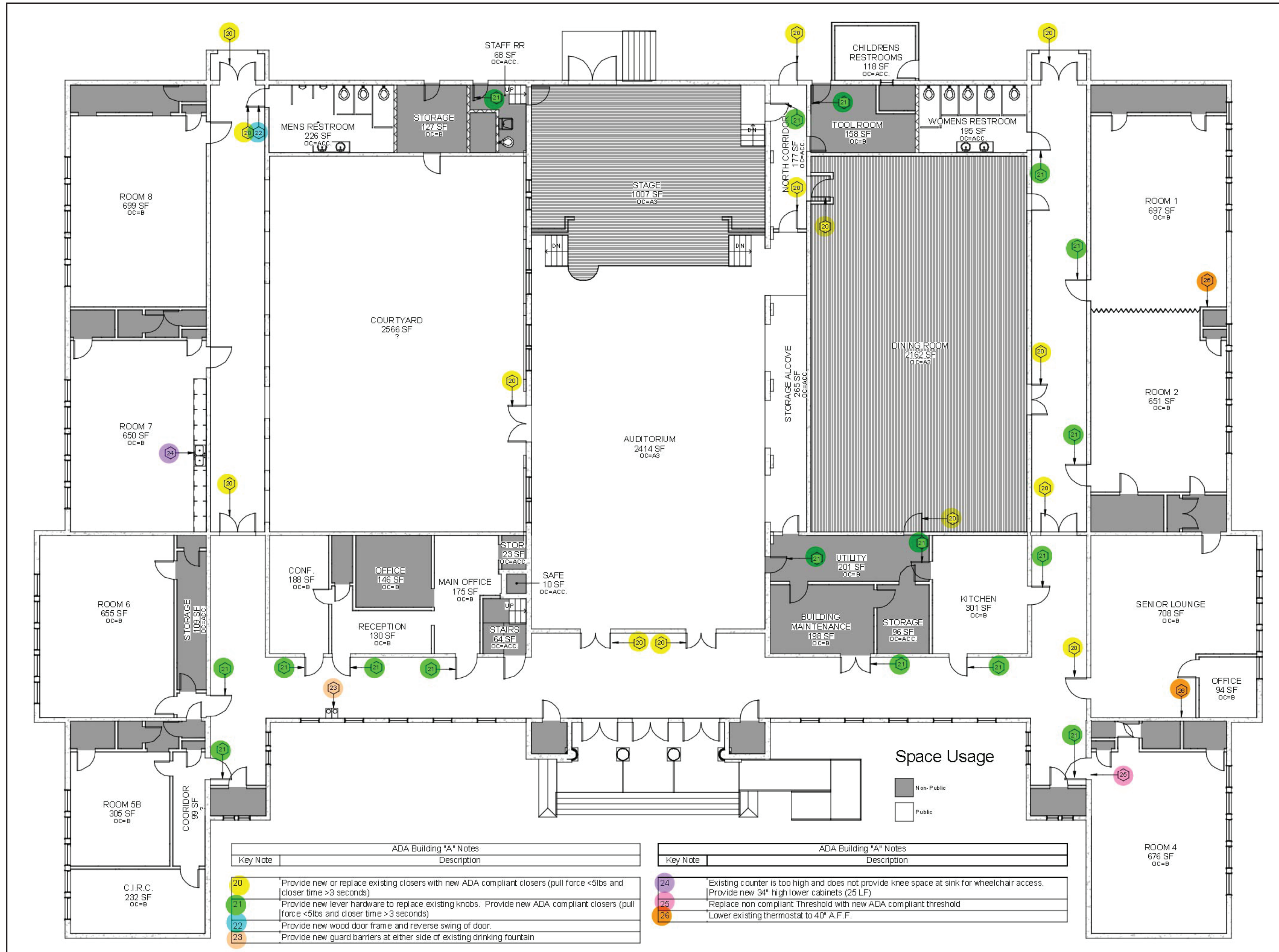


Figure 17. Accessibility Assessment for Building A, Adapted from Crosby Group, *Accessibility Assessment, Goleta Valley Community Center & The United Boys & Girls Club of Goleta*, report (2013).

SCENARIO I

STAIRS TO MAIN ENTRANCE

The Crosby Group report recommends contrasting striping at the edges of the main stairs to the Main Building and suggested the City consider replacing of the stair treads in their entirety, though no reason is given. The Partner Engineering report observed the lack of handrails with proper extensions and sections at steps.

Potential Impacts to Historic Features

The tiled steps at the main entrance are a character-defining feature and should be retained. Currently, the step treads are partially protected by a slip-resistant cover. It does not appear the metal handrails at the steps are original to the building.

Preservation Considerations

- Contrast striping can be accomplished on the existing tread covers without impacting historic features.
- Should the step covers be removed and contrast striping is needed on the tiled steps, consider adhesive tape rather than striping that requires drilling into the tile. The tape should be tested to ensure there is no permanent staining or damage to the tiles.
- The tiled treads should not be replaced unless they cannot be repaired. Further assessment by a preservation professional should be conducted to determine the treads' condition.
- Avoid drilling into or otherwise impacting the tiled steps when retrofitting or replacing the existing, non-historic handrails

EXTERIOR AND INTERIOR DOORS

The Crosby Group report observed deficiencies mainly at the original wood doors. The weight of 14 mainly entrance/exit doors required more pressure to operate and closers were recommended to assist. At 17 locations of doors mostly along the corridors, the original knob hardware was identified as non-compliant and lever hardware recommended as replacements. The report also identified the door at the men's restrooms to reverse the door swing and replace the door frame. It is unclear if clearance into the space is the driving factor for the proposed work at the men's restroom door.

Potential Impacts to Historic Features

Most of the Main Building's doors are character-defining, including the multi-light doors found at entrances and the wood paneled doors along the corridors leading to classrooms, offices, and other spaces (**Figure 16**). Typically, original wood doors can be easily modified to accept new ADA compliant hardware like closers and levers without affecting their historic character.

Preservation Considerations

- When installing new door hardware, carefully remove original hardware. Prepare door stiles, rails and frames to receive new ADA-compliant hardware. Where wood doors require patching, provide in-kind, "Dutchmen" repairs. New closers shall be placed to avoid impacts on door trim and door frames.
- Durable, high-quality commercial grade hardware should be specified. The design and finish of new hardware should be compatible with existing hardware and finishes.
- Reversing the door swing for the men's restroom door can be done without affecting its historic character. If feasible, retain and modify the door frame to accept the new door swing. If not, replace the door frame in-kind, matching it in wood material, dimensions, profiles, and other details.

RESTROOMS

The Crosby Group report recommends total redesign of public restrooms, with new toilets, urinals and sinks. It also noted that the current number of stalls is inadequate per the 2010 CBC, but is not required to be corrected for an existing building.

Potential Impacts to Historic Features

The restrooms appeared to have been remodeled previously and are considered spaces with little significance, except for the concrete walls and wood windows. A redesign would not impact historic features so long as it remains within the restroom space and does not affect the concrete walls and windows that are considered historic features.

Preservation Considerations

- Maintain the concrete walls and wood windows when redesigning the restrooms.
- If expanded restrooms are needed, they should be carefully integrated with the historic fabric of the building. Bump-outs into the courtyard and corridors should be avoided.

OTHER INTERIOR ELEMENTS

The Crosby Group report also identified single instances of the following deficiencies:

- Lack of cane guards at the drinking fountain in the corridor
- Too tall counter height in Room 7
- A non-compliant door threshold in Room 4
- Location of thermostat too high in 1

Potential Impacts to Historic Features

None of these elements are character-defining features, and correcting the deficiencies should not impact the building's historic character. Nonetheless, the correction approach should be carefully considered as to not affect nearby historic material.

Preservation Considerations

- New equipment and accessories, like the cane guards and thermostat, should be placed in such a way that does not alter historic features such as the chair rail and door frames.
- Affected wall finishes and floor should be patched, prepped, and painted to match nearby surfaces. Note, original, character-defining wood flooring is in the corridors and may remain in the classrooms under the existing carpet.
- The non-compliant door threshold appears to be in the dance room that has an added layer of floor finish. It is not known what the finish is below the current flooring.
- Consider relocating the drinking fountain from the corridor as part of a full building rehabilitation.

SCENARIO 2

SCENARIO 2: FULL REHABILITATION

For Scenario 2, Page & Turnbull outlines the improvements that would likely be part of a comprehensive rehabilitation of the Main Building and provides general guidance and strategies for either developing a SOI Standards-compliant rehabilitation or a rehabilitation project that retains the Main Building's historic character.

In addition to the seismic, life safety and accessibility items noted in Scenario 1, a typical comprehensive rehabilitation would likely include:

- Mitigation of hazardous materials, including asbestos containing materials (ACMs);
- Landscape and exterior improvements;
- Remaining structural and seismic deficiencies as required by occupancy;
- Preservation and routine maintenance of interior and exterior character-defining features, including original wood windows and doors, decorative plaster, arched openings, and wood rafter tails;
- Rehabilitation of interior spaces, including public restrooms, kitchen and other improvements dictated by current and future user groups;
- Mechanical, Electrical, and Plumbing (MEP) systems; Complete fire detection, notification and suppression system, including fire sprinklers and alarms;
- Accessibility and path of travel items as required by the rehabilitation.
- Improvements to address energy and water efficiency.

Below, we highlight best practices and approaches for the above systems, as well as general considerations in designing a sensitive rehabilitation projects. Where available, SOI Guidelines for Rehabilitation are noted with ◆. We also discuss the possible restoration of lost historic features that the City may wish to consider, such as the clay tile roof that was originally on the building. Restoration of missing features is not required as part of a rehabilitation, but can be considered then or at a later time.

It is worth noting that a SOI Standards-compliant rehabilitation requires the review of detailed plans and project information so that impacts on the historic resource can be evaluated cumulatively. While the considerations for Scenario 2 are presented as separate building systems, it is necessary to think of a historic building as an integrated whole where each system and component contributes to the building's historic character. Minor impacts to many different systems could have a detrimental impact on the historic character when taken as a whole.

REHABILITATION DESIGN CONSIDERATIONS

This section describes things to consider when beginning to plan for a rehabilitation of a historic building. These are process-oriented recommendations that help create a solid foundation for a rehabilitation project. The SOI Standards for Rehabilitation are the recommended framework and treatment because it provides the most flexibility when dealing with a historic building.

The first step to developing a SOI Standards-compliant rehabilitation project is understanding the historic resource. The significance diagrams and list of character-defining features included in this report are great tools for understanding the qualities of the building that make it historic. These tools identify the degree of change that can be accommodated in different parts of a building while still maintaining its historic character.

Likewise, information on the future building users and their needs is valuable. Gathering information from potential users may take the form of a formal architectural programming study facilitated by design professionals or may be completed in an ad-hoc manner led by members of the community. The key to any programming exercise is to think expansively about future uses so that all the possibilities are considered.

Conceptual level planning may begin with a "fit" test to see if the historic building can accommodate the proposed future uses while maintaining its historic character. As expressed in SOI Standard for Rehabilitation #1:

> *A property shall be used for its historic purpose or be placed in a new use that requires minimal change to the defining characteristics of the building and its site and environment.*

Not all uses or intensity of uses are appropriate for a historic building. Forcing a program on a historic building will not only have an impact on historic character but also compromise the needs of the user. However, historic buildings are often flexible enough to accommodate new uses through creative solutions.

Based on experience planning historic building rehabilitations, the following guidance is relevant to the Main Building:

- When planning for future building uses and needs, look for areas of the building that are currently underutilized like basements and closets.
- The Main Building features large open spaces and rooms that are easily adaptable to a variety of uses. Maintain existing flexibility when planning for potential future uses.
- Significant spaces and spatial relationships at the interior of the Main Building shall be maintained.
- The building was designed around two original courtyards. While the west courtyard has been covered with a roof, the east courtyard is currently underutilized.
- Consider completing a Historic Structure Report that can outline treatment recommendations for on-going maintenance, prioritize repair projects, and guide future planning and rehabilitation of the Main Building.

◆ *Interior Features -Spaces, Features and Finishes*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_spacefeatfinish.htm

GENERAL REHABILITATION CONSIDERATIONS

- Rehabilitation work should avoid impacts on character-defining features, significant spaces and historic materials.
- Historic buildings often contain tertiary spaces like basements, attics, and closets that can be used to conceal mechanical, electrical, and plumbing (MEP) ducts and equipment, fire sprinklers, and structural upgrades.
- Minimize impact to historic materials by sensitive location and installation of penetrations for ducts, wiring, and plumbing chases, as well as wall and ceiling air devices. Patch damaged surfaces to match historic finishes, including texture and color of historic plaster.
- Consider a campus-wide approach to systems, including a central plant that could serve the heating and cooling loads for the Main Building and the other existing buildings or new construction at the site.
- The preservation of exterior details and character-defining features contributes to the historic feel and overall integrity of the Main Building. Exterior character-defining features, including original wood windows and doors; exposed eaves and wood rafter tails; central portico with concrete columns; and concrete walls with plaster finish shall be preserved. Exterior character-defining features require, like original wood windows, should be repaired, in-kind, rather than replaced.
- Utilize the gentlest means possible when working with character-defining features and materials. Actions including cleaning and removal of surface coatings and hazardous materials should include small mock-ups to determine a method that does no harm to historic fabric.

RECOMMENDATIONS BY SYSTEMS

HAZARDOUS MATERIALS

Page & Turnbull reviewed a Hazardous Materials Survey Report prepared by Partner Engineering and Science in November 2016. The purpose of the assessment is to identify potentially hazardous materials that could be impacted by renovation or demolition activities. The survey was limited to accessible areas only; additional regulated materials may still be found at inaccessible areas. The survey includes both the Main Building and two additional classroom buildings.

The report includes sampling and analysis of surfaces and materials suspected of having asbestos-containing materials (ACM) and lead-based paint (LBP). The survey also includes visual inspection of additional regulated hazardous waste materials, including

- Mercury light ballasts, fluorescent lights, mercury light switches, and thermostat bulbs,
- Radioactive sources such as tritium-containing signage,
- Polychlorinated biphenyl (PCB)-containing equipment, and
- Chlorofluorocarbons (CFC)-containing equipment.

The location and extent of confirmed ACM, LBP, and other regulated hazardous waste materials at the Main Building are as follows:

<u>Asbestos-containing material (ACM)</u>

The report distinguishes between friable and non-friable ACMs. Friable ACMs are damaged and may contain loose asbestos fibers. Friable material is a greater concern for becoming airborne and impacting worker safety.

Friable

Beige sheet vinyl flooring in the HVAC Closet - 650 SF

Non-Friable

Beige 12x12 vinyl floor tile plus mastic in the Dining Room – 2,100 SF

Grey roof patch and penetration mastic at the north, south, and east roofs – 80 LF

<u>Lead-based paint (LBP)</u>

HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012) was used to define the LBP threshold as 1.0 mg/cm2. Per this standard, 19 of the 132 readings taken for lead-based paint at the Main Building registered as LBP. Surfaces with LBP include interior and exterior walls, windows, doors, and exterior overhangs.

<u>Additional Regulated Hazardous Waste Materials</u>

The report does not specify the building or location of additional regulated hazardous waste materials. Based on Page & Turnbull's understanding of the Main Building, it is assumed that the following additional regulated hazardous waste materials are present:

- Fluorescent lights containing mercury,
- Fluorescent light ballasts containing PCBs,
- Emergency Signs, containing radioactive sources, and
- Thermostats, containing mercury.

Partner Engineering includes general guidelines for mitigating the presence of hazardous materials. Guidelines include managing ACMs "in-place" and respiratory protection and personal protective equipment (PPE) for activities that may impact LBP. Partner's recommendations are consistent with historic preservation best practices and the hazardous materials rehabilitation considerations noted below. Additional consultation with a certified industrial hygienist during the design process is recommended to understand the full course of options available for mitigating regulated hazardous materials.

<u>Hazardous Materials Rehabilitation Considerations</u>

- From a historic preservation perspective, the presence of ACMs and LBP does not prevent the Main Building from being rehabilitated. ACMs are not character-defining features and their removal would not impact the historic character of the Main Building.
- If the City desires to abate ACMs, it can be completed prior to the building rehabilitation or as part of the rehabilitation project.
- If hazardous flooring materials like linoleum and vinyl tile are stable and their fibers not airborne, they may be encapsulated under new floor finishes.
- The ACMs identified are easily accessible and removal should not be complicated or cost-prohibitive.
- LBP that is stable is often best left encapsulated under later paint coatings. An approach to LBP is often associated with the use of a space as the concern with lead is from ingestion.
- The additional regulated hazardous waste materials identified in the survey can be removed without impacting historic character. Walls and ceilings where items are removed shall be patched to match the adjacent surfaces, in color texture and material.

LANDSCAPE AND EXTERIOR IMPROVEMENTS

The Main Building is in a designed landscape that fronts on Hollister Avenue. The semi-circular driveway, semi-circular landscaped area at the street front, and flagpole within the landscaped area are all considered character-defining features. The relationship between the Main Building and site should be maintained.

Considerations related to a new disabled access path of travel to the main entrance are included with Scenario 1. Other considerations include:

- Existing landscape features that are considered character-defining should be preserved.
- New construction should not be placed in the landscaped area at the front of the building, but rather directed to the sides and rear of the building.

- *Site*

  https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_site.htm

- *Setting*

  https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_setting.htm

- *Special Requirements – New Additions*

  https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_newadd.htm

Figure 18. Main Building (left) set back from Hollister Avenue (right) behind semi-circular landscape area and driveway.

STRUCTURAL AND SEISMIC

Structural and seismic strengthening items in addition to the items discussed under Scenario 1 are included with a full rehabilitation of the Main Building. A comprehensive structural evaluation and seismic analysis is recommended during the design phase once the use and reconfiguration of spaces has been considered. Additional structural items, besides those discussed below, may be triggered based on current code requirements and the future use.

Structural review should consider the provisions of the California Historical Building Code. The CHBC permits alternative solutions to the regular code when evaluating structural and seismic strengthening, including a reduction in seismic forces applied the building. The CHBC also includes provisions for the maintenance and repair of “archaic” materials. Archaic materials refer to historical methods and materials that do not meet current codes or are not codified. Some of these materials, including wood framing, wood plaster and lath, concrete and glazing are found in the Main Building.

Scenario 2 items include the Priority 2 items identified by the Crosby Group in 2013 and items noted by Partner Engineering in 2016.

- Remaining roof diaphragms throughout the building.
- Remaining wall-to-roof anchorage connections throughout the building.
- Evaluate the reinforcing at existing concrete shear walls to determine if additional strengthening is required. Crosby Group notes that these walls are overstressed during earthquake loads, but additional analysis using the CHBC and current codes is recommended.

<u>Structural and Seismic Rehabilitation Considerations</u>

- Details included in the Crosby Group report indicate that the retrofit repairs are supplemental to the existing connections and will have no impact on character-defining features.
- It may be necessary to remove small areas of existing walls and ceiling to install the recommended connections. Wall and ceilings removed for the installation of the connections should be repaired with in-kind materials and finished to match adjacent construction. There should be no trace of removal after the repairs are completed.

- Strengthening of roof diagrams will involve the placement of new plywood on top of existing roof sheathing. Care should be taken that nailing of new plywood is consistent with the existing framing to avoid impacts to the tongue and groove ceilings where they are exposed.
- Connections proposed to strengthen the roof to wall connections at the trusses at the former class room spaces will be hidden above the ceiling and not visible from the occupied spaces.
- Connections proposed for the attachment of the rafters and sill plate to the top of the wall at the arcade at the east patio are minimal and should not be visible from the corridor. Paint exposed connections to match adjacent finishes.
- Connections proposed for the attachment of the rafters and sill plate at interior corridor walls are minimal and will be hidden by wall and ceiling finishes.

◆ *Interior Features – Structural System*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_strucsystems.htm

EXTERIOR WALLS

Exterior walls are reinforced concrete with a painted cement plaster finish. The walls feature a water table and extended sills. Deep-set, punched window openings articulate the exterior walls. Arched opening at the east patio and the central portico with concrete columns are other important character-defining features. The exterior walls appear to be in good condition. See Structural and Seismic section for other considerations related to the exterior walls.

Exterior Wall Rehabilitation Considerations

- Maintain existing wall openings, including window openings and arched openings at the east patio.
- Maintain concrete columns and elements of the front portico, including the “GOLETA UNION SCHOOL” signage cast into the frieze above the columns.
- Cement plaster finish shall be maintained. If plaster is removed for structural and seismic retrofits, it shall be repaired to match the adjacent surface.
- If new openings are required, details shall be consistent with the existing style of punched openings. New openings will need to be reviewed for conformance with the SOI Standards and SOI Guidelines.

◆ *Exterior Features – Entrances and Porches*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_entrances.htm

Figure 19. Cleaning and restoring lettering in concrete. Source: Spectra Company.

WINDOWS AND DOORS

The building has original wood windows at the front (north) and rear (south) facades, as well as in the East Patio, Auditorium, and in the Dining Room, that was originally an outdoor patio. They appear to be in fair to good condition. These are important character-defining features that should be preserved and maintained.

The windows at the east and west façade are vinyl replacement windows installed in 2008.

Most of the doors in the Main Building are original and character-defining. In particularly, the main entrance doors at the front (north) façade, the corridor doors at the rear (south) façade, and those that lead to the existing and former patio should be retained. The paneled wood doors with transoms along the interior and exterior corridors are also character-defining and should be retained.

- Partner Engineering’s Property Condition Report, dated December 30, 2016, recommends “consideration should be given to replacing wood windows as part of any renovation plan” (page 29). There is no reason to replace existing wood windows as they are in good condition and can easily be repaired and refinished, using preservation best practices, to extend their service life for many years to come. Removing the windows and replacing them with non-wood windows has the potential to be a significant impact.
- Energy efficiency of the existing wood windows and single-glazing can be improved with simple retrofits so that the performance of historic wood windows is comparable to that of high performance replacement options.
  - Historic glazing should be maintained. Window films are a cost-effective means of improving glazing performance. Existing awning at the windows on the north façade are an effective means of controlling solar heat gain.
- Preserve the operability of original wood windows and doors. Do not block or infill windows with new walls, partitions, or MEP equipment.
- Existing wood doors should be repaired rather than replaced. Historic wood doors can be modified to accept new egress and disabled access hardware.

- The original windows and doors are not fire rated, as they precede fire rating systems. They can be removed and tested for a rating if needed. However, the CHBC offers flexibility to retain non-rated, character-defining windows and doors if an automatic fire sprinkler system is installed. Since a fire sprinkler system is recommended, the Main Building could potentially take advantage of the CHBC to retain its historic doors.

◆ *Exterior Features – Windows*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_windows.htm

◆ *Special Requirements – Energy Efficiency*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_energyeff.htm

◆ *National Trust for Historic Preservation, Preservation Green Lab*

Saving Windows, Saving Money: Evaluating the Energy Performance of Window Retrofit and Replacement. *https://savingplaces.org/preservation-green-lab.htm*

Figure 20. Wood repair and maintenance.

ROOFS, WOOD EAVES, AND RAFTER TAILS

The Main Building features both sloped and flat roofs, with a dominant front gable and monumental portico at the central front entry. Exposed wood eaves and rafter tails, typical of Mediterranean style buildings from the 1920s, are also important character-defining features. The bell tower at the southwest corner of the Auditorium, with intact red clay tiles, is an important original element that should be preserved.

Original red clay tiles at the gable and hipped roofs were replaced with composite shingles. Flat roofs are covered in rolled roofing. Partner Engineering notes that roofing system are more than twenty years old and they recommend replacing both the asphalt shingles and rolled roofing in the next few years. Their report does not identify any issues with the exposed wood roof elements, with exception of recommending new paint.

Roof System Rehabilitation Considerations

- Based on the recent assessment, the existing roof system is nearing the end of its service life. The roof systems should be replaced soon to prevent moisture-related problems from developing.
- Asphalt shingles may continue to be used on the building without impacting its integrity.
- Maintenance and repair of the roof systems should include repair of roof crickets, gutters, and downspouts.

Red Clay Tile Roof Restoration Considerations

- Restoration of the original red clay tile at the hipped and gabled roofs would not be required for a rehabilitation project; if it is desired to restore the red tile roof the SOI Standards and Guidelines for Restoration offer guidance on replacement of missing historic features.
  - A key tenant of a restoration is to use available documentation to accurately reproduce the missing item. Conjecture shall be avoided.
  - The red clay tiles remaining at the bell tower appear to be original to the building and should be used, along with available photo documentation, to specify replacement tile. Replacement tiles shall match the original clay tile in size, scale, material, and color and be installed in the same coursing as the original tile.

◆ *Exterior Features – Roofs*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_roofs.htm

Wood Eaves and Rafter Tail Rehabilitation Considerations

- The wood eaves and rafter tails are character-defining features that should be retained and preserved.
- Exposed tongue and groove decking is also an important character-defining feature that should be preserved.
- It is common for exposed wood elements to experience rot and decay from environmental conditions. The preference is always to repair deteriorated areas using preservation best practices, with replacement as a last resort when the entire wood feature is too deteriorated to repair. Match original details when making repairs.
- Maintain paint coatings to protect exposed wood features from the elements.

◆ *Exterior Materials – Wood*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_wood.htm

SCENARIO 2

MECHANICAL, ELECTRICAL, AND PLUMBING (MEP); FIRE ALARM AND FIRE SPRINKLERS

Rehabilitation of the Main Building will involve upgrading the MEP systems. The existing MEP systems are dated and do not serve the needs of current users. There is currently no air conditioning making some of the spaces uncomfortable for more active uses. Installation of new systems is typically a major component of rehabilitating a historic building.

Additionally, a fire alarm and automatic fire sprinkler system should be installed during the rehabilitation. As noted previously, a fire alarm and automatic fire sprinkler system protect the building and improve life-safety for occupants. The automatic fire sprinkler system is also required to leverage the full benefit of the CHBC, including provisions for occupancy separations, fire resistive construction, rated openings, and maximum floor area.

Considerations for the installation of fire alarm and fire sprinklers are the same as those of installing a new MEP system.

Figure 21. Sensitive installation of fire sprinkler and seismic reinforcement in architecturally significant interior spaces.

MEP; Fire Alarm and Fire Sprinklers Rehabilitation Considerations

- Take a holistic approach to designing and sizing the new system. The Main Building was constructed before mechanical heating and cooling became the default strategy for conditioning spaces. Maintain existing operable windows to provide passive ventilation. Consider the building's inherent qualities like thick concrete walls, recessed windows and overhangs that will reduce the heating and cooling loads. Integrate the new mechanical system with energy conserving upgrades including insulating attic spaces, weather-stripping and shading strategies for original glazing.
- Limit new vertical chases, soffits, and dropped ceilings, especially in significant and character-defining spaces.
- Avoid impacts to historic features, including interior windows and transom lights, wood wainscot, and decorative plaster features.
- Consider using exposed ductwork, rather than soffits and dropped ceiling, in significant spaces like the Auditorium. Differentiation between old and new is often effective when installing new mechanical and lighting systems in historic spaces.
- If remaining historic light fixtures remain, they should be identified and preserved. It is possible to upgrade historic fixtures with new wiring and controls to improve efficiency and usability.
- Consider the weight and locations of mechanical equipment to avoid overstressing structural elements and interior finishes. Mounting equipment at grade is preferable to locating on rooftops.
- Located new equipment in locations that do not impact the visual character of the building or setting. Locate exterior equipment at secondary facades and provide appropriate screening, as needed.

◆ *Interior Features – Mechanical Systems*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_mechsystems.htm

INTERIOR FINISHES AND FEATURES

A comprehensive building rehabilitation generally includes interior changes. Historic features and materials, including, but not limited to, plastered walls with chair rail, decorative plaster brackets and archways, decorative beams, and wood paneled doors should be protected and maintained during a rehabilitation of the Main Building.

Figure 22. Typical Main Building classroom interior. Finishes can be upgraded and new systems installed without significantly altering the space.

- Interior finishes should not be gutted to install new systems like electrical wiring. If removal of interior finishes is required, it should be done selectively and the historic material shall be repaired in-kind to match adjacent finishes.
- Surface-mounted conduit and wiring may be done sensitively to avoid the need to channel into existing finishes. Select architectural-quality surface mounted conduit and locate to minimize impact on the character-defining qualities of the space.
- Deteriorated historic interior features shall be repaired rather than replaced.
- Maintain the type of historic finish. Painted surfaces shall remain painted. A paint analysis study is often helpful to understanding if finishes have changed over time.

◆ *SOI Guidelines, Interior Features – Spaces/Features/Finishes*

https://www.nps.gov/tps/standards/four-treatments/standguide/rehab/rehab_spacefeatfinish.htm

SCENARIO 3

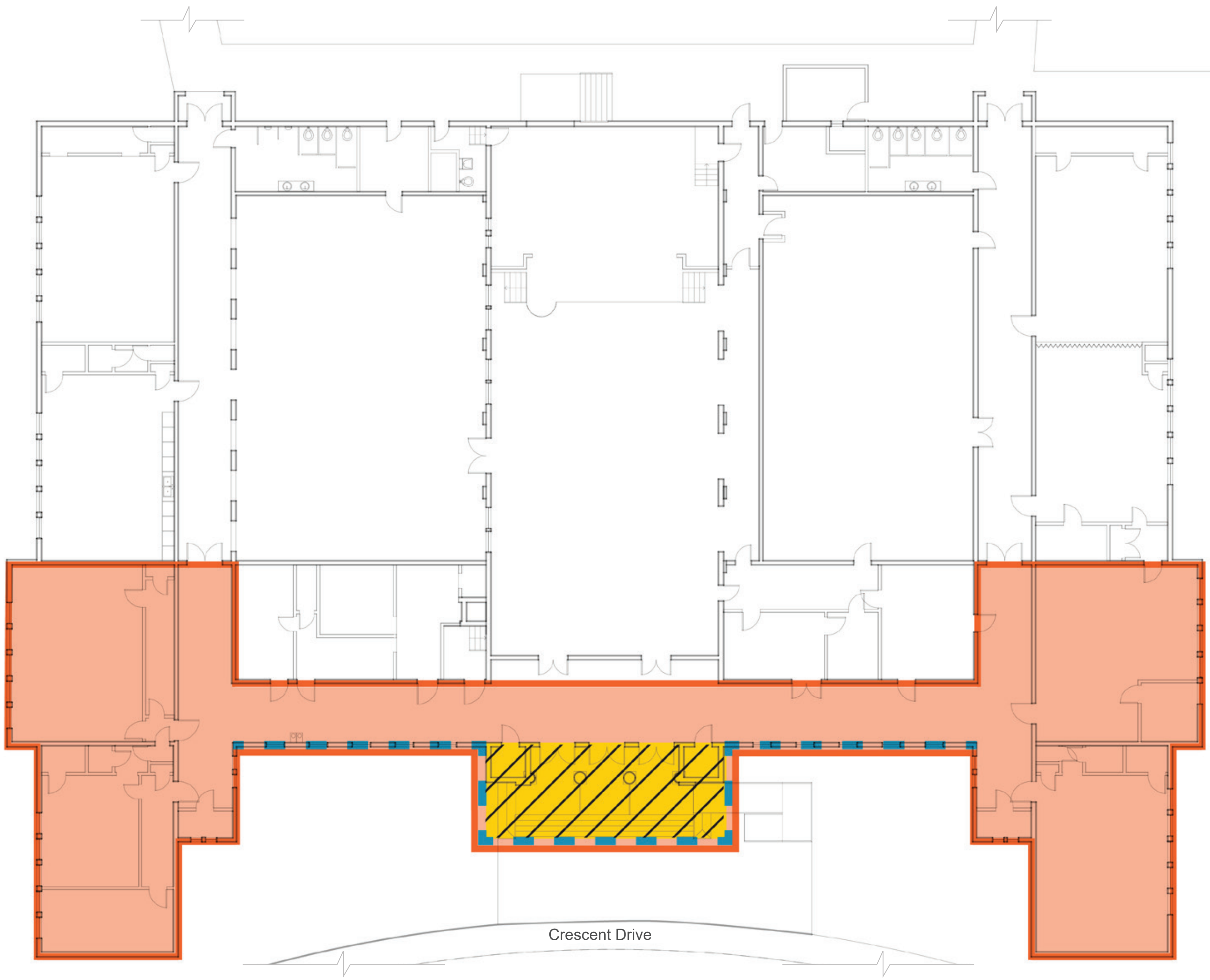


Figure 23. Options for Demolition with Portion of Front Facade Retained, Adapted from Current Floor Plan, Main Building, 2016, RNT Architects.

SCENARIO 3: DEMOLITION

Scenario 3 explores the demolition of the Main Building of the Goleta Community Center either in full or as a partial demolition.

FULL DEMOLITION

The Main Building would be fully demolished and a new building constructed in its place.

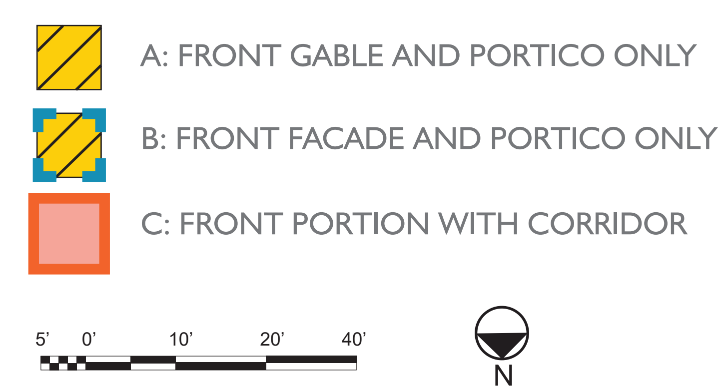
DEMOLITION WITH FRONT FACADE RETAINED

Most of the Main Building would be demolished except for a certain amount of the front façade that would be retained. A new building would be built behind and possibly attached to the retained façade.

As City staff did not indicate which parts of the front façade would be retained, Page & Turnbull assumed three possible options:

- A: Retain only the front gable and portico section
- B: Retain the central façade between the east and west wings, including the front gable and portico
- C: Retain the entire front and east and west gables, as well as the interior corridor

LEGEND



POTENTIAL IMPACTS TO HISTORIC FEATURES

Demolition of a historic resource under CEQA is considered an unavoidable adverse impact that cannot be mitigated to less than significant levels. The full demolition falls into this category.

Demolition where only the front façade remained is, in essence, a full demolition. While slightly less impactful than full demolition, almost all of the character-defining features that make up the historic resource that is the Main Building would still be lost. As such, Options A and B above would also result in an unavoidable adverse impact under CEQA that cannot be mitigated to less than significant levels.

A partial demolition where a significant portion of the historic resource remains has the potential to avoid significant adverse impacts. This can be achieved if the remaining portion has the integrity to be eligible for listing in the California Register. The adjacent or attached new construction would also need to be sufficiently differentiated but still compatible with the remaining portion and not overshadow or visually dominate what remained.

Option C most likely would not have the integrity to be eligible for the California Register. Much of the Main Building's character-defining features would be removed, including its overall massing, H-plan layout, most of the east and west wings, the Auditorium, the East Patio, and all the finishes and fixtures in the removed areas. What remained would no longer be recognizable as a 1920s school building and would be unable to convey its significance as the Goleta Union School so important to Goleta's development. Therefore, Option C would also result in a significant adverse impact that could not be mitigated to less than significant levels.

Because all the above options would result in essentially the full loss of the historic resource and would be considered a significant impact under CEQA, an EIR would be needed to consider alternatives and mitigation measures to avoid or reduce the significant impacts. The rehabilitation project outlined in Scenario 2 or Option C could potentially be evaluated as preservation alternative but they would need to be developed more fully. Potential mitigation measures are outlined below.

POTENTIAL MITIGATION MEASURES

Historic resource mitigations are typically developed on a case-by-case basis, providing the opportunity to tailor them to the characteristics and the significance of the resource and the impacts to it. Common mitigation measures for demolition consist of documentation of the resource, typically to the standards of the Historic American Buildings Survey (HABS) and preparation of a salvage plan for significant architectural features and materials. Four potential mitigation measures are outlined below.

While in some instances these mitigation measures are judged to reduce the level of adverse impacts to a less than significant level, they often do not alter the loss to community character and collective history. Section 15126.4(b)(2) of the Public Resources Code is clear in this regard: "In some circumstances, documentation of an historical resource, by way of historic narrative, photographs or architectural drawings, as mitigation for the effects of demolition of the resource will not mitigate the effects to a point where clearly no significant effect on the environment would occur."

The following mitigation measure are options for Goleta if a demolition scenario is pursued. Estimated cost ranges are provided for reference. Even with the implementation of the mitigation measures, adverse impacts to historic resources will not be mitigated to less than significant levels.

The following mitigation measure is recommended to document the Main Building as an example of Mediterranean Revival designed by Louis N. Crawford. However, even with the implementation of the mitigation measures, adverse impacts to historic resources will not be mitigated to less than significant levels.

<u>Recordation</u>

Prior to issuance of a demolition permit, the Main Building shall be documented to the standards of the Historic American Building Survey (HABS) program. The documentation shall include:

- Written description and narrative report following the most recent HABS Guidelines for Historical Reports, Outline Format;
- Large format (4" x 5" or larger negative) photographs following the most recent HABS Photography Guidelines. Views shall include the setting, important site features, all exterior façades, the Building's façades within the mall, detail views of significant exterior architectural features, and interior views of significant spaces and features;
- A site plan showing the Building location in relationship to the shopping mall, setting and surrounding streets; a photo key using the site plan shall be included as well;
- Duplicates of historic photographic and drawings, if available.

A qualified professional who meets the requirements of the Secretary of the Interior's Professional Qualifications Standards for history, architectural history, or historic architecture, shall prepare the documentation. Upon completion, copies of the documentation materials shall be offered and sent to appropriate local archives and repositories, which may include Santa Barbara Historical Society library, Goleta Valley Historical Society, University of California, Santa Barbara, Southern California Information Center (or Central Coast), and City of Goleta Community Development Department.

Estimated Cost Range: $12,000 to $18,000.

<u>Interpretive Program</u>

To commemorate the Main Building, and the role it played as the Goleta Union School and Goleta Community Center, a publicly accessible interpretive program could be developed. The interpretive program would showcase the building's construction, and its significance in the development of Goleta's education system and growth of Goleta's town center in the early 20th century. Its conversion into the Goleta Community Center in the 1970s could also be part of the interpretation program. The interpretive program should include, but not be limited to, historic and contemporary photographs; narrative text; historic news articles and memorabilia; salvaged materials; and maps.

The interpretative program could be presented as a display at the site or in another publicly accessible location. Creative solutions regarding medium and format of the interpretive program could also be considered, such as a website, video, audio tour, or interactive display. The interpretative program should be developed with the assistance of a qualified architectural historian or historic preservation professional who meets the Secretary of the Interior's Professional Qualifications Standards.

Figure 24. Example of interpretive display next to historic doors.

Figure 25. Architectural component salvage as relic. Source: FoundSF.org.

Ideally, the interpretative program is completed prior to demolition of the Main Building. At a minimum, a plan for the interpretative program outlining the proposed format, medium, content, and public accessibility should be approved by the City before the issuance of a demolition permit for the building.

Estimated Cost Range: $50,000-$150,000 depending on display medium.

<u>Salvage</u>

Salvaging character-defining features as a mitigation measure depends on whether the historic resource has distinctive features worth salvaging, such as artwork, cravings, signage, etc. The salvaged features may be donated, incorporated into the new construction, or retained on site as a relic or folly. Some materials may also be incorporated into an educational interpretive program as discussed above. Like the options that retain a portion of the front façade, salvage allows some distinct parts of the historic resource to survive, but would not be enough to mitigate the loss of the resource to less than significant levels.

For the Main Building, there are few decorative features that would be useful to salvage. One option may be to salvage the front gable and portico section and reinstall on the site as an architectural folly or a piece of art. Another may be to salvage the two-sided bell parapet to be part of the interpretative program.

The estimated cost for salvage would depend on the features salvage, and should include cost for storage and re-installation into a permanent location.

<u>Relocation</u>

Relocation can sometimes retain the historic status of a building if it maintains its architectural values and integrity. The National Register guidance on moved buildings provides a framework for how to maintain a historic resource's eligible for historic listing. Typically, it should retain its orientation, setting, and general environment at the new location, as well as all other aspects of integrity, namely design, materials, workmanship, feeling, and association. Historic resources significant for their architecture has the most likely success in maintaining its historic status after relocation. For those significant for their association with historic events or persons, the building either has to be highly significant or the relocated site is close to the original site.

For the Main Building, the relocated site would need to be sufficient to re-create the circular drive, landscape area, and same spatial relationship the building has to the street. It should also be near the present location, as the location is important to the consolidation of Goleta's education system and its early 20th century growth that's associated with the Main Building. Finding a comparable site may be difficult.

In addition, relocating the Main Building would be technically difficult and very expensive. It is a large, heavy building with an open courtyard. It would need to be cut into pieces, moved, and re-assembled. Though buildings and structures larger than the Main Building have been moved, we would not recommend relocation as a mitigation measure.

HISTORIC PRESERVATION CONSIDERATIONS

- The Main Building appears to be in fair to good condition with few deficiencies. The ones discussed in Scenario 1 can be addressed relatively easily and with little impact to the historic building. A full rehabilitation under Scenario 2 also seems feasible.
- As the building appears to be in fair to good condition, and the deficiencies can be addressed without major changes to the character-defining features, demolition is not warranted.
- If the City decides to demolish the building, retaining only the façade is not recommended. It would not be enough to mitigate the impacts to less than significant levels and would be costly shored and stabilized what remains while a new building is built behind it. Retaining only the façade is not considered best practice in historic preservation, and is often discouraged.
- Relocation is also not recommended, as finding a comparable relocation site and moving the Main Building would be difficult and costly.

Attachment 3G

Binder of Special Studies

Seismic Study (ASCE 31-03 Tier 1 Evaluation Report)

ASCE 31-03
Tier 1 Evaluation Report

Goleta Valley Community Center

5679, 5681 and 5689 Hollister Ave
Goleta, CA 93117

April 24, 2013

Prepared for:
City of Goleta
130 Cremona Drive, Ste. B
Goleta, CA 93117

Prepared by:
Crosby Group
999 Baker Way
Suite 410
San Mateo, CA 94404

Executive Summary

The following report summarizes the results of a **Seismic Assessment** which has been prepared for the Goleta Valley Community Center located at 5679 through 5689 Hollister Avenue in Goleta, California. This report has been prepared at the request of the City of Goleta as part of the overall Seismic, ADA and Fire/Life Safety Need Assessment as referenced in the RFP/RFQ dated May 10th, 2012.

The scope of this evaluation includes the review of the three main structures built between 1927 and 1958. The first of these buildings is the Main Community Center which was originally constructed in 1927 and is labeled Building A. The second and third buildings were constructed in 1948 and 1958 respectively as classroom additions and are labeled Building B and Building C4. The current uses for Buildings A, B and C are as follows:

Building A.	Main Community Center	5679 Hollister Avenue
Building B.	Head Start Classrooms	5681 Hollister Avenue
Building C4.	Rainbow School, Extension	5689 Hollister Avenue

As part of this investigation, each of these buildings was evaluated to determine whether there were existing seismic deficiencies which would pose a risk to life-safety. To conduct this evaluation, our team completed onsite investigations, reviewed all available existing building plans, and completed a Structural Tier 1, limited Tier 2 life-safety evaluation in accordance with ASCE 31-03. A formal ASCE 31 Tier 1 nonstructural components evaluation was not conducted, however, we believe the current condition of the existing nonstructural components do not pose a significant life safety threat. Based upon this analysis and our own professional experience, we found most items to be compliant with the life-safety checks except for the items listed below. Since an ASCE 31 evaluation simply assesses whether a particular component is compliant, we have grouped each of our found deficiencies into two categories termed Priority 1 and Priority 2. Based upon our experience with similar buildings, we believe Priority 1 items pose the greatest risk to Life-Safety and based upon these particular building circumstances, are those deficiencies that can generally lead to local areas of collapse. Priority 2 items are those which we would expect to be associated with extensive structural and non-structural damage, but are not usually linked to local areas of collapse. Priority 1 and 2 items are as follows:

Building A - Priority 1 Items

1. Existing wall anchorage-to-diaphragm connections at the Auditorium were found to be significantly overstressed. See Details 3 and 8 on drawing sheet S-2.
2. The long span diaphragm over the main auditorium does not have compliant sheathing and is therefore considered non-compliant per ASCE 31's guidelines for Life Safety compliance. It is recommended that this area be sheathed with ½" plywood as indicated on plan sheet S-1.
3. Existing in plane roof to concrete wall connections at the Auditorium are insufficient to transfer anticipated seismic loads and should be strengthened per Detail 7 on sheet S-2.

Building A - Priority 2 Items

1. Existing roof diaphragm to wall anchorage connections throughout the remainder of the Main building was found to be overstressed and non-compliant. Since these walls are partially restrained at the base and are a maximum of 11'-0" high, we believe that the risk of local collapse is less than that of the similar connections at the Auditorium. Nonetheless, conditions such as these often lead to significant structural and non-structural damage to a building and in rare cases, local collapse. These conditions are listed as Priority 2 items and are addressed in details 1, 2, 5, 6, 9, 15, and 18 on sheet S-2.
2. All existing roof sheathing, except for the area of the barrel vault over the exiting dining room, is composed of 1x straight sheathing which has been shown to have very low capacity to resist and transmit seismic forces. We recommend that these areas be sheathed with new ½" plywood throughout the structure as indicated on sheet S1.
3. Concrete shear walls were found to have insufficient reinforcement ratios per the ASCE 31 structural checklist; however an additional analysis shows that these walls are not overstressed against expected earthquake loads. Mitigation is not recommended at this time.

Building B – No deficiencies were found for this building

Building C4 – No deficiencies were found for this building

Application to Future Codes

The next edition of ASCE 31 will be combined with the related standard ASCE 41 to form ASCE 41-13. As the name suggests, this new code is expected to be published in the near future. ASCE 41-13 will combine the seismic evaluation procedures of ASCE 31-03 with the seismic retrofit procedures of ASCE 41-06 to form a unified standard and a new state of the practice in seismic evaluation and retrofit of existing buildings. Our team performed a parallel review of the three buildings in question with the upcoming standard's proposed provisions. In particular, there are new seismic hazard demands and out-of-plane wall anchorage procedures. We have determined that these changes are nonetheless consistent with our current findings and mitigation strategies and that our recommendations in this report will be consistent and valid with the proposed provisions.

Table of Contents

A. Scope & Intent of Evaluation

The ASCE 31-03 (formerly FEMA 310) Tier 1 report is intended to allow a rapid evaluation of the seismic capabilities of the structural system in a building. The objective of this evaluation is to determine whether the building meets the 'Life Safety' performance level. Using the checklists provided in ASCE 31-03, building system and component deficiencies are identified and described in this report.

A.1 Method and Scope of Evaluation

As noted above, the appropriate standard to assess whether or not the building meets a level of "Life Safety" in regards to future seismic events is ASCE-31-03. This document identifies buildings of certain age and construction type as "Benchmark Building" or buildings that are generally perceived as compliant. A matrix indicating these parameters is presented in Table 3-1 of Appendix B. Where a particular building falls within the parameters of this classification, only limited evaluation is normally required. Where a building falls outside of these parameters, a full assessment is required to determine whether the said building does or does not meet the stated performance level. For the purposes of this evaluation, the Performance Level is "Life-Safety."

Since the buildings in question do fall outside of these parameters, a full ASCE 31 evaluation has been completed. This evaluation starts with a "Tier 1 – Screening Phase" that attempts to assess main components of the buildings' seismic force resisting system by the use of standard checklists and simplified structural calculations.

Where any potential deficiencies are identified during the initial Tier 1 analysis, ASCE-31 methodology requires that these potential deficiencies be corrected or that a refined evaluation be completed to better assess the potential risk of these items. The second order evaluation phases are termed Tier 2 and Tier 3 and generally require substantially greater levels of effort. These subsequent assessments can either consist of a complete evaluation, or in some instances, may consist of a limited Tier 2 evaluation focused on a certain "perceived" deficiency. This procedure is outlined in **Figure 1** below.

For the purposes of this assessment, complete Tier 1 and limited Tier 2 evaluations were required to completely assess these buildings and included the following items:

1. Review of original tenant improvement construction documents dating from 1926 to 1958.
2. Site visit to establish general conditions of the building and to generally verify information shown on the drawings.
3. Preparation of rapid screening evaluation techniques and calculations for the structural system using ASCE 31-03 design guidelines for Life-Safety Performance Level Tier 1.
4. Additional limited analysis using ASCE 31-03 design guidelines for Life-Safety Performance Level Tier 2.

A.2 Limitations

The services performed for this project have been provided at a level that is consistent with the general level of skill and care ordinarily provided by engineers practicing Structural Engineering. Work provided is done under the constraints of time and budget. Conclusions and information presented in this report are dependent on information provided by others. No warranty is expressed or implied. It should also be noted that a number of factors make it difficult to fully and easily assess the current condition of the existing structural elements. These include both the limited documentation available and the presence of hard finishes in many areas.

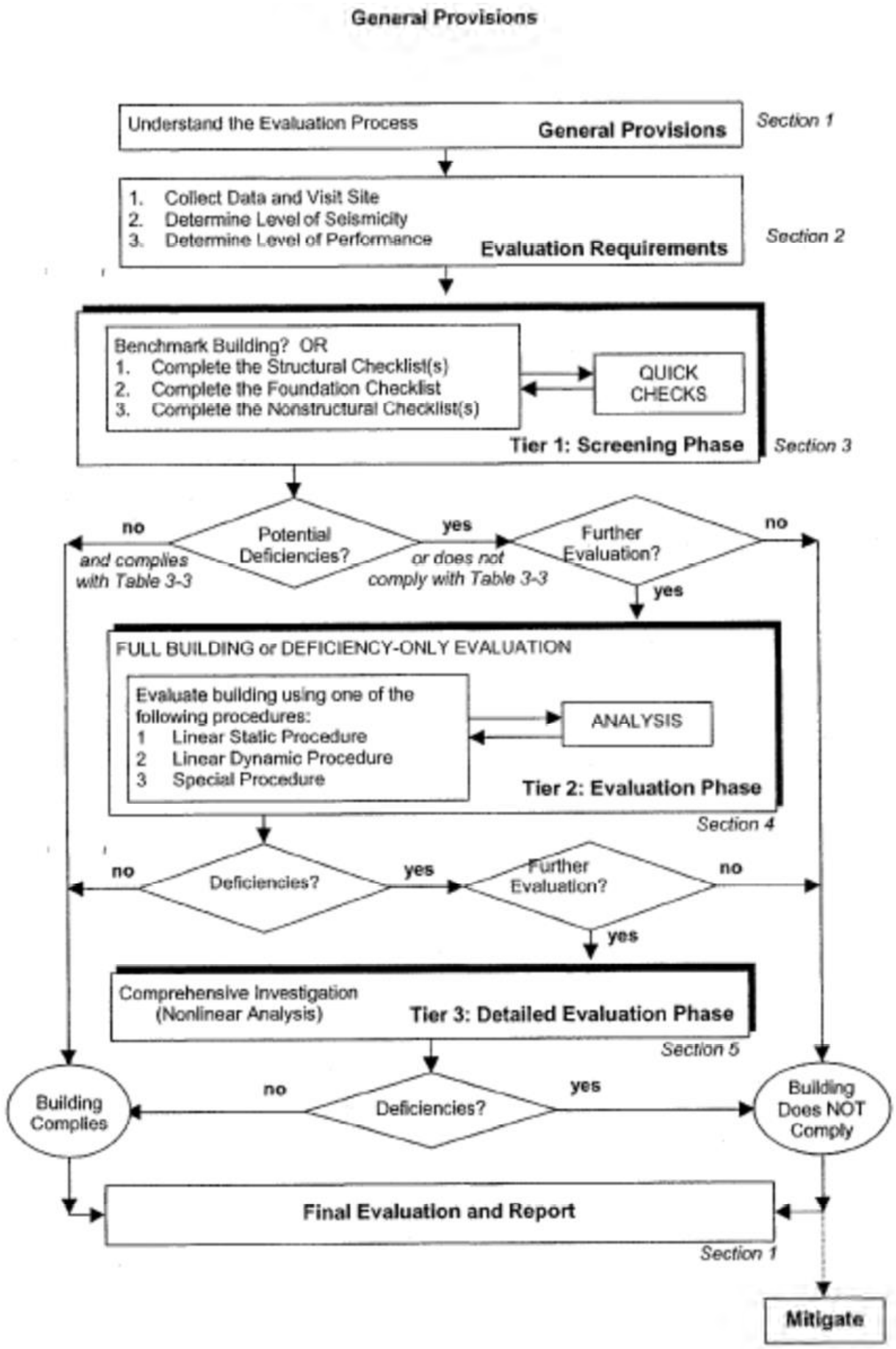


Figure 1 – Evaluation Process from ASCE 31-03

B. Site Seismicity & Soil Profile

B.1 General

The successful performance of buildings in areas of high seismicity depends upon the combination of strength, structural component ductility, and the presence of a fully interconnected, balanced, and complete lateral force resisting system. As the level of seismicity is decreased, the demands on the structural system are decreased.

The Goleta Valley area is in a region of historically high seismic activity and high seismic potential. The nearest active fault to the site is the Santa Ynez fault, located approximately 7 miles from the site. A table indicating the potentially active faults and their respective magnitude potential is shown below.

Fault Name (Seismic Source)	Maximum Moment Magnitude	Slip Rate (mm/yr.)	Distance From Site (miles)
Santa Ynez	7	2.0	7
San Andreas (1857 Rupture)	7.8	34.0	42
Red Mountain	6.8	2	9
Ventura Pitas-Point	6.8	1	16

TABLE 1 **– Site Seismicity Based on Design Accelerations**

B.2 Site Accelerations

In general, site "Seismicity" or the potential for strong ground motion is classified into regions of Low, Medium, and High. These regions are based upon mapped site accelerations S_S and S_1 which are then modified by site coefficients F_a and F_v to produce Design Spectral Accelerations S_{DS} (short period) and S_{D1} (1 second period).

Design Spectral Accelerations computed for this site are as follows:

S_{DS}= 1.14g

S_{D1}= 0.665g

As indicated below by the site accelerations, this standard places the subject property in a region of HIGH Seismicity.

Site Seismicity Based on Design Accelerations (From ASCE 31-03)

Region of Seismicity	S_{DS}	S_{D1}
Low	<.167g	<.067g
Moderate	<.500g >.167g	<.200g >.067g
High	**>.500g**	**>.200g**

Site Class D is assumed per the recommendations of the Geotechnical report by Earth Systems Pacific, dated December 3, 2012. All pseudo-static lateral demands required for the Tier 1 evaluation are computed based on this site classification.

B.3 Site Soils

Site Characteristics	
Building Pad Preparation	Assumed to be compacted fill. Alluvium and Colluvium Deposits Below.
Fault Rupture Potential	Assumed Very Low. Site is not located in a State Earthquake Fault Zone.
Liquefaction Potential	Assumed Low to moderate.
Land Slide Potential	Site is Flat -Nil

TABLE 3 **– Site Characteristics**

See attached geotechnical report located in Appendix D

C. Building Information

C.1 Building Descriptions

Building A

Building A was designed in 1926 and constructed in 1927. The single story building has an overall plan area of approximately 19,607 square feet. The building consists of a main auditorium in the middle of the building flanked by an open court and row of classrooms to the east side and an assembly room and row of classrooms to the west side. The assembly room to the immediate west side of the main auditorium was originally an open court as well but was modified to include a barrel vaulted roof above the space.

In the main auditorium, the gravity load carrying system generally consists of a wood diaphragm over 2x6 rafters and 42 foot long wood trusses. The trusses are spaced 12 feet on center and anchored to 10" concrete shear walls. The lateral load resisting system consists of the same wood diaphragm which distributes lateral loads in to the concrete shear walls on each side of the auditorium.

For the classroom sections of the building, the gravity system consists of a flat truss with 2x6 members and the truss is spaced at 32" oc. The roof truss is then anchored to the perimeter concrete shear walls which are either 8" or 10" in thickness.

The main auditorium is connected and tied to the side classroom wings by a primary corridor which consists of a queen post truss system spaced at 32" oc and composed of 2x6 rafters. The truss system bears on 8 and 10 inch concrete shear walls. The space immediately to the west side of the middle auditorium was originally an open court, similar to the space immediately to the east side of said auditorium. After a tenant improvement, a barrel-vaulted wood roof was installed which ties the former open court together (See Figure 4). The foundation system for this building consists of concrete wall footings. Due to the use of concrete shear walls with flexible diaphragms, this building is classified as Type C2A per ASCE 31 terminology.

Building B

Building B was designed in 1948-1949. The original construction was built in 1948 and consisted of two classrooms. Four classrooms were added to this building in 1950. The single story building has an overall plan area of approximately 6,850 square feet. The gravity load carrying system generally consists of a diaphragm of 1" solid diagonal sheathing over double 2x4 rafters at 24" which are then supported by 4" steel I-beams spaced approximately 5'-1" apart. The I-beams are supported by 12", 27 lb./ft. wide flange steel girders spaced 10'-10" apart. The roofing system is supported by 5" std. pipe columns within bearing walls that also include 2x6 studs at 16". The lateral load resisting system consists of the same 1" solid diagonal sheathing diaphragm which distributes shear loads into the 1" solid diagonal sheathing shear walls. The foundation system consists of concrete strip footings. With wood diaphragms, steel beams and posts, and other intermediary wood members, this building is classified as a Building Type W2, per ASCE 31 terminology.

Building C4

Building C4 was designed and constructed in 1958. The single story building has an overall plan area of approximately 5,376 square feet. The gravity load carrying system generally consists of a diaphragm of 1/2" plywood over trussed 2x6 wood rafters which are then supported by 6x4 continuous top plates. The top plates are supported by stud walls which consist of 4x6 posts and 2x6 studs @ 16" on center. The walls are anchored to 2x6 sill plates which are then bolted to concrete foundations consisting of a 6" high curb and varied concrete footing dimensions. The lateral load resisting system consists of the same ½" plywood sheathing for the diaphragms which distributes lateral loads in to ½" plywood sheathed shear walls. This building is classified as a Building Type W2, per ASCE 31 terminology.

C.2 Building Reference Documents

Building A

Only one sheet (main floor plan) of the original drawings was retrieved. The drawing is dated 1926 and prepared by Louis N Crawford, Architect. Undated tenant improvement drawings prepared by "Arendt / Mosher / Grant / Pedersen / Phillips Architects" were recovered as well. Other building and site specific documentation was not available for review.

Building B

The available drawings are dated December 16, 1949, and were prepared by Winsor Soule F.A.I.A. and John Frederic Murphy A.I.A. Architects. Other building and site specific documentation was not available for review.

Building C4

The available drawings are dated May 9, 1958, and were prepared by Howell Arendt Mosher & Grant Architects & Planning Consultants. Other building and site specific documentation was not available for review.

C.3 Site Visit

Crosby Group conducted a site visit on September 20-21, 2012, to validate existing conditions. Another objective of the site visit is to identify potential deficiencies, unusual conditions and details. Additionally, the site visit is meant to compare the existing documents (made available to Crosby Group) with actual field conditions and to identify any discrepancies.

D. Tier 1 Evaluation Findings

Building A

The majority of the items from the ASCE 31-03 Tier 1 checklists were noted compliant except two items relating to the attachment of the interior and exterior concrete walls to the wood roof system and the construction of the wood roof system or more specifically the lack of roof sheathing (plywood or OSB board) and the proper nailing of this system to the roof joists and purlins. The mitigation strategies of these non-compliant items will be described in Section E.

The damage caused by the absence of a positive horizontal connection between the roof system and heavy concrete walls has been well documented from past earthquakes and has been shown to be responsible for local and occasionally large areas of collapse. Undated tenant-improvement drawings indicate many areas of proposed work which could have addressed this deficiency; however it was noted during our recent site visit that this strengthening work does not appear to have been completed.

All areas of Building A, excluding the barrel vault over the dining area, are made from 1x6 straight continuous sheathing. In contrast to plywood, OSB or diagonally sheathed wood roof diaphragms, diaphragms composed of straight sheathing (1x4 or 1x6 wood members) are no longer used as they have limited capacity to transfer horizontal inertial loads. Where the span to width aspect ratio is also high, they are particularly vulnerable. The aspect ratio for the straight sheathed diaphragm at the auditorium is 2.25:1 which exceeds the maximum 2:1 ratio recommended by ASCE 31. Additionally, this diaphragm has a span longer than 40 feet which is noncompliant. A majority of Building A has similar diaphragm spans and since they are intended to brace the heavy interior and exterior walls, these diaphragms should be strengthened.

Reinforcing steel ratios were also found to be below the minimum ratios (.0015 reinforcement area-to-gross concrete area) recommended in ASCE 31. A concrete shear wall with insufficient or low amounts of steel reinforcement can sustain excessive deflection and or flexural and shear cracking when subjected to large seismic events. This can lead extensive damage when demands are high and capacities are low. However, for Building A the average shear stress ratios (demand/ capacities) are somewhat low due to the large number of walls present and are within the allowable threshold established within ASCE 31. As such, they can be deemed compliant. Similarly, calculations for out-of-plane loading and associated flexural stresses indicate that the existing walls are also adequate.

Building B

Building B was evaluated as compliant with all of the items in the ASCE 31-03 Tier 1 Screening Phase structural checklist. The shear stress quick check for the shear walls passed the allowable loads criteria identified by ASCE 31. Narrow shear walls, with aspect ratios greater than 2-to-1 are present in this building; however, these walls were not included in the calculations for checking the stress on the shear walls. Therefore, we conclude that this building passes the Tier 1 checklist item for narrow shear walls.

Building C4

Building C4 was evaluated to be mostly compliant with the checklist items in the ASCE 31 Tier 1 Screening Phase. The primary calculation in this phase is checking the average shear stress of the shear walls. For this building, the average shear stress expected in the shear walls was 707 plf which is lower than the listed allowable shear stress of 1000 plf for wood structural panels (see appended calculations). However, another checklist item requires that narrow wood shear walls not be used to resist lateral forces developed in the building in levels of moderate and high seismicity. In Building C4, there are many narrow wood shear walls present in the longitudinal direction of the building layout. These narrow shear walls were found to be necessary for the average shear stress of the walls to fall under the 1000 plf allowable maximum threshold. Therefore, this item was found to be non-compliant. A Tier 2 evaluation was performed where overturning and shear demands were calculated to determine whether the narrow shear walls were compliant or non-compliant. The shear demand was found to be within the allowable loads. The expected overturning demands on the existing J-bolt hold-down anchors were also found to be within the capacity provided by the anchors. Therefore, compliance from this Tier 2 analysis replaces the Tier 1 check.

E. Conclusion & Mitigation Strategy

Building A

The seismic evaluation of Building A yielded two main deficiencies. They included the inadequate connection between the roof system and exterior concrete walls, and the absence of proper roof structural sheathing throughout the entire roof system excluding the barrel vault. It is our recommendation that these existing connections be retrofitted as shown on the attached plans and details sheets S-1 and S-2 attached to this report as Appendix E

Since an ASCE 31 evaluation simply assesses whether or not a particular component is compliant, we have also grouped each of our found deficiencies into two categories termed Priority 1 and Priority 2. Based upon our experience with similar buildings, we believe Priority 1 items to pose the greatest risk to Life-Safety and based upon the particular building circumstances, are those that can generally lead to local areas of collapse under moderate to large earthquakes. We have chosen to group those upgrades around the auditorium area as Priority 1 due to the high concrete walls present as well as the occupancy of the space below. Priority 2 items include the remainder of the concrete to wall horizontal connections as well as additional plywood sheathing throughout the remainder of the roof system excluding the barrel vault. In our opinion, while noncompliant and requiring strengthening to reach a life safety level, we believe these areas pose a slightly lesser risk to life-safety than the Priority 1 items. We would encourage the owner to complete both Priority 1 and Priority 2 items at the same time and have grouped them so that appropriate cost-benefit-risk decisions can be made. Priority 1 and 2 items are as follows:

Building A - Priority 1 Items

1. Existing wall anchorage-to-diaphragm connections at the Auditorium were found to be significantly overstressed. See Details 3 and 8 on drawing sheet S-2.
2. The long span diaphragm over the main auditorium does not have compliant sheathing and is therefore considered non-compliant per ASCE 31's guidelines for Life Safety

compliance. It is recommended that this area be sheathed with ½" plywood as indicated on plan sheet S-1

3. Existing in plane roof to concrete wall connections at the Auditorium are insufficient to transfer anticipated seismic loads and should be strengthened per Detail 7 on sheet S-2.

Building A - Priority 2 Items

1. The existing roof diaphragm to wall connections throughout the remainder of the main building was found to be overstressed and non-compliant. Since these walls are partially restrained at the base and are a maximum of 11'-0" high, we believe that the risk of local collapse is less than that of similar connections at the Auditorium. Nonetheless, conditions such as these often lead to significant structural and non-structural damage and in rare cases, local collapse. These details are listed as Priority 2 items and are addressed in details 1, 2, 5, 6, 9, 15, and 18 on sheet S2.
2. All existing roof sheathing, except for the area of the barrel vault over the exiting dining room, is composed of 1x straight sheathing which has been shown to have very low capacity to resist and transmit seismic forces. We recommend that these areas be sheathed with new ½" plywood throughout the structure as indicated on sheet S1.
3. Concrete shear walls were found to have insufficient reinforcement ratios per the ASCE 31 structural checklist; however an additional analysis shows that these walls are not overstressed against expected earthquake loads. Mitigation is not recommended at this time.

Building B

All structural checklist items were found to be compliant per ASCE 31-03's Tier 1 Screening Phase. As a result, no mitigation strategy for structural-related items is necessary at this time for Building B.

Building C4

All structural checklist items were ultimately found to be compliant. The narrow shear walls check from the ASCE 31 Tier 1 checklist was originally noncompliant; however a further Tier 2 analysis shows that the narrow shear walls are expected to provide a performance level consistent with Life Safety standards. The narrow walls are not expected to uplift nor fail from applied shear loads. Therefore, no mitigation strategy is required for structural-related items in this building.

Appendix A – Site Photos

Figure 2 - Front Entrance of Building A

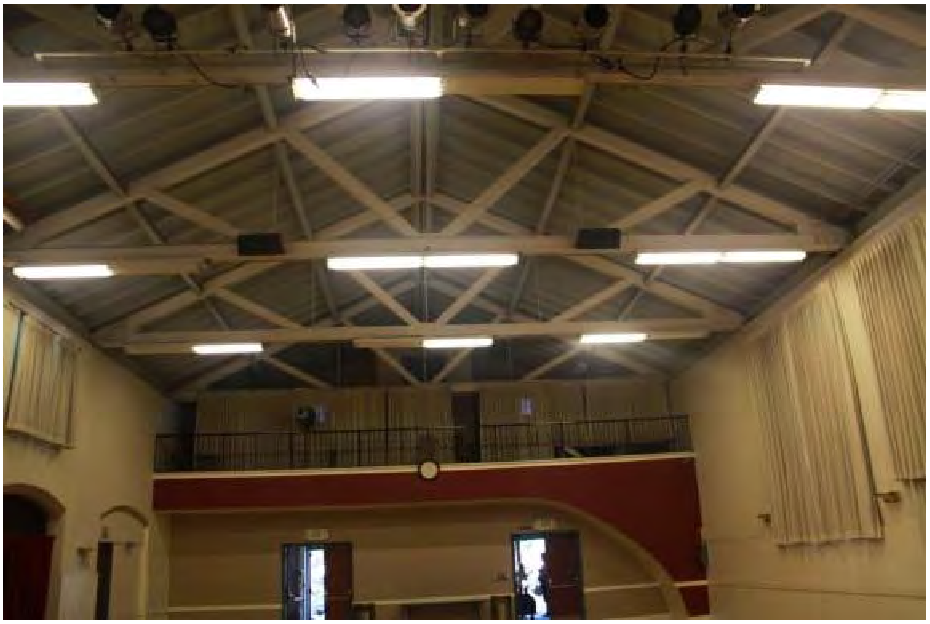


Figure 3 – Building A, Main Auditorium, Roof Truss

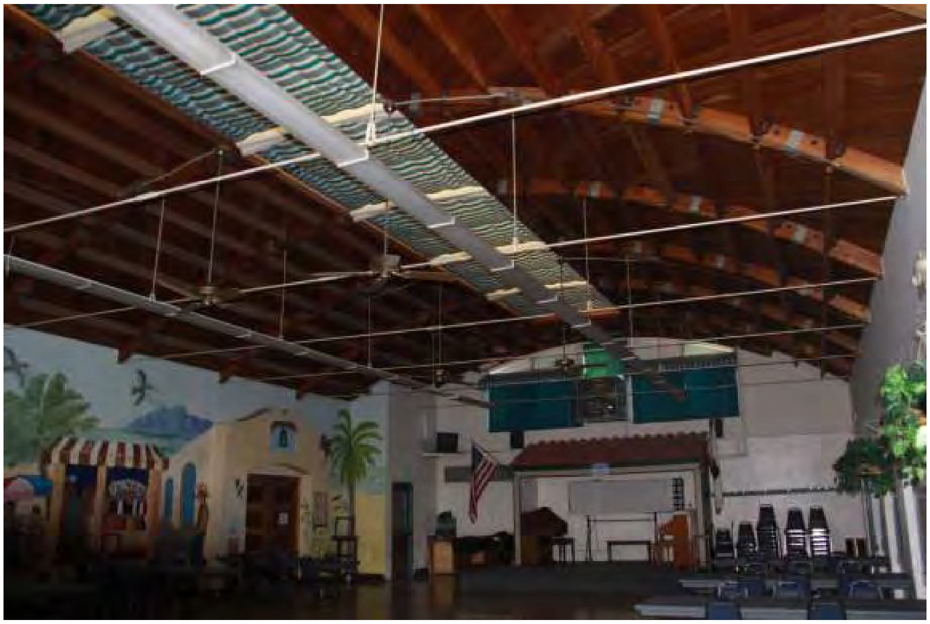


Figure 4 – Building A, Barrel Vaulted Roof Addition

Figure 5 – Building B

Figure 6 – Building B, Original building to the left, new addition to the right

Figure 7 – Building C4

Appendix B – Evaluation Method & Tier 1 Checklists

General Provisions

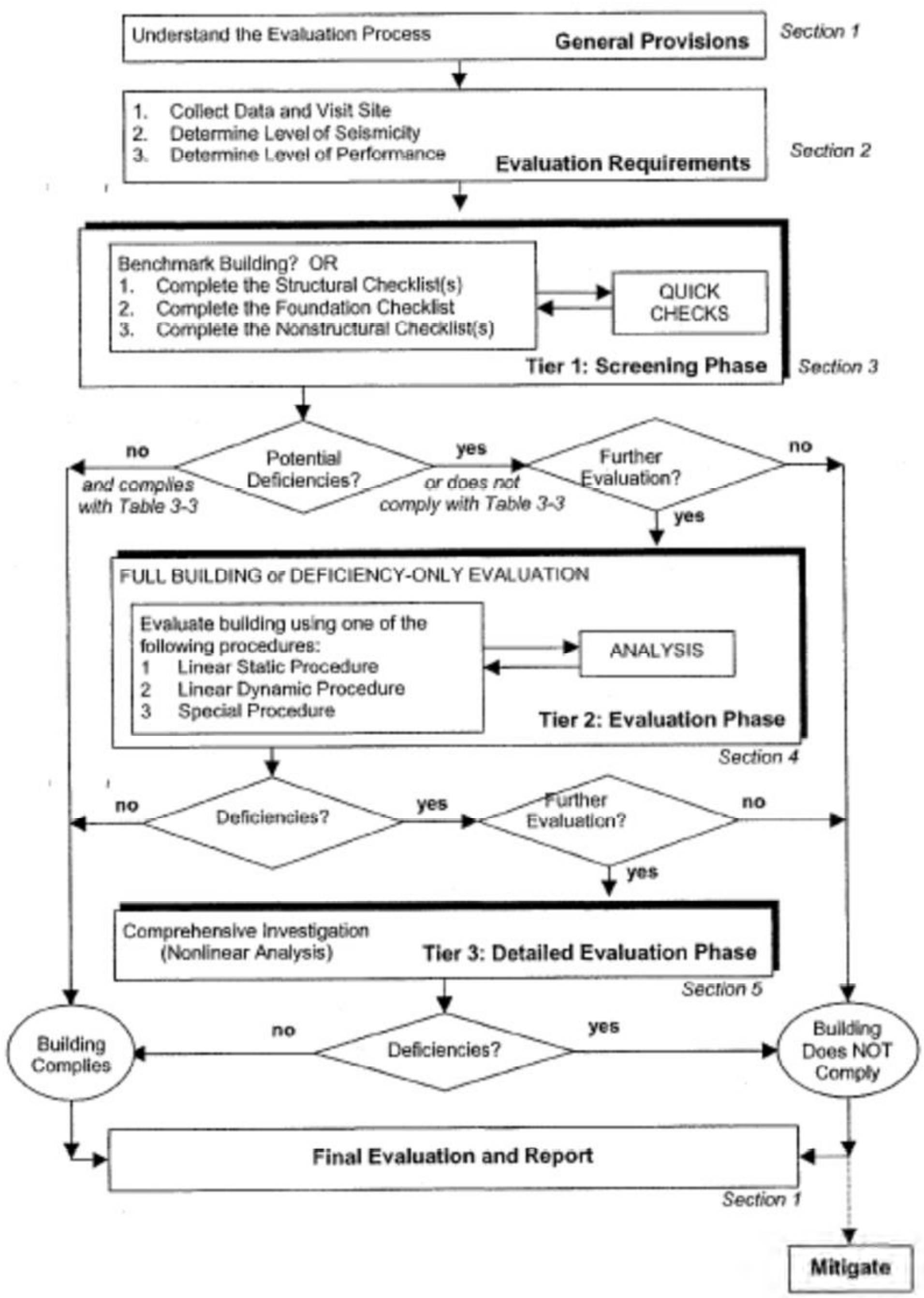


Table 3-1. Benchmark Buildings

	Model Building Seismic Design Provisions							
Building Type[1, 2]	NBC[ls]	SBC[ls]	UBC[ls]	IBC[ls]	NEHRP[ls]	FEMA 178[ls]	FEMA 310[ls, io]	CBC[io]
Wood Frame, Wood Shear Panels (Type W1 & W2)	1993	1994	1976	2000	1985	*	1998	1973
Wood Frame, Wood Shear Panels (Type W1A)	*	*	1997	2000	1997	*	1998	1973
Steel Moment-Resisting Frame (Type S1 & S1A)	*	*	1994[4]	2000	**	*	1998	1995
Steel Braced Frame (Type S2 & S2A)	1993	1994	1988	2000	1991	1992	1998	1973
Light Metal Frame (Type S3)	*	*	*	2000	*	1992	1998	1973
Steel Frame w/ Concrete Shear Walls (Type S4)	1993	1994	1976	2000	1985	1992	1998	1973
Reinforced Concrete Moment-Resisting Frame (Type C1)[3]	1993	1994	1976	2000	1985	*	1998	1973
Reinforced Concrete Shear Walls (Type C2 & C2A)	1993	1994	1976	2000	1985	*	1998	1973
Steel Frame with URM Infill (Type S5, S5A)	*	*	*	2000	*	*	1998	*
Concrete Frame with URM Infill (Type C3 & C3A)	*	*	*	2000	*	*	1998	*
Tilt-up Concrete (Type PC1 & PC1A)	*	*	1997	2000	*	*	1998	*
Precast Concrete Frame (Type PC2 & PC2A)	*	*	*	2000	*	1992	1998	1973
Reinforced Masonry (Type RM1)	*	*	1997	2000	*	*	1998	*
Reinforced Masonry (Type RM2)	1993	1994	1976	2000	1985	*	1998	*
Unreinforced Masonry (Type URM)[5]	*	*	1991[6]	2000	*	1992	*	*
Unreinforced Masonry (Type URMA)	*	*	*	2000	*	*	1998	*

[1] "Building Type" refers to one of the Common Building Types defined in Table 2-2.
[2] Buildings on hillside sites shall not be considered Benchmark Buildings.
[3] Flat Slab Buildings shall not be considered Benchmark Buildings.
[4] Steel Moment-Resisting Frames shall comply with the 1994 UBC Emergency Provisions, published September/October 1994, or subsequent requirements.
[5] URM buildings evaluated using the ABK Methodology (ABK, 1984) may be considered benchmark buildings.
[6] Refers to the GSREB or its predecessor, the Uniform Code of Building Conservation (UCBC).

[ls] Only buildings designed and constructed or evaluated in accordance with these documents and being evaluated to the Life Safety (LS) Performance Level may be considered Benchmark Buildings.
[io] Buildings designed and constructed or evaluated in accordance with these documents and being evaluated to either the Life Safety or Immediate Occupancy (IO) Performance Level may be considered Benchmark Buildings.

* No benchmark year; buildings shall be evaluated using this standard.
** Local provisions shall be compared with the UBC.

NBC = *National Building Code* (BOCA, 1993).
SBC = *Standard Building Code* (SBCC, 1994).
UBC = *Uniform Building Code* (ICBO, 1997)
GSREB = *Guidelines for Seismic Retrofit of Existing Buildings* (ICBO, 2001).
IBC = *International Building Code* (ICC, 2000).
NEHRP = FEMA 368 and 369, *NEHRP Recommended Provisions for the Development of Seismic Regulations for New Buildings* (BSSC, 2000)
FEMA 178 (*See* BSSC, 1992a)
FEMA 310 (*See* FEMA, 1998)
CBC = *California Building Code, California Code of Regulations, Title 24* (CBSC, 1995).

Figure 8 - Table of Benchmark Buildings (From ASCE 31-03)

Building A

Basic Structural Checklist for Building Type C2A: Concrete Shear Walls with Flexible Diaphragms

C	NC	N/A	ITEM	Crosby Group Comment:
BUILDING SYSTEM				
C			LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)	
		N/A	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building shall be greater than 4 percent of the height of the shorter building for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.1.2)	
		N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)	
		N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)	
		N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)	
		N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)	
C			VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)	
		N/A	MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)	
C			DETERIORATION OF WOOD: There shall be no signs of	

			decay, shrinkage, splitting, fire damage, or sagging in any of the wood members and none of the metal connection hardware shall be deteriorated, broken, or loose. (Tier 2: Sec. 4.3.3.1)	
C			DETERIORATION OF CONCRETE: There shall be no visible deterioration of concrete or reinforcing steel in any of the vertical- or lateral-force resisting elements. (Tier 2: Sec. 4.3.3.4)	
		N/A	POST-TENSIONING ANCHORS: There shall be no evidence of corrosion or spalling in the vicinity of post-tensioning or end fittings. Coil anchors shall not have been used. (Tier 2: Sec. 4.3.3.5)	
C			CONCRETE WALL CRACKS: All existing diagonal cracks in wall elements shall be less than 1/8 inch for Life Safety and 1/16 inch for Immediate Occupancy, shall not be concentrated in one location, and shall not form an X pattern. (Tier 2: Sec. 4.3.3.9)	
LATERAL-FORCE-RESISTING SYSTEM				
C			REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)	
C			SHEAR STRESS CHECK: The shear stress in the concrete shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the greater of 100 psi or $2\sqrt{f_c'}$ for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.1)	The average shear stresses in the concrete shear walls for all buildings were below the allowable values listed to the left.
	NC		REINFORCING STEEL: The ratio of reinforcing steel area to gross concrete area shall be not less than 0.0015 in the vertical direction and 0.0025 in the horizontal direction for Life Safety and Immediate Occupancy. The spacing of reinforcing steel shall be equal to or less than 18 inches for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.2)	The ratio of reinforcing steel area to gross concrete area in the concrete shear walls is below 0.0015.
CONNECTIONS				
	NC		WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support shall be anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections shall have adequate strength to resist the connection force calculated in the Quick Check procedure of Section 3.5.3.7. (Tier 2: Sec. 4.6.1.1)	The existing anchorage detail is insufficient to transfer and develop the out-of-plane forces from the walls. A seismic retrofit concerning the wall anchorage is recommended.
C			TRANSFER TO SHEAR WALLS: Diaphragms shall be connected for transfer of loads to the shear walls for Life Safety and the connections shall be able to develop the	

lesser of the shear strength of the walls or diaphragms for Immediate Occupancy. (Tier 2 Sec. 4.6.2.1)

C FOUNDATION DOWELS: Wall reinforcement shall be doweled into the foundation for Life Safety, and the dowels shall be able to develop the lesser of the strength of the walls or the uplift capacity of the foundation for Immediate Occupancy. (Tier 2: Sec. 4.6.3.5)

Building A

Supplemental Structural Checklist for Building Type C2A: Concrete Shear Walls with Flexible Diaphragms

C	NC	N/A		Crosby Group Comment:
LATERAL FORCE RESISTING SYSTEM				
			COUPLING BEAMS: The stirrups in coupling beams over means of egress shall be spaced at or less than d/2 and shall be anchored into the confined core of the beam with hooks of 135° or more for Life Safety. All coupling beams shall comply with the requirements above and shall have the capacity in shear to develop the uplift capacity of the adjacent wall for Immediate Occupancy. (Tier 2: Sec. 4.4.2.2.3)	
		N/A	OVERTURNING: All shear walls shall have aspect ratios less than 4-to-1. Wall piers need not be considered. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.4)	
		N/A	CONFINEMENT REINFORCING: For shear walls with aspect ratios greater than 2-to-1, the boundary elements shall be confined with spirals or ties with spacing less than $8d_b$. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.5)	
		N/A	REINFORCING AT OPENINGS: There shall be added trim reinforcement around all wall openings with a dimension greater than three times the thickness of the wall. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.6)	
		N/A	WALL THICKNESS: Thickness of bearing walls shall not be less than 1/25 the unsupported height or length, whichever is shorter, nor less than 4 inches. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.2.7)	
DIAPHRAGMS				
C			DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1)	
C			CROSS TIES: There shall be continuous cross ties between diaphragm chords. (Tier 2: Sec. 4.5.1.2)	
		N/A	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls shall be less than 25 percent of the wall length for Life Safety and 15 percent of the wall length for Immediate Occupancy. (Tier 2: Sec. 4.5.1.4)	

N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

N/A DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

NC STRAIGHT SHEATHING: All straight sheathed diaphragms shall have aspect ratios less than 2 to·1 for Life Safety and 1-to-1 for Immediate Occupancy in the direction being considered. (Tier 2: Sec. 4.5.2.1)

NC SPANS: All wood diaphragms with spans greater than 24 feet for Life Safety and 12 feet for Immediate Occupancy shall consist of wood structural panels or diagonal sheathing. (Tier 2: Sec. 4.5.2.2)

N/A UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms shall have horizontal spans less than 40 feet for Life Safety and 30 feet for Immediate Occupancy and shall have aspect ratios less than or equal to 4-to-1 for Life Safety and 3-to-1 for Immediate Occupancy. (Tier 2: Sec. 4.5.2.3)

The diaphragm for the barrel vaulted roof room has a span greater than 40 feet.

N/A NON·CONCRETE FILLED DIAPHRAGMS: Untopped metal deck diaphragms or metal deck diaphragms with fill other than concrete shall consist of horizontal spans of less than 40 feet and shall have span/depth ratios less than 4-to-1. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.3.1)

C OTHER DIAPHRAGMS: The diaphragm shall not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Tier 2: Sec. 4.5.7.1)

CONNECTIONS

N/A UPLIFT AT PILE CAPS: Pile caps shall have top reinforcement and piles shall be anchored to the pile caps for Life Safety, and the pile cap reinforcement and pile anchorage shall be able to develop the tensile capacity of the piles for Immediate Occupancy. (Tier 2: Sec. 4.6.3.10)

Building B

Basic Structural Checklist for Building Type W2: Wood Frames, Commercial and Industrial

C	NC	N/A	ITEM	Crosby Group Comment:
BUILDING SYSTEM				
C			LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)	
		N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)	
		N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)	
		N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)	
		N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)	
C			VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)	
		N/A	MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)	
C			DETERIORATION OF WOOD: There shall be no signs of decay, shrinkage, splitting, fire damage, or sagging in any of the wood members and none of the metal connection hardware shall be deteriorated, broken, or loose. (Tier 2: Sec. 4.3.3.1)	
		N/A	WOOD STRUCTURAL PANEL SHEAR WALL	

FASTENERS: There shall be no more than 15 percent of inadequate fastening such as overdriven fasteners, omitted blocking, excessive fastening spacing, or inadequate edge distance. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.3.3.2)

LATERAL FORCE-RESISTING SYSTEM

C		REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)	
C		SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the following values for Life Safety and Immediate Occupancy (Tier 2: Sec. 4.4.2.7.1): Structural panel sheathing: 1,000 plf Diagonal sheathing: 700 plf Straight sheathing: 100 plf All other conditions: 100 plf	Shear stress of diagonal sheathed walls: 515 plf < allowable 700 plf → OK (See Appendix C)
	N/A	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings shall not rely on exterior stucco walls as the primary lateral-force-resisting system (Tier 2: Sec. 4.4.2.7.2)	
	N/A	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard shall not be used as shear walls on buildings over one story in height with the exception of the uppermost level of a multi-story building. (Tier 2: Sec. 4.4.2.7.3)	
C		NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 for Life Safety and 1.5-to-1 for Immediate Occupancy shall not be used to resist lateral forces developed in the building in levels of moderate and high seismicity. Narrow wood shear walls with an aspect ratio greater than 2-to-1 for Immediate Occupancy shall not he used to resist lateral forces developed in the building in levels of low seismicity. (Tier 2: Sec. 4.4.2.7.4)	Narrow wood shear walls (greater than 2:1 aspect ratio) exist in the building but were not used in calculations of the shear stress check. Therefore, this item is judged to be compliant.
	N/A	WALLS CONNECTED THROUGH FLOORS: Shear walls shall have interconnection between stories to transfer overturning and shear forces through the floor. (Tier 2: Sec. 4.4.2.7.5)	
	N/A	HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story due to a sloping site, all shear walls on the downhill slope shall have an aspect ratio less than 1-to-1 for Life Safety and 1-to-2 for Immediate Occupancy. (Tier 2: Sec. 4.4.2.7.6)	

N/A CRIPPLE WALLS: Cripple walls below first-floor-level shear walls shall be braced to the foundation with wood structural panels. (Tier 2: Sec. 4.4.2.7.7)

C OPENINGS: Walls with openings greater than 80 percent of the length shall be braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or shall be supported by adjacent construction through positive ties capable of transferring the lateral forces. (Tier 2: Sec. 4.4.2.7.8)

CONNECTIONS

C WOOD POSTS: There shall be a positive connection of wood posts to the foundation. (Tier 2: Sec. 4.6.3.3)

C WOOD SILLS: All wood sills shall be bolted to the foundation. (Tier 2: Sec. 4.6.3.4)

C GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

Building B

Supplemental Structural Checklist for Building Type W2: Wood Frames, Commercial and Industrial

C	NC	N/A	ITEM	Crosby Group Comment:
LATERAL-FORCE-RESISTING SYSTEM				
		N/A	HOLD-DOWN ANCHORS: All shear walls shall have hold-down anchors constructed per acceptable construction practices, attached to the end studs. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.7.9)	
DIAPHRAGMS				
C			DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1)	
C			ROOF CHORD CONTINUITY: All chord elements shall be continuous, regardless of changes in roof elevation. (Tier 2: Sec. 4.5.1.3)	
		N/A	PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)	
		N/A	DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)	
		N/A	STRAIGHT SHEATHING: All straight sheathed diaphragms shall have aspect ratios less than 2-to-1 for Life Safety and 1-to-1 for Immediate Occupancy in the direction being considered. (Tier 2: Sec. 4.5.2.1)	
C			SPANS: All wood diaphragms with spans greater than 24 feet for Life Safety and 12 feet for Immediate Occupancy shall consist of wood structural panels or diagonal sheathing. Wood commercial and industrial buildings may have rod-braced systems. (Tier 2: Sec. 4.5.2.2)	
C			UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms shall have horizontal spans less than 40 feet for Life Safety and 30 feet for Immediate Occupancy and shall have aspect ratios less than or equal to 4-to-1 for Life Safety and 3-to-1 for Immediate Occupancy. (Tier 2: Sec. 4.5.2.3)	

C	OTHER DIAPHRAGMS: The diaphragm shall not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Tier 2: Sec. 4.5.7.1)
CONNECTIONS	
C	WOOD SILL BOLTS: Sill bolts shall be spaced at 6 feet or less for Life Safety and 4 feet or less for Immediate Occupancy, with proper edge and end distance provided for wood and concrete. (Tier 2: Sec. 4.6.3.9)

Building C4

Basic Structural Checklist for Building Type W2: Wood Frames, Commercial and Industrial

C	NC	N/A	ITEM	Crosby Group Comment:
BUILDING SYSTEM				
C			LOAD PATH: The structure shall contain a minimum of one complete load path for Life Safety and Immediate Occupancy for seismic force effects from any horizontal direction that serves to transfer the inertial forces from the mass to the foundation. (Tier 2: Sec. 4.3.1.1)	
		N/A	MEZZANINES: Interior mezzanine levels shall be braced independently from the main structure, or shall be anchored to the lateral-force-resisting elements of the main structure. (Tier 2: Sec. 4.3.1.3)	
		N/A	WEAK STORY: The strength of the lateral-force-resisting system in any story shall not be less than 80 percent of the strength in an adjacent story, above or below, for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.1)	
		N/A	SOFT STORY: The stiffness of the lateral-force-resisting system in any story shall not be less than 70 percent of the lateral-force-resisting system stiffness in an adjacent story above or below, or less than 80 percent of the average lateral-force-resisting system stiffness of the three stories above or below for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.3.2.2)	
		N/A	GEOMETRY: There shall be no changes in horizontal dimension of the lateral-force-resisting system of more than 30 percent in a story relative to adjacent stories for Life Safety and Immediate Occupancy, excluding one-story penthouses and mezzanines. (Tier 2: Sec. 4.3.2.3)	
C			VERTICAL DISCONTINUITIES: All vertical elements in the lateral-force-resisting system shall be continuous to the foundation. (Tier 2: Sec. 4.3.2.4)	
		N/A	MASS: There shall be no change in effective mass more than 50 percent from one story to the next for Life Safety and Immediate Occupancy. Light roofs, penthouses, and mezzanines need not be considered. (Tier 2: Sec. 4.3.2.5)	
C			DETERIORATION OF WOOD: There shall be no signs of decay, shrinkage, splitting, fire damage, or sagging in any	

	of the wood members and none of the metal connection hardware shall be deteriorated, broken, or loose. (Tier 2: Sec. 4.3.3.1)	
N/A	WOOD STRUCTURAL PANEL SHEAR WALL FASTENERS: There shall be no more than 15 percent of inadequate fastening such as overdriven fasteners, omitted blocking, excessive fastening spacing, or inadequate edge distance. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.3.3.2)	
LATERAL FORCE-RESISTING SYSTEM		
C	REDUNDANCY: The number of lines of shear walls in each principal direction shall be greater than or equal to 2 for Life Safety and Immediate Occupancy. (Tier 2: Sec. 4.4.2.1.1)	
C	SHEAR STRESS CHECK: The shear stress in the shear walls, calculated using the Quick Check procedure of Section 3.5.3.3, shall be less than the following values for Life Safety and Immediate Occupancy (Tier 2: Sec. 4.4.2.7.1): Structural panel sheathing: 1,000 plf Diagonal sheathing: 700 plf Straight sheathing: 100 plf All other conditions: 100 plf	The building has an average shear stress of 707 plf, which is under the allowable 1,000 plf for structural panel sheathing. However, narrow shear walls were required to produce a satisfactory shear stress. See "Narrow Shear Walls" below for more information.
N/A	STUCCO (EXTERIOR PLASTER) SHEAR WALLS: Multi-story buildings shall not rely on exterior stucco walls as the primary lateral-force-resisting system (Tier 2: Sec. 4.4.2.7.2)	
N/A	GYPSUM WALLBOARD OR PLASTER SHEAR WALLS: Interior plaster or gypsum wallboard shall not be used as shear walls on buildings over one story in height with the exception of the uppermost level of a multi-story building. (Tier 2: Sec. 4.4.2.7.3)	
NC	NARROW WOOD SHEAR WALLS: Narrow wood shear walls with an aspect ratio greater than 2-to-1 for Life Safety and 1.5-to-1 for Immediate Occupancy shall not be used to resist lateral forces developed in the building in levels of moderate and high seismicity. Narrow wood shear walls with an aspect ratio greater than 2-to-1 for Immediate Occupancy shall not he used to resist lateral forces developed in the building in levels of low seismicity. (Tier 2: Sec. 4.4.2.7.4)	The building possesses many narrow shear walls with an aspect ratio greater than 2:1. These narrow shear walls are likely to be "highly stressed and subject to severe deformations that will reduce the capacity of the walls" (ASCE 31-03 §C4.4.2.7.4). A Tier 2 Evaluation was performed and overturning and shear demands were calculated. The hold-down capacity is insufficient for the overturning forces. A seismic retrofit addressing this detail is recommended.
N/A	WALLS CONNECTED THROUGH FLOORS: Shear walls	

shall have interconnection between stories to transfer overturning and shear forces through the floor. (Tier 2: Sec. 4.4.2.7.5)

N/A HILLSIDE SITE: For structures that are taller on at least one side by more than one-half story due to a sloping site, all shear walls on the downhill slope shall have an aspect ratio less than 1-to-1 for Life Safety and 1-to-2 for Immediate Occupancy. (Tier 2: Sec. 4.4.2.7.6)

N/A CRIPPLE WALLS: Cripple walls below first-floor-level shear walls shall be braced to the foundation with wood structural panels. (Tier 2: Sec. 4.4.2.7.7)

C OPENINGS: Walls with openings greater than 80 percent of the length shall be braced with wood structural panel shear walls with aspect ratios of not more than 1.5-to-1 or shall be supported by adjacent construction through positive ties capable of transferring the lateral forces. (Tier 2: Sec. 4.4.2.7.8)

CONNECTIONS

C WOOD POSTS: There shall be a positive connection of wood posts to the foundation. (Tier 2: Sec. 4.6.3.3)

C WOOD SILLS: All wood sills shall be bolted to the foundation. (Tier 2: Sec. 4.6.3.4)

C GIRDER/COLUMN CONNECTION: There shall be a positive connection utilizing plates, connection hardware, or straps between the girder and the column support. (Tier 2: Sec. 4.6.4.1)

Building C4

Supplemental Structural Checklist for Building Type W2: Wood Frames, Commercial and Industrial

C NC N/A ITEM — **Crosby Group Comment:**

LATERAL-FORCE-RESISTING SYSTEM

N/A HOLD-DOWN ANCHORS: All shear walls shall have hold-down anchors constructed per acceptable construction practices, attached to the end studs. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.4.2.7.9)

DIAPHRAGMS

C DIAPHRAGM CONTINUITY: The diaphragms shall not be composed of split-level floors and shall not have expansion joints. (Tier 2: Sec. 4.5.1.1)

C ROOF CHORD CONTINUITY: All chord elements shall be continuous, regardless of changes in roof elevation. (Tier

2: Sec. 4.5.1.3)

N/A PLAN IRREGULARITIES: There shall be tensile capacity to develop the strength of the diaphragm at re-entrant corners or other locations of plan irregularities. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.7)

N/A DIAPHRAGM REINFORCEMENT AT OPENINGS: There shall be reinforcing around all diaphragm openings larger than 50 percent of the building width in either major plan dimension. This statement shall apply to the Immediate Occupancy Performance Level only. (Tier 2: Sec. 4.5.1.8)

N/A STRAIGHT SHEATHING: All straight sheathed diaphragms shall have aspect ratios less than 2-to-1 for Life Safety and 1-to-1 for Immediate Occupancy in the direction being considered. (Tier 2: Sec. 4.5.2.1)

C SPANS: All wood diaphragms with spans greater than 24 feet for Life Safety and 12 feet for Immediate Occupancy shall consist of wood structural panels or diagonal sheathing. Wood commercial and industrial buildings may have rod-braced systems. (Tier 2: Sec. 4.5.2.2)

N/A UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms shall have horizontal spans less than 40 feet for Life Safety and 30 feet for Immediate Occupancy and shall have aspect ratios less than or equal to 4-to-1 for Life Safety and 3-to-1 for Immediate Occupancy. (Tier 2: Sec. 4.5.2.3)

C OTHER DIAPHRAGMS: The diaphragm shall not consist of a system other than wood, metal deck, concrete, or horizontal bracing. (Tier 2: Sec. 4.5.7.1)

CONNECTIONS

C WOOD SILL BOLTS: Sill bolts shall be spaced at 6 feet or less for Life Safety and 4 feet or less for Immediate Occupancy, with proper edge and end distance provided for wood and concrete. (Tier 2: Sec. 4.6.3.9)

Appendix C – Calculations

Project:	Goleta Valley CC	Job No:		
Description:	ASCE 31-03	Date: October 2012		Sht:
	Seismic Evaluation	By: JW	Ck: CB	

Building A - Seismic Dead Loads

Typical Roof/Ceiling

Roofing	2.0	psf
1" Straight Sheath.	2.5	psf
Rafters/framing	3.0	psf
Lath and Plaster	8.0	psf
MEP	1.0	psf
Misc	1.5	psf
Total	18.0	psf

Auditorium/Barrel Vault Roof

Roofing	2.0	psf
Sheathing	2.5	psf
Framing/Trusses	5.5	psf
MEP	1.0	psf
Misc	1.0	psf
Total	12.0	psf

Floating Ground Floor

Carpet/finishing	3.0	psf
Subfloor	2.5	psf
Joists/framing	3.0	psf
MEP	1.0	psf
Misc	2.5	psf
Total	9.0	psf

Walls:

10" Concrete Walls

1.5" Stucco Finish	15	psf
10" Concrete	125	psf
Total	140.0	psf

8" Concrete Walls

1.5" Stucco Finish	15	psf
8" Concrete	100	psf
Total	115.0	psf

PSEUDO LATERAL FORCE :

PER ASCE-31-03 § 3.5.2.1

$V = C S_a W$ (EQ 3-1)

$C = 1.0$ (TABLE 3-4)

$S_a = \frac{S_{D1}}{T}$ (§ 3.5.2.3.1)

S_a SHALL NOT EXCEED S_{DS}

WHERE:

$S_{D1} = 0.665$

$S_{DS} = 1.138$

$T = C_t h_n^{\beta}$ (EQ 3-8)

$C_t = 0.020$

$h_n = 15 FT$

$\beta = 0.75$

$T = (0.020)(15FT)^{0.75} = 0.152$ SEC.

$S_a = \frac{0.665}{0.152} = 4.375 > 1.138 \therefore S_a = 1.138$

$V = (1.0)(1.138) W$

$V = 1.138W$

Crosby group

Building A - Seismic Base Shear

$V_{BASE} = CS_aW =$ 1.138W

Typ Roof DL =	18.0 psf
Aud/B. Vault DL =	12.0 psf
Floor DL =	9.0 psf
Roof Area =	14937 ft^2
Aud/ B. Vault Area =	7395 ft^2
Floor Area =	14580 ft^2
8" Walls N/S Dirc =	349 kips
10" Walls N/S Dirc =	864 kips
8" Walls E/W Dirc =	530 kips
10" Walls E/W Dirc =	363 kips
Seismic Wt, $W_{N/S}$ =	1702 kips
Seismic Wt, $W_{E/W}$ =	1382 kips

$V_{N/S}$ = 1937 kips

$V_{E/W}$ = 1572 kips

Crosby group

Project: Goleta Valley CC	Job No:	
Description: Main Building	Date: 10/18/12	Sht: 1
	By: ML Ck:	

Pseudo Lateral Force/Base Shear

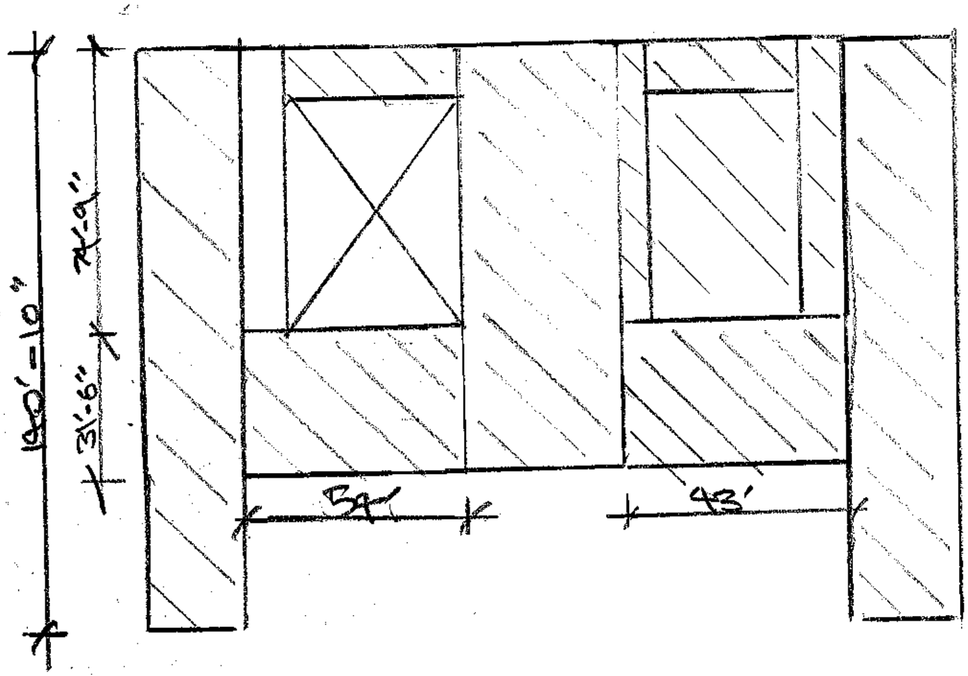
Typical Roof: 18 PSF
Auditorium/Barrel Vault Roof: 12 PSF
Floating Ground Floor: 9.0 PSF

10" Walls: 140 PSF
8" Walls: 115 PSF

(See Prev Calcs)

$V = 1.133\,W$

Identify Individual Diaphragms:

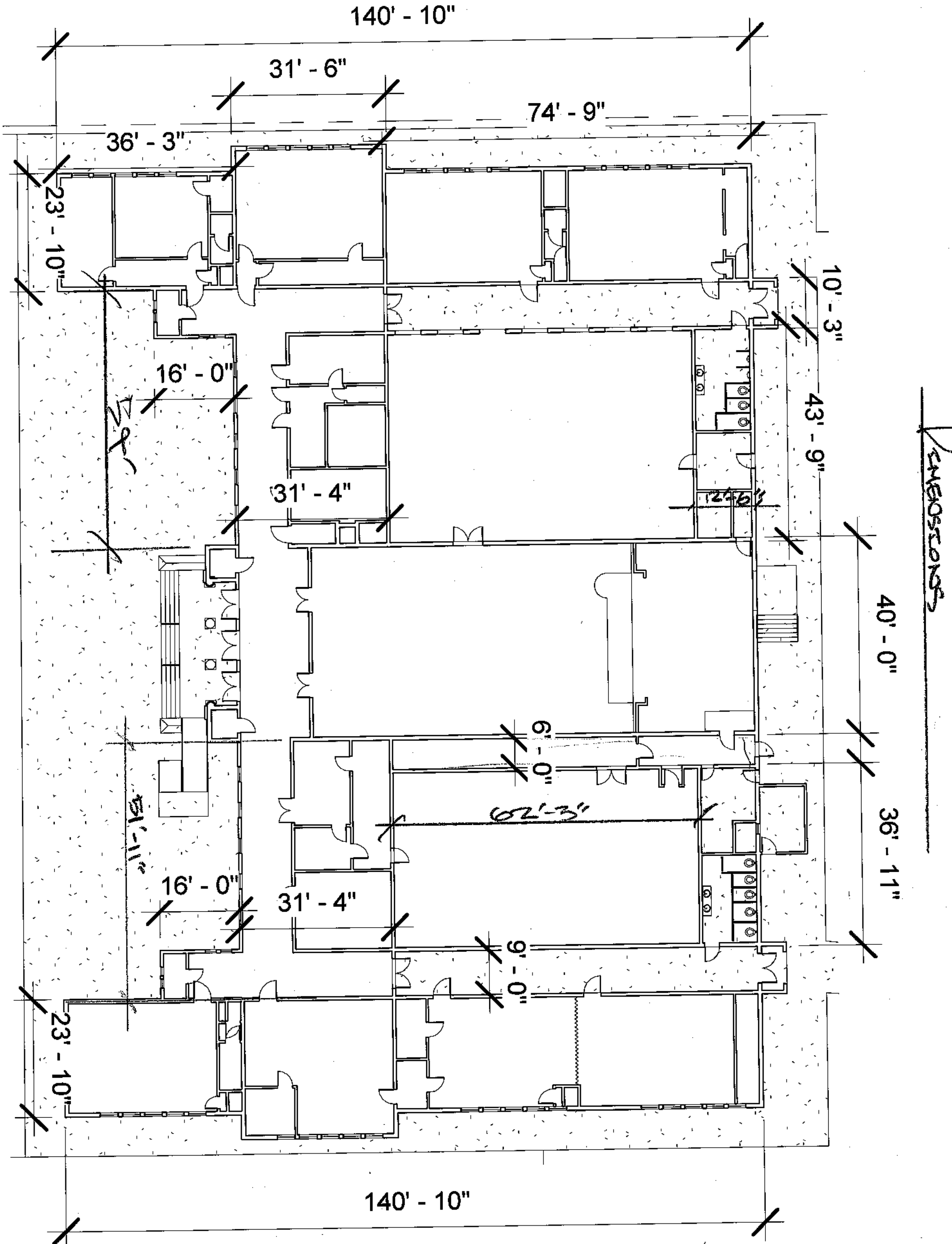


Plan View

Scale: (140' = 1/8")

ASCE 31-03 Eq 3-12:

Shear Stress in Shear Walls: $V_j = \frac{1}{m}\left[\frac{V_j}{A_w}\right]$


140' - 10"
31' - 6"
74' - 9"
36' - 3"
23' - 10"
10' - 3"
16' - 0"
43' - 9"
31' - 4"
40' - 0"
6' - 0"
62'-3"
36' - 11"
16' - 0"
31' - 4"
9' - 0"
23' - 10"
140' - 10"

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/8/12	Sht: 2
	By: ML Ck:	

LEFT DIAPHRAGM (N-S)

ROOF AREA: 141' × 24' = 3384 FT² (CLASSROOMS)

1/2 (44' × 13' + 44' × 32') = 990 FT² (CORRIDOR TRIB)

126' × 11' = 1386 FT² (LONG HALLWAY)

Σ = 5760 FT²

FLOOR AREA:

3384 FT² + 990 FT² + 47' × 11' = 4891 FT²

WALLS:

LENGTH: 24' × 4 = 96 FT (TRANSV. DIR)

96' × 8' TRIB HT × 140 PSF = 108 KIPS

141' × 2 = 282 FT (LONGITUDINAL DIR)

282' × 8' TRIB HT × 140 PSF = 316 KIPS

TOTAL SEISMIC WEIGHT:

(5760 FT² × 18 PSF + 4891 FT² × 9 PSF)/1000

+ 108^K + 316^K = 572^K

V = 1.138W

= 651^K

Crosby group

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/18/12	Sht: 3
	By: ML Ck:	

CALCULATE AREA OF WALLS

LENGTH: APPROX 138 FT

$138\text{ FT} \times 12 \times 8'' = 13248\text{ IN}^2$

$V_{S,AVG} = \frac{1}{4}\ \frac{651{,}000\#}{13{,}248\text{ IN}^2} = 12.3\text{ PSI} < \begin{cases} 100\text{ PSI} \\ 2\sqrt{f'_c} \end{cases}$

$\therefore$ OK ✓

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/8/12	Sht: 4
	By: ML Ck:	

MIDDLE DIAPHRAGM (N-S)

ROOF AREA:

$40' \times (76' + 32') = 4320\ FT^2$
$(54' \times 32')/2 = 864\ FT^2$
$(44' \times 13')/2 = 286\ FT^2$
$(52' \times 32')/2 = 832\ FT^2$
$6' \times 75' = 450\ FT^2$ $\Sigma = \underline{6752\ FT^2}$

FLOOR AREA:

$6752\ FT^2 - 286\ FT^2 = \underline{6466\ FT^2}$

WALL LENGTHS:

$(76' + 32') \times 2 + 40' \times 2 + 54'/2 \times 3 \times 2$
$+ 44'/2 \times 2 \times 2 + 40' = 586\ FT$

$586\ FT \times 11'$ TRIB WIDTH $\times 140\ PSF = \underline{903^K}$

TOTAL SEISMIC WEIGHT

$(6752\ FT^2 \times 18\ PSF + 6466\ FT^2 \times 9\ PSF)/1000$
$+ 903\ K = \underline{1082^K}$

$V = 1.138W = \boxed{1232\ KIPS}$

CALCULATE AREA OF WALLS

LENGTH OF WALLS ABOUT 46' (LIMIT TO > 10' WALLS)
$46' \times 12 \times 8'' = 4416\ IN^2$

$V_{S,AVG} = \frac{1}{4} \frac{1232{,}000\#}{4416\ IN^2} = 70\ PSI < \begin{cases} 100\ PSI \\ 2\sqrt{f'_c} \end{cases}$

∴ OK ✓

Project: GOLETA VALLEY	Job No:	
Description: MAIN BUILDING	Date: 10/8/12 By: ML Ck:	Sht: 5

WEIGHT DIAPHRAGM

ROOF AREA:

$141' \times 24' = 3384 \text{ FT}^2$

$(52' \times 32')/2 = 832 \text{ FT}^2$

$(75' \times 9')/2 = 338 \text{ FT}^2 \qquad \Sigma = \underline{4554 \text{ FT}^2}$

FLOOR AREA:

$4554 \text{ FT}^2 - 338 \text{ FT}^2 = \underline{4216 \text{ FT}^2}$

WALL LENGTHS:

$141' \times 2 + 24' \times 4 + 32' \times 2 \;/2 = 430 \text{ FT}$

TOTAL SEISMIC WEIGHT:

$18 \text{ PSF} \times 4554 \text{ FT}^2 + 9 \text{ PSF} \times 4216 \text{ FT}^2$

$+ 430 \text{ FT} \times 19.5'/2 \times 190 \text{ PSF} = 707 \text{ K}$

$V = 1.138 W = \boxed{803 \text{ K}}$

CALCULATE AREA OF WALLS

LENGTH: ABOUT 118' (EXCLUDE NARROW WALLS)

$\text{AREA} = 118' \times 12 \times 8'' = 11{,}328 \text{ IN}^2$

$V_{S,AVG} = \frac{1}{4} \frac{803{,}000\#}{11{,}328 \text{ IN}^2} = 17.8 \text{ PSI} < \begin{cases} 100 \text{ PSI} \\ 2\sqrt{f'_c} \end{cases}$

OK ✓

Crosby group

Project: GOLETA VALLEY	Job No:	
Description: MAIN BUILDING	Date: 10/8/12	Sht: 6
	By: ML Ck:	

BARREL VAULTED ROOM

ROOF AREA ≈ FLOOR AREA:

$37' \times 63 = 2331\ FT^2$

LENGTH OF WALLS:

APPROX 200' (INCLUDING BOTH DIRECTIONS)

TOTAL SEISMIC WEIGHT

$2331\ FT^2 (12\ PSF + 9\ PSF) + 200' \times 8' \times 140\ PSF$

$= 273\ K$

$V = 1.138\ W = 310.7\ KIPS$

CALCULATE AREA OF WALLS:

TRANSVERSE DIRECTION OF ROOM (CONTROLS)

APPROX 24' (EXCLUDING NARROW WALLS)

$A = 24' \times 8'' \times 12 = 2304\ IN^2$

$$V_{S,AVG} = \frac{1}{4} \frac{310700\#}{2304\ IN^2} = 33.7\ PSI < \begin{cases} 100\ PSI \\ 2\sqrt{f'_c} \end{cases}$$

∴ OK ✓

Crosby group

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/8/12	Sht: 7
	By: ML Ck:	

DIAPHRAGM ANALYSIS/SHEAR STRESS CHECK IN E-W DIRECTION

LEFT OR RIGHT CLASSROOM WING DIAPHRAGMS

USE 805^K (CONSERVATIVE) FROM PREV CALC FOR PSEUDO LAT. FORCE

TOTAL LENGTH OF E-W SHEAR WALL: APPROX 95'

AREA: 95' x 12 x 8" = 9120 in^2

$$V_{s,AVG} = \frac{1}{4} \frac{805{,}000\#}{9120\ in^2} = 22.1\ psi < \left\{ \begin{array}{l} 100\ psi \\ 2\sqrt{f'c} \end{array} \right.$$

∴ OK ✓

MIDDLE DIAPHRAGM:

USE 1232^K FROM PREV. CALC FOR PSEUDO LAT FORCE

TOTAL LENGTH OF E-W SHEAR WALL: APPROX 55'

AREA: 55' x 12 x 8" = 5280 in^2

$$V_{s,AVG} = \frac{1}{4} \frac{1{,}222{,}000\#}{5280\ in^2} = 58.3\ psi < \left\{ \begin{array}{l} 100\ psi \\ 2\sqrt{f'c} \end{array} \right.$$

∴ OK ✓

Reinforcing Steel Check

(2) 3/8" Mats @ 18" o.c. both ways

$A_{s,\#3} = \pi(3/8"/2)^2 = 0.11\ in^2$ (circular bars)

$= (3/8")^2 = 0.14$ (square bars)

$\rho = \frac{A_s}{bd} = \frac{0.11 \times 2}{18" \times 8"} = .0015$

$= \frac{0.14 \times 2}{18" \times 8"} = .0019$

.0023 min, for horiz dir.

NC. per ASCE 31 checklist.

See EnerCalc. (existing reinf ok for strength/deflection against out-of-plane loads)

Concrete Slender Wall

ENERCALC, INC. 1983-2012, Build:6.12.11.1, Ver:6.12.11.1

Lic. # : KW-06002900 — Licensee : CROSBY GROUP

Description : Goleta - Main Building, OOP reinforcement check , 8" WALL

Code References

Calculations per ACI 318-05 Sec 14.8, IBC 2006, CBC 2007, ASCE 7-05

Load Combinations Used : ASCE 7-05

General Information

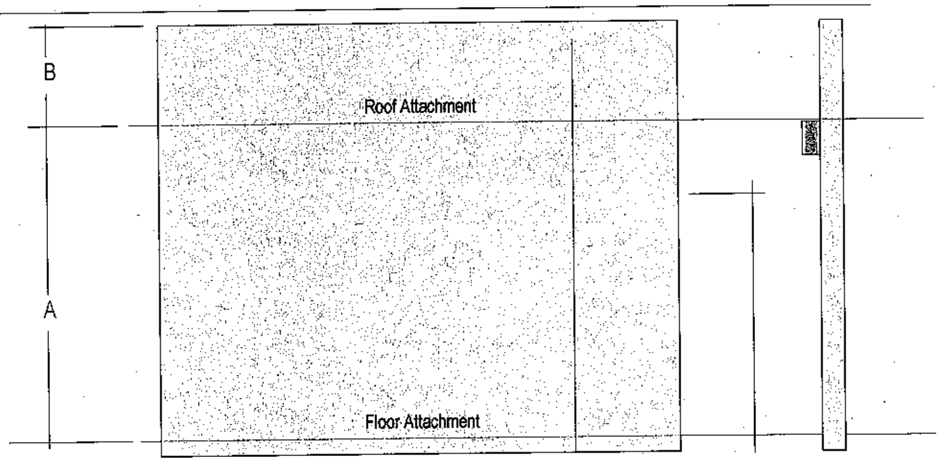
f'c : Concrete 28 day strength	=	2.50 ksi	Wall Thickness	8.0 in	Temp Diff across thickness =	0.0 deg F
Fy : Rebar Yield	=	40.0 ksi	Rebar at each face		Min Allow Out-of-Plane Defl Ratio = L /	150.0
Ec : Concrete Elastic Modulus	=	3,122.0 ksi	Rebar "d" distance	1.250 in	Minimum Vertical Steel % =	0.00150
λ : Lt Wt Conc Factor	=	1.0	Lower Level Rebar . . .		Using Stiff. Reduction Factor per ACI R.10.12.3	
Fr : Rupture Modulus	=	250.0 psi	Bar Size #	3		
Max % of ρ balanced	=	0.01693	Bar Spacing	18 in		
Max Pu/Ag = f'c *	=	0.060				
Concrete Density	=	150.0 pcf				
Width of Design Strip	=	12.0 in				

One-Story Wall Dimensions

A Clear Height = 14.0 ft

B Parapet height = 0.0 ft

Wall Support Condition Top & Bottom Pinned



Vertical Loads

Vertical Uniform Loads . . . (Applied per foot of Strip Width)		DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind
Ledger Load	Eccentricity 4.0 in	0.2160	0.0	0.0	0.0	0.0 k/ft
Concentric Load		0.0	0.0	0.0	0.0	0.0 k/ft

Lateral Loads

Full area WIND load 0.0 psf

Fp = Wall Wt. * 0.6828 = 68.280 psf

Wall Weight Seismic Load Input Method : ASCE seismic factors entered

SDS Value per ASCE 12.11.1

S_{DS} = 1.707 — 1.138 x 2 x 0.75 (75% Performance LVL)

DESIGN SUMMARY

Results reported for "Strip Width" of 12.0 in

	Governing Load Combination . . .	Actual Values . . .		Allowable Values . . .	
PASS	Moment Capacity Check	Maximum Bending Stress Ratio =	0.8787		
	+0.90D+E	Max Mu	1.706 k-ft	Phi * Mn	1.941 k-ft
PASS	Service Deflection Check	Min. Defl. Ratio	4,609.38	Max Allow Ratio	150.0
	D + L + S + E/1.4	Max. Deflection	0.03645 in	Max. Allow. Defl.	1.120 in
PASS	Axial Load Check	Max Pu / Ag	11.450 psi	0.06 * f'c	150.0 psi
	+1.20D+0.50L+0.20S+E	Location	7.233 ft		
PASS	Reinforcing Limit Check	Controlling As/bd	0.000905	As/bd = 0.0 rho bal	0.01693
FAIL	Minimum Moment Check	Mcracking	2.667 k-ft	Minimum Phi Mn	1.709 k-ft
	D Only				

Maximum Reactions . . .	for Load Combination....	
Top Horizontal	E Only	0.4780 k
Base Horizontal	E Only	0.4780 k
Vertical Reaction	D Only	1.616 k

Description : Goleta - Main Building, OOP reinforcement check

Design Maximum Combinations - Moments

Load Combination	Axial Load Pu (k)	Axial Load 0.06*f'c*b*t (k)	Mcr (k-ft)	Mu (k-ft)	Phi	Moment Values Phi Mn (k-ft)	As (in^2)	As Ratio	0.6 * rho bal
D Only at 13.53 to 14.00	0.000	14.400	2.67	0.10	0.90	1.71	0.073	0.0009	0.0169
+1.20D+0.50Lr+1.60L at 13.53 to 14.00	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+1.60L+0.50S at 13.53 to 14.00	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+1.60Lr+0.50L at 13.53 to 14.00	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+1.60Lr+0.80W at 13.53 to 14.00	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+0.50L+1.60S at 13.53 to 14.00	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+1.60S+0.80W at 13.53 to 14.00	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+0.50Lr+0.50L+1.60W at 13.53 to 14.	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+0.50L+0.50S+1.60W at 13.53 to 14.0	0.000	14.400	2.67	0.09	0.90	1.71	0.073	0.0009	0.0169
+1.20D+0.50L+0.20S+E at 7.00 to 7.47	1.099	14.400	2.67	1.72	0.90	2.02	0.073	0.0009	0.0169
+0.90D+1.60W at 13.53 to 14.00	0.000	14.400	2.67	0.06	0.90	1.71	0.073	0.0009	0.0169
+0.90D+E at 7.00 to 7.47	0.824	14.400	2.67	1.71	0.90	1.94	0.073	0.0009	0.0169

Design Maximum Combinations - Deflections

Load Combination	Axial Load Pu (k)	Moment Values Mcr (k-ft)	Moment Values Mactual (k-ft)	I gross (in^4)	Stiffness I cracked (in^4)	I effective (in^4)	Deflections Deflection (in)	Defl. Ratio
D + L + Lr at 7.93 to 8.40	0.823	2.67	0.04	512.00	31.50	384.000	0.001	128686.4
D + L + W at 7.93 to 8.40	0.823	2.67	0.04	512.00	31.50	384.000	0.001	128686.4
D + L + W + S/2 at 7.93 to 8.40	0.823	2.67	0.04	512.00	31.50	384.000	0.001	128686.4
D + L + S + W/2 at 7.93 to 8.40	0.823	2.67	0.04	512.00	31.50	384.000	0.001	128686.4
D + L + S + E/1.4 at 7.00 to 7.47	0.916	2.67	1.23	512.00	31.97	384.000	0.036	4,609.4
D + 0.5(L+Lr) + 0.7W at 7.93 to 8.40	0.823	2.67	0.04	512.00	31.50	384.000	0.001	128686.4
D + 0.5(L+Lr)+ 0.7E at 7.00 to 7.47	0.916	2.67	1.21	512.00	31.97	384.000	0.036	4,700.1

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
D Only	0.0 k	0.01 k	1.616 k
S Only	0.0 k	0.00 k	0.000 k
W Only	0.0 k	0.00 k	0.000 k
E Only	0.5 k	0.48 k	0.000 k
D + L + Lr	0.0 k	0.01 k	1.616 k
D + L + S	0.0 k	0.01 k	1.616 k
D + L + W + S/2	0.0 k	0.01 k	1.616 k
D + L + S + W/2	0.0 k	0.01 k	1.616 k
D + L + S + E/1.4	0.3 k	0.34 k	1.616 k

Concrete Slender Wall

Lic. # : KW-06002900 Licensee : CROSBY GROUP

Description : Goleta - Main Building, Out-of-plane reinforcement check, 10" wall

Code References

Calculations per ACI 318-05 Sec 14.8, IBC 2006, CBC 2007, ASCE 7-05
Load Combinations Used : ASCE 7-05

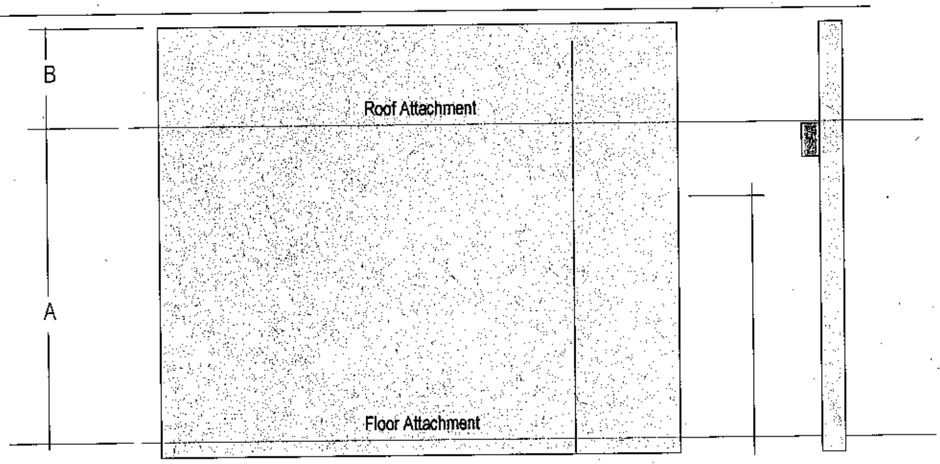
General Information

f'c : Concrete 28 day strength =	2.50 ksi	Wall Thickness	10.0 in	Temp Diff across thickness =	deg F
Fy : Rebar Yield =	40.0 ksi	Rebar at each face		Min Allow Out-of-Plane Defl Ratio =	L / 150.0
Ec : Concrete Elastic Modulus =	3,122.0 ksi	Rebar "d" distance	1.250 in	Minimum Vertical Steel % =	0.00150
λ : Lt Wt Conc Factor =	1.0	Lower Level Rebar . . .		Using Stiff. Reduction Factor per ACI R.10.12.3	
Fr : Rupture Modulus =	250.0 psi	Bar Size #	4		
Max % of ρ balanced =	0.01693	Bar Spacing	18.0 in		
Max Pu/Ag = f'c * =	0.060				
Concrete Density =	150.0 pcf				
Width of Design Strip =	12.0 in				

One-Story Wall Dimensions

A Clear Height = 20.0 ft
B Parapet height = 0.0 ft

Wall Support Condition Top & Bottom Pinned



Vertical Loads

Vertical Uniform Loads . . . *(Applied per foot of Strip Width)*		DL : Dead	Lr : Roof Live	Lf : Floor Live	S : Snow	W : Wind
Ledger Load	Eccentricity 5.0 in	0.360	0.0	0.0	0.0	0.0 k/ft
Concentric Load		0.0	0.0	0.0	0.0	0.0 k/ft

Lateral Loads

Full area WIND load 0.0 psf
Fp = Wall Wt. * 0.6828 = 85.350 psf

Wall Weight Seismic Load Input Method : ASCE seismic factors entered
SDS Value per ASCE 12.11.1
S_{DS} = 1.707 = 1.138 x 2 x 0.75 ← 75% PERFORMANCE LEVEL
0.4x2 (FLEX, DEMAND) >

DESIGN SUMMARY — OK,

Results reported for "Strip Width" of 12.0 in

	Governing Load Combination . . .	Actual Values . . .		Allowable Values . . .	
~~FAIL~~ DCR=1.009	Moment Capacity Check +0.90D+E	Maximum Bending Stress Ratio =	1.009 DCR=1.009 OK		
		Max Mu	4.367 k-ft	Phi * Mn	4.328 k-ft
PASS	Service Deflection Check D + L + S + E/1.4	Min. Defl. Ratio	2,481.88	Max Allow Ratio	150.0
		Max. Deflection	0.09670 in	Max. Allow. Defl.	1.60 in
PASS	Axial Load Check +1.20D+0.50L+0.20S+E	Max Pu / Ag	16.10 psi	0.06 * f'c	150.0 psi
		Location	10.333 ft		
PASS	Reinforcing Limit Check	Controlling As/bd	0.001270	As/bd = 0.0 rho bal	0.01693
FAIL	Minimum Moment Check D Only	Mcracking	4.167 k-ft	Minimum Phi Mn	3.833 k-ft

Maximum Reactions . . .	for Load Combination....	
Top Horizontal	E Only	0.8535 k
Base Horizontal	E Only	0.8535 k
Vertical Reaction	D + L + S + E/1.4	2.860 k

Concrete Slender Wall

Description : Goleta - Main Building, Out-of-plane reinforcement check, 10" wall

Design Maximum Combinations - Moments

Load Combination	Axial Load Pu (k)	0.06*f'c*b*t (k)	Mcr (k-ft)	Mu (k-ft)	Phi	Moment Values Phi Mn (k-ft)	As (in^2)	As Ratio	0.6 * rho bal
D Only at 19.33 to 20.00	0.000	18.000	4.17	0.21	0.90	3.83	0.133	0.0013	0.0169
+1.20D+0.50Lr+1.60L at 19.33 to 20.00	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+1.60L+0.50S at 19.33 to 20.00	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+1.60Lr+0.50L at 19.33 to 20.00	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+1.60Lr+0.80W at 19.33 to 20.00	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+0.50L+1.60S at 19.33 to 20.00	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+1.60S+0.80W at 19.33 to 20.00	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+0.50Lr+0.50L+1.60W at 19.33 to 20.	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+0.50L+0.50S+1.60W at 19.33 to 20.0	0.000	18.000	4.17	0.18	0.90	3.83	0.133	0.0013	0.0169
+1.20D+0.50L+0.20S+E at 10.00 to 10.67	1.932	18.000	4.17	4.41	0.90	4.49	0.133	0.0013	0.0169
+0.90D+1.60W at 19.33 to 20.00	0.000	18.000	4.17	0.14	0.90	3.83	0.133	0.0013	0.0169
+0.90D+E at 10.00 to 10.67	1.449	18.000	4.17	4.37	0.90	4.33	0.133	0.0013	0.0169

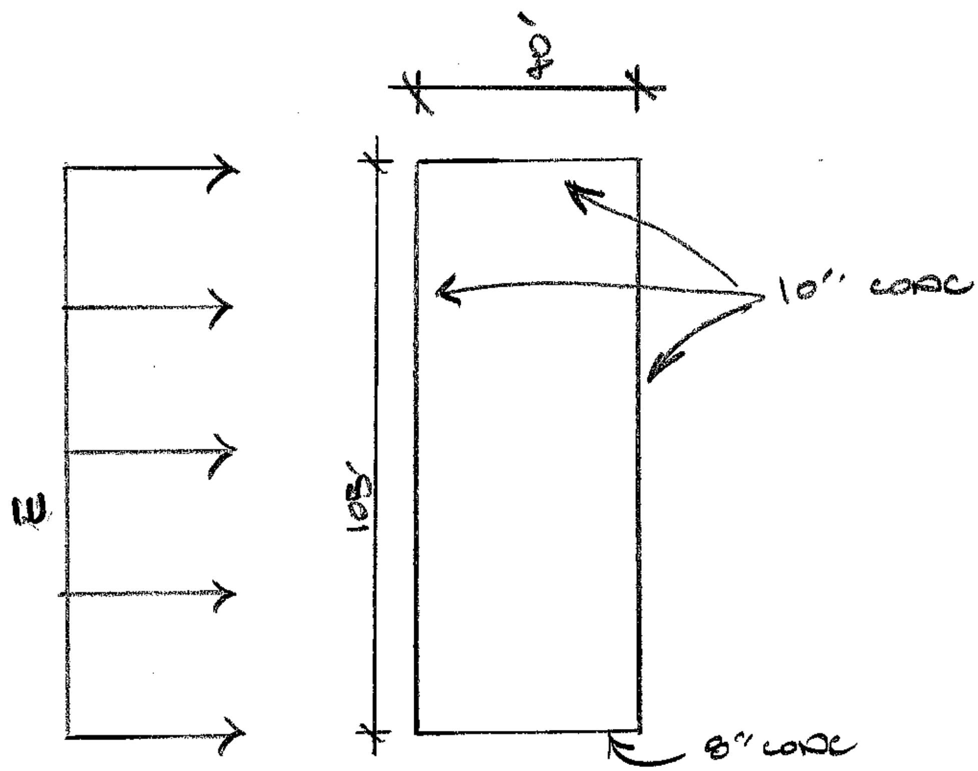
Design Maximum Combinations - Deflections

Load Combination	Axial Load Pu (k)	Moment Values Mcr (k-ft)	Mactual (k-ft)	I gross (in^4)	Stiffness I cracked (in^4)	I effective (in^4)	Deflections Deflection (in)	Defl. Ratio
D + L + Lr at 11.33 to 12.00	1.443	4.17	0.09	1,000.00	92.17	750.000	0.003	84,315.6
D + L + W at 11.33 to 12.00	1.443	4.17	0.09	1,000.00	92.17	750.000	0.003	84,315.6
D + L + W + S/2 at 11.33 to 12.00	1.443	4.17	0.09	1,000.00	92.17	750.000	0.003	84,315.6
D + L + S + W/2 at 11.33 to 12.00	1.443	4.17	0.09	1,000.00	92.17	750.000	0.003	84,315.6
D + L + S + E/1.4 at 10.00 to 10.67	1.610	4.17	3.13	1,000.00	93.47	750.000	0.097	2,481.9
D + 0.5(L+Lr) + 0.7W at 11.33 to 12.00	1.443	4.17	0.09	1,000.00	92.17	750.000	0.003	84,315.6
D + 0.5(L+Lr)+ 0.7E at 10.00 to 10.67	1.610	4.17	3.07	1,000.00	93.47	750.000	0.095	2,531.0

Reactions - Vertical & Horizontal

Load Combination	Base Horizontal	Top Horizontal	Vertical @ Wall Base
D Only	0.0 k	0.01 k	2.860 k
S Only	0.0 k	0.00 k	0.000 k
W Only	0.0 k	0.00 k	0.000 k
E Only	0.9 k	0.85 k	0.000 k
D + L + Lr	0.0 k	0.01 k	2.860 k
D + L + S	0.0 k	0.01 k	2.860 k
D + L + W + S/2	0.0 k	0.01 k	2.860 k
D + L + S + W/2	0.0 k	0.01 k	2.860 k
D + L + S + E/1.4	0.6 k	0.60 k	2.860 k

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/16/12	Sht:
	By: ML Ck:	



OUT OF PLANE ANCHORAGE FORCES

$T_c = 0.9 S_{DS}\, W_p\, A_p$ (ASCE 31-03 EQ 3-16)

$S_{DS} = 1.138\ g$

W_p = UNIT WT. OF WALL
= 140 PSF (10")
115 PSF (8")

ANCHORAGE CONNECTIONS
ARE SPACED @ 12'-0" OC
TRIB WALL HT = 9'-0"

$A_p = 9' \times 12' - \underbrace{(5' \times 5')}_{\text{WINDOW}} = 83\ FT^2$

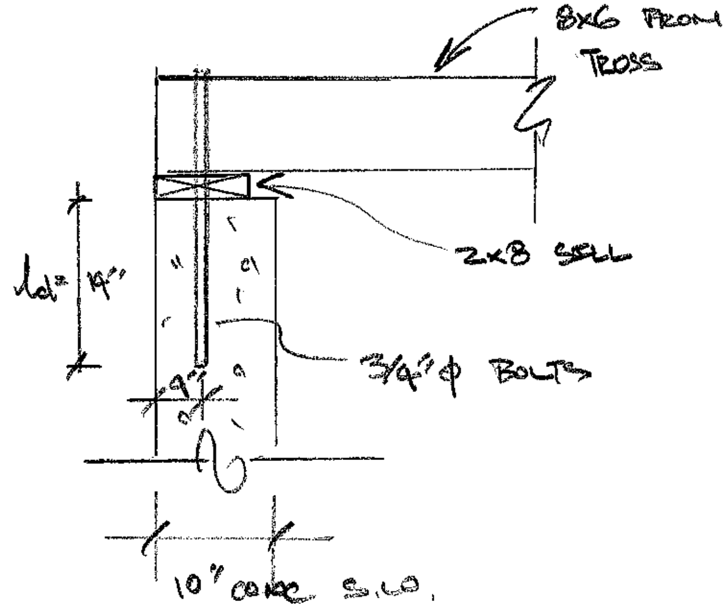
$T_c = 0.9\,(1.138)(140\ PSF)(83\ FT^2)$
= **11.9 KIPS**

Project: Goleta Valley CC	Job No:	
Description: Main Building	Date: 10/16/12	Sht:
	By: ML Ck:	

Diaphragm Anchorage

Embedment: 14.5"
Bolt size: 3/4"

$T_c = 11.9$ kips Demand



ACI 318-08 Appendix D

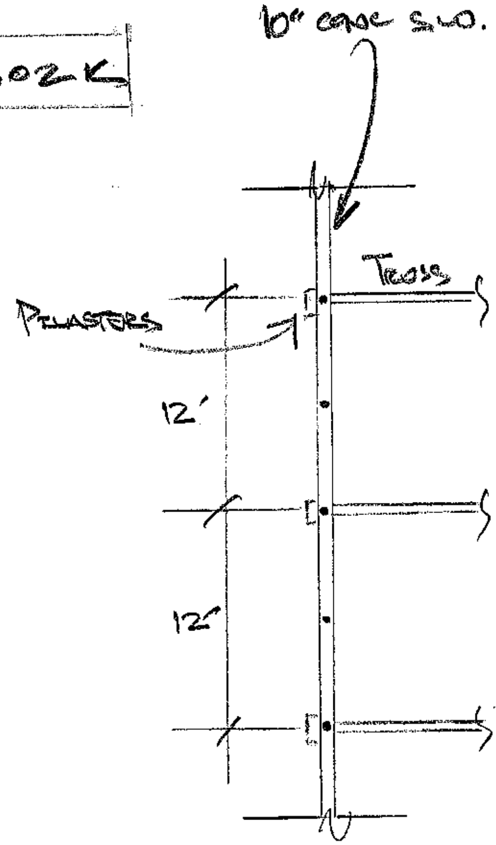
Steel Strength (Assume: A307 bolts, $F_u = 60$ ksi)

$V_{sa} = n A_{se,v} f_{uta} \times 0.6$

$= (0.334 \text{ in}^2)(60 \text{ ksi}) \times 0.6 = \boxed{12.02 K}$

$\phi = 0.65$

$\phi V_{sa} = \boxed{7.82 K}$



Plan View

Concrete Breakout

$V_{cb} = \frac{A_{vc}}{A_{vco}} \psi_{ed} \psi_c \psi_h V_b$ $\phi = 0.70$

$c_{a1} = 6"$ $A_{vco} = 4.5(6)^2 = 162 \text{ in}^2$

$A_{vc} = 162 \text{ in}^2$

$V_b = (7 (l_e/d_a)^{0.2} \sqrt{d_a}) \lambda \sqrt{f'_c}\, c_{a1}^{1.5}$

$l_e \le 8 d_a$ $f'_c = 2500$ psi

$= 6"$

$V_b = 6.75$ kips

$\psi_{ed} = 1.0$

$\psi_c = 1.0$

$\psi_h = 1.0$

$\boxed{V_{cb} = 6.75K \quad \phi V_{cb} = 4.73K}$

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/16/12	Sht:
	By: ML Ck:	

CONCRETE PRYOUT

$V_{cp} = K_{cp} N_{cb}$ $\qquad \psi_{ed} = 0.76$

$K_{cp} = 2.0$ FOR $h_{ef} > 2.5''$ $\qquad \psi_c = 1.0$

$N_{cb} = \frac{A_{NC}}{A_{NCO}} \psi_{ed} \psi_c \psi_{cp} N_b$ $\qquad \psi_{cp} = 1.0$

$A_{NCO} = 9 h_{ef}^2$
$= 9(14'')^2 = 1764 \text{ IN}^2$

$A_{NC} = (1.5 \times 14'')(2) \times 10'' = 420 \text{ IN}^2$

$N_b = K_c \lambda \sqrt{f'c}\, h_{ef}^{1.5}$
$= 24 \sqrt{2500} (14'')^{1.5} = 62.86 K$

$N_{cb} = 420/1764 \times 0.76 \times 62.86^K = 11.37 K$

$V_{cp} = 22.75^K$
$\phi V_{cp} = 15.92K$

Crosby group

Project: GROVE VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/25/12	Sht:
	By: ML / Ck:	

UBC 1991 ANCHORAGE CAPACITY

$R_n = \text{MIN}(V_s, \phi V_c)$

ASSUME: A307 BOLTS
$F_u = 60$ KSI

$V_s = 0.75 A_b F_s'$

$= 0.75 (0.334 \text{IN}^2)(60 \text{ KSI}) =$ **15.03 KIPS** (STEEL STRENGTH)

$\phi V_c = \phi 2 \pi d_e^2 \lambda \sqrt{f'_c}$

$= 0.65 (2) \pi (4")^2 \sqrt{2500}$ $=$ **3.27 KIPS** (CONCRETE STRENGTH)

$DCR = \dfrac{11.9 \text{ KIPS}}{3.27 \text{ KIPS}} = 3.64$ NG

RETROFIT NEEDED

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/25/12	Sht:
	By: ML	Ck:

RETROFIT OPTION:

- ADD MORE ANCHORS, SPACED SUFFICIENTLY APART TO PREVENT CONC. BREAKOUT

$T_c = 11.9$ KIPS DEMAND

APPENDIX D,

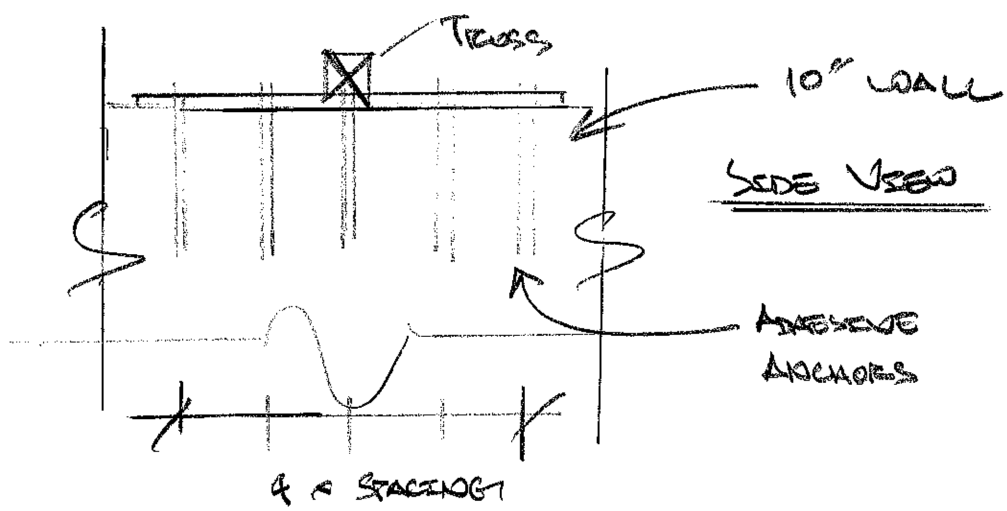
$$11.9K = \phi V_{cbg}$$

$$= \frac{A_{vc}}{A_{vco}} \psi_{ed} \psi_c \psi_h V_b$$

$c_{a1} = 6''$

$A_{vco} = 4.5(6)^2 = 162 in^2$

$A_{vc} = 1.5(6) \times (1.5(6) \times 2 + 4s) = 162 + 36s$



$V_b = 6.75K$

$$11.9K = 0.7\left(\frac{72 + 24s}{72}\right) 6.75K$$

$s = 4.56''$

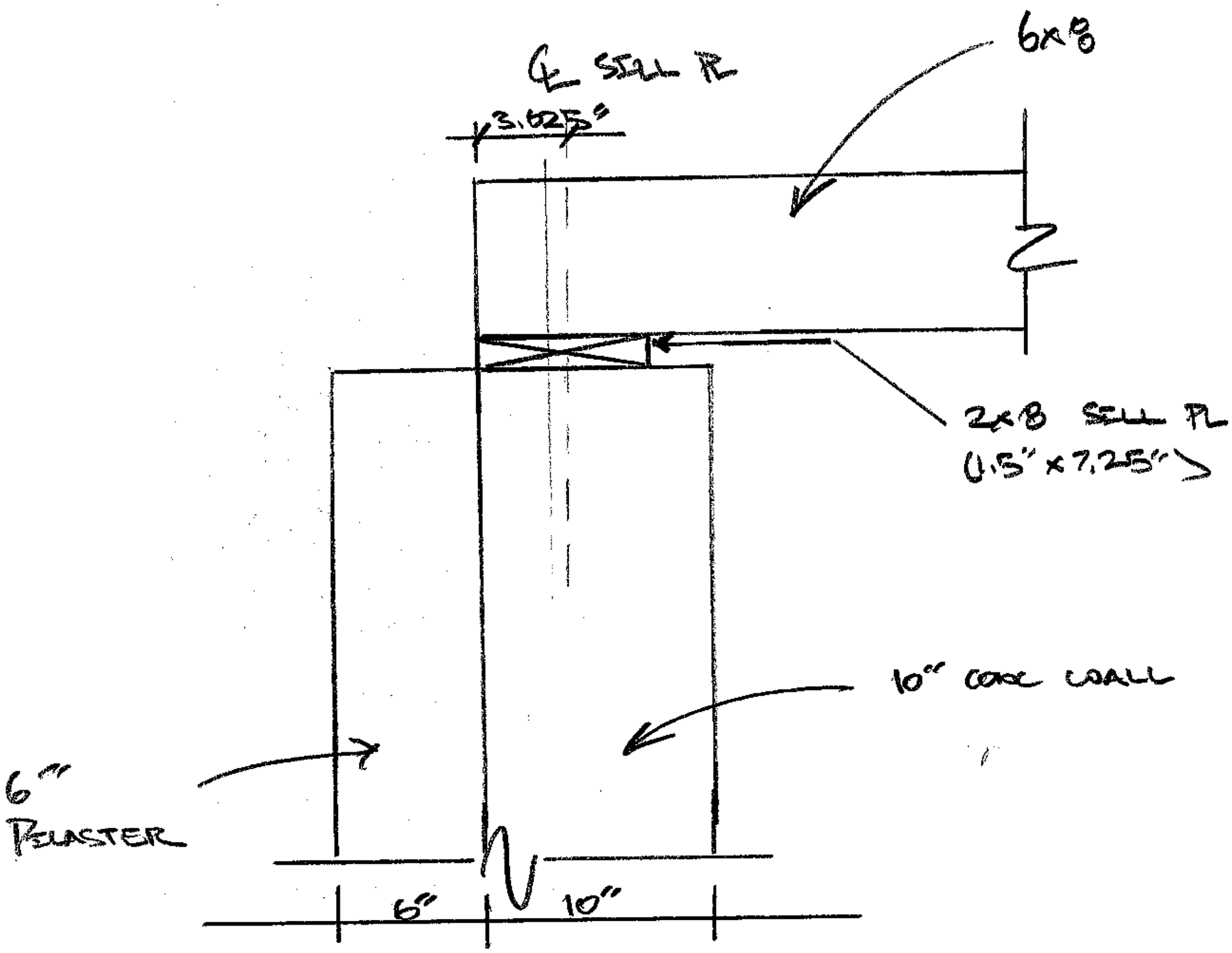
w/ ADDITIONAL 0.75 RED. FACTOR,

$s = 7.07''$

SEE HILTI PRINTOUTS

Crosby group

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING WALL ANCHORAGE	Date: 10/31/12	Sht:
	By: ML Ck:	



NDS §8.5.3 - MINIMUM BOLT EDGE DISTANCE

PERPENDICULAR TO GRAIN LOADING,

MIN. EDGE DIST = 4D

= 4(3/4") = 3" (3/4" ANCHOR)

4(5/8") = 2.5" (5/8" ")

4(1/2") = 2" (1/2" ")

ANCHOR DIAM	MIN EDGE DIST	CONTROLLING ANCHOR EDGE DIST. IN CONCRETE
1/2"	2"	8"
5/8"	2.5"	7.5"
3/4"	3"	7"
7/8"	3.5"	6.5"

Company:		Page:	1
Specifier:		Project:	
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/31/2012
E-Mail:			

Specifier's comments:

1 Input data

6" SPACING

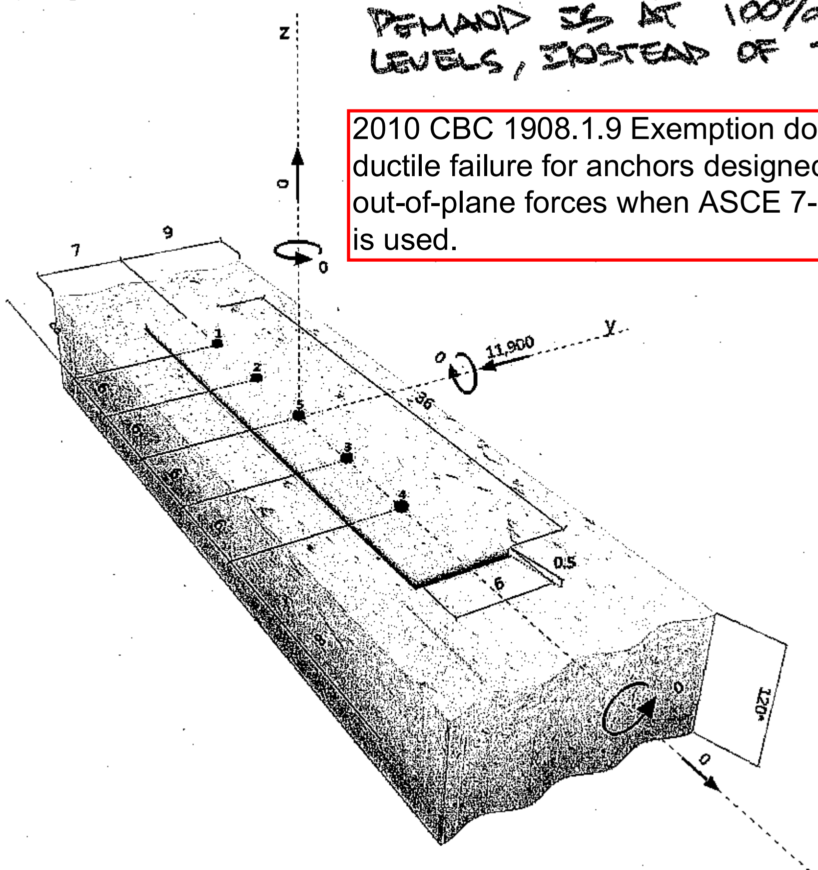
Anchor type and diameter:	**HIT-RE 500-SD + HAS 3/4**
Effective embedment depth:	$h_{ef,act}$ = 6.000 in. ($h_{ef,limit}$ = - in.)
Material:	ASTM F 568M Class 5.8
Evaluation Service Report::	ESR 2322
Issued I Valid:	4/1/2010 | 4/1/2012
Proof:	design method ACI 318 / AC308
Stand-off installation:	e_b = 0.000 in. (no stand-off); t = 0.500 in.
Anchor plate:	l_x x l_y x t = 36.000 in. x 6.000 in. x 0.500 in.; (Recommended plate thickness: not calculated)
Profile:	no profile
Base material:	cracked concrete, 2500, f_c' = 2500 psi; h = 120.000 in., Temp. short/long: 32/32 °F
Installation:	hammer drilled hole, installation condition: dry
Reinforcement:	tension: condition B, shear: condition B; no supplemental splitting reinforcement present edge reinforcement: none or < No. 4 bar
Seismic loads (cat. C, D, E, or F)	no

DCR = 99%

NEED ADD'L 75% REDUCTION FOR HIGH SEISMIC REGIONS, BUT DEMAND IS AT 100% OF NEW BUILDING LEVELS, INSTEAD OF 75%... → OK.

Geometry [in.] & Loading [lb, in.lb]

2010 CBC 1908.1.9 Exemption does not require ductile failure for anchors designed to resist wall out-of-plane forces when ASCE 7-05 Eq 12.11-1 is used.



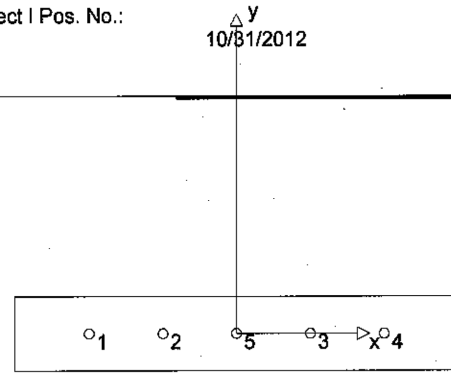
Company:		Page:	2
Specifier:		Project:	
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/31/2012
E-Mail:			

2 Load case/Resulting anchor forces

Load case: Design loads

Anchor reactions [lb]
Tension force: (+Tension, -Compression)

Anchor	Tension force	Shear force	Shear force x	Shear force y
1	0	2380	0	-2380
2	0	2380	0	-2380
3	0	2380	0	-2380
4	0	2380	0	-2380
5	0	2380	0	-2380



max. concrete compressive strain: - [‰]
max. concrete compressive stress: - [psi]
resulting tension force in (x/y)=(0.000/0.000): 0 [lb]
resulting compression force in (x/y)=(0.000/0.000): 0 [lb]

3 Tension load

	Load N_{ua} [lb]	Capacity ϕN_n [lb]	Utilization $\beta_N = N_{ua}/\phi N_n$	Status
Steel Strength*	N/A	N/A	N/A	N/A
Bond Strength*	N/A	N/A	N/A	N/A
Concrete Breakout Strength**	N/A	N/A	N/A	N/A

* anchor having the highest loading **anchor group (anchors in tension)

4 Shear load

	Load V_{ua} [lb]	Capacity ϕV_n [lb]	Utilization $\beta_V = V_{ua}/\phi V_n$	Status
Steel Strength*	2380	8730	28	OK
Steel failure (with lever arm)*	N/A	N/A	N/A	N/A
Pryout Strength (Concrete Breakout Strength controls)**	11900	33856	36	OK
Concrete edge failure in direction y-**	11900	12763	94	OK

* anchor having the highest loading **anchor group (relevant anchors)

w/ WINDOW WT
DEMAND = 12,362#
DCR = 96.9%

4.1 Steel Strength

$V_{sa} = (n\ 0.6\ A_{se,V}\ f_{uta})$ refer to ICC-ES ESR 2322

$\phi\ V_{steel} \geq V_{ua}$ ACI 318-08 Eq. (D-2)

Variables

n	$A_{se,V}$ [in.^{2}]	f_{uta} [psi]	$(n\ 0.6\ A_{se,V}\ f_{uta})$ [lb]
1	0.33	72500	14550

Calculations

V_{sa} [lb]
14550

Results

V_{sa} [lb]	ϕ_{steel}	$\phi\ V_{sa}$ [lb]	V_{ua} [lb]
14550	0.600	8730	2380

4.2 Pryout Strength (Concrete Breakout Strength controls)

$V_{cpg} = k_{cp}\left[\left(\frac{A_{Nc}}{A_{Nc0}}\right)\psi_{ec,N}\ \psi_{ed,N}\ \psi_{c,N}\ \psi_{cp,N}\ N_b\right]$ ACI 318-08 Eq. (D-31)

$\phi\ V_{cpg} \geq V_{ua}$ ACI 318-08 Eq. (D-2)

A_{Nc} see ACI 318-08, Part D.5.2.1, Fig. RD.5.2.1(b)

$A_{Nc0} = 9\ h_{ef}^2$ ACI 318-08 Eq. (D-6)

$\psi_{ec,N} = \left(\frac{1}{1+\frac{2\ e_N}{3\ h_{ef}}}\right) \leq 1.0$ ACI 318-08 Eq. (D-9)

$\psi_{ed,N} = 0.7 + 0.3\left(\frac{c_{a,min}}{1.5h_{ef}}\right) \leq 1.0$ ACI 318-08 Eq. (D-11)

$\psi_{cp,N} = \mathrm{MAX}\left(\frac{c_{a,min}}{c_{ac}}, \frac{1.5h_{ef}}{c_{ac}}\right) \leq 1.0$ ACI 318-08 Eq. (D-13)

$N_b = k_c\ \lambda\ \sqrt{f'_c}\ h_{ef}^{1.5}$ ACI 318-08 Eq. (D-7)

Variables

k_{cp}	h_{ef} [in.]	$e_{c1,N}$ [in.]	$e_{c2,N}$ [in.]	$c_{a,min}$ [in.]
2	6.000	0.000	0.000	7.000

$\psi_{c,N}$	c_{ac} [in.]	k_c	λ	f'_c [psi]
1.000	9.000	17	1	2500

Calculations

A_{Nc} [in.^{2}]	A_{Nc0} [in.^{2}]	$\psi_{ec1,N}$	$\psi_{ec2,N}$	$\psi_{ed,N}$	$\psi_{cp,N}$	N_b [lb]
672.00	324.00	1.000	1.000	0.933	1.000	12492

Results

V_{cpg} [lb]	$\phi_{concrete}$	$\phi\ V_{cpg}$ [lb]	V_{ua} [lb]
48366	0.700	33856	11900

4.3 Concrete edge failure in direction y-

$V_{cbg} = \left(\frac{A_{Vc}}{A_{Vc0}}\right) \psi_{ec,V}\, \psi_{ed,V}\, \psi_{c,V}\, \psi_{h,V}\, \psi_{parallel,V}\, V_b$	ACI 318-08 Eq. (D-22)
$\phi\, V_{cbg} \geq V_{ua}$	ACI 318-08 Eq. (D-2)
A_{Vc} see ACI 318-08, Part D.6.2.1, Fig. RD.6.2.1(b)	
$A_{Vc0} = 4.5\, c_{a1}^2$	ACI 318-08 Eq. (D-23)
$\psi_{ec,V} = \left(\frac{1}{1 + \frac{2e_v}{3c_{a1}}}\right) \leq 1.0$	ACI 318-08 Eq. (D-26)
$\psi_{ed,V} = 0.7 + 0.3\left(\frac{c_{a2}}{1.5c_{a1}}\right) \leq 1.0$	ACI 318-08 Eq. (D-28)
$\psi_{h,V} = \sqrt{\frac{1.5c_{a1}}{h_a}} \geq 1.0$	ACI 318-08 Eq. (D-29)
$V_b = \left(7 \left(\frac{l_e}{d_a}\right)^{0.2} \sqrt{d_a}\right) \lambda \sqrt{f'_c}\, c_{a1}^{1.5}$	ACI 318-08 Eq. (D-24)

Variables

c_{a1} [in.]	c_{a2} [in.]	e_{cV} [in.]	$\psi_{c,V}$	h_a [in.]
7.000	-	0.000	1.000	120.000

l_e [in.]	λ	d_a [in.]	f'_c [psi]	$\psi_{parallel,V}$
6.000	1	0.750	2500	1.000

Calculations

A_{Vc} [in.^{2}]	A_{Vc0} [in.^{2}]	$\psi_{ec,V}$	$\psi_{ed,V}$	$\psi_{h,V}$	V_b [lb]
472.50	220.50	1.000	1.000	1.000	8509

Results

V_{cbg} [lb]	$\phi_{concrete}$	$\phi\, V_{cbg}$ [lb]	V_{ua} [lb]
18233	0.700	12763	11900

5 Warnings

- To avoid failure of the anchor plate the required thickness can be calculated in PROFIS Anchor. Load re-distributions on the anchors due to elastic deformations of the anchor plate are not considered. The anchor plate is assumed to be sufficiently stiff, in order not to be deformed when subjected to the loading!
- Condition A applies when supplementary reinforcement is used. The Φ factor is increased for non-steel Design Strengths except Pullout Strength and Pryout strength. Condition B applies when supplementary reinforcement is not used and for Pullout Strength and Pryout Strength. Refer to ACI 318, Part D.4.4(c).
- Design Strengths of adhesive anchor systems are influenced by the cleaning method. Refer to the INSTRUCTIONS FOR USE given in the Evaluation Service Report for cleaning and installation instructions
- The present version of the software does not account for adhesive anchor special design provisions corresponding to overhead applications. Refer to the ICC-ES Evaluation Service Report (e.g. section 4.1.1 of the ICC-ESR 2322) for details.
- Checking the transfer of loads into the base material and the shear resistance are required in accordance with ACI318 or the relevant standard!

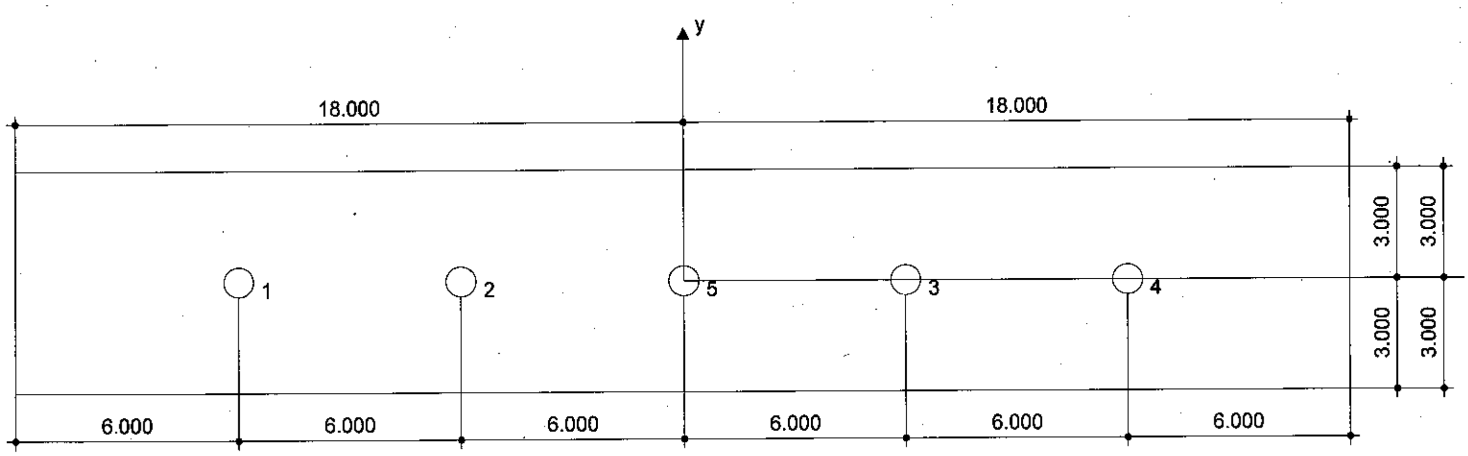
Fastening meets the design criteria!

Company:
Specifier:
Address:
Phone I Fax: |
E-Mail:

6 Installation data

Anchor plate, steel: -
Profile: no profile; 0.000 x 0.000 x 0.000 in.
Hole diameter in the fixture: d_f = 0.813 in.
Plate thickness (input): 0.500 in.
Recommended plate thickness: not calculated
Cleaning: Premium cleaning of the drilled hole is required

Anchor type and diameter: HIT-RE 500-SD + HAS, 3/4
Installation torque: 1200.000 in.lb
Hole diameter in the base material: 0.875 in.
Hole depth in the base material: 6.000 in.
Minimum thickness of the base material: 7.750 in.



Coordinates Anchor in.

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
1	-12.000	0.000	-	-	7.000	9.000
2	-6.000	0.000	-	-	7.000	9.000
3	6.000	0.000	-	-	7.000	9.000

Anchor	x	y	c_{-x}	c_{+x}	c_{-y}	c_{+y}
4	12.000	0.000	-	-	7.000	9.000
5	0.000	0.000	-	-	7.000	9.000

Company:		Page:	6
Specifier:		Project:	
Address:		Sub-Project I Pos. No.:	
Phone I Fax:	|	Date:	10/31/2012
E-Mail:			

7 Remarks; Your Cooperation Duties

- Any and all information and data contained in the Software concern solely the use of Hilti products and are based on the principles, formulas and security regulations in accordance with Hilti's technical directions and operating, mounting and assembly instructions, etc., that must be strictly complied with by the user. All figures contained therein are average figures, and therefore use-specific tests are to be conducted prior to using the relevant Hilti product. The results of the calculations carried out by means of the Software are based essentially on the data you put in. Therefore, you bear the sole responsibility for the absence of errors, the completeness and the relevance of the data to be put in by you. Moreover, you bear sole responsibility for having the results of the calculation checked and cleared by an expert, particularly with regard to compliance with applicable norms and permits, prior to using them for your specific facility. The Software serves only as an aid to interpret norms and permits without any guarantee as to the absence of errors, the correctness and the relevance of the results or suitability for a specific application.
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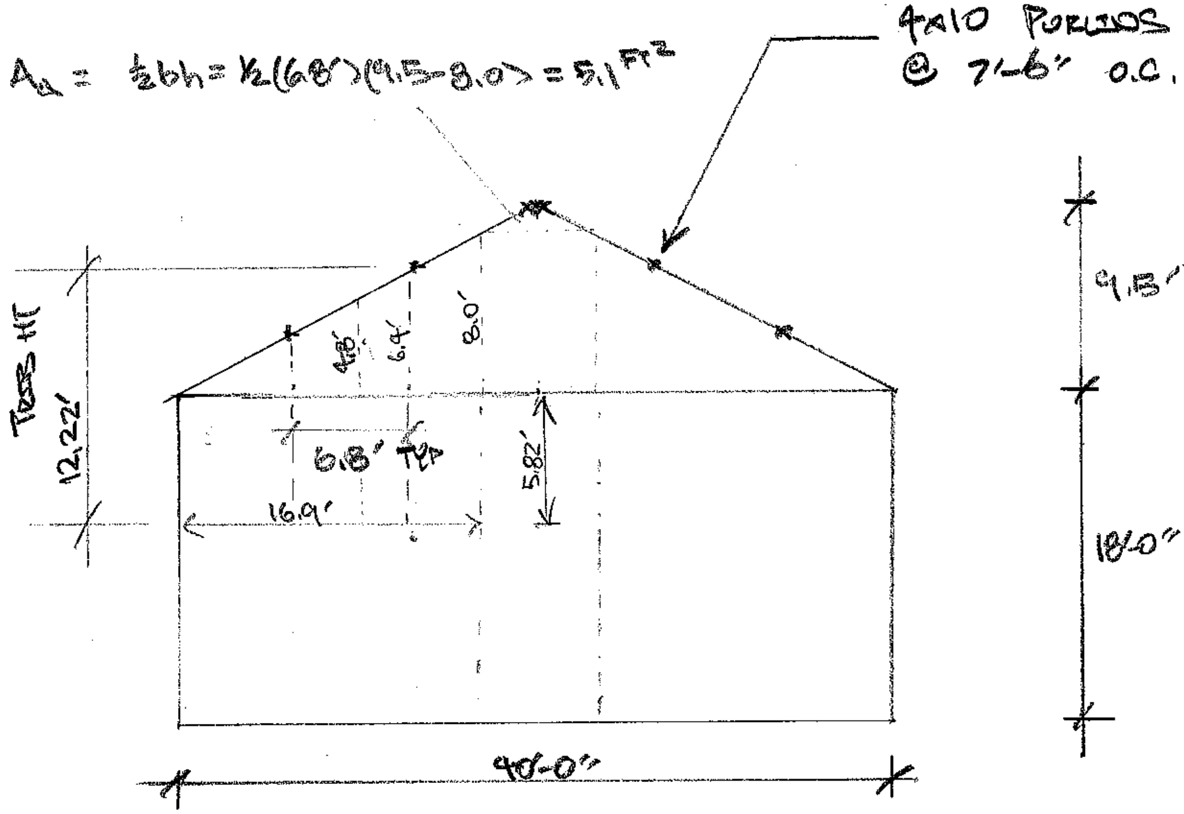
Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 10/31/12	Sht:
	By: ML Ck:	

AUDITORIUM

MIDDLE DIAPHRAGM - END WALLS

$A_\Delta = \frac{1}{2}bh = \frac{1}{2}(6.8')(9.5-8.0) = 5.1 \text{ FT}^2$



$\tan\theta = 9.5'/20'$

$\theta = \underline{25.41°}$

HORIZ. SPACING = $7.5' \times \cos\theta = \underline{6.8'}$

SCALE: 3/32" = 1'-0"

ASCE 31-05 § 4.2.5.1 OUT-OF-PLANE WALL ANCHORAGE FOR TO FLEXIBLE DIAPHRAGMS

MIDDLE TRIB AREA: $A_T = (176.14 + 5.1)/2 = 90.62 \text{ FT}^2$

$F_P = 0.8\, S_{DS} W_P = 11.6^K$

W/ 75% = **8.66K**

Project: GOLETA VALLEY CC | Job No:
Description: MAIN BUILDING | Date: 11/1/12 | Sht:
By: ML | Ck:

* ASSUME 150 PCF CONC W/ 15 PSF STUCCO

CLASSROOM SIDE - OUTSIDE

TRUSSES @ 32" OC (2.67')
6" WALL → 90 PSF*, WINDOW, ASSUME 18 PSF
10" WALL → 140 PSF*

$F_p = 0.9 S_{DS} W_p$

TRIB HT = 15.94'/2 = 7.97' → 8'-0"

$F_p = \cancel{0.9}\,0.8\,(1.138) \times (90\,PSF \times 3.75' \times 2.67' + 140\,PSF \times 1' \times 2.67' + 18\,PSF \times (8' - 4.75') \times 2.67')$

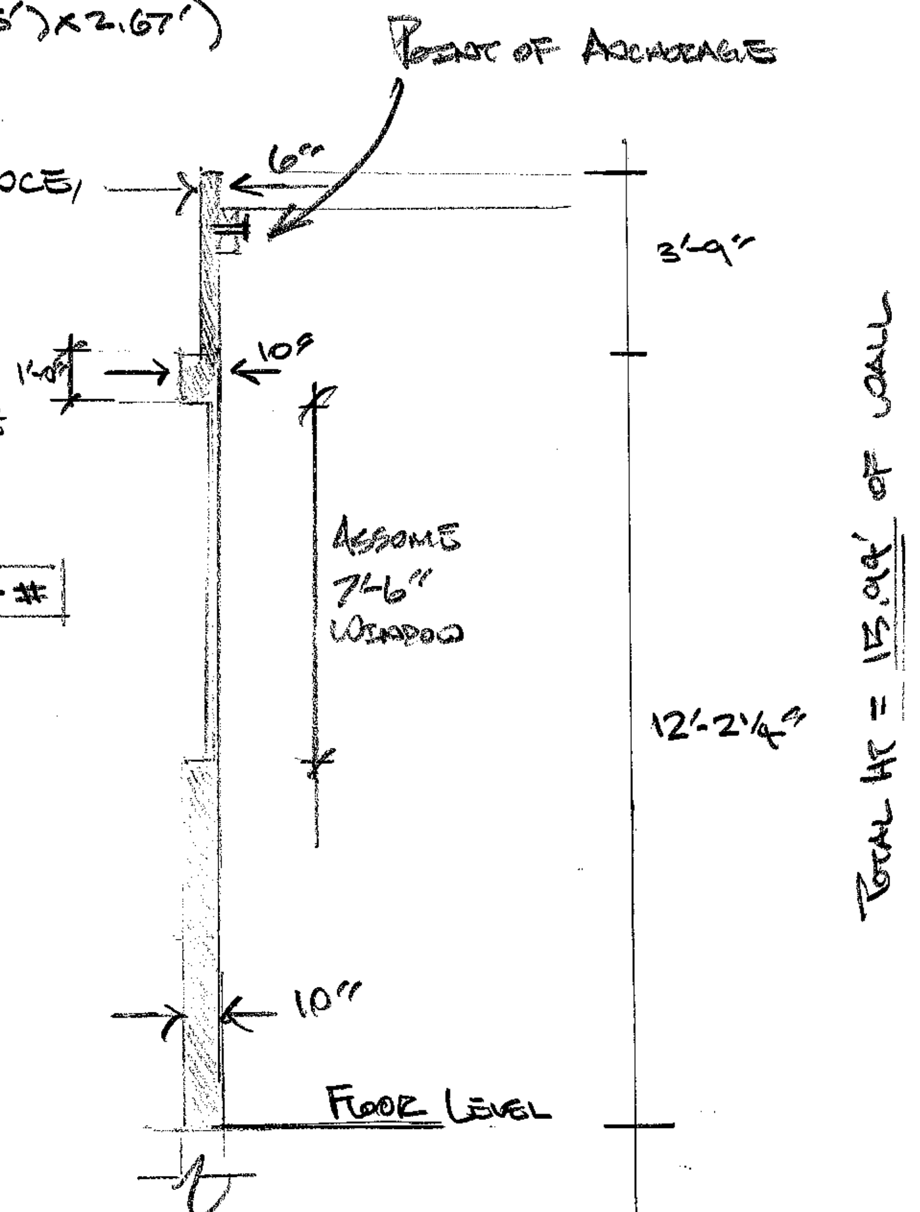
= 1303 #

W/ 75% PERFORMANCE,

= **977 #**

W/ 64" ANCHORAGE SPACING,

977 × 2 = **1954 #**



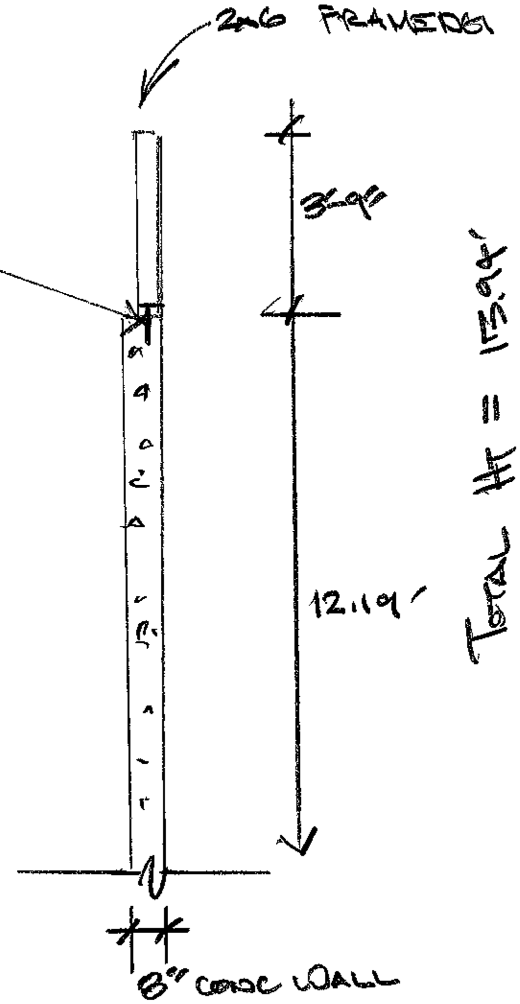
Project: Goleta Valley CC	Job No:	
Description: Main Building	Date: 11/1/12	Sht:
	By: ML Ck:	

Classroom Side – Inside

Truss @ 32" oc (2.67')

8" conc wall ⇒ 115 PSF
2x6 @ 32" ⇒ 0.7 PSF
Misc wall wt at truss ⇒ 15 PSF

Trib ht ≈ 8'-0"



$F_p =$ ~~0.9~~ 0.8 $S_{DS} W_p$

$= $ ~~0.9~~ 0.8 $(1.138)(2.67' \times 15.7\,PSF \times 3.75' + 2.67' \times 115\,PSF \times (8' - 3.75'))$

= 1331#

w/ 75% SEBC level,

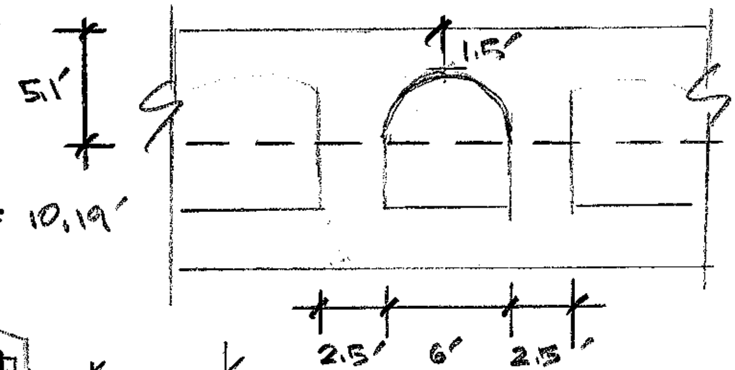
= **998#**

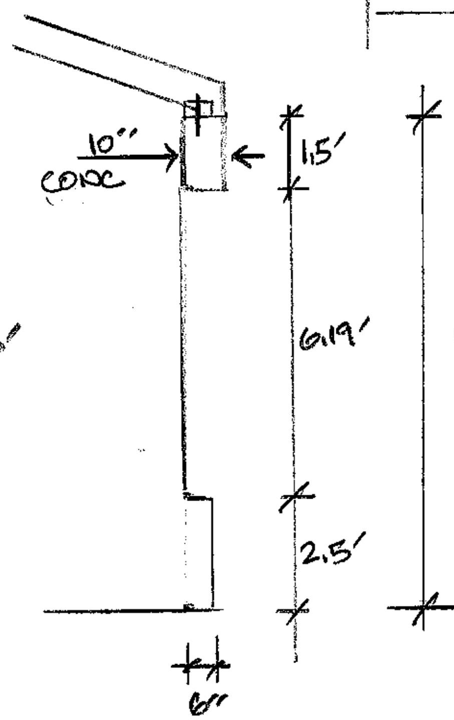
For anchorage @ 64" oc, Demand = **1996#**

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 11/1/12	Sht:
	By: ML Ck:	

CLOISTER

2x6 @ 24" OC
WALL HT = 12'-2 1/4" - 2' = 10.19'





10" CONC ⇒ 140 PSF
PIER WIDTH = 2.5'
ARCH WIDTH = 6'

PER 8.5'
(140 PSF x 2.5' x 5.1'
+140 PSF x 1.75' x 6') / 8.5'
= 383 PLF

TRIB HEIGHT = 10.19'/2 = 5.1'

$F_p = 0.8 S_{DS} W_p$
$F_p = 0.8(1.138)\,383$ PLF = 349 PLF

w/ 75% PERFORMANCE = 262 PLF

SPACING	SHEAR DEMAND*
24"	524#
48"	1048#
72"	1572#

* WITH 75% PERFORMANCE

Crosby group

Project: GOLETA VALLEY CC	Job No:	
Description: MAIN BUILDING	Date: 11/1/12	Sht:
	By: MYL	Ck:

OOP ANCHORAGE FOR OFFICE

10" CONC WALL, 140 PSF

TRUSS @ 32" O.C.

TRIB HT = 14'/2 = 7'

$F_p = 0.8 S_{DS} W_p$

$= 0.8 (1.138) (140 \text{ PSF} \times 32/12 \times 7')$

$= 2579.18$ #

w/ 75%

= **1784 #**

FOR 64", = 3569 #

Project:	Goleta Valley CC	Job No:			
Description:	ASCE 31-03	Date:	October 2012		Sht:
	Seismic Evaluation	By: JW	Ck: CB		

Building B - Seismic Dead Loads

Typical Roof/Ceiling

Roofing	2.0 psf
1" Diagonal Sheathing	2.5 psf
2x4 Sub Purlins @ 24"oc	1.0 psf
Steel Purlins	1.5 psf
Steel Girders	2.7 psf
Acoustical Ceiling	3.0 psf
Low Suspended Ceiling	2.0 psf
MEP	1.0 psf
Partitions	5.0 psf
Misc	1.3 psf
Total	22.0 psf

Overhang

Roofing	2.0 psf
1" Diagonal Sheathing	2.5 psf
2x8 @ 24" oc	1.5 psf
Ceiling	1.0 psf
Steel Posts	0.5 psf
Misc	1.5 psf
Total	9.0 psf

Walls:

Interior and Exterior walls are accounted for in partition load for roof seismic weight.

Project: GOLETA VALLEY CC	Job No:	
Description: BUILDING B - TIER 1 SEISMIC EVAL	Date: 9/27/2012	Sht:
	By: JW Ck: CB	

Crosby group

PSUEDO LATERAL FORCE :

PER ASCE 31-03 § 3.5.2.1

$V = C S_a W$ (EQ 3-1)

$C = 1.3$ (TABLE 3-4)

$S_a = \frac{S_{D1}}{T}$ (BUT NOT EXCEED S_{DS}) (§3.5.2.3.1)

WHERE :

$S_{D1} = 0.665$

$S_{DS} = 1.138$

$T = C_t h_n^{\beta}$ (EQ 3-8)

$C_t = 0.060$

$h_n = 14.25$ FT

$\beta = 0.75$

$T = (0.060)(14.25 \text{ FT})^{0.75} = 0.440$ SEC.

$S_a = \frac{0.665}{0.440} = 1.511 > 1.138 \quad \therefore S_a = 1.138$

$V = 1.3 S_a W = 1.3(1.138) W$

$V = 1.479 W$

Building B - Seismic Base Shear

$V_{BASE} = CS_aW =$ 1.479W

Roof DL = 22.0 psf
Overhang DL = 9.0 psf

Roof Area = 8512 ft^2
Overhang Area = 2112 ft^2

Seismic Weight, W = 206 kips

V_{BASE} = 305 kips

Crosby group

Project: GOLETA (GVCC)	Job No:	
Description: BUILDING B TIER 1 CHECKS	Date: 10/4/12	Sht:
	By: ML	Ck:

SHEAR STRESS CHECK

$$V_J^{AVG} = \frac{1}{m}\left(\frac{V_J}{A_W}\right)$$

$V_J = 305$ KIPS

$m = 4.0$

A_W = LENGTH OF WALLS, EACH DIRECTION

IN N-S DIRECTION:

ASSUME (E) BUILDING HAS 3 N-S WALLS.

EACH N-S WALL IS ~ 31.4'

8 WALLS × 31.4' = 251.3'

IN E-W DIRECTION:

NOTE WALL HT ~ 14'
NARROW WALL HT LIMITATION: H/D < 2
IGNORE WALLS NARROWER THAN 14/2 = 7'

ESTIMATE WALLS LENGTH:
ASSUME 30' OF WALL IN (E) BLDG

ABOUT 148' TOTAL

CHECK SHEAR STRESS:

$$V_{S,AVG} = \frac{1}{4}\left(\frac{305^K}{148'}\right) = \underline{515} \text{ \#/FT} < 700 \text{ \#/FT}$$

SHEAR WALLS OK ✓

Crosby group

Project:	Goleta Valley CC	Job No:			
Description:	ASCE 31-03	Date:	October 2012		Sht:
	Seismic Evaluation	By: JW		Ck: CB	

Building C4 - Seismic Dead Loads

Typical Roof/Ceiling

Roofing	2.0 psf
1/2" Plywood	1.5 psf
Wood Trusses @ 24" oc	3.0 psf
Insulation	0.5 psf
Ceiling	2.0 psf
MEP	1.0 psf
Partitions	5.0 psf
Misc	2.0 psf
Total	17.0 psf

Overhang

Roofing	2.0 psf
1/2" Plywood	1.5 psf
2x8 @ 24" oc	1.5 psf
Ceiling	1.0 psf
Steel Posts	0.5 psf
Misc	1.5 psf
Total	8.0 psf

Walls:

Interior and Exterior walls are accounted for in partition load for roof seismic weight.

Project: GOLETA VALLEY CC	Job No:		
Description: BUILDING C4 - TIER 1 SEISMIC EVAL	Date: 9/27/2012		Sht:
	By: JW	Ck: CB	

PSUEDO LATERAL FORCE :

PER ASCE 31-03 § 3.5.2.1

$V = C S_a W$ (EQ 3-1)

$C = 1.3$ (TABLE 3-4)

$S_a = \frac{S_{D1}}{T}$, BUT NOT EXCEED S_{DS} (§3.5.2.3.1)

WHERE:

$S_{D1} = 0.665$

$S_{DS} = 1.138$

$T = C_t h_n^{\beta}$ (EQ 3-8)

$C_t = 0.60$

$h_n = 9.5 FT$

$\beta = 0.75$

$T = (0.060)(9.5FT)^{0.75} = 0.325$ SEC.

$S_a = \frac{0.665}{0.325} = 2.046 > 1.138 \therefore S_a = 1.138$

$V = 1.3(1.138)W$

$$V = 1.479 W$$

Project:	Goleta Valley CC	Job No:			
Description:	ASCE 31-03 Seismic Evaluation	Date:	October 2012		Sht:
		By:	JW	Ck: CB	

Crosby group

Building C4 - Seismic Base Shear

$V_{BASE} = CS_aW =$ 1.479W

Roof DL = 17.0 psf
Overhang DL = 8.0 psf

Roof Area = 5880 ft^2
Overhang Area = 1348 ft^2

Seismic Weight, W = 111 kips

V_{BASE} = 164 kips

Crosby group

Project: GOLETA VALLEY CC	Job No:	
Description: BUILDING C4	Date: 10/10/18	Sht:
	By: ML Ck:	

SHEAR STRESS CHECK

PSEUDO-LAT. FORCE: $V = \underline{164 \text{ KIPS}}$

$$V_{S,AVG} = \frac{1}{m}\frac{V_S}{A_W}$$

A_W = LENGTH OF SHEAR WALLS
(INCL. WALLS WITH 2:1 ASPECT RATIO OR LOWER)

$m = 4$ (ASCE 31 TABLE 3-7)

"A_W" =

LONGITUDINAL DIR.: 225' (IGNORING 2:1 ASPECT RATIO WALLS)
TRANSVERSE DIR.: 80'

$$V_{S,AVG} = 1/4\ \frac{164000\#}{225} = 1822 \text{ PLF} > 1000 \text{ PLF} \quad \text{NG}$$

INCLUDE TOTAL LENGTH OF SHEAR WALLS, REGARDLESS OF ASPECT RATIO.

$L = 58'$ OF WALL

$$V_{S,AVG} = 1/4\ \frac{164{,}000\#}{58'} = \underline{707 \text{ PLF}} < 1000 \text{ PLF} \quad \text{OK} \checkmark$$

Project: GOLETA VALLEY CC	Job No:	
Description: BUILDING CA	Date: 10/15/12	Sht:
	By: ML Ck:	

NARROW SHEAR WALL TIER 2 CHECK

- OVERTURNING
- SHEAR DEMANDS

m-FACTOR (TABLE 4-8)

m = 3.5 FOR 3.5 ≥ h/L > 2.0, (LIFE SAFETY)

SHEAR DEMAND CHECK

PER PREV CALC,

$V_{J,AVG} = \frac{1}{3.5} \frac{164,000\#}{58'} =$ 808 PLF < 1000 PLF OK ✓

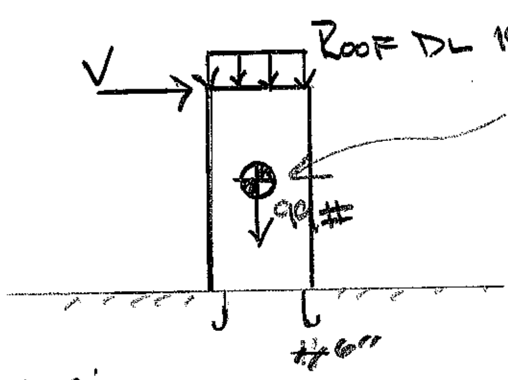
OVERTURNING CHECK

V: 808 PLF × 4' = 3232 #

h = 8.5'

b = 4'-0"

J-BOLTS ARE 6" FROM S.W. EDGE



W_{WALL}

1/2" PLYWOOD = 1.5 PSF

2×6 @16" = 1.4 PSF

2.9 PSF

2.9 PSF × 8.5' × 4' = 98.6 #

⇒ 99 #

ROOF LOADS:

17 PSF - 5 PSF (PARTITION LOADS)

= 12 PSF

W_{ROOF} = 12 PSF × 16' = 192 PLF

Crosby group

Project: GOLETA VALLEY CC	Job No:	
Description: BUILDING C4	Date: 10/15/12	Sht:
	By: ML Ck:	

$\Sigma M_{\text{J-BOLT LOCATION}} = 0$

$-(3232\#)(8.5') + 0.9(99\#)(1.5') + 0.9(192\text{ PLF} \times 4')(1.5')$

$-R(3') = 0$

R = 8767 # UPLIFT FORCE

(FROM PSEUDO LATERAL FORCE METHOD)

EQUIVALENT LATERAL FORCE PROCEDURE (ELF)

$V = C_s W$

$= \frac{1.1380}{6.5/1.0}(111 \text{ KIPS})$

$= 19.4 \text{ KIPS}$

19.4 KIPS / 58' = 335 PLF

LATERAL FORCE PER 4' SEGMENT

335 PLF × 4' = 1340 #

$\Sigma M_{\text{J-BOLT LOCATION}} = 0$

$-(1340\#)(8.5') + 0.9(99\#)(1.5') + 0.9(192\text{ PLF} \times 4')(1.5')$

$-(R)(3') = 0$

R = -3407 # UPLIFT FORCE

(EQUIV. LAT FORCE METHOD)

Project: GOLETA VALLEY CC	Job No:	
Description: BUILDING C4	Date: 10/15/12	Sht:
	By: ML	Ck:

HOLDDOWN ANCHORAGE CAPACITY

REF: APPENDIX D ACI 318-08

TENSILE CAPACITY (STEEL STRENGTH)

$N_{sa} = n A_{se,N} f_{uta}$

$A_{se,N} = 0.334 \text{ in}^2$ (REF: PCA 318-08 TABLE 34-2)

FOR STEEL STRENGTH, ASSUME 60 KSI (A307 BOLTS ASSUMPTION)

$N_{sa} = 20.0$ KIPS

$\phi = 0.75$

$\phi N_{sa} = 15.0$ KIPS

TENSILE CAPACITY (CONCRETE BREAKOUT)

$\phi = 0.70$

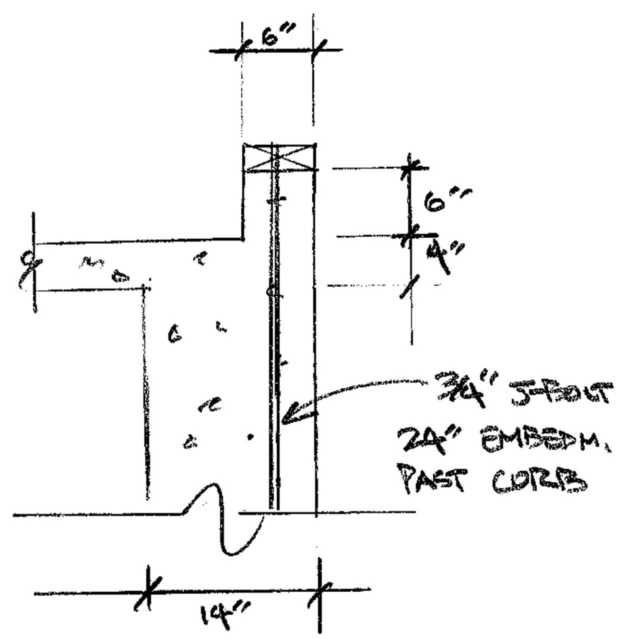
$N_{cb} = \frac{A_{Nc}}{A_{Nco}} \psi_{ed} \psi_c \psi_{cp} N_b$

APPROACH: IGNORE 6" HIGH CURB

$A_{Nco} = 9 h_{ef}^2$

$= 9(24")^2$

$= 5184 \text{ in}^2$



CONTINUOUS FOOTING

$N_b = 16\lambda\sqrt{f'_c}\, h_{ef}^{5/3}$

$= 16(1.0)\sqrt{2000}\,(24)^{5/3}$

$= 142.89$ KIPS

$A_{NC} = (1.5h_{ef} \times 14'') = 309\ in^2$

$\psi_{ed} = 0.7 + 0.3\frac{C_{a,min}}{1.5h_{ef}} = 0.7 + 0.3(3''/1.5 \times 24'') = 0.725$

$\psi_c = 1.0$ (CRACKING @ SERVICE LEVEL)

$\psi_{cp} = 1.0$ (CIP ANCHORS)

$N_{cb} = 10.0$ KIPS

$\phi N_{cb} = 7.0$ KIPS

PULLOUT STRENGTH

$N_{pn} = \psi_{cp} N_p$

$\psi_{cp} = 1.0$ (CRACKING @ SERVICE LEVEL LOADS)

$N_p = 0.9 f'_c e_h d_a$

$e_h = 6''$

$N_p = 0.9(2000^{PSI})(6'')(3/4'')$

$N_p = 8.1$ KIPS

$\phi N_p = 5.67$ KIPS

Project: GOLETA VALLEY CC	Job No:	
Description: BUILDING C4	Date: 10/24/12	Sht:
	By: ML Ck:	

ANCHORAGE CAPACITY (UBC 1991)

$R_N = \text{MIN}(P_S, \phi P_C)$

$P_S = 0.9 A_S f'_S$

$= 0.9(0.339 \text{ IN}^2)(60{,}000 \text{ PSI}) = 18.0 \text{ KIPS}$

$\phi P_C = \lambda \sqrt{f'_c}\,(2.8 A_S + 4 A_T)$

$\lambda = 1.0$ $\quad \phi = .65$

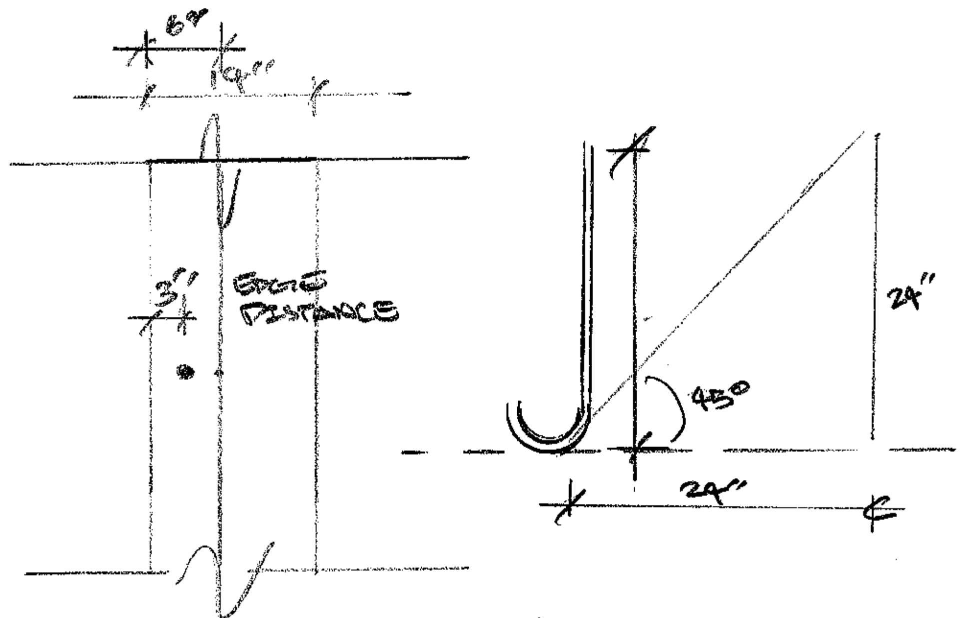
$f'_c = 2000 \text{ PSI}$

A_S = SLOPING AREA

A_T = FLAT AREA

APPROACH:

- IGNORE 6" HIGH CURB



PLAN VIEW

$A_T = 14'' \times (24'' \times 2)$

$= 672 \text{ IN}^2$

$\phi P_C = 0.65\sqrt{2000}\,(4 \times 672 \text{ IN}^2) \times 3''/24'' =$ **9.8 KIPS**

↑ EDGE DIST/EMBEDMENT

Appendix D – Geotechnical Report

GEOTECHNICAL FEASIBILITY / GEOLOGIC HAZARDS STUDY
SEISMIC AND ADA NEEDS ASSESSMENT
GOLETA VALLEY COMMUNITY CENTER
5679 HOLLISTER AVENUE
GOLETA, CALIFORNIA

December 3, 2012

Prepared for

Mr. Colin Blaney, SE
Crosby Group

Prepared by

Earth Systems Pacific
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December 3, 2012

FILE NO.: SL-16901-SA

Mr. Colin Blaney, SE
Crosby Group
2200 Bridge Parkway, Suite 104
Redwood City, CA 94065

PROJECT: SEISMIC AND ADA NEEDS ASSESSMENT
GOLETA VALLEY COMMUNITY CENTER
5679 HOLLISTER AVENUE
GOLETA, CALIFORNIA

SUBJECT: Geotechnical Feasibility / Geologic Hazards Study

CONTRACT REFS.:

1) Proposal to Provide a Geotechnical Feasibility / Geologic Hazards Study, Seismic and ADA Needs Assessment for the Goleta Valley Community Center, 5679 Hollister Avenue, Goleta, California, by Earth systems Pacific, Doc. No. 1205-102.PRP.REV, revised November 6, 2012

2) Request for Qualifications and Proposal (RFQ/RFP) for Seismic and ADA Needs Assessment for the Goleta Valley Community Center, by the City of Goleta, dated May 10, 2012

Dear Mr. Blaney:

In accordance with your authorization of our revised proposal (Ref. No. 1), this geotechnical feasibility / geologic hazards study has been prepared to provide information for your use in providing the Seismic and ADA Needs Assessment for the Goleta Valley Community Center in Goleta, California. This report is based on the information contained in the project's RFQ/RFP (Ref. No. 2), and on our telephone conversations regarding the revised scope of services contained in our proposal.

We appreciate the opportunity to have provided services for this project. If there are any questions concerning this report, please feel free to contact the undersigned at your convenience.

Sincerely,
Earth Systems Pacific

REGISTERED PROFESSIONAL ENGINEER FREDERICK J. POTTHAST No. GE 2369 Exp. 03/31/14 GEOTECHNICAL STATE OF CALIFORNIA

12/3/12

Fred J. Potthast, G.E.

Richard T. Gorman, C.E.G.

PROFESSIONAL GEOLOGIST RICHARD T. GORMAN No. CEG 1325 CERTIFIED ENGINEERING GEOLOGIST STATE OF CALIFORNIA

Doc. No.: 1210-002.RPT/jr

TABLE OF CONTENTS

APPENDIX

1.0 INTRODUCTION

According to information provided by the City of Goleta, the Goleta Valley Community Center (GVCC) consists of a Main Building, which contains an auditorium, dining hall, kitchen, meeting rooms, dance studios, restroom and storage rooms. There are several other detached buildings serving as classrooms on the 9.85-acre site, and a large building at the rear of the site that houses the Goleta Valley Boys & Girls Club. The site also has lighted parking for 200 cars, basketball courts, a tennis court, athletic fields and picnic areas.

We understand that the Main Building, reportedly constructed in 1927, was utilized as an elementary school until 1976, when the School District elected to close the school rather than retrofit it to meet State of California earthquake standards for schools. The site was converted to the Community Center, and it is currently under a lease agreement assumed by the City of Goleta ("the City") with the School district; the City subleases the facility to the non-profit GVCC. In 2013, the City will acquire the property, and it is anticipating a larger maintenance responsibility for the site upon assuming ownership.

In preparation for the transition to ownership, the City has asked for an assessment of the physical condition of the GVCC property and all structures, and an identification of seismic and ADA modifications that would be needed to meet the current building code for existing and future uses. The RFQ/RFP (City of Goleta, 2012) provided the overall requirements for the assessment.

2.0 SCOPE OF SERVICES

The purpose of this study was to provide an assessment of the geotechnical and geologic characteristics of the site, including identification of issues that could constitute a constraint to the current use of the existing facilities, and possible future renovations or expansions. The study was based upon a review of available published geologic and geotechnical information; Earth Systems' archival geologic, soils and seismic data for the general project area; geologic maps; aerial photographs; geologic literature; the Santa Barbara County Seismic Safety Element; FEMA maps; and soil survey information. A field reconnaissance was performed by a Certified Engineering Geologist; however, no geologic mapping, subsurface exploration or laboratory testing was requested or performed. In view of this, the assessment of geotechnical/geologic hazards is necessarily of a qualitative nature. Conclusions about specific conditions may be subject to modification once actual subsurface conditions are determined and/or laboratory tests are performed during possible future phases of the project or during planning for additional structures.

Pertinent information is presented regarding local and regional geology, geologic units, mapped landslides, liquefaction potential, and locations of faults. It includes general site characteristics and potential problem areas, and preliminary ground motion information.

This report is intended to be used be primarily for informational purposes, with the objective of identifying potential constraints and to provide general information to be used in the assessment by the client of potential structural modifications of the existing facilities. It is intended to be in accordance with common geotechnical engineering and engineering geologic practices in this area under similar conditions at this time.

3.0 GEOLOGY

Geologic Setting

The site is located within Goleta Valley, which is a coastal plain in southern Santa Barbara County. The Goleta Valley is approximately 8 miles long from west to east, and ranges in width from approximately 0.25 mile in the west to almost 3 miles from north to south in the central area near Fairview Avenue. It comprises alluvial plains on the east, north, and west that slope gently south. These plains merge into the Goleta Slough in the south-central portion of the valley and drain to the ocean past Mescalitan Island. The Goleta Valley is bounded on the south and southeast by the nearly continuous terraces formed by More Mesa, Goleta Mesa, and Mescalitan Island.

Locally, the site lies in the central area of the broad, east-west trending Goleta Valley. This part of the valley is underlain by alluvium and colluvium deposits of Holocene and upper Pleistocene age. The geologic units are indicated on the Geologic Map in the Appendix, which is an extract from the Geologic Map of Goleta (Minor and others, 2007).

Faulting

The closest active fault to the site is the Santa Ynez fault, located approximately 7 miles north of the site. The closest mapped faults to the site, *regardless of activity*, are the Late Quaternary age More Ranch fault, located about 1 mile south-southeast of the site, and the Late Quaternary age Carneros fault, located approximately 1 mile north. Regional and local faults and locations of historic earthquake events are depicted on the Historical Earthquake/Fault Map in the Appendix.

Slope Stability

The site has no geologically significant slopes on or immediately adjacent to it, therefore the potential for slope stability to affect the site is considered to be nil.

Flooding

According to the Flood Insurance Rate Map Number 06083C1362F, dated September 30, 2005, published by the Federal Emergency Management Agency (FEMA), the majority of the site is located in Flood Zone X. Areas designated as Flood Zone X have a 0.20 percent chance of being flooded in any given year. The average depth of flooding is less than 1 foot. The north side and the northwest corner of the site are located within Flood Zone AE, which has 1.0 percent annual chance of flooding (100-year flood). The FEMA Flood Zone Map in the Appendix is an extract from Map No. 06083C1362F.

Earthquake History

The historic seismicity in the site's region was researched using EQSEARCH (Blake, updated 2010) and the Boore and Joyner (1997) ground attenuation method. Based on archive information for this area, a Site Class "D" (stiff soil profile) per the 2010 California Building Code (CBC, 2010) was assumed. EQSEARCH is a computer program that performs automated searches of a custom catalog of historical California earthquakes. As the program searches the catalog, it computes and prints the epicentral distance from the selected site to each of the earthquakes within the specified search area. The epicentral distances should be considered estimated distances, particularly for earthquake data that dates prior to 1932, before instruments were used to record earthquake data. The parameters used for the search consisted of earthquake Richter magnitudes ranging from 5.0 to 9.0 that occurred in a 65-mile radius from the site from 1800 to 2010.

The results of the search indicated that within the search parameters, 48 earthquakes have occurred; some nearby earthquakes are shown on the appended Historical Earthquake / Fault Map. The highest peak horizontal ground acceleration (PGA) estimated to have occurred at the site from those historical earthquakes is 0.37g. This earthquake had a 5.7 magnitude and occurred in 1862; it was also the closest earthquake to the site, occurring approximately 1 mile southeast. The largest earthquake that the search revealed was a 7.9 magnitude earthquake, approximately 62 miles east of the site; this is known as the 1857 earthquake on the San Andreas Fault. Due to its distance, it only produced an estimated PGA of 0.10g at the site.

Ground Acceleration Parameters

The site is in a region of generally high seismicity and has the potential to experience strong ground shaking from earthquakes on regional or local causative faults. To characterize the seismicity at the site and to provide seismic design parameters, a General Procedure Ground Motion Analysis for deterministic ground motions was performed. The deterministic ground motions are based on the 2009 International Building Code General Procedure that was obtained from the United States Geological Survey Earthquake Hazards Program website (USGS, 2012) and the 2005 ASCE 7 Standard Analysis Method. The results of the seismic hazard analysis are presented in the following table and in the appended Site Design Response Spectrum.

SUMMARY OF DESIGN RESPONSE ACCELERATION PARAMETERS

Mapped Acceleration Values for Site Class B		**2010 CBC Site Coefficients and General Procedure Adjusted MCE Spectral Response Acceleration Parameters For Site Class D (PGA = S_{DS}/2.5 = 1.138 /2.5 = 0.455g)**					
Seismic Parameters	Values (g)	Site Coefficients	Values	Seismic Parameters	Values (g)	Seismic Parameters	Values (g)
S_S	1.71	F_a	1.00	S_{MS}	1.71	S_{DS}	1.14
S_1	0.665	F_v	1.50	S_{M1}	0.998	S_{D1}	0.665

Seismic Design Category

Section 1613A.5.6 of the 2010 CBC indicates that structures will be assigned to Category D unless S_1 is less than or equal to 0.75. The S_1 calculated for the site is 0.665g; therefore, the site is assigned to Seismic Design Category D.

Surface Ground Rupture

Surface ground rupture generally occurs at sites that are traversed by, or that lie very near, a causative fault. The site is not in a State Earthquake Fault Zone, and there are no mapped faults crossing or immediately adjacent to the site. Therefore, the potential for surface ground rupture to occur within the site is considered to be very low.

Liquefaction
Soil liquefaction is the loss of soil strength during a significant seismic event. It occurs primarily where the groundwater level is shallow and loose to medium-dense, fine to medium grained sands and sandy silts occur within a depth of about 50 feet. Liquefaction potential decreases as sand and gravel sizes increase, and as silt and clay contents increase. The site area is underlain by alluvium and colluviums deposits of Holocene and upper Pleistocene age, which are generally susceptible to liquefaction. The Santa Barbara County Seismic Safety & Seismic Element (2010) indicates that the site lies within a moderate liquefaction potential zone. The depth of groundwater in the site area is approximately 35 feet, based on groundwater elevations for June 2008 well measurements by Steven Bachman (2010). If liquefaction were to occur at depths, its effects at the surface would be at least partially attenuated by the relatively thick layer of non-liquefied soil. Therefore, in our opinion, the site has a low to moderate potential for liquefaction.

4.0 GEOTECHNICAL

Expansive Soils
Archival information indicates the site soils would be considered expansive, per 2010 CBC Section 1803.5.3, with actual expansion index values (ASTM D 4829-11) expected to be in the range of 35 to 70. Expansive soils tend to swell with seasonal increases in soil moisture and shrink during the dry season as soil moisture decreases. The volume changes that the soils undergo in this cyclical pattern can stress and damage slabs and foundations if precautionary measures are not incorporated into the design and construction.

To protect foundations from the damaging effects of expansive soils, they are generally deepened and more heavily reinforced. For expansion indices in this range, minimum foundation depths of 18 to 21 inches below lowest adjacent grade would generally be considered sufficient to mitigate the soil's expansion potential. Slab protection generally could involve placement of nonexpansive material beneath the slab in conjunction with premoistening of subslab soils. For expansion indices in this range, it is probable that a layer of nonexpansive material 12 to 18 inches thick would generally be recommended if conventional slabs and foundations are used. Premoistening of the native soils to optimum moisture content or above, to depths of 12 to 18 inches below the nonexpansive layer would also be recommended. Minimum reinforcement for foundations of #4 or #5 rebar top and bottom, and #3 rebar at 18 to 24 inches on center each way would likely be recommended.

The use of deepened foundations, imported nonexpansive soils, premoistening of subslab soils and increased reinforcement are commonly used for structures similar to those on this site in this area at this time. There are a number of other options available, such as post-tensioned slab foundations, conventionally reinforced mat foundations, or 3 to 5-foot deep nonexpansive building pads. However, these solutions are typically not as cost-effective at this time as the measures presented above for structures similar to those on this site.

Differential Settlement

Differential settlement can occur when a foundation of a particular structure spans materials with different settlement characteristics, or variable *in situ* moisture and density conditions. These conditions can stress and possibly damage foundations, often resulting in severe cracks and displacement. To reduce the differential settlement potential, it is necessary for all foundations of an individual structure to bear in sufficiently uniform material. On this site, sufficiently uniform bearing for new structures would likely be achieved by overexcavating and recompacting the soils within a building area, to depths of 3 to 5 feet below existing grade.

It is our understanding that the existing structures are performing satisfactorily given their age, and there are no indications of excess differential settlement, therefore no additional recommendations for mitigation of differential settlement in the existing structures are considered necessary at this time.

Foundation Bearing and Lateral Pressures

Assuming proper preparation of bearing soils to mitigate differential settlement and sufficient depths to mitigate expansion potential, it is expected that allowable bearing capacities in the range of 1,800 to 2,500 psf can be utilized. The on-site soils are expected to exert moderate lateral pressures on retaining walls; active equivalent fluid pressure in the range of 40 to 50 pcf and at rest pressures of 55 to 65 pcf should be anticipated for level backfill. Clean sand or gravel backfill will apply the least equivalent fluid pressure, on the order of 35 pcf for active conditions and 50 pcf for at-rest conditions. Passive resistance values of 250 to 350 pcf (equivalent fluid pressure) for the soil would be expected, with friction coefficients in the range of 0.35 to 0.40.

Surface and Subsurface Water

As previously noted in the Geology Section of this report, *subsurface* water is expected to lie at such a depth that it would not be expected to affect the design or performance shallow conventional foundations. Appropriate *surface* drainage systems should be installed and maintained in any unimproved areas where a minimum slope of 2 percent for a minimum distance of 10 feet from foundations cannot be provided. Proper drainage of retaining walls and thorough waterproofing of walls where transmission of moisture is undesirable should be provided.

Erosion
Drainage on the site is by sheet flow, and the majority of the expected surface water runoff on site appears to be controlled by existing hardscape and surface drains; the existing playfields and landscape areas also provide a limited amount of infiltration area for rainfall. No significant erosion features were observed during the site reconnaissance. Conventional erosion control measures such as vegetation, erosion matting, and maintenance of irrigation systems should be sufficient to control erosion. Rodent activity can disrupt drainage patterns; therefore an aggressive program of rodent control should be maintained.

Asphalt Pavement
The soil types anticipated at this site typically exhibit low to moderate resistance to the types of loads imposed by traffic. Moderately thick aggregate base sections with hot mix asphalt surface layers, based on the expected Traffic Index values, should be anticipated for any new or reconstructed parking areas.

5.0 CLOSURE
This report is valid for conditions as they exist at this time for the project described herein. Our intent was to perform this study in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing in the locality of this project under similar conditions. No representation, warranty, or guarantee, is either expressed or implied.

If changes to the project become necessary, or if any of the assumptions used in the preparation of this report are not correct, this firm should be notified to provide modifications to this report as necessary. Any items not specifically addressed in this report are beyond our scope of services.

This document, the data, conclusions, and recommendations contained herein are the property of Earth Systems Pacific. This report shall be used in its entirety, with no individual sections reproduced or used out of context. Copies may be made only by Earth Systems Pacific, the client, and the client's authorized agents for use exclusively on the subject project. Any other use is subject to federal copyright laws and the written approval of Earth Systems Pacific.

End of Text.

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City of Goleta, *Request for Qualification and Proposal (RFQ/RFP) for Seismic and ADA Needs Assessment for the Goleta Valley Community Center*, May 10, 2012

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Santa Barbara County, *Seismic Safety and Seismic Element*, amended 2010

United States Geological Survey, *Earthquake Hazards Program Website*, 2012

APPENDIX

Geologic Map

Historical Earthquake / Fault Map

FEMA Flood Zone Map

Site Design Response Spectrum

GEOLOGIC MAP

GOLETA VALLEY COMMUNITY CENTER
5679 Hollister Avenue
Goleta, California

Extract from: Geologic Map of Goleta, by Minor and others, 2007

EXPLANATION

Geologic Units

- **af** — Artificial fill (Holocene)
- **Qa** — Active channel alluvium (Holocene)
- **Qe** — Estuarine deposits (Holocene)
- **Qac** — Alluvium and colluvium (Holocene and upper Pleistocene)
- **Qia** — Intermediate alluvial deposits (Upper Pleistocene)
- **Qoa** — older alluvial deposits (Upper and middle Pleistocene)

Geologic Symbols

- Contact — Dashed where approximately located or inferred
- High-angle fault — Dashed where approximately located or inferred; dotted where concealed
- Thrust or reverse fault — Dashed where approximately located or inferred; dotted where concealed. Saw-teeth on upper plate. Dip of fault plane between 30° and 80°
- Anticline — Showing axis of surface. Dashed where approximately located; dotted where concealed
- Syncline — Showing axis of surface. Dashed where approximately located; dotted where concealed
- Horizontal, Inclined (30), Vertical (90) — Strike and dip of beds

N

Approx. Scale: 1" = 1000'

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November 2012

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SL-16901-SA

HISTORICAL EARTHQUAKE/ FAULT MAP

GOLETA VALLEY COMMUNITY CENTER
5679 Hollister Avenue
Goleta, California

LEGEND

Quaternary and younger faults from the Fault Activity Map of California

HISTORICAL EARTHQUAKE MAGNITUDE

○ 5.0 to 5.9 ● 6.0 to 6.9 ◍ 7.0 to 7.9

FAULTS

1 Pitas Point
2 Oak Ridge
3 Red Mountain
4 Mesa
5 More Ranch
6 Santa Ynez
7 Lavigia
8 San Jose
9 Baseline
10 unnamed
11 Carneros

REFERENCES

Blake, T.F., EQSEARCH, updated 2010
Jennings and Bryant, 2010

N

(Approximate Scale: 1" = 5 miles)

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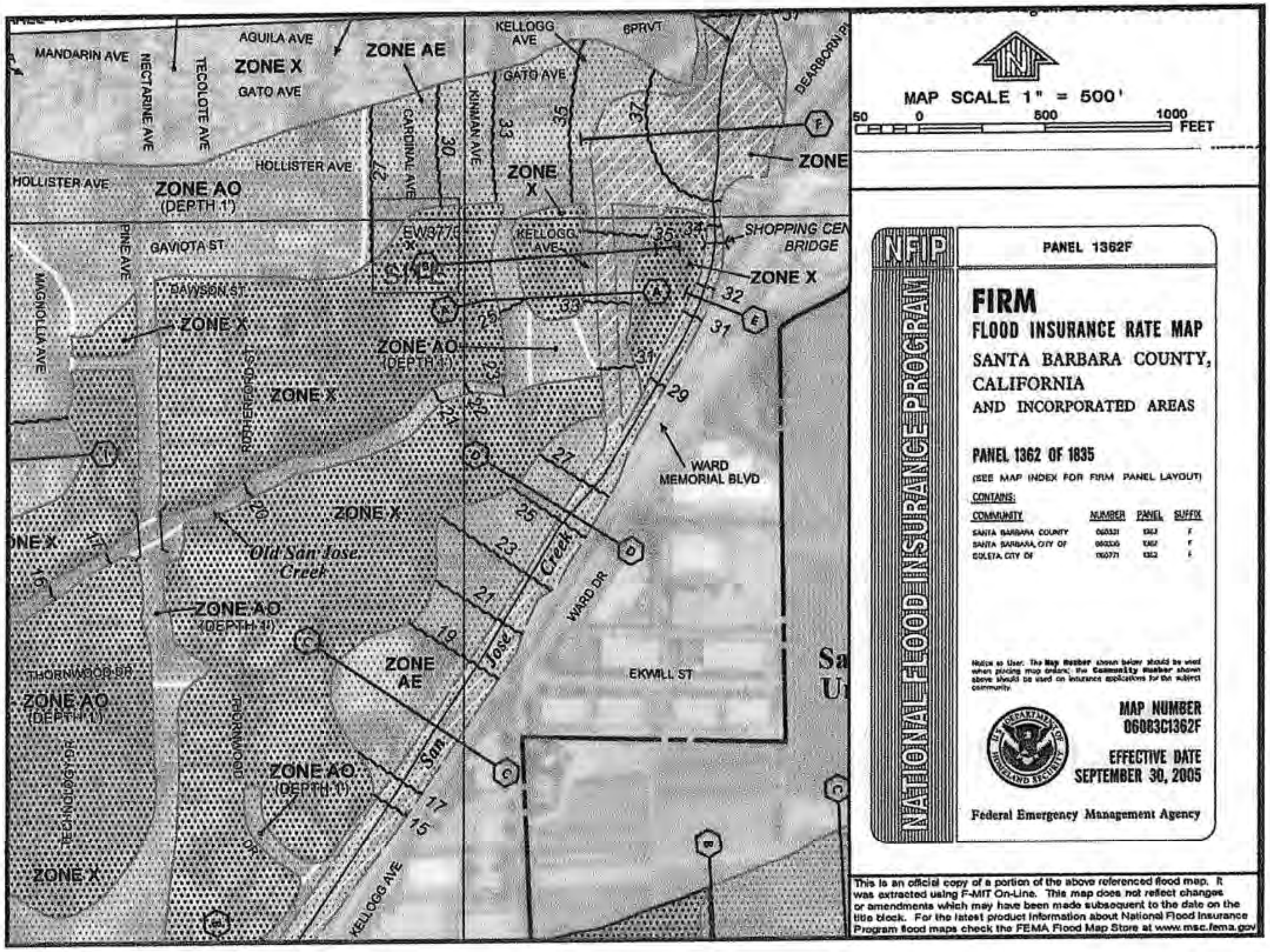
FEMA FLOOD ZONE MAP

GOLETA VALLEY COMMUNITY CENTER

5679 Hollister Avenue
Goleta, California



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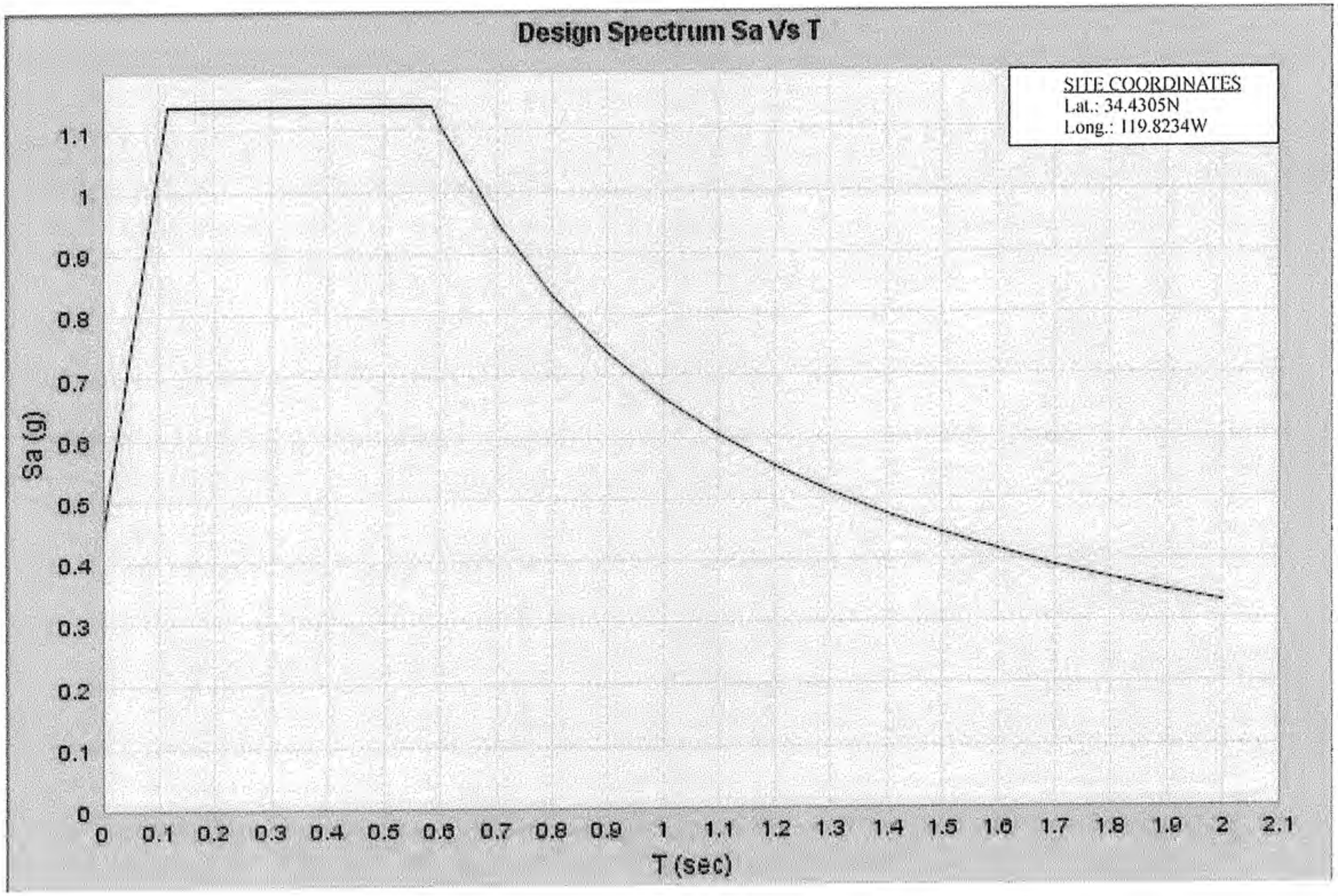
SITE DESIGN RESPONSE SPECTRUM

GOLETA VALLEY COMMUNITY CENTER

5679 Hollister Avenue
Goleta, California



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Appendix E – Structural Drawings

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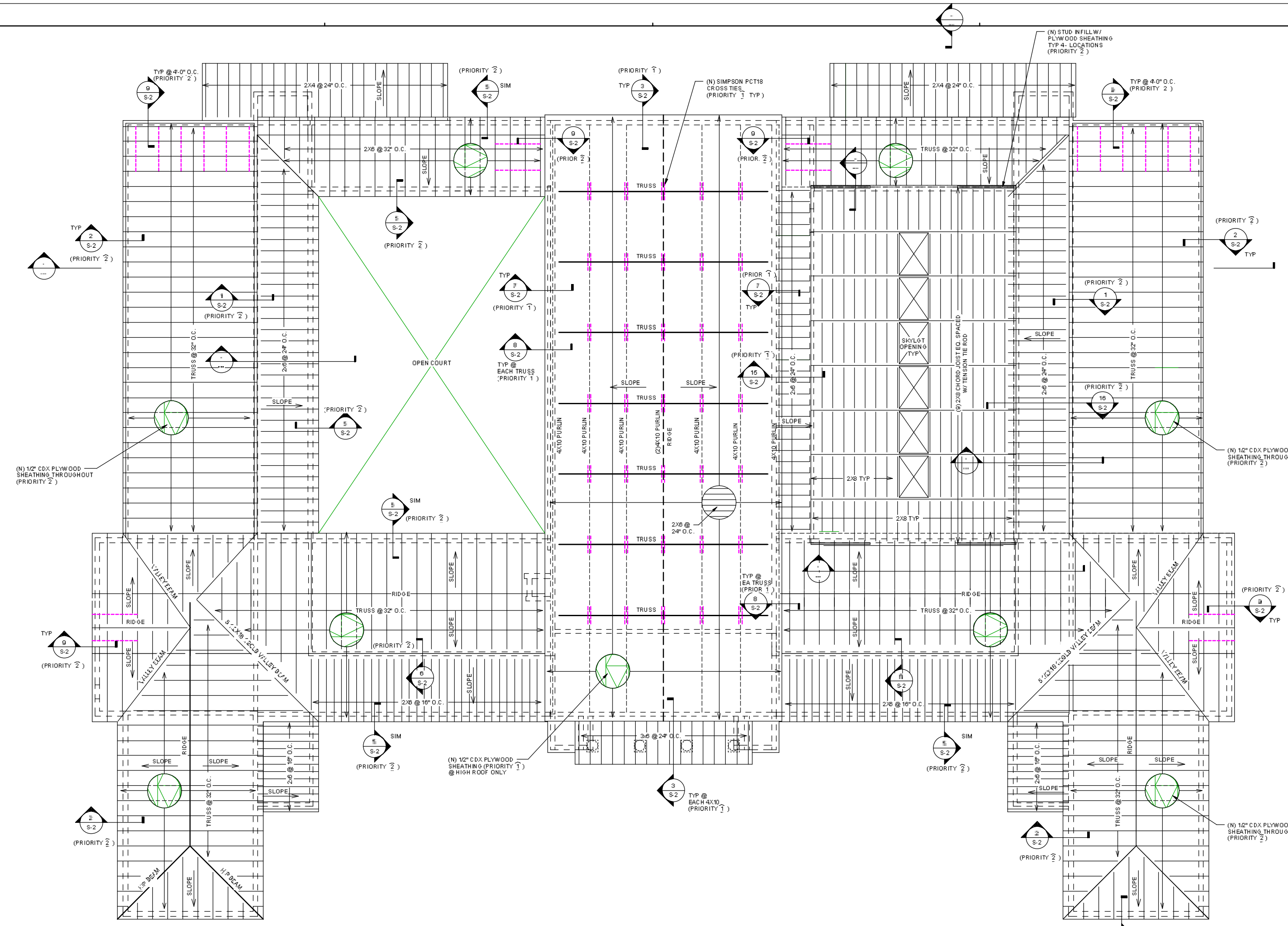
Appendix E – Structural Drawings



NOTES:

1. ALL MEMBERS SHOWN ARE EXISTING (E) UNLESS OTHERWISE NOTED.
2. REFER TO ASCE 31-03, TIER 1 EVALUATION REPORT FOR THE GOLETA VALLEY COMMUNITY CENTER (5679, 5681, AND 5689 HOLISTER AVE, GOLETA, CA) FOR ADDITIONAL INFORMATION.

1 STRUCTURAL ROOF PLAN
1/8" = 1'-0"

SCHEMATIC DESIGN ONLY
NOT FOR CONSTRUCTION

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Crosby group
Structural Engineering and Design
999 Baker Way
Suite 410
San Mateo, CA 94404
tel: (650) 367-8100
fax: (650) 598-0277

Goleta Valley Community Center
Seismic Assessment Building A
5679 Hollister Avenue
Goleta, California

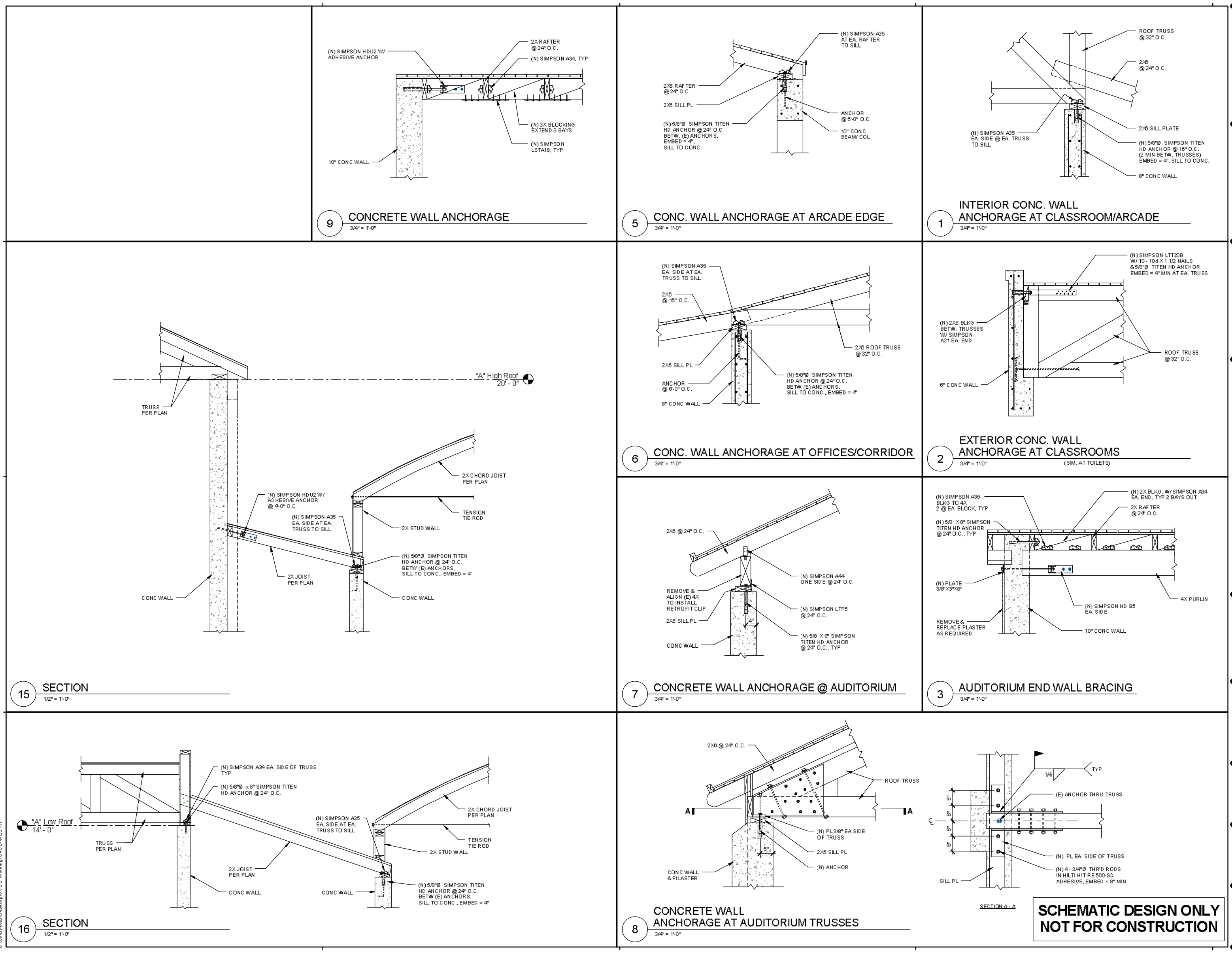
Revision Schedule

No.	Date	Description

STRUCTURAL ROOF PLAN

Scale: 1/8" = 1'-0"
Project No:
Phase:
Issue For: Council Review
Issue Date: 4/24/13
Drawn By: YK
Designed By:
Checked By:
Approved By:

S-1



SCHEMATIC DESIGN ONLY
NOT FOR CONSTRUCTION

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Suite 410
San Mateo, CA 94404
tel (650) 367-8100
fax (650) 598-0277

Goleta Valley Community Center

Seismic Assessment Building A

5679 Hollister Avenue
Goleta, California

Revision Schedule

No.	Date	Description

DETAILS

Scale: As indicated
Project No:
Phase:
Issue For: Council Review
Issue Date: 4/24/13
Drawn By: YK
Designed By:
Checked By:
Approved By:

S-2

5/14/2013 11:21:40 AM
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Attachment 3H

Binder of Special Studies

Accessibility Assessment (ADA) Report

Accessibility Assessment

Goleta Valley Community Center & the United Boys & Girls Club of Goleta

5638, 5679, 5681, 5689 & 5717 Hollister Ave
Goleta, CA 93117

April 24, 2013

Prepared for:
City of Goleta
130 Cremona Drive, Ste. B
Goleta, CA 93117

Prepared by:
Crosby Group
999 Baker Way, Suite 410
San Mateo, CA 94404

Executive Summary

The following report summarizes the results of an **Accessibility Assessment** which has been prepared for the Goleta Valley Community Center and the United Boys and girls Club of Goleta located at 5679 through 5689 Hollister Avenue in Goleta, California. This report has been prepared at the request of the City of Goleta as part of the overall Seismic. ADA and Fire/Life Safety Need Assessment as referenced in the RFP/RFQ dated May 10th 2012.

The property currently known as the Goleta Valley Community Center (GVCC) began as a public school. In 1976 the Goleta Unified School District decided to close the school rather than provide mandated upgrades. The facility was first leased to the County of Santa Barbara in 1977 by the School District. In 1984 the County sublet the property to the Goleta Valley Community Center Board of Directors and the facility opened to the public. In the year 2002, The City of Goleta incorporated, assumed control of the lease, and continued to sublet to the GVCC Board of Directors. The end of the 30 year lease is approaching and the City of Goleta is preparing to purchase the facility and as a result, assume full operational and maintenance control of the property. This report is being prepared in order that the City can properly budget for repairs and upgrades in three main areas: Seismic Safety, Accessibility and Fire and Life Safety. The following report summarizes the results of a fire and life safety review of the 5 main buildings which comprise the Goleta Valley Community Center. These buildings are:

Building A: This is the original school building built in 1927 and currently houses all functions of the Community Center.

Building B: The west portion was constructed in 1948 and the east portion in 1950. These are site built class rooms currently used by a publically funded daycare program run by the Community Action Center (CAC). The east portion of the building formerly housed CAC offices but is currently vacant.

Building C2: This is a trio of portable classrooms set end to end and house a portion of the privately run Rainbow Pre-School. The buildings were placed/constructed in 1987.

Building C4: This is a site built class room constructed in 1958 that houses a portion of the privately run Rainbow Pre-School.

Building D: This is a site built Community Center which is operated by the United Boys and Girls Club of Goleta. The building was originally constructed circa 1950 with an addition and remodel occurring in 2000.

Each facility was reviewed to determine which portions are deemed inadequate per the methods listed in Section B of this report. Major findings include:

1. Overall finding # 1. The path of travel across the site contains several non-compliant issues.
2. Overall finding # 2. Public Restrooms do not completely meet accessibility requirements.
3. Overall finding # 3. Access within the respective buildings is for the most part compliant with the exception of several doors/doorways which require too much force to open and close too fast.

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A. Intent of Evaluation and Scope of Assessment

The Americans with Disabilities Act (ADA) was approved by Congress in July 1990. Its purpose was to bar discrimination against individuals with physical or mental disabilities with respect to employment, government services, public accommodations, transportation and telecommunication. Applying this to buildings and sites intended for, and available to, the public, the concept of a "Barrier Free Environment" evolved. A "Barrier Free Environment" can be defined as "an environment where the structural or architectural design does not impeded use by individuals with special physical needs". This assessment seeks to identify such "barriers" at the existing Goleta Valley Community Center.

The ADA is a Federal Law, and is subject to a certain amount of interpretation by different parties. As such, enforcement primarily takes place in civil courts. The State of California has incorporated their interpretation of the law into the California Code of Regulations, Title 24, also known as the California Building Code (CBC). It is this code that is used as the final interpretation with respects to this assessment. The code is enforced at the city level by the City of Goleta Building Official.

The scope of this assessment includes a visual inspection of the facility using the methodology described in Section B of this report. ADA regulations focus mainly on areas of public use while the CBC makes no such distinction. Using the CBC as the primary guide to the assessment, we have used checklists developed by national ADA advocates as well as a full ADA checklist developed by the State of California from the CBC. Results of this assessment have been complied in a set of drawings included in Section C of this report.

A.1 Limitations

An ADA assessment of this type inherently confines itself to building elements which are meant to be accessible to any users. As such there were no areas pertinent that were outside the scope of the assessment. Areas that were deemed non-public were not considered in this assessment. The balcony in the auditorium is currently being used as storage by the operators of the Community Center and there are no future plans to change this. This being the case, the balcony was treated as a non-public space and has not been considered in this assessment. If, in the future, the balcony is used as a public space, access to this space will need to be reconsidered.

The primary purpose of this assessment is to identify existing accessibility barriers and provide a typical solution for budgeting purposes. The solution described herein may not be the only solution available.

B. Assessment Methodology

B.1 Per CBC Section 1134B Accessibility for Existing Buildings (Public)

Section 1134B of the 2010 California Building Code (CBC) sets forth the minimum requirements for providing accessibility upgrades in Public Buildings. This section assumes that ADA upgrades are being provided as part of a larger building renovation, structural repair, alteration and /or addition to an existing building. Under this section, the scope of accessibility upgrades is dependent on the cost of the intended renovation, structural repair, alteration and /or addition and is prioritized as follows:

1. An Accessible Entrance
2. An accessible route to the altered area
3. At least one accessible restroom for each sex
4. Accessible telephones
5. Accessible drinking fountains
6. Signage
7. When possible, additional accessible elements such as parking, storage and alarms

Although the accessibility upgrades may take place in conjunction with structural repairs and/or retrofits, the assessment provided herein lists areas of deficiency without regard to any other building alterations.

B.2 Per ADA Checklist for Existing Facilities (version 2.1)

The Americans with Disabilities act is Federal law, not a building code, that sets forth guidelines for accessibility and barrier free environments. This check list was developed by the Adaptive Environments Center, Inc. for the National Institute on Disability and Rehabilitation Research. In that sense, it is an interpretation of the law and is somewhat broader in scope than what is found in the CBC, although it’s scope contains all the items found in the Section 1134B (with the exception of Item 7 “storage” and “alarms”) The check list is divided into 4 sections:.

1. Accessible Approach/Entrance
2. Access to Goods and Services
3. Usability of Restrooms
4. Additional Access

Each section includes several items for consideration during assessment. For the purposes of this report, the facility has been assessed using this checklist as a secondary assessment with regards to the CBC Section 1134B.

B.3 Per DSA-AC Checklist (Revised 01/01/2011)

The Division of the State Architect (DSA) publishes a comprehensive accessibility checklist for new public buildings in the State of California that fall under the jurisdiction of the State Architect. Although the facility was once a public school and under the jurisdiction of the DSA, this is no longer the case. This checklist is used as a reference during the assessment process to aid in the determination and scope of required upgrades.

B.4 Assessment Procedures

The assessment was conducted over the span of several site visits. The site and each of the buildings were visually inspected and, where required, measured for compliance. Several interviews with the current users and operators of the facility were also held to understand the current use and gauge for the future.

C. Findings

C.1 General Assessment

Areas of deficiency were to be expected in a facility of this age and several deficiencies were found. The following is a brief description of deficiencies found:

Site Issues – A barrier free path of travel from the parking lots to each of the buildings and from the bus stop on Hollister to each of the buildings contains several deficiencies and constitutes the majority of the work required to be addressed to meet accessibility requirements.

Building A – Typical to most doors in all 5 buildings, doors with closers were found to take more than 5 pounds of force to open and closed too quickly when released. We believe that the provision of new closers will solve this issue. The public restrooms were also found to be non-compliant and will most likely require a complete retrofit to bring into compliance. The women's restroom will need to lose one water closet in order to provide required clear spaces at all water closets and lavatories. It is worth noting that the current number of fixtures provided in each of the public restrooms is inadequate per current code. Remediation of the situation is not required by code for an existing building.

Building B – Most doors with closers in this building fail the door pull force issue described in Building A above. The public restrooms in this building all are sized for small children, configured to allow for direct visual inspection by adult staff, and are not required to comply with all ADA regulations. Grab bars are missing from each of the restrooms and should be provided at one water closet in each restroom. Adult restrooms are not provided in this building and it is assumed that the restrooms in Buildings A and C4 are used for adult staff. Existing cabinets and counter tops are non-compliant and should be replaced. One door contains a 4" lip at the threshold – a new landing and ramp should be extended to accommodate.

Building C2 – Two major issues with this trio of portable buildings are non-compliant ramps accessing the buildings and a restroom which is too small to provide adequate ADA compliant Children's facility. Adult restrooms are not provided in this building and it is assumed that the restrooms in Buildings A and C4 are used for adult staff. Existing cabinets and counter tops are non-compliant and should be replaced.

Building C4 - Most doors with closers in this building fail the door pull force issue described in Building A above. The public restrooms in this building all are sized for small children, configured to allow for direct visual inspection by adult staff, and are not required to comply with all ADA regulations. Grab bars are missing from the restroom and should be provided. Adult Staff restrooms are provided by one unisex bathroom which also serves the needs of adult staff in Buildings B and C2. Existing cabinets and counter tops are non-compliant and should be replaced. Existing thermostats are located too high for ADA compliance.

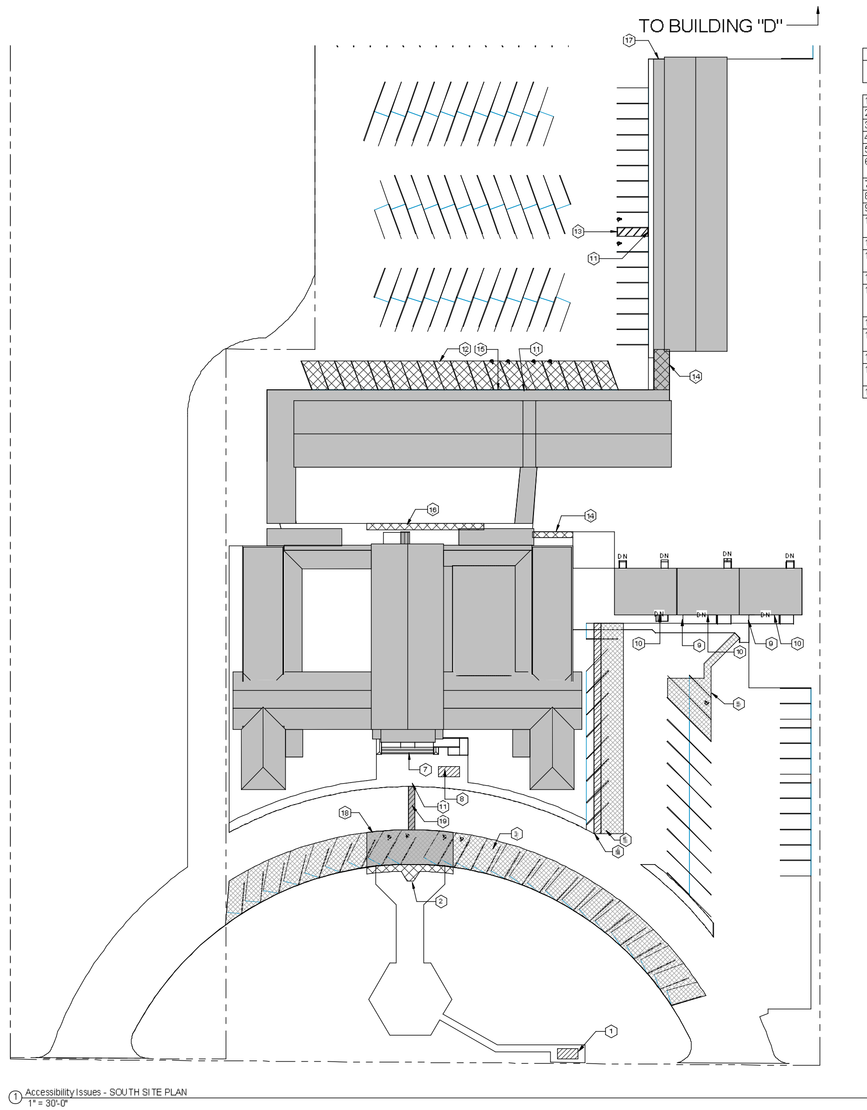
Building D - Most doors with closers in this building fail the door pull force issue described in Building A above. The Men's restroom does not provide adequate pull side clearance and the door to the Staff restroom does not provide 32" minimum clearance.

See Section C.2 for additional items and specific information on the issues discussed above.

C.2 Drawing Index

The following drawings indicate specific CBC/ADA deficiencies discovered during the assessment. Where appropriate a general solution was provided in order that a cost estimate could be performed and a budgetary number established for future remediation.

Sheet	Description
A0a	Accessibility Assessment – South Site Plan
A0b	Accessibility Assessment – North Site Plan
A1	Accessibility Assessment – Building A – Main Community Center
A1a	Accessibility Assessment – Building A – Main Community Center – Public Restrooms
A2	Accessibility Assessment – Building B - Classrooms
A3	Accessibility Assessment – Building C2 – Portable Classrooms
A4	Accessibility Assessment – Building C4 - Classrooms
A5	Accessibility Assessment – Building D – United Boys and Girls Club



ADA Site Notes - South

Key Note	Description
1	Provide new bus shelter with adequate seating/coverage for a wheel chair
2	Provide new ADA Compliant curb cut and access aisle in front of stalls. Include 4 wheel stops.
3	Provide 4 new ADA compliant parking stalls with signage, restripe remaining stalls to accomodate, approximately 6100 sf.
4	Provide new ADA compliant sidewalk, 4' wide, 125' long
5	Restripe parking stalls to accomodate sidewalk, approximately 1,600 sf.
6	Restripe parking stalls to provide compliant ADA Van Stall and adjacent Striped access aisle, walkway to Building C2 and signage, approximately 750 SF. 30' each).
7	Provide new contrasting stripe at each stair tread (approximately 50 l.f. total). City may consider replacing treads in their entirety.
8	Provide new shorter (6') bench to allow space for wheel chair under the shelter
9	Provide new asphalt transition to wood ramp, slope not to exceed 1:20 (approximately 20 s.f. total)
10	Provide new handrails at building side of ramps and stairs (approximately 50 LF total). Detach existing chain link fence from existing east ramp railing as required to provide required handrail clearance.
11	Provide new detectable warning strip at existing curb cut (assume 24 SF at each curb cut)
12	Restripe existing parking stalls to accomodate 4 accessible stalls and 1 5' and 1 8'(van accessible) access aisle (approximately 3000 SF). Align one access aisle with existing curb cut
13	Paint "NO PARKING" at existing access aisle.
14	The slope of the existing ramps are slightly non-compliant, provide 2" topping slab (approximately 300 SF) as required to maintain a slope no greater that 1:12. Notch existing adjacent concrete at lower end of ramp to accomodate topping slab with a smooth transition. Provide new handrails on each side.
15	Provide new curb cut at new accessible stall loading aisle
16	Existing cross slope is 5%, provide new concrete walk with cross slope no greater than 2% (approximately 250 SF of new sidewalk, include demo of existing)
17	Provide new curb cut at new striped access aisle to Building "D"
18	Provide new asphalt as required to provide 2% maximum cross slope at all accessible parking spaces and at new accessible aisle to existing curb cut (approximately 1100 s.f of average 2" thick asphalt)
19	Provide new striped access aisle (approximately 100 s.f.) from accessible parking stalls to existing curb cut

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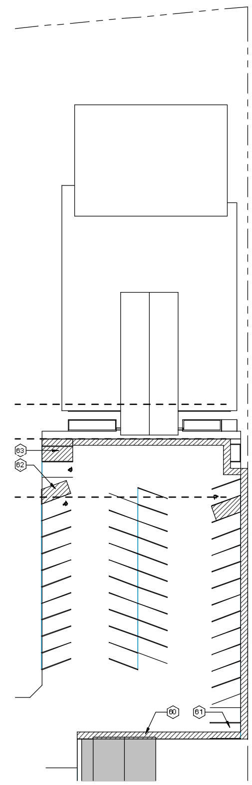
ACCESSIBILITY - SOUTH SITE PLAN A-0a



1 Accessibility Issues - NORTH SITE PLAN
1" = 30'-0"

ADA Site Notes - North	
Key Note	Description
60	Provide new stripped access aisle from new curb cut to Building "D" and across to west side accessible stall (approximately 1500 s.f.)
61	One parking stall to be removed to allow for access aisle
62	Convert existing accessible stall to standard parking stall
63	Provide new van accessible parking stall, access aisle and signage (approximately 500 s.f. of re-striping required)

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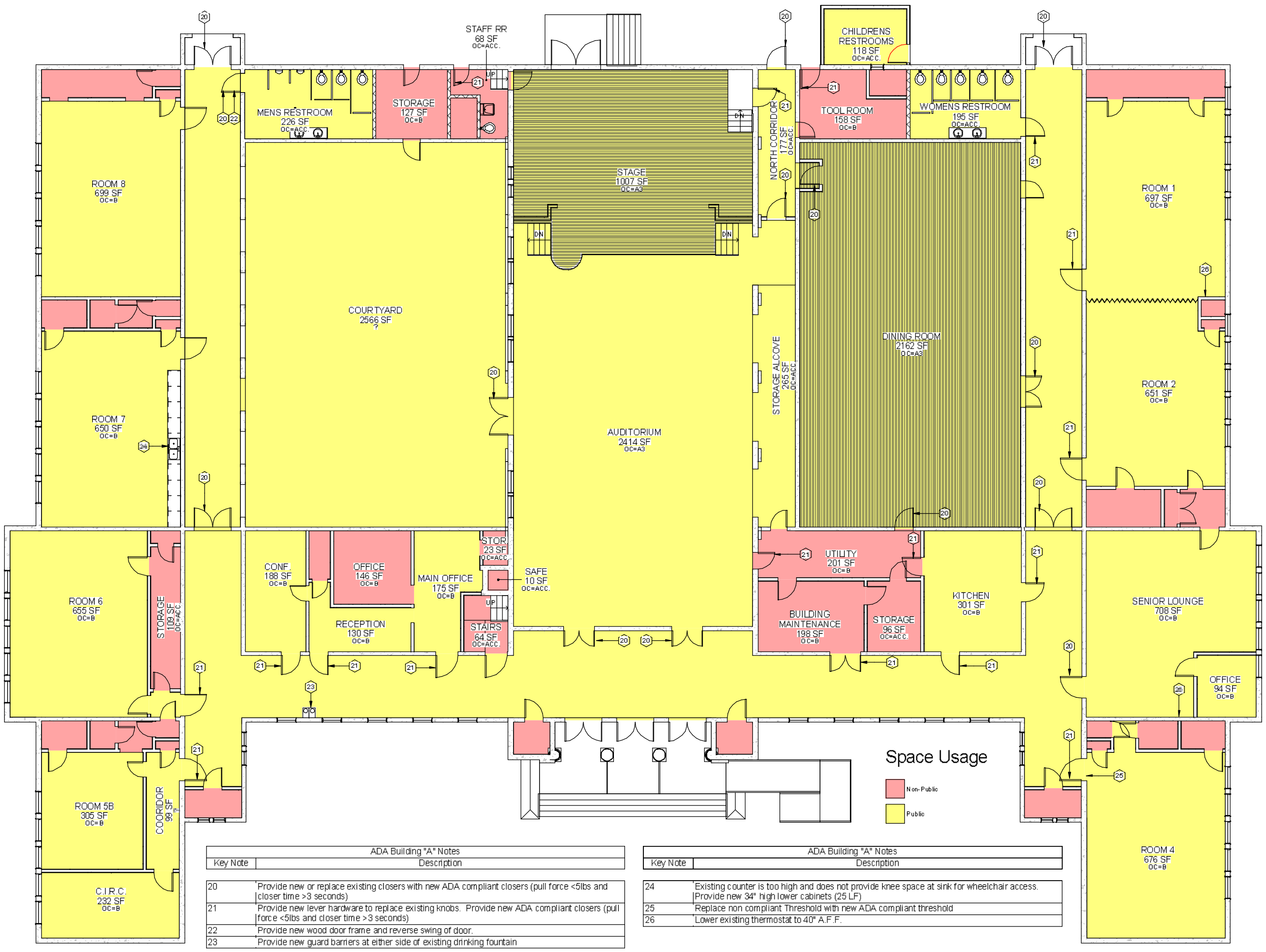
ACCESSIBILITY - NORTH SITE PLAN A-0b



ADA Building "A" Notes	
Key Note	Description
20	Provide new or replace existing closers with new ADA compliant closers (pull force <5lbs and closer time >3 seconds)
21	Provide new lever hardware to replace existing knobs. Provide new ADA compliant closers (pull force <5lbs and closer time >3 seconds)
22	Provide new wood door frame and reverse swing of door.
23	Provide new guard barriers at either side of existing drinking fountain

ADA Building "A" Notes	
Key Note	Description
24	Existing counter is too high and does not provide knee space at sink for wheelchair access. Provide new 34" high lower cabinets (25 LF)
25	Replace non compliant Threshold with new ADA compliant threshold
26	Lower existing thermostat to 40" A.F.F.

1 Accessibility Issues - BUILDING "A"
1/8" = 1'-0"

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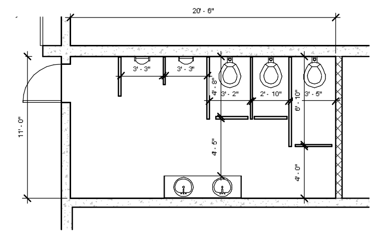
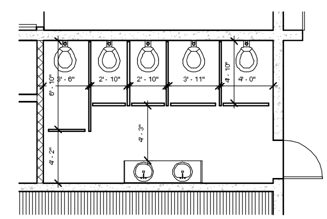
ACCESSIBILITY - BUILDING "A" A-1



① Men's Public Restroom
1/4" = 1'-0"

Provide at Men's Public Restroom:
- 3 new wall mounted water closets with partitions, grab bars and associated accessories
- 2 new urinals with partitions
- 2 new lavatories and associated accessories

Reccommend total redesign of public restrooms, removal of all fixtures and provision of all new water closets, urninals and lavatories.



② Women's Public Restroom
1/4" = 1'-0"

Provide at Women's Public Restroom:
- 4 new wall mounted water closets with partitions, grab bars and associated accessories
- 2 new lavatories and associated accessories

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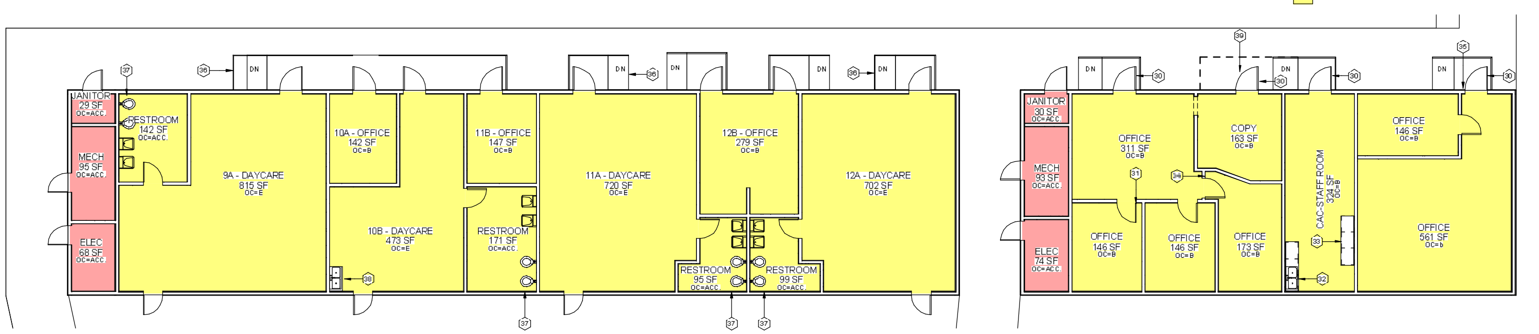
BUILDING "A" - Restrooms A-1a

ADA Building "B" Notes	
Key Note	Description
30	Provide new ADA compliant closers (pull force <5lbs and closer time >3 seconds)
31	Provide new lever hardware to replace existing knobs
32	Existing counter is too high and does not provide knee space at sink for wheelchair access. Provide new 34" high lower cabinets (10 LF)
33	Existing counter is too high. Provide new 34" high lower cabinets (10 LF)
34	Inadequate latch side clearance at door. Move acjacent wall further into Copy Room to provide 18" minimum clearance at latch side of door.
35	Inadequate latch side clearance at door. Move acjacent wall further into office to provide 12" minimum clearance at latch side of door.
36	Inadequate latch side clearance at gate. Remove gate.
37	Provide new ADA compliant grab bars at childrens toilet
38	Existing counter is too high and does not provide knee space at sink for wheelchair access. Provide new 34" high lower cabinets (4 LF)
39	Existing 4" lip - extend existing landing from the east to provide 4' wide, 4'long sloped ramp and 4' wide by 5' long landing at door. Include curb and railing. (assume 60 s.f of new 4" landing + ramp)

Space Usage

- Non-Public
- Public



1 Accessibility Issues - BUILDING "B"
1/8" = 1'-0"

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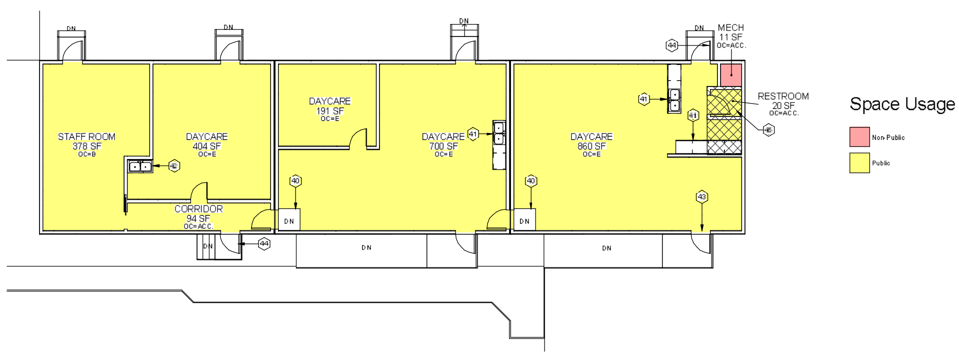
ACCESSIBILITY - BUILDING "B" A-2

ADA Building "C2" Notes	
Key Note	Description
40	Remove existing non-compliant ramp and provide new ramp with slope no greater than 1:12
41	Existing counter is too high and does not provide knee space at sink for wheelchair access. Provide new lower cabinets (8 LF each location)
42	Existing counter is too high and does not provide knee space at sink for wheelchair access. Provide new lower cabinets (4 LF)
43	Provide new ADA compliant threshold at door
44	Provide new lever hardware to replace existing krobs. Provide new ADA compliant closers (pull force <5lbs and closer time >3 seconds)
45	Existing unisex toilet room is non compliant. Provide walls, doors, new water closet, grab bars, lavatory and associated accessories (70 SF)



1 Accessibility Issues - BUILDING "C2"
1/8" = 1'-0"

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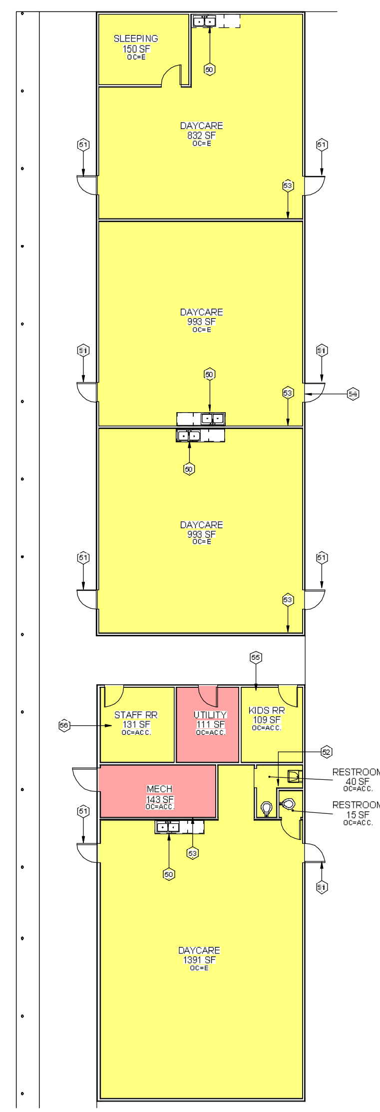
ACCESSIBILITY - BUILDING "C2" A-3

ADA Building "C4" Notes

Key Note	Description
50	No knee space provided for wheelchair access. Provide new lower cabinets (8'LF each location)
51	Provide new lever hardware to replace existing knobs. Provide new ADA compliant closers (pull force <5lbs and closer time >3 seconds)
52	Combine two restrooms into one ADA Compliant Restroom (50 SF). Provide new water closet, grab bars, lavatory and associated accessories
53	Lower existing thermostat to 40" A.F.F.
54	Provide new ADA compliant threshold at door
55	Provide grab bars at existing childrens toilet
56	Provide new ADA compliant Unisex restroom. Provide new water closet, grab bars, lavatory and associated accessories



Space Usage

- Non-Public
- Public

(1) Accessibility Issues - BUILDING "C4"
1/8" = 1'-0"

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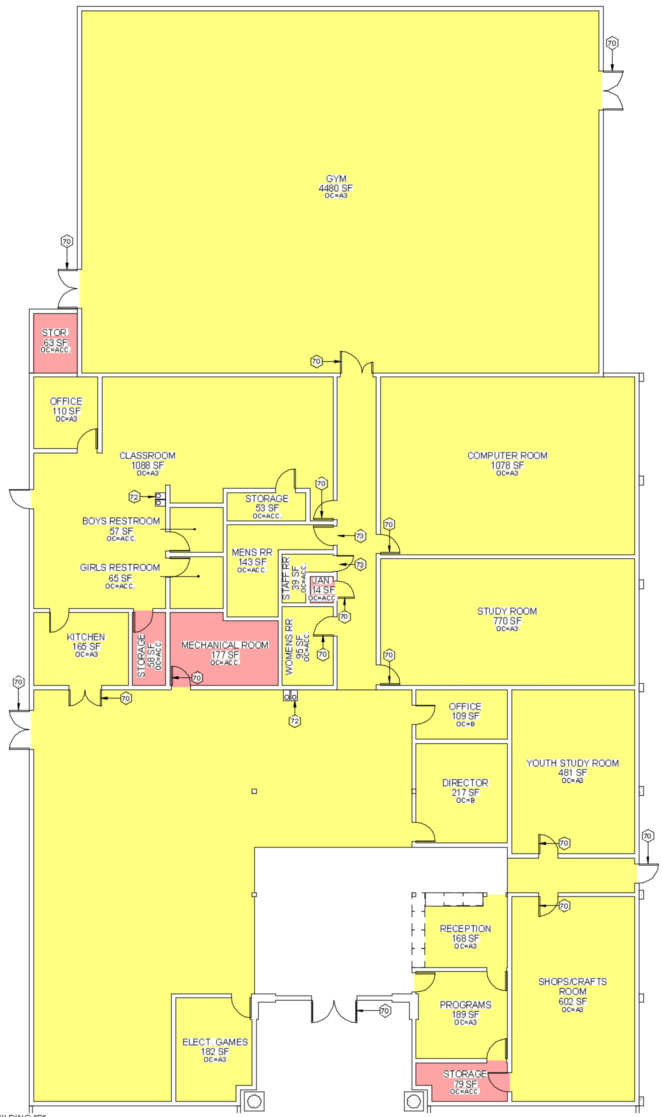
ACCESSIBILITY - BUILDING "C4" A-4

ADA Building "D" Notes	
Key Note	Description
70	Existing door has a pull force greater than 5 lbs. or no closer. Provide new closer ADA compliant closer with pull force less than 5 lbs.
72	Provide new guard barriers at either side of existing drinking fountain
73	Existing door is not wide enough too allow for required clearance nor is there sufficient clear space adjacent to the handle side of the door. Provide new ADA automatic door opener



1 Accessibility Issues - BUILDING "D"
1/8" = 1'-0"

Space Usage

- Non-Public
- Public

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ACCESSIBILITY - BUILDING "D" A-5

D. Conclusion & Mitigation Strategy

This assessment has identified specific areas and elements that are currently non-compliant with respects to the California Building Code and the Americans with Disabilities Act as it relates to site and building accessibility. Remediation is needed to provide a barrier free experience for those individuals with special physical and mental conditions who use this facility.

The drawings included in this report identify specific items that need to be addressed. The suggestions described in the drawings are typical but generally lack sufficient detail for a standard competitive bid scenario. Further site surveys and solution refinement is required. The City should follow the guidelines found in CBC Section 1134B unless otherwise directed by the City's Building Official.

If and when the structural remediation work recommended in the Seismic Assessment Report at Building A is undertaken, at least a portion of the site accessibility and probably all of the interior accessibility issues will be required to be implemented as a part of that work. Since there is no structural work suggested for the buildings B, C2, C4 and D, the associated accessibility issues should be prioritized and included in the City's Capital Improvement Budgets over the next several years.

Appendix A – Site Photos

Figure 1 - Front Entrance of Building A

Figure 2 – Front of Building B

Figure 3 – Front of Building C2

Figure 4 – Front of Building C4

Figure 5 – Front of Building D

Figure 6 – Path of Travel from Hollister Bus Stop

Figure 7 – Path of Travel from Hollister Bus Stop

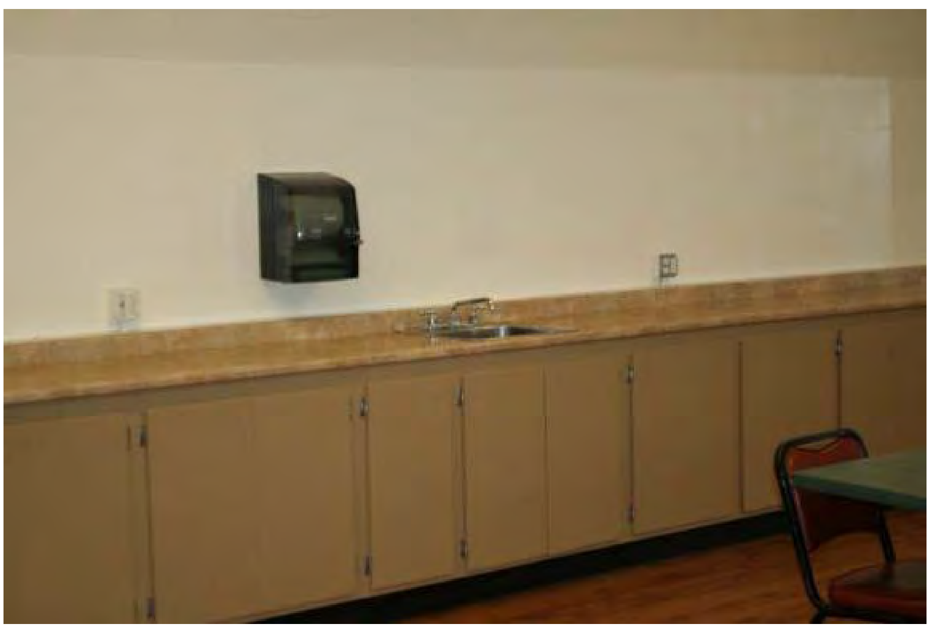

Figure 8 – Building A, non-compliant cabinet and sink

Attachment 3I

Binder of Special Studies

Fire & Life Safety Assessment Report

Fire & Life Safety Assessment

Goleta Valley Community Center & The United Boys & Girls Club of Goleta

5638, 5679, 5681, 5689 & 5717 Hollister Ave
Goleta, CA 93117

April 24, 2013

Prepared for:
City of Goleta
130 Cremona Drive, Ste. B
Goleta, CA 93117

Prepared by:
Crosby Group
999 Baker Way
Suite 410
San Mateo, CA 94404

Executive Summary

The following report summarizes the results of a **Fire & Life Safety Assessment** which has been prepared for the Goleta Valley Community Center and the United Boys and Girls Club of Goleta located at 5679 through 5689 Hollister Avenue in Goleta, California. This report has been prepared at the request of the City of Goleta as part of the overall Seismic, ADA and Fire/Life Safety Need Assessment as referenced in the RFP/RFQ dated May 10th 2012.

The property currently known as the Goleta Valley Community Center (GVCC) began as a public school. In 1976 the Goleta Unified School District decided to close the school rather than provide mandated upgrades. The facility was first leased to the County of Santa Barbara in 1977 by the School District. In 1984 the County sublet the property to the Goleta Valley Community Center Board of Directors and the facility opened to the public. In the year 2002, The City of Goleta incorporated, assumed control of the lease, and continued to sublet to the GVCC Board of Directors. The end of the 30 year lease is approaching and the City of Goleta is preparing to purchase the facility and as a result, assume full operational and maintenance control of the property. This report is being prepared in order that the City can properly budget for repairs and upgrades in three main areas: Seismic Safety, Accessibility and Fire and Life Safety. Please note that this assessment does not specifically include assessment of the buildings with respect to the Fire Code. The CBC contains code provisions that are similar in nature to the Fire Code and is generally adequate for assessments of existing buildings. The following report summarizes the results of a fire and life safety review of the 5 main buildings which comprise the Goleta Valley Community Center. These buildings are:

Building A: This is the original school building built in 1927 and currently houses all functions of the Community Center.

Building B: The west portion was constructed in 1948 and the east portion in 1950. These are site built class rooms currently used by a publically funded daycare program run by the Community Action Center (CAC). The east portion of the building formerly housed CAC offices but is currently vacant.

Building C2: This is a trio of portable classrooms set end to end and house a portion of the privately run Rainbow Pre-School. The buildings were placed/constructed in 1987.

Building C4: This is a site built class room constructed in 1958 that houses a portion of the privately run Rainbow Pre-School.

Building D: This is a site built Community Center which is operated by the United Boys and Girls Club of Goleta. The building was originally constructed circa 1950 with an addition and remodel occurring in 2000.

Each component of the facility was reviewed to determine which portions are inadequate per the current code with regards to Fire and Life Safety, focusing primarily on occupancy, area separation and exiting. Major finding include:

1. Overall finding # 1. None of the work associated with the assessments trigger any area separation upgrades.
2. Overall finding # 2. Generally speaking exiting requirements from the rooms and buildings are compliant with current code. Specific exceptions exists, see body of report for additional information.

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A. Intent of Evaluation & Scope of Assessment

For the purposes of this assessment, Fire and Life Safety issues deal primarily with alerting occupants to a state of emergency (typically fire) and providing a certain amount of time and a level of safety in order for those occupants exit the building. The building code utilizes the occupancy type of a room and its area to provide an occupant load and this is used to determine if exit paths are numerous and wide enough to allow the number of occupants to exit the building in a timely manner. Occupancy separation and fire resistive assemblies are used to contain fires for a prescribed amount of time to further allow full exiting of a building. In the case of existing buildings, a change of use or an addition may affect the occupancy loads and, in turn, the fire and life safety of the building.

The existing buildings on this site are, at the time of this report, between 26 and 86 years old. With the exception of building D, all buildings were originally intended for use as public school classrooms and were under the jurisdiction of the Division of the State Architect (DSA). These buildings are currently still owned by the Goleta Unified School District but are being leased to the City of Goleta for use as a public community center under the jurisdiction of the Building Department. Building D was constructed as a Girls and Boys Club with a child care component. The building was added to and remodeled in the year 2000 when the child care component was removed from the building. Building D is also being leased to the City of Goleta by the Goleta Unified School District. The switch in use, from Public school to Community Center and the removal of the child care component from Building D, has facilitated changes in occupancies for each of the buildings. These changes may have an effect on code required life safety issues, specifically in the areas of occupancy, area separation and exiting. Nothing being proposed in either this assessment, the Accessibility Assessment or the Seismic Assessment automatically triggers upgrades to occupancy separation requirements and will not be addressed in this report. The intent of this report is to document compliance/non-compliances issues with current codes with respect to occupancy and exiting. Additional information regarding fire alarm and fire sprinkling status will be noted where appropriate.

A.1 Limitations

The assessment is based on visual inspection, interviews with users, original drawings and various remodel projects of the facility. Determination of original occupancy is based on what information could be derived from the drawings as well as the known history of the site.

B. Assessment Methodology

Each building was reviewed and an occupancy classification was assigned to the building based on its current use. Occupancy loads for individual rooms and spaces were also identified by their function based on Table 1004.1.1 "Maximum Floor Area Allowance per Occupant". This occupant load was used to determine associated exiting loads at room exits. See the drawings in Section C for a detailed account of occupancy and exiting.

C. Findings

C.1 General Assessment

The property currently known as the Goleta Valley Community Center served as an elementary school up until 1976. In 1977 the facility was leased to the County of Santa Barbara and that lease was turned over to the City of Goleta when it incorporated in 2002. It is assumed that all occupancy issues associated with the change over from public school to community center were addressed 36 years ago. There is one minor exception at Building D which is noted below. None of the work recommended by the Seismic or Accessibility Assessments as listed in the Executive Summary result in an occupancy change to the facility as a whole or to the individual rooms or spaces. That being the case, the exiting requirements for all of the buildings are compliant with current codes.

As noted in Section A above, nothing being proposed in either this assessment, the Accessibility Assessment or the Seismic Assessment automatically triggers upgrades to occupancy separation requirements and will not be addressed in this report.

C.2 Building A – Main Community Center

Building A is a Community Hall and currently falls under the occupancy classification of "Assembly Group A3" per section 303.1 of the CBC. Three rooms are large enough to require two exits which are provided and appropriately spaced from each other. All exits are wide enough and are equipped with panic hardware. These rooms shall have the Occupancy Load posted inside the room.

The majority of other rooms have an occupant load small enough to be classified as "Business Group B" per Section 303.1, Exception 2 and Section 304. It should be noted that under current code these occupancies are required to have a 2 hour occupancy separation between the Assembly Occupancies and all other occupancies of the building. The existing walls are 8” and 10” concrete walls - CBC table 720 requires only 5” of concrete to achieve a 2 hour fire rating. Under the current code, all openings in these walls (doors, windows and frames) require a 1/1/2 hour rating. Currently the doors and windows do not have any fire rating. The building official may require that any future additions or alterations to the Assembly spaces include upgrading the doors and windows to rated assemblies.

This building is not equipped with an automatic fire sprinkler system and is not equipped with a fire alarm system. Unless otherwise directed by the Building Official, neither the sprinklers nor alarms are required at this time. Exiting from all rooms and from the building is compliant with current code. See Sheet E1 in Section C.7 for additional information.

C.3 Building B – Classrooms

Building B contains classrooms, offices and accessory spaces and currently falls under the occupancy classification of “Educational Group E” per section 305 of the CBC. There are several offices (or former classrooms being used as offices) that fall under the “Business Group B” per Section 304 of the CBC. As with Building A above, current code requires these occupancies have a 2 hour occupancy separation between the Educational Occupancies and all other occupancies of the building. The fire rating of these walls is unknown since these office spaces seem to have been built sometime after the original construction and no drawings were available for review.

This building is not equipped with an automatic fire sprinkler system. It is equipped with a fire alarm system with visual strobes in most rooms. Exiting from all rooms and from the building is compliant with current code. See Sheet E2 in Section C.7 for additional information.

C.4 Building C.2 – Portable Classrooms

Building “C.2” contains classrooms, a separate staff area and accessory spaces and currently falls under the occupancy classification of “Educational Group E” per section 305 of the CBC. The staff area falls under the “Business Group B” per Section 304 of the CBC. Current code requires a 2 hour occupancy separation between the Educational occupancies and the Business occupancy. The fire rating of these walls is unknown since as there were no drawings available for review.

This building is not equipped with an automatic fire sprinkler system. It is equipped with a fire alarm system with visual strobes in most rooms. Exiting from all rooms and from the building is compliant with current code. See Sheet E3 in Section C.7 for additional information.

C.5 Building C.4 – Classrooms

Building "C.4" contains classrooms and accessory spaces and currently falls under the occupancy classification of "Educational Group E" per section 305 of the CBC. There are no occupancy separation issues as all spaces are either the same occupancy classification or considered "Accessory".

This building is not equipped with an automatic fire sprinkler system. This building was recently equipped with an audible only fire alarm system. Exiting from all rooms and from the building is compliant with current code. See Sheet E4 in Section C.7 for additional information.

C.6 Building D - United Boys and Girls Club

Building D is a Community Hall and currently falls under the occupancy classification of "Assembly Group A3" per section 303.1 of the CBC. Three rooms are large enough to require two exits which are provided and appropriately spaced from each other. These rooms shall have the Occupancy Load posted inside the room. All exits are wide enough and are equipped with panic hardware with the exception of the south west exit in the "Classroom" which opens in the wrong direction and does not have panic hardware.

The existing room designated as "Classroom" was originally intended as a Daycare facility which placed it in the "Educational Group E" Occupancy classification. After the remodel in 2000, the Daycare function was removed and this space was converted to an A3 classification.

The other rooms with an A3 classification have an occupant load small enough to be classified as "Business Group B" per Section 303.1, Exception 2 and Section 304. The building Code in affect at the time of the addition and remodel was the 1998 CBC. This code did not require an area separation between occupancy classifications A3 and B. Under current code, these occupancies, in a sprinkler equipped building, are required to have a 1 hour occupancy separation. The existing walls are either CMU or wood studs. As discussed in Section A of this report none of the changes recommended in the Accessibility or Seismic assessments automatically triggers upgrades to occupancy separation requirements. The building official may require that any future additions or alterations to the building include upgrading the walls and all openings to rated assemblies.

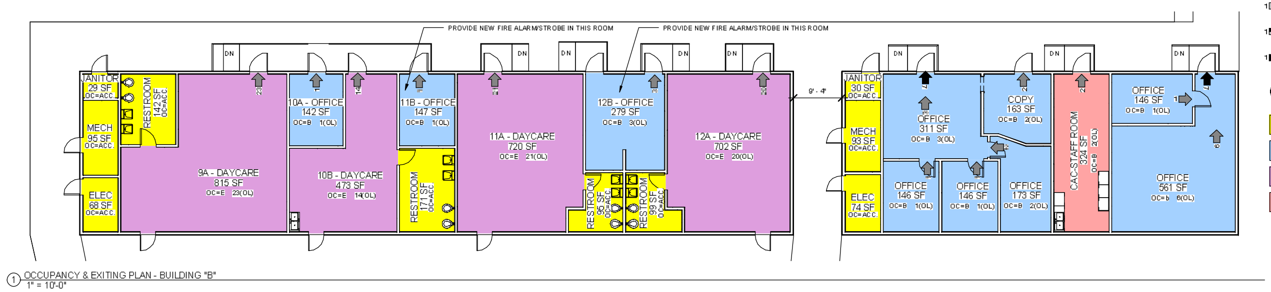
This building is equipped with an automatic fire sprinkler system. The building contains a fire alarm system with visual strobes. Exiting from all rooms and from the building is compliant with current code. See Sheet E5 in Section C.7 for additional information.

C.7 Drawing Index

The following drawings show occupancy and exiting information. Additional notes indicating recommend solutions to non-compliant situations are added as required. Where appropriate a general solution was provided in order that a cost estimate could be performed and a budgetary number established for future remediation.

Sheet	Description
E1	Fire & Life Safety Assessment – Building A - Main Community Center
E2	Fire & Life Safety Assessment – Building B - Classrooms
E3	Fire & Life Safety Assessment – Building C2 - Portable Classrooms
E4	Fire & Life Safety Assessment – Building C4 - Classrooms
E5	Fire & Life Safety Assessment – Building D - United Boys and Girls Club

ROOM EXITING - "B"										
Room Number	Name	Area	Occupancy Classification	Occupancy	OLF	OL	2 Exit Threshold	2 Exits Required	Exit Width Required (inches)	Exit Width Provided (inches)
9A	9A - DAYCARE	815 SF	E	DAY CARE	35 SF	23	49	No	4.7	70
10A	10A - OFFICE	142 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	38
10B	10B - DAYCARE	473 SF	E	DAY CARE	35 SF	14	49	No	2.7	70
11A	11A - DAYCARE	720 SF	E	DAY CARE	35 SF	21	49	No	4.1	70
11B	11B - OFFICE	147 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	38
12A	12A - DAYCARE	702 SF	E	DAY CARE	35 SF	20	49	No	4.0	70
12B	12B - OFFICE	279 SF	B	BUSINESS AREAS	100 SF	3	49	No	0.6	38
14A	CAC-STAFF ROOM	324 SF	B	KITCHENS	200 SF	2	49	No	0.3	38
13D	COPY	163 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.3	38
14B	OFFICE	561 SF	b	BUSINESS AREAS	100 SF	6	49	No	1.1	38
14B.1	OFFICE	146 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	32
13E	OFFICE	311 SF	B	BUSINESS AREAS	100 SF	3	49	No	0.6	38
13A	OFFICE	146 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	32
13B	OFFICE	146 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	32
13C	OFFICE	173 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.3	32
Grand total: 15		5249 SF				101				



1 OCCUPANCY & EXITING PLAN - BUILDING "B"
1" = 10'-0"

Exiting Symbols

- OCCUPANT LOAD OF SPECIFIC ROOM EXITING THROUGH A PARTICULAR EXIT
- OCCUPANT LOAD OF A SPECIFIC ROOM, DIVIDED BETWEEN 2 OR MORE EXITS, EXITING THROUGH A PARTICULAR EXIT
- CUMLATIVE LOAD EXITING THROUGH A PARTICULAR EXIT

Occupancy Legend

- ACCESSORY
- BUSINESS AREAS
- DAYCARE
- KITCHENS

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FIRE & LIFE SAFETY - BUILDING "B" E2

Room Number	Name	Area	Occupancy Classification	Occupancy Load Category	OLF	OL	2 Exit Threshold	2 Exits Required	Exit Width Required (inches)	Exit Width Provided (inches)
ROOM EXITING - "A"										
10	AUDITORIUM	2414 SF	A3	ASSEMBLY W/O FIXED SEATS	15 SF	161	49	Yes	32.2	214
14	BUILDING MAINTENANCE	198 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.4	56
5	C.I.R.C.	232 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.5	34
6	CONF.	188 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.4	34
12	DINING ROOM	2162 SF	A3	ASSEMBLY W/O FIXED SEATS	15 SF	144	49	Yes	28.8	90
16	KITCHEN	301 SF	B	KITCHENS	200 SF	2	49	No	0.3	102
9	MAIN OFFICE	175 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.3	40
20	OFFICE	94 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.2	34
7	OFFICE	146 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	36
8	RECEPTION	130 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.3	34
17	ROOM 1	697 SF	B	ASSEMBLY W/O FIXED SEATS	15 SF	46	49	No	9.3	40
18	ROOM 2	651 SF	B	ASSEMBLY W/O FIXED SEATS	15 SF	43	49	No	8.7	40
21	ROOM 4	676 SF	B	EXERCISE	50 SF	14	49	No	2.7	40
4	ROOM 5B	305 SF	B	ASSEMBLY W/O FIXED SEATS	15 SF	20	49	No	4.1	30
3	ROOM 6	655 SF	B	ASSEMBLY W/O FIXED SEATS	15 SF	44	49	No	8.7	34
2	ROOM 7	650 SF	B	ASSEMBLY W/O FIXED SEATS	15 SF	43	49	No	8.7	40
1	ROOM 8	699 SF	B	EXERCISE	50 SF	14	49	No	2.8	40
19	SENIOR LOUNGE	708 SF	B	ASSEMBLY W/O FIXED SEATS	50 SF	14	49	No	2.8	40
11	STAGE	1007 SF	A3	STAGE	15 SF	67	49	Yes	13.4	68
29	TOOL ROOM	158 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.3	34
13	UTILITY	201 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.4	30
21		12446 SF				628				

Room Number	Name	Area	Occupancy Classification	Occupancy Load Category	OL	Exit Width Required (inches)	Exit Width Provided (inches)
CORRIDOR EXITING - "A"							
22	SOUTH CORRIDOR	2154 SF	ACC.	ACCESSORY	183	36.6	204
23	WEST CORRIDOR	658 SF	ACC.	ACCESSORY	125	25.0	70
24	EAST CORRIDOR	659 SF	ACC.	ACCESSORY	163	32.6	70
25	NORTH CORRIDOR	177 SF	ACC.	ACCESSORY	141	28.1	32
4		3648 SF			612		

1 OCCUPANCY & EXITING PLAN - BUILDING "A"
1" = 10'-0"

Exiting Symbols

- OCCUPANT LOAD OF SPECIFIC ROOM EXITING THROUGH A PARTICULAR EXIT
- OCCUPANT LOAD OF A SPECIFIC ROOM, DIVIDED BETWEEN 2 OR MORE EXITS, EXITING THROUGH A PARTICULAR EXIT
- CUMLATIVE LOAD EXITING THROUGH A PARTICULAR EXIT

Occupancy Legend

- ACCESSORY
- ASSEMBLY W/O FIXED SEATS
- BUSINESS AREAS
- EXERCISE
- KITCHENS
- STAGE

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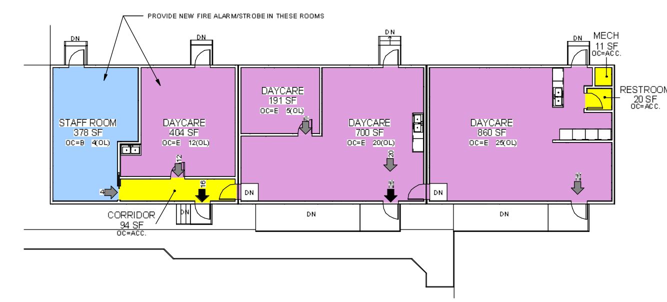
FIRE & LIFE SAFETY - BUILDING "A" E1

ROOM EXITING - "C2"										
Room Number	Name	Area	Occupancy Classification	Occupancy	OLF	OL	2 Exit Threshold	2 Exits Required	Exit Width Required (inches)	Exit Width Provided (inches)
C2.1	STAFF ROOM	378 SF	B	BUSINESS AREAS	100 SF	4	49	No	0.8	32
C2.2	DAYCARE	404 SF	E	DAY CARE	35 SF	12	49	No	2.3	28
C2.4	DAYCARE	191 SF	E	DAY CARE	35 SF	5	49	No	1.1	28
C2.5	DAYCARE	700 SF	E	DAY CARE	35 SF	20	49	No	4.0	32
C2.6	DAYCARE	860 SF	E	DAY CARE	35 SF	25	49	No	4.9	32
5		2534 SF				65				

CORRIDOR EXITING - "C2"							
Room Number	Name	Area	Occupancy Classification	Occupancy Load Category	OL	Exit Width Required (inches)	Exit Width Provided (inches)
12A.34	CORRIDOR	94 SF	ACC.	ACCESSORY	16	3.2	32
1		94 SF			16		



① OCCUPANCY & EXITING PLAN - BUILDING "C2"
1" = 10'-0"

Occupancy Legend

- ACCESSORY
- BUSINESS AREAS
- DAYCARE

Exiting Symbols

- OCCUPANT LOAD OF SPECIFIC ROOM EXITING THROUGH A PARTICULAR EXIT
- OCCUPANT LOAD OF A SPECIFIC ROOM, DIVIDED BETWEEN 2 OR MORE EXITS, EXITING THROUGH A PARTICULAR EXIT
- CUMLATIVE LOAD EXITING THROUGH A PARTICULAR EXIT

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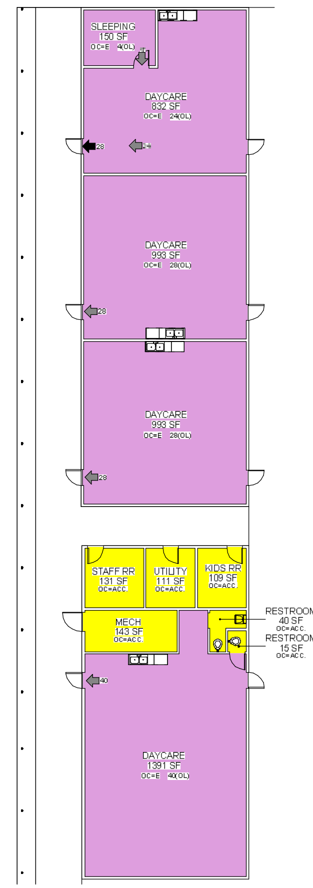
FIRE & LIFE SAFETY - BUILDING "C2" E3

ROOM EXITING - "C4"										
Room Number	Name	Area	Occupancy Classification	Occupancy	OLF	OL	2 Exit Threshold	2 Exits Required	Exit Width Required (inches)	Exit Width Provided (inches)
C4.1	SLEEPING	150 SF	E	DAY CARE	35 SF	4	49	No	0.9	32
C4.2	DAYCARE	832 SF	E	DAY CARE	35 SF	24	49	No	4.8	64
C4.3	DAYCARE	993 SF	E	DAY CARE	35 SF	28	49	No	5.7	64
C4.4	DAYCARE	993 SF	E	DAY CARE	35 SF	28	49	No	5.7	64
C4.11	DAYCARE	1391 SF	E	DAY CARE	35 SF	40	49	No	8.0	64



1 OCCUPANCY & EXITING PLAN - BUILDING "C4"
1" = 10'-0"

Exiting Symbols

- OCCUPANT LOAD OF SPECIFIC ROOM EXITING THROUGH A PARTICULAR EXIT
- OCCUPANT LOAD OF A SPECIFIC ROOM, DIVIDED BETWEEN 2 OR MORE EXITS, EXITING THROUGH A PARTICULAR EXIT
- CUMULATIVE LOAD EXITING THROUGH A PARTICULAR EXIT

Occupancy Legend

- ACCESSORY
- DAYCARE

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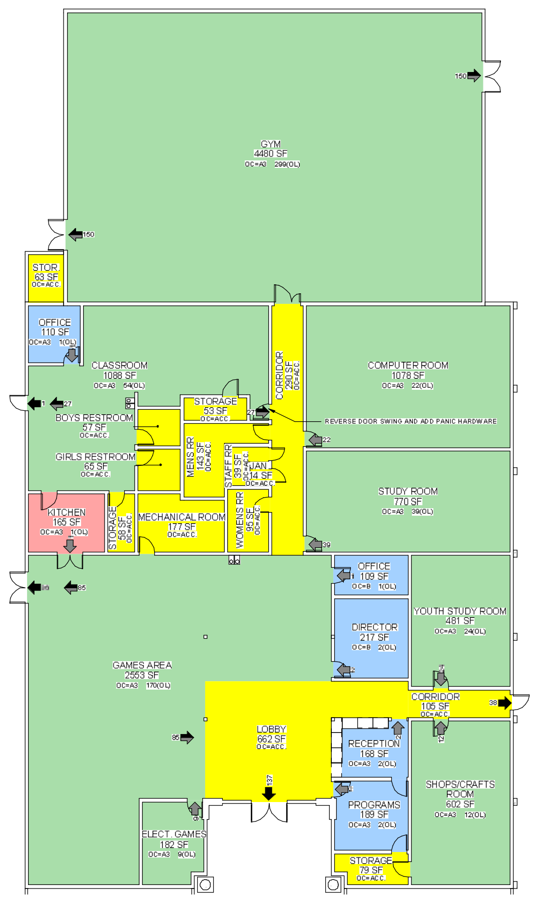
FIRE & LIFE SAFETY - BUILDING "C4" E4



1 OCCUPANCY & EXITING PLAN - BUILDING "D"
1" = 10'-0"

ROOM EXITING - "D"

Room Number	Name	Area	Occupancy Classification	Occupancy	OLF	OL	2 Exit Threshold	2 Exits Required	Exit Width Required (inches)	Exit Width Provided (inches)
D.1a	GAMES AREA	2,553 SF	A3	ASSEMBLY W/O FIXED SEATS	15 SF	170	49	Yes	34.0	148
D.2	ELECT. GAMES	182 SF	A3	ASSEMBLY W/O FIXED SEATS	20 SF	9	49	No	1.8	34
D.4	PROGRAMS	189 SF	A3	BUSINESS AREAS	100 SF	2	49	No	0.4	34
D.5	RECEPTION	168 SF	A3	BUSINESS AREAS	100 SF	2	49	No	0.3	34
D.6	SHOPS/CRAFTS ROOM	602 SF	A3	ASSEMBLY W/O FIXED SEATS	50 SF	12	49	No	2.4	34
D.8	DIRECTOR	217 SF	B	BUSINESS AREAS	100 SF	2	49	No	0.4	34
D.9	OFFICE	109 SF	B	BUSINESS AREAS	100 SF	1	49	No	0.2	34
D.10	YOUTH STUDY ROOM	481 SF	A3	ASSEMBLY W/O FIXED SEATS	20 SF	24	49	No	4.8	34
D.11	KITCHEN	165 SF	A3	KITCHENS	200 SF	1	49	No	0.2	56
D.12	OFFICE	110 SF	A3	BUSINESS AREAS	100 SF	1	49	No	0.2	34
D.17	CLASSROOM	1,088 SF	A3	ASSEMBLY W/O FIXED SEATS	20 SF	54	49	Yes	10.9	68
D.24	STUDY ROOM	770 SF	A3	ASSEMBLY W/O FIXED SEATS	20 SF	39	49	No	7.7	34
D.25	COMPUTER ROOM	1,078 SF	A3	ASSEMBLY W/O FIXED SEATS	50 SF	22	49	No	4.3	34
D.26	GYM	4,480 SF	A3	ASSEMBLY W/O FIXED SEATS	15 SF	299	49	Yes	59.7	136
14		12,192 SF				637				

CORRIDOR EXITING - "D"

Room Number	Name	Area	Occupancy Classification	Occupancy Load Category	OL	Exit Width Required (inches)	Exit Width Provided (inches)
D.7	CORRIDOR	105 SF	ACC.	ACCESSORY	38	7.6	34
D.23	CORRIDOR	290 SF	ACC.	ACCESSORY	137	27.5	80
2		395 SF			175		

Exiting Symbols

- OCCUPANT LOAD OF SPECIFIC ROOM EXITING THROUGH A PARTICULAR EXIT
- OCCUPANT LOAD OF A SPECIFIC ROOM, DIVIDED BETWEEN 2 OR MORE EXITS, EXITING THROUGH A PARTICULAR EXIT
- CUMLATIVE LOAD EXITING THROUGH A PARTICULAR EXIT

Occupancy Legend

- ACCESSORY
- ASSEMBLY W/O FIXED SEATS
- BUSINESS AREAS
- KITCHENS

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FIRE & LIFE SAFETY - BUILDING "D" E-5

D. Conclusion & Mitigation Strategy

The way a building or facility is used may evolve and change over its lifetime. As noted in Section A above, these changes in use can have an effect on life safety issues. In this case, with the exception of Building A and a portion of Building D, the buildings are still being used for the same purpose they were originally intended for. This minimizes the overall fire and life safety issues found during this assessment. Although Building A has undergone the most dramatic change in overall use from a public school to a community center, generally speaking the functions of the room remain similar enough as to have a minimal effect on the occupant load. Only a portion of Building D has changed since its remodel in 2000 and that change was to a generally less restrictive use.

This assessment has identified no specific areas and items that are currently non-compliant with respects to the California Building Code. Occupancy separations in certain buildings are not currently compliant but are not required to be upgraded at this time. Exiting paths, widths and hardware are also within the current code requirements except as noted in the drawings. Existing Occupant Load signs should be reviewed and verified with the occupant loads calculated in this assessment (using the current code) and shown on the drawings. These signs should be updated if they differ. See Section C.7 for specific recommendations at each building.

Attachment 4

CIP Budget Sheet for Community Center Improvements

Project Title:	**GOLETA COMMUNITY CENTER IMPROVEMENTS**	**9067**

Description:	Make repairs, improvements and upgrades as identified/needed at the Goleta Community Center.
Benefit/Core Value:	To maintain and improve City-wide facilities.
Purpose and Need:	The City needs to undertake needed repairs; Seismic, ADA and Fire/Life Safety upgrades; and perform on-going maintenance and equipment replacement at the Goleta Community Center.
Project Status:	Repairs and construction related to upgrades is expect to begin in FY 17/18; maintenance activities will be on going.

Project Phases	**Project Costs (Expenditures)**							
	Total Prior Actuals	**YTD Projected FY2016-17**	**Projected FY2017-18**	**Projected FY2018-19**	**Projected FY2019-20**	**Projected FY2020-21**	**Projected FY2021-22**	**TOTAL**
Land Acquisition/ROW	-	-	-	-	-	-	-	**-**
Preliminary Eng/Environ	-	-	-	-	-	-	-	**-**
Construction / CM	-	38,000	760,000	760,000	-	-	-	**1,558,000**
	-	-	-	-	-	-	-	**-**
TOTAL	**-**	**38,000**	**760,000**	**760,000**	**-**	**-**	**-**	**1,558,000**

Project Funding Sources	**Sources of Funds (Revenues)**							
	Total Prior Actuals	**YTD Projected FY2016-17**	**Projected FY2017-18**	**Projected FY2018-19**	**Projected FY2019-20**	**Projected FY2020-21**	**Projected FY2021-22**	**TOTAL**
General Fund	-	38,000	-	-	-	-	-	**38,000**
TBD	-	-	760,000	760,000	-	-	-	**1,520,000**
TOTAL	**-**	**38,000**	**760,000**	**760,000**	**-**	**-**	**-**	**1,558,000**

Future Operating & Maintenance Costs	**Total Prior Actuals**	**YTD Projected FY2016-17**	**Projected FY2017-18**	**Projected FY2018-19**	**Projected FY2019-20**	**Projected FY2020-21**	**Projected FY2021-22**	**TOTAL**
TBD	-	-	-	175,000	135,000	145,000	70,000	**525,000**
TOTAL	**-**	**-**	**-**	**175,000**	**135,000**	**145,000**	**70,000**	**525,000**

5 Year Appropriation Projections								
Fund Title	**Total Prior Actuals**	**YTD Projected FY2016-17**	**Projected FY2017-18**	**Projected FY2018-19**	**Projected FY2019-20**	**Projected FY2020-21**	**Projected FY2021-22**	**TOTAL**
General Fund	-	38,000	-	-	-	-	-	**38,000**
TBD	-	-	760,000	935,000	135,000	145,000	70,000	**2,045,000**
TOTAL	-	**38,000**	**760,000**	**935,000**	**135,000**	**145,000**	**70,000**	**2,083,000**

**Total estimated cost is subject to change pending on actual repairs, and will eventually move into operating.*