ATTACHMENT 3

CONSULTING SERVICES REPORT

Mechanical, Electrical and Plumbing (MEP) Assessment and Testing Report

1126 Yosemite Drive
Milpitas, CA 95035
Terracon Project No. F3196204
July 2, 2019

Prepared for:
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Prepared by:
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Houston, Texas

July 2. 2019

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Re: **MEP Assessment and Testing Report**
1126 Yosemite Drive
Milpitas, CA 95035
Terracon Project No. F3196204

Mr. Luo:

Terracon Consultants, Inc. (Terracon) is pleased to submit this Consulting Services Report of our MEP Assessment and Testing Report for the commercial building located at 1126 Yosemite Drive, Milpitas, CA. These services were authorized via signed Terracon proposal on PFT196089 dated June 12, 2019. Mr. Ali Aljumaili, MEP Consulting Engineer of Terracon, performed the site visit with Mr. Lyhak Eam, P.E., Civil Engineer with the City of Milpitas on June 25, 2019.

The purpose of this Report is to present the results of our MEP assessment and testing at the building and present estimated costs for immediate and future repairs of the MEP equipment and systems at the site.

This document includes background information, observations, findings, and conclusions pertaining to the conditions at the site.

Terracon appreciates the opportunity to be of service to you on this project. If you have any questions regarding this report, please do not hesitate to contact us at Terracon.

Sincerely,
Terracon Consultants, Inc.
Texas Firm Registration F-3272

Ali Aljumaili

Ali Aljumaili, MSME
MEP Consulting Engineer
Facilities Services

Jeffrey A. Miller, P.E., (TX) LEED AP, CBCP, EBCP
Principal / Senior Engineer
Facilities Services

TABLE OF CONTENTS

PROJECT INFORMATION

The subject building is a one-story, approximate 6,000 square foot office and attached warehouse building constructed in 1981. The space is currently unoccupied. The building is provided with two, 3-ton direct expansion (DX) cooling and natural gas heating packaged, roof mounted units (RTUs) manufactured by *Carrier* in 1999 and utilizing R-22 refrigerant that serves the office spaces and conference room. One, 4-ton DX heat pump RTU manufactured by *Day & Night* in 2010 utilizing R-22 refrigerant, serves an additional room which was added to the office space in 2010. All RTUs are provided with an outside air intake to provide minimum and adjustable amount of outside air to the office space. The RTUs are not provided with seismic restrains per code requirements. Bathroom exhaust and warehouse air ventilation is provided by down blast, direct drive roof ventilators manufactured by *Dayton Electric Inc*.

Electrical service to the building is supplied by a utility-owned, pad-mounted electrical transformers and conductors routed below ground to the electrical room inside the building. Electrical service within the building is rated at 400-amps, 120/208-volt, 3-phase, 4-wire. Electrical wiring within the building is copper. Exterior lighting consists of pole-mounted and wall-mounted high intensity discharge (HID) light fixtures reportedly by timers controlled. Interior lighting mainly consists of T-8 fluorescent light fixtures. The interior lighting is controlled by manual switching.

Wastewater drainage is provided by gravity flow through subsurface piping to the municipal sanitary sewer system. The type of piping used for the sanitary sewer reportedly to be cast iron. Municipal water main piping is tapped to provide potable water to the building. The type of piping used for the water distribution system was observed to be copper. Hot water is provided to the restrooms by a 50-gallon electric heater manufactured by *State Select* in 2010, located in the janitor room. Backflow prevention devices for the potable water service was observed. Utilities including domestic water, sanitary sewer, and electricity are provided to the building by City of Milpitas.

Natural gas service and a meter are provided to the building. A seismic natural gas shutoff valve is not provided with the gas meter.

FINDING AND RECOMMENDATIONS

A. Mechanical.

Terracon observed and performed limited testing of the mechanical RTUs. Please see the table below. The two 3-ton RTUs were observed to be in fair to poor condition and beyond typical Estimated Unit Life (EUL) and are recommended for replacement. Please see the Cost Tables.

The 4-ton RTU was observed and tested to be generally in good working condition. The fan compressor were operated in the cooling and heating modes and were functional with wall mounted electronic thermostats. The discharge airflow temperature of 58.5-degree F was measured on most of the supply air diffusers. The measured values were within acceptable ranges for units installed in this type of property. The exhaust fan provided to the restrooms was observed to be in good to fair operation condition. The RTUs are not provided with seismic restraints and it is required per code to provide seismic restraints to all RTUs on the roof.

Condensate drain from 3-ton RTUs was observed to be routed to the roof drain. It is required by code to rout the condensate drain piping to the sink in the janitor room.

RTU TEST MEASUREMENTS – JUNE 25, 2019

Nominal tonnage and Serial Number	4-ton G074012071	3-ton P05202C1H	3-ton P043K951H
Supply Voltage	208.0	209.2	208.5
Compressor 1 Amps	20.0, 19.1, 21.8	19.8, 20.6, 18.7	20.3, 19.8, 17.8
Return Air Temperature (F)	73.4	73.6	74.8
Cooling Supply Air Temperature (F)	59.0	58.8	58.5
Gas Heat Supply Air Temperatures (F)	112.0 & 119.0	103.0 & 119.1	116.0 & 122.0
Refrigerant Discharge Pressure Circuit (PSIG)	330	290	275

Note:

A. Cooling and Heating Supply Air Temperatures will most likely be lower and higher, respectively, when the airflow rate is reduced due to resistance from a ductwork distribution system.

B. Cooling Supply Air Temperatures will most likely be lower when the building is cooled and the return air temperature is lower.

C. Heating Supply Air Temperatures will most likely be lower when operated in the winter, not summer.

RECOMMENDATIONS:

- Replace the two existing 3-ton RTUs with DX heat pump RTUs utilizing R-410a refrigerant to meet 2020 EPA requirements. Provide new units with seismic restrains to meet the state of California code. Replace power disconnect with new one. (OPTIONAL)
- Provide existing 4-ton RTU with seismic restraint to meet the state of California code.
- Reroute the 3-ton RTUs condensate piping to the sing in the janitor room.
- Repair damaged duct insulations to prevent condensation above ceiling. (See example in the photos)

B. Plumbing.

The electric water heater were observed to be in good working condition, domestic hot water temperature were measured in the restrooms to be 105-degree F to 115-degree F. The electric water heater is provided with seismic restrains on the upper and lower side per code. Plumbing fixtures were observed to be in good condition. Natural gas and meter are provided to the building, a seismic gas shutoff valve is not provided and is recommended to provided per code. Please see cost tables.

RECOMMENDATIONS:

- Install seismic automatic shutoff valve on the natural gas line before the gas meter to meet the state of California code.
- Remove sink located by the electrical room.

C. Electrical.

Electrical service to the building is supplied by utility-owned, pad-mounted electrical transformers and conductors routed below ground to the electrical room inside the building. Electrical service within the building is rated at 400-amps, 120/208-volt, 3-phase, 4-wire. Electrical wiring within the building is copper. Exterior lighting consists of pole-mounted and wall-mounted high intensity discharge (HID) light fixtures reportedly timers controlled. Interior lighting mainly consists of T-8 fluorescent light fixtures. The interior lighting is controlled by manual switching. Exterior lighting fixture were observed to be in fair condition. all exterior lighting fixtures needs to be cleaned and maintained. The electrical room was not provided with a cooling system. A wall mounted DX cooling unit is recommended to be provided and to avoid electrical panels from being overheated. Please see the cost tables.

RECOMMENDATIONS:

- Install wall mounted DX cooling unit in the electrical room.
- Update all electrical panels indexes.
- Maintain and repair all exterior lighting.

LIMITATIONS

The field observations, notes, conclusions, and recommendations presented in this report are based upon the information provided to Terracon by our Client and site observations, reconnaissance, and field notes collected at the time of our site visit. While additional conditions may exist that could alter our conclusions, we feel that reasonable means have been made to fairly and accurately evaluate the existing conditions of this facility. This report is limited to Terracon's visual observations of the exterior of the facility.

This report has been prepared for the exclusive use of the Client for specific application to the project discussed and has been prepared in accordance with generally accepted engineering practices using the standard of care and skill currently exercised by professional engineers practicing in this area, for a project of similar scope and nature. No warranties, either expressed or implied, are intended or made. In the event that information described in this document which was provided by others is incorrect, or if additional information becomes available, the conclusions and recommendations contained in this report shall not be considered valid unless Terracon reviews the information and either verifies or modifies

Photo #1 View of two 3-ton RTUs on the lower level roof.

Photo #2 Side view of typical 3-ton RTU.

Photo #3 RTUs are not provided with seismic restrains.

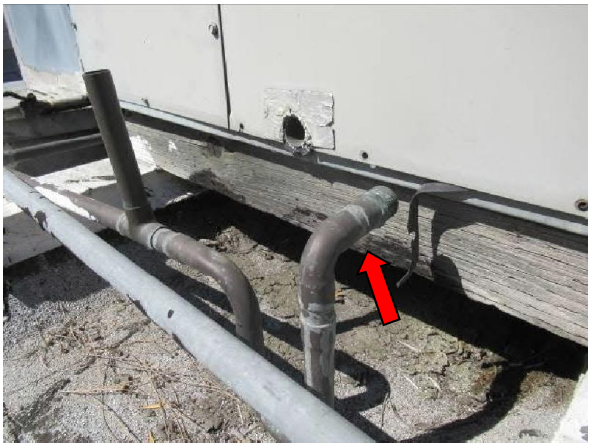

Photo #4 View of broken condensate water drain pipe.

Photo #5 Typical natural gas pipe routing to the RTUs.

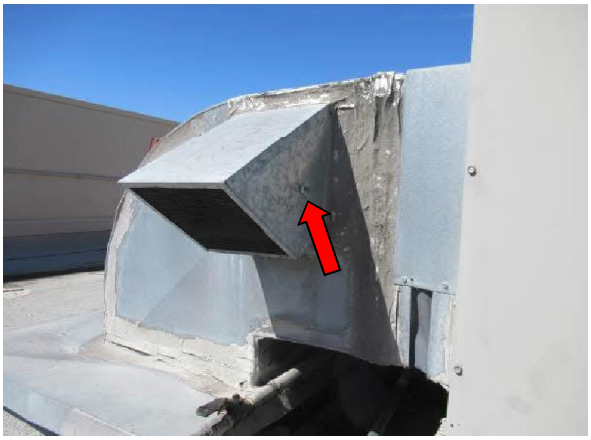

Photo #6 Typical adjustable outside air intake in the RTUs.

Photo #7 View of 4-ton DX RTU with adjustable outside air intake.

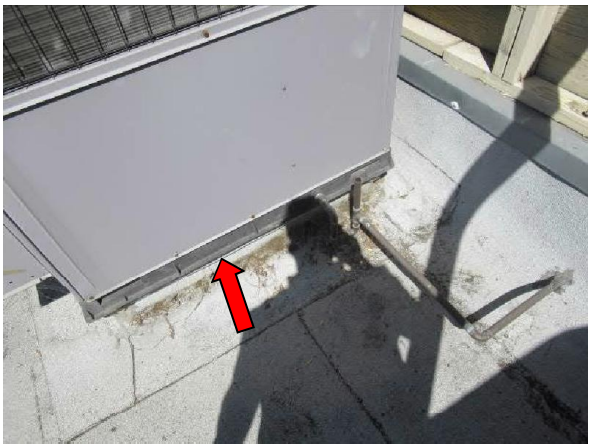

Photo #8 4-ton RTU is not provided with seismic restrain.

Photo #9 View of the restroom exhaust fan located on the lower roof level.

Photo #10 Typical air vent located on upper roof level

Photo #11 View of the main electrical main switch board in the electrical room.

Photo #12 Typical electrical panel with index that needs to be updated.

Photo #13 View of the main electrical meter.

Photo #14 View of the pad-mounted, utility-owned transformer located in the back side of the building.

Photo #15 Typical T-8 fluorescent lights in the office space.

Photo #16 Typical T-8 fluorescent lights in the additional room to offices.

Photo #17 Typical floor mounted electrical power receptacle switch in the additional room

Photo #18 Typical lighting manual lighting switches.

Photo #19 Typical wall mounted electronic thermostat.

Photo #20 View of 50-gal. electric water heater located inside janitor room and provided with seismic restraints.

Photo #21 View of plumbing fixtures in the men's restroom.

Photo #22 View of typical sink hot/cold water testing.

Photo #23 Typical view of water-efficient faucet provided in the break room sink.

Photo #24 Typical view of sanitary drainage PVC pipe.

Photo #25 Example of code violation of industrial sink installed and provided with water pump to pump the drainage water out to the sink inside the janitor room.

Photo #27 View shows the industrial sink drainage collected and pumped to the sink in the janitor room with water pump.

Photo #28 Typical view of above ceiling shows some of the plumbing piping and flexible ducts.

Photo #29 View shows damage in the duct insulation.

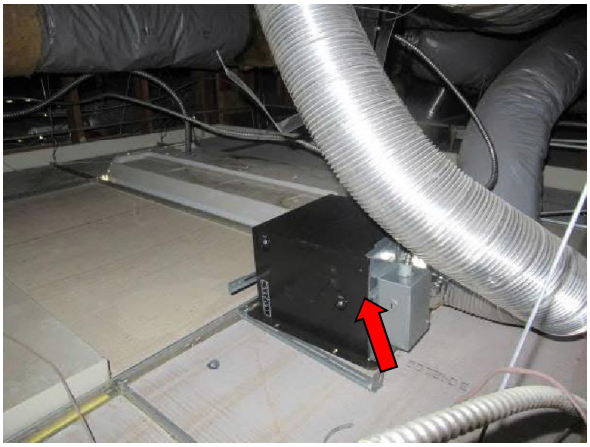

Photo #30 View of the exhaust fan above the ceiling provided to the break room.

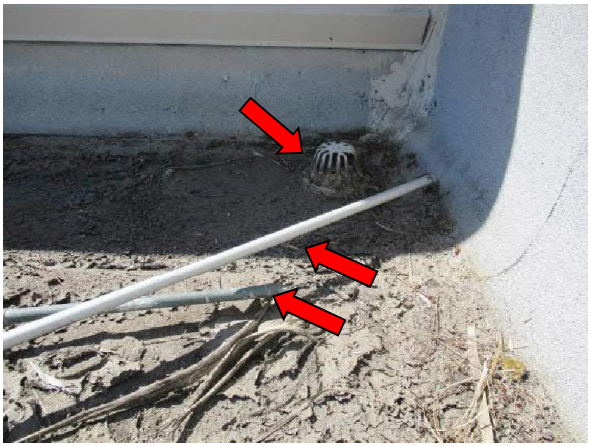

Photo #31 Example of a code violation of condensate drains free discharging the condensate water to the roof drains.

Photo #32 Typical external lighting fixtures needs to be cleaned and maintained.

Photo #34 Typical external pole lighting fixture.

Photo #33

Photo #35 View shows natural gas meter, seismic shutoff valve is not provided per code.

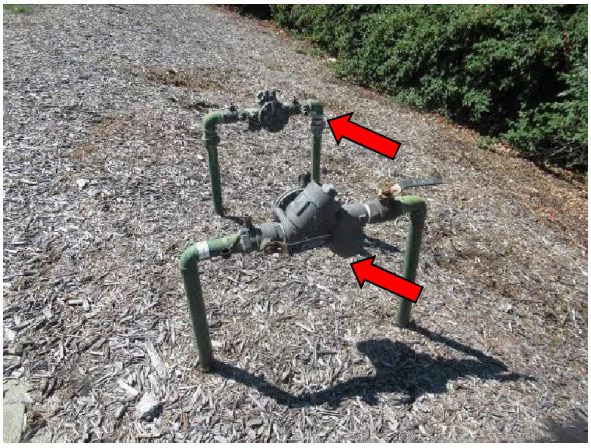

Photo #36 View of the water supply and irrigation back flow preventer.

Photo #37 View of the water meter manhole.

Photo #38 Typical storm water manhole.

1.0. EXECUTIVE SUMMARY

General Property Identification Summary

Item	Description
Property Name	**1126 Yosemite Drive Milpitas CA MEP**
Property Address	1126 Yosemite Drive, Milpitas, CA
Type of Facility	Office Warehouse
Site Area	Acres
Total Parking Spaces	
Number of Buildings	1
Number of Stories	1
Building(s) Area (SF)	6,000 Rentable
Year(s) Constructed	1981
Renovation Notes	
General Construction	
Date of Site Visit	June 25, 2019
Survey Conducted By	Ali A. Al Jumaili

Summary of Recommended Expenditures

1.1 Immediate Repairs Summary

	Total Cost
Time Period for Repair	**0 to 1 YR**

1.2 Replacement Reserve Summary

	Total Cost
Evaluation Term	**1**
Square Feet	**6,000**
Total Replacement Reserve Cost	**$43,300**
Inflation Factor	**3.0%**
Total Replacement Reserve (per SF per Year)	**$10.00**

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Terracon Project No. F3196204

1.2 Replacement Reserve Cost Table

Project:	**1126 Yosemite Drive Milpitas CA MEP**	Square Feet:	6,000
Location:	**1126 Yosemite Drive, Milpitas, CA**	No. of Bldgs:	1
Type of Facility:	**Office Warehouse**	Reserve Term	1
No. Stories	**1**	Property Age	38

	Item Description	EUL	Quantity	Units	Cost	R-Total$
R - 1	Replace 3-ton RTUs, air to air split	20	2	Ea.	$ 12,650.00	$25,300
R - 2	Install new 2-ton wall mounted DX split units in the electrical room.	20	1	Ea.	$ 4,800.00	$4,800
	Miscellaneous items including install seismic automatic natural gas shutoff valvere, rout condensate piping, repairing damaged duct insulation, remove sink located by the electrical room, install seismic restraints for all RTUs, repair and maintain exterior lighting fixtures.	N/A	ALL	ALL	$ 13,200.00	$ 13,200.00
	Subtotal					**$43,300**
	Escalation Factor per year				**3.00%**	**$44,599**
	Total with escalation					
	Cost per SF - uninflated		**$10.00**			
	Average cost per SF per year		**$10.00**			
	Cost per SF - inflated		**$3.00**			
	Average cost per SF per year		**$3.00**			