

**Los Angeles County Fire Department**  
**Lifeguard Headquarters**  
2300 Ocean Front Walk, Venice, CA 90291

**Building Assessment Report**  
Architectural, Structural, Mechanical, & Electrical

Prepared for:  
**County of Los Angeles**  
Internal Services Department

Submitted by:  
**ChoyAssociates**  
Architects

30 June 2014

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## Section 1- Building Assessment Introduction

### Project Description

The L.A. County Fire Dept. Lifeguard Headquarters building is located at 2300 S. Ocean Front Walk in Venice Beach, Ca. Constructed in 1969, the building was designed to house the administrative headquarters of the City of Los Angeles Lifeguard Division.

The Building could be best described as an exposed wood/beam tower with a symmetric hexagonal plan design. From grade level to top of roof it is approximately 40 feet high, and made up of (3) levels. The ground level serves as a vehicular and equipment storage facility for the Fire Dept. Lifeguards and the Dept. of Beaches and Harbor. The second (intermediate) level has limited floor space, and serves as office space. The third (top) level serves as the primary administrative office space, with a walk around observation balcony.

Over the past 45 years of the building's life, there have been some upgrades and improvements made, but none that would alter the total area, or exterior appearance. Some of the observed building system deficiencies observed include, weathered/dry-rotted wood beams at top level floor and roof, weathered balcony deck/railing system, rusted pipes and equipment (HVAC, Elect. Switchgear, Generator), rusted metal storm shutters at intermediate level, partial conformance with disabled access, and lack of second exit from levels 2 and 3.

The following is recent building permit activity for this facility:

- 2005-Install Electrical Conduit for future use (lighting)
- 2008-Re-Roof (Bldg. Repair)
- 2008- Interior Remodel for Women's Locker (Bldg. Repair)
- 20012-Fire Sprinkler pendant install (permit expired)

As noted above there has been a limited amount of permitted upgrades and improvements that have been documented.

The County has asked us to provide a building assessment report to evaluate the existing conditions, and to provide recommendations for future building improvements. We will provide a code analysis of the existing building, identify existing building deficiencies, provide recommendations, and probable cost estimates. Our building assessment will be separated by different discipline sections; Structural, Mechanical, & Electrical.

## **Section 1.A- Building Data Code Search**

The following data was obtained from L.A. City Dept. of Building and Safety Parcel Profile Report. The City of Los Angeles would be the lead review agency for the processing of building permits for this building.

### **1. PARCEL LEGAL DESCRIPTION INFORMATION:**

Legal Description:

Tract :	<u>SHORT LINE BEACH SUBDIVISION NO. 1</u>
Block :	
Lot :	<u>THE STRAND</u>
Arb :	<u>NO</u>
Modifier:	<u>NO</u>
Map Reference Number for Tract Recordation:	<u>M B 2-59</u>
Parcel ID Number; (PIN):	<u>105A145 443</u>

### **2. BASIC ZONING INFORMATION FOR PARCEL:**

Alquist-Priolo Fault Zone:	<u>NO</u>
Baseline Hillside Ordinance:	<u>NO</u>
Baseline Mansionization Ordinance:	<u>NO</u>
Council District:	<u>11</u>
Community Redevelopment Area:	<u>NO</u>
District Map:	<u>NO</u>
Flood Hazard Zone:	<u>NO</u>
Hillside Grading Area:	<u>NO</u>
Hillside Ordinance Area:	<u>NO</u>
Preliminary Hollywood Fault Study Area:	<u>NO</u>
Planning Area & Community Name:	<u>Venice</u>
Zone(s):	<u>OS-1XL-O</u>

### **3. GEOGRAPHICALLY ORIENTED" PARCEL INFORMATION:**

Census Tract:	<u>2739.02</u>
Energy Zone:	<u>6</u>
Earthquake-Induced Liquefaction Area:	<u>Yes</u>
Methane Hazard Site:	<u>Methane Zone</u>
Near Source Zone Distance:	<u>5.6</u>
Parcel Area (sqft):	<u>42547.5</u>
Thomas Brothers Map Grid:	1) 671-H6 2) 671-H7

**4. CITY DOCUMENTS ASSOCIATED WITH PARCEL:**

- City Planning Cases:
- 1) CPC-17599-A
  - 2) CPC-1987-648-ICO
  - 3) CPC-1998-119-LCP
  - 4) CPC-2000-4046-CA
  - 5) CPC-2005-8252-CA
- Ordinance:
- 1) ORD-130294
  - 2) ORD-169186-SA770
  - 3) ORD-172019
  - 4) ORD-172897
  - 5) ORD-175693
  - 6) ORD-175694
- Specific Plan Area:
- 1) Los Angeles Coastal Transportation Corridor
  - 2) Venice Coastal Zone
- Zoning Information File: ZI-2406 Dir Inter of Venice SP for Small Lot Sub

**5. OTHER PARCEL RELATED INFORMATION:**

Seismic Gas Shut Off Valve Installed: NO

Of note, the Zoning of the building has changed since it was initially built. The current Zoning is OS (Open Space), and such a building would not be allowed to be built in this Zone today. Per consultation with LA City Planning Dept. this building is considered non-conforming, and therefore limited with regards to allowed improvements/alterations.

**Expected Project Review Agencies**

- City of Los Angeles
- L.A. City Planning Dept.
- L.A. City Bureau of Engineering
- L.A. City Building & Safety
- L.A. City Fire Dept.

- \* California Coastal Commission
- \* Venice Neighborhood Council

*\*possible review contingent on project scope of work, and as determined by assigned L.A. City Plan Check Engineer*

**Building Data**

Existing Building

Year Built: 1968  
 Stories/Height: 3 stories/ 40 ft. high  
 Construction Type: Type 5A  
 Sprinklered: Yes  
 Exits from 2<sup>nd</sup> and 3<sup>rd</sup> Levels: 1  
 Occupancy: B (office) and S-2 (Storage)  
     B Occupancy Allowable height 50', stories 3, and area 18,000 s.f.  
     S-2 Occupancy Allowable height 50', stories 4, and area 21,000 s.f.  
 Total Area: +/- 11,600 s.f.  
     Ground Level: 9,700 s.f. (approx. office 10% & 90% Storage & Utility)  
     Level 2: 600 s.f. (office)  
     Level 3: 1,300 s.f. (office)

Occupant Load:

Level 1: 25 Occupants (7 'B' Occupants 1 per 100 sf gross/ 18 'S-2' Occupants 1 per 500sf)  
 Level 2: 2 Occupants (1 per 100 sf gross)  
 Level 3: 13 Occupants (1 per 100 sf gross)

Parking: 12 total Spaces (1 Accessible and 11 Standard)

**Existing Non-Conforming or Possible Required Building Elements to be Upgraded:**

- Required parking spaces to be determined by Planning Dept.
- Existing stairs exceed maximum allowable rise of 7" (exist. 7.5"), intermediate landings at existing stairs are not compliant with Accessibility requirements of Chapter 11B, 2013 CBC.
- Accessible Parking Stall has 5' wide load path of travel, 8' wide loading area is required for a van stall.
- Accessible Toilet/Shower facilities to be verified for full conformance as required by Disabled Access division of L.A. City Building and Safety.
- Doors/ Door Hardware/ Thresholds will be required to comply with section 1008 of 2013 CBC.
- Required Exits from all Levels: 2 (per 2013 CBC)

TABLE 1021.1 MINIMUM NUMBER OF EXITS FOR OCCUPANT LOAD

OCCUPANT LOAD (persons per story)	MINIMUM NUMBER OF EXITS (per story)
1-500	2
501-1,000	3
More than 1,000	4

**1021.2 Single exits.** Occupancies shall be permitted to have a single *exit* in buildings otherwise required to have more than one *exit* if the areas served by the single *exit* do not

exceed the limitations of Table 1021.2. Mixed occupancies shall be permitted to be served by single *exits* provided each individual occupancy complies with the applicable requirements of Table 1021.2 for that occupancy. Where applicable, cumulative *occupant loads* from adjacent occupancies shall be considered in accordance with the provisions of [Section 1004.1](#). Basements with a single *exit* shall not be located more than one *story* below *grade plane*.

The excerpt above is taken from the 2013 California Building Code, which is the latest adopted code by the City of Los Angeles.

The County may choose to refurbish and renovate the existing building by replacing existing Structural, Mechanical, and Electrical systems and not provide a 2<sup>nd</sup> exit from the top level. However, we strongly recommend providing a conforming second means of egress from the 2<sup>nd</sup> and 3<sup>rd</sup> levels of the building. There's also the possibility that this would be requested by the reviewing agencies, based on the following:

1. The existing means of egress consists of non-conforming stair treads & landings.
2. The existing means of egress does not lead directly to the building's exterior.
3. The estimated cost of the total work proposed may not allow for a hardship exemption.

#### Recommendation for location of 2<sup>nd</sup> Stair

We recommend providing an exterior metal stair on the southwest elevation side of the building. Providing a stair at this location provides the following benefits:

- The stair can be structurally isolated on its own foundation, which means that the existing building structure is not impacted and therefore, not requiring a complete seismic building analysis.
- Construction costs are minimized due to not penetrating the lower roof structure.
- Minimize the visual impact to the residential neighborhood.
- Construction phasing not required, as construction of stairs would not impact daily operations.

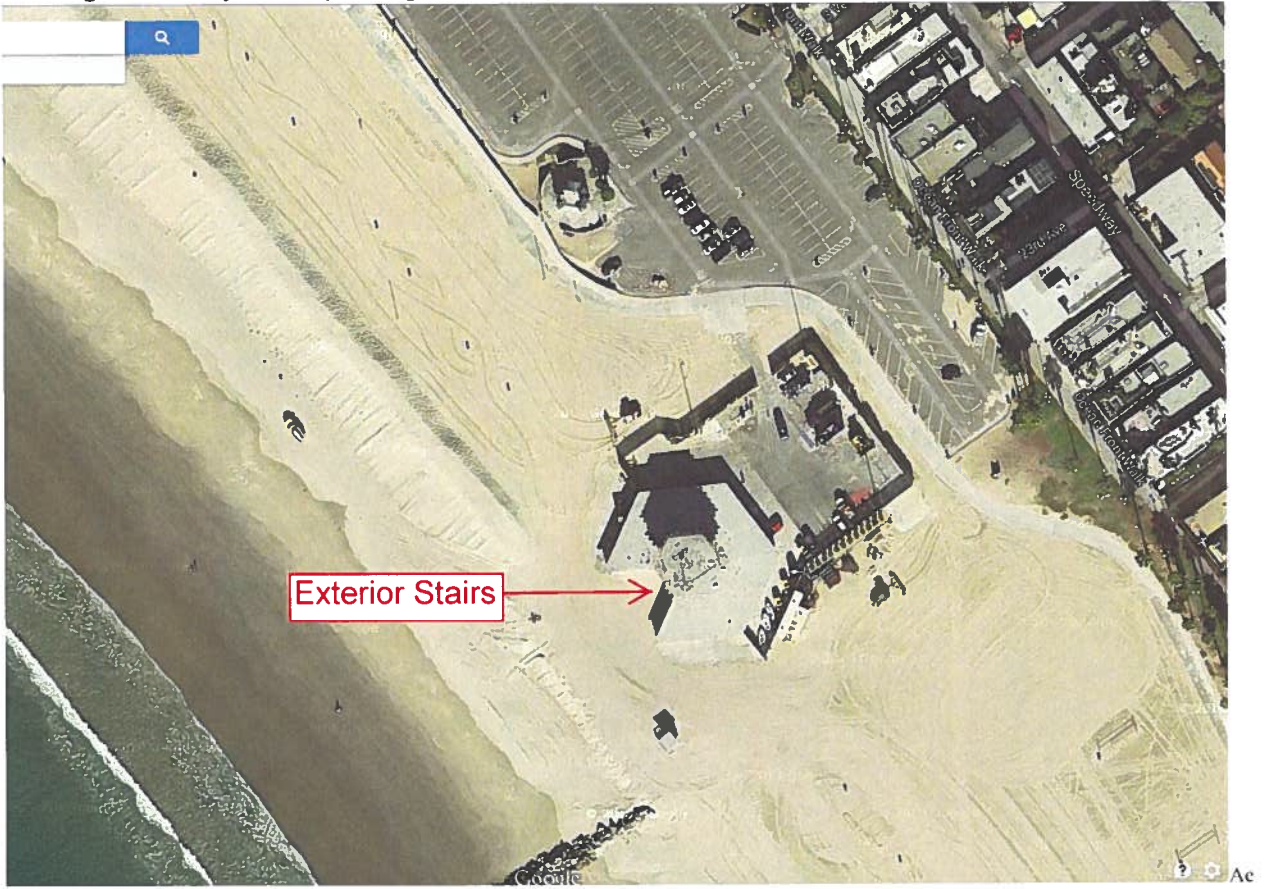
The one area of concern that would need to be addressed is security. The stair location currently is not fenced, and may be accessed by the public.

The following page illustrates the proposed location of the 2<sup>nd</sup> means of egress stairs.



Los Angeles County Fire Dept. Lifeguard Headquarters

2300 Ocean Front Walk, Venice CA



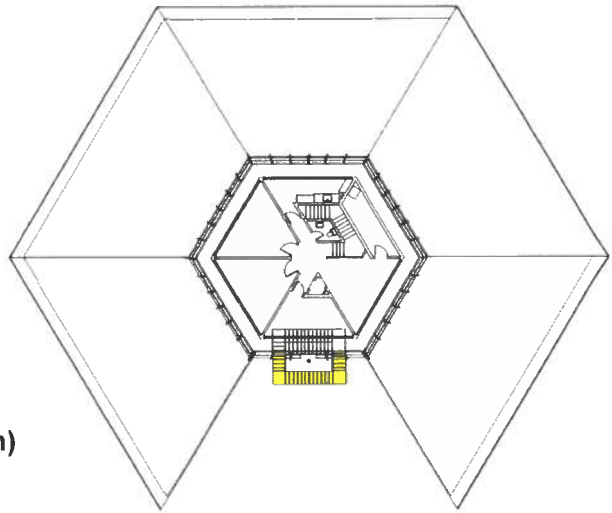
erial photo courtesy of google maps



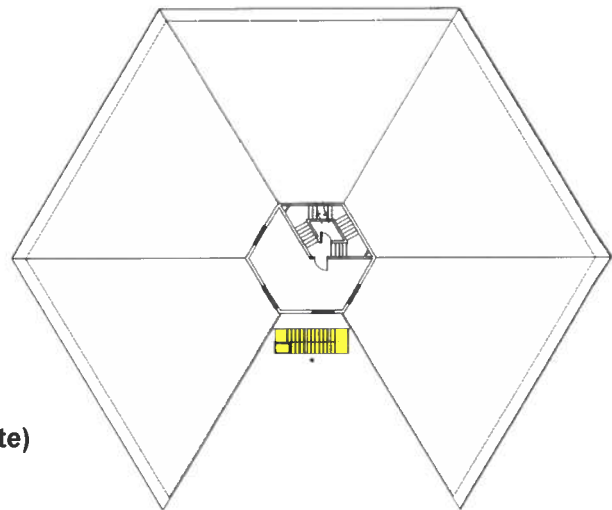
Southwest Elevation

**Section 1.B- Concept Plan of 2<sup>nd</sup> Exit**

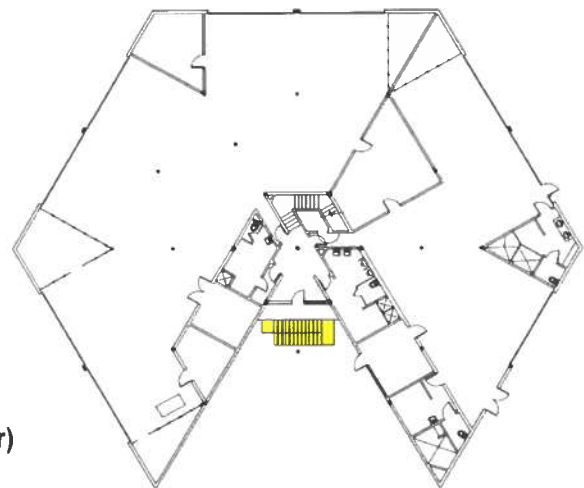
**3rd Level (Observation)**



**2nd Level (Intermediate)**



**1st Level (Ground floor)**



**Section 1.C- Existing Building Conditions –photos**



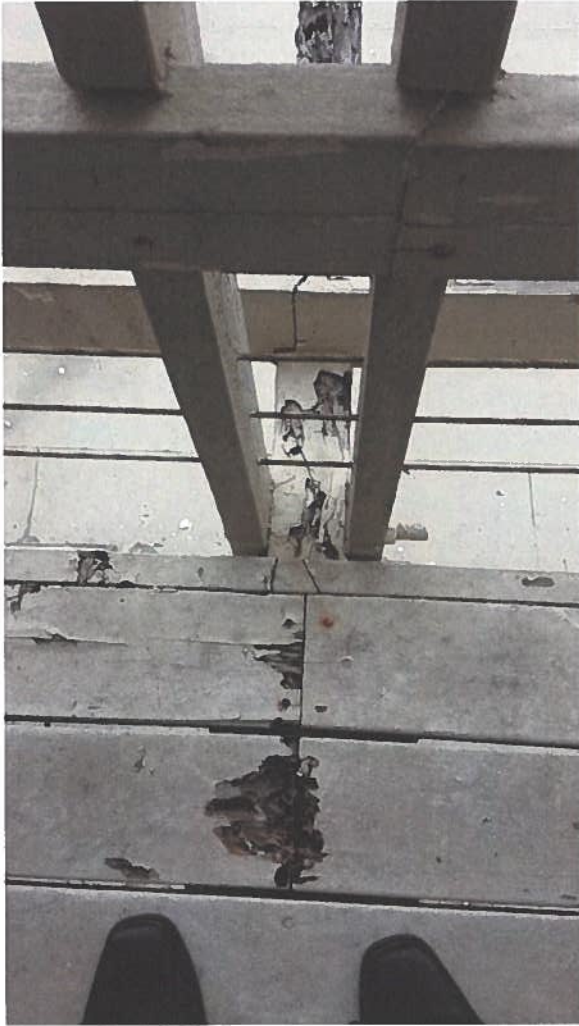
View from service yard looking west at Northeast building elevation



View from lower view looking at southwest elevation



View from observation balcony looking west



Balcony Deck & Beam outrigger dry-rot



2<sup>nd</sup> level rusted metal roll-up door shutter



Condition at building corner



Condition at exterior door



Condition at 2<sup>nd</sup> level wood siding



Existing Electrical Generator



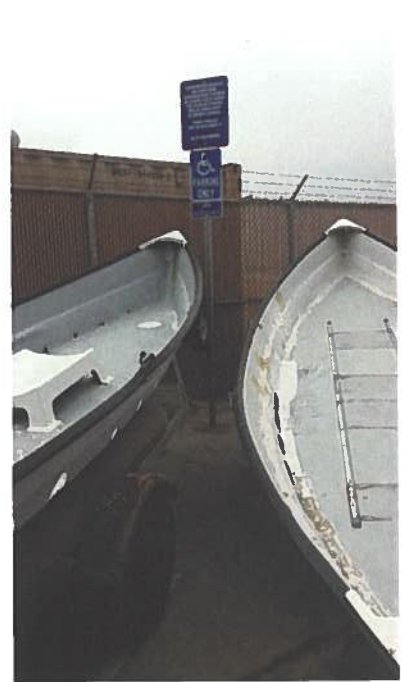
Toilet room facility-no accessible signage or accessible door hardware



Non-conforming threshold



non-conforming toilet room design



Existing Disabled Access parking

## **Section 1.D- Architectural Summary and Recommendations**

Based on site observations and follow up research there appears to be (2) major items that should be addressed as part of any future improvements to the building; the lack of a 2<sup>nd</sup> exit from top upper floors, and the structural damage created by dry rot damage to the exposed beams. Other areas requiring attention will be noted below.

### Improvements requiring immediate attention

The structural assessment report that follows will expand on recommendations for the structural repair of the exposed wood members.

Exterior 2<sup>nd</sup> exit stair should be provided as a 2<sup>nd</sup> means of egress from the 2<sup>nd</sup> and 3<sup>rd</sup> floors. The stair structure should be structurally independent of the existing structure connected at floor landings by seismic expansion joints. Concrete foundations and steel columns would support the metal stair and rail system. We recommend providing a zinc-rich primer coating similar to Carboline Carbozinc 12 VOC. This type of coating is designed to provide corrosion protection in weathering and marine environments.

Disabled Access upgrades at ground level. As part of the overall project, the disabled access unit at Building & Safety will require, at minimum, a completely accessible ground floor. We will argue that there's equivalent facilitation on the ground floor to that of the 3<sup>rd</sup> floor, and therefore expect no required upgrades on the 3<sup>d</sup> floor. The typical elements that need to be upgraded, or verified to be conforming, include:

- Accessible path of travel from public right of way
- Accessible path of travel from accessible parking stall to building entrance
- Accessible path of travel from building entrance to toilet/shower facilities
- Accessible toilet/shower facilities for men and women
- Signage and door hardware upgrades will be required

### Improvements requiring attention

As part of the project that would address the items above, we recommend the following:

- Repair/Replace damaged non-structural exposed wood to include fascia, trellis, wood siding, doors, trim, etc.
- Paint exterior throughout with corrosion protection paint
- Repair/Replace exposed metal fasteners and cable rails. Provide stainless steel, or equivalent corrosion protection coating.
- Provide bird control device(s)

### Other possible improvements

The following items for improvement could be considered:

- Provide insulation as required at office areas to be air conditioned, and replace all doors/windows with energy efficient type.
- Replace/Repair all interior finishes and paint.
- Slurry seal and restripe parking area.

## Section 2- Structural Assessment

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California  
91030-3035

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KANDA | TSO

June 19, 2014

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Subject: **LA COUNTY FIRE DEPARTMENT – LIFEGUARD HEADQUARTERS  
2300 Ocean Front Walk, Venice, CA 90290**

1. The As-Built for LA County Fire Department – Lifeguard Headquarters consists of (4) levels structural. Per site observation on May 20, 2014, there are suspended concrete slab/concrete beams and pile foundation, intermediated floor, low roof framing, observation floor and high roof framings which had been confirmed and match As-Built structural drawings.

This building was built with (E) 6x6 posts and (E) 3" diameter standard pipe columns for gravity supports at the 1<sup>st</sup> floor to support low roof framings. Also, all these posts and columns are supported by (E) concrete beams below 1<sup>st</sup> floor which are spanning between (E) pile caps. All (E) pile caps are composed with (4) (E) piles. There is (E) wood stairs from the (E) 1<sup>st</sup> floor passing through (E) intermediate floor up to (E) observation floor. I have performed structural observations with (4) different floor levels with findings and recommendations as followed:

2. **Observation at (E) foundation:**

With opening access from (E) 1<sup>st</sup> floor suspended 7" concrete slab, go into under (E) slab and investigate (E) piles and (E) pile cap, and concrete beams. **It is not required to proceed with structural restrengthening and no structural deficiency found from the observations.**

**Observations at (E) low roof framings:**

Standing on the 1<sup>st</sup> floor slab, visually observed the (E) low roof framings consisted of (E) 6x6 posts and (E) 3" ø std. pipe posts, and 5" x22 ¾" glb beams and (E) 6x / (E) 4x beams. **There is no structural deficiency found, and it is not required for restrengthening.**

**Observation at (E) stairs:**

There are (2) 2x wood stud on the (E) bearing wall with wood ledgers and 2x joists between (E) 2x wood stud walls. The stairs are connected from the 1<sup>st</sup> floor to the observation floor level. **Structural restrengthening is not required, and there is no structural deficiency from the observation.**

**Observation at (E) observation floor level:**

There are dry rot found at (18) 4x12 beams and rust on ¼” steel plates with (4) 1” diameter thru bolts.

See As-Built observation level floor framing plan with indication of the location that needs repair on page 4. Also, see attached photos #1, #2, #3, #4, #5, #6, #8, #11, #12 and #15.

**Observation at (E) high roof framings:**

Standing on the (E) observation floor level, observed (E) 4x8 roof joist, (E) 6x8 roof beams and (E) 4x6 posts. All (E) 6x roof beams and (E) 4x posts are not showing any structural deficiency. **There is no structural restrengthening required, but there are dry rot found for (18) (E) 4x6 beams.**

See As-Built high roof framing plan with indication of the location that needs repair on page 5. Also, see attached photos #7, #9, #10, #13 and #14.

3. **Suggestion to short term (5 to 10 years maximum) repair:**

At the observation for floor framings, propose to use ‘the total wood restoration system (see attached from pages 6 to 13), which are attached for reference to repair (E) 4x12 beams for the (E) ¼” steel side plates and (E) (4) 1” diameter thru bolt, propose to sand blast side plate and replace bolts which are rusted. Apply rust-proof coating into ¼” steel side plate after the connections have been cleaned. The estimated cost of proposed short term repair including floor framings with restoration and high roof framings with replace roof beams is \$150,000.00.

At high roof framings, propose to replace (E) 4x8 beams with (N) 4x8 D.F.L. No.1 and better, also install impel rod for each (N) 4x8 beam to prevent future dry rot.



**Suggestions to long term (20 to 30 years maximum) repair:**

At the observation for floor framings, **replace (E) 4x12 beams with (N) 4x12 D.F.L. No.1 and better, also install impel rod for each (N) 4x12 beam to prevent future dry rot. Replace ¼” side plates and (4) 1” diameter thru bolts at bracings connection with S.S. plates and S. S. bolts.**

The estimated cost of proposed long term repair including replacing partial floor framings and roof framings is **\$300,000.00.**

4. **Proposed new exit stair framings:**

Design structural steel stairs which are including **concrete caissons and tie beams foundation, plus structural steel tube columns and beams, metal deck landing with concrete topping with concentric bracing systems** for seismic and wind resistance. **The stair framings should be designed with gravity and laterally independent from As-Built building** and rust-resistant finish will be recommended per architect.

The proposed estimated cost of the new exit stair framings is **\$100,000.00.**

Please contact me if you should have any questions. Thank you.

Sincerely,  
Kanda and Tso Associates

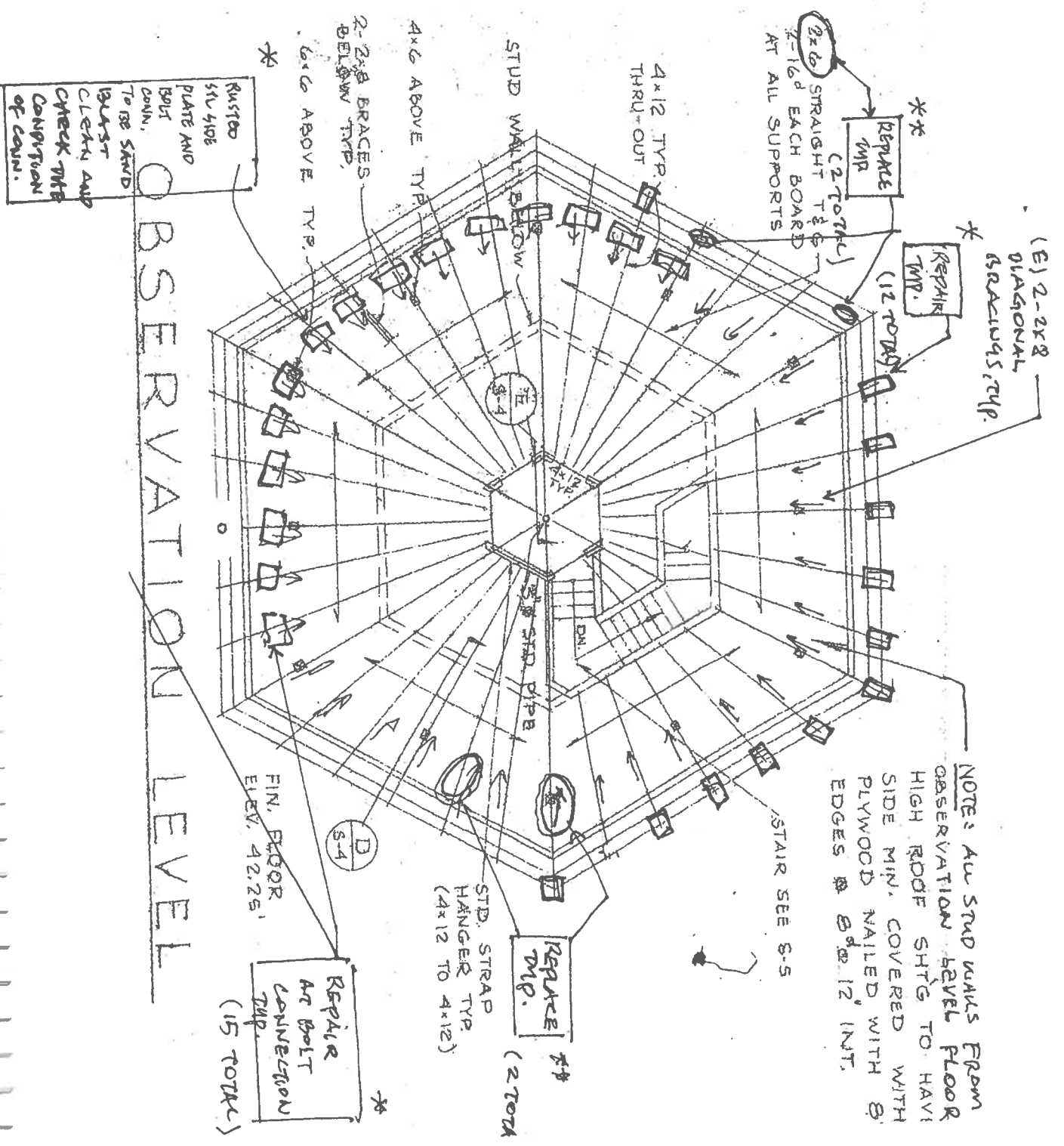


T.J. Wu, SE

TJW/ac

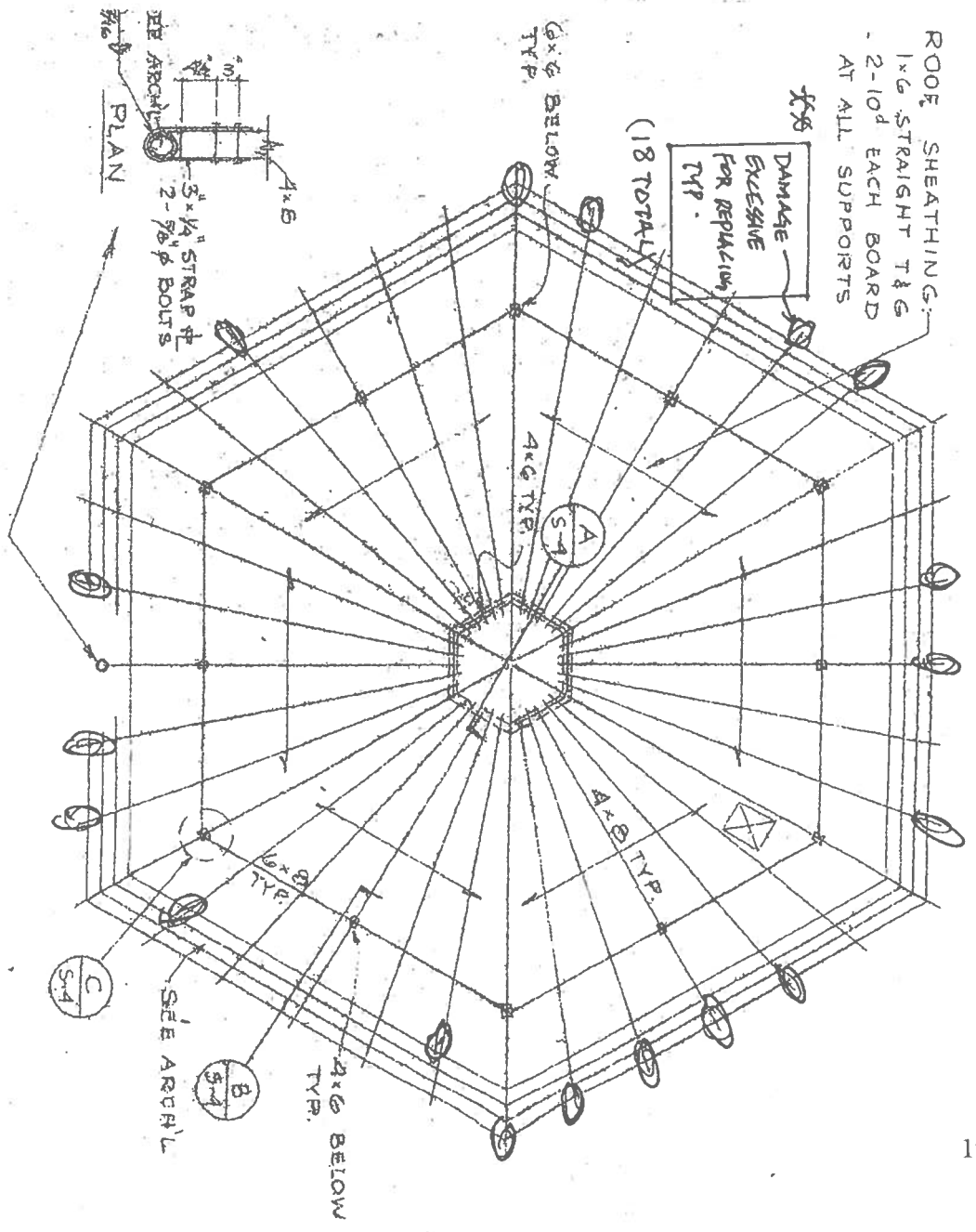
NOTES:

1.  INDICATES REPAIR AS REQD.
2.  INDICATES REPLACE STD., MEMBER AS REQD
3.  $\rightarrow$  INDICATES (E) 2-2X8 BRACES



NOTES:

○ INDICATES  
REPLACE STRUCTURAL  
MEMBER AS REPAIR.



HIGH ROOF FRAMING PLAN

# The Total Wood Restoration System

## INSTRUCTIONS

1. Look around for the source of moisture. If there is rot, there is excessive moisture. If you can determine the source, try to divert the water away from the wood. While it is not always possible to find the source, flashing, caulking, gutters or downspouts will often help.
2. Excavate the rotten wood. This can be done with a die grinder, chisel, wood carving tools, or drills. It is best to grind back until you see bright wood. However, you don't have to get every spec of rotten wood out, just the compost and crumbly wood. **Hint:** Have a shop vac handy to suck out the dust and crumbly wood so you can see what you are doing. Also, some people are sensitive to molds and fungi. Wear a dust mask and safety goggles.
3. Remove the paint in the areas that are affected. Often times a small crack in the paint has allowed water to come in contact with the wood and keep it wet. It is advisable to scrape or sand the sills to remove the paint. After the repairs are made, the area will need to be primed and painted anyway, so it's best to start over from bare wood.
4. Depending on the size of the wood, determine the size of **IMPEL® Rod** (from the chart at Wood Care Systems) and drill the appropriate holes beginning at 1/2" from the outside of the rotten area, and then another about 2" from that area. Do this on both sides of the repair, along the grain. **IMPEL® Rods** diffuse better along the grain than they do across it. Therefore, stagger the holes to take advantage of the natural pathways of water in wood. When the wood is greater than 2", you should plan on drilling a deeper hole and putting two or three rods in each hole. **IMPEL® Rods** will slowly dissolve and release borate wood preservative over a long period of time inside the wood. This is the long term insurance policy against re-occurring rot and is the key to the success of this repair.
5. Mix up a batch of **Borate Solution** and pour it into your trigger sprayer or squirt bottle. Spray the cavity you excavated and the holes you drilled. This will kill the decay fungi and poison the wood as a future food source. It will penetrate in about 1/4" to 1/2" or more from the surface. Allow at least one hour for it to soak into the wood. You can wait several days before the next step, but make sure the hole you excavated is protected against rain. If the void fills up with water, it will render the treatment ineffective and it will have to be re-applied.
6. Install the **IMPEL® Rods** into the holes you drilled.
7. If the cavity is still damp, use a hair dryer or heat gun to force dry it. Mix up a few ounces of **Liquid TIMBR™**. The amount you mix up must be used quickly. When the temperature is above 75 degrees, you only have about 10 minutes before it gets very hot and begins to harden. Using the mixing bottle and a small paintbrush, apply **Liquid TIMBR™** to the entire surface of the cavity. Apply it liberally. You cannot use too much. **DO NOT** apply **Liquid TIMBR™** to the holes you drilled for **IMPEL® Rods**.
8. Estimate the amount of **TIMBR Flex™** you will need to fill the void. Start with a relatively small amount, like a golf ball size of A and a golf ball size of B. Knead the two together thoroughly until there is one consistent color. If A and B are not mixed properly, the reaction will not take place and your repair will fail. Ball it up and flatten it out several times to mix. When it is warmer than 75 degrees, keep it as flattened out as possible to avoid heat buildup and hardening before you are ready for it. Start filling in the void in layers about 1/2" thick. Pack in the **TIMBR Flex™** so it comes in contact with all surfaces of the void. Build it up slightly higher than the finished surface and try to sculpt the final shape. It does not have to be perfect because you will sand it flush after it cures. Seal the holes that contain the **IMPEL® Rods** with the remaining **TIMBR Flex™**. If the void is large, you can coat treated wood chunks with **Liquid TIMBR™**, then fit them into the void. Make sure you leave no air pockets. Rebar or fiberglass rods can also be used when structural integrity needs to be restored.
9. Allow about 4 - 24 hours for the wood filler to cure hard enough that it can be sanded without crumbling. Use an orbital, belt or detail sander, to get the rough shape, but use a planer or block sander for the fine details. Be careful not to over sand or sand too deep.
10. Vacuum or wipe down the sanded repair, clean the window and surrounding area. Apply a coat of **TIMBR Prime™** by brush or spray to the area that will be repainted. Not all primers will stick to epoxies. This one will.
11. Caulk opened miter joints and all areas water may seep in with high quality sealant.
12. Repaint with two coats of 100% acrylic latex exterior paint.

This process revitalizes the usability of a window, door, column, beam or log that was once damaged to a point that replacement was the only option. Now, you can combine proven technologies to stop the rot, prevent its return and restore the integrity of the wood at a fraction of the cost of replacement.

PROCEDURE FOR RESTORATION OF WOOD MEMBERS WITH REDUCED CROSS-SECTION  
DUE TO DECAY AND/OR INSECT INFESTATION

1. Material Specifications: Unless noted otherwise, all materials listed in this Section are available from WOOD CARE SYSTEMS, 751 Kirkland Avenue, Kirkland, WA 98033, 1-425-827-6000, 1-800-827-3480, and FAX 1-425-822-5800.
1. IMPEL Rods: Solid borate rods molded from water-diffusible borates approved by EPA as a decay protection and prevention system for wood.
2. Boracare: A borate solution that acts as a wood preservative and pesticide.
3. Liquid TIMBR: To be applied to the pocket in the wood resulting from the removable of all unsound wood due to degradation from decay and/or insect infestation down to the sound wood. A two-part penetrating epoxy wood hardener. The Liquid TIMBR waterproofs and reinforces the surface of the wood in the pocket after it penetrates into the surface of the sound wood in the pocket. It has 100% active ingredients with no fillers or thinners.
4. TIMBR Flex: A two-part structural adhesive putty system. When Part "A" and Part "B" are combined, they harden and become a non-shrinking mass that is dimensionally stable and is a chemical, water, heat, and weather resistant wood replacement compound. TIMBR Flex will not crack, split or shrink. TIMBR Flex will rebuild and restore wood's integrity and form a permanent bond to most rigid surfaces.
5. TIMBR Prime: A primer for wood substrates ready for a latex top coat. Will bond to TIMBR Flex.

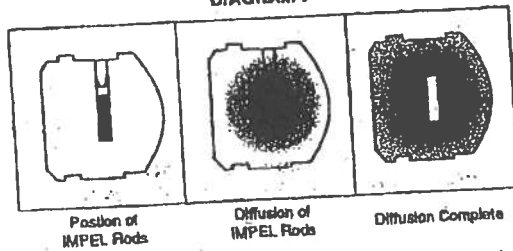
## GENERAL INFORMATION

IMPEL Rods are molded from water-diffusible borates and are highly concentrated for maximum efficiency. When inserted into decaying wood or wood in high risk areas, IMPEL Rods diffuse very slowly and provide a controlled and long lasting release of borate preservative.

### Preservative Diffusion

The diffusion process depends on moisture to work. When moisture contents reach levels suitable for decay attack (i.e., around 25%), IMPEL Rods begin to diffuse throughout both heartwood and sapwood for total protection. If moisture levels drop below 25%, the preservative becomes dormant and provides a reserve ready to reactivate when decay conducive conditions recur. See Diagram 1 below for an illustration of this diffusion process over time.

DIAGRAM 1



**Preservative Durability**  
The less consistently moist the environment, the longer IMPEL Rods will last. IMPEL Rods will provide decay protection for many years in window millwork, where lower moisture and protective coatings combine for very slow diffusion. However, in consistently moist to wet environments (i.e., fence posts, landscape timbers, etc.), IMPEL Rods may retain their effectiveness for 3 to 10 years. Their effectiveness can be enhanced if wood surfaces are sealed with a paint or water repellent sealer. In any case, the rods should be checked periodically and new rods inserted, if necessary.

### Application Sites

**Install IMPEL Rods** in areas where wood decay is present or where the potential for decay exists. Examples include:

**Flooring and Foundation Systems**—especially around kitchens and bathrooms where leaky plumbing, deteriorated caulking and inadequate moisture barriers may be common.

**Window and Door Framing**—where weathered paint provides inadequate protection against moisture. Garage doors and the base of their frames are particularly susceptible areas.

**Exterior Steps, Porches and Decks**—where damage may occur in columns, railings, floors and support members.

**Roof Trim and Facia**—especially facia boards supporting gutter systems and soffits; where trim is in contact with skylights, vents and chimneys and where excessive moisture is common.

**Attics and Roofing**—where leaks may cause decay damage to support members and rafters.

**Porches and Garages**—where concrete slabs abut walls and trim.

**Fence Posts**—where decay is common near the ground line.

**Log Construction**—in any decayed or susceptible areas where moisture is present; especially cracks and checks that allow water entry into corners, joints, ends and lower courses.

**Wood Utility Poles**—in both above ground and groundline applications. Above ground areas include: around decay pockets, above field-drilled bolt holes, pole tops, crossarms, etc.

**Note:** If any wood member's structural integrity has been reduced to the extent that repairs or replacement is necessary, repairs and/or replacement should be made and the source of moisture should be reduced or eliminated. IMPEL Rods will not add structural integrity to previously damaged wood.

A few examples of where to place IMPEL Rods and the sizes to use are found in Table 1.

TABLE 2  
DIMENSIONAL LUMBER AND TIMBERS

Nominal Size	Actual Size	Rod Size (dia. x length)	Hole Size (dia. x depth)	Linear Space Between Holes	No. of Rods Per Hole
1" x 1"	3/4" x 3/4"	1/4" x 1/2"	5/16" x 3/4"	12"	1
1" x 2"	3/4" x 1 1/2"	"	5/16" x 1"	8"	1
1" x 4"	3/4" x 3 1/2"	"	5/16" x 2 1/4"	6"	2
1" x 4"	3/4" x 3 1/2"	1/3" x 1/2"	3/8" x 2"	7"	1
1" x 6"	3/4" x 5 1/2"	"	3/8" x 3"	5"	1
2" x 2"	1 1/2" x 1 1/2"	"	3/8" x 1"	9"	1
2" x 4"	1 1/2" x 3 1/2"	"	3/8" x 2 1/4"	7"	2
1" x 8"	3/4" x 5 1/2"	1/3" x 1"	3/8" x 3"	5"	1
2" x 4"	1 1/2" x 3 1/2"	"	3/8" x 2 1/4"	7"	1
2" x 6"	1 1/2" x 5 1/2"	"	3/8" x 3 3/4"	10"	2
2" x 8"	1 1/2" x 7 1/4"	"	3/8" x 4 1/2"	7"	2
2" x 6"	1 1/2" x 5 1/2"	1/3" x 2 5/8"	3/8" x 4"	11"	1
2" x 8"	1 1/2" x 7 1/4"	"	3/8" x 5"	8"	1
2" x 10"	1 1/2" x 9 1/4"	"	3/8" x 6"	7"	1
2" x 12"	1 1/2" x 11 1/4"	"	3/8" x 8 1/4"	11"	2
4" x 4"	3 1/2" x 3 1/2"	"	3/8" x 3"	7"	1
2" x 10"	1 1/2" x 9 1/4"	1/2" x 2"	9/16" x 5 1/2"	12"	1
2" x 12"	1 1/2" x 11 1/4"	"	9/16" x 6 1/2"	10"	1
4" x 4"	3 1/2" x 3 1/2"	"	9/16" x 2 3/4"	14"	1
4" x 6"	3 1/2" x 5 1/2"	"	9/16" x 3 3/4"	8"	1
4" x 8"	3 1/2" x 7 1/2"	"	9/16" x 4 3/4"	6"	1
6" x 6"	5 1/2" x 5 1/2"	"	9/16" x 4 3/4"	11"	2
4" x 6"	3 1/2" x 5 1/2"	1/2" x 4"	9/16" x 4 3/4"	15"	1
4" x 8"	3 1/2" x 7 1/2"	"	9/16" x 5 3/4"	12"	1
6" x 6"	5 1/2" x 5 1/2"	"	9/16" x 4 3/4"	11"	1
6" x 8"	5 1/2" x 7 1/2"	"	9/16" x 5 3/4"	8"	1
6" x 8"	5 1/2" x 7 1/2"	3/4" x 3"	13/16" x 5 1/4"	14"	1
6" x 12"	5 1/2" x 11 1/2"	"	13/16" x 7 1/4"	9"	1
8" x 8"	7 1/2" x 7 1/2"	"	13/16" x 5 1/4"	10"	1
10" x 10"	9 1/2" x 9 1/2"	"	13/16" x 6 1/4"	13"	2
12" x 12"	11 1/2" x 11 1/2"	"	13/16" x 7 1/4"	8"	2

**Note:** Recommended application rates based upon rods installed in a linear pattern and preservative retention of 6 oz. BAE/cf for remedial treatments. If necessary, holes can be drilled on an angle to leave room for plug and expansion.

**Caution:** When drilling into structural support members, such as joists, consult your local building code authority for restrictions. Extensive drilling could result in structural weakening.

TABLE 3  
ROUND LOGS, POSTS AND POLES

Wood Diameter	Rod Size (dia. x length)	Hole Size (dia. x depth)	Linear Space Between Holes	No. Of Rods Per Hole
4"	1/3" x 2 5/8"	3/8" x 3"	7"	1
4"	1/2" x 2"	9/16" x 2 3/4"	14"	1
6"	"	9/16" x 4 3/4"	12"	2
8"	"	9/16" x 5 3/4"	7"	2
6"	3/4" x 3"	13/16" x 4 1/2"	15"	1
8"	"	13/16" x 5"	12"	1
10"	"	13/16" x 6"	7"	1
12"	"	13/16" x 8"	10"	2
14"	"	13/16" x 10"	7"	2
16"	"	13/16" x 12"	5"	3

**Note:** Recommended application rates based upon rods installed in a linear pattern and preservative retention of 6 oz. BAE/cf for remedial treatments. In fence posts and vertical building poles, insert the recommended number of rods into holes drilled at a downward angle and within 6 inches of vulnerable groundline area.

TABLE 4  
HOW TO CALCULATE CUBIC FEET

Sawn Materials	Round Materials
$V = T \times W \times L$	$V = \frac{\pi \times R^2 \times L}{1728}$
$V =$ Volume (i.e., cubic feet)	$\pi = 3.14$
$T =$ Actual Thickness in inches	$R =$ Radius in inches
$W =$ Actual Width in inches	$L =$ Length in inches

**Important:** Always use actual measurements instead of nominal sizes for sawn wood since actual sizes are smaller.

**RECOMMENDED IMPEL ROD SIZES FOR VARIOUS APPLICATIONS**

App.	Impel Rod Size	BAE*	Stock Number
Smaller Windows, Door Frames And Smaller Millwork	1/4" x 1/2"	0.03	14012
Larger Windows, Door Frames And Facial Applications In Dimensional Lumber	1/3" x 1/2"	0.07	13012
Facia Boards, Eaves And Small Dimensional Lumber	1/3" x 1"	0.14	13100
Joints, Rafters, Girders, Headers And Sleepers	1/3" x 2 5/8"	0.33	13258
Fence Posts And Timbers	1/2" x 2"	0.62	12200
Foundation Posts, Large Beams, And Large Timber Applications	1/2" x 4"	1.23	12400
Logs And Wood Poles	3/4" x 3"	2.03	34300

\*BAE - Boric Acid Equivalent In ounces/Impel Rod.

**Method of Application**

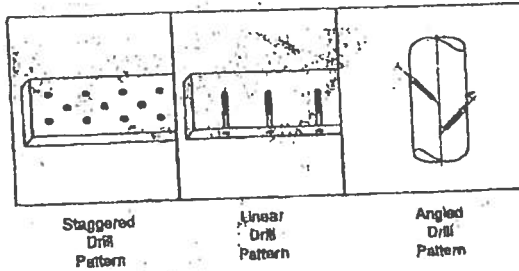
IMPEL Rods can be inserted through any wood surface, depending on access, in either a staggered, linear or angled pattern, as indicated in Diagrams 2-4. It is important to understand that spacing depends upon the size of the IMPEL Rod, the dimensions of wood, and the volume of wood to be treated. For best results, linear spacings should not exceed 15 inches on center. And since diffusion across the grain is limited, these spacings should not exceed 6 inches on center.

Whenever possible, start holes approximately 6 inches or more on either side of any area showing signs of decay. Continue placing holes throughout the decayed area and for at least 6 inches past the end of the decayed section.

The recommended size of IMPEL Rods and their linear spacings for various sawn and round wood dimensions are provided in Tables 2 and 3.

If the recommended rod size and spacing for your job cannot be found in Tables 2 and 3, the information can be determined in the following manner:

- 1) First, calculate the total cubic feet of wood to be treated with IMPEL Rods. A convenient way to calculate cubic feet in sawn and round materials is found in Table 4.
- 2) Next, multiply the cubic footage by 6 oz. BAE/cf, the recommended loading. This calculation gives the total BAE required to treat this volume of wood.
- 3) Determine the number of IMPEL Rods required by dividing the total BAE content needed to treat the wood by the BAE content of the rod selected for the job.
- 4) Finally, select the size of IMPEL Rod that will provide effective treatment of the target area with the fewest number of drill holes possible. Recall that linear spacing should not exceed 15 inches on center. Refer to Table 2 and 3 for assistance in selecting the rod size and refer to Diagram 2-4 for examples of rod positioning.



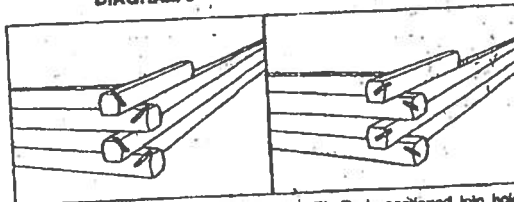
**LOG AND TIMBER STRUCTURES**

IMPEL Rods may be positioned in a variety of ways depending on access and owner preference. A drilling pattern that is least conspicuous may be selected for aesthetics. Diagrams 5 and 6 below illustrate how IMPEL Rods may be positioned in a typical "butt and pass" corner section. Although corner construction varies widely, IMPEL Rods should generally be placed about 6 inches from the end of each log and in holes drilled across the wood grain, as shown.

**Butt And Pass Corner Construction**

DIAGRAM 5

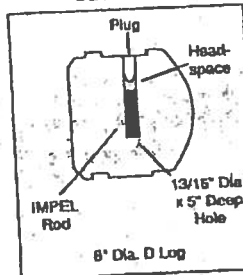
DIAGRAM 6



IMPEL Rods positioned into holes drilled 6" from log end, 45° angle to side of log.

IMPEL Rods positioned into holes drilled 6" from log end, 45° angle to top of log.

DIAGRAM 7



**TYPICAL INSTALLATION**

Insert 3/4" x 3" IMPEL Rod into 13/16" Dia. x 5" deep hole; as determined by log size in Table 3. Plug hole to leave a minimum 1/8" space between plug and rod.

Note: Installation at time of construction will allow for the vertical positioning in top face of logs as shown in diagram so that drilled holes can be hidden between logs.

In base logs, install IMPEL Rods 6 inches from back end and at the recommended spacings along the log (see Table 3). In rafters and overhangs, install IMPEL Rods 6 inches from each exposed end and at recommended spacings, as needed. For additional information see the IMPEL Rods "Log and Timber Structures Use And Applications Guide".

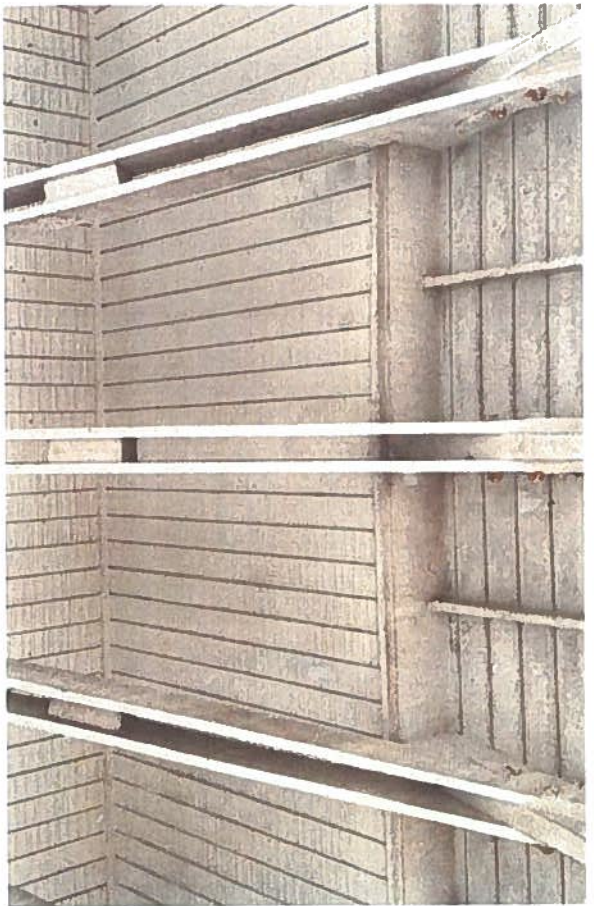


PHOTO #1

(E) 2-2X BRACING AT OBSERVATION LEVEL)



PHOTO #2

(E) 2-2X BRACING / (E) 4X BEAM)



PHOTO #3

(E) 2-2X BRACING / (E) 4X BEAM)



PHOTO #4

(E) 2-2X BRACING / (E) 4X BEAM)





PHOTO #5

(E) OBSERVATION LEVEL AND  
(E) HIGH ROOF LEVEL



PHOTO #6

(E) OBSERVATION LEVEL AND  
(E) HIGH ROOF LEVEL



PHOTO #7

(E) 2x TRELLIS AT (E) HIGH ROOF

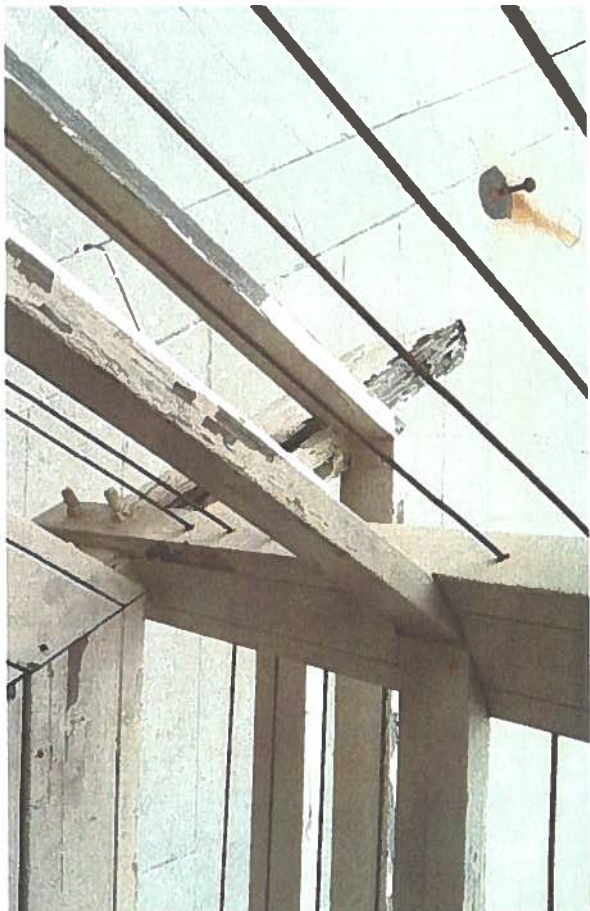


PHOTO #8

(E) 4X BEAM AT CORNER OF OBSERVATION LEVEL

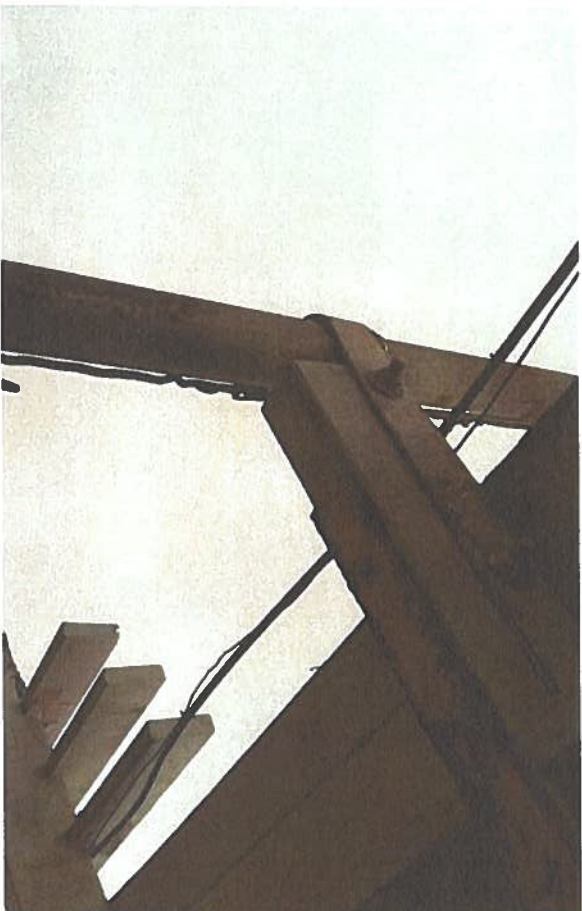


PHOTO #10

(E) STEEL POLE CONNECTION



PHOTO #9

(E) STEEL POLE CONNECTION TO HIGH ROOF JOIST IN THE BACK



PHOTO #11

(E) 2X6 STRAIGHT T&G AT STEEL POLE

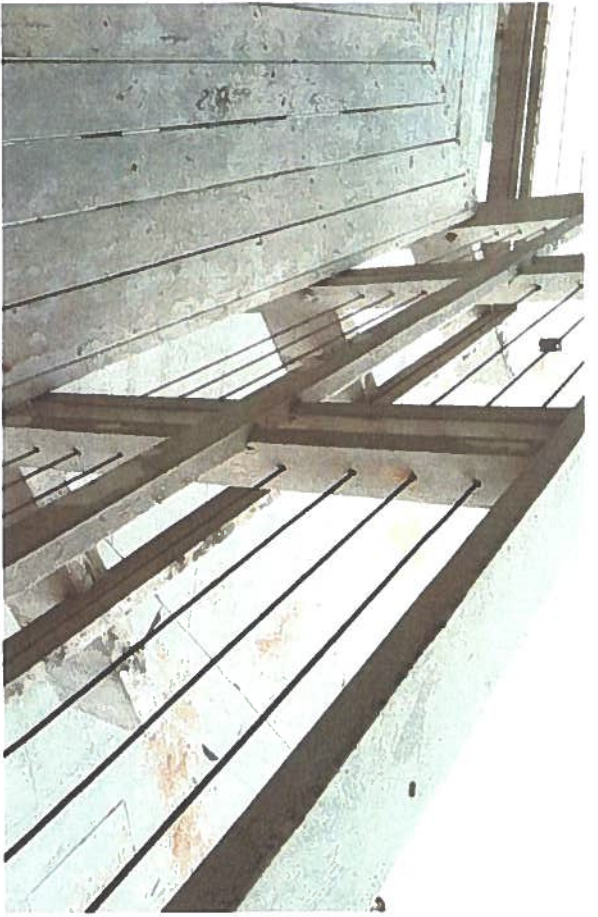


PHOTO #12

(E) 2X6 TRUSS AND (E) 2-2X BRACING AT OBSERVATION LEVEL )

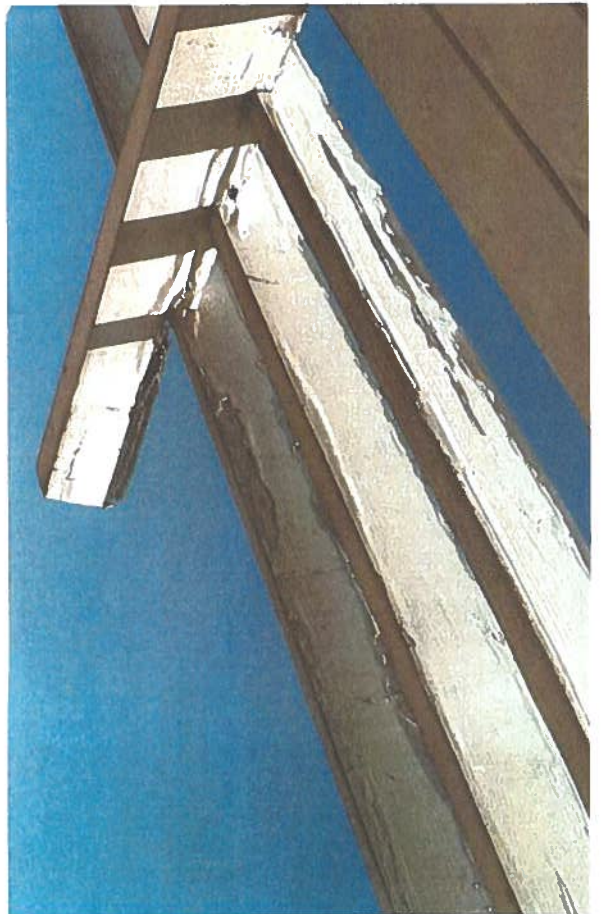


PHOTO #13

(E) 2X TRUSS AT HIGH ROOF, AND (E) 4X BEAM)

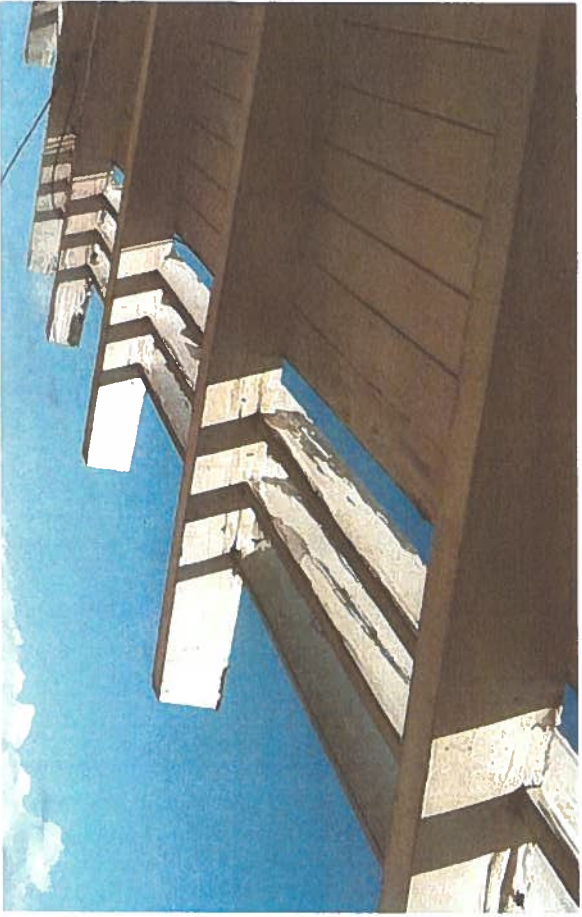


PHOTO #14

(E) 4X BEAMS AND (E) 1X6 TRUSS



PHOTO #15

(E) 4X BEAMS, 2-2X BRACINGS, 2X6 TRUSS AND (E) 1X6 TRUSS

## Section 3- Mechanical & Plumbing Assessment

**KEVIN A. SMOLA AND ASSOC., INC.**

CONSULTING MECHANICAL ENGINEERS  
235 WEST CHESTNUT AVENUE  
MONROVIA, CA 91016

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**Life Guard Headquarters Evaluation  
Los Angeles County  
Venice Beach, CA  
June 25, 2014**

### **A. Mechanical Systems – Existing Conditions:**

The existing ground floor mechanical HVAC systems consists of two heating only air handlers, a central exhaust fan, and unit ventilators. Heating hot water is provided by the domestic hot water boilers. The air handlers provide heating and ventilation for the office areas. Heating in the perimeter garage, storage and support areas is provided by the unit ventilators. The central exhaust fan provides restroom exhaust and ventilation for storage areas. Garage and storage areas are equipped with passive penthouse vents in the roof. All original equipment is more than 40 years old.

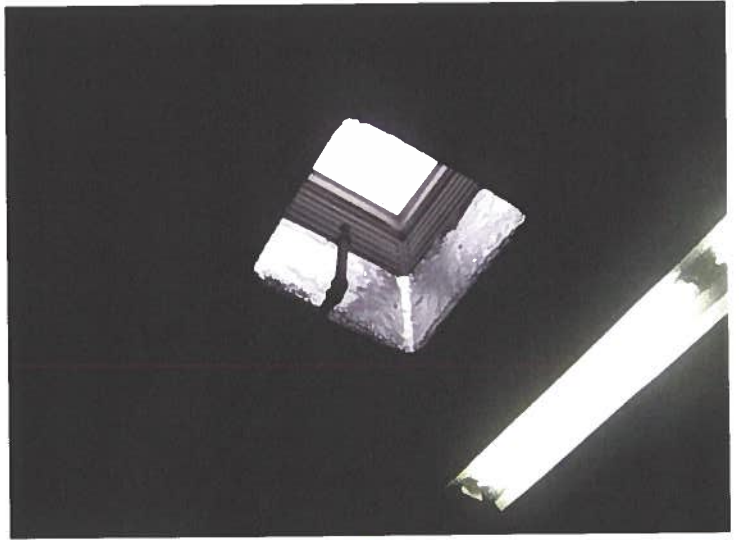
A small generator is located near the existing mechanical room with an exhaust vent to the roof.

Hot water fan coils originally provided heating to the intermediate and observation levels. Exhaust fans provide ventilation on these floors by means of transfer air. Air is exhausted and transfer air provided through door louvers and undercuts, creating a negative pressure in the staircase. This is of great concern since air in the garages may be transferred through these spaces.

Four heat pump split systems were installed for the observation level approximately 10 - 15 years ago. These systems are currently not fully functional. All of the outdoor equipment and piping has corroded due to the harsh climate conditions. Indoor units are wall mounted type with exposed piping.

All existing controls are electromechanical.

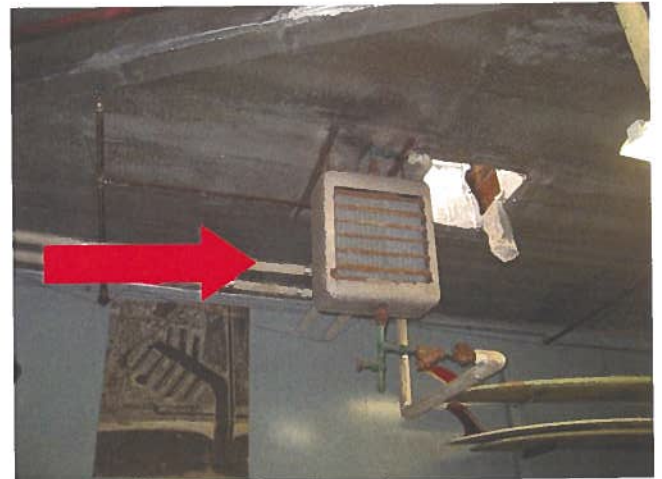
Existing passive vent in garage.



Existing generator on the ground level outside of the mechanical room



Existing unit ventilator on the ground floor.



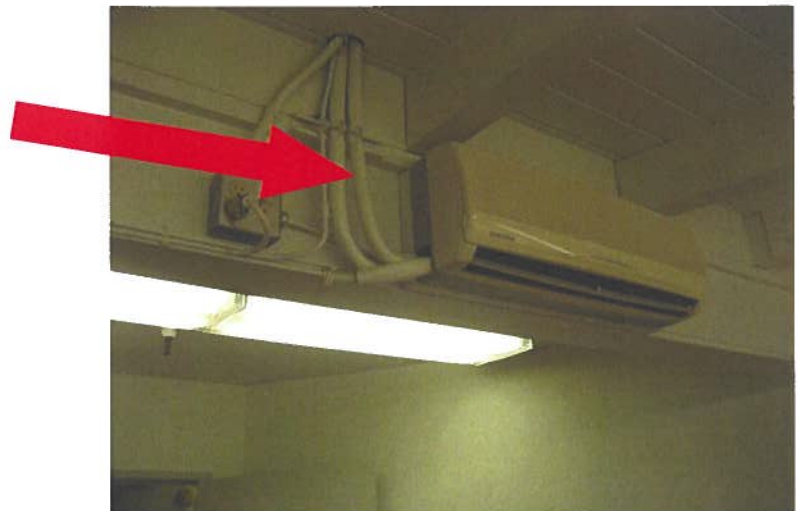
Existing outdoor heat pump



Existing outdoor heat pump



Existing indoor fan coil



**1. Short Term Code Related Recommendations:**

- a. Install a garage exhaust system to meet current code requirements. This also requires a definite architectural separation between the staircase and garage areas. Staff protocol must be evaluated to ensure air from the garage is not transferred to the staircase. This will eliminate stack effect also known as chimney effect.
- b. Install a dedicated outside air system for the intermediate and observation levels. Wall mounted fan coils are not capable of providing ventilation. Creating a negative pressure in the staircase as was originally designed can create life-safety issues. System to include heating for the spaces served.

**2. Long Term Recommendations:**

- a. Replace all existing HVAC equipment. Ground floor air handlers, heating hot water piping, and exhaust fan, to be replaced in kind.
- b. Replace all packaged split heat pump systems and piping. Careful consideration must be taken when selecting the type of equipment and coatings required due to the extreme climate. Piping will need to be insulated, wrapped and jacketed.
- c. Installation of an EMS system is optional.

**B. Plumbing Systems – Existing Conditions:**

The building is served by an existing 6" sewer main, 6" fire line with a fire department connection with check valve, and 3" natural gas service. The building is fully sprinkled. We did not observe the installation of a backflow preventer on the domestic water system. The gas meter is missing a seismic shut off valve. The original tank water heater has been replaced with three tank-less water heaters with a circulating pump. These heaters appear to be approximately 1-2 years old and in good condition. The old heating hot water boiler system was removed, it appears that these hot water heaters may also be providing heating hot water. Verification is required. All of the plumbing fixtures appear to be 10 years old and in fair condition. An existing clarifier is located in the garage for washing vehicles.

In the parking lot are two fuel systems, one for gasoline, and the other for diesel. These consist of an underground fuel tank, overfill alarms, emergency shut off valves, and fueling stations. These systems appear to be more than 20 years old in poor condition. One Veeder Root control panel was observed inside the garage area. Two grease interceptors are located in the parking lot as well for vehicle washes. An above ground vertical storage/pressurization tank is appears to be part of the gasoline fuel system.

Part of the storage area is houses oxygen bottles for refilling the smaller portable oxygen bottles used by the staff. These bottles are only anchored at the upper third of the tank, and are missing the appropriate header, valves, and alarms required by NFPA.

The fire sprinkler piping inside the garage is severely corroded in some areas and missing seismic bracing.

Existing FDC and PIV



Existing gas meter missing seismic shut off valve





Existing diesel fueling station



Existing fuel filling alarms and control panels



Existing oxygen bottle storage area



Existing hose bibb



Existing fire sprinkler piping inside garage area



**1. Short Term Code Related Recommendations:**

- a. Install backflow preventer on the domestic water system.
- b. Install natural gas seismic shut off valve at gas meter.
- c. Replace existing fuel alarms and controls.
- d. Replace all corroded fire sprinkler piping inside the building.
- e. Domestic hot water system should be analyzed further to confirm if the system provides heating hot water as well. Install the appropriate mixing valves as required by the CPC.
- f. Anchor oxygen bottles per NFPA requirements.
- g. Provide oxygen manifold, valves and alarms per NFPA requirements.

**2. Long Term Recommendations:**

- a. Replace all plumbing fixtures with new low flow and low lead fixtures.
- b. Replace existing galvanized steel domestic water piping with new copper piping.

**End of Memorandum:**

Submitted by: **Richard Amado, Kevin A. Smola and Associates, Inc.**

## Life Guard Headquarters, Venice Beach

### Short Term Code Related Reccomendations

17-Jun-14

Item	Quantity	Units	Cost	Total Cost
<b>HVAC</b>				
Exhaust controls and thermostats	7		\$500.00	\$3,500
Replace and add fans	6		\$2,500.00	\$15,000
Outside air unit with heating	1		\$20,000.00	\$20,000
<b>Plumbing</b>				
Condensate piping (piping + labor)	100	Feet	\$100.00	\$10,000
Gas seismic shut off	1		\$1,000.00	\$1,000
Oxygen piping, manifold, alarms, etc.	1		\$5,000.00	\$5,000
Backflow preventer	1		\$3,000.00	\$3,000
Fuel oil controls	2		\$10,000.00	\$20,000
<b>Fire Sprinkler</b>				
Replace old piping and heads	13,500	Sq. Ft.		\$108,000
Subtotal				\$185,500
Contractor's Markup	20%			\$37,100
Subtotal				\$222,600
Contingency	10%			\$22,260
<b>Grand Total</b>				<b>\$244,860</b>

## Life Guard Headquarters, Venice Beach

### Long Term Recommendations

17-Jun-14

Item	Quantity	Units	Cost	Total Cost
<b>HVAC</b>				
New split heat pumps (upper floors)	6		\$10,000.00	\$60,000
Thermostats	13		\$500.00	\$6,500
Ground floor air handlers	2		\$8,000.00	\$16,000
Ductwork, insulation, diffusers, etc. (optional)				\$5,000
Unit heaters	5		\$3,000.00	\$15,000
<b>Plumbing</b>				
New plumbing fixtures (incl. labor, pipe, etc.)	20		\$2,500.00	\$50,000
Condensate piping (piping + labor)	300	Feet	\$100.00	\$30,000
Gas Pipe (Unit heaters)	500	Feet	\$100.00	\$50,000
<b>Fire Sprinkler</b>				
None				\$0
Subtotal				\$232,500
Contractor's Markup	20%			\$46,500
Subtotal				\$279,000
Contingency	10%			\$27,900
<b>Grand Total</b>				<b>\$306,900</b>

## Section 4- Electrical Assessment



**ENGINEERING, INC.**  
*Electrical Engineering*

Building description and data

### **Electrical Systems:**

Our assessment of the electrical systems are based on field observations made by our office and review of record drawings provided by the City. No maintenance or service records were available for our review and use. Based on our observations and our understanding of the future program for the Lifeguard Headquarters Building, the following electrical system upgrades or equipment replacements are recommended. These recommendations are listed in order of importance to the facility are as follows:

#### 1. Main Service Switchboard:

The building is served underground from a DWP service pole on Speedway to a 600 amp, 120/240V, single phase, 3-wire main switchboard in the Mechanical/Electrical Room. The existing main switchboard rated at 600 amps has the capacity to serve its maximum recorded demand load of 20.0kW or 104.2 amps. The electrical room is enclosed with walls and the lock door. The upper portion of the walls facing the Storage Room are open allowing birds to enter, roost and nest. All equipment within the room is covered with bird feces. The feces is considered hazardous and must be removed by a Hazardous Material Contractor before being repaired or removed.

The main switchboard is in **extremely** poor condition showing signs of rust and contamination from nesting birds. The switchboard is obsolete and replacement parts are only available as remanufactured components. The main switchboard should be replaced.

- The estimated cost of removal and replacement of the main switchboard in kind is approximately \$16,000.00. This estimate does not include the cost of hazardous material removal.

The motor control center which is located adjacent to the main switchgear is in the same condition as the main switchboard and should be replaced.

- The estimated cost of removal and replacement of the motor control center in kind is approximately \$12,000.00. This estimate does not include the cost of hazardous material removal.

The lighting and power panels which serves all the lighting and power systems in the lifeguard building are located in the electrical room and outside the electrical room. The panels are obsolete and are in a state of disrepair due to the many modifications over the years. These panels should be replace with a larger panel that has spares/spaces for future loads.

- The estimated cost of removal and replacement panels, total of four is approximately \$14,000.00.



2. Emergency Generator System:

The emergency generator which is located in the storage room that faces the beach is inoperable. The generator and related equipment was added to the distribution system after the building was constructed. The emergency generator is in **extremely** poor condition and has contamination from nesting birds. The generator should be replaced with a new generator in a protective housing that complies with the South Coast Air Quality Management District (SCAQMD).

- The estimated cost of removal and replacement of the generator and its related equipment is approximately \$25,600.00. This estimate does not include the cost of hazardous material removal.

3. Power System:

The existing power system consists of an interior and exterior distribution system that serves lighting, receptacles and power equipment. The system is in fair condition. Improvements to this system will consist of raising the height of receptacles in the vehicle storage to comply with the code for a garage environment and raising the height of devices to comply with ADA requirements. Other observations include replacing exterior EMT conduits which have been corroded from exposure to the salt air.

- The estimated cost for the power system upgrades and replacement of corroded conduits is \$12,000.00.

4. Lighting System:

The existing lighting system consists of interior and exterior fluorescent and incandescent light fixtures. The lighting system is in fair condition given its age. The lighting system has a high maintenance and energy cost and should be replaced with energy efficient LED light fixtures to lower the energy and maintenance cost.

- The estimated cost of removal and replacement of the existing light fixtures and installing Title 24 related automatic and energy saving control devices is \$38,500.00.

5. Telecommunication Systems:

The existing Telecommunication Systems in the building were not observed and will not be included in the final report.

- While the telecommunication Systems were not part of this assessment, there may be needed repairs or replacement of components as a result of any electrical upgrades. We recommend that a \$6,000.00 allowance be set aside for the Telecommunication Systems.

## Section 5- Summary of Probable Costs

### Item A Estimated Construction Costs for short-term/priority Improvements

• Division 1-General Requirements.....	\$ 75,000
• Division 2- Site & Demolition.....	\$ 35,000
• Division 3-Concrete.....	\$ 25,000
• Division 5-Metals.....	\$ 50,000
• Division 6-Woods, Plastics, Composites.....	\$ 150,000
• Division 7-Thermal & Moisture Protection.....	\$ 25,000
• Division 8-Windows, Doors, and Openings.....	\$ 35,000
• Division 9-Finishes.....	\$ 75,000
• Division 10-Specialties.....	\$ 80,000
• Division 15-Mechanical & Plumbing.....	\$ 185,000
• Division 16-Electrical	\$ 90,000
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Estimated Direct Cost	\$ 825,000
Contractor's Profit/OH & Contingency (30% of Direct Cost)	\$ 247,500
<hr/>	
Estimated Total Cost	<b>\$1,072,500</b>

#### Items Included in this estimate:

- Steel Stairs for 2<sup>nd</sup> exit
- Repair existing exposed wood beams & repaint
- Disabled Access upgrades
- Replace existing Fire Sprinklers throughout
- HVAC (**heating & ventilation only**)
- Plumbing items listed on page 38
- Electrical switchboard system
- Electrical generator

#### Items of note that are not included:

- Replacing exposed structural wood beams with new
- Building insulation & Energy efficient windows/doors
- New interior finishes & paint
- HVAC-cooling component
- New plumbing fixtures
- New lighting system
- New telecomm system
- Site Work

**Item B Estimated Construction Costs for long-term Improvements**

• Division 1-General Requirements.....	\$ 136,000
• Division 2- Site & Demolition.....	\$ 50,000
• Division 3-Concrete.....	\$ 25,000
• Division 5-Metals.....	\$ 50,000
• Division 6-Woods, Plastics, Composites.....	\$ 250,000
• Division 7-Thermal & Moisture Protection.....	\$ 75,000
• Division 8-Windows, Doors, and Openings.....	\$ 120,000
• Division 9-Finishes.....	\$ 125,000
• Division 10-Specialties.....	\$ 100,000
• Division 15-Mechanical & Plumbing.....	\$ 400,000
• Division 16-Electrical	\$ 140,000
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Estimated Direct Cost	\$1,496,000
Contractor's Profit/OH & Contingency (30% of Direct Cost)	\$ 448,800
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Estimated Total Cost	<b>\$1,944,800</b>

Items Included in this estimate:

- Steel Stairs for 2<sup>nd</sup> exit
- Replacing exposed structural wood beams with new
- Disabled Access upgrades
- Building insulation & Energy efficient windows/doors
- New interior finishes & paint
- Replace existing Fire Sprinklers throughout
- HVAC (**optimal operation heating, cooling & ventilation**)
- Plumbing items listed on page 38
- New plumbing fixtures
- Electrical switchboard system
- Electrical generator
- New lighting system
- New telecomm system
- Site Work (Slurry seal and re-stripe parking area)