CITY OF SANTA CLARA
GEORGE F. HAINES INTERNATIONAL SWIM CENTER

VISUAL OBSERVATION ASSESSMENTS REPORT

01/24/2024
LPA Job No. 31047

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PREPARED FOR
CITY OF SANTA CLARA

PREPARED BY
LPA, Inc.
& Aquatic Design Group, Inc.
& Simpson Gumpertz & Heger

01/24/2024
LPA Job No. 31047

YOUR TEAM

CONSULTING TEAM

LPA Inc.

Arash Izadi, Principal & Director of Sport + Recreation, LPA, Inc.

John Courtney, Managing Director, LPA, Inc.

Steve Key, Associate & Managing Director, LPA Inc.

Daniel Wang, Associate & Director of Structural Engineering, LPA Inc.

Aquatic Design Group, Inc.

Dennis Berkshire, Principal, Aquatic Design Group, Inc.

Simpson Gumpertz & Heger

Judson Taylor, Senior Principal, Simpson Gumpertz & Heger

Christine Diosdado, Associate Principal, Simpson Gumpertz & Heger

Jesse Sipes, Project Manager, Simpson Gumpertz & Heger

Alan Humphreys, Senior Technical Manager, Simpson Gumpertz & Heger

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1.0 EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

Santa Clara International Swim Center
Executive Summary

In the Summer of 2023, the City of Santa Clara initiated a competitive RFP process to determine the most qualified consultant team to assess the facilities and structural properties at the Santa Clara George F. Haines International Swim Center (ISC). The City interviewed several firms and concluded that the LPA Team, consisting of LPA, Inc., Aquatic Design Group, Inc., and SGH were most qualified to provide a focused assessment of the facility.

This Executive Summary provides the reader with a condensed description of the findings of the assessment. The assessment was limited in nature and included review of the existing pool, pool systems, pool deck, dive tower, existing support buildings, and existing bleachers. No members of the LPA team are risk management experts and therefore this assessment is to provide the City with information on the existing facility only for their use and determination of facility use. We reviewed code compliance for structural, fire life safety egress analysis, plumbing code, and pool specific requirements by the Health Department or Building Code. Some nondestructive testing was provided for select structural steel elements within the facility. All observations around accessibility compliance were excluded from this assessment.

Although not part of our base services to advise the City on whether to continue use or close the ISC facility; based on our professional opinion and visual observations, our recommendation would be that the City should close the facility immediately until major repairs or replacement on all life safety and structural concerns noted in this report are complete.

The ISC facility was constructed in 1967 to provide competitive swimmers and divers in the Santa Clara Valley with a complete venue for training, practicing, and competing in water sports events. The existing facility has a 50-meter x 25-yard competition pool, a 6-lane x 25 yard instructional pool and a diving pool with a diving tower that accommodates five springboards and a 10-meter diving tower. The facility has provided continuous operations for 57 years. Even with maintenance, in general, most outdoor swimming centers in California require a major overhaul or full replacement at about 45 to 50 years, even in consideration of refurbishment or improvements made throughout its life span.

Visual investigations of the existing facility were initiated in late September 2023. Many elements within the facility are beyond their usable life or in a condition that does not allow use as originally designed.

Below is a summary of the major deficiencies observed:

1. Building A Main Building/Locker Room
   a. A shower addition was previously condemned by the city and should be removed and replaced.
   b. Roofs are beyond usable life expectancy.
   c. The building is structurally unsound due to the large clerestory windows which prevent adequate lateral structural support throughout. These windows need to be removed and infilled to transfer shear loads.
   d. Roofs/Exterior Cladding/Windows and siding all at end of life needing replaced.
   e. Building supporting walls and columns are structurally unsound and have significant corrosion of metal components, requiring significant repairs and/or replacement.
   f. Some elements installed are not part of any approved plans and do not appear to have been formally permitted, such as the tower to the south of the existing building on the roof.

2. Egress Review
   a. Emergency egress from the existing buildings and pool spectator stands and deck do not meet California Building Code requirements for the size, quantity, and hardware required for compliant exits.
   b. All existing gates that could be used for exiting are chained closed

GEORGE F. HAINES INTERNATIONAL SWIM CENTER,
VIEWED FROM THE DIVE BLOCK

at all times, according to ISC facility staff.

c. No event should be held at this facility until such time that extensive corrections to egress for both the fencing and building are completed or facility replacement occurs.

3. Diver Tower and Viewing Windows
   a. Diving Tower platform showing cracking and the condition after years of water intrusion, weather, and pool water is unknown.
   b. Vibrations observed likely do not meet competition requirements.
   c. Platforms not at current standards for competitive diving.
   d. The railing of the dive tower are corroded at their base affecting the structural integrity.
   e. Through interviews and observations, there is evidence of conduits breaking within the pool and possible settlement of the main structure.
   f. The main access stairs for users are corroded beyond use and are currently in an unsafe condition for users.
   g. Based on our professional opinion after our field observations the City should stop using the dive tower until such time major repairs or replacement are complete.

4. Pools Systems and Deck
   a. The pool mechanical and lighting systems have a variety of code violations and excessive wear, requiring significant cost to upgrade to meet the building code; for example, the 50-meter pool and the training pool are on the same pump and filter system as well as both the pool deck and shell plaster are delaminating and cracking and both need to be replaced.
   b. The pool deck is showing signs of deterioration and distress in various locations, demonstrating that the deck is at or beyond its life expectancy.
   c. Currently the Competition Pool and Warm up pool are filtered together which is no longer allowed by code.
   d. Depth of main pool is shallow and existing starting blocks are not compliant for use at a shallow depths.
   e. The diving pool mechanical system does not meet the code required for 6-hour turnover rate.
   f. The viewing area under the deck at the dive pool and the deck above are showing signs of structural instability and significant deterioration. The City should close this portion of deck and viewing area immediately.

5. Large Canopy over Bleachers and Building D Tower
   a. Roof supporting structure may be salvageable with re-coating and upgrades to strengthening of the columns.
   b. Roof drains have eroded the foundation over time of the columns and towers.
   c. Tower and supporting stairs for access to roof needs replacement.
   d. Bleachers show signs of settlement and separation.
   e. There was limited if any compliant accessible seating throughout the facility.

6. Building B and C – Restroom and Concessions
   a. The existing restroom and concessions are lacking the appropriate quantity of fixtures according to California Building Code. Additionally, the restrooms do not comply with current accessibility requirements.

7. Building E, F and G
   a. Building E, F and G were being used either as training rooms or maintenance storage rooms. The support bearing wall appears to be masonry and in good condition. The roofs at these

	facilities are near their useful life and in some cases evidence of leaks were observed.
b.	**These buildings are directly beneath the main canopy cover and portions of the gutters are corroded to a point of falling on occupants and/or structures below.**

The reader is encouraged to review the complete report for additional information, photographs of current conditions and diagrams for potential considerations.

END OF EXECUTIVE SUMMARY.

BLDG B.
RESTROOMS
CONCESSIONS
DIVE
TOWER
DIVING
WELL
VIEW
WINDOWS
BLEACHERS
BLDG D.
CANOPY
TOWER
CANOPY
BLEACHERS
COMPETITION
POOL
BLDG A.
MAIN ENTRY
BLDG F.
MAINT.
STORAGE
BLDG E.
TRAINING
ROOM AND
STORAGE
WARM UP
POOL
BLDG G.
PARK
MAINT.
STORAGE
BLDG C.
RESTROOMS
CONCESSIONS

SITE MAP

2.0 METHODOLOGY OF ASSESSMENT

ALAMO HEIGHTS HIGH SCHOOL NATATORIUM

METHODOLOGY

City of Santa Clara
International Swim Center
2023 Assessment of Existing Conditions

A visual investigation of the International Swim Center was performed in the third quarter of 2023 to determine the facility's ongoing viability as a training and competition venue. The consulting team utilized minimally invasive non-destructive testing and construction material sampling to determine the condition of selected structures and improvements. This approach was utilized to determine the condition without causing a disruption to the operation of the facility to repair the areas tested during a more exhaustive destructive testing method. The structural forensics team utilized ground penetrating radar, carbonation analysis, and isolation water testing to determine granular loss, cracking, curling/cupping, flaking, weathering and dry rot. The team peeled back some discrete areas typically prone to deterioration such as eaves, valleys, and near rain gutters. Shingles and/or roofing materials were lifted to see underlayment, determine remaining roofing and underlaid sheathing, potential corrosion of steel fasteners in roofing and structural systems for buildings, stair and supports. A narrow steel probe was used at exposed beams and/or purlins to determine the amount of organic degradation due to mildew, mold and resulting dry rot conditions that affect structural integrity and load bearing capacities.

Structural steel columns were carefully observed and measured to determine the amount (in millimeters) of degradation and reduction of the structural steel thickness due to corrosion of exposed steel. The degradation was observed to be substantial, as the report indicates. Structural observations of horizontal and vertical structural members were provided to determine relative anticipated shear strength in the vertical wall sections. In the event of earthquakes and/or high winds a structure's shear strength determines its ability to withstand the shaking forces presented in a seismic or lateral force event. The building's clerestory sections at the top were determined to lack sufficient shear strength, as provided in the report.

The architectural team made detailed observations for pool code related items such as minimum standards for health and safety requirements such as the pool water turnover rate, flow rate volume requirements, filtering requirements, mechanical systems sizing and control requirements and monitoring requirements. The observations and concerns with code issues are significant and are documented in detail within the report.

The architectural team analyzed the occupancy and safe dispersal requirements of the project site, buildings, and bleacher areas, utilizing the capacities of visitors the facility is capable of hosting for tournament types of events. The code requires the designers to calculate based upon the maximum possible capacity of patrons at a typical swim meet, competition, or special event as provided within the Assembly Occupation designation. Utilizing the calculations provided in the building code, the facility was found to be deficient in allowing the safe dispersal of visitors exiting the facility in the event of a safety concern, as is the common requirement for designing facilities with an Assembly Occupancy classification designation. Significant reconfiguration of the fencing, gates, concrete paving, lighting and ADA path of travel improvements to and in the parking lot would be needed to comply with the code requirements. The detailed calculations are contained in the report.

The report that follows provides detailed documentation of the findings of the architectural team utilizing best practices and methodologies for assessing the condition of the existing International Swim Center facility. The planning for assessing the future of the facility is a combination of risk assessment and construction cost analysis. Utilizing the first metric, risk assessment, the architectural team has identified significant building code concerns and safety risks that should be addressed immediately if the City desires to continue allowing the public to utilize the facility. For example, the dive tower should be either permanently closed or reconstructed if diving is still a priority program for the community. The structural integrity of the tower is such that repairing it would not rectify the issues. Another example is the significant code-compliance issues with the pool mechanical piping systems, equipment, pool shell/plaster and pool deck that should be addressed to maintain public safety with the use of the facility. These issues need to be addressed now to mitigate public safety risks.

The third example is the structural integrity of the upper clerestory portions of the building that could fail in a seismic event. This item would require the replacement or removal of the upper sections of the building. There are other examples of risks to public safety contained in the details of the report.

To help address the second metric, construction cost analysis, it may be helpful to utilize an example that the State of California Division of State Architect (DSA) uses in the assessment of costs for state-owned public facilities. The City of Santa Clara is not obligated to utilize the State's method of cost assessment, but the methodology can be instructional for evaluating the City's 57-year-old swim center because of the similarities the State faces with facilities of identical age. DSA has a rule that states, in the event modernization costs exceed 40 percent of the full replacement value of a structure or facility, the owner of the facility shall fully upgrade or replace the structure to current code. Owners of State financed public facilities must calculate the full replacement cost at today's construction cost, and multiply by .40 to determine if the rough estimate of modernization and renovation required by the architect's assessment of the facility exceeds that figure. It is very likely that will all the deficiencies found in our assessment that the cost to renovate this facility would far surpass the threshold requiring a full code update and/or replacement of the facility in its entirety.

END OF METHODOLOGY.

GEORGE F. HAINES INTERNATIONAL SWIM CENTER, VIEWED FROM THE SIDEWALK

3.0 ASSESSMENT FINDINGS

AQUATIC DESIGN GROUP, INC.

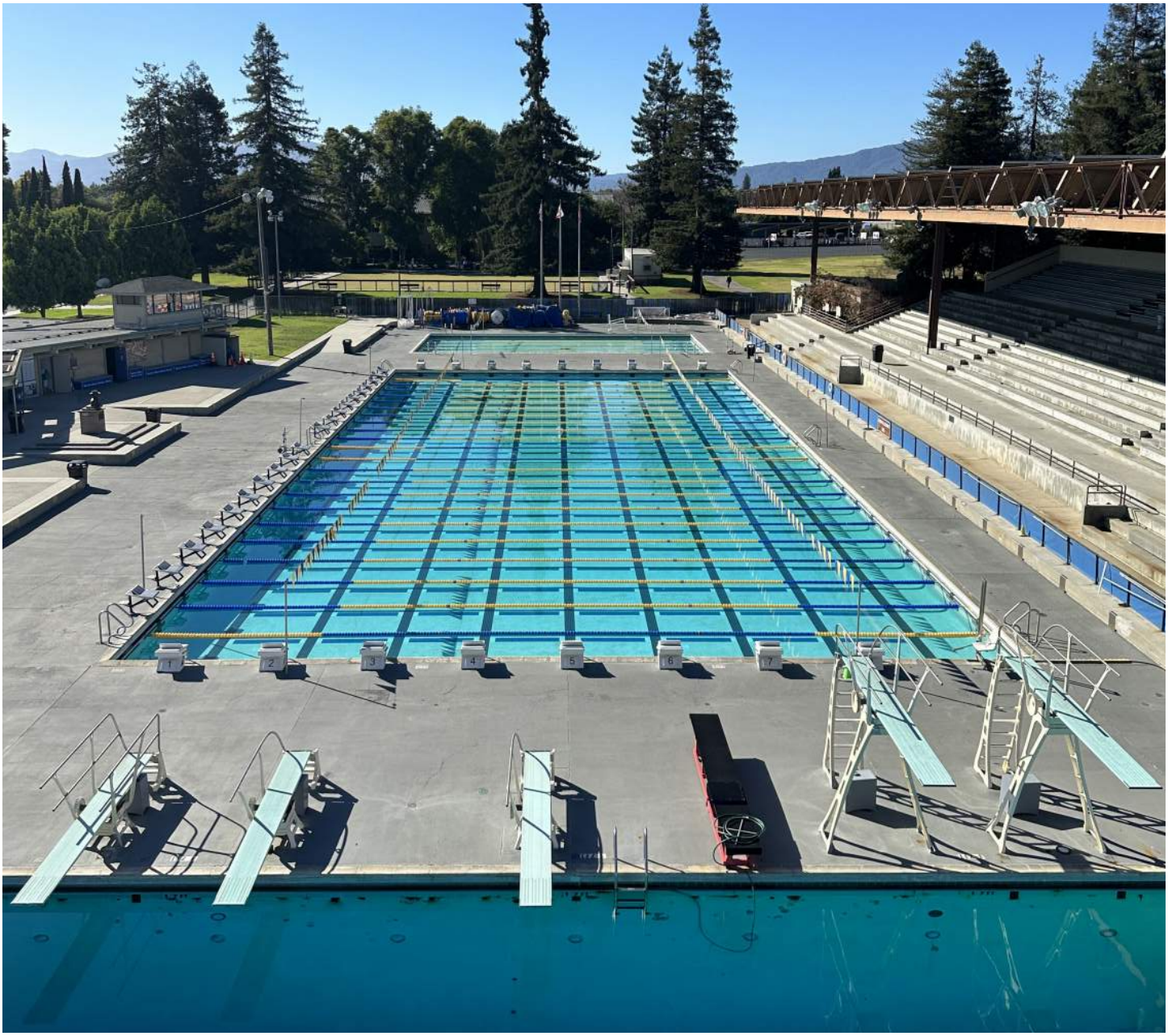
3.0 ASSESSMENT FINDINGS

3.1 Aquatic Design Group, Inc. (ADG)

3.1.1 Building A - Main Building/ Locker Room

3.1.2 Diver Tower and Viewing Windows

3.1.3 Pool Systems and Deck



INTERNATIONAL SWIM CENTER SWIMMING POOLS NEEDS ASSESSMENT

JANUARY 2024

AQUATIC DESIGN GROUP

THE CITY OF SANTA CLARA CALIFORNIA
The Mission City
INCORPORATED 1852

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Aquatic Design Group (ADG) visited the International Swim Center in Santa Clara, California on September 27, 2023 to perform an assessment of the swimming pools, as well as their systems and equipment. The systems were in operation during ADG's site visit. The facility has the following outdoor bodies of water:

- **A 50-meter x 25-yard competition pool**
- **A 6-lane x 25-yard instructional pool**
- **A diving pool with a 10-meter tower and five (5) springboard diving boards**

The following report includes a summary of the existing conditions, code violations, deficiencies and proposed improvements for rehabilitation of the International Swim Center and related equipment. The scope of this report includes the swimming pools, dive tower and mechanical equipment. It excludes the structural integrity of the swimming pool shells, appurtenances, and accessibility in the path of travel to the swimming pool area and within the adjacent buildings. Note this also excludes evaluation of the building, building systems and building structural. It is possible that a facility of this age could have underlying issues that have gone unnoticed by staff and are not apparent to a visual inspection. This report attempts to provide an accurate and realistic assessment of existing conditions. Our observations are based upon the conditions we could observe, original drawings and information provided by staff. This report should be read in full with no excerpts to be fully representative of the findings and has been prepared exclusively for LPA, Inc. No liability is accepted for any use of or reliance on the report by third parties.

This report identifies any violations of codes that were found. Some of these violations may currently be operating on a grandfathered exemption, meaning they complied with code when they were built but code changes since make them not compliant with current code. We therefore recommend that these issues be reviewed on an individual basis to determine the disposition and possible remedies for each violation.

In addition to the code violations being of concern to the County Environmental Health Services Department, they may be of concern to the City from a risk mitigation perspective.

Not included in this report, but an important area to be reviewed, is the requirement for the entire facility to meet the American Disabilities Act (ADA). This includes access to the facility and restrooms, in addition to the swimming pools and deck. To comply, every swimming pool must have a primary means of access into the water. This can include a wheelchair ramp or an accessible lift. The scope of this report is for the swimming pools and deck. Therefore, access from the street or parking areas to the International Swim Center and the adjacent buildings are not covered herein.

The estimated opinion of probable costs identified in the itemized sections of "E" thru "F" of this report includes materials and labor for the repair, but does not include architectural or engineering design costs or complete project soft costs that may occur. Structural analysis of the pool structures, pool mechanical spaces, or other spaces will require destructive testing which is not included in the scope of this report.

Image 1: International Swim Center

For the purpose of this report the facility's compliance with current codes and standards will be examined. The current codes and standards that may apply are:

- **Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities** (ADAAG)
- **Americans with Disabilities Act** (ADA)
- **California Plumbing Code** (CPC), 2022 Edition
- **California Building Code** (CBC), **Chapter 31B**, 2022 Edition
- **California Mechanical Code** (CMC), 2022 Edition
- **California Fire Code** (CFC), 2022 Edition
- **International Swimming Pool and Spa Code** (ISPSC) **Standards,** 2021 Edition
- **Model Aquatic Health Code** (MAHC), 2023 Edition
- **Pool and Hot Tub Alliance Standards** (PHTA)
- **Federal Virginia Graeme Baker Pool and Spa Safety Act** (VGBA)
- **California AB1020** (AB1020)
- **Occupational Safety and Health Administration** (OSHA)
- **National Federation of State High School Associations** (CIF)
- **USA Swimming**
- **USA Water Polo**

The International Swim Center was built in 1967. The data compiled in this section of the report is based upon information from 1966 original drawings and staff, as well as images taken by ADG and observations made during the site visit.

50-Meter x 75-Yard Competition Pool:

- **Dimensions:** 164'-1½" long x 75'-1" wide (per drawings)
- **Perimeter:** 478 linear feet (per drawings)
- **Surface Area:** 12,300 square feet (per drawings)
- **Volume:** 547, 116 gallons (per drawings)
- **25-Yard Lanes:** Twenty (20), 7'-0" in width (observed during site visit)
- **50-Meter Lanes:** Nine (9), 8'-0" in width (per drawings)
- **Depths:** 4'-6" to 6'-6" (per drawings)
- **Finish:** Plaster and tile (observed during site visit)
- **Underwater Lights:** Thirty-two (32) (per drawings)
- **Pool Main Drains:** Two (2) 18" x 18" (observed during site visit)
- **Gutter:** Perimeter gutter system (observed during site visit)
- **Ingress and Egress:** Six (6) sets of grabrails with recessed steps (observed during site visit)
- **Floor Inlets:** Forty (40) (per drawings)
- **Code Minimum Flow Rate:** 1,520 Gallons Per Minute (GPM) (Using 6-hour turnover)
- **Code Minumum Turnover Rate:** 6-hours
- **Actual Flow Rate:** Unknown (no flow meter)
- **Actual Turnover Rate:** Unknown (no flow meter)
- **Design Flow Rate:** 1,200 GPM (per installed valve)
- **Design Turnover Rate:** 8-hours

6-Lane x 25-Yard Instructional Pool:

- **Dimensions:** 75'-1" long x 42'-0" wide (per drawings)
- **Perimeter:** 234 linear feet (per drawings)
- **Surface Area:** 3,150 square feet (per drawings)
- **Volume:** 70,686 gallons (per drawings)
- **25-Yard Lanes:** Six (6), 7'-0" in width (per drawings)
- **Depth:** Constant 3'-0" (per drawings)
- **Finish:** Plaster and tile (observed during site visit)
- **Underwater Lights:** Seven (7) (per drawings)
- **Pool Main Drain:** One (1) 24" x 24" (observed during site visit)
- **Gutter:** Perimeter gutter system (observed during site visit)
- **Ingress and Egress:** Four (4) sets of grabrails with recessed steps (observed during site visit)
- **Floor Inlets:** Fourteen (14) (per drawings)
- **Code Minimum Flow Rate:** 196 Gallons Per Minute (GPM) (Using 6-hour turnover)
- **Code Minumum Turnover Rate:** 6-hours
- **Actual Flow Rate:** Unknown (no flow meter)
- **Actual Turnover Rate:** Unknown (no flow meter)
- **Design Flow Rate:** 200 GPM (per installed valve)
- **Design Turnover Rate:** 8-hours

Mechanical (Comingled) and Chemical Systems:
(Observed During Site Visit)

- **Diatomaceous Earth (D.E.) Filter Tank (x1) with Slurry**
  - Designed Total Filter Surface Area: 760 FT^2
  - Actual Total Filter Surface Area: 659 FT^2
  - Designed Filter Media Rate: 1.84 GPM / FT^2 at 1,400 GPM
  - Actual Filter Media Rate: 2.12 GPM / FT^2 at 1,400 GPM
- **Recirculation Pump**
  - Make: Unknown
  - Model: Unknown
  - Horsepower: 30
- **Recirculation Motor**
  - Make: Unknown
  - Model: Unknown
  - Horsepower: 30
- **Heating System**
  - Make: RBI
  - Model: CP4000
  - BTU Maximum Output: Unknown
  - Maximum Thermal Efficiency: Unknown
- **Chemical Control Monitor**
  - Make: BecSys
  - Model: System 3
- **Sanitation**
  - Liquid Chlorine (Sodium Hypochlorite) bulk tanks
  - 500 gallon capacity (x2) plus one (1) for Diving Pool
  - Stenner 85M5 and 45M4 chemical metering pumps: 120 total gallons per day feed rate capacity
- **pH Control**
  - Liquid Acid (Hydrochloric Acid)
  - No access to room during site visit
- **50-Meter Pool Suction Pipe Size and Flow Velocity**
  - Suction Pipe Size: 10-inch schedule 80
  - Suction Flow Velocity: 9.07 Feet Per Second (FPS)
- **50-Meter Pool Return Pipe Size and Flow Velocity**
  - Return Pipe Size: 6-inch schedule 80
  - Return Flow Velocity: 7.39 FPS
- **Instructional Pool Suction Pipe Size and Flow Velocity**
  - Suction Pipe Size: 6-inch schedule 80
  - Suction Flow Velocity: 5.58 FPS
- **Instructional Pool Return Pipe Size and Flow Velocity**
  - Return Pipe Size: 4-inch schedule 80
  - Return Flow Velocity: 5.58 FPS

Diving Pool:

- **Dimensions:** 75'-1" long x 60'-0" wide (per drawings)
- **Perimeter:** 270 linear feet (per drawings)
- **Surface Area:** 4,500 square feet (per drawings)
- **Volume:** 572,220 gallons (per drawings)
- **Depth:** Constant 17'-0" (per drawings)
- **Finish:** Plaster and tile (observed during site visit)
- **Underwater Lights:** Twenty-four (24) (per drawings)
- **Pool Main Drains:** Two (2) 24" x 24" (observed during site visit)
- **Gutter:** Perimeter gutter system (observed during site visit)
- **Ingress and Egress:** Four (4) sets of grabrails with recessed steps (observed during site visit)
- **Floor Inlets:** Twenty (20) (per drawings)
- **Code Minimum Flow Rate:** 1,590 Gallons Per Minute (GPM) (Using 6-hour turnover)
- **Code Minumum Turnover Rate:** 6-hours
- **Actual Flow Rate:** Unknown (no flow meter)
- **Actual Turnover Rate:** Unknown (no flow meter)
- **Design Flow Rate:** 1,200 GPM
- **Design Turnover Rate:** 8-hours

Image 2: Diving Pool Piping

Mechanical and Chemical Systems: (Observed During Site Visit)

- **Diatomaceous Earth (D.E.) Filter Tank (x1) with Slurry**
  - Designed Total Filter Surface Area: 760 FT^2
  - Actual Total Filter Surface Area: 659 FT^2
  - Designed Filter Media Rate: 1.84 GPM / FT^2 at 1,400 GPM
  - Actual Filter Media Rate: 2.12 GPM / FT^2 at 1,400 GPM
- **Recirculation Pump**
  - Make: Unknown
  - Model: Unknown
  - Horsepower: 25
- **Recirculation Motor**
  - Make: Unknown
  - Model: Unknown
  - Horsepower: 25
- **Heating System**
  - Make: RBI
  - Model: DW1950
  - BTU Maximum Output: Unknown
  - Maximum Thermal Efficiency: Unknown
- **Chemical Control Monitor**
  - Make: BecSys
  - Model: System 3
- **Sanitation**
  - Liquid Chlorine (Sodium Hypochlorite) bulk tanks
  - 500 gallon capacity (x1) plus two (2) for other pools
  - Stenner 45M4 (x2) chemical metering pumps: 70 total gallons per day feed rate capacity
  - Liquid Acid (Hydrochloric Acid)
  - No access to room during site visit
- **Diving Pool Suction Pipe Size and Flow Velocity**
  - Suction Pipe Size: 10-inch schedule 80
  - Suction Flow Velocity: 5.45 Feet Per Second (FPS)
- **Diving Pool Return Pipe Size and Flow Velocity**
  - Return Pipe Size: 6-inch schedule 80
  - Return Flow Velocity: 6.7 FPS

The International Swim Center supports the Santa Clara community and the Bay Area through the following programs:

- Recreational Swimming
- Lap Swimming
- Leisure Swimming
- Adult, Teen, Youth, Infant and Adaptive Learn-To-Swim Programs
- Aquatic Fitness Classes
- Recreational Diving
- Club Diving
- Lane and Facility Rentals
- Party Rentals

Staff indicated that no new or additional programming is desired for the facility and confirmed that the pools and dive tower accommodate existing programs well.

Image 3: Santa Clara Swim Club Sign in Floor

Image 4: Hall of Fame Display

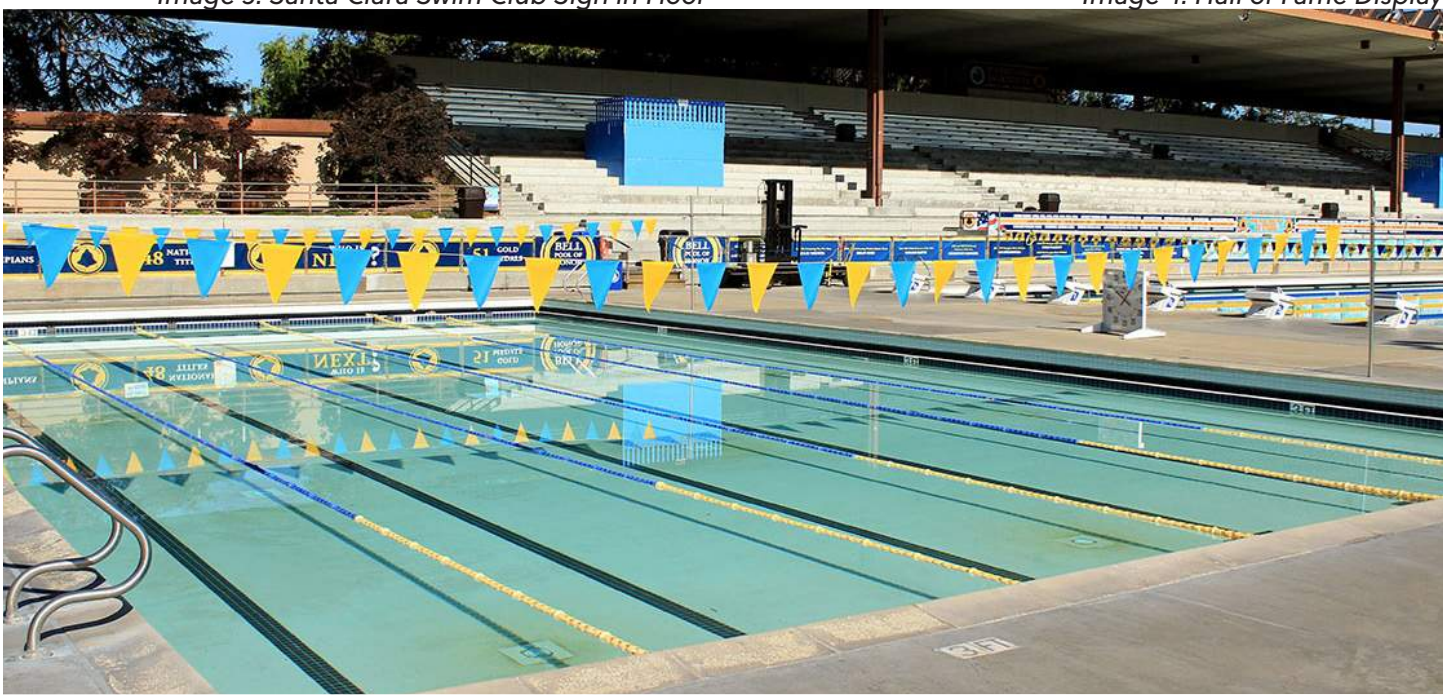

Image 5: Instructional Pool

ADG has determined that the following twenty-one (21) items at the International Swim Center do not comply with current code standards. For each item within the report a description of the condition is given along with a reference to the code that applies. A suggestion of possible remedy and an opinion of probable cost is given for most items. The itemized estimates do not include general conditions and other soft costs that are typically added to any project for a total construction project cost. In addition, many code items trigger the need to bring additional code items into compliance simultaneously. As such, it is difficult to approach the suggested code repairs as individual projects.

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1.1 Comingled Pools:

The 50-Meter Pool and the Instructional Pool operate on the same recirculation system, despite being separate bodies of water. California code requires each pool to have its own recirculation system. The comingled pools are in violation of CBC, Chapter 31B:

> *3123B.1 System description. Each pool shall be provided with a separate recirculation system designed for the continuous recirculation, filtration and disinfection of the pool water. The system shall consist of pumps, filters, chemical feeders, skimmers or perimeter overflow systems, valves, pipes, connections, fittings and appurtenances.*

To separate the pools requires installing new piping and corresponding mechanical equipment to operate each individual pool. To accommodate an additional set of mechanical equipment the layout in the mechanical room needs to be reconfigured. During this process existing mechanical equipment that is dated could be, and in some cases would have to be, replaced. Additionally, this process would require draining of the pools as well as demolition of the decks. Upon completion of the install for new piping and mechanical equipment, the decks would have to be reconstructed and the pools replastered and refilled with water.

The following estimate is for new mechanical systems, new underground piping, a new surge tank and removal and replacement of the deck. For the full project scope and cost see page 23.

(Estimated Cost- $4,579,575.00)

Image 6: 50-Meter and Instructional Pools

1.2 Turnover Rate for Pools:

The 50-Meter Pool and Instructional Pool's turnover rate should meet or exceed 6-hours to comply with code. The pools were designed for a 7.6-hour turnover, which is in violation of CBC, Chapter 31B:

> *3124B. Turnover Time. The recirculation system shall have the capacity to provide a complete turnover of pool water in:*
>
> *1. One-half hour or less for a spa pool; and*
> *2. One-half hour or less for a spray ground; and*
> *3. One hour or less for a wading pool; and*
> *4. Two hours or less for a medical pool; and*
> *5. Six hours or less for all other types of public pools.*

The pool systems should be revised to meet the code required minimum 6-hour turnover rate. This can be addressed when resolving item 1.1. See page 23 for the project scope and cost to address this code item.

1.3 Gutters for Pools:

The 50-Meter Pool and Instructional Pool's gutters are operating below the gutter lip due to flooding when the pools are full of swimmers. As a result, the pools do not skim the surface water when the pools are not full of swimmers. This condition is in violation of CBC, Chapter 31B:

> *3136B. Pool Skimming Systems. The pool shall be equipped with one or more skimming methods to provide continuous skimming of the pool water and shall be capable of continually withdrawing not less than 100 percent of the flow rate.*

The gutter and gutter piping should be modified to meet the code requirement for constant skimming. The following estimate is for gutter and gutter piping replacement for both pools (this item is included in the project scope on page 23).

(Estimated Cost- $882,000.00)

Image 7: 50-Meter and Instructional Pools

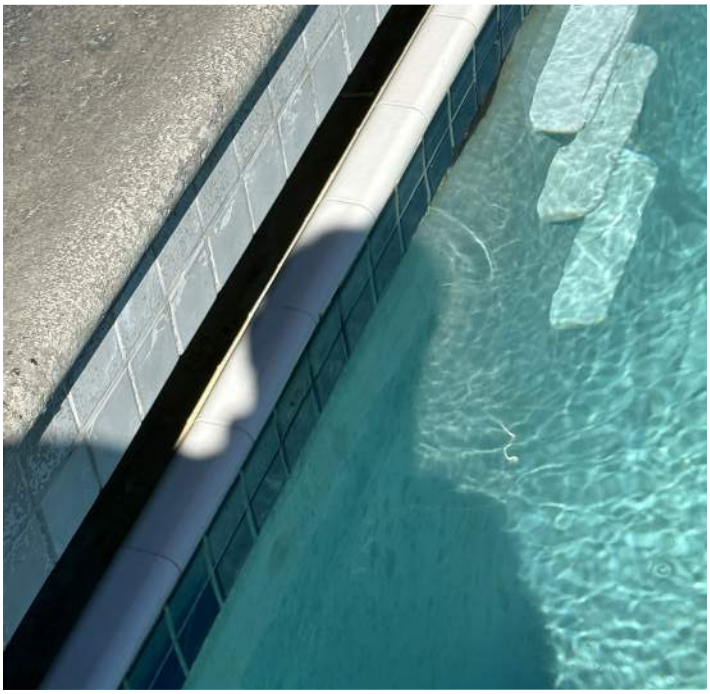


Image 8: Instructional Pool Gutter

1.4 50-Meter Pool Autofill System:

The 50-Meter Pool is filled with water manually. The lack of an automatic fill system is in violation of CBC, Chapter 31B:

> *3127B.3. Makeup Water. Automatic makeup water flow controls with a manual override control shall be provided to maintain the proper pool water level.*

An automatic fill system should be installed. The following estimate is for an automatic fill system to connect to the existing waterline piping (this item is included in the project scope on page 23).

(Estimated Cost- $20,000.00)

1.5 50-Meter Pool Depth for Racing Platforms:

The 50-Meter Pool has racing platforms installed in all 50-meter and 25-yard course locations. All of the 50-meter course starting platforms are installed where the pool water depth is 4'-6". The majority of the 25-yard short-course starting platforms are installed where the pool water depths are 4'-6" to 6'-0". California Building Code requires a universal No-Diving symbol be placed adjacent to every deck depth marker where the water depth is 6-feet or less. See CBC, Chapter 31B:

> *3110B.5. No diving markers. For pool water depths 6 feet or less no diving markers with the universal symbol of no diving...*

The starting platforms should be removed from all locations where the water is 6' deep or less to enhance safety and comply with code. Staff can remove the starting platforms from the deck.

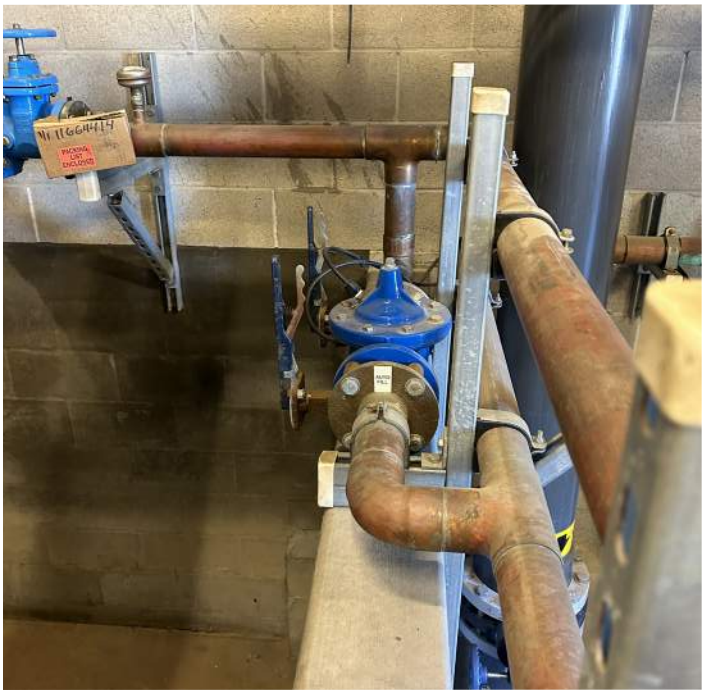


Image 9: Example Autofill System

Image 10: Starting Platform in 4'-6" Depth of Water

1.6 50-Meter Pool Piping:

The 50-Meter Pool suction piping larger than 6-inches is transite pipe, which contains asbestos. Asbestos concrete, which was a common building material during the time of initial construction, is now in violation of CBC, Chapter 31B and California Plumbing Code:

> *3125B.1.1. Materials. All piping, tubing and fittings shall comply with the applicable standards for potable water system materials set forth in Chapter 6 of the California Plumbing Code.*

A hazardous material abatement process for the piping would be required during pool and deck demolition, increasing costs. The following estimate is for hazardous material removal and disposal for the piping (this item is included in the project scope on page 23).

(Estimated Cost- $175,000.00)

1.7 Flow Velocity for Pools:

The 50-Meter Pool and Instructional Pool have a flow velocity for suction piping of 9.07 Feet Per Second (FPS). The flow velocity exceeds the allowances in CBC, Chapter 31B:

> *3125B.1. Line sizes. Pipes shall be sized so flow velocity of piping systems including all pipes and fittings other than inlet devices or venturi throats shall not exceed 6 feet per second in any suction or copper piping and 8 feet per second in any portion of the return system.*

High flow velocities can erode pipes and either cause leaking or replacement ahead of typical lifecycles. Old standards allowed PVC pipe velocities of up to 10 feet per second. With extra diligence the system can continue to operate at the current velocity. When the opportunity arises to provide separate systems for each pool the piping can change to have compliant flow velocities. The piping from the pools to the mechanical room as well as inside the mechanical room would need replacing to achieve flow velocities that do not exceed 6 FPS on the suction side and 8 FPS on the return side. This code item can be addressed when resolving item 1.1. The following estimate is for new piping (this item is included in the project scope on page 23).

(Estimated Cost- $150,000.00)

1.8 50-Meter Pool Floor Inlets:

The 50-Meter Pool has forty (40) floor inlets for recirculation. California Code requires all swimming pools that are 40-feet wide or wider use floor inlets spaced evenly throughout the pool to assure effective distribution of chlorine for proper disinfection and water quality. The swimming pool is 75-feet wide and greater than 3,000 square feet. CBC, Chapter 31B states:

> *3137B.2.4 Floor inlets. Pools that are greater than 40 feet (12,192 mm) in width or 3,000 square feet (278.7 mm²) in surface area shall have floor-mounted return inlets. The number of floor inlets shall be in compliance with Section 3137B.2. All floor inlet fittings shall be located to provide uniform circulation and shall be installed so as to be flush with the surface of the pool bottom.*

California Code requires two (2) inlets for the first 10,000 gallons of water and one (1) inlet thereafter per additional 10,000 gallons of water. CBC, Chapter 31B states:

> *3137B.2 Inlet fittings. Each pool shall be provided with not less than two recirculation system inlets for the first 10,000 gallon capacity and one additional inlet for each additional 10,000 gallon or less capacity.*

To comply with code the number of floor inlets would be fifty-five (55). To install floor inlets in the swimming pool the pool would have to be drained and trenches cut in the pool floor to install new under pool piping. Then floor inlets would be installed and the pool floor concrete replaced. In order to do the trenchwork the pool plaster would have to be removed and replaced. The pool would have to be refilled with water and chemically balanced. The following estimate represents trenchwork, fifty-five (55) new floor inlets and related piping, and pool floor concrete (this item is included in the project scope on page 23). It is not reflective of pool plaster removal and replacement or costs associated with draining and refilling the pool with water (see page 23).

(Estimated Cost- $180,000.00)

1.9 Safety Markers for Pools:

The 50-Meter Pool and Instructional Pool are missing code-compliant "No Diving" graphic markers where the water depths are 6-feet or less. The lack of proper "No Diving" graphic markers is in violation of CBC, Chapter 31B:

> *3110B.5. No diving markers. For pool water depths 6 feet or less no diving markers with the universal symbol of no diving, which is a red circle with a slash through it superimposed over the image of a diver, shall be installed on the deck directly adjacent to the depth markers required by Section 3110B.4.1. No diving markers shall comply with Section 3110B.4.4 (2-3).*

Proper "No Diving" graphic markers can be installed by bushing down deck concrete and laying down code-compliant "No Diving" tile graphic markers. If the pool deck is to be completely replaced these safety markers would be included in that cost, along with all required depth markers (see page 23). The following estimate is for a retrofitted install of "No Diving" tile graphic markers on the pool deck in locations where the water depth is 6-feet or less.

(Estimated Cost- $8,000.00)

1.10 Instructional Pool Coping Stones:

The Instructional Pool coping stones are rough and pitted, creating places for bacteria and pathogens to grow. Code requires these surfaces to be non-porous to prevent recreational water illness outbreaks. See CBC, Chapter 31B:

> *3108B.2. Finish. The finished pool shall be lined with a smooth waterproof interior finish that will withstand repeated brushing, scrubbing and cleaning procedures. The interior pool finish shall completely line the pool to the tile lines, coping or cantilevered deck.*

The coping stones should be replaced. The following estimate is for replacement coping stones (this item is included in the project scope on page 23).

(Estimated Cost- $50,000.00)

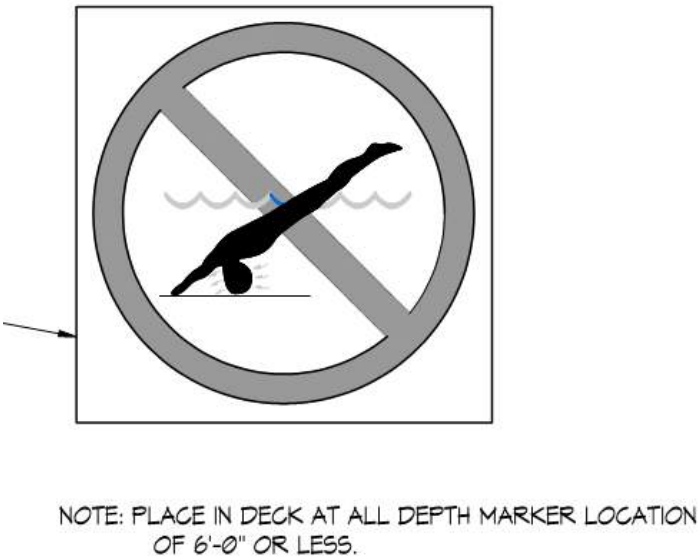


Image 11: Example of "No Diving" Graphic Marker

Image 12: Instructional Pool Coping Stones

1.11 Diving Pool Turnover Rate:

The Diving Pool's turnover rate should meet or exceed 6-hours to comply with code. The pool was designed for an 8-hour turnover, which is in violation of CBC, Chapter 31B:

> *3124B. Turnover Time. The recirculation system shall have the capacity to provide a complete turnover of pool water in:*
>
> *1. One-half hour or less for a spa pool; and*
> *2. One-half hour or less for a spray ground; and*
> *3. One hour or less for a wading pool; and*
> *4. Two hours or less for a medical pool; and*
> *5. Six hours or less for all other types of public pools.*

The pool system should be revised to meet the code required minimum 6-hour turnover rate. This will require the removal of the surrounding pool deck, underground piping, under pool piping and an update to the mechanical equipment. See page 24 for the full project scope and cost to address this code item.

1.12 Diving Pool Main Drains:

The Diving Pool main drains were not designed to be hydraulically balanced as required by code. CBC, Chapter 31B states:

> *3162B. Anti-Entrapment Devices and Systems. Every swimming pool constructed on or after January 1, 2010, shall have at least two suction outlets per pump that are hydraulically balanced and symmetrically plumbed through one or more "T" fittings, and that are separated by a distance of at least three feet in any dimension between the suction outlets.*

New main drains and related under pool piping should be installed. The following estimate is for new main drains and related piping (this item is included in the project scope on page 24).

(Estimated Cost- $387,500.00)

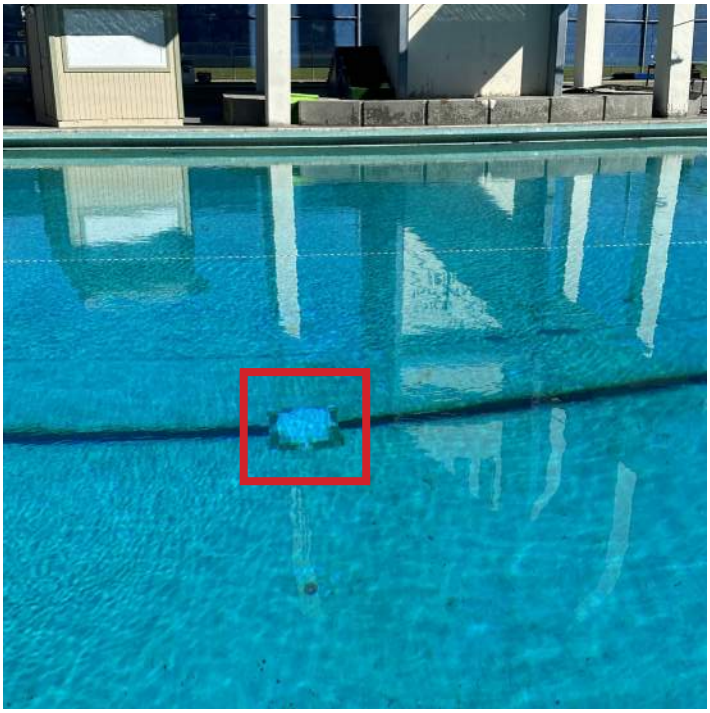


Image 13: Diving Pool Main Drain

1.13 Diving Pool Floor Inlets:

The Diving Pool has twenty (20) floor inlets for recirculation and all of them are missing their adjustable flow inserts. California Code requires all swimming pools that are 40-feet wide or wider use floor inlets spaced evenly throughout the pool to assure effective distribution of chlorine for proper disinfection and water quality. The swimming pool is 75-feet wide and greater than 3,000 square feet. CBC, Chapter 31B states:

> *3137B.2.4 Floor inlets. Pools that are greater than 40 feet (12,192 mm) in width or 3,000 square feet (278.7 mm²) in surface area shall have floor-mounted return inlets. The number of floor inlets shall be in compliance with Section 3137B.2. All floor inlet fittings shall be located to provide uniform circulation and shall be installed so as to be flush with the surface of the pool bottom.*

California Code requires two (2) inlets for the first 10,000 gallons of water and one (1) inlet thereafter per additional 10,000 gallons of water. CBC, Chapter 31B states:

> *3137B.2 Inlet fittings. Each pool shall be provided with not less than two recirculation system inlets for the first 10,000 gallon capacity and one additional inlet for each additional 10,000 gallon or less capacity.*

To comply with code the number of floor inlets would be fifty-eight (58). To install floor inlets in the swimming pool the pool would have to be drained and trenches cut in the pool floor to install new under pool piping. Then floor inlets would be installed and the pool floor concrete replaced. In order to do the trenchwork the pool plaster would have to be removed and replaced. The pool would have to be refilled with water and chemically balanced. The following estimate represents trenchwork, fifty-eight (58) new floor inlets and related piping, and pool floor concrete (this item is included in the project scope on page 24). It is not reflective of pool plaster removal and replacement or costs associated with draining and refilling the pool with water (see page 24).

(Estimated Cost- $95,000.00)

1.14 Diving Pool Underwater Lights:

The Diving Pool underwater pool lights are not working on the north side of the pool. Staff report that this is due to compromised underground conduits being broken possibly by settlement from the dive tower, which does not allow new wires to be pulled through. New underground conduits and underwater pool lights should be installed to ensure the safety of patrons during early morning and evening hours of operation. The following estimate is for new underwater lights (this item is included in the project scope on page 24).

(Estimated Cost- $185,000.00)

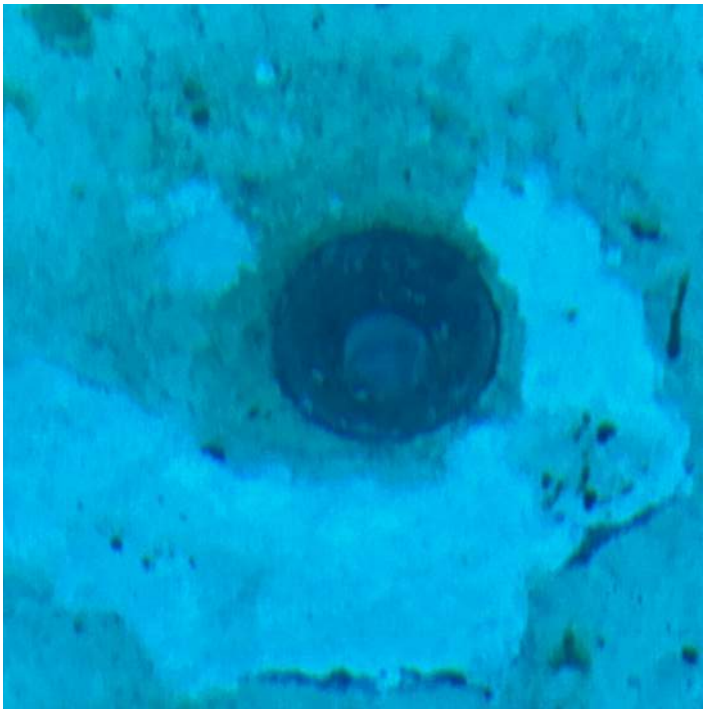


Image 14: Diving Pool Floor Inlet Without Flow Insert

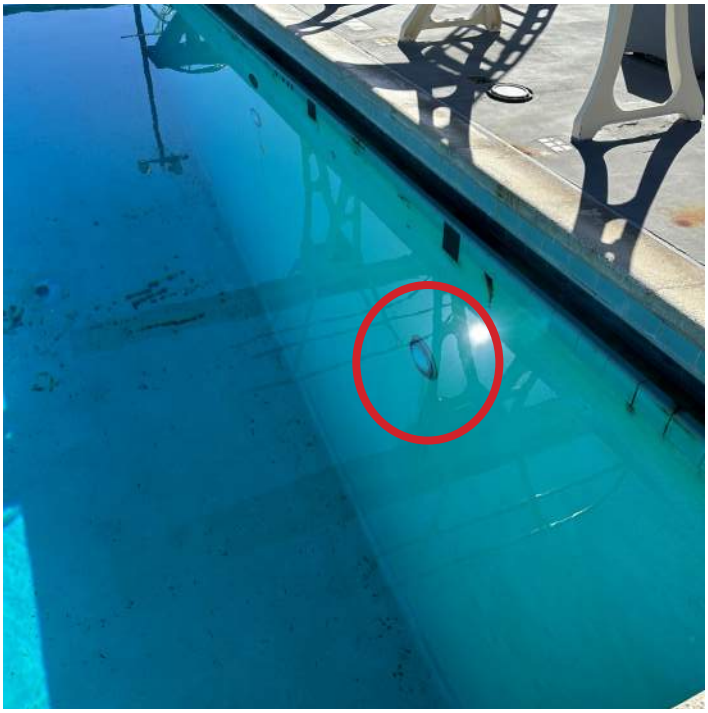


Image 15: Underwater Light in Diving Pool

1.15 Diving Pool Finish:

The Diving Pool finish is in need of replacement. The surface is delaminating, creating a porous finish for pathogens to grow. The aging finish is in violation of CBC, Chapter 31B:

> *3108B.2. Finish. The finished pool shell shall be lined with a smooth waterproof interior finish that will withstand repeated brushing, scrubbing, and cleaning procedures. The interior pool finish shall completely line the pool to the tile lines, coping, or cantilevered deck.*

The National Plasterers Association states that swimming pool plaster should be expected to last between 12-15 years under normal conditions. As plaster ages water gets closer to the underlying structure of the pool shell and the result can be oxidation and deterioration of the steel rebar which can increase the risk of leaks and structural failure of the pool shell. A failing pool finish may also harbor pathogens, which could affect the health and safety of patrons.

The plaster must be replaced. The tile is recommended to be replaced at the same time. A new finish for the pool will improve safety for patrons and help protect against leaks and structural concerns. The industry standard for pool plaster is to use a quartz-based plaster with tile. The following estimate includes removal of all existing previous pool finish to bare concrete and the installation of a new plaster and tile finish (this item is included in the project scope on page 24). The following estimate also includes waterproofing the surge tank, costs associated with draining and refilling the pool with water, and costs to balance the chemicals. Sometimes in older pools as existing plaster is removed underlying conditions can be worse than expected and consequently increase both the scope and cost of a plaster renovation due to concrete shell repairs.

(Estimated Cost- $337,500.00)

Alternative pool finishes to plaster and tile include fiberglass, liners and Myrtha's RenovAction system. If the City is interested in information for alternative finishes ADG can be consulted for details, including costs.

Image 16: Delaminating Plaster in Diving Pool

1.16 Diving Pool Coping Stones:

The Diving Pool coping stones are rough and pitted, creating places for bacteria and pathogens to grow. Code requires these surfaces to be non-porous to prevent recreational water illness outbreaks. See CBC, Chapter 31B:

> *3108B.2. Finish. The finished pool shall be lined with a smooth waterproof interior finish that will withstand repeated brushing, scrubbing and cleaning procedures. The interior pool finish shall completely line the pool to the tile lines, coping or cantilevered deck.*

The coping stones should be replaced. The following estimate is for replacement coping stones (this item is included in the project scope on page 24).

(Estimated Cost- $60,000.00)

Image 17: Diving Pool Coping Stones

Image 18: Failing Pool Deck

1.17 Deck for Pools:

The deck for the pools is in need of replacement to continue to safely serve patrons, athletes and spectators. The deck is failing with delamination, rough and porous areas, differential movement and cross slopes greater than 2%. These conditions are in violation of CBC, Chapter 31B:

> *3114B.1. General. A minimum continuous and unobstructed 4-foot wide slip resistant, cleanable, nonabrasive deck area of concrete or like material shall be provided flush with the top of the pool coping extending completely around the pool, and the deck area shall further extend 4 feet on both sides and rear of any diving board, fixed disabled access assistance device or slide and their appurtenances. The deck width shall be measured from the poolside edge of the coping lip.*

These deck issues will worsen with time. An estimate for a pool deck replacement is provided, including demo of the existing deck and a medium broom finish concrete with slot drains (this item is included in the project scope on page 23). Required deck depth markers and "no diving" markers would be replaced during deck replacement.

(Estimated Cost- $1,100,000.00)

1.18 Diving Pool Safety Markers:

Waterline depth markers are missing from the waterline tile in the Diving Pool. The lack of proper waterline depth markers is in violation of CBC, Chapter 31B:

> *3110B.4.2. Position. Where required by Section 3110B.4.1, depth markers shall be located in the following positions:*
>
> *2. For pools with perimeter overflow systems where coping cantilevers over the gutter depth markers may be positioned at the face of the cantilevered coping, the back wall above the gutter or immediately below the waterline which will result in the depth markers being completely submerged; or*

Waterline tile depth markers can be installed by removing and replacing waterline tiles. If the pool finish is to be completely replaced, these waterline tile depth markers are included in the cost estimate in section 1.15 (also included in the project scope on page 24). The following estimate is for a retrofitted install of waterline tile depth markers at all depth locations.

(Estimated Cost- $12,000.00)

Image 19: No Waterline Depth Marker

1.19 Diving Pool Autofill System:

The Diving Pool is filled with water manually. The lack of an automatic fill system is in violation of CBC, Chapter 31B:

> *3127B.3. Makeup Water. Automatic makeup water flow controls with a manual override control shall be provided to maintain the proper pool water level.*

An automatic fill system should be installed. The following estimate is for an automatic fill system to connect to the existing waterline piping (this item is included in the project scope on page 24).

(Estimated Cost- $20,000.00)

1.20 Flow Meters for Pools:

ADG did not observe flow meters for the pools during the site visit. The lack of flow meters on the pools is in violation of CBC, Chapter 31B:

> *3125B.3. Flow meter. A flow meter shall be provided on each recirculation system accurate to within 10 percent of flow and installed according to the manufacturer's written instructions with increments in the range of normal flow.*

Any flow meter purchased should be certified, listed and labeled to ANSI / NSF 50 by an ANSI-accredited certification organization. In addition, it is ADG's recommendation to install the flow meters in pipe locations with minimal flow distortion. Adequate straight-run pipe, both upstream and downstream of the flow meter, is recommended to maximize flow profile. Many manufacturers recommend placing a flow meter after a minimum of 10 pipe diameters of straight pipe and having an additional minimum 5 pipe diameters of straight pipe after the flow meter. It is also recommended that the flow meter be located after the filter. The following estimate is for two (2) new digital flow meters certified, listed and labeled to ANSI / NSF 50 (included in the projects scopes on page 23 and 24).

(Estimated Cost- $9,000.00)

Image 20: Example of A Digital Flow Meter

1.21 Pools Leaking:

There are known underground piping leaks, as reported by staff. At least one of the leaks is apparent by the water seeping into the pool pump pit from the underground pipes adjacent to the pit. The drawings show all large pool suction pipes to be concrete asbestos transite pipe. These pipes are notorious for leaking in pool applications after many years of service. Both the 50-Meter Pool and the Diving Pool have construction joints between the pool walls and the pool floor, which can also be another common source of pool leaks. The leaks should be sourced and repairs made. The following estimate is for leak detection and repairs (this item is included in the project scopes on pages 23 and 24).

(Estimated Cost- $100,000.00)

Image 21: Evidence of Leak in Pump Pit

The following eight (8) items are maintenance items for operations at the International Swim Center. A suggestion of possible remedy and an opinion of probable cost is given for most items. The itemized estimates do not include general conditions and other soft costs that are typically added to any project for a total construction project cost. In the proforma section of this report the itemized costs are totaled to give an example of a total project cost. In addition, many maintenance items are impacted by rectifying code items. As such, it may be difficult to approach each suggested maintenance repair as an individual project.

ITEM	DESCRIPTION	PAGE #
2.1	50-Meter Pool Finish	19
2.2	50-Meter Pool Racing Platforms	19
2.3	Diving Pool Underwater Windows	20
2.4	Floors for Pools	20
2.5	50-Meter Pool Steps	21
2.6	DE Filters for Pools	21
2.7	Pools Heaters and Controllers	22
2.8	Dive Tower	22

2.1 50-Meter Pool Finish:

The 50-meter pool plaster finish is starting to fail with small areas of delamination. This deterioration will accelerate over time. The plaster finish replacement should be planned for the upcoming years. The National Plasterers Association states that swimming pool plaster should be expected to last between 12-15 years under normal conditions. As plaster ages water gets closer to the underlying structure of the pool shell and the result can be oxidation and deterioration of the steel rebar which can increase the risk of leaks and structural failure of the pool shell. The following estimate is for a new plaster and tile finish for the 50-Meter Pool (this item is included in the project scope on page 23).

(Estimated Cost- $738,000.00)

Image 22: Plaster Delaminating in 50-Meter Pool

2.2 50-Meter Pool Racing Platforms:

The 50-Meter Pool's Omega starting platform anti-slip finish has worn off in many areas. These platforms should be repaired or replaced, unless they are eliminated as noted in section 1.5. The following estimate is for anti-slip finish replacement for the starting platforms.

(Estimated Cost- $40,000.00)

Image 23: Aging Anti-Slip Finish on Racing Platforms

Image 24: Diving Pool Underwater Windows

2.3 Diving Pool Underwater Windows:

The Diving Pool underwater windows are deteriorated and starting to leak. These three 3'x 3' windows will continue to deteriorate and require replacement or elimination. These windows are not typically used in modern aquatic centers. Given that nearly every person has a camera on them within their mobile phones there is a concern for inappropriate photos taken through the windows. With modern underwater cameras training aids and underwater viewing can be accommodated without the need for underwater windows. The underwater windows should be removed and eliminated. The following estimate is for removal of the windows.

(Estimated Cost- $160,000.00)

2.4 Floors for Pools:

It should be noted that the pool floors for both the 50-Meter Pool and the Diving Pool have a light steel reinforcement accompanied with a 10/10 woven wire fabric structure. As such, care should be taken if portions of the pool floor are removed for repairs in order to prevent pool walls from failing.

2.5 50-Meter Pool Steps:

The 50-Meter Pool has recessed steps installed in the midpoint of the 50-Meter long walls, which could be a hazard to someone using the lane for flip turns. These recessed steps should be removed and replaced with removeable ladders to avoid the potential hazard. The following estimate is for a removal of the steps and an installation of removeable ladders (this item is included in the project scope on page 23).

(Estimated Cost- $10,000.00)

2.6 DE Filters for Pools:

Staff report that they must drain and clean the diatomaceous earth filter systems every other week or 26 times per year. To accomplish this the staff most close the 50-Meter and Instructional Pools every other Tuesday from 6AM to 3PM and the Diving Pool every other Wednesday from 6AM to 3PM to clean the filter systems. New fully automatic high-rate sand filters would eliminate this requirement for staff labor and pool program closure. The following estimate is for new high-rate sand filter systems for each pool (this item is included in the project scopes on pages 23 and 24).

(Estimated Cost- $1,050,000.00)

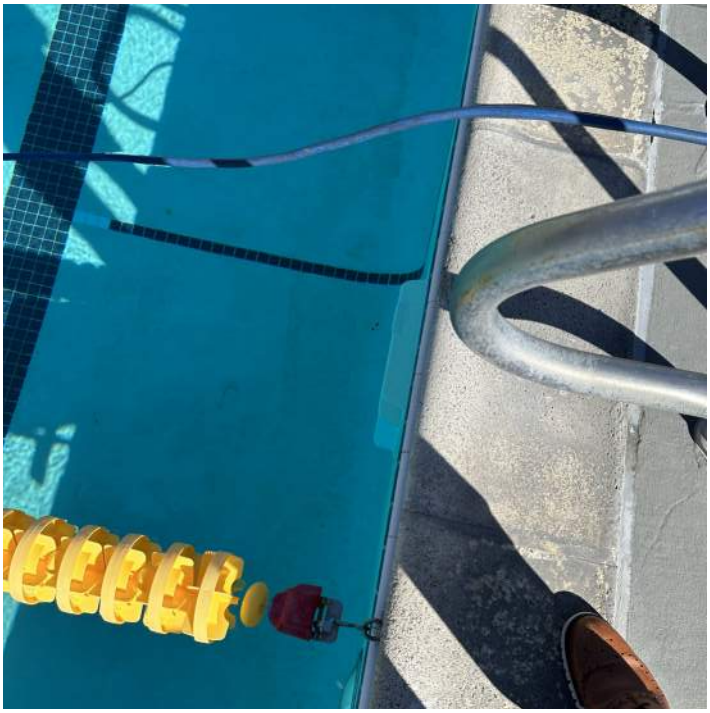


Image 25: Recessed Steps in 50-Meter Pool

Image 26: DE Filter

2.7 Pool Heaters and Controllers:

Under current operations staff report that they have had to replace the pool water heat exchangers three (3) times in the last four years. The failure of these heat exchangers is typically due to chemical corrosion. New chemical control and feed systems along with modern titanium external heat exchangers should provide a heating system with an expected life of 12 to 20 years. The following estimate is for replacement heating systems for the pools (this item is included in the project scopes on pages 23 and 24).

(Estimated Cost- $600,000.00)

2.8 Dive Tower:

The dive tower has been deteriorating for some time. The structural viability of this tower will be addressed by others. In the meantime it should be noted that the existing dive tower is constructed with 5-meter, 6.5-meter and 10-meter platforms. Current dive regulations require dive platforms of 5-meters, 7.5-meters and 10-meters.

Image 27: Diving Pool Heater

Image 28: Diving Platform in Tower

The following proforma budget of the International Swim Center provides estimated costs to separate the comingled pools (50-Meter Pool and Instructional Pool). This project also addresses some of the code and maintenance concerns outlined in the report and improves pool operations. All repairs or replacements would be designed and constructed to current code standards.

International Swim Center
Separation of 50-Meter and Instructional Pool Co-Mingled Systems
Proforma Budget Estimated Opinion of Probable Cost

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	EXTENSIONS
1.0	CONSTRUCTION COSTS				
1.1	Remove and Replace Pool Deck & Deck Drains	20,000	SF	$ 55.00	$ 1,100,000.00
1.2	New Under Pool Piping 50-Meter Pool	1	LS	$ 180,000.00	$ 180,000.00
1.3	New 50-Meter Pool Main Drains	1	LS	$ 50,000.00	$ 50,000.00
1.4	New 50-Meter Pool Underground Piping	1	LS	$ 95,000.00	$ 95,000.00
1.5	New 50-Meter Pool Mechanical Equipment	1	LS	$ 400,000.00	$ 400,000.00
1.6	Conversion of the Filter Pit to Pump Pit	1	LS	$ 75,000.00	$ 75,000.00
1.7	New 50-Meter Pool Plaster and Tile	12,300	SF	$ 60.00	$ 738,000.00
1.8	New 50-Meter Pool Surge Tank	1	LS	$ 60,000.00	$ 60,000.00
1.9	New 50-Meter Pool Underwater Lights	32	EA	$ 3,000.00	$ 96,000.00
1.10	New 50-Meter Pool Stairs	1	LS	$ 60,000.00	$ 60,000.00
1.11	New Instructional Pool Main Drains	1	LS	$ 60,000.00	$ 60,000.00
1.12	New Instructional Pool Underground Piping	1	LS	$ 65,000.00	$ 65,000.00
1.13	New Instructional Pool Mechanical Equipment	1	LS	$ 250,000.00	$ 250,000.00
1.14	New Instructional Pool Surge Tank	1	LS	$ 10,000.00	$ 10,000.00
1.15	New Instructional Pool Plaster and Tile	3,150	SF	$ 50.00	$ 157,500.00
1.16	New Instructional Pool Underwater Lights	7	EA	$ 3,000.00	$ 21,000.00
1.17	New Instructional Pool Walk-Out Stairs	1	LS	$ 60,000.00	$ 60,000.00
1.18	New ADA Access Both Pools	2	EA	$ 15,000.00	$ 30,000.00
1.19	**Subtotal**				**$ 3,507,500.00**
1.20	General Contractor Mark-Up/Overhead	15%			$ 526,125.00
1.21	Construction Contingency Costs	10%			$ 350,750.00
1.22	Design Contingency	5%			$ 175,375.00
1.23	**SUBTOTAL CONSTRUCTION & EQUIPMENT COSTS**				**$ 4,559,750.00**
1.24	Construction Escalation	**1**	**YRS**	**5.0%**	**$ 227,987.50**
1.25	**TOTAL CONSTRUCTION & EQUIPMENT COST W/ ESCALATION**				**$ 4,787,737.50**
2.0	FF&E				
2.1	Pool Deck & Safety Equipment (Allowance)	1	LS	$ 30,000.00	$ 30,000.00
2.2	**TOTAL FF&E**				**$ 30,000.00**
3.0	NONCONSTRUCTION COSTS				
3.1	**Soft Costs**	**30%**			**$ 1,445,321.25**
4.0	**TOTAL ESTIMATED PROJECT COST**				**$ 6,263,058.75**

The following proforma budget of the International Swim Center provides estimated costs to replace the mechanical system and related piping for the Diving Pool to comply with turnover rates under current code. This project also addresses some of the code and maintenance concerns outlined in the report and improves pool operations. All repairs or replacements would be designed and constructed to current code standards.

International Swim Center
Diving Pool 6-Hour Turnover Rate Upgrade
Proforma Budget Estimated Opinion of Probable Cost

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	EXTENSIONS
1.0	CONSTRUCTION COSTS				
1.2	New Under Pool Piping Dive Pool	1	LS	$ 140,000.00	$ 140,000.00
1.3	New Dive Pool Main Drains	1	LS	$ 50,000.00	$ 50,000.00
1.4	New Dive Pool Underground Piping	1	LS	$ 95,000.00	$ 95,000.00
1.5	New Dive Pool Mechanical Equipment	1	LS	$ 400,000.00	$ 400,000.00
1.6	Conversion of the Filter Pit to Pump Pit	1	LS	$ 75,000.00	$ 75,000.00
1.7	New Dive Pool Plaster and Tile	4,500	SF	$ 75.00	$ 337,500.00
1.8	New Dive Pool Surge Tank	1	LS	$ 60,000.00	$ 60,000.00
1.9	New Dive Pool Underwater Lights	24	EA	$ 3,000.00	$ 72,000.00
1.10	New ADA Access Both Pools	1	LS	$ 15,000.00	$ 15,000.00
1.11	**Subtotal**				**$ 1,244,500.00**
1.12	General Contractor Mark-Up/Overhead	15%			$ 186,675.00
1.13	Construction Contingency Costs	10%			$ 124,450.00
1.14	Design Contingency	5%			$ 62,225.00
1.15	**SUBTOTAL CONSTRUCTION & EQUIPMENT COSTS**				**$ 1,617,850.00**
1.16	Construction Escalation	**1**	**YRS**	**5.0%**	**$ 80,892.50**
1.17	**TOTAL CONSTRUCTION & EQUIPMENT COST W/ ESCALATION**				**$ 1,698,742.50**
2.0	FF&E				
2.1	Pool Deck & Safety Equipment (Allowance)	1	LS	$ 30,000.00	$ 30,000.00
2.2	**TOTAL FF&E**				**$ 30,000.00**
3.0	NONCONSTRUCTION COSTS				
3.1	**Soft Costs**	**30%**			**$ 518,622.75**
4.0	**TOTAL ESTIMATED PROJECT COST**				**$ 2,247,365.25**

The following proforma budget of the International Swim Center provides estimated costs to replace all of the pools in-kind. All replacements would be designed and constructed to current code standards.

International Swim Center
Replacement Pools
Proforma Budget Estimated Opinion of Probable Cost

ITEM	DESCRIPTION	QTY	UNIT	UNIT PRICE	EXTENSIONS
1.0	CONSTRUCTION COSTS				
1.1	Demo and Dispose of Pools and Pool Deck	1	LS	$ 250,000.00	$ 250,000.00
1.2	New Dive Pool and Mechanical Equipment	6,150	SF	$ 350.00	$ 2,152,500.00
1.3	New 10-Meter Dive Tower	1	LS	$ 2,000,000.00	$ 2,000,000.00
1.4	New Dive Pool Dry Land Training Allowance	1	LS	$ 500,000.00	$ 500,000.00
1.5	New Dive Pool Surge Tank	1	LS	$ 60,000.00	$ 60,000.00
1.6	New 50-Meter Competition Pool & Mech. Equip.	12,300	SF	$ 320.00	$ 3,936,000.00
1.7	New 50-Meter Pool Surge Tank	1	LS	$ 60,000.00	$ 60,000.00
1.8	New 50-Meter Pool Competitive Equipment	1	LS	$ 325,000.00	$ 325,000.00
1.9	New Instructional Pool & Mechanical Equipment	3,250	SF	$ 305.00	$ 991,250.00
1.10	New Instructional Pool Surge Tank	1	LS	$ 10,000.00	$ 10,000.00
1.11	All Pool Deck Equipment	1	LS	$ 185,000.00	$ 185,000.00
1.12	New Pool Deck and Deck Drainage	20,000	SF	$ 55.00	$ 1,100,000.00
1.13	New Pool Mechanical Space	1	LS	$ -	$ -
1.14	**Subtotal**				**$ 11,569,750.00**
1.15	General Contractor Mark-Up/Overhead	15%			$ 1,735,462.50
1.16	Construction Contingency Costs	10%			$ 1,156,975.00
1.17	Design Contingency	5%			$ 578,487.50
1.18	**SUBTOTAL CONSTRUCTION & EQUIPMENT COSTS**				**$ 15,040,675.00**
1.19	Construction Escalation	**1**	**YRS**	**5.0%**	**$ 752,033.75**
1.20	**TOTAL CONSTRUCTION & EQUIPMENT COST W/ ESCALATION**				**$ 15,792,708.75**
2.0	FF&E				
2.1	Pool Deck & Safety Equipment (Allowance)	0	LS	$ -	$ -
2.2	**TOTAL FF&E**				**$ -**
3.0	NONCONSTRUCTION COSTS				
3.1	**Soft Costs**	**30%**			**$ 4,737,812.63**
4.0	**TOTAL ESTIMATED PROJECT COST**				**$ 20,530,521.38**

Image 28: Instructional Pool

The International Swim Center has proudly served the Santa Clara and Bay Area communities. The pools and dive tower have provided many years of service. In their current condition, they are in need of extensive repairs or replacement to safely and effectively serve.

This document provides an assessment of existing conditions, recommendations for action and options that can be weighed by City staff. It is important to note that this document is based strictly on observations, original drawings and information provided by staff. No information found in this document is provided with any agenda other than fulfilling the contractual obligations between LPA, Inc. and ADG.

On behalf of all of us at Aquatic Design Group we look forward to continuing to help LPA, Inc. and the City of Santa Clara in any way we can to ensure continued aquatic success.

Sincerely,

AQUATIC DESIGN GROUP, INC.

END OF ADG ASSESSMENT FINDINGS.

LPA, INC.

STRUCTURAL

3.0 ASSESSMENT FINDINGS

3.2 LPA, Inc.

3.2.1 Structural

3.2.1.1 Building A - Main Building/ Locker Room

3.2.1.2 Diver Tower and Viewing Windows

3.2.1.3 Large Canopy over Bleachers and Building D Tower

3.2.1.4 Building B and C - Restroom and Concessions

3.2.1.5 Building E,F, and G

STRUCTURAL ASSESSMENT FINDINGS

October 19, 2023

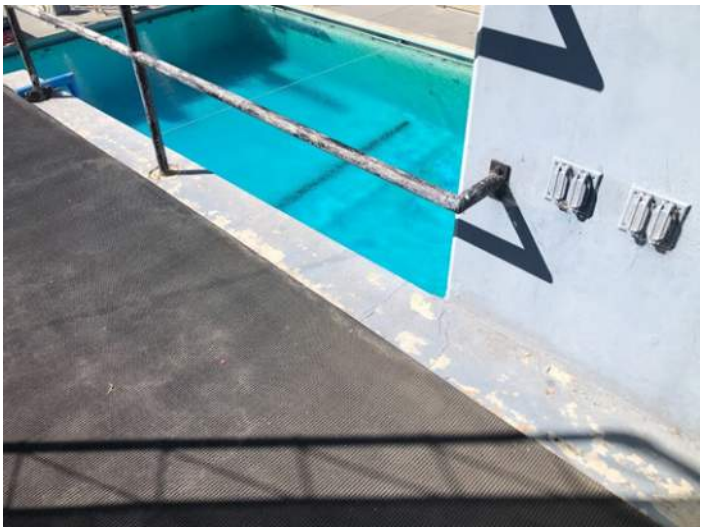
International Swim Center, Santa Clara, CA
Structural Assessment

1. Building A – Administration Building
   a. The center Rotunda requires lateral load resisting system. Existing corner wood posts are not sufficient as lateral load resisting system.

   b. Along the 4 wings of the building, continuous clerestory windows occur along all perimeter walls. As the result, the shear walls are discontinued from the roof framing. Wood posts cantilever over wall panels to resist lateral loads from the roof. This type of lateral load resisting system is not permitted in current code. Further review required to retrofit the lateral load resisting system.
   c. Some exposed steel posts are badly rusted at the base and shall be replaced.
   d. Press box structure above the club office wing does not have defined lateral load resisting system on 4 sides of walls.

e. The red tagged Women's shower and Men's shower addition should be demolished and replaced. The existing wood studs have been severely damaged by steam piping leakage.

2. Diver Tower
   a. Steel stair inside the dive tower is severely rusted and some connections are damaged. Stair is unsafe to use.
   b. Concrete curb adjacent to the stair opening is cracked and exposed rebar is severely rusted.
   c. Diving platforms at the start of the cantilevers have observed cracks on the top surface concrete structural slab. Concern that water will get into these cracks and cause rusting to the rebars. Recommend removing the floor cover to further evaluate the existing condition.



   d. Basic structural system is reasonable. There are a lot of shear walls for the size of the structure. Concrete shear walls are in general good condition.
   e. ICS facility staff mentioned the tower seems to have settled during some recent earthquake. They said they cannot pull the electric cable to change the pool lights along the wall adjacent to the dive tower foundation. The facility staff suspected the pile foundation settlement obstructed the cable. Some moderate cracking observed on the concrete platform at the base of the dive tower structure. These cracks may indicate some settlement of the structure. However, whether the settlement is contributing to the light issue is unknown.

3. Building B – Restroom/Concessions.
   a. Exposed glue-laminated fascia beams appears to be delaminated at many places on the surface. This member may not be structural in naturemay not affect the integrity of the structure.

4. Building D – Canopy Tower.
   a. Severe rusting is found on the roof drain gutter along the perimeter of the canopy roof. These roof drain gutter are made of light gauge sheet metal. Some damaged gutters poses falling hazards to the building or walkway below.

b. Roof trusses of the canopy roof appear in reasonably sound condition. Some of the cover coating has been worn off and exposed the base primer. The original primer appears to be in reasonable shape with minor rusting observed.

c. The canopy tower access structure that houses the access ladder to the top of roof deck is badly damaged. Severe water damage and drywall cracks are observed on all walls of the structure. Rusting of metal stud bottom tracks are observed. Metal stud walls enclosed by the gypsum wall board are anticipated to be badly rusted as well. This is a stand-alone structure without connection to the roof structure. The gravity and lateral load resisting system is primarily metal studs and drywall. With the severity of the damage observed, most of the lateral load resisting system have been compromised, it is unsafe to be inside the structure.

d. There are (8) steel cantilever columns supporting the entire roof structure. Columns are most likely not in compliance with the current building code standard and should be evaluated. An additional steel member, or reinforcing the existing member by welding new member, will be required to strengthen the existing structure. Further analysis will be required to provide recommendations.

5. Canopy Bleachers
   a. Metal stud walls behind the aluminum bleachers appears to be rusted and indicates signs of water damage. Studs shall be replaced and protected.
   b. Severe concrete cracks on steps are found along south end of the bleacher. Evident of differential settlement is observed. Geotechnical engineer should review the existing soil condition and provide recommendations.

6. Building E – Training Room and Storage
   a. This one-story building constructed of wood roof framing and reinforced concrete masonry wall around perimeter is in generally good condition.

7. Building F – Maintenance Storage
   a. Similar construction as Building E with wood roof framing and concrete masonry walls, the building is in generally good condition.

8. Building G – Park Maintenance Storage
   a. This one-story building constructed of wood roof framing over plywood shear walls on all side of the building. A continuous clerestory window along the north and south wall of the structure. The shear wall are discontinuous between roof and top wall. Wood posts connect the roof to the shear wall. This system do not meet the current code requirement.
   b. Evidence of water damage observed at the plywood shear wall near the sill plate.

END OF STRUCTURAL ASSESSMENT FINDINGS.

LPA, INC.

ARCHITECTURE

3.0 ASSESSMENT FINDINGS

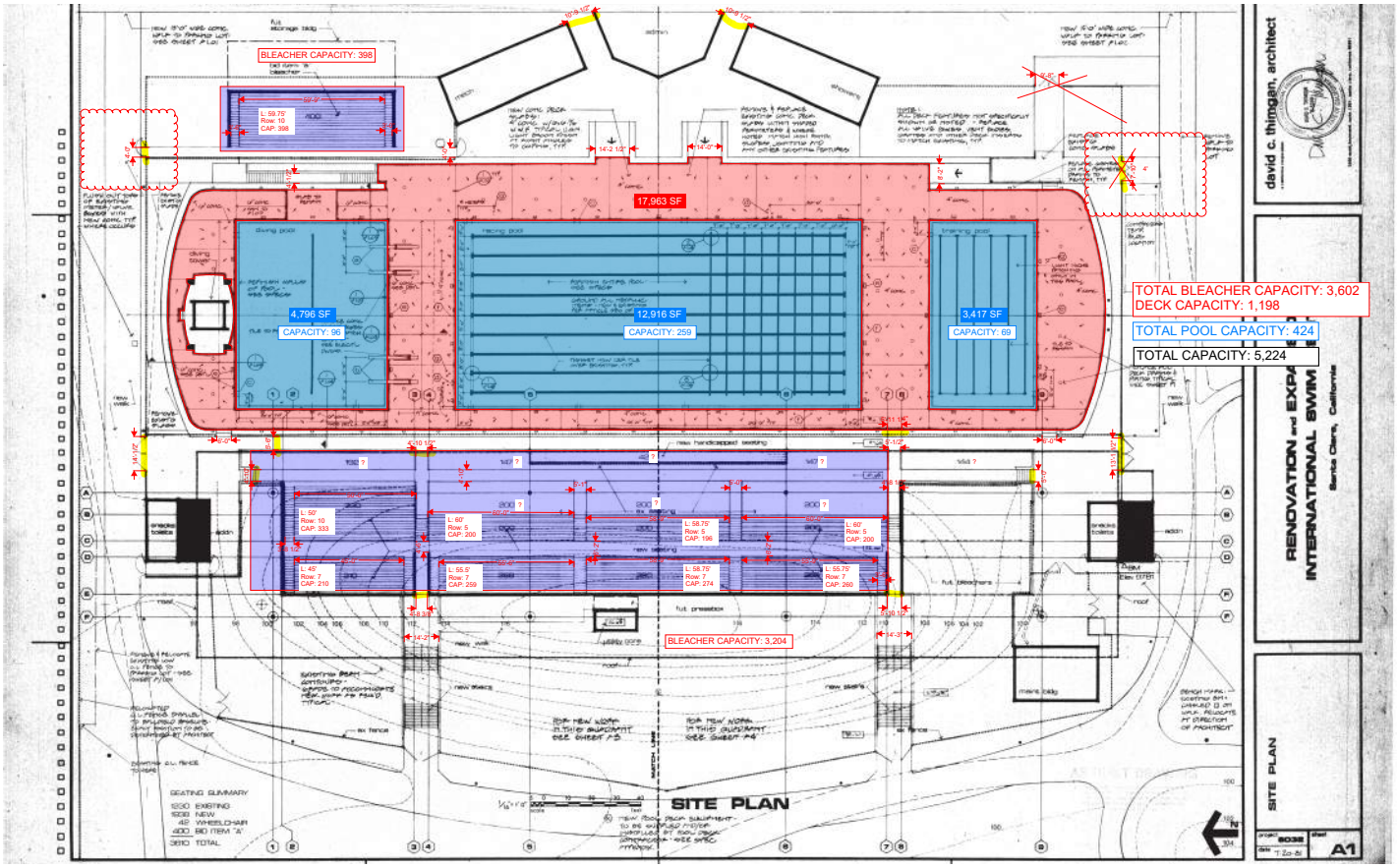
3.2 LPA, Inc.

3.2.2 Architectural

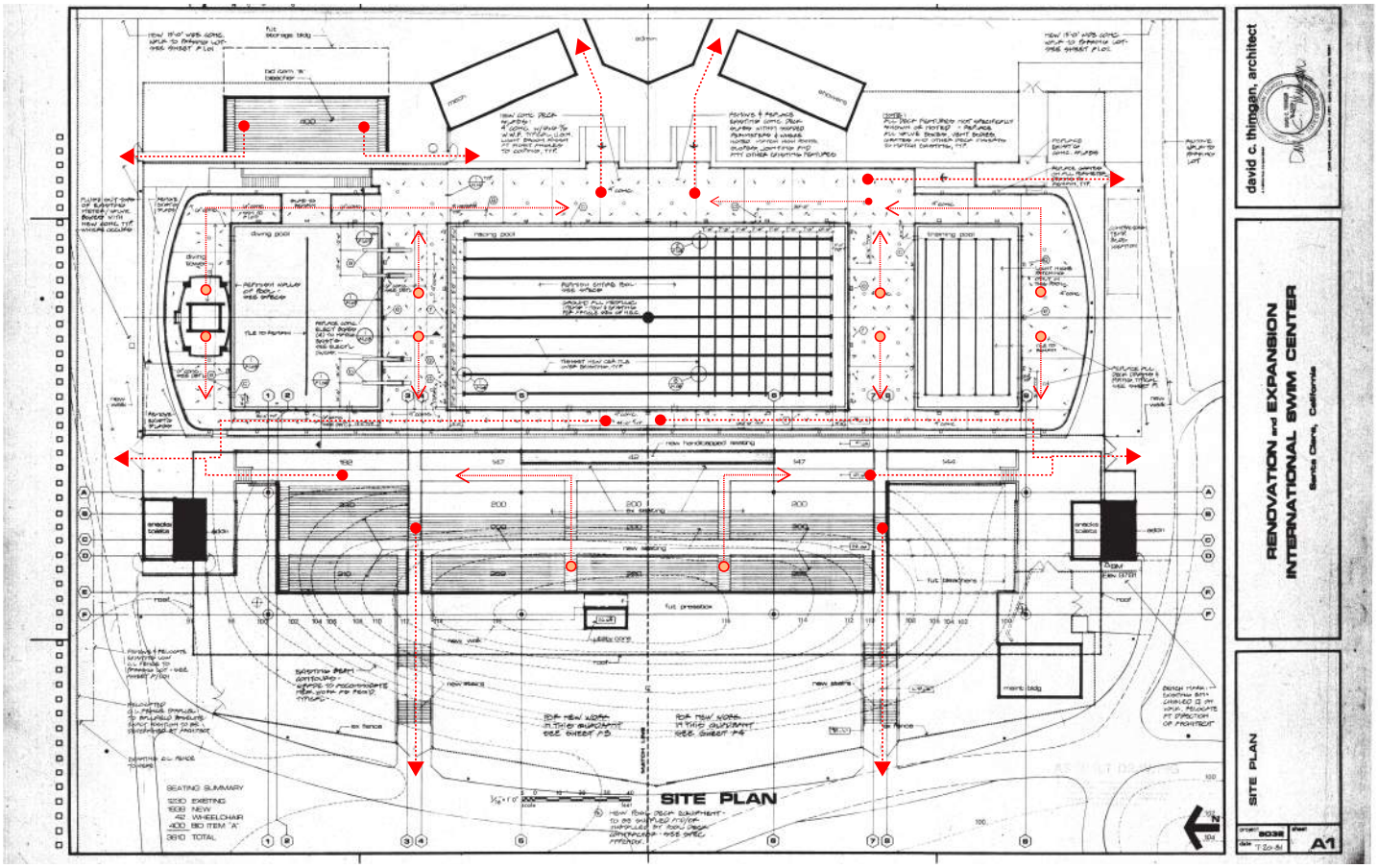
3.2.2.1 Facility and Site Egress Review

3.2.2.2 Plumbing Code Review

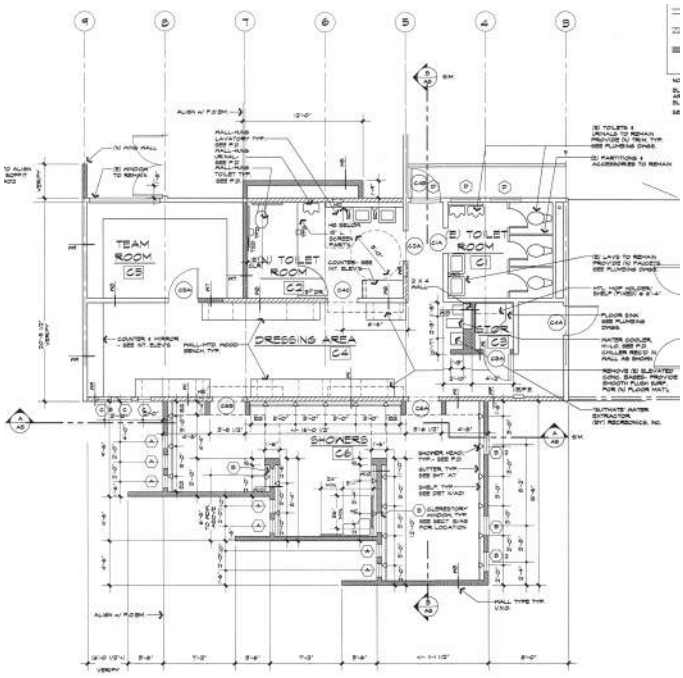
SITE KEY PLAN



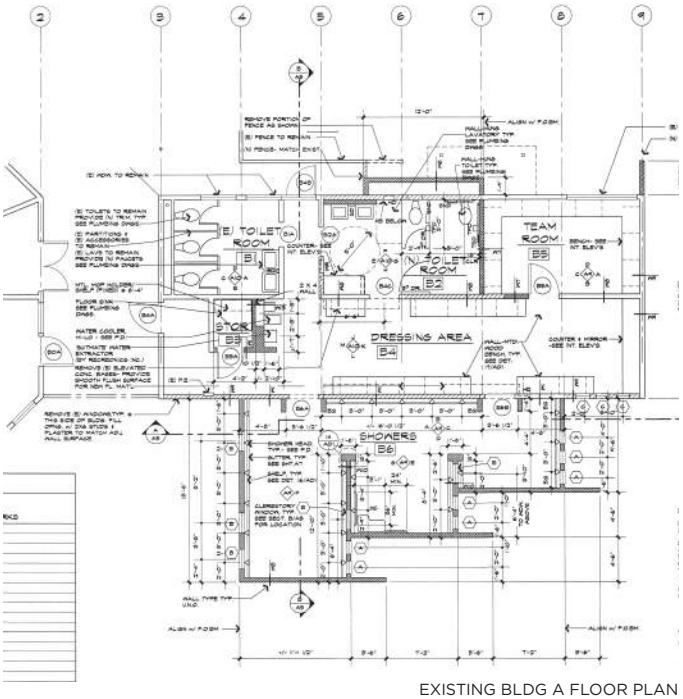
OCCUPANCY LOAD CALCULATIONS - BLEACHERS, POOLS, AND POOL DECKS



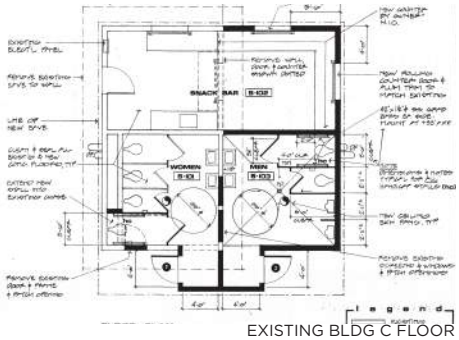
EXIT EGRESS ANALYSIS



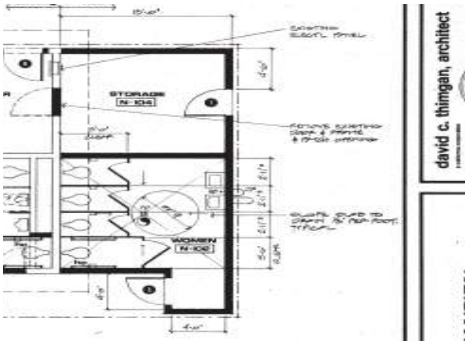
EXISTING BLDG A FLOOR PLAN
SOUTH SHOWER ROOMS



EXISTING BLDG A FLOOR PLAN
NORTH SHOWER ROOMS



EXISTING BLDG C FLOOR PLAN
RESTROOMS & CONCESSIONS



EXISTING BLDG B FLOOR PLAN
RESTROOM & CONCESSIONS

REQUIRED FIXTURES PER 2022 CPC

	WATER CLOSET	URINALS	LAVATORIES	DRINKING FOUNTAINS
MEN'S	10	14	14	14
WOMEN'S	32	0	18	

EXISTING FIXTURES

	WATER CLOSET	URINALS	LAVATORIES	DRINKING FOUNTAINS
MEN'S	8	7	8	12
WOMEN'S	13	0	8	

ARCHITECTURAL ASSESSMENT FINDINGS

Architectural Assessment – Occupancy, Egress Analysis, and Plumbing Code Compliance.

The Santa Clara International Swim Center is a facility that was built in 1967. The original constitution would have followed that year's respective building code requirements. Following new and current codes, which are required for the planning review, the building creates several violations that trigger the facility to be uninhabitable and unsafe until substantial changes are made. Our current review process looks at 3 minimum factors that are requirements in this upgrade: Occupancy, Egress, and Plumbing Count.

The current occupancy, classified per the CBC 2022, categorizes the facility under the A3 and A5 occupancy. This creates a total occupant count of 5,224 occupants, inclusive of the bleachers, bodies of water, and pool deck with minimal occupancy within the supporting structures. Per the CBC 2022 This capacity at the main event area nears the pools and bleachers requires a minimum of 4 complaint exits and a total combined exit width of 87 feet spread throughout all exits.

Observation of the current conditions shows that the facility has a total combined exit width of roughly 45 linear feet, which is nearly half of the requirements needed for an event. Of the 45 feet only (2) gates of approximately 8 feet in width have code-compliant egress gate and hardware for pedestrians. However, two gates with proper hardware are locked by chains and padlocks at all times making them non code-complaint. The remaining exits are not pedestrian gates and are currently used like maintenance gates that are not valid exits when closed.

Based on how the facility currently operates, the main exit path is not in compliance with California Building Code for safe emergency egress. All users are required to enter and exit through a single entry within the main entry building. In an emergency, the main path of egress divides into two directions, only to funnel the two paths back into the buildings in one main exit path. This is not

ARCHITECTURAL ASSESSMENT FINDINGS

compliant with code and a life safety hazard during an emergency.

Should the two site exits off of the main pool deck that have panic hardware be unchained during use, then the pool deck is partially compliant, allowing a maximum number of occupants of 380 or less. If the gates are not unchained during use, then the maximum occupancy of this facility would be 49 occupants, utilizing the front entrance only.

Based on the occupancy, the building code requires that any event with less than 500 occupants would need to have two functional and unchained exits with panic hardware. Having more than 500 occupants would require three exits with panic hardware and the proper widths. Having 1,000 or more occupants would need to have four exits minimum that have panic hardware and the proper amount of exit widths.

Our findings show that it is needed to have additional exit lengths to total 87 feet and a minimum of four exits with panic hardware, per the 2022 California Building Code.

Based on the current plumbing fixtures combined from Main Building A Locker Rooms and the supporting Restroom and Concessions, the plumbing fixtures are greater than 50 percent deficiency from what would be needed at full capacity. Both the size of the restrooms and lockers rooms and quantity of fixtures would need to be increased to meet plumbing fixture requirements. However, this is not possible in the current footprint of the existing building and will require additional square footage in order to achieve the minimum plumbing fixture requirements.

EXISTING CHAINED EXIT

OCCUPIED SPACE

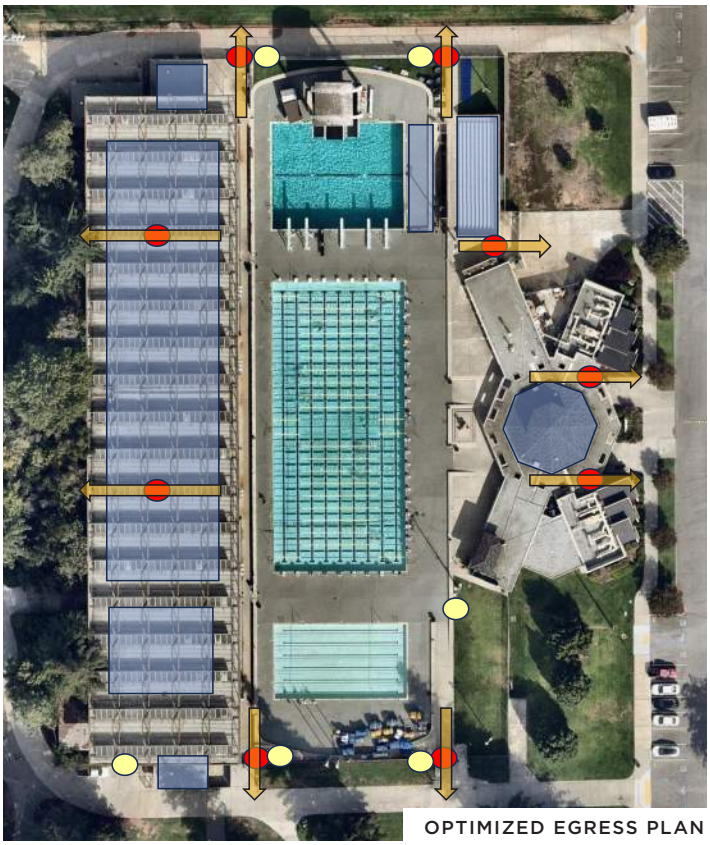
ACTIVE EXITS

LOCKED EXITS

ADDITIONAL EXITS NEEDED

EXIT PATH

CURRENT EGRESS PLAN



OPTIMIZED EGRESS PLAN

END OF ARCHITECTURAL ASSESSMENT FINDINGS.

SIMPSON GUMPERTZ & HEGER

3.0 ASSESSMENT FINDINGS

3.3 Simpson Gumpertz & Heger (SGH)

3.3.1 Building A - Main Building/Locker Room

3.3.2 Diver Tower and Viewing Windows

3.3.3 Pool Deck

3.3.4 Large Canopy over Bleachers and Building D Tower

SGH ASSESSMENT FINDINGS

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SHOWER FACILITIES IN BUILDING A

CANOPY BLEACHER STRUCTURE

DIVE TOWER

CONCRETE STRUCTURES & COMPONENTS

CONCRETE STADIUM BLEACHERS & STEPS

STEEL STADIUM ROOF

CODES & STANDARDS

For purposes of this report, compliance with current codes and industry standards will be used to evaluate the condition and performance of the Facility. We also reviewed and considered project-specific documents, such as architectural drawings and condition assessment reports prepared by others. The documents we considered in our analysis include:

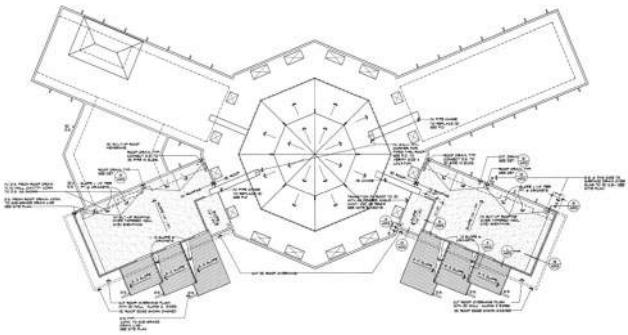
- 2022 California Building Code (CBC)
- ASTM E2018-15, Standard Guide for Property Condition Assessments: Baseline Property Condition Assessment Process
- 2023 TCNA Handbook for Ceramic, Glass, and Stone Tile.
- Facility Condition Assessment Report for the International Swim Center prepared by Kitchell for the City of Santa Clara, CA dated 31 January 2018.
- ASTM E797/E797M-21, Standard Practice for Measuring Thickness by Manual Ultrasonic Pulse-Echo Contact Method
- ASTM A168: Tentative Specification for Corrosion Resistant Iron-Chromium and Iron-Chromium-Nickel Alloy Castings for General Application
- ASTM D4580/D4580M-18, Standard Practice for Measuring Delaminations in Concrete Bridge Decks by Sounding

On September 27th, 2023, Christine Diosdado, P.E. and Jesse Sipes, P.E. of SGH, conducted a visual evaluation of roofs, exterior siding, fenestrations, and shower rooms.
Building A contains low-slope, built-up roofs

ROOFS

with a gravel surfacing and steep-slope roofs with architectural asphalt shingles. An octagonal, steep-slope roof covers the main reception/ administration area and saw-tooth roofs extend over the Men's and Women's Showers. The remaining areas of the building (i.e., offices, mechanical rooms, club offices, and the Men's and Women's dressing rooms) are covered by a built-up roof with a gravel ballast.

Other buildings on site (i.e., Buildings B, C, E, F & G) have low-slope, built-up roofs with a gravel surfacing.



Site Observations & Code Violations

During SGH's site inspection, we noted the following conditions and code violations:

Low-Slope Roofs

- The low-slope roof at Building A has 16 "skylight" openings with no cover, safety barrier, or safety markings. These unprotected roof openings pose a potential fall hazard to the ground level below (Appendix A, Photo 1) and violate the current Code: Section 3212 of the California Code of Regulations (CCR), Title 8 requires roof openings to be guarded by a cover or a guardrail on all sides of the roof opening. This safety hazard is exacerbated by the ease of roof-level access, where a single flight of stairs leads directly to the roof (Appendix A, Photo 2). There are no locked gates or restrictions to the roof level.

- The perimeter of the low-slope roof has no safety barriers, tie-offs, or edge delineation. This condition poses a fall hazard, especially given the unrestricted, roof-level access. This condition also violates the current code: Section 3210 of CCR, Title 8 requires guardrails along roof edges more than 30 inches above the ground. Alternatively, a zone along the roof edge can be marked to discourage anyone from walking within that zone, but zone marking alone is not code-compliant.
- No walkway pads exist leading to the mechanical equipment. Walkway pads delineate safe paths of travel on roofs and reduce foot traffic on the roof surface, thereby reducing wear and tear.
- Approximately 40% of the built-up roof exhibits signs of distress and inadequate drainage, such as bar spots and cracked plies and asphalt.
- Debris (e.g., dislodged asphalt shingles, swimming attire, wood crates) exists on the roof (Appendix A, Photo 3).
- Missing pipe insulation.
- Sheet metal flashings, rooftop mechanical equipment, and other metal roof components exhibited moderate to severe corrosion and rust.
- Wide parapet caps and rooftop mechanical chutes exhibited oil canning (i.e., visible, wavy distortion that affects cold-rolled metal products) (Appendix A, Photo 4).
- The roofs on Buildings B, C, E, F, and G also exhibited signs of wear and tear, such as worn areas and cracked plies.

Steep-Slope Roofs

- Approximately 60-70% of the composite, asphalt shingles at the saw-tooth roofs are inadequately adhered and could be lifted with relative ease. These poorly adhered shingles occur along the rake edge and within the field of the roof (Appendix A, Photos 5 & 6). Algae growth exists on the downslope edges of asphalt shingles (Appendix A, Photos 7 & 8).

- Approximately 70% of the asphalt shingles we checked at the octagonal, steep slope roof are dislodged or inadequately adhered. Most of the asphalt shingles on the hips are dislodged, missing, or have significant granular and • The missing shingles on the hips align with the ceiling cracks, nail pops, and bubbling in the gypsum wallboard below (Appendix A, Photos 9 & 10).

- Sheet metal flashings, rooftop mechanical equipment, and other metal roof components exhibit moderate to severe corrosion and rust (Appendix A, Photos 11 & 12).
- Sealant repairs at flashing were splitting and deteriorated (Appendix A, Photo 13).
- Incomplete integration of roof flashing to stucco-clad walls results in sizeable gaps and exposed stucco lath and accessories (Appendix A, Photo 14).
- Significant wood decay occurs at common and hip rafter exposed ends (Appendix A, Photos 15 & 16).

Service Life Assessment

According to the architectural drawings prepared by Prodis Associates Architects dated 16 June 1999, the low-slope and steep-slope roofs over the Men's and Women's showers and dressing areas are identified as a "new," part of a 1999 expansion project. Therefore, these roofs are 24 years old. The remaining low-slope and steep-slope roofs, which are labeled as "existing," appear to be from the original 1966 construction, making them 57 years old. The typical lifespan for architectural asphalt shingles ranges from 20 to 30 years . The typical useful life for built-up roofs is 20 to 30 years, with some lasting as long as 40 years.

Conclusions & Recommendations

The roofs at this Facility exhibit significant distress and deterioration. Further, the roofs are beyond their useful service life, particularly the low-slope, built-up roofs. Lastly, the layout and configuration of the low-slope roofs near openings and along the perimeter fail to comply with current safety codes and standards. Given the current condition and configuration of the roofs and roof accessories, we recommend wholesale removal and replacement with code-compliant roofs.

EXTERIOR WALL CLADDING & FENESTRATIONS

The exterior walls of Building A are clad with T1-11 plywood siding, 3-coat stucco (cement plaster), and roughcast stucco. The clubhouse office and the south and north walls of the multi-purpose area are clad with T1-11 plywood siding. The mechanical wing and the west wall of the multi-purpose room are clad with roughcast stucco, and the remaining exterior walls are covered with standard, 3-coat stucco.

Buildings B, C, E, F, and G are also clad predominantly with stucco.

According to the architectural drawings prepared by Prodis Associates Architects dated June 16th, 1999, the stucco walls enclosing Men's and Women's showers and dressing areas are identified as "new," built during the 1999 expansion. The wall details on Sheet AD3 require the installation of cement plaster over metal lath over 2 layers of building paper. The two layers of building paper are intended to serve as the code-mandated, water-resistive barrier (WRB) for the stucco wall assembly. The remaining exterior walls including the T-1-11 siding of Building A, which are labeled as "existing," appear to be part of the original 1966 construction, making them 57 years old.

Site Observations & Code Violations

During SGH's site inspection, we noted that several cuts had been made in the perimeter walls outboard of the Men's and Women's showers and were covered with plywood, painted to match the surrounding stucco. To determine the as-built wall assembly and the current condition of the exterior wall components, we asked that the plywood be removed. Upon removal of the plywood, we noted the following conditions and Code violations:
Stucco Wall & Aluminum Framed Windows

- Significant and extensive decay and cross-sectional loss of the load-bearing wood studs.
- Extensive and significant decay of the exterior plywood sheathing behind the stucco assembly.
- Extensive corrosion and significant cross-sectional loss of metal components (i.e., copper pipes, metal tracks, nails, and metal lath).

- Missing building paper layers, which means there is no code-required, water-resistive barrier.
- Stucco cracks, spalls, and patches at all stucco-clad buildings.
- Water stains on stucco soffits with no soffit drip screed or other provision to weep.
- The aluminum windows and storefronts at Building A show signs of wear and tear, including deteriorated glazing seals and gaskets (Appendix A, Photos 17 & 18).
- Significant wood decay at exterior window trim (Appendix A, Photo 19)
- Extensive corrosion and deterioration at exterior hollow metal doors (Appendix A, Photo 20).

We also documented the condition of the stucco walls at Building D, the Canopy Tower, and noted the following conditions and code violations:

- Extensive cracks throughout the stucco wall forming a checkerboard pattern (Appendix A, Photo 21). We also noticed pronounced buckling of the walls and large stucco spalls, most likely from soil settlement in this general vicinity (Appendix A, Photo 22).
-

- The soil erosion behind the canopy bleachers and around the canopy tower has caused vertical offsets in the concrete walkway, excessive stucco cracks at the canopy bleacher walls (Appendix A, Photo 23) and shifted the walkway and the roof deck downspouts (Appendix A, Photo 24).
- The weep screed abuts the concrete flatwork (Appendix A, Photo 25) or is less than 4 in. from grade (Appendix A, Photo 26). Section 2512.1.2 of the 2022 CBC requires a 2 in. clearance between a weep screed and hardscape and a 4 in. clearance between a weep screed and grade. The current condition violates the code.

T1-11 Siding

During SGH's site inspection, we noted the following conditions and code violations:

- The Clubhouse and multi-purpose wing walls exhibited significant wood decay forming large holes in T1-11 siding. The holes in the T1-11 siding expose a single layer of Type B building paper over an open wood stud cavity.
- The wood trim throughout the complex, particularly the T1-11 siding, which is significantly decayed and covered with flaking paint. We were able to push the awl into the trim with relative ease.

Service Life Assessment

The typical lifespan for T1-11 plywood siding ranges from 20 to 30 years, assuming it is painted every 10 years. The T1-11 siding at the ISC Facility is well beyond its useful life, as evidenced by the significant decay and cross-sectional loss described above. All T1-11 clad walls need to be removed and replaced, along with any decayed wood framing members within the wall cavity.

Aluminum-framed windows have a typical service life range of 15-20 years or up to 30 with proper maintenance . The aluminum windows and storefronts are well beyond their useful life, as evidenced by loose/short exterior gaskets and deteriorated glazing sealant. The aluminum windows and storefronts should be removed and replaced with products meeting the water penetration resistance required for this area and application.

While stucco can provide as a serviceable cladding for over 50 years if design and maintained properly, the stucco walls at the Facility are exhibiting signs of water damage, such as cracking, spalling, staining, and mildew growth. We also did not observe any water-resistive barrier in the destructive opening through the stucco assembly. If the other stucco-clad walls at Building A have no water-resistive barrier), then all stucco-clad walls will need to be removed and rebuilt.

SHOWER FACILITIES IN BUILDING A

Building A contains Women's and Men's showers which were built as part of the 1999 expansion project. According to Kitchell's Facility Condition Assessment Report dated January 31st, 2018, "dripping water was present at the bottom of exterior walls by the showers of the addition, indicating water leakage through the exterior wall." Previously, the City evaluated these reported leaks and made several interior and exterior wall openings at these showers. Based on their observations of leaking pipes and significant wood decay of vertical load-bearing framing, the City closed access to the Men's and Women's shower

enclosures.

According to the architectural drawings prepared by Prodis Associates Architects dated 16 June 1999, the interior shower walls consist of ceramic tile over a mortar bed, lath, and membrane on stud framing. However, the type of membrane is not identified in the drawings.

Site Observations & Code Violations

During SGH's site inspection, we noted the following conditions and code violations:

Showers

- Sizeable cracks in the ceiling and wall finishes (Appendix A, Photos 27 & 28) and cracks and gaps within the tile assembly particularly at inside wall corners and at tile ledges (Appendix A, Photo 29). The location and pattern of cracking indicate wall movement.
- Water stains and chipped paint exist on the non-

tiled portion of the shower enclosures, indicative of water damage (Appendix A, Photos 30, 31 & 32).

- Debonded ceramic tiles expose a discolored and discontinuous mortar bed (Appendix A, Photos 33 & 34)
- Pronounced efflorescence and discolored residue exist along the base of the tile walls, around shower escutcheon plates, and at tile grout lines (Appendix A, Photos 35, 36 & 37) indicative of water leakage through the tile assembly.
- At an interior wall opening, we observed ceramic tile over a mortar bed over expanded wire lath over 2 layers of grade D building paper. It appears that these two layers of building paper were installed as the shower membrane. Current shower wall standards require a waterproofing membrane inside the shower area extending the full height of the tile assembly and water vapor management.

Two layers of building paper fail to meet this requirement.

Conclusions & Recommendations

The Men's and Women's showers in Building A exhibit significant structural distress and water damage. Further, the exterior and interior wall assemblies fail to comply with current building code and standards. Given the current condition of these showers, we recommend wholesale demolition and reconstruction of these spaces with code-compliant showers and perimeter wall assemblies.

Metal Structures and Components

On September 27th, 2023, Alan Humphreys of SGH, an AMPP-certified Corrosion Engineer, conducted a visual corrosion evaluation of the metal structures and components at the Facility. He also measured the thickness of select metal components using an ultrasonic thickness (UT) gauge to evaluate section loss due to corrosion.

CANOPY BLEACHER STRUCTURE

SGH inspected the canopy bleacher structure, including the support columns, support truss structure, canopy panels, and canopy tower. During our visual inspection and UT testing, we noted the following:

Canopy Columns

- The eight columns supporting the canopy truss structure appear to be in good condition. The base coating of these columns is well adhered to the steel substrate, but the top coating is delaminating in discrete, localized areas. We did not observe any significant corrosion of the steel substrate, even at the low point where the columns intersect the concrete bleacher steps.

- UT measurements taken at the base of the eight columns (1 in. to 6 ft above the bleacher steps) show no significant variations in the steel thickness with height or between the columns. Refer to these UT measurements in Table 1. These consistent thickness measurements indicate little to no corrosion of the inner surface of the tubular columns.

Canopy Support Truss Structure

- A truss structure supports canopy panels and the now obsolete solar heating panels and tubing. The truss structure consists of steel I-beams and channels with welded and bolted connections.

- The canopy support truss structure generally appears to be in good condition. The base coating is well adhered to the steel, but the top coating is delaminating.
- We did not observe any significant corrosion (section loss) in the structural steel or fasteners in the areas we inspected.

Canopy Panels and Gutters

The corrugated canopy panels are connected by bolts to the bottom of the truss structure. We inspected approximately 10% of the topside of the canopy, and noted the following:

- The canopy panels appear to be in relatively good condition with the original coating on the top surface of the panels intact and no crevice corrosion between the fasteners and roof panels.

- Infrequent and discrete locations in the trough of the panels with through-thickness corrosion occur. Leaves and other debris have accumulated throughout the troughs of the roof panels, but there did not appear to be a correlation between debris accumulation and corroded areas. The corrosion is highly localized (less than 12 in.) with the coating immediately adjacent to these locations in relatively good condition.
- The gutters along both edges of the roof are completely corroded with cross-sectional loss at multiple sections.

Canopy Tower

The canopy tower (Building D) contains metal components such as the staircase, railings, pipe risers, doors, and frames. We noted the following:

- The two riser pipes for the redundant solar heating system appear to have subsided into the ground. These have, in turn, pulled down adjacent pipe supports on the roof, resulting in deformation of the roof panel connected to these supports.

Lab Analysis

We conducted laboratory analysis on (top) coating samples from a canopy support column and canopy support truss structure. We used Energy Dispersive Spectroscopy (EDS) to determine the chemical composition of both coatings and determine whether lead is present. We did not detect the presence of lead in either coating.

Conclusions & Recommendations

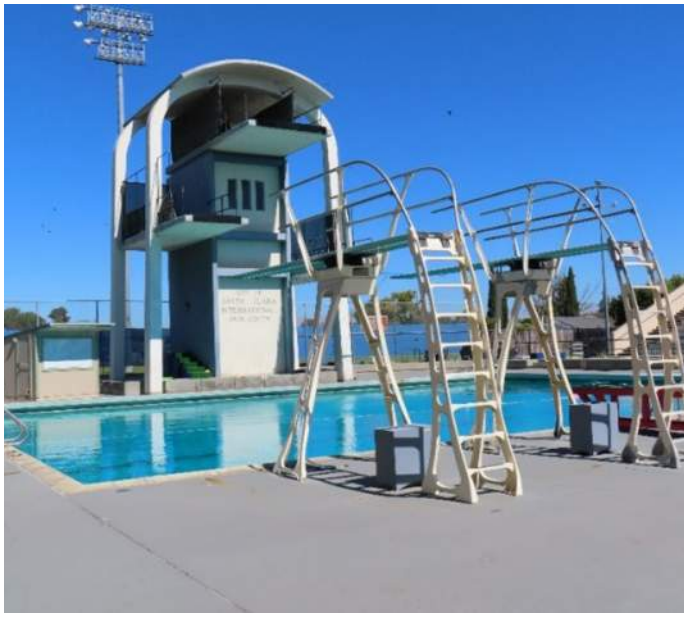
The canopy support columns and canopy support truss structure appear to be in good condition. We recommend stripping the current coating and recoating them with a two-part epoxy coating. We did not detect lead in our coating analysis at these locations. The localized corrosion on the canopy panels is likely due to original local coating defects rather than debris accumulation and ponding water. These local areas could be cut out and replaced, with the remaining panels stripped and recoated. However, it might be more cost-effective to replace these panels. The canopy gutters are corroded past their useful life and should be replaced with a non-metallic gutter system. The canopy tower appears to be in good condition and no work is required on the stairs or railings. The corroded door and frames should be replaced with components that are designed for external exposure. The solar heating pipe risers should be removed, and the local deformation of the roof panels repaired.

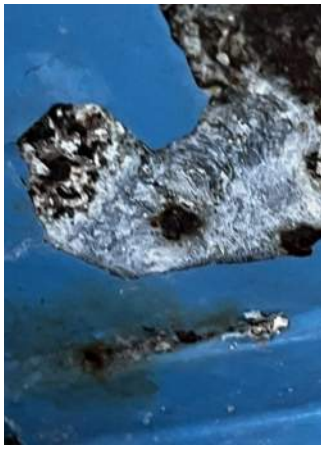
DIVE TOWER

The dive tower consists of metal components such as a staircase, stair handrails, platform railings, and doors. We noted the following:

Dive Tower Staircase

- The dive tower staircase is in poor condition with extensive corrosion, particularly on flat surfaces and crevices. Welds are also corroded with the lower section more heavily corroded than the upper section.
- Many of the original coatings have completely delaminated, resulting in a significant accumulation of corrosion products.
- Areas of white corrosion products exist underneath delaminated sections of coating.





Dive Tower Platform Railings

- The railings along the edge of the dive tower platforms appear to be in good condition with intact coatings and no visible corrosion. However, we observed coating loss and corrosion at the base of the railings at the plane of the pool deck.
- We were unable to conduct UT measurements at these locations, but using a knife to remove corrosion products we measured corrosion loss of at least 1/8 in.

Dive Tower Viewing Windows

We inspected the dive tower viewing windows, located beneath the pool deck, and noted the following:

- The window frames are not coated and appear to be galvanized steel.
- The adjacent concrete is cracked with evidence of water seepage and a small, active leak at one location.
- The top and side elements of the galvanized frames are heavily corroded.

Conclusions & Recommendations

The dive tower staircase is heavily corroded and should be replaced. The white corrosion products that we observed suggest that underneath the coating, the metal substrate is galvanized, which is not a suitable coating for structures such as these which are frequently wet and enclosed in a humid environment. We recommend removing and replacing it with a code-compliant structure fabricated from a corrosion-resistant alloy, such as 316 stainless steel.

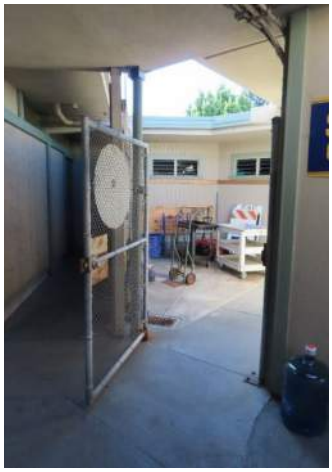
The railings on the dive tower platforms are corroded at their base, which has likely affected their structural integrity. The railings should also be replaced with a code-compliant structure fabricated from a corrosion-resistant alloy.

The galvanized window frames at the viewing area are heavily corroded due to water infiltration through the concrete. We recommend that once the concrete has been repaired and waterproofed, these frames are replaced with frames fabricated from a corrosion-resistant alloy such as 316 stainless steel.

Building A Canopy Supports

We inspected the metal poles that are supporting the Building A canopy and noted the following:

- The posts, particularly at deck level, exhibit coating failure and localized corrosion of up to 50%.



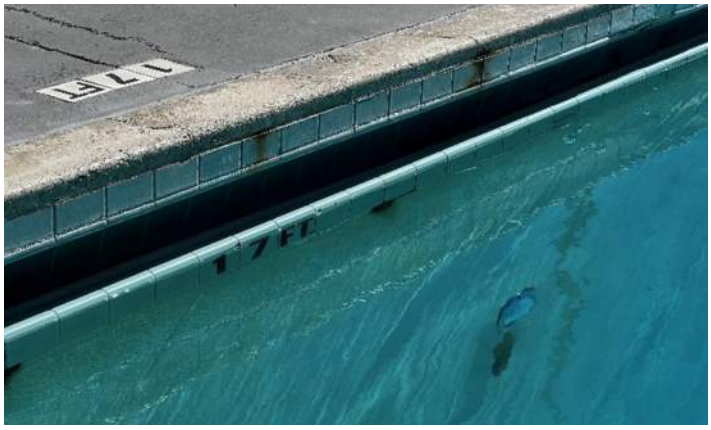
Conclusions & Recommendations

The Building A canopy supporting poles have corroded at several locations, especially at their base, with thickness loss of up to 50%. We recommend that these poles be replaced with carbon steel posts coated with a 2-part epoxy system.

General Pool Deck

We conducted a brief inspection of the general deck around the diving well and competition pool and noted the following:

- The concrete deck is cracked with occasional corrosion staining.
- The pool tiles at the waterline are corroded.



Conclusions & Recommendations

We observed localized corrosion staining around the pool deck at crack locations, suggesting that localized rebar corrosion is occurring. Local concrete repairs and waterproofing the deck should eliminate this corrosion.

CONCRETE STRUCTURES AND COMPONENTS

On September 27th, 2023, Anindya Dutta, Ph.D., S.E. and Megan Ladd, S.E. of SGH conducted a visual evaluation of the concrete structures and components at the Facility.

Concrete Pool Deck

The concrete pools and decks at Santa Clara Swim Center were designed and constructed circa 1966. Based on available drawings from the diving pool, we understand the pool construction to consist of varying thickness reinforced concrete walls with a thickened concrete bond beam at the top of the pool wall. The base of the pool is constructed of a 6-inch reinforced concrete slab on grade with a thickened edge at the wall support (Figure 1).

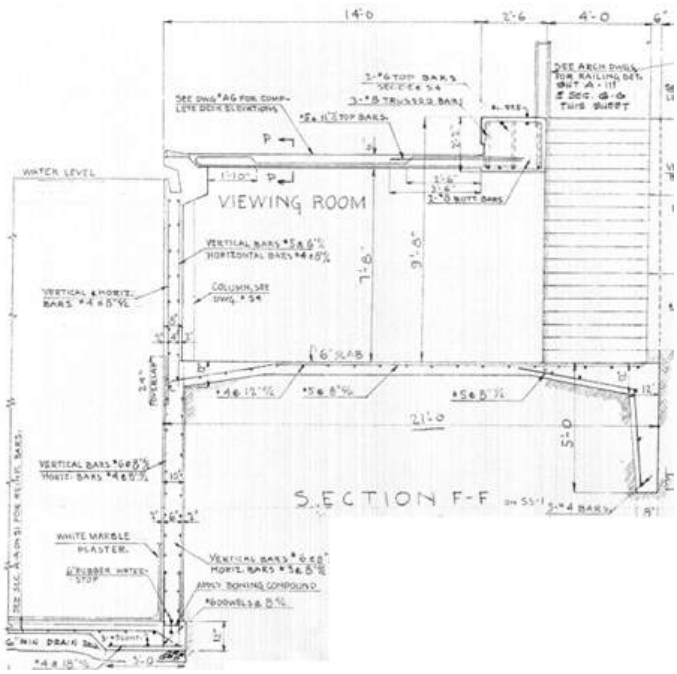


Figure 1: Section at Viewing Room

The decks surrounding the pools are constructed of 4- and 6-inch reinforced concrete slabs bearing on a minimum of 4 inches of drain rock or gravel. The sole section of the pool deck featuring an elevated slab is the approximately 24 feet by 16 feet section located to the east of the diving pool in the Viewing Room Area (Figure 2).

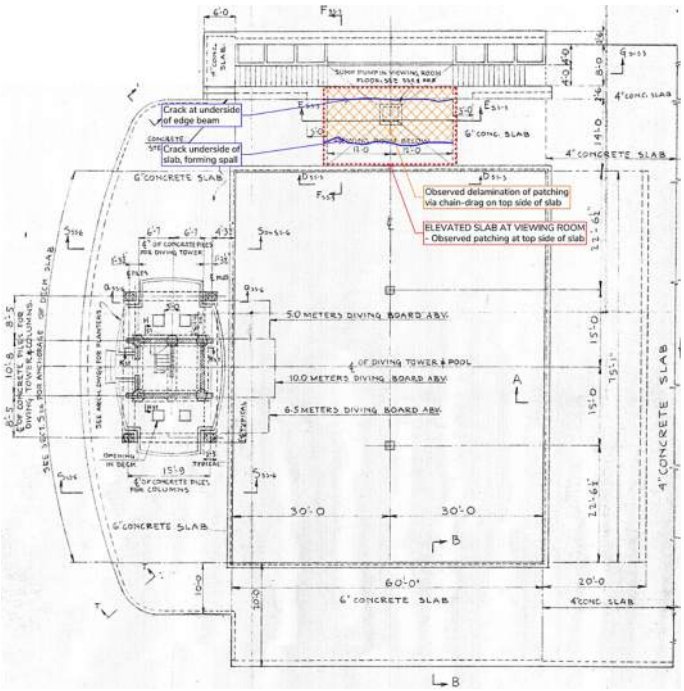


Figure 2: Plan of Diving Pool

The elevated slab spans between an upturned edge beam and the bond beam at the top of the pool wall, with a cold joint between the slab and the bond beam as indicated in the original drawings (Figure 3)

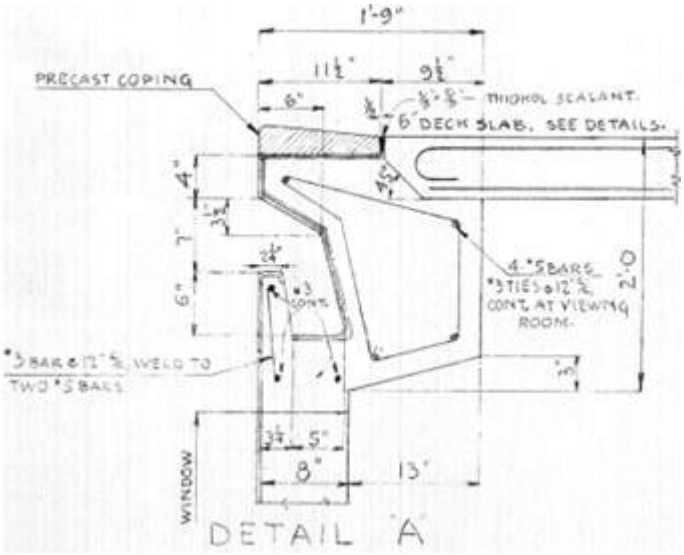


Figure 3: Section Bond Beam at Viewing Room

SGH Observations

During SGH's site investigation, we noted the following conditions and code violations:

- SGH performed a chain drag at the topside of all pool deck slabs. A chain drag test is a non-destructive testing method used to evaluate the presence of delamination in concrete structures. The process involves dragging a chain across the surface of the concrete and listening for changes in sound, which can indicate areas where delamination may be present.
- SGH performed a ground penetrating radar (GPR) survey of select locations of the concrete pool deck construction. GPR is a non-destructive testing technique that uses electromagnetic waves to investigate subsurface conditions and can be used to detect the location and depth of rebar within concrete.
- The typical pool deck slab on grade has significant cracking uniformly. These cracks are likely due to several reasons including soil compaction and settlement cracking, drying shrinkage cracking due to the wide spacing between control joints. These cracks do not represent a life-safety hazard but could present serviceability issues.
-

- The topside of the elevated deck slab above the viewing room has patching mortar applied. SGH detected delamination of the patch material when performing a chain drag.

- The underside of the viewing room elevated slab has a large crack running longitudinally along the slab. The crack is beginning to initiate spalls, representing a safety hazard. Outside of the spalled region, the underside of the slab appeared in sound condition when we hit it with a sounding hammer.

- Significant efflorescence and/or chemical leaching is evident on the underside of the slab.
- The exterior face (viewing room side) of the pool walls and the top bond beam both have moderate cracks exhibiting signs of efflorescence and or chemical leaching. The observed cracks align with reinforcement locations, as determined by our GPR survey. This indicates that moisture is likely reaching the reinforcement, and corrosion of the rebar is probable.

- The cold joint between the elevated slab and the bond beam appears moderately deteriorated with signs of water intrusion between the concrete joint.
- The metal frames for the windows inset into the viewing room pool room are exhibiting signs of severe corrosion.
- The underside of the viewing room elevated slab has a large crack running longitudinally along the edge beam to the east. The crack is beginning to initiate spalls. Significant efflorescence and or chemical leaching is evident on the underside of the slab.

Service Life Assessment

Based on the date of initial construction, the pool decks at International Swim Center are nearly sixty years old. The expected lifespan of an exterior exposed concrete structure ranges between 50 to 70 years. The expected service life varies significantly based on environmental conditions, exposure to chemicals and water, maintenance practices, and the quality of initial construction. The initial construction quality of the pool decks appears to be sound, with no observation of exposed rebars (i.e., minimal concrete cover) or poor compaction or consolidation of concrete. However, there is significant evidence of water intrusion and chemical exposure at the viewing room area.

Conclusions and Recommendations

The concrete pool decks at this Facility exhibit signs of distress and deterioration. While the cracking and settlement of the slabs on grade do not present a life safety hazard, they may pose serviceability issues. The current condition of the elevated Viewing Room represents an unsafe condition. Access to the Viewing Room below or walking on top of the elevated slab should be restricted. Given the condition of the elevated deck, we recommend locally removing and replacing the elevated slab and beam at the earliest.

CONCRETE STADIUM BLEACHERS AND STEPS

A combination of formed concrete bleachers and aluminum seats supported by steel stringers, constitute the stadium bleachers. The original concrete bleachers, designed and constructed circa 1966, consist of reinforced concrete foundation elements bearing on a base of compacted rock. Based on available drawings (Figures 4 & 5), it appears that the steps of the bleachers are not reinforced in a way that reinforced concrete stairs typically are (presence of L shaped rebars with a nosing bar).

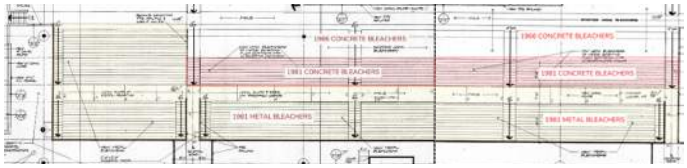


Figure 4 - Stadium Bleacher Plan

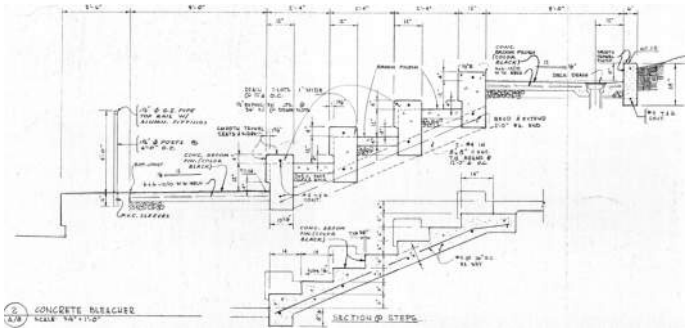


Figure 5 - 1966 Concrete Bleacher Section

In 1981, the stadium seating was expanded with additional concrete seats to match the existing setup. Additional aluminum seats supported by steel stringers and posts were also added. Lateral support for this system was provided by cable braces (Figure 6). The exterior perimeter of the stadium bleachers was framed with light gauge metal stud walls. Unfortunately, details for the stadium seating expansion were unavailable in the existing drawings available for review.

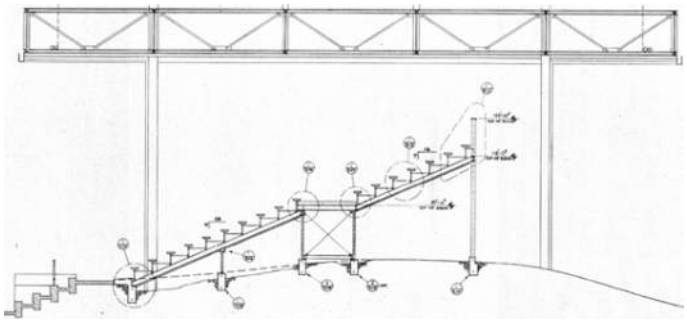
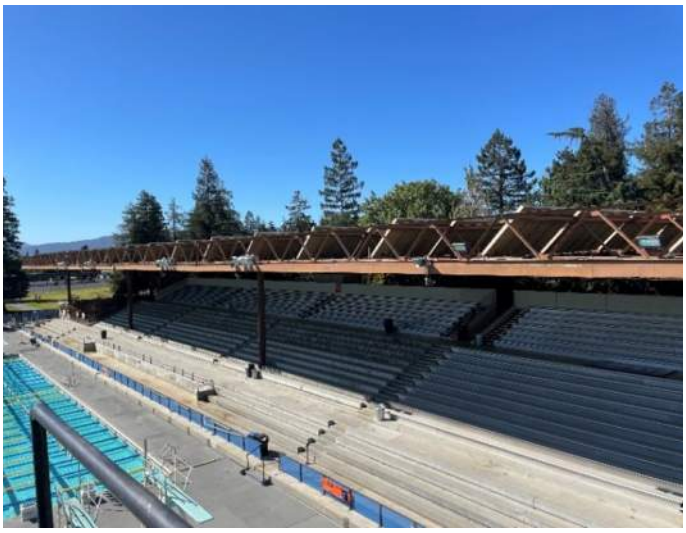


Figure 6 - 1981 Concrete Bleacher Section

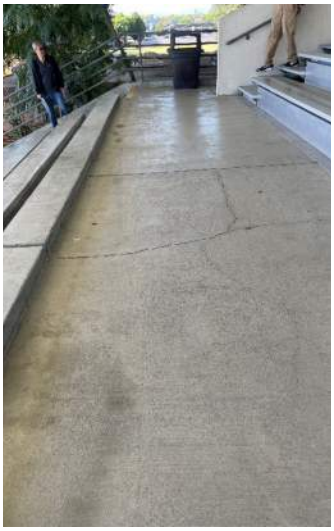
SGH Observations

During SGH's site investigation, we noted the following conditions:

- Both concrete and metal stadium seats are present.



- The concrete slab and steps appear in fair condition, with moderate settlement cracking observed.



- The steel beam stringers, posts, and seat support elements are painted and appear to be in sound condition with no visible signs of corrosion.

- Many of the studs for the perimeter walls have been replaced with newer galvanized studs, however top and bottom tracks appear to be original and exhibit signs of corrosion. These light gauge stud and track elements are not structural elements.

Service Life Assessment

The expected service life of the concrete and steel stadium structures varies significantly based on environmental conditions, maintenance practices, and the quality of initial construction. The initial construction appears to be sound, with no observation of exposed rebar or poor consolidation in the concrete elements. The steel stadium bleacher framing also appears of sound condition, with no observation of missing bolts, inadequate edge distance, poor quality welds, etc. If properly maintained, the stadium bleachers can remain in service for a significant period of time.

Conclusions and Recommendations

The construction of the stadium bleachers appears to be in fair condition structurally. However, we note that architecturally, there may be some concerns. The settlement of the concrete stair elements may constitute a trip hazard. If the hazard is deemed significant, the concrete steps and slabs should be removed, soil compacted, and replaced in kind.

Additionally, given the exterior condition of the stadium, the non-galvanized light gauge stud wall framing should be replaced with galvanized construction.

Annual visual observations of the structural steel elements should be performed to inspect for signs of corrosion or deterioration.

STEEL STADIUM ROOF

The stadium roof was designed and constructed circa 1977. It measures approximately 380 ft by 85 foot in plan and is framed with steel trusses running in both the north-south and east-west directions. Built box-WF columns support the steel trusses, these columns are founded on 48 in. diameter drilled pier foundations (Figure 7).

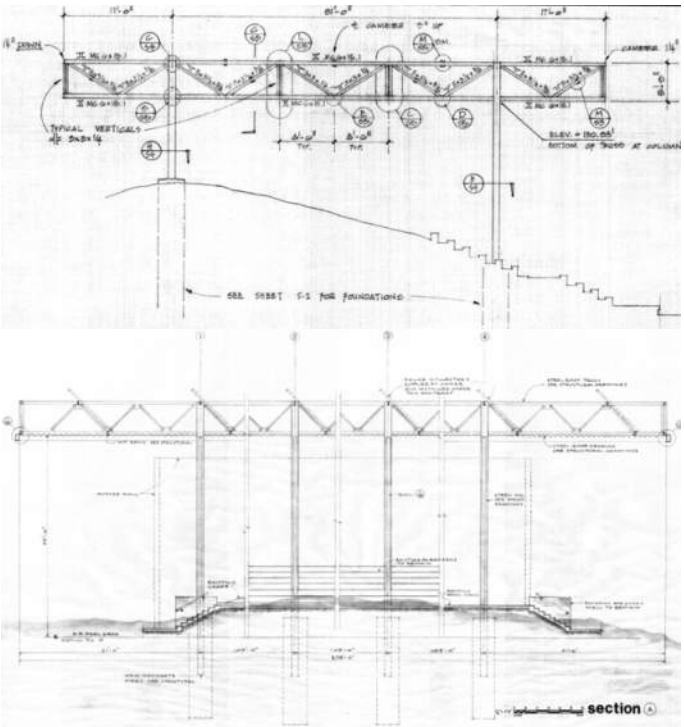


Figure 7: Stadium Roof Sections. Transverse (S.4) and Longitudinal (A.5)

Per the drawings, these drilled piers extend 12 ft into the soil, and the steel columns embed approximately 6 ft into the concrete foundation (Figure 8).

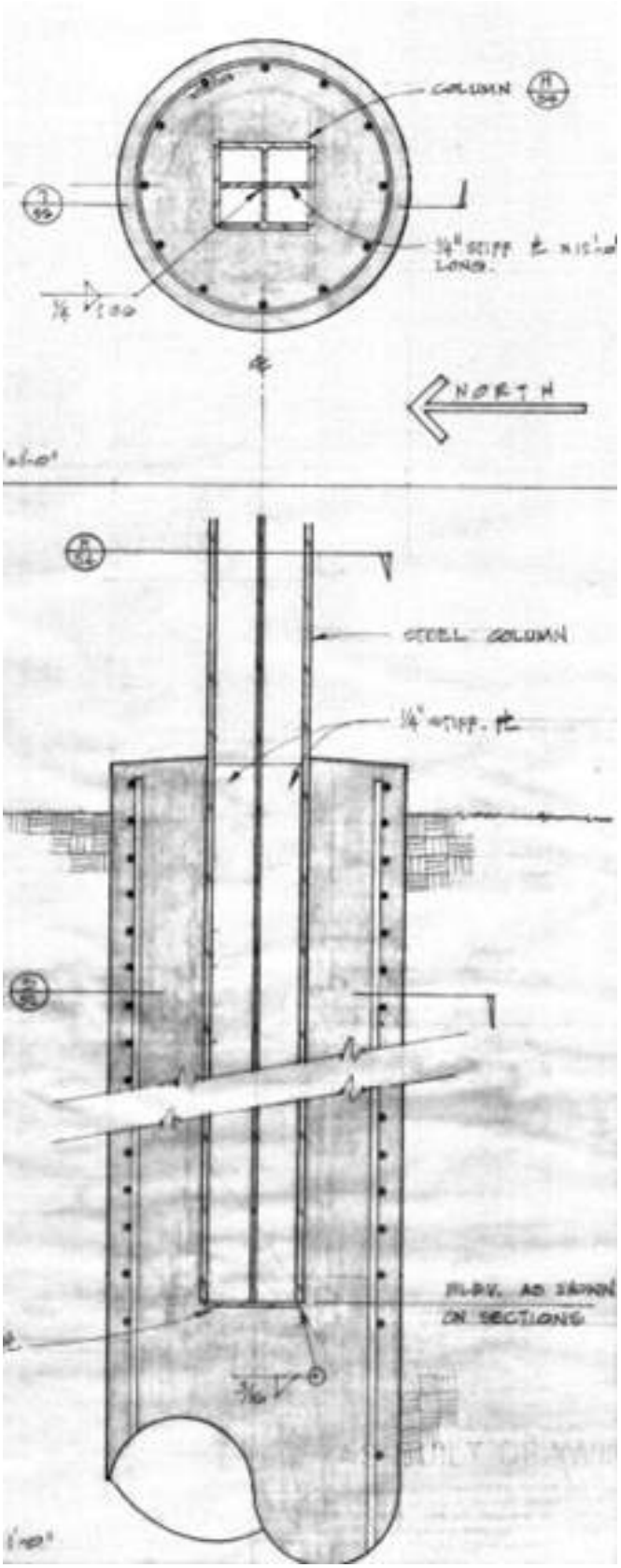


Figure 8: Foundation Detail

The double-angle truss braces are connected to the double-angle top chords and double-channel bottom chords via welded plate connections. A corrugated metal deck serves as the roof deck and is fastened to the underside of the bottom chord of the steel trusses.

Arrays of solar panels are present on the roof, which were previously in use as part of a solar water-heating system for the pool but have since been disconnected.

SGH Observations

During SGH's site investigation, we noted the following conditions and code violations:

- The structural steel members appear to be in fair condition with minimal signs of local corrosion.

- The paint of the structural steel trusses is spalling at locations, however, we observed no corrosion of steel members observed.

- The metal deck appears to be in fair condition.

- We observed significant corrosion of the metal gutter at the edge framing of the roof; refer to the "Metal Structures and Components: section. The gutter is fabricated of a bent 18 Ga. plate and is not a structural element.
- While the steel structure appears of sound construction, we note that the lateral system of the stadium roof consists of a steel cantilever column system. Per the current Building Code (2022 California Building Code), "Steel Special" Cantilever Column Systems are permitted in Seismic Design Category-D for building heights of up to 35 ft``. "Ordinary" Cantilever Column Systems are also permitted up to

heights of 35 ft provided the roof weight does not exceed 20 psf. Given the age of construction, it is unlikely that the system meets the detailing requirements of a special system and would thus constitute as an ordinary system. Based on the drawings and our observations, the roof weight is within the limits (especially if the solar heating elements and supporting steel is removed) and the structure height is less than 35 ft. Thus, it is an allowable lateral system per the current Building Code. However, it is likely that the diaphragm (deck), chords, and collectors would require strengthening in order to meet current design loads. The pier foundation system should also be checked against updated geotechnical recommendations to confirm its adequacy.

Service Life Assessment

Provided proper maintenance practices, such as inspections for corrosion and regular re-painting, the stadium roof structure can remain in service for a number of additional years.

Conclusions and Recommendations

We recommend that the Facility Ownership engage a structural engineer to perform a detailed seismic evaluation of the stadium roof structure, to identify any structural deficiencies, and to propose strengthening remediations in order to bring the structure into Code compliance. SGH has significant experience in this type of work.

Annual visual observations of the structural steel elements should be performed to inspect for signs of corrosion or deterioration.

4.0 APPENDIX

CORDOVA COMMUNITY POOL

Photo 1

2023-09-27 JRS 114

Building A

Unprotected roof openings pose a potential fall hazard to the ground level below.

Photo 2

2023-09-27 CD 180

Building A
Roof level access

Single flight of wood stairs leads directly to the roof with no locked gates or restrictions to the roof level.

Photo 3

2023-09-27 CD 233

Building A
Low slope roof

Debris (e.g., dislodged asphalt shingles, swimming attire, wood crates) exist on the roof.

Photo 4

2023-09-27 CD 265

Building A
Roof

Rooftop mechanical ducts exhibit oil canning and stains from potential ponding water.

Photo 5

2023-09-27 CD 193

Building A
Steep-slope roofs

Poorly adhered shingles occur at the slope transition sheet metal.

Photo 6

2023-09-27 CD 195

Building A
Steep-slope roofs

Poorly adhered shingles occur along the rake edge and within the field of the roof.

Photo 7

2023-09-27 CD 248

Building A
Steep-slope roofs

Organic growth exists on the downslope edges of asphalt shingles - see Photo 8 for close up.

Photo 8

2023-09-27 CD 249

Building A
Steep-slope roofs

Algae growth exists on the downslope edges of asphalt shingles.

Photo 9

2023-09-27 CD 100

Building A
Steep-slope roofs

Missing shingles on the roof hips align with the ceiling crack, nail pops, and bubbling in the gypsum wallboard.

Photo 10

2023-09-27 CD 101

Building A
Steep-slope roofs

Bubbling in the gypsum wallboard paint finish (close-up of Photo 9).

Photo 11

2023-09-27 CD 204

Building A
Roof components

Sheet metal flashings, rooftop mechanical equipment, and other metal roof components exhibit moderate to severe corrosion.

Photo 12

2023-09-27 CD 256

Building A
Roof components

Pipes and metal roof components exhibit varying degrees of corrosion.

Photo 13

2023-09-27 JRS 134

Building A
Steel-slope roofs

Previous sealant repairs at flashing are splitting and deteriorated.

Photo 14

2023-09-27 JRS 103

Building A
Steep-slope roofs

Gapped roof edge flashing exists at the top of the stucco-clad walls.

Photo 15

2023-09-27 JRS 188

Building A
Steep-slope roofs

Significant wood decay at the exposed ends of common and hip rafters.

Photo 16

2023-09-27 JRS 194

Building A
Steep-slope roofs

Significant wood decay at the exposed ends of common and hip rafters.

Photo 17

2023-09-27 JRS 268

Building A
Building Elevation

Window frames are worn and glazing seals are deteriorated.

Photo 18

2023-09-27 JRS 218

Building A
Building Elevation

Aluminum-framed windows are weathered.

Photo 19

2023-09-27 CD 203

Building A
Exterior window

Significant wood decay exists at exterior window trim.

Photo 20

2023-09-27 CD 291

Building A
Exterior door

Exterior hollow metal doors are corroded and deteriorated and significant wood decay of wall siding in foreground.

Photo 21

2023-09-27 CD 39

Building D
Stucco wall

Extensive cracks exist throughout the stucco wall cladding form a checkerboard pattern.

Photo 22

2023-09-27 CD 346

Building D
Stucco wall

Soil settlement exists behind the stucco-clad bleacher walls.

Photo 23

2023-09-27 CD 390

Building D
Stucco wall

Extensive, relatively wide cracks exist in the stucco-clad bleacher walls.

Photo 24

2023-09-27 CD 364

Building D
Canopy bleachers

Soil erosion occurs around column foundations and along the concrete slab walkway. The roof deck downspouts have separated from the foundations.

Photo 25

2023-09-27 CD 326

Building D

The stucco wall weep screed abuts the concrete flatwork.

Photo 26

2023-09-27 CD 341

Building D

The stucco wall weep screed is less than 1 in. above grade.

Photo 27

2023-09-27 CD 72

Building A
Women's Showers

Sizeable cracks exist in the plaster ceiling and wall finishes. The location and pattern of cracking indicate wall movement.

Photo 28

2023-09-27 CD 136

Building A
Men's Showers

Over 1/8 in. wide cracks exist in the plaster wall finish adjacent to tile.

Photo 29

2023-09-27 CD 68

Building A
Women's Showers

Cracks and gaps within the tile assembly particularly at inside wall corners and at tile ledges.

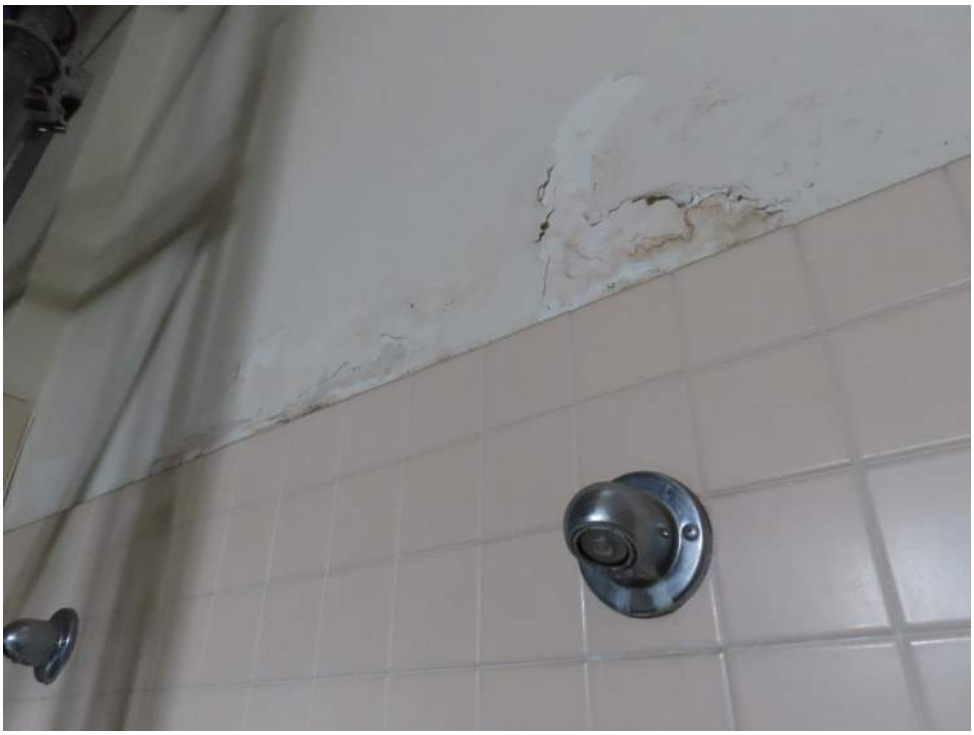


Photo 30

2023-09-27 CD 134

Building A
Shower facility

Water stains and chipped paint exist on the non-tiled portion of the shower enclosures indicative of water damage.

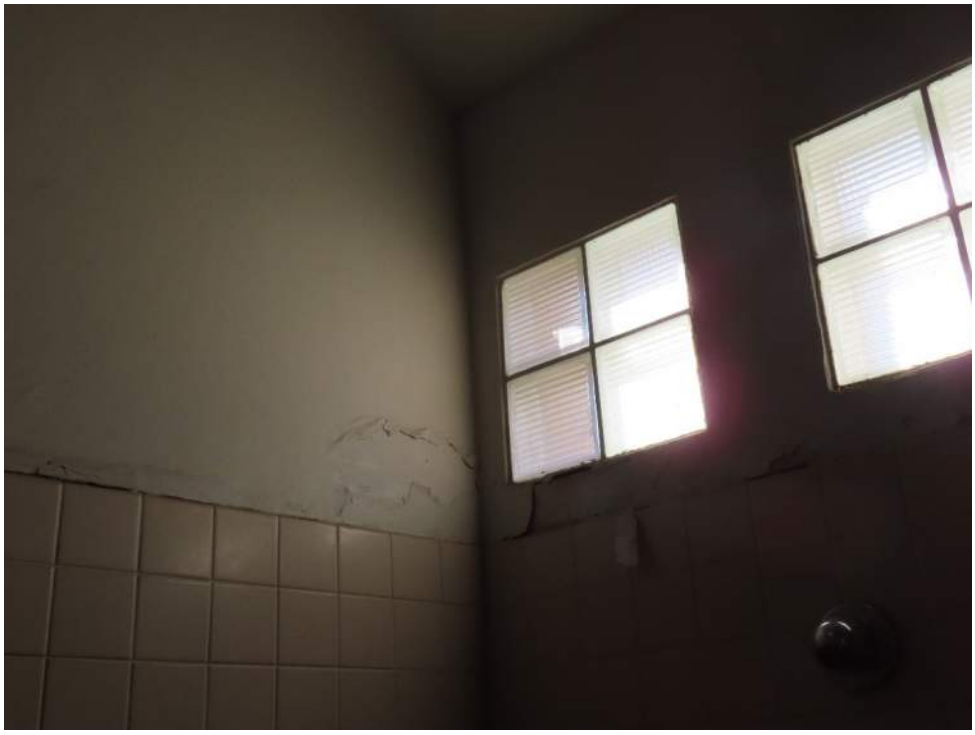


Photo 31

2023-09-27 CD 127

Building A
Shower facility

Water stains and chipped paint exist on the non-tiled portion of the shower enclosures.

Photo 32

2023-09-27 CD 129

Building A
Shower facility

Water stains and chipped paint exist on the non-tiled portion of the shower enclosures.

Photo 33

2023-09-27 CD 74
Building A
Shower facilities

Debonded ceramic tiles exist on the small shelf below the shower valves and heads. The mortar bed under the debonded tiles is discolored and discontinuous.

Photo 34

2023-09-27 CD 75

Building A
Shower facilities

Debonded ceramic tiles expose the underlying discolored and discontinuous mortar bed.

Photo 35

2023-09-27 CD 123

Building A
Shower facility

Pronounced efflorescence and discolored residue exists along the base of the tile-clad walls,

Photo 36

2023-09-27 CD 145

Building A
Shower facility

Pronounced efflorescence and green residue exist around shower control escutcheon plates.

Photo 37

2023-09-27 CD 133

Building A
Shower facility

Efflorescence and gray/white residue exist on the tile grout and tiles.

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