

7 Conclusions

The existing swim center does not meet Possible Post Earthquake Performance. A reinforced building meeting Collapse Prevention performance level could see crushing and extensive cracking in the masonry walls. There could be damage around openings and at corners. Secondary elements such as windows and doors could be shattered. There could be extensive permanent drift and extensive damage to nonstructural elements. Joinville Swim Center is nearly 56 years old; seismic demands have increased and detailing demands have become more stringent since the original construction. Retrofits are suggested to meet the Structural Performance Level (see Appendix A).

A Tier 2 should be performed. The Tier 1 criteria are conservative. Some of the non-compliant structural items may be shown to be compliant by a Tier 2 evaluation.

Thank you for the opportunity to be of service.
Please call with any questions.
IDA Structural Engineers, Inc.

Ian Dickson

Elliott Goodwin, P.E.

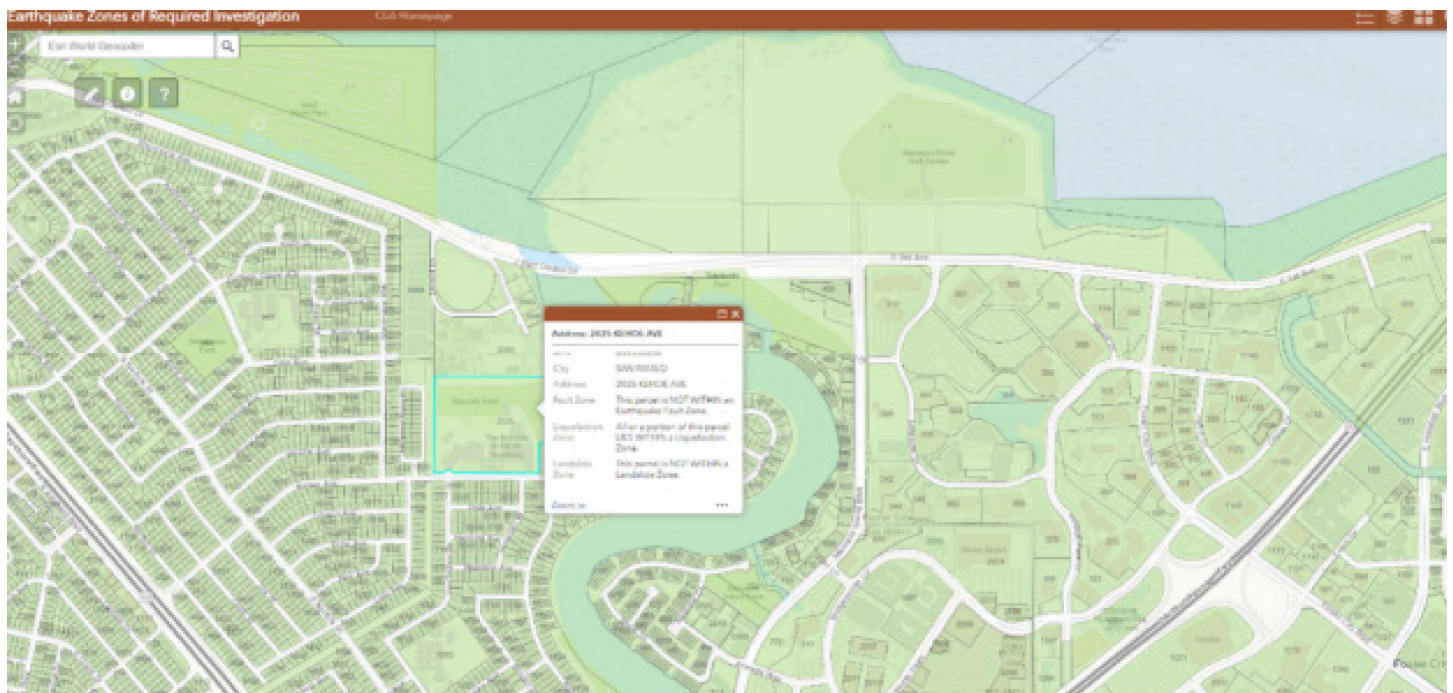
Stephen DeJesse, S.E.
President



Figure 1. Proximity map of site



Figure 3. Satellite View



Address: 2025 KEHOE AVE

APN	035160050
City	SAN MATEO
Address	2025 KEHOE AVE
Fault Zone	This parcel is NOT WITHIN an Earthquake Fault Zone.
Liquefaction Zone	All or a portion of this parcel LIES WITHIN a Liquefaction Zone.
Landslide Zone	This parcel is NOT WITHIN a Landslide Zone.

[Zoom to](#)



Figure 4. CGS Zoning Map of Seismic Hazards



Figure 5. Typical Exposed Glulam Beams Showing Water Damage



5b. Appendix A



Structural Cost Estimate Narrative and Conceptual Retrofits

Structural Improvements Narrative

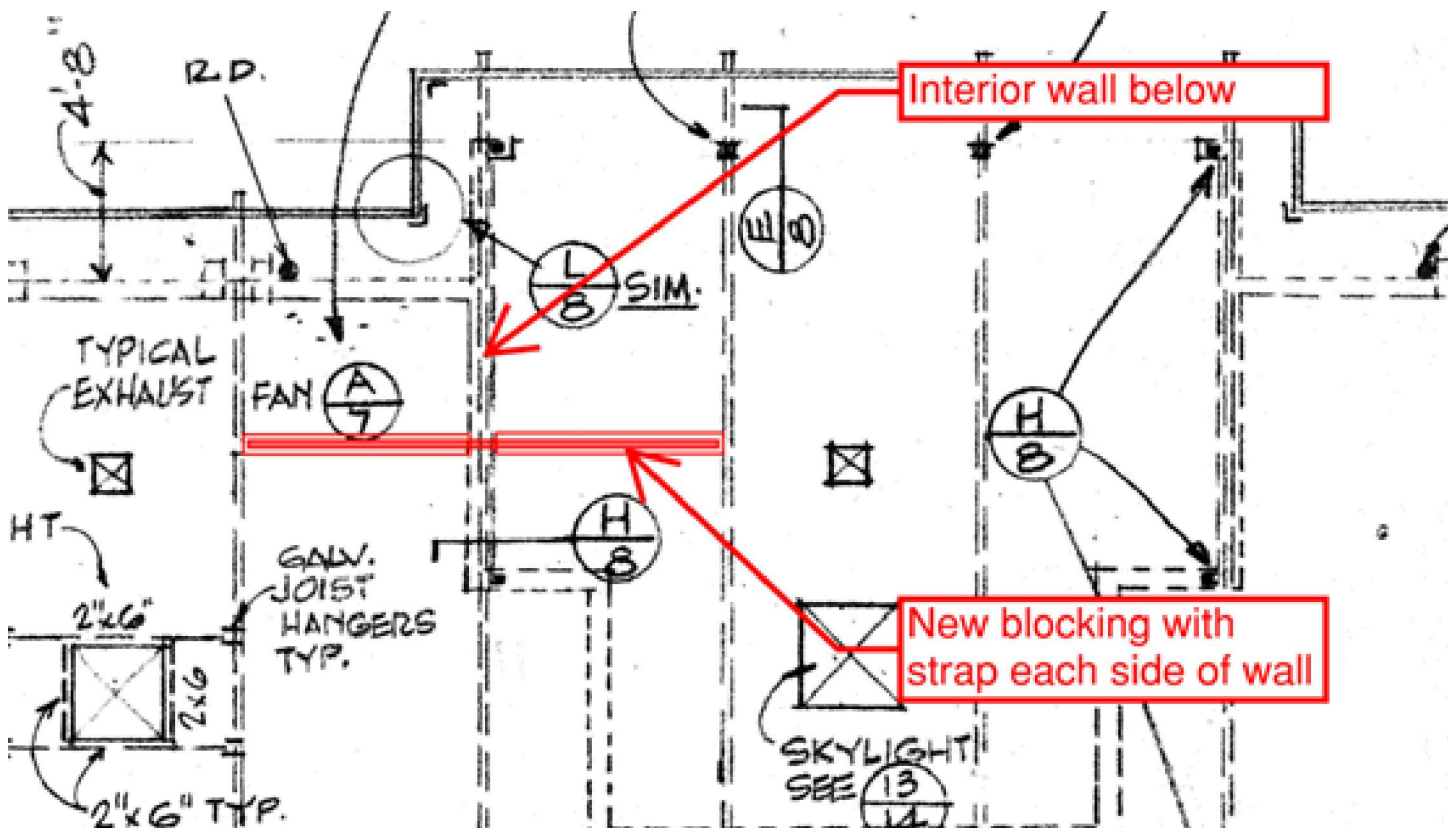
This document provides a preliminary narrative for structural improvements to the Joinville Community Center. The intent with these descriptions is to inform a preliminary cost estimate.

Basis of these improvements is :

- An ASCE 41-17 Tier 1 analysis. This analysis is ongoing. The improvements are sorted into buckets based on structural priority. The Basic Performance Objective for Existing Buildings was used as the basis for the analysis. More information will be provided in a Tier 1 report to be issued in March 2024.
- Observations made in the field based on the existing condition of the structure that are outside the scope of an ASCE 41 analysis.

Item 1 – Modify existing wall anchorage details at interior walls (Priority 1)

- Provide 3x8 blocking each side of existing wall at 4' o.c. over length of wall. Extend blocking to next wood beam. Provide strap on top of roof sheathing with nails into the new blocking. Provide framing anchors each end of new blocking to existing wall or existing beam.



- Where beam framing is parallel to existing exterior walls (see figure below with highlighted walls), provide new blocking and hold downs with thru bolt at 4'-0" o.c.



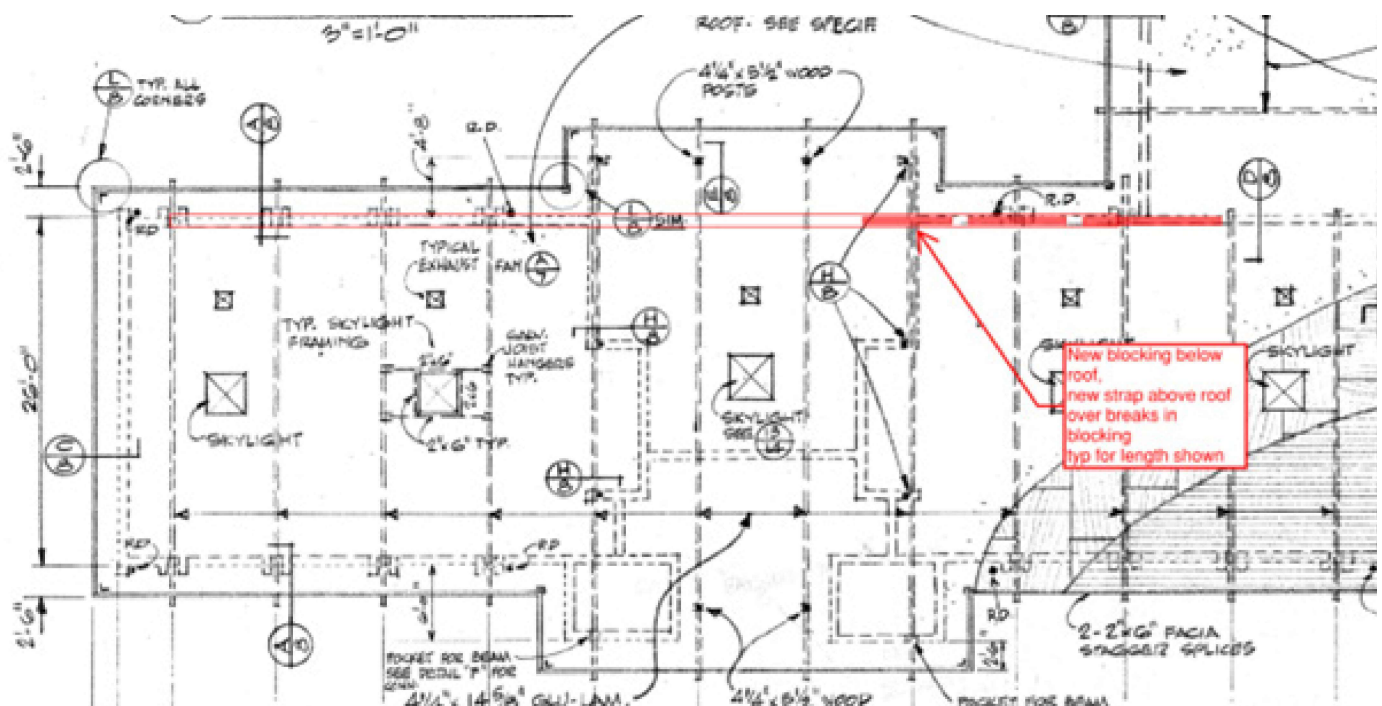
Item 3 – Cut off and cap ends of all beams around the perimeter (Priority 1)

- Existing beam ends show signs of decay and rot. While not a structural concern currently, without mitigation the rot could spread and become an issue. The ends of all exposed beams should be cut off to remove the existing rot and then capped to prevent future water infiltration. A waterproofing consultant should be engaged to develop these details.



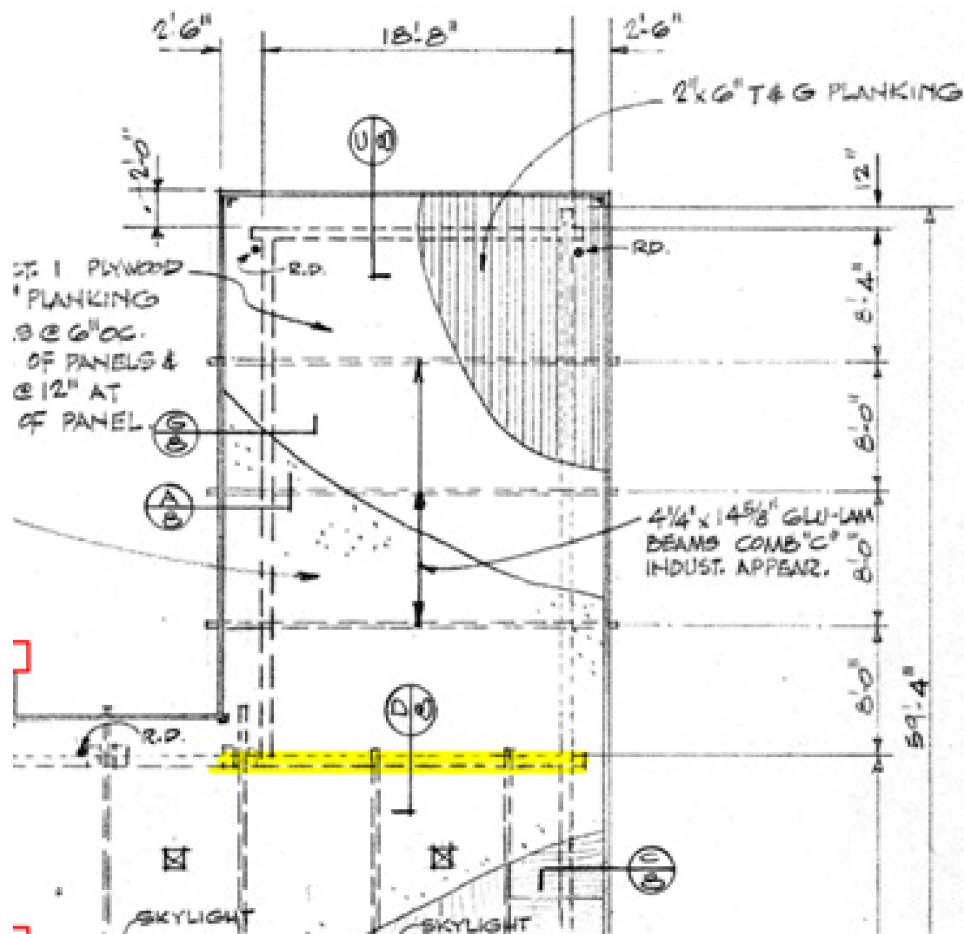
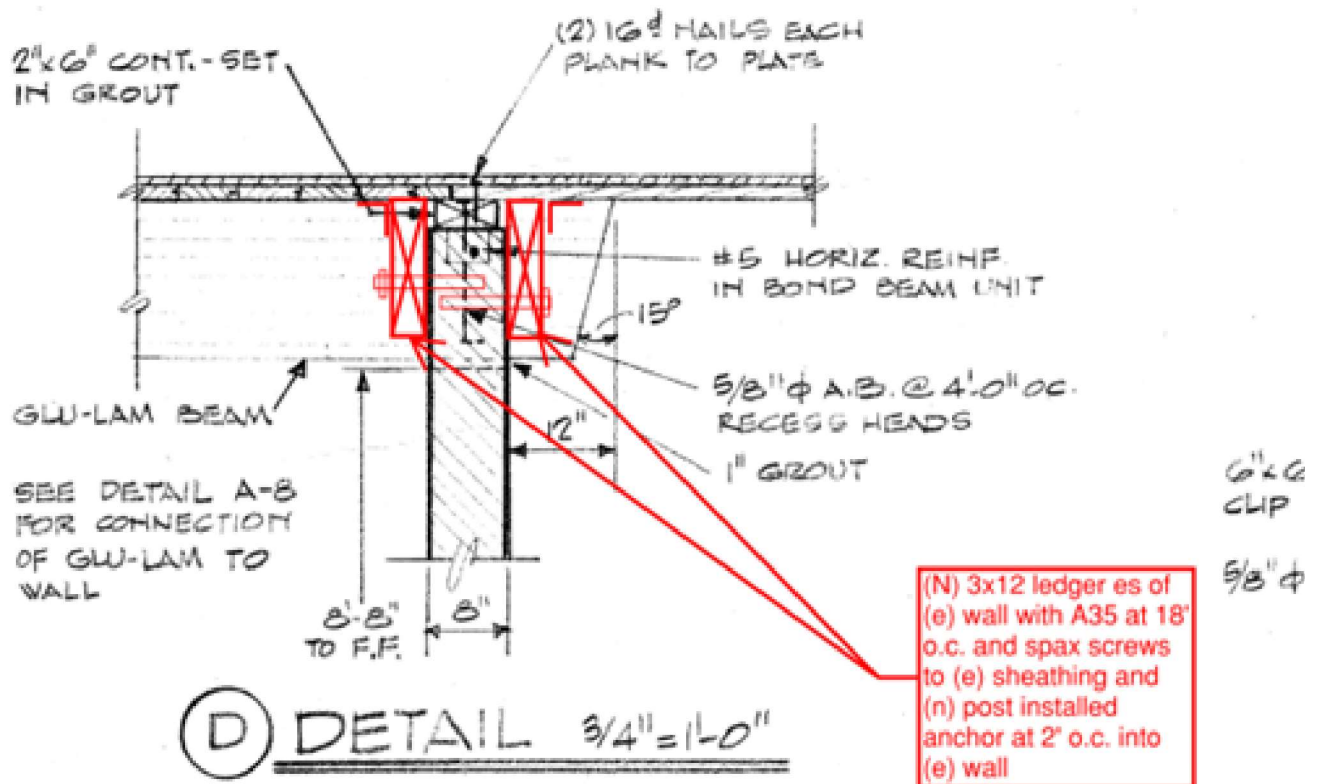
Item 4 – New collector (Priority 2)

- Provide new 3x12 blocking below roof and new strap above roof.



Item 5 – New shear transfer detail (Priority 2)

- Provide new ledgers and hardware at the highlighted wall shown below.

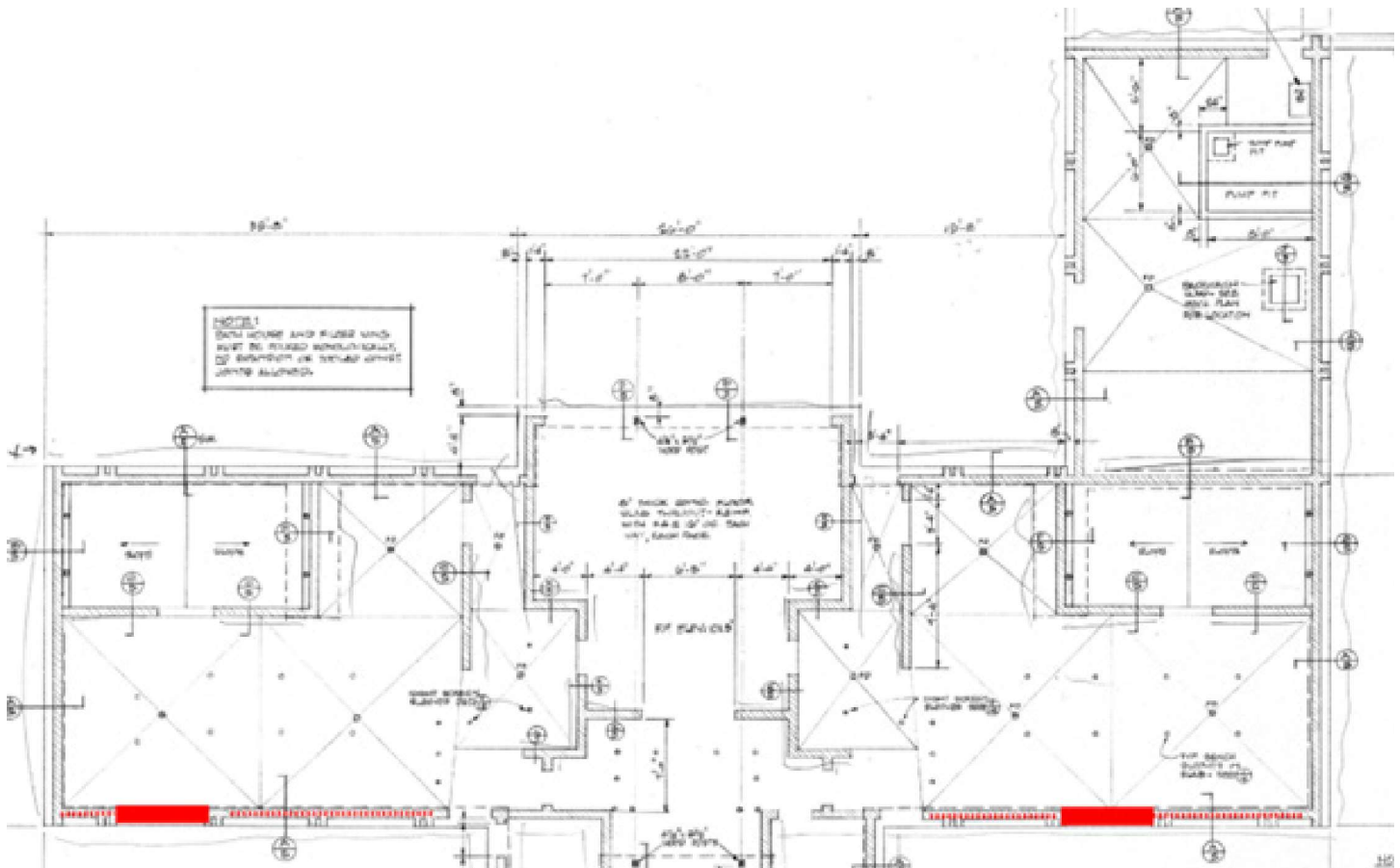


Item 6 – Brace all nonstructural components in pool mechanical room (Priority 2)

- Pool equipment appears to be unbraced, unanchored or have inadequate anchorage. New anchorages should be installed. Assume (4) new anchors for each ground supported unit consisting of L4x4x1/4 bolted to existing units and post installed anchors into existing slab on grade. In addition, provide strapping of all tanks to walls where possible. Similar bracing and anchorage into either the existing slab on grade or into a new concrete pad is expected for any new equipment that is added or to replace existing.

Item 7 – New shear wall (Priority 3)

- Provide new concrete shear walls (shown in sold red below) in the locations indicated. Assume new post installed rebar into existing thickened edge at foundation and new nailing from roof diaphragm into new 3x sill plate on top of the new wall. Provide new collectors at dashed line below roof with new straps above roof. Cut down top of existing cmu wall and install new transom window below collector.



5C. Appendix B



Building Checklists and Quick Check Calculations

Table 17-2. Collapse Prevention Basic Configuration Checklist

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low Seismicity			
Building System—General			
C NC N/A U	LOAD PATH: The structure contains a complete, well-defined load path, including structural elements and connections, that serves to transfer the inertial forces associated with the mass of all elements of the building to the foundation.	5.4.1.1	A.2.1.1
C NC N/A U	ADJACENT BUILDINGS: The clear distance between the building being evaluated and any adjacent building is greater than 0.25% of the height of the shorter building in low seismicity, 0.5% in moderate seismicity, and 1.5% in high seismicity.	5.4.1.2	A.2.1.2
C NC N/A U	MEZZANINES: Interior mezzanine levels are braced independently from the main structure or are anchored to the seismic-force-resisting elements of the main structure.	5.4.1.3	A.2.1.3
Building System—Building Configuration			
C NC N/A U	WEAK STORY: The sum of the shear strengths of the seismic-force-resisting system in any story in each direction is not less than 80% of the strength in the adjacent story above.	5.4.2.1	A.2.2.2
C NC N/A U	SOFT STORY: The stiffness of the seismic-force-resisting system in any story is not less than 70% of the seismic-force-resisting system stiffness in an adjacent story above or less than 80% of the average seismic-force-resisting system stiffness of the three stories above.	5.4.2.2	A.2.2.3
C NC N/A U	VERTICAL IRREGULARITIES: All vertical elements in the seismic-force-resisting system are continuous to the foundation.	5.4.2.3	A.2.2.4
C NC N/A U	GEOMETRY: There are no changes in the net horizontal dimension of the seismic-force-resisting system of more than 30% in a story relative to adjacent stories, excluding one-story penthouses and mezzanines.	5.4.2.4	A.2.2.5
C NC N/A U	MASS: There is no change in effective mass of more than 50% from one story to the next. Light roofs, penthouses, and mezzanines need not be considered.	5.4.2.5	A.2.2.6
C NC N/A U	TORSION: The estimated distance between the story center of mass and the story center of rigidity is less than 20% of the building width in either plan dimension.	5.4.2.6	A.2.2.7
Moderate Seismicity (Complete the Following Items in Addition to the Items for Low Seismicity)			
Geologic Site Hazards			
C NC N/A U	LIQUEFACTION: Liquefaction-susceptible, saturated, loose granular soils that could jeopardize the building's seismic performance do not exist in the foundation soils at depths within 50 ft (15.2 m) under the building.	5.4.3.1	A.6.1.1
C NC N/A U	SLOPE FAILURE: The building site is located away from potential earthquake-induced slope failures or rockfalls so that it is unaffected by such failures or is capable of accommodating any predicted movements without failure.	5.4.3.1	A.6.1.2
C NC N/A U	SURFACE FAULT RUPTURE: Surface fault rupture and surface displacement at the building site are not anticipated.	5.4.3.1	A.6.1.3
High Seismicity (Complete the Following Items in Addition to the Items for Moderate Seismicity)			
Foundation Configuration			
C NC N/A U	OVERTURNING: The ratio of the least horizontal dimension of the seismic-force-resisting system at the foundation level to the building height (base/height) is greater than $0.6S_a$.	5.4.3.3	A.6.2.1
C NC N/A U	TIES BETWEEN FOUNDATION ELEMENTS: The foundation has ties adequate to resist seismic forces where footings, piles, and piers are not restrained by beams, slabs, or soils classified as Site Class A, B, or C.	5.4.3.4	A.6.2.2

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.

Table 17-34. Collapse Prevention Structural Checklist for Building Types RM1 and RM2

Status	Evaluation Statement	Tier 2 Reference	Commentary Reference
Low and Moderate Seismicity			
Seismic-Force-Resisting System			
C NC N/A U	REDUNDANCY: The number of lines of shear walls in each principal direction is greater than or equal to 2.	5.5.1.1	A.3.2.1.1
C NC N/A U	SHEAR STRESS CHECK: The shear stress in the reinforced masonry shear walls, calculated using the Quick Check procedure of Section 4.4.3.3, is less than 70 lb/in. ² (0.48 MPa).	5.5.3.1.1	A.3.2.4.1
C NC N/A U	REINFORCING STEEL: The total vertical and horizontal reinforcing steel ratio in reinforced masonry walls is greater than 0.002 of the wall with the minimum of 0.0007 in either of the two directions; the spacing of reinforcing steel is less than 48 in. (1220 mm), and all vertical bars extend to the top of the walls.	5.5.3.1.3	A.3.2.4.2
Stiff Diaphragms			
C NC N/A U	TOPPING SLAB: Precast concrete diaphragm elements are interconnected by a continuous reinforced concrete topping slab.	5.6.4	A.4.5.1
Connections			
C NC N/A U	WALL ANCHORAGE: Exterior concrete or masonry walls that are dependent on the diaphragm for lateral support are anchored for out-of-plane forces at each diaphragm level with steel anchors, reinforcing dowels, or straps that are developed into the diaphragm. Connections have strength to resist the connection force calculated in the Quick Check procedure of Section 4.4.3.7.	5.7.1.1	A.5.1.1
C NC N/A U	WOOD LEDGERS: The connection between the wall panels and the diaphragm does not induce cross-grain bending or tension in the wood ledgers.	5.7.1.3	A.5.1.2
C NC N/A U	TRANSFER TO SHEAR WALLS: Diaphragms are connected for transfer of seismic forces to the shear walls.	5.7.2	A.5.2.1
C NC N/A U	TOPPING SLAB TO WALLS OR FRAMES: Reinforced concrete topping slabs that interconnect the precast concrete diaphragm elements are doweled for transfer of forces into the shear wall or frame elements.	5.7.2	A.5.2.3
C NC N/A U	FOUNDATION DOWELS: Wall reinforcement is doweled into the foundation.	5.7.3.4	A.5.3.5
C NC N/A U	GIRDER-COLUMN CONNECTION: There is a positive connection using plates, connection hardware, or straps between the girder and the column support.	5.7.4.1	A.5.4.1
High Seismicity (Complete the Following Items in Addition to the Items for Low and Moderate Seismicity)			
Stiff Diaphragms			
C NC N/A U	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length.	5.6.1.3	A.4.1.4
C NC N/A U	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long.	5.6.1.3	A.4.1.6
Flexible Diaphragms			
C NC N/A U	CROSS TIES: There are continuous cross ties between diaphragm chords.	5.6.1.2	A.4.1.2
C NC N/A U	OPENINGS AT SHEAR WALLS: Diaphragm openings immediately adjacent to the shear walls are less than 25% of the wall length.	5.6.1.3	A.4.1.4
C NC N/A U	OPENINGS AT EXTERIOR MASONRY SHEAR WALLS: Diaphragm openings immediately adjacent to exterior masonry shear walls are not greater than 8 ft (2.4 m) long.	5.6.1.3	A.4.1.6
C NC N/A U	STRAIGHT SHEATHING: All straight-sheathed diaphragms have aspect ratios less than 2-to-1 in the direction being considered.	5.6.2	A.4.2.1
C NC N/A U	SPANS: All wood diaphragms with spans greater than 24 ft (7.3 m) consist of wood structural panels or diagonal sheathing.	5.6.2	A.4.2.2
C NC N/A U	DIAGONALLY SHEATHED AND UNBLOCKED DIAPHRAGMS: All diagonally sheathed or unblocked wood structural panel diaphragms have horizontal spans less than 40 ft (12.2 m) and aspect ratios less than or equal to 4-to-1.	5.6.2	A.4.2.3
C NC N/A U	OTHER DIAPHRAGMS: Diaphragms do not consist of a system other than wood, metal deck, concrete, or horizontal bracing.	5.6.5	A.4.7.1
Connections			
C NC N/A U	STIFFNESS OF WALL ANCHORS: Anchors of concrete or masonry walls to wood structural elements are installed taut and are stiff enough to limit the relative movement between the wall and the diaphragm to no greater than 1/8 in. (3 mm) before engagement of the anchors.	5.7.1.2	A.5.1.4

Note: C = Compliant, NC = Noncompliant, N/A = Not Applicable, and U = Unknown.



Date: 02/27/2024
By: ITD
Project: Joinville Swim Center

Page:
Job #: 23076

Joinville Swim Center ASCE 41-17 Tier 1

Evaluate the BPOE with the BSE-2E at S-5 Structural Performance Level
(Collapse Prevention) and N-D Non structural performance Level (Hazards
Reduced)

Compliance with BSE-2E implies compliance with BSE-1E 3-C Performance
Objective (Life Safety Structural Non structural)

Seismic Parameters for Performance Objectives:
Per Seismic Design Maps and ASCE 41-17:

$$S_s := 1.595$$

$$S_I := 0.634$$

$$S_{XS} := 1.914$$

$$S_{XI} := 1.077$$

Building type

RM1

USGS web services were down for some period of time and as a result this tool wasn't operational, resulting in *timeout error*.
USGS web services are now operational so this tool should work as expected.



Joinville

Latitude, Longitude: 37.565819, -122.293761



Date	2/20/2024, 10:01:36 AM
Design Code Reference Document	ASCE41-17
Custom Probability	
Site Class	D - Default (See Section 11.4.3)

Type	Description	Value
Hazard Level		BSE-2N
S _S	spectral response (0.2 s)	1.66
S ₁	spectral response (1.0 s)	0.674
S _{XS}	site-modified spectral response (0.2 s)	1.992
S _{X1}	site-modified spectral response (1.0 s)	1.146
F _a	site amplification factor (0.2 s)	1.2
F _v	site amplification factor (1.0 s)	1.7
ssuh	max direction uniform hazard (0.2 s)	2.264
crs	coefficient of risk (0.2 s)	0.905
ssrt	risk-targeted hazard (0.2 s)	2.048
ssd	deterministic hazard (0.2 s)	1.66
s1uh	max direction uniform hazard (1.0 s)	0.934
cr1	coefficient of risk (1.0 s)	0.892
s1rt	risk-targeted hazard (1.0 s)	0.833
s1d	deterministic hazard (1.0 s)	0.674

Type	Description	Value
Hazard Level		BSE-1N
S _{XS}	site-modified spectral response (0.2 s)	1.328
S _{X1}	site-modified spectral response (1.0 s)	0.764

Type	Description	Value
Hazard Level		BSE-2E
S _S	spectral response (0.2 s)	1.595
S ₁	spectral response (1.0 s)	0.634
S _{XS}	site-modified spectral response (0.2 s)	1.914
S _{X1}	site-modified spectral response (1.0 s)	1.077
f _a	site amplification factor (0.2 s)	1.2
f _v	site amplification factor (1.0 s)	1.7

Type	Description	Value
Hazard Level		BSE-1E
S _S	spectral response (0.2 s)	0.78
S ₁	spectral response (1.0 s)	0.286
S _{XS}	site-modified spectral response (0.2 s)	0.936
S _{X1}	site-modified spectral response (1.0 s)	0.58
F _a	site amplification factor (0.2 s)	1.2
F _v	site amplification factor (1.0 s)	2.029

Type	Description	Value
Hazard Level		TL Data
T-Sub-L	Long-period transition period in seconds	12

DISCLAIMER

While the information presented on this website is believed to be correct, SEAO / OSHPD and its sponsors and contributors assume no responsibility or liability for its accuracy. The material presented in this web application should not be used or relied upon for any specific application without competent examination and verification of its accuracy, suitability and applicability by engineers or other licensed professionals. SEAO / OSHPD do not intend that the use of this information replace the sound judgment of such competent professionals, having experience and knowledge in the field of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the results of the seismic data provided by this website. Users of the information from this website assume all liability arising from such use. Use of the output of this website does not imply approval by the governing building code bodies responsible for building code approval and interpretation for the building site described by latitude/longitude location in the search results of this website.



Date: 02/27/2024
By: ITD
Project: Joinville Swim Center

Page:
Job #: 23076

Determine T

Coefficient to determine building period $C_t := 0.020$

Height in feet above the base to the roof level $h_n := 10 \text{ ft}$

$$\beta := 0.75$$

Fundamental period of vibration of the building, calculated in accordance with Section 4.5.2.4 $T := C_t \cdot \left(\frac{h_n}{1 \text{ ft}} \right)^\beta = 0.112$

Per 7.2.3.6, beta (damping) is the default 5% $\beta := 0.05$

Per 2.4.1.7.1, horizontal response spectrum $B_I := \frac{4}{(5.6 - \ln(100 \cdot \beta))} = 1.002$

For periods between T_0 and long period (i.e. along the flat line), Spectral Response Acceleration uses this eqn:

$$S_a := \left(\frac{S_{XS}}{B_I} \right) = 1.91$$

$$T_S := \frac{S_{Xl}}{S_{XS}} = 0.56$$

$$T_\theta := 0.2 \cdot \frac{S_{Xl}}{S_{XS}} = 0.11$$

$$T_L := 8$$

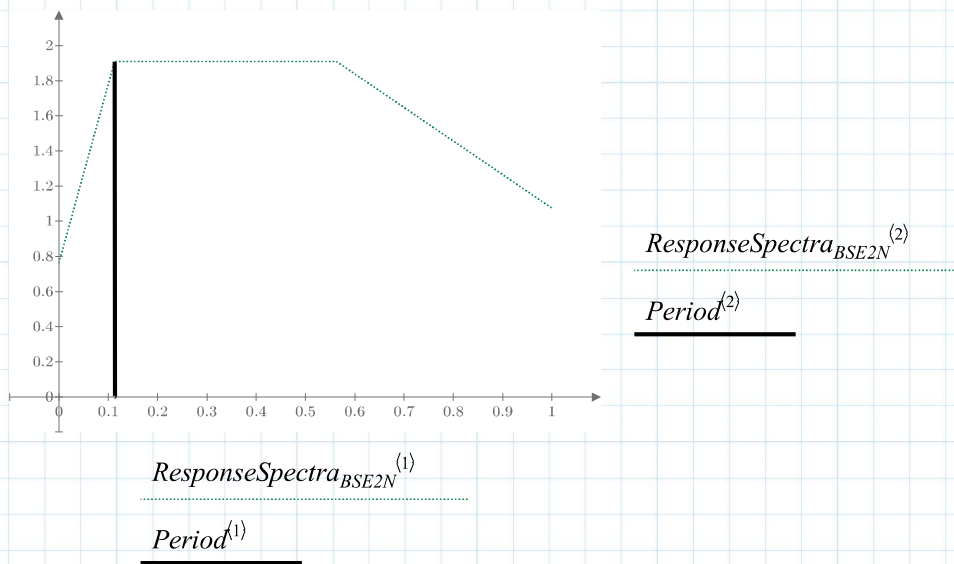
Periods shorter than T_0 not allowed to be used, unless dynamic analysis



$$ResponseSpectra_{BSE2N} := \begin{bmatrix} 0 & 0.4 \cdot S_{XS} \\ T_0 & \frac{S_{XS}}{B_I} \\ T_S & \frac{S_{XS}}{B_I} \\ 1 & \frac{S_{XI}}{B_I} \end{bmatrix} = \begin{bmatrix} 0 & 0.77 \\ 0.11 & 1.91 \\ 0.56 & 1.91 \\ 1 & 1.07 \end{bmatrix}$$

Leave off tail to T_L

$$Period := \begin{bmatrix} T & 0 \\ T & \max(ResponseSpectra_{BSE2N}^{(2)}) \end{bmatrix} = \begin{bmatrix} 0.11 & 0 \\ 0.11 & 1.91 \end{bmatrix}$$





Torsion:

Estimated distance btwn story center of mass and story center of rigidity not less than 20% of the building width in either direction

$$BldgWidth := 27 \text{ ft}$$

$$BldgLength := 59.5 \text{ ft}$$

Building width and length taken as the shorter dimensions of the "L" shaped bldg

$$AllowableDim := \min(0.20 \cdot BldgWidth, 0.20 \cdot BldgLength) = 5.4 \text{ ft}$$

Only some masonry walls appear to extend up to roof diaphragm and assumed to act as shear walls. Based on layout and lengths of these walls and the irregular "L" shape of the building, the distance between center of mass and center of rigidity is expected as greater than 20% of the building width by inspection.

Therefore Torsion Deficiency Exists.



Overturning:

Minimum horizontal dimension of CMU shear walls

$$length := 10 \text{ ft}$$

Exact lengths of shear walls not clear, but several short masonry shear walls appear to exist

$$Overturning := \text{if} \left(\frac{length}{h_n} > 0.6 \cdot S_a, \text{"Compliant"}, \text{"Non Compliant"} \right)$$

$$Overturning = \text{"Non Compliant"}$$

Therefore overturning deficiency exists.

Reinforcing Steel:

$$VertRatio := \frac{0.2 \text{ in}^2}{16 \text{ in} \cdot 8 \text{ in}} = 0.0016$$

#4 @ 16" OC vert wall bars

$$HorizRatio := \frac{0.31 \text{ in}^2}{48 \text{ in} \cdot 8 \text{ in}} = 0.0008$$

#5 @ 48" OC horiz wall bars

$$TotalReinfRatio := \text{if} (VertRatio + HorizRatio > 0.002, \text{"Compliant"}, \text{"Non Compliant"})$$

$$TotalReinfRatio = \text{"Compliant"}$$

Minimum of 0.007 in either direction. Horiz ratio is 0.0008, so therefore OK.

Reinforcing steel is 48" oc for horiz bars. Requires less than 48" OC spacing.
Therefore reinforcing steel deficiency exists.



Shear Stress Check of Masonry Shear Walls:

Determine V , the pseudo lateral force from Equation 4-1. V is a function of

- C , modification factor to relate expected maximum inelastic displacements to displacements calculated for linear elastic response; shall be taken from table 4-7
- S_a , the response spectral acceleration at the fundamental period of the building in the direction under consideration. S_a shall be calculated in accordance with Section 4.4.2.3
- W , the total dead load

From Weigh-Up:

$$w_{roof} := 20 \text{ psf} \quad w_{walls} := 64 \text{ psf}$$

$$A_{roof_trib} := 4787 \text{ ft}^2 \quad L_{walls} := 378 \text{ ft} \quad h_n = 10 \text{ ft}$$

$$W_{roof} := w_{roof} \cdot A_{roof_trib} = 95.74 \text{ kip} \quad W_{walls_trib_roof} := \frac{h_n}{2} \cdot w_{walls} \cdot L_{walls} = 120.96 \text{ kip}$$

$$Floors := 1 \quad w := W_{roof} + W_{walls_trib_roof} = 216.7 \text{ kip}$$

$$w := [w]$$

Total seismic weight of structure

$$W := \sum_{i=1}^{Floors} w_i = 216.7 \text{ kip}$$

Modification Factor for RM1

$$C := 1.0$$

Table 4-7. Modification Factor, C

Building Type ^a	Number of Stories			
	1	2	3	≥4
Wood and cold-formed steel shear wall (W1, W1a, W2, CFS1)	1.3	1.1	1.0	1.0
Moment frame (S1, S3, C1, PC2a)				
Shear wall (S4, S5, C2, C3, PC1a, PC2, RM2, URMa)	1.4	1.2	1.1	1.0
Braced frame (S2)				
Cold-formed steel strap-brace wall (CFS2)				
Unreinforced masonry (URM)	1.0	1.0	1.0	1.0
Flexible diaphragms (S1a, S2a, S5a, C2a, C3a, PC1, RM1)				

^a Defined in Table 3-1.



Joinville Swim Center - Tier 1 Analysis

DESIGN LOADS

Roof

	Decking	Joists	Beams	Seismic
4-ply tar & Gravel Roofing	4.7	4.7	4.7	4.7
3/8" plywood	1.2	1.2	1.2	1.2
2x6 T&G Planking	2.0	2.0	2.0	2.0
4.25"x14.625" Glulam @ 8'-0" OC	0.0	0.0	1.9	1.9
Ceiling	0.0	3.0	3.0	3.0
Partitions	0.0	0.0	0.0	5.0
Mech/Elec/Miscellaneous	<u>1.8</u>	<u>2.0</u>	<u>2.0</u>	<u>2.5</u>
Dead Load	10	13	15	20
Live Load	<u>20</u>	<u>20</u>	<u>20</u>	<u>0</u>
Total Load	30	33	35	20

CMU Walls

8" CMU Wall, grouted 16" oc	64.0
Dead Load	64.0

Wall Weights and Areas

(Excerpted from Design of Reinforced Masonry Structures, published by CMAACN)

Average Weight of Completed Wall¹ (psf) and Equivalent Solid Thickness (in)

		Hollow Concrete Block												Equivalent Solid Thickness ²			
		Lightweight 103 pcf				Mediumweight 115 pcf				Normalweight 135 pcf				Inches			
Wall Thickness		6"	8"	10"	12"	6"	8"	10"	12"	6"	8"	10"	12"	6"	8"	10"	12"
Solid grouted wall		52	75	93	118	58	78	98	124	63	84	104	133	5.6	7.5	9.6	11.6
vertical cores grouted at	16" o.c.	41	60	69	88	47	63	80	94	52	66	86	103	4.5	5.8	7.2	8.5
	24" o.c.	37	55	61	79	43	58	72	85	48	61	78	94	4.1	5.2	6.3	7.5
	32" o.c.	36	52	57	74	42	55	68	80	47	58	74	89	4.0	4.9	5.9	7.0
	40" o.c.	35	50	55	71	41	53	66	77	46	56	72	86	3.8	4.7	5.7	6.7
	48" o.c.	34	49	53	69	40	45	64	75	45	55	70	83	3.7	4.6	5.5	6.5

¹ The above table gives the average weights of completed walls of various thickness in pounds per square foot of wall face area. An average amount has been added into these values to include the weight of bond beams and reinforcing steel. Weight of grout is assumed at 140 pcf.

² Equivalent solid thickness means the calculated thickness of the wall if there were not hollow cores, and is obtained by dividing the volume of solid material in the wall by the face area of the wall. This Equivalent Solid Thickness (EST) is for the determination of area for structural design only, e.g. $f_s = P/(EST)b$. It is NOT to be used to obtain fire ratings. Fire rating thickness is based either on equivalent solid thickness of ungrouted units only or solid grouted walls.



Seismic force

Pseudo seismic force per 4.4.2.1 Eq. 4-1 $V := C \cdot S_a \cdot W = 413.79 \text{ kip}$

factor per 4.4.2.2 $k := \text{if}(T > 2.5, 2, \text{if}(T \leq 0.5, 1, 0.5 \cdot T + 0.75)) = 1$

Story force $F_x := V = 413.79 \text{ kip}$

Shear Stress Check:

System modification factor; shall be taken from Table 4-8

$M_s := 4.5$

Table 4-8. M_s Factors for Shear Walls

Wall Type	Level of Performance		
	CP ^a	LS ^a	IO ^a
Reinforced concrete, precast concrete, wood, reinforced masonry, and cold-formed steel	4.5	3.0	1.5
Unreinforced masonry	1.75	1.25	1.0

^a CP = Collapse Prevention, LS = Life Safety, IO = Immediate Occupancy.

Determine summation of the horizontal cross-sectional area of all shear walls in the direction of loading. Openings shall be taken into consideration where computing. For masonry walls, the net area shall be used.

Total area of masonry shear walls in north south direction $A_{wNS} := 127 \text{ ft} \cdot 8 \text{ in} = 84.67 \text{ ft}^2$

Total area of masonry shear walls in east west direction $A_{wEW} := 100 \text{ ft} \cdot 8 \text{ in} = 66.67 \text{ ft}^2$

Shear stress in shear walls in north south direction $v_{NS} := \frac{1}{M_s} \cdot \frac{V}{A_{wNS}} = 7.54 \text{ psi}$

Shear stress in shear walls in east west direction $v_{EW} := \frac{1}{M_s} \cdot \frac{V}{A_{wEW}} = 9.58 \text{ psi}$

$\text{ShearStressCheck} := \text{if}(\max(v_{NS}, v_{EW}) > 70 \text{ psi}, \text{"Non Compliant"}, \text{"Compliant"}) = \text{"Compliant"}$

Therefore, shear stress OK

IMAGE A:



IMAGE D:



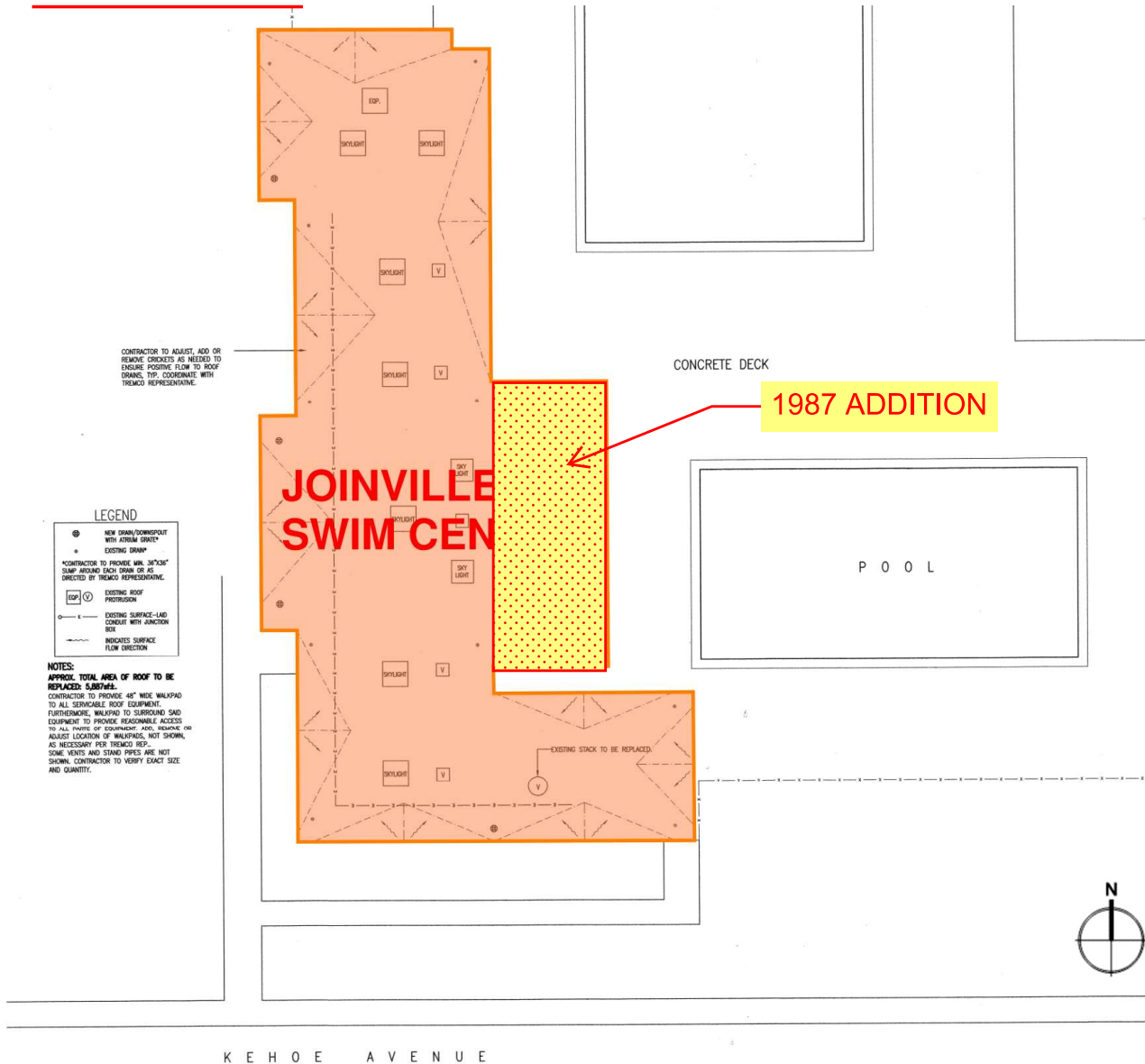
IMAGE B:



IMAGE C:

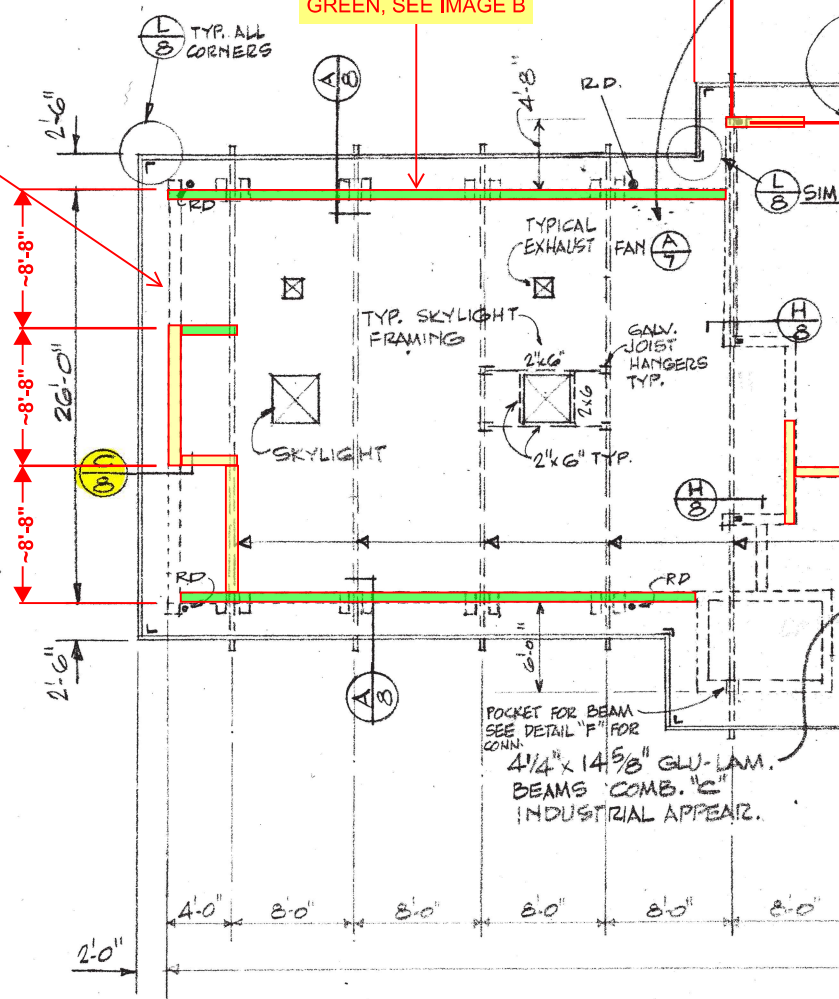


IMAGE E:



BUILT CONDITION
VARIES FROM AS
SHOWN HERE. SEE
IMAGE A

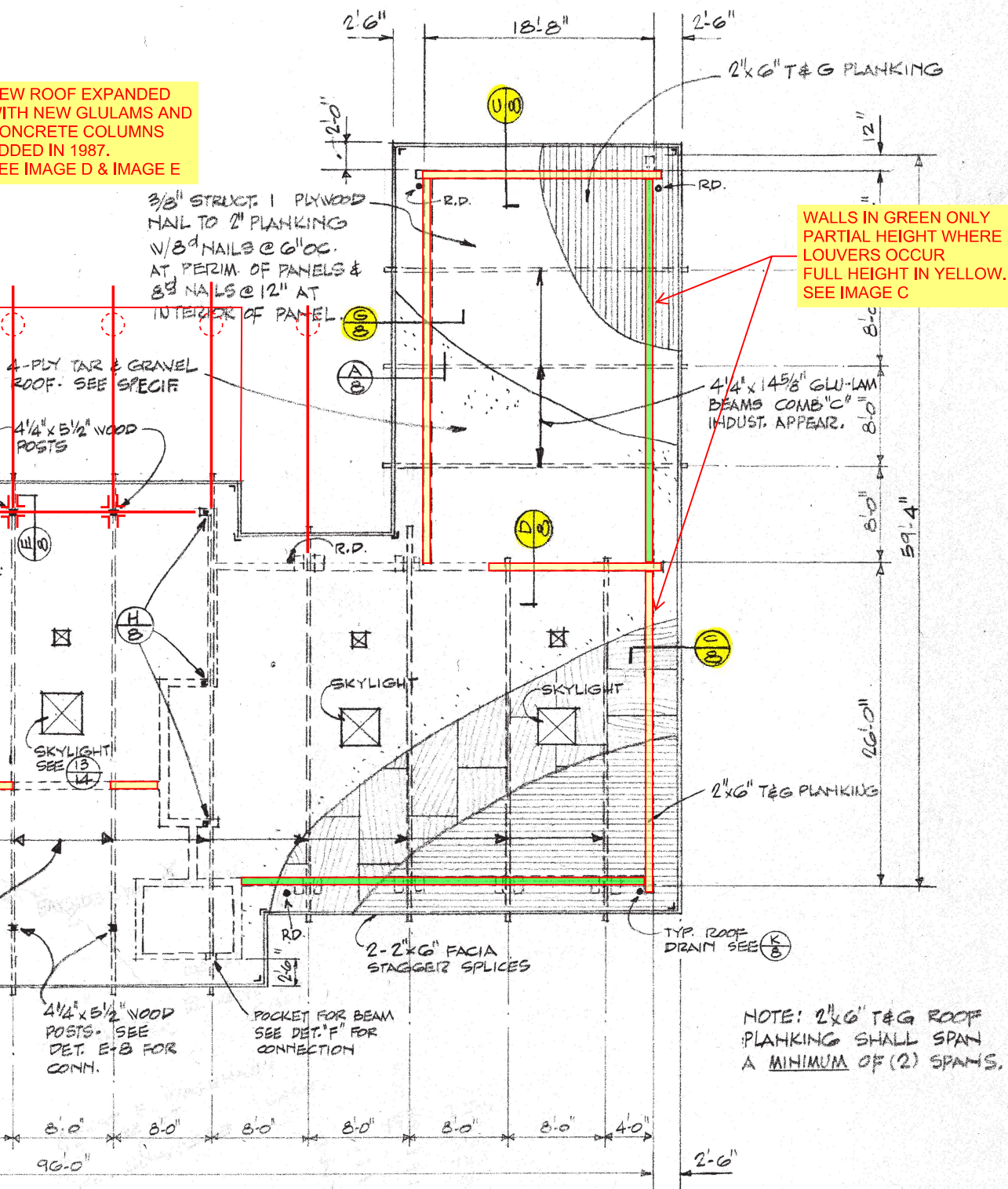
WALLS DO NOT GO
FULL HEIGHT, TYP
WHERE SHOWN IN
GREEN, SEE IMAGE B



ROOF AND R

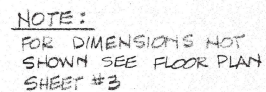
SCALE:

NEW ROOF EXPANDED
WITH NEW GLULAMS AND
CONCRETE COLUMNS
ADDED IN 1987.
SEE IMAGE D & IMAGE E

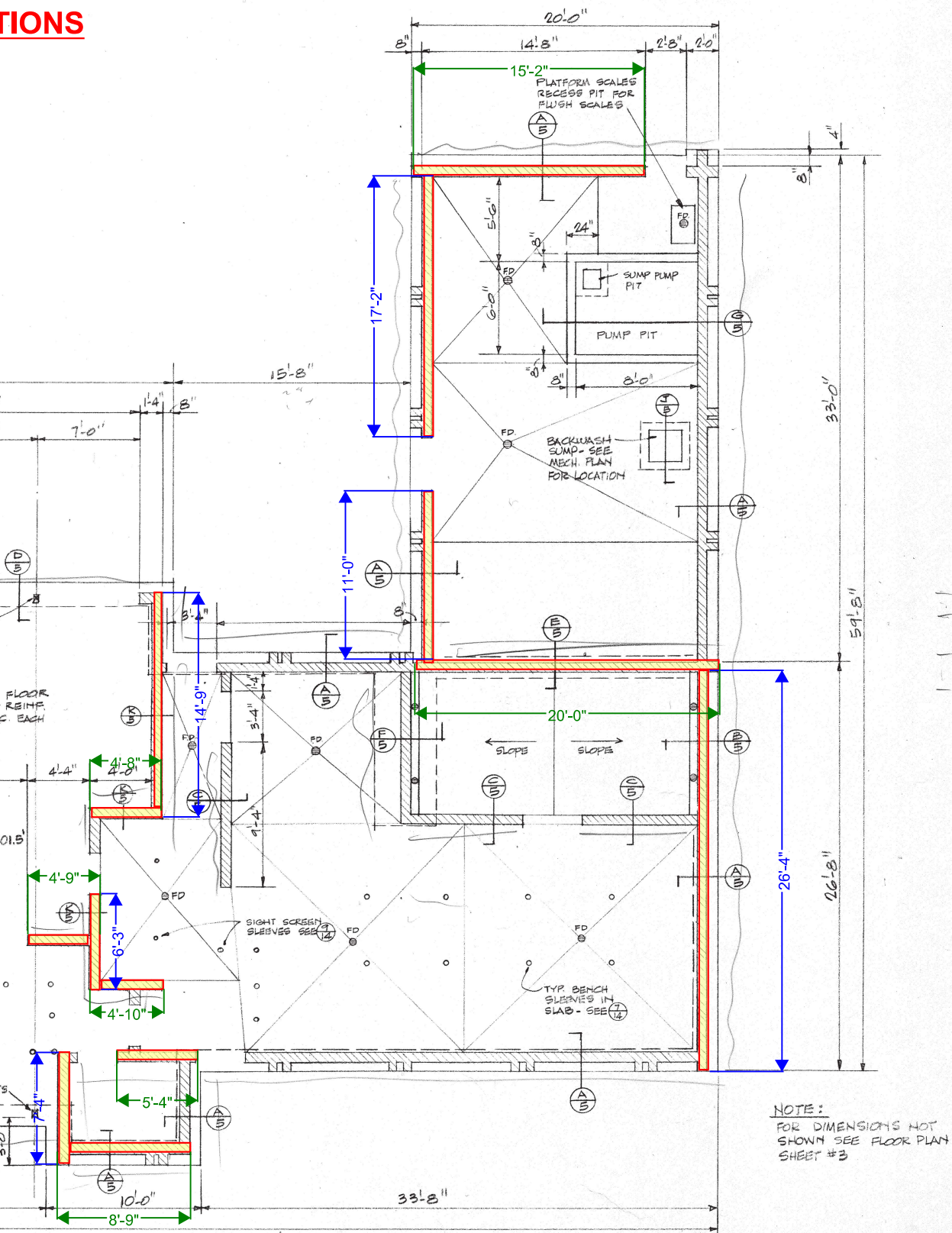


ROOF FRAMING PLAN

1/8" = 1'-0"



TIONS



1. REVISIONS 2. 3.		AUGUST E. WAEAGEMANN CIVIL ENGINEER 20 SECOND STREET SAN FRANCISCO, CALIFORNIA 94105 SU 1-8535	BAYSIDE SWIMMING POOL CITY OF SAN MATEO RECREATION DEPT. KEHOE AVE AT ROBERTA DR. SAN MATEO, CALIF.	SHEET 4
DRAWN MGT	JOB NO. M-461		FOUNDATION PLAN - BATH HOUSE	OF 37 SHEETS
DATE 4-8-68	SCALE NOTED			

6. Mechanical Assessment

Introduction

The existing building consists of an entry lobby flanked by locker rooms. As you enter the lobby, there is a reception desk, behind which is administration space with open office space and one small, enclosed office. There is a meeting room which can only be entered from the pool deck.

Existing Conditions

Most of the equipment is beyond it’s useful life and all of the equipment should be replaced.

The main office space has a newer ceiling hung gas-fired unit heater. The gas-fired unit heater that was replaced, was moved into the meeting room off the pool deck.

The small, enclosed office has a wall mounted packaged terminal heat pump (PTHP) unit mounted low under the desk.

The locker rooms have exhaust vents through the roof with operable windows for natural ventilation and gas-fired unit heaters. The unit heaters in the locker rooms have started to rust and the damper blades are corroded.

The meeting room off the pool deck has a gas-fired unit heater (as mentioned above). There is also a small kitchenette with an electric range and oven as well as a residential range hood.



Meeting room unit heater



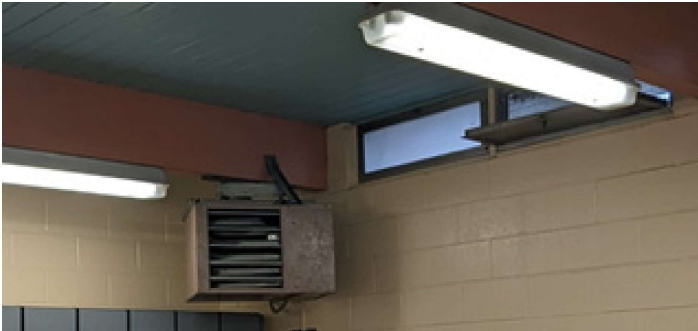
Wall mounted PTHP unit

Existing Equipment

Space	Recommendations
Locker rooms	Propeller fan inline with roof, make-up through operable windows, gas-fired unit heater
Lobby/Open office	Natural ventilation, gas-fired unit heater, PTHP unit
Meeting room	Range hood exhaust, gas-fired unit heater, natural ventilation



Office unit heater



Locker room gas unit heater and natural ventilation

Recommendations

All of the equipment installed is beyond its useful life, except for the newly installed gas-fired unit heater. All of the existing mechanical equipment should be removed and replaced. The gas-fired unit heaters are not appropriate for the spaces they serve, including the new one.

The locker room exhaust fans are propeller fans inline with the roof, exhausting out with a weather cap. These could be replaced with new upblast exhaust fans with fully insulated and weather proofed penetrations. The exhaust fan make-up for the locker rooms can be provided by cascading the mechanical ventilation air required to be provided to the open office and lobby spaces.

The open office space can be provided with a supply fan sized to provide the code required ventilation for the space type but will likely be increased to provide the locker room make-up air. This would be untempered but filtered air. If the building is occupied in the winter, a small electric resistance duct coil could be added to temper the mechanical ventilation in the winter if needed. The space conditioning for the open office space and private office space could be split systems. Each space could have a high wall split system with one shared outdoor heat pump either ground mounted and caged or on the roof.

The meeting room off the pool deck could have the same system type as the adjacent spaces: a filtered supply fan providing mechanical ventilation and a split system providing space conditioning. The ventilation can be relieved passively through a roof vent at the existing roof location in that space.

All exterior equipment shall be provided with the manufacturer's corrosion resistant coating for salty air, to be applied at the factory. The pool equipment and chemical rooms shall be exhausted per the latest codes and standards. All utility and equipment type spaces shall be exhausted.



Locker room roof mounted exhaust fan



Split system outdoor unit with optional indoor units and controls

Preliminary Equipment List

<i>Space</i>	<i>Recommendations</i>
<i>Locker rooms</i>	<i>Each locker room: Roof mounted upblast exhaust fan, ceiling hung electric heater</i>
<i>Lobby/Open office</i>	<i>In-line supply fan with 2" MERV 13 filter box, duct up through existing unit heater flue penetration; roof mounted 2 ton heat pump with two 1 ton high wall mounted fan coils; wall mounted thermostats</i>
<i>Meeting room</i>	<i>In-line supply fan with 2" MERV 13 filter box, duct up through existing unit heater flue penetration; new relief vent in roof for relief; roof mounted 2 ton heat pump with one 2 ton high wall mounted fan coil; wall mounted thermostat</i>

7. Plumbing Assessment

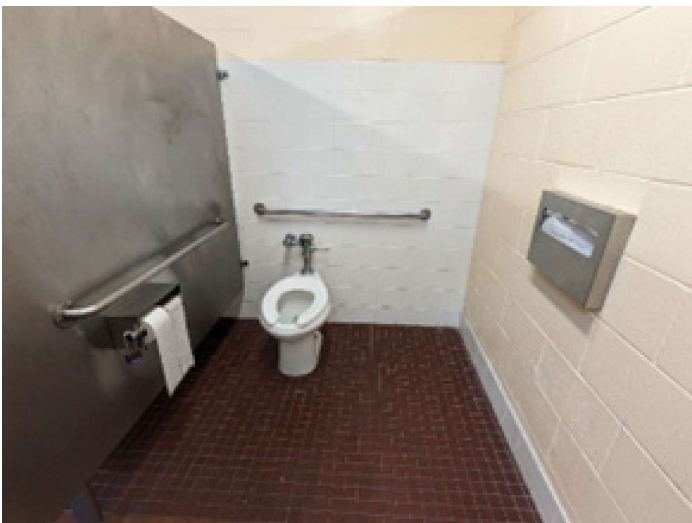
Existing Conditions

Most of the plumbing piping appears to be original copper and cast iron from 1968. Water heaters are located within the pool equipment room. The system is comprised of a large storage tank (365 gallon) paired with a gas fired water heater and circulator. The water heater was manufactured in 2004 (per the nameplate). The existing storage tank was replaced because it was leaking but the water heater remains and operates well enough (based on site discussions with the maintenance staff).

The hot water from the tank is routed to a tempering valve to set a single Tempered temperature distributed below slab to all showers parallel to the cold water distribution piping. All water distribution (cold and tempered occurs below slab only rising up within tiled walls to serve the showers. There is no circulator to reduce the wait time for hot water and this seems to be the largest pain point for the users. Copper piping in mechanical room is green in places (due to the pool chemicals in the air) but appears to be in good condition. No distinct history of plumbing leaks or piping failures has been reported. Below grade sanitary piping has no history of severe blockages besides the occasional hair ball from the showers (based on site discussions with the maintenance staff).



Gas Fired Water Heater and Tank



Water Closet (Floor Mount, Flush valve)



Gang Shower Thermostatic Mixing Valve (green copper)

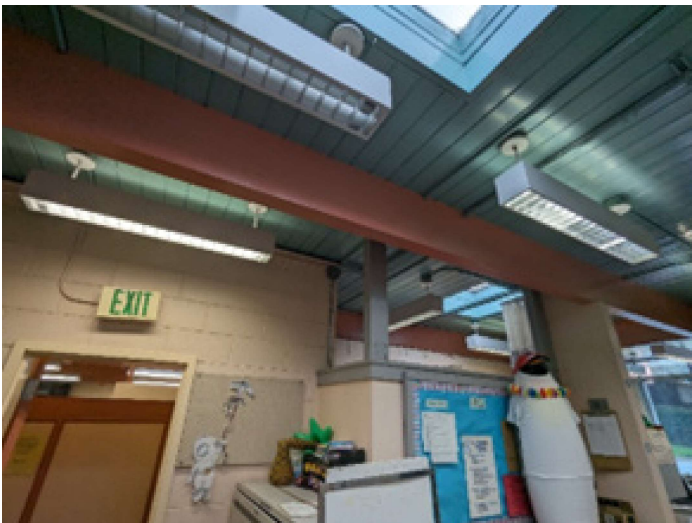
All fixtures appear to be original. Showers are operated by a single valve for each head (no compliant pressure balance valve). There is a kitchenette in the building but they said it is rarely used. A sink would likely make the space more appealing for group events.



Stainless Steel Single Temperature Showers



Existing Kitchenette



Ceilings photo Indicating limited easy pathways for piping

Recommendations

P1: Hot Water Return line to reduce wait time for hot water.

- To solve the main pain point of wait time for hot water, install a circ pump with a new 1/2" copper Hot Water Return (approximately 100 ft horizontally) to reduce the wait time from minutes to seconds. This both improves the user experience and reduces water usage. This would require routing across the open ceiling of the building (below beams or through CMU walls) or across the roof. Roof routing would require outdoor rated jacketed insulation.
- It is not likely that the existing mixing valve was listed to the same safety standard as a modern thermostatic mixing valve so to provide an improved level of temperature control and scald protection, provide new gang shower master thermostatic mixing valve to blend the hot output from the tank with cold water AND the new return line to provide stable output temperature.

P2: Replace Fixtures to be improved and compliant.

- This would improve user experience (sensor flush at urinals and water closets)
- Shower valves replaced with modern compliant pressure balance valves. (This may trigger required modifications of floor drains)
- Refer to attached floor plans for fixture counts.

P3: Remove existing gas fired water heater and replace it with an electric heat pump

- The large tank that was recently replaced could be repurposed with multiple SANCO2 air source heat pumps making use of all the existing connections but using electricity instead of gas.
- The feasibility of this first would require City input on how much showering they anticipate to determine peak usage. This estimate should consider the installed condition when users actually enjoy the hot shower amenities.

P4: Camera the sanitary lines

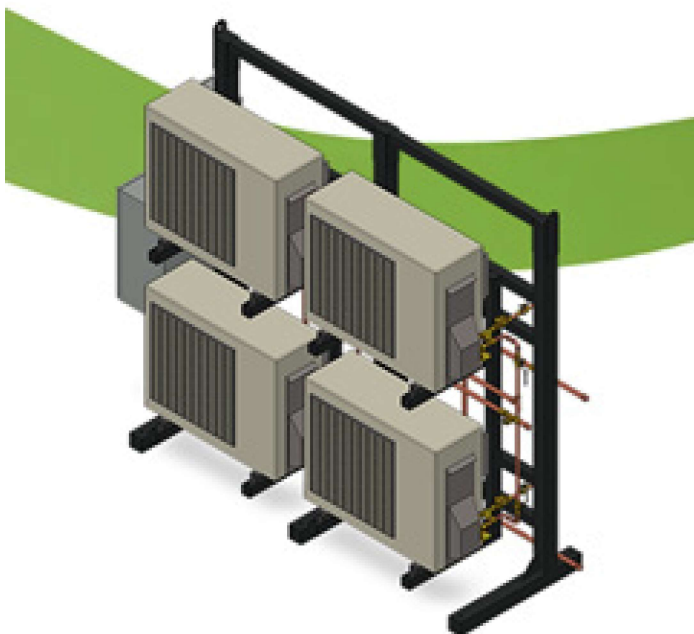
- While not an immediate pain point, the existing sanitary lines are over 50 years old and likely include sags or cracks or root intrusion that can be managed if it can be identified and remedied.

Preliminary Equipment List

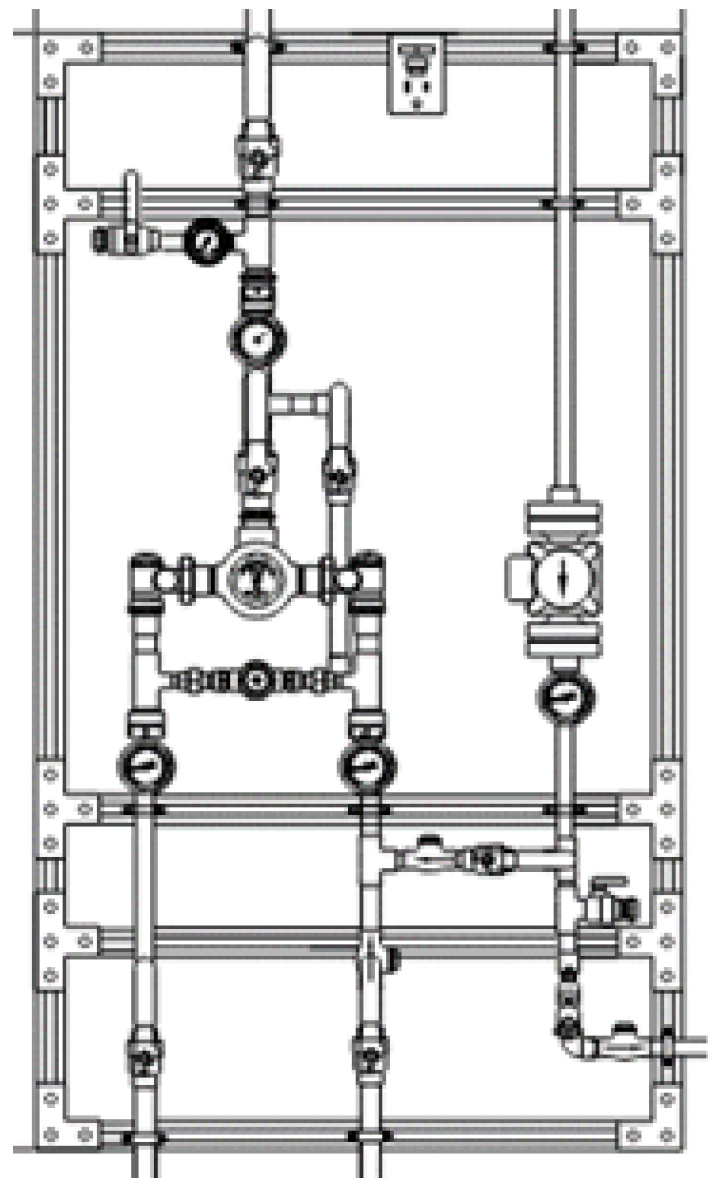
Water Heating

- (6) SANCO2 Water Heaters (This represents about 25% of the capacity of the existing gas water heater.)
 - Installed somewhere outside (luckily these blow cold air during the summer and they are relatively quiet at 40dB)
 - WaterDrop provides pre-plumbed and wired heat pumps on a rack for ease of installation.
- Central Mixing Valve and Circ Pump– Leonard Megatron – 2" Tempered water outlet
 - Pre-mounted on Galvanized Strut
- Expansion Tank

WaterDrop Droplets



Heat Pump Package on Rack (SANCO2 units)



Central Mixing Valve and Pump Pre-Plumbed

8. Electrical Assessment

Electrical Report

1 Executive Summary

This report describes recommended electrical improvements, based on building modernization, improvements, and electrification to the pool process equipment and mechanical systems.

1.1 Project Goals

Key electrical objectives for the proposed project are to:

- Maximize and balance energy and cost efficiencies to design for sustainability in state-of-the-art buildings.
- Design systems to allow for seamless operations and maintenance schedule.
- Electrification of Mechanical and Pool process equipment

1.2 Codes & Standards

California Codes

- California Building Code (CBC), Volumes #1 and #2 (Part 2, Title 24, CCR).
- California Building Code (Part 3, Title 24, CCR).
- California Fire Code (CFC) (Part 9, Title 24, CCR).
- California Green Code (Part 11, Title 24, CCR).
- California Referenced STANDARDS CODE (Part 12, Title 24, CCR).
- NFPA 72 National Fire Alarm Code.
- ADA Standards for Accessible Design.
- City Electrical Department Standards.

2 Electrical System

2.1 Utility Service

Upgrade the existing electrical service from 250Amp to 600Amp (estimated), 208/120V, 3phase. Includes new pad mount transformer and main switchboard. Assume main switchboard will be outdoor rated.

2.2 Electrical Distribution System

The main switchboard described in the section above shall include a distribution section with the following feeder breakers.

- 250Amp 3phase panel for Pool Equipment
- 150Amp 3phase panel for HVAC
- 10Amp 3phase panel for domestic hot water systems
- (2) additional 150Amp 3phase panels for general power and lighting

2.3 PV System

Include a 24kW grid-tied PV system. System Equipment shall include the following:

- (64) LG Solar 375W LG375N1C-A6 PV Modules
- String Wiring with Cable and Wire Management Supports
- (4) 6.0 KW SE-6000H-US 240 V 1 PH SolarEdge Inverter
- (64) P401 SolarEdge DC Optimizers
- PV Sub Panel(s), (1) 200A Main, 225A Bus, 240V/120V 1 PH, 3 Wire, 35kAIC with (4) 35A/2P branch circuit breakers
- PV & Battery Disconnect, (1) 200A, fused at 125A, 240 1 PH
- PV Roof Mount Racking Equipment
- PV Monitoring System

2.4 Emergency Power System

Code required emergency load for this project are the following:

- Emergency and Egress Lighting
- Exit Signs
- Fire Alarm

Secondary source of power for the emergency loads

will be via central lighting inverters for emergency lighting and local batteries for the other loads described above.

2.5 Branch Distribution

- Branch circuit design will not exceed a maximum of 1,080 volt amperes per 20 ampere, 120 volt circuit for general areas.
- Branch circuit design for computer rooms, offices, and administration will not exceed a maximum of 720 volt amperes per 20 ampere, 120 volt circuit.
- Motors of 1/2 horsepower and larger will be served at 208 volt service, 3 phase, 3 wire + ground.
- Motors less than 1/2 horsepower will be served at 120 volt service, 1 phase, 2 wire + ground.
- All multi-wire branch circuits will be installed with dedicated neutrals. Highly loaded, 20-amp, continuous electrical loads, such as circulation lighting and servers, will have increased wire sizes (i.e.: from #12 to #10) in order to reduce power loss in the wiring.
- Separate wires in conduit will be provided for each of the following loads:

Mechanical and Pool Systems

- 208V, 3 phase, 3 wire + ground, 60 hertz.
- 208V, 1 phase, 2 wire + ground, 60 hertz.
- 120V, 1 phase, 2 wire + ground, 60 hertz.

Lighting

- 120V, 1 phase, 2 wire + ground, 60 hertz.

General Purpose Receptacles

- 120V, 1 phase, 2 wire + ground, 60 hertz.

Head-ends for Signal Systems

(i.e.: BMS, Security, Fire Alarm, Lighting Controls, etc.)

- 120V, 1 phase, 2 wire + ground, 60 hertz.

2.6 Grounding

- Grounding will be accomplished by utilizing a UFER grounding system, rods, and connections to active cold water pipe and building steel.
- A single point grounding system will be established via main ground bus located in the main electrical room. The main ground bus will function as a connection point for the grounding and bonding systems within the room.
- A minimum of two ground rods will be located in opposite corners of the room and will be outside the main switchgear. The ground rods will be exothermically connected to the electrical room ground loop.
- Separately derived systems will be grounded per CEC requirements. Grounding of emergency generators will conform to CEC 250.30 – Grounding Separately Derived Alternating Current Systems.
- A telecommunications ground bus will be installed in all telecommunication rooms. The ground bus will include stainless steel mounting brackets, an insulator, and a pre-drilled copper bus bar. Isolated ground buses will be provided in distribution equipment serving telecommunication rooms.

2.7 Power Monitoring

A main building meter will be provided at the main switchboard. Additionally, we recommend submetering of end use loads. A multipoint metering system shall be used at the main switchboard to monitor all feeder breakers. Sub-meters will be web-enabled and communicate to the building energy management system.

2.8 Lighting Controls

- An addressable lighting control system will have the ability for granular control and monitoring of each luminaire and associated lighting control device, load monitoring, and automatic demand response (ADR) capability. Addressable lighting controls will be Wattstopper DLM.
- Time schedules shall be defined in the BMS and shared with the lighting control system.
- The primary method of controlling interior luminaires while conserving energy in the building will be achieved through the use of occupancy sensors and manual override switches. Lighting control devices will be integrated into an addressable system.
- Occupancy sensors will be set to “manual on/ auto off” in offices and conference rooms; “auto on/auto off” for restrooms and support areas.
- Emergency lighting will be controlled with other lights. Occupancy sensors that control stairs and emergency egress lighting will be bypassed to provide 100% illumination in the event of normal power failure.
- Photosensors will dim luminaires based on available daylighting.
- Astronomical time clock controls, occupancy sensors, and/or photosensors will be provided for exterior, site, and landscape lighting applications via the lighting control system. Lighting will automatically turn on or off as appropriate throughout the course of the day. Photosensors will allow dimming based on scheduled times, occupancy sensor control overrides at night, and adjustment based on available daylight levels.
- Daylight harvesting will be designed and specified to reduce energy where natural daylight occurs in abundant and sufficient levels. Spaces, receiving sufficient, natural sunlight from glazing, will be equipped with a dimmable lighting system to automatically adjust the amount of electric light against available and constantly fluctuating daylight. This continuously dimming system consists of photocells, daylight dimming control modules, and dimmable 0-10VDC drivers for each space.

3 ELECTRICAL EQUIPMENT

3.1 Switchboard

Switchboards will be completely assembled, free standing, with copper bus bars, full neutral bus, and separate copper ground bus. All bus work will be braced to withstand 65KAIC amperes RMS symmetrical. Short circuit values shall be revisited in future design phase to determine actual ratings for all equipment. Protective devices will be provided with approved barrier between sections and extended load terminals. Protective devices will consist of circuit breakers. Circuit breaker selection will utilize molded case type; be rated for application in their intended enclosure; include solid state tripping with adjustable long time, instantaneous, short time, and ground fault. Additional spare branch feeder breakers will be provided for future and spare capacity. Switchboard will be Eaton Cutler Hammer, Square D, GE, Siemens, or approved equal

3.2 Panelboards

Panelboards shall have door-in-door construction with 42-poles, and copper bussing, unless otherwise noted in single line diagram. Transient Voltage Surge Suppressors shall be used on all panelboards feeding all IT rooms (IDF, MDF, Site Cores, etc). For pricing purposes, 208/120V panelboard bus work will be braced to withstand 22kAIC amperes RMS symmetrical.

Proposed: Square D, Eaton Cutler Hammer, or approved

3.3 Conduit and Wiring

Conductors will be copper, THHN or THWN-2, with PVC insulation; galvanized rigid steel (GRS) conduit in exterior or exposed interior work up to eight feet above finished floor, and for work embedded in concrete; rigid nonmetallic conduit (HDPE) for all underground exterior work; concrete encased for all site underground, electrical metallic tubing (EMT) for interior concealed work or above eight feet exposed; flexible metal conduit (Greenfield) for interior work in short lengths or liquid tight flexible metal conduit (Sealtight) wherever moisture may be present for the connection of recessed luminaires, motors, separate building structures and any vibrating equipment. To avoid the potential environmental impacts of PVC coated power cables, we recommend the use of a cable similar to General Cable XHHW-2 VW-1, which uses XLPE insulation in lieu of PVC.

Electrical Improvement List

Executive Summary

List of recommended improvements based on the electrification of Pool equipment and mechanical systems

Service Upgrade

- Upgrade the existing electrical service from 250Amp to 600Amp (estimated), 208/120V, 3phase. Includes new pad mount transformer and main switchboard. Assume main switchboard will be outdoor rated. Switchboards will be completely assembled, free standing, with copper bus bars, full neutral bus, and separate copper ground bus. All bus work will be braced to withstand 22KAIC amperes RMS symmetrical. Protective devices will consist of circuit breakers. Circuit breaker selection will utilize molded case type; be rated for application in their intended enclosure; include solid-state tripping with adjustable long time, instantaneous, short time, and ground fault. Additional spare branch feeder breakers will be provided for future and spare capacity. Switchboard will be Eaton Cutler Hammer, Square D, GE, Siemens, or approved equal
- Include feeder branch breakers per Item 2 below.

Electrical Distribution Equipment Replacement

- 250Amp 3phase panel for Pool Equipment
- 150Amp 3phase panel for HVAC
- 10Amp 3phase panel for domestic hot water systems
- (2) additional 150Amp 3phase panels for general power and lighting
- Panelboards shall have door-in-door construction with 42-poles, and copper bussing, unless otherwise noted in single line diagram. Transient Voltage Surge Suppressors shall be used on all panelboards feeding all IT rooms. For pricing purposes, 208/120V panelboard bus work will be braced to withstand 22kAIC amperes RMS symmetrical. Proposed: Square D, Eaton Cutler Hammer, or approved
- New grid tied PV system. Assume 24kW Grid-tied PV system

New lighting and lighting control system

- New interior and exterior lighting through out.
- All lighting will be LED with 0-10v dimming with energy compliant lighting controls
- Assume \$25/sqft lighting cost and \$7/sqft lighting control cost (Wattstopper DLM)

New receptacles throughout based on proposed program

9. Conceptual Design Cost Plan

CONTENTS	Page
Commentary.....	113 – 114
Overall Summary.....	115 – 117
(E) Building Upgrades.....	118 – 126
(E) Swimming Pool Remodel.....	127 – 132
Site Improvement.....	133 – 136
Priority 2.....	137 – 140

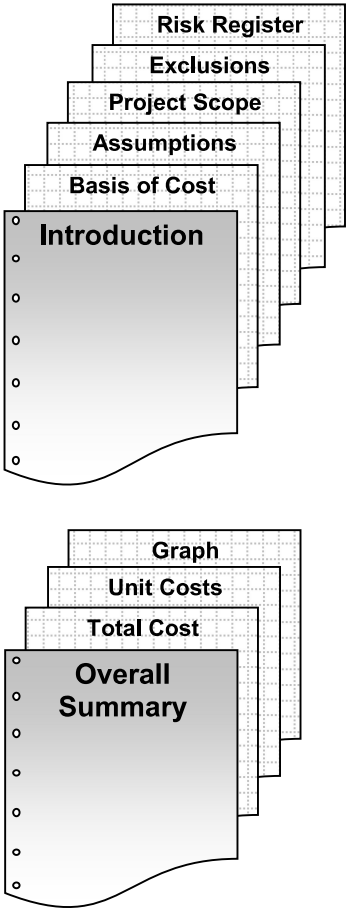
Conceptual Design Cost Plan

Commentary **Joinville Swim Center**

Introduction
Basis of Cost
Assumptions
Exclusions

April 23, 2024

introduction



mack5 was requested to carry out a Conceptual Design Cost Plan for the proposed renovation of existing Joinville Swim Center, located at 2111 Kehoe Avenue, San Mateo, CA 94403. The first part of the Report contains the basis of the report, the assumptions made, description of the project scope, and exclusions to the costs which contain items that have potential to impact cost at some point in the future.

The Overall Summary section contains a Summary of Gross Floor Areas, an Overall Project Summary, and Component and Trade Cost Summaries with Graphs.

Each section contains Control Quantities, a Cost Summary and Graph, and a Detailed Breakdown of Costs.

project introduction

The City of San Mateo wishes to renovate their existing Joinsville Swimming Pool Facilities. The project consists of an assessment of the current physical conditions of the pool and existing buildings, including structural analysis, facility assessments of the pool decks, buildings shells/finishes, equipment & pipings, and code & accessibility requirement.

items used for cost estimate

pricing documents Preliminary estimate package prepared by ELS, dated 02/29/2024
IDA Structural Engineers Memorandum, dated 2/7/2024
Mechanical/Plumbing narrative, dated 2/7/2024
Electrical narrative prepared by RIJA Consulting, dated 2/23/2024
Existing building documents

assumptions

- (a) Construction will start in March, 2026
- (b) A construction period of 5 months
- (c) The general contract will be competitively bid by a minimum of five (5) qualified contractors
- (d) The general contractor will have full access to the site during normal business hours
- (e) There are no phasing requirements
- (f) The contractor will be required to pay prevailing wages

exclusions

- (a) Cost escalation beyond a midpoint of May, 2026
- (b) Loose furniture and equipment except as specifically identified
- (c) Compression of schedule, premium or shift work, and restrictions on the contractor's working hours
- (d) Soft Cost such as testing and inspection fees, architectural design and construction management fees, assessments, taxes, finance, legal and development charges
- (e) Scope change and post contract contingencies
- (f) Environmental impact mitigation
- (g) Temporary housing for displaced management and staff
- (h) Moving and relocation cost

Conceptual Design Cost Plan

Overall Summary **Joinville Swim Center**

Gross Floor Areas
Overall Summary
Component Summary
Trade Summary

April 23, 2024

PRIORITY 1:

	Area	%	\$/SF	\$,000
(N) Building Addition for Pool Equipment - Allowance	625 SF	8%	\$900.00	\$563
(N) Building Addition for (N) family changing room with shower, toilet & lavatory	125 SF	3%	\$1,500.00	\$188
(E) Building Upgrades	4,360 SF	25%	\$404.13	\$1,762
(E) Swimming Pool Remodel	17,598 SF	62%	\$247.02	\$4,347
Site Improvement	856 SF	2%	\$165.89	\$142
TOTAL BUILDING CONSTRUCTION & SITEWORK				\$7,002

PRIORITY 2:**\$,000**

Remodel & Reconfigure (E) Locker Rooms (2,220SF)	\$1,426
(N) All-Electric Pool Equipment & Electrical Service Upgrade - Allowance	\$953

Figure 10: Extended roof area from 1987 Phase 2 improvements



Conceptual Design Cost Plan

(E) Building Upgrades Joinville Swim Center

Control Quantities
(E) Building Upgrades Summary
Detailed Cost Breakdown

April 23, 2024

(E) Building Upgrades Control Quantities	Job #24842
	April 23, 2024

Enclosed Areas

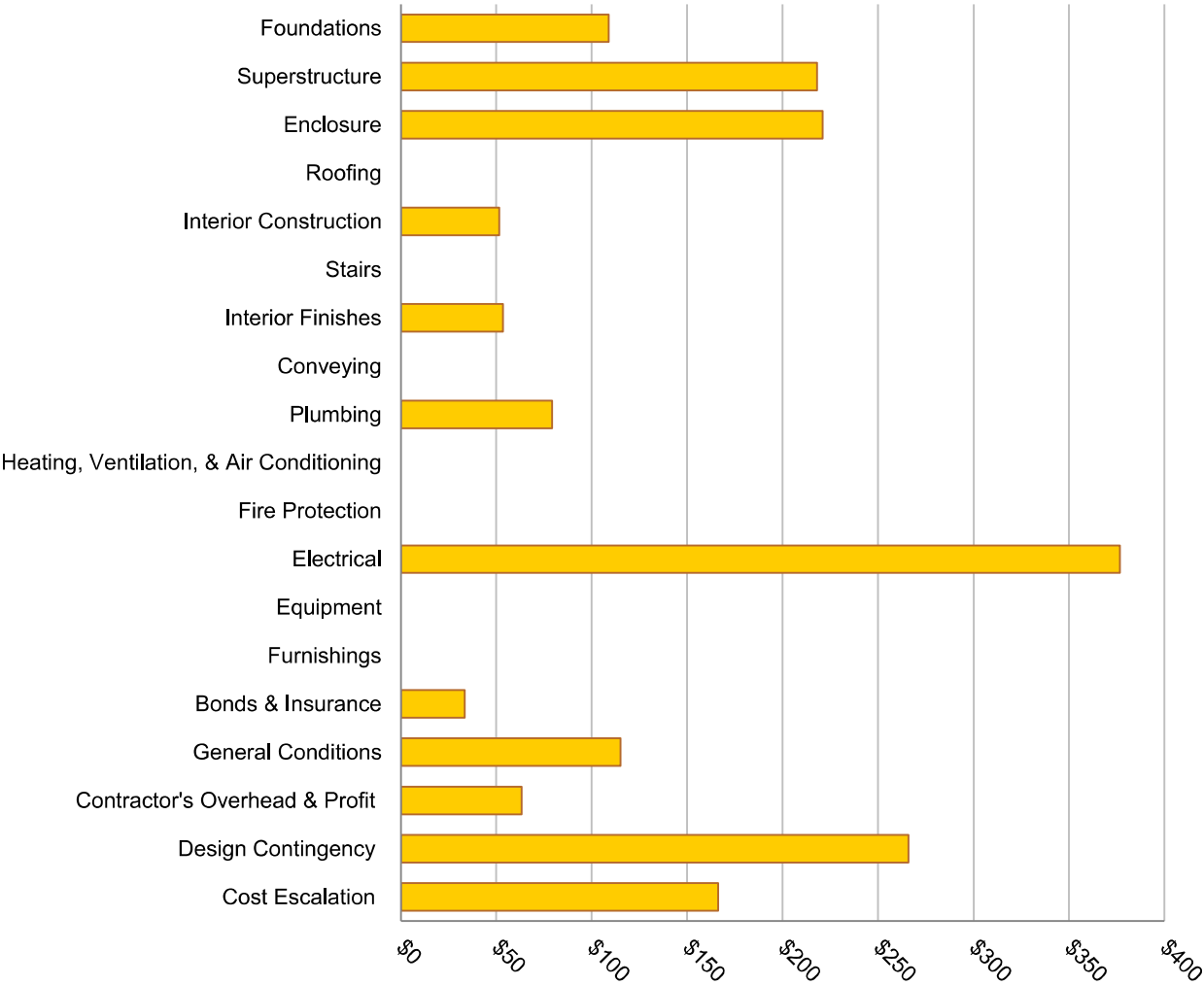
(N) Building Addition, 625SF	<i>see Overall Summary</i>
(E) Pool Equipment Space	597
(E) 1987/89 Office/Bathhouse & Activity	1,543
(E) 1968 Locker Rooms	2,220

Subtotal of Enclosed Area	4,360
---------------------------	-------

CSI UniFormat Summary	4,360 SF	%	\$/SF	\$,000
SUBSTRUCTURE				
Foundations		6%	\$25.00	\$109
SHELL				
Superstructure		12%	\$50.00	\$218
Enclosure		13%	\$50.69	\$221
Roofing		0%	\$0.00	\$0
INTERIORS				
Interior Construction		3%	\$11.84	\$52
Stairs		0%	\$0.00	\$0
Interior Finishes		3%	\$12.29	\$54
SERVICES				
Conveying		-	-	-
Plumbing		4%	\$18.17	\$79
Heating, Ventilation, & Air Conditioning		0%	\$0.00	\$0
Fire Protection		0%	\$0.00	\$0
Electrical		21%	\$86.40	\$377
EQUIPMENT & FURNISHINGS				
Equipment		0%	\$0.00	\$0
Furnishings		0%	\$0.00	\$0
Selective Building Demolition		0%	\$2.00	\$9
Subtotal - Building Construction		63%	\$256.39	\$1,118
Bonds & Insurance	3.00%	2%	\$7.69	\$34
General Conditions	10.00%	7%	\$26.41	\$115
Contractor's Overhead & Profit	5.00%	4%	\$14.52	\$63
Subtotal		75%	\$305.05	\$1,330
Design Contingency	20.00%	15%	\$61.01	\$266
Cost Escalation	10.41%	9%	\$38.11	\$166
TOTAL CONSTRUCTION BUDGET		100%	\$404.13	\$1,762

NOTE: Inclusions and Exclusions listed in the Commentary Section.

CSI UniFormat Summary



FOUNDATIONS

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Standard Foundations

Allowance for seismic retrofit	4,360	GSF	\$25.00	\$109,000
--------------------------------	-------	-----	---------	-----------

Subtotal For Foundations:			\$109,000
----------------------------------	--	--	------------------

SUPERSTRUCTURE

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Structural Framing

Allowance for seismic retrofit	4,360	GSF	\$50.00	\$218,000
--------------------------------	-------	-----	---------	-----------

Subtotal For Superstructure:			\$218,000
-------------------------------------	--	--	------------------

ENCLOSURE

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Wall Framing, Furring & Insulation + Exterior Finishes

Allowance for Locker Room remodel only	4,360	GSF	\$50.00	\$218,000
----------------------------------------	-------	-----	---------	-----------

Exterior Doors, Frames And Door Hardware

(N) Automatic door operators at exits from locker rooms to pool deck	2	EA	\$1,500.00	\$3,000
----------------------------------------------------------------------	---	----	------------	---------

Subtotal For Enclosure:			\$221,000
--------------------------------	--	--	------------------

ROOFING

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

Subtotal For Roofing:			
------------------------------	--	--	--

INTERIOR CONSTRUCTION

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Interior Partitions

Allowance for (N) accessible shower in mens locker room

1	LS	\$10,000.00	\$10,000
---	----	-------------	----------

Toilet fittings and accessories

Minor accessibility upgrades at (E) locker room

2,220	SF	\$5.00	\$11,100
-------	----	--------	----------

Miscellaneous

Rough carpentry

4,360	GSF	\$2.00	\$8,720
-------	-----	--------	---------

Cut/patch and repair areas affected by the structural/mechanical/electrical upgrade

4,360	GSF	\$5.00	\$21,800
-------	-----	--------	----------

Subtotal For Interior Construction:			\$51,620
--------------------------------------------	--	--	-----------------

STAIRS

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

Subtotal For Stairs:			
-----------------------------	--	--	--

INTERIOR FINISHES

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Wall Finishes

(N) Paint throughout

4,360	GSF	\$5.00	\$21,800
-------	-----	--------	----------

(N) Ceramic wall tiles at accessible shower in mens locker room

1	LS	\$10,000.00	\$10,000
---	----	-------------	----------

Miscellaneous - Allowance

Cut/patch and repair areas affected by the structural/mechanical/electrical upgrade

4,360	GSF	\$5.00	\$21,800
-------	-----	--------	----------

Subtotal For Interior Finishes:			\$53,600
----------------------------------------	--	--	-----------------

CONVEYING

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

Subtotal For Conveying:			
--------------------------------	--	--	--

PLUMBING

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Fixtures & Associated piping; (N) water-efficient plumbing fixture at remodelled locker room

New high/low drinking fountains on pool deck	2	EA	\$5,000.00	\$10,000
New accessible shower in Men's locker room,	1	EA	\$5,000.00	\$5,000
Hot water return distribution	100	LF	\$72.00	\$7,200

Equipment

Replace mechanical equipment and water heaters;

Sanco2 heat pump	6	EA	\$5,500.00	\$33,000
Tank, 119 gal	1	EA	\$12,000.00	\$12,000
Circ pump & Exp tank	1	LS	\$2,000.00	\$2,000
Mixing valve	1	LS	\$10,000.00	\$10,000

Subtotal For Plumbing: **\$79,200**

HEATING, VENTILATION, & AIR-CONDITIONING

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

See Priority 2

Subtotal For Heating, Ventilation, & Air-Conditioning:

FIRE PROTECTION

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

See Priority 2

Subtotal For Fire Protection:

ELECTRICAL

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Service and Distribution Upgrade

NIC, See Priority 2

Standby Power System:

Solaredge Backup Interface	1	EA	\$7,000.00	\$7,000
400A standby power panel with 200AMCB				
208V 1Ph	1	EA	\$8,700.00	\$8,700
Panel 100A 208/120V 1Ph	2	EA	\$3,500.00	\$7,000
24kW Grid-tied PV system with 38.8kW Li Ion battery system	1	EA	\$114,000.00	\$114,000
Structural steel support - allowance	1	LS	\$18,000.00	\$18,000
AC Feeder allowance	1	LS	\$25,000.00	\$25,000
PV conduit infrastructure allowance	1	LS	\$15,000.00	\$15,000

ELECTRICAL

Quantity

Unit

Rate

Total (\$)

Machine and Equipment Connections

Mechanical and water hear connections:

Locker rooms - provide each locker room with roof mounted upblast exhaust fan, ceiling hung unit heater

2 EA \$5,250.00 \$10,500

Lobby/Open office - in-line supply fan roof mounted 2 ton heat pump with two 1 ton high wall mounted fan coils

1 EA \$5,250.00 \$5,250

Meeting room - in-line supply fan roof mounted 2 ton with one 2 ton high wall mounted fan coil

1 EA \$5,250.00 \$5,250

New ADO at exits from lockers rooms to pool deck - ADO power connections

2 EA \$3,500.00 \$7,000

New high/low drinking fountains on pool deck - allow 120V power connection

1 EA \$5,000.00 \$5,000

Resiliency Items:

Replace existing water heater paired with multiple air source heat pumps using electricity Instead of gas

6 EA \$4,285.00 \$25,710

Add 1/64 HP circulating pump

1 EA \$1,575.00 \$1,575

Addition of 625 sf to house new equipment - electrical works - lighting, power, fire alarm

*Included In Overall Summary - (N) Bldg Addition***Power Receptacles and Misc Power**

New power receptacles throughout based on proposed program

4,950 SF \$10.00 \$49,500

Lighting & Branch Wiring

New interior and exterior LED lighting through

*See Priority 2***Lighting Control and Branch Wiring**

New energy compliant lighting controls

*See Priority 2***Communications, AV, PA, FA & Security**

Telecom

Excluded

AV Conduit rough-ins only

Excluded

Paging System

Excluded

Fully addressable fire alarm system

Excluded

Access Control System/Intrusion Burglar

Alarm System

Excluded

CCTV Surveillance Camera System

Excluded

ELECTRICAL

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Miscellaneous Electrical Work

Permits/Fees	1	LS	\$7,500.00	\$7,500
Selective Trade demolition - electrical	1	LS	\$27,225.00	\$27,225
Temporary Power	1	LS	\$15,000.00	\$15,000
Seismic Bracing/Firesealing/Grounding allowance	1	LS	\$10,000.00	\$10,000
Testing & commissioning/Coordination	1	LS	\$12,500.00	\$12,500

Subtotal For Electrical: **\$376,710**
EQUIPMENT

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

See Priority 2

Subtotal For Equipment:
FURNISHINGS

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

No Work Anticipated In This Section

See Priority 2

Subtotal For Furnishings:
SELECTIVE BUILDING DEMOLITION

Quantity	Unit	Rate	Total (\$)
----------	------	------	------------

Interior Building Demolition

Demolition due to minor accessibility upgrades	4,360	SF	\$2.00	\$8,720
------------------------------------------------	-------	----	--------	---------

Hazardous Materials Abatement

NIC, Excluded

Subtotal For Selective Building Demolition: **\$8,720**



Conceptual Design Cost Plan

(E) Swimming Pool Remodel Joinville Swim Center

Control Quantities
(E) Swimming Pool Remodel Summary
Detailed Cost Breakdown

April 23, 2024

(E) Swimming Pool Remodel Control Quantities	Job #24842
	April 23, 2024

Swimming Pool Areas

Swimming Pool	3,600
Training Pool	1,825
Pool deck	12,173

Subtotal	17,598
----------	--------

CSI UniFormat Summary	17,598 SF	%	\$/SF	\$,000
Site Preparation		0%	\$0.00	\$0
Site Improvement		0%	\$0.00	\$0
Site Mechanical Utilities		0%	\$0.00	\$0
Site Electrical Utilities		0%	\$0.00	\$0
Swimming Pool Budget (Excluding Pool Deck)		63%	\$156.72	\$2,758
Subtotal - Sitework		63%	\$156.72	\$2,758
Bonds & Insurance	3.00%	2%	\$4.70	\$83
General Conditions	10.00%	7%	\$16.14	\$284
Contractor's Overhead & Profit	5.00%	4%	\$8.88	\$156
Subtotal		75%	\$186.44	\$3,281
Design Contingency	20.00%	15%	\$37.29	\$656
Cost Escalation	10.41%	9%	\$23.29	\$410
TOTAL CONSTRUCTION BUDGET		100%	\$247.02	\$4,347

NOTE: Inclusions and Exclusions listed in the Commentary Section.

SITE PREPARATION

Quantity

Unit

Rate

Total (\$)

Site Protective Construction

Erosion control; including storm drain inlet protection, fiber rolls, stabilized construction entrance/exit, and curb inlet sediment dam (Outdoor swimming pool area only)

*Included Under Site Improvement***Subtotal For Site Preparation:****SITE IMPROVEMENT**

Quantity

Unit

Rate

Total (\$)

Pool Deck

Concrete pool deck

*included in swimming pole Budget***Subtotal For Site Improvement:****SITE MECHANICAL UTILITIES**

Quantity

Unit

Rate

Total (\$)

Pool Water Heating

Pool Heat pump, pool heat exchanger, valves, piping and associated connections

*included in swimming pole Budget***Subtotal For Site Mechanical Utilities:****SITE ELECTRICAL UTILITIES**

Quantity

Unit

Rate

Total (\$)

Service and Distribution - Pool

Included In Swimming Pool Budget

Machine and Equipment Connection

Included In Swimming Pool Budget

Power Receptacles and Misc Power Connections

Included In Swimming Pool Budget

Lighting and Power Specialties Wiring

Included In Swimming Pool Budget

Communications, AV, PA, FA & Security

Telecommunications system

Included In Swimming Pool Budget

PA System

Included In Swimming Pool Budget

CCTV Surveillance Camera System

Included In Swimming Pool Budget

Area of Rescue System (AOR)

*Included In Swimming Pool Budget***Subtotal For Site Electrical Utilities:**

SWIMMING POOL BUDGET

Quantity

Unit

Rate

Total (\$)

Swimming Pool Budget (provided by Aquatic Design Group thru els)

1.0 Code Concerns

(N) Mechanical and chemical equipment to rectify code violation

1 LS \$700,000.00 \$700,000

(N) Pool finishes

1 LS \$375,000.00 \$375,000

(N) Deck and deck drainage

1 LS \$500,000.00 \$500,000

(N) Depth markers/Safety signage

1 LS \$6,000.00 \$6,000

(N) ADA Access for pools; including ADA compliant chair lifts and stairs with dual ADA compliant handrail

1 LS \$100,000.00 \$100,000

Convert pools to skimmer pools

1 LS \$400,000.00 \$400,000

2.0 Maintenance & Operations

(N) Under pool piping

1 LS \$350,000.00 \$350,000

Eliminate surge tank

1 LS \$30,000.00 \$30,000

Alter depths in large pool if desired - allow

1 LS \$150,000.00 \$150,000

(N) Mechanical room door, frame and hardware

1 LS \$4,500.00 \$4,500

(N) Mechanical/chemical building space to accommodate additional equipment, 625SF

see Overall Summary

Room finishes improvement for (E) mechanical and chemical spaces

1 LS \$75,000.00 \$75,000

(N) Deck electrical outlets

1 LS \$7,500.00 \$7,500

(N) Underwater LED pool lights

1 LS \$60,000.00 \$60,000

Subtotal For Swimming Pool Budget:

\$2,758,000

Conceptual Design Cost Plan

Site Improvement Joinville Swim Center

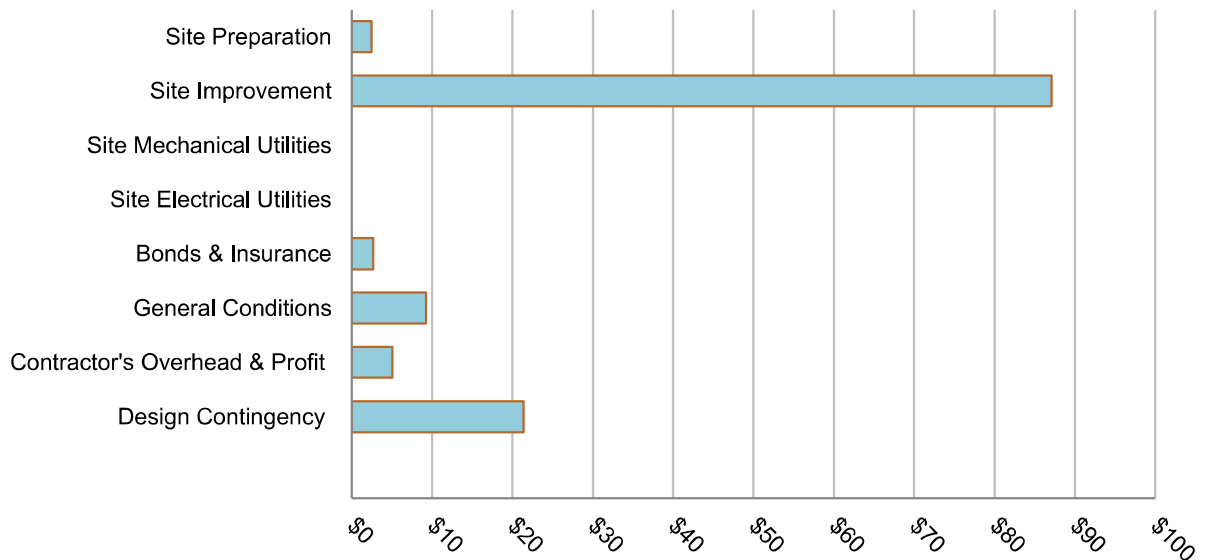
Site Improvement Summary
Detailed Cost Breakdown

April 23, 2024

CSI UniFormat Summary	856 SF	%	\$/SF	\$,000
Site Preparation		2%	\$2.90	\$2
Site Improvement		61%	\$101.75	\$87
Site Mechanical Utilities		0%	\$0.00	\$0
Site Electrical Utilities		0%	\$0.00	\$0
Subtotal - Sitework		63%	\$104.65	\$90
Bonds & Insurance	3.00%	2%	\$3.14	\$3
General Conditions	10.00%	6%	\$10.78	\$9
Contractor's Overhead & Profit	5.00%	4%	\$5.93	\$5
Subtotal		75%	\$125.00	\$107
Design Contingency	20.00%	15%	\$25.00	\$21
Cost Escalation	10.41%	1%	\$15.62	\$13
TOTAL CONSTRUCTION BUDGET		100%	\$165.89	\$142

NOTE: Inclusions and Exclusions listed in the Commentary Section.

CSI UniFormat Summary



Site Area

(N) Exist Walkway	740
-------------------	-----

(N) Trash Enclosure	116
---------------------	-----

Subtotal of Enclosed Area	856
---------------------------	-----

SITE PREPARATION

Quantity

Unit

Rate

Total (\$)

Site Demolition

Demo and remove (E) landscape area, for
new exit walkway

740

SF

\$2.00

\$1,480

Site Protective Construction

SWPP/Erosion control; including storm drain
inlet protection, fiber rolls, stabilized
construction entrance/exit, and curb inlet

1

LS

\$1,000.00

\$1,000

Subtotal For Site Preparation:**\$2,480****SITE IMPROVEMENT**

Quantity

Unit

Rate

Total (\$)

Pedestrian Paving

(N) Exit walkway

740

SF

\$25.00

\$18,500

Connect to (E) path in the park

84

LF

\$100.00

\$8,400

Trash Enclosure

Relocate trash enclosure

116

SF

\$200.00

\$23,200

Landscaping

Modify (E) planting area as required for new
exits and exit pathway - allowance

1

LS

\$5,000.00

\$5,000

Fencing & Miscellaneous Accessories

(N) Exit gates with panic hardware,
double leaf 6'-0"wide

4

PR

\$8,000.00

\$32,000

*NIC, Excluded***Subtotal For Site Improvement:****\$87,100**

Conceptual Design Cost Plan

Priority 2 - ADD Alternates **Joinville Swim Center**

Alternates Cost Breakdown

April 23, 2024

Remodel & Reconfigure (E) Locker Rooms

Quantity

Unit

Rate

Total (\$)

ADD:**Interior Partitions (Locker Room Remodel Only)**

Non-rated partition; including metal stud framing, insulation and gypsum board on both sides, 0.10/SF

222

LF

\$432.00

\$95,904

Backing and blocking, provide 16 gauge or heavier metal blocking and backing at all wall or ceiling mounted items including but not limited to light fixtures, handrails, grab bars, cabinetry, bulletin boards, equipment, shelving, signage, etc.

2,220

SF

\$2.00

\$4,440

Interior Doors & Door Hardware

(N) Single leaf door, 34EA/LF

7

EA

\$4,000.00

\$28,000

Toilet fittings and accessories

Standard toilet partition, phenolic

5

EA

\$1,800.00

\$9,000

ADA toilet partition, phenolic

2

EA

\$2,000.00

\$4,000

Shower enclosure, phenolic

8

EA

\$3,000.00

\$24,000

Urinal screen, phenolic

3

EA

\$500.00

\$1,500

Toilet accessories; including toilet tissue dispenser, napkin disposal, seat cover dispenser, soap dispenser, waste receptacle, grab bar, paper towel dispenser, wall mirror, etc.

7

STALL

\$5,000.00

\$35,000

Shelving and millwork

Janitor's mop and broom holder

1

EA

\$500.00

\$500

Quartz solid surface vanity countertop & backsplash

12

LF

\$350.00

\$4,200

Custom wood reception desk with lower & upper soiled surface countertop and low swing doors

1

LS

\$10,000.00

\$10,000

Chalkboards, insignia and graphics

Door signage

7

EA

\$200.00

\$1,400

Directional/wayfinding & code signage

2,220

SF

\$3.00

\$6,660

Miscellaneous

Rough carpentry

2,220

SF

\$2.00

\$4,440

Cut/patch and repair areas affected by the structural/mechanical/electrical upgrade

4,360

GSF

\$5.00

\$21,800

Remodel & Reconfigure (E) Locker Rooms

Quantity

Unit

Rate

Total (\$)

ADD:**Plumbing**

Remodel and reconfigure locker rooms with new showers; New plumbing fixtures, including minimum 3 toilets and 3 urinals for men, 4 toilets for women, 3 lavatories each. 4 showers each for men and women, 10 Floor drains

34 EA \$6,500.00 \$221,000

Plumbing related items & Demo

1 LS \$30,000.00 \$30,000

HVAC System**Locker room;**

Exhaust

2 EA \$5,000.00 \$10,000

Electric unit heater

2 EA \$3,500.00 \$7,000

Lobby / Office;

Supply fan

1 LS \$5,000.00 \$5,000

Rooftop packaged heat pump, 2 ton with two 1 ton fan coils

1 LS \$16,000.00 \$16,000

Refrigerant line sets

200 LF \$48.00 \$9,600

Meeting Rm.;

Supply fan with relief vent

1 LS \$6,200.00 \$6,200

Rooftop packaged heat pump, 2 ton with one 1 ton fan coil

1 LS \$14,000.00 \$14,000

Refrigerant line sets

120 LF \$48.00 \$5,760

HVAC Related items & Demo

1 LS \$15,000.00 \$15,000

Fire Sprinkler System

Allowance at remodeled locker room

4,360 GSF \$12.00 \$52,320

Lighting & Branch Wiring

New interior and exterior LED lighting through

4,360 GSF \$25.00 \$109,000

Lighting Control and Branch Wiring

New energy compliant lighting controls

4,360 GSF \$7.00 \$30,520

Miscellaneous Equipment

Breakroom and lifeguard equipment; including refrigerator, ice machine, microwave, etc. (at lifeguard, activity room &

1 LS \$10,000.00 \$10,000

Swimsuit spinner - allowance

1 EA \$2,500.00 \$2,500

Remodel & Reconfigure (E) Locker Rooms

	Quantity	Unit	Rate	Total (\$)
Amenities & convenience items				
Phenolic lockers & pedestal bench	4,360	GSF	\$15.00	\$65,400
Portable Fire extinguisher - allowance	2	EA	\$500.00	\$1,000
Moveable Furnishings				
FF&E Allowance				NIC, OFOI
Conference/meeting tables and chairs				NIC, OFOI
Office tables and chairs				NIC, OFOI
Interior Building Demolition				
Interior demolition; including walls/doors and floor/wall/ceiling finishes - remodeled area	4,360	GSF	\$10.00	\$43,600
Mark-up's per Overall Summary	57.62%			\$521,325
Subtotal for Remodel & Reconfigure (E) Locker Rooms (2,220SF):				\$1,426,069

(N) All-Electric Pool Equipment & Electrical Service Upgrade - Allowance

	Quantity	Unit	Rate	Total (\$)
ADD:				
Swimming Pool Equipment - Cost premium for All-electric equipment (ref. Piedmont Project)	1	LS	\$500,000.00	\$500,000
Upgrade existing service from 250A to 600A 208/120V. Upgrade existing transformer pad and main indoor switchboard, 22kAIC and feeder breakers. Upgrade associated feeders	1	EA	\$53,500.00	\$53,500
Replace equipment below:				
Panel 250A 208/120V 3Ph 22kAIC for Pool	1	EA	\$7,500.00	\$7,500
Panel 250A 208/120V 3Ph 22kAIC for HVAC	1	EA	\$7,500.00	\$7,500
Panel 150A 208/120V 3Ph 22kAIC for hot water systems	1	EA	\$5,100.00	\$5,100
Panel 150A 208/120V 3Ph 22kAIC for general power and lighting	2	EA	\$5,100.00	\$10,200
Provide TVSS for each panelboard	5	EA	\$4,100.00	\$20,500
Mark-up's per Overall Summary	57.62%			\$348,205
Subtotal for (N) All-Electric Pool Equipment & Electrical Service Upgrade - Allowance:				\$952,505

10. Appendix: Site Visit Notes and Code Analysis

Potential Issues

- Pool deck exiting does not comply with code requirements. 2022 CBC occupant load calculations requires in excess of 18' of exit width. Only one exit gate with panic hardware (approx. 4' wide is provided)
- Pool deck is in poor shape, cracked and uneven. Deck drainage and accessibility are affected.
- Plumbing fixtures in locker rooms: Both locker rooms do not have sufficient toilets and lavs to meet 2022 CBC. One additional toilet and one lav are needed for Women and one additional toilet, lav, and urinal for men. Accessible shower in Men's locker rooms does not have walls on three sides and is likely not code compliant.
- Floor drains in men's and women's showers appear to allow water from one bather to flow into another bather's area—this is not permitted by current code.
- Some doors appear to lack sufficient strike side and door swing clearance to meet current accessibility requirements.
- According to existing building drawings, there is no insulation in walls or roof.
- Cracks have been observed in both swimming pools.
- Wood outrigger beams supporting roof overhang are visibly deteriorated.

General Observations

Community/Multi-use room:

- Room includes tables and chairs, announcement boards and white board, storage cabinets. Walls are painted CMU. A kitchenette includes an electric stove with hood, sink and cabinets. There is a full-size refrigerator in the room. VCT flooring in the kitchenette area.
- Electric stove with residential range hood likely does not meet current fire code requirements (Type 1 hood typically required).
- Heater suspended from ceiling was recently moved there (according to staff) but does not look up to date (mechanical engineers to review).
- Carpet appears to be somewhat worn, but serviceable.

Pool and Pool Deck

Lap Pool

Pool is 82'-6" long. by six lanes (44 ft.) wide (per existing building drawings). Depth ranges from 4 feet minimum to 6'-3" at the deepest point. Pool is currently covered.

- Significant cracking in the pool along the sides, near the vertical pool walls.
- According to staff, accessible lifts are attached to the pool deck during times when the pool is open (3 months per year).
- Pool water area: 3,630 square feet.

Rec Pool

- Pool depth ranges from 2 feet at each end to 3'-9" at the deepest point.
- Pool is to be 60 ft. long by 30 ft. wide. Pool water area: 1,800 square feet.

Pool Deck

- The large concrete pool deck is surrounded by lawn on two sides.
- Portions of the pool deck around the pools and between the pools have been covered by a gray coating, presumably for purposes of waterproofing and bridging over cracks.
- There is evidence of widespread cracking and movement in the pool deck in both areas that have been coated and areas without coating. Cracks have been repaired, in some cases multiple times, with some type of gray sealant. There is significant cracking around deck drains, and in some cases there is water ponding on the deck from recent rain.

- There are on-deck showers, one unit with three heads outside of the locker room entrance. For outdoor showers, recommend high and low shower heads with controls within accessible reach ranges. Controls do not appear to meet accessible reach range requirements, this is recommended, but not a code requirement to my knowledge.
- Small building with sign saying “Guard’s Quarters” along with adjacent fenced enclosure not reviewed.
- There appears to be one drinking fountain on deck. Two are required

Pool Equipment Room

- Equipment appears dated and worn
- An eyewash station has been added outside of the pool equipment room, on the pool deck.

Building Interior

Office Area

- Walls are CMU with exposed structure (beams and decking) wiring of light fixtures is surface-mounted. A series of open office areas looks out to the pool deck.
- A semi-circular area that projects out to the pool deck was reportedly a later addition.
- First aid room has an examination table, sink and cabinets, and is partitioned off from the main space by a curtain.
- A reception deck faces the entrance to the facility and has a glass access window.
- Dutch doors lead from the office area into the locker rooms on either side (women’s locker rooms to the north and men’s to the south)
- Office area includes a copier, and supplies along with a bulletin board, file cabinets, and other assorted items such as branded clothing.

Women’s Locker Room

- Locker room includes: 3 toilets (assumed) with one accessible stall, benches, changing stalls with curtains, 2 lavatories with mirrors above, electric hand dryer, lockers (2-high, either phenolic or p-lam), swimsuit spinner.
- Finishes are 2x2 ceramic floor tile, painted CMU walls with tile on shower walls.
- Showers are gang showers. Location of drains does not appear to meet the requirement for one

person’s waste water not to flow into another’s shower area. (CPC 408.8: “wastewater from one bather shall not pass over areas occupied by other bathers.”)

- Separate accessible shower stall has padded fold-down seat, grab bars and hand-held controls.
- Locker area includes bench and mirror and accessible lockers have been designated.
- Number of toilets required appears to be one short, taking into account the pool water area. Three lavatories are required, and only two are installed.

Men’s Locker Room

- Locker room includes: 2 toilets and two urinals (one accessible toilet stall and one accessible urinal). Per code, 3 toilets and 3 urinals required. 3 lavatories are required, 2 are provided.
- Finishes are the same as the Women’s Locker Room. Gang shower has a similar configuration.
- Accessible lockers have been provided, along with an accessible bench. Mirror on wall is not at accessible mounting height.
- Accessible shower with folding seat and handheld controls is located in a corner of the gang shower with no enclosing walls. This does not appear to meet current accessibility standards which require a seat to be mounted on one side wall with grab bars on the back wall and opposite side wall.

Reference Materials

The following drawings and reports were provided as reference materials for this assessment:

1. Original 1968 plans by August E. Waegemann, Civil Engineer
2. 1987 Drawings Phase 2, Civil and Landscape only
3. 2022 Pool Leak Detection Reports
4. 2020 Pool Health Inspection Report

Code Analysis

Plumbing Fixture Count per CBC 3116B

Water Area:

Lap Pool	3,630 sf
Rec Pool	1,800 sf
Total Area	5,430 sf
Total Users (@1 user/15 sf water area)	362
Users, Male and Female:	181 each

Plumbing Fixtures Required (CBC 3116B):

	Men	Women
Toilets	3	4
Urinals	3	
Lavatories	3	3
Showers (one per 50 pool users)	4	4
Drinking Fountains	2	

Pool Deck Exiting:

CBC Table 1004.5 includes the following allowances swimming pool occupant loads:

Skating rinks, swimming pools	
Rink and pool	50 gross
Decks	15 gross

Pool and Deck Occupant Calculation:

	Area	Occupant Load
Pool Water	5,430 sf	109
Pool Deck	15,156 sf	1,011
Total	18,726	1,120

Minimum 4 exits required per CBC Table 1006.3.3

4 exits required if occupant load exceeds 1000.

Exit width required (using an occupant load factor of 0.2 (per CBC 1005.3.2): 224" or 18'-8". One existing 4' wide gate with panic hardware exits from the pool area out towards the street. Need to review with building official whether the path of exit travel from the pool deck can go back through the building.

This may require a negotiation with the building official to determine how to calculate the occupant load and whether some areas can be designated as "Safe Dispersal Areas" within the fence line per CBC 1028.5.

CBC Chapter 31B, Public Pools

Pool configuration, CBC 3111B- 3115B: By ADG

3114B.3 Deck slope. The pool's deck surface shall have a slope of no less than 1 percent ($\frac{1}{8}$ inch per foot) but no more than 2 percent ($\frac{1}{4}$ inch per foot) away from the pool to a deck drainage system and shall be constructed and finished to prevent standing water.

CBC 3116B Dressing, Shower and Toilet Facilities

3116B.2 Number of sanitary facilities. For the purpose of this subsection, one pool user shall be considered for every 15 square feet (1.39 m²) of pool water surface area and/or spray ground splash zone area.

3116B.2.1 Showers. One shower shall be provided for every 50 pool users.

3116B.2.2 Toilets. Separate toilet facilities shall be provided for each sex. One toilet shall be provided for every 60 women or less and one toilet plus one urinal for every 75 men or less.

3116B.2.3 Lavatories. One lavatory shall be provided for every 80 pool users.

CBC 3116B.3 Construction

3116B.3 Construction.

3116B.3.1 Floors. Floors shall have a hard, nonabsorbent surface, such as portland cement concrete, ceramic tile or other approved material, which extends upwards onto the wall at least 5 inches (127 mm) with a coved base. Floors which may be walked on by a wet pool user shall be slip resistant. Floors shall be sloped not less than $\frac{1}{4}$ inch (6.4 mm) per foot to floor drains or other approved surface water disposal areas. Carpeting and other similar artificial floor covering shall not be permitted on shower and toilet room floors.

3116B.3.2 Interior surfaces. The materials used in the walls, except for structural elements, shall be of a type which is not adversely affected by moisture.

SECTION 3117B DRINKING FOUNTAINS

One guarded jet drinking fountain shall be provided for the first 250 pool users and an additional fountain shall be provided for each additional 200 pool users or fraction thereof. The number of pool users shall be determined according to Section 3116B.2.

Building Code Scoping Requirements:

Current Valuation Threshold for Alterations, Structural Repairs or Additions is \$195,358.

California Existing Building Code, 2022:

CEBC 306.7:

306.7 Alterations. A facility that is altered shall comply with the applicable provisions in Chapter 11 of the *International Building Code*, ICC A117.1 and the provisions of Sections 306.7.1 through 306.7.16, unless technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent technically feasible.

306.7.1 Alterations affecting an area containing a primary function. Where an alteration affects the accessibility to, or contains an area of primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities and drinking fountains serving the area of primary function.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of a facility.
5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

306.7.11 Toilet rooms. Where it is technically infeasible to alter existing toilet rooms to be accessible, one accessible single-user toilet room or one accessible family or assisted-use toilet room constructed in accordance with Section 1110.2.1 of the *International Building Code* is permitted. This toilet room shall be located on the same floor and in the same area as the existing toilet rooms. At the inaccessible toilet rooms, directional signs indicating the location of the nearest such toilet room shall be provided. These directional signs shall include the International Symbol of Accessibility, and sign characters shall meet the visual character requirements in accordance with ICC A117.1.

306.7.12 Bathing rooms. Where it is technically infeasible to alter existing bathing rooms to be accessible, one accessible single-user bathing room or one accessible family or assisted-use bathing room constructed in accordance with Section 1110.2.1 of the *International Building Code* is permitted. This accessible bathing room shall be located on the same floor and in the same area as the existing bathing rooms. At the inaccessible bathing rooms, directional signs indicating the location of the nearest such bathing room shall be provided. These directional signs shall include the International Symbol of Accessibility, and sign characters shall meet the visual character requirements in accordance with ICC A117.1.

Alterations:

SECTION 503 ALTERATIONS

503.1 General. Alterations to any building or structure shall comply with the requirements of the *California Building Code* or *California Residential Code*, as applicable, for new construction. Alterations shall be such that the existing building or structure is not less complying with the provisions of the *California Building Code* or *California Residential Code*,

as applicable, than the existing building or structure was prior to the alteration.

1.1.3 Scope. The provisions of this code shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures throughout the State of California. [HCD 1 & 2] The provisions of this code shall apply to repair, alteration, change of occupancy, addition to and relocation of every existing building or structure or any appurtenances connected or attached to such buildings or structures throughout the State of California.

1.1.3.1 Nonstate-regulated buildings, structures and applications. Except as modified by local ordinance pursuant to Section 1.1.8, the following standards in the California Code of Regulations, Title 24, Parts 2, 2.5, 3, 4, 5, 6, 9, 10 and 11 shall apply to all occupancies and applications not regulated by a state agency.