David Fredendall, Mayor, District 2
Karen Davis, Mayor Pro Tem, District 4
Michael Allawos, Councilmember, District 1
Shaunna Elias, Councilmember, District 3
Mendell Thompson, Councilmember, District 5

CITY COUNCIL
Workshop 2: Library and Public Works Yard

6:00 PM SPECIAL MEETING

Tuesday, July 21, 2026
Glendora Public Library Bidwell Forum
140 S. Glendora Avenue, Glendora

AGENDA

NEW BUSINESS

1. **Workshop 2: Library and Public Works Yard**
   Recommended Action for the City Council:
   — 1. Receive and file the updated reports on the Glendora Public Library and the City Corporate Yard; and
   — 2. Provide direction to staff regarding project priorities and potential funding strategies for these two critical City facilities.

Date Posted: July 17, 2026 03:55 pm

STAFF REPORT

TO: Mayor and Council Members **DATE:** July 21, 2026
and Council Members

FROM: Public Works **DISTRICT(S):** Citywide

SUBJECT: Workshop 2: Library and Public Works Yard

RECOMMENDATION
That the City Council:

1. Receive and file the updated reports on the Glendora Public Library and the City Corporate Yard; and
2. Provide direction to staff regarding project priorities and potential funding strategies for these two critical City facilities.

STRATEGIC FOCUS AREAS
Goal 3 - New + Revitalized Facilities

EXECUTIVE SUMMARY
The purpose of this workshop is to provide the City Council with an update on the condition, long-term needs, and potential funding strategies for two of the City's most significant capital facility projects: the Glendora Public Library and the City Corporate Yard.

This discussion follows Workshop No. 1, during which the City Council provided direction on the use of approximately $11.88 million in one-time funding for street improvements and other immediate facility needs. At that time, the Library and Corporate Yard were intentionally excluded from the broader funding discussion because each represents a major standalone capital investment that requires separate policy direction and a dedicated funding strategy.

Although the two facilities serve different purposes, both are essential to the City's ability to deliver reliable public services. The Library is one of Glendora's most heavily used public facilities, providing educational, cultural, and community services while also serving as the City's designated Emergency Operations Center (EOC). The Corporate Yard serves as the operational hub for Public Works, supporting Fleet Services, Streets, Facilities Maintenance, materials storage, emergency response, and the future consolidation of Parks, Landscape Maintenance, and Urban Forestry operations.

Glendora Public Library
The Library was completed in 1972 as part of the Civic Center complex. For more than five decades, the City has worked to address recurring water intrusion and structural issues associated with Bidwell Plaza, which forms the roof over portions of the Library below. Historical records show these concerns began shortly after the building opened and have been evaluated repeatedly through engineering studies, repairs, and rehabilitation efforts over several decades. Despite those investments, many of the same underlying issues remain.

In 2023, the City retained Myers, Houghton & Partners (MHP) to perform a comprehensive structural evaluation and visioning study for the Library. In July 2026, MHP updated its analysis to incorporate additional historical records, evaluate the building under current building code requirements, and confirm previous cost estimates. The updated report concludes that the primary structural concerns remain generally stable but recommends near-term repairs to prevent further deterioration. The estimated construction cost for structural strengthening and waterproofing of the Bidwell Plaza roof structure is approximately $3.2 million. Additional project costs, including design, permitting, inspection, construction management, and other soft costs, will need to be evaluated as the project scope is further developed.

Those repairs, however, address only the most immediate structural needs. They do not include modernization of aging building systems such as heating and air conditioning, electrical, plumbing, lighting, accessibility improvements, interior renovations, or other improvements identified through previous planning studies. In addition, if the City intends for the Library to continue serving as its Emergency Operations Center, additional improvements to building systems would likely be necessary to meet the higher standards required for essential public safety facilities.

Separate from the structural analysis, the City's Facility Condition Assessment identified approximately $6.96 million in additional building system improvements projected over the next twenty years, including mechanical, electrical, plumbing, fire protection, roofing, flooring, and window replacements. Previous visioning studies have also identified broader modernization and expansion opportunities intended to better serve the community's long-term needs.

City Corporate Yard

The City Corporate Yard, located at 1250 St. Vladimir Street, was originally developed in approximately 1965 and serves as the operational center for the Public Works Department. While individual buildings have been maintained over the years, the facility no longer adequately supports modern Public Works operations. Aging infrastructure limited operational space, outdated buildings, and changing regulatory requirements have significantly reduced the site's efficiency and functionality.

The Corporate Yard also plays an important role in the City's broader facilities strategy. Recent efforts to relocate Transit operations to the former Parks Yard – where electric bus infrastructure can be more effectively accommodated – and to relocate Recreation and Human Services closer to community facilities have positioned the Corporate Yard to become a centralized campus for Public Works operations. Consolidating these functions will improve coordination among work groups, increase operational efficiency, and better position the City to respond to routine maintenance needs and emergency events.

As part of the City's Facility Condition Assessment, Bureau Veritas identified approximately $2.12 million in deferred maintenance needs at the existing facility. Subsequent planning by IDS Group concluded that renovating the existing buildings would not adequately address the site's long-term operational deficiencies and determined that replacement of the facility would provide the most practical and cost-effective long-term solution.

In 2024, the City Council authorized preparation of design and construction documents for a new Corporate Yard. The original conceptual construction estimate was approximately $12.6 million. At the City's direction, IDS Group subsequently developed a phased construction strategy that would allow Public Works operations to continue throughout construction. That phased approach is currently estimated at approximately $13.6 million.

Moving Forward

Together, the Library and Corporate Yard represent the City's two largest remaining facility priorities. While each addresses different community needs, both require significant long-term investment beyond the City's routine maintenance program.

The purpose of this workshop is not to authorize construction or appropriate project funding. Instead, the workshop is intended to provide the City Council with a comprehensive understanding of each facility's condition, summarize the work completed to date, and obtain policy direction regarding project priorities and future funding strategies. That direction will help inform Workshop No. 3, which will focus on evaluating funding options and developing a long-term implementation strategy for both projects.

LEGISLATIVE HISTORY / PREVIOUS ACTIONS

On June 16, 2026, during Workshop No. 1, the City Council reviewed the City's broader capital improvement needs, including street improvements, pavement management, and current facility maintenance needs. At that workshop, the City Council provided direction regarding the use of approximately $11.88 million in available one-time funding for priority streets and facility projects (Attachment A). On July 14, 2026, the City Council appropriated the first $3 million to begin implementation of those approved projects.

Consistent with City Council direction, the Glendora Public Library and the City Corporate Yard were intentionally excluded from that funding discussion. Although both facilities represent critical City assets, each requires a significantly larger investment than could reasonably be addressed through the one-time funding available as part of Workshop No. 1. As a result, the City Council directed staff to return with a separate workshop focused exclusively on these two facilities, including their current condition, previous planning efforts, estimated project costs, and potential funding strategies.

GLENDORA PUBLIC LIBRARY

Background

The Glendora Public Library is a two-story reinforced concrete and masonry building totaling approximately 27,000 square feet. Completed in 1972 as part of the Civic Center complex, it has served generations of residents as one of the City's most important public facilities. In addition to traditional library services, the building serves as a community gathering place and is designated as the City's Emergency Operations Center (EOC).

One of the Library's defining architectural features is the Bidwell Plaza, which is constructed directly above portions of the Library and functions as the roof over occupied spaces below. Because the plaza serves both as a public open space and as part of the building's roof structure, its condition directly affects the structural integrity and weather protection of the Library beneath it.

The Library's structural and waterproofing challenges are not recent. Historical records indicate that water intrusion was documented shortly after the building was completed, and over the past five decades the City has invested millions of dollars evaluating, repairing, and maintaining the facility. While many individual repairs have successfully addressed isolated issues, they have not fully resolved the underlying structural and waterproofing deficiencies associated with the plaza deck.

Accordingly, the City's current efforts should not be viewed as the result of deferred maintenance or a recently discovered problem. Rather, they reflect the continuation of decades of engineering evaluations, repairs, and capital investment intended to preserve one of the City's most important public buildings.

History of Evaluations and Improvements

The Library has been evaluated by numerous architects, engineers, and facility specialists over the past forty years. Although each study examined different aspects of the building, their conclusions have remained remarkably consistent: the Bidwell Plaza waterproofing system has reached the end of its useful life (again), recurring water intrusion continues to affect portions of the structure, and long-term improvements are needed to preserve the facility.

The following table summarizes the major studies and milestones

Year	Evaluation / Action	Key Significance

1983	Investigation of slab and waterproofing system	Cracking of plaza deck slab and water intrusion; recommended removal and replacement of slab and waterproofing
1988	Structural soundness review	Identified concrete girder cracking and structural load concerns.
1990	Proposition 85 / grant-related cost evaluation	Included expansion to approximately 50,000 square feet, Library courtyard deck structural repairs and discussion of potential seismic upgrades.
2003-2004	Voluntary structural upgrade & calculations	Reinforced portions of the building and resurfaced the plaza; however, water intrusion and cracking concerns later continued by December 2004.
2021	Preliminary Structural Assessment	Visible cracking was observed during review of a proposed shade structure, leading to broader structural concern and need for further evaluation.
2022	Cho Design Associates preliminary condition assessment	Studied ability to add a shade structure to the Bidwell Plaza. Confirmed cracking exceeding allowable standards and water intrusion at the concrete roof/plaza system. Recommended a full structural assessment.
2023	MHP Phase 1 Structural Analysis and Phase 2 Programmatic Visioning	Phase 1: Identified structural, waterproofing, live load, and programmatic deficiencies (estimated structural cost: $2,867,266); Phase 2: Improvement concepts. Held seven public workshops (March through June 2023), and met with key stakeholders from Library, Board of Library Trustees, and GPL Friends Foundation. Recommended an expansion to approximately 50,000 sqft.
2023	State Grant Application	An application for a State grant was submitted requesting $8 million dollars to help address critical Library needs, including structural repairs, waterproofing, and aging mechanical, electrical and plumbing systems. Efforts were unsuccessful as the grant criteria favored communities with high poverty.
2023-2024	Bureau Veritas Facility Condition Assessment	The assessment identified $6,961,888 in building systems and components (i.e., mechanical, electrical, plumbing, fire, flooring, roofing, windows) improvement costs based on a 20-year expenditure forecast factoring an estimated 3% annual inflation.

2025-2026	Civic Center Concept	Following Library structural assessments and discussions regarding aging facilities, City staff engaged a consultant to prepare high-level conceptual plans and preliminary cost estimates for a new Civic Center to include the Library, City Hall, Police Station, Council Chambers and parking.
2026	Phase 1 Structural Evaluation Update	Update to the 2023 MHP analysis conducted in 2026. Reviewed previous condition assessments and structural calculations from the 1980 through the early 2000's. Structural strengthening and waterproofing repairs remain needed. Updated cost estimate of $3,166,106 for structural repairs.

Rather than representing isolated concerns, these evaluations document a consistent pattern of recurring structural and waterproofing issues dating back to the Library's original construction. They also demonstrate the City's longstanding commitment to maintaining the facility through engineering evaluations, rehabilitation projects, and the pursuit of outside funding whenever opportunities became available.

Recent Structural Evaluations

The City's most recent engineering work began in 2021 during a feasibility study for a proposed shade structure on the Bidwell Plaza. During that evaluation, engineers observed cracking within portions of the concrete beam system and evidence of continued water intrusion inside the Library. Those observations prompted the City to commission a more comprehensive structural assessment.

2022 Preliminary Condition Assessment

Cho Design Associates (CDA) completed a Preliminary Condition Assessment in April 2022 (Attachment B). The evaluation concluded that the Library remained safe for continued occupancy but identified several conditions requiring additional investigation.

The assessment found that the concrete beams, roof slab, and overall structural system to be generally sound with most cracking classified as minor and no visible delamination, spalling, or reinforcing-steel corrosion. However, some previously epoxy-repaired cracks were again leaking and staining, new slab cracks showed evidence of water infiltration, and several cracks in the main girders exceeded the accepted reasonable crack-width threshold of 0.016"; some cracks measured more than 0.06". CDA concluded that repairs were needed but did not find conditions requiring closure of the Library. The consultant advised the City to undertake a comprehensive structural evaluation and prepare long-term repair plans.

2023 Comprehensive Structural Assessment

In 2023, the City retained Myers, Houghton & Partners (MHP) to perform a detailed structural analysis of the Library and evaluate its ability to support future renovation or expansion (Attachment C).

MHP determined that the Library's primary structural system generally did not require broad seismic strengthening beyond specific wall-anchorage improvements. The study nevertheless identified minor to moderate cracking in the main concrete roof structure, deterioration of the waterproofing system beneath the Bidwell Plaza, and live-load and soil-bearing concerns involving certain girders and four central pad footings. MHP recommended coordinated structural strengthening, concrete repairs and replacement of the plaza waterproofing system to prevent continued deterioration.

The study also evaluated the Plaza's ability to support public gatherings. MHP concluded that the Bidwell Plaza can continue to accommodate normal day-to-day public use but recommended against large events involving crowds of greater than 1,000 people with heavy equipment, such as stages, music or vendors until the recommended improvements are completed (2,000+ people standing).

2026 STRUCTURAL UPDATE AND CURRENT CONDITIONS

In 2026, the City directed MHP to update its 2023 structural evaluation to determine whether the condition of the Library had changed and to confirm that the previously recommended repairs remained appropriate (Attachment D).

The updated review had five primary objectives:

- Reinspect the building to determine whether cracking, water intrusion, or other visible deterioration had progressed since the 2023 evaluation.
- Review historical engineering reports and structural calculations dating back to the 1980s that became available after completion of the original study.
- Evaluate the building using the current California Building Code.
- Determine what additional improvements would be necessary if the Library continues to serve as the City's Emergency Operations Center (EOC), which is held to a higher structural standard than a typical public building.
- Reevaluate the four central interior pier foundations for a live load of 100 pounds per square feet.

Overall, MHP concluded that the building's condition has remained generally stable since its previous evaluation. While no significant progression of structural deterioration was observed, the consultant continues to recommend that the identified repairs be completed in the near term to prevent future deterioration and avoid more costly repairs over time. The principal findings are summarized below.

Structural Condition

The cracking in the main concrete beams and girders appears stable and does not present an immediate concern under current loading conditions. Areas of recurring water intrusion also appear generally unchanged when compared with 2022 photographs.

Stable does not mean that no work is needed. Continued water entry can enlarge cracks and eventually damage concrete or reinforcing steel. MHP therefore recommends completing concrete repairs and replacement of the plaza waterproofing system in the near term, ideally as coordinated work so repaired structural elements are not left exposed to continued moisture.

Seismic Performance

MHP evaluated the building under the Basic Performance Objective for Existing Buildings using Risk Category IV, the higher structural category applicable if the Library is expected to function as an Emergency Operations Center. The primary seismic force-resisting system generally meets that evaluation objective, with the principal exception of the Bidwell Forum.

Recommended work at the Bidwell Forum includes supplemental wall anchorage, fiber-reinforced polymer wrapping of supporting beams, and new shear walls along the north elevation. Although the 2025 California Building Code increased calculated seismic demand by approximately 30 percent, MHP concluded that the overall structural strengthening scope remains substantially similar to the 2023 recommendation.

Foundation Improvements

The evaluation also determined that four central interior pad footings should be enlarged to safely support the higher occupancy loads of 100 pounds per square foot and the higher Risk Category IV criteria. MHP recommends adding approximately one foot of concrete around the full perimeter of each footing, increasing each from approximately 13 feet by 16 feet 8 inches to approximately 15 feet by 18 feet 8 inches.

These improvements are relatively localized and do not require replacement of the building's primary foundation system.

Emergency Operations Center Considerations

The Library currently serves as the City's designated Emergency Operations Center. If the City intends to continue using the building in that capacity, additional improvements beyond the structural repairs identified by MHP will likely be necessary.

The structural evaluation addresses the building frame, but an Emergency Operations Center must also remain functional after an emergency. Mechanical and electrical equipment, plumbing, communications, suspended ceilings, and other non-structural components must be properly anchored and capable of continued operation under the more stringent requirements applicable to an essential Risk IV facility.

The Rough Order of Magnitude (ROM) costs to implement those non-structural improvements are estimated at $200,000 to $400,000 and are in addition to the $3.2 million estimate. If the Library is to remain the City's Emergency Operations Center, additional evaluation by mechanical, electrical, plumbing, architectural, and information technology consultants will be necessary before the full scope and cost can be established.

Updated Cost Estimate

Based on current construction costs, MHP estimates that the structural repairs and waterproofing improvements recommended in its updated evaluation would cost approximately $3.2 million, assuming construction begins in September 2027.

This estimate is limited to the structural scope identified in the report and includes strengthening of structural components and replacement of the deteriorated waterproofing system beneath Bidwell Plaza. Consistent with MHP's recommendation, a waterproofing specialist should be engaged to investigate the full plaza assemble and develop the final waterproofing design.

The estimate does not include:

- Modernization of mechanical, electrical, or plumbing systems;
- Interior renovations or accessibility improvements;
- Replacement of aging building systems identified through other facility assessments;
- Improvements necessary to maintain the Library as the City's Emergency Operations Center; or
- Broader expansion or modernization concepts developed through previous visioning studies.

Accordingly, the estimated construction cost should be viewed as the investment necessary to address the Library's most immediate structural needs rather than the total cost of modernizing the facility.

BROADER LIBRARY MODERNIZATION NEEDS

Although structural repairs represent the City's most immediate priority, they address only one aspect of the Library's long-term needs.

Over the past several years, additional consultant studies have evaluated the building's mechanical, electrical, plumbing, and operational systems. Collectively, those assessments conclude that the Library's needs extend well beyond structural repair. Many major systems are original to the 1972 building, have reached or exceeded their expected service lives, and would require substantial replacement as part of a major renovation or expansion.

Among the most significant needs identified are:

- Aging heating, ventilation, and air-conditioning equipment;
- Outdated electrical distribution systems with limited remaining capacity;
- Plumbing infrastructure that no longer meets current operational needs;
- Recurring roof and waterproofing issues;
- Outdated lighting and energy systems;
- Overcrowded staff work areas and limited storage; and
- Limited flexibility to accommodate changing library services and technology.

Consistent with those findings, the Bureau Veritas Facility Condition Assessment estimates approximately $6.96 million in additional building system improvements over the next 20 years, assuming a three percent annual inflation factor.

These improvements are separate from the estimated $3.2 million in structural repairs identified by MHP and represent the ongoing investment that will be necessary to preserve the building regardless of whether the City ultimately pursues modernization, expansion, or replacement of the Library. The City should therefore view the $3.2 million as the cost to address the most immediate structural and plaza-related work – not as a complete modernization of the Library.

PREVIOUS LIBRARY PLANNING EFFORTS

The City's current discussion builds upon decades of planning and engineering work. Although individual studies have varied in scope, each has recognized the importance of preserving and improving the Library to meet the community's long-term needs.

Early Visioning Efforts
During the late 1980s, the City evaluated options to renovate and expand the Library while preserving its existing location within the Civic Center. Those planning efforts identified the need for additional children's programming space, expanded staff work areas, improved public services, updated technology, and repairs to the deteriorating Bidwell Plaza structure.

At the same time, structural engineers documented many of the same waterproofing and structural concerns that continue to be addressed today, including cracking of the plaza deck and overstressed structural members supporting portions of the building.

Those studies ultimately formed the basis of the City's unsuccessful application for Proposition 85 Library Construction funding in 1990.

2023 Visioning Process
Recognizing that community expectations have changed significantly over the past several decades, the City undertook a comprehensive visioning process in 2023 following completion of the structural evaluation (Attachment E).

The process included seven public workshops involving Library staff, the Board of Library Trustees, the Glendora Public Library Friends Foundation, City staff, and community stakeholders. Rather than focusing solely on repairing the existing building, the visioning effort explored how the Library could better serve residents over the coming decades. Several concepts were evaluated, ranging from structural repairs to major expansion and construction of a new facility.

The planning effort identified approximately 50,000 square feet as the preferred long-term planning target, allowing space for expanded children's services, flexible meeting and learning areas, technology, collaborative workspaces, community gathering areas, and future library programming. The earlier visioning process had also identified 50,000 square feet of need; this previous work was not known at the time of the 2023 visioning process.

Construction estimates prepared during the visioning process are summarized below.

Option	Estimated Cost*
Structural Repairs	$2.9-$4 million
Structural Repairs with Plaza Improvements	$3.2 million
"The Deck" expansion	$20.6 million
"The Paseo" expansion	$23.0 million
New Library	$42.7 million

*Construction estimates reflect planning-level costs and exclude soft costs such as design, permitting, and inspection as of 2023. These concepts were intended to assist the City Council in understanding the range of potential investments rather than recommend a specific project.

Civic Center Vision

In 2025, the City expanded this planning effort by evaluating the Library as part of a broader Civic Center concept. Prepared by DLR Group, the conceptual plan explored construction of a new Library alongside renovations to City Hall, improvements to the Police Department, new public gathering spaces, structured parking, and other Civic Center improvements.

The preliminary construction estimate for the overall Civic Center concept was approximately $125 million. While no decision has been made to proceed with that concept, the study provides a long-term framework for future discussions regarding modernization of the City's civic facilities, consistent with City Council direction.

HISTORY OF FUNDING EFFORTS

For more than fifty years, the City has actively pursued outside funding opportunities to support improvements to the Library.

When planning began for the current Library during the late 1950s, the City first pursued state and federal construction grants together with a voter-approved general obligation bond in the 1960s. After those grant opportunities were not awarded, the City ultimately financed construction through the Glendora Library Authority, a Joint Powers Authority formed with the Glendora Unified School District. That financing approach enabled construction of the current Library without a voter-approved property tax measure.

Since that time, funding opportunities for library construction have become significantly more limited.

In 1990, the City sought funding through Proposition 85, the California Library Construction and Renovation Bond Act. Although the proposal would have funded structural repairs, renovation, and expansion of the Library, the program ultimately expired and no comparable statewide funding program exists today.

More recently, following completion of the 2023 structural assessment, the City submitted an application for approximately $8 million through the California State Library's Building Forward Library Facilities Improvement Program. The application focused on structural repairs and replacement of aging building systems identified during the engineering assessments. Although the project was considered technically competitive, it was not selected for funding because the program prioritized libraries serving communities with the highest poverty levels under the California Poverty Measure.

Collectively, these efforts demonstrate the City's longstanding commitment to pursuing outside funding whenever opportunities become available. They also illustrate the limited availability of state and federal funding for major library rehabilitation projects, leaving local governments increasingly reliant on local funding sources to preserve essential public facilities.

CURRENT FUNDING EFFORTS

Consistent with City Council direction provided during the unanimous adoption of the Civic Center Vision as a starting point for future public discussion in January 2026, staff continues to pursue outside funding opportunities for the Library.

Consistent with that direction, staff is currently working with Senator Perez's office to secure a State budget appropriation as part of the Fiscal Year 2026/27 State Budget. The proposed funding request is based on the City's previously submitted Building Forward Grant application and is focused on addressing the Library's most critical facility needs, including structural repairs, weatherproofing, and replacement of aging mechanical, electrical, and plumbing systems. At this time, the request does not include many of the additional improvements identified through the Civic Center Visioning process.

Following City Council direction at this workshop, staff will meet again with Senator Perez's office to submit a formal funding request. Preliminary discussions have centered on an appropriation of approximately $10 million, which generally reflects updated cost estimates for the proposed scope of work. If the City Council directs staff to pursue a broader scope that incorporates additional improvements identified during the visioning process, the requested funding amount could be increased accordingly. Staff notes that, as with any discretionary State funding request, the amount ultimately awarded is influenced by a variety of factors, including available funding and statewide priorities. As a result, requests for larger appropriations may present additional challenges during the State budget process.

Regardless of the amount ultimately requested, pursuing this State budget appropriation would not limit the City's ability to seek additional funding in the future. The City may continue to pursue future State budget allocations for other improvements identified in the Civic Center Vision, as well as County, State, and Federal grant opportunities as they become available and align with City Council priorities. This phased funding strategy provides flexibility to advance critical improvements as funding opportunities arise while continuing to leverage outside resources to reduce the City's long-term financial responsibility.

MAINTAINING LIBRARY SERVICES DURING CONSTRUCTION

Regardless of the improvement option ultimately selected by the City Council, maintaining Library services throughout construction remains a high priority.

To prepare for that possibility, Library staff evaluated temporary service models used by neighboring communities and developed preliminary operating plans that would allow essential Library services to continue if the existing building were unavailable during construction.

Three preliminary alternatives were evaluated:

Options	**Startup Costs**	**Annual Costs**	**Year One Costs**
Option 1: Alternate brick and mortar location in rental facility of at least 7,000 square feet	$907,000	$2,243,829	$3,150,829
Option 2: One fixed temporary location (e.g. portable trailer in a park) of 2,160 square feet with two outreach vehicles	$1,059,300	$2,354,829	$3,414,129
Option 3: Two fixed temporary locations totaling 4,320 square feet with one outreach vehicle	$1,354,300	$2,420,829	$3,775,129

Services	**Option 1**	**Option 2**	**Option 3**
References and information services	✓	✓	✓
Borrowing/lending services for popular materials	✓	✓	✓
Limited public computers, scanning & printing	✓	✓	✓
Limited study/reading space	✓		✓

Small group/programming space	✓		
Space for staff functions	✓		
Off-site services	✓	✓	✓
Vending machines	✓	✓	✓

Although each option provides continued access to core Library services, they vary considerably in the level of service, available public space, and overall cost. A leased temporary facility would provide the greatest continuity of service but would also require the highest level of operational planning.

Should the City proceed with a major renovation or replacement project, staff will return to the City Council with a more detailed relocation and service continuity plan for consideration.

CITY CORPORATE YARD

Background
The City's Corporate Yard (located at 1250 St. Vladimir Street) is the operational hub of the City's Public Works Department. From this facility, employees maintain City streets, parks, public buildings, vehicles, trees, landscaped areas, and other public infrastructure that residents rely on every day.

Although it is not a public-facing facility like the Library, the Corporate Yard is essential to the City's ability to deliver core municipal services. It serves as the base of operations for Fleet Services, Streets, Facilities Maintenance, equipment and material storage, and emergency response activities. The site is also planned to accommodate Parks, Landscape Maintenance, and Urban Forestry operations, allowing Public Works functions to operate from a single, centralized location.

A centralized Corporate Yard improves coordination among work groups, reduces travel time between facilities, allows equipment and personnel to be shared more efficiently, and strengthens the City's ability to respond to both routine maintenance requests and emergency incidents.

The proposed Corporate Yard is also part of a broader long-term facilities strategy designed to better align City operations with the services they provide.

Over the past several years, the City has strategically relocated several departments to improve operational efficiency. Transit operations were moved to the former Parks Yard, where the site can better accommodate the infrastructure required for electric buses and future fleet expansion. Recreation and Human Services operations have been relocated closer to the facilities they primarily serve, including the La Fetra Senior Center and Finkbiner Park. Those relocations have also created opportunities to modernize City Hall through a phased approach while positioning the Corporate Yard to become a centralized campus for Public Works operations.

Together, these efforts reflect the City's long-term strategy of locating departments where they can most effectively serve the community while making the best use of existing City facilities.

EXISTING FACILITY CONDITIONS

The existing Corporate Yard was originally developed in approximately 1965 and has served the City for more than sixty years. Although individual buildings and infrastructure have been maintained and repaired over time, the facility no longer adequately supports the operational needs of a modern Public Works Department.

In addition to the age of the buildings themselves, the site contains aging utility infrastructure, including electrical, sewer, and storm drain systems that require substantial upgrades to support current operations and comply with modern regulatory requirements.

Operational challenges include:

- Limited office space for Public Works staff;
- Inadequate employee support facilities;
- Insufficient meeting and training space;
- Limited indoor and outdoor storage;
- Inefficient circulation throughout the site;
- Inadequate staging areas for contractors and construction projects;
- Limited parking and equipment storage;
- Aging maintenance facilities; and
- Site constraints that reduce overall operational efficiency.

Many of these limitations cannot be corrected through routine maintenance because they result from the original design and layout of the facility rather than the condition of individual buildings.

In addition to operational challenges, the City must also prepare for evolving State and Federal requirements related to fleet electrification, stormwater management, environmental compliance, underground fuel systems, and other regulatory mandates that did not exist when the facility was originally constructed.

FACILITY ASSESSMENTS

Recognizing these long-term challenges, the City commissioned several independent evaluations of the Corporate Yard.

Facility Condition Assessment
As part of the Citywide Facility Condition Assessment, Bureau Veritas evaluated the existing Corporate Yard and identified approximately $2.12 million in deferred maintenance needs. The assessment documented deteriorated roofing, pavement failures, aging building systems, and other building deficiencies typical of facilities that have been in service for several decades.

While these repairs remain necessary, the assessment also demonstrated that addressing deferred maintenance alone would not resolve the broader operational limitations of the site.

Operational Planning Study
To evaluate long-term options, the City retained IDS Group to prepare a comprehensive planning and site analysis. After evaluating the existing facility, IDS concluded that renovating the existing buildings would not provide the most practical or cost-effective long-term solution.

Although renovations could address some maintenance deficiencies, they would not resolve the site's fundamental operational limitations, including inadequate office space, employee facilities, maintenance areas, storage capacity, or overall site functionality. Accordingly, IDS recommended replacing the existing buildings with a new Corporate Yard specifically designed to support current operations while providing flexibility for future Public Works needs.

PROPOSED CORPORATE YARD

On November 12, 2024, the City Council approved an agreement with IDS Group to prepare architectural and engineering plans for a new Corporate Yard. The project replaces approximately 8,270 square feet of existing buildings with approximately 18,310 square feet of modern operational facilities designed to support Public Works for decades to come.

In addition to replacing aging buildings, the project would provide:

- Modern administrative offices;
- Expanded Fleet Maintenance facilities;
- Improved maintenance shops;

- Additional equipment and material storage;
- Enhanced contractor staging areas;
- Improved vehicle circulation;
- Upgraded utility infrastructure;
- Improved employee facilities; and
- Flexibility to accommodate future operational needs.

The proposed campus also preserves opportunities for future enhancements, including a Traffic Management Center, an alternate Emergency Operations Center location, and expanded emergency response capabilities should future needs require those functions.

The conceptual project consists of four primary buildings.

Building	**Proposed Use**	**Existing Sq. Ft.**	**Proposed Sq. Ft.**
Building 1: Office	Offices for Facilities, Streets, Parks, Trees, and Landscape. Future use could include establishing a traffic control center within this building and using the facility as an emergency operations center.	1,203 +/-	7,500 +/-
Building 2: Garage / Fleet Maintenance	Fleet office, maintenance garage, repair space, car wash station	4,346 +/-	5,510 +/-
Building 3: Sign & Tire Storage	Paint/sign shop and tire storage	1,200 +/-	1,800 +/-
Building 4: Facility Shops	Workshop space for wood and metal work	1,521 +/-	3,500 +/-
	Total:	**8,270 +/-**	**18,310 +/-**

PHASED CONSTRUCTION

Because the Corporate Yard must remain operational throughout construction, the City directed IDS Group to develop a phased implementation strategy (Attachment F). Maintaining uninterrupted Public Works operations presents unique challenges due to the size of the site, the location of the Big Dalton Wash, existing utility infrastructure, and the need to continuously support City operations during construction. The phased approach allows construction to occur while maintaining day-to-day Public Works services.

The project is organized into four phases:

- *Phase 1A* – Construction of site improvements northwest of the Big Dalton Wash, including grading, storm drain improvements, Low Impact Development facilities, paving, and material storage areas.
- *Phase 1B* – Construction of the new Administration Building together with employee parking, primary circulation routes, and major utility infrastructure.
- *Transition Zone* – Completion of shared utility improvements necessary to maintain uninterrupted operations while preparing for demolition of the remaining facilities.
- *Phase 2* – Demolition of the existing buildings followed by construction of the Fleet Maintenance Building, Maintenance Shops, Sign and Tire Storage Building, vehicle wash facilities, parking areas, landscaping, emergency generator, and all remaining site improvements.

The phased approach is currently estimated to cost approximately $13.6 million, reflecting the additional expense associated with maintaining operations throughout construction.

KEY CONSIDERATIONS

Unlike many facility improvement projects, the Corporate Yard is not intended to expand municipal services. Rather, it is intended to replace an aging and functionally obsolete facility with one capable of supporting the Public Works Department for decades to come.

The proposed project would:

- Improve operational efficiency;
- Better support emergency response;
- Position the City to meet future regulatory requirements;
- Consolidate Public Works operations onto one campus;
- Reduce duplication of facilities and resources; and
- Provide modern workspaces that better support employees and the services they deliver to the community.

While the estimated construction cost is significant, continuing to invest in the existing facility would not resolve many of the operational limitations identified through the City's planning efforts. For that reason, the discussion before the City Council is not simply whether to repair existing buildings, but how best to position the City's Public Works operations to meet the community's needs over the coming decades.

DISCUSSION

The Library and Corporate Yard represent the City's two largest remaining facility priorities. While both facilities continue to serve the community, decades of use, changing operational needs, and aging infrastructure have created challenges that extend beyond routine maintenance. Unlike many of the projects discussed during Workshop No. 1, these facilities cannot be addressed through annual maintenance budgets or one-time capital funding alone. Each requires long-term planning, significant financial investment, and policy decisions regarding the level of improvement the City wishes to pursue.

For the Library, the City Council must determine whether its immediate priority is limited structural repairs, broader modernization of the existing facility, expansion, or eventual replacement. Each option carries different costs, timelines, and long-term implications for Library services and the Library's continued use as the City's Emergency Operations Center.

Similarly, the Corporate Yard requires more than repair of aging buildings. The consultant evaluations concluded that replacing the existing facility would provide the most practical long-term solution by improving operational efficiency, supporting future Public Works needs, and positioning the City to meet evolving regulatory requirements.

Deferring either project will likely increase future construction costs, prolong operational inefficiencies, and increase the City's long-term maintenance obligations. At the same time, staff recognizes that neither project currently has a dedicated funding source and that available resources must be carefully balanced with the City's many other capital priorities.

For these reasons, staff believes the next phase of the discussion should focus less on identifying facility needs – which have now been well documented – and more on establishing priorities and developing realistic funding and implementation strategies.

FUNDING CONSIDERATIONS

As discussed throughout this report, no dedicated funding source currently exists for either the Library or the Corporate Yard.

The City has made significant investments in public infrastructure over the past several years, completing nearly $50 million in capital projects since 2020 while aggressively pursuing grant funding whenever opportunities have been available. Those efforts have significantly improved streets, parks, facilities, transportation infrastructure, and other public assets. Despite those investments, the scale of the Library and Corporate Yard projects exceeds the City's current available funding capacity.

Staff will continue pursuing all available funding opportunities, including:

- State and federal grants;
- State budget appropriations;
- Available one-time revenues, if directed by the City Council;
- Capital financing options;
- Potential proceeds from future property sales or other one-time revenues;
- Reprioritization within the Capital Improvement Program;
- Phased construction as funding becomes available; and
- Future voter-approved revenue measures should the City Council choose to explore those options.

Because no single funding source is likely to fully fund either project, staff anticipates that successful implementation will require a combination of funding strategies developed over multiple fiscal years.

ITEMS FOR CITY COUNCIL CONSIDERATION

Based upon the evaluations completed to date, staff recommends that the City Council:

1. Receive and file the consultant reports and facility assessments for the Glendora Public Library and the City Corporate Yard.
2. Confirm that the Library and Corporate Yard remain the City's highest long-term facility priorities, recognizing that both projects extend beyond routine maintenance and require dedicated funding strategies.
3. Provide policy direction regarding the Library by identifying which long-term approach should receive further evaluation, including:
    - Immediate structural repairs only;
    - Structural repairs with broader modernization;
    - Expansion of the existing facility;
    - Construction of a new Library; or
    - A phased approach that addresses immediate structural needs while preserving future expansion opportunities.
4. Direct staff to continue advancing the Corporate Yard replacement project, including refinement of project phasing, updated cost estimates, and continued pursuit of outside funding opportunities.
5. Direct staff to continue pursuing State, Federal, and other competitive funding opportunities for both facilities and return to the City Council as funding opportunities become available.
6. Direct staff to prepare Workshop No. 3, focusing on:
    - Funding alternatives;

- Project prioritization;
- Potential implementation schedules;
- Financing options;
- Phasing strategies; and
- Recommended long-term funding roadmaps for Council consideration.

FISCAL IMPACT

There is no fiscal impact associated with receiving and filing this report. Any future appropriation, funding plan, design modification, construction award, or financing action will be brought back to the City Council for consideration.

ENVIRONMENTAL DETERMINATION

Receiving and filing this update is not a project under the California Environmental Quality Act because it does not approve construction, authorize physical improvements, or commit the City to a specific project. Future project approvals for the Library or Corporate Yard will include appropriate environmental review prior to approval of construction or other discretionary actions.

Prepared By:	Valerie Velasquez-Santoya, Assistant Public Works Director
Concurs With:	Not Applicable
Reviewed By:	Moises Lopez, Assistant City Manager
Certified to Availability of Funds:	Kyle Johnson, Finance Director/City Treasurer
Approved By:	Adam Raymond, City Manager
Legal Review:	Danny Aleshire, City Attorney
CEQA Review:	Not Applicable

Attachments

A_Workshop_No_1_Projects_Selected.pdf
B_Cho_Design_Associates_Preliminary_Assessment_2022.pdf
C_Phase_1_MHP_Structural_Evaluation_Report_2023.pdf
D_Phase_1_MHP_Structural_Evaluation_Report_-_2026_Update.pdf
E_Phase_2_MHP_-_Options_for_Vertical_Expansion_2023_-_Redacted.pdf
F_Glendora_Corporate_Yard_Phasing_Plan_Report_2026.pdf
G_Glendora_Public_Library_Capital_Improvements.pdf
H_Corporate_Yard_Chronology.pdf
I. Workshop 2 Presentation.pdf

WORKSHOP 1: RESULTS & NEXT STEPS

One-Time Funding Investment in Glendora

EXECUTIVE SUMMARY

Where Glendora Stands Today

Stability restored

Organizational modernization, Measures E & Z, and pension restructuring eliminated a $3.5–$4M deficit and earned a AAA bond rating.

Needs remain

Significant facility, street, and infrastructure needs persist — well documented through years of studies and assessments.

A rare opportunity

Fiscal prudence created one-time funding capacity to address a meaningful share of those needs — without a new tax.

A MULTI-YEAR DISCUSSION, BROKEN INTO THREE FOCUSED MEETINGS

A Three-Workshop Series

COMPLETED

01

Workshop 01 • June 16

Foundation & Funding

Reviewed five years of strategic planning, public engagement, and facility assessments. City Council reached consensus on $11.88M in one-time funds for streets and facilities — within the $8–$12M target.

02

Workshop 02 • July 21

Library & Public Works Yard

The City's two most significant facility needs — structural assessments, repair vs. replacement costs, phasing options, and service-continuity considerations.

03

Workshop 03 • Sept 15

Funding Options & Next Steps

Grants, land sales, and debt issuance to pay for the work — plus the potential structure of a citizen-led advisory committee.

RESULTS OF WORKSHOP 1 — CITY COUNCIL CONSENSUS

Council Reached Consensus

72	$11.88M	2.87	$8–12M
Consensus items City Council supported	Total one-time funds allocated	Estimated Citywide PCI increase	City Council target window — met

How the $11.88M breaks down



The $11.88M total falls within the City Council's $8–$12M target window — $8.73M directed to streets & roads and $3.15M to existing City facilities.

RESULTS — STREETS & ROADS

Streets: $8.73M Across Key Corridors

How segments were selected

- Coordinated with planned water-main replacement work
- Prioritized major corridors — Route 66, Grand, Valley Center
- Targeted low-PCI segments before they fail
- Standalone-ready streets with no near-term water work
- Selected by PCI, community benefit & project readiness

$8.73M directed to streets & roads — 10 grind & overlay segments plus an expanded slurry seal program.

+2.87 PCI gain from the selected segments — the largest one-time lift the City has funded.

Estimated Citywide PCI will increase from base of 63.2 in 2025. Calculation of one-time funding increases plus planned projects less overall annual deterioration is underway.

Funded Street Segments by Corridor

Corridor	Segments	Area (SF)	Treatment	Est. PCI Gain*	Cost
Route 66 Barranca Ave to Grand Ave Pasadena Ave to Elwood Ave Compromise Line to Cataract Ave	3	833,000	2″ Grind & Overlay	+1.74	$4,600,000
Sunflower Ave Arrow Hwy to Juanita Ave Juanita Ave to Gladstone Ave Gladstone Ave to 210 Freeway	3	270,000	2″ Grind & Overlay	+0.57	$1,850,000
Juanita Ave Glendora Ave to San Dimas Wash San Dimas Wash to Bonnie Cove Ave Bonnie Cove Ave to Sunflower Ave	3	186,000	Grind & Overlay / Slurry	+0.39	$975,000
Valley Center Ave Arrow Hwy to Juanita Ave	1	85,000	2.5″ Grind & Overlay	+0.18	$800,000
Slurry Seal Program (Citywide)	—		Type II Slurry (expanded)	—	$500,000
Total	**11 items**	**1,374,000 SF**		**+2.87**	**$8,725,000**

**Estimated PCI gains are rounded at the segment level and may not sum exactly. Segments selected through the 2025 Pavement Management Program (Bucknam).*

RESULTS — CITY FACILITIES

Facilities: $3.15M Across the City

City Council reached consensus on $3.15M of FCA-recommended facility maintenance — funding 61 near-term repair and replacement items across City buildings, parks, and recreation sites.

$3.15M

directed to existing City facilities

61

maintenance items funded for the 2026–2030 period

13

City sites & parks covered by the funded work

All funded work comes directly from the Bureau Veritas Facility Condition Assessment — assessment-driven maintenance that moves the City from reactive repairs to a planned program. A site-by-site breakdown follows.

Funded Facility Work by Site

Site	Items	Key work funded	Subtotal
La Fetra Center	6	Foundation repair, roof, HVAC, kitchen	$1,056,401
Crowther Teen & Family Center	3	Gym roof, parking lots, exterior paint	$573,200
Finkbiner Park	11	Snack bar, roofs, HVAC, paint, fences	$372,942
Library / Police Station	3	Generator, electric panel, HVAC	$247,666
Big Dalton Canyon	12	Roofs, restrooms, retaining wall, paint	$205,515
City Hall	1	HVAC replacements	$194,789
Bus Plaza	3	Area lighting, drinking fountain, backflow	$150,348
Dawson Park Tennis Complex	1	Parking lots: grind, overlay, stripe	$109,693
Louie Pompei Sports Park	8	Snack bar fixtures & kitchen equipment	$98,220
Recreation & Human Services	3	Admin roof, HVAC, garage electrical	$82,049
South Hills Park	7	Restroom upgrades & park amenities	$39,747
Gladstone Park	2	Roof, drinking fountains, toilets	$20,322
Old Chamber of Commerce	1	Toilet replacement	$2,777
Total	**61**	**13 City sites & parks**	**$3,153,669**

NEXT STEPS

Putting the Plan Into Motion

Allocate $3M

Allocate $3M from the sale of the San Jose site into a project account in Fund 301 to begin funding the streets and facilities work.

Return for verification

Staff will bring a detailed implementation timeline for the streets and facilities work back to City Council for verification.

Quarterly updates

Staff will report on the progress of the one-time funding investment in Glendora to City Council every quarter.

NEXT STEPS — IMPLEMENTATION

Streets & Facilities: What Happens Now

Streets

- The City has engaged TransTech to lead street engineering and design.
- Bid packages and engineering to be completed in 60-90 days.
- Tentatively out to bid in early fall.
- Construction to commence in late 2026 to early 2027.

City Facilities

- The City will package the facility projects over the next month.
- Scope confirmed across 61 items at 13 City sites and parks.
- Bid and contract documents prepared for the packaged work.
- A detailed timeline returns to City Council for verification.

Workshop 1: Results & Next Steps

Questions & City Council direction

Line

City of Glendora
Glendora Public Library/Bidwell Plaza
Preliminary Condition Assessment

April 11, 2022



Cho Design Associates, Inc.
3601 W. MacArthur Boulevard, #903
Santa Ana, California 92704

City of Glendora
Glendora Public Library/Bidwell Plaza
Preliminary Condition Assessment

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APPENDICES

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Introduction

The City of Glendora (City) has requested that JMD and Cho Design Associates, Inc. (CDA), review and provide a preliminary assessment of the structural elements of the City's Public Library roof slab and framing system that forms the base of the Bidwell Plaza. It is our understanding that the City desires to add a permanent shade structure to the existing Bidwell Plaza that is on top of the roof of the Glendora Public Library. During the initial investigation to add a shade structure to the existing roof, it was noted that there were some cracks in the existing concrete roof system and some water intrusion into the library. A preliminary assessment of the concrete roof system was requested by the City. This assessment includes the plaza deck and library roof system.

Purpose and Scope

The goal of the project is to provide the City with a preliminary structural engineering assessment/investigation of the City's existing Public Library roof slab and framing system that forms the base of the Bidwell Plaza in terms of its utility and possible hazards. CDA conducted a site visit to assess the overall structural condition of the library's roof framing system and slab. A summary of our findings and recommendations is included in this Preliminary Condition Assessment Report.

Description

Based on as-built plans provided by the City, the existing library facility and Bidwell Plaza was completed in 1972. The library is a two-story reinforced concrete and concrete masonry (CMU) structure located next to the City of Glendora City Hall at the southeast corner of Glendora Boulevard and W. Foothill Avenue.

Data Collection and Review

The following documents and information have been received from the City and reviewed in association with this project:

- As-built plans for *Glendora Public Library*, prepared by Anthony & Langford Architects, dated September 5, 1970, consisting of 30 sheets.
- As-built plans for *Glendora Public Library – Voluntary Upgrade*, dated June 2003 prepared by Jeff Coronado, S.E.
- As-built plans for *Glendora Public Library – Plaza Demo and Resurfacing*, undated, prepared by Jeff Coronado, S.E.

No other plans or reports are available for our review.

Review of As-Built Plans and Reports

Cho Design Associates conducted a review of the as-built plans provided by City. According to the as-built plans for the facility, the main floor and structure was designed utilizing concrete with a required minimum compressive strength of 3,000 psi at 28 days and Grade 40 reinforcing steel. The building envelope consists of cast-in-place concrete and CMU walls with a wood roof framing system. No structural calculations or geotechnical reports were available for our review as a part of this project.

In 2003 and 2004 the library went through extensive structural modifications to reinforce the structure and its foundation to bring the building into compliance with the current codes and standards at the

time. The 2003 project reinforced the north wall and the supporting columns. The 2004 project addressed the plaza's deteriorating concrete surface and water infiltration by replacing its water-proof membrane and adding a lightweight concrete topping on the existing deck. It appears that the 2004 project may have also repaired some roof slab cracks with epoxy injection. We did not find any plans or specifications to document that this was to be done as a part of the project, only what we observed in some project construction photos provided by the City.

Based on information from the City, the concrete deterioration at the library has been an ongoing for some time and generally consist of cracks in the concrete beams and roof slab surfaces. There appears to be some water infiltration into the main library after rain events, located primarily in the north-east section of the library ceiling. This study only includes a representative visual assessment of the surface defects, a review of the as-built plans and evaluation of the City's historical observations.

Preliminary Condition Assessment

A visual condition assessment of the surface defects was conducted at the library on March 29, 2022 and was limited to a representative sampling of the beams and slabs above the drop ceiling.

Our preliminary investigation consisted of physically accessing each area by removing the drop ceiling panels and visually inspecting the surfaces for deterioration. Most of the concrete deterioration consisted of minimally to moderately cracked concrete surfaces. We did not observe anything that would indicate an immediate underlying structural problem in the areas with the deteriorated concrete surface areas. We also employed the use of a rotary percussion hammer to check for areas of delamination or other structural defects that were not noticeably visible. Generally, the underlying surface of the concrete was found to be sound, with no visual evidence of delamination or spalling. The main area of obvious deterioration are the numerous superficial cracks throughout the roof beams and roof slabs of the library (Figures 1 and 2). The majority of these are not thought to be a serious issue since they were small and there was no evidence of major seepage, leakage or corrosions stains that were noted on the concrete. There are however several locations where the epoxy repaired cracks are exhibiting some sort of leakage and staining (Figures 5 and 6). There also appears to be some new cracks that may have occurred after the 2004 repairs. Some of these new cracks in the slab are showing signs of water infiltration and staining, but there was no indication of corrosion of the beam or slab reinforcing from the water infiltration (Figures 7, 8, 9 and 10). These cracks are thought to be new because they are large enough so they should have been repaired during the epoxy injection process of the other cracks, or they were smaller back then and have developed into larger cracks since the 2004 project.

There are also several areas where there are large cracks in the main girders. These cracks exceed 0.06" (1.5mm) in width which is the accepted threshold for a reasonable crack width of 0.016" (0.41mm) (Figures 3 and 4). No other significant structural issues were noted during our representative assessment of the library beams and slab system.

The following are some representative photos of the typical cracks and other defects that were found during our preliminary visual assessment. A complete set of photos taken during our visual assessment is included in Appendix "A" of this report.



Figure 1 - Typical Cracking in Slab (minor)



Figure 2 – Typical Concrete Cracks at Beam and Slab (minor)



Figure 3 – Large Girder Crack, > 0.016"



Figure 4 - Close-up of Girder Crack, > 0.016"



Figure 5 – Epoxy Injection Repaired Area



Figure 6 – Leakage at Epoxy Repair

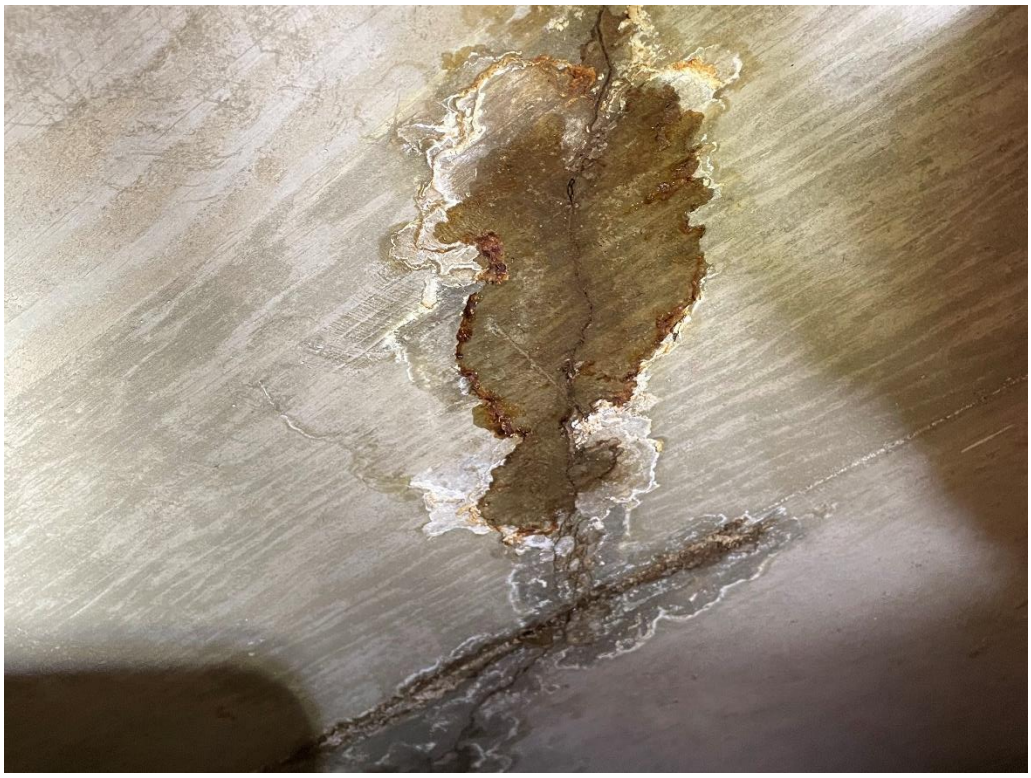

Figure 7 – Leakage at Slab Crack (unrepaired)



Figure 8 – Leakage and Staining at Beam (unrepaired)



Figure 9 – Crack at Waffle Slab (Main Reading Area)



Figure 10 – Close-up of Waffle Slab Crack (Main Reading Area)

Conclusions

In summary, the concrete beams, roof slab and overall structural systems of the library and plaza base are generally in sound structural condition, but there are some issues that needs to be addressed to maintain the structural integrity of the facility. Based on our initial visual inspection and evaluation, the library roof and slab and plaza base needs to have the crack issues addressed. These repairs should not require the library to be shut down.

The American Concrete Institute (ACI) publishes document ACI 224R-01 "Control of Cracking in Concrete Structures". Table 4.1 from that document provides a general guideline for reasonable crack widths for reinforced concrete elements under service loads. Acceptable crack widths range from 0.004 in. (0.1 mm) to 0.016 in. (0.41 mm), with smaller widths for concrete in wet or aggressive environments and larger crack widths for drier exposures. For the City's library, the 0.016" (0.41 mm) is considered an acceptable crack width.

Table 4.1—Guide to reasonable* crack widths, reinforced concrete under service loads

Exposure condition	Crack width	
	in.	mm
Dry air or protective membrane	0.016	0.41
Humidity, moist air, soil	0.012	0.30
Deicing chemicals	0.007	0.18
Seawater and seawater spray, wetting and drying	0.006	0.15
Water-retaining structures†	0.004	0.10

* It should be expected that a portion of the cracks in the structure will exceed these values. With time, a significant portion can exceed these values. These are general guidelines for design to be used in conjunction with sound engineering judgement.
†Exclusing nonpressure pipes.

There are numerous cases where the crack width exceeds the reasonable limit of 0.016" as presented in the table above and needs to be addressed. Many of the cracks are less than that and do not pose any real issues.

The condition of the unexposed reinforcing steel could not be assessed, because the level of inspection for this project did not include destructive testing, no conclusion was drawn for the condition of the unexposed reinforcing steel.

No visual evidence of carbonation or alkali-silica reactivity or other issues were apparent. Laboratory testing for these issues is beyond the scope for this project.

A plot showing the approximate locations of the representative photos and cracks is included in Appendix "A" along with a complete photo log.

Recommendations

We recommend that City initiate a full extensive survey of the roof and slab of the library to fully document the repair needs for this facility as soon as possible to minimize any further damage.

At this time, the following items are recommended:

- Comprehensive Field Survey: Perform a comprehensive field survey, assessment and evaluation of the entire library roof slab and beam system. This survey should fully document the size and location of all cracks. Any additional defects such as spalling, delamination or pop-outs should also be noted.
- Final Repair Plans: Prepare comprehensive plans, details and specifications for the repair and rehabilitation of all defects noted in the Comprehensive Field Survey above.

Appendix A

Photo Location Record
and
Photo Log

Photo Location Record

Area with new cracks and active leaking Photo #30 & #31

Area with minor slab cracks, < 0.016"

Area with epoxy injection repairs

Area with slab cracks, ~ 0.020" Photo #32

No issues noted in these areas.

No Access. Area in use.

Area with minor slab cracks, < 0.016"

Area with new cracks and active leaking Photo #28 & #29

Beam crack ~0.04" Photo #34

Beam crack ~0.04" Photo #33

Beam crack ~0.02" Photo #35

Area with epoxy injection repairs

Beam crack > 0.05" Photo #37 & #38. Typical in this area. Area was is use by library patrons

No Access. Area in use.

No Access. Area in use.

Beam crack ~0.05" Photo #36

Slab and beam crack. Photo # 25

Beam and slab crack, ~0.02" Photo #19

Area with epoxy injection repairs. Photo #26 & #27

Minor cracking at top of beam, ~12" off of end. Typical at numerous locations, see Photo #12

Beam crack, > 0.06" Photo #18

Area with slab cracks, ~0.025" Photo #8

Area with slab cracks, ~0.025" Photo #7

Beam crack, > 0.06" Photo #17

Area with slab cracks, ~ 0.020" Photo #20

Repaired beam Photo #15

Beam crack, > 0.03" Photo #16

Area with slab cracks, ~0.025" Photo #6

Beam crack, > 0.06" Photo #9, #10 & #11

Area with water stains. Photo #22, #23 & #24

Beam crack ~0.020" Photo #21

Area with epoxy injection repairs and water stains. Photo #22, #23 & #24

Minor cracking at top of beam, ~12" off of end. Typical at numerous locations, Photo #12

No issues noted in these areas.

No issues noted in this area.

No issues noted in these areas.

Area with epoxy injection repairs

Beam and slab crack, ~0.02" Photo #13 & #14

Area with slab cracks, ~0.03" Photo #1, #2, #3, #4 & #5

No Access. Area in use.

add a legend?

LEGEND

- No Access. Area in use.
- No issues noted in these areas.
- Slab Crack Area
- Beam Crack Area
- Beam/Slab Crack Area
- Area with epoxy injection repairs
- Area with new/old cracks and active leaking/water stains

Annotation from Visual Survey performed on 03/29/2022

FOR REFERENCE ONLY

UPPER FLOOR FRAMING PLAN

SCALE: 1/8" = 1'-0"

NOTES:

1. GIRDERS OR BEAMS WITH NO SIZE INDICATED ON PLAN ARE TAPERED SEE SHT. S2 FOR SIZES
2. BEAM OR GIRDER REINFORCING NOT SHOWN OR INDICATED ON THE PLAN OR ELEVATIONS THIS SHEET ARE SHOWN ON SHEET S2
3. TOP OF SLAB ELEVATIONS ARE FINISHED FLOOR SLABS ONLY SEE ARCH'L DRAWINGS FOR FINISH ELEVATIONS
4. SHORES UNDER CONC. SOFFITS MAY BE REMOVED TEN (10) DAYS AFTER PLACING CONC. & AFTER A TEST CYLINDER MADE WITH THE POUR SHOWS f'c = 2,000 PSI.
5. DESIGN LL. = 100 PS.F. (NON-REDUCIBLE)
6. USE TAPERED END PANS FOR ALL JOISTS OVER 24" SPAN.

BEAM ELEV. B12 & STAIR #2

PART ELEV. GIRDER G-5

PLAN @ CONC. ROOF SLAB

REVISIONS	ENGINEER	APPROVALS
1 PLANS, DEPT. COMM. 9-15-70	RUSS CONNORS ASSOCIATES CONSULTING STRUCTURAL ENGINEERS 780 ORANGETHORPE AVENUE BUENA PARK, CALIFORNIA 90620 (213) 865-7784 (714) 525-3936	

GLENDORA PUBLIC LIBRARY
140 SOUTH GLENDORA AVENUE
CITY OF GLENDORA

T. V. ANTHONY II C-11260
V. WALLACE LANGFORD C-11501

ANTHONY & LANGFORD ARCHITECTS AIA
12422 EAST WHITTIER BOULEVARD, WHITTIER, CALIFORNIA

UPPER FLOOR FRAMING PLAN

DRAWN B. M.
CHECKED Ed. H.
DATE 8-17-70

FILE NO. 6808
SHEET NO. S-2

Photo Log

Photo #	Description
1	Slab cracks, < 0.03"
2	Slab cracks, < 0.03"
3	Slab cracks, < 0.03"
4	Slab cracks, < 0.03"
5	Slab cracks, < 0.03"
6	Slab cracks, ~0.025"
7	Slab cracks, ~0.025"
8	Slab cracks, ~0.025"
9	Beam cracks, >0.06"
10	Beam cracks, >0.06"
11	Beam cracks, >0.06"
12	Minor beam crack approximately 12" from end, typical at numerous beams
13	Beam and slab cracks, ~0.02"
14	Beam and slab cracks, ~0.02"
15	Repaired beam
16	Beam cracks, >0.03"
17	Beam cracks, >0.06"
18	Beam cracks, >0.06"
19	Beam and slab cracks, ~0.02"
20	Slab cracks, ~0.02"
21	Beam cracks, ~0.02"
22	Epoxy injection repaired area with water stains
23	Epoxy injection repaired area with water stains
24	Epoxy injection repaired area with water stains
25	Beam and slab crack
26	Epoxy injection repaired area
27	Epoxy injection repaired area
28	Area with new cracks and active water infiltration
29	Area with new cracks and active water infiltration
30	Area with new cracks and active water infiltration
31	Area with new cracks and active water infiltration
32	Slab cracks, ~0.02"
33	Beam crack, ~0.04"
34	Beam crack, ~0.04"
35	Beam crack, ~0.02"
36	Beam crack. ~0.05"
37	Beam crack @ waffle slab, >0.05" (typical)
38	Beam crack @ waffle slab, >0.05" (typical)

Photos

Appendix B
As-Built Plans

- As-built plans for *Glendora Public Library*, prepared by Anthony & Langford Architects, dated September 5, 1970, consisting of 30 sheets.
- As-built plans for *Glendora Public Library – Voluntary Upgrade*, dated June 2003 prepared by Jeff Coronado, S.E.
- As-built plans for *Glendora Public Library – Plaza Demo and Resurfacing*, undated, prepared by Jeff Coronado, S.E.

PHASE 1 STRUCTURAL EVALUATION

GLENDORA PUBLIC LIBRARY

CITY OF GLENDORA

Prepared by

MHP, Inc.
Structural Engineers
Long Beach, California

September 25, 2023

MHP JN: 22-0647-00

3900 Cover Street, Long Beach, CA 90808 562.985.3200 P 562.985.1011 F www.mhpse.com

STRUCTURAL EVALUATION: Glendora Public Library

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1.0 EXECUTIVE SUMMARY

At the request of the City of Glendora, MHP has conducted a seismic evaluation of the existing Glendora Public Library building. The seismic evaluation was completed in accordance with ASCE/SEI 41-17 *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE 41) as referenced by the 2022 California Existing Building Code (CEBC). This effort is part of Phase 1 of the Library Structural Analysis and Options for Vertical Expansion project. There is no Code requirement for the evaluation or strengthening of the existing building and the Phase 1 work is being undertaken on a voluntary basis. Scope items completed in support of Phase 1 include review of existing structural drawings, site visits, materials testing, geotechnical studies, and comprehensive structural analysis.

The library is a two-story reinforced concrete and concrete masonry unit (CMU) structure constructed in 1972. Structural framing of the plaza utilizes concrete slabs and pan joists spanning between large reinforced concrete beams and girders which are supported by the perimeter walls, central concrete piers, and isolated columns. Some of the concrete girders incorporate large embedded mechanical ducting, creating a hollow section. The high roof levels utilize a combination of concrete slab and wood framing. The foundation system consists of shallow concrete pad and continuous footings. The building is considered to be a Risk Category III structure per the 2022 CBC.

The evaluation investigated the structure's ability to meet the seismic Performance Objectives designated by the 2022 CEBC and ASCE 41 based on the building Risk Category, which pair a Seismic Hazard Level with a target Structural Performance Level. For the purposes of this voluntary evaluation, the ASCE 41 Basic Performance Objective for Existing Buildings (BPOE) was selected. This Objective is consistent with the seismic requirements set forth by other local jurisdictions (e.g.: Los Angeles, Santa Monica, etc.) for evaluation and retrofit of concrete buildings constructed prior to 1977. Structural evaluation of the primary lateral force-resisting system of the Library building utilized both hand calculations and computer modeling using ETABS structural analysis software. The evaluation utilized data gathered from the material testing program and geotechnical site classification. The existing structure was found to satisfy the ASCE 41 BPOE and is anticipated to perform reasonably well in future seismic events. Seismic strengthening does not appear warranted at this time, though wall anchorage upgrades at the high roof levels should be provided to improve the seismic performance of those areas.

Limited site observations were completed during the course of Phase 1. Conditions observed on site are consistent with those documented in previous reports and include minor-to-moderate cracking throughout the library's main roof structure. Based on observations of significant water intrusion during the past rainy season it is our opinion that the plaza waterproofing membrane may be compromised and may require replacement. It is recommended that a waterproofing consultant be retained in future phases to provide recommendations for investigation and repair prior to completion of a final design for replacement.

Given the observed cracking within the plaza framing members a review of the gravity load-carrying system was also performed as part of this phase. It was determined that although the structure has demonstrated its ability to support the daily sustained service loads over the past 50 years, some existing girders and pad footings do not fully satisfy current 2022 CBC provisions for gravity design considering the original stated design live load of 100 psf. If subjected to the stated 100 psf live load, several main concrete girders would be overstressed due to torsion, and stresses underneath the existing pad footings supporting the interior concrete piers would marginally exceed the allowable soil bearing pressure.

A conceptual repair and strengthening design was developed which would replace the existing plaza waterproofing membrane, and bring the plaza framing into conformance with 2022 CBC requirements. Repair work consists of the replacement of the plaza topping and waterproofing membrane. Strengthening work includes the addition of fiber-

reinforced polymer overlay of existing concrete beams and girders to provide additional bending, shear, and torsional strength. Construction cost for the repair and strengthening is estimated to be $2,867,266 and assumes that the library will be closed for the approximately 6-month construction duration. It is anticipated that the strengthening scope may reduce somewhat as this conceptual design is further developed in future design phases.

It is our opinion that use of the library can continue, however, given that the plaza framing does not fully satisfy 2022 CBC requirements, superimposed loads on the plaza (whether from occupants or temporary construction) should be limited to 40 psf maximum until the recommended strengthening measures can be implemented. This recommended restriction likely exceeds the loading currently being applied by various uses and events. A 40 psf loading equates to approximately 2,800 people evenly distributed throughout the exterior plaza. However, since uniform distribution cannot be assured, a maximum occupancy of 1,000 people may be a practical limit.

2.0 PURPOSE AND SCOPE

At the request of the City of Glendora, MHP has conducted a seismic evaluation of the existing Glendora Public Library building. The seismic evaluation was completed in accordance with ASCE/SEI 41-17 *Seismic Evaluation and Retrofit of Existing Buildings* (ASCE 41) as referenced by the 2022 California Existing Building Code (CEBC). This effort is part of Phase 1 of the Library Structural Analysis and Options for Vertical Expansion project.

There is no Code requirement for the evaluation or strengthening of the existing building and the Phase 1 work is being undertaken on a voluntary basis. The purpose of the Phase 1 seismic evaluation is to determine the anticipated seismic performance of the building to inform decision making as to whether voluntary seismic strengthening of the existing building is warranted. Scope items completed in support of Phase 1 include review of existing structural drawings, site visits, materials testing, geotechnical studies, and comprehensive structural analysis.

Gravity analysis of the existing framing was not proposed to be part of the Phase 1 scope, as gravity deficiencies are rarely uncovered in 50-year-old structures that are still in use. However, given the existing conditions and implications for the Phase 2 work, the existing gravity load-carrying system was also reviewed in order to determine if strengthening was warranted to ensure adequate performance for the building's ongoing and future use.

3.0 EXISTING CONSTRUCTION

3.1 Existing Structure Summary

The building site is located next to the City of Glendora City Hall at the southeast corner of Glendora Boulevard and W. Foothill Avenue. The library is a two-story reinforced concrete and concrete masonry unit (CMU) structure constructed in 1972 with 27,000 square feet of enclosed area. The first floor houses different reading halls and book stacks, while the second floor incorporates a public meeting hall, office spaces, and an open outdoor plaza. Structural framing of the plaza utilizes concrete slabs and pan joists spanning between large reinforced concrete beams and girders which are supported by the perimeter walls, central concrete piers, and isolated columns. Some of the concrete girders incorporate large embedded mechanical ducting, creating a hollow section. The high roof levels utilize a combination of concrete slab and wood framing. The foundation system consists of shallow concrete pad and continuous footings.

The primary LFRS of the building consists of the interior concrete and perimeter CMU shear walls. Lateral seismic forces are delivered to the walls by the cast-in-place concrete plaza diaphragm which spans horizontally between wall lines. At the high roof levels such as the Bidwell Room, the CMU shear walls extend up to support wood-framed roof diaphragms.

3.2 Existing Building Risk Category

Building Risk Category is determined based on 2022 California Building Code (CBC) Table 1604.5 and is based on the nature of the building occupancy and occupant load. The primary use of the building is as a Library; therefore, the 2022 California Building Code (CBC) Occupancy Category is Assembly Group A-3. The occupant load is considered to be greater than 300. It is understood that at this time the Library building is not considered to be a designated emergency operations center or emergency shelter. Based on the preceding, the building is considered to be a Risk Category III structure per the 2022 CBC. If future designation classifies the building as being required for emergency response (e.g.: emergency operations center, emergency shelter, etc.), this would trigger consideration as a Risk Category IV structure.

3.3 Prior Structural Modification & Condition Assessment Review

Since 1972, various structural studies have been conducted to address structural improvements and recommend repairs. In the early 2000s, the library went through two significant structural modifications, namely “Plaza Demo and Resurfacing” and “Voluntary Upgrade”.

The “Plaza Demo and Resurfacing” phase included removal and replacement of existing concrete topping and waterproof barrier on the plaza. The existing 3.5” normal weight architectural topping slab was removed and replaced by 2.5” lightweight concrete. The existing planters were removed and filled with Styrofoam block filler and concrete slab and stem walls. Existing concrete benches were also removed.

The “Voluntary Upgrade” phase was a seismic strengthening which included application of FRP strips on the north CMU wall and strengthening of the interior concrete piers through shotcrete enlargement. The FRP product used in this phase is comprised of the reinforcing fabric and epoxy. The reinforcing fabric is a uni-directional carbon fabric oriented in 0° direction and the epoxy is a two-component epoxy matrix. The concrete wall enlargement consisted of the application of a 4.5” shotcrete layer either on one side or two sides of the interior concrete walls with additional vertical and horizontal reinforcement (Figure 1).

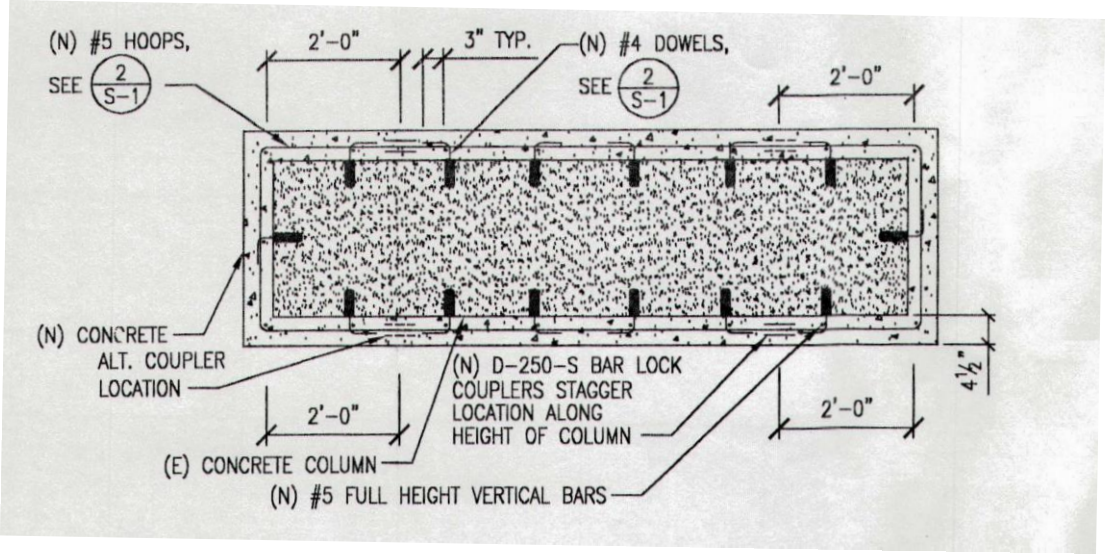


Figure 1- Concrete pier ductility enhancement through shotcrete enlargement, ca. 2003

No explicit target seismic performance objective for the project is noted on the plans, which is not uncommon for the era of the retrofit. Project calculations state that the intent of the shotcrete enlargement for the concrete walls and columns was to provide ductility enhancement in accordance with Uniform Building Code section 1921.4.4.1 (Figure 2), which stipulated a minimum amount of transverse reinforcement.

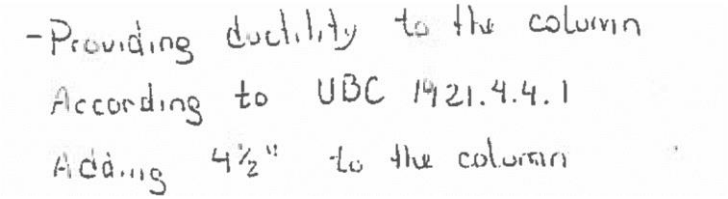


Figure 2- Statement in project calculations, ca. 2003

Concrete deterioration and water intrusion at the library has been noted for some time and generally consists of cracks in the concrete beams and roof slab surfaces. A preliminary condition assessment of Bidwell Plaza at the Library was conducted in 2022 by Cho Design Associates, Inc. The assessment appears to have been limited to visual observation of representative accessible concrete surfaces and does not mention structural analysis of the building. The assessment concluded that the overall structural system of the library is generally in sound condition, but that some issues need to be addressed to maintain the structural integrity of the facility. The primary recommendation was repair of cracks which exceed “reasonable” crack widths as defined in American Concrete Institute document ACI 224R-01 “Control of Cracking in Concrete Structures”.

3.4 Site Observations

Limited site observations were completed during the course of Phase 1. Conditions observed on site are consistent with those documented in previous reports and include minor-to-moderate cracking throughout the library’s main roof structure. No evidence of severe deterioration or hazardous conditions was observed. Cracking in the primary

beams and girders typically consists of inclined cracks adjacent to columns, likely due to the high shear stresses at these locations. There are signs of epoxy injection at some slab locations that were likely implemented as a repair solution for existing cracks and water infiltration. However, documents detailing the specification and extent of the repair were not available for review. Significant water intrusion occurs during rain events, requiring library staff to place tarps and buckets below active leakage zones to catch water. It also interrupted the use of a light fixture and caused failure in ceiling tiles.

4.0 DATA COLLECTION

A data collection program was developed for the project to establish existing site classification and material properties for use in the seismic evaluation. The scope consisted of review of existing building drawings, site classification by a geotechnical consultant, development of a materials testing and condition assessment program, and completion of laboratory testing.

4.1 Material Testing & Condition Assessment

A Material Testing and Condition Assessment Program ("MTCAP") was developed for the project in accordance with ASCE 41. The purpose of the MTCAP was to confirm in-situ material properties and existing construction detailing for use in the structural evaluation. The extent of investigation required for the MTCAP is defined by ASCE 41 based on the Performance Objective for the project and the available existing building documentation. The building is considered to be a Risk Category III structure and original design drawings are available, therefore, the MTCAP scope was selected based on "Usual Testing" and "Visual" Condition Assessment as defined by ASCE 41.

Table 6-1. Data Collection Requirements

	Level of Knowledge					
Data	**Minimum**		**Usual**		**Comprehensive**	
Performance Level	Life Safety (S-3) or lower		Damage Control (S-2) or lower		Immediate Occupancy (S-1) or lower	
Analysis Procedures	LSP, LDP		All		All	
Testing	No tests[a]		Usual testing		Comprehensive testing	
Drawings	Design drawings	Field survey drawings prepared in absence of design drawings	Design drawings	Field survey drawings prepared in absence of design drawings	Design drawings	Field survey drawings prepared in absence of design drawings
Condition Assessment[b]	Visual	Comprehensive	Visual	Comprehensive	Visual	Comprehensive
Material Properties	From design drawings (or documents)[c]	From default values	From design drawings (or documents) and tests	From usual tests	From design drawings (or documents) and tests	From comprehensive tests
Knowledge Factor (κ)[d]	0.9[e,f]	0.75	1.00	1.00	1.00	1.00

Note: LSP, linear static procedure; LDP, linear dynamic procedure.
[a] Except where no default material properties are provided in this standard.
[b] In the absence of sufficient component detailing information from the design drawings, missing information shall be supplemented by a comprehensive condition assessment.
[c] Where material properties are missing from the design drawings (or documents), default values may be used in conjunction with $\kappa = 0.75$.
[d] Refer to Chapters 9 through 12 for additional material-specific requirements and limitations.
[e] If the building meets the benchmark requirements of Table 3-2, then $\kappa = 1.0$.
[f] If inspection or testing records are available to substantiate the design drawings, then $\kappa = 1.0$.

ASCE 41 Table 6-1, Data Collection Requirements

The existing superstructure utilizes a single concrete strength specification: normal-weight concrete with a minimum compressive strength of 3,000 pounds per square inch. To satisfy the MTCAP criteria, the testing scope consisted of the extraction of three concrete core samples for compressive strength laboratory testing. The laboratory testing confirmed that the existing concrete strength exceeds the minimum strength specified on the original design

drawings, with an average compressive strength of approximately 3,170 pounds per square inch. The materials testing program and material test data report are provided in appendix A & B.

No testing of reinforcing steel is required by ASCE 41 for this level of testing or knowledge. Testing of slab on grade or concrete masonry unit wall material was not conducted and a Knowledge Factor reduction was taken for these items where required per ASCE 41 during the evaluation.

4.2 Geotechnical Investigation & Seismic Hazard

Existing foundation bearing capacities are noted on the as-built structural drawings. The specified values were used for the evaluation in accordance with ASCE 41 provisions.

Site classification was completed in accordance with ASCE 41 and ASCE 7 provisions for use in the seismic evaluation. The geotechnical consultant, ENGEO, evaluated published maps and databases of available shear-wave velocity over the top 100 feet or 30 meters (VS30), regional geology, and seismic hazard zones to determine that the site meets the definition of Site Class D. The letter report provided by the geotechnical consultant is provided in appendix C.

5.0 STRUCTURAL ANALYSIS

This section provides a narrative description of the structural analysis that was undertaken to evaluate the subject building. The evaluation was completed following procedures consistent with those set forth in the American Society of Civil Engineers, Structural Engineering Institute's "Standard for the Seismic Evaluation and Retrofit of Existing Buildings" (ASCE/SEI 41-17, "ASCE 41") for a Tier 3 comprehensive structural evaluation as referenced by the 2022 California Existing Building Code. The evaluation was completed using the linear analysis provisions of ASCE 41 to establish current anticipated seismic performance of the existing building's primary lateral force-resisting system (LFRS). The evaluation utilizes data gathered from the material testing program and geotechnical site classification.

5.1 Seismic Performance Objective

The evaluation investigated the structure's ability to meet the seismic Performance Objectives designated by the 2022 CEBC and ASCE 41 based on the building Risk Category, which pair a Seismic Hazard Level with a target Structural Performance Level. CEBC Table 304.3.2 stipulates the Objectives for compliance with "Reduced Seismic Forces", which are commonly applied to existing structures in the absence of an addition, alteration, or increase in Risk Category which would trigger compliance with "Full Seismic Forces".

[BS] TABLE 304.3.2
PERFORMANCE OBJECTIVES FOR USE IN ASCE 41
FOR COMPLIANCE WITH REDUCED SEISMIC FORCES

RISK CATEGORY (Based on IBC Table 1604.5)	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1E EARTHQUAKE HAZARD LEVEL	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2E EARTHQUAKE HAZARD LEVEL
I	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
II	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
III	Damage Control (S-2). See Note a	Limited Safety (S-4). See Note b
IV	Immediate Occupancy (S-1)	Life Safety (S-3). See Note c

a. For Risk Categories I, II and III, the Tier 1 and Tier 2 procedures need not be considered for the BSE-1E earthquake hazard level.
b. For Risk Category III, the Tier 1 screening checklists shall be based on the Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on *MS*-factors that are the average of the values for Collapse Prevention and Life Safety.
c. For Risk Category IV, the Tier 1 screening checklists shall be based on Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on *MS*-factors for Life Safety.

2022 CEBC Table 304.3.2

For the purposes of this voluntary evaluation, the ASCE 41 Basic Performance Objective for Existing Buildings (BPOE) was selected. This Objective is consistent with the seismic requirements set forth by other local jurisdictions (e.g.: Los Angeles, Santa Monica, etc.) for evaluation and retrofit of concrete buildings constructed prior to 1977.

In order to meet the ASCE 41 BPOE, an existing Risk Category III structure must satisfy both:

1. **"S-2" Damage Control** Structural Performance Level when subjected to the **BSE-1E Seismic Hazard**.
2. **"S-4" Limited Safety** Structural Performance Level when subjected to the **BSE-2E Seismic Hazard**.

5.2 Seismic Evaluation Methodology

Based on limited site observations the available structural drawings appear to be representative of existing construction and were therefore relied upon for definition of existing configuration and dimensions. Existing drawings have been used to define the material properties of CMU and rebar. The drawings and findings from the MTCAP were implemented in the definition of concrete material properties.

Structural evaluation of the primary LFRS of the Library building utilized both hand calculations and computer modeling using ETABS structural analysis software (Figure 3). The building's primary structural elements were mathematically modeled using full three-dimensional finite element computer models and evaluated using linear dynamic response spectrum procedures (LDP).

To evaluate the building's response to the spectral acceleration developed for the specified Seismic Hazards, the building was modeled as an assemblage of concrete beams, columns, walls, and floor/roof slabs. The structural elements were spatially configured to represent the actual geometry, mass, and stiffness properties of the as-built structure. The response of the structure to earthquake excitation at the soil-foundation interface is approximated by performing a modal analysis of the linear elastic computer model using an appropriate earthquake response spectrum and structural damping level for the input ground motion. The building was modeled as a freestanding structure, without explicit consideration of soil-structure interaction effects.

Stiffness modifiers were applied to concrete sections in the structural analysis model to represent the "cracked" sectional shear and bending stiffnesses in accordance with ASCE 41 and ACI 318 provisions. These reference documents are silent on the application of stiffness modifiers to account for post-cracking torsional stiffness, therefore, the recommendations of Bruun, et al. were utilized to assess these effects in the structural analysis model.

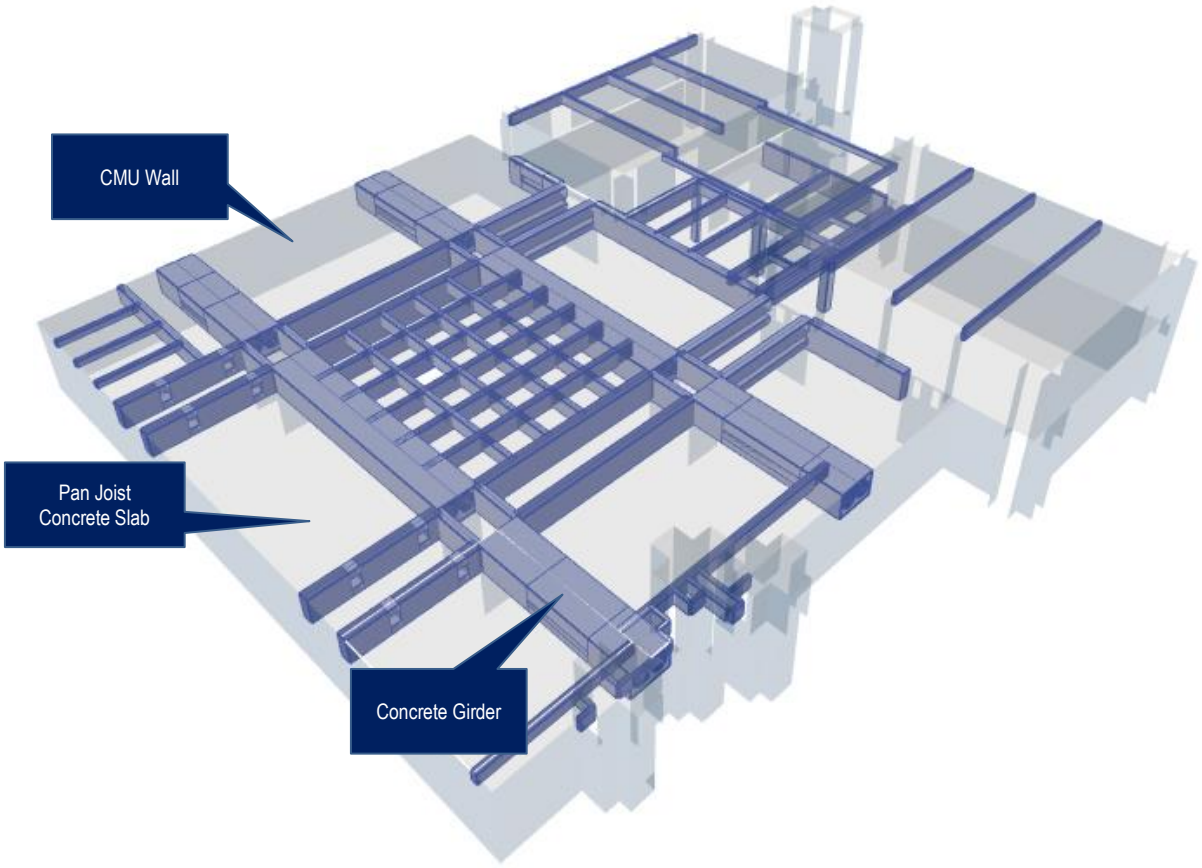


Figure 3- Overview of ETABS analysis model of Library Building

Periods and mode shapes for the building structure are computed and earthquake forces calculated for key structural elements assuming structural behavior remains linear elastic. To ensure proper distribution of seismic forces across the structure, semi-rigid diaphragm elements were utilized representing the approximate flexibility of the roof and floor diaphragms. A damping value of 5 percent for the structure was selected for the analysis as a reasonably conservative estimate for post-yield behavior under the earthquake ground motions. Sufficient mode shapes are extracted, using the Ritz vector analysis method, in order to achieve a minimum of 90-percent mass participation in both principal horizontal directions. The modal forces are combined using the complete quadratic combination (CQC) method. The dynamic forces obtained from the dynamic analysis are combined with appropriate dead and live load forces, with the resulting combined forces defined as the elastic demand force.

ASCE 41 defines a "Knowledge Factor", κ, which accounts for the level of uncertainty in the existing material properties and configuration and the target structural performance. In accordance with ASCE 41 provisions, κ=1.0 was used for concrete and rebar materials and κ=0.9 was selected for CMU material.

The calculated elastic demand force (D) for each element is then compared to the capacity (C) of that element. The ratio of the component demands to their capacity is termed the "Demand-Capacity Ratio" (DCR). The capacity of those members capable of inelastic behavior, defined by ASCE 41 as deformation-controlled behavior, is multiplied by a component modification factor to account for permissible deformations beyond yield. These modification factors

are referred to as m-factors. The capacity is further modified by the Knowledge Factor to account for uncertainty in material properties. Acceptable m-factors for various deformation-controlled component actions are defined in ASCE 41 and vary depending on the specific element type being analyzed and the performance level to which the element is being compared. Acceptable performance for deformation-controlled element behavior is denoted as when the element expected strength capacity multiplied by the appropriate m-factor and Knowledge Factor is greater than or equal to the demand from the analysis ($m*\kappa*C \geq D$). The ratio of D to $m*\kappa*C$ is termed the "Acceptance Criteria Ratio" (ACR). The element satisfies the Performance Objective when the ACR is less than 1.0.

For element behavior that is not capable of post-yield inelastic behavior, defined by ASCE 41 as force-controlled behavior, member capacity is simply calculated as the lower bound strength capacity of the member multiplied by the Knowledge Factor. Acceptable performance for force-controlled element behavior is denoted as when the element capacity is greater than or equal to the force-controlled demand which is modified by several factors, including the force-delivery reduction factor, J, which is defined in ASCE 41 and varies depending on the level of seismicity and structural performance criteria. For force-controlled elements the ACR is the ratio of the lower-bound element capacity to the force-controlled demand.

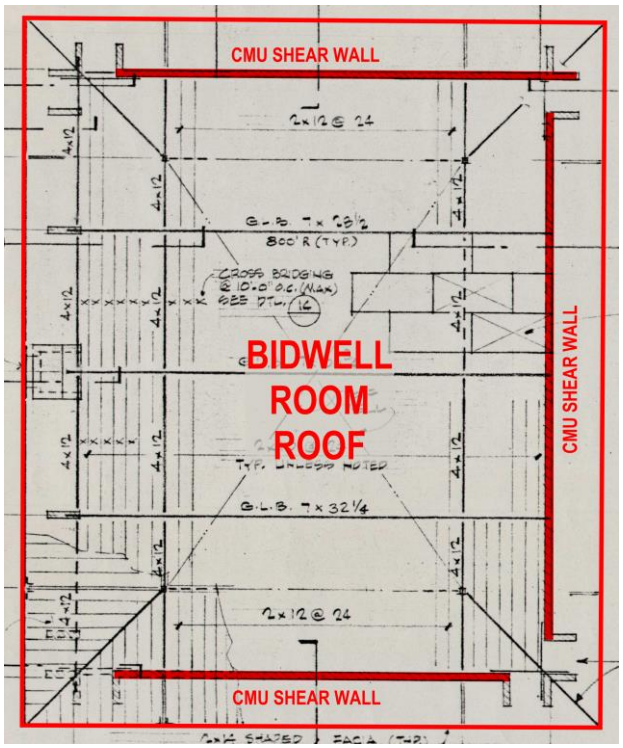
An evaluation of the global state of the various ACRs for the various structural elements (diaphragms, shear wall piers, CMU walls, and concrete columns) was completed for the specified Performance Objectives. Exceedance of the acceptance criteria for a small number of individual elements does not necessarily mean that the Building Performance objective is not satisfied as the structural system may have the ability to redistribute earthquake forces from individual failed elements without risk to the overall performance of the building. Building drifts (floor-to-floor lateral deflections caused by seismic forces) were also calculated and compared to typical ranges noted in ASCE 41.

6.0 FINDINGS

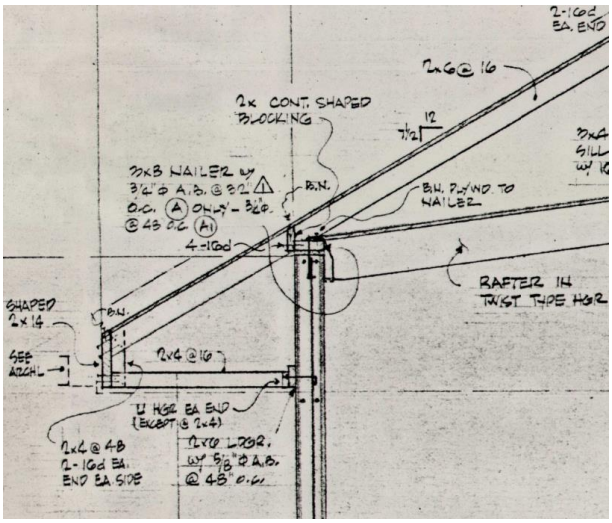
6.1 Anticipated Performance of Primary LFRS

Overall, the existing structure was found to satisfy the ASCE 41 BPOE for a Risk Category III structure and is anticipated to perform reasonably well in future seismic events. At the higher BSE-2E Seismic Hazard Level the concrete and CMU shear wall ACRs are up to 0.4 and 0.6, respectively, indicating satisfactory performance with substantial reserve capacity. Other elements of the primary LFRS elements, such as diaphragms and collectors, were found to have even lower ACRs, owing to the extensive shear walls at all four sides of the structure.

Upper-level high roofs (such as the Bidwell Room) are supported by CMU shear walls that extend from 1st level to the 2nd level on two sides. The other two sides are supported by discontinuous CMU walls which bear on plaza level concrete beams and columns. The walls have adequate capacity to support the roof for the target structural performance objective, however, wall anchorage does not fully comply with Code requirements for new construction, and the roof diaphragms utilize a "three-sided box" approach (Figure 4)which requires the plywood diaphragms to act in rotation to deliver seismic forces to the supporting walls. The "three-sided box" is not an uncommon approach where architectural requirements dictate that one side of a space be open or provided with full glazing, however, the tradeoff of this configuration is somewhat increased anticipated damage in a significant seismic event.



"Three-sided box" of Bidwell Room – CMU shear walls on three sides only



Example wall anchorage detail – no direct tension tie, wall anchorage forces resisted by plywood

Figure 4- Bidwell Room roof plan (left) and (E) CMU wall anchorage detail (right)

The anticipated lateral seismic movement, or "seismic drift" can be used as a global measure of the lateral response of the structure and is related to the level of damage that is to be expected at a given input seismic hazard. The California Building Code prescribes seismic drift limits based on building structure type and Risk Category. This is not a requirement for the existing Library building but is noted here as a frame of reference. The CBC limits are expressed as a ratio of the story height. For Risk Category III masonry cantilever shear wall buildings such as the library, the acceptable seismic drift is 0.01 times the story height, or 1%.

Table 12.12-1 Allowable Story Drift, Δ_a [a,b]

Structure	Risk Category I or II	Risk Category III	Risk Category IV
Structures, other than masonry shear wall structures, four stories or less above the base as defined in Section 11.2, with interior walls, partitions, ceilings, and exterior wall systems that have been designed to accommodate the story drifts	$0.025h_{sx}$ [c]	$0.020h_{sx}$	$0.015h_{sx}$
Masonry cantilever shear wall structures[d]	$0.010h_{sx}$	$0.010h_{sx}$	$0.010h_{sx}$
Other masonry shear wall structures	$0.007h_{sx}$	$0.007h_{sx}$	$0.007h_{sx}$
All other structures	$0.020h_{sx}$	$0.015h_{sx}$	$0.010h_{sx}$

[a] h_{sx} is the story height below level x.
[b] For seismic force-resisting systems solely comprising moment frames in Seismic Design Categories D, E, and F, the allowable story drift shall comply with the requirements of Section 12.12.1.1.
[c] There shall be no drift limit for single-story structures with interior walls, partitions, ceilings, and exterior wall systems that have been designed to accommodate the story drifts. The structure separation requirement of Section 12.12.3 is not waived.
[d] Structures in which the basic structural system consists of masonry shear walls designed as vertical elements cantilevered from their base or foundation support that are so constructed that moment transfer between shear walls (coupling) is negligible.

Allowable Story Drift per ASCE 7-16 as referenced by 2022 CBC

The seismic analysis of the library building showed that the anticipated seismic drift is well below the accepted limits as depicted below (Figure 5).

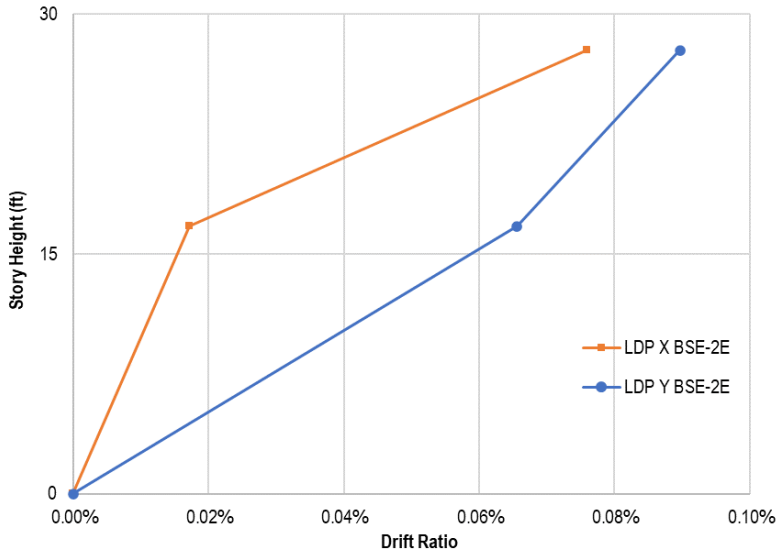


Figure 5- Linear Dynamic Procedure Seismic Drift of Library

6.2 Risk Category IV

The existing Library is considered to be a Risk Category III (RC III) structure. As noted previously, if future designation classifies the building as being required for emergency response (e.g.: emergency operations center, emergency shelter, etc.), this would trigger consideration as a Risk Category IV (RC IV) structure. In the context of seismic evaluation and retrofit, this reclassification would introduce additional, more stringent requirements for seismic performance.

The primary LFRS has substantial reserve capacity and would likely largely comply with the enhanced performance requirements associated with RC IV. Analysis of the building for RC IV has not been conducted, however, additional strengthening that would likely be required to achieve conformance with this higher standard may include:

- Addition of new shear walls to eliminate “three-sided box” conditions at the high roofs (new shear walls to be located at the open sides)
- Additional FRP wrap of beams supporting discontinuous shear walls supporting high roofs
- Increased wall anchorage requirements at high roofs
- Complete non-structural evaluation and strengthening of all components and systems (e.g. re-anchorage of mechanical equipment, etc.)

6.3 Gravity Load-Carrying Capacity

The existing library has supported its use for over 50 years. The original structural drawings note that the structure was designed for a non-reducible Live Load of 100 pounds per square foot. Additionally, the following "Special Note" is provided on the original foundation plan (Figure 6):

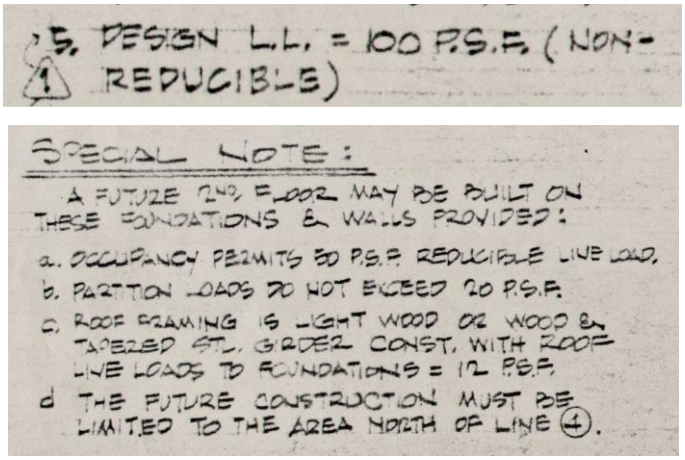


Figure 6- Design Live Load and "Special Note" from Existing Structural Drawings

Due to the observed existing cracking in the plaza framing and the consideration of additional loads imposed by a future second story addition, the existing gravity load-carrying system was reviewed in order to determine if strengthening was warranted to ensure adequate performance for the building's ongoing and future use. It was determined that some existing girders and pad footings do not fully satisfy current Code provisions for gravity design.

6.3.1 Plaza Girder Torsion

As a result of continuous research and observations of poor performance during seismic events, building Code requirements for seismic design have changed dramatically since the original design of the building. Conversely, gravity load-carrying elements of buildings have historically performed well, and as a result overall Code gravity provisions have not changed significantly since the building's original design.

One notable exception is the introduction of torsion design provisions for concrete framing members. Torsion is essentially the twisting of a member about its longitudinal axis, which results in diagonal tension forces similar (and additive) to those caused by vertical beam shear forces. Torsion is naturally present in monolithic cast-in-place concrete structures and can be induced by unbalanced loadings on either side of a concrete beam, such as occurs in many locations within the Library framing.

Despite the fact that torsion exists in all monolithic concrete structures, detailed provisions for design of concrete members to resist torsion were not introduced until the adoption of the 1973 Uniform Building Code (UBC). As a result, limited-to-no consideration of torsion was likely incorporated into the design of the Library concrete framing members, which were constructed before the adoption of the 1973 UBC.

The torsion design philosophy in current Code provisions uses a "thin-walled tube space truss analogy" (Figure 7). Essentially, torsion stresses on a concrete member are idealized as shear forces in the walls of a tube. High torsion stresses can result in inclined cracking on all faces of a beam, spiraling around the perimeter of the member. To

resist torsion forces and/or control the cracking, transverse steel reinforcement in the form of closed stirrups (ties) and distributed longitudinal steel reinforcement referred to as “skin” reinforcement are commonly used.

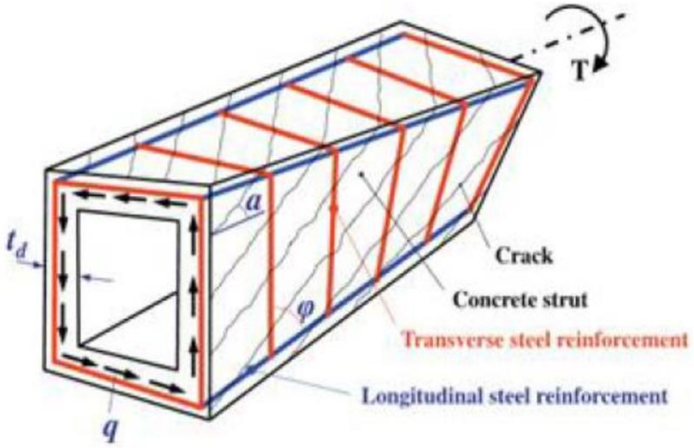


Figure 7- Visualization of Torsion & Torsion Cracks

The design philosophy in the building Code (specifically ACI 318) considers two torsion conditions:

1. equilibrium torsion, where torsional forces must be resisted by a specific member otherwise the structure is unstable, and;
2. compatibility torsion, where torsional forces can be redistributed to and resisted by other elements

An equilibrium torsion deficiency would need to be urgently addressed. Fortunately, torsion effects on the Library plaza framing would be considered compatibility torsion, as torsion in the plaza girders can readily be redistributed to the in-framing slabs, beams, and pan joists. In the case of compatibility torsion, the primary goal of Code torsion design provisions is to limit the width of torsional cracks.

Current provisions for resisting compatibility torsion include prescriptive detailing requirements (i.e.: they are rules for proportioning the reinforcement that are somewhat independent of the design loads) and investigation of redistribution of torsional moments to adjacent members as a result of member cracking. The prescriptive detailing requirements include the closed stirrups, longitudinal bars distributed around a section with a maximum spacing, minimum spacing of the ties, minimum area of the longitudinal bars, and proper anchorage of the longitudinal bars. Since the Library was designed before these provisions were included in the building Code, the plaza framing does not comply with all of these prescriptive detailing requirements.

Specifically, the plaza girders do not satisfy the requirements for a minimum area of closed stirrups or a maximum spacing of distributed longitudinal bars. The original structural drawings show that 8’-wide girders with the embedded mechanical ducting have #5 longitudinal bar at each side of the beam (Figure 8), and 2’-wide girders have only top and bottom longitudinal rebars without any skin reinforcement. Stirrups consist of an unconventional two-piece configuration that does not provide a continuous shear flow load path to resist torsion.

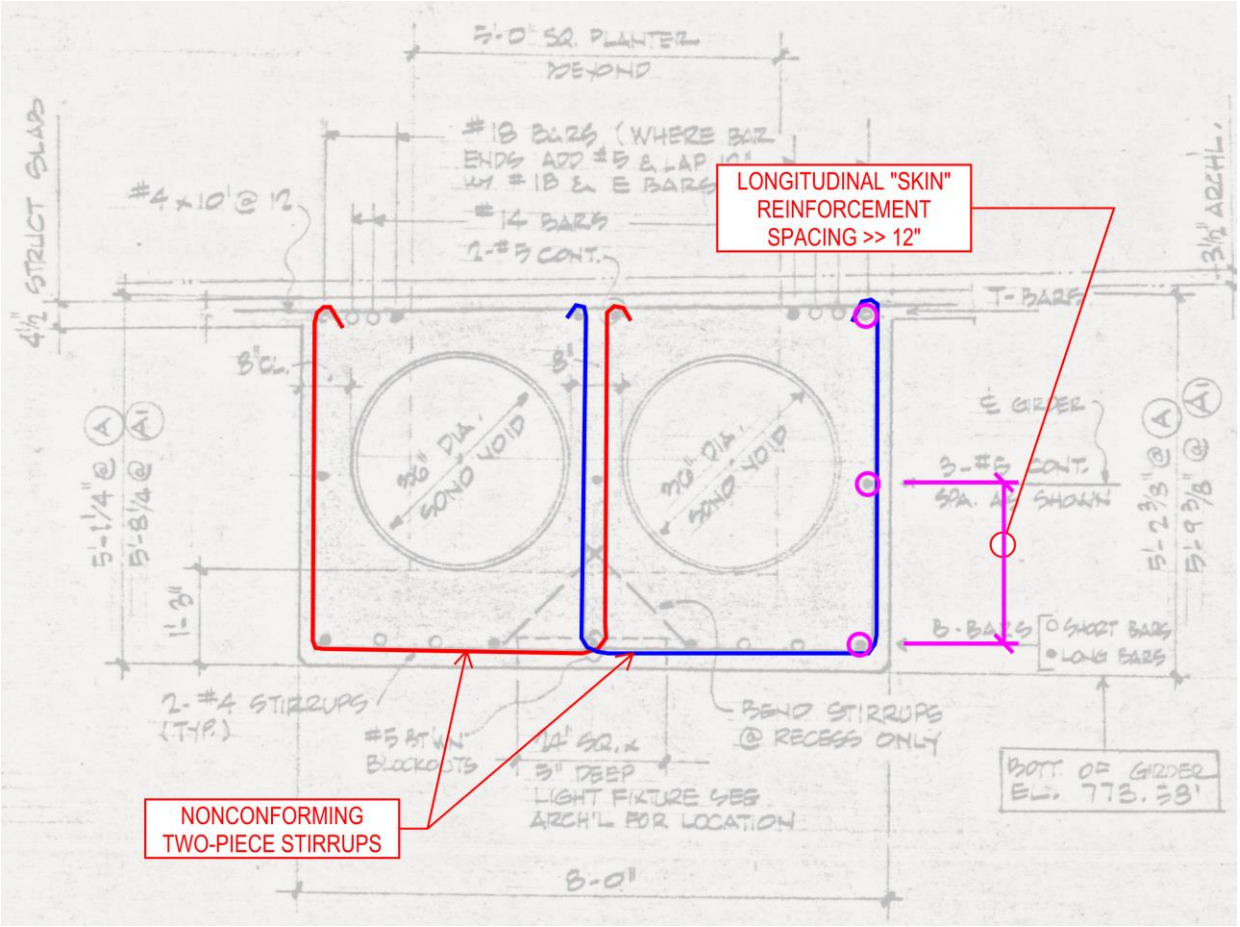


Figure 8- Example existing plaza girder section with torsional considerations noted

These detailing deficiencies could potentially be a contributing factor to the cracking observed in the plaza girders, however, it should be noted that the crack profiles are more consistent with typical beam shear cracking than with torsional cracking, as the cracks do not spiral around the full beam perimeter surface (Figure 7).

6.3.2 Interior Pier Combined Foundations

Main plaza girders are supported by four pairs of large concrete piers. Each pair is supported by a shared concrete pad footing (Figure 9).

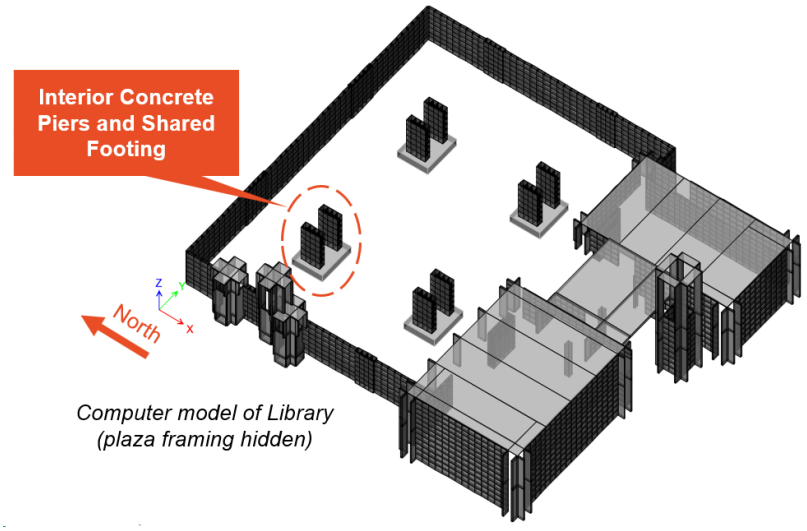


Figure 9- Interior Concrete Pier and Footing Overview (ETABS Model)

These footings would be utilized to support a future roof over the plaza. Given the "Special Note" on the existing plans, which suggests that these footings were designed for additional future loads, these footings were evaluated to verify their reserve capacity.

Unfortunately, it was determined that the footings do not have reserve capacity and the allowable soil bearing capacity would be exceeded if the 100 psf non-reducible design live load is considered. This is due to the fact that the resultant of all the gravity loads acting on the foundation is not concentrically located above the middle of the footing, it is slightly offset toward the center of the plaza. This offset creates a non-uniform bearing pressure that peaks at one corner of the footings (Figure 10). This peak pressure exceeds the allowable bearing pressure by approximately 20% at the highly loaded corner.

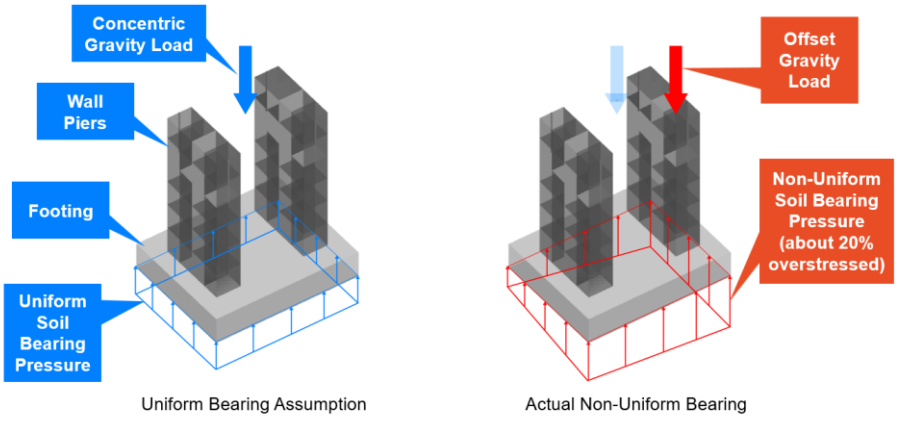


Figure 10- Non-Uniform Bearing Condition Visualization

6.4 Cracks and Water Intrusion

Water intrusion primarily through the plaza level has been noted throughout the life of the structure. There are signs of previous epoxy injection at some plaza slab locations that were likely implemented as a repair solution for existing cracks and water infiltration. In addition, the plaza surface was demolished and reconstructed in the early 2000s, with work consisting of removal of the existing 3.5" topping slab and waterproofing membrane, and installation of a new membrane and 2.5" topping slab.

Based on recent observations of water intrusion during the past rainy season it is our opinion that the plaza waterproofing membrane may have failed. A waterproofing membrane is intended to prevent water penetration into the building. When the membrane fails, it allows water to seep through and reach the underlying layers.

Waterproofing membranes deteriorate over time due to various contributing factors such as improper surface preparation prior to installation, insufficient coverage, faulty membrane overlaps, damage during installation, or poor drainage leading to standing water on the membrane and resulting deterioration. Significant cracking of the concrete substrate may contribute to failure of the membrane.

It appears that membrane failure is allowing water to penetrate through the concrete, which has common hairline cracks due to thermal expansion as well as the larger cracks noted in previous studies. Over time, water seepage may result in rebar corrosion and concrete spalling and could present a safety concern. Although no condition which indicates a safety concern has been observed at this time, the water intrusion should be addressed to prevent future deterioration of the concrete framing.

7.0 RECOMMENDATIONS

7.1 Seismic Strengthening

The primary elements of the LFRS satisfy the ASCE 41 BPOE for a Risk Category III structure. Strengthening of the primary LFRS does not appear warranted at this time. Wall anchorage connections between the upper-level high roofs and supporting CMU walls do not comply with current code and are vulnerable to damage in a significant seismic event. Although not required by Code or Ordinance at this time, supplemental wall anchorage connections (e.g.: holddowns with threaded rods set in adhesive connecting the walls to the roof framing) could be provided to improve anticipated seismic performance.

7.2 Gravity Strengthening

It was determined that although the structure has demonstrated its ability to support the daily sustained service loads over the past 50 years, some existing girders and pad footings do not fully satisfy current Code provisions for gravity design. When considering the full 100 psf non-reducible design live load stated on the original structural drawings, several main concrete girders do not satisfy current Code provisions for torsion, and stresses underneath the existing pad footings supporting the interior concrete piers marginally exceed the allowable soil bearing pressure.

Strengthening to bring the structure into compliance with Code provisions for torsion should be implemented if a change in occupancy or loading is proposed, such as the addition of a new roof/story over the plaza. Additionally, strengthening should be completed if it is desired to bring the existing plaza into conformance with current Code requirements to support the 100 psf design live load stated on the original structural drawings. Strengthening would consist of the application of fiber-reinforced polymer overlay on the existing beams to provide supplemental torsional and shear strength. Structural drawings depicting conceptual strengthening measures are provided in Appendix D. Full Construction Documents should be developed as part of a future phase for the strengthening.

In consideration of this finding, it is important to note that the Library plaza has likely never been subjected to 100 psf of live load. To visualize 100 psf, consider the following scenarios which are each approximately equivalent to 100 psf of live loading:

- Three layers of Ford F-150s stacked on top of each other throughout the plaza
- The plaza entirely full of 200 lb individuals, about 7,000 people total, standing shoulder to shoulder
- Just over 19 inches of standing water

It is our opinion that use of the library can continue, however, given that the plaza framing does not fully satisfy 2022 CBC requirements, superimposed loads on the plaza (whether from occupants or temporary construction) should be limited to 40 psf maximum until the recommended strengthening measures can be implemented. This recommended restriction likely exceeds the loading currently being applied by various uses and events. A 40 psf loading equates to approximately 2,800 people evenly distributed throughout the exterior plaza. However, since uniform distribution cannot be assured, a maximum occupancy of 1,000 people may be a practical limit.

7.3 Water Intrusion Mitigation

Due to the interruption to operations and potential future structural deterioration caused by continued water intrusion, it is recommended that repairs be completed to mitigate future water intrusion. Repair measures depicted

in the provided conceptual structural repair plans consist of the removal and replacement of the existing plaza topping slab and waterproofing membrane, and existing larger cracks in the concrete slab, beams and girders should be repaired through epoxy-injection before placing the new membrane. To ensure that the root cause of the water intrusion is identified and properly addressed, it is recommended that a waterproofing expert be engaged in future phases to assess the existing conditions of the waterproofing assembly and provide recommendations for repair or replacement. For the purposes of this feasibility study a budgetary estimate is provided for full removal and replacement of the topping and membrane and epoxy injection of existing cracks.

7.4 Cost Estimate

Budgetary numbers for the conceptual strengthening and repair work were provided by Cumming. Estimates of repair costs are necessarily broad at this conceptual/feasibility phase and may be refined in future phases as the design progresses. The probable cost of the high roof wall anchorage strengthening is anticipated to be on the order of $50,000, and it is recommended that this be considered to fit within the gravity load repair budget.

The costs include consideration for the impacts of access to repair locations and for restoration of finishes, and assume the Library is unoccupied during the construction. The costs have been escalated to an assumed construction start date of November 2023. Soft costs, including design consultant fees, plan-check and permit fees, etc., would be in addition to the budgetary numbers provided in the cost estimate.

Estimated Construction Costs are as follows:

Gravity Load Repairs & High Roof Wall Anchorage Strengthening	$2,176,365
Topping Slab and Membrane Replacement	$ 690,901
TOTAL Direct Construction Cost	$2,867,266

We trust that this report satisfies your immediate needs for Phase 1 of this feasibility study and we thank you for the opportunity to be of continued service to the City of Glendora. Should you have any questions, please feel free to contact our office.

Reihaneh Sarraf, Ph. D., S.E. CA S7141
Senior Project Engineer / Engineering Analyst

Kyle D. White, S.E. CA S6033
Project Manager

Lance Kenyon, M.S., S.E. CA S3399
Principal

APPENDIX A: Materials Testing Program

STRUCTURAL MATERIALS TESTING PROGRAM

FOR THE

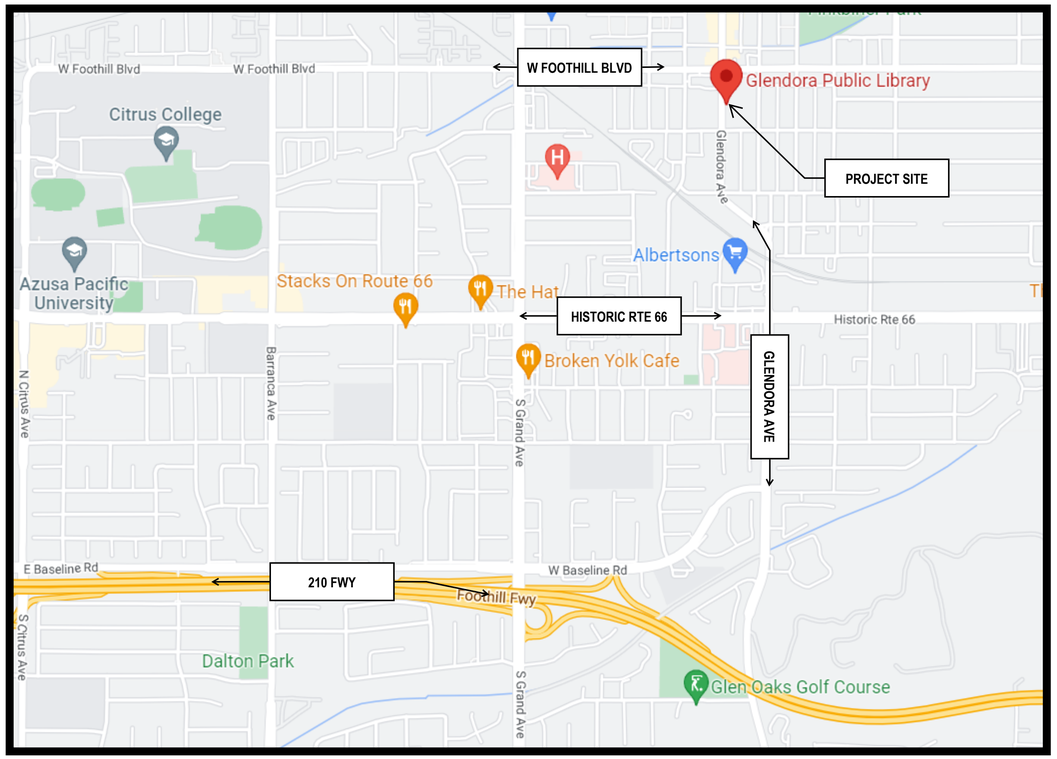
SEISMIC EVALUATION

OF

GLENDORA PUBLIC LIBRARY

140 GLENDORA AVE

GLENDORA, CA 91741



SITE VICINITY MAP



SITE AERIAL VIEW

STRUCTURAL ENGINEER

MHP STRUCTURAL ENGINEERS

3900 Cover Street
Long Beach, CA 90808
562.985.3200 P
562.985.1011 F

PROJECT INFORMATION

Testing Program

Seismic Evaluation

GLENDORA PUBLIC LIBRARY

140 GLENDORA AVE,
GLENDORA, CA 91741

CLIENT INFORMATION

CITY OF GLENDORA

116 E. FOOTHILL BLVD.,
GLENDORA, CA 91741

SUBMITTALS AND REVISIONS

ISSUE DATE:	02-23-2023
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APPROVAL

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SHEET INFO

JOB NUMBER:	22-0647-00
DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW / LRK
SCALE:	

SHEET TITLE

SHEET NUMBER

S-0.1

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TESTING PROGRAM GENERAL NOTES

CODE OF RECORD:	• SEI/ASCE 41-17 SEISMIC EVALUATION AND RETROFIT OF EXISTING BUILDINGS
TESTING CRITERIA:	• PER ASCE 41-17 TABLE 6-1 • "USUAL" LEVEL OF KNOWLEDGE • "VISUAL" CONDITION ASSESSMENT • "USUAL" TESTING (PROPERTIES FROM DRAWINGS AND USUAL TESTS)
TARGET KNOWLEDGE FACTOR:	• k = 1.00
CONCRETE TESTING REQUIRED:	• EXISTING STRUCTURAL DRAWINGS IDENTIFY CONCRETE STRENGTH FOR COLUMNS, SLAB, JOISTS, AND GIRDERS o ONE (1) CORE REQUIRED FROM EACH STRENGTH OF CONCRETE o MINIMUM THREE (3) CORES FOR ENTIRE STRCUTURE REFERENCE: ASCE 41-17 SECTION 10.2.4 ITEM 2
REINFORCING STEEL TESTING REQUIRED:	• EXISTING STRUCTURAL DRAWINGS IDENTIFY STEEL REINFORCEMENT STRENGTH o NO STEEL REINFORCING TESTING PROPOSED.

CONCRETE MATERIAL TESTING BY ELEMENT

ELEMENT	SPECIFIED f'c	TESTING	LEVEL	NOTES
GIRDERS	3,000 PSI	3 CORES	FROM UPPER LEVEL FRAMING PLAN	
TOTAL		**3 CORES**		

GENERAL PROJECT TESTING REQUIREMENTS:

1. ALL QUESTIONS REGARDING TESTING AND SAMPLING PROCEDURES SHALL BE DISCUSSED WITH MHP, INC. PRIOR TO COMMENCEMENT OF WORK. CONTACT KYLE WHITE OR LANCE KENYON AT (562) 985-3200.

2. A PRE-TESTING SITE WALK IS REQUIRED TO BE COMPLETED WITH MHP PRIOR TO COMMENCEMENT OF THE WORK. TESTING LOCATIONS WILL BE IDENTIFIED AND CONFIRMED.

3. THE TESTING CONTRACTOR SHALL PROVIDE A SCHEDULE OF SAMPLING AND REPAIRS TO MHP, INC. AT LEAST **5 WORKING DAYS** PRIOR TO COMMENCEMENT OF THE WORK. TESTING DATES AND TIMES WILL BE SCHEDULED BY MHP, INC. IT IS ANTICIPATED THAT THE TESTING WILL BE REQUIRED TO BE PERFORMED ON EARLY MORNINGS. CONTRACTOR SHALL COORDINATE WITH CITY TO HAVE ACCESS TO THE LIBRARY AT THE PREFERRED TIME.

4. TESTING CONTRACTOR SHALL OBTAIN ALL SAMPLES AS INDICATED, COMPLETE ALL TESTS AND SHALL RESTORE ALL TESTING LOCATIONS TO THE ORIGINAL CONDITION. ALL WORK SHALL BE COMPLETED IN ACCORDANCE WITH THE REFERENCED PLANS AND DETAILS. ALL FINISHES SHALL BE RESTORED TO THEIR ORIGINAL APPEARANCE TO MATCH EXISTING FINISHES INCLUDING WATERPROOFING, COLOR, TEXTURE, AND ANY OTHER APPEARANCES.

5. TESTING CONTRACTOR SHALL ISOLATE EACH TEST AREA AS REQUIRED TO CONTROL ALL DUST – THIS REQUIREMENT SHALL BE STRICTLY ENFORCED. ALL DUST AND DEBRIS WITHIN THE ENCLOSED TEST AREA AND ANY DUST OR DEBRIS THAT EXTENDS BEYOND TEST AREA SHALL BE THOROUGHLY CLEANED FROM ALL SURFACES AT CONTRACTOR'S EXPENSE. ALL DUST, DEBRIS, WASTE, ETC. SHALL BE REMOVED FROM JOBSITE AND ALL CONDITIONS SHALL BE RETURNED TO PRE-SAMPLING CONDITION.

6. RESULTS OF TESTING SHALL BE SUBMITTED TO MHP, INC. WITHIN 15 WORKING DAYS.

7. VERIFY SPECIFIC TESTING LOCATIONS WITH MHP, INC. PRIOR TO CORING, DRILLING, CUTTING, ETC.

CONCRETE TESTING

1. GENERAL CONCRETE TESTING LOCATIONS ARE IDENTIFIED ON PLAN. EXACT LOCATIONS OF TESTING ARE TO BE DETERMINED IN THE FIELD BY THE TESTING CONTRACTOR IN CONSIDERATION OF EXISTING NON-STRUCTURAL CONDITIONS (FINISHES, MECH/ELEC COMPONENTS, ETC.) AND LOCATIONS OF EXISTING REBAR/STRAND. TESTING CONTRACTOR TO PROVIDE DETAILED PROPOSED TESTING LOCATIONS TO SEOR FOR REVIEW PRIOR TO REMOVING SAMPLES.

2. EXISTING REBAR/STRAND SHALL NOT BE DAMAGED IN ANY WAY DURING THE COURSE OF THE TESTING PROGRAM. EXISTING REBAR/STRAND IS TO BE LOCATED BY NON-DESTRUCTIVE METHODS (SUCH AS PACHOMETER OR RADAR IMAGING) PRIOR TO CORING FOR TEST SAMPLES.

3. TESTING SHALL CONSIST OF REMOVAL OF CONCRETE CORE SAMPLES FOR COMPRESSIVE STRENGTH TESTING. CORE SAMPLES SHALL BE TESTED IN ACCORDANCE WITH ASTM C42/C42-03. MINIMUM CORE DIAMETER SHALL BE BASED ON AN ASSUMED COARSE AGGREGATE SIZE OF 1 INCH.

4. DENSITY OF CORE SAMPLES SHALL BE DOCUMENTED FOR VERIFICATION OF LIGHTWEIGHT OR NORMALWEIGHT MATERIAL.

5. AFTER SAMPLES ARE REMOVED, FILL HOLES WITH HIGH STRENGTH NON-SHRINK GROUT WITH MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 8,000 PSI. RESTORE FINISHES TO ORIGINAL CONDITION IN ACCORDANCE WITH GENERAL PROJECT TESTING REQUIREMENTS.

STRUCTURAL ENGINEER
MHP
STRUCTURAL ENGINEERS
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562.985.1011 F

PROJECT INFORMATION

Testing Program

Seismic Evaluation

GLENDORA PUBLIC LIBRARY

140 GLENDORA AVE,
GLENDORA, CA 91741

CLIENT INFORMATION

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DRAWN:	RS
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SCALE:	

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SHEET NUMBER

S-1.0

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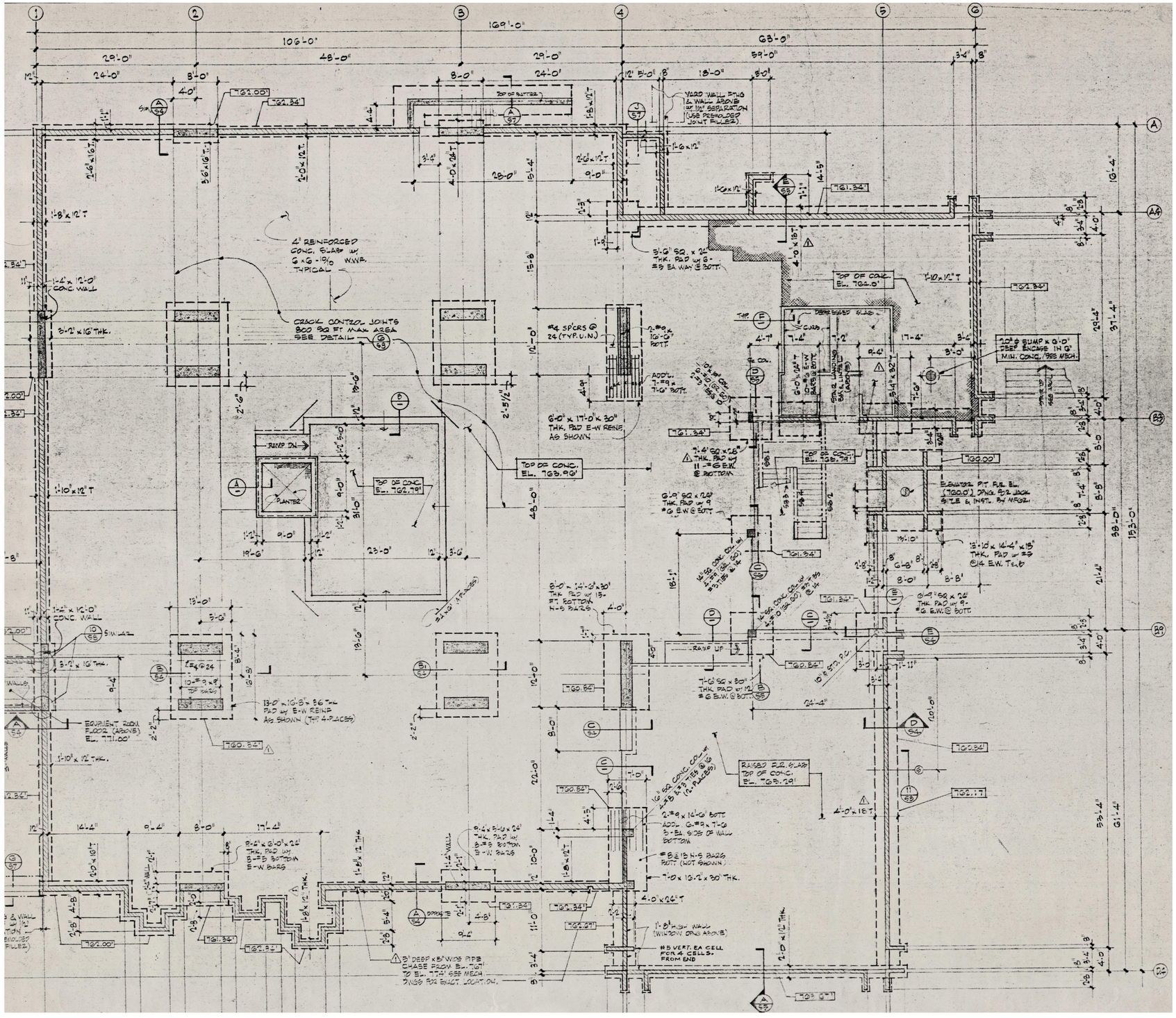

FOUNDATION AND LOWER FLOOR PLAN

(NO WORK)

STRUCTURAL ENGINEER
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SAMPLING LOCATIONS, LOWER FLOOR PLAN

SHEET NUMBER

S-2.0

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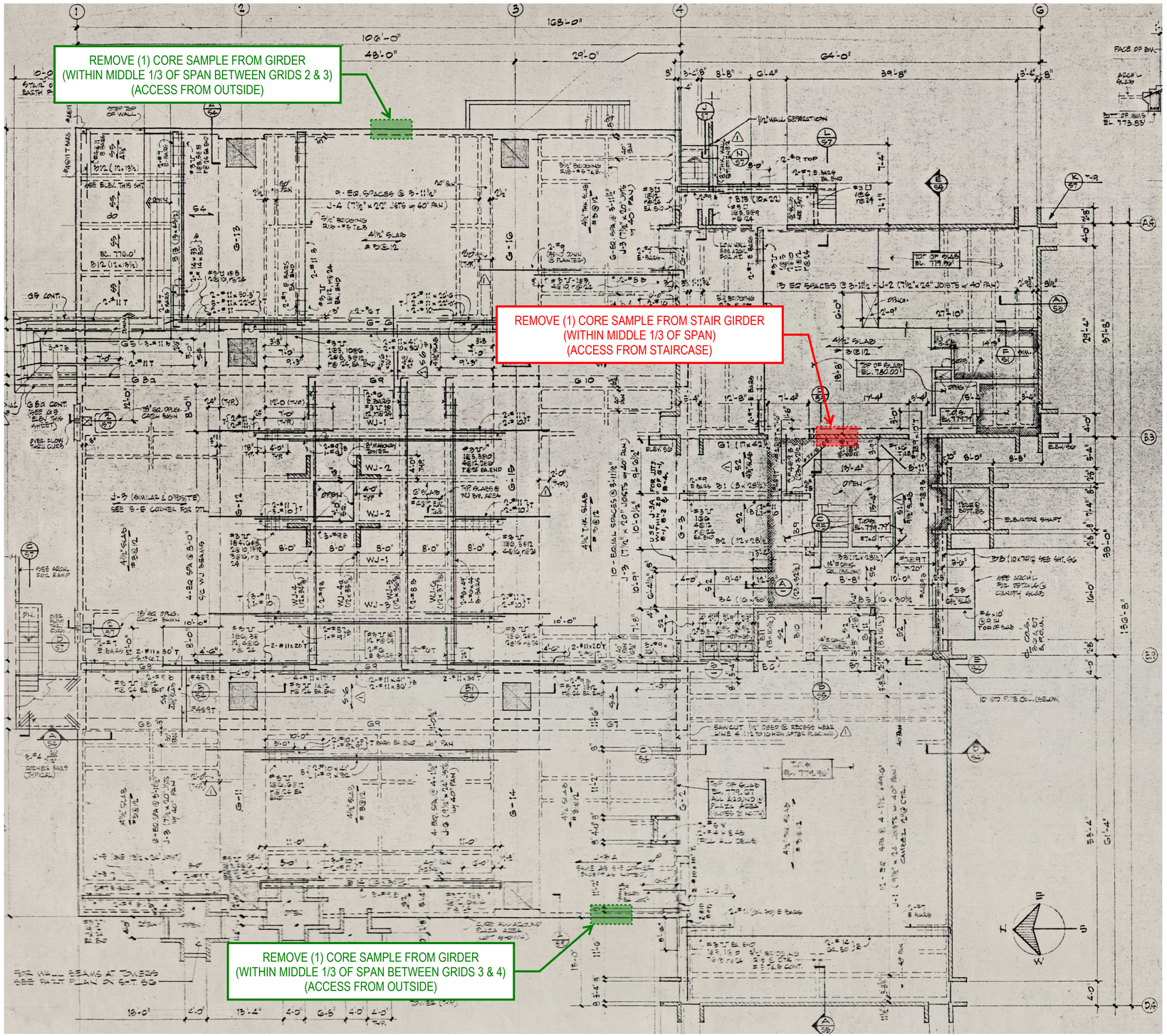

NOTE!

-- SEE S-1.0 FOR SAMPLE QUANTITY AND ADDITIONAL INFORMATION.

-- MULTIPLE SAMPLING CORES SHALL NOT BE TAKEN FROM THE SAME ELEMENTS.

-- DO NOT DAMAGE EXISTING REBAR! LOCATE REBAR VIA ON-DESTRUCTIVE MEANS PER GENERAL NOTES.

-- COORDINATE LOCATION OF TESTING WITH PROPERTY MANAGER AND MHP.

-- SUBMIT PROPOSED TESTING LOCATION SHOP DRAWINGS TO MHP (MAY USE THESE DRAWINGS AS TEMPLATE).

UPPER FLOOR FLOOR FRAMING PLAN

(CONCRETE GIRDER SAMPLES TAKEN FROM FLOOR FRAMING, EXCEPT STAIR GIRDER, REFER TO S-3.0)

STRUCTURAL ENGINEER

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STRUCTURAL ENGINEERS
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SAMPLING LOCATIONS, UPPER FLOOR PLAN

SHEET NUMBER

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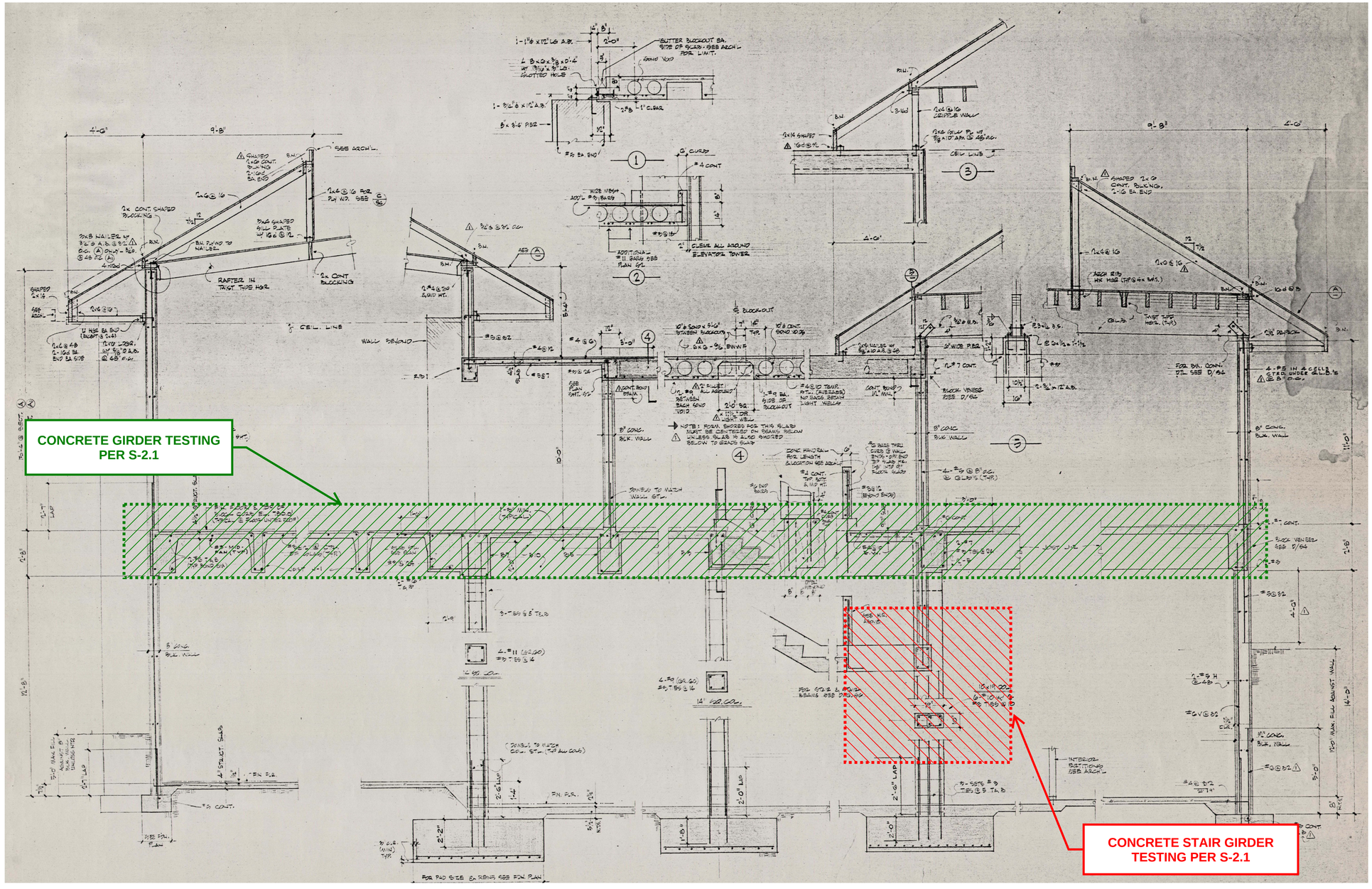

BUILDING TESTING SECTION

NOTES:
SEE S-1.0 FOR GENERAL NOTES AND SAMPLE QUANTITY

STRUCTURAL ENGINEER
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DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW / LRK
SCALE:	

SHEET TITLE

SAMPLING LOCATIONS, BUILDING SECTION

SHEET NUMBER

S-3.0

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APPENDIX B: Material Test Data Report

ACCU-TEST STRUCTURAL LABORATORIES, INC.
TESTING • INSPECTION • ENGINEERS • RESEARCH
Tel: 818.591.3555
23915 Ventura Boulevard | Calabasas, CA 91302
Fax: 818.591.3560

March 23, 2023

Mr. Kyle D. White, S.E. | Project Manager
MHP Structural Engineers
3900 Cover Street
Long Beach, CA 90808

Subject: Glendora Public Library, 140 Glendora Ave, Glendora, CA
Onsite Structural Investigations and Laboratory Materials Testing

Dear Mr. White:

We are pleased to have completed our testing assignment related to the subject project in accordance with your instructions and authorization. Enclosed please find the results of structural investigations and testing conducted recently for the subject project. Details related to the operations carried out at the site, and the results of laboratory work performed are presented in the attached report.

As directed, the tests were carried out in conformance with the given specifications, and per applicable ASTM standards. Under the direction of our qualified testing engineers, the tests were carefully conducted by competent technicians. Our professional services have been performed using the degree of care and skill ordinarily exercised under similar circumstances by reputable testing agencies practicing in this locality. No other warranty, expressed or implied, is made as to the information presented in this report.

We are grateful for this opportunity to render our engineering laboratory services. Should you have any questions, or if we may be of further assistance, please contact this office.

Very Truly,
ACCU-TEST ENGINEERING LABORATORIES, INC.

By: _____
Satinder S. Sethee, Ph.D.
Director, Structural Testing

SS:ss

Enclosure: Test Report No. 2303311 (5 pages)

ACCU-TEST STRUCTURAL LABORATORIES, INC.
23915 Ventura Boulevard, Calabasas, California 91302-1445

Subject:	Physical Properties of Core Samples from Concrete Members	**Test ID:**	Girders (f'c, Uw)
	Glendora Library, 140 Glendora Ave., Glendora, California	**Test Dates:**	3/13-17/2023
Report By:	Rod R./AA,FF/rr,ss	**Checked By:**	S. Sethee, Ph.D.

CONCRETE CORE SAMPLING AND LABORATORY TESTS

1. Type of Test: Compressive Strength and Unit Weight of concrete from drilled core samples

2. Test Sample: Cylindrical core specimens from concrete members

3. Sample Source: The concrete core specimens were extracted by Accu-Test staff with the help of a water-cooled diamond core-drilling machine from various reinforced concrete structural members of the subject multi-story commercial building with basement.

4. Sample Location: Concrete core test samples were obtained from the concrete wall in the basement. The cores were drilled-out from locations specified by the Engineer of Record, and/or Project Manager at site.

5. Sampling Procedure: In accordance with the given project specifications, and per standard operating procedures, the field sampling process was carried out essentially in the following four steps.

(1) **Set Up.** In each specified concrete sampling area, set up a suitable workstation with necessary instruments and equipment.

(2) **Radar.** Conduct Radar and Pachometer scanning over the proposed test areas to non-destructively determine the locations of embedded reinforcing steel. Mark detected reinforcement, in the two orthogonal directions, in the immediate surroundings of the given concrete core location.

(3) **Core-Drill.** Mark a suitable reinforcement-free core extraction location in the scanned test area. Set up core drilling rig. Per EOR specifications, diamond core drill approximately 3" to 4" diameter hole to extract a testable concrete core sample from each location. In general, per standard specifications and as far as practical, attempt was made to obtain cores with the diameter no less than three times the maximum aggregate-size in the concrete being sampled, and the core-length possibly close to twice the diameter of the core. Only those samples that were at least as long as the diameter of the core, revealed no defect, and appeared acceptable per ASTM, were used for laboratory testing.

(4) **Patch.** Using specified high-strength non-shrink grout, each core hole was filled solid and given a suitable finish, in accordance with the provided project specifications.

6. EOR: Mr. Kyle D. White, S.E. | **MHP Structural Engineers**
3900 Cover Street | Long Beach, CA 90808-1773

ACCU-TEST STRUCTURAL LABORATORIES, INC.
23915 Ventura Boulevard, Calabasas, California 91302-1445

Subject:	Physical Properties of Core Samples from Concrete Members	**Test ID:**	Girders (f'c, Uw)
	Glendora Library, 140 Glendora Ave., Glendora, California	**Test Dates:**	3/13-17/2023
Report By:	Rod R./AA,FF/rr,ss	**Checked By:**	S. Sethee, Ph.D.

Laboratory Notes

1. Specifications: (1) ASTM Standard C-39 (2) ASTM Standard C-42
(3) Project/EOR Specifications

2. Conditioning: The test samples were stored and tested at normal indoor laboratory conditions (75º F ±, 50% ± relative humidity) in a dry state, as instructed.

3. Capping: Each concrete core sample was capped using high-strength fast-setting hydro-stone gypsum cement, or sulfur mortar. Because each specimen was capped, diameter tolerances do not apply.

Table 1.1 Results of Laboratory Tests on Core Specimens from Concrete Girders

DESCRIPTION	CORE #1	CORE #2
Laboratory Core ID	C-1, Stair Girder	C-2, Outside Girder
Core Location (See Appendix "A")	At Grid "B.3x5"	East, Grid "2-3"
Date Cored	03/13/23	03/13/23
Date Tested	03/17/23	03/17/23
Maximum Aggregate Size (Nominal), inches	3/4" ±	3/4" ±
Length of Uncapped Core Specimen Tested, inches	5.63	5.50
Length of Capped Core Specimen Tested, inches	6.00	5.88
Core Diameter, inches	3.24	3.24
Cross-Sectional Area, sq. in.	8.24	8.24
Maximum Load, pounds	26,700	26,100
Compressive Strength, psi	3,238	3,166
Length to Diameter Ratio	1.85	1.81
Strength Correction Factor	0.988	0.985
Corrected Compressive Strength, psi	**3,200**	**3,118**
Unit Weight of Core Specimen, pcf (Approximate)	**147**	**147**
Concrete Modulus of Elasticity, Ec, ksi	3,316	3,287
Fracture Type in Compression Test (per ASTM C39)	Type 3	Type 2

Note: *1. The L/D correction factors given above are linearly interpolated from the base values tabulated in ASTM Standards C-42.*
2. The concrete modulus of elasticity (Ec) reported above is based upon formulation given in ACI 318-8.
3. The noted "Fracture Type" conforms to the typical fracture patterns defined in ASTM Standards C-39.

PRELIMINARY

ACCU-TEST STRUCTURAL LABORATORIES, INC.
23915 Ventura Boulevard, Calabasas, California 91302-1445

Subject:	Physical Properties of Core Samples from Concrete Members	**Test ID:**	Girders (f'c, Uw)
	Glendora Library, 140 Glendora Ave., Glendora, California	**Test Dates:**	3/13-17/2023
Report By:	Rod R./AA,FF/rr,ss	**Checked By:**	S. Sethee, Ph.D.

Laboratory Notes

1. Specifications: (1) ASTM Standard C-39 (2) ASTM Standard C-42
(3) Project/EOR Specifications

2. Conditioning: The test samples were stored and tested at normal indoor laboratory conditions (75º F ±, 50% ± relative humidity) in a dry state, as instructed.

3. Capping: Each concrete core sample was capped using high-strength fast-setting hydro-stone gypsum cement, or sulfur mortar. Because each specimen was capped, diameter tolerances do not apply.

Table 1.2 Results of Laboratory Tests on Core Specimens from Concrete Girder

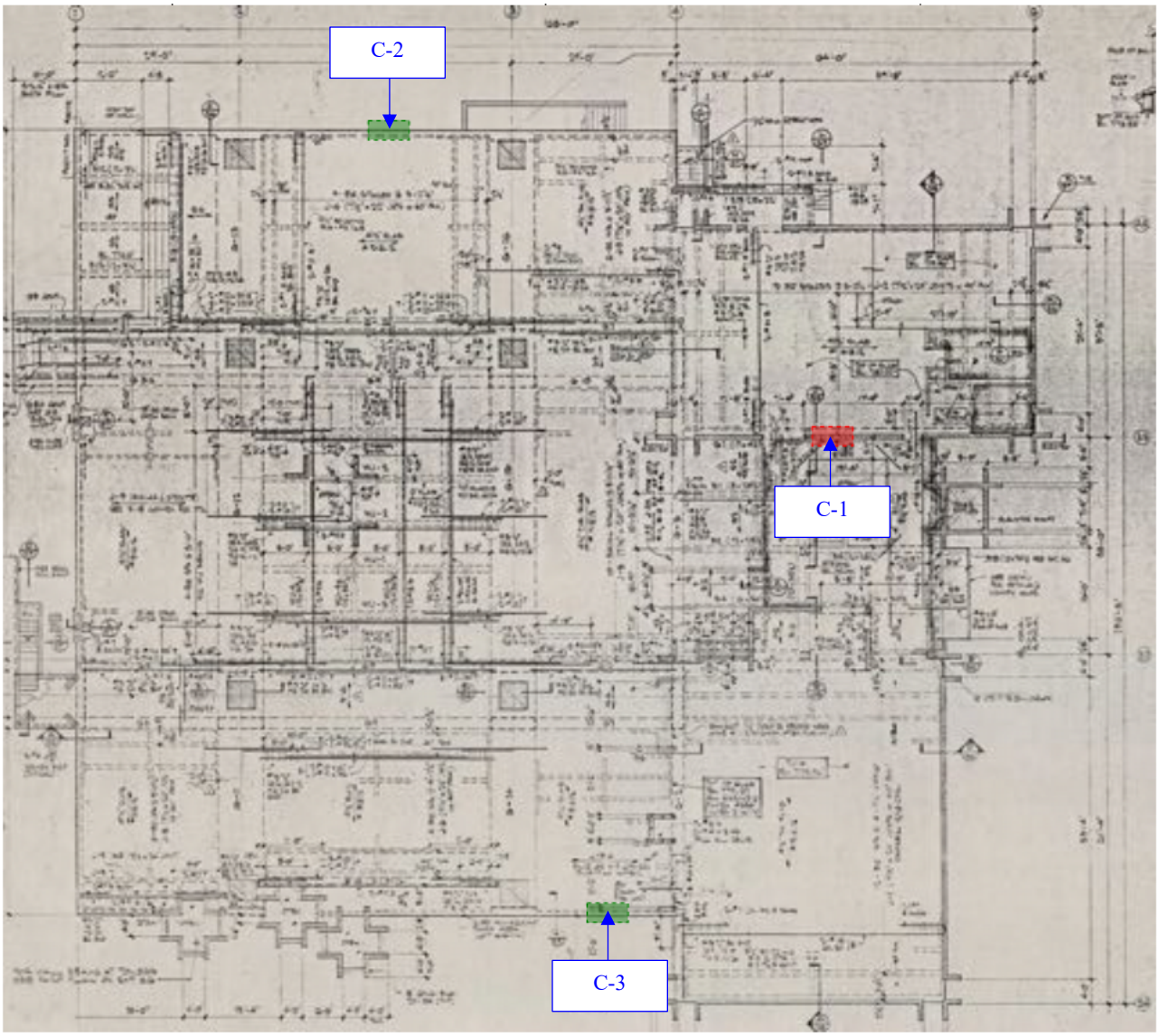
DESCRIPTION	CORE #3
Laboratory Core ID	C-3, Outside Girder
Core Location (See Appendix "A")	West Side, Grid "3-4"
Date Cored	3/13/2023
Date Tested	3/17/2023
Maximum Aggregate Size (Nominal), inches	3/4" ±
Length of Uncapped Core Specimen Tested, inches	6.00
Length of Capped Core Specimen Tested, inches	6.50
Core Diameter, inches	3.24
Cross-Sectional Area, sq. in.	8.24
Maximum Load, pounds	26,400
Compressive Strength, psi	3,202
Length to Diameter Ratio	2.01
Strength Correction Factor	1.000
Corrected Compressive Strength, psi	**3,202**
Unit Weight of Core Specimen, pcf (Approximate)	**147**
Concrete Modulus of Elasticity, Ec, ksi	3,318
Fracture Type in Compression Test (per ASTM C39)	Type 3

Note: *1. The L/D correction factors given above are linearly interpolated from the base values tabulated in ASTM Standards C-42.*
2. The concrete modulus of elasticity (Ec) reported above is based upon formulation given in ACI 318-8.
3. The noted "Fracture Type" conforms to the typical fracture patterns defined in ASTM Standards C-39.

PRELIMINARY

Subject: Physical Properties of Core Samples from Concrete Members **Glendora Library**, 140 Glendora Ave, Glendora, California	**Test ID:** Test Locations **Test Dates:** 3/13-17/2023
Report By: Rod R./AA,FF,JG/rr,ss	**Checked By:** S. Sethee, Ph.D.

Figure A.1 Floor Plan Showing Test Locations



APPENDIX C: Site Classification

Project No.
21071.000.001

April 4, 2023

Mr. Kyle White, SE
MHP Structural Engineers
3900 Cover Street
Long Beach, CA 90808

Subject: City of Glendora Library
140 Glendora Avenue
Glendora, California

SITE CLASS EVALUATION

Dear Mr. White:

At your request and with your authorization, we completed an evaluation of the seismic site classification for the City of Glendora Library located at 140 Glendora Avenue in Glendora, California. Based on our discussions with you, we understand MHP Structural Engineers is performing a structural evaluation of the existing library building. We also understand that the seismic Site Class is currently assumed to be "D - Default" in accordance with the American Society of Civil Engineers (ASCE) 41-17 and 7-16 standards.

The "D - Default" Site Class is typically used for sites where the soil properties are not known in sufficient detail to determine the site class. Previous geotechnical reports for the site or surrounding parcels were not available at the time of this assessment; therefore, the purpose of our evaluation is to refine the site class based on a detailed review of available maps and geotechnical databases.

DATA REVIEW AND FINDINGS

We evaluated published maps and databases of the time-averaged shear-wave velocity over the top 100 feet or 30 meters (V_{S30}), regional geology, and seismic hazard zones. We utilized published V_{S30} maps by Wills et al. (2015) and Thompson (2018) to estimate a site V_{S30} value of 1,155 feet per second (ft/s). These maps are largely based on site geology and topography rather than measured shear-wave velocity (V_S) data. We also reviewed the Shear-Wave Velocity Profile Database by Ahdi et al. (2018) and Kwak et al. (2021) to confirm that the mapped V_{S30} at the site is generally consistent with measured V_{S30} values in the site vicinity. Based on two measured V_S profiles collected within 3½ miles of the site and from the same mapped geologic units (Dibblee, 2002), the measured V_{S30} ranges from approximately 970 to 1,270 ft/s. Considering these three data points, it is our opinion that the mapped site V_{S30} of 1,155 ft/s is generally consistent with the average of the two nearby measured V_{S30} values and is appropriate for use in preliminary site classification.

The site is not located within a State of California Seismic Hazard Zone for areas that may be susceptible to liquefaction (CGS, 1999).

CONCLUSIONS

Based on our review and estimation of the site V_{S30}, on a preliminary basis, we classified the site as Site Class “D - Stiff Soil” in accordance with the ASCE 41-17 and 7-16 standards.

We strived to perform our professional services in accordance with generally accepted principles and practices currently employed in the area; there is no warranty, express or implied.

If you have any questions or comments regarding this letter, please contact us and we will be glad to discuss them with you.

Sincerely,

ENGEO Incorporated



Chris Nicas, PE



Bahareh Heidarzadeh, PhD, PE

cn/bh/ue/dt

Attachment: Selected References

SELECTED REFERENCES

Ahdi, SK, S Sadiq, O Olhan, Y Bozorgnia, YMA Hashash, DY Kwak, D Park, A Yong, JP Stewart. 2018. “Development of a United States community shear wave velocity profile database,” in Geotechnical Engineering and Soil Dynamics V: Seismic Hazard Analysis, Earthquake Ground Motions, and Regional-Scale Assessment. June 10-13, 2018. Austin, TX. ASCE Geotechnical Special Publication No. 291, S.J. Brandenberg and M.T. Manzari (eds.), pp 330-339.

American Society of Civil Engineers (ASCE 41-17), 2017. ASCE/SEI 41-17: Seismic Evaluation and Retrofit of Existing Buildings, Reston, VA.

American Society of Civil Engineers (ASCE 7-16), 2016. ASCE/SEI 7-16: Minimum Design Loads for Buildings and Other Structures, Reston, VA.

California Geologic Survey. 1999. Seismic Hazard Zone Report for the Glendora 7.5-Minute Quadrangle. Los Angeles County, California.

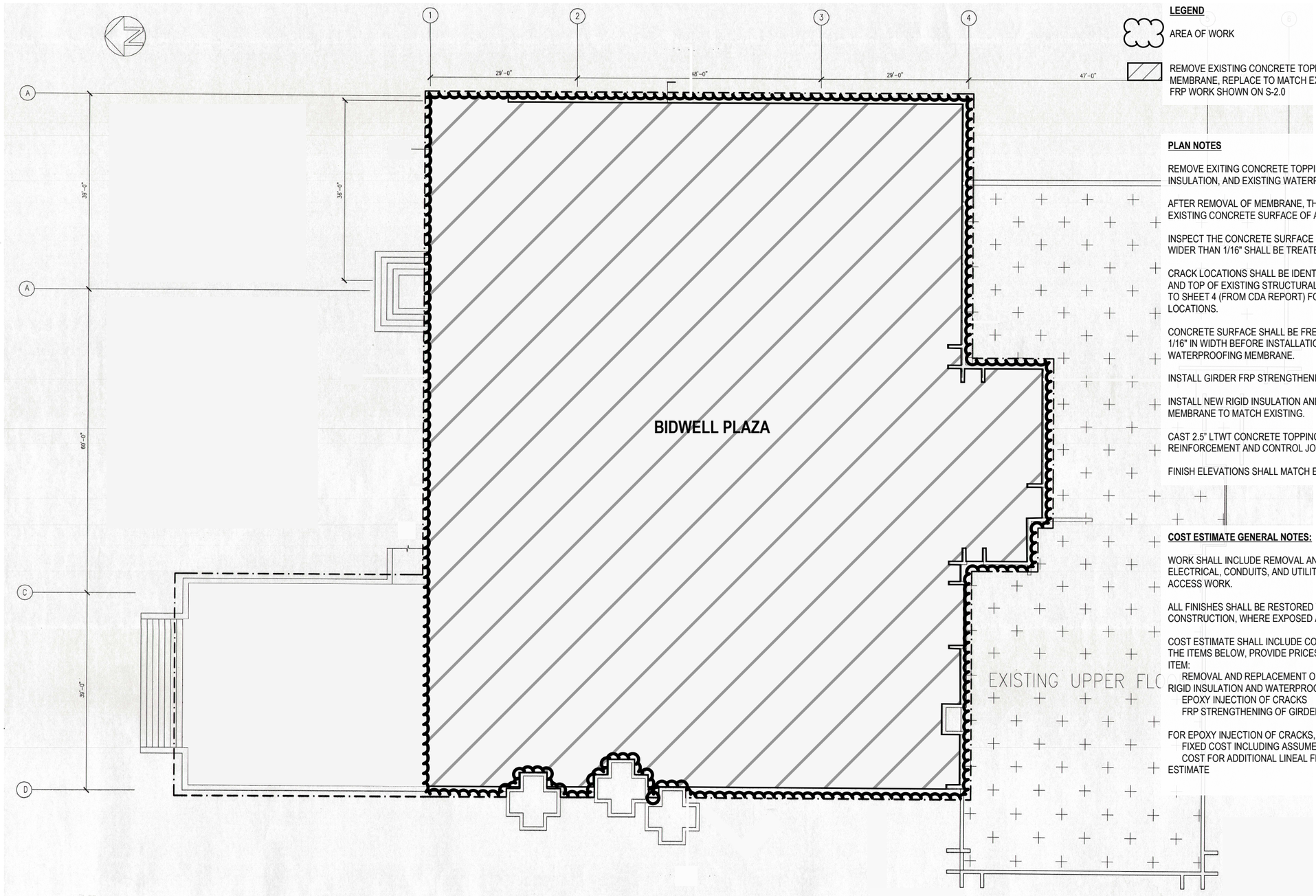
Dibblee, T.W., and Minch, J.A. 2002. Geologic Map of the Glendora Quadrangle, Los Angeles County, California. Dibblee Geological Foundation, Santa Barbara, CA.

Kwak D.Y., Ahdi S.K.; Wang P., Zimmaro P., Brandenberg S.J., Stewart J.P. 2021. Web portal for shear wave velocity and HVSR databases in support of site response research and applications. UCLA Geotechnical Engineering Group. DOI:10.21222/C27H0V.

Thompson, E.M. 2018. An Updated Vs30 Map for California with Geologic and Topographic Constraints (ver. 2.0, July 2022): U.S. Geological Survey data release, https://doi.org/10.5066/F7JQ108S.

Wills, C. J., Gutierrez, C., Perez, F. G., & Branum, D. 2015. A Next Generation VS30 Map for California Based on Geology and Topography. Bulletin of the Seismological Society of America, 105(6), 3083-3091. doi: 10.1785/0120150105.

APPENDIX D: Conceptual Plans for Phase 1 – Gravity Repair



LEGEND

AREA OF WORK

REMOVE EXISTING CONCRETE TOPPING AND WATERPROOF MEMBRANE, REPLACE TO MATCH EXISTING, COORDINATE WITH FRP WORK SHOWN ON S-2.0

PLAN NOTES

REMOVE EXITING CONCRETE TOPPING, EXISTING RIGID INSULATION, AND EXISTING WATERPROOF MEMBRANE.

AFTER REMOVAL OF MEMBRANE, THOROUGHLY CLEAN EXISTING CONCRETE SURFACE OF ALL RESIDUE.

INSPECT THE CONCRETE SURFACE FOR CRACKS, CRACKS WIDER THAN 1/16" SHALL BE TREATED WITH EPOXY INJECTION.

CRACK LOCATIONS SHALL BE IDENTIFIED FROM BOTH BELOW AND TOP OF EXISTING STRUCTURAL CONCRETE SLAB, REFER TO SHEET 4 (FROM CDA REPORT) FOR THE EXPECTED CRACK LOCATIONS.

CONCRETE SURFACE SHALL BE FREE OF CRACKS WIDER THAN 1/16" IN WIDTH BEFORE INSTALLATION OF NEW WATERPROOFING MEMBRANE.

INSTALL GIRDER FRP STRENGTHENING PER S-2.0.

INSTALL NEW RIGID INSULATION AND WATERPROOF MEMBRANE TO MATCH EXISTING.

CAST 2.5" LTWT CONCRETE TOPPING SLAB, MIN 3,000 PSI, W/ REINFORCEMENT AND CONTROL JOINT PER 3/S-3.0.

FINISH ELEVATIONS SHALL MATCH EXISTING ELEVATION.

COST ESTIMATE GENERAL NOTES:

WORK SHALL INCLUDE REMOVAL AND REPLACEMENT OF ALL ELECTRICAL, CONDUITS, AND UTILITIES AS NECESSARY TO ACCESS WORK.

ALL FINISHES SHALL BE RESTORED TO ORIGINAL CONSTRUCTION, WHERE EXPOSED AND VISIBLE.

COST ESTIMATE SHALL INCLUDE COSTS ASSOCIATED WITH THE ITEMS BELOW, PROVIDE PRICES FOR EACH INDIVIDUAL ITEM:

- REMOVAL AND REPLACEMENT OF CONCRETE TOPPING, RIGID INSULATION AND WATERPROOF MEMBRANE
- EPOXY INJECTION OF CRACKS
- FRP STRENGTHENING OF GIRDERS

FOR EPOXY INJECTION OF CRACKS, PROVIDE:

- FIXED COST INCLUDING ASSUMED LINEAL FEET
- COST FOR ADDITIONAL LINEAL FEET BEYOND INITIAL ESTIMATE

SITE PLAN

S-1.0

STRUCTURAL ENGINEER
MHP
STRUCTURAL ENGINEERS
3900 Cover Street
Long Beach, CA 90808
562.985.3200 P
562.985.1011 F

PROJECT INFORMATION

Phase1 - Gravity Repair

Glendora Public Library
140 Glendora Avenue
Glendora
CA 91741

SUBMITTALS AND REVISIONS

ISSUE DATE:	04-26-2023
NO. DESCRIPTION	DATE
DRAFT COST ESTIMATE	04-26-2023

STAMP

SHEET INFO

JOB NUMBER:	22-0647-00
DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW
SCALE:	NONE

SHEET TITLE

RESURFACING PLAN

SHEET NUMBER

S-1.0

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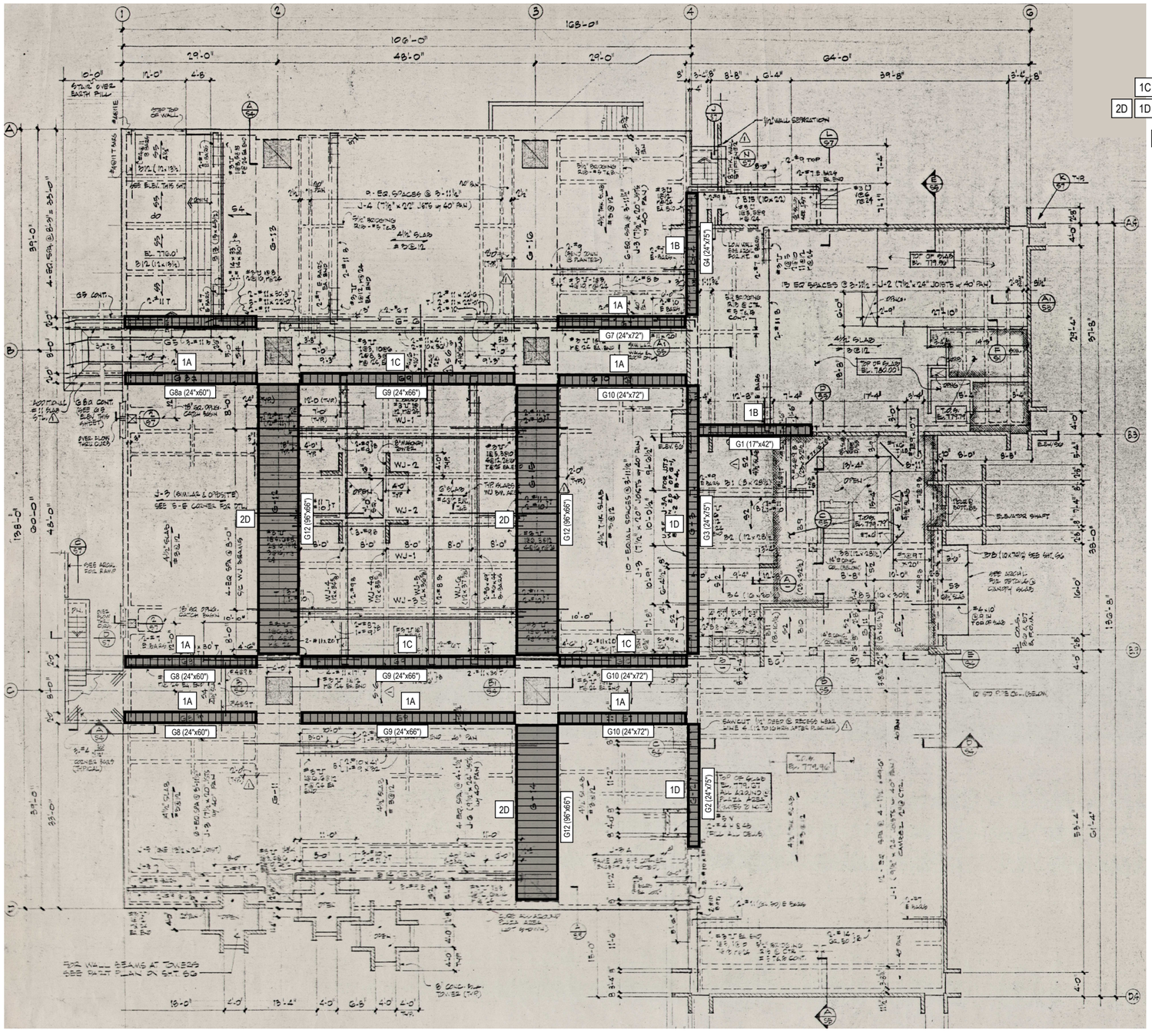

UPPER FLOOR FRAMING PLAN

S-2.0

STRUCTURAL ENGINEER

MHP
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Long Beach, CA 90808
562.985.3200 P
562.985.1011 F

PROJECT INFORMATION

Phase1 - Gravity Repair

Glendora Public Library
140 Glendora Avenue
Glendora
CA 91741

SUBMITTALS AND REVISIONS

ISSUE DATE:	04-26-2023
NO. DESCRIPTION	DATE
DRAFT COST ESTIMATE	04-26-2023

STAMP

SHEET INFO

JOB NUMBER:	22-0647-00
DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW
SCALE:	NONE

SHEET TITLE

UPPER FLOOR FRAMING PLAN

SHEET NUMBER

S-2.0

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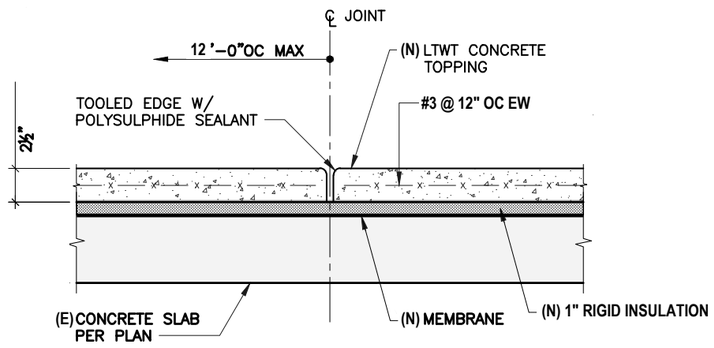
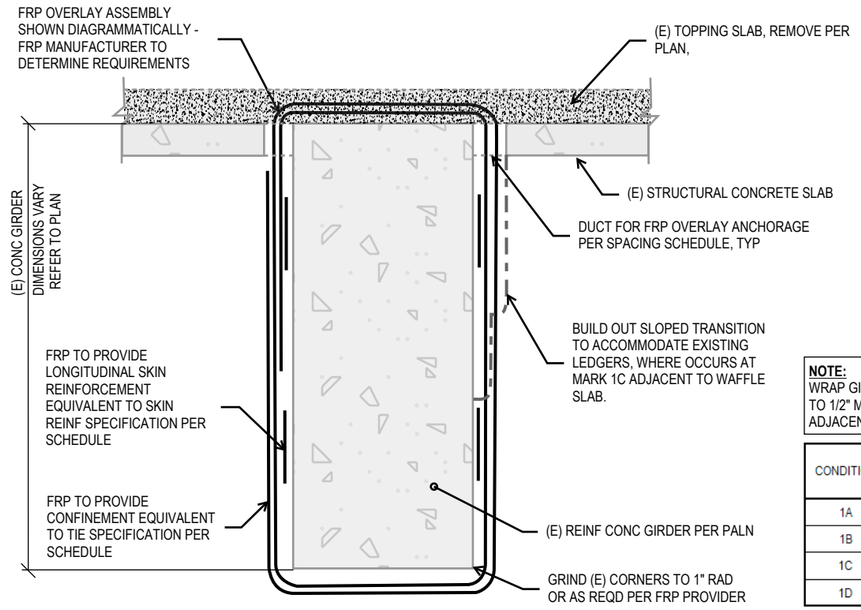


CONCRETE TOPPING SLAB

3
S-3.0

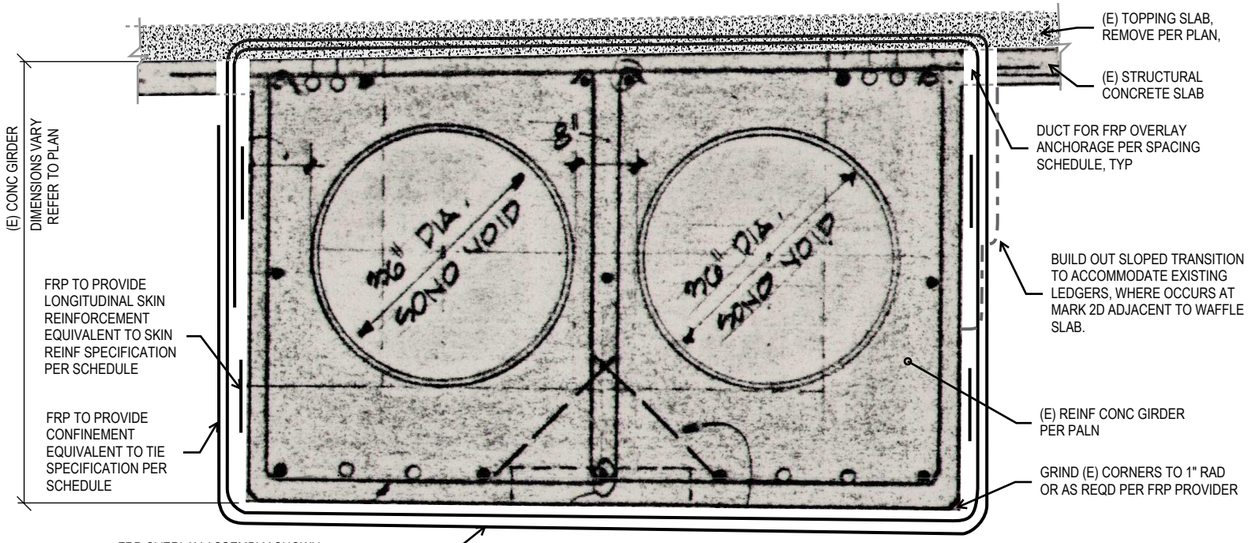


NOTE:
WRAP GIRDER FULL LENGTH TO 1/2" MAXIMUM CLEAR OF ADJACENT COLUMN/WALL

CONDITION	CONFINEMENT				TOTAL EQUIVALENT SKIN REINF @ EA SIDE
	FRP TYPE	WIDTH	SPACING	LAYER	
1A	1/5 SikaWrap 1200C	10"	24"	1	-
1B	1/5 SikaWrap 1200C	10"	24"	1	0.6 IN^2
1C	1/5 SikaWrap 1200C	10"	24"	2	1.6 IN^2
1D	1/5 SikaWrap 1200C	10"	24"	3	1.8 IN^2

24" WIDE GIRDER FRP STRENGTHENING

1D S-3.0 | 1C S-3.0 | 1B S-3.0 | 1A S-3.0



NOTE:
WRAP GIRDER FULL LENGTH TO 1/2" MAXIMUM CLEAR OF ADJACENT COLUMN/WALL

CONDITION	CONFINEMENT				TOTAL EQUIVALENT SKIN REINF @ EA SIDE
	FRP TYPE	WIDTH	SPACING	LAYER	
2D	1/5 SikaWrap 1200C	10"	24"	3	2.0 IN^2

8' WIDE GIRDER FRP STRENGTHENING

2D S-3.0

STRUCTURAL ENGINEER
STRUCTURAL ENGINEERS
3900 Cover Street
Long Beach, CA 90808
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PROJECT INFORMATION

Phase1 - Gravity Repair

Glendora Public Library
140 Glendora Avenue
Glendora
CA 91741

SUBMITTALS AND REVISIONS

ISSUE DATE:	04-26-2023
NO. DESCRIPTION	DATE
DRAFT COST ESTIMATE	04-26-2023

STAMP

SHEET INFO

JOB NUMBER:	22-0647-00
DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW
SCALE:	NONE

SHEET TITLE

DETAILS

SHEET NUMBER

S-3.0

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APPENDIX E: Conceptual Cost Estimate

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

Statement of Probable Cost

May 1, 2023

CUMMING

Building Value Through Expertise

Credits

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

May 1, 2023

The information contained within this documents is confidential and should not be distributed or copied for any reason without the consent of either Cumming Construction Management, Inc. or the intended client.

Cumming has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions.

This opinion of the probable cost of construction is made on the basis of the experience, qualifications, and best judgment of a professional consultant familiar with the construction industry. However, Cumming cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

This document reflects fair market value construction costs obtainable in a competitive bidding market in Los Angeles, California. Cumming assumes a minimum of three (3) competitive bids from qualified general contractors, with bids from a minimum of three (3) subcontractors per trade. This statement is a determination of fair market value for the construction of the project and is not intended to be a prediction of low bid. Please note that experience indicates a fewer number of bidders may result in a higher bid amount, thus more bidders may result in a lower bid result.

The Cumming staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.



LA | Cumming Management Group, Inc.

Merilyn Olave

Associate Director

Los Angeles, CA

molave@ccorpusa.com

Executive Summary

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

May 1, 2023

Project Description

The project is a structural analysis/feasibility study and options for vertical expansion of the existing Library for the City of Glendora. The existing library is a two-story reinforced concrete and CMU structure with 27,000 square feet

Project Control Metrics

Construction Start:	November 1, 2023
Construction Completion:	April 30, 2024
Construction Duration:	6 Months
Delivery Method:	Design Bid Build

Scope of Work	Area	$ / SF	Total Cost
Option 1 - Seismic Strenthening/Gravity Repair	15,130 SF	$190	**$2,867,266**
Option 2 - Seismic Strenthening Plus Additional Level			**NIC**
Option 3 - Construction of New Library			**NIC**
Total Construction Costs	**15,130 SF**	**$190**	**$2,867,266**

Note:

- The cost estimate above is applicable only for Option 1 - Structural Strengthening. Options 2 & 3 will be done separately at a later date
- Assume the library is shutdown during construction
- Soft Costs - Excluded
- Construction Contingency - Excluded

Direct Construction Cost Summary

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

May 1, 2023

CUMMING
Building Value Through Expertise

Element		Building 15,130 SF Total	$/SF
A) Shell (1-5)		**$1,648,475**	**$108.95**
1 Foundations		$0	$0.00
2 Vertical Structure		$0	$0.00
3 Floor & Roof Structures		$1,376,135	$90.95
4 Exterior Cladding		$0	$0.00
5 Roofing and Waterproofing		$272,340	$18.00
B) Interiors (6-7)		**$138,000**	**$9.12**
6 Interior Partitions, Doors and Glazing		$50,000	$3.30
7 Floor, Wall and Ceiling Finishes		$88,000	$5.82
C) Equipment and Vertical Transportation (8-9)		**$0**	**$0.00**
8 Function Equipment and Specialties		$0	$0.00
9 Stairs and Vertical Transportation		$0	$0.00
D) Mechanical and Electrical (10-13)		**$75,650**	**$5.00**
10 Plumbing Systems		$0	$0.00
11 Heating, Ventilation and Air Conditioning		$0	$0.00
12 Electrical Lighting, Power and Communications		$75,650	$5.00
13 Fire Protection Systems		$0	$0.00
E) Building Prep & Demo (14-15)		**$75,650**	**$5.00**
14 Building Preparations & Protection		$0	$0.00
15 Building Demolition		$75,650	$5.00
F) Site Work (16-18)		**$0**	**$0.00**
16 Site Preparation and Demolition			$0.00
17 Site Paving, Structures & Landscaping		$0	$0.00
18 Utilities on Site			$0.00
Sub-Total Direct Construction Cost		**$1,937,775**	**$128.08**
Design/Cost Contingency	15.00%	$290,666	$19.21
Market Escalation to Buyout	3.96%	$88,298	$5.84
Total Direct Construction Cost		**$2,316,739**	**$153.12**
General Conditions	$30,310 / MO	$181,860	$12.02
General Requirements	6.00%	$139,004	$9.19
Subcontractor Default Insur.	1.20%	$27,801	$1.84
General Liability Insurance	1.50%	$39,564	$2.61
Overhead & Profit	6.00%	$162,298	$10.73
Sub-Total Indirect Construction Cost		**$550,527**	**$36.39**
Total Construction Cost		**$2,867,266**	**$189.51**

Construction Cost Detail

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

May 1, 2023

CUMMING
Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
A) Shell (1-5)				
1 Foundations				
Sub-Total: 1 Foundations	**15,130**	**SF**		
2 Vertical Structure				
Sub-Total: 2 Vertical Structure	**15,130**	**SF**		
3 Floor & Roof Structures				
Floor				
FRP strenthening of (E) girders including grinding corners, duct for FRP overlay anchorage	10,161	SF	$120.00	$1,219,320
Prepare slab and Epoxy injection of cracks	218	LF	$82.00	$17,876
Prepare beam and Epoxy injection of cracks	40	LF	$90.00	$3,600
Allowance for additional epoxy injection cracks	200	LF	$82.00	$16,400
New 2.5" Light Weight concrete topping, 3,000 psi	15,130	SF	$6.00	$90,780
Reinforcement to concrete topping, #3@12" O.C.	15,644	LB	$1.80	$28,159
Sub-Total: 3 Floor & Roof Structures	**15,130**	**SF**	**$90.95**	**$1,376,135**
4 Exterior Cladding				
Sub-Total: 4 Exterior Cladding	**15,130**	**SF**		
5 Roofing and Waterproofing				
New waterproofing membrane	15,130	SF	$12.50	$189,125
New rigid insulation	15,130	SF	$5.50	$83,215
Sub-Total: 5 Roofing and Waterproofing	**15,130**	**SF**	**$18.00**	**$272,340**
Total - A) Shell (1-5)	**15,130**	**SF**	**$108.95**	**$1,648,475**

Construction Cost Detail

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

May 1, 2023

CUMMING
Building Value Through Expertise

Code		Quantity	Unit	Unit Rate	Total Cost
B) Interiors (6-7)					
6 Interior Partitions, Doors and Glazing					
	Restore damage partition as needed - allowance	1	LS	$50,000.00	$50,000
	Sub-Total: 6 Interior Partitions, Doors and Glazing	**15,130**	**SF**	**$3.30**	**$50,000**
7 Floor, Wall and Ceiling Finishes					
	Restore all finishes to original construction, where exposed and visible	4,000	SF	$22.00	$88,000
	Sub-Total: 7 Floor, Wall and Ceiling Finishes	**15,130**	**SF**	**$5.82**	**$88,000**
Total - B) Interiors (6-7)		**15,130**	**SF**	**$9.12**	**$138,000**
C) Equipment and Vertical Transportation (8-9)					
D) Mechanical and Electrical (10-13)					
10 Plumbing Systems					
	Sub-Total: 10 Plumbing Systems	**15,130**	**SF**		
11 Heating, Ventilation and Air Conditioning					
	Sub-Total: 11 Heating, Ventilation and Air Conditioning	**15,130**	**SF**		
12 Electrical Lighting, Power and Communications					
	Remove and replace electrical, conduit and utilities as necessary to access work	15,130	SF	$5.00	$75,650
	Sub-Total: 12 Electrical Lighting, Power and Communications	**15,130**	**SF**	**$5.00**	**$75,650**
13 Fire Protection Systems					
	Sub-Total: 13 Fire Protection Systems	**15,130**	**SF**		
Total - D) Mechanical and Electrical (10-13)		**15,130**	**SF**	**$5.00**	**$75,650**

Construction Cost Detail

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

May 1, 2023

CUMMING
Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
E) Building Prep & Demo (14-15)				
14 Building Preparations & Protection				
Sub-Total: 14 Building Preparations & Protection	**15,130**	**SF**		
15 Building Demolition				
Selective Demolition				
Remove concrete topping	15,130	SF	$2.00	$30,260
Remove rigid insulation	15,130	SF	$1.00	$15,130
Remove waterproofing membrane	15,130	SF	$2.00	$30,260
Sub-Total: 15 Building Demolition	**15,130**	**SF**	**$5.00**	**$75,650**
Total - E) Building Prep & Demo (14-15)	**15,130**	**SF**	**$5.00**	**$75,650**

Project Escalation Forecast

Cumming revises our escalation forecast on a quarterly basis. All rates subject to change with market conditions.

Estimate Date	05/01/23
Construction Start	11/01/23
Construction Midpoint	01/30/24
Construction Completion	04/30/24
Construction Buyout	11/01/23
Construction Duration	181 Days
Construction Duration	*6 months*

Year	Time	Rate	Total	Rate
2023	0.50	7.86%	3.96%	
2024	0.00	5.0%	0.0%	3.96%
			Total Escalation to Start Date	3.96%

CUMMING
Building Value Through Expertise

		Qty	%	Building	Rate/Hr	Rate/Mo	Total Cost
Project Management							
Project Manager	Overall project responsibility, cost, schedule, logistics	1	100%	6.00	$175.00	$30,310	$181,860
		Sub-Total:			**$30,310/Month**	**0.57%**	**$181,860**
Grand Total - Project Staffing					**$30,310/Month**	**7.85%**	**$181,860**

PHASE 1 STRUCTURAL EVALUATION
2026 UPDATE
GLENDORA PUBLIC LIBRARY
CITY OF GLENDORA

Prepared by

MHP, Inc.
Structural Engineers
Long Beach, California

July 16, 2026
MHP JN: 22-0647-01

EXECUTIVE SUMMARY

At the request of the City of Glendora, MHP has completed updates to the previous Phase 1 study issued in 2023 which addressed the findings and recommendations of a structural evaluation of the Library. These updates included: site observations to assess whether there has been a significant change in structural conditions since 2023, reanalysis of the building to address newly-adopted 2025 California Existing Building Code seismic criteria and the Library now considered to be a Risk Category IV building (required for an Emergency Operations center classification), reanalysis and development of a strengthening concept for the existing central pier foundations which were found to be deficient in the prior study, review of additional historical documents relating to Library repair work and studies completed throughout the life of the building, and an update of the previous cost estimate.

In general, the cracking of the main beams and girders appears stable and does not present an immediate concern under the current loading conditions. Areas where water intrusion frequently occurs also appear stable when compared with photos from 2022, however, it is recommended that these areas be addressed in the near term to prevent further deterioration.

The updated seismic analysis confirmed that the primary seismic force-resisting system of the building largely complies with the ASCE 41-23 Basic Performance Objective for Existing Buildings using Risk Category IV (BPOE-RCIV), with the exception of the Bidwell Room where strengthening needs are generally as-described in our 2023 report, consisting of supplemental wall anchorage, FRP wrap of supporting beams, and new shear walls at the north elevation. Although the update to 2025 CBC provisions resulted in significantly increased seismic demands, the level of structural strengthening needed did not substantially change. However, the new Code also presents greatly heightened requirements for non-structural elements and equipment anchorage in order to satisfy the criteria for Risk Category IV buildings, which are not addressed by the current project scope. If the City wishes to pursue this further it is recommended that additional team members, such as mechanical, electrical, plumbing, IT, and architectural consultants be retained to assist in evaluating all systems affected by emergency operations.

The updated review of the central pier foundations revealed that in addition to strengthening being required in order to support 100 psf Live loading the foundations also require strengthening in order to satisfy the BPOE-RCIV criteria if the Library were to be considered an Emergency Operations Center. Widening of the footings on all sides as depicted herein will satisfy both conditions.

The historical documents reviewed provide additional information about the Library structure and past work that is consistent with our current findings and support the proposed repair and strengthening approach. A gap in the historical record that is not resolved by the provided documents is the unknown actual detailing of repairs completed at the northeast corner where water intrusion continues to be an issue, however, further investigation would be a largely academic exercise as the continued water intrusion proves that the system is not functioning adequately.

STRUCTURAL EVALUATION 2026 UPDATE: Glendora Public Library

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1.0 PROJECT BACKGROUND

1.1 History

In late 2022 through late 2023 MHP assembled a team of consultants and provided evaluation and design consultation services to the City of Glendora to assist with the evaluation of the existing Glendora Public Library building and development of concepts for the future of the Library. Phase 1 consisted of a structural evaluation of the existing Library structure and included site visits, material testing, geotechnical studies, a Tier 3 Systematic ASCE 41-17 seismic evaluation, preparation of conceptual retrofit drawings and associated cost estimates. Phase 2 involved Architectural, Mechanical, Plumbing, Electrical, Structural Engineering, and cost estimation consultation services to explore and develop concepts for the upgrade and expansion of the Library.

Significant findings and recommendations presented within the Phase 1 report included:

- The Library was found to satisfy the ASCE 41-17 Basic Performance Objective for Existing Buildings (BPOE) when considered to be a Risk Category III structure in accordance with 2022 California Building Code (CBC) criteria for a public library.
- If considered to be a Risk Category IV structure, as would be required should it be classified as an Emergency Operations Center, some seismic strengthening would be anticipated to satisfy the BPOE and was described in the Phase 1 report, but this was not explicitly evaluated at the time.
- Based on observed water intrusion during rain events it was considered likely that the waterproofing membrane (approximately 20 years old at the time) had failed in some locations and requires replacement.
- Some existing plaza framing members and central pier foundations do not satisfy 2022 CBC gravity load-carrying criteria when evaluated using 100 pounds per square foot (psf) of non-reducible Live loading as indicated by the original construction drawings and as required by Code for areas used for assembly. Strengthening recommendations consisted of fiber-reinforced polymer overlay of some existing beams and girders to provide additional, shear, bending, and torsional strength. It was recommended that live loading should be limited to 40 psf until strengthening could be implemented. It was noted that 40 psf equates to approximately 2,800 people evenly distributed throughout the plaza, and likely even this limit exceeds the loading commonly applied during various uses and events.
- Both the waterproofing and gravity strengthening of plaza framing would ideally be completed concurrently, and the project was estimated to involve a 6-month construction duration and an estimated construction cost of $2,867,266.

1.2 2026 Update Scope

At the request of the City of Glendora, MHP has completed updates to the previous Phase 1 study along with additional review of historical documentation related to prior evaluations and known structural concerns. Specifically, the project scope includes:

- Site investigation to observe structural conditions of the plaza concrete framing and assess whether existing deterioration has progressed notably since 2023
- Update the previously completed seismic evaluation to follow the newly-adopted ASCE 41-23 seismic evaluation and retrofit standard as referenced by the 2025 California Existing Building Code as well as

classification of the Library as a Risk Category IV structure, as would be required should it be classified as an Emergency Operations Center

- Updated evaluation of the four interior concrete pier foundations and provision of a conceptual retrofit to increase live load capacity to 100 psf, or recommendations for additional study
- Review of historical documentation related to prior evaluations and repair work or recommendations to evaluate consistency with current observations and analysis
- Update of the 2023 cost estimate to current dollars (presumed September 2027 construction start)
- Preparation of this report documenting our findings and recommendations

2.0 SITE INVESTIGATION

Concrete deterioration and water intrusion at the library has been noted for some time and generally consists of cracks in the concrete beams and roof slab surfaces. A preliminary condition assessment of Bidwell Plaza at the Library was conducted in 2022 by Cho Design Associates, Inc.

During Phase 1 of the 2023 project, MHP completed site observations of the conditions at the underside of the Plaza slab noted in the Cho Design Associates report to assess whether deterioration appeared to be rapidly progressing or worsening. Observations on site at that time were consistent with those described in the Cho Design Associates report, indicating that no rapid progression was occurring.

Further site observations were completed as part of the current project, once again to assess any readily visible signs of progression in the deterioration of the plaza framing. Conditions observed on site in May of 2026 appear generally consistent with those observed by MHP in 2023 and those documented in the photos from the Cho Design Associates report in 2022. No notable progression or major new cracking was observed in the main girders. Photos over time of one example main girder crack are provided below, showing no visible progression.

<table>
<tr>
<td> 

2022 Cho Design Associates Photo</td>
<td> 
2023 Photo by MHP</td>
<td> 
2026 Photo by MHP</td>
</tr>
</table>

The northeast corner of the plaza slab is an area where we understand that water intrusion continues to be an issue. This area was observed to be in similar condition as observed before. While the condition does not appear to be visibly worse or rapidly progressing, the presence of rust staining and continued water intrusion indicates that further deterioration is occurring and should be addressed in the near term. Addressing these conditions will require exposure of the top surface of the concrete for observation and repair, and replacement of the waterproofing system. This work was covered in the Phase 1 costs presented in 2023 and is covered in the updated costs presented in this report.

3.0 SEISMIC EVALUATION UPDATE

Two major aspects of seismic evaluation have been updated from the prior report. The first change is that the building code basis has been updated from the 2022 California Building Code (CBC) and its referenced codes to the 2025 CBC and its referenced codes. This update was necessitated by the 2025 CBC having gone into effect for all projects in California at the beginning of 2026. The second update is upgrading the building's Risk Category (RC) from RC III to RC IV. The higher Risk Category, RC IV, would be required if the building were to be used as an Emergency Operations Center.

3.1 Building Code Update

When building codes update, there are generally two major components that change for seismic evaluations. The main change that generally occurs is increases in seismic demands. The seismic demands predominately are based on underlying ground shaking intensity values provided by the United States Geological Survey (USGS). These values determine how much ground shaking might occur as the result of an earthquake with a specified probability of exceedance. With each code cycle, there have been additional earthquakes and scientific studies which increase our understanding of potential earthquake shaking. Over the last several decades, the seismic demands have tended to increase as the codes have updated. As an example from the current update, the USGS 0.2-second spectral acceleration for the 975-year return period seismic hazard has increased by approximately 30%.

The other main change is the capacity of elements to resist seismic demands. An element's capacity to resist seismic demands is a function of both strength and ductility. Strength is an element's ability to resist force while ductility is an element's ability to undergo plastic deformation before fracturing. An element's strength is an important consideration for an element under everyday gravity loading scenarios and is a much simpler and well understood property, so it typically does not change greatly between code cycles. An element's ductility is of particular importance to seismic loading and is a much younger and more complicated concept than strength. The provisions for determining an element's ductility can change greatly from code cycle to code cycle. There has been a general trend toward ductility (and therefore capacity) decreasing as the codes update, but those results are much more scattered, and any given element might see a large increase in ductility as the code changes.

Since the main lateral force resisting elements, concrete and masonry walls, had a substantial reserve capacity in the prior analysis, they still meet the RC III performance objective under the 2025 CBC. As noted in the prior report, the wall anchorage at the upper wood roof levels did not meet the prior performance objective. Under the 2025 CBC provisions, the wall anchorage is slightly less compliant than it was under the 2022 CBC, so it is still recommended for the wall anchorage to be strengthened.

It is of note that the interior pier foundations do not currently conform to the RC III performance objective, but the foundation strengthening associated with the 100 psf live load as described in the next section will also allow the foundation to conform to the seismic performance objective.

3.2 Risk Category IV Update

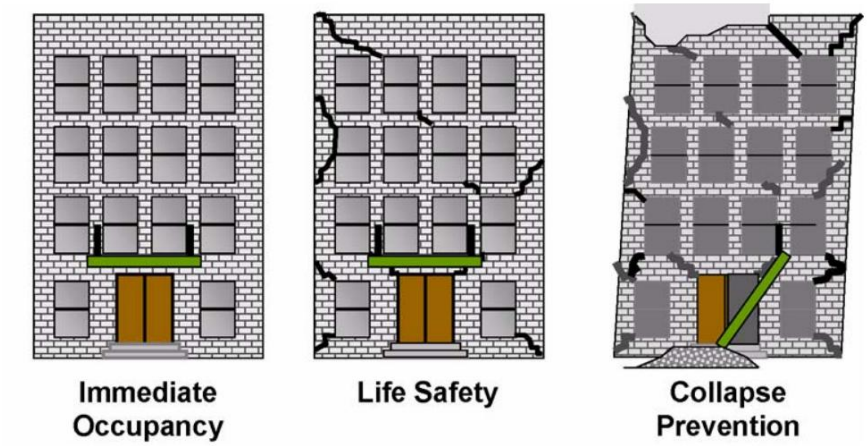
The table below shows the required performance objective for existing buildings of each risk category. The middle column shows the required structural performance level for the BSE-1E earthquake hazard level (BSE-1E for short). BSE-1E represents a seismic hazard that has a 20% probability of exceedance in 50 years (in a given 50 year period, there is a 20% chance of there being an earthquake which produces greater shaking at the site, and an 80% chance that no earthquake produces greater shaking at the site). The rightmost column shows the required

structural performance level for the BSE-2E earthquake hazard level. BSE-2E represents a seismic hazard that has a 5% probability of exceedance in 50 years.

[BS] TABLE 304.3.2—PERFORMANCE OBJECTIVES FOR USE IN ASCE 41 FOR COMPLIANCE WITH REDUCED CRITERIA FORCES		
RISK CATEGORY (Based on IBC Table 1604.5)	**STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1E EARTHQUAKE HAZARD LEVEL**	**STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2E EARTHQUAKE HAZARD LEVEL**
I	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
II	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
III	Damage Control (S-2). See Note a	Limited Safety (S-4). See Note b
IV	Immediate Occupancy (S-1)	Life Safety (S-3). See Note c

a. For Risk Categories I, II and III, the Tier 1 and Tier 2 procedures need not be considered for the BSE-1E earthquake hazard level.
b. For Risk Category III, the Tier 1 screening checklists shall be based on the Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on *MS*-factors that are the average of the values for Collapse Prevention and Life Safety.
c. For Risk Category IV, the Tier 1 screening checklists shall be based on Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on *MS*-factors for Life Safety.

The structural performance represents the allowable amount of damage that a building can sustain during the given seismic event. The structural performance ranges from collapse prevention (the building remains standing, but is in need of substantial repair and/or replacement), to immediate occupancy (the building is immediately safe to occupy after the seismic event).



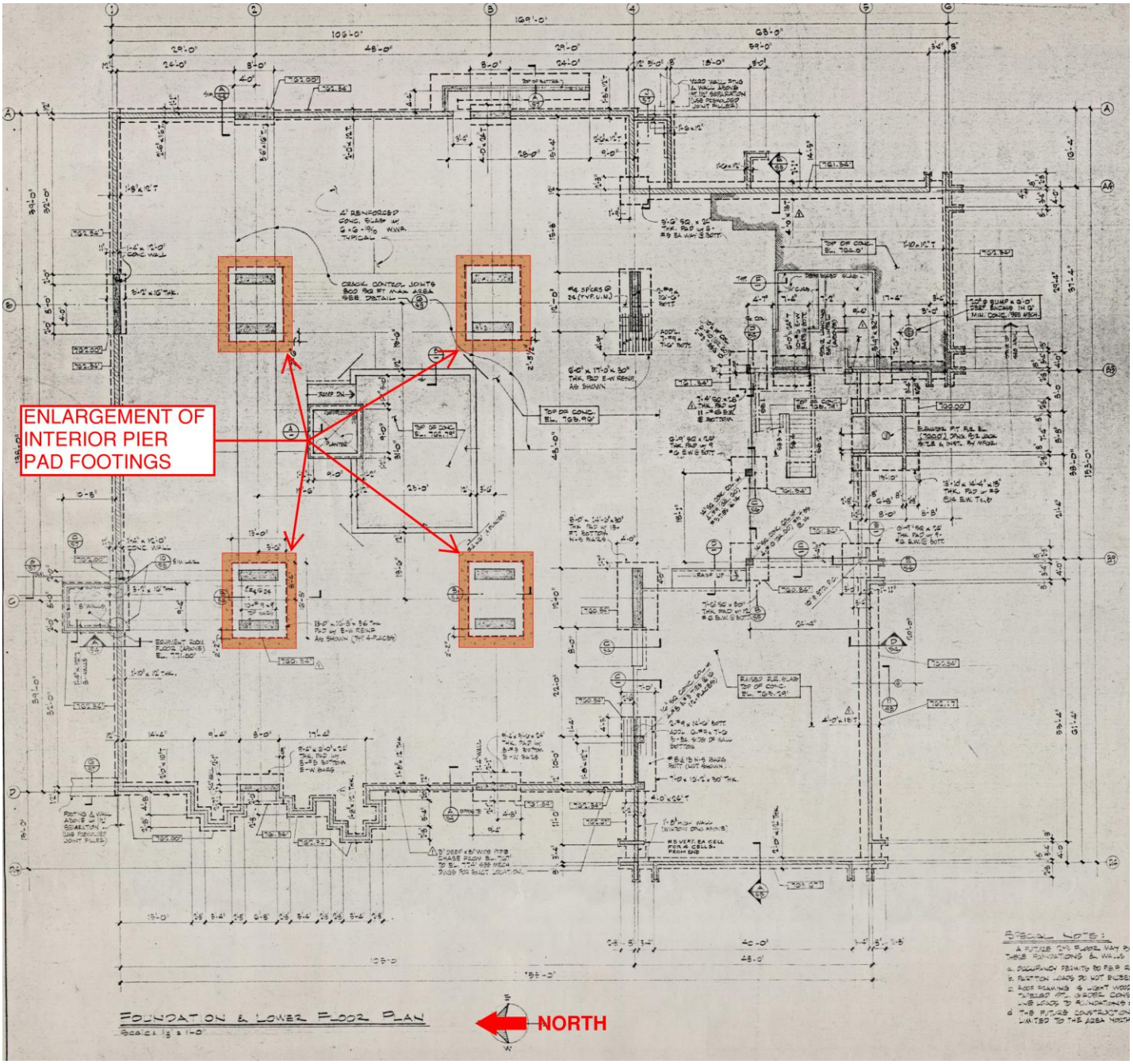
For each performance objective, the building is evaluated at two levels, one with a higher earthquake hazard level and a higher level of allowable damage, and one with a lower earthquake hazard level and a lower level of allowable damage. An RC III building is required to meet damage control at BSE-1E (not pictured above, but between immediate occupancy and life safety) and limited safety at BSE-2E (not pictured above, but between life safety and collapse prevention). An RC IV building is required to meet a more stringent criteria of immediate occupancy at BSE-1E and life safety at BSE-2E.

Immediate occupancy is a very high threshold and it is very unlikely for a building to meet that threshold without having been intentionally designed to do so. Our evaluation found that the main concrete and masonry walls would marginally meet the RC IV performance objective. However, the upper floor contains a number of irregularities that would prevent the building from meeting the immediate occupancy structural performance level without seismic strengthening.

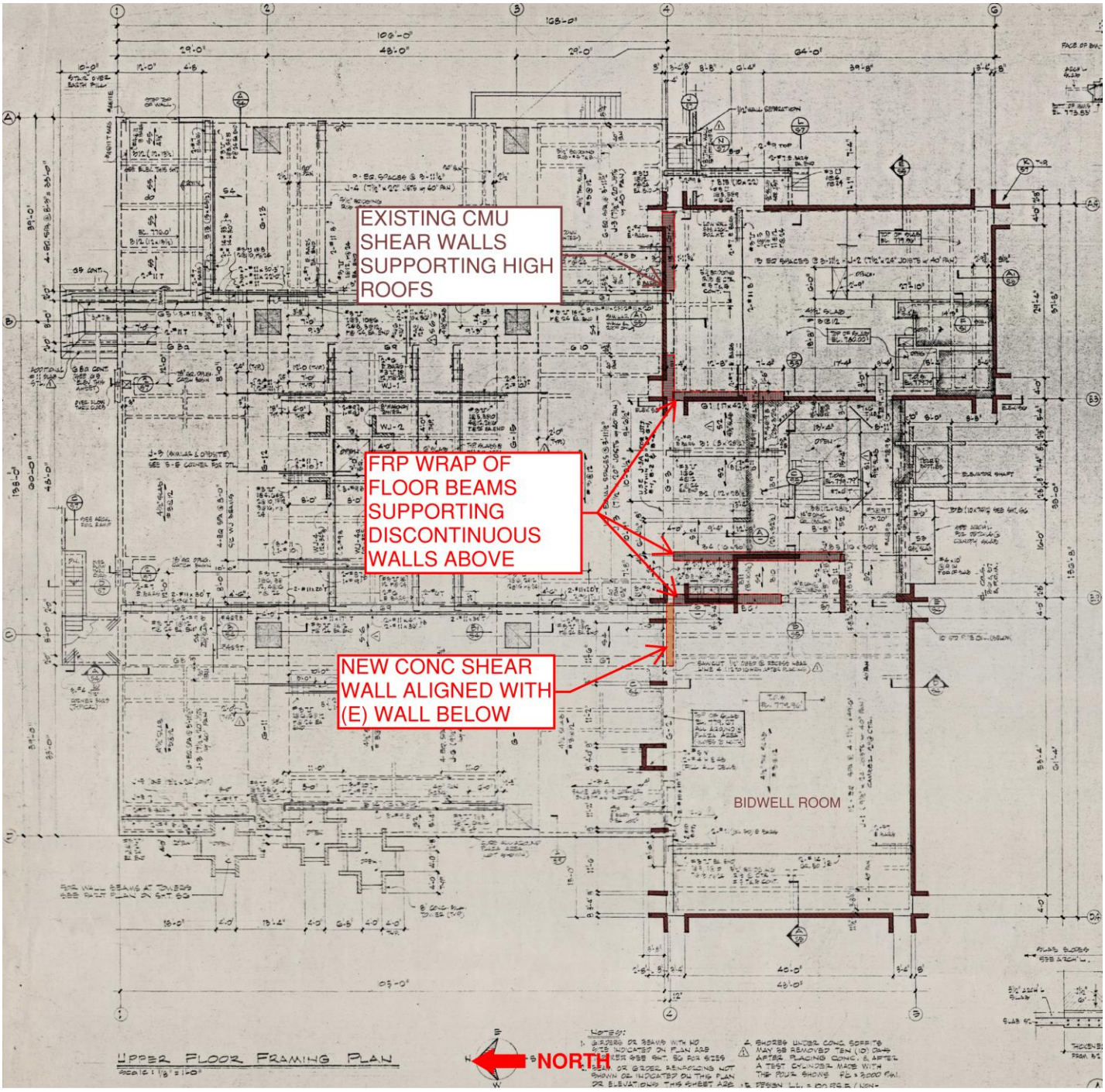
In order to meet the RC IV performance objective, the following structural conditions would need to be retrofit:

- There are discontinuous shear walls along grid 4, grid B.3, and grid B.7. These are shear walls that support the high roofs, but do not extend through the first floor to the foundations. The most straightforward remedy would be to extend the shear walls through the first floor, however this would impact the first-floor layout. An alternative retrofit would entail strengthening the beams supporting these walls as well as the 2nd floor diaphragm.
- At the Bidwell room, the roof is supported by masonry shear walls on three sides. This condition allows for a high amount of deformation along the open edge which would be incompatible with the masonry piers/columns along grid 4. To remedy this condition, a new shear wall would need to be added along grid 4. This wall would either need to extend to the foundations, or the supporting beam and diaphragm would need to be strengthened as described above.
- The wall anchorage as described in the previous section would need additional strengthening above that described above (similar, but at a smaller spacing).
- The interior pier foundation would need additional strengthening to what is described in the following section (similar, but with a larger extension).
- All nonstructural systems would be subject to a seismic evaluation and probable strengthening or replacement. Not all nonstructural systems are required to be fully operational for an RC IV building, but those components must not create hazards due to breaking or falling, and certain life safety systems such as stairs, exit signs, emergency power, and fire suppression systems are expected to remain operational.

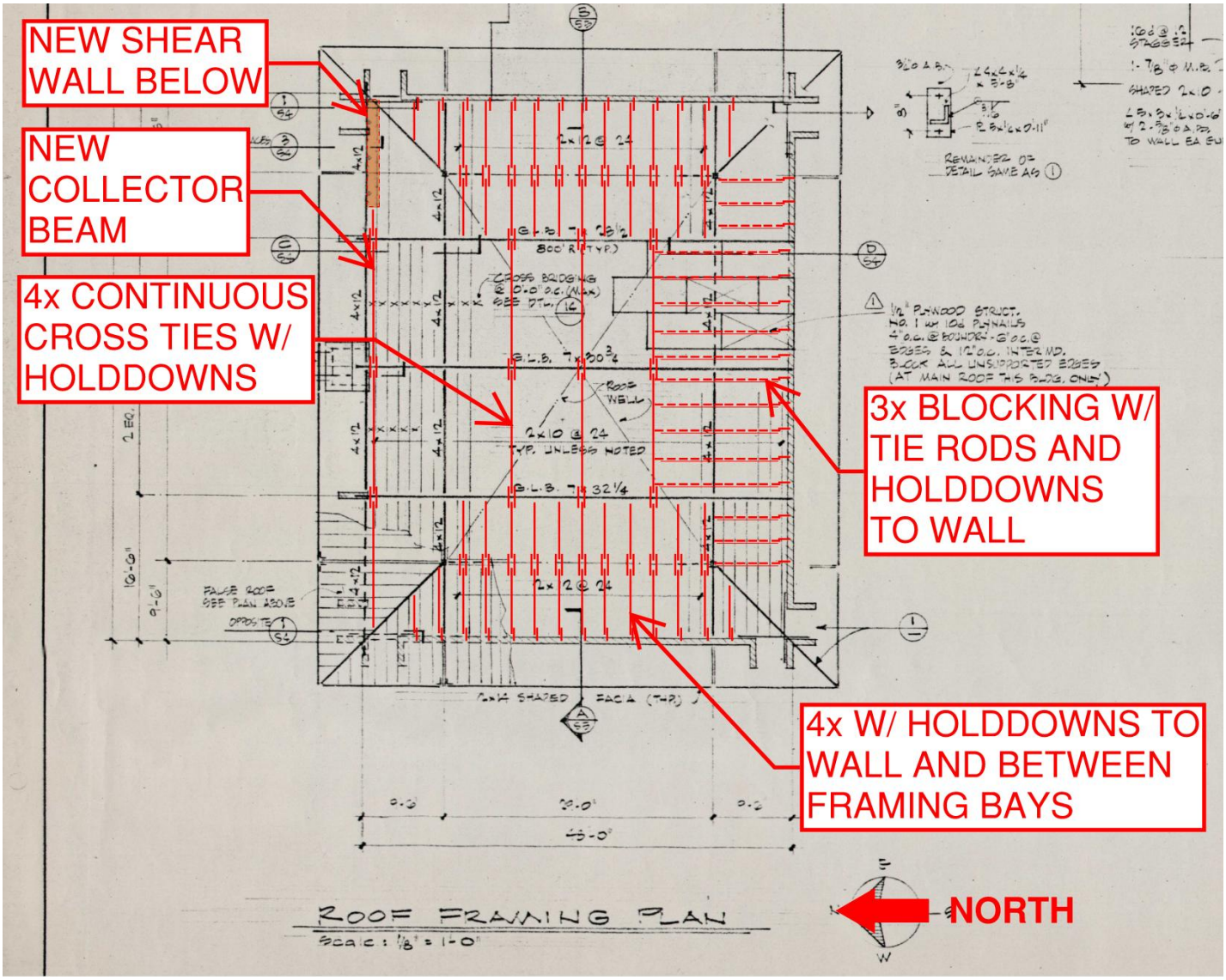
Strengthening measures which could be designed to address the above are depicted below at a conceptual / illustrative level.



Conceptual Plan View of Central Pier Foundation Retrofit



Conceptual Plaza Level Framing Plan – New Shear Wall and FRP Beam Wrap



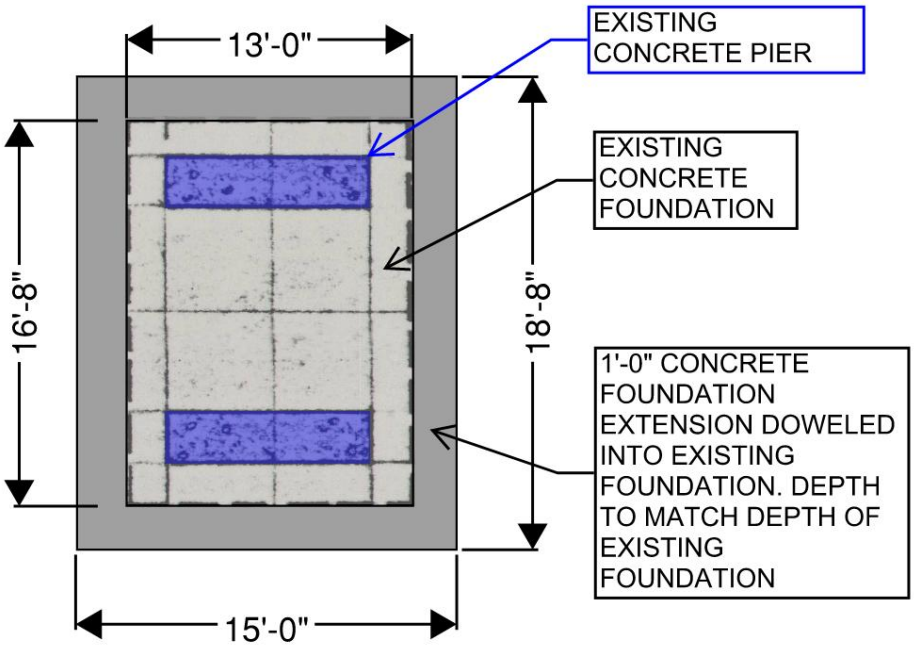
Conceptual High Roof Strengthening (Bidwell Room shown, North High Roof Similar)

4.0 FOUNDATION IMPROVEMENTS

The prior report noted that an evaluation of the gravity load-carrying system was performed due to the cracking that was observed in the podium slab and beams. The original drawings specified that the podium was designed for a live load of 100 pounds per square foot in addition to the self-weight of the structure. This amount of live load is consistent with what the current code would require for assembly areas and lobbies.

The prior evaluation determined that the podium beams and the interior pier foundations did not have the required capacity to resist the specified gravity loads due to more recent code requirements and more modern analysis techniques. As noted in the prior section, these foundations also fall short of the seismic performance objective.

The recommended strengthening consists of extending the plan dimensions of the existing 13’-0” by 16’-8” foundations by adding 1 foot of concrete around the full perimeter, increasing the plan dimension to 15’-0” by 18’-8”. The thickness of the foundation extension would match the thickness of the existing foundation, and the new portion would be attached to the existing using epoxy dowels.



Plan View of Central Pier Foundation Retrofit

5.0 HISTORICAL DOCUMENTATION REVIEW

In addition to the 2022 structural condition assessment report prepared by Cho Design Associates, the City of Glendora provided several other documents from the history of the Library, summarized below with respect to their consistency with the current evaluation and analysis.

- **1983 Investigation of wear slab and waterproofing system by Building Systems Evaluation**

  This report summarizes the findings of an investigation by BSE into the cracking of the plaza deck slab and the water intrusion into the library. It involved partial demolition and sampling of the deck system. The report provides some opinions as to the cause of the issues observed at that time and recommends that the wear slab and waterproofing system be removed and replaced. Ultimately, we understand that some version of this work was completed in 2004.

- **1988 Letter from K.B. Leung & Associates**

  This letter, dated March 4, 1988 from Kar Ban Leung, was included within the Library Space Rationale report. The letter notes the presence of diagonal shear cracks in the existing north-south concrete girders, and states that structural analysis at the time indicates overstresses when subjected to 100 psf superimposed Live loading. This is consistent with MHP's findings as documented in our 2023 Phase 1 report.

  To resolve the noted deficiencies, the K.B. Leung report proposes that the existing plaza deck be replaced by structural concrete composite overlay to provide additional strength, and that some new columns be introduced within the Library to provide additional support to the girders.

  The proposed retrofit measures would largely address the deficiencies identified in the letter (and the MHP analysis), however, we note that FRP was not widely in use as a method for strengthening concrete structures until the mid-1990's and may not have been considered a feasible option at the time of the letter. In our opinion, an FRP approach addresses the deficiencies without the impact to the Library space that would be caused by new structural columns.

- **1990 Notice to apply for grant funds**

  This Notice documents the City's intent to apply for grant funds to support repairs and improvements, including the Library deck repair and replacement project, seismic upgrades, and the addition of new space. The Notice includes discussion or consideration of the Library being declared an essential services facility, and notes that such a designation would require seismic upgrades.

  Presumably, this relates to the plaza slab remediation and seismic upgrades that were completed in the early 2000's. However, we note that the structural drawings for the seismic upgrade (by JCSE) identify the project as a "Voluntary Upgrade" but do not provide detail as to the seismic performance target that the retrofit was designed to achieve.

- **2003 Library Strengthening Structural Calculations by Jeff Coronado, S.E.**

  These calculations accompany the voluntary upgrade drawings from the same era and support the design depicted therein, which was ultimately implemented. These calculations address the addition of FRP overlay to the north walls (to add flexural strength), the shotcrete overlay of the central piers (to add ductility), and include several footing checks, including the footings under the central piers.

The calculations do not present an overall comprehensive seismic or gravity evaluation of the building, nor do they state a specific seismic performance objective that is targeted by the upgrades. This is not unusual for "voluntary" upgrade projects, as there is no general Code mandate for the gravity or seismic force-resisting system of an existing building to be evaluated or strengthened in the absence of a structural alteration or addition.

Notably, the calculations do provide an analysis of the central concrete pier foundations and find them to be adequate. The structural analysis approach used for the foundation checks in the 2003 calculations are substantially different and less detailed than those used in the comprehensive evaluation completed by MHP in 2023 and supplemented in this report. Key to the difference in findings is the assumption in the 2003 calculations that vertical loads are acting concentrically on the existing footing, rather than eccentrically as has been confirmed and shown in the MHP analysis. This eccentricity is what causes foundation bearing pressures to exceed the stated allowable bearing pressure at the corner of the footing as described in the 2023 report.

- **2004 Library Roof Occurrence**

  This is a statement regarding an incident where concrete debris fell from the underside of the plaza slab in Section 600 of the Library during the ongoing plaza deck repair project. The statement is not written from a structural engineering perspective, but given our observations on site we interpret the falling debris to have been a portion of the concrete slab which delaminated and fell through the ceiling framing. Delamination of a sheet of concrete is not uncommon when a concrete slab has been subject to severe water intrusion for long periods of time. The water causes the steel reinforcing within the slab to rust. When rebar rusts, it expands dramatically, pushing the concrete out until it spalls. If a portion of the bottom of the concrete slab is loose due to this ongoing process, it can be dislodged by the vibration and movement caused by construction operations on the top of the slab, causing it to fall. To prevent the possibility of a similar event in the future, areas with water intrusion and any areas with delamination should be corrected as discussed in Section 7.1 below.

6.0 COST ESTIMATE UPDATE

The 2023 Phase 1 report included a cost estimate prepared by Cumming based on a presumptive construction start date of November 1, 2023. The cost estimate included the recommended gravity strengthening, seismic strengthening, and replacement of the plaza deck and waterproofing. This cost estimate has been updated based on a new presumptive construction start date of September 1, 2027, with a new total construction cost of $3,166,106. The cost estimate, provided in Appendix A, identifies the cost for each scope item.

Note that this number does not include consideration for seismic improvements to the structure and non-structural systems that may be required to support the Library's use as an Emergency Operations Center. When incorporated as part of the overall recommended gravity strengthening project, we estimate the rough order-of-magnitude additional structural cost of seismic improvements to be approximately $200,000 to $400,000. However, to fully assess and understand the non-structural impacts and costs it is recommended that additional team members, such as mechanical, electrical, plumbing, IT, and architectural consultants be retained to assist in evaluating all systems affected by emergency operations.

7.0 FINDINGS & RECOMMENATIONS

7.1 Site Investigation & Repair of Deteriorated Areas

In general, the cracking of the main beams and girders appears stable and does not present an immediate concern under the current loading conditions. Areas where water intrusion frequently occurs also appear stable when compared with photos from 2022, however, it is recommended that these areas be addressed in the near term to prevent further deterioration or another delamination event as is described in the 2004 Library Roof Occurrence statement. Addressing these conditions will require exposure of the top surface of the concrete structure for observation and repair, removal of any damaged concrete and rebar, epoxy injection of existing cracks, and replacement of the waterproofing system. This work was generally covered in the Phase 1 costs presented in 2023 and is covered in the updated costs presented in this report.

7.2 Seismic Strengthening for Emergency Operations Center Designation

The analysis confirmed that the primary seismic force-resisting system of the building largely complies with the ASCE 41-23 BPOE-RCIV, with the exception of the Bidwell Room where strengthening needs are generally as-described in our 2023 report, consisting of supplemental wall anchorage, FRP wrap of supporting beams, and new shear walls at the north elevation. Although the update to 2025 CBC provisions resulted in significantly increased seismic demands, the level of structural strengthening needed did not substantially change.

However, the new Code also presents greatly heightened requirements for non-structural and equipment anchorage in order to satisfy the criteria for Risk Category IV buildings, which are not addressed by the current project scope. Furthermore, it is possible that some equipment or systems will need to be replaced for reasons other than structural requirements should the Library be used as an Emergency Operations Center.

If the City would like to explore this further it is recommended that additional team members, such as mechanical, electrical, plumbing, IT, and architectural consultants be retained to assist in evaluating all systems affected by emergency operations.

7.3 Foundation Improvement

As part of the gravity strengthening discussed in the 2023 Phase 1 report, it was noted that the four central pier foundations would require strengthening if they are to support the 100 psf of non-reducible Live load stipulated on the original construction drawings. It was also determined as part of this study that the foundations also require strengthening in order to satisfy the BPOE-RCIV criteria if the Library were to be considered an Emergency Operations Center. Widening of the footings on all sides as depicted herein will satisfy both conditions.

7.4 Historical Document Review

The historical documents reviewed provide additional information about the Library structure and past work that is consistent with our current findings and support the proposed repair and strengthening approach. The 2004 Library Roof Occurrence underscores the need to complete a detailed structural condition assessment and repair prior to undertaking heavy construction operations on the plaza to ensure that any loose material is identified and remediated to prevent unexpected falling debris. A gap in the historical record that is not resolved by the provided documents is the unknown actual detailing of repairs completed at the northeast corner where water intrusion continues to be an issue.

We trust that this report satisfies your current needs for the project and we thank you for the opportunity to be of continued service to the City of Glendora. Should you have any questions, please feel free to contact our office.

Chris Stone, S.E. CA S6912
Senior Project Engineer

Kyle D. White, S.E. CA S6033
Associate, Project Manager

APPENDIX A: COST ESTIMATE

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

Statement of Probable Cost

June 17, 2026

CUMMING

Building Value Through Expertise

Credits

Glendora Library Structural Analysis/Feasibility Study
Conceptual Design
June 17, 2026

The information contained within this documents is confidential and should not be distributed or copied for any reason without the consent of either Cumming Construction Management, Inc. or the intended client.

Cumming has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions.

This opinion of the probable cost of construction is made on the basis of the experience, qualifications, and best judgment of a professional consultant familiar with the construction industry. However, Cumming cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

This document reflects fair market value construction costs obtainable in a competitive bidding market in Los Angeles, California. Cumming assumes a minimum of three (3) competitive bids from qualified general contractors, with bids from a minimum of three (3) subcontractors per trade. This statement is a determination of fair market value for the construction of the project and is not intended to be a prediction of low bid. Please note that experience indicates a fewer number of bidders may result in a higher bid amount, thus more bidders may result in a lower bid result.

The Cumming staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.



LA | Cumming Management Group, Inc.

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Executive Summary

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

June 17, 2026

Project Description

The project is a structural analysis/feasibility study and options for vertical expansion of the existing Library for the City of Glendora. The existing library is a two-story reinforced concrete and CMU structure with 27,000 square feet

Project Control Metrics

Construction Start:	November 1, 2027
Construction Completion:	April 30, 2028
Construction Duration:	6 Months
Delivery Method:	Design Bid Build

Scope of Work	Area	$ / SF	Total Cost
Option 1 - Seismic Strenthening/Gravity Repair	15,130 SF	$209	**$3,166,106**
Option 2 - Seismic Strenthening Plus Additional Level			**NIC**
Option 3 - Construction of New Library			**NIC**
Total Construction Costs	**15,130 SF**	**$209**	**$3,166,106**

Note:

- The cost estimate above is applicable only for Option 1 - Structural Strengthening. Options 2 & 3 will be done separately at a later date
- Assume the library is shutdown during construction
- Soft Costs - Excluded
- Construction Contingency - Excluded

Direct Construction Cost Summary

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Conceptual Design

June 17, 2026

CUMMING
Building Value Through Expertise

Element		Building 15,130 SF Total	$/SF
A) Shell (1-5)		**$1,713,754**	**$113.27**
1 Foundations		$0	$0.00
2 Vertical Structure		$0	$0.00
3 Floor & Roof Structures		$1,441,414	$95.27
4 Exterior Cladding		$0	$0.00
5 Roofing and Waterproofing		$272,340	$18.00
B) Interiors (6-7)		**$155,000**	**$10.24**
6 Interior Partitions, Doors and Glazing		$55,000	$3.64
7 Floor, Wall and Ceiling Finishes		$100,000	$6.61
C) Equipment and Vertical Transportation (8-9)		**$0**	**$0.00**
8 Function Equipment and Specialties		$0	$0.00
9 Stairs and Vertical Transportation		$0	$0.00
D) Mechanical and Electrical (10-13)		**$84,577**	**$5.59**
10 Plumbing Systems		$0	$0.00
11 Heating, Ventilation and Air Conditioning		$0	$0.00
12 Electrical Lighting, Power and Communications		$84,577	$5.59
13 Fire Protection Systems		$0	$0.00
E) Building Prep & Demo (14-15)		**$86,241**	**$5.70**
14 Building Preparations & Protection		$0	$0.00
15 Building Demolition		$86,241	$5.70
F) Site Work (16-18)		**$0**	**$0.00**
16 Site Preparation and Demolition			$0.00
17 Site Paving, Structures & Landscaping		$0	$0.00
18 Utilities on Site			$0.00
Sub-Total Direct Construction Cost		**$2,039,571**	**$134.80**
Design/Cost Contingency	15.00%	$305,936	$20.22
Market Escalation to Buyout	9.12%	$213,895	$14.14
Total Direct Construction Cost		**$2,559,402**	**$169.16**
General Conditions	$33,254 / MO	$199,526	$13.19
General Requirements	6.00%	$153,564	$10.15
Subcontractor Default Insur.	1.20%	$30,713	$2.03
General Liability Insurance	1.50%	$43,687	$2.89
Overhead & Profit	6.00%	$179,214	$11.84
Sub-Total Indirect Construction Cost		**$606,704**	**$40.10**
Total Construction Cost		**$3,166,106**	**$209.26**

Construction Cost Detail

Glendora Library Structural Analysis/Feasibility Study

Conceptual Design

June 17, 2026

CUMMING
Building Value Through Expertise

Code		Quantity	Unit	Unit Rate	Total Cost
A) Shell (1-5)					
1 Foundations					
	Sub-Total: 1 Foundations	**15,130**	**SF**		
2 Vertical Structure					
	Sub-Total: 2 Vertical Structure	**15,130**	**SF**		
3 Floor & Roof Structures					
Floor					
	FRP strenthening of (E) girders including grinding corners, duct for FRP overlay anchorage	10,161	SF	$126.00	$1,280,286
	Prepare slab and Epoxy injection of cracks	218	LF	$88.00	$19,184
	Prepare beam and Epoxy injection of cracks	40	LF	$96.00	$3,840
	Allowance for additional epoxy injection cracks	200	LF	$88.00	$17,600
	New 2.5" Light Weight concrete topping, 3,000 psi	15,130	SF	$6.00	$90,780
	Reinforcement to concrete topping, #3@12" O.C.	15,644	LB	$1.90	$29,724
	Sub-Total: 3 Floor & Roof Structures	**15,130**	**SF**	**$95.27**	**$1,441,414**
4 Exterior Cladding					
	Sub-Total: 4 Exterior Cladding	**15,130**	**SF**		
5 Roofing and Waterproofing					
	New waterproofing membrane	15,130	SF	$12.50	$189,125
	New rigid insulation	15,130	SF	$5.50	$83,215
	Sub-Total: 5 Roofing and Waterproofing	**15,130**	**SF**	**$18.00**	**$272,340**
Total - A) Shell (1-5)		**15,130**	**SF**	**$113.27**	**$1,713,754**

Code	Quantity	Unit	Unit Rate	Total Cost
B) Interiors (6-7)				
6 Interior Partitions, Doors and Glazing				
Restore damage partition as needed - allowance	1	LS	$55,000.00	$55,000
Sub-Total: 6 Interior Partitions, Doors and Glazing	**15,130**	**SF**	**$3.64**	**$55,000**
7 Floor, Wall and Ceiling Finishes				
Restore all finishes to original construction, where exposed and visible	4,000	SF	$25.00	$100,000
Sub-Total: 7 Floor, Wall and Ceiling Finishes	**15,130**	**SF**	**$6.61**	**$100,000**
Total - B) Interiors (6-7)	**15,130**	**SF**	**$10.24**	**$155,000**
C) Equipment and Vertical Transportation (8-9)				
D) Mechanical and Electrical (10-13)				
10 Plumbing Systems				
Sub-Total: 10 Plumbing Systems	**15,130**	**SF**		
11 Heating, Ventilation and Air Conditioning				
Sub-Total: 11 Heating, Ventilation and Air Conditioning	**15,130**	**SF**		
12 Electrical Lighting, Power and Communications				
Remove and replace electrical, conduit and utilities as necessary to access work	15,130	SF	$5.59	$84,577
Sub-Total: 12 Electrical Lighting, Power and Communications	**15,130**	**SF**	**$5.59**	**$84,577**
13 Fire Protection Systems				
Sub-Total: 13 Fire Protection Systems	**15,130**	**SF**		
Total - D) Mechanical and Electrical (10-13)	**15,130**	**SF**	**$5.59**	**$84,577**

Construction Cost Detail

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June 17, 2026

CUMMING
Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
E) Building Prep & Demo (14-15)				
14 Building Preparations & Protection				
Sub-Total: 14 Building Preparations & Protection	**15,130**	**SF**		
15 Building Demolition				
Selective Demolition				
Remove concrete topping	15,130	SF	$2.50	$37,825
Remove rigid insulation	15,130	SF	$1.00	$15,130
Remove waterproofing membrane	15,130	SF	$2.20	$33,286
Sub-Total: 15 Building Demolition	**15,130**	**SF**	**$5.70**	**$86,241**
Total - E) Building Prep & Demo (14-15)	**15,130**	**SF**	**$5.70**	**$86,241**

Project Escalation Forecast

Cumming revises our escalation forecast on a quarterly basis. All rates subject to change with market conditions.

Estimate Date	06/17/26
Construction Start	11/01/27
Construction Midpoint	01/30/28
Construction Completion	04/30/28
Construction Buyout	11/01/27
Construction Duration	181 Days
Construction Duration	*6 months*

Year	Time	Rate	Total	Rate
2026	0.54	8.00%	4.34%	
2027	0.83	5.5%	4.6%	9.12%
			Total Escalation to Start Date	9.12%

		Qty	%	Building	Rate/Hr	Rate/Mo	Total Cost
Project Management							
Project Manager	Overall project responsibility, cost, schedule, logistics	1	100%	6.00	$192.00	$33,254	$199,526
		Sub-Total:			**$33,254/Month**	**0.62%**	**$199,526**
Grand Total - Project Staffing					**$33,254/Month**	**7.80%**	**$199,526**

PHASE 2 OPTIONS FOR VERTICAL EXPANSION

GLENDORA PUBLIC LIBRARY

CITY OF GLENDORA

Prepared by

MHP, Inc.
Structural Engineers
Long Beach, California

October 18, 2023

MHP JN: 22-0647-00

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PHASE 2: OPTIONS FOR VERTICAL EXPANSION: Glendora Public Library

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APPENDIX D: Workshop Presentation Slide Decks

1.0 EXECUTIVE SUMMARY

At the request of the City of Glendora, the Project Team has completed a feasibility study for vertical expansion of the existing Library building. The feasibility study was divided into two phases. The first phase involved in-depth structural analysis and material testing of the existing Library structure to provide an understanding of the current condition of the building and any repair or strengthening work required to meet the City's continued use and seismic resiliency goals. The second phase involved the evaluation of the feasibility of vertical expansion of the building while simultaneously working with Library stakeholders to identify the intended use of the expanded space and anticipate the activities that will take place there.

In Phase 1 it was determined that the building satisfies the seismic performance objectives stipulated by the 2022 California Existing Building Code and ASCE/SEI 41-17 for both existing structures, with the exception of wall anchorage upgrade needs at the wood-framed high roof levels. However, the structural analysis unexpectedly revealed that although the structure has demonstrated its ability to support daily sustained service loads for the past 50 years, some existing girders and pad footings do not satisfy current building code provisions for gravity design when considering the original stated design live load of 100 psf. Full details on the analysis, conceptual repair and strengthening recommendations, and considerations for the continued use of the Library are documented in the Phase 1 report.

Phase 2, led by the architectural consultant, Pfeiffer, a Perkins Eastman Studio, involved a series of seven workshops between March and June 2023. The workshops were attended by representatives from the Library, Board of Library Trustees, GPL Friends Foundation, City Manager's office, and Public Works Department, as well as members from MHP and the Pfeiffer team. Through the workshops, the Library's vision and objectives for the future expansion/addition were validated and refined. Four potential options, summarized below, were determined to be feasible and were developed to a conceptual level for comparison and rough order-of-magnitude cost estimation.

- **Option 1:** Complete structural strengthening and repairs only as described in the Phase 1 report. This option serves as a baseline, where the existing water intrusion issues are mitigated, and plaza framing is structurally strengthened to provide the building envelope and load-carrying capacity intended by the building's original design.
- **Option 1a:** Complete structural strengthening and repairs and additionally provide architectural enhancement to the plaza deck through a combination of strategically-located new hardscape and green roof features.
- **Option 2:** "The Deck" concept. Expand the facility by constructing a second story over the plaza deck, with a green roof on top of the new addition, and expansion toward Glendora Avenue. Option 1 work is also completed.
- **Option 3:** "The Paseo" concept. Expand the facility through an extension towards Glendora Avenue and south toward the Police Station, including the creation of a new two-story entrance lobby at Glendora Avenue. Option 1a work is also completed.
- **Option 4:** Construct a completely new facility at a to-be-determined site.

The concept development process, diagrams of each concept, and critical architectural, structural, mechanical, electrical, and plumbing considerations for each option are described in detail within the report and appendices. It is important to note that the concept diagrams are intended to broadly convey the configuration of building massing

and positioning within the existing site – detailed design elements such as windows, doors, finish materials, etc. are not represented in the concept diagrams. Development of the preferred concept will be completed as part of the future design phase.

Initial area allocations are discussed. Flexibility and adaptability of the future Library building and potential expansion are key elements of the Library's vision, however, initial area allocations were defined in order to facilitate a meaningful evaluation of the structural needs and feasibility of an expansion of the Library building for this study. These initial allocations are estimates, forecasted in time for the opening of a new or newly remodeled facility, and may continue to evolve as the project moves forward into future design phases and beyond.

Hard construction cost estimates were generated for each option based on the design concepts and conceptual narratives developed by the Project Team and assuming a September 2024 start date. Soft costs, including design consultant fees, plan-check and permit fees, etc., would be in addition to the budgetary numbers provided in the cost estimate. Hard construction cost estimates are summarized below:

SUMMARY OF ESTIMATED HARD CONSTRUCTION COST AND SCHEDULE			
OPTION	**DESCRIPTION**	**CONSTRUCTION DURATION**	**ESTIMATED HARD CONSTRUCTION COST (ROM)**
1	Baseline structural strengthening and repairs only	6 months	$2.9M
1a	Option 1 plus plaza deck hardscape/green roof	6 months	$3.2M
2	"The Deck" concept	12 months	$20.6M
3	"The Paseo" concept	12 months	$23.0M*
4	New building	18 months	$42.7M

**includes $0.3M for plaza hardscape and green roof features*

These 4 options offer different approaches to achieve project goals at a broad, conceptual level. Further evaluation and detailed consideration will be required in the future to determine the most suitable course of action. Ultimately, once a preferred approach is identified, complete design and construction documents must be developed for the selected option.

Conceptual diagrams, construction cost estimates, mechanical, electrical, & plumbing assessment report, and workshop slide decks are provided as Appendices to this report.

2.0 PURPOSE AND SCOPE

The overall purpose of the project is to provide an understanding of the existing structural properties of the library building, including any repair or strengthening needs, and to evaluate the feasibility of a potential second-floor expansion. Using the findings, the City may objectively weigh the options and determine the optimal path forward for their needs. The project scope included structural analysis, material testing, geotechnical studies, development of conceptual structural plans, professional construction cost estimates, and documentation of findings in this report.

While structural considerations are a necessity for any construction project, they assume a humble and supporting role in the larger context of the building's purpose and experience. A critical purpose of Phase 2, led by the architectural consultant, Pfeiffer, a Perkins Eastman Studio, was to begin to bring into focus the City's vision for the future of the Library building and its place within the civic center. Concept diagrams were developed representing potential options for addition/expansion of the library building. It is important to note that the concept diagrams are only intended to broadly convey the configuration of building massing and positioning within the existing site – detailed design elements such as windows, doors, finish materials, etc. are not represented in the concept diagrams. Development of the preferred concept will be completed as part of the future design phase.

Mechanical, electrical, and plumbing systems were also evaluated to assess current maintenance or repair needs, and concepts were developed for modifications required in support the addition/expansion.

3.0 PHASE 1 SUMMARY & STRUCTURAL IMPLICATIONS FOR PHASE 2

3.1 Phase 1 Summary

In phase one it was determined that the building satisfies the seismic performance objectives stipulated by the 2022 California Existing Building Code and ASCE/SEI 41-17 for existing structure, with the exception of wall anchorage upgrade needs at the wood-framed high roof levels.

However, the structural analysis unexpectedly revealed that although the structure has demonstrated its ability to support daily sustained service loads for the past 50 years, some existing girders and pad footings do not satisfy current building code provisions for gravity design when considering the original stated design live load of 100 psf. If subjected to the 100 psf live load stated on the original design drawings, several main concrete girders would be overstressed due to torsion, and soil bearing pressures underneath the existing pad footings supporting the interior concrete piers would marginally exceed the allowable soil bearing pressure.

A conceptual repair and strengthening design was developed which would replace the existing plaza waterproofing membrane, and bring the plaza framing into conformance with 2022 CBC requirements. Repair work consists of the replacement of the plaza topping and waterproofing membrane. Strengthening work includes the addition of fiber-reinforced polymer overlay of existing concrete beams and girders to provide additional bending, shear, and torsional strength. Hard construction cost for the repair and strengthening is estimated to be $2,867,266 and assumes that the library building will be closed for the approximately 6-month construction duration. It is recommended that a project budget of $4.0M be considered for this work. It is anticipated that the strengthening scope may reduce somewhat as this conceptual design is further developed in future design phases.

Full details on the analysis, conceptual repair and strengthening recommendations, and considerations for the continued use of the Library building are documented in the phase one report.

3.2 Structural Implications for Phase 2

In the absence of an addition, alteration, or other circumstance which triggers the requirement for mandatory strengthening in accordance with the 2022 California Existing Building Code the strengthening and repair work may be pursued on a voluntary basis and should be considered a high priority for inclusion in any future major improvement of the building.

However, vertical expansion, which is the subject of this feasibility study, would trigger mandatory strengthening of gravity load-carrying elements which support new loads, including foundations. Depending on the scope of the addition or alteration, mandatory seismic evaluation and potential strengthening may also be triggered for some or all existing lateral force-resisting elements. The impacts of this trigger were evaluated as part of Phase 2, and the existing structure was confirmed to comply with the ASCE 41-17 Basic Performance Objective Equivalent to New Building Standards (2022 CEBC “Full Seismic Forces”), therefore no global seismic strengthening will be needed if triggered by the expansion, however, local elements seeing increased seismic forces due to the expansion will require strengthening to resist the new loads. This impact is included in the concepts presented herein.

The strengthening and repair work identified in Phase 1 may easily be adjusted to accommodate limited enhancements to the plaza level (such as the addition of hardscape, planters, or green roof features) at relatively modest additional cost through the application of additional layers of fiber-reinforced polymer overlay.

4.0 PHASE 2 CONCEPT DEVELOPMENT PROCESS

The project was initially launched to conduct a thorough structural analysis, evaluating the existing Library building's structural integrity and capacity and to determine if it could feasibly accommodate vertical expansion. Simultaneously, it was crucial to determine the intended use of the expanded space. Phase 2 of the project, led by Pfeiffer, a Perkins Eastman Studio, focuses specifically on identifying the intended use of the expanded space and anticipating the activities that will take place there.

Pfeiffer conducted a series of seven workshops between March and June 2023, which aimed at validating and refining the Library's vision and objectives for the future expansion/addition.

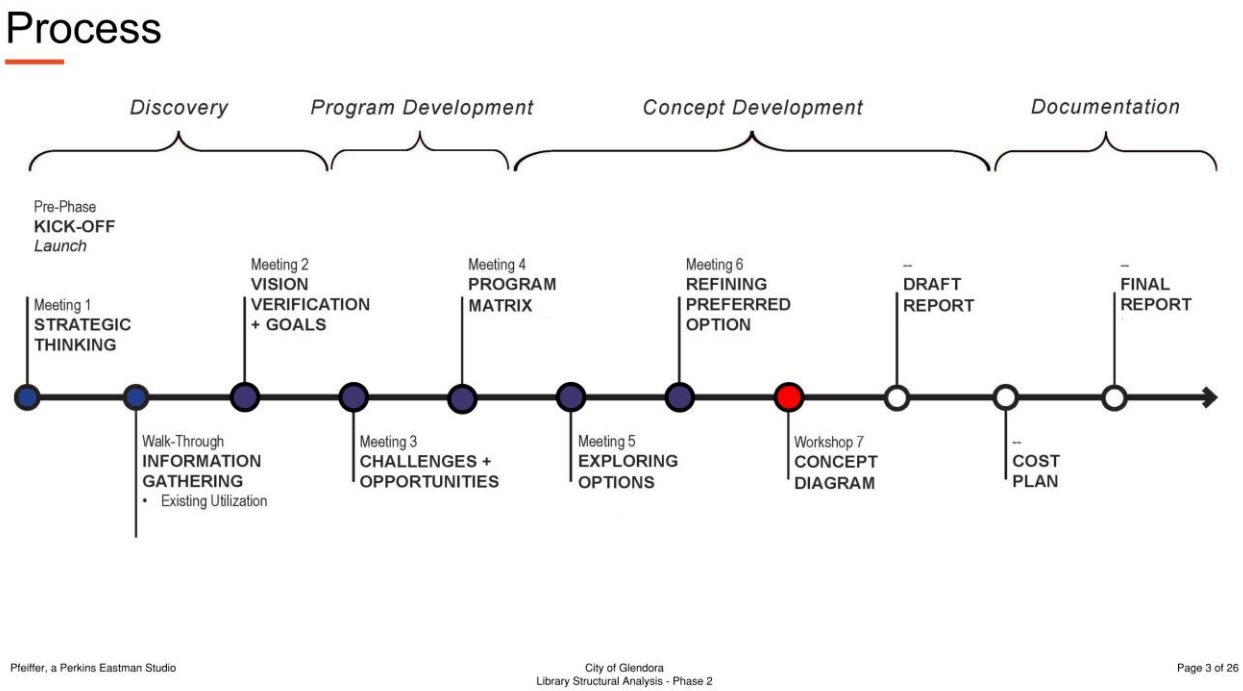

Figure 1 - Process Diagram from Workshop Slide Deck

The workshops were attended by representatives from the Library, Board of Library Trustees, GPL Friends Foundation, City Manager's office, and Public Works Department, as well as members from MHP and the Pfeiffer team. The presence of multiple perspectives greatly enriched the conversations, helped ensure that occupants of the current building spaces were part of the discussion, and proved to be valuable.

4.1 Vision Verification

Service Philosophy

The main goal of the library is to prioritize flexibility in order to meet the **changing aspirations and evolving needs of the community**. Janet Stone, the Library Director, provided an explanation of the library's service philosophy and presented the eight tenets of its strategic framework, which are: Proximity, Human Development, Physiology, Preservation, Organization, Protection/Availability, Interpretation/Context, and Sustainability.

Meeting the Community's Needs

The discussion regarding right-sizing the expansion or addition considered the City's current population and future projections based on the 2020 US Census estimates. Upon examination of the per capita library area, it became evident that the size of the library had not kept pace with the growing population. As a result, the per capita library space has decreased and currently ranges around 0.6 square feet per person. In order to adequately meet the needs of the community in the current digital age, it is crucial for library buildings to be properly sized, which often involves making them larger. This adjustment is necessary to ensure the provision of a high-quality level of service, particularly when it comes to electronic information access. Considering the projected population and the per-capita square footage allocation, the library expansion is expected to fall within the range of 45,000 to 52,500 gross square feet.

At the same time, we also recognize that standards, benchmarks, and best practices are merely a starting point. The library must be shaped by its community and offer unique environments tailored to meet the specific needs of the local residents, while promoting discovery, creativity, and engagement.

When participants described the desired outcomes and objectives for this study, the **shared vision** was to create an exciting place with ample learning opportunities, positioning the library building as a civic center that will serve the community's needs for the next 50 years. The goal is to provide a responsive space that aligns with the community's aspirations and to establish the library building as a cultural center.

In general terms, libraries require additional space to enhance their current operations and accommodate activities that are currently limited due to insufficient or inadequate space. When considering the potential uses for additional space, we explored the practices and initiatives implemented by other libraries to broaden our perspective on what could be feasible.

Pfeiffer delivered an environmental scan of public libraries with the purpose of offering insights into potential paths for growth and future services. The presentation featured a variety of examples from different libraries, showcasing their varying sizes, types, and geographic locations. The intention was to highlight how these libraries have successfully utilized their spaces to meet the needs of their specific communities in the following areas:

- **Co-Working**: Creating shared workspaces to facilitate collaboration and productivity.
- **Learning/Studying**: Providing resources and conducive environments for educational pursuits and academic endeavors.
- **Skilling**: Offering opportunities for individuals to acquire new skills and enhance their existing abilities.
- **Discovering**: Promoting exploration and discovery through access to a diverse range of materials and resources.
- **Making**: Supporting hands-on activities and providing spaces for individuals to engage in creative and practical projects.
- **Creating** (tech arts): Fostering the development of artistic and technological skills, enabling individuals to express themselves creatively.
- **Gaming**: Catering to the gaming community by offering gaming spaces and resources for recreational purposes.
- **Sharing**: Facilitating knowledge exchange and collaboration among community members through platforms and programs.
- **Playing**: Providing spaces and resources for recreational activities and fostering a sense of playfulness.

- **Chilling**: Creating comfortable and inviting spaces for relaxation and leisure activities.

This exploration served to broaden the scope of envisioning possibilities beyond conventional library services and spaces, with a focus on the wide range of activities (rather than the User groups) while keeping in mind the diverse needs and interests of the community. Envisioning a public library as a vibrant hub may include the incorporation of various activities such as pop-ups, a culinary kitchen, a tinkering garage, a garden, and art trucks. Moreover, it opens up the potential for a public library to become a center for learning, offering opportunities such as a language center, makerspaces, and a tech arts lab. Additionally, it can evolve into a civic and cultural center, accommodating amenities like a café or coffee cart, a community gallery, a business and career center, a social services center, and a dedicated space to showcase local history and archives.

Flexibility is key

During the discussion, the focus shifted towards finding a balance between providing customized experiences through dedicated spaces for specific activities and creating multi-purpose ("black-Box" type) areas that allow for future flexibility.

The library's physical environment must reflect the values and priorities of its community. For Glendora public library "i**ntentional service makes the world of ideas accessible**"**.** To this end, and to the extent possible, the Library wants a "black-Box" concept – in other words: a setting that will allow for unlimited flexibility to accommodate evolving needs of their community, stay responsive, adapt, change quickly and as needed. This customization will empower the library staff to effectively meet the diverse needs of their customers.

4.2 Functional Analysis

The functional analysis consolidates all the knowledge accumulated thus far regarding the library and assesses the building's potential for expansion to accommodate new programmatic elements. During Workshop #3, the architectural and engineering (A&E) team presented the study's findings from the analysis conducted up to that point.

Structural

MHP Structural Engineers have summarized the findings of the ongoing structural evaluation process as follows: Phase 1 aimed to establish the baseline by conducting material testing, geotechnical site classification, and seismic evaluation. Phase 2 focuses on assessing the feasibility of any additions or modifications to the structure and conceptually defining the structural elements and strengthening required to support the new additions or modifications.

A summary of Phase 1 findings and their implications for Phase 2 are discussed in Section 3.0 and the Phase 1 report. Structural work during Phase 2 included an additional comprehensive seismic evaluation of the existing Library building following the same evaluation and retrofit standard, ASCE 41-17, but using a heightened seismic Performance Objective as would be required by the 2022 CEBC when triggered due to a substantial structural alteration, such as the addition of a second story or a structurally-connected addition.

For the purposes of the mandatory evaluation, the ASCE 41 Basic Performance Objective equivalent to New Building Standards (BPON) was selected. This two-level Objective stipulates the same Structural Performance Levels but compares them to increased Seismic Hazard Levels.

In order to meet the ASCE 41 BPON, an existing Risk Category III structure must satisfy both:

1. **"S-2" Damage Control** Structural Performance Level when subjected to the **BSE-1N Seismic Hazard**.
2. **"S-4" Limited Safety** Structural Performance Level when subjected to the **BSE-2N Seismic Hazard**.

2022 CEBC Table 304.3.1, which stipulates the required Performance Objective for "Full" seismic forces, is shown below:

[BS] TABLE 304.3.1
PERFORMANCE OBJECTIVES FOR USE IN ASCE 41
FOR COMPLIANCE WITH FULL SEISMIC FORCES

RISK CATEGORY (Based on IBC Table 1604.5)	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1N EARTHQUAKE HAZARD LEVEL	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2N EARTHQUAKE HAZARD LEVEL
I	Life Safety (S-3)	Collapse Prevention (S-5)
II	Life Safety (S-3)	Collapse Prevention (S-5)
III	Damage Control (S-2)	Limited Safety (S-4)
IV	Immediate Occupancy (S-1)	Life Safety (S-3)

2022 CEBC Table 304.3.1

The existing building has substantial reserve seismic capacity, and it was confirmed that existing structure satisfies with the ASCE 41-17 BPON, therefore no global seismic strengthening will be needed if triggered by the expansion, however, local elements seeing increased seismic forces due to the expansion will require strengthening to resist the new loads. This impact is included in the concepts presented herein.

Architectural & Programmatic Utilization

Pfeiffer conducted a baseline analysis of the current (April 2023) programmatic space utilization to assess the anticipated impact of a renovation on the current spaces and services.

In terms of overall space utilization, the 27,455 ASF facility confirms that approximately 78% of the library areas are located on the first floor, while the upper level accounts for 22% of the total space.

Regarding the entry sequence experience, Pfeiffer found that the approach to the building is hindered by its opacity. There is no visibility of the activities happening inside, and the small entries are shaded, resulting in a dark appearance during the daytime. Furthermore, the lack of wayfinding clues makes the entry process non-intuitive. The façade facing Glendora Avenue presents a solid wall, and the corners closest to the sidewalk, although they appear as entries, are not actual entrances. This deceptive design causes confusion among visitors.

However, once inside the building, the experience is entirely different. The space becomes welcoming and inviting, with well-attended service points greeting visitors. Clear and easily readable signage, along with adequate lighting, creates a sense of clarity, orderliness, and calm. Resources are effectively displayed, accompanied by information on how to utilize them, empowering visitors to engage with the resources independently, should they prefer not to seek assistance from others or staff.

Pfeiffer identified several areas where the existing environment fails to meet current codes, highlighting the need to address these issues during the renovation process. One notable issue is the vertical circulation, where the stair to the upper floor is clearly visible from the main entry doors, but the elevator is not. This poses a challenge for individuals with mobility limitations, but can be easily addressed with proper signage. Additionally, the stair's handrail and guardrail do not meet the current code requirements. There are also doors that lack sufficient swinging clearance.

The electrical connectivity in the building is inadequate, with a shortage of electrical outlets. The existing outlets are wall-mounted, making it challenging to provide power to open-plan areas located away from the walls. Consequently, service-points are awkwardly placed either near the available outlet but away from where they are most needed, or with floor-mounted channels covering cords and wires.

Temperature control and ventilation pose challenges, primarily affecting the staff offices, which were constructed with a storefront-type enclosure without adjusting the mechanical system. As a result, the system does not effectively regulate the temperature and ventilation in those areas.

Water leaks have been a persistent issue since the library's opening, particularly under the Plaza, resulting in stained walls and floors, as well as corrosion of some window frames. The affected areas are often covered with plastic or taped off, limiting the library's ability to provide service to the community.

The lighting systems, including fixtures and controls, are outdated and require an upgrade.

In the northeast portion of the floor, the arrangement of collection shelving and patrons' carrels obstructs sightlines and can present challenges or triggers for some visitors. A simple adjustment to the layout can rectify this issue.

The library staff workplace is small, overcrowded, and lacks natural daylight. Moreover, there is a clear shortage of storage space for the various items that support the library's range of activities, services, and programming, including summer reading materials and promotional items.

Mechanical, Electrical, & Plumbing Infrastructure Considerations

Assessment of current and future needs for MEP systems was provided by P2S, Inc.

The HVAC system at Glendora Library utilizes a mix of hydronic systems and standalone DX packaged and split AC systems. The equipment comprises a combination of original components, replacements, and additions made throughout the years. Moreover, a separate system serves the newly constructed west-side library addition. To accommodate the planned expansion, the existing system capacity will require expansion.

The Library's electrical system covers both its facility, and the neighboring City Hall and Police station, with a central 480Y/277V switchboard 'MS'. This electrical system includes two paralleled, standby power generators for backup on utility power loss. The library's remaining electrical infrastructure has changed little from the original 1970s design. Fluorescent lamp fixtures and receptacle coverage are consistent, with mechanical systems having a few more upgrades in the interim. The proposed additions and alterations will necessitate expanding the electrical equipment and devices, correcting several deficiencies, and tentative remodels of existing spaces.

Plumbing conditions consists of the domestic water system, comprised of copper piping served by tankless water heaters, and a small electric water heater serving the mop sink. Sanitary drainage system materials could not be confirmed but are anticipated to consist of cast iron piping. Natural gas is used serving the space conditioning equipment and consists of steel pipe. To support an addition/expansion,

Full documentation of MEP findings and recommendations are provided in the MEP report in Appendix C.

4.3 Prioritizing Goals

The Library has refined its vision and space utilization for a 50,000 Gross Square Feet (GSF) building based on Functional Analysis, visioning discussions, and research. The Library Director aims to avoid labelling specific services to ensure a responsive and adaptable building. Instead, the focus is on categorizing spaces based on different human activities. Flexibility and adaptability of the future Library building and potential expansion are key elements of the Library's vision, however, in order to facilitate a meaningful evaluation of the structural needs and feasibility of an expansion of the Library building for this study, initial area allocations were defined. These initial allocations are estimates, forecasted in time for the opening of a new or newly remodeled facility, and may continue to evolve as the project moves forward into future design phases and beyond.

Initial area allocations have been determined through a combination of input, research, and the Director's experience. The allocations include customer-driven workspaces, open-format public assembly spaces, library-mediated public workspaces, fulfillment center services, a physical content showroom, leisure spaces, service points, specialized storage and technology access, and infrastructure. The library envisions a planning paradigm that prioritizes activities rather than individuals or groups, ensuring a flexible space to accommodate a range of human endeavors.

The Library's initial area allocations for the purposes of the structural feasibility study are defined as follows:

13%	Customer-Driven Workspaces
12%	Public Assembly Spaces
10%	Library-Mediated Public Workspace
9%	Fulfillment Center Services
8%	Small Private / Semi-Private Spaces
8%	Physical Content Showroom
6%	Leisure Spaces – Relaxation
4%	Library Services
5%	Additional Library Services and Capacity Including: Preservation/Archival storage, Public Access Technologies, Food Service, Event Catering
5%	Flexible Future Space: Uncharted Possibilities
20%	Infrastructure
100%	

Additionally, the future library building will provide outdoor opportunities for various activities, utilizing floor space that is separate from the designated park and garden areas.

Here is a description of how each category of space allocation is envisioned:

Customer-Driven Workspaces

In the future library building, approximately 13% of the building's square feet could be **customer-driven workspaces** – which may serve as an enhanced version of the current main floor seating area.

These spaces could be dispersed throughout the library building, offering individuals a place to bring their materials, technologies, and ideas for short-term project staging. Whether visitors will require a space for education-related deskwork, staging and practicing skills, engaging in creative work, or enjoying in-person gaming experiences, the workspaces will be thoughtfully designed to cater to diverse needs. The multi-purpose furniture and flexible seating provided in these areas can be utilized by patrons to fulfill their aspirations and foster collaborative work with others.

The Library building can serve as a gathering place where individuals will collaborate with others and utilize the tools necessary to achieve their aspirations. It will be designed with flexibility in mind, offering workspaces for the community to bring their materials, technologies, and ideas, while also providing short-term staging areas for project development, regardless of how those projects may evolve in the future.

Public Assembly Spaces

In the future library, approximately 12% of the library building could be dedicated to reconfigurable **public assembly spaces**. Public Assembly spaces in the future library building are dynamic and versatile areas designed for a range of activities. These spaces, referred to as the "third place," offer opportunities for learning, training, discussions, and celebrations. They can be utilized by the community for civic, educational, social, and family needs. These areas can be used for entertainment, cultural events, recreation, social gatherings, meetings, emergencies, play, and various other events. They resemble spaces like Bidwell and the Friends Room known for their adaptability and welcoming atmosphere. They are available for "checkout" or can be rented to accommodate different events and purposes.

Library-mediated Public Workspaces

In the future library building, **library-mediated public workspaces** could make up about 10% of the building's area. These shared workspaces may be open and not private, intended for temporary instructional and exploratory installations. They can be equipped with specialized furniture and equipment for various activities. Individuals can receive instruction, build skills using specific equipment, and engage in collaborative work. The library may offer access to experts and resources to support skill development and learning beyond traditional education. The flexible nature of these spaces will allow for their configuration based on community needs, making them adaptable labs for diverse subjects such as cooking or coding.

Fulfillment Center Services

In the future library building, **fulfillment center services** could encompass approximately 9% of the building. These services may involve the storage, preparation, packing, and distribution of various information objects, including traditional materials like books and potential future innovations such as Li-Fi hotspots. The Fulfillment center can also cater to the storage needs of Libraries of Things, program giveaways, crafts, and more. It could serve as the hub where ideas and information objects, ranging from traditional printed books to future possibilities like Li-Fi hotspots, are packaged and made accessible to the community, potentially even incorporating delivery services for some materials. With a focus on efficient supply chains, these spaces will be flexibly designed to accommodate the technology and expertise required for handling and delivering the library's inventory to the community.

Physical Content Showroom

In the future library building, there could be a **Physical content showroom** comprising of approximately 8% of the space. The showroom may showcase a wide range of physical content, including traditional materials like books, libraries of things, historical treasures, future technologies, works of art, and scientific exhibits. It can be a

combination of a gallery and a bookstore, providing visitors with the opportunity to explore and engage with the diverse range of physical content available.

These Library building spaces can be designed to be flexible, allowing customers to engage with and learn from the physical content on-site. Additionally, some of the materials may be available for borrowing or purchasing to be enjoyed beyond the library's premises.

Visitors to the future library building will have the chance to immerse themselves in a dynamic and enriched environment, where they can browse, discover, and appreciate the diverse range of physical collections, spanning from traditional materials to cutting-edge technology and artistic endeavors.

Leisure Spaces - Relaxation

Approximately 6% of the future library facility could be designated for leisure spaces, dispersed throughout the building. These spaces may be dedicated to relaxation rather than organized or formalized gatherings. They can provide a sense of hospitality and offer comfortable lounging areas for visitors to unwind and chill. These spaces may feature choice of lounge seating, designed to enhance the leisure experience. The Library recognizes the importance of providing spaces for relaxation and rejuvenation amidst the world of ideas, offering a respite from information overload.

Service Points & Expertise

In the future library building, 4% of the building area could be dedicated to **service points**. These areas may serve as identified interface zones where visitors can access staff expertise. The service points could be staffed by both library personnel and, as needed, representatives from city services. They can also address other essential needs, such as curbside assistance and technology support.

Whether you need guidance, information, or connections to help you achieve your aspirations, the expert staff at these service points will be there to assist you. Their expertise will make the world of ideas more accessible, organized, and contextual, ensuring that visitors can easily navigate and benefit from the library's resources.

These service points can be reconfigurable spaces within the library building, providing a centralized location for customers to receive help directly from the knowledgeable staff. Whether through walk-in visits or scheduled appointments, visitors can have access to expertise tailored to their specific needs. Additionally, these service points may serve as a home base for library experts who will extend their support and services beyond the library's walls, both in the community and within the building itself.

Additional Library Services & Capacity

In the future library building, approximately 5% of the area could be dedicated to a range of **additional** essential library **services**. This allocation may include specialized preservation and archival storage, ensuring the long-term safeguarding of valuable materials. Additionally, it may provide public access to vital technology equipment, aiming to bridge the digital divide and promote technological inclusivity within the community. A modest space allocation can accommodate food preparation for specialized events, equipped with the necessary facilities and equipment.

Flexible Future Space

In the future library building, there could be a 5% area dedicated to **flexible future space**. This space could represent a dynamic and adaptable environment that holds immense potential for diverse and unforeseen uses. It embodies the concept of exploring new horizons and embracing innovative ideas.

The Flexible Future Space can serve as a canvas for uncharted possibilities, allowing for creative and evolving utilization based on the changing needs and aspirations of the community. This area would be designed to be versatile and responsive, capable of accommodating a wide range of activities, events, and services.

The Library aims to foster experimentation, collaboration, and discovery. It encourages visitors to push the boundaries of traditional library services and engage in activities that may shape the future of knowledge sharing and community interaction. This space represents an exciting realm of unexplored opportunities, inviting individuals to envision and create their own unique experiences within the library's evolving landscape.

Facility Infrastructure

Approximately 20% of the facility will likely be dedicated to Infrastructure, which will provide for essential components like HVAC systems, environmental installations (such as plants and acoustical features), restrooms, technology infrastructure, and janitorial supplies and storage for capital equipment.

This area allocation will prioritize accessibility installations to ensure inclusivity and accommodate the needs of all visitors. This may involve features such as ramps, elevators, accessible restrooms, and other modifications designed to provide a barrier-free experience for individuals with disabilities.

Outdoor opportunities

In the future library building, there could be a substantial allocation dedicated to outdoor spaces, specifically excluding park and garden areas. These outdoor areas would be carefully designed to cater to a wide variety of activities, representing a new planning approach that emphasizes the diverse range of human endeavors. By embracing an innovative approach, the future library can effectively utilize its outdoor spaces to cater to diverse experiences and adapt to evolving user needs. It may offer engaging activities like sustainable gardening, and educational programming, fostering a dynamic and inclusive environment for hands-on learning and exploration. This integration of outdoor opportunities aims to encourage exploration, foster a connection with nature, and provide enriching learning experiences for all.

4.4 Conceptual Program Development

The Library's vision for the renovated/future facility demonstrates its dedication to building a strong operational foundation and fostering an inclusive, functional, and welcoming environment for everyone. It acknowledges the importance of having the necessary framework in place to meet the diverse needs of the community and ensure the seamless delivery of library services. To capture the future planning intent, Pfeiffer developed a project matrix that detailed the space requirements and functions discussed earlier, including approximate sizes and seating capacities.

We then proceeded with a block and stack exercise to explore various possibilities, aiming to utilize the building renovation to address existing deficiencies and shortcomings. Our focus was on leveraging strategic interventions to improve the entry sequence and enhance the overall user experience. We also aimed to optimize opportunities for branding purposes and increase visibility from the street, making the activities within the library building visible and inviting. Additionally, we considered the importance of incorporating daylighting to create a brighter and more welcoming environment. We also carefully considered important factors such as determining the optimal number and placement of service points, evolving approach to collection security, defining areas for public and restricted access, and considering accessibility beyond regular library hours.

4.5 Concept Development

Concept Development activities involve exploring various options for the future use and utilization of the Second Story Addition. This process considers the approved space-program document, understanding of the existing facility, functional analysis findings, and the limitations of the existing site.

During the concept development phase, the team explored various options for the future of the facility. This involved examining different renovation approaches, such as massing, scale, proportion, and site relationship, as well as considering structural considerations. The concept development process is iterative and involves evaluating and synthesizing multiple scenarios in close collaboration with representatives from the Library and the City.

These options include:

- **Option 1:** Complete structural strengthening and repairs only as described in the Phase 1 report. This option serves as a baseline, where the existing water intrusion issues are mitigated, and plaza framing is structurally strengthened to provide the building envelope and load-carrying capacity intended by the building's original design.
- **Option 1a:** Complete structural strengthening and repairs and additionally provide architectural enhancement to the plaza deck through a combination of strategically-located new hardscape and green roof features.
- **Option 2:** "The Deck" concept. Expand the facility by constructing a second story over the plaza deck, with a green roof on top of the new addition, and expansion toward Glendora Avenue. Option 1 work is also completed.
- **Option 3:** "The Paseo" concept. Expand the facility through an extension towards Glendora Avenue and south toward the Police Station, including the creation of a new two-story entrance lobby at Glendora Avenue. Option 1a work is also completed.
- **Option 4:** Construct a completely new facility at a to-be-determined site.

These 4 options offer different approaches to achieve the project goals at a broad level. Further evaluation and detailed consideration will be required in the future to determine the most suitable course of action.

The architectural exploration focused on two options: building on the deck (option 2) and building on Glendora (option 3).

Planning Principles

Enhancing usability and creating a walkable and interactive civic space are priorities, and incorporating shaded and greened areas on the flat roofs is crucial. Sustainability is an important focus, considering not only the energy efficiency aspects but also the well-being of occupants and visitors (WELL buildings and FIT matrices).

Flat roofs were studied and found to offer opportunities for elevated plazas and roofscapes, including PV arrays, mechanical equipment, and green roofs.

- For green roof criteria, the team's planning assumption is a balanced 50% hardscape and 50% softscape ratio. The cost model will account for electrical, AV light poles, trellises, PV-trellises options, and emphasize plant selection that requires minimal maintenance or is maintenance-free.
- Transforming the accessible roof decks into versatile spaces for programming aligns with the Library's goals. These outdoor areas will offer engaging activities, such as involving children in planting and tending to a

flowering cutting garden, organizing farm-to-table culinary activities, and providing educational opportunities on sustainable farming practices like seasonal planting and crop rotation.

The massing of the library building is crucial in creating a civic center ambiance and fostering a sense of community between City Hall and the Police Department building. Additionally, the renovation and addition of the library building have the potential to turn it into a teaching facility that showcases the city's sustainability goals.

5.0 PHASE 2 "PREFERRED" CONCEPT DIAGRAMS

Two conceptual schemes were refined and developed to meet the specific needs of the City and the Library. These proposals were named "The Deck" and "The Paseo." Both concepts entail the renovation of the existing Friends Room and the construction of a modest addition along Glendora Avenue to address concerns regarding accessibility, and to enhance the Library's presence and visibility along Glendora Avenue.

In the Deck option, a second floor will be added above the existing plaza, while in the Paseo option, the existing plaza will be retained, and a new addition will be constructed to the south, utilizing a small portion of the current library and Police Station parking lot.

Both propose the renovation and expansion of the Library facility with a focus on structural improvements, the creation of appealing outdoor programming spaces, improved accessibility, and enhanced pedestrian connectivity. Additional visual diagrams and discussion of the two concepts is provided in Appendix A & Appendix D.

5.1 "The Deck" Concept

The proposed Deck concept entails a combination of renovation and expansion to address structural and waterproofing issues, as well as introduce new elements to improve its functionality and overall appeal.

To accommodate the need for more space, the plan suggests constructing a second story over the existing Plaza deck along with a 2-story addition on the Glendora Avenue side. The second level will be designed with a set-back perimeter on both the Glendora Avenue and city hall sides, allowing for the creation of programmable outdoor areas.

The outdoor roof spaces and new entries will be carefully designed to include shade structures and the integration of green elements. This approach aims to enhance the facility's visual appeal and establish a natural environment for library patrons to enjoy and engage in programming.

These shaded outdoor areas can be equipped with connectivity and AV capabilities, allowing for seamless integration of technology and audiovisual resources in programming. This feature enhances flexibility and enables a wide range of activities and events to take place in these shaded areas.

Recognizing the significance of accessibility, the scheme incorporates the addition of a new elevator and stairwell. This new vertical core will be located at the current site of the light-monitor towers, facilitating seamless movement between different levels of the library building for individuals of all abilities.

While the Deck Scheme offers several advantages, it also presents challenges. Supporting the increased load on the plaza necessitates the installation of additional columns and walls on the first floor, which raises concerns about potential impacts on circulation and the usability of the existing space. Future planning will need to effectively address structural requirements while preserving the functionality of the area, striking a balance between the two.

The Deck Scheme seeks to transform the existing structure into a dynamic and inclusive space that warmly accommodates the needs of all library visitors.

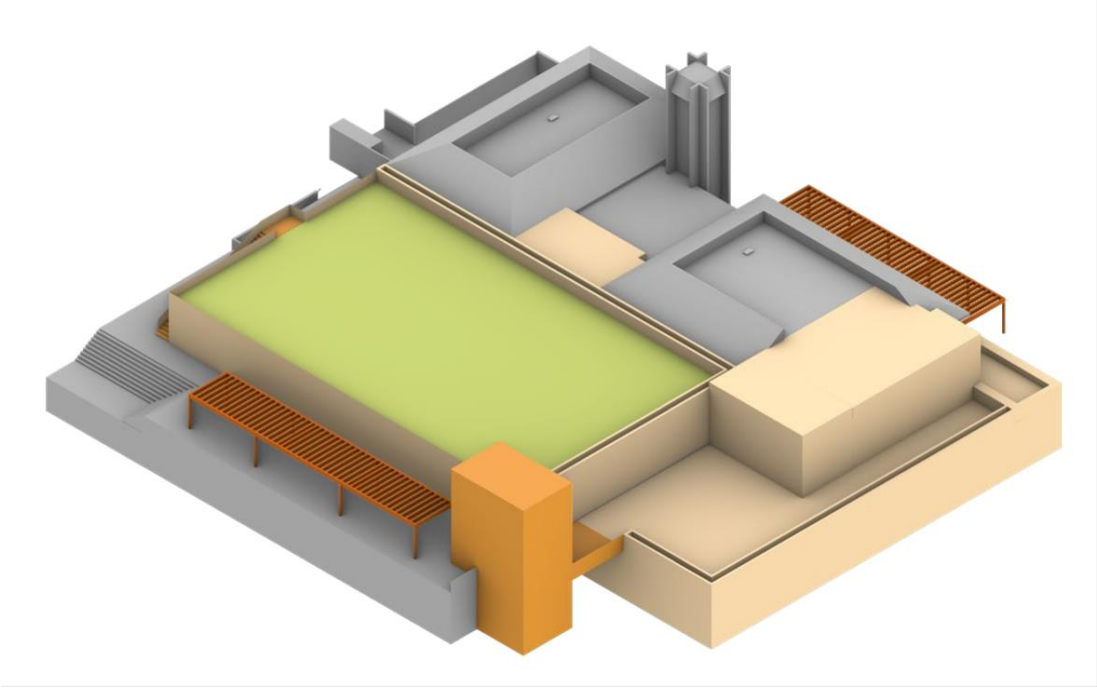

Figure 2: "The Deck" Massing Diagram, Isometric View

5.2 "The Paseo" Concept

The Paseo Concept focuses on the renovation and expansion of the library building to improve its functionality and overall appeal. It involves a three-part addition, consisting of A, B, and C blocks, with the central B block as the taller Paseo.

Block A, similar to the Deck concept, extends the library building towards Glendora Avenue. Block C is situated to the south and occupies a small portion of the existing library building and Police Station parking lot. Both blocks have a second level that is set back, providing a human-scale experience, rooftop access, and green space.

The Paseo (Block B), is envisioned as an architectural atrium-like space that captures abundant natural light through clearstory windows during the day. It will serve as a radiant lantern during evenings when the library is illuminated. The Paseo may serve as a public lobby, connecting a new library entry from Glendora Avenue to the west entry from the parking lot. The Paseo may offer space for discovery, engaging exhibits, displays, pop-up activities, as well as service points and greeters. It can serve as an identifier/marker for the library and also enhance circulation and intuitive wayfinding, creating a welcoming environment for the community.

The existing plaza will be retained as an open gathering and community space, enriched with a combination of hardscape and a green roof. Importantly, any planters or green roof elements positioned directly above the existing 4-column structure are expected to have minimal to no additional impact on the lower level of the library building.

To promote connectivity and establish a welcoming ambiance, an open-site stair will be incorporated just north of Block A. This feature meant to encourage unrestricted movement between Glendora Avenue, the plaza level, and the parking lot, facilitating pedestrian flow and enabling library visitors to explore and engage with the diverse programs and Library offerings available to them.

An additional advantage of the Paseo Concept is the simplified structural work, as all new additions will have their own structural strength while being tied to the existing structure, minimizing the imposition of additional loads.

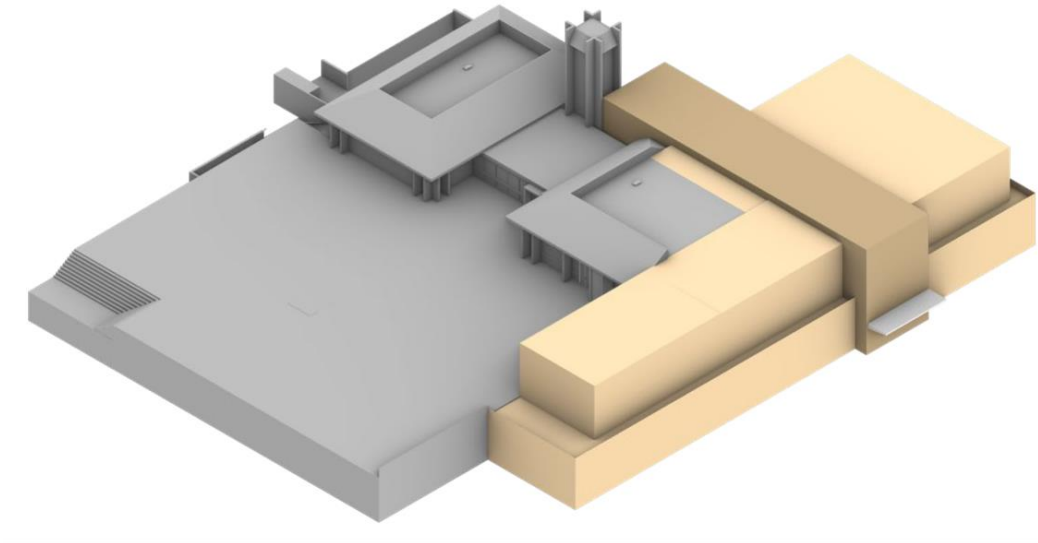

Figure 3: "The Paseo" Massing Diagram, Isometric View

6.0 CONCLUSIONS

It was determined in Phase 1 that repair and strengthening of the Library structure is necessary to preserve its structural integrity and ensure that the plaza may continue to serve the community as a public gathering space. The necessary repair and strengthening work can readily be incorporated into a future addition/expansion of the Library building, and therefore addition/expansion is considered feasible and represents a potentially cost-effective alternative to construction of a new facility. Options can be objectively weighed, and a preferred approach can now be identified for further development.

6.1 Conceptual Cost Estimate Summary

Budgetary numbers for the four options were provided by Cumming. Estimates of strengthening, repair, and construction costs are necessarily broad at this conceptual/feasibility phase and may be refined in future phases as the design progresses.

The estimated hard construction cost and schedule for each option are summarized below:

SUMMARY OF ESTIMATED HARD CONSTRUCTION COST AND SCHEDULE			
OPTION	**DESCRIPTION**	**CONSTRUCTION DURATION**	**ESTIMATED HARD CONSTRUCTION COST (ROM)**
1	Baseline structural strengthening and repairs only	6 months	$2.9M
1a	Option 1 plus plaza deck hardscape/green roof	6 months	$3.2M
2	“The Deck” concept	12 months	$20.6M
3	“The Paseo” concept	12 months	$23.0M*
4	New building	18 months	$42.7M

**includes $0.3M for plaza hardscape and green roof features*

The costs include consideration for the impacts of access to repair locations and for restoration of finishes, and assume the Library building is unoccupied during the construction. The costs have been escalated to an assumed construction start date of September 2024. Soft costs, including design consultant fees, plan-check and permit fees, inspection, and other construction fees, etc., would be in addition to the budgetary numbers provided in the cost estimate.

We trust that this report satisfies your immediate needs for Phase 2 of this feasibility study, and we thank you for the opportunity to be of continued service to the City of Glendora. Should you have any questions, please feel free to contact our office.



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APPENDIX A: Conceptual Plans for Phase 2 – Addition/Expansion

COST ESTIMATE GENERAL NOTES:

- OPTION 1, BASELINE STRUCTURAL STRENGTHENING FOR THE EXISTING BUILDING, IS DEPICTED IN THE PHASE 1 REPORT AND NOT SHOWN HERE.

- THESE CONCEPTUAL DRAWINGS DEPICT TWO CONCEPTS FOR THE EXPANSION OF THE GLENDORA PUBLIC LIBRARY.

- THERE ARE TWO ADDITION/EXPANSION OPTIONS.
  - **OPTION 2, "THE DECK",** CONSISTS OF A SMALL TWO-STORY ADDITION AND A NEW OCCUPIABLE ROOF OVER A LARGE PORTION OF THE EXISTING UPPER PLAZA. NEW FRAMING CONSISTS OF CONCRETE FILLED METAL DECK OVER STEEL WIDE FLANGE BEAMS AND CONCRETE WALLS. NEW COLUMNS EXTEND DOWN THROUGH THE EXISTING LIBRARY SPACE TO NEW FOOTINGS, AND ADDITIONAL SHEAR WALLS AND FOUNDATION STRENGTHENING ARE REQUIRED. DRAWINGS S-1.0, S-1.1, AND S-1.2. GRAVITY STRENGTHENING AND WATER INTRUSION MITIGATION AS DEPICTED IN THE PHASE 1 DRAWINGS ARE TO BE INCLUDED WITH THIS SCOPE, HOWEVER, WATER INTRUSION MITIGATION WORK NEED ONLY BE COMPLETED OUTSIDE OF THE FOOTPRINT OF THE NEW ROOF AREA OVER THE PLAZA. WALL ANCHORAGE IS PROVIDED AT EXISTING ROOF DIAPHRAGMS.
  - **OPTION 3, "THE PASEO",** CONSISTS OF A TWO-STORY ADDITION. NEW FRAMING CONSISTS OF CONCRETE FILLED METAL DECK OVER STEEL WIDE FLANGE BEAMS AND CONCRETE WALLS. THE EXISTING PLAZA REMAINS OPEN PLAZA. GRAVITY STRENGTHENING AND WATER INTRUSION MITIGATION AS DEPICTED IN THE PHASE 1 DRAWINGS ARE TO BE INCLUDED WITH THIS SCOPE. WALL ANCHORAGE IS PROVIDED AT EXISTING ROOF DIAPHRAGMS.

- **OPTION 3** INCLUDES ONE "**ADD ALTERNATE**" SCOPE ITEM: THE ADDITION OF PLANTERS AT THE PLAZA LEVEL (UPPER FLOOR). NEW MICROPILES ARE PART OF THIS ADD ALTERNATE. ASSOCIATED COSTS SHOULD BE TRACKED SEPARATELY FROM THE REST OF THE OPTION 2 WORK.

- COST OPINION FOR ENTIRELY NEW 45,000 SF PUBLIC LIBRARY SHALL ALSO BE PROVIDED.

NOT FOR CONSTRUCTION

THESE DRAWINGS ARE CONCEPTUAL IN NATURE AND ARE INTENDED SOLELY TO ILLUSTRATE THE GENERAL CONCEPT OF A FEASIBLE FRAMING CONFIGURATION TO ASSIST IN THE DEVELOPMENT OF ROUGH ORDER-OF-MAGNITUDE CONSTRUCTION BUDGETS.

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PROJECT INFORMATION

Phase 2 - Feasibility Study

Glendora Public Library
140 Glendora Avenue
Glendora
CA 91741

SUBMITTALS AND REVISIONS

ISSUE DATE:	06-30-2023
NO. DESCRIPTION	DATE
DRAFT	06-30-2023

STAMP

SHEET INFO

JOB NUMBER:	22-0647-00
DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW
SCALE:	NONE

SHEET TITLE

GENERAL NOTES

SHEET NUMBER

S-0.0

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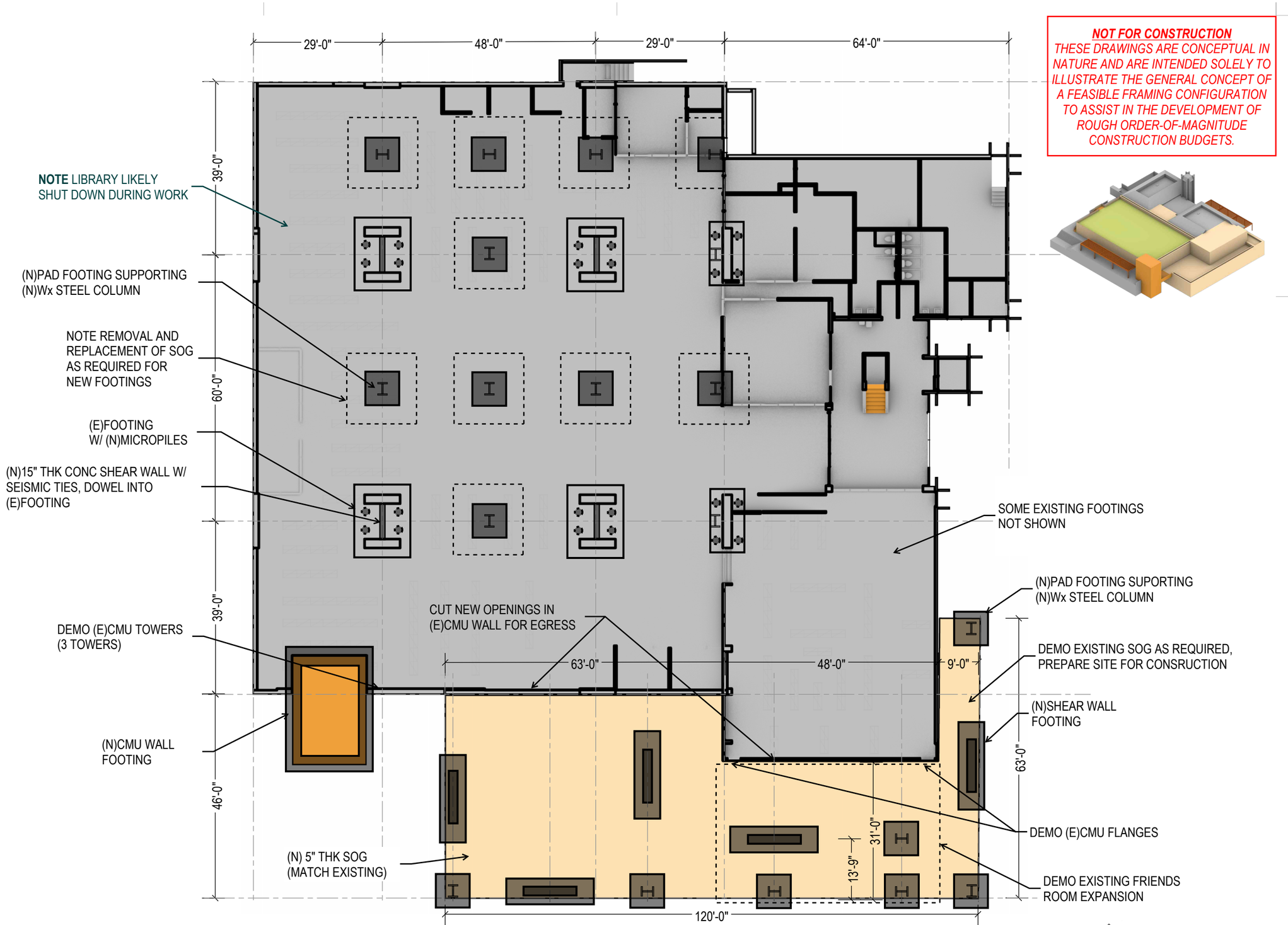

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OPTION 1 - FOUNDATION AND LOWER FLOOR PLAN

REPORT OPTION 2: "THE DECK"

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OPTION 2 FOUNDATION AND LOWER FLOOR PLAN

SHEET NUMBER

S-1.0

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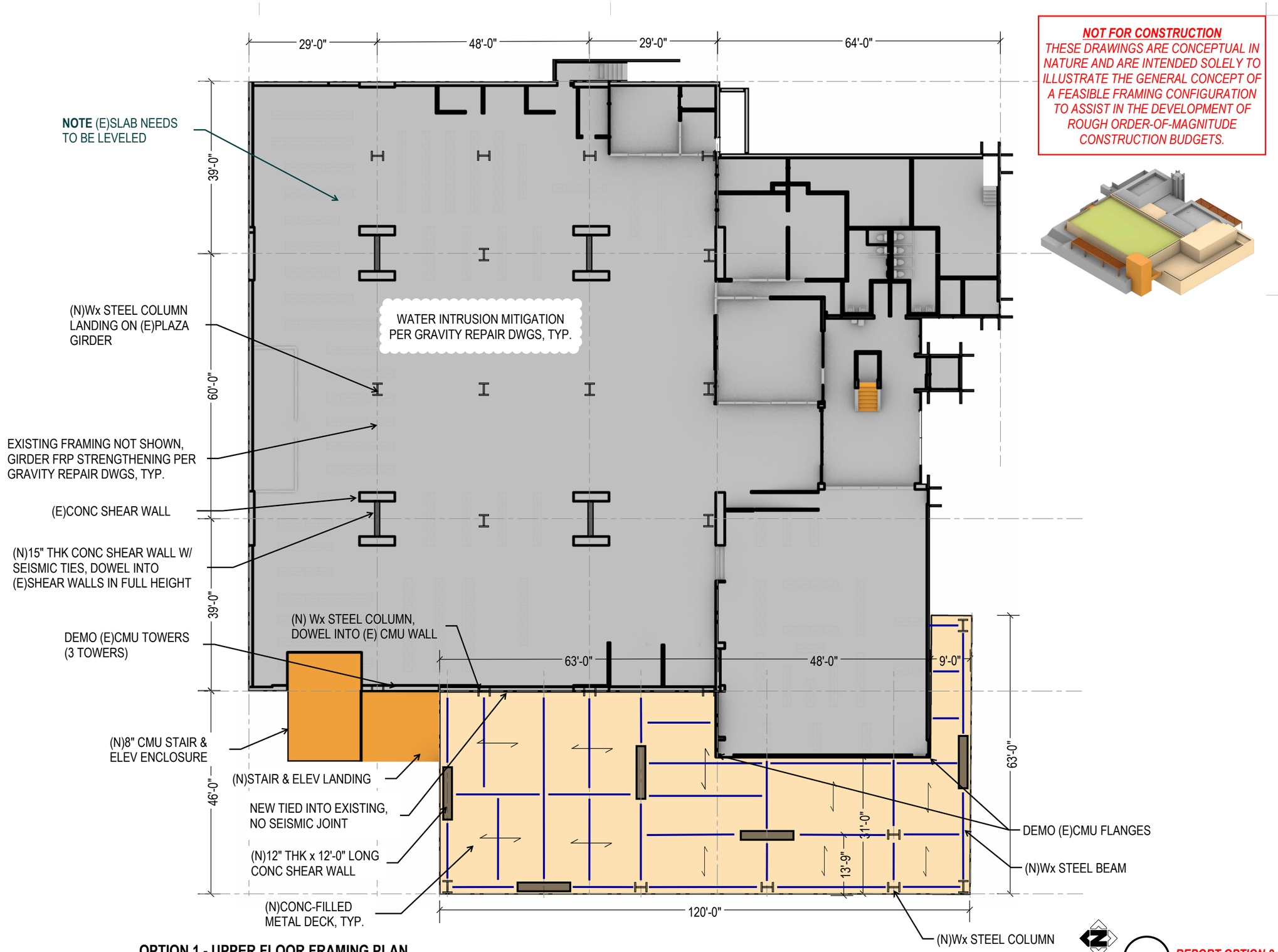

OPTION 1 - UPPER FLOOR FRAMING PLAN

S-1.1

REPORT OPTION 2: "THE DECK"

NOT FOR CONSTRUCTION

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OPTION 2
UPPER FLOOR
FRAMING PLAN

SHEET NUMBER

S-1.1

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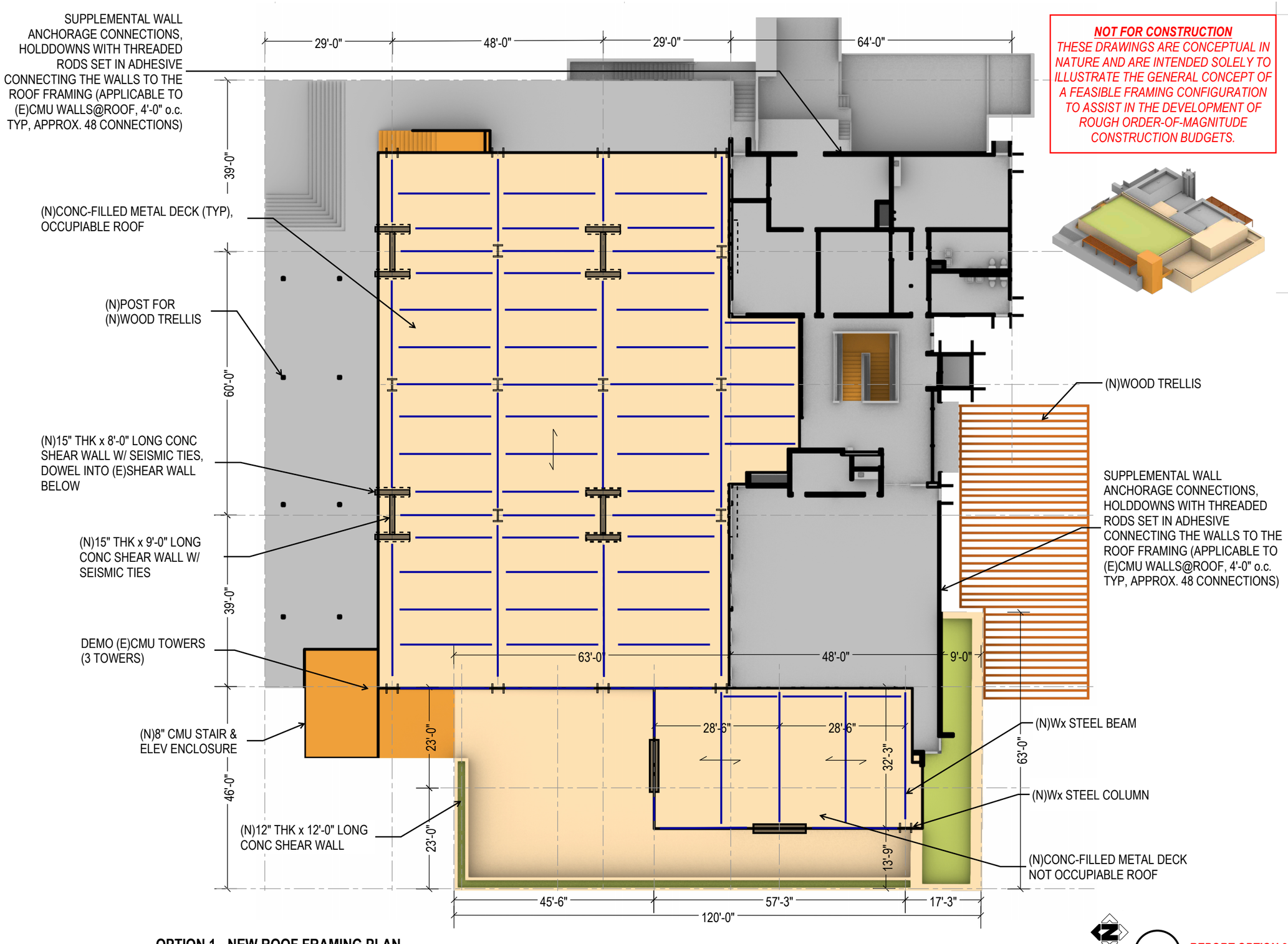

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OPTION 1 - NEW ROOF FRAMING PLAN

S-1.2

REPORT OPTION 2: "THE DECK"

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CHECKED:	KDW
SCALE:	NONE

SHEET TITLE

OPTION 2
NEW ROOF
FRAMING PLAN

SHEET NUMBER

S-1.2

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OPTION 2 - FOUNDATION AND LOWER FLOOR PLAN

S-2.0

REPORT OPTION 3: "THE PASEO"

NOT FOR CONSTRUCTION

THESE DRAWINGS ARE CONCEPTUAL IN NATURE AND ARE INTENDED SOLELY TO ILLUSTRATE THE GENERAL CONCEPT OF A FEASIBLE FRAMING CONFIGURATION TO ASSIST IN THE DEVELOPMENT OF ROUGH ORDER-OF-MAGNITUDE CONSTRUCTION BUDGETS.

STRUCTURAL ENGINEER

STRUCTURAL ENGINEERS
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PROJECT INFORMATION

Phase 2 - Feasibility Study

Glendora Public Library
140 Glendora Avenue
Glendora
CA 91741

SUBMITTALS AND REVISIONS

ISSUE DATE:	06-30-2023
NO. DESCRIPTION	DATE
DRAFT	06-30-2023

STAMP

SHEET INFO

JOB NUMBER:	22-0647-00
DRAWN:	RS
DESIGNED:	RS
CHECKED:	KDW
SCALE:	NONE

SHEET TITLE

OPTION 3 FOUNDATION AND LOWER FLOOR PLAN

SHEET NUMBER

S-2.0

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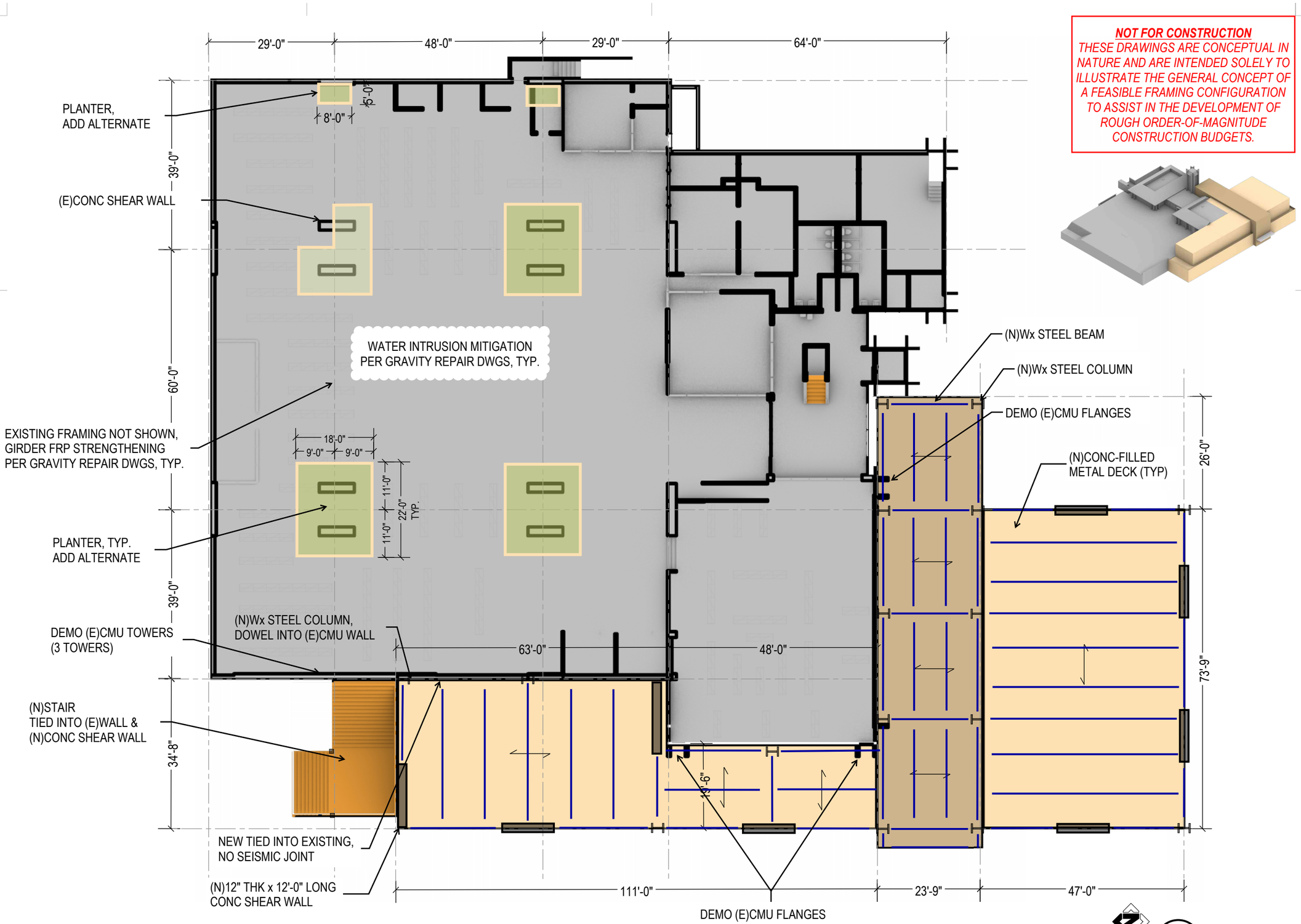

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OPTION 2 - UPPER FLOOR FRAMING PLAN

S-2.1

REPORT OPTION 3: "THE PASEO"

STRUCTURAL ENGINEER

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PROJECT INFORMATION

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Glendora
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FRAMING PLAN

SHEET NUMBER

S-2.1

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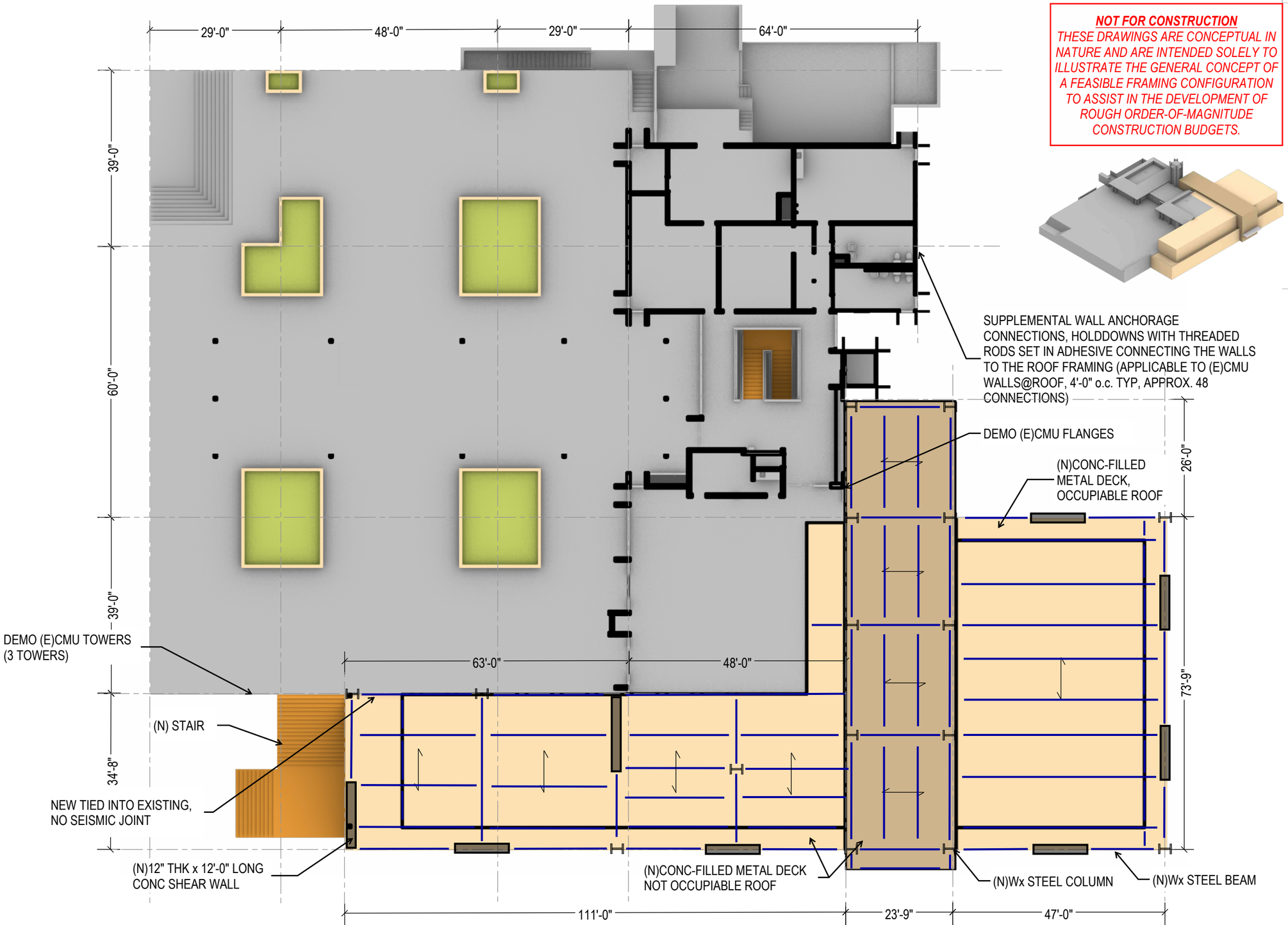

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OPTION 2 - NEW ROOF FRAMING PLAN

S-2.2

REPORT OPTION 3: "THE PASEO"

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APPENDIX B: Conceptual Cost Estimate

Glendora Library Structural Analysis & Expansion

Feasibility Study

Statement of Probable Cost

August 18, 2023

CUMMING

Building Value Through Expertise

CUMMING
Building Value Through Expertise

The information contained within this documents is confidential and should not be distributed or copied for any reason without the consent of either Cumming Construction Management, Inc. or the intended client.

Cumming has no control over the cost of labor and materials, the general contractor's or any subcontractor's method of determining prices, or competitive bidding and market conditions.

This opinion of the probable cost of construction is made on the basis of the experience, qualifications, and best judgment of a professional consultant familiar with the construction industry. However, Cumming cannot and does not guarantee that proposals, bids, or actual construction costs will not vary from this or subsequent cost estimates.

This document reflects fair market value construction costs obtainable in a competitive bidding market in Los Angeles, California. Cumming assumes a minimum of three (3) competitive bids from qualified general contractors, with bids from a minimum of three (3) subcontractors per trade. This statement is a determination of fair market value for the construction of the project and is not intended to be a prediction of low bid. Please note that experience indicates a fewer number of bidders may result in a higher bid amount, thus more bidders may result in a lower bid result.

The Cumming staff of professional cost consultants has prepared this estimate in accordance with generally accepted principles and practices. This staff is available to discuss its contents with any interested party.



LA | Cumming Management Group, Inc.

Merilyn Olave
Associate Director
Los Angeles, CA
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Executive Summary

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

Project Description

The project is a structural analysis/feasibility study and options for vertical expansion of the existing Library for the City of Glendora. The existing library is a two-story reinforced concrete and CMU structure with 33,500 square feet covered area. The feasibility study includes 3 options:

Option 2 - Seismic upgrade and renovation to (E) library (33,500 SF) + Expansion (11,500 SF)

Option 3 - Seismic upgrade and renovation to (E) library (33,500 SF) + Expansion (18,130 SF)

Option 4 - New 2-story Library (45,000 SF) on New Site (60,000 SF)

Project Control Metrics	**OPTION 2 & 3**	**OPTION 4**
Construction Start:	September 1, 2024	September 1, 2024
Construction Completion:	August 31, 2025	January 31, 2026
Construction Duration:	12 Months	18 Months
Delivery Method:	Design Bid Build	Design Bid Build

Scope of Work	*REPORT OPTION 2: "THE DECK"* Option 2 Upgrade + Expansion Area	$ / SF	Total Cost	*REPORT OPTION 3: "THE PASEO"* Option 3 Upgrade + Expansion Area	$ / SF	Total Cost	*REPORT OPTION 4: NEW FACILITY* Option 4 New Library + Site Area	$ / SF	Total Cost
Existing Building Upgrade + Expansion	45,000 SF	$456	**$20,538,711**	51,630 SF	$439	**$22,650,061**			
New 2-story Library Building							45,000 SF	$859	**$38,677,225**
Site Development for New Library							60,000 SF	$66	**$3,974,688**
Total Construction Costs	**45,000 SF**	**$456**	**$20,538,711**	**51,630 SF**	**$439**	**$22,650,061**	**45,000 SF**	**$948**	**$42,651,913**

Alternate:

New Planter at Plaza Deck (Option 3) ***$291,857***

Note:

- Assume the (E) Library is shutdown during construction
- Hazmat Abatement to (E) Building - Excluded
- New floor and ceiling finishes replacement are assumed throughout the Existing library
- One new 2-stop elevator for option 1 is Included while there is **No** new elevator for option 2
- Site development for Option 1 & 2 is minimal and it includes 6 ft paving around the new expansion. Wet utilities inlude reconnection and Electrical inlcudes upsizing transformer and new exteior lighting
- The New Library will be constructed on a different location (TBD) - assume 60,000 SF site area
- Cost Escalation to Start Date of Construction (September 2024) - Included
- Audio Visual Equipment - Excluded
- Soft Costs - Excluded
- Construction Contingency - Excluded

Direct Construction Cost Summary

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

CUMMING
Building Value Through Expertise

Element		Option 2 Upgrade + Expansion 45,000 SF		Option 3 Upgrade + Expansion 51,630 SF		Option 4 New Construction New Library 45,000 SF		Site Development 60,000 SF	
		Total	$/SF	Total	$/SF	Total	$/SF	Total	$/SF
A) Shell (1-5)		**$4,910,085**	**$109.11**	**$4,936,662**	**$95.62**	**$9,847,688**	**$218.84**		
1 Foundations		$297,358	$6.61	$295,554	$5.72	$933,813	$20.75		
2 Vertical Structure		$852,540	$18.95	$569,850	$11.04	$1,140,750	$25.35		
3 Floor & Roof Structures		$1,376,135	$30.58	$1,376,135	$26.65	$3,478,500	$77.30		
4 Exterior Cladding		$1,649,849	$36.66	$1,697,730	$32.88	$2,964,875	$65.89		
5 Roofing and Waterproofing		$734,203	$16.32	$997,393	$19.32	$1,329,750	$29.55		
B) Interiors (6-7)		**$1,755,319**	**$39.01**	**$2,046,440**	**$39.64**	**$2,992,500**	**$66.50**		
6 Interior Partitions, Doors and Glazing		$399,500	$8.88	$538,380	$10.43	$1,350,000	$30.00		
7 Floor, Wall and Ceiling Finishes		$1,355,819	$30.13	$1,508,060	$29.21	$1,642,500	$36.50		
C) Equipment and Vertical Transportation (8-9)		**$1,005,886**	**$22.35**	**$1,134,843**	**$21.98**	**$3,266,750**	**$72.59**		
8 Function Equipment and Specialties		$770,886	$17.13	$1,099,843	$21.30	$2,996,750	$66.59		
9 Stairs and Vertical Transportation		$235,000	$5.22	$35,000	$0.68	$270,000	$6.00		
D) Mechanical and Electrical (10-13)		**$5,583,814**	**$124.08**	**$6,502,887**	**$125.95**	**$10,093,950**	**$224.31**		
10 Plumbing Systems		$396,289	$8.81	$598,074	$11.58	$1,276,200	$28.36		
11 Heating, Ventilation and Air Conditioning		$2,189,273	$48.65	$2,484,186	$48.12	$3,462,750	$76.95		
12 Electrical Lighting, Power and Communications		$2,744,003	$60.98	$3,106,707	$60.17	$4,950,000	$110.00		
13 Fire Protection Systems		$254,250	$5.65	$313,920	$6.08	$405,000	$9.00		
E) Building Prep & Demo (14-15)		**$212,800**	**$4.73**	**$212,800**	**$4.12**	**$0**	**$0.00**		
14 Building Preparations & Protection		$0	$0.00	$0	$0.00	$0	$0.00		
15 Building Demolition		$212,800	$4.73	$212,800	$4.12	$0	$0.00		
F) Site Work (16-18)		**$445,516**	**$9.90**	**$510,068**	**$9.88**	**$0**	**$0.00**	**$2,692,550**	**$44.88**
16 Site Preparation and Demolition		$47,104	$1.05	$76,291	$1.48		$0.00	$375,000	$6.25
17 Site Paving, Structures & Landscaping		$39,072	$0.87	$57,792	$1.12	$0	$0.00	$1,351,000	$22.52
18 Utilities on Site		$359,340	$7.99	$375,985	$7.28		$0.00	$966,550	$16.11
Sub-Total Direct Construction Cost		**$13,913,420**	**$309.19**	**$15,343,700**	**$297.19**	**$26,200,888**	**$582.24**	**$2,692,550**	**$44.88**
Design/Cost Contingency	15.00%	$2,087,013	$46.38	$2,301,555	$44.58	$3,930,133	$87.34	$403,883	$6.73
Market Escalation to Buyout	6.93%	$1,108,088	$24.62	$1,221,998	$23.67	$2,086,683	$46.37	$214,439	$3.57
Total Direct Construction Cost		**$17,108,521**	**$380.19**	**$18,867,253**	**$365.43**	**$32,217,704**	**$715.95**	**$3,310,872**	**$55.18**
General Conditions	8.00%	$1,368,682	$30.42	$1,509,380	$29.23	$2,577,416	$57.28	$264,870	$4.41
General Requirements	4.00%	$684,341	$15.21	$754,690	$14.62	$1,288,708	$28.64	$132,435	$2.21
Subcontractor Default Insur.	1.20%	$205,302	$4.56	$226,407	$4.39	$386,612	$8.59	$39,730	$0.66
General Liability Insurance	1.50%	$287,423	$6.39	$316,970	$6.14	$541,257	$12.03	$55,623	$0.93
Overhead & Profit	4.50%	$884,442	$19.65	$975,361	$18.89	$1,665,526	$37.01	$171,159	$2.85
Sub-Total Indirect Construction Cost		**$3,430,190**	**$76.23**	**$3,782,809**	**$73.27**	**$6,459,521**	**$143.54**	**$663,817**	**$11.06**
Total Construction Cost		**$20,538,711**	**$456.42**	**$22,650,061**	**$438.70**	**$38,677,225**	**$859.49**	**$3,974,688**	**$66.24**

OPTION 2

Construction Cost Detail - Option 2

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

CUMMING
Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
A) Shell (1-5)				
1 Foundations				
Work to Existing Building				
Reinforced concrete pad footings at existing building, assume 30" depth	71	CY	$850.00	$60,350
New micropiles to (E) footing, 10' deep	24	EA	$2,000.00	$48,000
Building Expansion				
Excavation				
Over-excavate and compact building footprint, 5' depth and 5' beyond perimeter	1,442	CY	$24.00	$34,608
Foundation				
Reinforced concrete pad/wall footings at expansion, assume 36" depth	164	CY	$850.00	$139,400
Elevator pit, complete	1	EA	$15,000.00	$15,000
Sub-Total: 1 Foundations	**45,000**	**SF**	**$6.61**	**$297,358**
2 Vertical Structure				
Work to Existing Building				
Structural steel columns	30	TN	$8,000.00	$240,000
New reinforced concrete shearwall, 15" thick	2,140	SF	$80.00	$171,200
Seismic ties, dowel into shear wall	504	EA	$55.00	$27,720
Building Expansion				
Structural steel columns (4 lb/sf)	23	TN	$8,000.00	$184,000
New shearwall, 12" thick	1,800	SF	$75.00	$135,000
CMU wall, 8" - elevator/stair enclosure	2,490	SF	$38.00	$94,620
Sub-Total: 2 Vertical Structure	**45,000**	**SF**	**$18.95**	**$852,540**
3 Floor & Roof Structures				
Seismic/Gravity Repair				
FRP strenthening of (E) girders including grinding corners, duct for FRP overlay anchorage	10,161	SF	$120.00	$1,219,320
Prepare slab and Epoxy injection of cracks	218	LF	$82.00	$17,876
Prepare beam and Epoxy injection of cracks	40	LF	$90.00	$3,600
Allowance for additional epoxy injection cracks	200	LF	$82.00	$16,400
New 2.5" Light Weight concrete topping, 3,000 psi (Plaza deck)	15,130	SF	$6.00	$90,780
Reinforcement to concrete topping, #3@12" O.C. (Plaza deck)	15,644	LB	$1.80	$28,159

Construction Cost Detail - Option 2

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

CUMMING
Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
Work to Existing Building				
Slab on grade				
Sawcut and remove slab on grade for new footing	3,069	SF	$10.00	$30,690
Reinforced concrete slab on grade, 5"	3,069	SF	$14.00	$42,966
Dowels between new and existing slab @ 12" o.c.	923	EA	$55.00	$50,765
Plaza deck roof				
Structural steel framing (10 lb/sf)	52	TN	$8,000.00	$416,000
Metal deck with concrete topping - roof	10,341	SF	$19.00	$196,479
Supplemetal wall anchorage connections, holdowns wit threaded rods set in adhesive connecting the walls to roof framing, @ 4' o.c.	96	EA	$300.00	$28,800
Trellis				
Wood trellis	4,111	SF	$80.00	$328,880
New post and footing for trellis	16	EA	$1,590.00	$25,440
Building Expansion				
Slab on grade				
Reinforced concrete slab on grade, 5" thick	5,750	SF	$14.00	$80,500
Suspended floors and Roofs				
Structural steel framing (12 lb/sf)	67	TN	$8,000.00	$536,000
Metal deck with concrete fill - floor	6,042	SF	$19.00	$114,798
Metal deck with concrete fill - roof	6,166	SF	$19.00	$117,154
Miscellaneous				
Miscellaneous metal, framing backing, equipment support framing	11,500	SF	$3.00	$34,500
Seismic joint	200	LF	$200.00	$40,000
Sub-Total: 3 Floor & Roof Structures	**45,000**	**SF**	**$30.58**	**$1,376,135**

4 Exterior Cladding

Work to Existing Building				
Plaza deck				
Metal studs framing, sheathing, waterproofing, insulation	3,066	SF	$30.00	$91,980
Cement plaster, painted	3,066	SF	$30.00	$91,980
Gypsum board lining to interior phase	3,066	SF	$5.50	$16,863
Aluminum glazed window and storefronts (20% of wall area)	613	SF	$130.00	$79,690
Patch and repaint existing exterior walls	14,730	SF	$5.00	$73,650
Windows - Existing to remain				No work anticipated

Code	Quantity	Unit	Unit Rate	Total Cost
Building Expansion				
Wall framing, furring and insulation				
Metal studs framing, sheathing, waterproofing, insulation	8,331	SF	$30.00	$249,930
Exterior finishes				
Metal panel or wood panel, cement plaster	8,331	SF	$55.00	$458,205
Interior finish to exterior walls				
Gypsum board lining	8,331	SF	$5.50	$45,821
Windows, glazing and louvers				
Aluminum glazed window and storefronts (30% of wall area)	3,571	SF	$130.00	$464,230
Fascias, bands, screens and trim				
Miscellaneous architectural features, window canopy, trims	11,500	SF	$5.00	$57,500
Exterior doors, frames and hardware				
Exterior storefront entry doors, metal doors	1	LS	$20,000.00	$20,000
Sub-Total: 4 Exterior Cladding	**45,000**	**SF**	**$36.66**	**$1,649,849**

5 Roofing and Waterproofing

Existing Plaza Deck and Roof				
New waterproofing membrane at deck - outside footprint of new roof	4,789	SF	$12.50	$59,863
New rigid insulation at deck -outside footprint of new roof	4,789	SF	$5.50	$26,340
Concrete pavers	4,789	SF	$25.00	$119,725
Single-ply roofing membrane, with cover board and rigid insulation	10,341	SF	$25.00	$258,525
Miscellaneous flashing and sheet metal	10,341	SF	$5.00	$51,705
Building Expansion				
Waterproofing				
Waterproofing - stair and elevator landing	292	SF	$13.00	$3,796
Elevator pit	1	EA	$1,800.00	$1,800
Roofing				
Single-ply roofing membrane, with cover board and rigid insulation	6,166	SF	$25.00	$154,150
Roofing upstands and sheetmetal				
Miscellaneous flashing and sheet metal	6,166	SF	$5.00	$30,830
Deck				
Hard surface finish to elevator/stair landing	292	SF	$35.00	$10,220
Caulking and sealants	11,500	SF	$1.50	$17,250
Sub-Total: 5 Roofing and Waterproofing	**45,000**	**SF**	**$16.32**	**$734,203**
Total - A) Shell (1-5)	**45,000**	**SF**	**$109.11**	**$4,910,085**

Code	Quantity	Unit	Unit Rate	Total Cost
B) Interiors (6-7)				
6 Interior Partitions, Doors and Glazing				
Work to Existing Building				
Patch and replace damage partition as needed - allowance	33,500	SF	$3.00	$100,500
Building Expansion				
Partition				
Metal studs partition with gypsum board lining and insulation (0.045 ratio/GFA)	11,500	SF	$20.00	$230,000
Interior Door and Glazing	11,500	SF	$6.00	$69,000
Sub-Total: 6 Interior Partitions, Doors and Glazing	**45,000**	**SF**	**$8.88**	**$399,500**
7 Floor, Wall and Ceiling Finishes				
Work to Existing Building				
New finish at plaza deck	10,341	SF	$9.00	$93,069
Ceramic tiles at toilet, resilient flooring, sealed concrete at mechanical spaces and carpet throughout	33,500	SF	$12.00	$402,000
Gypsum board ceiling, ACT ceiling, and painted exposed ceiling	33,500	SF	$11.50	$385,250
Miscellaneous painting as needed	1	LS	$50,000.00	$50,000
Building Expansion				
Floors				
Ceramic tiles at toilet, resilient flooring, sealed concrete at mechanical spaces and carpet throughout	11,500	SF	$13.50	$155,250
Bases				
Ceramic tiles at restrooms, resilient/wood base throughout	11,500	SF	$1.50	$17,250
Walls				
Ceramic tiles to toilet, acoustical wall panel, paint throughout	11,500	SF	$8.50	$97,750
Ceilings				
Gypsum board ceiling, ACT ceiling, and painted exposed ceiling	11,500	SF	$13.50	$155,250
Sub-Total: 7 Floor, Wall and Ceiling Finishes	**45,000**	**SF**	**$30.13**	**$1,355,819**
Total - B) Interiors (6-7)	**45,000**	**SF**	**$39.01**	**$1,755,319**

Code	Quantity	Unit	Unit Rate	Total Cost
C) Equipment and Vertical Transportation (8-9)				
8 Function Equipment and Specialties				
Work to Existing Building				
Allowance for patch and repair, modify as needed building specialties, casework, equipment affected during new construction	33,500	SF	$5.00	$167,500
Building Expansion				
Specialties				
Building specialties such as toilet cubicles and accessories, markerboard and tackboards, mirror, fire extinguisher cabinets, lockers and bench	11,500	SF	$3.50	$40,250
Signage - Code, Directional and Exterior ID	11,500	SF	$1.00	$11,500
Window shade, manual	3,571	SF	$16.00	$57,136
Cabinets and countertops				
Fixed casework and millwork	11,500	SF	$8.00	$92,000
Equipment				
Library shelving/stacks and equipment	11,500	SF	$35.00	$402,500
Sub-Total: 8 Function Equipment and Specialties	**45,000**	**SF**	**$17.13**	**$770,886**
9 Stairs and Vertical Transportation				
Building Expansion				
Staircase				
Concrete filled metal pan staircase, finish and railings	1	FLT	$35,000.00	$35,000
Elevator				
Elevator, 2-stop	1	EA	$200,000.00	$200,000
Sub-Total: 9 Stairs and Vertical Transportation	**45,000**	**SF**	**$5.22**	**$235,000**
Total - C) Equipment and Vertical Transportation (8-9)	**45,000**	**SF**	**$22.35**	**$1,005,886**

Code	Quantity	Unit	Unit Rate	Total Cost
D) Mechanical and Electrical (10-13)				
10 Plumbing Systems				
General Plumbing Equipment				
5-9 kW Electric Water Heater	2	EA	$5,996.00	$11,992
HW rough-in at water heater	2	EA	$1,171.00	$2,342
Sanitary Fixtures				
Water closet, WC-1, wall, sensor FV	4	EA	$2,132.00	$8,528
Urinal, UR-1	2	EA	$1,541.00	$3,082
Lavatory, L-1, wall	4	EA	$1,212.00	$4,848
Sink, SS-1	2	EA	$1,503.00	$3,006
Drinking fountain, DF-1	1	EA	$3,523.00	$3,523
Floor drain, FD-1	2	EA	$809.90	$1,620
Rough-ins				
Local rough-in at fixture	15	EA	$717.00	$10,755
Domestic Cold Water				
Domestic Cold Water Piping	11,500	SF	$4.87	$56,005
Upsize existing cold water service to 4" with a 2.5" water meter and 4" SOV including trenching and permitting	1	LS	$16,500.00	$16,500
New pressure reducing station on domestic water service to the building	2	EA	$6,593.00	$13,186
Domestic Hot Water				
Domestic Hot Water Piping	11,500	SF	$4.18	$48,070
Waste Piping				
Waste Piping, SF	11,500	SF	$5.36	$61,640
New Sanitary Waste tie-in points including trenching and permitting	1	LS	$12,500.00	$12,500
Vent Piping				
Vent Piping, SF	11,500	SF	$4.39	$50,485
Relocating/Extending the vent pipe serving the friends' room	1	LS	$6,500.00	$6,500
Provide vent caps	8	EA	$567.30	$4,538
Roof Drainage				
Roof Drainage, Allowance	11,500	SF	$2.01	$23,115
New Storm Drain tie-in points including trenching and permitting	1	LS	$12,500.00	$12,500
Condensate Drainage				
Trap and equipment connect	5	EA	$503.20	$2,516
3/4" pipe, cu type M, in bldg	150	LF	$40.24	$6,036
Pipe insulation, 3/4"	150	LF	$12.55	$1,883

Code	Quantity	Unit	Unit Rate	Total Cost
Miscellaneous Plumbing				
Test / clean plumbing	40	HR	$127.18	$5,087
Start-up/check-out	40	HR	$152.61	$6,104
Commissioning assist	20	HR	$133.87	$2,677
Seismic bracing	11,500	SF	$0.85	$9,775
Penetrations and firestopping for plumbing	11,500	SF	$0.65	$7,475
Sub-Total: 10 Plumbing Systems	**45,000**	**SF**	**$8.81**	**$396,289**

11 Heating, Ventilation and Air Conditioning

HVAC Demolition				
Modify existing ductwork layout to rectify HVAC zoning issues	33,500	SF	$6.05	$202,675
Remove air handlers - AHU-1, 660,000 btu/hr, AHU-2, 516,000 btu/hr	2	EA	$14,820.00	$29,640
Remove air handlers - AHU-3, 61,500 btu/hr, AHU-4, 57,000 btu/hr	2	EA	$13,720.00	$27,440
Remove existing cooling tower	1	LS	$30,920.00	$30,920
Existing package units - To remain	2	EA		NIC
Chilled Water Equipment				
Chiller, centrifugal - water cooled (York), high eff	60	TON	$602.00	$36,120
CHW pump, end suction, 5 hp, 225 gpm	1	EA	$5,361.00	$5,361
VFD to CHW pump, 5 hp	1	EA	$3,887.00	$3,887
Condenser Water Equipment				
Cooling towers, pumps, misc	160	TON	$507.20	$81,152
CW pump, end suction, 5 hp, 225 gpm	1	EA	$5,361.00	$5,361
VFD to CW pump, 5 hp	1	EA	$3,887.00	$3,887
Condenser Water Piping				
Condenser piping to chiller or HX, weld, 4"	1	EA	$8,886.00	$8,886
Cooling tower rough-in, weld, 6"	1	EA	$14,250.00	$14,250
CW pump connect, weld, end suct, 4"	1	EA	$9,541.00	$9,541
CW piping distribution to HVAC units	11,500	SF	$2.08	$23,920
Chilled Water Distribution				
Chiller connect, weld, 6"	1	EA	$11,400.00	$11,400
CHW pump connect, weld, end suct, 2-1/2"	1	EA	$6,232.00	$6,232
CHW coil connect, cu, 2-way, 2"	5	EA	$6,025.00	$30,125
CHW distribution to HVAC equipment	11,500	SF	$3.76	$43,240
Hot Water Distribution				
Coil connection KIT	28	EA	$1,250.00	$35,000
HHW distribution to HVAC equipment	45,000	SF	$4.44	$199,800

Code	Quantity	Unit	Unit Rate	Total Cost
Air-Side Equipment				
Replacement AHU-1, 660,000 btu/hr	22,000	CFM	$14.40	$316,800
Replacement AHU-2, 516,000 btu/hr	17,200	CFM	$14.40	$247,680
Replacement AHU-3, 61,500 btu/hr	2,050	CFM	$14.40	$29,520
Replacement AHU-4, 57,000 btu/hr	1,900	CFM	$14.40	$27,360
New Air Handling Unit for Expansion	11,500	CFM	$14.40	$165,600
Terminal units				
VAV box w/ reheat, 10", 1450 cfm max	28	EA	$1,197.00	$33,516
Fans				
Exhaust fans	2,300	CFM	$2.34	$5,382
Air Distribution				
Ductwork, galv	9,200	LBS	$15.75	$144,900
Duct insulation, wrap	5,750	SF	$3.46	$19,895
Manual volume damper	58	EA	$88.79	$5,105
Flexible duct, insulated, various sizes	288	LF	$24.46	$7,032
Grilles and diffusers				
Supply/Return/Exhaust Grilles	58	EA	$188.00	$10,810
Miscellaneous				
Pre-read and record - cfm, gpm	24	HR	$150.96	$3,623
Test / balance HVAC	40	HR	$150.96	$6,038
Start-up/check-out	80	HR	$137.24	$10,979
Commissioning assist	40	HR	$137.24	$5,490
Seismic bracing	11,500	SF	$0.90	$10,350
Hoisting and rigging	1	LS	$27,610.00	$27,610
Penetrations and firestopping for HVAC	11,500	SF	$0.65	$7,475
Integrated Automation				
HVAC Controls				
DDC controls, chiller	1	EA	$20,640.00	$20,640
DDC controls, cooling tower cell	1	EA	$28,900.00	$28,900
DDC controls, pump wth vfd	2	EA	$8,257.00	$16,514
DDC controls, air handler, vav	5	EA	$24,780.00	$123,900
DDC controls, CO2 sensors	10	EA	$1,549.00	$15,490
DDC controls, vav box, reheat	28	EA	$2,323.00	$65,044
DDC controls, general exhaust fan	2	EA	$1,549.00	$3,098
DDC controls, integration/programming	1	EA	$15,490.00	$15,490
Plumbing Controls				
DDC controls, domestic water heaters	2	EA	$3,097.00	$6,194
Sub-Total: 11 Heating, Ventilation and Air Conditioning	**45,000**	**SF**	**$48.65**	**$2,189,273**

Code	Quantity	Unit	Unit Rate	Total Cost
12 Electrical Lighting, Power and Communications				
Service and Distribution				
Replace 1600A 480/277V service switchboard with modern fault protection standards	1	EA	$85,487.50	$85,488
(Alternate - Obtain remaining 400A breaker leftover in stock and install to serve new loads)	1	EA	$8,310.00	$8,310
Provide 400A 480/277V distribution board to serve mechanical systems and lighting including feeders	1	EA	$14,465.00	$14,465
Provide 112.5kVA 480-208/120V transformer including primary/secondary feeders	1	EA	$26,586.50	$26,587
Provide 400A 208/120V panelboard including feeders	1	EA	$10,535.00	$10,535
Replace existing panelboards - LX, LA, A, A2 & B with 225A 208/120V copper bus, 100A for Panel 'LX' - panels shall be upgraded with additional breaker capacity	5	EA	$2,700.00	$13,500
Replace existing 'MCC' distribution panel with 400A 480/277V 72 poles cupper bus including feeders	1	EA	$14,618.75	$14,619
Provide 400A FDS Sw 240V/3Ph on two existing tranformer for secondary protection	1	EA	$8,500.00	$8,500
Grounding System/Coring/Firesealing	45,000	SF	$0.25	$11,250
Testing and Commissioning	45,000	SF	$0.35	$15,750
Mechanical and Equipment Connections				
Mechanical equipment upgrades and misc equipment connections	45,000	SF	$2.63	$118,500
Convenience power				
Provide receptacles on building additions to include computer labs, conference rooms, collaboration spaces, multi-media	11,500	SF	$7.00	$80,500
Lighting and Control				
Provide LED lighting and lighting controls upgrades to comply with latest energy codes/Title 24 on new additions/renovation areas. Provide centralized lighting control station (nLIght Eclypse)	45,000	SF	$33.74	$1,518,500
General/Electrical Requirements				
Electrical selective demolition	45,000	SF	$0.85	$38,250
General conditions / General requirements - Includes Small Tools, Office Staffing, Indirect Labor, Cosumables, Equipment Rental & General Expenses	45,000	SF	$12.00	$540,000
Communication				
Existing telecom infrastructure shall be extended from existing 2nd floor IT room to the addition area.	1	LS	$15,000.00	$15,000
Provide new telecom outlets to addition areas	11,500	SF	$9.00	$103,500
Paging				
Paging for new addition areas - allowance	11,500	SF	$2.75	$31,625

Code	Quantity	Unit	Unit Rate	Total Cost
AV - Conduit Rough-Ins				
AV conduit rough-ins for new addition area - allowance	11,500	SF	$1.50	$17,250
Card Access				
Existing access control system shall be extended to the new addition area to match City's preferred vendor or standards	11,500	SF	$2.75	$31,625
CCTV				
Existing CCTV system shall be extended to the new addition area to match City's preferred vendor or standards - allowance	11,500	SF	$3.50	$40,250
Sub-Total: 12 Electrical Lighting, Power and Communications	**45,000**	**SF**	**$60.98**	**$2,744,003**
13 Fire Protection Systems				
Upgrade existing fire sprinkler system	33,500	SF	$4.50	$150,750
Wet-pipe sprinklers	11,500	SF	$9.00	$103,500
Sub-Total: 13 Fire Protection Systems	**45,000**	**SF**	**$5.65**	**$254,250**
Total - D) Mechanical and Electrical (10-13)	**45,000**	**SF**	**$124.08**	**$5,583,814**
E) Building Prep & Demo (14-15)				
14 Building Preparations & Protection				
Sub-Total: 14 Building Preparations & Protection	**45,000**	**SF**		
15 Building Demolition				
Selective Demolition				
Remove concrete topping at plaza deck	15,130	SF	$2.00	$30,260
Remove rigid insulation at plaza deck	15,130	SF	$1.00	$15,130
Remove waterproofing membrane at plaza deck	15,130	SF	$2.00	$30,260
Remove (E) friends room expansion complete	1,616	SF	$15.00	$24,240
Demo and remove CMU towers	3	EA	$3,000.00	$9,000
Cut new openings in (E) CMU wall for egress	1,776	SF	$10.00	$17,760
Remove CMU flanges	48	LF	$50.00	$2,400
Remove floor and ceiling finishes	33,500	SF	$2.50	$83,750
Sub-Total: 15 Building Demolition	**45,000**	**SF**	**$4.73**	**$212,800**
Total - E) Building Prep & Demo (14-15)	**45,000**	**SF**	**$4.73**	**$212,800**

Code	Quantity	Unit	Unit Rate	Total Cost
F) Site Work (16-18)				
16 Site Preparation and Demolition				
Site clearing				
Demo and remove slab on grade and paving for new expansion	8,192	SF	$2.50	$20,480
Site grading	8,192	SF	$2.50	$20,480
Erosion Control	8,192	SF	$0.75	$6,144
Sub-Total: 16 Site Preparation and Demolition	**45,000**	**SF**	**$1.05**	**$47,104**
17 Site Paving, Structures & Landscaping				
Paving				
New concrete paving around building expansion, 6' width	2,442	SF	$16.00	$39,072
Sub-Total: 17 Site Paving, Structures & Landscaping	**45,000**	**SF**	**$0.87**	**$39,072**
18 Utilities on Site				
Wet Utilities - No major work anticipated				
Allowance for minimal work and reconnection as needed	1	LS	$50,000.00	$50,000
Site Electrical				
Provide primary feeder ductbank for upsizing of existing SCE 500KW transformer/new transformer pad	1	EA	$35,000.00	$35,000
Provide 1600A secondary feeder ductbank only for new service switchboard, (4)-4"C (secondary cable by SCE)- allow	1	EA	$29,300.00	$29,300
Relocate (2) existing generators with (2) new pads + (2) sets 600A emergency feeders at 200ft horizontal run	1	LS	$154,250.00	$154,250
Site Lighting				
Replace existing site lighting with LED equivalent in same locations, provide LED wall packs over exterior exit ways. Provide astronomically controlled 16 relay panel	1	LS	$90,790.00	$90,790
Sub-Total: 18 Utilities on Site	**45,000**	**SF**	**$7.99**	**$359,340**
Total - F) Site Work (16-18)	**45,000**	**SF**	**$9.90**	**$445,516**

OPTION 3

Construction Cost Detail - Option 3

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

CUMMING
Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
A) Shell (1-5)				
1 Foundations				
Work to Existing Building				
New micropiles to (E) footing, 10' deep	24	EA	$2,000.00	$48,000
Building Expansion				
Excavation				
Over-excavate and compact building footprint, 5' depth and 5' beyond perimeter	2,346	CY	$24.00	$56,304
Foundation				
Reinforced concrete pad/wall footings at expansion, assume 36" depth	225	CY	$850.00	$191,250
Sub-Total: 1 Foundations	**51,630**	**SF**	**$5.72**	**$295,554**
2 Vertical Structure				
Work to Existing Building				
Structural steel columns - No work anticipated				
Building Expansion				
Structural steel columns (4 lb/sf)	36	TN	$8,000.00	$288,000
New shearwall, 12" thick	3,150	SF	$75.00	$236,250
CMU wall, 8"	1,200	SF	$38.00	$45,600
Sub-Total: 2 Vertical Structure	**51,630**	**SF**	**$11.04**	**$569,850**
3 Floor & Roof Structures				
Seismic/Gravity Repair				
FRP strenthening of (E) girders including grinding corners, duct for FRP overlay anchorage	10,161	SF	$120.00	$1,219,320
Prepare slab and Epoxy injection of cracks	218	LF	$82.00	$17,876
Prepare beam and Epoxy injection of cracks	40	LF	$90.00	$3,600
Allowance for additional epoxy injection cracks	200	LF	$82.00	$16,400
New 2.5" Light Weight concrete topping, 3,000 psi	15,130	SF	$6.00	$90,780
Reinforcement to concrete topping, #3@12" O.C.	15,644	LB	$1.80	$28,159
Work to Existing Building				
Slab on grade - patch and repair due to construction of new micropiles	540	SF	$25.00	$13,500
Supplemetal wall anchorage connections, holdowns wit threaded rods set in adhesive connecting the walls to roof framing, @ 4' o.c.	48	EA	$300.00	$14,400

Code	Quantity	Unit	Unit Rate	Total Cost
Building Expansion				
Slab on grade				
Reinforced concrete slab on grade, 5" thick	9,656	SF	$14.00	$135,184
Suspended floors and Roofs				
Structural steel framing (12 lb/sf)	103	TN	$8,000.00	$824,000
Metal deck with concrete fill - floor	9,065	SF	$19.00	$172,235
Metal deck with concrete fill - roof	9,676	SF	$19.00	$183,844
Miscellaneous				
Miscellaneous metal, framing backing, equipment support framing	18,130	SF	$3.00	$54,390
Seismic joint	204	LF	$200.00	$40,800
Sub-Total: 3 Floor & Roof Structures	**51,630**	**SF**	**$26.65**	**$1,376,135**

4 Exterior Cladding

Work to Existing Building				
Patch and repaint existing exterior walls	13,890	SF	$5.00	$69,450
Windows - to remain				No work anticipated
Building Expansion				
Wall framing, furring and insulation				
Metal studs framing, sheathing, waterproofing, insulation	10,380	SF	$30.00	$311,400
Exterior finishes				
Metal panel or wood panel, cement plaster	10,380	SF	$55.00	$570,900
Interior finish to exterior walls				
Gypsum board lining	10,380	SF	$5.50	$57,090
Windows, glazing and louvers				
Aluminum glazed window and storefronts (30% of wall area)	4,448	SF	$130.00	$578,240
Fascias, bands, screens and trim				
Miscellaneous architectural features, window canopy, trims	18,130	SF	$5.00	$90,650
Exterior doors, frames and hardware				
Exterior storefront entry doors, metal doors	1	LS	$20,000.00	$20,000
Sub-Total: 4 Exterior Cladding	**51,630**	**SF**	**$32.88**	**$1,697,730**

Code	Quantity	Unit	Unit Rate	Total Cost
5 Roofing and Waterproofing				
Existing Plaza Deck				
New waterproofing membrane - deck	15,130	SF	$12.50	$189,125
New rigid insulation - deck	15,130	SF	$5.50	$83,215
Concrete pavers	15,130	SF	$25.00	$378,250
Building Expansion				
Waterproofing				
Waterproofing - stair landing	611	SF	$13.00	$7,943
Roofing				
Single-ply roofing membrane, with cover board and rigid insulation	9,676	SF	$25.00	$241,900
Roofing upstands and sheetmetal				
Miscellaneous flashing and sheet metal	9,676	SF	$5.00	$48,380
Deck				
Hard surface finish to stair landing	611	SF	$35.00	$21,385
Caulking and sealants	18,130	SF	$1.50	$27,195
Sub-Total: 5 Roofing and Waterproofing	**51,630**	**SF**	**$19.32**	**$997,393**
Total - A) Shell (1-5)	**51,630**	**SF**	**$95.62**	**$4,936,662**
B) Interiors (6-7)				
6 Interior Partitions, Doors and Glazing				
Work to Existing Building				
Restore damage partition as needed - allowance	33,500	SF	$2.00	$67,000
Building Expansion				
Partition				
Metal studs partition with gypsum board lining and insulation (0.045 ratio/GFA)	18,130	SF	$20.00	$362,600
Interior Door and Glazing	18,130	SF	$6.00	$108,780
Sub-Total: 6 Interior Partitions, Doors and Glazing	**51,630**	**SF**	**$10.43**	**$538,380**

Code	Quantity	Unit	Unit Rate	Total Cost
7 Floor, Wall and Ceiling Finishes				
Work to Existing Building				
Ceramic tiles at toilet, resilient flooring, sealed concrete at mechanical spaces and carpet throughout	33,500	SF	$12.00	$402,000
Gypsum board ceiling, ACT ceiling, and painted exposed ceiling	33,500	SF	$11.50	$385,250
Miscellaneous painting as needed	1	LS	$50,000.00	$50,000
Building Expansion				
Floors				
Ceramic tiles at toilet, resilient flooring, sealed concrete at mechanical spaces and carpet throughout	18,130	SF	$13.50	$244,755
Bases				
Ceramic tiles at restrooms, resilient/wood base throughout	18,130	SF	$1.50	$27,195
Walls				
Ceramic tiles to toilet, acoustical wall panel, paint throughout	18,130	SF	$8.50	$154,105
Ceilings				
Gypsum board ceiling, ACT ceiling, and painted exposed ceiling	18,130	SF	$13.50	$244,755
Sub-Total: 7 Floor, Wall and Ceiling Finishes	**51,630**	**SF**	**$29.21**	**$1,508,060**
Total - B) Interiors (6-7)	**51,630**	**SF**	**$39.64**	**$2,046,440**
C) Equipment and Vertical Transportation (8-9)				
8 Function Equipment and Specialties				
Work to Existing Building				
Allowance for patch and repair, modify as needed building specialties, casework, equipment affected during new construction	33,500	SF	$5.00	$167,500
Building Expansion				
Specialties				
Building specialties such as toilet cubicles and accessories, markerboard and tackboards, mirror, fire extinguisher cabinets, lockers and bench	18,130	SF	$3.50	$63,455
Signage - Code, Directional and Exterior ID	18,130	SF	$1.00	$18,130
Window shade, manual	4,448	SF	$16.00	$71,168
Cabinets and countertops				
Fixed casework and millwork	18,130	SF	$8.00	$145,040
Equipment				
Library shelving/stacks and equipment	18,130	SF	$35.00	$634,550
Sub-Total: 8 Function Equipment and Specialties	**51,630**	**SF**	**$21.30**	**$1,099,843**

Code	Quantity	Unit	Unit Rate	Total Cost
9 Stairs and Vertical Transportation				
Building Expansion				
Staircase				
Concrete filled metal pan staircase, finish and railings	1	FLT	$35,000.00	$35,000
Elevator				None
Sub-Total: 9 Stairs and Vertical Transportation	**51,630**	**SF**	**$0.68**	**$35,000**
Total - C) Equipment and Vertical Transportation (8-9)	**51,630**	**SF**	**$21.98**	**$1,134,843**
D) Mechanical and Electrical (10-13)				
10 Plumbing Systems				
General Plumbing Equipment				
5-9 kW Electric Water Heater	4	EA	$5,996.00	$23,984
HW rough-in at water heater	4	EA	$1,171.00	$4,684
Sanitary Fixtures				
Water closet, WC-1, wall, sensor FV	8	EA	$2,132.00	$17,056
Urinal, UR-1	4	EA	$1,541.00	$6,164
Lavatory, L-1, wall	8	EA	$1,212.00	$9,696
Sink, SS-1	4	EA	$1,503.00	$6,012
Drinking fountain, DF-1	2	EA	$3,523.00	$7,046
Floor drain, FD-1	4	EA	$809.90	$3,240
Rough-ins				
Local rough-in at fixture	30	EA	$717.00	$21,510
Domestic Cold Water				
Domestic Cold Water Piping	18,130	SF	$4.87	$88,293
Upsize existing cold water service to 4" with a 2.5" water meter and 4" SOV including trenching and permitting	1	LS	$16,500.00	$16,500
New pressure reducing station on domestic water service to the building	2	EA	$6,593.00	$13,186
Domestic Hot Water				
Domestic Hot Water Piping	18,130	SF	$4.18	$75,783
Waste Piping				
Waste Piping, SF	18,130	SF	$5.36	$97,177
New Sanitary Waste tie-in points including trenching and permitting	1	LS	$12,500.00	$12,500

Code	Quantity	Unit	Unit Rate	Total Cost
Vent Piping				
Vent Piping, SF	18,130	SF	$4.39	$79,591
Relocating/Extending the vent pipe serving the friends' room	1	LS	$6,500.00	$6,500
Provide vent caps	8	EA	$567.30	$4,538
Roof Drainage				
Roof Drainage, Allowance	18,130	SF	$2.01	$36,441
New Storm Drain tie-in points including trenching and permitting	1	LS	$12,500.00	$12,500
Condensate Drainage				
Trap and equipment connect	7	EA	$503.20	$3,522
3/4" pipe, cu type M, in bldg	210	LF	$40.24	$8,450
Pipe insulation, 3/4"	210	LF	$12.55	$2,636
Miscellaneous Plumbing				
Test / clean plumbing	40	HR	$127.18	$5,087
Start-up/check-out	40	HR	$152.61	$6,104
Commissioning assist	20	HR	$133.87	$2,677
Seismic bracing	18,130	SF	$0.85	$15,411
Penetrations and firestopping for plumbing	18,130	SF	$0.65	$11,785
Sub-Total: 10 Plumbing Systems	**51,630**	**SF**	**$11.58**	**$598,074**

11 Heating, Ventilation and Air Conditioning

HVAC Demolition				
Modify existing ductwork layout to rectify HVAC zoning issues	33,500	SF	$6.05	$202,675
Remove air handlers - AHU-1, 660,000 btu/hr, AHU-2, 516,000 btu/hr	2	EA	$14,820.00	$29,640
Remove air handlers - AHU-3, 61,500 btu/hr, AHU-4, 57,000 btu/hr	2	EA	$13,720.00	$27,440
Remove existing cooling tower	1	LS	$30,920.00	$30,920
Existing package units - To remain	2	EA		NIC
Chilled Water Equipment				
Chiller, centrifugal - water cooled (York), high eff	70	TON	$602.00	$42,140
CHW pump, end suction, 5 hp, 225 gpm	1	EA	$5,361.00	$5,361
VFD to CHW pump, 5 hp	1	EA	$3,887.00	$3,887
Condenser Water Equipment				
Cooling towers, pumps, misc	170	TON	$507.20	$86,224
CW pump, end suction, 5 hp, 225 gpm	1	EA	$5,361.00	$5,361
VFD to CW pump, 5 hp	1	EA	$3,887.00	$3,887
Condenser Water Piping				
Condenser piping to chiller or HX, weld, 4"	1	EA	$8,886.00	$8,886
Cooling tower rough-in, weld, 6"	1	EA	$14,250.00	$14,250
CW pump connect, weld, end suct, 4"	1	EA	$9,541.00	$9,541
CW piping distribution to HVAC units	18,130	SF	$2.08	$37,710

Code	Quantity	Unit	Unit Rate	Total Cost
Chilled Water Distribution				
Chiller connect, weld, 6"	1	EA	$11,400.00	$11,400
CHW pump connect, weld, end suct, 2-1/2"	1	EA	$6,232.00	$6,232
CHW coil connect, cu, 2-way, 2"	7	EA	$6,025.00	$42,175
CHW distribution to HVAC equipment	18,130	SF	$3.76	$68,169
Hot Water Distribution				
Coil connection KIT	30	EA	$1,250.00	$37,500
HHW distribution to HVAC equipment	51,630	SF	$4.44	$229,237
Air-Side Equipment				
Replacement AHU-1, 660,000 btu/hr	22,000	CFM	$14.40	$316,800
Replacement AHU-2, 516,000 btu/hr	17,200	CFM	$14.40	$247,680
New Air Handling Units for Expansion	18,130	CFM	$14.40	$261,072
Terminal units				
VAV box w/ reheat, 10", 1450 cfm max	30	EA	$1,197.00	$35,910
Fans				
Exhaust fans	3,626	CFM	$2.34	$8,485
Air Distribution				
Ductwork, galv	14,504	LBS	$15.75	$228,438
Duct insulation, wrap	9,065	SF	$3.46	$31,365
Manual volume damper	91	EA	$88.79	$8,049
Flexible duct, insulated, various sizes	453	LF	$24.46	$11,086
Grilles and diffusers				
Supply/Return/Exhaust Grilles	91	EA	$188.00	$17,108
Miscellaneous				
Pre-read and record - cfm, gpm	24	HR	$150.96	$3,623
Test / balance HVAC	80	HR	$150.96	$12,077
Start-up/check-out	120	HR	$137.24	$16,469
Commissioning assist	60	HR	$137.24	$8,234
Seismic bracing	18,130	SF	$0.90	$16,317
Hoisting and rigging	1	LS	$30,100.00	$30,100
Penetrations and firestopping for HVAC	18,130	SF	$0.65	$11,785

Code	Quantity	Unit	Unit Rate	Total Cost
Integrated Automation				
HVAC Controls				
DDC controls, chiller	1	EA	$20,640.00	$20,640
DDC controls, cooling tower cell	1	EA	$28,900.00	$28,900
DDC controls, pump wth vfd	2	EA	$8,257.00	$16,514
DDC controls, air handler, vav	5	EA	$24,780.00	$123,900
DDC controls, CO2 sensors	15	EA	$1,549.00	$23,235
DDC controls, vav box, reheat	30	EA	$2,323.00	$69,690
DDC controls, general exhaust fan	4	EA	$1,549.00	$6,196
DDC controls, integration/programming	1	EA	$15,490.00	$15,490
Plumbing Controls				
DDC controls, domestic water heaters	4	EA	$3,097.00	$12,388
Sub-Total: 11 Heating, Ventilation and Air Conditioning	**51,630**	**SF**	**$48.12**	**$2,484,186**

12 Electrical Lighting, Power and Communications

Service and Distribution				
Replace 1600A 480/277V service switchboard with modern fault protection standards	1	EA	$85,487.50	$85,488
(Alternate - Obtain remaining 400A breaker leftover in stock and install to serve new loads)	1	EA	$8,310.00	$8,310
Provide 600A 480/277V distribution board to serve mechanical systems and lighting including feeders	1	EA	$18,800.00	$18,800
Provide 112.5kVA 480-208/120V transformer including primary/secondary feeders	1	EA	$26,586.50	$26,587
Provide 400A 208/120V panelboard including feeders	1	EA	$10,535.00	$10,535
Replace existing panelboards - LX, LA, A, A2 & B with 225A 208/120V copper bus, 100A for Panel 'LX' - panels shall be upgraded with additional breaker capacity	5	EA	$2,700.00	$13,500
Replace existing 'MCC' distribution panel with 400A 480/277V 72 poles cupper bus including feeders	1	EA	$14,618.75	$14,619
Provide 400A FDS Sw 240V/3Ph on two existing tranformer for secondary protection	1	EA	$8,500.00	$8,500
Grounding System/Coring/Firesealing	51,630	SF	$0.25	$12,908
Testing and Commissioning	51,630	SF	$0.35	$18,071
Mechanical and Equipment Connections				
Mechanical equipment upgrades and misc equipment connections	51,630	SF	$2.44	$125,977
Convenience power				
Provide receptacles on building additions to include computer labs, conference rooms, collaboration spaces, multi-media	18,130	SF	$6.00	$108,780
Lighting and Control				
Provide LED lighting and lighting controls upgrades to comply with latest energy codes/Title 24 on new additions/renovation areas. Provide centralized lighting control station (nLIght Eclypse)	51,630	SF	$32.35	$1,670,231

Code	Quantity	Unit	Unit Rate	Total Cost
General/Electrical Requirements				
Electrical selective demolition	51,630	SF	$0.85	$43,886
General conditions / General requirements - Includes Small Tools, Office Staffing, Indirect Labor, Cosumables, Equipment Rental & General Expenses	51,630	SF	$12.00	$619,560
Communication				
Existing telecom infrastructure shall be extended from existing 2nd floor IT room to the addition area.	1	LS	$20,000.00	$20,000
Provide new telecom outlets to addition areas	18,130	SF	$8.00	$145,040
Paging				
Paging for new addition areas - allowance	18,130	SF	$2.25	$40,793
AV - Conduit Rough-Ins				
AV conduit rough-ins for new addition area - allowance	18,130	SF	$1.25	$22,663
Card Access				
Existing access control system shall be extended to the new addition area to match City's preferred vendor or standards	18,130	SF	$2.25	$40,793
CCTV				
Existing CCTV system shall be extended to the new addition area to match City's preferred vendor or standards - allowance	18,130	SF	$2.85	$51,671
Sub-Total: 12 Electrical Lighting, Power and Communications	**51,630**	**SF**	**$60.17**	**$3,106,707**

13 Fire Protection Systems

Upgrade existing fire sprinkler system	33,500	SF	$4.50	$150,750
Wet-pipe sprinklers	18,130	SF	$9.00	$163,170
Sub-Total: 13 Fire Protection Systems	**51,630**	**SF**	**$6.08**	**$313,920**

Total - D) Mechanical and Electrical (10-13)	**51,630**	**SF**	**$125.95**	**$6,502,887**

E) Building Prep & Demo (14-15)

14 Building Preparations & Protection

Sub-Total: 14 Building Preparations & Protection	**51,630**	**SF**		

Code	Quantity	Unit	Unit Rate	Total Cost
15 Building Demolition				
Selective Demolition				
Remove concrete topping	15,130	SF	$2.00	$30,260
Remove rigid insulation	15,130	SF	$1.00	$15,130
Remove waterproofing membrane	15,130	SF	$2.00	$30,260
Remove (E) friends room expansion complete	1,616	SF	$15.00	$24,240
Demo and remove CMU towers	3	EA	$3,000.00	$9,000
Cut new openings in (E) CMU wall for egress	1,776	SF	$10.00	$17,760
Remove CMU flanges	48	LF	$50.00	$2,400
Remove floor and ceiling finishes	33,500	SF	$2.50	$83,750
Sub-Total: 15 Building Demolition	**51,630**	**SF**	**$4.12**	**$212,800**
Total - E) Building Prep & Demo (14-15)	**51,630**	**SF**	**$4.12**	**$212,800**
F) Site Work (16-18)				
16 Site Preparation and Demolition				
Site clearing				
Demo and remove slab on grade and paving for new expansion	13,268	SF	$2.50	$33,170
Site grading	13,268	SF	$2.50	$33,170
Erosion Control	13,268	SF	$0.75	$9,951
Sub-Total: 16 Site Preparation and Demolition	**51,630**	**SF**	**$1.48**	**$76,291**
17 Site Paving, Structures & Landscaping				
Paving				
New concrete paving around building expansion, 6' width	3,612	SF	$16.00	$57,792
Sub-Total: 17 Site Paving, Structures & Landscaping	**51,630**	**SF**	**$1.12**	**$57,792**

Construction Cost Detail - Option 3

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

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Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
18 Utilities on Site				
Wet Utilities - No major work anticipated				
Allowance for minimal work and reconnection as needed	1	LS	$60,000.00	$60,000
Site Electrical				
Provide primary feeder ductbank for upsizing of existing SCE 500KW transformer/new transformer pad	1	EA	$35,000.00	$35,000
Provide 1600A secondary feeder ductbank only for new service switchboard, (4)-4"C (secondary cable by SCE)- allow	1	EA	$29,300.00	$29,300
Relocate (2) existing generators with (2) new pads + (2) sets 600A emergency feeders at 200ft horizontal run	1	LS	$154,250.00	$154,250
Site Lighting				
Replace existing site lighting with LED equivalent in same locations, provide LED wall packs over exterior exit ways. Provide astronomically controlled 16 relay panel	1	LS	$97,435.00	$97,435
Sub-Total: 18 Utilities on Site	**51,630**	**SF**	**$7.28**	**$375,985**
Total - F) Site Work (16-18)	**51,630**	**SF**	**$9.88**	**$510,068**

OPTION 4

Code	Quantity	Unit	Unit Rate	Total Cost
A) Shell (1-5)				
1 Foundations				
Excavation				
Over-excavate and compact building footprint, 5' depth and 5' beyond perimeter	4,731	CY	$23.00	$108,813
Foundation				
Reinforced concrete pad footings, grade beams and wall footings	45,000	SF	$18.00	$810,000
Elevator pit, complete	1	EA	$15,000.00	$15,000
Sub-Total: 1 Foundations	**45,000**	**SF**	**$20.75**	**$933,813**
2 Vertical Structure				
Columns				
Steel columns and bracings (6 lb/sf)	135	TN	$8,000.00	$1,080,000
Fireproofing steelwork				
Sprayed fireproofing steelwork	135	TN	$450.00	$60,750
Sub-Total: 2 Vertical Structure	**45,000**	**SF**	**$25.35**	**$1,140,750**
3 Floor & Roof Structures				
Slab on grade				
Reinforced concrete slab on grade, 5"	22,500	SF	$15.00	$337,500
Suspended floors and Roofs				
Structural steel framing (12 lb/sf)	270	TN	$8,000.00	$2,160,000
Metal deck with concrete topping - floor	22,500	SF	$19.00	$427,500
Metal deck - roof	24,750	SF	$12.00	$297,000
Fireproofing steelwork				
Sprayed fireproofing steelwork	270	TN	$450.00	$121,500
Miscellaneous				
Miscellaneous metal, framing backing, equipment support framing	45,000	SF	$3.00	$135,000
Sub-Total: 3 Floor & Roof Structures	**45,000**	**SF**	**$77.30**	**$3,478,500**

Code	Quantity	Unit	Unit Rate	Total Cost
4 Exterior Cladding				
Exterior Façade (0.6 ratio/GFA)				
Metal studs framing, sheathing, waterproofing, insulation	20,250	SF	$30.00	$607,500
Exterior finishes				
Metal panel or wood panel, cement plaster	20,250	SF	$54.00	$1,093,500
Interior finish to exterior walls				
Gypsum board lining	20,250	SF	$5.50	$111,375
Windows, glazing and louvers				
Aluminum glazed window and storefronts (25% of wall area)	6,750	SF	$130.00	$877,500
Fascias, bands, screens and trim				
Miscellaneous architectural features, window canopy, trims, mechanical screen	45,000	SF	$5.00	$225,000
Exterior doors, frames and hardware				
Exterior storefront entry doors, metal doors	1	LS	$50,000.00	$50,000
Sub-Total: 4 Exterior Cladding	**45,000**	**SF**	**$65.89**	**$2,964,875**
5 Roofing and Waterproofing				
Roofing				
Claytile roofing and insulation	24,750	SF	$35.00	$866,250
Waterproofing	24,750	SF	$6.00	$148,500
Roofing upstands and sheetmetal				
Miscellaneous flashing and sheet metal	24,750	SF	$10.00	$247,500
Caulking and sealants	45,000	SF	$1.50	$67,500
Sub-Total: 5 Roofing and Waterproofing	**45,000**	**SF**	**$29.55**	**$1,329,750**
Total - A) Shell (1-5)	**45,000**	**SF**	**$218.84**	**$9,847,688**
B) Interiors (6-7)				
6 Interior Partitions, Doors and Glazing				
Partitions				
Metal studs partition with gypsum board lining and insulation (0.045 ratio/GFA)	45,000	SF	$24.00	$1,080,000
Interior Door and Glazing	45,000	SF	$6.00	$270,000
Sub-Total: 6 Interior Partitions, Doors and Glazing	**45,000**	**SF**	**$30.00**	**$1,350,000**

Code	Quantity	Unit	Unit Rate	Total Cost
7 Floor, Wall and Ceiling Finishes				
Floors				
Ceramic tiles at toilet, resilient flooring, sealed concrete at mechanical spaces and carpet throughout	45,000	SF	$13.00	$585,000
Bases				
Ceramic tiles at restrooms, resilient/wood base throughout	45,000	SF	$1.50	$67,500
Walls				
Ceramic tiles to toilet, acoustical wall panel, paint throughout	45,000	SF	$9.00	$405,000
Ceilings				
Gypsum board ceiling, ACT ceiling, and painted exposed ceiling	45,000	SF	$13.00	$585,000
Sub-Total: 7 Floor, Wall and Ceiling Finishes	**45,000**	**SF**	**$36.50**	**$1,642,500**
Total - B) Interiors (6-7)	**45,000**	**SF**	**$66.50**	**$2,992,500**
C) Equipment and Vertical Transportation (8-9)				
8 Function Equipment and Specialties				
Specialties				
Building specialties such as toilet cubicles and accessories, markerboard and tackboards, mirror, fire extinguisher cabinets, lockers and bench	45,000	SF	$3.00	$135,000
Signage - Code, Directional and Exterior ID	45,000	SF	$1.75	$78,750
Exterior signage	1	LS	$20,000.00	$20,000
Window shade, manual	6,750	SF	$16.00	$108,000
Cabinets and countertops				
Fixed casework and millwork	45,000	SF	$9.00	$405,000
Equipment				
Library shelving/stacks, book detection system	45,000	SF	$50.00	$2,250,000
Sub-Total: 8 Function Equipment and Specialties	**45,000**	**SF**	**$66.59**	**$2,996,750**

Code	Quantity	Unit	Unit Rate	Total Cost
9 Stairs and Vertical Transportation				
Stairs				
Concrete filled metal pan staircase, finish and railings	2	FLT	$35,000.00	$70,000
Elevators				
New traction passenger elevator, 2-stop	1	EA	$200,000.00	$200,000
Sub-Total: 9 Stairs and Vertical Transportation	**45,000**	**SF**	**$6.00**	**$270,000**
Total - C) Equipment and Vertical Transportation (8-9)	**45,000**	**SF**	**$72.59**	**$3,266,750**
D) Mechanical and Electrical (10-13)				
10 Plumbing Systems				
Plumbing systems				
General Plumbing Equipment	45,000	SF	$1.59	$71,550
Sanitary Fixtures	45,000	SF	$2.50	$112,500
Rough-ins	45,000	SF	$1.15	$51,750
Domestic Cold Water piping	45,000	SF	$4.87	$219,150
Domestic Hot Water Piping	45,000	SF	$4.18	$188,100
Waste Piping	45,000	SF	$5.36	$241,200
Vent Piping	45,000	SF	$4.39	$197,550
Roof Drainage	45,000	SF	$2.01	$90,450
Condensate Drainage	45,000	SF	$0.32	$14,400
Misc. plumbing - test/clean, start-up, commissioning, seismic bracing and penetrations & firestopping	45,000	SF	$1.99	$89,550
Sub-Total: 10 Plumbing Systems	**45,000**	**SF**	**$28.36**	**$1,276,200**

Code	Quantity	Unit	Unit Rate	Total Cost
11 Heating, Ventilation and Air Conditioning				
HVAC System				
Chilled Water Equipment	45,000	SF	$2.63	$118,350
Condenser Water Equipment	45,000	SF	$1.78	$80,100
Heating Hot Water Equipment	45,000	SF	$1.26	$56,700
Condenser Water Piping	45,000	SF	$3.95	$177,750
Chilled Water Distribution	45,000	SF	$5.64	$253,800
Hot Water Distribution	45,000	SF	$6.97	$313,650
Air Side Equipment: Air Handling Units, DX ancoils/Splits, Terminal Units, Exhaust Fans	45,000	SF	$16.87	$759,150
Air Distribution: ductwork, insulation, air distribution registers, manual volume dampers, flexible duct	45,000	SF	$21.82	$981,900
Misc. HVAC - test/clean, start-up, commissioning, seismic bracing and penetrations & firestopping	45,000	SF	$4.90	$220,500
Integrated Automation				
Controls & Instrumentation	45,000	SF	$11.13	$500,850
Sub-Total: 11 Heating, Ventilation and Air Conditioning	**45,000**	**SF**	**$76.95**	**$3,462,750**
12 Electrical Lighting, Power and Communications				
Service and distribution				
Service and distribution, including panelboards, transformer, feeders and grounding	45,000	SF	$16.00	$720,000
Mechanical and equipment connections, including HVAC/plumbing and misc equipment connections	45,000	SF	$7.00	$315,000
Convenience power	45,000	SF	$8.00	$360,000
Lighting and lighting control				
Lighting and Lighting switching and controls including toggle switches, dimmers, occupancy sensors, and daylighting sensors	45,000	SF	$34.00	$1,530,000
General conditions / General requirements - Includes Small Tools, Office Staffing, Indirect Labor, Cosumables, Equipment Rental & General Expenses	45,000	SF	$12.00	$540,000

Code	Quantity	Unit	Unit Rate	Total Cost
Communications				
Telephone Data Systems	45,000	SF	$12.50	$562,500
Paging system	45,000	SF	$3.50	$157,500
Audio Visual - roughin only	45,000	SF	$1.50	$67,500
Electrical Safety And Security				
Security system, access control and CCTV	45,000	SF	$8.00	$360,000
Fire alarm System	45,000	SF	$7.50	$337,500
Sub-Total: 12 Electrical Lighting, Power and Communications	**45,000**	**SF**	**$110.00**	**$4,950,000**
13 Fire Protection Systems				
Wet-pipe sprinklers system	45,000	SF	$9.00	$405,000
Sub-Total: 13 Fire Protection Systems	**45,000**	**SF**	**$9.00**	**$405,000**
Total - D) Mechanical and Electrical (10-13)	**45,000**	**SF**	**$224.31**	**$10,093,950**

Construction Cost Detail - Option 4 Site Development

Glendora Library Structural Analysis & Expansion

Feasibility Study SOPC

August 18, 2023

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Code	Quantity	Unit	Unit Rate	Total Cost
F) Site Work (16-18)				
16 Site Preparation and Demolition				
Selective demolition and removal				
Site clearing and demolition (assumed no building structure to be removed)	60,000	SF	$2.50	$150,000
Earthwork				
General site grading and compaction	60,000	SF	$3.00	$180,000
Erosion Control	60,000	SF	$0.75	$45,000
Sub-Total: 16 Site Preparation and Demolition	**60,000**	**SF**	**$6.25**	**$375,000**
17 Site Paving, Structures & Landscaping				
Paving				
Asphalt paving at parking, concrete pavers, standard concrete paving elsewhere	27,500	SF	$18.00	$495,000
Landscaping and irrigation				
Allowance for landscaping, trees, shrubs and ground cover	10,000	SF	$15.00	$150,000
Irrigaton	10,000	SF	$5.50	$55,000
Site structures				
Allowance for site walls, curb, planter wall and perimeter fencing	60,000	SF	$10.00	$600,000
Specialties				
Site specialties such as bike racks, trash receptacle, benches	60,000	SF	$0.35	$21,000
Signage, ADA signs, parking striping	60,000	SF	$0.50	$30,000
Sub-Total: 17 Site Paving, Structures & Landscaping	**60,000**	**SF**	**$22.52**	**$1,351,000**
18 Utilities on Site				
Storm drainage				
Drainage system including piping, area drain, catch basin, cleanouts, trench drain	60,000	SF	$2.00	$120,000
Storm water capture, assume 4,000 sf x 6' deep	24,000	CF	$9.00	$216,000
Sewer				
PVC piping, connections including trenching and backfill, 6"	300	LF	$180.00	$54,000
Manhole	1	EA	$8,500.00	$8,500
Cleanouts	2	EA	$1,800.00	$3,600
Connect to existing	1	EA	$2,200.00	$2,200
Connect to Building	1	EA	$2,200.00	$2,200

Construction Cost Detail - Option 4 Site Development

Glendora Library Structural Analysis & Expansion

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August 18, 2023

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Building Value Through Expertise

Code	Quantity	Unit	Unit Rate	Total Cost
Domestic water				
PVC piping, connections including trenching and backfill, 4"	300	LF	$160.00	$48,000
Backflow prevener, 6"	1	EA	$14,000.00	$14,000
Meter	1	EA	$750.00	$750
Connect to existing	1	EA	$2,200.00	$2,200
Connect to Building	1	EA	$2,200.00	$2,200
Fire water				
PVC piping, connections including trenching and backfill, 6"	300	LF	$160.00	$48,000
Connect to existing	1	EA	$2,200.00	$2,200
Connect to Building	1	EA	$2,200.00	$2,200
Backflow prevener, 6"	1	EA	$14,000.00	$14,000
Fire hydrant, 6"	1	EA	$12,000.00	$12,000
Fire department connection including (1) post-indicator valve	1	EA	$9,500.00	$9,500
Site Electrical				
Site distribution including transformer, feeder	1	LS	$150,000.00	$150,000
Telecommunication	1	LS	$60,000.00	$60,000
Electric Vehicle Charging Station - Dual Level 2 EVCS with Base - allow	5	EA	$21,000.00	$105,000
Site lighting	60,000	SF	$1.50	$90,000
Sub-Total: 18 Utilities on Site	**60,000**	**SF**	**$16.11**	**$966,550**
Total - F) Site Work (16-18)	**60,000**	**SF**	**$44.88**	**$2,692,550**

Code	Quantity	Unit	Unit Cost	Total Cost
New Planter at Plaza Deck (Option 3 and 1a)				
Concrete planter wall, 30" high	925	SF	$75.00	$69,375
Plaster finish ith paint to planter wall	925	SF	$30.00	$27,750
Waterproofing	2,486	SF	$12.00	$29,832
Planter soil	159	CY	$75.00	$11,924
Landscaping and irrigation	1,561	SF	$30.00	$46,830
Drainage	6	EA	$2,000.00	$12,000
Markups				
Design Contingency	15.00	%	$197,711.31	$29,657
Escalation	6.93	%	$227,368.00	$15,746
General Conditions	8.00	%	$243,114.06	$19,449
General Requirements	4.00	%	$243,114.06	$9,725
Subcontractor Default Insur.	1.20	%	$243,114.06	$2,917
General Liability Insurance	1.50	%	$272,287.75	$4,084
Overhead & Profit	4.50	%	$279,289.43	$12,568
				$291,857

Project Escalation Forecast

Cumming revises our escalation forecast on a quarterly basis. All rates subject to change with market conditions.

Estimate Date	07/24/23
Construction Start	09/01/24
Construction Midpoint	03/01/25
Construction Completion	08/31/25
Construction Buyout	09/01/24
Construction Duration	364 Days
Construction Duration	*12 months*

Year	Time	Rate	Total	Rate
2023	0.44	7.86%	3.47%	
2024	0.67	5.0%	3.3%	6.93%
			Total Escalation to Start Date	6.93%

APPENDIX C: Mechanical, Electrical, & Plumbing Assessment Report



Glendora Public Library

Expansion Study

Final Submission

www.p2sinc.com

August 8, 2023

P2S Project #23-0674

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Mechanical Assessment

The HVAC system at Glendora Library utilizes a mix of hydronic systems and standalone DX packaged and split AC systems. The equipment comprises a combination of original components, replacements, and additions made throughout the years. Moreover, a separate system serves the newly constructed west-side library addition. To accommodate the planned expansion, the existing system capacity will require expansion.

Existing Conditions

MPR + 1st Floor

The library's first floor utilizes a dual duct air handling system (AHU-1) that supplies air to a hot and a cold plenum. These two plenums connect to 8 mixed air ducts equipped with 16 dampers (See Figure 1 below). These dampers regulate the air temperature in 8 distinct zones spanning the entire first floor of the library. (See Figure 2 below)

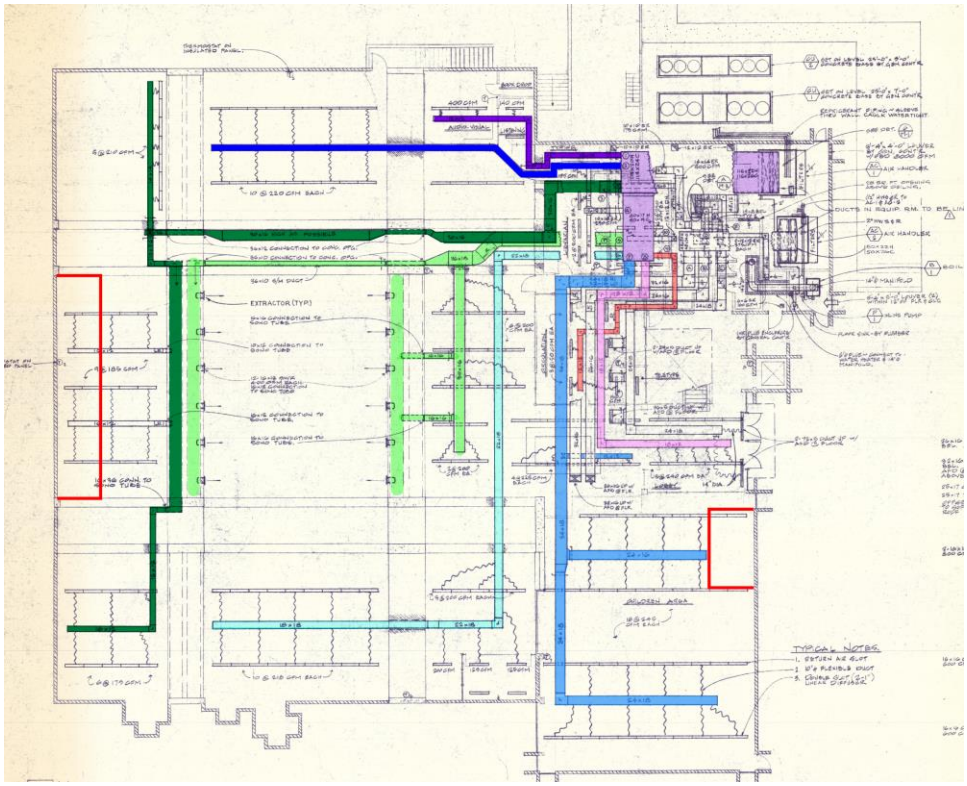


Figure 1: Original air conditioning zones for (AHU-1) serving the first floor.

Throughout the life of the library, as the need for additional office spaces was observed, portions of the stacks area and children's area were carved off to be dedicated to office spaces or small group meeting rooms. As these spaces were added to the main library, it does not appear that the existing air handling system was modified to accommodate the changes. These additional spaces are shown on the plan above with bright red lines.

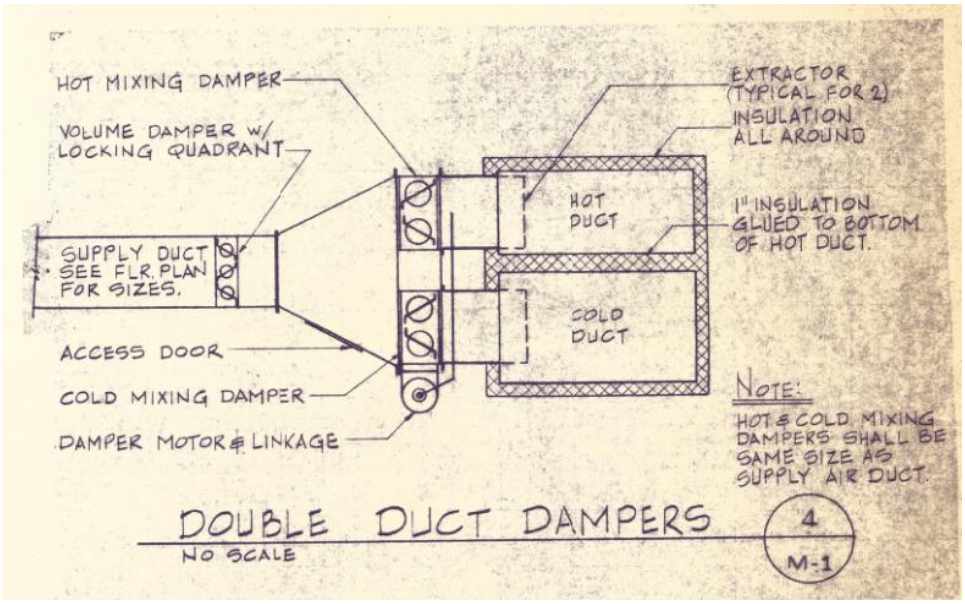


Figure 2: Existing double duct plenums with mixing dampers

During our site investigation, facility personnel noted that the controls for the air handling system are managed by Siemens and that they have limited control and access to the system. They also noted that due to changes to the spaces, some portions of the floor feel hotter while the other portions are freezing. This can be due to multiple factors, such as dampers not working properly, or the fact that the additional office spaces have isolated one of the thermostats from the rest of the building.

Furthermore, a portion of the air distribution ducts are embedded within the structural beams which poses additional challenges to proper adjustment of zones within this area. Because of this condition, there are not many opportunities for reprogramming of the stacks area. (See Figure 3 below)

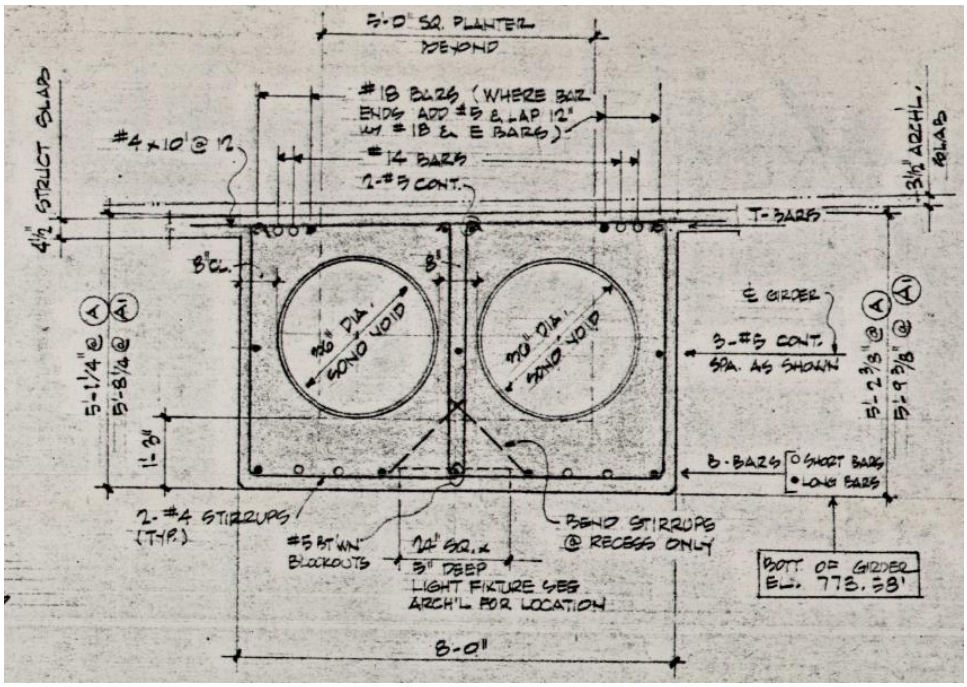


Figure 3: Ducts embedded within concrete beams.

Like the first floor, under the old design, a smaller dual duct air handling unit (AHU-2) catered to the entire second floor, including the multi-purpose room (also called the Forum), staff lounge, and what previously used to be a storage space. The multi-purpose room has a retractable wall in the middle that divides the room into two smaller areas. Hence, the multi-purpose room is divided into two zones to better control each smaller room's temperature. AHU-2 also feeds into a hot and cold plenum on the first floor above the offices (see Figure 4 and Figure 5 below). Under the original design, the aforementioned hot and cold plenums fed into six thermal zones on the second floor, including the Forum, staff lounge, lobby, the old history society, and the old storage and tech services. However, later modifications were made to the library that changed the storage and tech services room into a bookstore and the history society room into an IT closet. As a result of these changes, the original HVAC system was modified. A package system was added on the roof, which served both the bookstore and the staff lounge. Three split air conditioning units were also added to provide cooling for the IT closet. Refer to “IT room” and “Bookstore and Staff Lounge” sections below for more information.

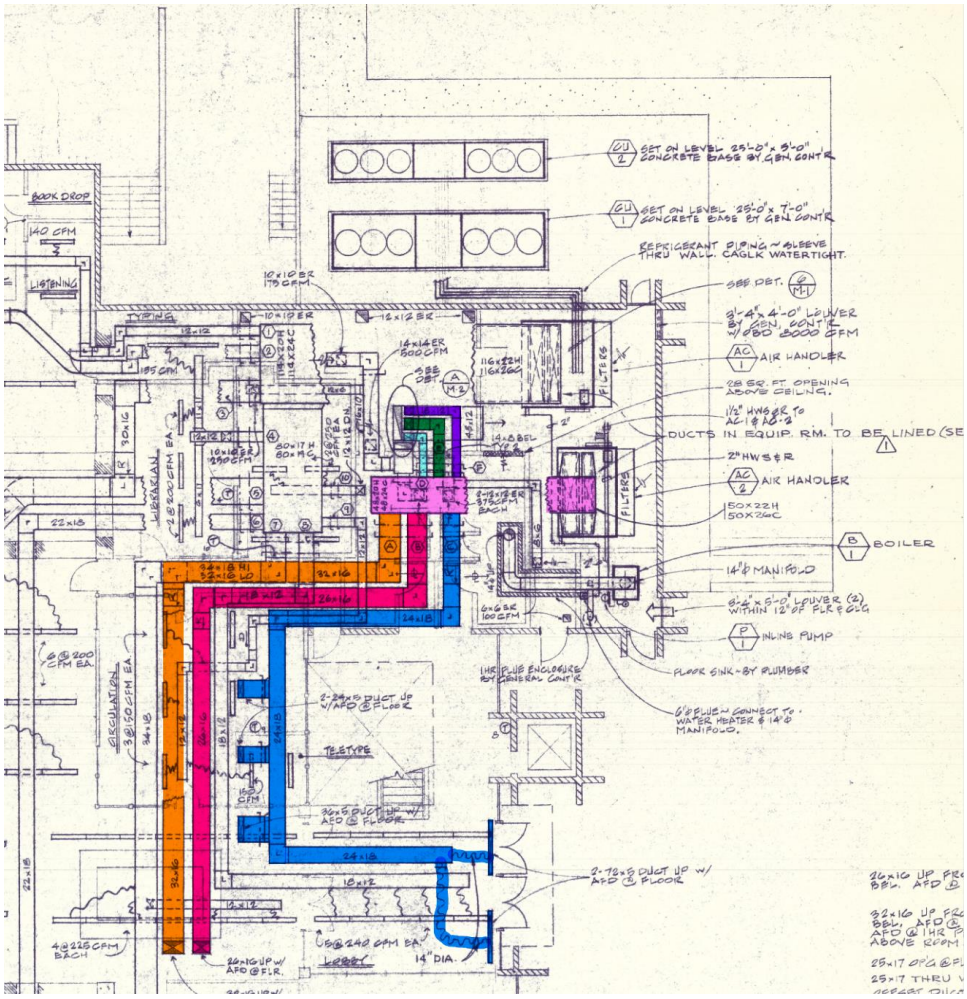


Figure 4: Original air conditioning distribution on first floor for (AHU-2) serving the second floor.

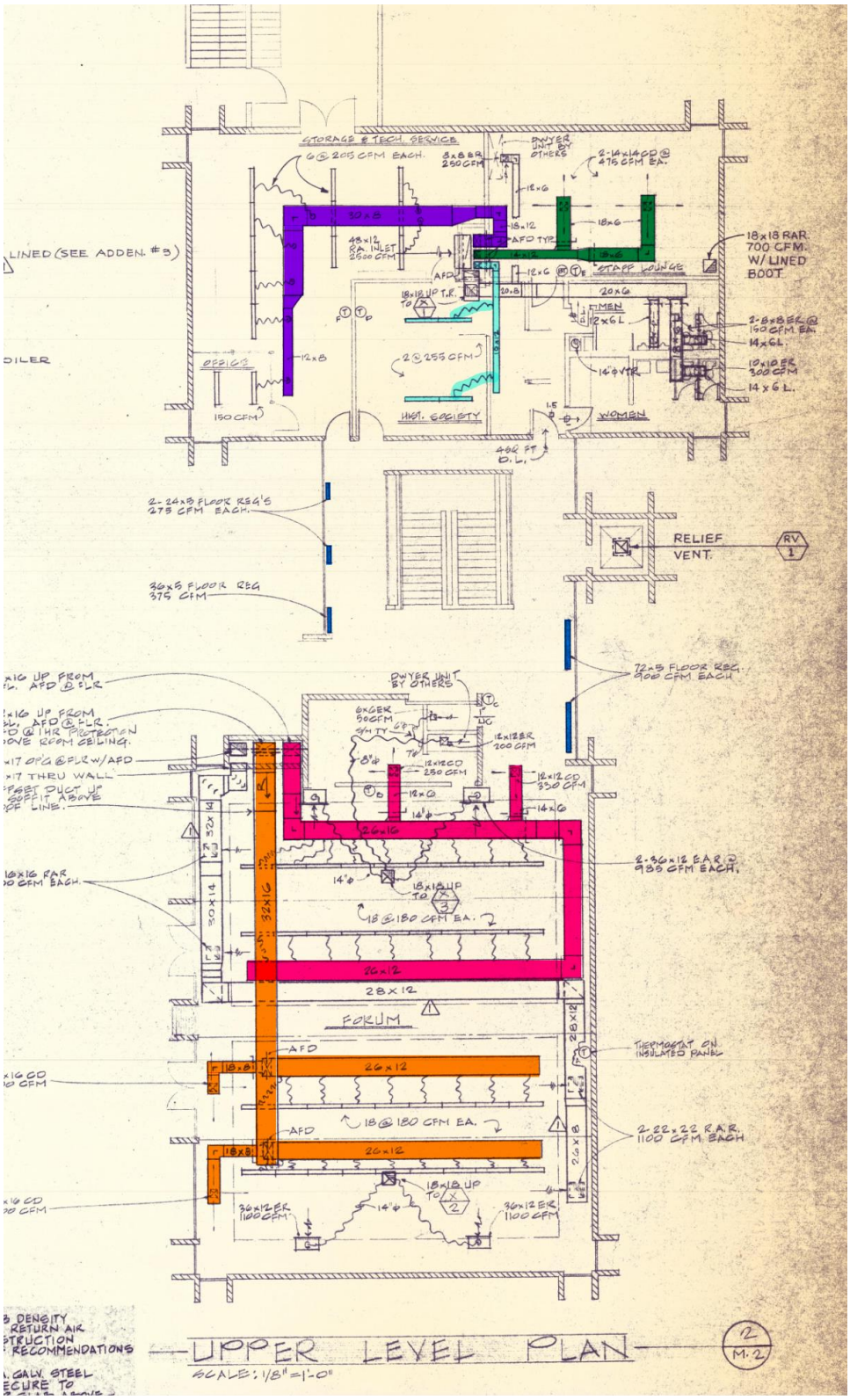


Figure 5: Original air conditioning zones for (AHU-2) serving the second floor.

Both AHU-1 and AHU-2 take the air from the mechanical room (See Figure 6 below), filter it, and feed it to the building after passing through the cooling or heating coils. A return duct from each area returns the air to the mechanical room. There are two Fresh air intake louvers mounted on the exterior face of the mechanical room. Hence, the entire mechanical room is a mixing chamber for mixing the return air and fresh outside air. This arrangement might have worked in the past, but it lacks controllability.



Figure 6: Air intakes for both AHU-1 and AHU-2

Both air-handling units are served by a central chiller and boiler system. The existing chiller system is housed within a chain-linked area situated at the rear of the building. It consists of a Baltimore Aircoil Company (BAC) evaporative cooling system and a packaged Chiller system comprising two Multistack modules and chilled water pumps.

IT Room

The IT closet (MDF room) on the second floor of the existing library is being served by three mini-split cooling systems. Two of the existing split systems are manufactured by Mitsubishi, and the third one is manufactured by Fujitsu. The three split systems can provide 10.25 tons of cooling for the MDF room (See figure 7 below).



Figure 7: Three split systems serving the IT closet.

Bookstore and Staff Lounge

The bookstore and the Staff Lounge are being served by a packaged system (AC-1) located on the roof that feeds down to serve both spaces. It is believed that the package system is being controlled by a thermostat located inside the bookstore. The temperature inside the staff lounge is believed to be controlled by a separate thermostat combined with a zone damper creating a Variable Volume and Temperature (VVT) system.

Westside addition (Friends Room)

The Westside addition is being used as a community gathering room. A packaged system (AC-2) is dedicated to serving this room. This packaged system is manufactured by International Comfort Products and is capable of producing 57,000 Btu/Hr of cooling. This unit at first glance appeared to be in fair condition; however, upon further investigations it was noted that the air intake of the unit was closed off with a plate screen that is heavy enough to prevent any outdoor air entering the unit.

Existing Chiller (CH-1) and Condensers (CD-1)

The Chiller plant is in the mechanical yard on the back side of the library, next to the parking lot. The original chillers were replaced in 2019. The chillers are inside a container that also houses two condenser pumps and heat exchangers. The existing chillers are Multistack modular chillers consisting of two modules, each having (2) two 25-ton compressors for a total of 100-ton cooling capacity. The chillers are being served by an evaporative condenser manufactured by Baltimore Aircoil Company (BAC) with 1518.00 MBH capacity (See Figure 8 below). The condenser is located next to the chiller box (See Figure 9 in the subsequent sections of this report).



Figure 8: Multistack Chiller and Condensers inside the mechanical yard

Existing Boiler (B-1)

The existing boiler is brand new to the building. According to the information provided to us by the staff, this boiler was replaced in May of 2023. The existing boiler is manufactured by Raypack and is a condensing type. Our team did not have the opportunity to visit the boiler, but considering it has recently been installed, we expect that the existing boiler is in good shape. From the manufacturer data provided to us by the staff, this boiler is rated for 850,000 Btu/hr input and can produce 826,200 Btu/hr output. It appears that the existing boiler has enough capacity for the existing building, but not for the new additions.

Consolidated table of each system

Equipment	*Area Served*	*Manufacturer*	*Model*	*Cooling Capacity (BTU/HR)*	*Heating Capacity (BTU/HR)*	*Age (years)*	*Estimated Useful Life* (years)*
AHU-1	1st Floor	Carrier	39CB1301UA20	790,000	750,000	53	15
AHU-2	2nd Floor	Carrier	39C110	540,000	430,000	53	15
AC-1	Bookstore / Lounge	Carrier	50TCQA06A2A6A0A0A0	61,500	58000	13	15
FC-1/CU-1	IT Room	Fujitsu	AOU36RLXB	33,000	34000	Unknown	15
FC-2,3/CU-2	IT Room	Mitsubishi	PUMY-P60NKMU1	60,000	66000	6	15
AC-2	West Expansion	ICP	PHN360000H00A1	57,000	55000	15	15
CH-1	AHU-1 / AHU-2	Multi-Stack	(2)MS050XN1H1A0AOC-410A	1,237,200	N/A	4	20
CD-1	CH-1	BAC	VC1-90P	1,518,000	N/A	4	20
B-1	AHU-1 / AHU-2	Raypak	H7-0856L	-	826,200	1	25

*Information is based on "ASHRAE Equipment Life Expectancy Chart" of ASHRAE Applications handbook chapter 37

Estimated Loads vs. Capacity

The ventilation rate estimation of the existing library was conducted by utilizing a range of 400 to 450 CFM (cubic feet per minute) across the cooling and heating coils. A range of 200 to 300 square feet per ton was employed to estimate the cooling load of the new addition. Manufacturers' published data or submittals were relied upon to obtain information regarding the chillers, condensing unit, packaged AHU, and DX AC systems. This data provided valuable insights into the specifications and performance of the equipment. By combining these methods and utilizing the available manufacturer-provided information, the load of the existing library was estimated, and the requirements for the new addition were determined. Informed decisions were made based on these estimations to ensure optimal performance of the HVAC system for the entire facility.

Area	*Area (SF)*	*Installed Cooling Capacity*	*Estimated Cooling Load*	*Installed Heating Capacity*	*Estimated Heating Load*
1st Floor minus Mechanical room	21,330	790,000	731,300	750,000	319,950
Forum + 2nd floor lobby	4000	540,000	192,000	430,000	60,000
IT Room	320	93,000	76,800	-	-
Bookstore + Staff Lounge	1600	61,500	54,860	58,000	24,000
Friends Room	2340	57,000	93,600	55,000	35,100

Observed Deficiencies

Age and condition issues:

The survey of the existing building determined that the two air handling units currently in place were original to the building. However, numerous deficiencies were observed during the assessment process. One significant issue identified was the presence of multiple leaks in both air handling units. These leaks were causing inefficiencies in the system and compromised the overall performance and significantly reducing capacity. Furthermore, the bottom side of both air handling units has rusted, and condensate water leaks into the floor from the bottom. Not to mention that the existing condensate traps provided on these air handling units are installed incorrectly, possibly the main reason for the rusting at the bottom (See Figure 8 below).



Figure 9: Incorrect condensate trap and rusted walls on AHU-2

Furthermore, based on our conversations with the tenants, it became apparent that there were complications with the zoning of the air handling units. The zones were found to be misconfigured, leading to improper distribution of conditioned air throughout the building. This resulted in inconsistent temperatures and discomfort for the occupants.

Addressing these deficiencies and rectifying the problems with the air handling units and zone configurations became imperative to improve the overall functionality and comfort of the building.

Capacity issues:

The current library spans approximately 33,500 square feet. Assuming an average cooling load of 350 square feet per ton, the estimated total cooling load for the existing library is around 96 tons, equivalent to 1,152,000 BTU/hr. It should be noted that these calculations are based on assumptions due to the absence of envelop details. Nevertheless, the existing air handling unit and chiller operate at their maximum capacity, set at 1,237,200 BTU/hr. With no spare capacity, the current air handling unit and chilled water system cannot accommodate any additions or expansions to the existing building.

Code violation issues:

During the site visit a few code violations were observed that will need to be remedied as part of the renovation project. Below is a list of issues noted during the site visit:

1- In the Friends Room, the sanitary vent pipe termination above the roof is too close to the fresh air intake of the air handling unit AHU-4
2- The fresh air intake for the AHU-4 serving the Friends Room is blocked off.
3- The condensate drains serving several air handling units are not installed correctly and need to be corrected.

Expansion and Improvement

There are two general concepts proposed for the new addition to the library.

- Option 1: considers using the courtyard and adding a second story to the main lobby. A two-story addition will also be added on the west side incorporating the Friends room. This option will increase the library's square footage by about 11,500 square feet to a total of 45,000 square feet.
- Option 2: aims to utilize the adjacent property around the library for two-story additions, which will increase the total square footage of the library by 18,130 square feet to the total of 51360 square feet.

Under both options, about 4,000 square feet and over 9,000 square feet of assembly spaces are being added to the first and second floors. Both Expansion programs will also house over 4500 square feet of library spaces, about 2000 square feet of reading spaces, and over 5831 square feet of business spaces. Moreover, the new addition will have about 2500 square feet dedicated to the mechanical room and storage spaces.

First Floor	***Area (SF)***	***Cooling load (SF/Ton)***	***Cooling Load (Ton)***	***Heating load (BTU/SF)***	***Heating Load (Btu/Hr)***
Assembly 1	1458	200	7.3	15	21870
Assembly 2	2346	200	11.7	15	35190
Library Stacks	10072	300	33.6	15	151080
Business	5831	300	19.4	15	87465
Storage	2009	500	4.0	15	30135
Second floor	***Area (SF)***	***Cooling load (SF/Ton)***	***Cooling Load (Ton)***	***Heating load (BTU/SF)***	***Heating Load (Btu/Hr)***
Assembly 1	4368	200	21.8	15	65520
Assembly 2	4832	200	24.2	15	72480
Reading room	1728	300	5.8	15	25920
Library Stack	3491	300	11.6	15	52365
Storage	460	500	0.9	15	6900
Business	7834	300	26.1	15	117510

Total Cooling Demand (ton)	166.5	***Total Heating Demand (MBH)***	666.4

Department Needs

1. HVAC zoning to adequately serve each area's comfort and ventilation needs; approximately 12-20 zones based on the new building expansion schematic plan for location 3.
2. Balance equipment efficiency to minimize utility costs with ease of maintenance.

Recommendations

While the two options for expansion listed above are different from the Architectural standpoint, our recommendations for both options are similar.

Option 1

1. **Replace both AHU-1 and AHU-2:** As was mentioned under deficiencies, both AHU-1 and AHU-2 are original to the building and are past their useful life. Both air handling units have major leaks and show signs of deterioration, especially on the lower part. We recommend replacing both AHU-1 and AHU-2 with new and more efficient air-handling units. The replacement can be with an in-kind model, however, considering the minimum flexibility available on the routing of ductworks, we recommend using air handling units with VAV reheat coils for more flexibility and efficiency.
2. **Replace ductworks within the existing Library:** Because of the existing air distribution system arrangements and the fact that portions of the existing ductwork run through concrete beams, there is not much flexibility within the air distribution system to accommodate deviations from the original space programming of the library. Hence, if the owner decides to reprogram the spaces within the book stacks area, the entire ductwork system shall be replaced with more efficient systems. At this point, using VAV boxes with hydronic reheat coils is recommended. If the client is seeking to restore the original programming of the spaces (i.e., removing all offices that were added throughout the time), at a minimum, both air handling units shall be replaced with in-kind as the existing air handling units are in bad condition and past their useful life.

3. **Expand the Central Chiller and boiler plant and loops, relocate Emergency Generator as needed:** For the expansion, we recommend expanding the central chillers and boiler plants and extending the chilled/hot water loops to the new addition (Please see the subsequent “Expansion of existing Chiller / Boiler plant” and “Extension of Chilled/Hot Water loop” sections below). Using Central AHU on the roof to provide cooling and ventilation. Ductwork connects AHU to VAV boxes (located above-ceiling throughout the building) for zoning. Heating is provided at VAV box coils with hydronic heating coils. A total of two (2) air handling units will be required.

   Since the existing system does not have additional capacity for the additional spaces, it is recommended to increase the capacity of the existing chiller and boiler plants to accommodate the additional loads and extend the chilled and hot water loop to the new buildings. Because the existing facility is already on the chilled/hot water system, expanding on the current system appears to be more cost-effective. Secondly, water-cooled systems offer enhanced cooling performance and reliability. These systems are also known for their simplicity and longer useful life, leading to improved reliability and reduced downtime. Furthermore, water-cooled systems provide flexibility for future expansion or modifications. Adjusting the system's capacity to meet changing cooling requirements is relatively straightforward by adding or removing chillers, pumps, or cooling towers. This adaptability allows the chilled water plant to accommodate growth without significant disruptions to the facility's operations. Lastly, from a maintenance standpoint, it would be more efficient to have similar equipment in the facility rather than having a variety of different types of equipment, each with varying requirements of maintenance.

4. **If Item 2 above is not acceptable, provide new packaged units:** If item 3 mentioned above is not acceptable due to the costs associated with the expansion of the existing Chilled / Hot water plants, and possible relocation of the generator, a cheaper alternative would be to provide two new packaged rooftop units with hydronic VAV reheat coils to serve the additional spaces. It is worth mentioning that while this option is cheaper from the installation cost standpoint, the maintenance cost and the life expectancy of this system is lower and may eventually outweigh the lower initial costs.

5. **Remove the package unit serving staff lounge, and reconnect these rooms to the AHU-2:** Considering that the Bookstore and the Staff Lounge were originally served by the AHU-2, and considering that the package unit serving these spaces is at the end of its useful life, we recommend demolishing the existing package unit serving the staff lounge and the Bookstore and providing new VAV system served by the new AHU-2.

6. **Remove Package unit serving the friends room and serve friends room with AHU serving the addition:** The package unit serving the Friends Room will be removed as part of the expansion. Because of the code issues associated with this unit and considering the fact that this unit is at the end of its useful life, we recommend that the Friend's room be served by the new air handling unit that will be serving the new addition building.

7. **Keep the split units serving the IT closet:** The cooling systems serving the IT closet are relatively in good working condition. We recommend keeping the existing two split systems that serve the IT closet.

8. **Update the control system:** Per the information provided by the facilities personnel, the existing control system does not offer enough controllability for the personnel. Considering the fact that the existing air handling units will be replaced, and at least two new air handling units will be added to the facility, we recommend a new control system be provided for the entire library. The control system for the new library needs to be simple yet code compliant. CO2 sensors shall be provided in all high-density spaces, such as assembly and meeting rooms. CO2 sensors shall monitor CO2 levels in the space and increase ventilation as needed.

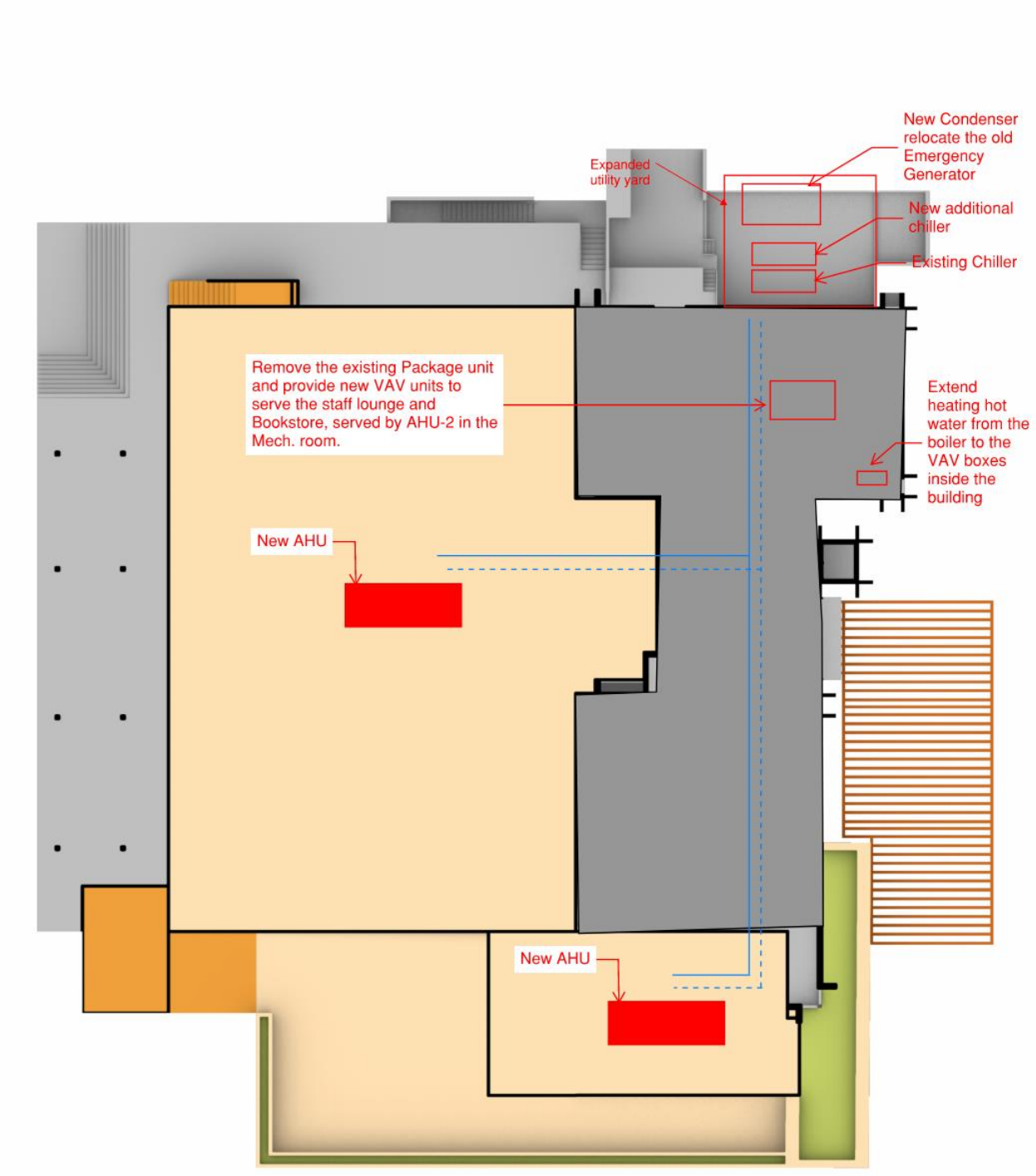


Figure 10: Option 1 proposed mechanical Layout

Option 2

1. **Replace both AHU-1 and AHU-2:** As was mentioned under deficiencies, both AHU-1 and AHU-2 are original to the building and are past their useful life. Both air handling units have major leaks and show signs of deterioration, especially on the lower part. We recommend replacing both AHU-1 and AHU-2 with new and more efficient air-handling units. The replacement can be with an in-kind model, however, considering the minimum flexibility available on the routing of ductworks, we recommend using air handling units with VAV reheat coils for more flexibility and efficiency.
2. **Replace ductworks within the existing Library:** Because of the existing air distribution system arrangements and the fact that portions of the existing ductwork run through concrete beams, there is not much flexibility within the air distribution system to accommodate deviations from the original space programming of the library. Hence, if the owner decides to reprogram the spaces within the book stacks area, the entire ductwork system shall be replaced with more efficient systems. At this point, using VAV boxes with hydronic reheat coils is recommended. If the client is seeking to restore the original programming of the spaces (i.e., removing all offices that were added throughout the time), at a minimum, both air handling units shall be replaced with in-kind as the existing air handling units are in bad condition and past their useful life.

3. For the new expansion buildings, a few HVAC system types are worth considering.
    a. **Expand the Central Chiller and boiler plant and loops, relocate Emergency Generator as needed:** Expanding the central plant chillers and boiler and extending the chilled water and hot water loops to the new addition. Using Central AHU to provide cooling and ventilation. Ductwork connects AHU to VAV boxes (located above-ceiling throughout the building) for zoning. Heating is provided at VAV box coils with hydronic heating coils.
        i. AHU is located outdoors on the roof, packaged chilled water cooling. Or…
        ii. AHU located indoors if the space has exterior wall that can be louvered for outside air intake and louvered for relief air.

    b. **If Item a above is not acceptable, provide new packaged units:** Using DX packaged AC units providing cooling, and ventilation. Ductwork runs from the AC units to each zone, for individual zone control and ventilation. AC units located outdoors on roof, packaged with DX cooling, or the AC unit located indoors if space has exterior wall that can be louvered for outside air intake and louvered for relief air. Split DX condensing unit separately located outdoors, connected to AC units by refrigerant piping.

4. **Keep the split units serving the IT closet:** The cooling systems serving the IT closet are relatively in decent condition. We recommend keeping the existing two split systems that serve the IT closet.

5. **Remove the package unit serving staff lounge, and reconnect these rooms to the AHU-2:**Considering that the Bookstore and the Staff Lounge were originally served by the AHU-2, and considering that the package unit serving these spaces is at the end of its useful life, we

recommend demolishing the existing package unit serving the staff lounge and the library and providing new VAV system served by the new AHU-2.

6. **Remove Package unit serving the friends room and serve friends room with AHU serving the addition:** The package unit serving the Friends Room will be removed as part of the expansion. Because of the code issues associated with this unit and considering the fact that this unit is at the end of its useful life, we recommend that the Friend's room be served by the new air handling unit that will be serving the new addition building.

7. **Update the control system:** Per the information provided by the facilities personnel, the existing control system does not offer enough controllability for the personnel. Considering the fact that the existing air handling units will be replaced, and at least two new air handling units will be added to the facility, we recommend a new control system be provided for the entire library. The control system for the new library needs to be simple yet code compliant. CO2 sensors shall be provided in all high-density spaces, such as assembly and meeting rooms. CO2 sensors shall monitor CO2 levels in the space and increase ventilation as needed.

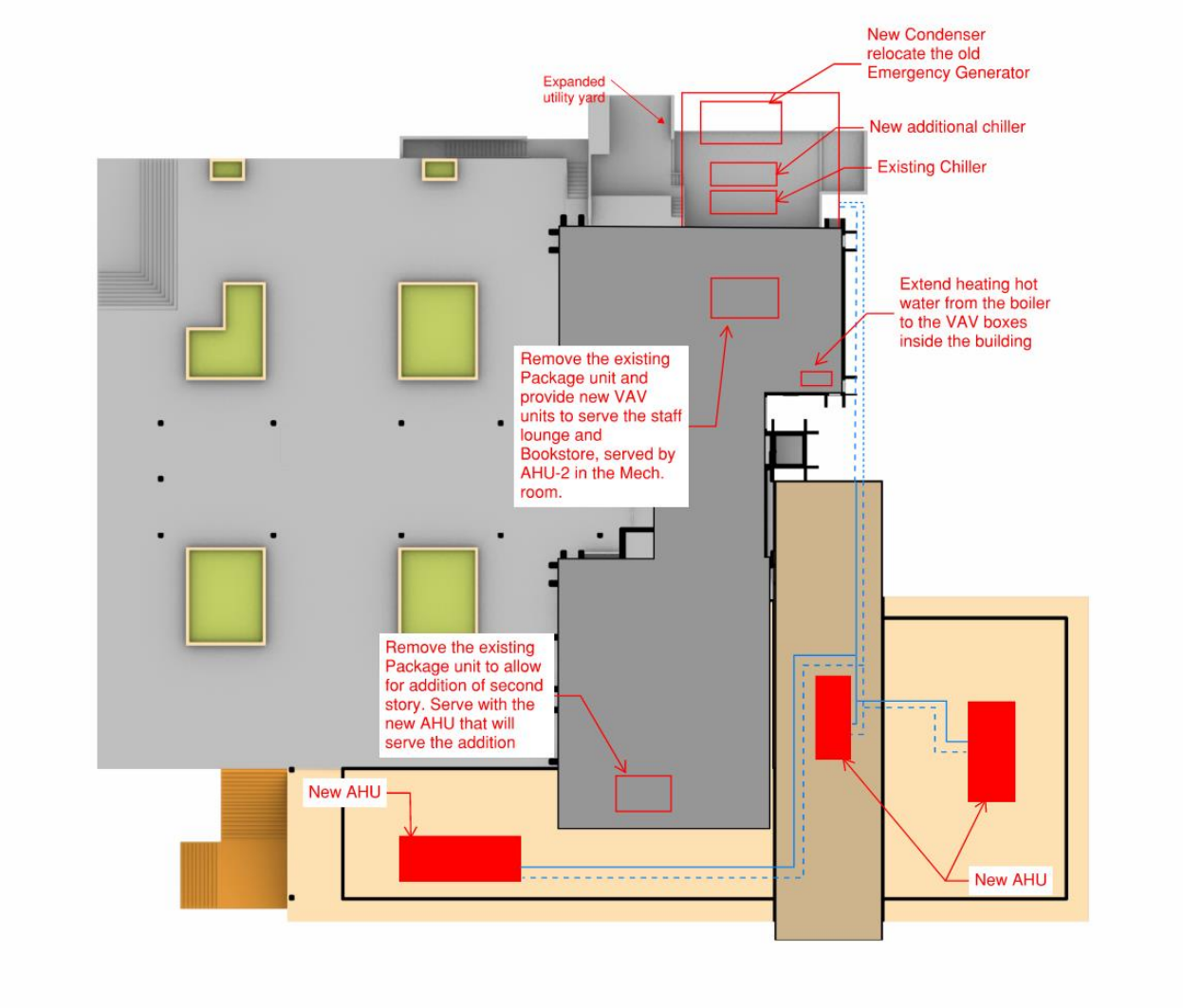


Figure 11: Option 2 proposed mechanical Layout.

Expansion of existing Chilled / Hot Water Plants:

The existing chiller is modular and manufactured by Multistack. The current Modules can handle 50 cooling tons. Based on coordination with the manufacturer's representative, there is a possibility for replacement of the existing modules with 70-ton modules, thus expanding the capacity from 100 to 140 tons is possible within the existing chiller enclosure. However, the expected total load of the library with the new expansion is expected to exceed 140-ton. Therefore, we recommend the chiller plant extension to include a second chiller enclosure. Adding a second chiller enclosure or upgrading the existing chiller modules will require upgrading the existing evaporative condenser unit.

Considering the space constraints within the existing utility yard on the back of the building, the available options are either adding a second chilled water plant or relocate the existing Emergency generators to a different location outside of the utility yard to allow for addition of a new chiller box.



Figure 12: Mechanical Yard arrangements

As was mentioned before, the existing boiler has recently been replaced. Based on the manufacturer information this boiler has enough capacity to support the heating needs for both the existing building and the addition. Hence, we recommend keeping the existing boiler.

Extension of Chilled/Hot water loop to new addition:

Chilled water needs to extend to the Air Handling Units on the new addition roof. We propose routing the chilled/hot water pipes along the side of the existing building, and through the new addition to the related equipment.

With the addition of new VAV reheat units throughout the existing library and the new addition, the existing heating hot water loop shall be extended to serve the VAV boxes within each zone as needed.

Electrical Assessment

The library's electrical system covers both its facility, and the neighbouring City Hall and Police station, with a central 480Y/277V switchboard 'MS'. This electrical system includes two paralleled, standby power generators for backup on utility power loss. The library's remaining electrical infrastructure has changed little from the original 1970s design. Fluorescent lamp fixtures and receptacle coverage are consistent, with mechanical systems having a few more upgrades in the interim. The proposed additions and alterations will necessitate expanding the electrical equipment and devices, correcting several deficiencies, and tentative remodels of existing spaces.

Electrical Capacity

The main electrical service for the library consists of a 1,600Amp, 480Y/277V switchboard 'MS'. The electrical service room resides on the east side of the ground level, with an SCE pad mount transformer feed from the exterior east parking lot (2nd level). 'MS' energizes both the City Hall and Police Station facilities via underground ductbanks.

The existing electrical infrastructure at the library has adequate capacity to serve additional loads:

1. The existing service switchboard 'MS' has a capacity of 1600 Amps.
2. The existing SCE transformer has a capacity of 500kVA, equivalent to 600 Amps.
   (Note that facility equipment designs require greater capacity than utility electrical loads)
3. Existing four (4) 4" conduits from SCE transformer to switchboard 'MS' will permit only 1200 Amps per latest SCE standards.

If it is determined that additional power is necessary beyond the 600 Amp transformer, SCE could replace the transformer with a larger unit. Note that the existing raceways will cap the limit to 1,200 Amps. The anticipated electrical load of the library is 18W/ft^2. For an 16,000 ft addition, this would equate to approximately 300 kiloWatts, an additional 600 Amps (nominally). The existing 1200 Amp infrastructure should be able to accommodate.



Figure13: Utility Service Transformer



Figure14: 'MS' Switchboard

   a. During coordination with SCE regarding service capacity, inquiry shall be made if SCE can provide any solution to the issue.

5. Existing 1970 branch electrical panels LX, LA, A, A2, and B are deficient for fault protection and lack spare capacity for additional circuits.
   a. Replace panelboards: 72 poles, 225Amp, recessed 208/120V, copper bus. (100 Amps for panel 'LX')
   b. Reconfigure panels A and A2 with listed Bus-feed through configuration.

6. The existing 1970 Motor Control Center 'MCC' distribution Panels are deficient for fault protection and lack spare capacity for upgrades.
   a. Replace with Distribution Panelboards: 72 poles, 400Amp, recessed 408Y/277V, copper bus.

7. The existing two (2) 480-208Y/120V transformers at electrical room do not have secondary overcurrent protection within 25 ft.
   a. Provide fused switch or enclosed breaker at each transformer – 3p-400Amps.

8. Existing two (2) generators at exterior east inhibit extension to chiller systems.
   a. Relocate generators to a new location.
   b. Provide reconnection feeders to transfer switches.

Receptacles, Lighting, and Device Power

RECEPTACLES AND MECHANICAL DEVICES

Aside from aesthetics for surface-mount raceways in select locations, no other concerns were observed or brought to attention for the existing receptacles or power connections at the facility.
For the proposed alterations and additions, refer to "*Receptacles and Device Power"* and *"Auxiliary/Mechanical" under* the Options for Consideration section for extent of provisions.

INTERIOR LIGHTING

The facility's existing lighting is consistent with the original 1970's designs and is in mixed condition both aesthetically and functionally. Interior facilities are illuminated with fluorescent type fixtures with LED retrofit lamps. Many fixture housings are worn out, though the lenses appear to have been cleaned and maintained. Still the illumination output has depreciated enough for some lenses to be removed (center reading area). The required maintenance for the fixture includes re-lamping and ballast replacement. Pending light fixtures are renovated, Title 24 would require that lighting power be restricted per the square footage of space (sections 141.0-I and 140.6).

Exit sign coverage appears adequate at egresses (corridors and exits). Emergency lighting is covered by the generator.

EXTERIOR LIGHTING

Exterior lighting is consistent with the original 1970's designs and is in mixed condition both aesthetically and functionally as well. Exteriors fixtures shall require limiting the amount of power they use where renovated.

LIGHTING CONTROLS

A majority of interior lighting controls consist of manual toggle switches, providing on/off operation only. Switches do not offer automated control or dimming capability. Ceiling motion sensors are present in select areas. Where lighting fixtures are rewired in any fashion, Title 24 would require that these areas have their controls upgraded as well (141.0-E). Exterior lighting controls shall require astronomical tracking and scheduling to limit lights to precise daylight operations.

FIRE ALARM

The library has an existing, complete manual fire alarm system by Fire-Lite. System is a non-proprietary system manufactured by Honeywell and offering readily available components. The system is up to date on tests; Central Monitoring Station: 1-866-890-1519, account A191358.

Where partition changes occur and spaces are re-purposed, fire alarm will need to be updated per building and fire code requirements.

Receptacles and Device Power - Options for Consideration

1. Devices for the building additions may include computer labs, conference rooms, collaboration spaces, and multimedia.
    a. Provide receptacles per use of space:
        i. Dedicated 1p-20A receptacles for each AV controller, projector, hand dryer, motorized door opener, drinking fountain, etc.
        ii. (1) 1p-20A circuit per four (4) computer receptacles
        iii. (1) 1p-20A circuit per two (2) display screens/televisions
        iv. (3) 1p-20A circuits per four station cubicle office station
        v. Conference rooms – one receptacle for every 12ft of perimeter wall length
        vi. Floor outlets at conference rooms and central table locations
2. Receptacles for the renovations include those listed in the additions.
    a. Utilizing existing panelboards, A, A2, and B – panels shall be upgraded to additional breaker space capacity.

Auxiliary/Mechanical - Options for Consideration

1. New Mechanical Systems shall be added to accommodate building renovation.
    a. Install replacement feeders from new 600Amp, 480/277V distribution board. (Anticipate (3) 3p-50A feeders, and (2) 3p-100A feeders)
    b. Install circuits for accessory items from new 400Amp, 208/120V panelboard. (Anticipate (12) 1p-20A and (4) 2p-40A circuits)

2. Existing Mechanical Systems shall be altered/replaced.
    a. Install replacement feeders from the distribution board replacing MCC. (Anticipate (6) 3p-200A feeders)

Interior Lighting - Options for Consideration

1. New additions/renovation - Interior lighting shall be energy code compliant (Title 24: sections 141.0-I and 140.6).
    a. Install interior LED lighting and 277V circuiting to the addition building (color rendering index (CRI) of 90), similar to following:
        i. 8ft length Pendant Linear LED: Open Areas, lobbies, centered in conference areas, etc.
        (Basis Axis Lighting #BBRLED)
            1. Account 13ft on-center lengthwise, and in rows 8ft apart (example 12 fixtures in a 16ft x 75ft area)
        ii. 2x4 troffer LED: Offices and grid ceiling area
        (Basis Mark Architectural Lighting #WHSPR)
            1. Account 8ft x 8ft on-center grid (example 4 fixtures in a 15ft x 15ft area)
        iii. 8ft length recessed Linear LED: Restrooms
        (Basis Axis Lighting #TB4SLED)
            1. Account 3 fixtures per restroom.
        iv. 4in or 6in downlight LED: restrooms, reception areas, larger conference areas
        (Basis Alphabet #NU6)
            1. Account centered in restrooms, over reception desks, and on perimeter of conference spaces (example fixtures arranged for 6ft x 6ft center-to-center square grid)
2. Existing interior lighting may not prove consistent with renovations; upgrades/alterations shall comply with latest energy codes (Title 24: sections 141.0-I and 140.6).
    a. Pending ceiling and structural changes: remove existing lighting and replace with new LED consistent to the addition/renovated areas' lighting noted prior.

Exterior Lighting - Options for Consideration

1. Exterior site lighting may not prove aesthetically consistent with renovations; upgrades/alterations shall comply with latest energy codes (Title 24 - 141.0-L-ii-a&b, 130.2-C-1).
    a. Replace existing site lighting with LED equivalent in same locations of 1970s design plan.
    b. Provide LED wall packs over exterior exit ways (basis Lithonia WDGE2), 277V circuiting.

Lighting Controls - Options for Consideration

1. Where lighting is added or altered, lighting controls shall be compliant for latest energy codes (Title 24 - TABLE 141.0-E, 110.9-B-5).
    a. Interior Additions - Install low-voltage interior lighting control system to building (nLight Eclypse basis):
        i. Low-voltage dimming switches and relay pack in each space and control zone with dimming. Account the following zoning:
            1. 1 zone/relay each: enclosed office, electrical and mechanical service spaces, restroom, corridors and stairs, breakrooms
            2. 1 zone/relay per 1,000-1,500 ft^2 of open library and office spaces
            3. 2 zones/relays per small conference spaces
            4. 6 zones/relays per large conference spaces

ii. Provide motion sensors in all locations.
    1. General spaces: spaced 14ft x 14ft apart in a square grid pattern
    2. Integrated sensor/wall switches in restrooms and smaller spaces.
iii. Provide a centralized lighting control station (nLight eclypse)

b. Exterior - Provide one astronomically controlled 16-relay panel for exterior lighting control for site (nLight ARP-16 basis).

2. Where lighting is altered, lighting controls shall comply with the latest energy codes (Title 24 - TABLE 141.0-E, 110.9-B-5).
    a. Remove all existing toggle light switches.
    b. Replace lighting controls consistent with the addition/renovated areas noted prior.

Plumbing Assessment

Existing Conditions

The Plumbing System consists of:

- Domestic water system
    - Domestic water system is serving plumbing fixtures in restrooms, Janitor rooms, and drinking fountains, etc.
    - Domestic hot water consists of point of use tankless water heaters serving the lavatories inside the restrooms, and a small electric water heater serving the mop sinks.
    - The piping material within the building is copper.
- Sanitary drainage systems
    - Sanitary drainage system is serving plumbing fixtures in restrooms, drinking fountains, etc.
    - Piping material is unknown but is expected to be Cast Iron.
- Storm drains system
    - The roof drainage is served by gutter systems that either spill to grade or go below grade.
- Natural gas system
    - Natural gas system is serving space conditioning equipment.
    - Piping material is steel.

The following conditions are noted:

1. The plumbing fixtures observed in the field are code compliant and meet EPA recommended flow rates; however, a few lavatories were noted to be missing flow aerators/restrictors which should be provided.
2. There is no evidence that the piping systems have been renovated. The bulk of the piping within the building is copper. Although the existing tank type water heaters were not accessible during our site visit, we were informed that the heaters have been replaced and reconnected to the existing system.

3. The condensate traps on the air handling units were observed to be installed incorrectly which has played a major role in water damage to the air handling unit.



Figure 17: Incorrect Condensate Trap on AHU-1 and AHU-2

4. The water service size was observed to be 2 inches.
5. The gas meters were observed inside the utility yard. The gas meter, regulator, valves, and piping were in good condition.



Figure 18: Existing Natural Gas Regulator and Meter

6. Storm drains were observed to be in ok condition, but they require cleaning. Also, overflow drains are just pipes sticking off roof. While this is acceptable, in some cases the overflow drain does not stick high enough and drains water at the same time as the main roof drain.



Figure 19: Existing roof drains

7. As was mentioned in the structural assessment there are signs of water intrusions in parts of the library under the plaza that need to be addressed properly.

8. Few sump pumps were noted around the plaza under the stair landings dedicated to each stair. These sump pumps although old, appeared to be functional.



Figure 20: Existing Sump pumps

9. Water pressure on the second floor was measured to be about 80 psi, this means the pressure on the first floor exceeds the maximum value allowed per code of 80 psi. A pressure reducing station is needed to maintain the pressure under code suggested value.



Figure 21: Existing Water Pressure

10. On air handling unit serving the staff lounged it was observed that the condensate drains directly into the storm receptor, which is not per code and needs to be corrected.



Figure 22: Existing condensate drain discharging into storm.

11. There are three condensate pumps serving the AC units inside the MDF room. These condensate pumps appeared to be in good condition.
12. It was also noted that most of the sanitary vent piping terminated above roof without any protection against dirt or leaves that may clog the pipe. We recommend a vent cap be added to all vent pipes.



Figure 23: Missing Vent Caps from Sanitary Vents

13. During the survey a fire sprinkler branched off was noted with a tamper switch inside the mechanical room. Although the location of the sprinklers could not be determined, from the size of the branch line, it appeared that it served multiple sprinklers.

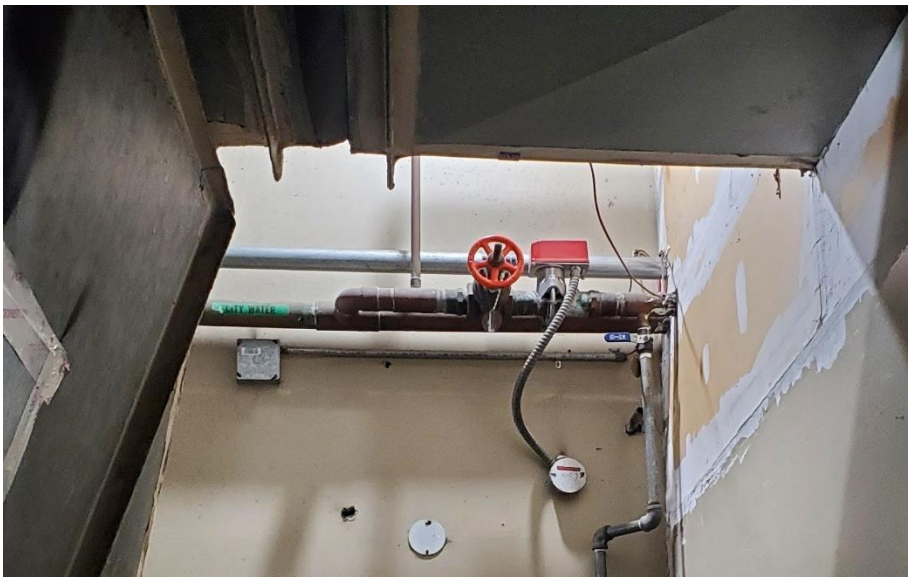


Figure 24: Sprinkler Flow Switch

Department Needs

1. The maintenance personnel stated that other than the water intrusion issue they have had limited issues with the existing plumbing system at the library.

Recommendations

1. Clean all existing plumbing fixtures. Provide flow aerators/restrictors on the lavatories.
2. For the new addition provide new plumbing fixtures that meet the current regulations.
    a. Current Regulation (CAL Green) mandatory measures to have the following maximum flow characteristics:
        1) Water Closet: 1.28 Gallons/flush (Flush valve).
        2) Urinals: 0. 125 Gallons/flush (Flush valve).
        3) Lavatory Faucet: 0.5 GPM.
        4) Shower: 1.5 GPM
3. For the new addition, the existing water service size is inadequate. We recommend the service size be increased to 4-inches minimum and a branch is extended from the existing meter location to serve the new additions.

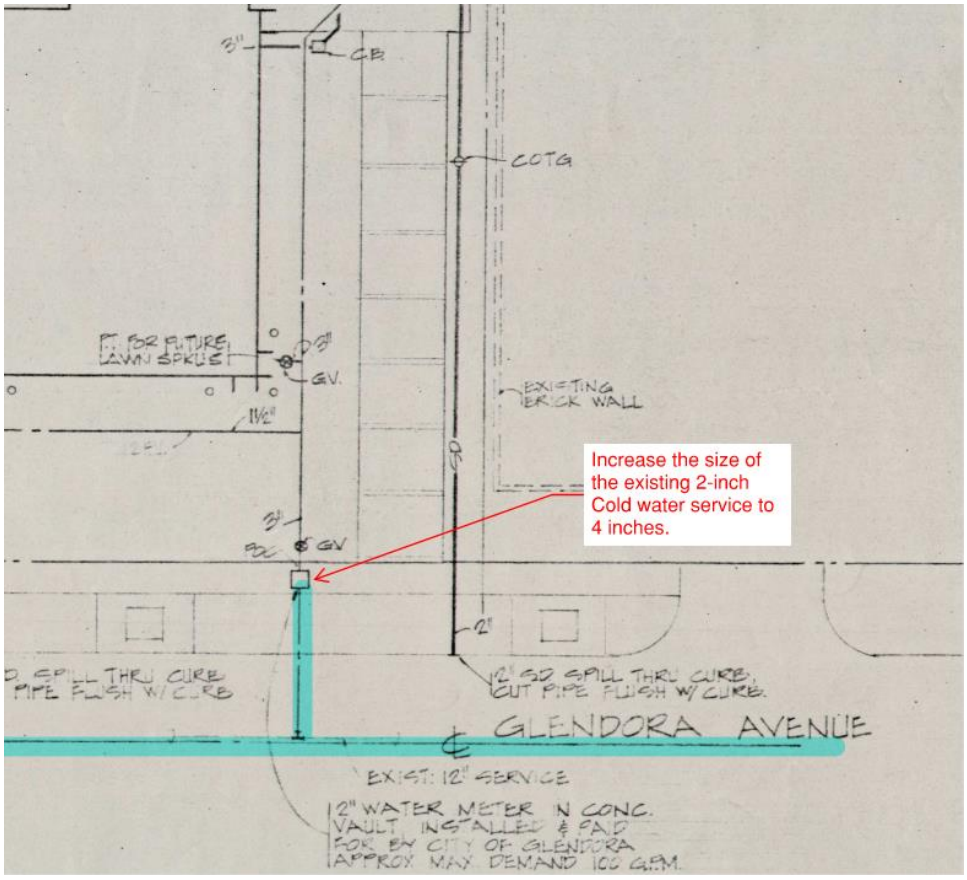


Figure 25: Upsize the existing water service.

4. Provide a pressure reducing station on domestic water service before distributing in the building.
5. A new sanitary tie in shall be provided for the addition buildings as the current sanitary drainage line is maxed out.
6. The existing gas service line serving the existing boilers shall remain in place. If the intent is to provide gas water heaters inside the building or increase the capacity of the boilers, then the existing pipe sizes downstream of the gas meter should be increased to meet the demand.
7. Provide vent caps on all sanitary vent termination points

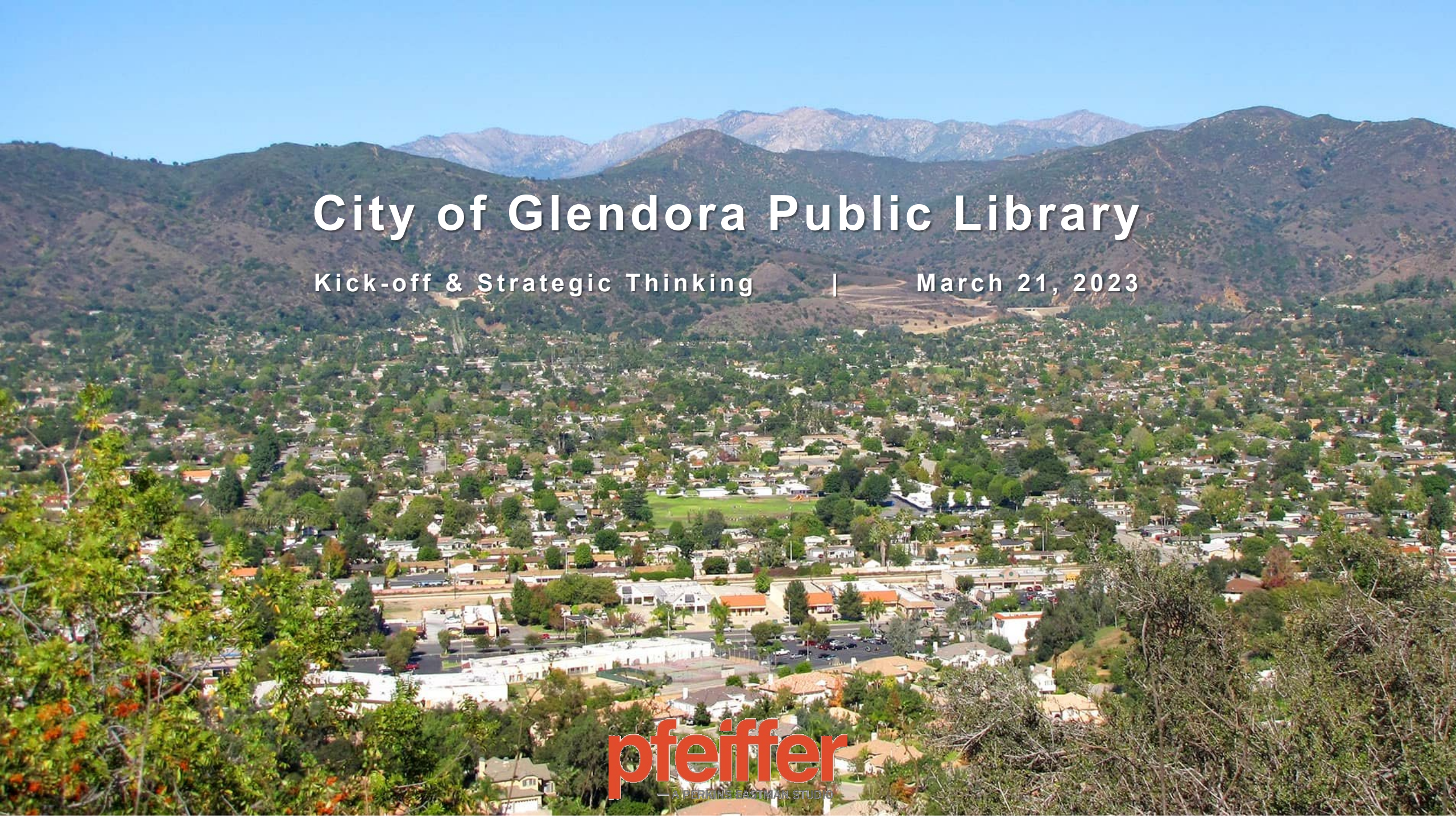
Technology Assessment

The existing Telecom infrastructure shall be extended from the existing 2nd floor IT room to the addition area. An additional IDF room may be needed in the addition area.

Physical Security Assessment

The existing access control system shall be extended to the new addition area and shall match the City's preferred vendor or standard.

APPENDIX D: Workshop Presentation Slide Decks



City of Glendora Public Library

Kick-off & Strategic Thinking | March 21, 2023

pfeiffer
A PERRAULT EASTMAN STUDIO

Today

Welcome & Introductions (Michael)

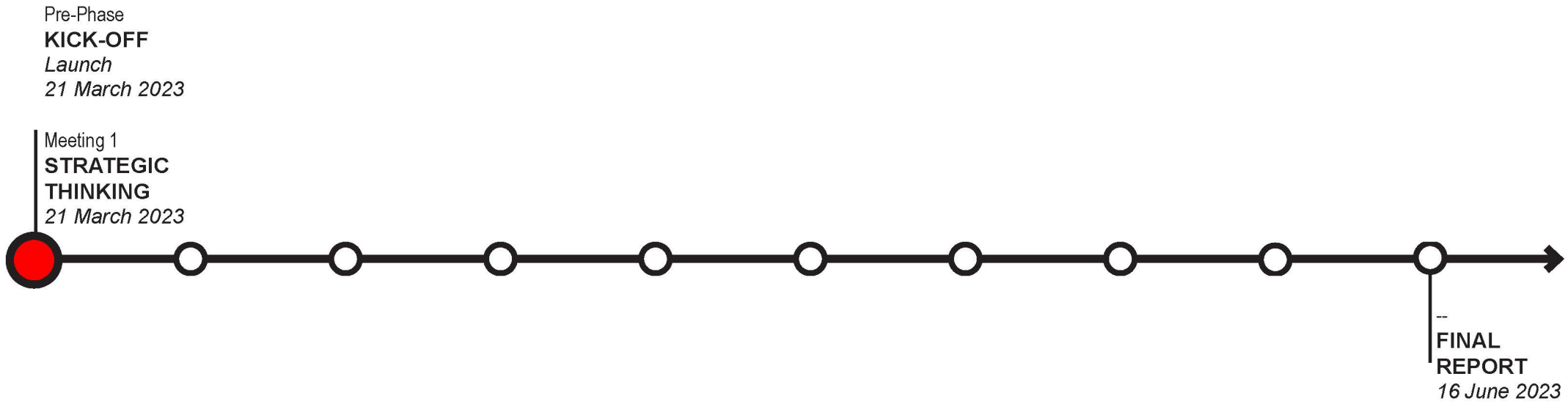
Background Info (by Library)

Discussion

Logistics for Site Walkthrough

Next Steps

Process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21 March 2023
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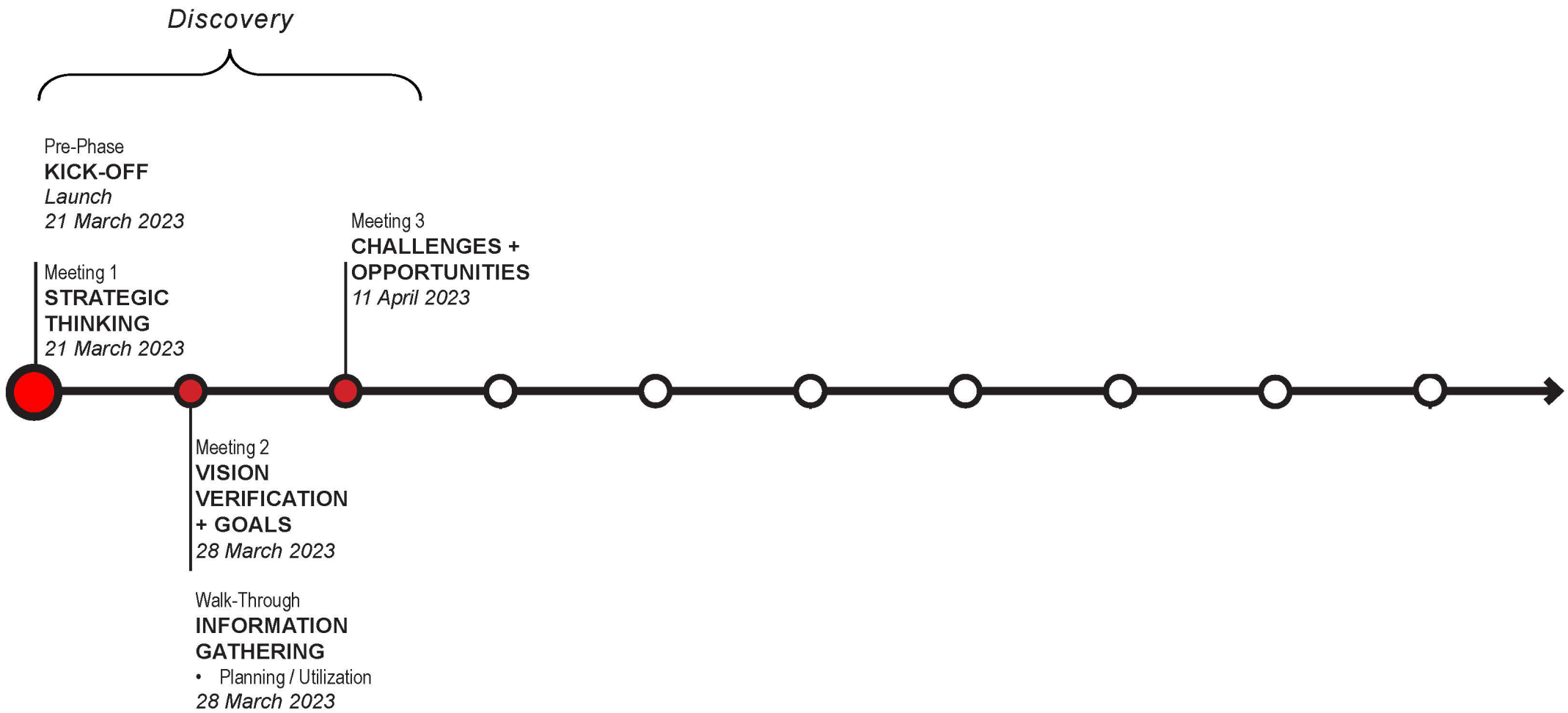
FINAL
REPORT
16 June 2023


Duration:
13 weeks

Process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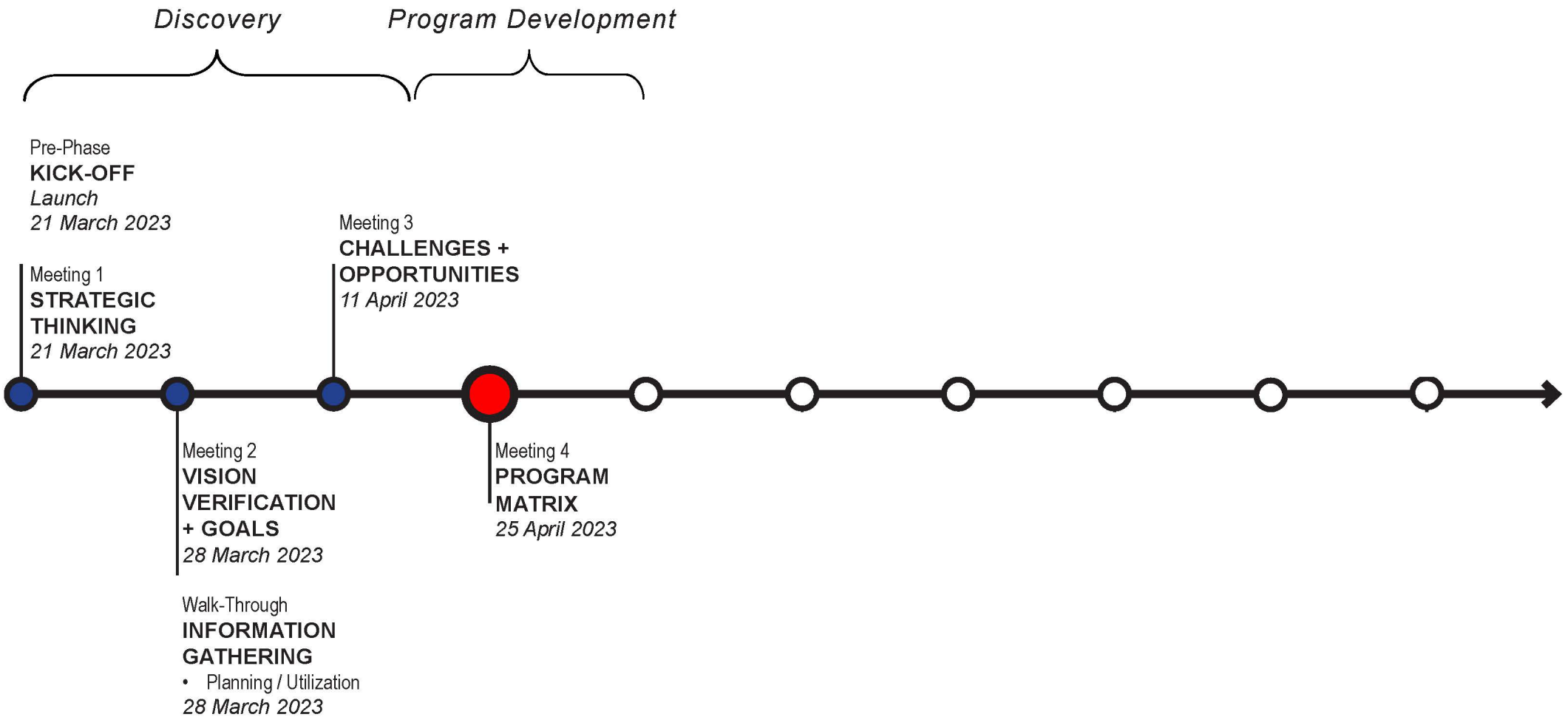
• Planning / Utilization
28 March 2023
Meeting 3
CHALLENGES + OPPORTUNITIES
11 April 2023

Process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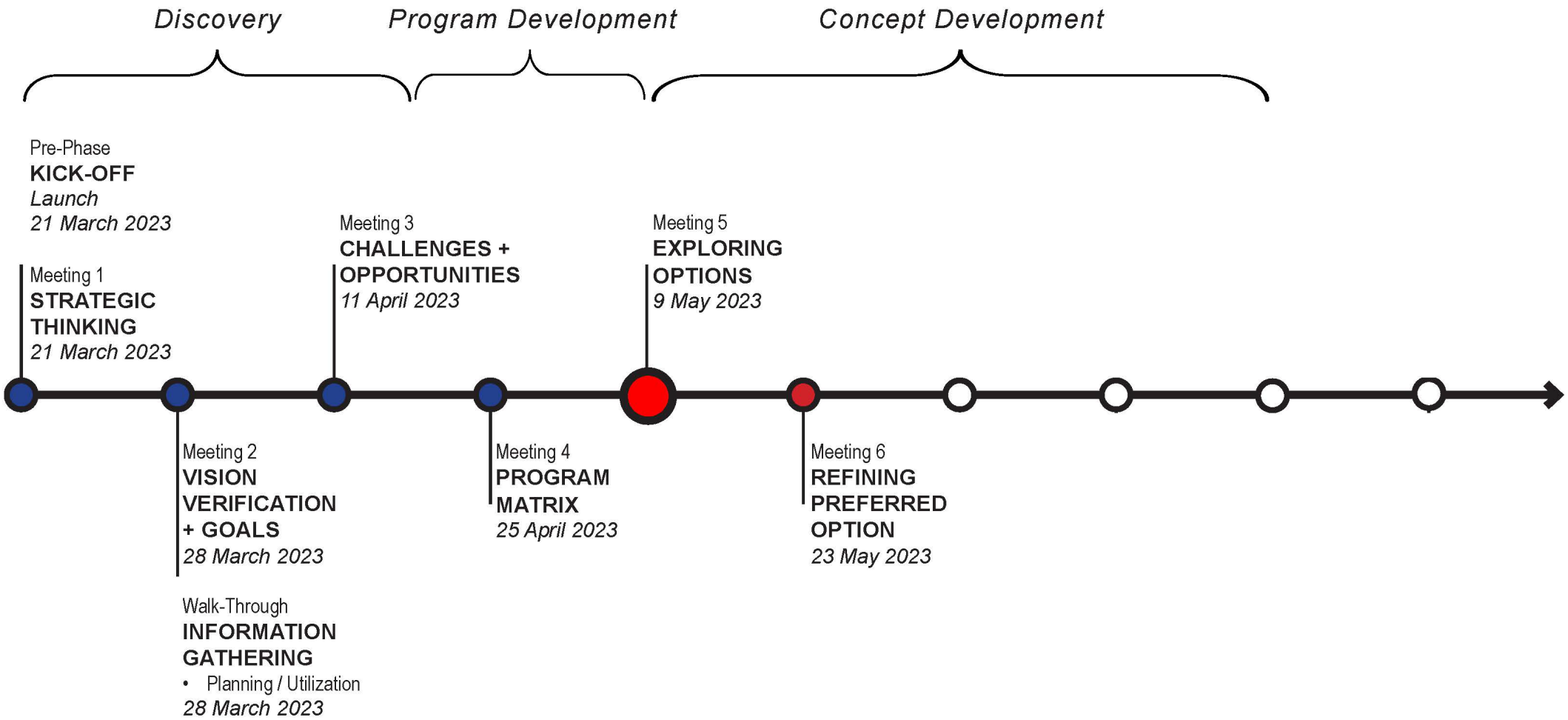
Meeting 4
PROGRAM MATRIX
25 April 2023

Process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Meeting 6
REFINING PREFERRED OPTION
23 May 2023

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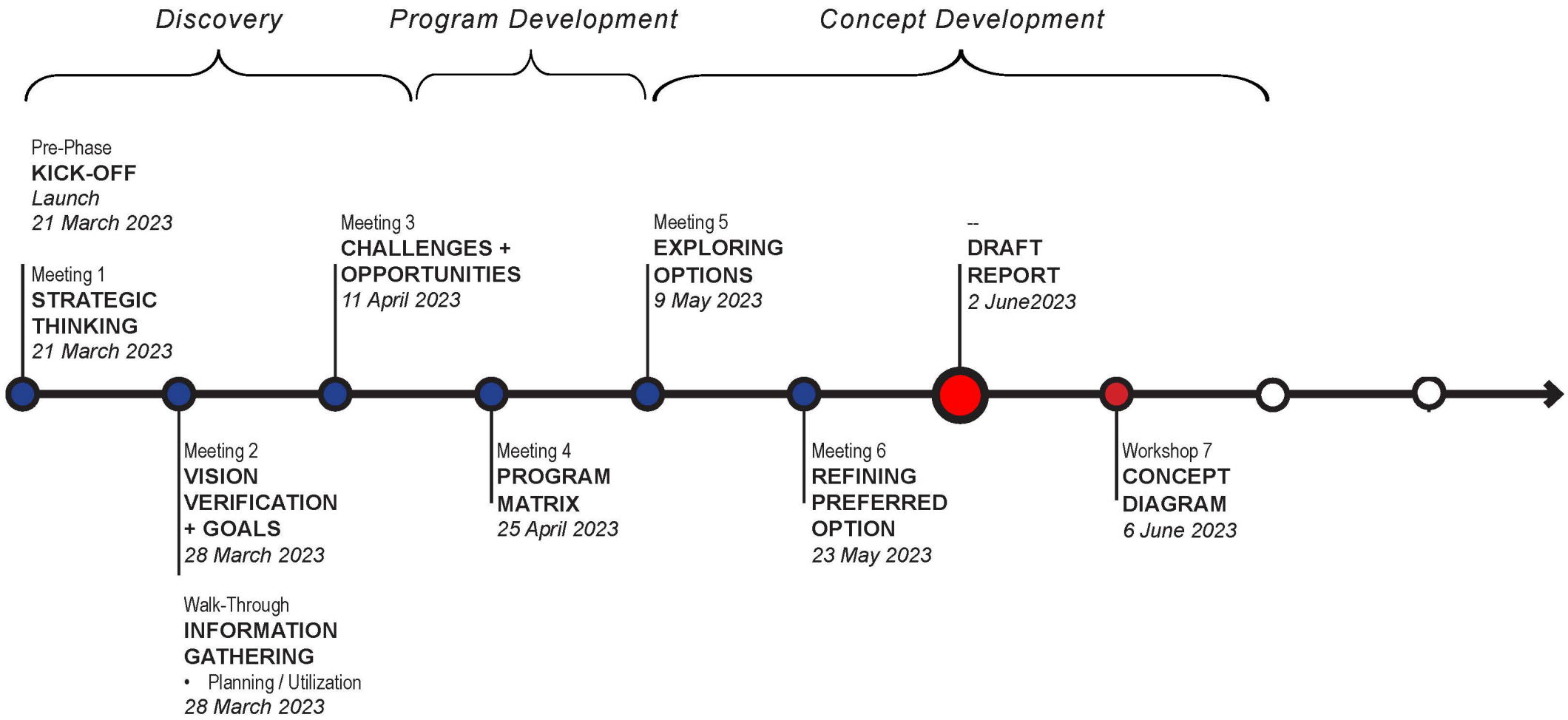
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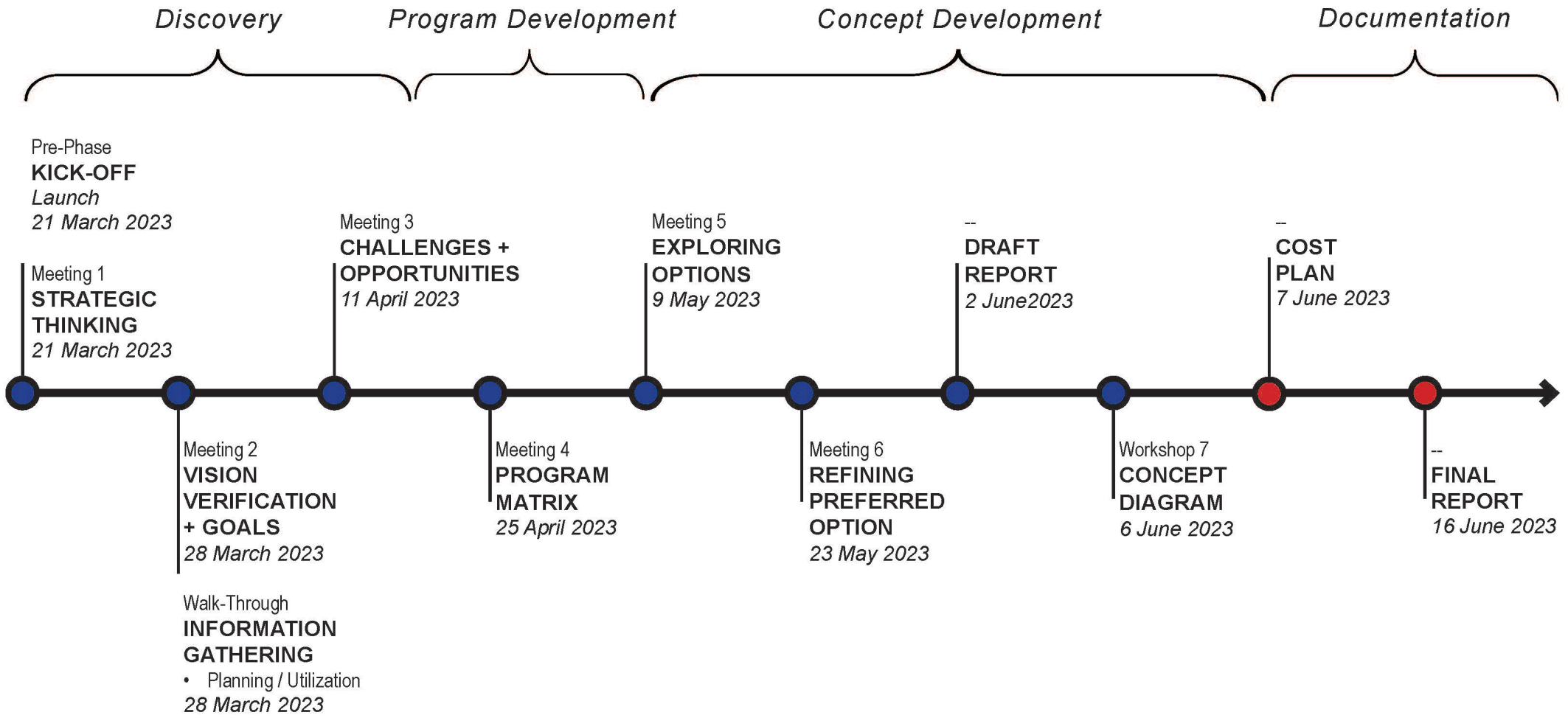
DRAFT REPORT
2 June2023
Workshop 7
CONCEPT DIAGRAM
6 June 2023

Process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FINAL REPORT
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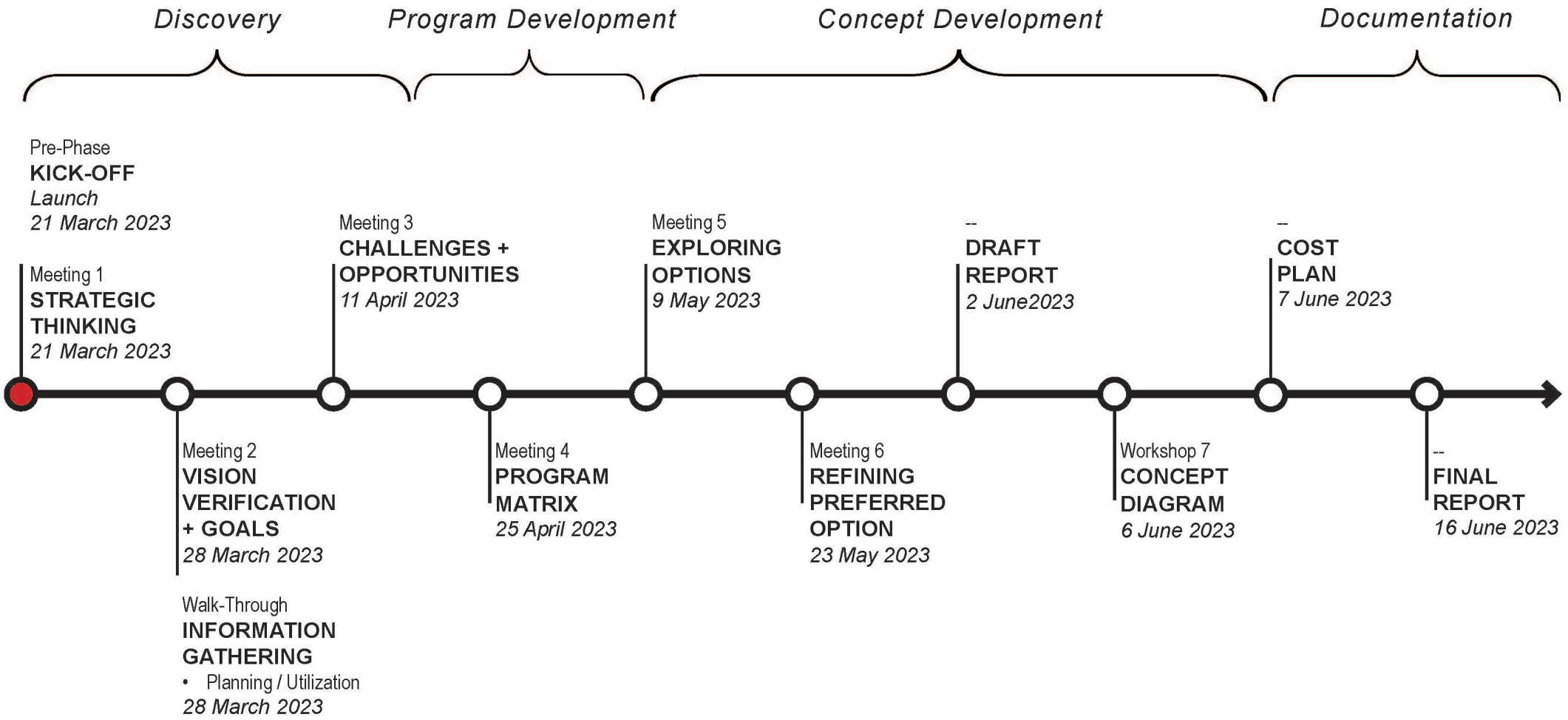
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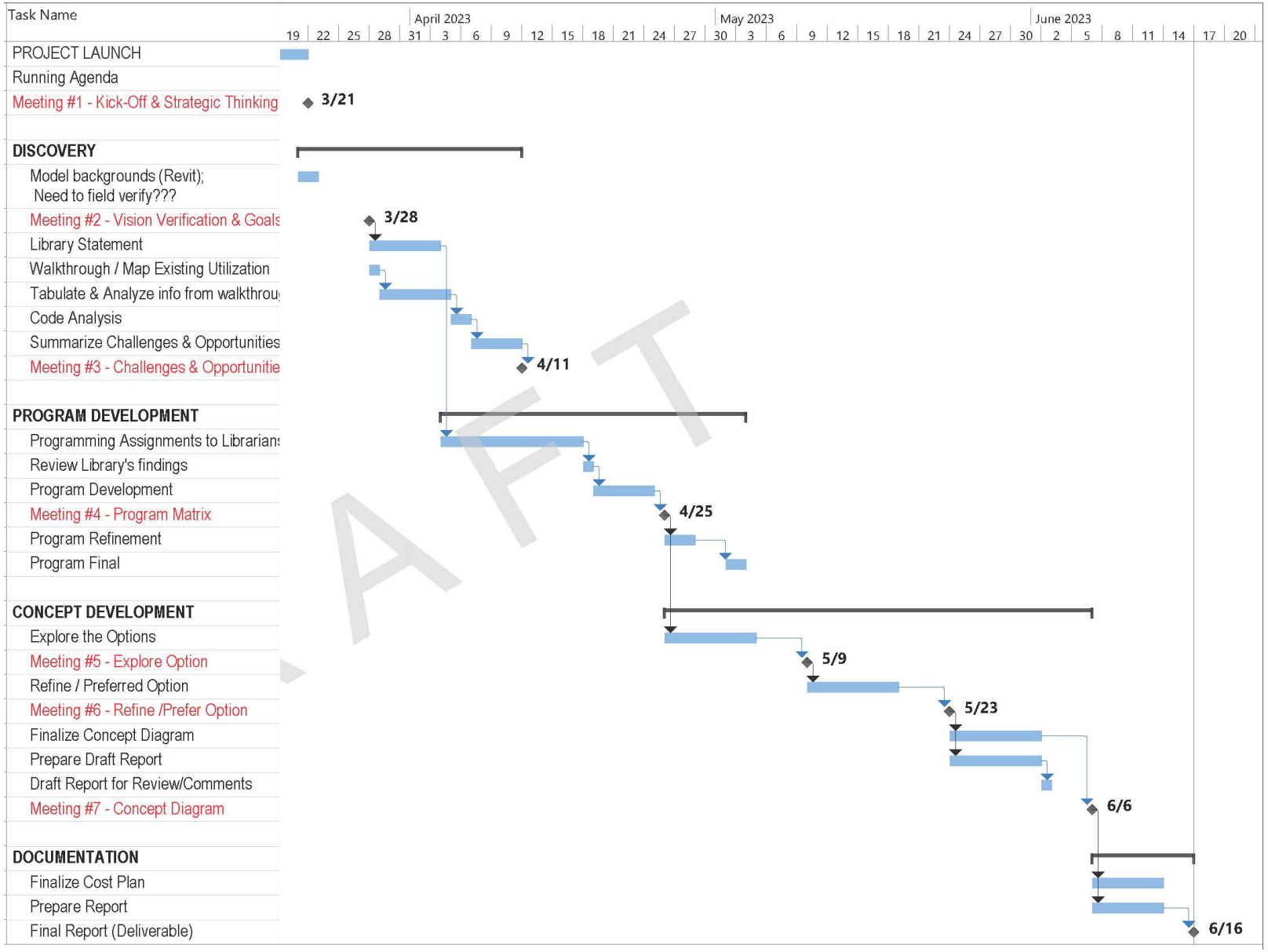
Proposed Timeline & Meeting Schedule



Welcome & Introductions (Michael)

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Discussion

Logistics for Site Walkthrough

Next Steps

Let’s Engage!

1.

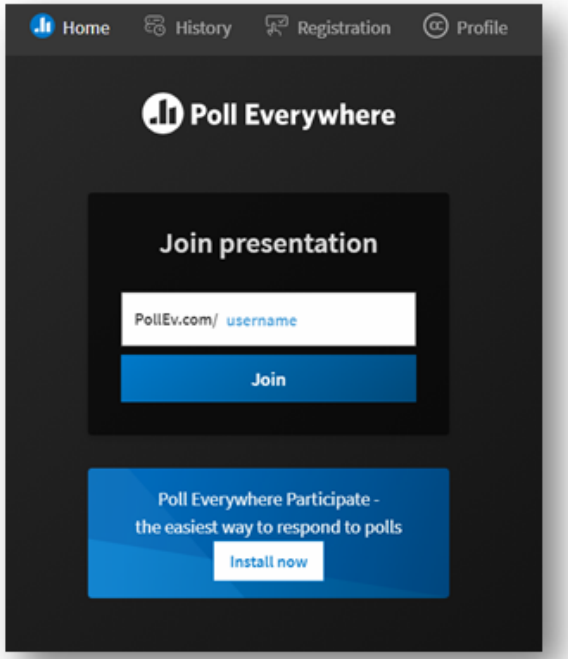
Open a web browser on your phone and navigate to Poll Everywhere by typing in:

www.pollev.com



2.

Enter **perkinse125** as the username. Turn on notifications if prompted.



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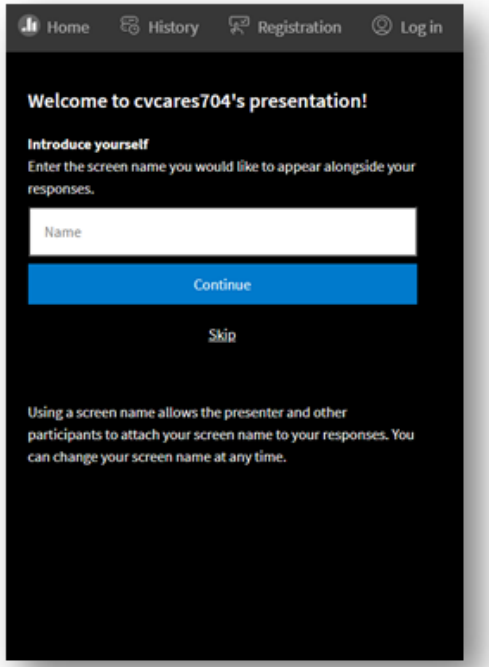
You can enter your name or skip this step to remain anonymous.



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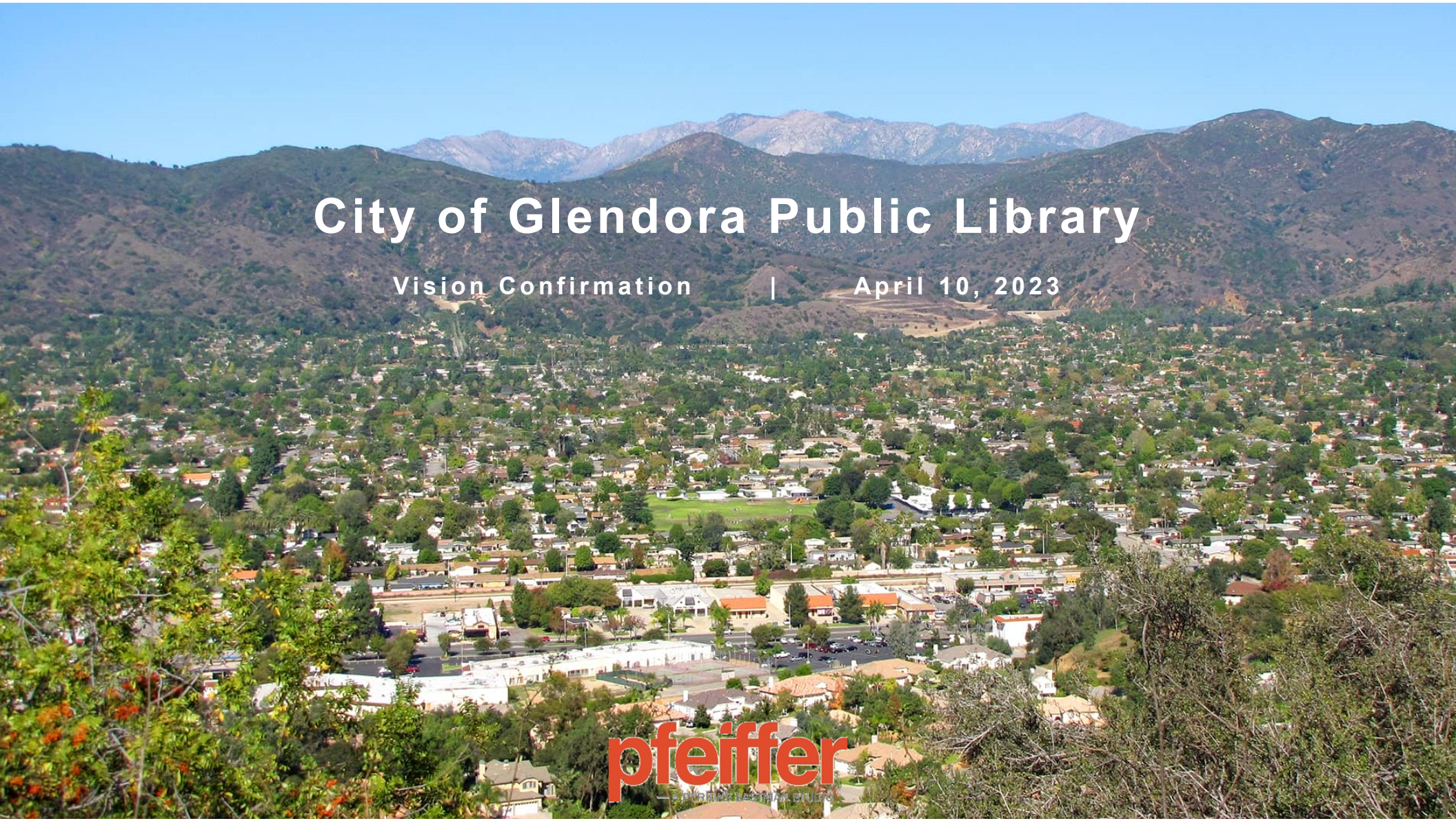


City of Glendora Public Library

Vision Confirmation | April 10, 2023

Today

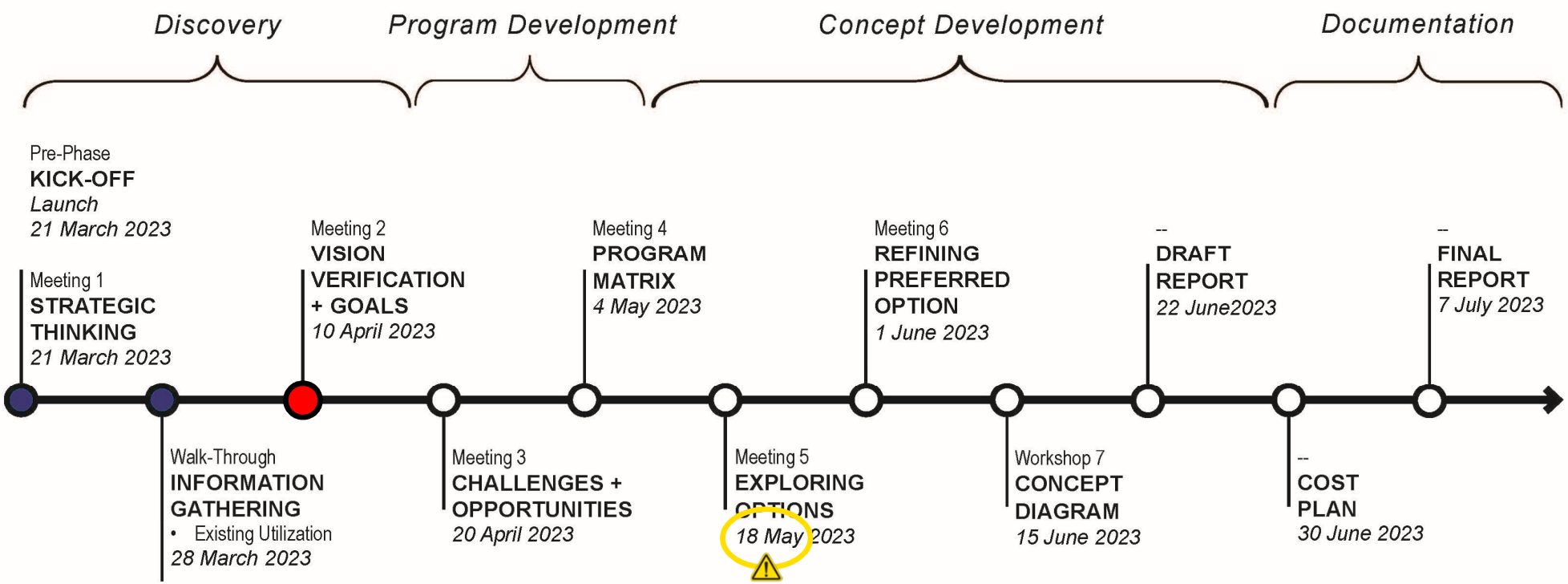
Welcome / Process

Vision Verification

- Right Sizing
- Library's Visioning Statement
- Areas for Growth / Expansion (enviroscan)
- Prioritization

Next Steps

Process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City of Glendora - Population

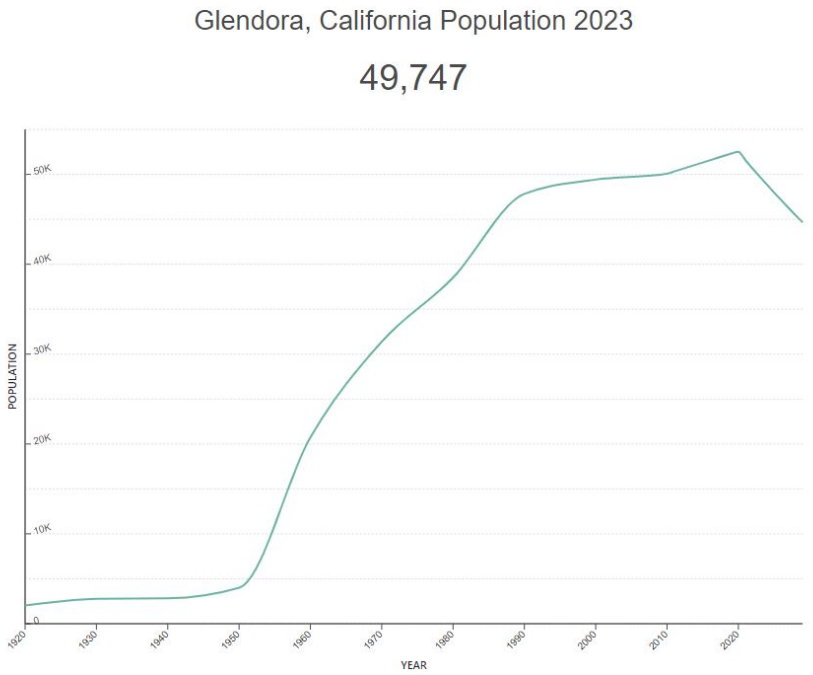
Glendora Population by Year

Note: data after 2021 is projected based on recent change

Year	Population	Growth	Growth Rate
2029	44,658	-811	-1.78%
2028	45,469	-825	-1.78%
2027	46,294	-840	-1.78%
2026	47,134	-855	-1.78%
2025	47,989	-871	-1.78%
2024	48,860	-887	-1.78%
2023	49,747	-903	-1.78%
2022	50,650	-919	-1.78%
2021	51,569	-936	-1.78%
2020	52,505	200	0.38%
2019	52,305	248	0.48%
2018	52,057	248	0.48%
2017	51,809	248	0.48%
2016	51,561	248	0.48%
2015	51,313	248	0.49%
2014	51,065	248	0.49%
2013	50,817	248	0.49%

https://worldpopulationreview.com/us-cities/glendora-ca-population

Glendora, California Population 2023



State	California
County	Los Angeles County
Land Area (mi²)	19.5 sq mi
Density (mi²)	2,550.0/sq mi
Growth Rate	-1.78% (-903)
Growth Since 2020	-5.25% (-2,758)
Rank in State	177th
Rank in Country	797th

The current population of Glendora, California is **49,747** based on our projections of the latest US Census estimates.The last official US Census in 2020 recorded the population at **52,505**.

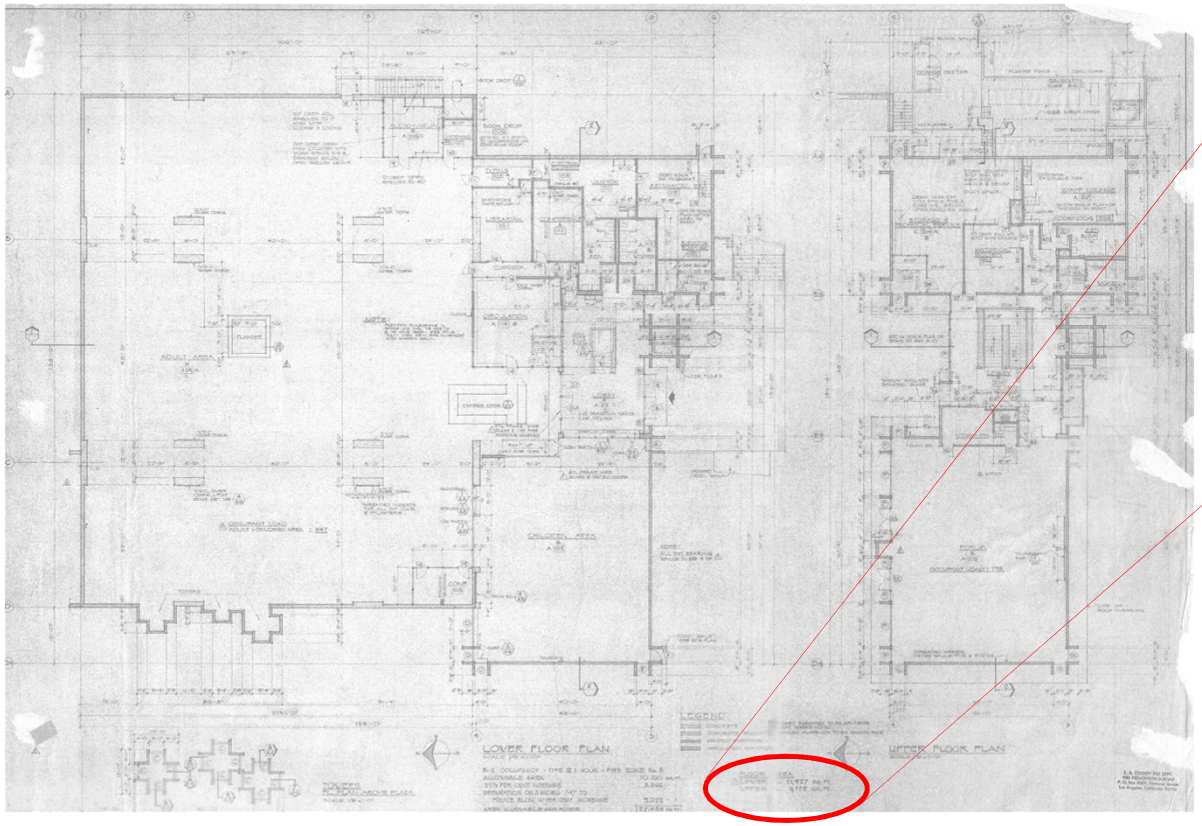
2020 CENSUS REPORT | CITY OF GLENDORA

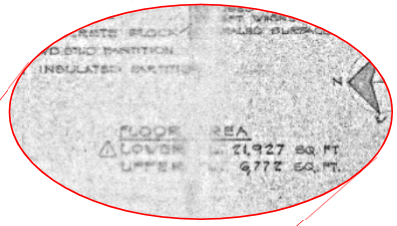


https://www.cityofglendora.org/about-glendora/demographics-and-statistics

Original Library Area (per 1967 drawing)

28,699 GSF





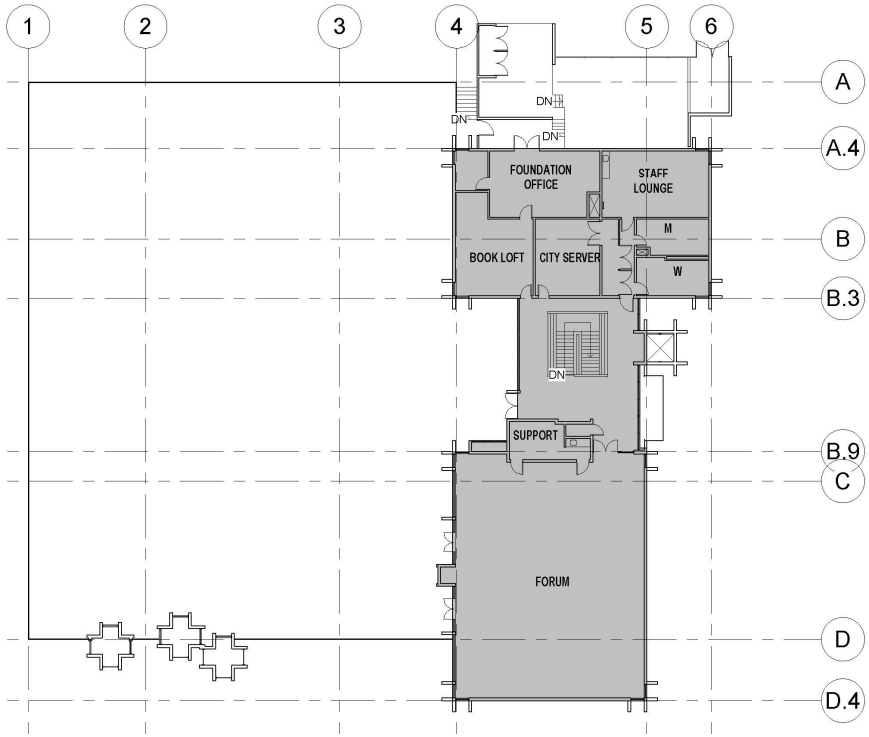
Floor Area	
Lower	21,927 SF
Upper	6,722 SF
Total	28,699 SF

Per 1967 drawings: 28,699 SF / 1970 Population: 31,380 / 0.9 SF per Capita

Existing Library Area (per 2023 utilization mapping) 29,720 GSF



Existing First Floor
23,150 GSF



Existing Second Floor
6,570 GSF

per 2023 utilization mapping: 29,720 GSF / 2023 Population: 49,707 / 0.57 SF per Capita
(27,454 NSF)

Library Area Per Capita

Year	Population	Lib GSF	Per Capita
1970	31,380	28,699	0.91
1980	38,500	29,720	0.77
1990	47,828	29,720	0.62
2000	49,415	29,720	0.60
2010	50,073	29,720	0.59
2020	52,505	29,720	0.57

2020 Population	Lib GSF	Per Capita
52,558	29,720	0.57
52,505	29,720	0.57
49,747	29,720	0.60
44,700	29,720	0.66



Target Growth - Scenarios

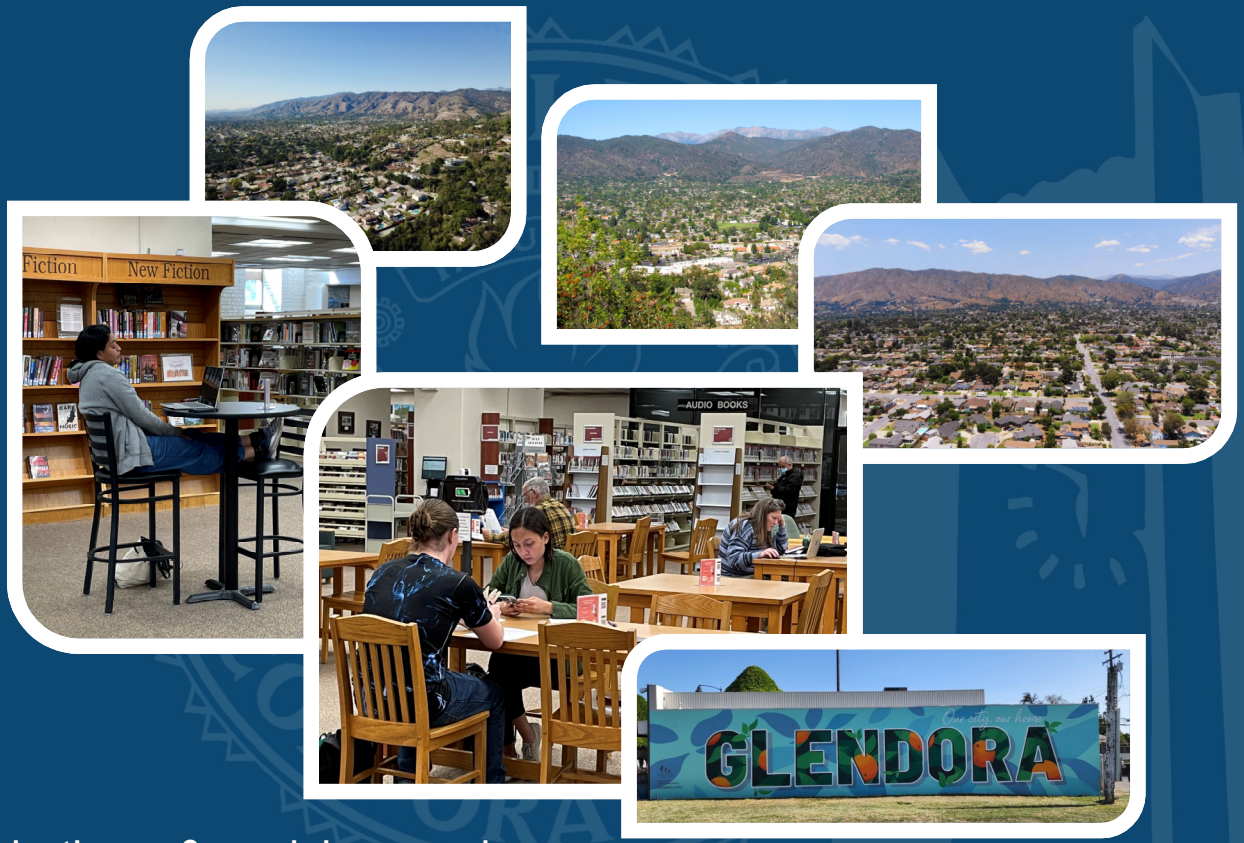
2020 Population	Per Capita	Lib SF	Existing	Delta
52,558	0.6	29,720	29,720	-
44,700	0.6	26,820	29,720	(2,900)
52,558	0.8	42,046	29,720	12,326
44,700	0.8	35,760	29,720	6,040
52,558	1.0	52,558	29,720	22,838
44,700	1.0	44,700	29,720	14,980

Best practices are only a starting point….

Service / Philosophy ≠ Building

Strategic Framework

- Proximity
- Human Development
- Physiology
- Preservation
- Organization
- Protection/Availability
- Interpretation/Context
- Sustainability



Flexibility → meet community's aspirations & evolving needs


How might we ...

Desired outcomes

When poll is active, respond at **PollEv.com/perkinse125**

What are the desired outcomes or objectives for this project?

4	More efficient and exciting place to visit with learning opportunities
3	Proposed space for both library use & civic center
3	To provide library service for next 50 years
1	providing community with a responsive space to meet their aspirations
1	Cultural center
1	Multiple options/plans
1	Meet technological needs
1	Flexible space that will serve into the future



What's right for GPL?



What's right for GPL?

Primary Spaces

- Service/Welcome Desk
- Collections
- Reading / Living Room
- Friends Room
- Bidwell Forum (MPR)
- Study Rooms**
- Computers
- Copy
- Bookstore

- Quiet Zone
- Meeting Rooms

Exciting Place

- Pop-ups
- Culinary Kitchen
- Tinkering Garage
- Garden
- Art Trucks

Learning Opportunities

- Language Center
- Makers Space
- Tech Arts Lab
- Dedicated Areas (By User)
  - Early Childhood Play
  - Storytelling
  - Children's Computers
  - Homework Help
  - Tween Area
  - Teen Space
  - Adult

Civic / Cultural Center

- Café / Coffee Cart
- Community Gallery
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- Local History / Archives

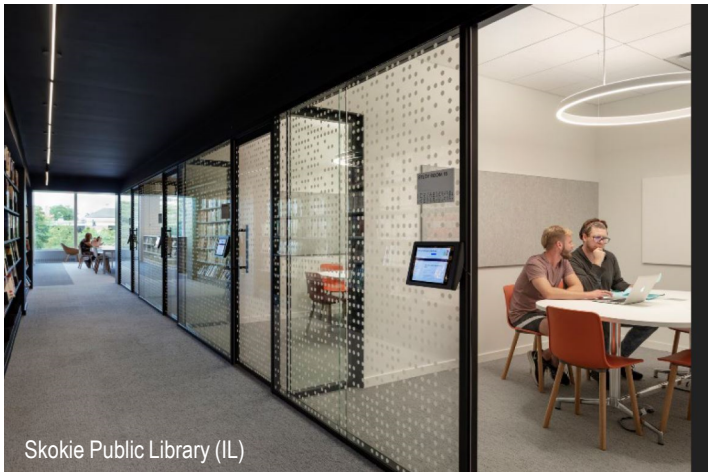
'Intentional service makes the world of ideas accessible'

Co-Working


Washoe County Library (NV)






Skokie Public Library (IL)



Learning / Studying


Seattle Public Library_Homework Help




Appleton Public Library Wi: *Tutoring Thursday*





Peterborough Public Library, Ontario, Canada

Skilling



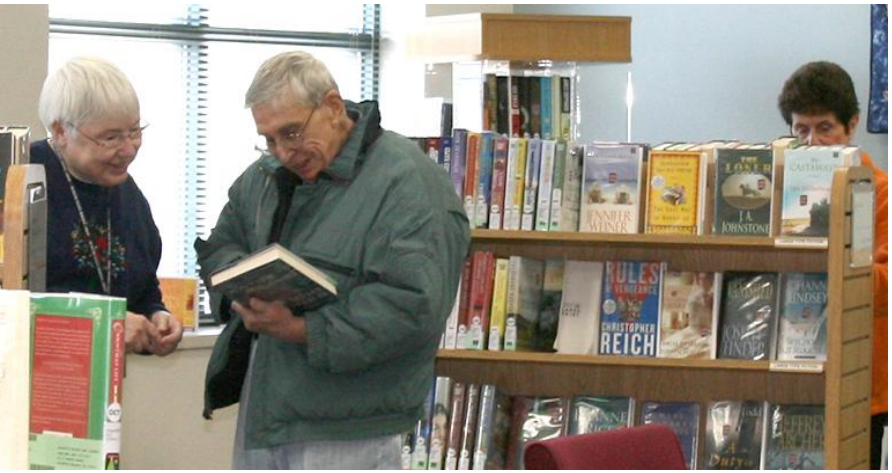
Tinker Lab _ New Haven Free Public Library (CT)



Los Angeles Central Library


Charlotte & William Bloomberg Medford Public Library (MA)

Discovering





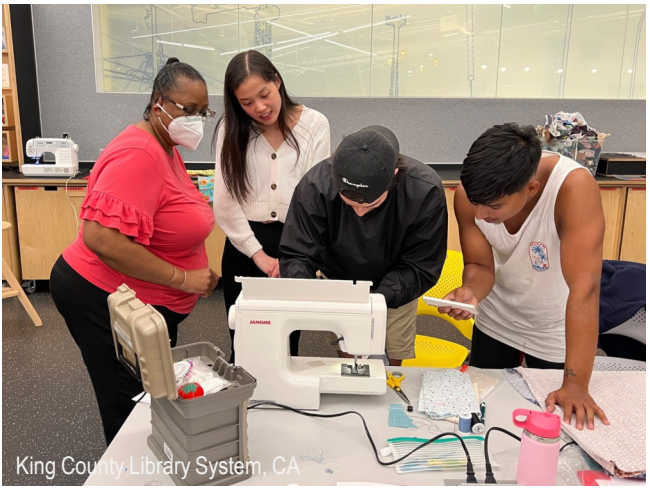
Edmonton Public Library_Milner-branch, Alberta



Queens Library Discovery Center, NY



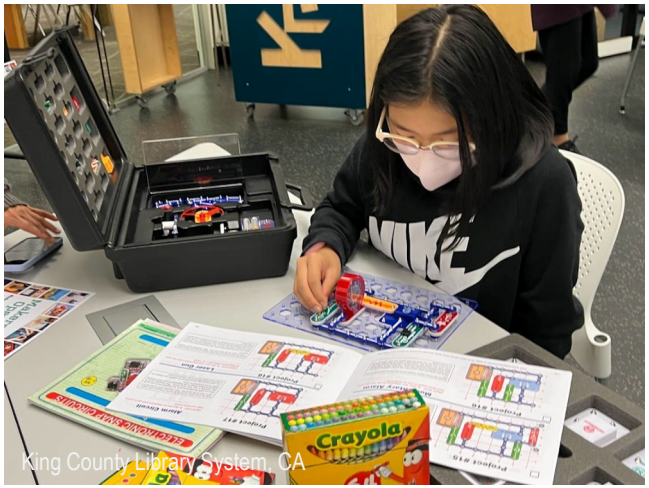
Making


King County Library System, CA

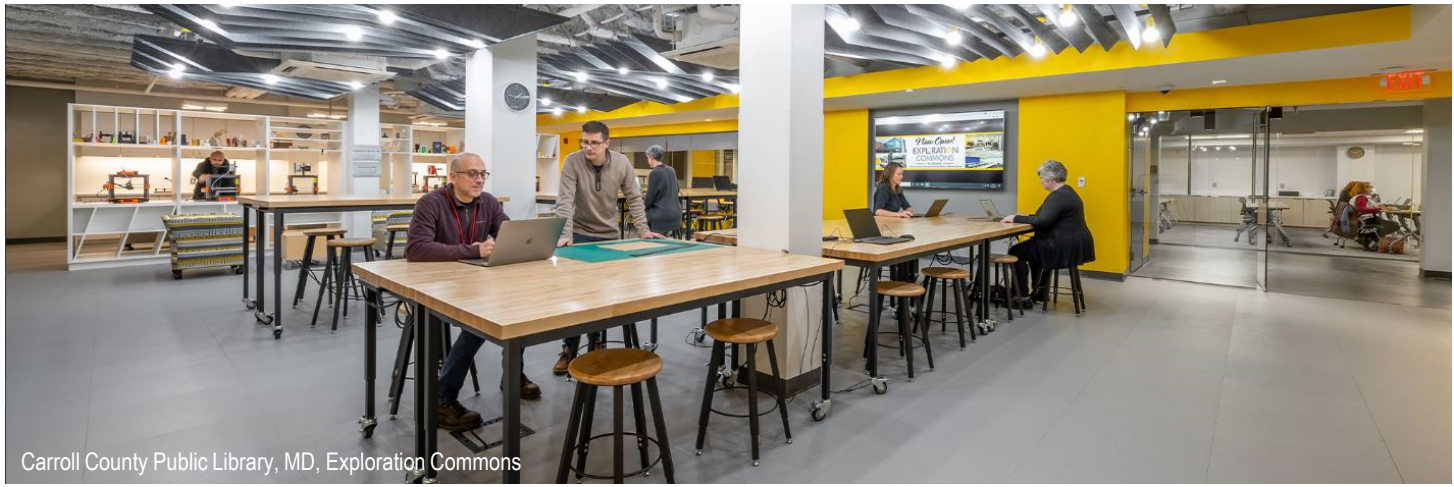


Edmonton Public Library_Milner-branch, Alberta


Charlotte & William Bloomberg Medford Public Library (MA)



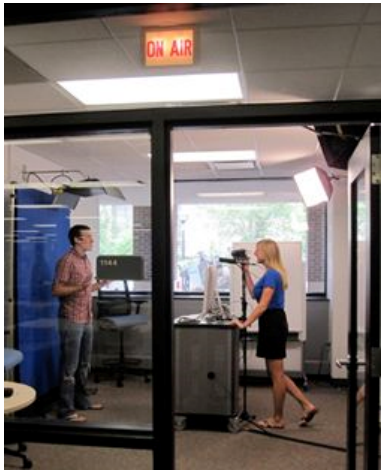
King County Library System, CA


Carroll County Public Library, MD, Exploration Commons

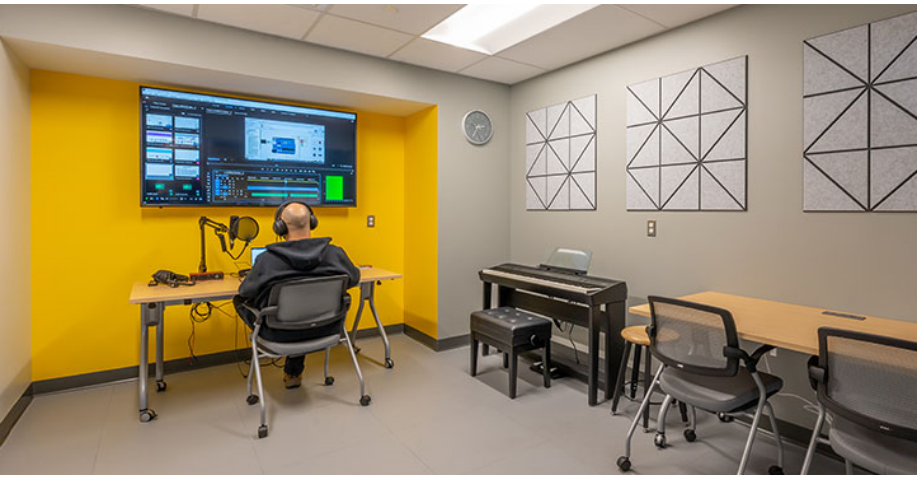
Creating (Tech Arts)

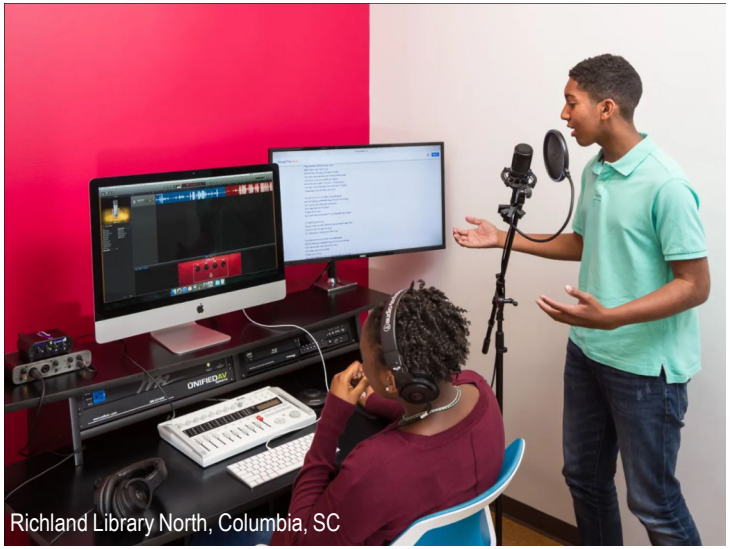


Carroll County Public Library, MD, Exploration Commons




SJSU_King Library_Presentation Practice Room



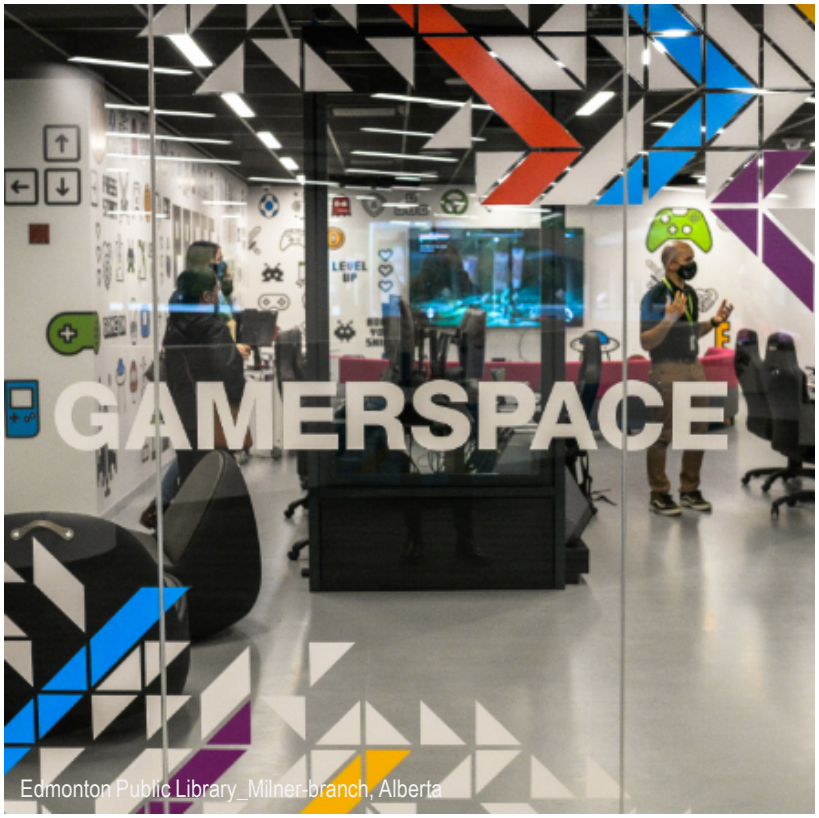

Richland Library North, Columbia, SC

Gaming


Halifax Public Library



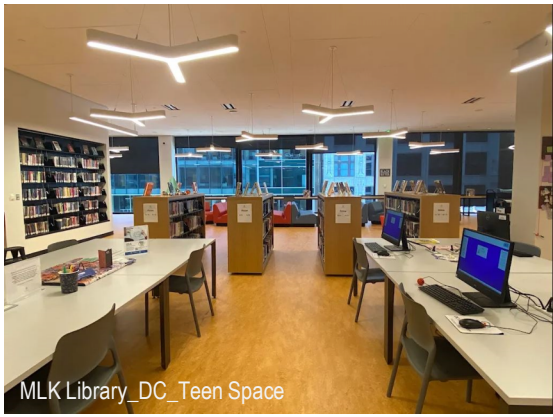
Longview Public Library (TX)



Edmonton Public Library_Milner branch, Alberta



Memphis Public Library (TN)


MLK Library_DC_Teen Space

Sharing (Arts & Culture)



MLK Library_DC

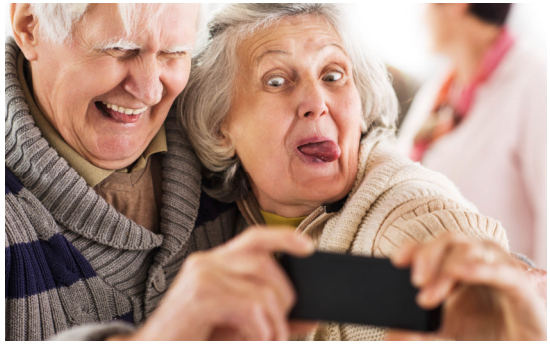

Ruidoso Public Library (NM)


Plano Public Library (TX)

Playing


Toronto Public Library, Ontario, Canada


Austin Public Library, TX





Chilling


Richland Library North Main, Columbia, SC


Salt Lake UT, Daybreak Library


Austin Public Library, TX


Austin Public Library, TX




Boston Public Lib_Central Library_Teen Central

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'Intentional service makes the world of ideas accessible'

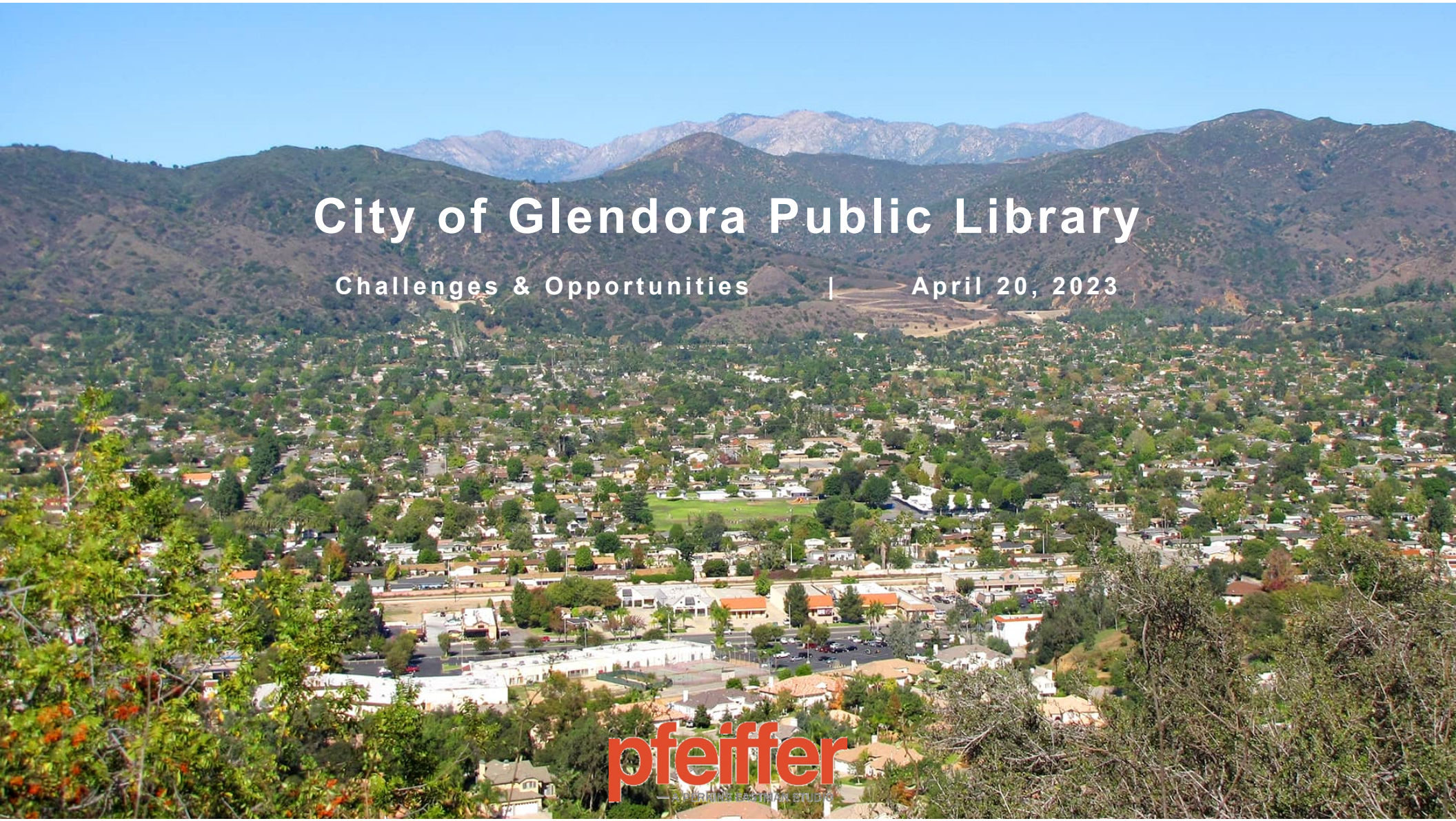
Welcome / Process

Vision Verification

- Right Sizing
- Library's Visioning Statement
- Areas for Growth / Expansion (enviroscan)
- Prioritization

Next Steps

- Meeting #3 – April 20, 2023


City of Glendora Public Library
Challenges & Opportunities | April 20, 2023
pfeiffer

Today

Welcome / Process

The Findings

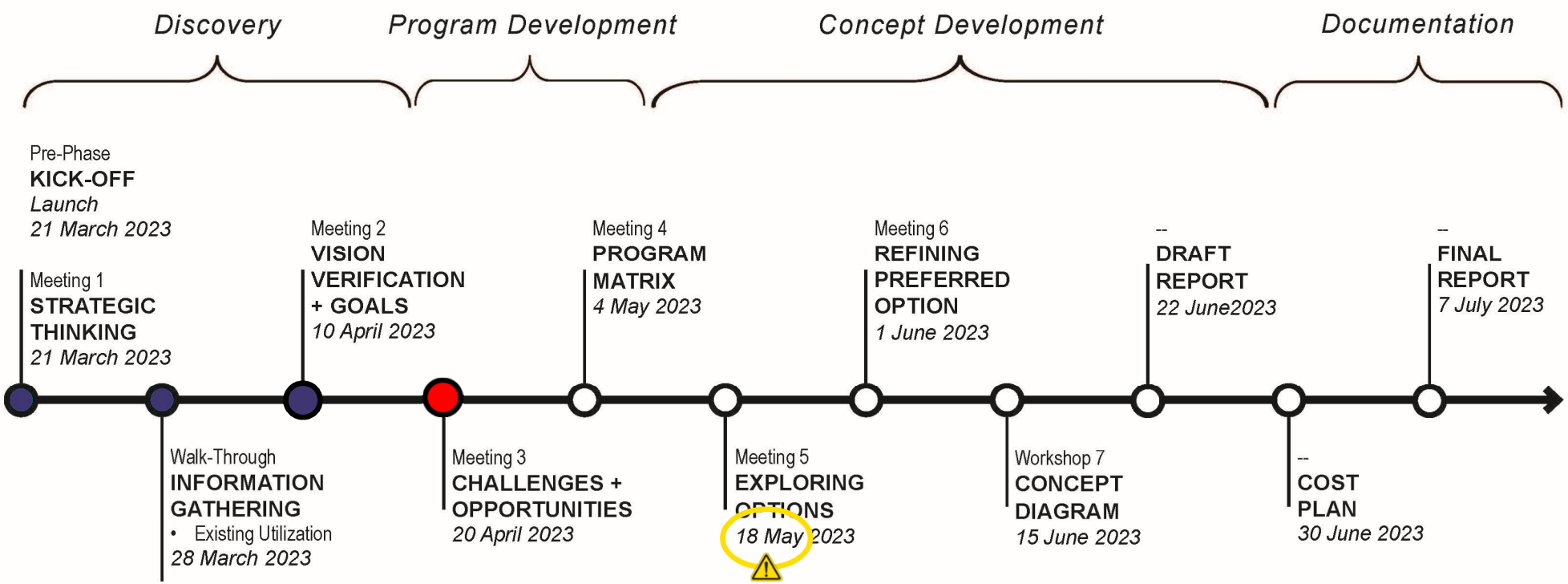
- Structural
- Architectural
- Programmatic Utilization

The Library's Vision

Discussion: Challenges & Opportunities

Next Steps

Process


Discovery
Program Development
Concept Development
Documentation
Pre-Phase
KICK-OFF
Launch
21 March 2023
Meeting 1
STRATEGIC THINKING
21 March 2023
Walk-Through
INFORMATION GATHERING
• Existing Utilization
28 March 2023
Meeting 2
VISION VERIFICATION + GOALS
10 April 2023
Meeting 3
CHALLENGES + OPPORTUNITIES
20 April 2023
Meeting 4
PROGRAM MATRIX
4 May 2023
Meeting 5
EXPLORING
18 May 2023
Meeting 6
REFINING PREFERRED OPTION
1 June 2023
Workshop 7
CONCEPT DIAGRAM
15 June 2023
--
DRAFT REPORT
22 June2023
--
COST PLAN
30 June 2023
--
FINAL REPORT
7 July 2023

Welcome / Process

The Findings

- Structural
- Architectural
- Programmatic Utilization

The Library's Vision

Discussion: Challenges & Opportunities

Next Steps

Structural Evaluation Process

- **Current: Phase 1**
  - Establish the baseline
  - Material Testing & Geotechnical Site Classification
  - Seismic Evaluation

- **Next: Phase 2**
  - Evaluation of new level addition or other alteration
  - Evaluation of Code triggers for upgrade/strengthening
    - For gravity loads – 5% increase trigger
    - For seismic – 10% increase trigger
    - Risk Category – increase in RC trigger

Structural Evaluation Process

- **Phase 1 Discussion/Findings**
  - Changes in structural Code provisions are responsive to observed poor performance or new research findings
  - **Seismic** Code requirements have changed significantly – continued research and several notable seismic events have demonstrated the need for more stringent requirements
    - Seismic Finding: In compliance with the ASCE 41-17 BPOE ("Basic Performance Objective for Existing Buildings")
  - **Gravity** Code requirements have proven adequate – current requirements are similar to those in the 1970's
    - As a result, typically wouldn't be reviewed in this phase…

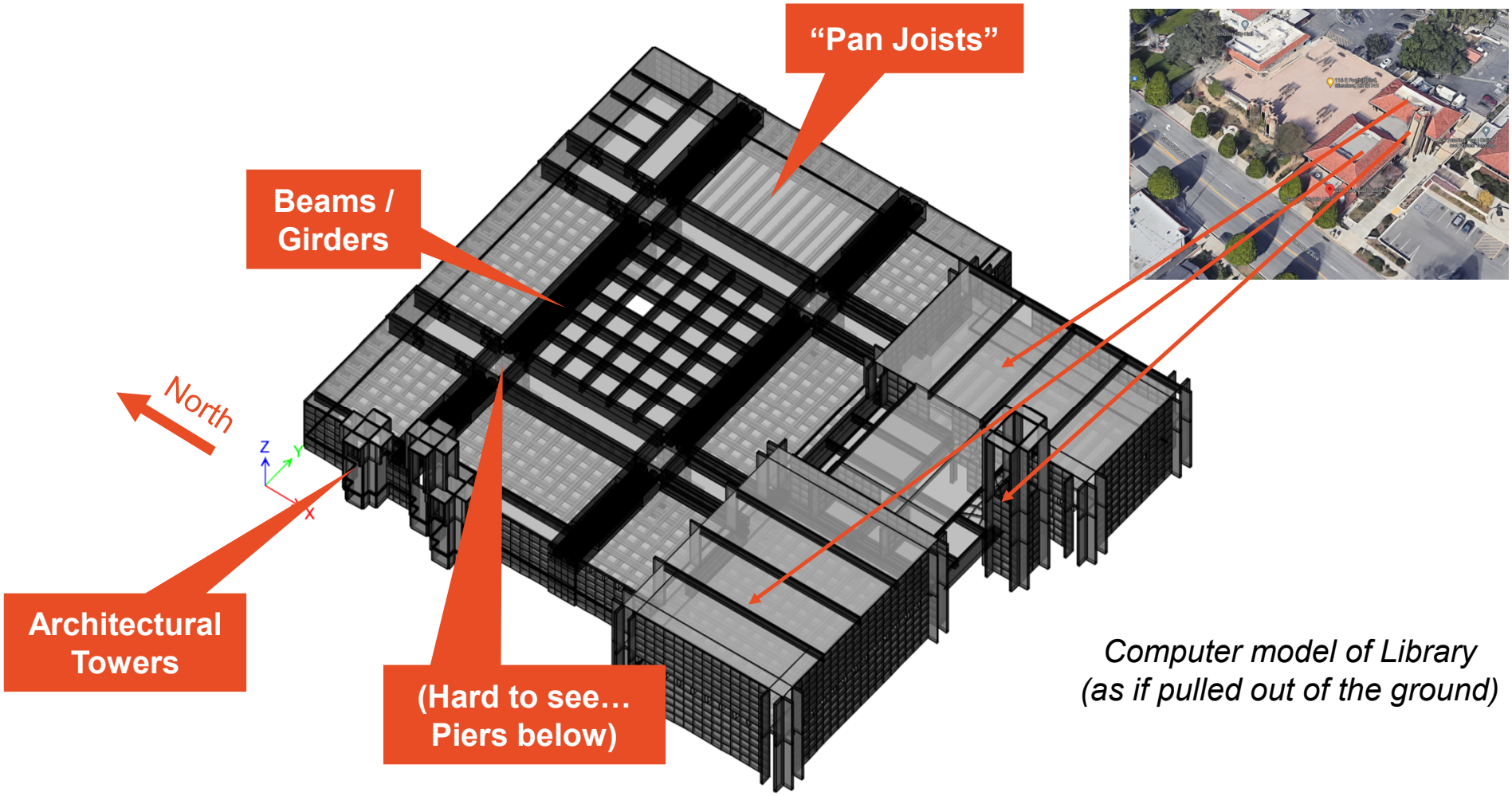
Structural Evaluation Process

- **Phase 1 Discussion/Findings**
  - During course of seismic review, potential gravity load-resisting deficiencies were identified that will affect Phase 2 recommendations:

    1. Existing plaza beams do not satisfy Code gravity criteria

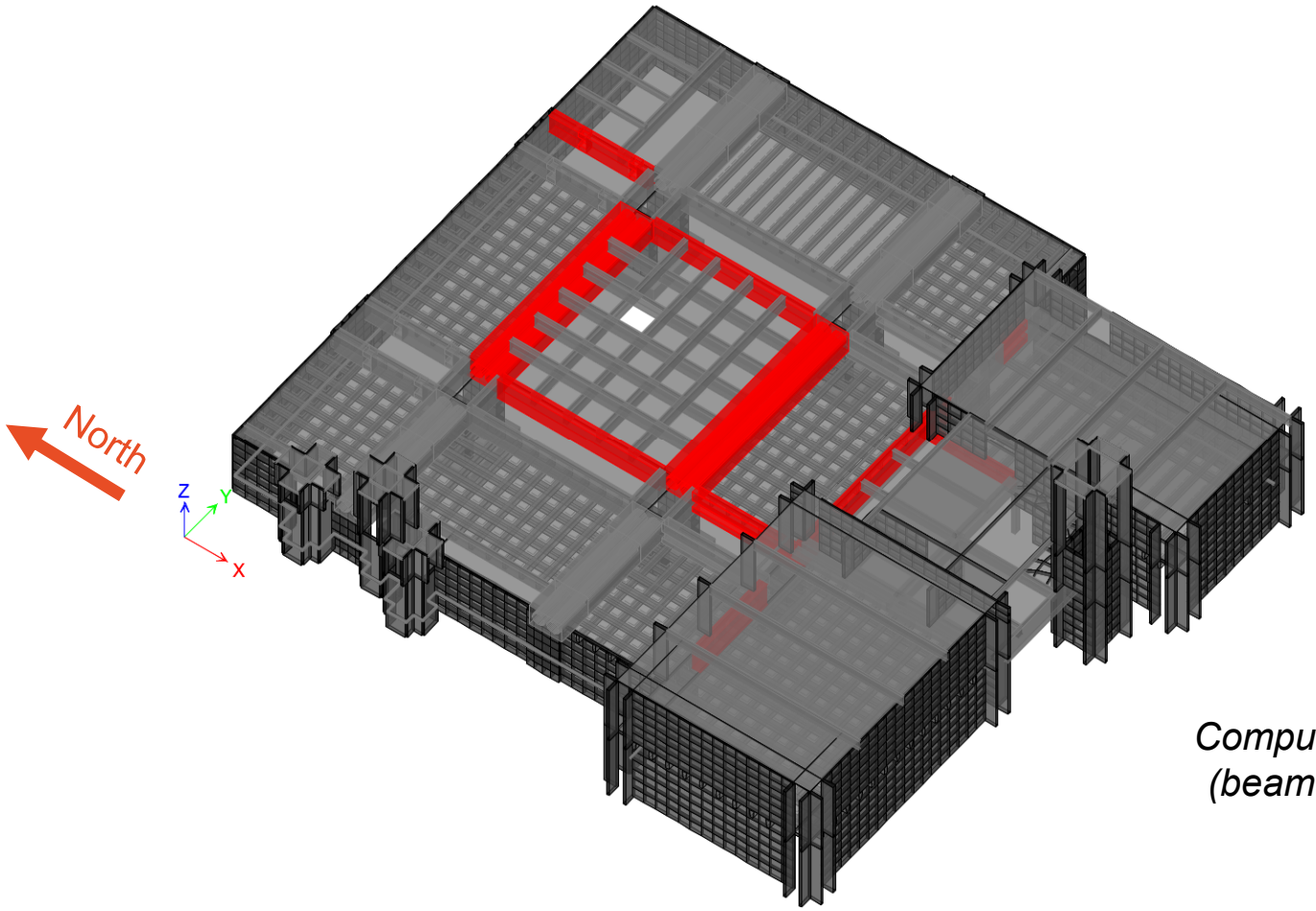
    2. Existing soil bearing pressure exceeds recommended allowable per original design

Library Structure Overview



Computer model of Library (as if pulled out of the ground)

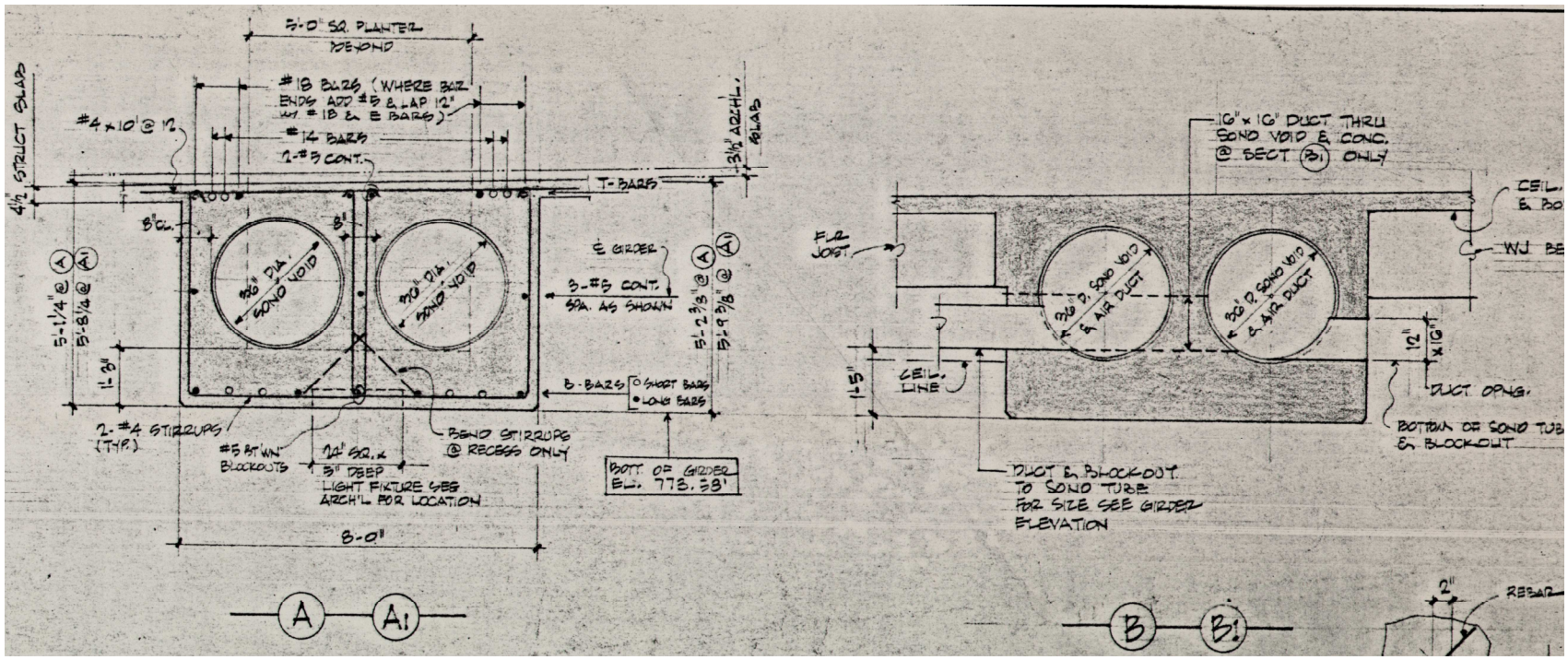
Structural Evaluation: Item #1 Plaza Beams



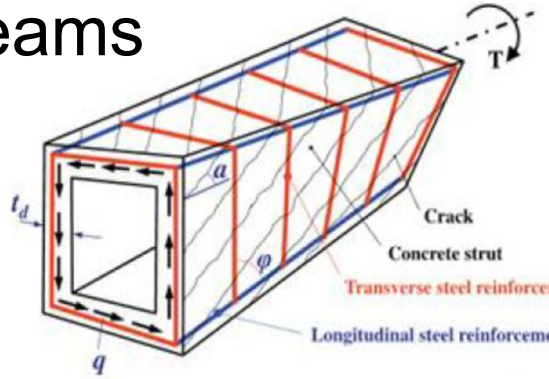
Computer model of Library
(beams of interest in red)

Structural Evaluation: Item #1 Plaza Beams

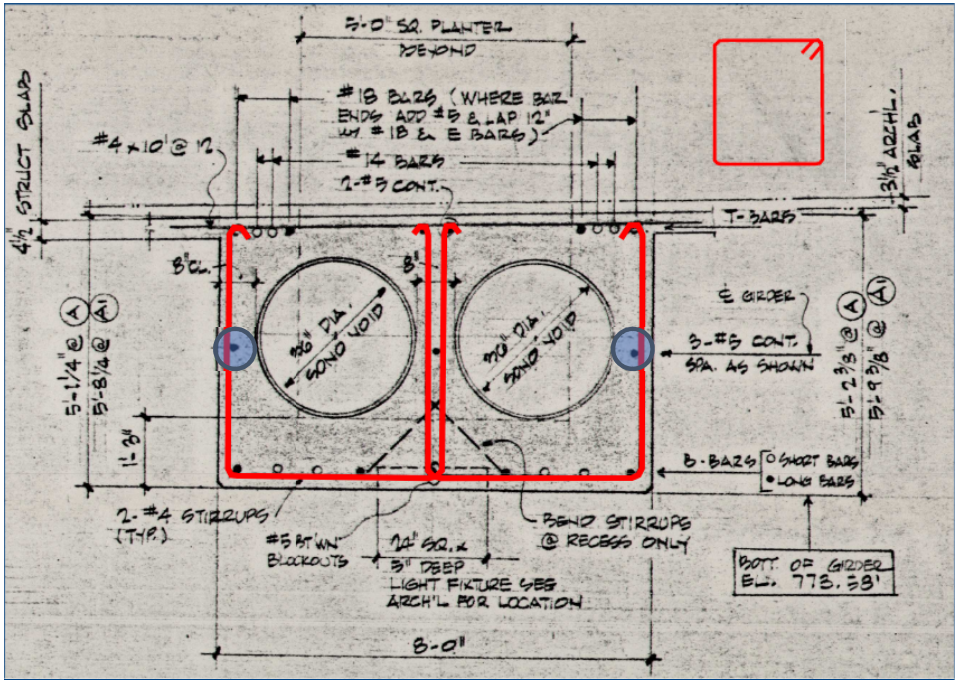
- Plaza beams include built-in mechanical ducts – very unusual design
  - (though not the first time we've seen it)



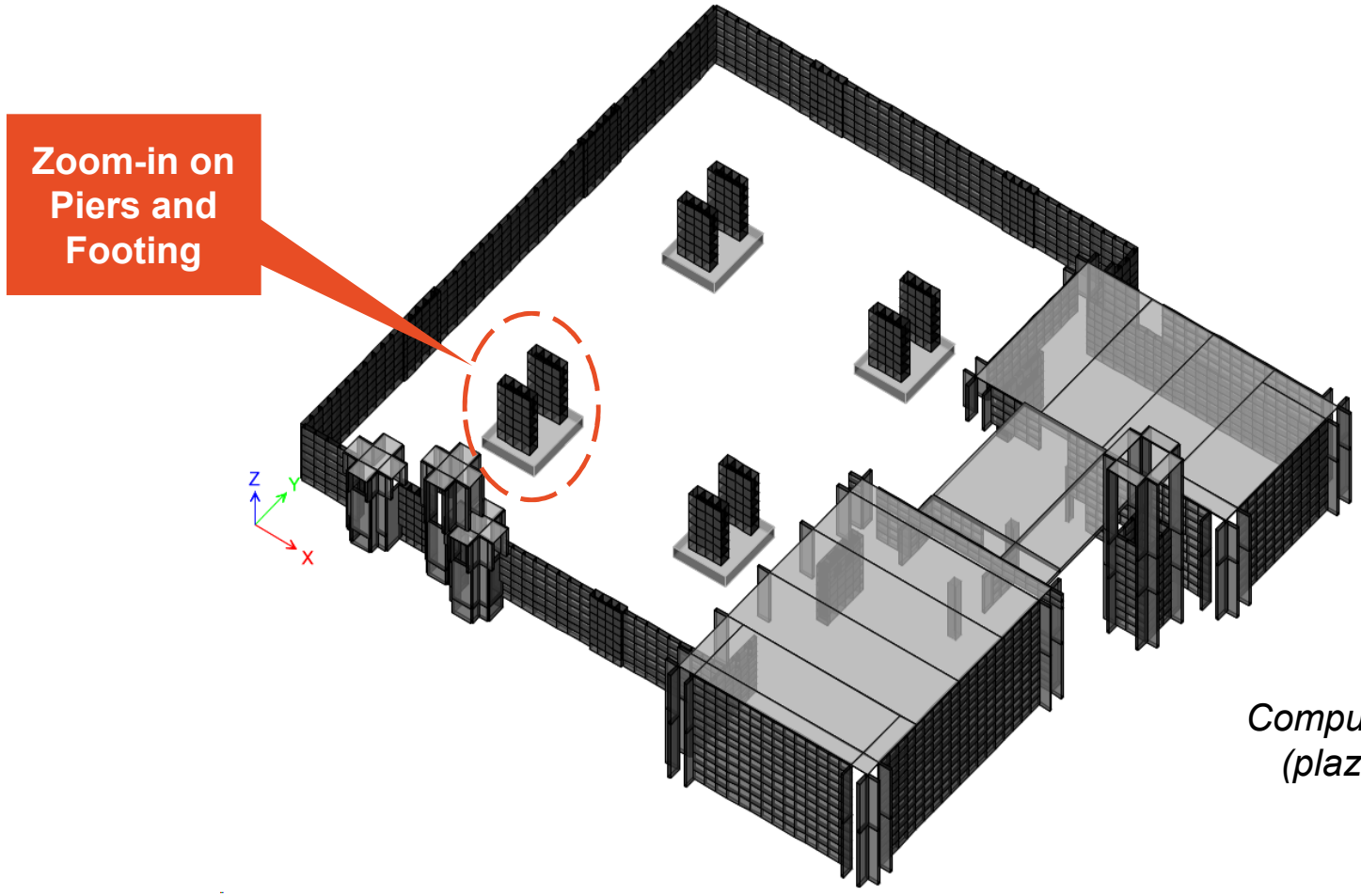
Structural Evaluation: Item #1 Plaza Beams



- Effect of **"torsion"** may have been overlooked
- Very limited Code requirements at time of original design
- Likely not even considered in original design due to hand calcs and simplifying assumptions that would have typically been used (vs. our computer models now)
- Beams do not meet the current requirements:
  - "Closed hoops"
  - "Skin reinforcement"
- **Possible explanation for cracks**

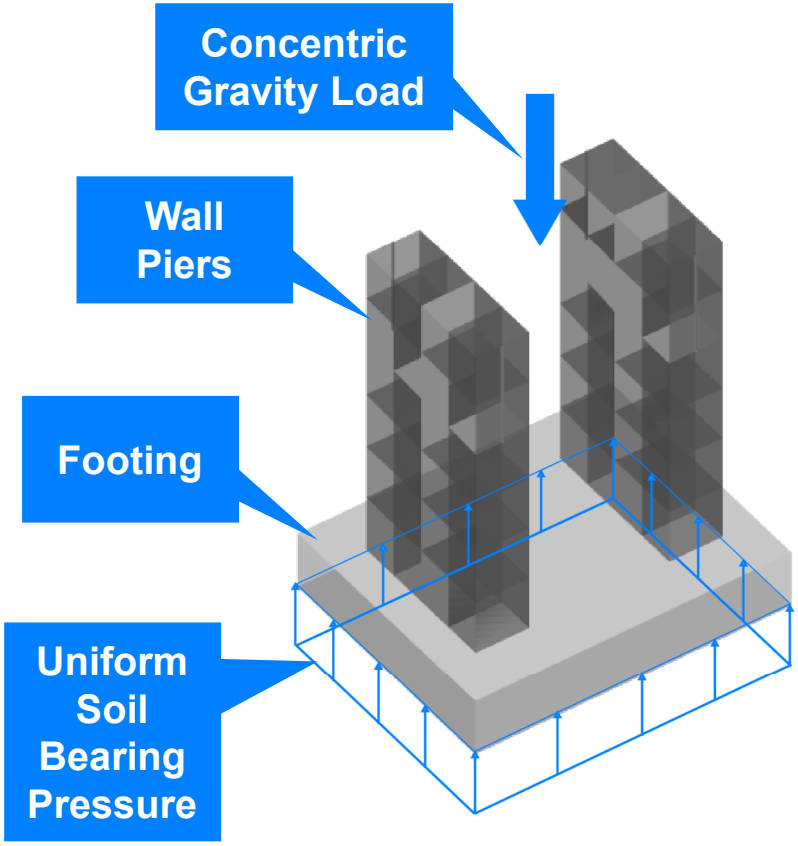


Structural Evaluation: Item #2 Existing Footings

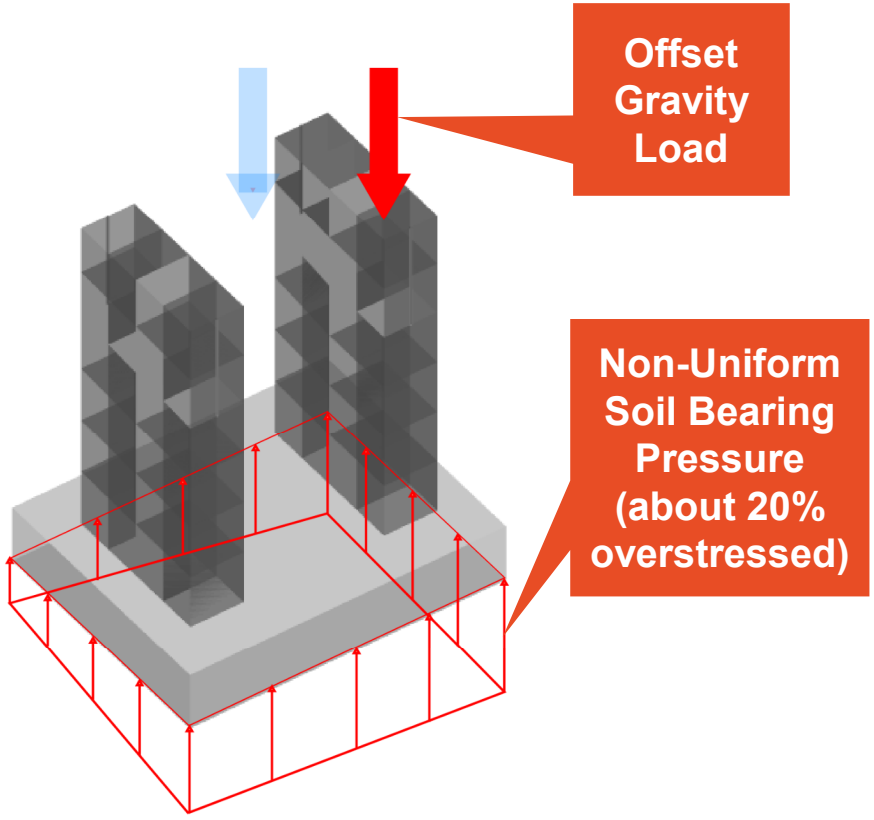


Computer model of Library (plaza framing hidden)

Structural Evaluation: Item #2 Existing Footings



Uniform Bearing Assumption

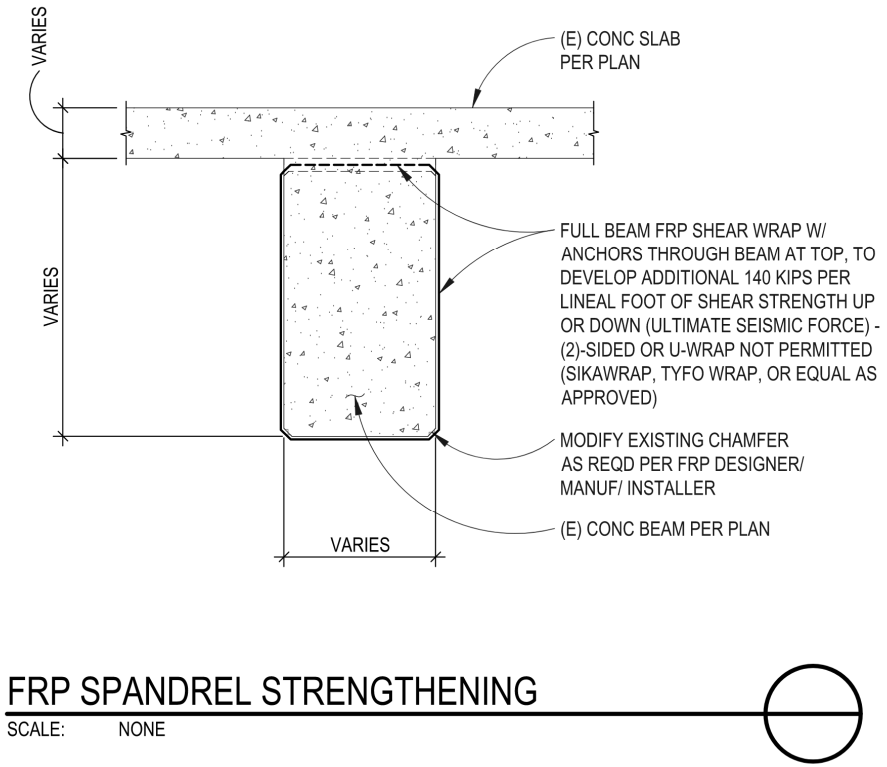


Actual Non-Uniform Bearing

Structural Evaluation: Current Summary

- **Overall Opinion**
  - No structural need for immediate shoring or strengthening
  - No issue with continued occupancy
  - However, cannot recommend adding new gravity loads without strengthening
    - For the beams/girders: Fiber-Reinforced Polymer wrap (FRP)
    - For the footings: enlargement or addition of micropiles

Structural Evaluation: FRP Strengthening





FRP Wrap Strengthening

Structural Evaluation: Gravity

- **Gravity Analysis Basics**
  - "Dead" loads (D): weights of materials that are always there:
    - e.g.: concrete beams, slabs, roofing, etc.
  - "Live" loads (L): weight from use of the space
    - e.g.: occupants, furniture, etc.

  - Concrete uses "Load and Resistance Factor Design" methodology
    - Gravity loads are increased by a Load Factor (1.2D+1.6L)
    - Element strength is reduced by a Resistance Factor (0.75, 0.90)
    - This is how we get safety factors that ensure safe design for extreme events

Structural Evaluation: Gravity

- **Gravity Analysis Basics**
  - Example: 100 psf Dead Load and 100 psf Live Load.
    - We **don't** design for 100 + 100 = **200 psf** total load and compare that to **100%** of what we think the capacity is
    - We design for 1.2*100 + 1.6*100 = **280 psf** and compare to **75%** of what we think the capacity is
  - Resulting safety factor of almost 2.0

Approach / Entry Sequence



Approach / Entry Sequence



Approach / Entry Sequence



Approach / Entry Sequence



Approach / Entry Sequence



Approach / Entry Sequence



Approach / Entry Sequence







Vertical circulation





Building Entry





Architectural features



Welcoming


New Fiction
New Fiction
Look Up
Books, Movies, Music


Jacques Pépin
NEW ARRIVALS!
CEO
Excellence
Tax Savvy
Small Business
WORLD ALMANAC
2023
MAGAZINES
HISTORY
BIOGRAPHY

Welcoming















Code-related Issues







Code-related Issues







Vertical Circulation









Code-related Issues







Electrical


Copy Center
REFERENCE
New Fiction
New Fiction
AUDIO BOOKS
VIDEOS
Glendora READS!
COMPUTER
SELF-HELP

Electrical


Under the Sea
Storytime
Tuesday, March 7
Friends Room
6:30 PM
Please
Do Not
Touch

Electrical





Heating & Cooling





Heating & Cooling





Lighting



Leaks


GLENDORA
STREETS


Look Up
Books, Movies, Music
OUT OF SERVICE
CAUTION



Leaks







Sight lines



Sight lines



Storage


Little Dino 65
Wings of Fire
24
A Wish in the Dark
48
Demco
Kiss
48



Storage / Workplace







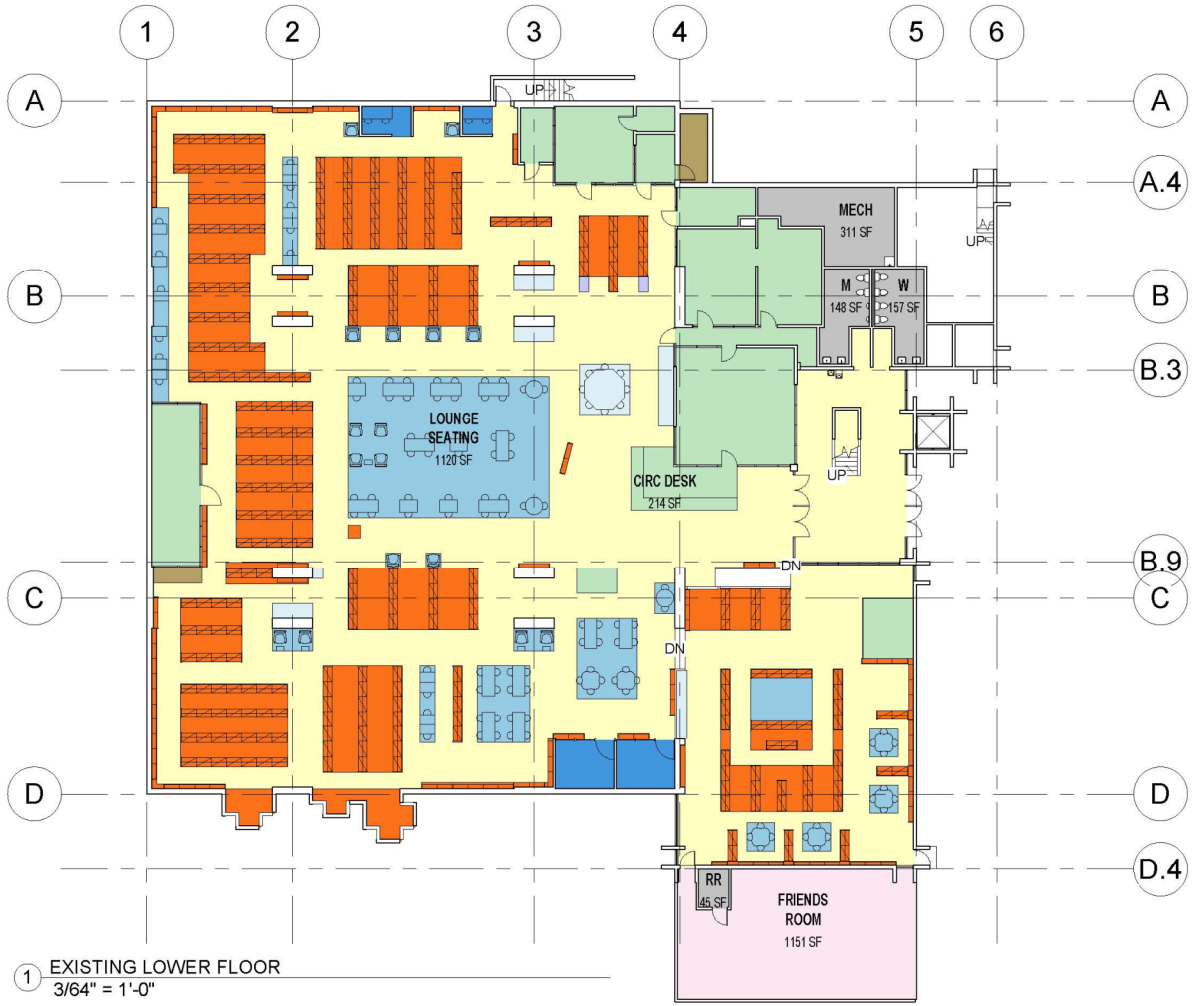
Workplace



Workplace



Space Utilization - Existing



1 EXISTING LOWER FLOOR
3/64" = 1'-0"

Department Legend

- CIRCULATION
- GENERAL COLLECTION / STACKS
- EXHIBIT
- friends
- READER - COLLABORATIVE
- READER - OPEN
- LIBRARY STAFF
- READER SUPPORT
- BUILDING SUPPORT
- STORAGE

Space Utilization - Existing



1 EXISTING UPPER FLOOR
3/64" = 1'-0"

Space Utilization - Existing

Department Legend

- CIRCULATION
- GENERAL COLLECTION / STACKS
- EXHIBIT
- friends
- READER - COLLABORATIVE
- READER - OPEN
- LIBRARY STAFF
- READER SUPPORT
- OTHER PROGRAM
- BUILDING SUPPORT
- STORAGE

LOWER FLOOR	18,747	68%
CHILDREN AREA FLOOR LEVEL	2,668	10%
UPPER FLOOR	6,040	22%
TOTAL	27,455	100%

CIRCULATION	10,788	39%
GENERAL COLLECTION / STACKS	3,902	14%
BIDWELL FORUM	2,929	11%
LIBRARY STAFF	2,875	10%
READER - OPEN	2,104	8%
BUILDING SUPPORT	1,278	5%
FRIENDS ROOM	1,151	4%
FRIENDS	951	3%
CHILDRENS COLLECTION / STACKS	714	3%
READER - COLLABORATIVE	315	1%
READER SUPPORT	251	1%
STORAGE	185	1%
EXHIBIT	12	0%
TOTAL	27,455	100%

Welcome / Process

The Findings

- Structural
- Architectural
- Programmatic Utilization

The Library's Vision

Discussion: Challenges & Opportunities

Next Steps

Library's Visioning (projected space utilization based on 50,000 GSF assumption)

Description	Projected need (designed to morph asneed)	Area Allocation (Sq Ft)	Reference
Customer-driven workspaces –	13%	6,500	
Open-format public assembly spaces, reconfigurable (more like Bidwell, Friends Room)	12%	6,000	Bidwell ±3,000 SF Friends Room ±1,200 SF
Library-mediated public workspaces	10%	5,000	No equiv space now
Fulfillment center services	9%	4,500	
Small private/semi-private spaces –	8%	4,000	
Physical content showroom –	8%	4,000	
Leisure spaces – relaxation rather than organized/formalized gathering	6%	3,000	
Service points Identified interface areas for access to staff expertise	4%	2,000	2,875
Specialized preservation/archival storage	0%	-	
Public technology access – capital equipment for digital divide	0%	-	
Food consumption/services (routine)	0%	-	
Food preparation (event specialized)	0%	-	
Infrastructure	20%	10,000	
Subtotal		45,000	
Outdoor opportunities (floor space, excluding park/garden areas)		16,000-26,000	

Library's Visioning Statement (projected space utilization based on 50,000 GSF assumption)

Description	Projected need at time of refres	
Customer-driven workspaces – Large area/not private – With neutral workshop furniture for customer use Education "deskwork" Staging/practicing skills Creative workspaces In-person game spaces (an enriched version of our main floor table area)	13%	6,500
Open-format public assembly spaces, reconfigurable Entertainment Culture Recreation Organized social Meeting/conferencing Emergency operations Playing Events (more like Bidwell, Friends Room)	12%	6,000

Library's Visioning Statement (projected space utilization based on 50,000 GSF assumption)

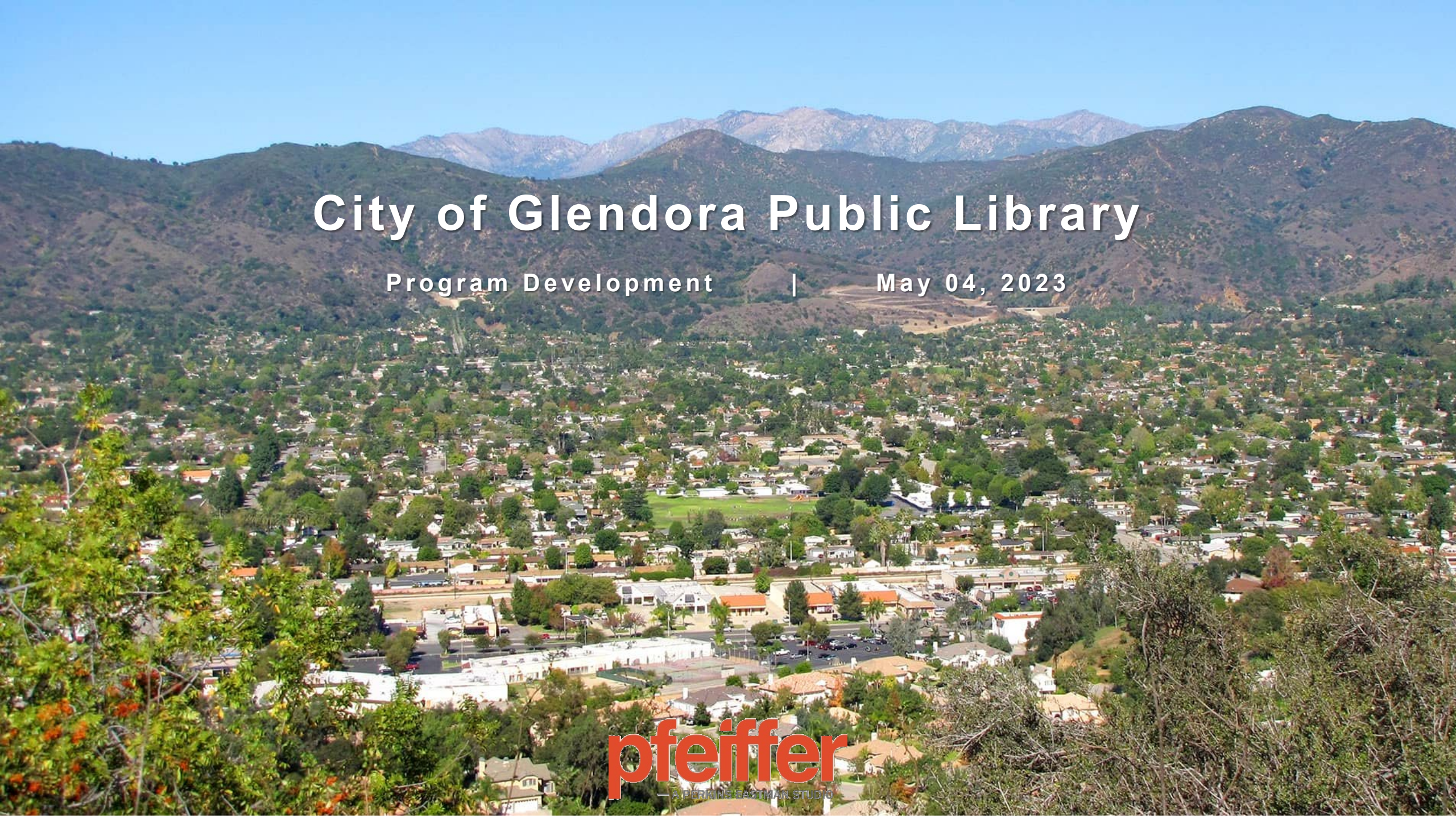
Description	Projected need at time of refres	
Library-mediated public workspaces – Large area/not private – Dedicated to temporary instructional/exploratory installations, with purposed furniture and equipment Instruction Equipment-based skills-building, creation (don't have an "instructional laboratory" space like this now)	10%	5,000
Fulfillment center services Traditional materials not necessarily on display (could be—see also showroom, below) but certainly available for delivery Storage for libraries of things Storage for program giveaways, crafts, etc. Preparation/packing/shipment/transportation support areas	9%	4,500
Small private/semi-private spaces – Multipurpose One-on-one/small group education Health care Social work / human services Officing / co-working Public safety Private City services (passports, etc.) Staff expert consultations (like our study rooms but more, and more private)	8%	4,000

Library's Visioning Statement (projected space utilization based on 50,000 GSF assumption)

Description	Projected need at time of refres	
Physical content showroom – Direct customer access space Traditional materials Libraries of things "Museum"/exhibit space Sales areas (enriched and more versatile "stacks" areas, bookstore)	8%	4,000
Leisure spaces – relaxation rather than organized/formalized gathering Hospitality Lounging Chilling (enriched versions of our lounge seating)	6%	3,000
Service points Identified interface areas for access to staff expertise Library staff City services as needed Other "storefront" needs – curbside, technology assistance, etc.	4%	2,000
Specialized preservation/archival storage	0%	-
Public technology access – capital equipment for digital divide	0%	-
Food consumption/services (routine)	0%	-
Food preparation (event specialized)	0%	-

Library's Visioning Statement (projected space utilization based on 50,000 GSF assumption)

Description	Projected need at time of refres	
Infrastructure "Home base" for expert staff, Friends Foundation Storage of capital equipment HVAC, etc. Environmental installations (plants, acoustical features, etc.) Restrooms, etc. Technology Janitorial Accessibility installations	20%	10,000
		45,000
Outdoor opportunities (floor space, excluding park/garden areas)		



City of Glendora Public Library

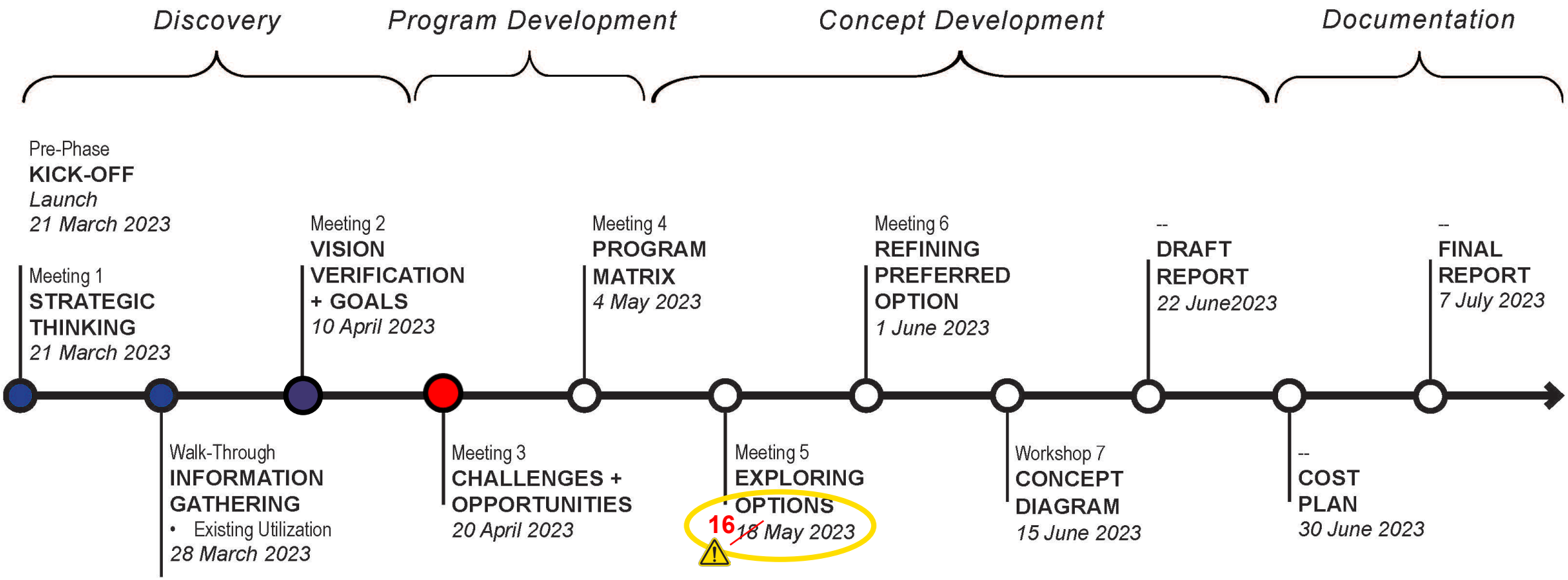
Program Development | May 04, 2023

pfeiffer
A PERKINS EASTMAN STUDIO

Today

- Welcome / Process
- Program Matrix
- Available Square Footage
- Next Steps

Process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10 April 2023
Meeting 3
CHALLENGES + OPPORTUNITIES
20 April 2023
Meeting 4
PROGRAM MATRIX
4 May 2023
Meeting 5
EXPLORING OPTIONS
16 18 May 2023
Meeting 6
REFINING PREFERRED OPTION
1 June 2023
Workshop 7
CONCEPT DIAGRAM
15 June 2023
--
DRAFT REPORT
22 June2023
--
COST PLAN
30 June 2023
--
FINAL REPORT
7 July 2023

- Building Lobby
- Customer Driven Workspaces
- Public Assembly Spaces
- Library Mediated Public Workspace
- Fulfillment Center Services
- Small Private / Semi-Private Spaces
- Physical Content Showroom
- Leisure Spaces – Relaxation
- Library Services
- Building Support
- Non-Assignable

Program Summary

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Proposed ASF	GSF	GPL Vision	Notes
1	BUILDING LOBBY	6	1,578	2,367	-	
2	CUSTOMER DRIVEN WORKSPACES	106	4,604	6,905	6,500	
3	PUBLIC ASSEMBLY SPACES	300	5,853	8,780	6,000	
4	LIBRARY MEDIATED PUBLIC WORKSPACE	75	3,678	5,517	5,000	
5	FULFILLMENT CENTER SERVICES	-	2,400	3,600	4,500	
6	SMALL PRIVATE / SEMI PRIVATE SPACES	96	2,648	3,972	4,000	
7	PHYSICAL CONTENT SHOWROOM	-	4,608	6,911	4,000	
8	LEISURE SPACES - RELAXATION	44	2,025	3,038	3,000	
9	LIBRARY SERVICES	-	5,133	7,699	2,000	
10	BUILDING SUPPORT	-	1,000	1,500	15,000	
11	NON-ASSIGNABLE	-	-	-		
		627 *	**33,526**	**50,288**	**50,000**	

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LEGEND

ASF	Assignable Square Feet
GSF	Assignable Square Feet
*	Including Public Assembly Spaces Seat Count

Entry / Lobby

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
1.0	**BUILDING LOBBY**	**6**				**1,578**	**2,367**	
	1.1 Building Lobby	**6**				**1,578**	**2,367**	
	Vestibule	-	-	-	-			
	Entry Lobby	-	2	350	700			Confirm: Single of one per level?
	Information Kiosk / Digital board		1	48	48			
	Book/Media Return - Thru Wall	-	1	48	48			
	Display / Pamphlets	-	1	80	80			
	Seating / Food consumption/services (routine)	6	6	35	210			
	Vending	-	3	20	60			
	Lockers (Amazon-type?)	-	-	-	-			
	Waste/ Recycling station	-	1	48	48			
	Welcome Desk	-	1	144	144			
	Collection Security Gate	-	2	120	240			Confirm: Single of multiple entries?
	x	-	-	-	-			
			0%	1,578	-			
	Subtotal	**6**			**1,578**	ASF		

Continued Next Page

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Customer Workstations / Public Assembly

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
2.0	**CUSTOMER DRIVEN WORKSPACES**	**106**				**4,604**	**6,905**	Open Plan; Flexible, large area; not private. Activities include: Education "deskwork", Staging/practicing skills, Creative workspaces, In-person game spaces
2.1	**Reader/Workspace Area - Open Plan**	**106**				**4,604**	**6,905**	
	Public Access Computers - Workstation w/Equipment	16	16	45	720			
	Reader Seat - Table (BYD)	40	40	25	1,000			
	Reader Seat - Counter (BYD)	20	20	25	500			
	Reader Seat - Carrel (Single, Open Plan)	24	24	35	840			
	Reader Seat - Lounge Chair	6	6	35	210			
	Computing - Online Public Access Catalog (OPAC)	-	4	35	140			
	X	-	-	-	-			
	Internal Circulation (Factor)	-	*35%*	*3,410*	*1,194*			
	Subtotal	**106**			**4,604**	ASF		
3.0	**PUBLIC ASSEMBLY SPACES**	**300**				**5,853**	**8,780**	Reconfigurable; Similar to Bidwell and Friends Room. Activities may include: Entertainment, Cultural, Recreation, Organized Social, Meeting/conferencing, Emergency Operations, Playing, Events
3.1	**Open-Format Public Assembly Spaces (Reconfigurable)**	**300**				**5,853**	**8,780**	
	Assembly (~~###~~ Seats)	300	300	15	4,500			15 SF /PP; Bidwell's Max Capacity is 389
	Presenter's Podium/Station	-	1	48	48			
	Large Screen / Technology Interface	-	1	180	180			
	Furniture Alcove	-	4	150	600			
	AV Rack Room	-	1	100	100			
	Secure Tech Equip Storage	-	1	100	100			
	Storage: Carts, Stands, Presentation Tools & Accessories	-	1	100	100			
	Control Room (Tech / Sound and Light)	-	-	-	-			
	Sound/Light Locks	-	-	-	-			
	Green Room	-	-	-	-			
	Kitchenette / Galley (Event Specialized)	-	1	225	225			
	Internal Circulation (Factor)	-	*0%*	*5,853*	-			
	Subtotal	**300**			**5,853**	ASF		

Continued Next Page

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Change "reader" to "activity"

Missing Friends Room

Total existing capacity for Bidwell & Friends is 522

Library Mediated Public Workspace

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
4.0	**LIBRARY MEDIATED PUBLIC WORKSPACE**	**75**				**3,678**	**5,517**	Large area/not private – Dedicated to temporary instructional/exploratory installations, with purposed (?) furniture and equipment. Activities may include: Instruction. Equipment-based skills-building. Creation
4.1	**Creative workspaces / Experiential Learning Lab 1**	**50**				**1,750**	**2,625**	25 SF /PP; Mobile nesting tables;
	Experiential Learning Lab 1 (50-Seat)	50	50	25	1,250			
	"Low-Tech" Maker / Fabrication Area	-	1	500	500			
	- Equipment: Sewing	-	-	-	-			
	- Equipment: Decal Machine, Button Maker	-	-	-	-			
	- Equipment: Poster Printer	-	-	-	-			
	- Storage: Maker / Craft Supplies	-	-	-	-			
	- Support Area / Clean-out	-	-	-	-			
	Internal Circulation (Factor)	-	*0%*	*1,750*	-			
	Subtotal	**50**			**1,750**	ASF		
4.2	**Experiential Learning Lab 2**	**25**				**1,928**	**2,892**	
	Technology Skilling & Fabrication Area (25-Seat)	25	25	45	1,125			45 SF /PP
	- Scanner Station	-	1	45	45			
	- 3D Printer (provide proper ventilation)	-	2	45	90			
	- Maker / Electronics Supplies	-	6	21	126			
	- Storage: Electronics gadgets	-	2	21	42			
	Recording Studio (audio and video)	-	1	200	200			
	Sandbox Studio (emerging technology, gaming, VR/AR etc.)	-	1	300	300			
	Internal Circulation (Factor)	-	*0%*	*1,928*	-			
	Subtotal	**25**			**1,928**	ASF		

Continued Next Page

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Fulfillment Center & Private Spaces

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS: Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
5.0	**FULFILLMENT CENTER SERVICES**	**-**				**2,400**	**3,600**	Traditional materials not necessarily on display (see also showroom, below) but certainly available for delivery. Storage for libraries of things, Storage for program giveaways, crafts; Preparation/packing / shipment /transportation support areas
5.1	**Fulfillment Center Services**	**-**				**2,400**	**3,600**	
	Libraries of Things	-	1	400	400			
	Program Giveaways	-	1	400	400			
	Crafts supplies	-	1	400	400			
	Swag, holiday events/decoration	-	1	400	400			
	Preparation/packing / shipment /transportation support areas	-	1	400	400			
	Emergency Response / Supplies	-	1	400	400			
	x	-	-	-	-			
	Internal Circulation (Factor)	-	*0%*	*2,400*	-			
	Subtotal	-			**2,400**	ASF		
6.0	**SMALL PRIVATE / SEMI PRIVATE SPACES**	**96**				**2,648**	**3,972**	Multipurpose activities may include: One-on-one/small group education, Health care, Social work / human services, Officing / co-working, Public safety, Private City services (passports, etc.), Staff expert
6.1	**Small Private / Semi-Private Spaces**	**96**				**2,648**	**3,972**	
	Study Room - 4-Seats	40	10	100	1,000			25 SF /PP; Acoustical privacy
	Project Room - 8-Seats	48	6	200	1,200			25 SF /PP; Acoustical privacy
	Zoom Room - 1-2 Seats	6	6	56	336			Acoustical privacy
	Focus Room (Neurodivergent needs)	1	1	56	56			Acoustical privacy
	Family Room / Mothers Room	1	1	56	56			
	x	-	-	-	-			
	Internal Circulation (Factor)	-	*0%*	*2,648*	-			
	Subtotal	**96**			**2,648**	ASF		

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Physical Content Showroom

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
7.0	**PHYSICAL CONTENT SHOWROOM**	-				4,608	6,911	
7.1	**Collection**	-				2,925	4,388	Direct customer access space to: Traditional materials, Libraries of things, "Museum"/exhibit
	Collection - PLACEHOLDER	-	1	2,925	2,925			Currently 3,900 SF; Assumed ±25% reduction in footprint
	New Books	-	-	-	-			
	Leisure Reading / Popular Fiction	-	-	-	-			
	Adult Reference	-	-	-	-			
	Ready Reserves / Holds	-	-	-	-			
	Unbound Current Periodicals (Slanted Hinged)	-	-	-	-			
	Media Collection	-	-	-	-			
	- Videos	-	-	-	-			
	- Audio Books	-	-	-	-			
	Glendora READS	-	-	-	-			
	Local History Collection _ Secured?	-	-	-	-			
	Maps?	-	-	-	-			
	Micro Format (Cabinet, Reader/Printer Station, Supplies)	-	-	-	-			
	Adult Literacy	-	-	-	-			
	General Collection	-	-	-	-			
	Business Home Improvement	-	-	-	-			
	Cookbooks	-	-	-	-			
	International Language Instruction	-	-	-	-			
	Biography's	-	-	-	-			
	Science (kits)	-	-	-	-			
	YA Collection	-	-	-	-			
	Juvenile Collection	-	-	-	-			
	Children Lit	-	-	-	-			
	X	-	-	-	-			
	Internal Circulation (Factor)	-	*0%*	*2,925*	-			
	Subtotal	-			2,925	ASF		

Continued Next Page

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Physical Showroom Cont'd & Leisure

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
7.2	**Exhibit Space**	-				400	600	
	Exhibit & Display	-	1	400	400			
	x	-	-	-	-			
	Internal Circulation (Factor)	-	*0%*	*400*	-			
	Subtotal	-			400	ASF		
7.3	**Book Store**	-				1,283	1,924	
	Friends Book Store	-	1	500	500			
	Friends Staff & Support Areas	-	1	450	450			
	Director's Office	-	-	-	-			
	Staff Workstations	-	-	-	-			
	Copy / Print	-	-	-	-			
	Storage: Files	-	-	-	-			
	Storage: Files Archive	-	-	-	-			
	Storage: Office Supplies	-	-	-	-			
	X	-	-	-	-			
	Internal Circulation (Factor)	-	*35%*	*950*	*333*			
	Subtotal	-			1,283	ASF		
8.0	**LEISURE SPACES - RELAXATION**	**44**				**2,025**	**3,038**	Leisure spaces – relaxation rather than organized/formalized gathering; Activities may include: Hospitality, Lounging, Chilling
8.1	**Reader Leisure spaces**	**44**				**2,025**	**3,038**	
	Reader Seat - Table (BYD)	24	24	25	600			
	Reader Seat - Lounge Chair	20	20	45	900			
	x	-	-	-	-			
	Internal Circulation (Factor)	-	*35%*	*1,500*	*525*			
	Subtotal	**44**			2,025	ASF		

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Library Services

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
9.0	**LIBRARY SERVICES**	**-**				**5,133**	**7,699**	Identified interface areas for access to staff expertise including: Library staff, City services as needed, Other "storefront" needs – curbside, technology assistance, etc.
9.1	**Service Points**	-				**1,747**	**2,620**	
	Welcome Desk / Greater station	-	1	144	144			
	Collection Security Gate	-	1	100	100			Confirm: Single of multiple entries?
	Circulation / Access Services P.O.S - (3-positions)	-	1	400	400			
	Queuing Space	-	1	150	150			Assume 2 person per POS at 25 SF/PP
	Self Check-Out Station	-	1	48	48			
	Reference Desk (Mobile)	-	1	80	80			
	Public Printing	-	1	300	300			
	Quick-Charging Station	-	2	36	72			
	x	-	-	-	-			
	Internal Circulation (Factor)	-	*35%*	*1,294*	*453*			
	Subtotal	-			**1,747**	ASF		
9.2	**Library Staff Work Space**	-				**2,136**	**3,204**	"Home base" for expert staff, Friends Foundation
	Library Director	-	1	150	150			
	Management Analyst	-	1	120	120			
	Digital Media Assistant	-	1	64	64			
	Admin Assistant	-	1	64	64			
	Librarian II	-	1	64	64			
	Librarian II	-	1	64	64			
	Library Aide III	-	0.5	64	32			Shared Desk
	Librarian I	-	0.5	64	32			Shared Desk
	Librarian I	-	1	64	64			
	Library Technician	-	1	64	64			
	Library Services Manager	-	1	64	64			

Continued Next Page

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Library Services Cont'd

SPACE PROGRAM

		PROGRAM						
			SPACE NEEDS					
No.	Space / Room Type	Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
	Library Aide III	-	0.5	64	32			Shared Desk
	Librarian II	-	1	64	64			Shared Desk
	Library Aide V	-	0.5	64	32			Shared Desk
	Library Services Manager	-	1	64	64			
	Library Aide I	-	0.5	64	32			Shared Desk
	Library Aide II	-	0.5	64	32			Shared Desk
	Library Aide II	-	0.5	64	32			Shared Desk
	Library Technician	-	1	64	64			
	Senior Library Technician	-	1	64	64			
	Library Aide I	-	0.5	64	32			Shared Desk
	Library Aide I	-	0.5	64	32			Shared Desk
	Library Aide I	-	0.5	64	32			Shared Desk
	Library Aide I	-	0.5	64	32			Shared Desk
	Library Aide II	-	0.5	64	32			Shared Desk
	Library Aide III	-	0.5	64	32			Shared Desk
	Library Aide I	-	0.5	64	32			Shared Desk
	Library Aide III	-	0.5	64	32			Shared Desk
	Library Aide III	-	0.5	64	32			Shared Desk
	Senior Library Technician	-	1	64	64			
	Library Aide II	-	0.5	64	32			Shared Desk
	X	-	-	-	-			
	Internal Circulation (Factor)	-	*35%*	*1,582*	554			
	Subtotal	-			**2,136**	ASF		

Continued Next Page

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Library Services Cont'd & Building Support

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
9.3	**Library Staff Support Areas**	-				1,250	1,875	
	Staff Breakroom	-	1	400	400			
	Staff Workroom		1	200	200			
	Public technology access – capital equipment for digital divid	-	1	300	300			
	Specialized preservation/archival storage	-	1	350	350			
	x	-	-	-	-			
	x	-	-	-	-			
	Internal Circulation (Factor)	-	*0%*	*1,250*	-			
	Subtotal	-			1,250	ASF		
10.0	**BUILDING SUPPORT**	-				1,000	1,500	
0.0	**Building Support**	-				1,000	1,500	
	Security Office	-	-	-	-			
	Waste / Recycling Collection Room	-	1	300	300			LEED 4.1
	Bicycle Facility (Shower, Changing Rm)	-	1	100	100			LEED 4.1
	Shipping & Receiving	-	1	200	200			
	Mail Room	-	-	-	-			
	Facility Storage -Capital Equipment	-	1	400	400			
	Storage: Building/Facility	-	1	400	400			
	Custodial Closets	-	2	36	72			
	Custodial Supplies Storage	-	1	200	200			
	X	-	-	-	-			
	Subtotal	-			1,672	ASF		

Continued Next Page

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Non-Assignable

SPACE PROGRAM

No.	Space / Room Type	PROGRAM SPACE NEEDS Patrons/ Seats	Unit/ Capacity	ASF/ Unit	ASF / Room/ Area	Proposed ASF	GSF	Notes
Continued								
11.0	**NON-ASSIGNABLE**	-				-	-	Included in GSF
11.1	**Non-Assignable Building Support**	-				-	-	
	Mechanical	-	-	-	-			
	Electrical	-	-	-	-			
	Telcom	-	-	-	-			
	Data / IDF / MDF	-	-	-	-			
	Elevator Machine Room	-	-	-	-			
	Restrooms	-	-	-	-			
	Restroom - Gender Neutral	-	-	-	-			
	Trash Enclosure	-	-	-	-			
	Loading Dock	-	-	-	-			
	Shafts	-	-	-	-			
11.2	**Vertical Circulation**	-				-	-	
	Interconnecting Stair	-	-	-	-			
	Egress Stair	-	-	-	-			
11.3	**Internal Circulation**	-				-	-	
	Internal Circulation (Path of Travel)	-	-	-	-			
	Subtotal	-			-	ASF		
	Subtotal	627 Seats				33,526 ASF	50,288 GSF	

Exclusions:

Outdoor opportunities (floor space, excluding park/garden areas)
Parking
Drive-through Book-Drop

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- Available Square Footage
  - Location 1
  - Location 2
  - Location 3

Location 1



Existing – 33,500 GSF
Available – 15,900 GSF
Possible – 48,400 GSF

Location 2 – 1st Floor



Location 2 – 2nd Floor



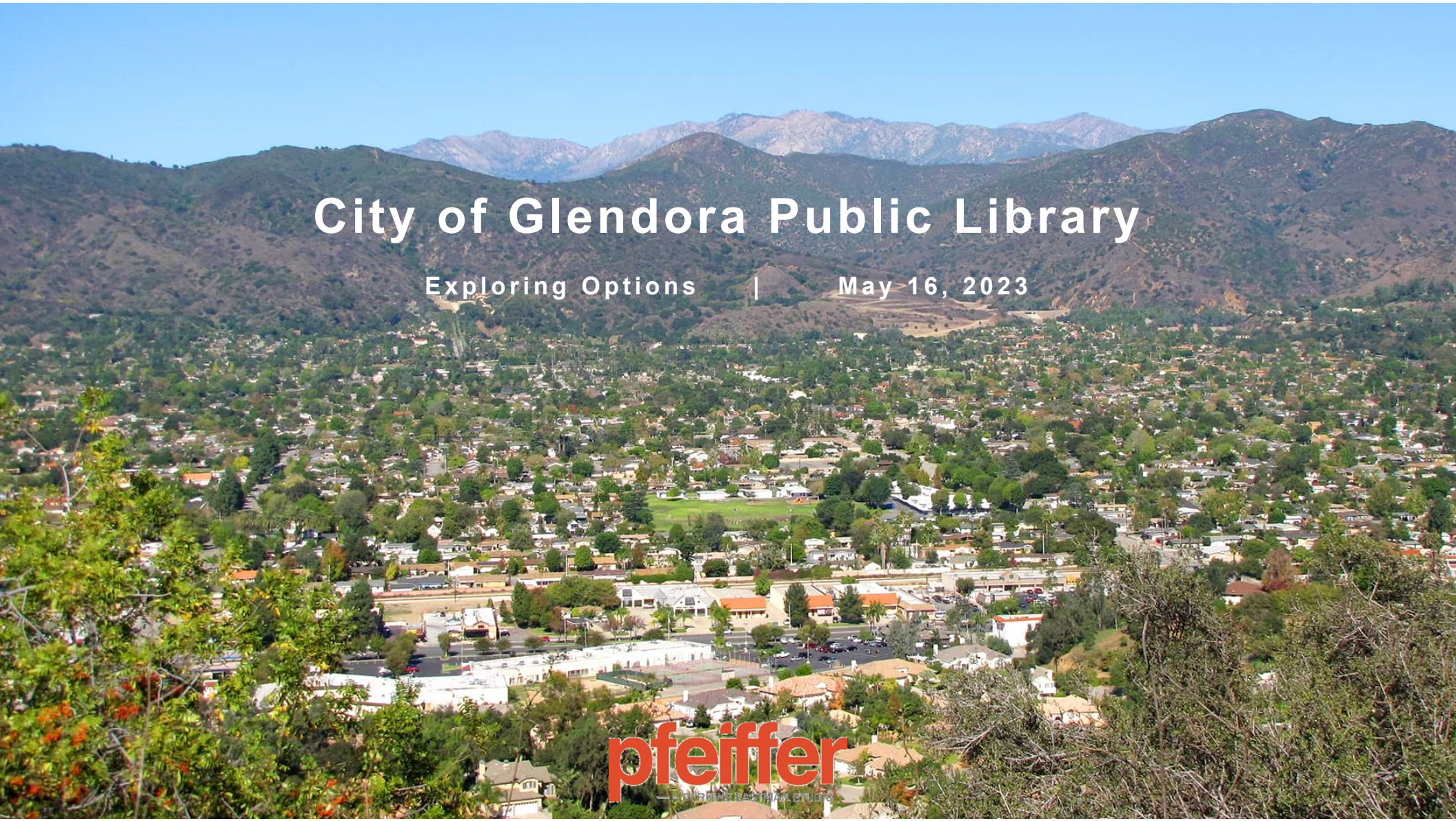
Existing – 33,500 GSF
Available – 15,900 GSF (1st)
Available – 15,900 GSF (2nd)
Possible – 49,400 to 65,300 GSF

Location 3 – 1st Floor



Location 3 – 2nd Floor

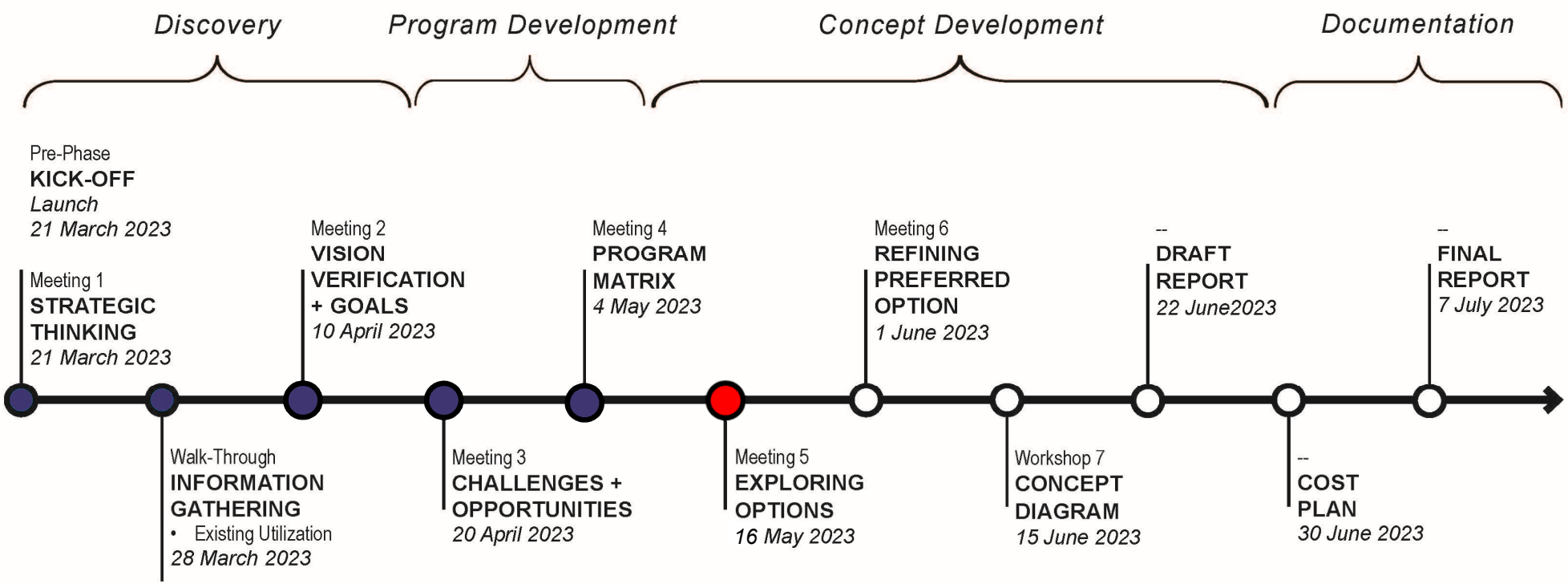



City of Glendora Public Library
Exploring Options | May 16, 2023
pfeiffer

Today

- Welcome / Process
- Exploring Options
- Discussion
- Next Steps

Process


Discovery
Program Development
Concept Development
Documentation
Pre-Phase
KICK-OFF
Launch
21 March 2023
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STRATEGIC THINKING
21 March 2023
Walk-Through
INFORMATION GATHERING
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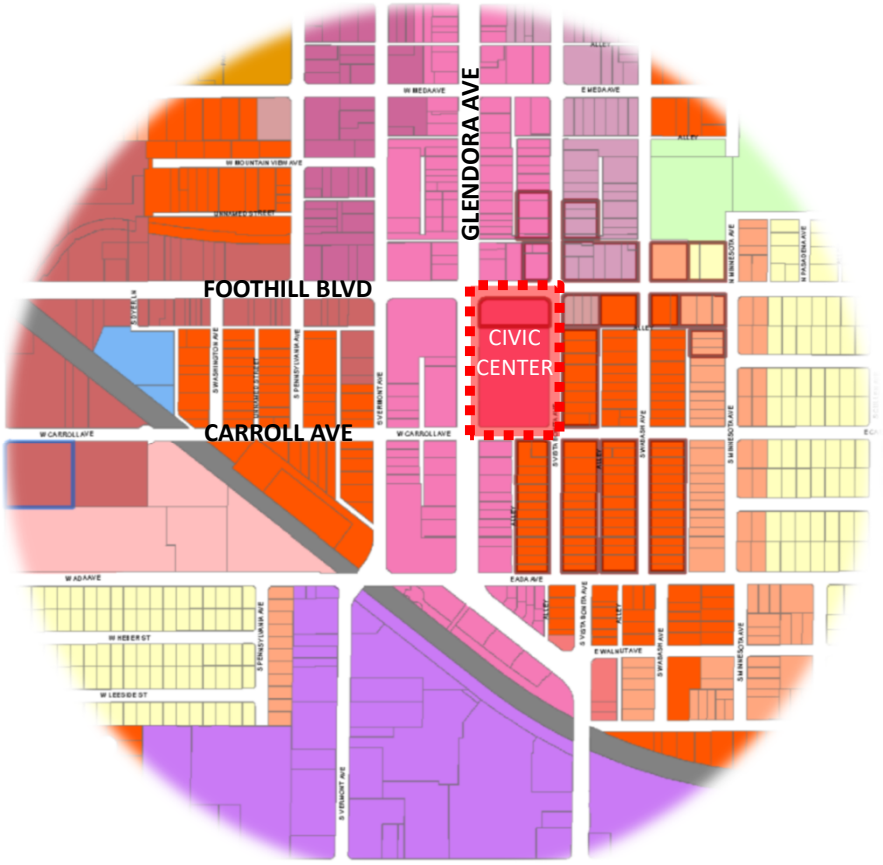
zoning code analysis



City of Glendora
Zoning Map

Zoning :	**Civic Center Area Plan; T-5 Village Core**
Land Use Designation:	**CCAP-T5**
Setbacks Requirements:	***None**
Maximum Height:	**45’ + 5’ for additional architectural features**
Maximum Stories:	**3 Stories**

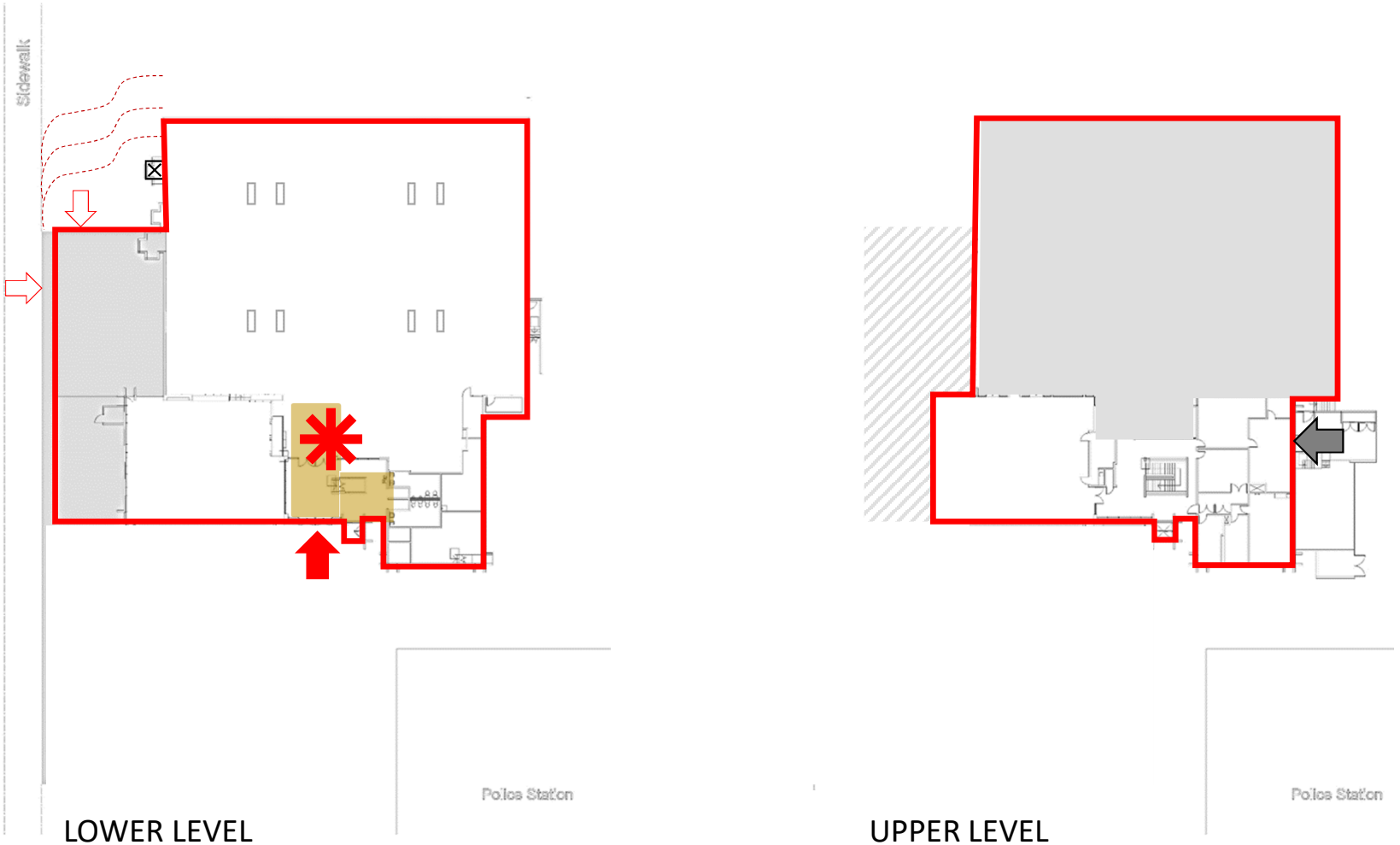
**Properties Fronting on Glendora Avenue*

Location 1

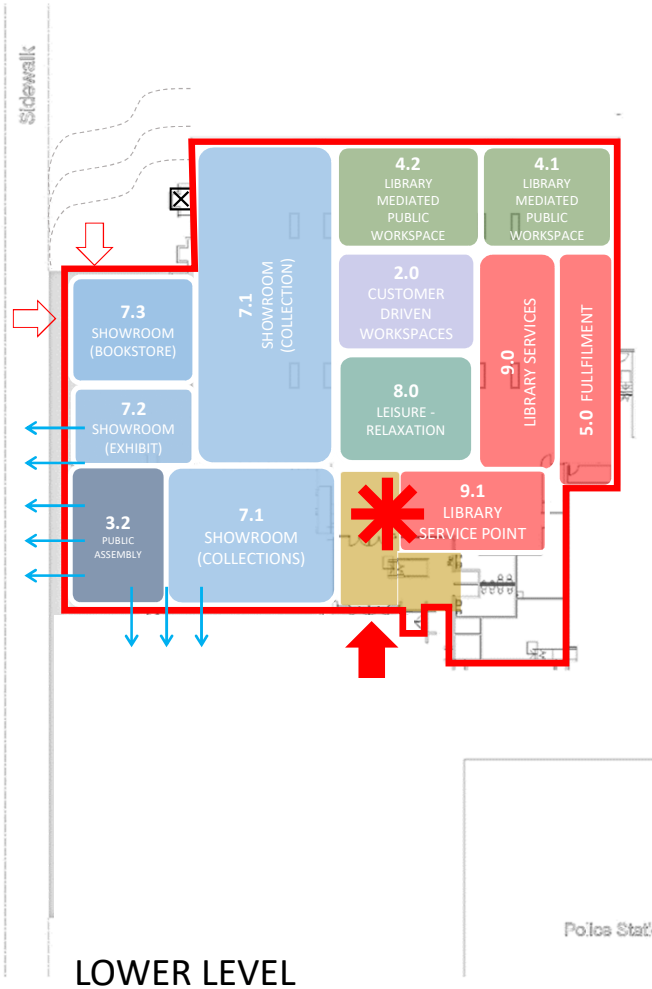
Presented May 4, 2023



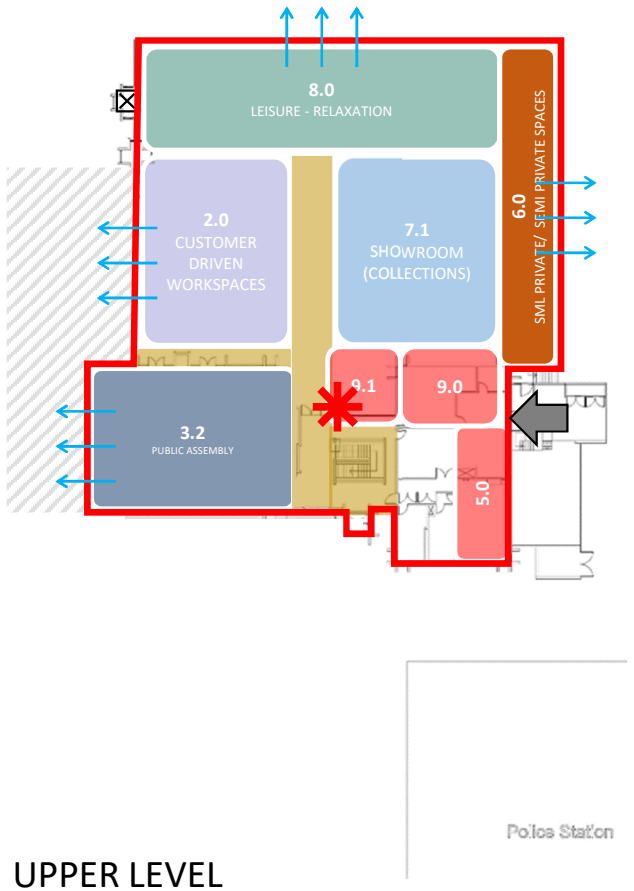
Location 1- Scenario A



Location 1- Scenario A.1

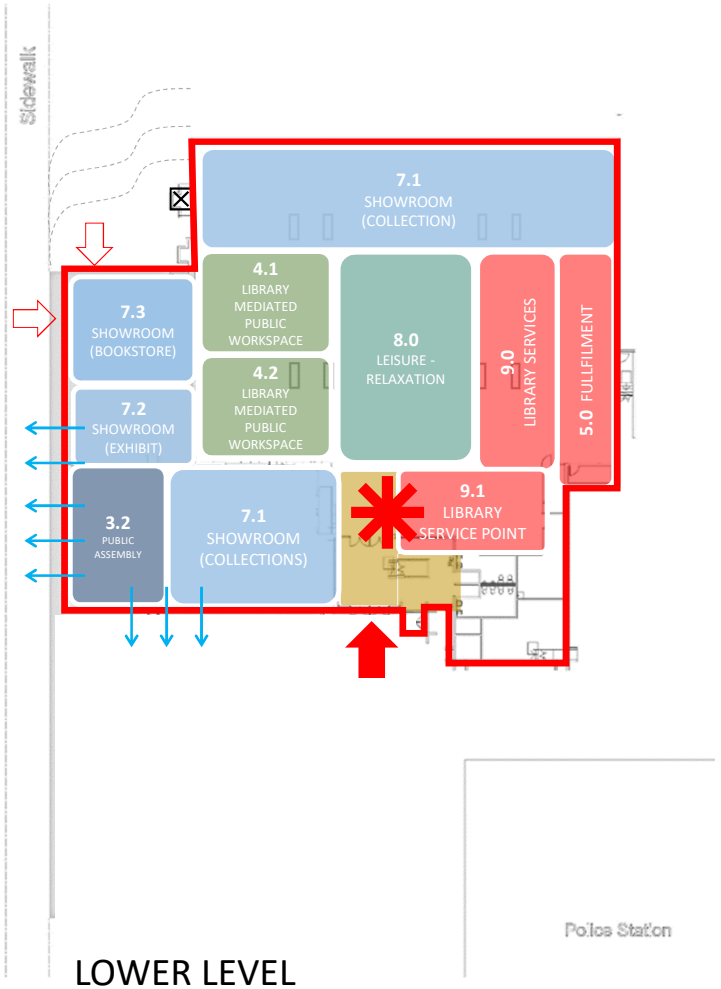


LOWER LEVEL



UPPER LEVEL

Location 1- Scenario A.2



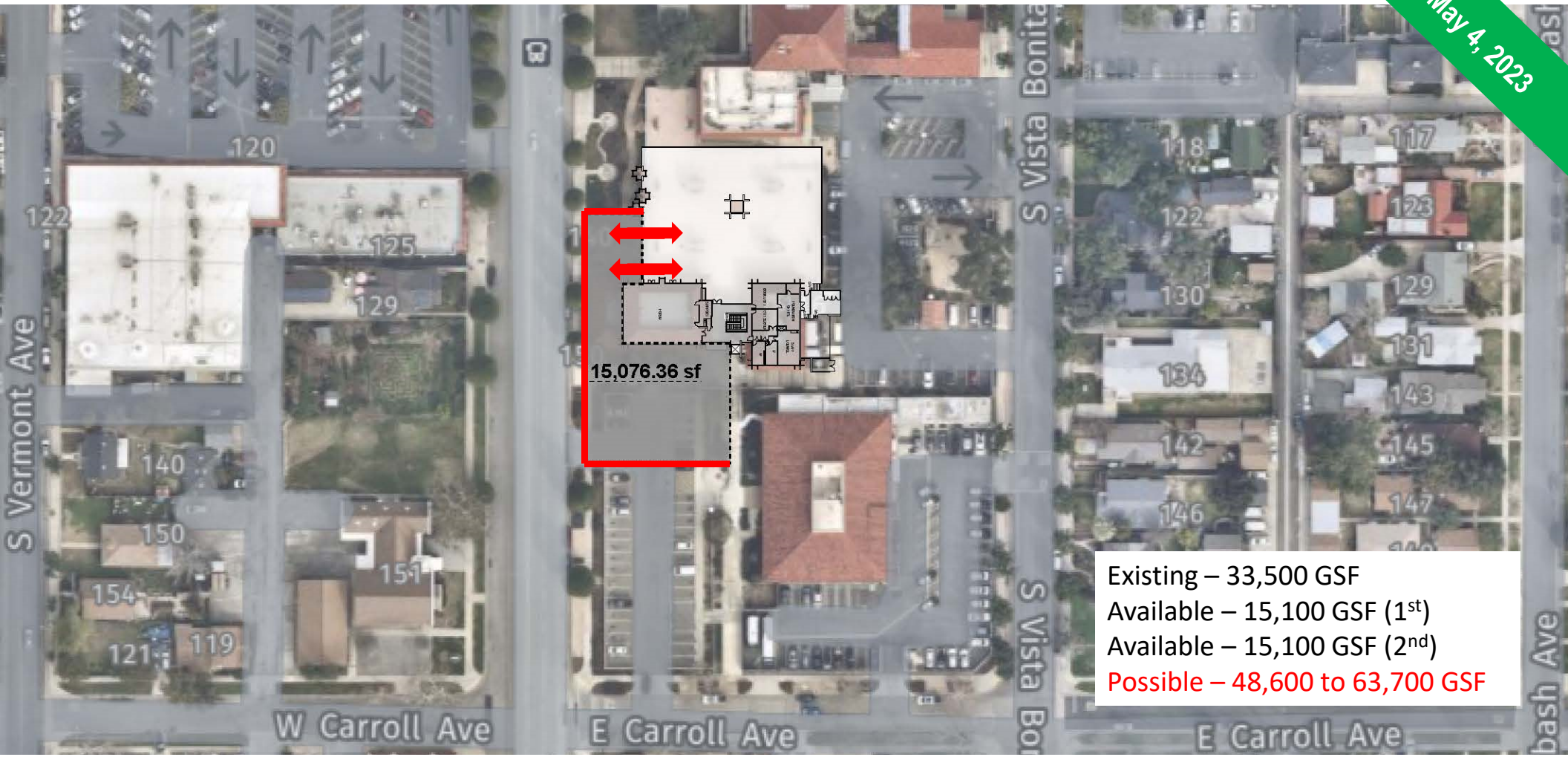
LOWER LEVEL



UPPER LEVEL

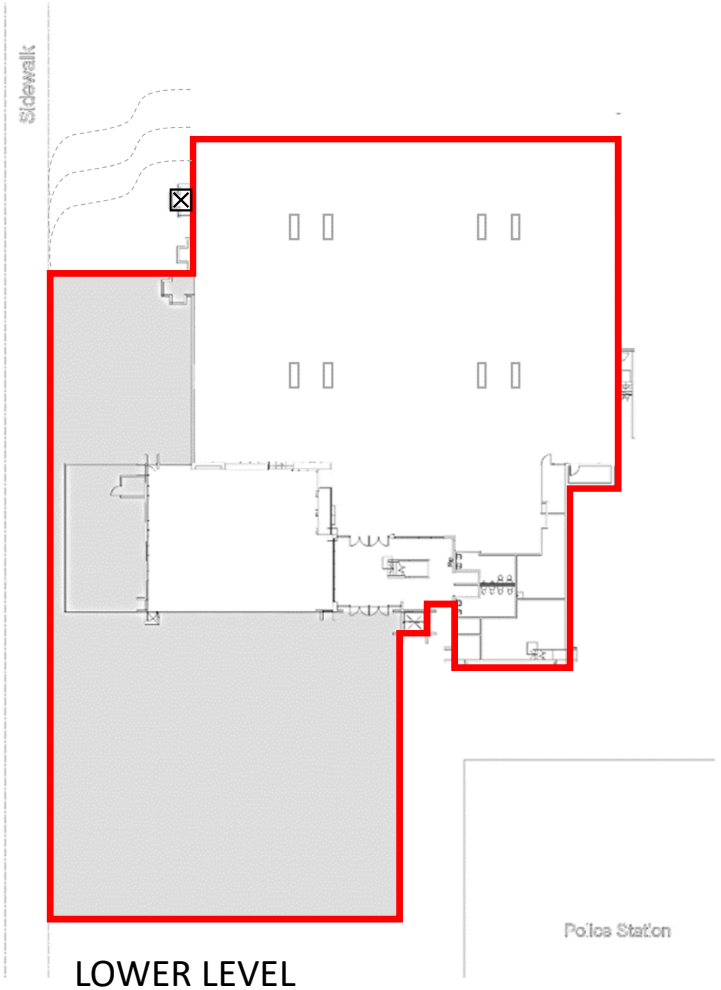
Location 3

Presented May 4, 2023

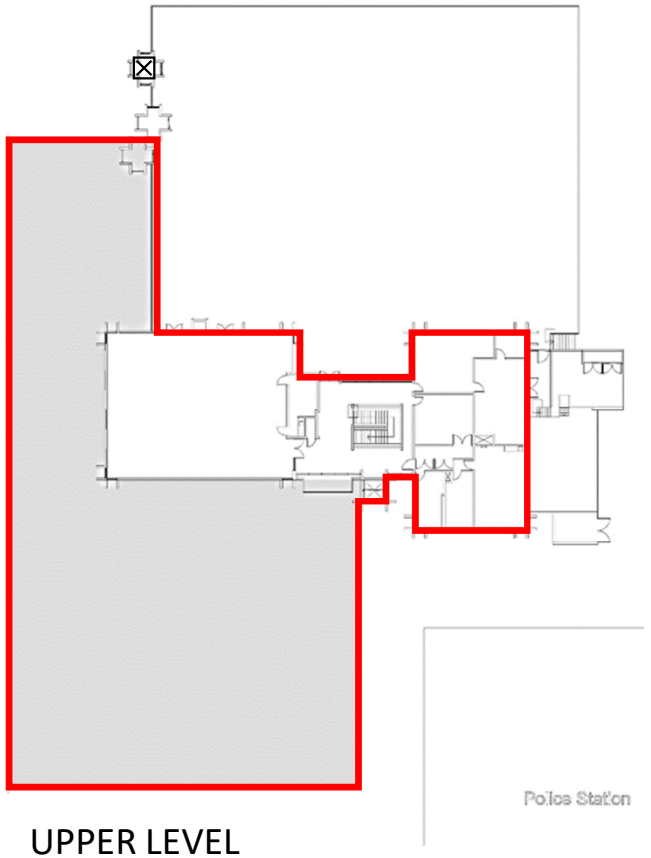


Existing – 33,500 GSF
Available – 15,100 GSF (1st)
Available – 15,100 GSF (2nd)
Possible – 48,600 to 63,700 GSF

Location 3



LOWER LEVEL

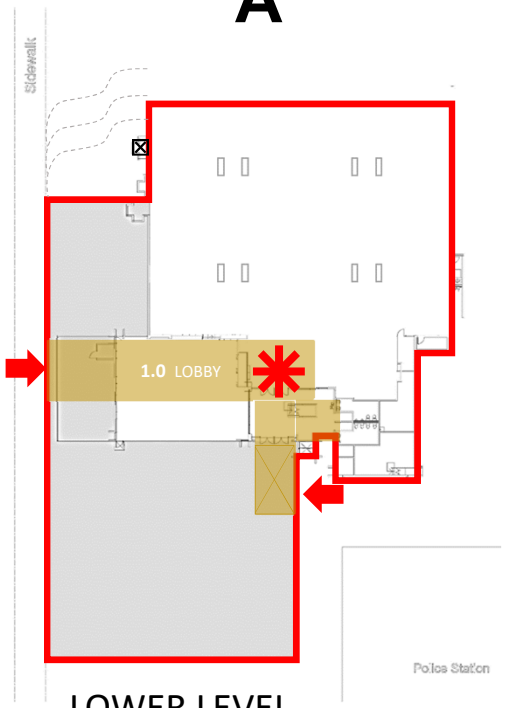


UPPER LEVEL

Existing
Expansion

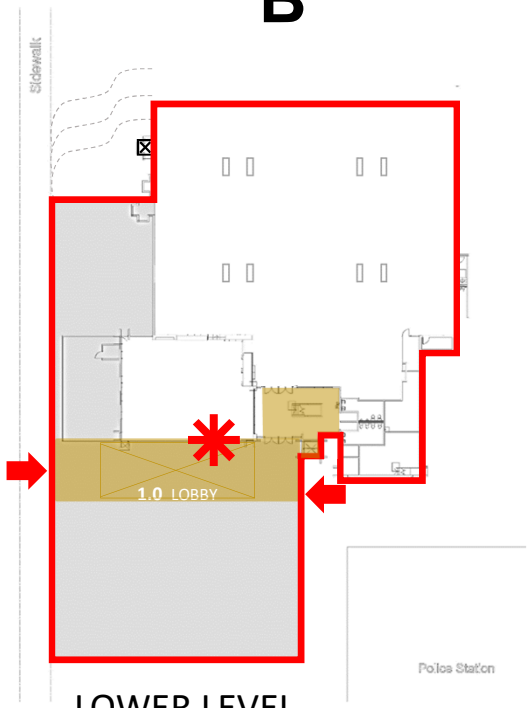
Location 3 - Scenarios

A



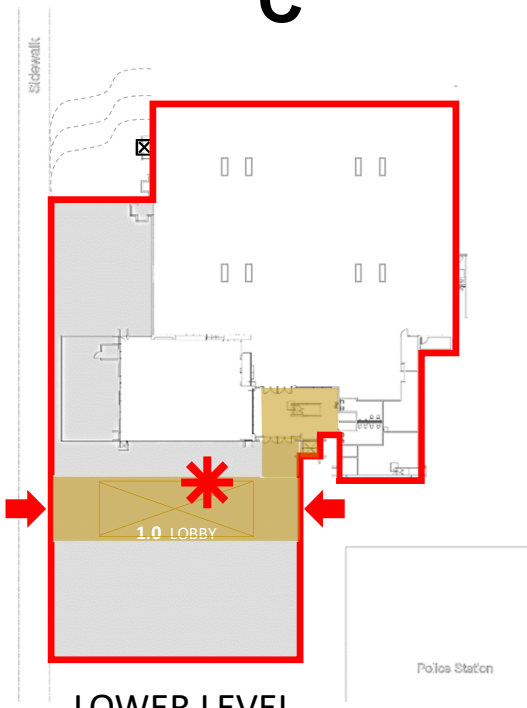
LOWER LEVEL

B



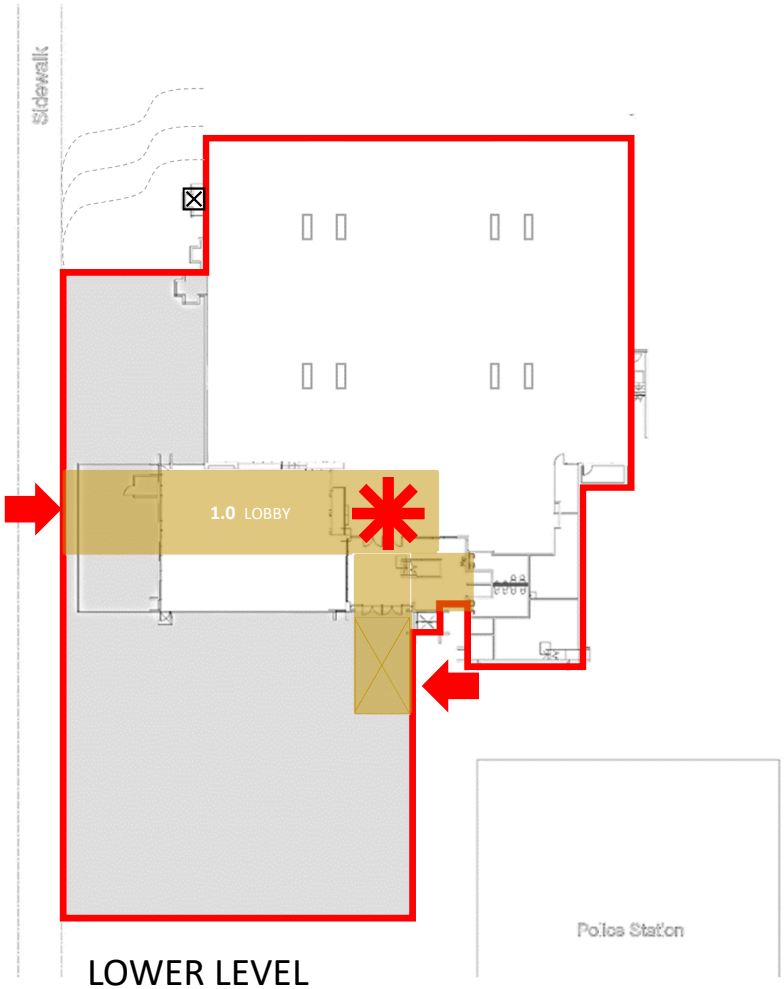
LOWER LEVEL

C

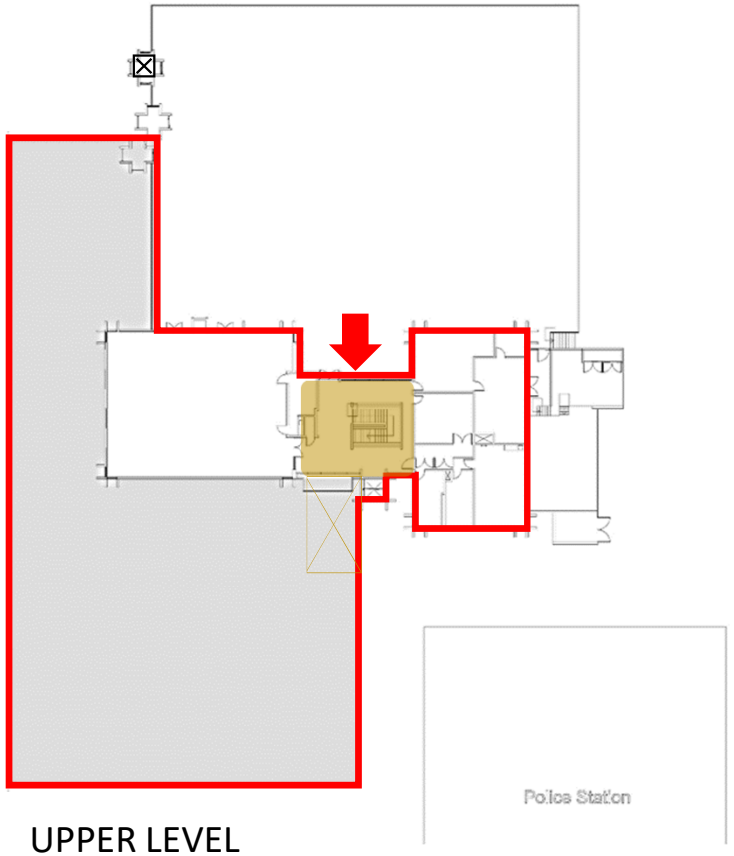


LOWER LEVEL

Location 3 - Scenario A

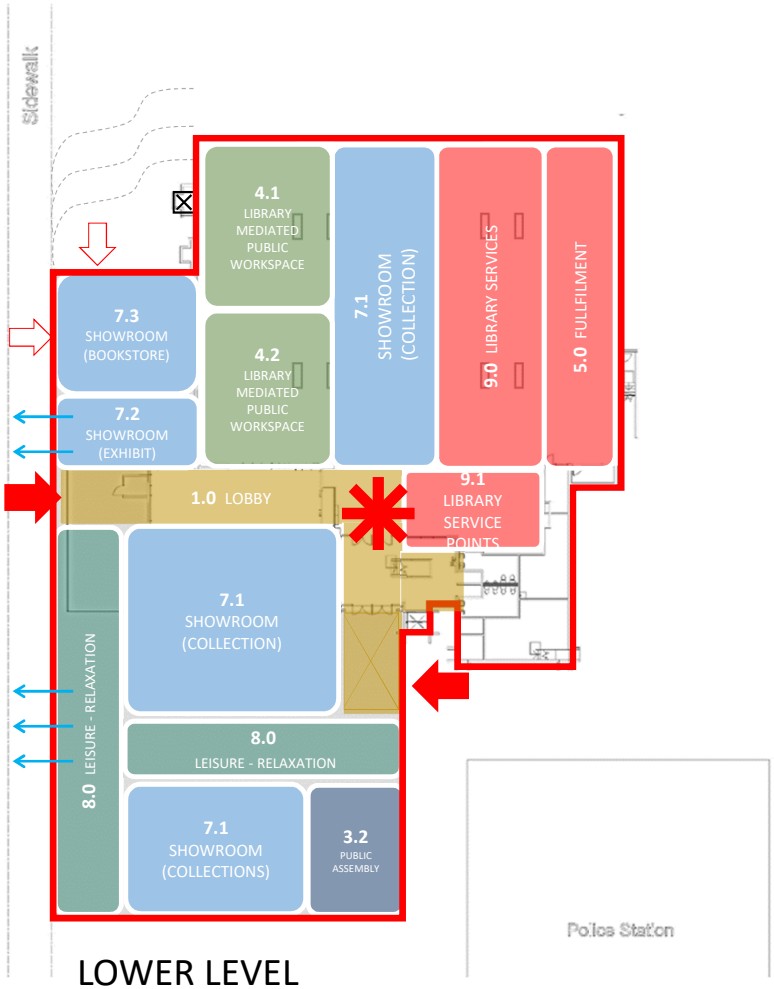


LOWER LEVEL

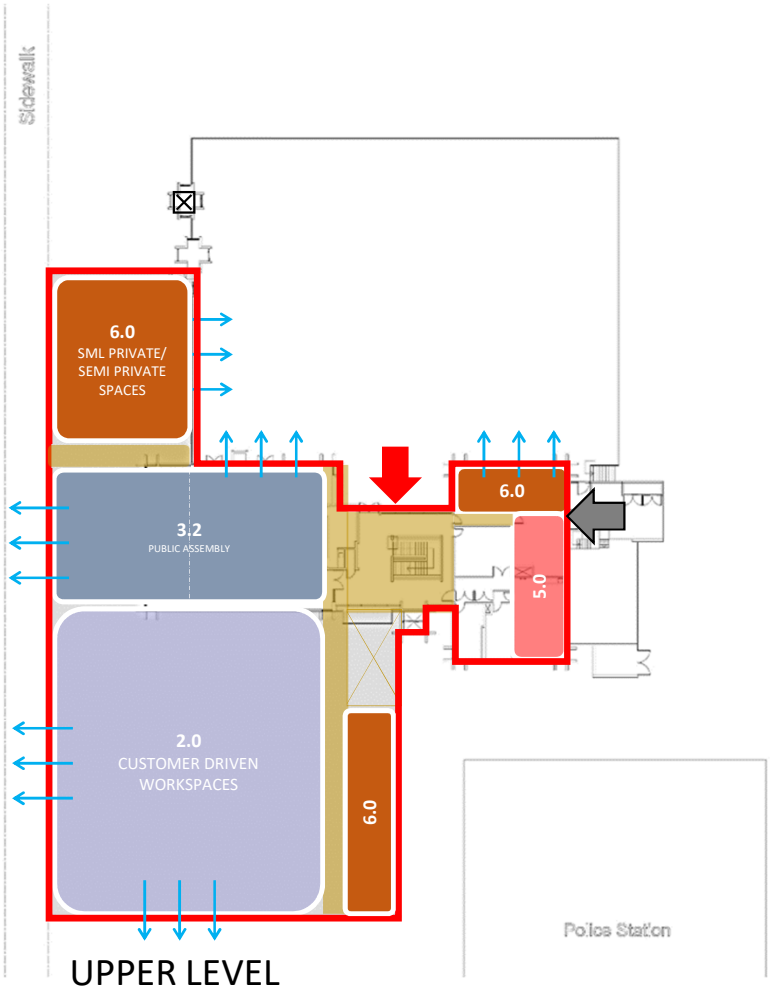


UPPER LEVEL

Location 3 - Scenario A.1

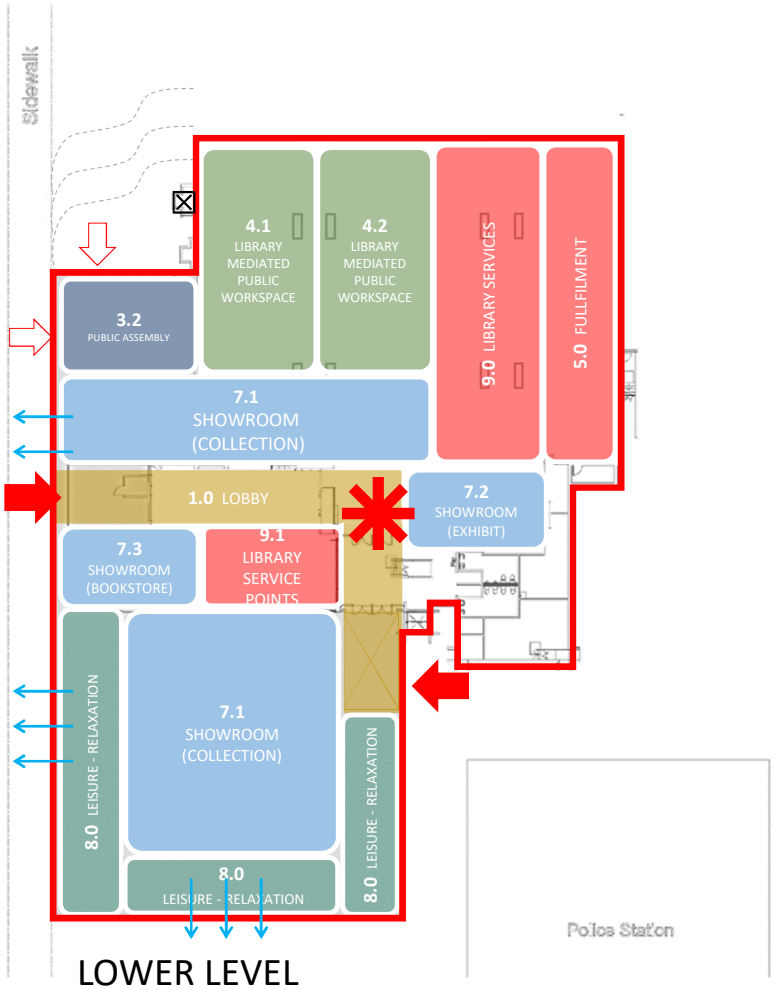


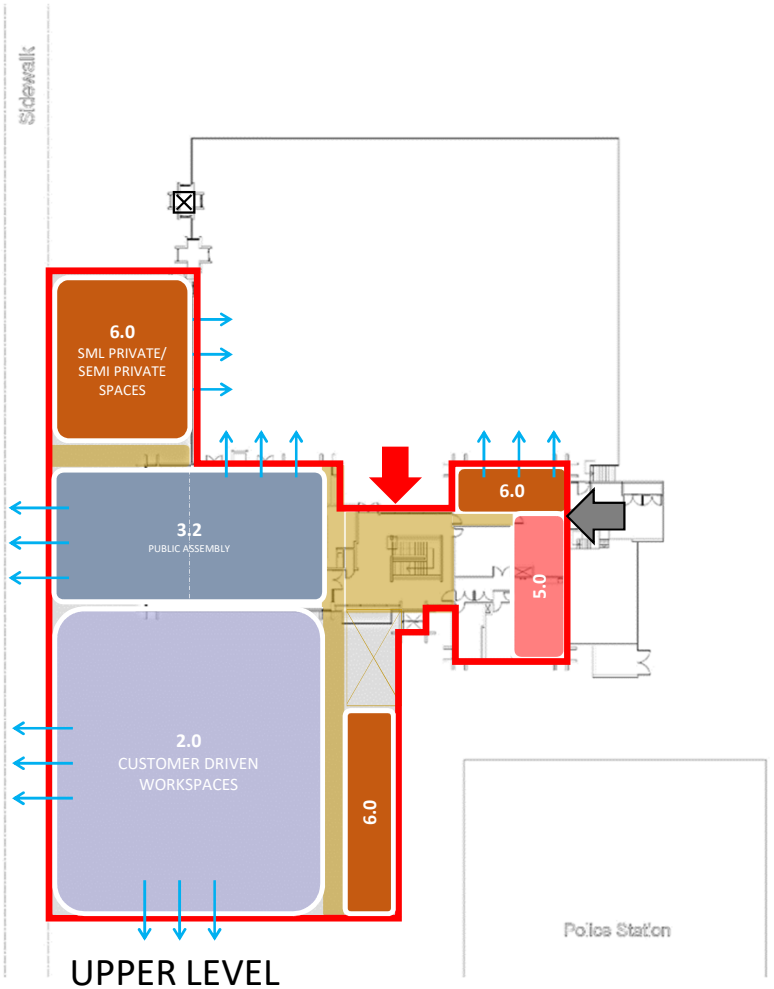
LOWER LEVEL



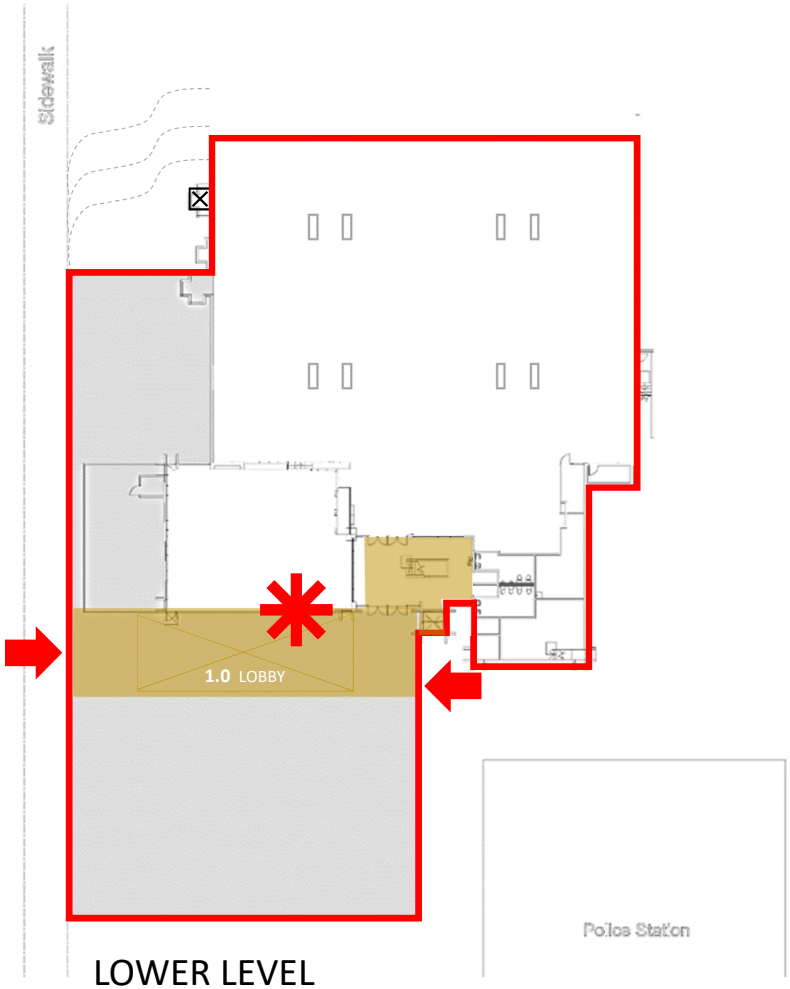
UPPER LEVEL

Location 3 - Scenario A.2

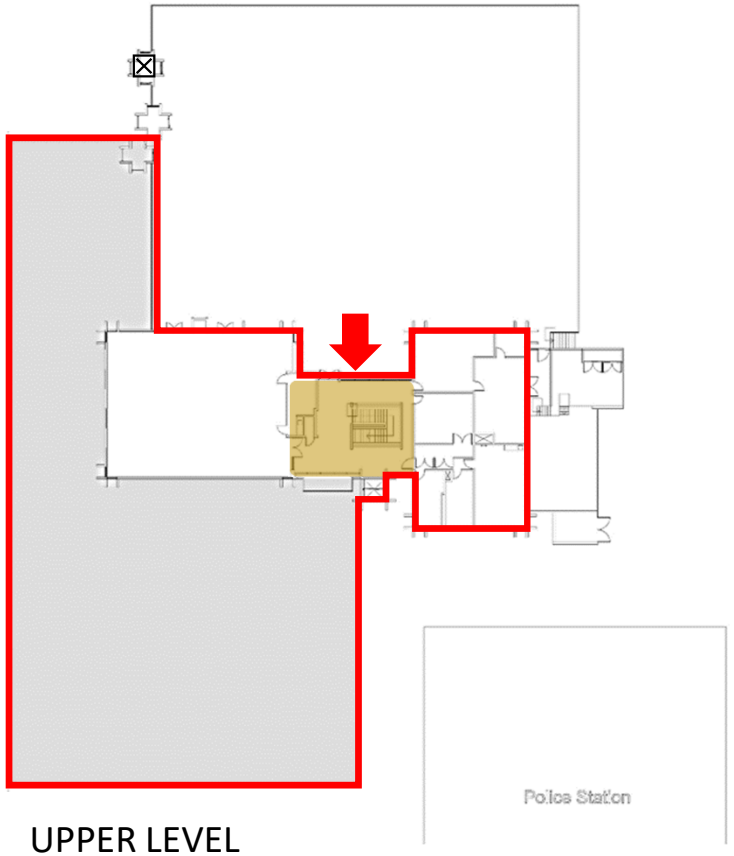




Location 3 - Scenario B



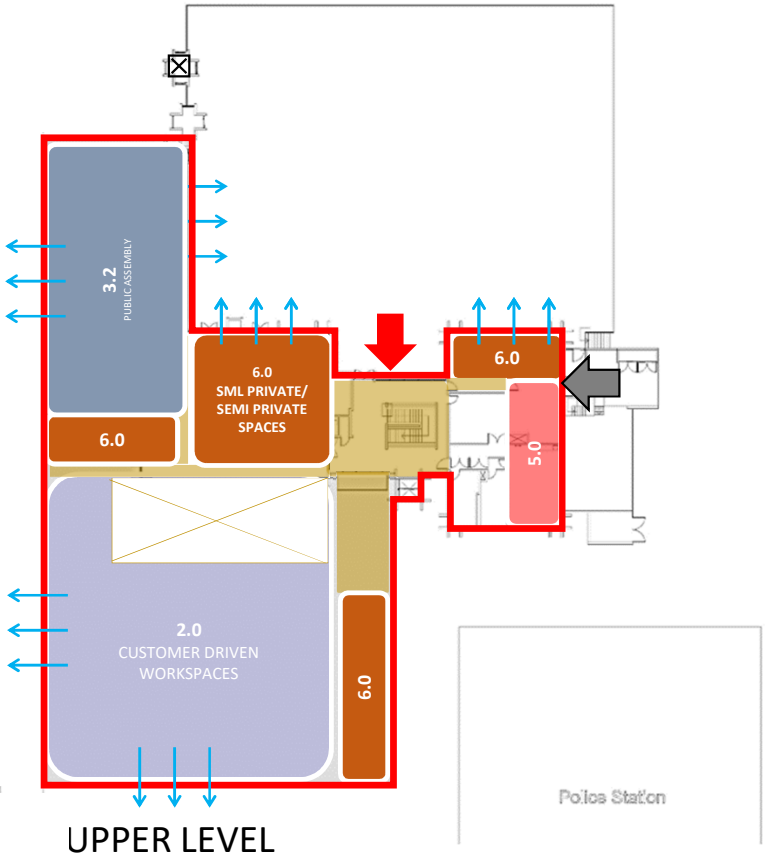
LOWER LEVEL



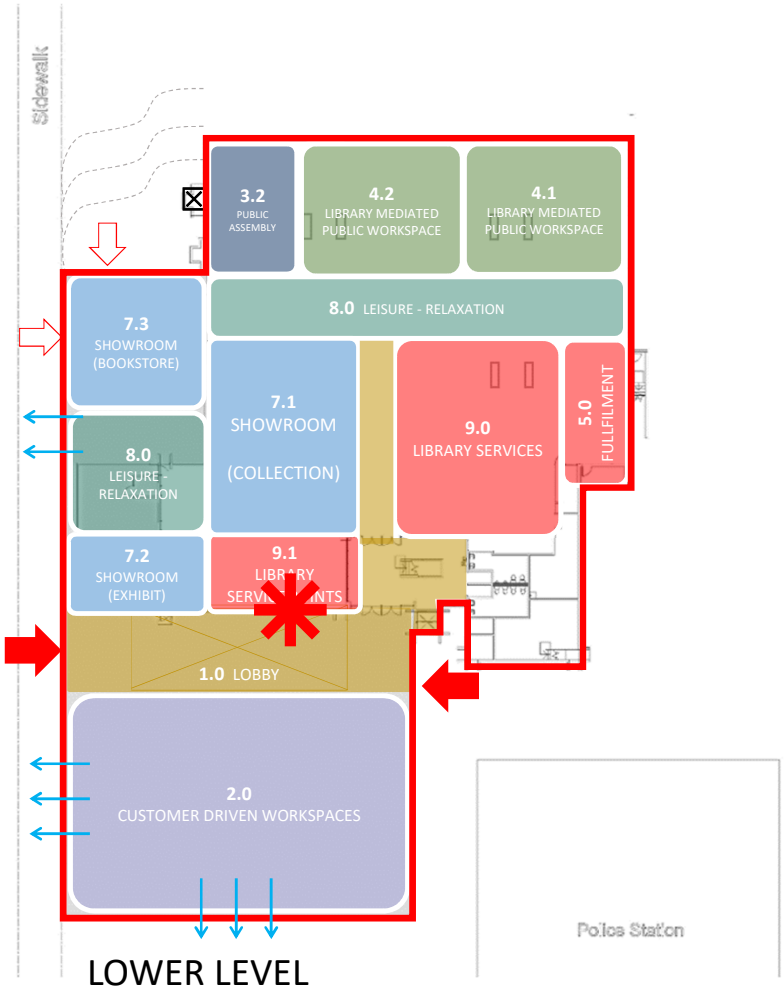
UPPER LEVEL

Location 3 - Scenario B.1

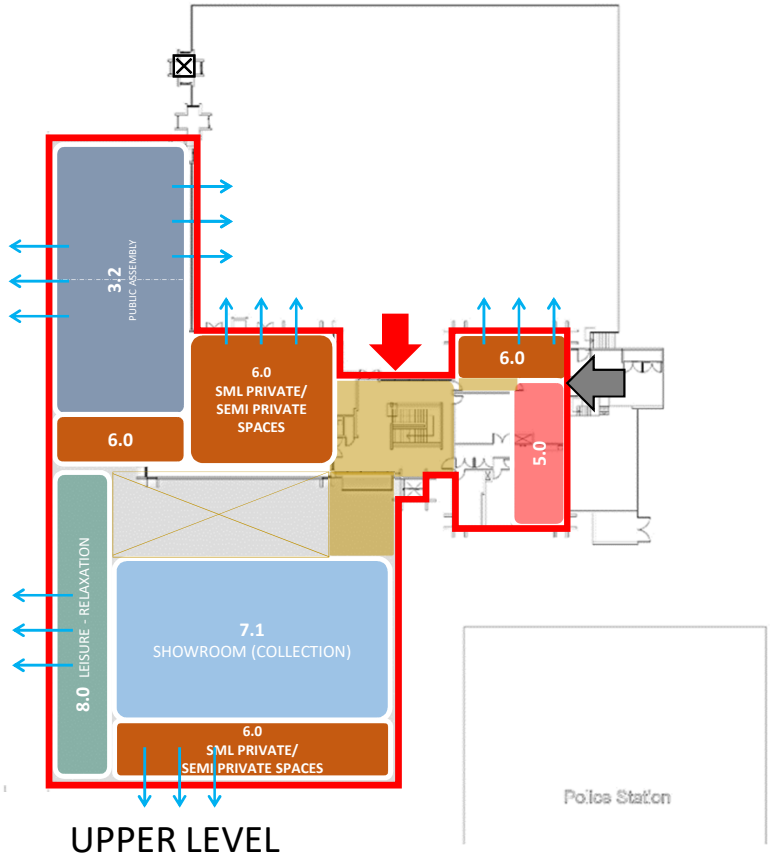




Location 3 - Scenario B.2



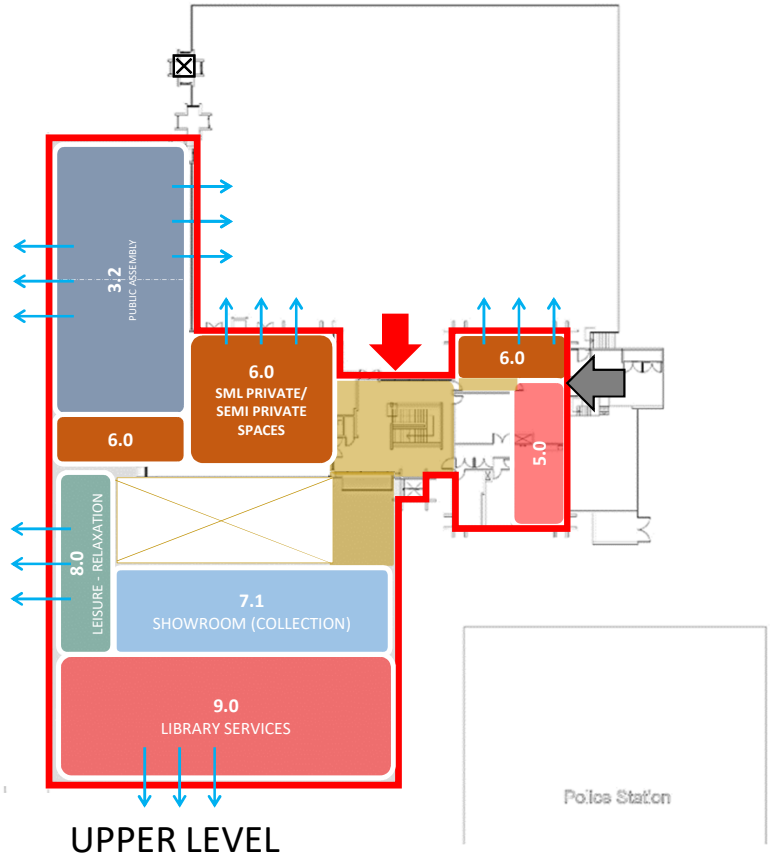
LOWER LEVEL



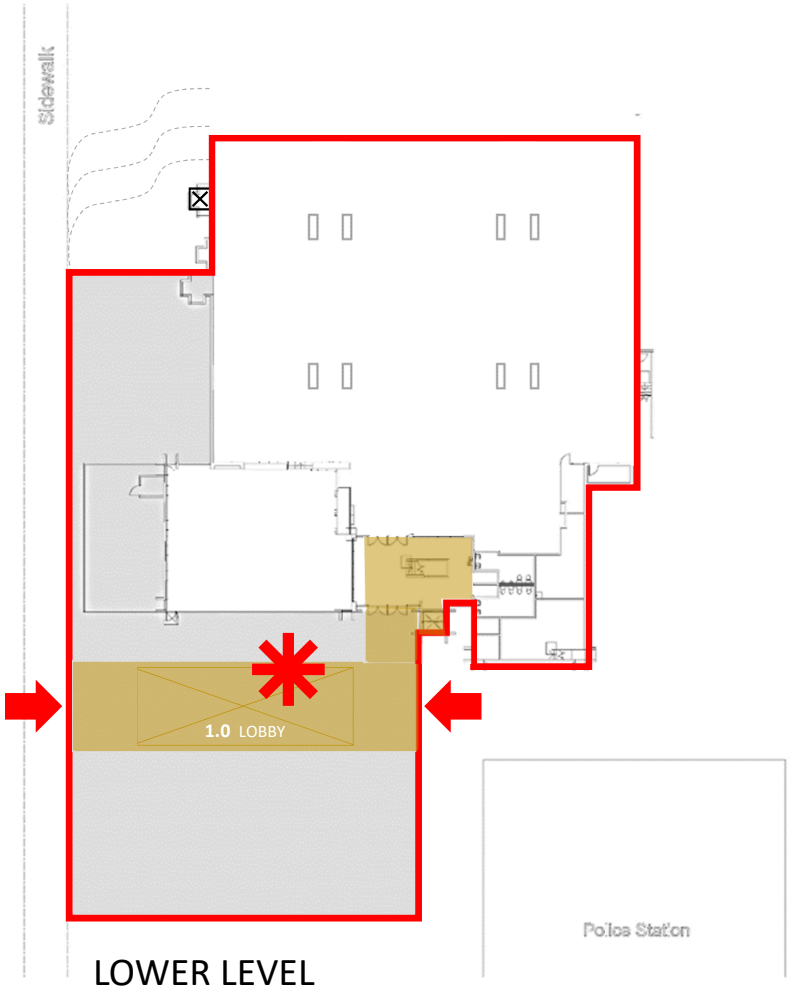
UPPER LEVEL

Location 3 - Scenario B.3

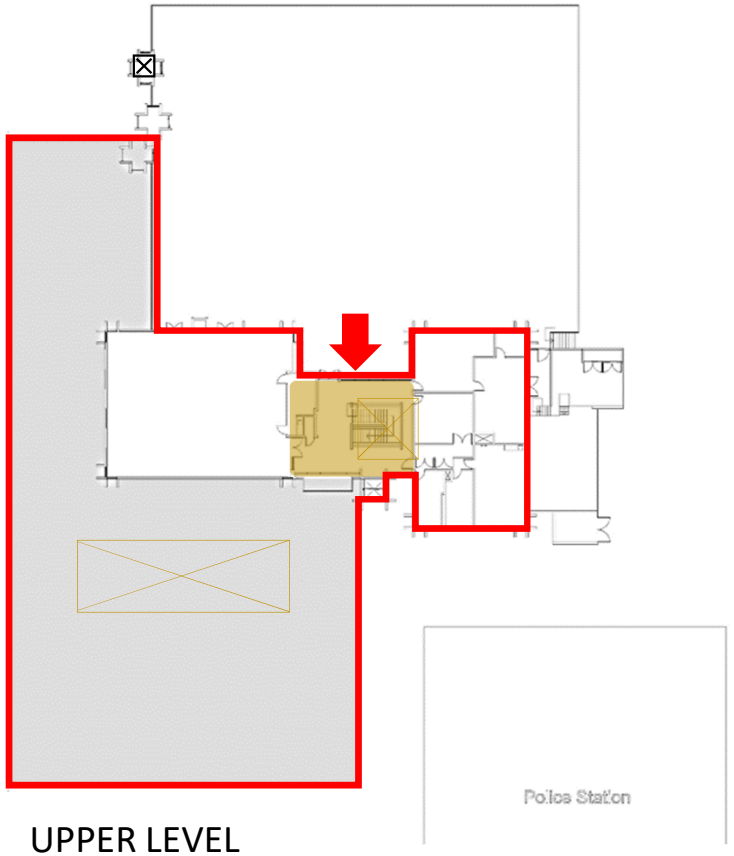




Location 3 - Scenario C



LOWER LEVEL

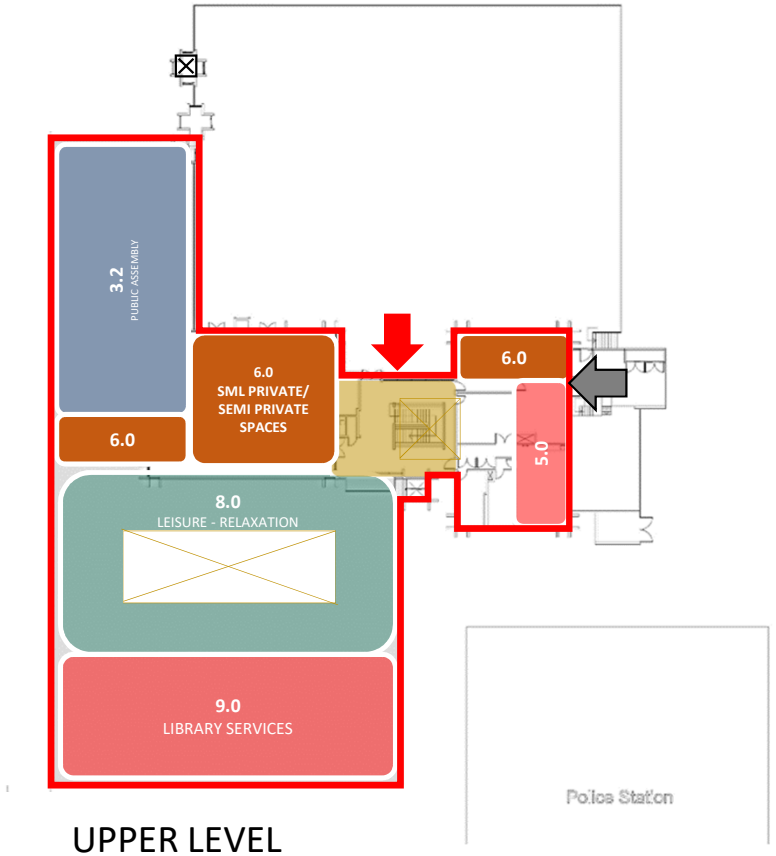


UPPER LEVEL

Location 3 - Scenario C.1

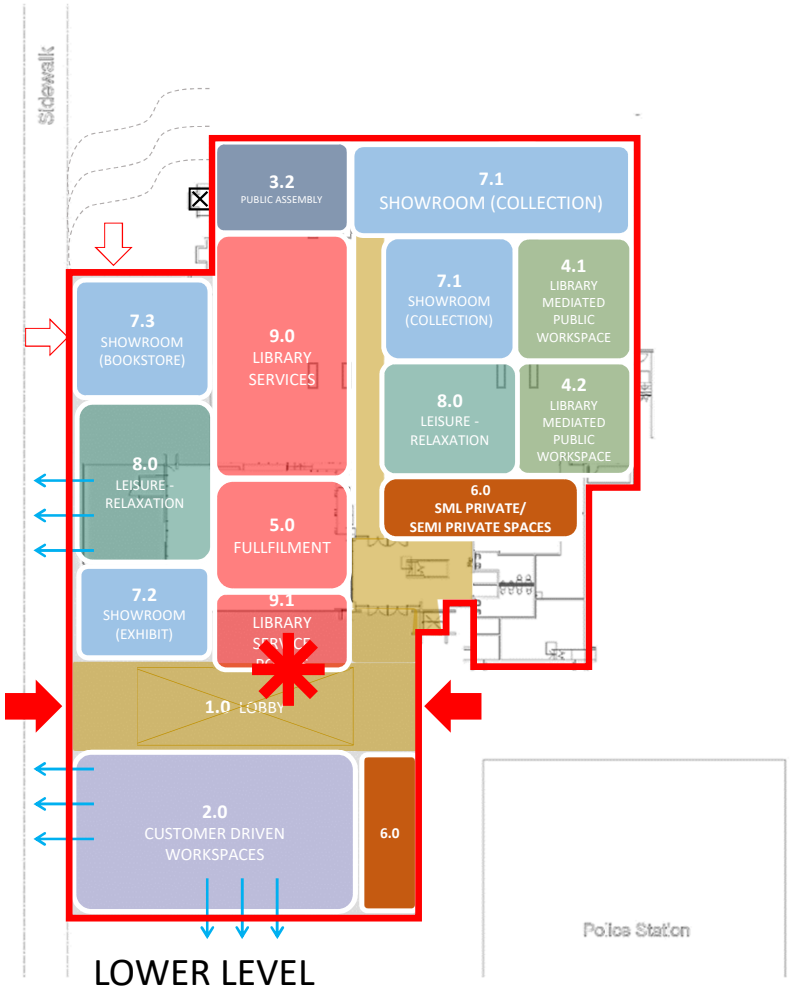


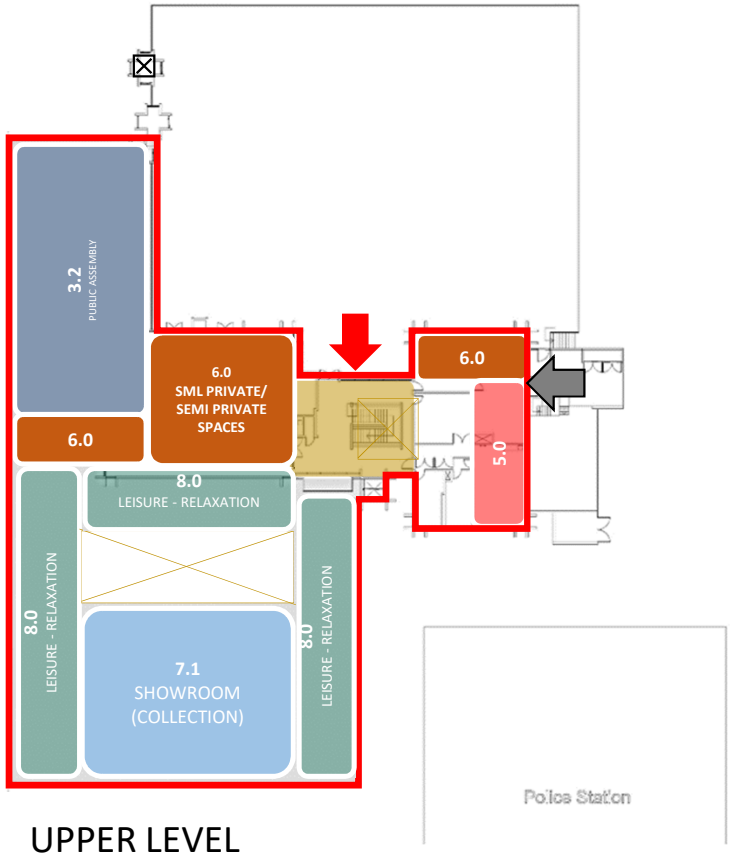
LOWER LEVEL

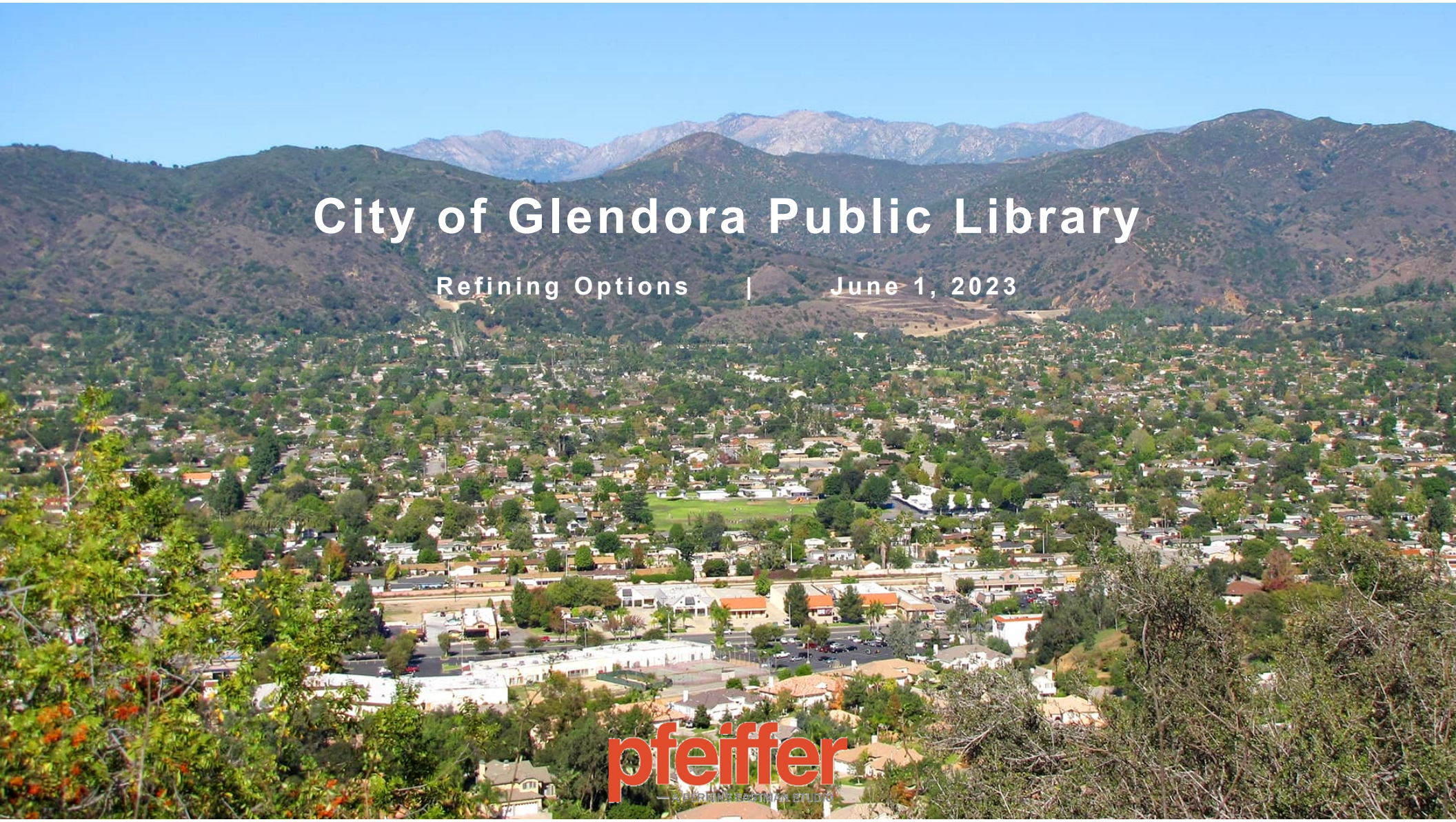


UPPER LEVEL

Location 3 - Scenario C.2







City of Glendora Public Library

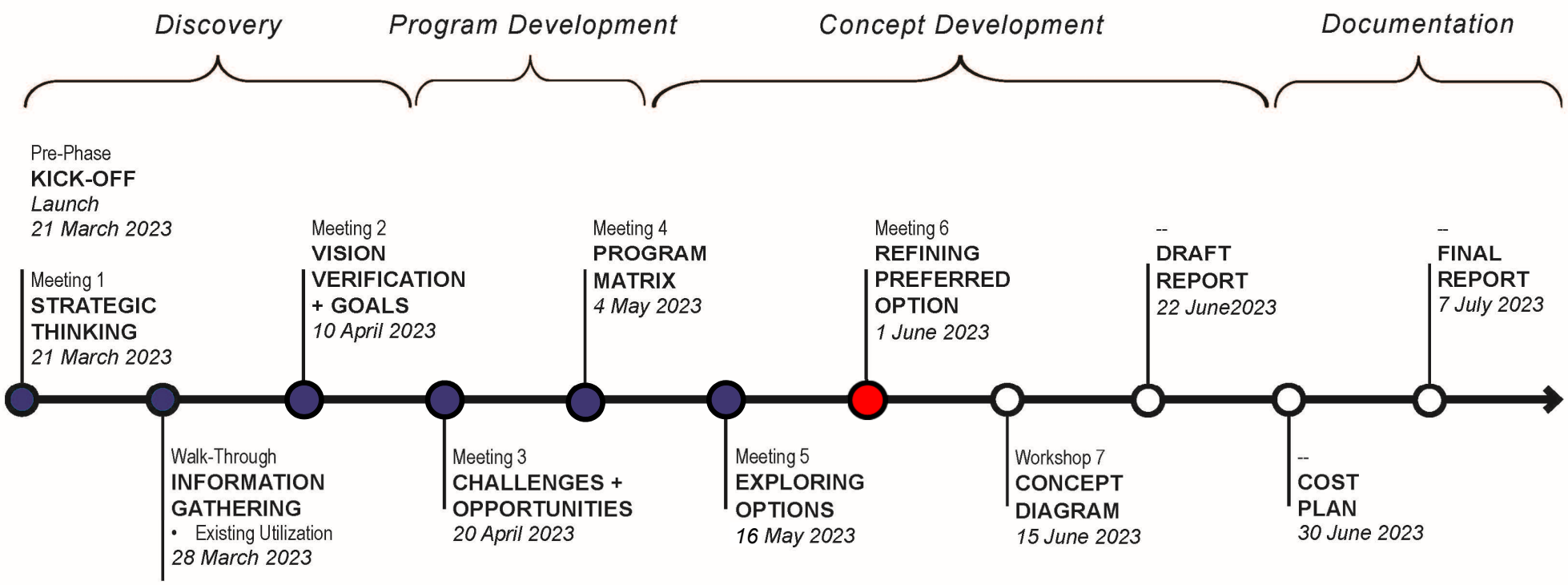
Refining Options | June 1, 2023

pfeiffer
A PERKINS EASTMAN STUDIO

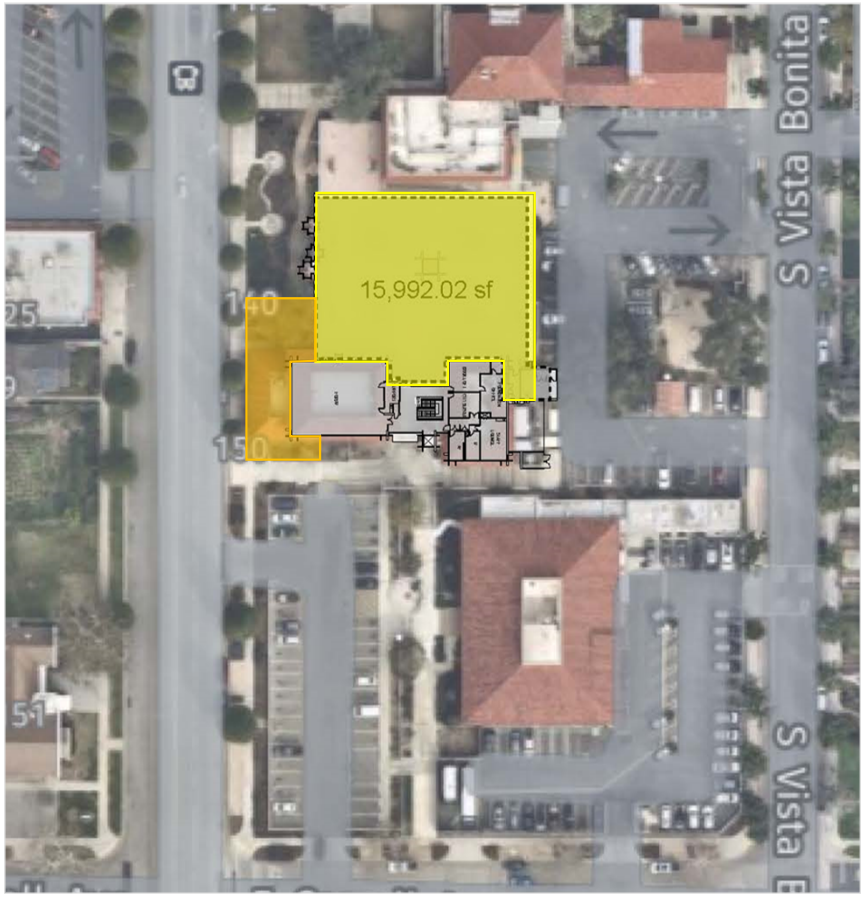
Today

- Welcome / Process
- Refining Options
- Discussion
- Next Steps

Process


Discovery
Program Development
Concept Development
Documentation
Pre-Phase
KICK-OFF
Launch
21 March 2023
Meeting 1
STRATEGIC THINKING
21 March 2023
Walk-Through
INFORMATION GATHERING
• Existing Utilization
28 March 2023
Meeting 2
VISION VERIFICATION + GOALS
10 April 2023
Meeting 3
CHALLENGES + OPPORTUNITIES
20 April 2023
Meeting 4
PROGRAM MATRIX
4 May 2023
Meeting 5
EXPLORING OPTIONS
16 May 2023
Meeting 6
REFINING PREFERRED OPTION
1 June 2023
Workshop 7
CONCEPT DIAGRAM
15 June 2023
--
DRAFT REPORT
22 June2023
--
COST PLAN
30 June 2023
--
FINAL REPORT
7 July 2023

Refining the Options

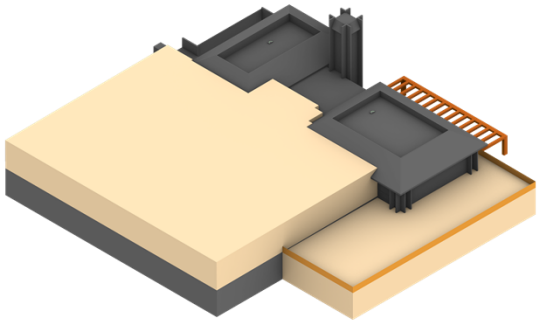


Option 1 - over the deck



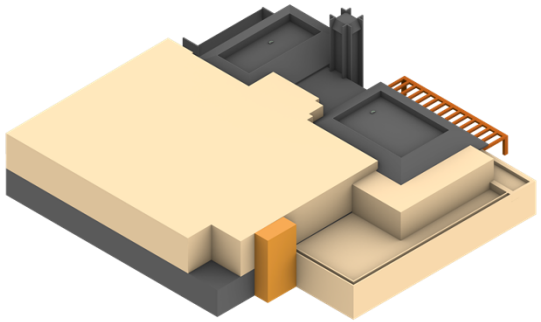
Option 2 – towards Glendora Ave

Option 1 studies at-a-glance



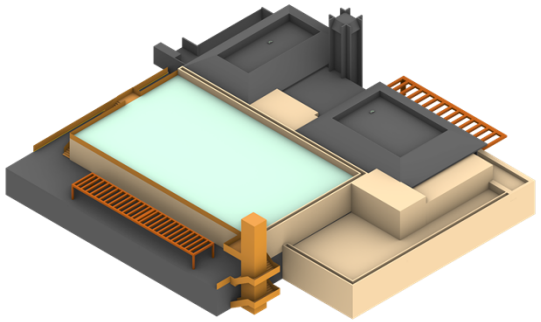
Base

48,924 SF



Terrace

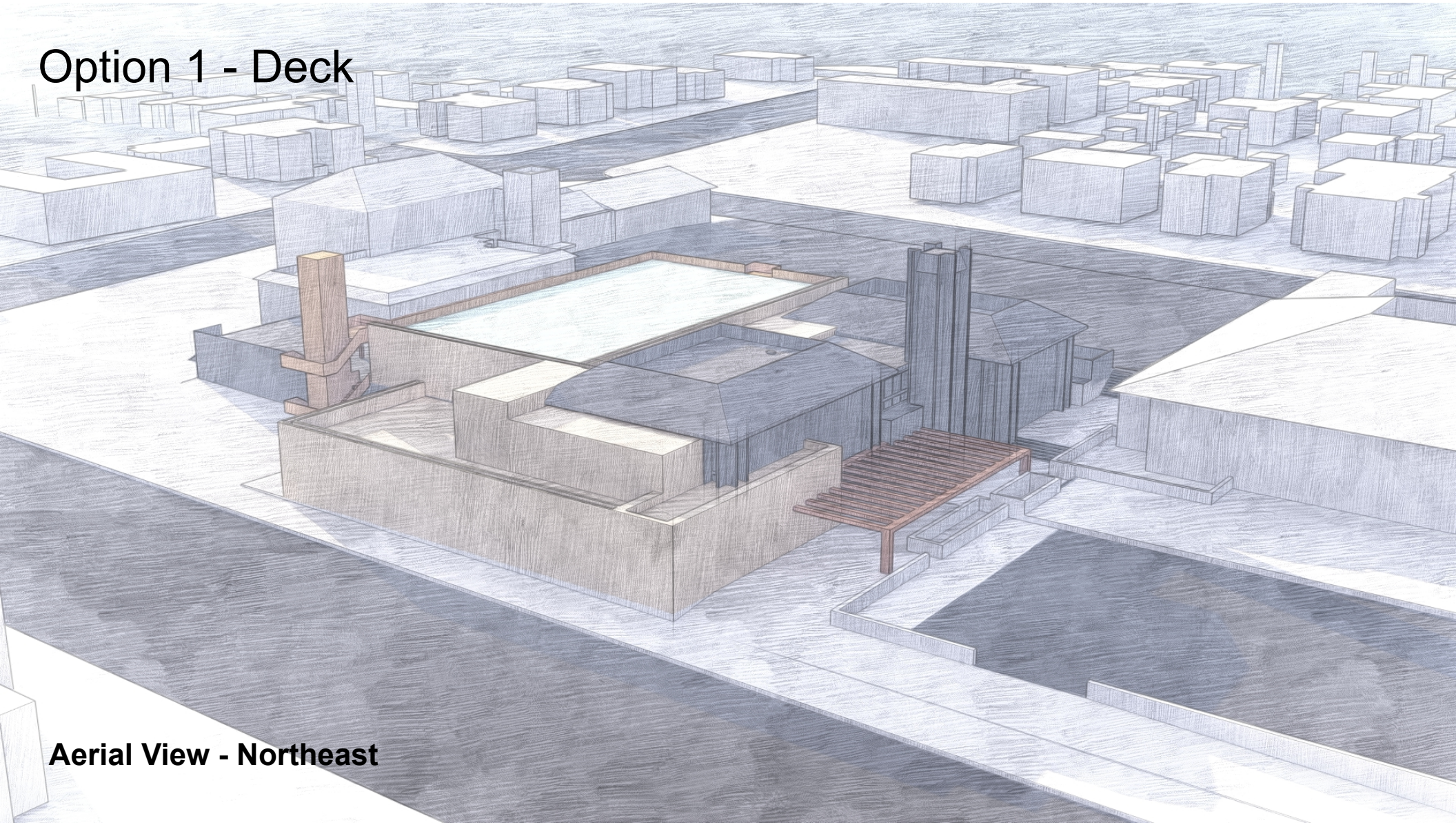
49,570 SF



Deck

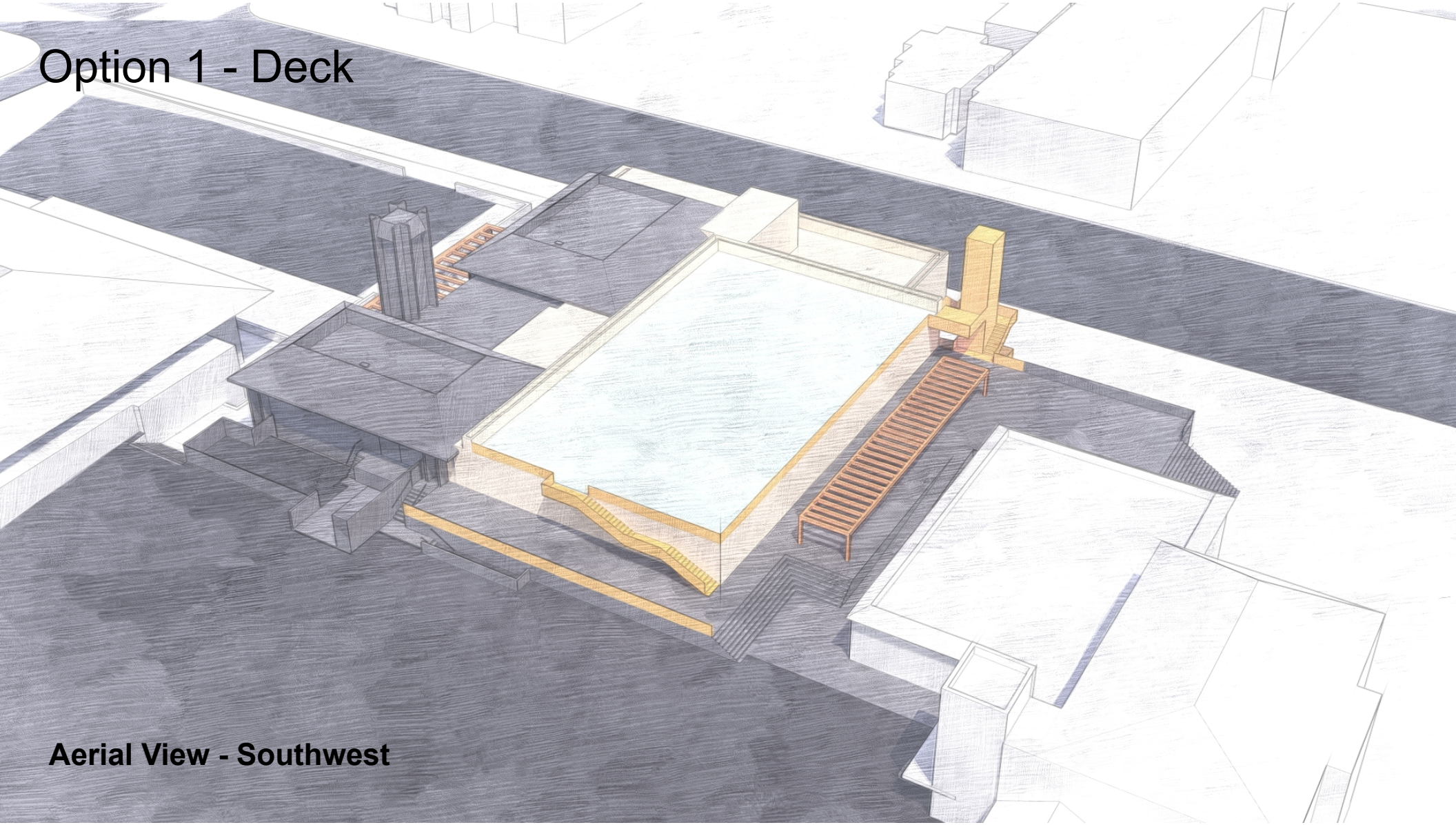
45,091 GSF

Option 1 - Deck



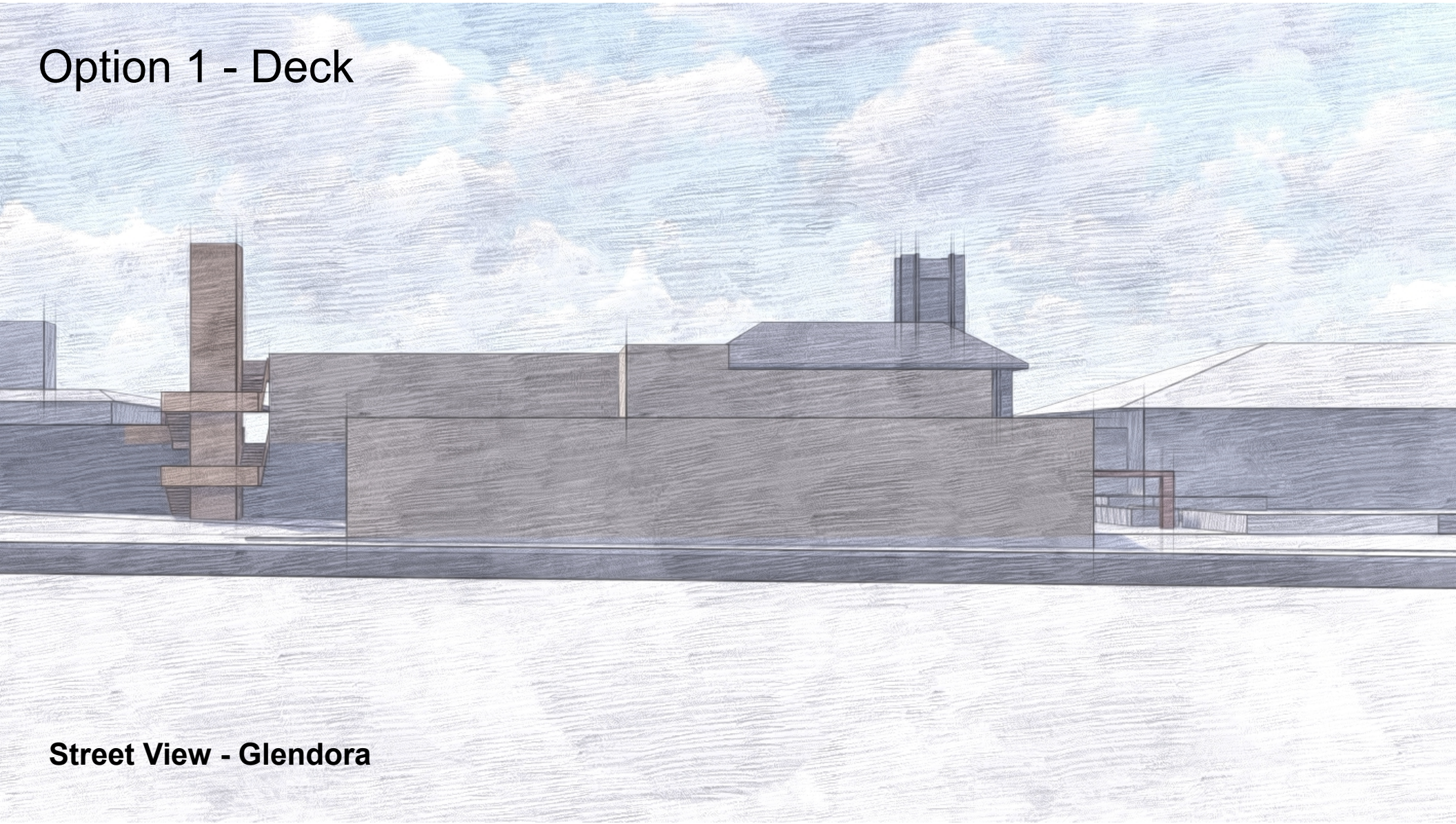
Aerial View - Northeast

Option 1 - Deck



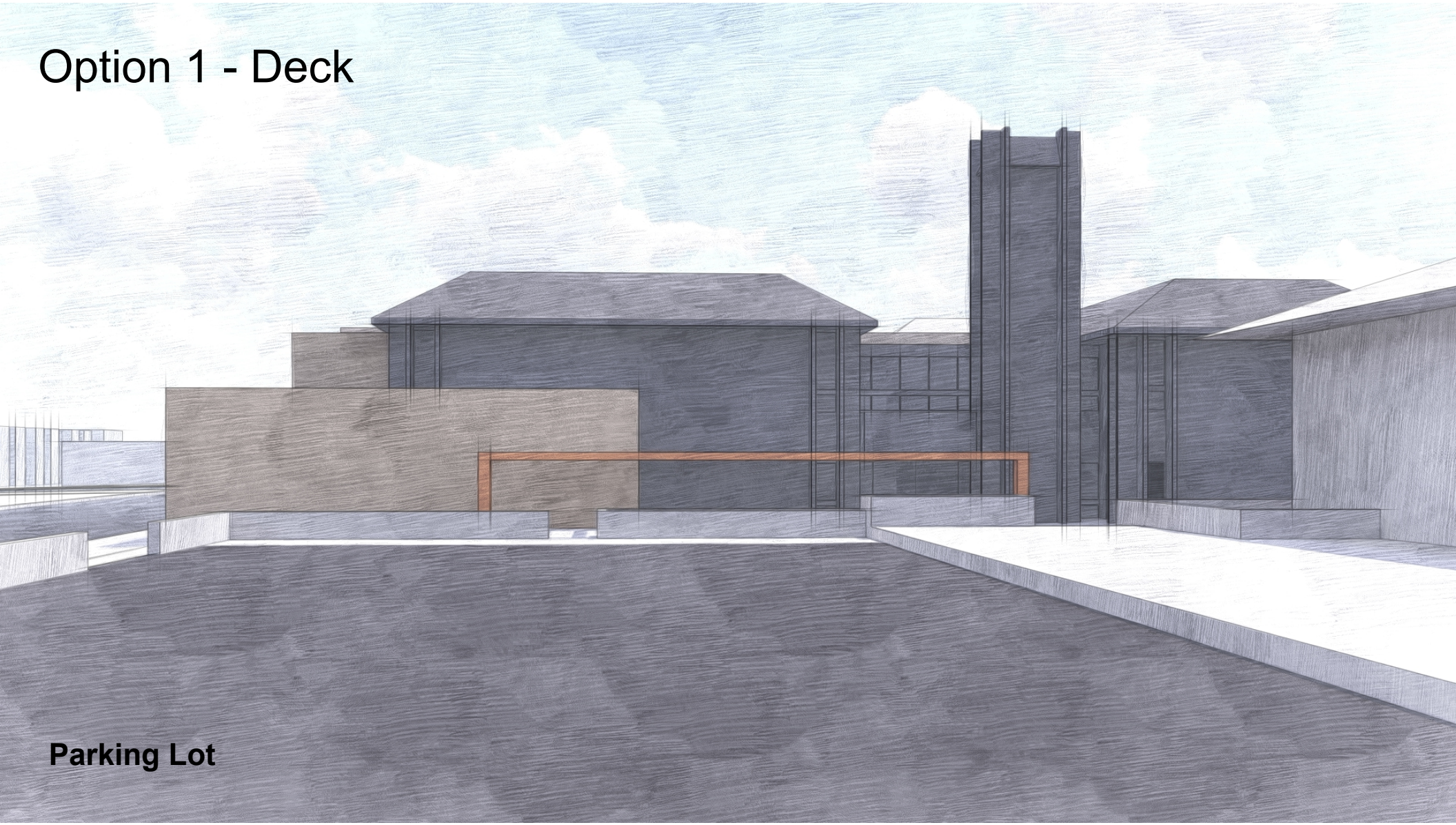
Aerial View - Southwest

Option 1 - Deck

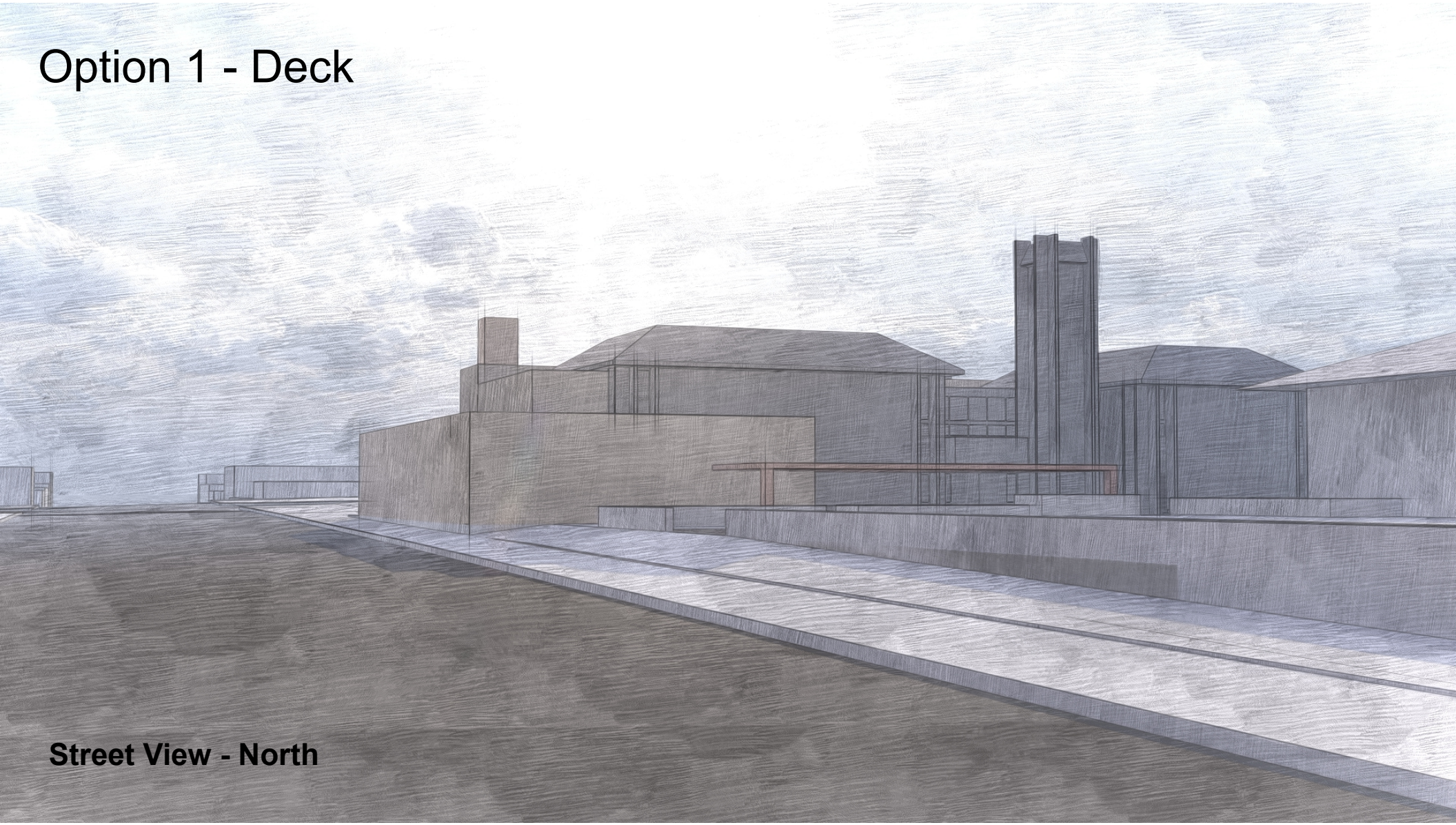


Street View - Glendora

Option 1 - Deck

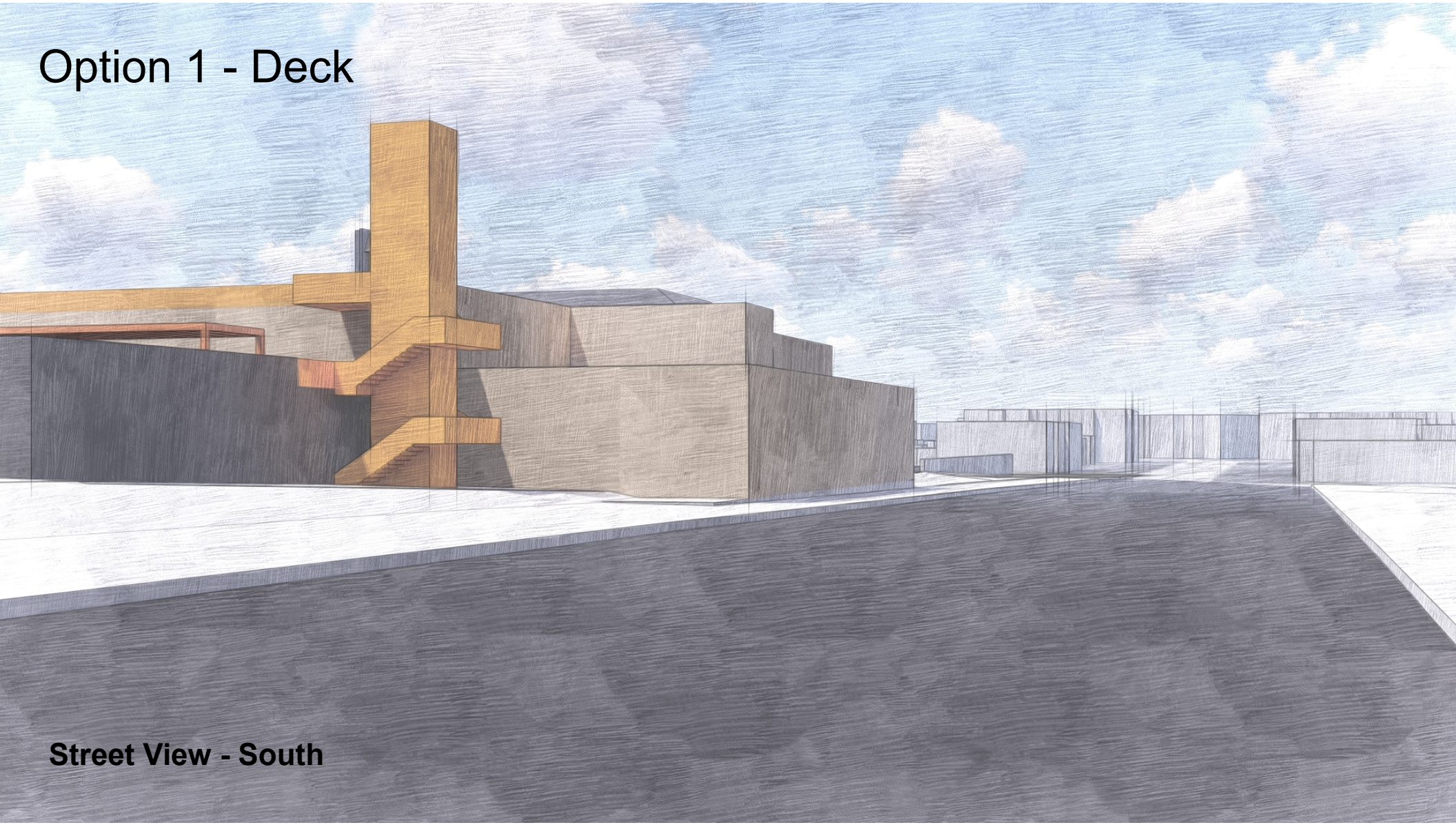


Option 1 - Deck



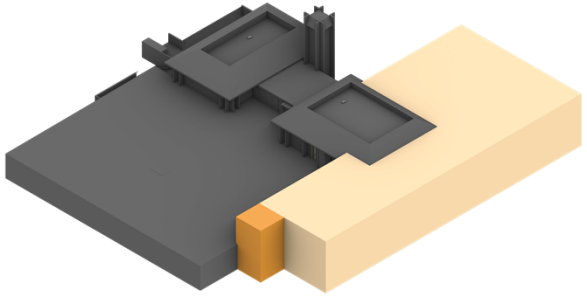
Street View - North

Option 1 - Deck



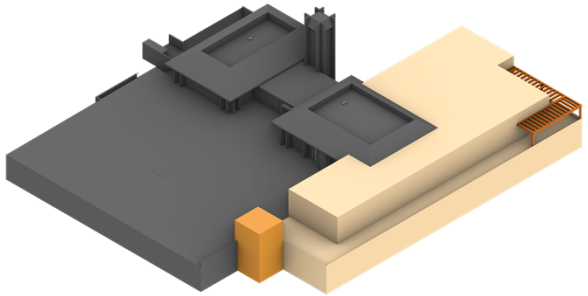
Street View - South

Option 2 studies at-a-glance



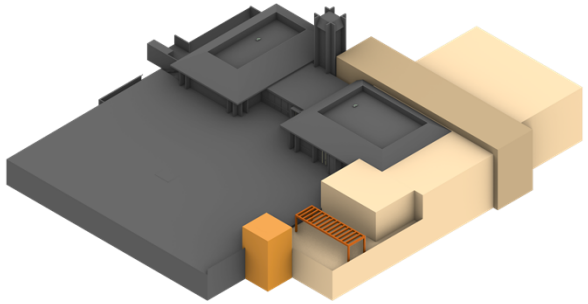
Base

49,495 SF



Terraces

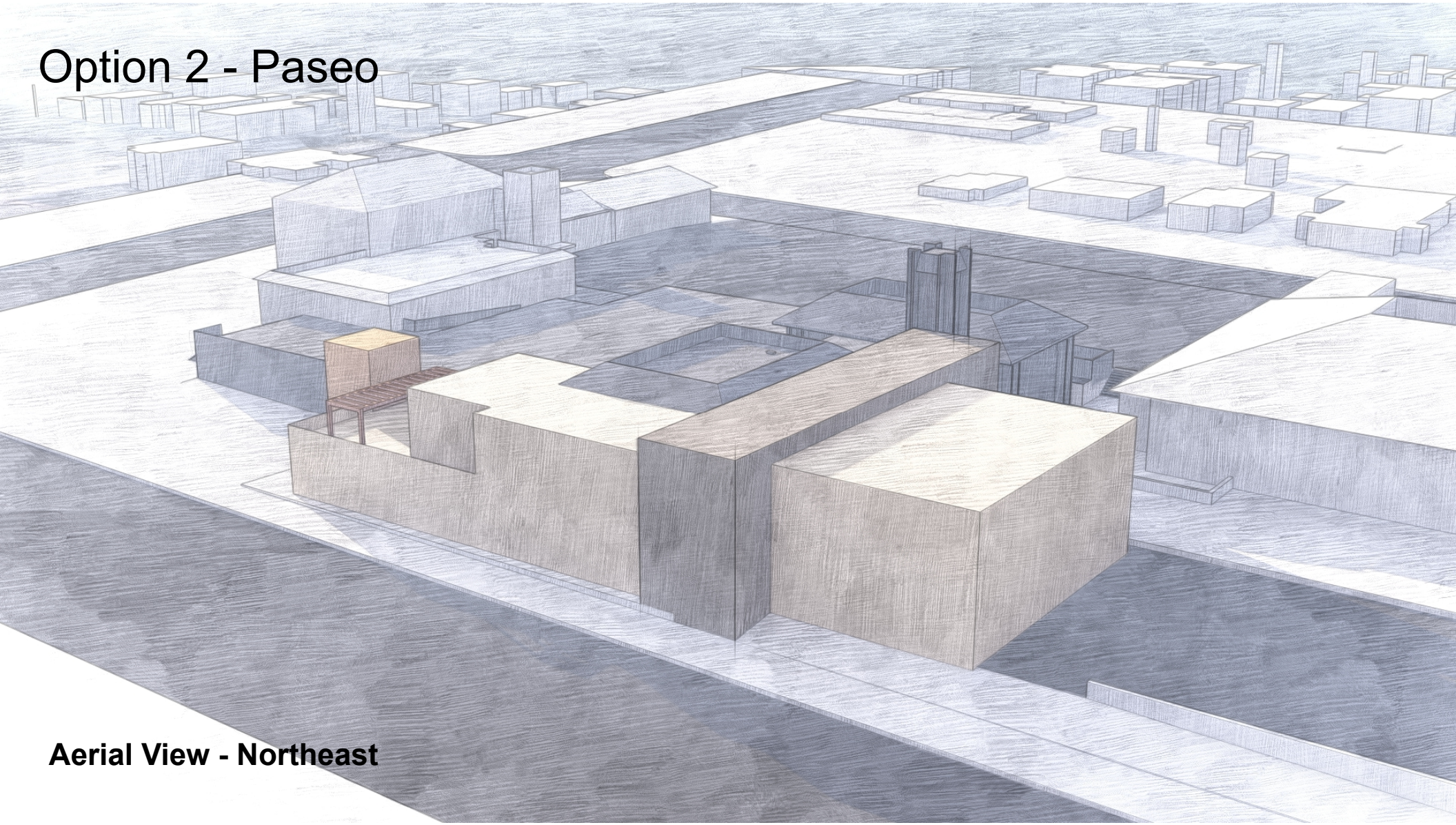
47,770 SF



Paseo

50,949 GSF

Option 2 - Paseo



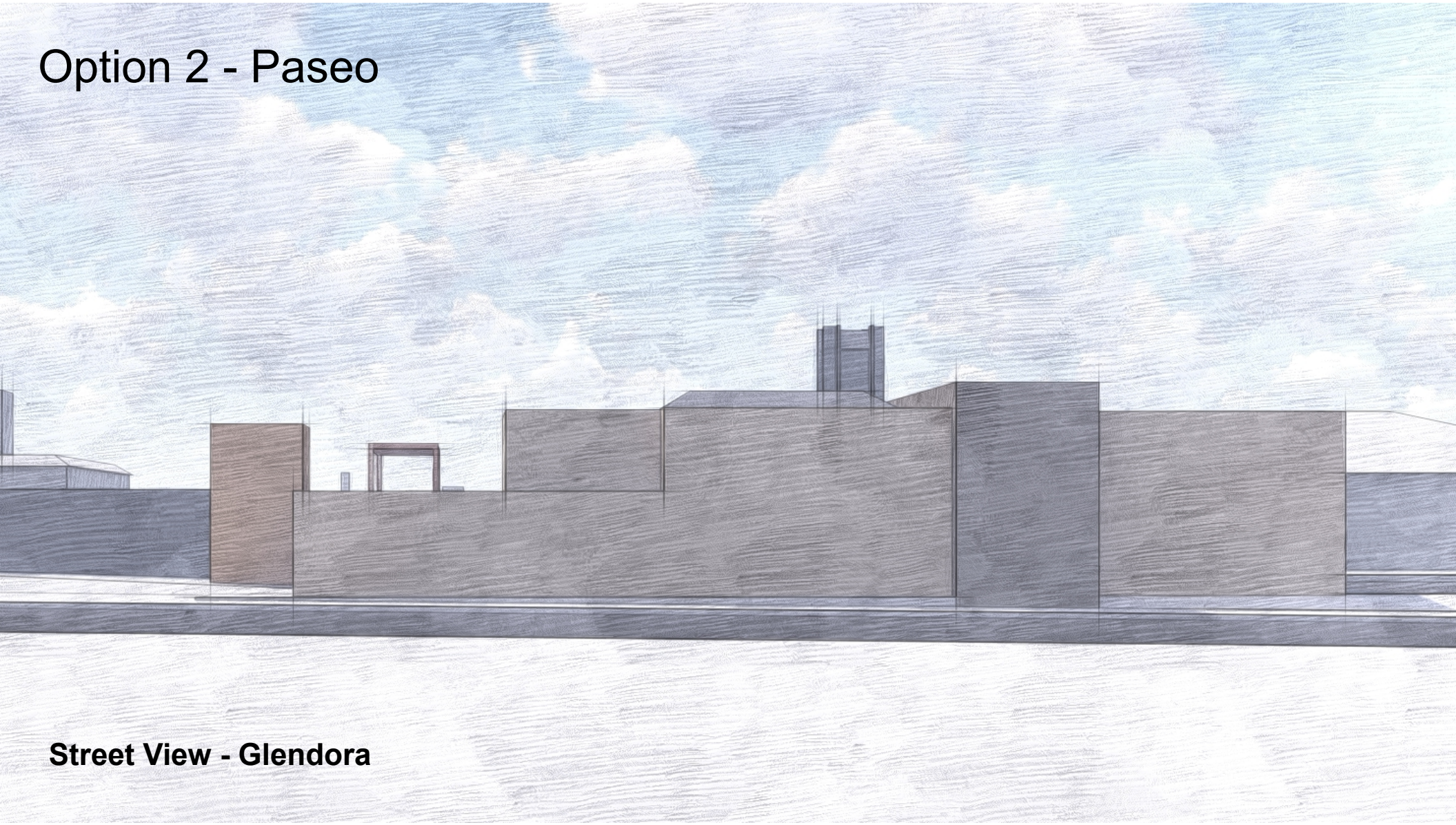
Aerial View - Northeast

Option 2 - Paseo



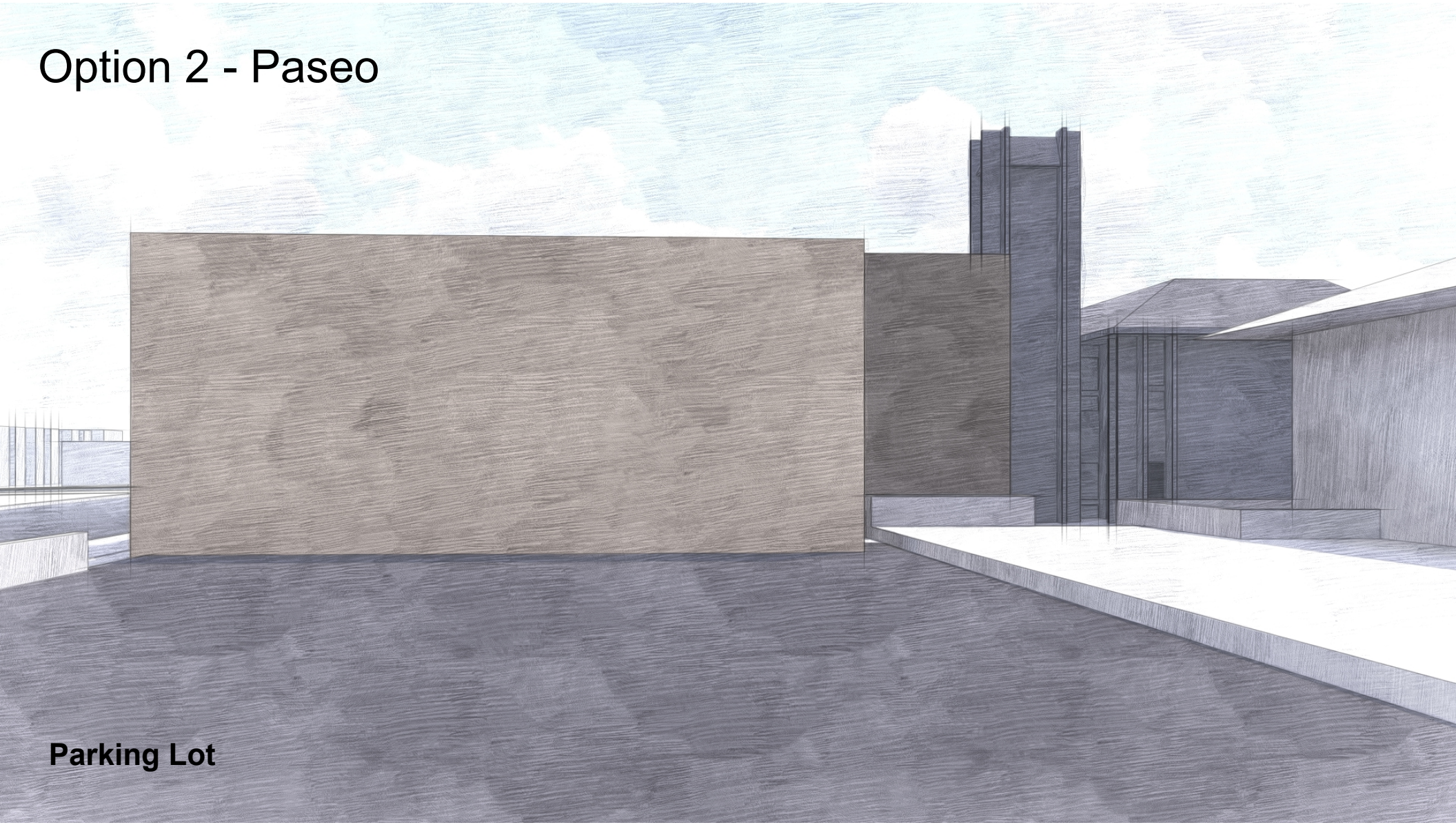
Aerial View - Southwest

Option 2 - Paseo

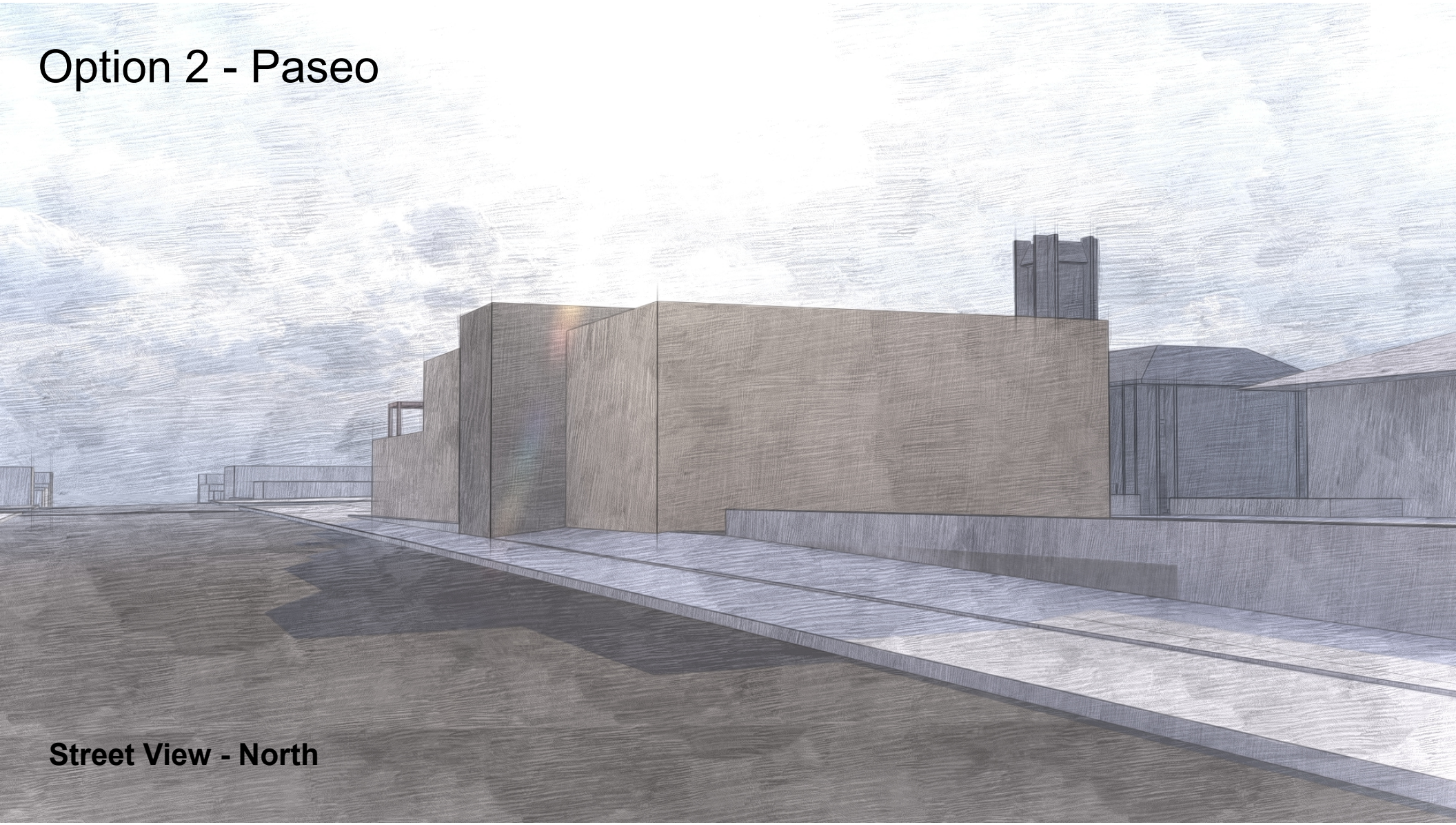


Street View - Glendora

Option 2 - Paseo



Option 2 - Paseo



Street View - North

Option 2 - Paseo



Street View - South

Precedent Imagery - Deck


Colorado College Tutt Library, Colorado Springs, CO

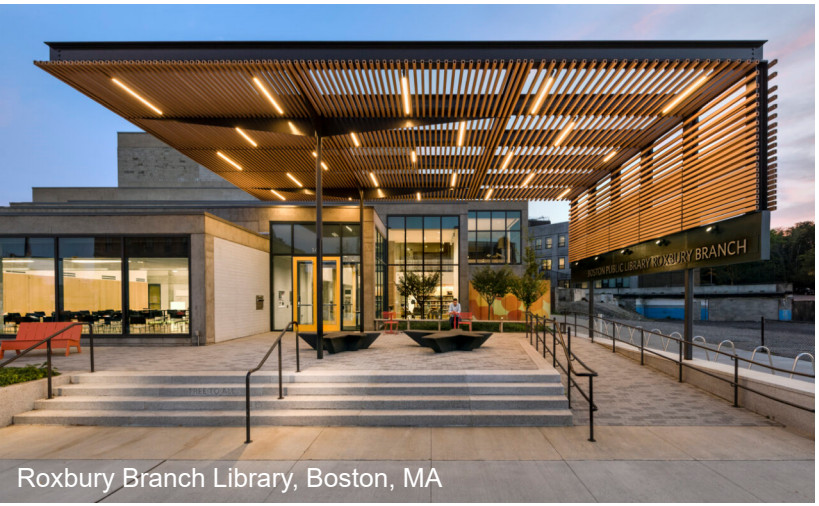

Austin Central Library, Austin, TX


Facebook Seattle, Seattle, WA


MLK Library, Chicago, IL


Cherie Flores Garden, Huston, TX

Precedent Imagery - Entry



Roxbury Branch Library, Boston, MA


Santa Monica Library, Santa Monica, CA


Brooklyn College, NY



Oregon City Library, Oregon City, OR


Gilead Wellbeing Center, Foster City, CA



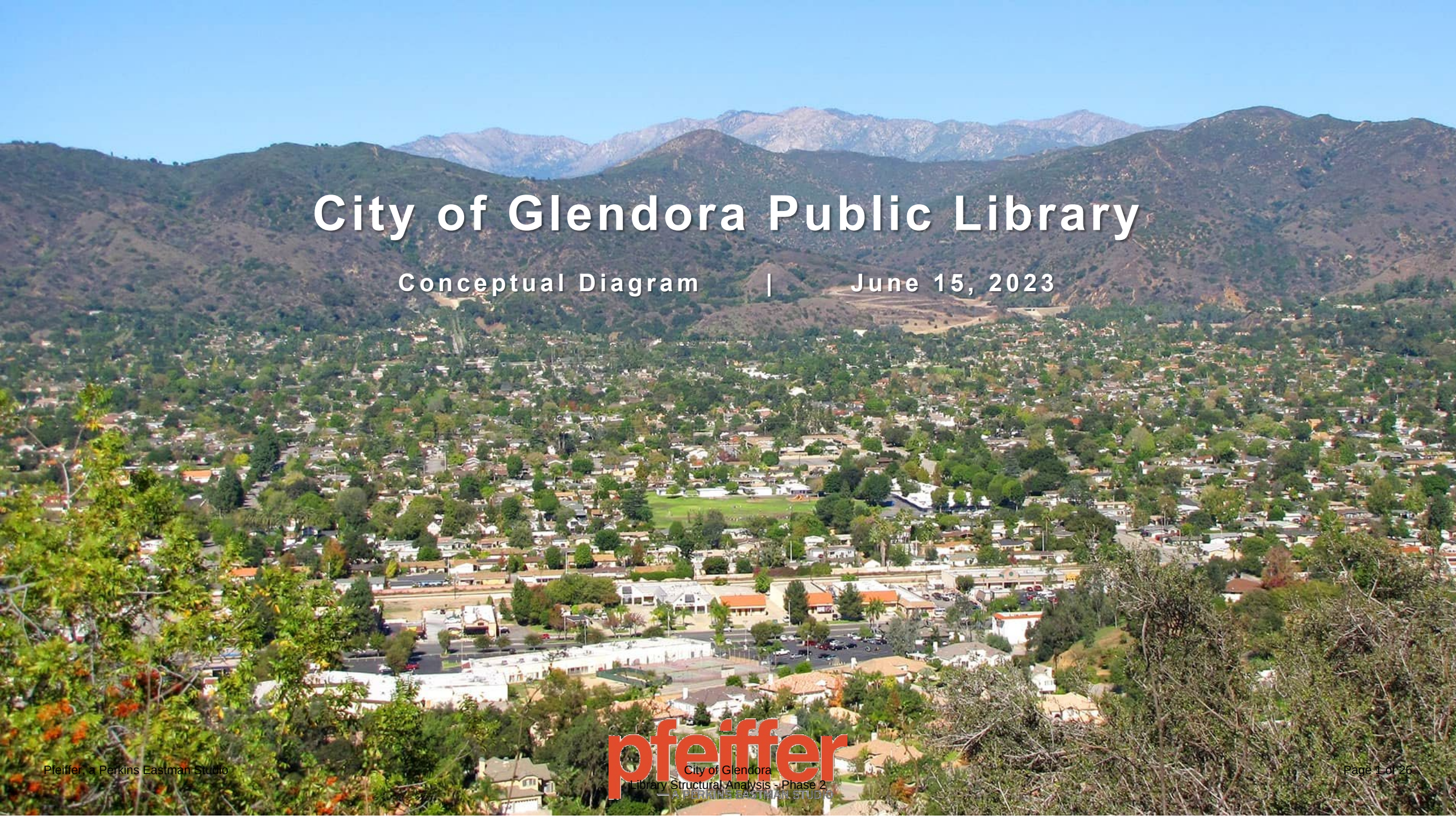
Davidson Library, Santa Barbara, CA

Precedent Imagery - Entry


Stoughton Public Library, MA


Stoughton Public Library, MA


Davidson Library, Santa Barbara, CA



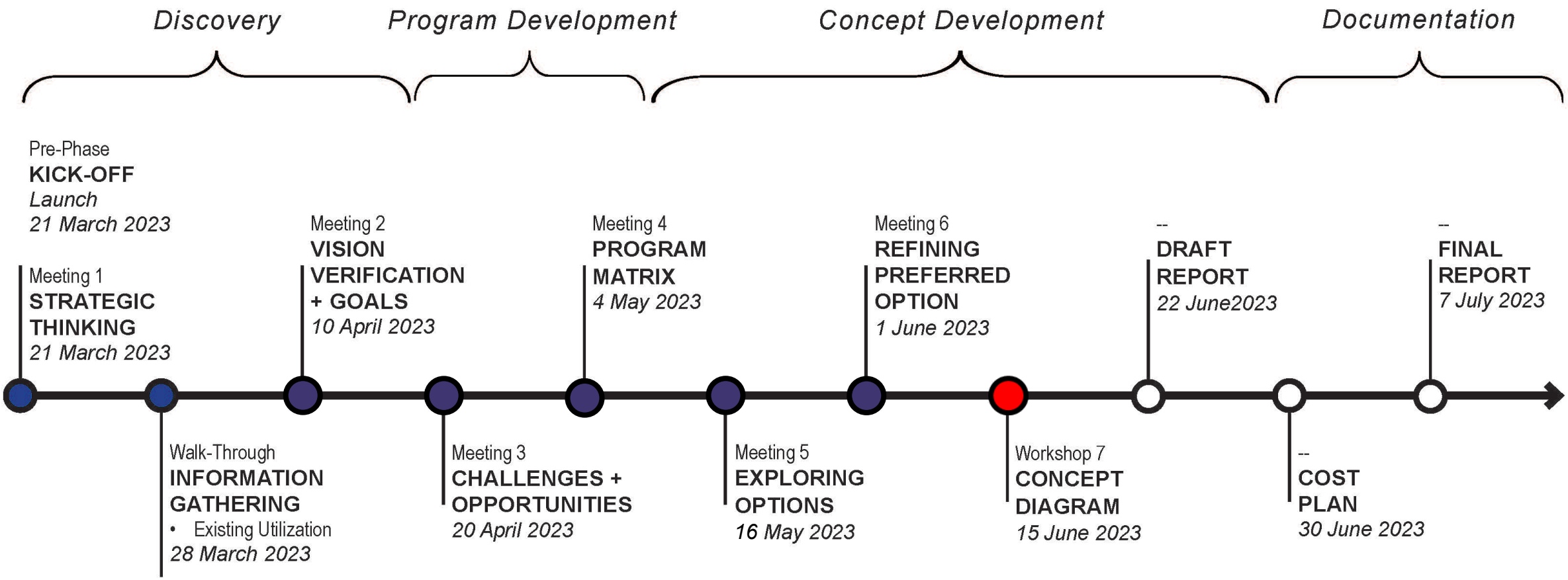
City of Glendora Public Library

Conceptual Diagram | June 15, 2023

Today

- Welcome / Process
- Concept Diagram
- Discussion
- Next Steps

Process


Discovery
Program Development
Concept Development
Documentation
Pre-Phase
KICK-OFF
Launch
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Meeting 1
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21 March 2023
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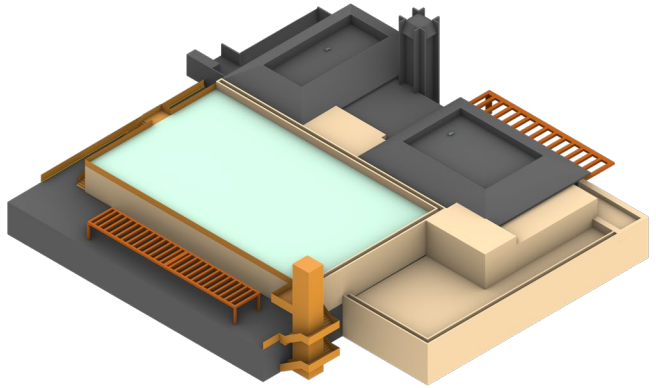
PROGRAM MATRIX
4 May 2023
Meeting 5
EXPLORING OPTIONS
16 May 2023
Meeting 6
REFINING PREFERRED OPTION
1 June 2023
Workshop 7
CONCEPT DIAGRAM
15 June 2023
--
DRAFT REPORT
22 June2023
--
COST PLAN
30 June 2023
--
FINAL REPORT
7 July 2023

Option 1 – Deck - feedback

- Explore additional views within the trellis area:
  - South (between the library and Police Station)
  - North (between the library and City Hall)

- New elevator/stair tower
  - moderate height
  - enclosed structure

- Maximize connectivity between the roof decks.

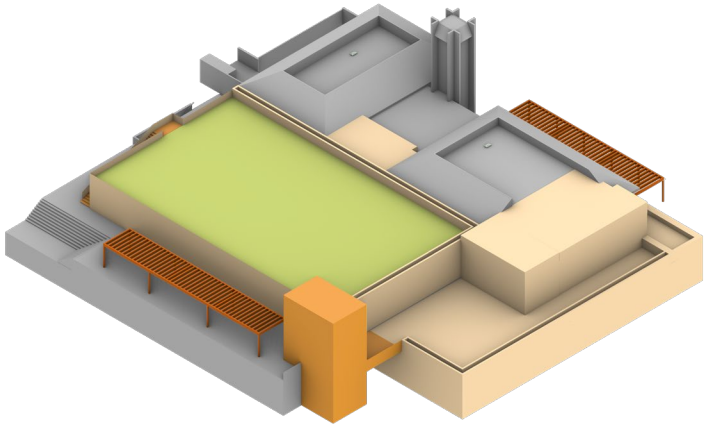


Deck

45,091

Presented June 1, 2023

Option 1 – Deck



Deck

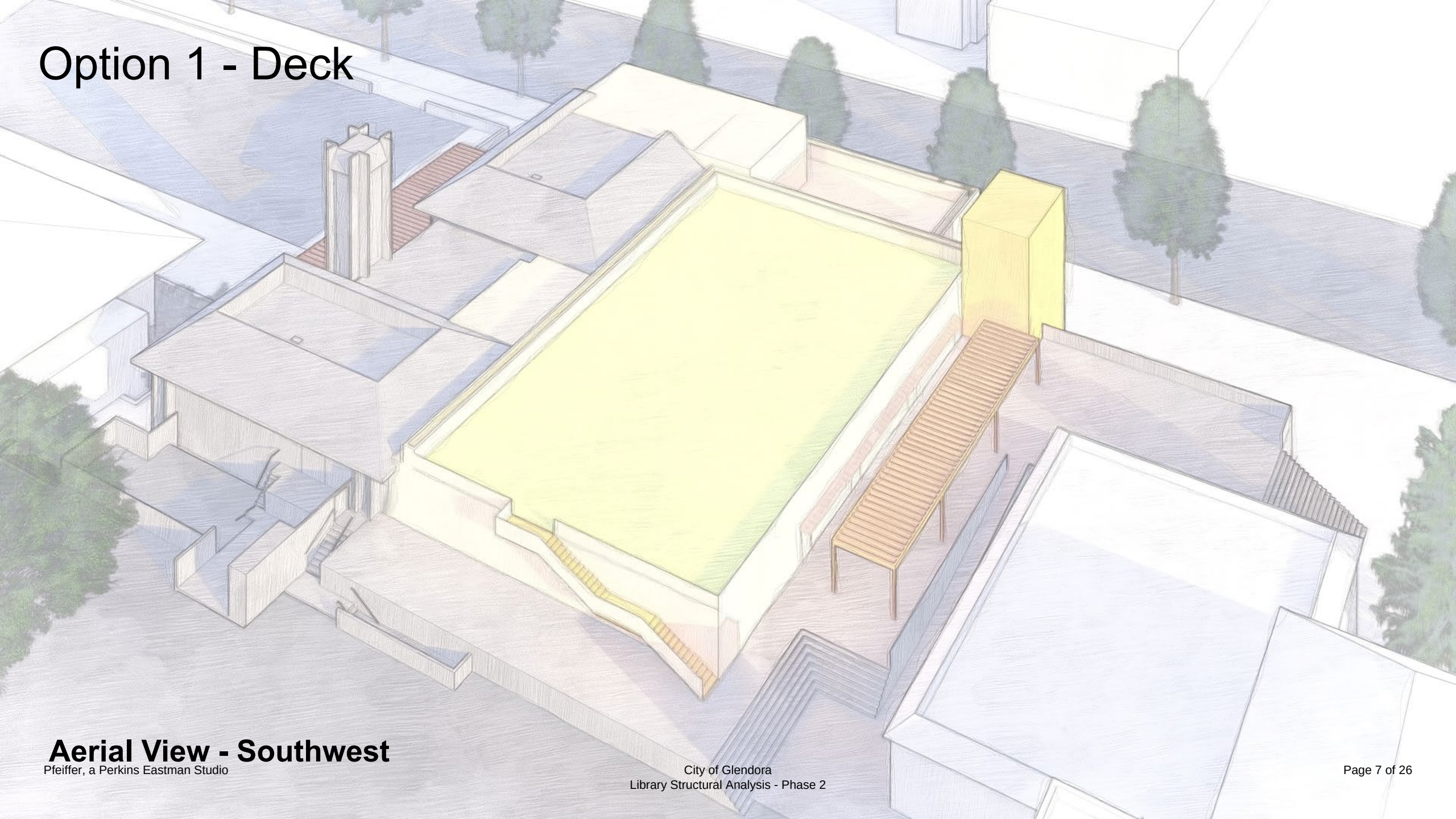
± 45,000 GSF

Option 1 - Deck



Aerial View - Northeast

Option 1 - Deck



Aerial View - Southwest

Option 1 - Deck



Paseo

Option 1 - Deck



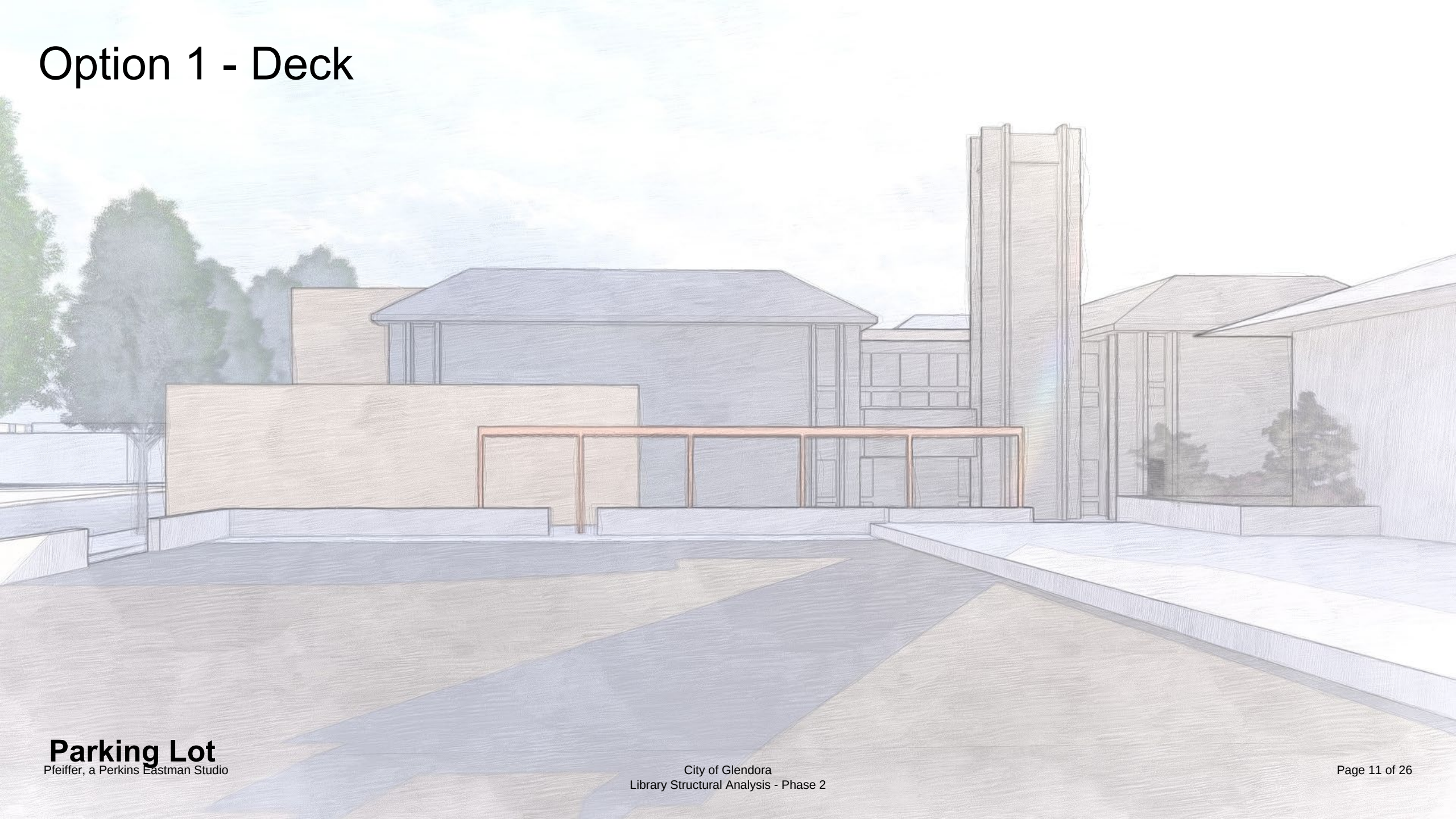
Street View – Vista Bonita

Option 1 - Deck



Street View - Glendora

Option 1 - Deck



Option 1 - Deck



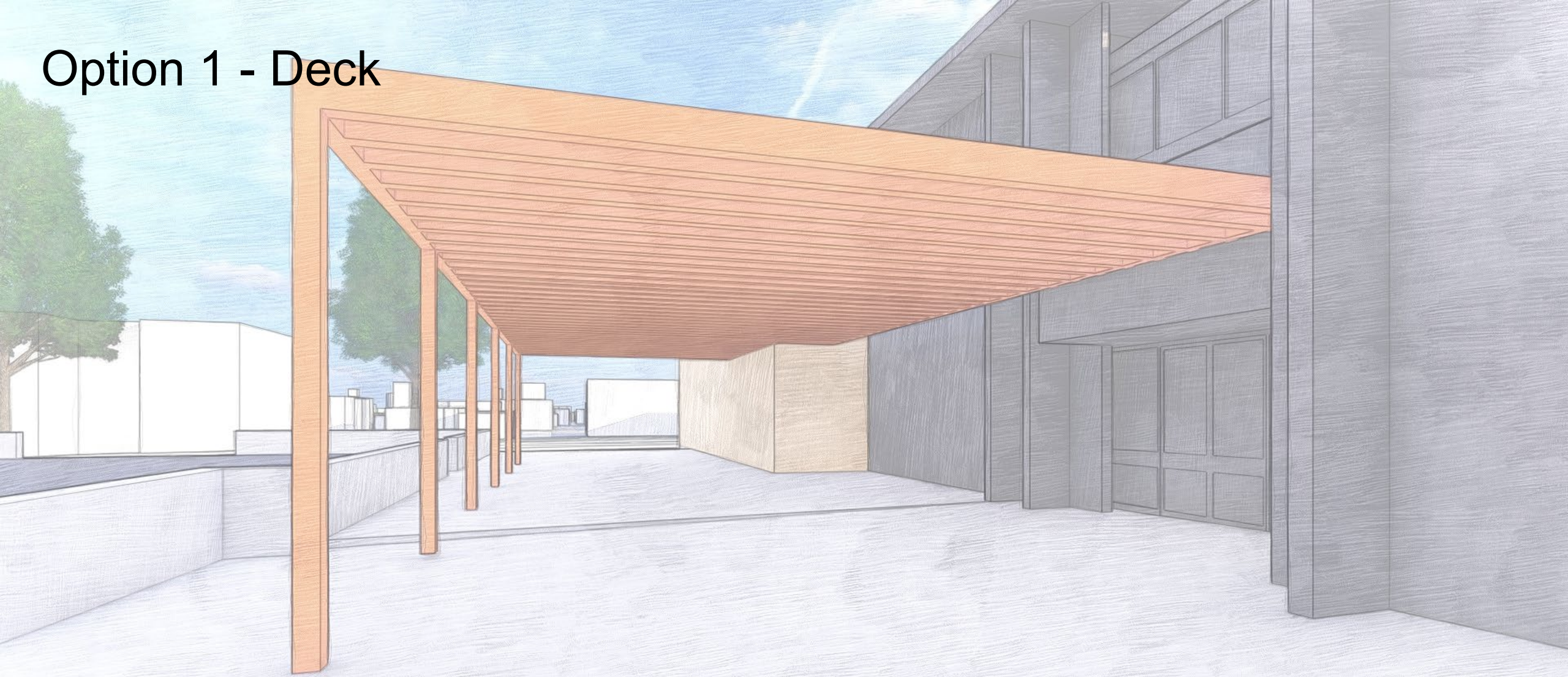
Police Station- North

Option 1 - Deck



Police Station - West

Option 1 - Deck



Ground Entry

Option 1 - Deck



Street View - North

Option 1 - Deck



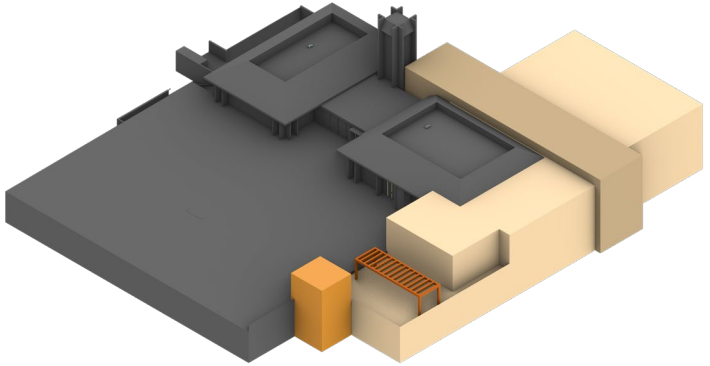
Street View - South

Option 2 – Paseo - feedback

- Minimize the visual impact of the addition
  Suggestions include:
  - Setting the addition away from the sidewalk
  - Stepping back the 2nd floor on all sides

- Explore additional camera views
  - in the space between the addition and the Police Station (East elevation)

- Maximize connectivity between the roof decks.

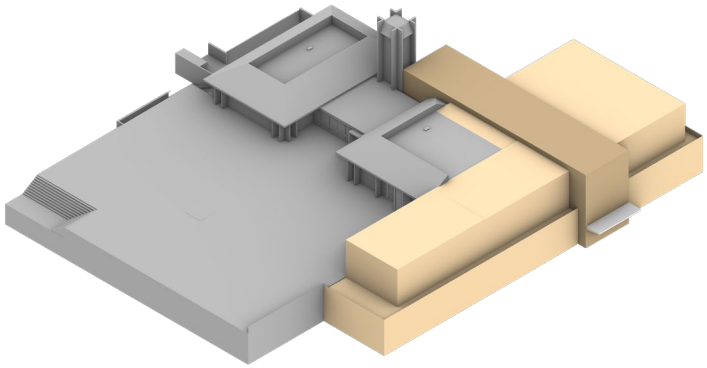


Paseo

50,949

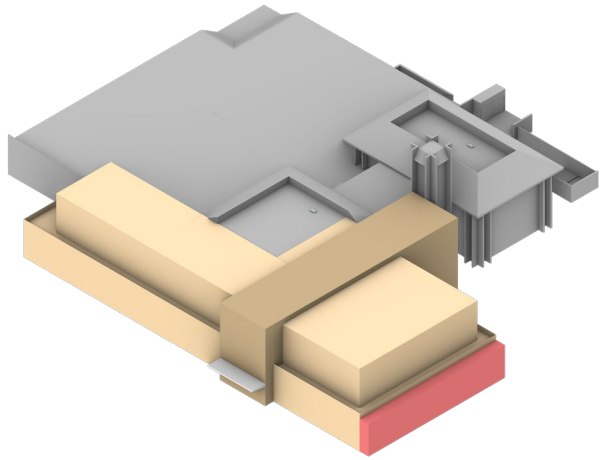
Presented June 1, 2023

Option 2 – Paseo



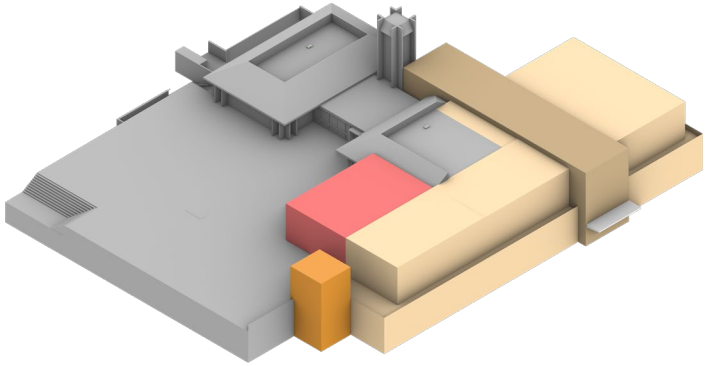
Base

45,000 GSF



***Parking Lot Expansion**

45,356 GSF



*** Deck Expansion**

46,686 GSF

Option 2 - Paseo



Aerial View - Northeast

Option 2 - Paseo



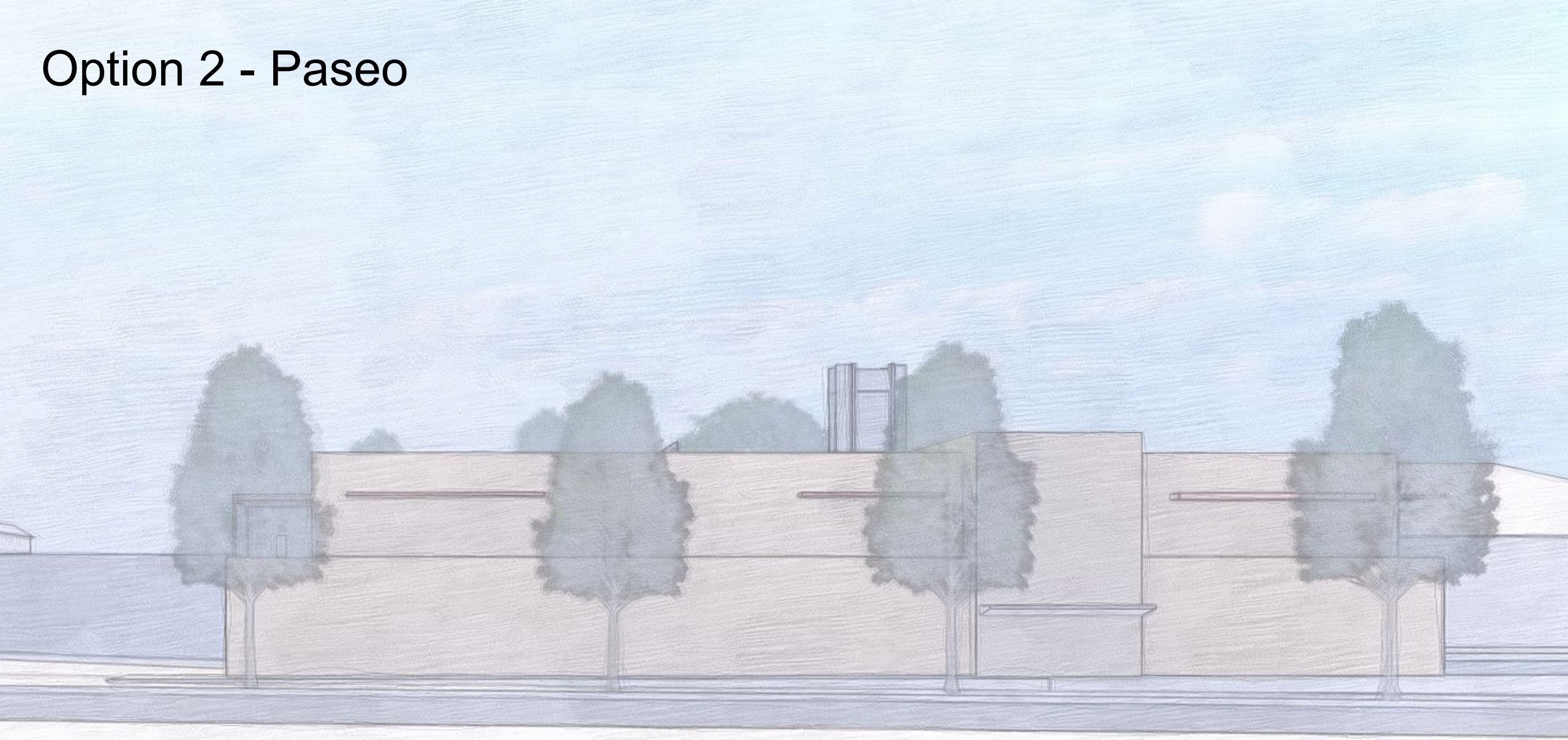
Aerial View - Southwest

Option 2 - Paseo



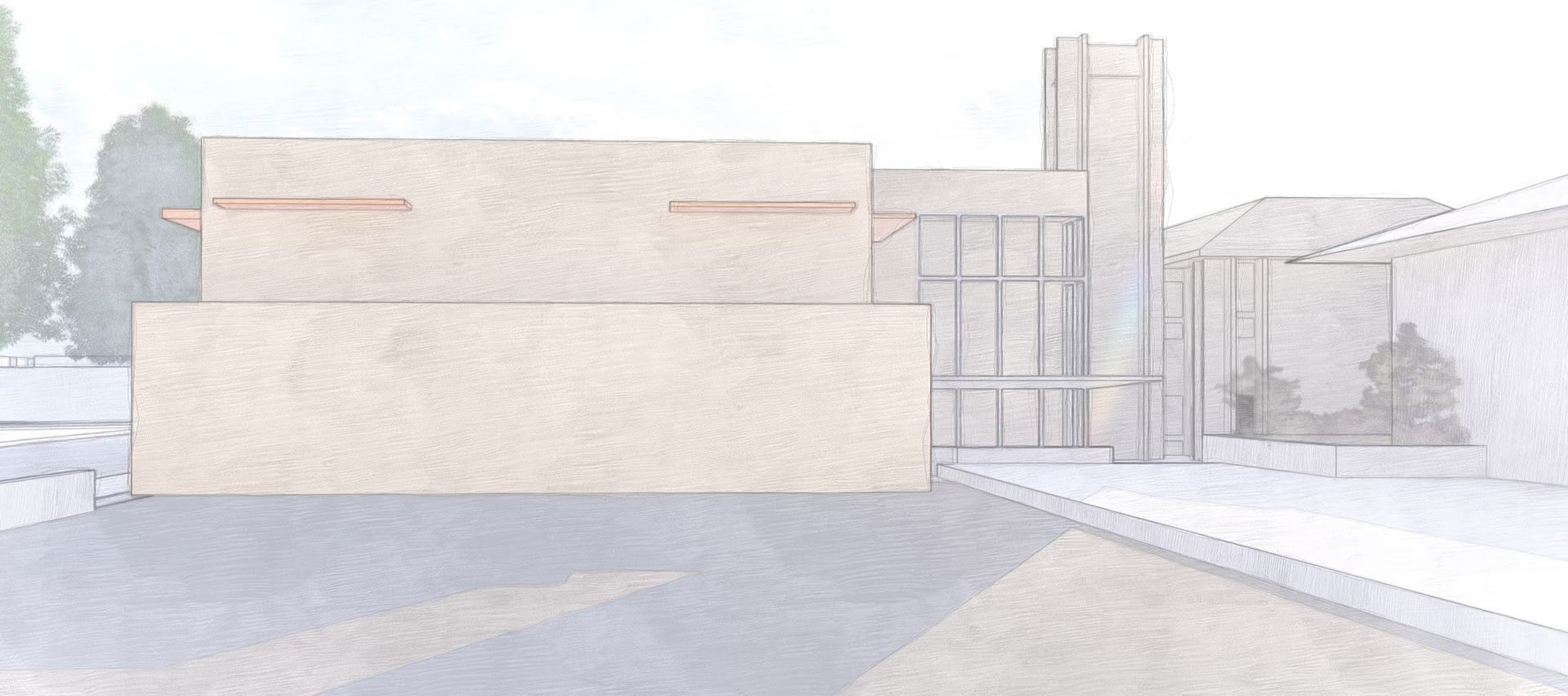
Street View – Vista Bonita

Option 2 - Paseo



Street View - Glendora

Option 2 - Paseo



Parking Lot

Option 2 - Paseo



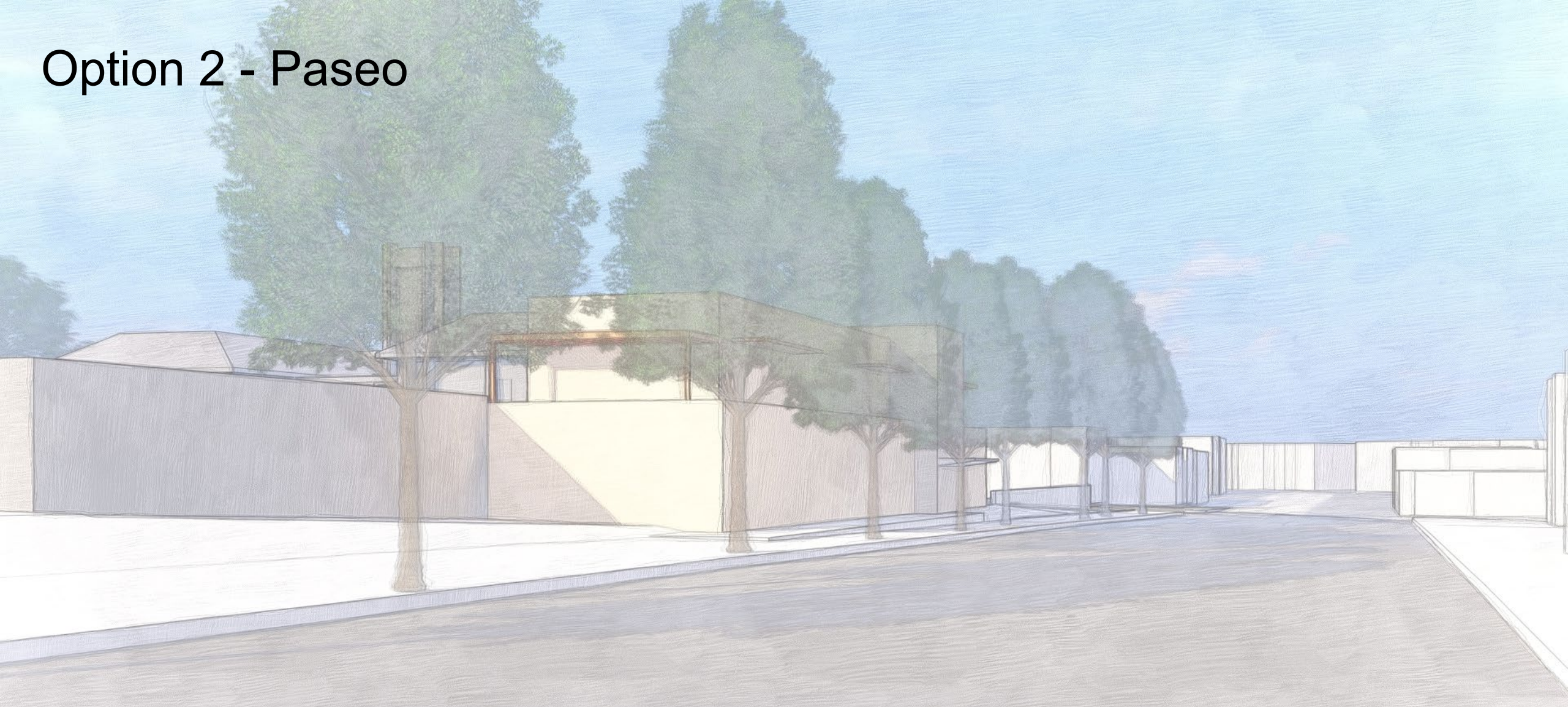
Police Station- North

Option 2 - Paseo



Street View - North

Option 2 - Paseo



Street View - South

PHASING PLAN REPORT
GLENDORA CORPORATE YARD IMPROVEMENTS
CITY OF GLENDORA

1250 ST. VLADIMIR STREET
GLENDORA, CA 91740



Prepared for:

CITY OF GLENDORA
116 E. Foothill Boulevard
Glendora, CA 91741

By:

1 Peters Canyon Rd., Suite 130
Irvine, CA 92606

IDS Project Number 22X021.07

July 15, 2026

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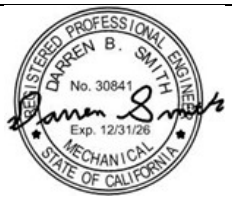
SEALS PAGE

Design Professional of Record at IDS Group, Inc.

Mechanical/Plumbing Engineer: **Darren Smith, PE, BEAP** **M30841**	
Electrical Engineer: **Steven Collins, PE, LEED AP** **E22808**	
Civil Engineer: **Adrian Anderson, PE** **C60955**	
Landscape Architect **Jill Van Sickle, PLA, ASLA** **5804**	
Architect **John Silber, AIA** **C-34131**	

End of Seals Page

EXECUTIVE SUMMARY

The Glendora Corporate Yard Improvements Project is a comprehensive modernization of the City's primary corporate yard, replacing obsolete buildings with new, efficient facilities and upgrading site infrastructure. The project will be implemented through a three-stage construction sequence consisting of Phase 1A, Phase 1B, and Phase 2.

Phase 1 is subdivided based on site constraints created by the Big Dalton Wash, which bisects the property.

- Phase 1A includes all Phase 1 work located northwest of the covered drainage channel (Big Dalton Wash).
- Phase 1B includes all Phase 1 work southeast of the Big Dalton Wash, including construction of the Office Building (Building 1).
- Phase 2 completes the remainder of the site, including all remaining buildings and final infrastructure.

A designated transition zone between Phase 1 (A/B) and Phase 2 allows for safe and coordinated installation of underground utilities while maintaining active yard operations. This phased strategy minimizes disruption, ensures continuity of City services, and provides a clear sequencing framework for construction and utility implementation.

SECTION 1. PROJECT OVERVIEW

1.1 Summary

The project site functions as the City's corporate yard, supporting storage, maintenance, fleet operations, and parks services. It is bounded by residential neighborhoods on three sides and the LA Metro rail corridor to the south, with primary access from St. Vladimir Street and secondary access from Walnut Avenue.

The site is physically divided by the **Big Dalton Wash**, a major covered drainage channel that creates a natural separation influencing construction phasing, circulation, and utility routing.

The proposed improvements include four new buildings:

- Office Building (Building 1)
- Fleet Maintenance Garage (Building 2)
- Sign Shop and Tire Storage (Building 3)
- Facility Workshops (Building 4)

Additional improvements include a vehicle wash station, emergency generator, ADA accessibility, material storage bins, site lighting, trash enclosure, landscaping, and full site repaving. The project also involves complex coordination of utilities, including water, sewer, gas, electrical, and storm drainage systems.

SECTION 2. PHASING STRATEGY OVERVIEW

2.1 Summary

The phasing approach is driven by two primary goals: maintaining uninterrupted City operations and accommodating the physical constraint of the Big Dalton Wash.

Phase 1 is divided into **Phase 1A and Phase 1B**, allowing construction to proceed on one side of the wash while maintaining operations on the other. Phase 1A includes the construction of new material storage bins and a stormwater Low Impact Development (LID) treatment area along the western portion of the site to maintain operational accessibility during Phase 1B construction. This reduces conflicts, improves safety, and allows for more efficient staging of construction activities.

A **transition zone** is maintained between Phase 1 and Phase 2 work areas to allow staged installation of underground utilities. This zone supports temporary and permanent connections, enabling systems installed during Phase 1A and Phase 1B to be extended and finalized during Phase 2.

SECTION 3. PHASE 1A & 1B, OFFICE BUILDING (BUILDING 1) AND INITIAL SITE DEVELOPMENT

3.1 Phase 1A – Northwest of Big Dalton Wash

Phase 1A includes all Phase 1 construction activities located on the northwest side of the Big Dalton Wash. This phase focuses on early site preparation, utility work, and improvements that can be completed independently of the southeastern portion of the site.

Work in this phase includes:

- Select demolition of existing features and utilities within the Phase 1A limits
- Installation of new storm drain utilities and Low Impact Development treatment device
- Construction of new material storage bins
- Site grading and paving improvements within the northwest work area
- Establishment of circulation routes to support ongoing operations

Utility work in Phase 1A is designed to support both current operations and future connections to Phase 1B and Phase 2 systems.

Throughout Phase 1A, operations in the eastern portion of the site remain active and unaffected, maintaining functionality of essential City services.

3.2 Phase 1B - Southeast of Big Dalton Wash (Building 1)

Phase 1B includes all Phase 1 construction activities located on the southeast side of the Big Dalton Wash, including the construction of the Office Building (Building 1).

This phase establishes the administrative core of the corporate yard and includes:

- Construction of Building 1 for Facilities, Maintenance, and Parks and Trees staff
- Development of adjacent parking and primary circulation areas
- Installation of utility infrastructure serving Building 1, including domestic water, fire water, sanitary sewer, irrigation, and gas systems.
- The sanitary sewer for Building 1 will be temporarily connected to the existing sanitary sewer between the existing vehicle wash and vehicle maintenance building.
- Utility stub-outs and extensions for Phase 2 connections, including fire water service and distribution lines, including irrigation mainline.

Phase 1B utilities initially connect to existing site systems to maintain operational continuity. These systems are designed to be upgraded and integrated into the final site-wide infrastructure during Phase 2.

The Electrical scope elements for Phase 1B are as follows:

- New lighting panel for exterior lighting control
- New 400-amp Panel CL, as indicated on the plans, including stubbed conduits for future power connections associated with Phases 1B and 2.
- New 400-amp Meter Main to feed building 1
- New 400-amp Underground Feeder to GWP utility's P.O.C. Per Glendale's (GWP) Underground service manual, GWP does not allow direct burial lines, conduit and wire will need to be ran to the utilities Point of Connection (POC), then abandoned after power is turned over. Coordinate with Glendora Water and Power (GWP) to confirm the final utility Point of Connection (POC).

During Phase 1B construction, operations in Phase 1A areas remain functional, with coordinated circulation and access maintained across the site. Upon completion, staff relocate to Building 1, enabling subsequent demolition activities in Phase 2.

SECTION 4. TRANSITION ZONE AND INTERIM CONDITIONS

4.1 Summary

The transition zone serves as a critical interface between the completed Phase 1B improvements and ongoing Phase 2 construction activities. It accommodates staged installation of utilities and provides flexibility for sequencing and connections.

Within this zone:

- Temporary paving and grading to connect Phase 1B to the existing site and later, Phase 1B to Phase 2 during Phase 2.
- Utilities installed during Phases 1B are extended and connected to Phase 2 systems
- New gas and domestic water lines will be temporarily connected to existing underground lines to maintain service to the existing site during Phase 1B. In Phase 2, existing gas and water lines will be removed and new gas and water lines will be connected to the Phase 1B lines.
- Access routes and paving may be temporarily modified to support construction logistics

The transition zone ensures that construction activities can proceed safely without disrupting ongoing operations or previously completed work.

SECTION 5. PHASE 2 – REMAINING BUILDINGS AND SITE COMPLETION

5.1 Summary

Phase 2 includes demolition of remaining existing buildings and construction of:

- Fleet Maintenance Garage (Building 2)
- Sign Shop and Tire Storage (Building 3)
- Facility Workshops (Building 4)

This phase also completes all remaining site improvements, including parking, circulation, perimeter walls, and landscaping.

Utility work in Phase 2 includes:

- Completion of all Phase 2 underground systems and connections to Phase 1A and 1B utilities
- Demolition or abandonment of existing utility lines no longer needed
- Full integration of new water, sewer, gas, and storm drain systems
- Coordination with Big Dalton Wash drainage infrastructure

The Electrical scope elements for Phase 2 are as follows:

- Future conduit routed from building 1 panel CL to Phase 2 area. to be picked up and extended to main switch board for final connections.

Final installation of the vehicle wash station and emergency generator occurs during this phase, along with completion of all site features.

SECTION 6. ACCESS, CIRCULATION, AND SAFETY

6.1 Summary

Access and circulation are carefully maintained throughout all phases. The primary entrance from St. Vladimir Street remains operational, with Walnut Avenue providing secondary access as needed.

The division of Phase 1 into 1A and 1B allows for improved separation between construction and operational zones, especially across the Big Dalton Wash. Temporary circulation routes, barriers, and signage will be implemented to ensure safety for staff and construction personnel.

Special consideration is given to adjacent residential areas to minimize noise, traffic impacts, and visual disruption.

SECTION 7. DISCIPLINE COORDINATION

7.1 Civil Engineering

Civil engineering design is central to the phased implementation strategy, particularly with respect to grading, drainage, and utility infrastructure. The project requires careful coordination of domestic water, fire water, sanitary sewer, storm drain systems across both phases.

Civil systems are phased to align with the 1A/1B split, with utilities installed and extended toward the transition zone for later connection. Final system integration occurs in Phase 2, including full replacement of select existing lines.

Stormwater management is designed to accommodate site constraints and coordinate with Big Dalton Wash, ensuring proper drainage and water quality treatment throughout all phases of construction.

7.2 Landscape Architecture

Landscape improvements are phased to align with construction activities and minimize rework. Phase 1A/1B includes installation of irrigation equipment at the existing Point of Connection (POC) and providing a stub-out for the mainline expansion at the transition area for Phase 2. Tree protection zone fencing for the mature existing Coast Live Oak northwest of proposed Building 1, will be installed during Phase 1B prior to demolition. Initial irrigation and planting installation in Phase 1B will be limited to areas adjacent to the Office Building where construction is complete and stable, and to satisfy City parking lot tree requirements.

Final landscape and irrigation improvements, including perimeter planting, screening and buffering of adjacent residential properties, and bioswale planting and irrigation, will be completed in Phase 2 following major construction activities. Coordination with grading, irrigation, and utility systems is critical to ensure successful installation and long-term performance.

7.3 Electrical Engineering

Electrical infrastructure will be installed in phases to maintain continuous power service to existing operations while introducing new systems. Phase 1B includes installation of electrical service to Building 1 and associated site lighting, along with provisions for future expansion.

The emergency backup generator will be integrated into the overall electrical system, with final connections completed in Phase 2. Electrical routing, lighting, and equipment connections will be coordinated with the transition zone to allow staged implementation and minimize service interruptions.]

Due to the proximity of the existing residential neighborhood located directly behind the proposed equipment yard relocation area, we do not recommend relocating the equipment to the southeast corner.

If this area is converted into an electrical yard housing the generator, additional mitigation measures would be required. The generator would need to be installed within a soundproof enclosure designed to limit noise levels to no more than 50 dBA at the property line during nighttime hours.

Additionally, because the generator would be located within 100 feet of a residential neighborhood, it would require a Diesel Particulate Filter (DPF) system. These requirements would increase the overall equipment footprint, add complexity to the installation, and significantly increase costs. The anticipated cost of the generator package could potentially double due to these added requirements.
Based on these considerations, we recommend keeping the existing electrical transformer and generator in their current location on the west side of the proposed Vehicle Washing Station.

7.4 Plumbing Engineering

Plumbing design includes sanitary sewer, domestic water, and gas systems coordinated across the phased construction. Phase 1A/1B includes initial connections to existing systems and installation of new lines serving Building 1, including sewer realignment to the municipal system.

Phase 2 completes the plumbing infrastructure for Buildings 2, 3, and 4, including new gas and water distribution systems and removal or abandonment of obsolete lines. Plumbing systems between Buildings 2, 3, and 4 are coordinated to be installed as part of the Phase 2 scope.

SECTION 8. ROM CONSTRUCTION COST ESTIMATES

8.1 Rough Order of Magnitude (ROM) Construction Cost Estimate

A Rough Order of Magnitude (ROM) construction cost estimate has been prepared to evaluate the anticipated construction costs associated with implementation of the proposed phased development approach for the Project. The estimate reflects the currently defined project scope, conceptual phasing strategy, and anticipated sequencing requirements necessary to maintain continuous City operations throughout construction. The estimates are intended for planning and budgeting purposes only and will require refinement as design progresses.

Based on the current phasing plan, the estimated construction costs are as follows:

Phase	Description	Approximate Construction Cost
Phase 1	Phase 1A and Phase 1B, including Building 1 (Office Building), initial site improvements, utility infrastructure, material storage bins, stormwater facilities, transition zone improvements, and associated paving and circulation improvements.	$6,500,000
Phase 2	Demolition of remaining existing facilities, construction of Buildings 2, 3, and 4, completion of site infrastructure, landscaping, vehicle wash station, emergency generator, utility integration, and final site improvements	$7,100,000
Total	Total Phased Construction Cost	$13,600,000

The above values represent anticipated direct construction costs only and exclude soft costs, including but not limited to design fees, construction management, inspections, permitting, environmental review, geotechnical services, testing, agency fees, escalation, financing costs, and owner contingencies.

The Phase 1 estimate reflects the additional infrastructure and temporary improvements required to establish an operational corporate yard during ongoing construction activities. This includes interim utility connections, phased site circulation routes, temporary access provisions, construction staging accommodations, and development of the transition zone necessary to support future Phase 2 work.

The Phase 2 estimate includes the completion of the remaining facilities and site improvements, final utility integration, demolition of obsolete infrastructure, and restoration of areas temporarily utilized during Phase 1 construction.

For comparison purposes, a previous planning-level construction estimate prepared in 2025 assumed the project would be constructed under a single-phase delivery approach. That estimate identified a total projected construction cost of $13,464,328. The current phased estimate of approximately $13,600,000 reflects the additional costs associated with maintaining uninterrupted City operations while construction occurs in multiple stages.

Conclusion

The phased construction cost estimate totals approximately $13.6 million, consisting of $6.5 million for Phase 1 and $7.1 million for Phase 2, exclusive of all soft costs. While the overall construction value remains generally consistent with the 2025 single-phase estimate of $13,464,328, the current estimate

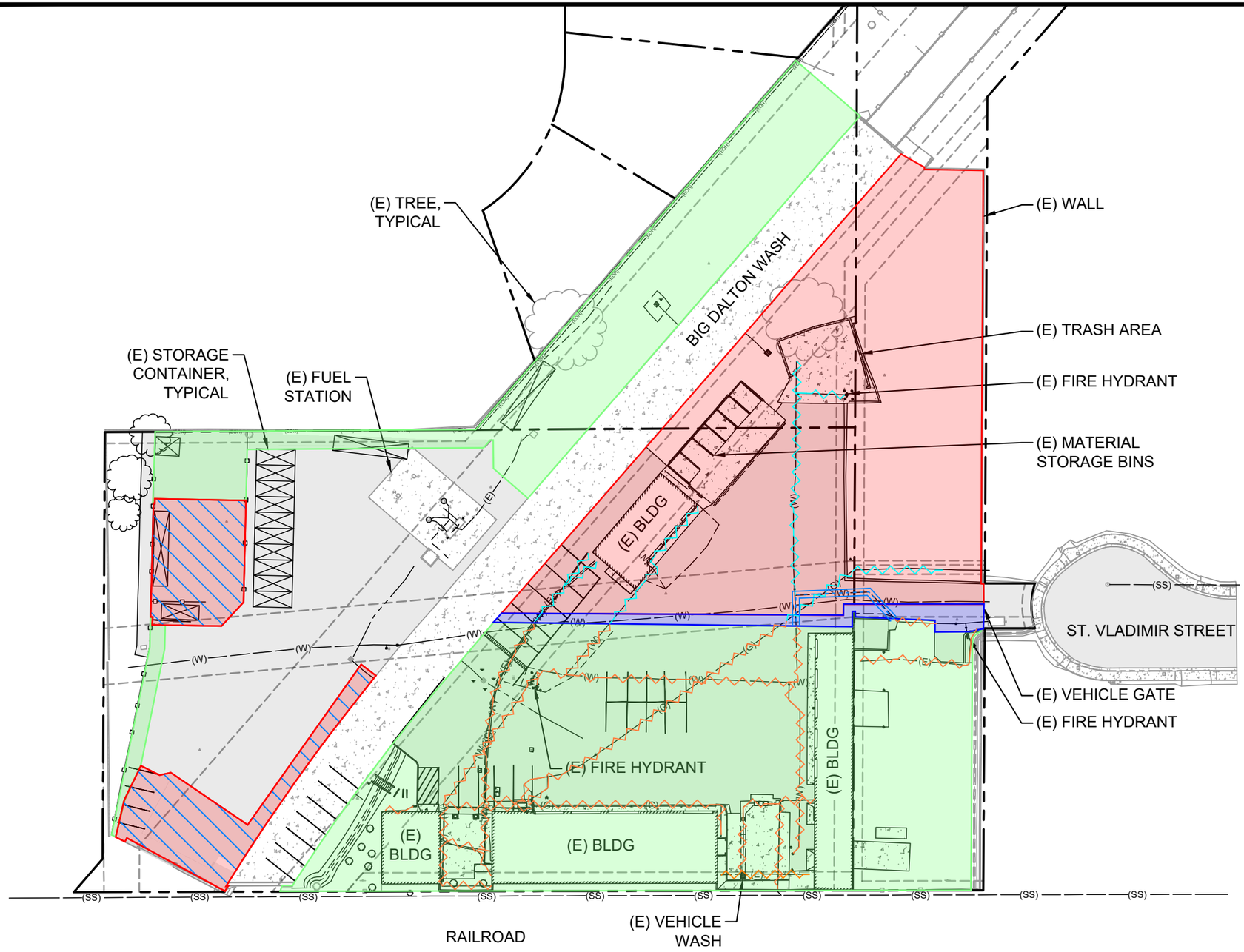
accounts for the added complexities associated with construction phasing, operational continuity, temporary utility connections, transition-zone improvements, contractor mobilization sequencing, and site logistics. These considerations are necessary to allow the City to maintain critical corporate yard functions throughout construction while minimizing disruption to ongoing municipal operations.

SECTION 9. CONCLUSION

The phased implementation strategy allows the City to maintain uninterrupted corporate yard operations while systematically replacing aging facilities and infrastructure. The ROM construction cost estimate reflects the additional coordination, temporary infrastructure, utility transitions, staging requirements, and logistical considerations necessary to support phased construction. Despite these added requirements, the overall phased construction cost remains generally consistent with previous planning-level estimates while providing a practical approach for maintaining essential City services throughout construction

APPENDIX A: PHASING DIAGRAMS

End of Report



LEGEND

- NEW CONCRETE PAVEMENT
- NEW ASPHALT CONCRETE PAVEMENT
- NEW TRUNCATED DOMES
- NEW LANDSCAPE AREA
- EXISTING ASPHALT CONCRETE PAVEMENT
- EXISTING CONCRETE PAVEMENT
- EXISTING WALL
- (W) EXISTING DOMESTIC WATER LINE
- (SS) EXISTING SANITARY SEWER LINE
- (G) EXISTING GAS LINE
- (E) EXISTING ELECTRICAL LINE
- (C) EXISTING COMMUNICATIONS LINE
- (EOH) EXISTING OVERHEAD ELECTRICAL LINE
- PROPERTY LINE
- EASEMENT LINE
- 1A / 1B PHASE 1A / 1B LIMITS
- PHASE 2 LIMITS
- PHASE 1 TO PHASE 2 TRANSITION AREA
- PHASE 1 UTILITY REMOVAL
- PHASE 2 UTILITY REMOVAL
- PHASE 2 UTILITY ABANDONMENT

SCALE: 1"=60'
0' 60' 120'

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PROJECT:
GLENDORA CORPORATE YARD IMPROVEMENTS

TITLE:
PHASING DEMOLITION PLAN

DESIGN: -

CHECK BY: -

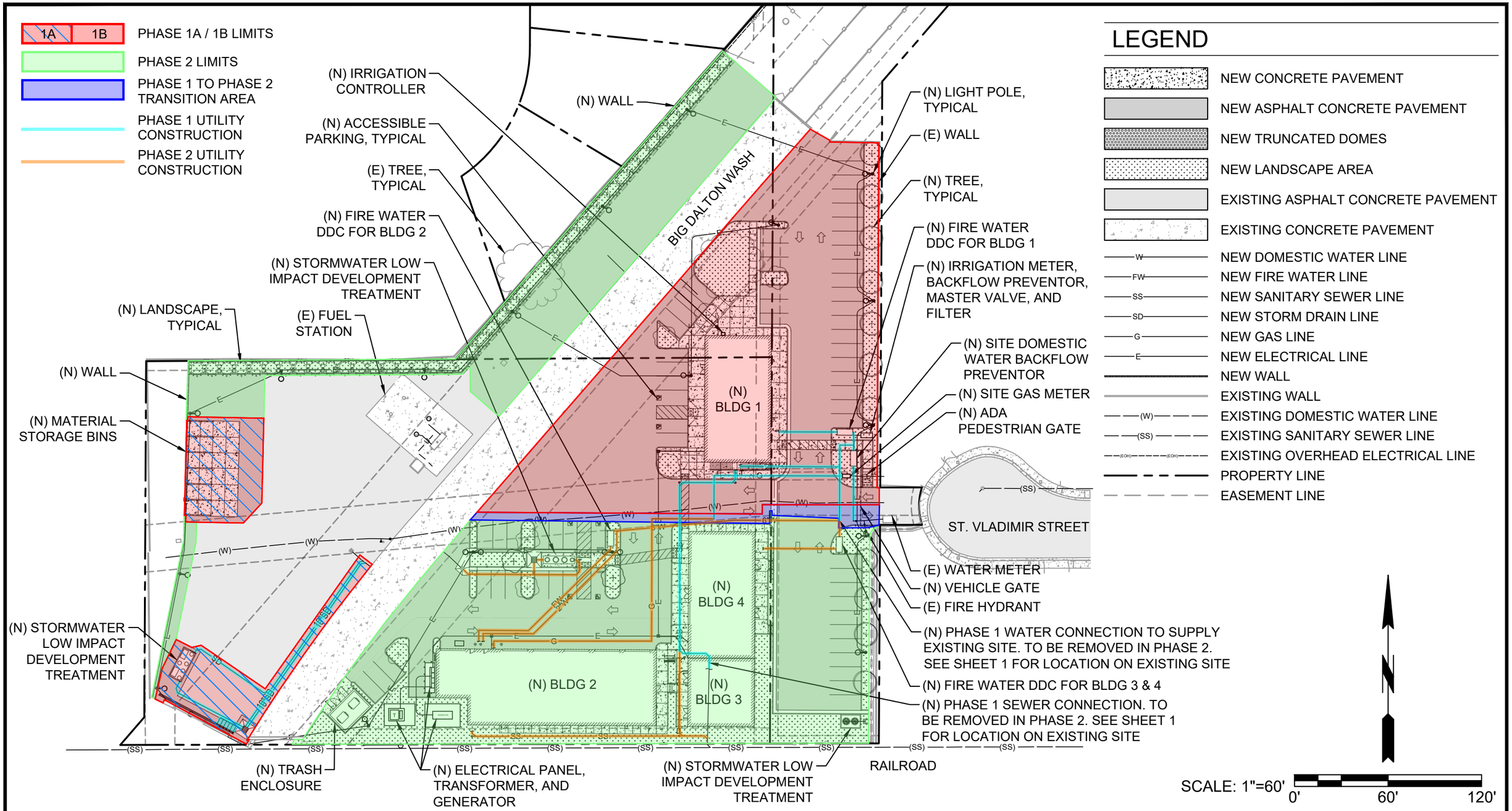
PROJECT #: 22X021.02

DATE: 7/15/2026

SCALE: AS NOTED

SKETCH #: 1 OF 2

REV: -



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PROJECT:
GLENDORA CORPORATE YARD IMPROVEMENTS

TITLE:
PHASING IMPROVEMENT PLAN

DESIGN: -

CHECK BY: -

PROJECT #: 22X021.02

DATE: 7/15/2026

SCALE: AS NOTED

SKETCH #: 2 OF 2

REV: -

GLENDORA PUBLIC LIBRARY CAPITAL IMPROVEMENT TIMELINE

Year	Project / Action	Category	System / Focus	Key Significance	Source File
1969	New Glendora Public Library - planning and authorization	Original Construction	Planning / Construction	Council authorization and pre-construction documents describe a two-story, approximately 28,000-square-foot library and civic facility.	Library Building Proposal - Specs, Est. Costs, Newspaper Article, State Grant Application (1969)(1).pdf
1970	Ground lease, project financing, design, and groundbreaking	Original Construction	Legal / Planning	Ground lease, revenue bond, architectural and construction documents established the project and site; groundbreaking occurred November 20, 1970.	Library Ground Lease and Sublease (1970).pdf; Library Ground-Breaking Ceremony (1970).pdf
1971	Carillon and civic amenity systems	Original Construction	Technology / Civic Amenity	Carillon system proposal included controls, amplification equipment, tower speakers, and installation.	Library Pre-Construction Documents - Agreement with A&L and E. Casler, Revenue Bonds, Guarantees, Carillon (1968-1971).pdf
1972	Library opens; landscaping, public telephones, AV and dedication improvements	Original Construction	Site / Interior / Technology	Completion records include landscaping, public telephone decisions, audiovisual systems, dedication plaque, and contractor guarantees.	Library Landscaping & Public Telephones (1972).pdf; Library Construction-Related Documents - AV Contract, Revenue Bonds, Preliminary Estimates, Payments to Architect (1969-1972)(1).pdf
1983	Building systems evaluation - plaza deck and water intrusion	Assessment / Study	Building Envelope / Drainage	Consultant documented cracking, failed waterproofing, settlement, deteriorated joints, ponding, and leakage into occupied library areas.	Report No. 110383 (1983) Building Systems Evaluation.pdf
1990	Proposition 85 modernization grant application	Planning / Grant	Comprehensive Modernization	Proposed comprehensive modernization included deck replacement, seismic work, expansion, remodeling, and architectural services.	Notices of Intent to Apply for State Grant Funds (1990).pdf
1997	Fire alarm modernization	Life Safety	Fire / Life Safety	Plans show a modern monitored fire alarm system with smoke detection, annunciation, notification, and central-station connection.	Library Fire Alarm Plans (1997)(1).pdf
1997	Retaining wall and drainage improvements	Site / Structural	Drainage / Site	Work addressed site drainage, block walls, sidewalks, and flooding concerns near the library entrance and Children's Room exit.	Retaining Wall Project (1997).pdf
1998	ADA planning, hardware, furnishings, shelving and drainage initiatives	Accessibility / Interior	ADA / Interior	Facilities goals included accessible door hardware, restroom retrofit design, automatic door funding, furnishings, seismic shelving, drainage, carpeting and wall-finish planning.	ADA Library Restroom Retrofit Project (1998).pdf; Retaining Wall Project (1997).pdf
1999	First-floor restroom ADA compliance renovation	Accessibility	ADA / Restrooms	Cogley & Son bid and contract renovated public restrooms for ADA compliance; construction records document completion in September 1999.	Library ADA Compliance Project - Contract with Cogley & Son General Contractor, and Plans (2000)(1).pdf
2000	Waterproofing and crack injection repairs	Building Envelope	Waterproofing	Repair program addressed leaking cracks in the library ceiling and roof using waterproofing materials with a three-year guarantee.	Waterproofing Work and Bid Specs (1991-2001).pdf
2001	Targeted leak, wall, window tower, drain and concrete repairs	Building Envelope	Waterproofing / Concrete	Repairs addressed east wall leakage, plaza-fill cracking, window tower sealants, urethane injection, box drain leakage, drain holes, and an air-register leak.	Waterproofing Work and Bid Specs (1991-2001).pdf
2003	Library structural retrofit - columns and north retaining walls	Structural	Structural / Seismic	Structural reinforcement was required before the plaza resurfacing project; contract awarded to D & M Construction.	Library Retrofit Plan No. 841 - Bid, Structural Calculations, and Plans (2003).pdf
2004	Library plaza demolition, waterproofing and resurfacing	Building Envelope / Site	Plaza / Waterproofing / Drainage	Project removed topping and site-cast slabs, waterproofed the structural slab, installed insulation, concrete topping, drains, electrical work, and new finishes.	Plaza Demo and Resurfacing Project Plan No. 852 - RFP, Bids, and Related Info (2004).pdf
2008	Children's Room expansion	Program Expansion	Interior / Program Space	Expansion improved children's services and program space. Amount should be confirmed against the final award and closeout documents before external publication.	Children's Room Expansion project records (uploaded set)
2014	Second-floor restroom ADA renovation - CDBG funding	Accessibility	ADA / Restrooms	Renovated two second-floor restrooms for wheelchair access and reduced reliance on the elevator for accessible restroom access.	Second Floor Restroom ADA Renovation Plan No. 1167 - CDBG Funding Agreement, Bid Specs, and Plans (2014-2015).pdf
2017	Public restroom renovation, Plan No. 1233	Accessibility	ADA / Restrooms	Renovation included ADA upgrades to men's and women's public restrooms, fixtures, partitions, plumbing, finishes, and a 45-working-day construction schedule.	Library Public Restroom Renovation Plan No. 1233 - Bid Specs and Plans (2016).pdf
2017	Roof repairs - Library, Police Department, and City Hall	Building Envelope	Roof	Combined roof-repair bid package covered the Library, Police Department, and City Hall; the library-specific share is not separately stated in the reviewed records.	Plan No. 1241 (2017) Roof Repairs - LIB, GPD, CH.pdf

2017	Server room improvements, Plan No. 1231	Technology	IT / HVAC / Security	Work secured the IT server room, closed openings, installed walls and a protective hard-lid ceiling, and upgraded HVAC and lighting.	Server Room Improvements Plan No. 1231 (2017).pdf
2018	Clean-agent fire suppression system for server room	Life Safety / Technology	Fire Suppression / IT	NOVEC-1230 clean-agent system protected the server room and technology infrastructure without water-based suppression.	B18-1151 Fire Suppression System - Server Room (2018).pdf
2026	Comprehensive facility assessment and modernization planning	Assessment / Study	Comprehensive Modernization	Current work evaluates the cumulative condition of the facility and long-term modernization options.	Current Library and Public Works workshop records

City Corporate Yard — Chronology of Actions

Compiled from City Council and Planning Commission agenda packets and meeting minutes, 1960–1989 (retained in the project archive).

Date	Meeting	Action
Jun 8, 1960	City Council	City Manager listed *"relocation and construction of a new City Corporation Yard"* (est. $27,500) among priority projects for the 1960-61 budget year. Council voted to make the relocation/construction a priority project, then designated it Priority No. 2 (behind a fire-service study, Priority No. 1).
Jul 7, 1961	City Council (adjourned mtg)	City Manager discussed the San Jose Reservoir site and the need for a new Corporation Yard. Mayor Day stated the Council consensus: if a Flood Control easement could be obtained, relocating the yard there would be agreeable to the Council.
Jan 28, 1963	City Council	City Manager produced a map showing planned improvements to the existing yard at Sierra Madre and Loraine Avenues. Council voted (Speck/Detwiler) to instruct the Engineering Dept. to prepare a more detailed study and drawings for later presentation. Councilman Finkbiner voted yes but asked to keep investigating a more centrally located yard. A separate year-end project status report presented the same night listed the "Corporation Yards" line item under the Sand Slurry program as: "No action has been taken."
May 7, 1963	City Council	Assistant City Engineer presented a study on building the yard on property adjacent to the Santa Fe Railroad, as an alternative to the San Jose Reservoir site — estimated at $105,000 in two phases. Council instructed the City Engineer to negotiate purchase of a small triangular parcel from Wilke Lumber Co. (up to $300), and to request a title search on an adjoining 1.7' strip. Nearby residents protested the plan, preferring the site be made into a park.
Jul 23, 1963	Planning Commission (Public Hearing)	Hearing on the yard's location, with extensive public testimony both for and against. PC voted (Dunham/Cleveland) to recommend the yard be sited adjacent to the Santa Fe tracks, with conditions: primary access via the railroad right-of-way, design by a licensed architect, screening/landscaping, and masonry walls where needed.
Aug 6, 1963	City Council (Public Hearing)	Council held its own hearing (Conditional Use Permit) on the same site, with continued public protest. Voted **4–1** (Finkbiner/Crumpler; Detwiler dissenting) to follow the Planning Commission's recommendation and approve the site per the Exhibit #1 plans.
Feb 18, 1964	City Council	Architect John Bartlett presented plans and cost estimates for Phase 1 and Phase 2 of the Corporation Yard.

Date	Meeting	Action
		Council voted **4–1** (Crumpler/Speck; Detwiler dissenting) to extend the architect's agreement through Phase 2 and to call for construction bids on both phases (~April 21, 1964).
Jun 16, 1964	City Council	Six construction bids for the Corporation Yard were opened, ranging from $117,224 to $138,992. Council voted (Speck/McGill) to refer the bids to the City Engineer for tabulation and report (no award made at this meeting).
Apr 6, 1965	City Council	Property owners (Rush, Krause, Gates) claimed city crews destroyed their property corner stakes while grading/oiling the Santa Fe right-of-way — identified as the access easement for the new Corporation Yard. Council denied the claims and referred them to the City's insurance carrier.
Jan 18, 1966	City Council	City Engineer reported that the owner of a 0.06-acre parcel immediately west of the yard offered to sell it to the City for $375. Council voted (Speck/Crumpler) to authorize the purchase and had the Mayor and City Clerk sign the escrow papers.
Feb 23, 1971	Planning Commission	*Tangential mention only:* a staff report on Tract 29772 identified the adjoining land use to the east as the "Division of Highways' Maintenance Yard" — a state (Caltrans) facility, not the City's own Corporation Yard. No action regarding the City's Corporation Yard was taken at this meeting.
Jun 8, 1982	City Council / CRA	Council voted (Martyns/Prestesater) to select the architectural firm Grillias/Pirc/Rosier/Alves and authorize a contract, not to exceed $18,500, to design a new "Corporation Yard Complex."
Nov 8, 1988	City Council / CRA	Council approved an amendment to the 1987 agreement with CHCG Architects for the Corporation Yard expansion, raising the fixed fee from $117,000 to $209,000. The scope grew from a 22,220 sq. ft. building program to 32,070 sq. ft., plus 9,000 sq. ft. of covered vehicle storage and 2,800 sq. ft. for a fuel dispensing/fueling structure.
Feb 28, 1989	City Council (Special Meeting)	Consultant James Nash and architect Manual Carlos (CHCG) presented the Corporation Yard Project design: a six-foot masonry perimeter wall, relocated fuel tanks, and a repositioned street-sweeper garage intended to reduce noise for neighboring residents. Estimated project cost: **$3.2 million**. Schematic design expected mid-March; construction documents by mid-summer; construction to be phased over roughly one year. Council voted (Martyns/Glenn) to receive and file the report.

Note: The February 23, 1971 Planning Commission entry references a state Division of Highways maintenance yard adjacent to an unrelated subdivision application, not the City's own Corporation Yard, and is included here only because it appears in the source file set.

WORKSHOP 2: LIBRARY & PUBLIC WORKS YARD

July 21, 2026

RECOMMENDATION

What Staff Is Recommending

That the City Council:

1. **Receive and file** the updated reports on the Glendora Public Library and the City Corporate Yard.

2. **Provide direction** to staff on prioritization and funding strategies for these two critical facility projects.

Scope of tonight's discussion: This workshop does not award a construction contract or appropriate full project funding. It provides the full context of the City's two largest outstanding facility needs, clarifies the magnitude, and prepares for Workshop 3, where funding strategies will be discussed based on tonight's direction.

A MULTI-YEAR DISCUSSION, BROKEN INTO THREE FOCUSED MEETINGS

A Three-Workshop Series

01

Workshop 01 • June 16 — COMPLETE

Foundation & Funding

City Council directed approximately $11.88M in one-time funds to streets and current facility needs.

The first $3M was appropriated July 14, 2026 to initiate the approved street work.

YOU ARE HERE

02

Workshop 02 • July 21

Library & Public Works Yard

Tonight: the City's two most significant facility needs – condition, history, cost estimates, phasing options, and service-continuity considerations.

03

Workshop 03 • Sept 15

Funding Options & Next Steps

Grants, land sales, debt issuance, and other strategies to pay for the work, shaped by the direction provided tonight.

WORKSHOP 1 RECAP — HOW THE CITY EARNED THIS CONVERSATION

A Turnaround Two Decades in the Making

$3.5–$4M

structural deficit eliminated through modernization, Measures E & Z, and pension restructuring

AAA

bond rating earned — the highest available

$2M+/yr

in efficiency savings deliberately reinvested into maintenance

$11.88M

in one-time funds directed to streets and facilities — without a new tax

Fiscal discipline created the capacity. Workshop 1 put it to work.

In 2002, the Los Angeles Times warned that Glendora's infrastructure was crumbling and the City could not afford repairs. It took organizational modernization, voter-approved measures, and years of disciplined budgeting to change that. On June 16, 2026 the City Council directed nearly $12 million toward streets and current facility needs – the first meaningful strike against decades of underinvestment. The first $3 million was appropriated on July 14, 2026 to begin the approved street work. Tonight addresses the two projects that were intentionally set aside from that discussion because they are too large for it: the Library and the Corporate Yard.

WORKSHOP 2 ANSWERS TWO QUESTIONS

Two Facilities — One Decision Framework

1

What is the true condition – and cost – of the Library and the Corporate Yard?

Decades of assessments, updated reports (2026), and current cost estimates – from a $3.2M structural repair to a $42.5M new library, and a $13.6M phased Corporate Yard.

2

What direction will shape the funding strategy for Workshop 3?

City Council identifies which Library scenario to evaluate further – repair, modernization, expansion, replacement, or EOC-ready – and confirms the Corporate Yard phasing approach.

EXECUTIVE SUMMARY

Two Essential Facilities, One Common Thread

Glendora Public Library — 1972

One of the City's most visible and heavily used public facilities, and its designated Emergency Operations Center. Water intrusion and structural concerns date to the year the building opened.



City Corporate Yard — c. 1965

The operational hub for Public Works: fleet, streets, facilities, materials, and emergency response support — with Parks, Trees, and Landscape operations planned to consolidate here.



The common thread: Both facilities are essential to City operations, both are far beyond the scope of routine maintenance budgets, and neither has a dedicated funding source. Per City Council direction (April 28, 2026), both were intentionally excluded from the Workshop 1 one-time funds allocation.

This Moment Didn't Happen by Accident

We studied the problem

The City Council directed a Citywide facility condition analysis, in-depth Library structural evaluations (2021–2026): a Corporate Yard site analysis, and community surveys — replacing assumptions with engineering and data.

This is in addition to the studies, evaluations, work, and improvements previously completed.

We planned deliberately

The Strategic Plan made new and revitalized facilities a formal City goal.

The City Council adopted the Civic Center vision as a public starting point, approved the three-workshop framework, and set the one-time funding range.

We chased every dollar

1990 California Library Construction and Renovation Bond Act; 2023 Building Forward application, a $10M State budget request.

Nearly $50M invested in capital projects since 2020.

Standing City Council direction (January 2026): pursue all state and federal grant funding.

The through-line: these workshops are the strategy – a structured, public process to confront facility needs that have been documented for decades, with the community in the room. Tonight is the second of three deliberate steps.

SECTION ONE

The Glendora Public Library

1

A 27,000-square-foot community anchor and a 50-year story of water, concrete, and hard funding choices.



THE GLENDORA PUBLIC LIBRARY

Completed 1972 – one of the City's most visible and heavily used public facilities, and its Emergency Operations Center.

THE GLENDORA PUBLIC LIBRARY

The Building Today







COMPLETED 1972 AS PART OF THE CIVIC CENTER COMPLEX

The Library at a Glance

1972
two-story reinforced concrete & masonry

27,000
square feet of building area

EOC
serves as the City's Emergency Operations Center

$2.95M
current annual operating budget

The plaza is the roof

The Bidwell Plaza sits directly above the occupied Library space and serves as part of its roof structure. The condition of the Plaza – and its drainage system – is directly tied to the water intrusion and structural concerns inside the Library below. Water intrusion was first documented shortly after the building opened, and the issues have been studied and repaired repeatedly for five decades without a comprehensive permanent solution.



THIS IS NOT A RECENTLY DISCOVERED ISSUE

Fifty Years of Study & Repair

1983	1988	1990	2003–04	2021
Slab & Waterproofing Study	**Structural Soundness Review**	**Prop 85 Grant Effort**	**Voluntary Upgrade**	**Preliminary Assessment**
Plaza deck cracking and water intrusion; recommended removal and replacement of slab and waterproofing.	Identified concrete girder cracking and structural load concerns (the same core finding confirmed in 2023).	Grant application for repairs, renovation, and expansion; grant program has since expired.	Reinforced portions of the building and resurfaced the plaza; water intrusion and cracking later continued.	Shade-structure study revealed visible cracking and water intrusion – prompting deeper evaluation.

2022	2023	2023	2023–24	2026
CDA Condition Assessment	**MHP Phase 1 + 2**	**State Grant Application**	**Bureau Veritas FCA**	**MHP Update**
Confirmed cracking exceeding allowable standards (0.016"; some over 0.06") and water intrusion.	In-depth structural analysis ($2.87M repair estimate) plus visioning: seven workshops, 50,000 sq. ft. target.	$8M Building Forward request; competitive but not selected – criteria prioritized disadvantaged communities.	$6.96M in building systems and component costs identified over 20 years (3% annual inflation).	Structural strengthening and waterproofing remain needed. Updated cost estimate: $3.2M.

2004 Renovations



Rear Wall Reinforcement





Column Reinforcement

2004 Plaza Resurfacing










DOCUMENTED CONDITIONS 2021 TO 2026

2022 CDA Condition Assessment





DOCUMENTED CONDITIONS 2021 TO 2026

2022 CDA Condition Assessment



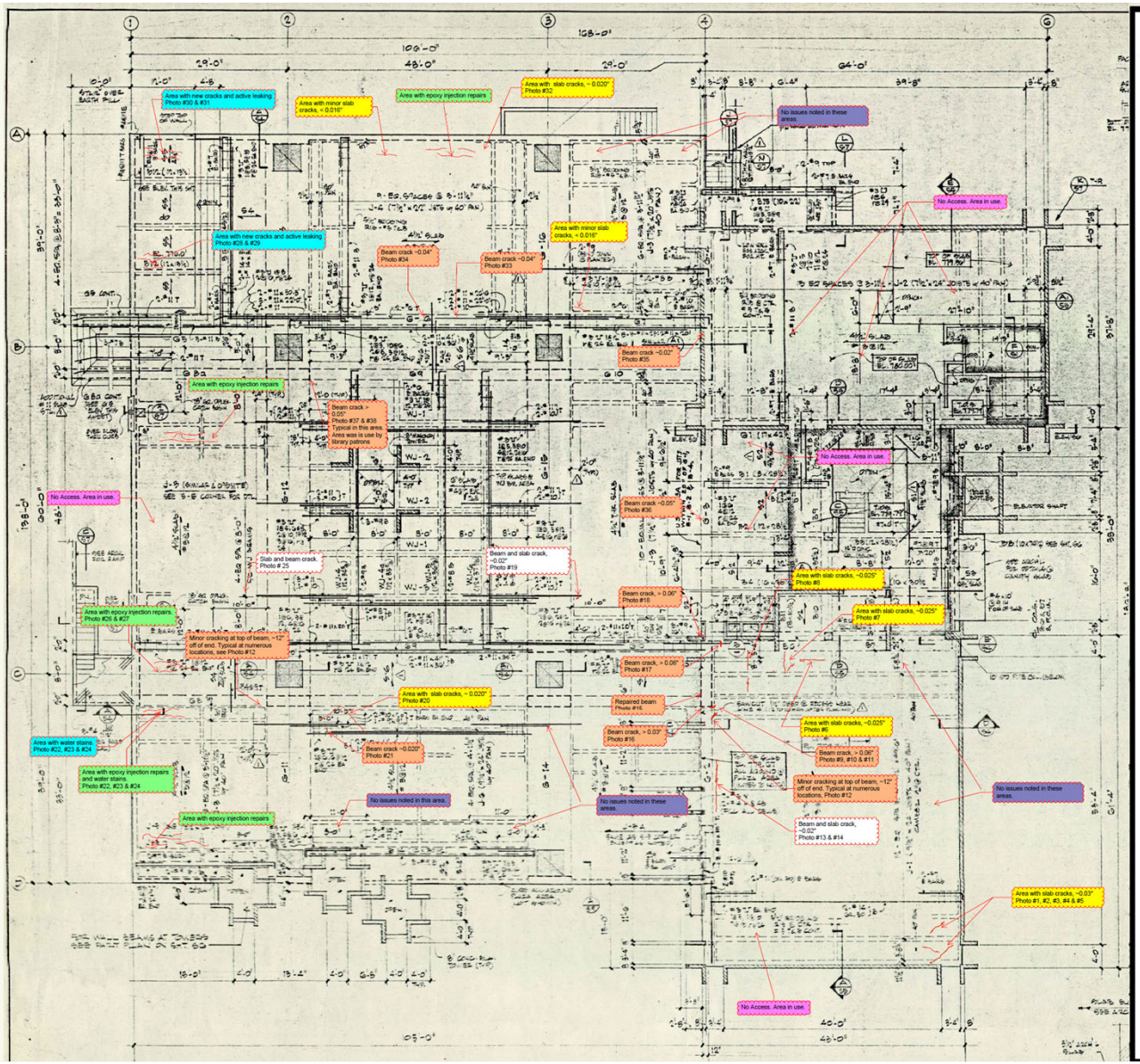




DOCUMENTED CONDITIONS 2021 TO 2026

2022 CDA Condition Assessment

Annotation from visual survey in March 2022 (not comprehensive)



Glendora

MHP STRUCTURAL EVALUATION — UPDATED JULY 2026

The 2026 MHP Update

Site Conditions

Cracking of main beams and girders appears stable – **does not present an immediate concern** under current loading. Water-intrusion areas should be addressed near-term to prevent further concrete damage.

Seismic Analysis

The main structural system generally meets essential-facility standards. The exception: the Bidwell Forum – needing wall anchorage, fiber-reinforced wrapping around supporting beams, and new shear walls.

Foundation Improvements

Four central pier foundations must be enlarged (one foot of concrete around the full perimeter) to support a 100-psf live load at essential-facility standards.

Non-Structural / EOC

If the Library is to remain the Emergency Operations Center, mechanical, electrical, plumbing, IT, and ceiling systems require further review and anchorage (not in the current repair scope).

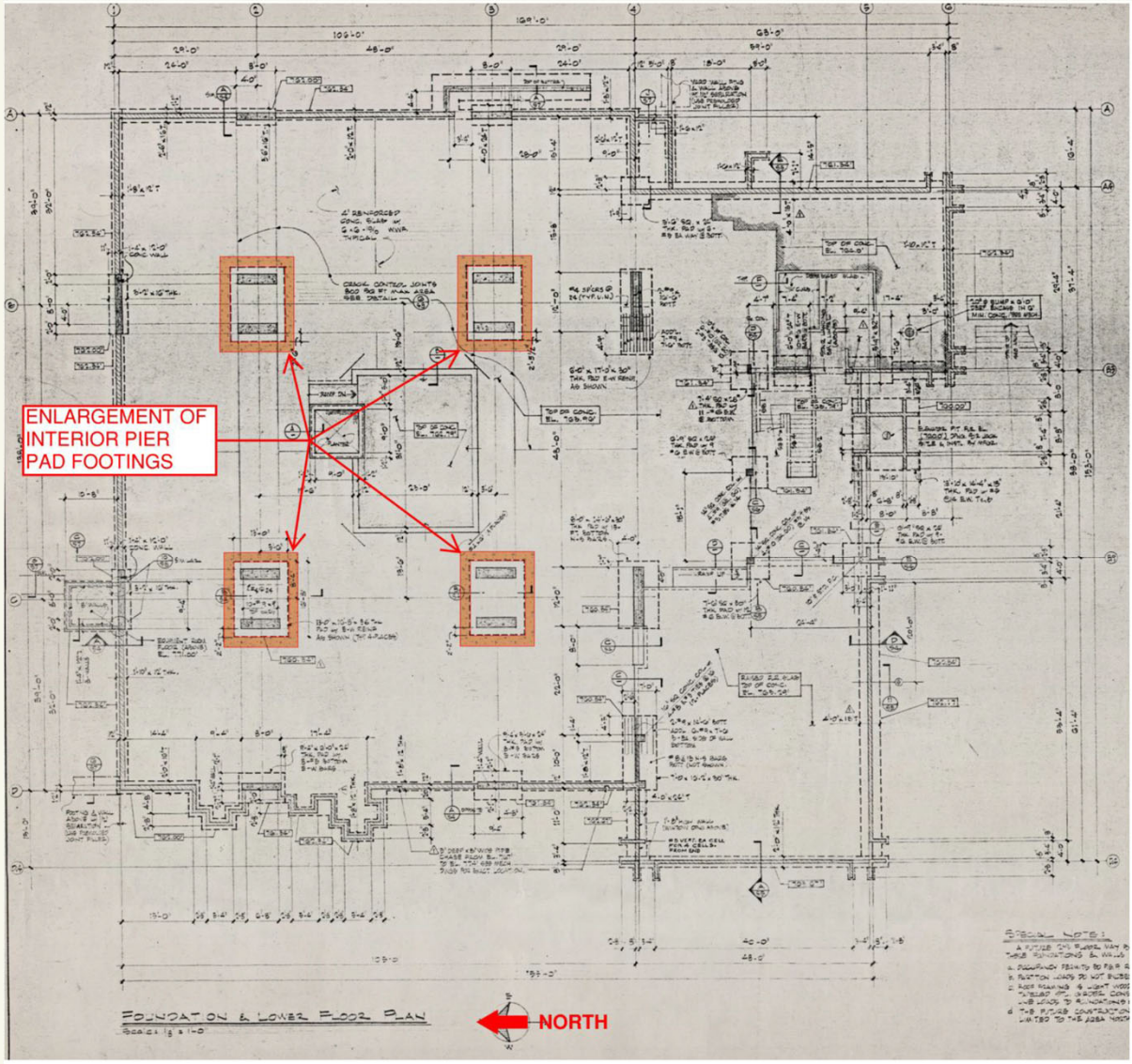
$3.2M

Updated construction cost for structural strengthening and Bidwell Plaza waterproofing (Sept 2027 start).

Excludes soft costs, broader modernization, comprehensive waterproofing, interior improvements, and EOC-related non-structural work.

DOCUMENTED CONDITIONS
2021 TO 2026

2023 and 2026 MHP Assessments

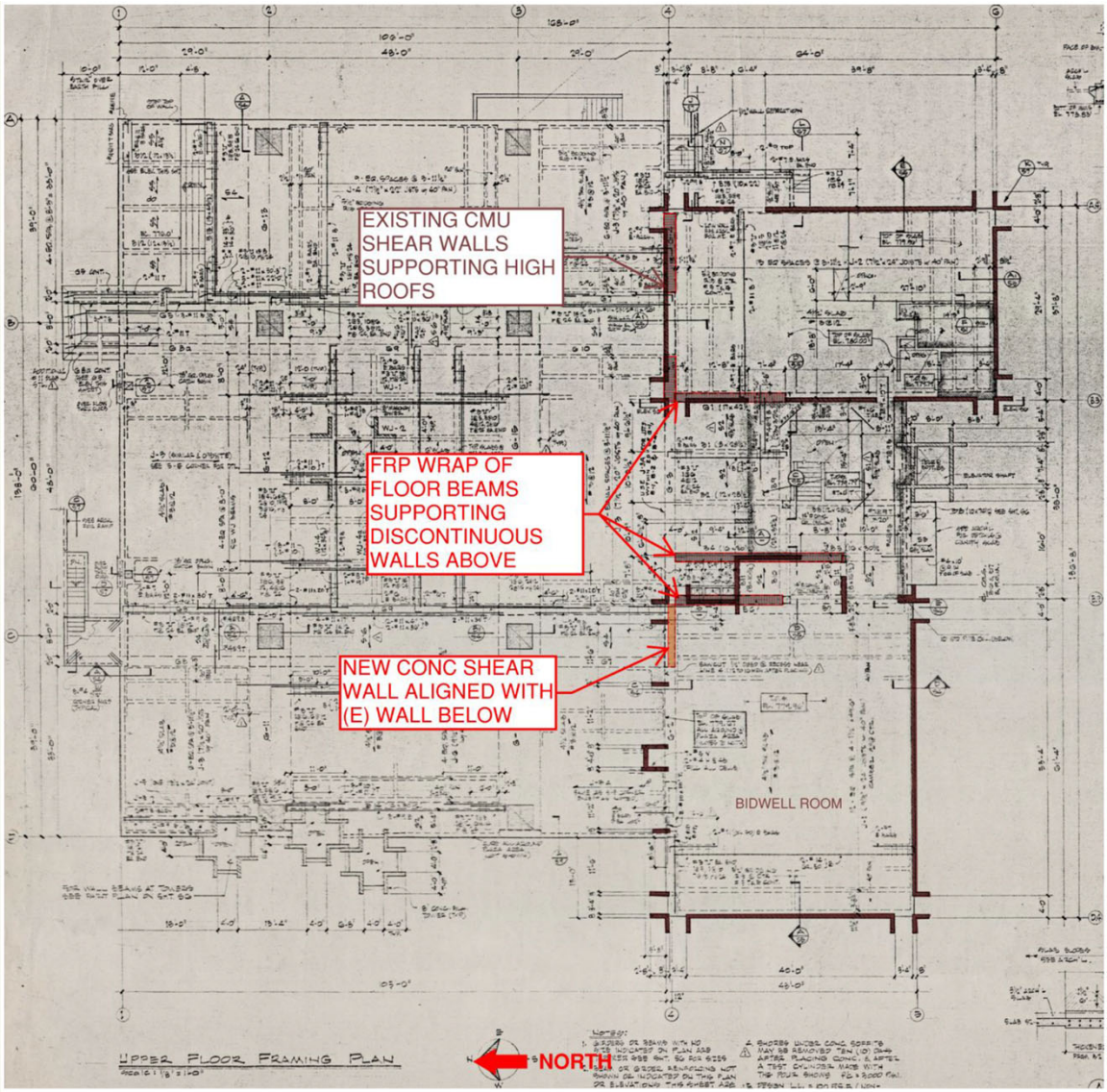


Conceptual Plan View of Central Pier Foundation Retrofit

Glendora

DOCUMENTED CONDITIONS
2021 TO 2026

2023 and 2026 MHP Assessments

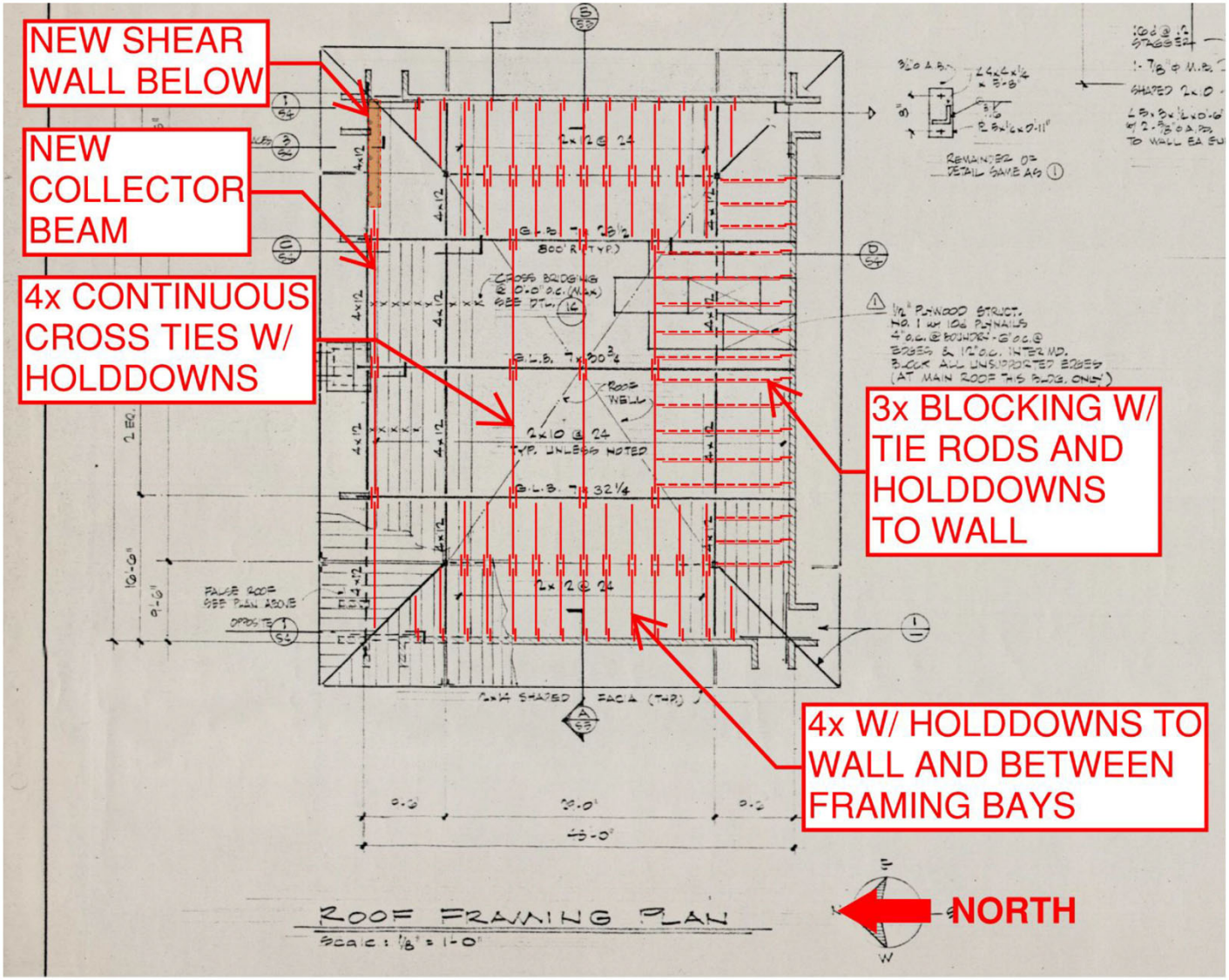


Conceptual Plaza Level Framing Plan – New Shear Wall and FRP Beam Wrap

Glendora

DOCUMENTED CONDITIONS
2021 TO 2026

2023 and 2026 MHP Assessments



Conceptual High Roof Strengthening (Bidwell Room shown, North High Roof Similar)

Glendora

P2S MEP ASSESSMENT (2023) + BUREAU VERITAS FCA

Beyond Structure: The Rest of the Building (2023)

Mechanical

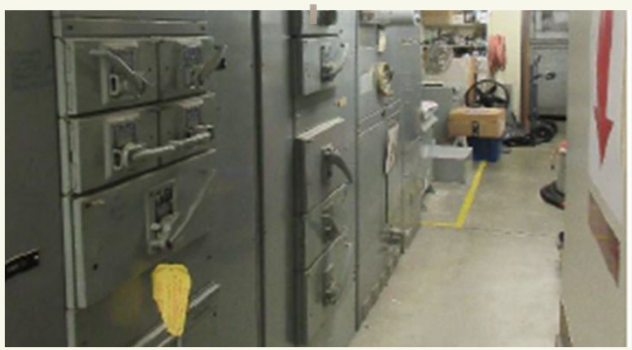
Both original air handlers are ~53 years old – well past their 15-year useful life – with major leaks and rusted casings. The chiller plant runs at maximum capacity with zero room for expansion. Ductwork is embedded in structural beams.





Electrical

The 1,600-amp main switchboard and panels are 1970 originals – obsolete, with uncertain replacement parts and no spare circuit capacity. Two interior transformers lack code-required overcurrent protection.



Plumbing

The 2-inch water service is inadequate for any addition (minimum 4 inches needed). Water pressure exceeds the 80-psi code maximum, and the sanitary drainage line is already at capacity.



$6.96M (2026) in building systems and component improvement costs identified by the Bureau Veritas FCA over the next 20 years (mechanical, electrical, plumbing, fire, flooring, roofing, windows — assuming 3% annual inflation).

FROM REPAIR TO REPLACEMENT — THE FULL RANGE

The Menu of Library Options

Option	Description	Estimate (2023)
1	Structural strengthening and repairs	**$2.9M (recommended project budget: $4.0M)**
1a	Option 1 plus plaza hardscape and green roof	**$3.2M**
2	“The Deck” expansion concept	**$20.6M**
3	“The Paseo” expansion concept	**$23.0M**
4	New building (50,000 sf vision)	**$42.7M**



“The Deck” expansion



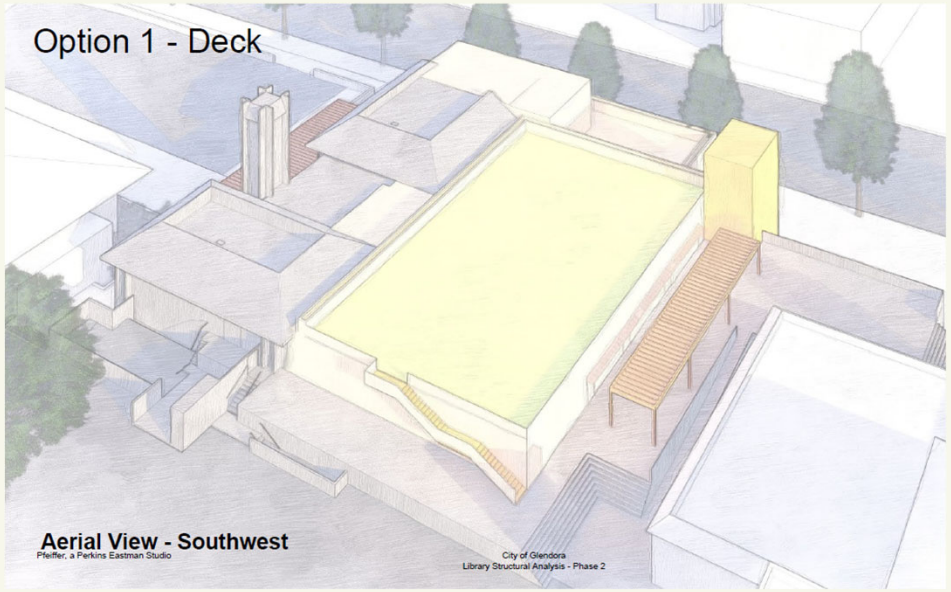
“The Paseo” expansion

Context: Estimates prepared in 2023 as part of the Visioning (MHP/Pfeiffer)
$2.9M baseline addresses structural repair only and leaves identified MEP deficiencies substantially unaddressed. A new standalone Library is estimated at $39M to upward of $72M.

Hard construction estimates by Cumming; excludes soft costs (design, plan check, permits, inspection).

MHP / PFEIFFER VISIONING — 2023

Two Visions for an Expanded Library





Visioning was non-architectural in nature, only massing and general use of space(s)

OPTION 1 — "THE DECK" • $20.6M

OPTION 2 — "THE PASEO" • $23.0M

IF THE LIBRARY MUST CLOSE FOR AN EXTENDED PERIOD

Keeping Library Services Running

Option 1

Rental facility of at least 7,000 sf

$3.15M

estimated Year One cost – approx. $900k in one-time funding

Highest service continuity — study space, programming, staff functions all continue.

Option 2

One portable location (2,160 sf) + two outreach vehicles

$3.41M

estimated Year One cost – approx. $1M in one-time funding

Core services continue; no study, programming, or staff space on site.

Option 3

Two temporary locations (4,320 sf) + one outreach vehicle

$3.78M

estimated Year One cost – approx. $1.3 million in one-time funding

Adds limited study space back; still no programming or staff space.

For scale: the Library's entire annual operating budget is approximately $2.95M. All options assume a two-month relocation, current staffing levels, mobile-service purchases in year one, and long-term storage of collection unavailable to the public.

HOW THE LIBRARY WAS PAID FOR — AND WHY IT CAN'T HAPPEN AGAIN

A Financing Model Frozen in Time

Then — 1970

- A 1955 library bond failed 68% to 32%; state and federal grants were denied.
- The City formed a JPA with the school district and issued approximately $950K in lease revenue bonds (no voter approval required).
- Fire services transferred to LA County, but the City kept the property tax capacity that had funded them.
- That freed-up tax capacity to make the annual lease payments.

Now — 2026

- Proposition 13 (1978) ended a city's ability to set or retain its own property tax rates.
- Cities can no longer create new repayment capacity by reallocating property taxes after a service transfer.
- Any significant new revenue source now generally requires voter approval (Props 13, 218, 26).
- JPAs and lease revenue bonds remain legal tools – but the revenue behind them must come from somewhere.

SIX DECADES OF PURSUING OUTSIDE MONEY

Grant Efforts — Past and Present

Late 1960s

State & federal construction grants sought to reduce local financing for the new library. Applications were denied, forcing the JPA lease-revenue approach.

1990 – Proposition 85

Approximately $650K sought for structural repairs, renovation, and modest expansion under the state library bond act. The program has long since expired; no comparable program exists today.

2023 – Building Forward Grant

$8M request for waterproofing, electrical, HVAC, plumbing, and structural repairs. Technically competitive but was not selected; the program prioritized disadvantaged communities.

NOW — FY 2026/27 State Budget Request

Staff is working with Senator Pérez to secure an allocation as part of Fiscal Year 2026/27 State budget; initial figure identified is $10 million, based on the scope of the previously submitted Building Forward grant (critical maintenance including mechanical, electrical, plumbing, structural, and weatherproofing repairs). Pending City Council direction tonight, staff will meet again with the Senator's office and submit a formal funding request. Pursuing this appropriation does not preclude future competitive state, county, or federal opportunities.

SECTION TWO

The Corporate Yard

2

Built around 1965 — the operational engine behind every street, park, tree, and City facility.



THE CITY CORPORATE YARD Built c. 1965 — the operational hub behind every street, park, tree, facility, and emergency response in Glendora.

1250 ST. VLADIMIR STREET — 2.8 ACRES

The Yard Today



FACILITIES DIVISION





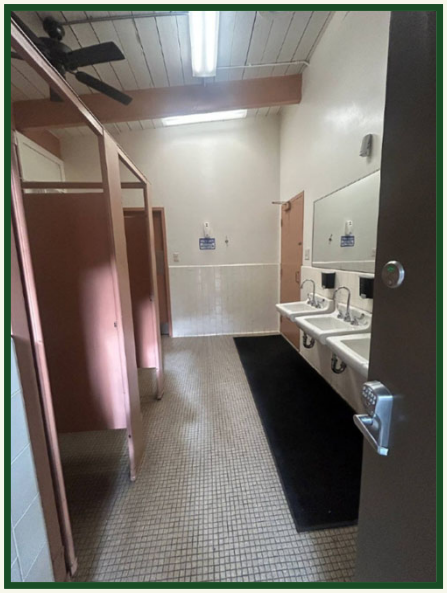
STREETS DIVISION



FLEET DIVISION

1250 ST. VLADIMIR STREET — 2.8 ACRES

The Yard Today









THE OPERATIONAL HUB OF PUBLIC WORKS

The Corporate Yard at a Glance

c. 1965

original construction — six decades of service

2.8

acres at 1250 St. Vladimir Street

8,270

square feet of existing building area

$2.12M

in deferred maintenance identified by Bureau Veritas

What runs through this site

Fleet Services, Streets, Facilities Maintenance, materials and equipment storage, vehicle operations, and emergency response support, with Parks, Landscape Maintenance, and Urban Forestry planned to consolidate here. A centralized yard improves coordination, reduces travel time, shares equipment, and strengthens emergency response.



THE IDS GROUP SITE ANALYSIS

Why Repair Isn't the Answer

The condition problem

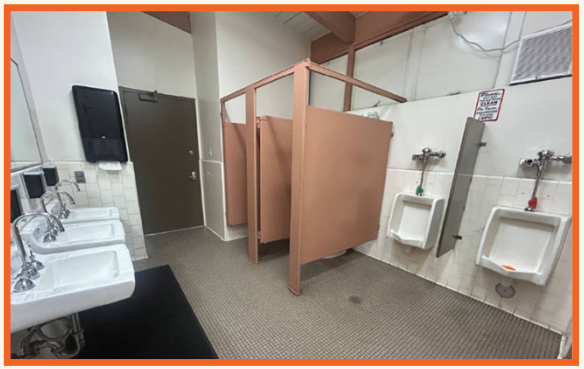
- $2.12M in deferred maintenance: deteriorated roofing, exterior deficiencies, pavement failures.
- Aging electrical, sewer, and stormwater infrastructure requiring substantial upgrades.
- **But fixing all of it still would not fix the yard.**

The obsolescence problem

- Buildings are functionally obsolete; the site layout is inefficient.
- Inadequate office, training, storage, staging, and employee support space.
- IDS conclusion: demolition and reconstruction is more cost-effective and operationally efficient than renovation.







IDS GROUP DESIGN — FROM 8,270 SF TO 18,310 SF

The Proposed New Corporate Yard

Building	Proposed Use	Existing SF	Proposed SF
(1) Office	Facilities, Streets, Parks, Trees & Landscape offices; future traffic control center / EOC potential	1,203	7,500
(2) Garage / Fleet	Fleet office, maintenance garage, repair space, car wash station	4,346	5,510
(3) Sign & Tire Storage	Paint/sign shop and tire storage	1,200	1,800
(4) Facility Shops	Workshop space for wood and metal work	1,521	3,500
Total		**8,270**	**18,310**

$12.6M

2024 preliminary construction estimate

$13.6M

2026 estimate with phased construction



Design status: City Council approved the IDS design agreement on Nov. 12, 2024; work has advanced through design and construction documentation.

SIX DECADES APART

The Yard Today — and the Yard Tomorrow



TODAY — BUILT c. 1965





TOMORROW — 18,310 SF MODERN CAMPUS

BUILDING IT WITHOUT STOPPING OPERATIONS

The Phasing Strategy

Phase 1A

Northwest of the Big Dalton Wash: selective demolition, new storm drain infrastructure, LID facilities, material storage bins, grading, and paving.

Phase 1B

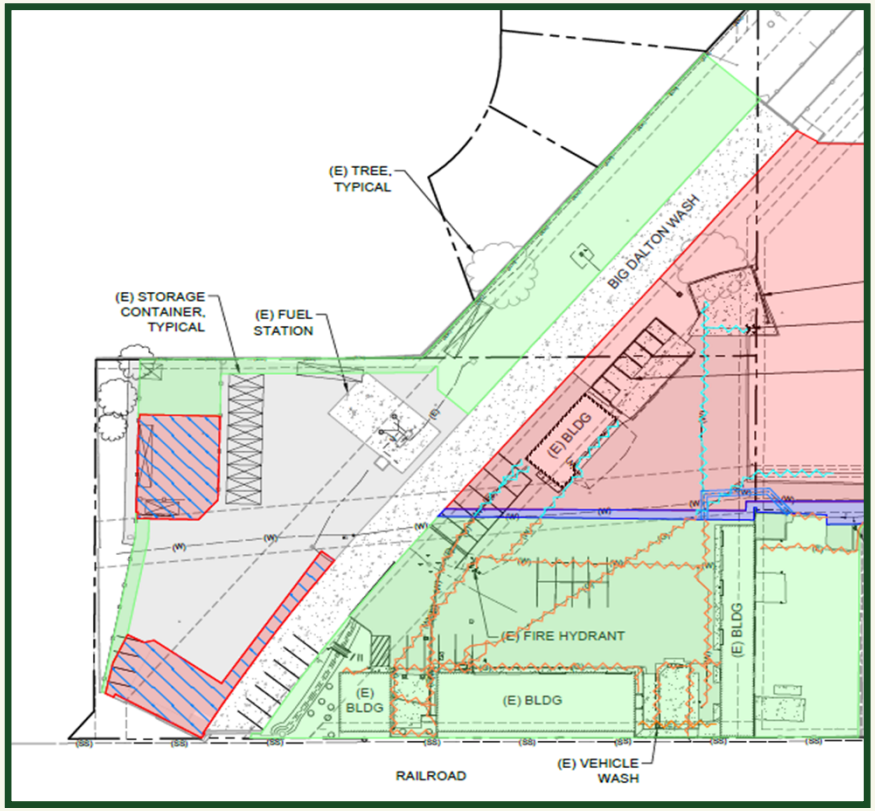
Southeast of the Wash: the new Administration Office (Building 1), employee parking, primary circulation, and major utility infrastructure.

Transition Zone

Shared utility connections and infrastructure to keep operations running continuously between Phase 1 and Phase 2.

Phase 2

Demolish remaining buildings; construct Fleet Maintenance, Sign & Tire Storage, and Maintenance Shops, plus all remaining site improvements.



Why phasing costs more: temporary operations, mobilization, sequencing, utility transitions, and escalation add ~$1M to the project.

SECTION THREE

The Decision Before You

3

Two essential facilities, no dedicated funding source. Tonight's direction shapes the Workshop 3 funding conversation.

DIFFERENT FROM ROUTINE FACILITY MAINTENANCE

Why These Projects Need Their Own Strategy

Too big to absorb

Neither project fits in annual maintenance budgets. The Library's near-term structural work alone is approximately $3.2M (construction only) – and that isn't modernization. The Corporate Yard is $13.6M and may grow with escalation and market conditions.

More than repairs

The Library requires a decision about its long-term role – including whether it remains the Emergency Operations Center. The Corporate Yard is a decision about how Public Works operates for the next several decades.

Citywide significance

The Library is a major community asset and gathering space; the Yard underpins daily operations and emergency response. Deferring either means higher future costs, continued inefficiency, and growing facility risk.

TRUE NORTH BOND FEASIBILITY SURVEY — 600 LIKELY VOTERS (MAY 2024)

The Funding Reality

45%
support for a Library-only bond measure

53%
support for a Citywide facilities bond

66.7%
voter approval required to pass a G.O. bond

$0
dedicated funding source exists for either project

Every option stays on the table

- State & federal grants and state budget appropriations (including the approximately $10M request with Senator Pérez)
- Available one-time funds, if directed by City Council, and proceeds from potential land sales
- Capital project debt financing and re-prioritization within the Capital Improvement Plan
- Phasing improvements over several years, future revenue measures if directed, or a combination of sources

THE DIRECTION STAFF IS SEEKING TONIGHT

Setting Up Workshop 3

For the Library

Which scenario should staff evaluate further?

- Repair only ($4.5+M recommended budget)
- Broader modernization (MEP + structural)
- Expansion (“The Deck” / “The Paseo”)
- Replacement (“Civic Center Vision” – new building)
- EOC-ready facility (adds non-structural scope)

For the Corporate Yard

- Confirm the phased construction approach ($13.6M)
- Direct staff to continue refining phasing and updated construction cost estimates
- Weigh the trade-off: phasing preserves operations and spreads cost over years — but adds expense through mobilization, sequencing, and escalation

Workshop 3 – September 15: Funding strategies, prioritization, phasing, and potential future City Council actions, built on tonight's direction.

FOR THE RECORD

Fiscal Impact & Environmental Determination

Fiscal Impact

There is no fiscal impact associated with receiving and filing this report. Any future appropriation, funding plan, design modification, construction award, or financing action will be brought back to the City Council for consideration.

Environmental Determination

Receiving and filing this update is not a “project” under the California Environmental Quality Act (CEQA) because it does not approve construction, authorize physical improvements, or commit the City to a specific project. Future project approvals for the Library or Corporate Yard will include appropriate environmental review.

Next steps: following tonight's direction, staff will refine scenarios and cost estimates, advance the state budget request, and return for Workshop 3 with funding strategies and a recommended roadmap.

BEFORE THE DISCUSSION

The Record is Clear. The Need Remains.

The Need Has Been Carefully Evaluated

Decades of assessments, decades of improvements, updated 2026 engineering, seven public visioning workshops, community surveys since 2011, and a deliberate three-workshop process. The City has studied the problem thoroughly and the record is clear.

Funding Opportunities Have Been Pursued

Grants pursued in the 1960s, 1990, and 2023. A $10+M state budget request underway today. Voter-approved Measures E & Z. Efficiency savings reinvested year after year. Nearly $50M in capital projects delivered since 2020 and nearly $12M more directed in Workshop 1. $12M that resulted from operational efficiencies, strong financial management, and the support of the community.

Planning For Future Generations

The Library's water intrusion was documented the year it opened…54 years ago! Every decade of deferral has raised the price. Investing in these facilities is not about today alone – it is about ensuring they continue to serve the community for future generations.

Workshop 2: Library & Public Works Yard

Questions & City Council discussion