

APPENDIX F:
Mechanical
Engineering
Reconnaissance

MECHANICAL EVALUATION

1. GENERAL OVERVIEW

Waimano Training School & Hospital is an outdated health facility with buildings ranging in age from thirteen to fifty-four years old. Many of the plumbing fixtures are antiquated and needs to be replaced along with the piping. Fire sprinkler lines also show signs of age.

The administration is very concerned about meeting code requirements for the health facility. This includes replacing the existing fixtures with those designed for the handicapped. In many cases, it may be necessary to rearrange the fixtures which is a very costly procedure. Other problems include the safe disposal of asbestos insulation on hot water piping and storage tanks and the lack of ventilation. In all buildings which patients frequent, the administration requests the installation of temperature regulators. The following is a list of the inspected buildings and a description of any mechanical deficiencies:

HALE A (1971) - The administration building is probably in the best condition of all the buildings. The plumbing fixtures are relatively new. There is central air conditioning.

HALE B (1973) - This building is also in good shape except for some rust on the fire sprinkler piping. There are wall unit air conditioners.

HALE C (1971) - The steel piping and fire sprinkler lines show signs of oxidation. Hale C has hot water.

HALE D (1971) - The galvanized steel, copper pipe, and fire sprinkler lines show signs of rust at the joints. Overall the building is in fair condition.

HALE E (1971) - This building has been converted from a kitchen to physical therapy. The galvanized steel and copper piping is rusting and in very poor condition. The dishwasher is in fair condition.

HALF F (1971) - The galvanized steel pipe is rusting, but overall, the plumbing is in very good condition. One problem is the fire sprinkler lines run underneath the building and is hard to maintain.

MAINTENANCE SHOP (1964) - The water closets and lavatories are in very poor condition. Copper piping is oxidizing.

AUTOMOTIVE SHOP (1964) - The water closets and lavatories are old, but they work adequately.

CENTRAL SUPPLY (1975) - The water closet and lavatory were installed after the building was completed and are in good condition. There is a wall mounted air conditioner in the supply office.

BLDG. 4 (1962) - The plumbing fixtures are stained with rust and are in very poor condition. Fire sprinkler heads are rusting. One of the urinals was found to be leaking from the push button.

THAYER HALL (1941) - This decadent building probably has the original plumbing fixtures. The fixtures are in very poor condition and shows signs of leaking. The fire hose cabinet is very antiquated.

BLDG. 1 & 2 (1936) - The old building has original plumbing fixtures. The piping and plumbing fixtures show signs of rust. The fire sprinkler heads and piping are rusting.

BLDG. 3 (1936) - The plumbing fixtures are very old and worn. The shower area is now used for a washer/dryer and storage. The fire sprinkler system piping is rusting.

OCCUPATIONAL THERAPY (1936) - Formerly the boy's kitchen, the second floor fixtures are in very poor condition. Brakish water comes out of the lavatories and there are no hardless on the showers. There is no hot water.

BOY'S BOILER HOUSE (1936) - Due to the condition of the asbestos insulation, no visual inspection could be made.

OLD MAINTENANCE CLUSTER (1936) - The service sink is in very poor condition and the corrugated steel wall behind the sink has rusted thru. The galvanized steel piping is totally covered in rust.

BLDG. 5 (1961) - The plumbing fixtures are in very good conditions but the fire sprinkler heads and galvanized steel pipes are rusting.

SUN PROJECT HOUSE - The galvanized steel and copper pipe is rusting. The plumbing fixtures are in fair condition. There is a sewage lift station in the back of the house.

MEDICAL DIRECTOR'S RESIDENCE (1954) - The galvanized steel and copper pipe are starting to rust. The water closets and lavatories are in good condition, but the shower is rusting and leaking.

OLD ADMINISTRATION (1943) - The galvanized steel is rusting and the fiberglass insulation is peeling. The water closets and lavatories are stained with rust and there is wood rot around the fixtures. The hot water is room temperature. One hose bibb is used to mix detergents.

MULTIPURPOSE BLDG. (1961) - The galvanized steel and copper pipes are rusting at the joints. The plumbing fixtures are decadent. There are no fire sprinklers or smoke detectors, but the building does have a fire alarm station.

DOCTOR'S RESIDENCE (1934) - The galvanized steel piping is in good condition but the copper pipe is rusting. Plumbing fixtures are in very poor condition. The water heater is fully encased in wood.

HALE ALOHA (1977) - Although relatively new, the water closets and lavatories are rusting. One of the lavatories has a crack.

F.G.P./VOLUNTEER - The plumbing fixtures are very antiquated and are starting to rust. The galvanized steel piping is also rusting. One lavatory is leaking. There is wall unit air conditioning.

CANTEEN (1974) - The galvanized steel is beginning to oxydize and the plumbing fixtures are in fair condition.

BLDG. 10 (1954) - The galvanized steel pipe is rusting. The plumbing fixtures are in fair condition and hot water is available.

TRAINING/TREATMENT CENTER - It is now a classroom. From only exterior visual inspection, the cast iron and copper pipe is in very poor condition.

HOBBY CENTER - The building is partially used for office space. The galvanized steel and copper piping is very rusty. The water closet and lavatory is old and run down.

SEWING - The cast iron pipes are in poor condition. The galvanized steel and copper water piping extremely rusty. The lavatory is very old and in poor condition.

BLDG. 9 (1963) - The galvanized steel and copper pipe show signs of rust, especially in the kitchen area. The plumbing fixtures are old.

BLDG. 6 (1954) - The cast iron, galvanized steel, and copper pipes are all rusty. The plumbing fixtures are very old. One lavatory is leaking.

The fire sprinkler system leaks causing water stains on the suspended ceiling. One water closet has been converted to a janitor's service sink. No exhaust fan in janitor's closet.

BLDG. 6/7 DINING (1954) - The cast iron, galvanized steel, and copper piping are rusting. The water closets and lavatories are in fair condition.

BLDG. 7 (1954) - The cast iron and copper piping is rusting. The water closets and lavatories are in fair condition. Fire sprinkler lines are rusting at the joints.

LAUNDRY (1948) - The galvanized steel pipes are rusting at the joints. The fiberglass insulation is in fair condition. The plumbing fixtures are dirty and rusting. Leaky water pipes has caused part of the bathroom ceiling rot.

BOILER HOUSE (1948) - The hot water storage tank and some of the steam and hot water pipes are insulated with asbestos.

HALE OLA (1950) - The galvanized steel and copper pipes are beginning to rust. The insulation on the larger hot water pipes are asbestos. The condition of the plumbing fixtures is very poor. The 3rd floor bathroom has been turned into a machine shop with all the plumbing fixtures removed.

BLDG. 11 (1943) - The galvanized steel and the copper pipe are in fair condition. The bathroom fixtures is a combination of new and old. The interior fire sprinkler heads look relatively new while the exterior fire sprinkler heads are covered with rust.

2. HOT WATER GENERATOR SYSTEMS

NAME OF EQUIPMENT	LOCATION	CONDITION
National Steel Construction Co. Water Heater 5000W.	Hale A	4
RUDD Mfg. Water Heater 50 gal, 502,000 btu/hr input, 30.3 gph recovery.	Hale B	3
Radford Waite Water Heater 75 gal, 290,000 btu/hr input, 263.6 gph recovery.	Hale C	3
Day & Night Water Heater 75 gal, 360,000 btu/hr input, 302 recovery, 1971.	Hale D	3
National Bd. 2016 Day & Night Mfg. Water Heater 75 gal, 302.5 gph recovery.	Hale E	3
Day & Night Mfg. Water Heater 75 gal, 360,000 btu/hr input, 302.5 gph recovery.	Hale F	4
Bock 72E Water Heater 68 gal, 187,000 btu/hr input, 189 gph recovery.	Bldg. 4	3
Bock 77E Water Heater 70 gal, 150 gph recovery.	Bldg. 4	3
State 510E Water Heater 30 gal, 4.5kw, 240v.	Bldg. 5	4
National B.D. Water Heater (Not operational) 60cy, 6kw, 208v.	Bldg. 5	N
2-Bock 72E Water Heater 68 gal, 120v, 162 gph recovery.	Bldg. 6,7,8, Annex	4

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NAME OF EQUIPMENT	LOCATION	CONDITION
Bock 71E Water Heater 70 gal, 120v, 150 gph recovery, 1000 gal storage tank insulated with asbestos..	Bldg. 9	2
Bock 275 Water Heater 68 gal, 120 v, 160 gph recovery, 500 gal storage tank insulated with asbestos.	Bldg. 10	2
Water Heater 40 gal, 4.5kw, 240v.	Sun Project	4
State Sensible 510E Water Heater 6 gal, 1.65kw, 120v.	Old Administration	4
Gama EFU 300-IL Water Heater 30 gal, 1.65kw, 240v.	Hale Aloha	4
Unknown 500 gal storage tank insulated with asbestos.	Hale Ola	2
Ray Burner Company 50 lbs steam, 1000 sq. ft. Boiler heating surface, 1962. Burner: PAEOP-144, Size 200 1.68 to 8.27 million Btu/hr, 220V., 60 Hz, 3-phase.	Boiler House	3
Ace Buehler Inc. Condensate Receiver 190 gal, 300°F, 1984.	Boiler House	3
Orr & Sembower 3H Boiler 150 lbs. steam, 1500 sq. ft. heating surface, 1967.	Boiler House	3

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3. QUALITATIVE RATING

BUILDING NAME	PLUMBING CONDITION	FIRE SPRINKLER CONDITION	A/C CONDITION
Hale A	4	5	5
Hale B	4	3	3
Hale C	2	3	N
Hale D	2	2	N
Hale E	1	3	N
Hale F	3	2	N
B-1	1	1	N
B-2	1	1	N
B-3	1	1	N
B-4 WI	1	2	N
B-4 WII	1	2	N
B-5	3	1	N
B-6	1	1	N
B-7	3	2	N
B-8	1	2	N
B-9	1	2	N
B-10	2	3	N
Annex	1	2	N
B-11	2	3	N
Hale Ola	1	3	N
Boiler	N	N	N

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BUILDING NAME	PLUMBING CONDITION	FIRE SPRINKLER CONDITION	A/C CONDITION
Laundry	1	N	N
Kitchen/Dining	1	N	N
B-6/7	2	N	N
Maint. Shop	1	N	N
Automotive Shop	2	N	N
Central Supply	3	N	3
Security Shed	N	N	N
Makiki Filter Bed	N	N	N
Warehouse	N	N	N
Sun Project Shed	N	N	N
Sun Project House	2	N	N
Deep Well	N	N	N
Thayer Hall	1	N	N
Boys Kitchen	1	N	N
Boys Kitchen Boiler	N	N	N
Old Maint. Yard	1	N	N
MD House	2	N	N
Booster Pump Station	N	N	N
Swimming Pool	N	N	N
Old Administration	1	N	N
Multi-Purpose	1	N	N
Doctor's House	1	N	N

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BUILDING NAME	PLUMBING CONDITION	FIRE SPRINKLER CONDITION	A/C CONDITION
Hale Aloha	2	N	N
Foster Grandparent	1	N	3
Cantee	2	N	N
Classroom	1	N	N
Old CDC	1	N	N
Sewing	1	N	N
Mauka Filter Bed	N	N	N

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