Mech/Elec/Plumb:
Overview of
Existing
Building Conditions Report

Mechanical, Electrical, Plumbing, & Fire Protection

LAKEWOOD COLONIAL THEATER & TERRACE RESTAURANT

Prepared for

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September 2010

Job No. 02.10.00385
1.0 INTRODUCTION

Glumac Engineering was engaged to provide a review of existing conditions, potential uses, and likely revisions for existing mechanical, electrical and plumbing systems at the subject facility. Glumac’s observations are limited to observed conditions. No existing mechanical, plumbing, electrical, or fire protection drawings are available. Glumac visited the project study site on Friday, May 28, 2010. The following summary and photographs summarize observations concerning the mechanical, plumbing, electrical, and fire protection systems in the facility.

2.0 EXECUTIVE SUMMARY

A. Existing mechanical, electrical and plumbing systems are minimally adequate for service.

B. HVAC:
   1. Service Life: There may be remaining operating life in existing HVAC equipment but with few exceptions (kitchen exhaust, theater furnaces) HVAC equipment is at the end of normal service life.
   2. Code Issues: Existing ventilation provisions are marginally adequate for the restaurant spaces and inadequate for theater/assembly spaces. Renovation of the existing theater and associated basement ballroom would require ventilation air. The theater is only heated and the existing furnaces are adequate only for winter temperature maintenance. Renovation of the space would require replacement of these units.

C. PLUMBING:
   1. Existing piping systems appear serviceable. New restaurant development would require addition of a grease trap. Restroom fixture counts appear minimal for the occupancy. Location of a facility grease interceptor was not noted.

D. FIRE PROTECTION:
   1. The existing system appears to have had the most recent attention and has full coverage of the above grade areas. The lack of sprinkler coverage in the basement with numerous storage areas may be a concern in the future.

E. ELECTRICAL:
   1. The existing original main service switchgear is unrated. Any major remodel should include replacement of this gear or at a minimum detailed testing assessment of the equipment.

F. CORRECTIVE WORK:
   1. Where information is available we have provided a description and cost opinion for corrective work.
3.0 MECHANICAL

A. HVAC SURVEY OBSERVATIONS:

1. LAKEWOOD COLONIAL THEATER:
   a) The Lakewood Theater was originally served by a hot water heating system using cast iron radiators for distribution. A firetube boiler and associated zone pumps are located in a boiler room at the basement level. The boiler inspection/service door is open and the system appears to have been abandoned. Replacing this system are a number of local split systems and furnaces. However, not all spaces appear to have been equipped with replacement systems. The theater itself is now served with two suspended gas furnaces immediately on either side of the stage. This equipment appears to be of recent vintage and was likely installed primarily to provide minimal temperature maintenance for protection of the sprinkler and other piping. No outside ventilation air is provided to the furnaces or to the theater.
   b) A ballroom with low stage is located beneath the main theater and this space appears to be served with one or two fan coil split systems. While ductwork was visible to the point of sidewall diffuser discharge, we could not locate the fan coil(s).
   c) Overall condition of the facility is poor with extensive roof leaks beneath the entry cupula/clock tower. Ventilation is inadequate and does not meet Washington State ventilation codes.

2. RESIDENCE:
   a) Originally served by a radiator the space is currently without permanent HVAC.

3. RESTAURANT:
   a) HVAC service is provided by a combination of split system fan coils with DX condensers mounted on the roof and at the rear of the facility and packaged HVAC units on the roof. Ventilation is provided by roof intakes and ventilation supply appears minimal. The 2nd level banquet room is served by a package gas/electric AC unit. Kitchen exhaust is provided by two large spun aluminum exhaust fans located on the south side of the main restaurant roof. These fans appear to be of fairly recent vintage. Other equipment appears to be in excess of 10 years old. We saw no evidence of a makeup air handler to serve the kitchen, but this may be provided by a fan coil with roof intake that is adjacent to the exhaust fans.

B. HVAC - RECOMMENDED CORRECTIVE WORK:

1. INSULATION: Initial site observation indicate minimum existing insulation. Where accessible attics and ceilings exist we recommend increasing insulation
levels to a minimum code level or at least R-19 insulation.

2. **LAKEWOOD COLONIAL THEATER:** In order to provide the theater and the basement event spaces full heating, cooling, and code required ventilation we recommend considering two alternative options having different potential costs. For sizing, both options are based on a rough order magnitude cooling load of 50 refrigeration tons.
   a) **Roof Mounted Packaged HVAC:** Install two (2) 20 ton packaged gas/electric rooftop units on the roof of the theater. Provide ductwork through the attic space of the theater with ceiling mounted diffusers. Provide one (1) 10 ton packaged gas/electric single zone rooftop unit with supply and return riser and sidewall distribution ductwork for the basement event space beneath the theater.
      1) **Rough Order Magnitude Cost:** $280,000 excluding structural support. (Basis: $28/sq.ft. including electrical)
   b) **Interior Housed HVAC:**
      1) Install a sectional air handler in a mechanical room created in the basement of the theater.
      2) Install a gas fired condensing boiler to serve the air handler and support space with heating hot water.
      3) Install a grade mounted air cooled chiller serving the new air handling system.
      4) Install new ductwork risers to attic of theater for theater air distribution and new ductwork for service to basement event spaces.
      5) **Rough Order Magnitude Cost:** $400,000 excluding structural support. (Basis: $40/sq.ft. including electrical)

3. **RESTAURANT:** No HVAC recommendations for the restaurant if the existing space planning is unchanged. If existing zoning and space use is revised, we recommend replacing existing equipment with new equipment sized for the new space uses.

4. **APARTMENT HVAC:** The simplest approach to providing HVAC to the apartment would be to provide a split system heat pump or furnace/condenser unit combination. The furnace or heat pump fan coil would be housed in a interior closet with ductwork as needed to provide conditioning air to each space.
   a) **Rough Magnitude Cost:** $6,000.

4.0 **PLUMBING**

A. **PLUMBING OBSERVATIONS:**
   1. **Potable Water Supply:** A water manifold with multiple water meters is located in the basement main electric service room. Service appears to be
approximately 2 ½” diameter transitioning to 3”. Individual services are smaller. The main backflow assembly is not located near the manifold and was not observed elsewhere.

2. Domestic hot water is provided to the restaurant from a Mueller electric water heat located in the basement beneath the kitchen.

3. Roof drainage is via gutters and downspouts. It appears that the system may not be adequate for the expected rain fall rate. Significant spill from downspouts was observed during rainfall occurring during the site visit.

4. Sanitary waste size and service location is unknown. A sewer manhole is located at the rear entry to the restaurant. No grease interceptor for restaurant service was observed.

5. There are 4 existing gas meters serving the occupancies. Two of the meters are small residential type with limited capacities.

6. With the exception of a Hobart dishwasher, kitchen appliances have been removed. A double and triple sink remain in the kitchen.

7. Piping materials vary but are predominantly metallic systems, including copper water piping and cast iron sewer.

8. Fixtures: Existing fixtures appear serviceable but some are stained. Toilets are floor mounted porcelain with flush valves. Fixtures and flush valves do not appear to meet current low flow requirements. Lavatory sinks are counter mounted or pedestal type. Faucets do not appear to meet ADA requirements. Restaurant kitchen and the upstairs banquet room are equipped with stainless prep sinks and a basement food prep area is also equipped with stainless steel sinks.

B. PLUMBING RECOMMENDATIONS: Provide new fixtures and revisions to restroom designs as required for occupant counts. No estimate of costs at this time.

5.0 FIRE PROTECTION

A. SITE OBSERVATIONS:
   1. A 6” main fire sprinkler service is located in a basement mechanical room adjacent to the main electrical distribution room. Two large storage tanks appear to have been used for sprinkler water storage although no fire pumps are present.
   2. A new flow detector valve was installed in 2010 along with a 6 zone fire manifold with control valves and alarm panel.
   3. Sprinkler coverage is throughout the facility with some coverage missing in selected areas.

B. RECOMMENDATIONS: None at this time.

6.0 ELECTRICAL

A. SITE ELECTRICAL OBSERVATIONS:
   1. Utility power is distributed at the site as a 120/208 volt, 3 phase system. A
locked utility entry room is located at the rear of the theater with a utility meter adjacent on the exterior of the building.

2. A main electrical service room is located in the basement of the theater. The main switchgear and submeters for the shopping center are installed in an original switchboard that appears to date from the building original construction. Power is metered and distributes from this board to distribution panels located around the facility. The electrical room is also occupied by potable water distribution meters and fire protection piping and controls, a violation of current building code.

3. Electrical for the restaurant is distributed from three panels in a basement electrical room. Panel A is 400 amp, 3ph, Panel B is 600 amp, 3 ph, and Panel C is a 100 amp, 3 ph. Power to the three panels is provided via a manufactured busway running in the basement corridor to the main distribution panel.

4. A 200 amp meter has been added external to the main service panel for service to the “Beer Room.” It’s assumed that this is the ballroom space beneath the theater.

5. Emergency power: No generator is present. Emergency lighting is provided using battery pack lights.

6. An unlabeled 200 amp kitchen distribution panel is located in the basement beneath the restaurant kitchen.

7. A new residential grade distribution panel has been added in the theater ticket booth to provide a central location for lighting circuits.

8. A theatrical lighting board and controls are located backstage. This fused gear appears to date from the original construction.

9. A distribution fuse panel and dimmers are located adjacent to the basement ballroom.

B. ELECTRICAL RECOMMENDATIONS:

1. Minimum Recommendation: At a minimum we recommend that the existing main electrical distribution board be tested by a qualified electrical testing firm to confirm fault current capacity and suitability for continued power distribution.
   a) Rough Magnitude Estimate of Cost: $8,000

2. Long term Recommendation: Based on the age of the switchgear we recommend replacement of the main service/distribution board
   a) Rough Magnitude Estimate of Cost: $45,000 based on replacement with a 1600 amp service.
SITE PHOTOS - EXTERIOR ARCHITECTURE

Theater North elevation

Theater North elevation
Tenant spaces to west of Theater and entry drive to rear of theater
Terrace Restaurant East of Theater and Dentist offices further east

View to east of Theater
View of Theater looking east from parking lot

Tenant space to east of theater. Package rooftop AC. Apartment above. Condensing unit for theater space.
Rear of Theater. Main electric vault to left.
Rear of theater and adjacent restaurant. Gas vent from restaurant water heater, sprinkler alarm bell, AC condensing unit.

Restaurant delivery access. Clapboard siding on private meeting room.
Restaurant rear. Roof mounted condensing units.

Rear fire exit from restaurant private meeting room.
Restaurant rear. Downspouts, external gas piping.

Rear entrance to restaurant. Sewer manhole.
View from roof access via private dining room. Condensing units on roof at rear of dentist suites.
Kitchen exhaust fans on roof of restaurant

Restaurant roof pitched to center. Private dining room to left. Condensing unit and fresh air intake for attic mounted fan coil. Chimney for restaurant fireplace.
Restaurant pitched roof looking to east with front of restaurant on right.

View from roof peak on east edge of restaurant pitched roof looking east. Private dining space on right.
View from theater roof looking north with private dining room on right, restaurant pitched roof and restaurant fireplace chimney beyond.

Private dining room addition with roofed over skylights.
Private 2nd level meeting/banquet hall, brick stage wall on right, gas flue from theater furnace below.

Package AC and exhaust for 2nd level restaurant private banquet room.
Stage roof. Main boiler chimney beyond, roof vent at center of roof.

Theater roof looking north.
View from south peak of theater roof to west. Dormers serve private apartment.
SITE PHOTOS – INTERIOR

Lobby space beneath projector room

Cold storage lockers in basement of restaurant
Prep area in basement of restaurant. Note electrical panel in foreground.

Apartment living area with window AC.
Apartment bathroom

Restaurant dining area at entry
Restaurant looking toward servery from entry

Restaurant – Commercial dishwasher installation with exhaust hood above
Restaurant kitchen – 3 sink combo to right.

Restaurant kitchen - Appliance stubups through floor.
Servery, back of house restaurant area

Exhibition cooking area.
Restaurant bar

Restaurant bar.
Bar seating

Bar performance area.
2\textsuperscript{nd} level banquet room bar/servery

Dumbwaiter at 2\textsuperscript{nd} level banquet room rear.
Back of house for 2nd level banquet room

2nd Level banquet room
Banquet room looking toward bar.

Fireplace room just off restaurant entry.
Ballroom beneath theater

Theater lobby
Theater

Theater snack bar.
Theater

Stage lighting
Theater radiator

Theater roof at wings
Theater roof at stage wing

Theater view toward balcony
Theater Roof framing

Theater footlights
Theater basement dressing room

Theater kitchen in basement
Ballroom below theater
SITE PHOTOS – HVAC

Hot water boiler.

Heating zone pumps.
Suspended gas furnace. Typical of one on either side of the main stage.
Exhaust fan accessed from stair to 2nd level banquet room
Tenant space to east of theater. Package rooftop AC. Apartment above. Condensing unit for theater space.
Rear of Theater. Main electric vault to left.
Rear of theater and adjacent restaurant. Gas vent from restaurant water heater, sprinkler alarm bell, AC condensing unit.
Restaurant delivery access.
Clapboard siding on private meeting room.

Restaurant rear. Roof mounted condensing units.
Rear fire exit from restaurant private meeting room.

View from roof access via private dining room. Condensing units on roof at rear of dentist suites.
Kitchen exhaust fans on roof of restaurant
Restaurant roof pitched to center. Private dining room to left. Condensing unit and fresh air intake for attic mounted fan coil. Chimney for restaurant fireplace.
View from roof peak on east edge of restaurant pitched roof looking east. Private dining space on right.

Package AC and exhaust for 2nd level restaurant private banquet room.
Stage roof. Main boiler chimney beyond, roof vent at center of roof.

View toward south stage roof.
View from south peak of theater roof to west. Dormers serve private apartment.
SITE PHOTOS - ELECTRICAL

Lighting distribution panel located in ticket booth. Provided breakers for majority of non-theatrical lights in theater.
Stage lighting controls

Stage lighting controls
Kitchen panel. Square D, 200 amp, 120/208. Basement prep room adjacent to water heater.

Stage lighting controls
Kitchen panel and starters.
Basement prep room adjacent to water heater.

Kitchen panel and starters
Unlabeled distribution panel
Basement theater ballroom lighting control and fused distribution panel.
Main Service panel
200 Amp meter for “Beer Room”.

Emergency battery pack lights
Fire sprinkler control panel
Panel A 120/208 volt, 400 amp, 3 ph. Fed via busduct from main service board.
Three restaurant panels, A, B, and C fed via busduct from main service board. Nearest panel on left is Panel C, 120/208 100 Amp, 3 ph.
Panel C, 120/208 volt, 100 amp, 3 ph. Fed via busduct from main service board. Located in basement closet.
Panel B 120/208 volt, 600 amp, 3 ph. Fed via busduct from main service board. Located in basement closet.

Panel and lighting dimmers on main floor or restaurant.
Dumbwaiter controls red tagged. Located on main floor adjacent to dumbwaiter.
Electric meter exterior to utility room

Electrical utility room and external meter
SITE PHOTOS – PLUMBING

6” fire sprinkler valve. Note recent work to replace valves.

Water storage tanks.
6 zone Radionics Fire control Panel

Fire sprinkler line in chase behind walls of ballroom.
Puget Sound Energy Gas Meter,
250 cfh, Meter #472374

Puget Sound Energy Gas Meter,
250 cfh, Meter # 873793
Puget Sound Energy Gas Meter, 1000 cfh, Meter #1164579

Puget Sound Energy Gas Meter, 1000 cfh, Meter #1164579
Domestic water supply. 3” manifold serving multiple unlabeled meters.

Sprinkler piping with 6 zone sprinkler zone alarm below.
Sprinkler test station to left of domestic water meters

Air compressor
Women's toilet room for 2nd floor banquet room.

Toilet at men's restroom
Men’s Rm. at restaurant bar
Lavatories for women’s room serving 2nd floor banquet room

Men’s room for 2nd floor banquet room
Services for removed appliances.

Three basin sink.
Hobart dishwasher drain direct piped to waste
Mueller Model D-6VF-105 water heater

Rear restaurant entrance. Note sewer manhole.