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Interim HVAC Report for the:

ORLEANS FIRE DEPARTMENT

58 Eldredge Park Way
Orleans, MA 02653

January 31st, 2020

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0.1 - ABBREVIATIONS

CFM	Cubic Feet Per Minute	deg F	Degrees Fahrenheit
IAQ	Indoor Air Quality	OSHA	Occupational Safety and Health Administration
AHU	Air Handling Unit	ppm	Parts Per Million
OA	Outside Air	ppb	Parts Per Billion
CO	Carbon Monoxide	pt/cc	Pints per cubic centimeter
CO2	Carbon Dioxide	EPA	Environmental Protection Agency
NO2	Nitrous Oxide	HVAC	Heating Ventilation & Air Conditioning
MEI	MacRitchie Engineering Inc.	UFP	Ultra-fine particles
VOC	Volatile Organic Compound	ERV	Energy Recovery Ventilator
HHW	Heating Hot Water	CHW	Chilled Water
BMS	Building Management System	VRF	Variable Refrigerant Flow
DOAS	Dedicated Outside Air System		

0.2 - Purpose of study:

This HVAC study will evaluate the existing conditions and provide recommendations for HVAC improvements at the Orleans Fire Station. The study will address the need for ventilation improvements based on complaints of poor indoor air quality and replacement of outdated HVAC equipment that is at or past its useful life.

0.3 - Background Information:

In May of 2019 The select board has approved this study to investigate what type of HVAC improvements can be implemented at the facility including any Architectural or Structural aspects that can help extend the facility's life. Poor air quality concerns were observed during a 2018 Barnstable County Health department survey. A 2018 existing conditions balancing report indicated a slight negative pressure relationship of 0.004"w.c. in the upper level with respect to the apparatus floor on the lower level. There are concerns that the negative pressure relationship between these spaces is promoting the migration of vehicle exhaust fumes into the upper level from the lower level and rescue vehicle area.

SECTION 1 – EXISTING IAQ & HVAC CONDITIONS

1.1 - Description of Existing HVAC systems serving upper level:

Air Handling Units: The 3 original air handling units (AHU) serving the upper level, located in the attic, were replaced at some point with 80% efficient Lennox furnaces and mated to the original carrier DX cooling coil sections. The model number on the furnaces suggest they are 10 years or older (more than halfway through its anticipated lifespan). At some point they were modified to draw air directly from the outdoors via a roof vent (as OA derived from the attic space is no longer allowed).

1.1.1 Condensing Units: The condensing units that serve these AHU's do not appear to be original, however they are older models that utilize the now defunct R-22 refrigerant and will have a limited lifespan going forward as they will not be easily serviceable.

1.1.2 Maintenance Access: The AHU's in the attic are located at the far end of the building (Southern end) from where access is provided in the ceiling of the Day room. Access to each of the AHUs are limited as it requires one to traverse 2x10 planks that have been secured to the cross bracing that makes up the wooden truss system of the roof which creates a hazard for maintenance personnel. Servicing these units is difficult and not practical.

Typical access for attic AHUs

1.1.3 HVAC Zones: The layout of the AHU systems serving the upper level are configured so they each form a separate zone with separate controls to cover a limited portion of the upper level.

- Zone "F-1" covers the east and southern exposures of the building and consists of mostly the offices and reception areas.
- Zone "F-2" covers the core of the building, which consists of the kitchen/eating areas, day room and some of the bunk rooms.
- Zone "F-3" covers part of the Southern and mostly all of the Western exposures of the building, which consists of the meeting room, locker room and bunk rooms along the exterior.

1.1.4 Balancing Issues: After reviewing the Air Balance survey report that was issued on 7/31/2018, It was noted that the current system shows areas of imbalance and incorrect airflows compared to the original design. It is notable that areas where there are complaints for lack of heat, these areas are experiencing greater disparity from what air flow they are receiving and what they are designed for. The thermostat for zone F-1 is located in the reception area which can lead to overheating in other spaces as the thermostat takes longer to become satisfied.

- Zone F-1 is operating at 71% of design airflow
- Zone F-2 is operating at 70% of design airflow

- Zone F-3 is operating at only 66% of design.

1.1.5 The addition of partitions to create bunk rooms: It is worth noting that when the additional partitions were constructed to create private bunk rooms that professional engineering services were not consulted and the balancing to those rooms may not have been set correctly, throwing the system that serves that side of the building out of balance. Additionally, when the original furnaces were replaced with the current models, it is unclear how the units were selected and what performance parameters were used. If fans with less static pressure ability were selected this may result in lower overall output and effecting system balance.

1.1.6 Exhaust Fans: From the air-balance survey work that was done, it was determined that most of these fans are not operating at their designed flow rates (CFM). For example the meeting room has an excessive amount of exhaust air, which may drag odors and particulates from other areas of the building and creating a negative condition in that space and promoting more infiltration air through gaps in doors and windows, also effecting the temperature of the space.

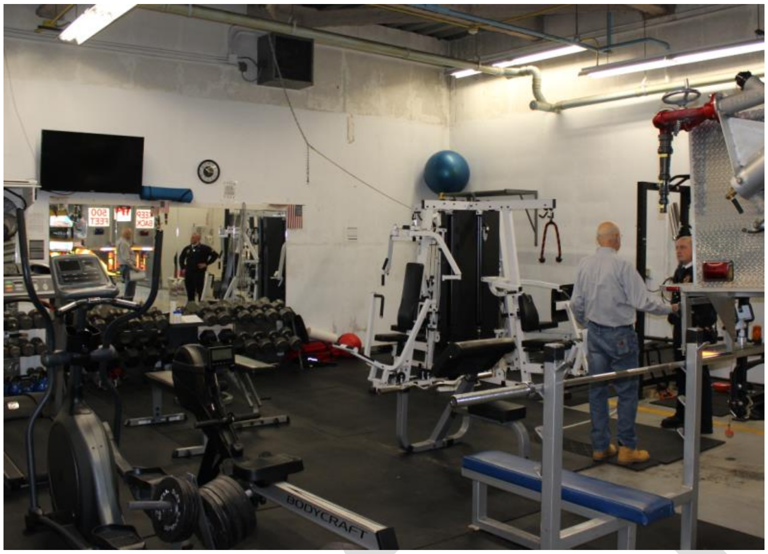
1.1.7 Kitchen Exhaust: It should also be noted that the range exhaust hood is operating at a lower CFM than designed and is vented through the roof using a corrugated rubber/plastic hose which is not suitable for higher temperature grease applications and could become a potential fire hazard due to excessive amounts of grease being stuck in the ribs of this rubber/plastic hose.

1.2 - Description of existing systems serving Apparatus & Rescue Vehicle Areas:

1.2.1 Apparatus Floor Heating: The apparatus floor on the lower level is heated by two gas fired unit heaters that are centrally located within the space. These units are only intended to maintain space temperature and recover the temperature in the space when the doors are opened.

1.2.2 Ventilation Air & Exhaust: There is no ventilation air being introduced directly into this space and the two exhaust fans that are existing do not appear to be functional. With the exercise equipment sharing this space with the equipment, this is leading to some serious health concerns for those who use this space as the only means of ventilation comes from opening the door which is not practical during the winter months.

1.2.3 Existing Exhaust Source Capture: A Plymovent system was installed to provide source capture of exhaust from the vehicles when they were started indoors, this system consists of rubber hoses hung from a track system that is connected directly to exhaust ductwork. The fans that provide the exhaust flow run whenever the system detects exhaust flow or is operated by the firefighters. This system does not capture general space exhaust, larger general-purpose fans for the space are also required.



Fitness equipment located on the apparatus floor

1.2.4 Rescue Vehicles Bay Heating: The Rescue Vehicles bay adjacent to the upper level feature the same type of gas fired unit heaters, centrally located within the space.

1.2.5 Ventilation and Exhaust for Rescue Vehicles bay: There is no direct exhaust fan for the Rescue Vehicle area. This area should be under a negative with respect to the adjacent living quarters and should have some type of general purpose exhaust.

1.2.6 Rescue Vehicle Exhaust Source Capture: A Plymovent source capture system has also be installed in this location. The Rescue Vehicle space is separated from the living quarters on the upper level only by a single door which leads directly to the Day room. With no constant volume of exhaust air to provide a negative relationship in the Rescue Vehicle bay, it is possible that exhaust fumes and other contaminants are finding their way into the living areas of the upper level.

1.3 - Survey Work Performed:

Throughout the month of December 2019, MacRitchie Engineering Inc (MEI) performed survey work to determine existing conditions, Air quality and specific complaints.

1.3.1 Newer Partitions and Converted Bunk rooms: It was noted that many spaces have been converted over the years to provide more Bunk space for their firefighters. Walls were constructed to form rooms in places the as-built plans do not show and it was unknown if their HVAC needs were factored into the construction. The “Shift officer” room was converted to a bunk room and there are complaints that the space is “always cold”. The “On Call” room had server equipment installed within it which now gets too hot in the summer months. The reception area was notably cold compared to the thermostat setpoint of

68 deg F. Finally, the "Male Dorm" area was converted to several private bunk rooms which feature no windows and have complaints of being "stuffy" which suggests poor air quality.

1.3.2 - CO2 Datalogger Results:

Datalogging equipment was installed by MEI on 12/20/19 and were set to sample air quality every 15 minutes. The dataloggers were retrieved on 01/06/20. Three locations were chosen:

1. Deputy's Office 105
2. Day Room 125
3. Bunk Room 137

Data from the Data Loggers was retrieved around 10am. The fire station population was less than 10 people, activity was low. Below is the Averages retrieved from the data loggers:

Deputy's Office 105 (Data Logger SN: 20769877)

At Time of Arrival: 786 ppm CO2 / 30% R.H. / 70.6*F
Max CO2 Measured: 975 ppm
Min CO2 Measured: 391 ppm
Avg CO2 Measured: 508 ppm

Day Room 125 (Data Logger SN: 20769862)

At Time of Arrival: 488 ppm CO2 / 31% R.H. / 65.3*F
Max CO2 Measured: 841 ppm
Min CO2 Measured: 379 ppm
Avg CO2 Measured: 489 ppm

Bunk Room 137 (Data Logger SN: 20769861)

At Time of Arrival: 520 ppm CO2 / 30% R.H. / 67.4*F
Max CO2 Measured: 1,450 ppm
Min CO2 Measured: 362 ppm
Avg CO2 Measured: 629 ppm

1.3.3 -Carbon Dioxide Testing Conclusions:

Carbon Dioxide correlates with metabolic human activity as people inhabit a room, the concentration increases in spaces depending on the number of people, what type of activity is performed and how much fresh air is circulated throughout the space. Higher than normal CO2 levels in a space can lead to drowsiness, headaches, or lead to overall lower productivity and responsiveness. CO2 Is measured in Parts per million (ppm) and typically buildings are designed with enough ventilation to a maximum of 1,000 ppm. Levels above 1,500 ppm can produce signs of drowsiness and is considered less ideal but not dangerous.

From the data gathered shows that none of the spaces tested rose higher than 1,500 ppm and on average were lower than 1,000 ppm. This means that the spaces are getting enough ventilation to maintain a healthy CO2 level for the space. Small short duration spikes in CO2 that were observed can be remedied with simple modifications to system balancing. For comparison: outdoor air is typically 350 to 450 ppm which means we have a fair amount of infiltration of air into the building. Due to the upper floor being at a slight negative this may be due in part to air being pulled through cracks in door and window frames around the building, or other unsealed penetrations. It could also indicate that the OA connections at the AHU's are not set correctly and could be allowing an excessive amount of OA, which could produce a less efficient heating and cooling system.

1.3.4 - Indoor Air Quality (IAQ) Testing:
On Monday January 6th, 2020 with the assistance of Cashins Associates, we conducted Indoor Air Quality testing of the Orleans Fire Department. There was a total of 3 rounds of testing conducted. Each round of testing was done in the same selected locations for consistency. Each location selected was the most typical representation of adjacent spaces and each location represented a different HVAC zone. The spaces selected for testing were (in order of testing):

1. Meeting room 132
2. Kitchen 130
3. Day Room 125
4. Bunk Room 136
5. Locker Room 131
6. Reception 120
7. Captain 113
8. Deputy 105
9. Rescue Vehicles Garage 101
10. Apparatus Floor 006 (Exercise Area)
11. Apparatus Floor 006 (Turnout Gear area)

These spaces were tested for the following contaminants:

1. Carbon Dioxide (CO_2)
2. Carbon Monoxide (CO)
3. Volatile Organic Compounds (VOC)
4. Ultra-Fine Particles (UFP)

There was additional testing done for Nitrous Oxide (NO_2) in specific areas that included:

1. Bunk Room 136
2. Day Room 125
3. Rescue Vehicles Garage 101
4. Apparatus Floor 006

Test #1: Baseline measurement with HVAC system off, no trucks or equipment running, typical environment conditions.
Test #2: Baseline measurement with HVAC system on, no trucks or equipment running, typical environment conditions.
Test #3: Worst case scenario condition based on a typical morning equipment check (running trucks and equipment outside in front of building for maintenance checks). HVAC system off, Exhaust fans in bathrooms on.

Test #4: A Worst-case scenario condition based on same criteria as Test #3, with HVAC system on and exhaust fans on. *This test was not completed as test #3 provided overwhelming data showing excessive contamination.*

It was noted during Test #3 that when the trucks were started on the apparatus floor and pulled out, it took less than 5 minutes for the entire front half upper level of the fire station to fill with strong odors of exhaust gasses. Source capture plymovent systems were in place and operational at the time, smells only occurred when trucks were pulled outside.

1.3.5 - Indoor Air Quality (IAQ) Testing Results:

Location	CO Levels (ppm)		
	Test #1	Test #2	Test #3
Meeting Room	<0.1	<0.1	0.9
Kitchen	<0.1	0.2	0.9
Day Room	0.3	0.2	2.6
Bunk 136	<0.1	0.2	1.2
Locker Room	0.6	0.4	1.1
Deputy Chief	0.3	0.2	1.8
Reception Area	0.4	0.2	2.6
Captain	0.5	0.1	1.8
Rescue Vehicles	0.9	0.2	2.6
Apparatus Area	0.4	0.9	4.4
Laundry Area	0.4	0.2	3.6
Max = 9ppm, Concern = 5ppm			

Location	UFP Levels (pt/cc)		
	Test #1	Test #2	Test #3
Meeting Room	2180	1870	2070
Kitchen	2240	1710	8910
Day Room	2190	1640	58700
Bunk 136	1940	1460	4140
Locker Room	1980	1580	4250
Deputy Chief	2510	1700	113000
Reception Area	2500	1630	123000
Captain	2050	1660	49200
Rescue Vehicles	2150	1900	61800
Apparatus Area	2480	1870	288000
Laundry Area	2400	1800	273000
Larger increase = more air contamination			

Indoor Air Quality (IAQ) Testing Results (continued):

Location	VOC Levels (ppb)		
	Test #1	Test #2	Test #3
Meeting Room	92	276	258
Kitchen	88	264	288
Day Room	83	252	533
Bunk 136	84	215	217
Locker Room	108	211	255
Deputy Chief	147	282	1562
Reception Area	137	278	1111
Captain	129	221	462
Rescue Vehicles	173	197	716
Apparatus Area	216	263	541
Laundry Area	233	281	462
Max = 500 ppb			

Location	NO2 Levels (ppm)		
	Test #1	Test #2	Test #3
Meeting Room	-	-	-
Kitchen	-	-	-
Day Room	<0.5	-	<0.5
Bunk 136	<0.5	-	<0.5
Locker Room	-	-	-
Deputy Chief	-	-	-
Reception Area	-	-	-
Captain	-	-	-
Rescue Vehicles	-	-	-
Apparatus Area	<0.5	-	<0.5
Laundry Area	-	-	-
Max = 5ppm			

1.3.5 - Indoor Air Quality Testing Conclusions:

Concentrations of carbon monoxide, VOCs, and ultrafine particulate were found to be at acceptable, normal levels for a typical indoor office environment throughout Test #1 and Test #2 sampling rounds.

However, A quick and noticeable increase in CO, VOCs, and ultrafine particles occurred within 5-10 minutes of the diesel engines becoming active during Test #3. In addition, a strong diesel odor affected various indoor areas. Locations most affected were the office spaces, day room, reception, Rescue Garage, and Apparatus area. Levels in these areas were found to be well above what would normally be found in a typical office environment. Less impacted were the bunk areas, adjacent bathroom and locker room.

Ultrafine particle (UFP) sampling is often used in indoor air quality investigations to assess if combustion products are present and to track the source. UFP's are used as a surrogate for diesel emissions because they are easy to measure and can represent the myriad of contaminants that make up diesel exhaust and which would be impossible to measure individually. There is no UFP criteria that would determine if a safe or unsafe condition exists when diesel emissions is a major contributor to poor air quality. The benefit of UFP testing in this instance is that significant increases in UFPs can be easily associated with poor air quality and provides an easy benchmark to gauge improvements.

Levels of NO2 were found to be less than 0.5 ppm, the instrument's limit of detection and not considered to be an issue. This result is to be expected as most modern Diesel vehicles typically have emission control devices to limit the output of NO2 to meet modern EPA emission standards. These numbers could rise in a situation where a truck's emission control systems were not functioning properly or otherwise compromised.

The top floor is under a slight negative pressure in comparison to the apparatus areas and the outdoors. This would help explain the rapid increase in various airborne contaminants found on the upper floor.

Test #3 being conducted leading to higher levels of contaminants

SECTION 2 – POTENTIAL CORRECTIVE HVAC OPTIONS

This section will discuss three different options to address the first goal of correcting Indoor Air Quality, and our second goal of improving overall HVAC efficiency and comfort. The strategy behind improving Air Quality is simple: Change the pressure relationship between the upper and lower levels to eliminate the movement of exhaust gasses and other harmful particulate into the living areas of the upper level. Pressurization of the upper level, and exhausting the lower level are key to achieving healthier air quality. It should be noted that any Architectural changes to the building (additions or room modifications) can have additional impacts to the loads on the HVAC system and would need further evaluation during a design phase.

2.1- 3 to 5 year IAQ option:

If the Town's goal is to ultimately replace the fire station at a later date, there are a few things that can be done to correct the poor air quality issues at the facility and potentially address a few of the comfort issues.

New Dedicated Outside Air System (DOAS):
To pressurize and provide pre-treated ventilation air for the upper level of the fire station.

Complete Re-balance of the HVAC systems on the upper level:
Rebalance to optimize system performance and ventilation.

New exhaust system for apparatus floor:
Used to maintain code mandated continuous exhaust airflow rates to provide a negative pressure relationship against the upper level, Eliminating potential migration of exhaust gasses to living and office spaces.

Potential impact to operations:
All of the work outlined in this section could be performed while the Fire Station remains operational. Temporary Heating and Cooling may not be necessary as the existing Air Handling units would remain operational.

2.2 – 20 Year HVAC and IAQ option:

If the Fire Station is to be renovated and fully updated to comply with modern Fire station construction standards, then it is suggested that the town consider the following HVAC improvements to address Indoor air quality concerns and improve the overall comfort of the facility:

New Heating Hot Water Boilers:

95% efficient boilers to serve air handling units to provide greater system flexibility through modulation of coil output to provide finer control over building loads as they change throughout the day and season.

New Air-cooled chiller:

An Higher efficiency Air-cooled chiller using the same principles of a boiler system; to provide greater flexibility through modulation of coil output to provide finer control over building loads as they change throughout the day and season.

New Air Handling Units:

To replace existing furnaces with New air handling units with economizers, hydronic cooling and heating coils capable of modulation for better zone control and efficiency when outdoor conditions are favorable. Fans can run continuously year round to provide required ventilation and positive pressurization year round.

Improved AHU Accessibility:

Dedicated pathway for servicing attic Air Handling equipment, with new service platforms for the new air handling units.

New Roof Dormers:

A total of (3) dormers should be constructed on the eastern side of the hip roof to provide outside air louvers and plenums for each of the air handling units.

New exhaust system for apparatus floor:

Installation of new general-purpose exhaust fans that are controlled by a Carbon Monoxide and Nitrous oxide monitoring system. Designed to maintain a constant negative pressure relationship in the apparatus and rescue vehicle bays and then ramp up in volume when the presence of exhaust gasses are detected to eliminate transmission to the upper level.

New Building Management System (BMS):

It is recommended that a BMS is installed to help manage the many control points of the system and allow for remote 3rd party monitoring and diagnosis of the system.

Upgraded Electrical Service:
With the additional equipment, it is likely the electrical service may need to be upgraded. Further evaluation is required.

Potential impact to operations:
All of the work outlined in this section could be performed while the Fire Station remains operational. However, some work (such as removal of the old air handlers) would require temporary heating or cooling to be provided while the work is being done. With proper coordination and phasing, this work could be performed in a relatively short timeframe.

2.3 – 20 Year HVAC and IAQ Green option:

It is understood that there is funding for energy efficient, green construction that the town could use for this project. The options listed in this section (section 2.3) could offer potential energy rebates and eligibility for funding through green initiatives. If the Fire Station is to be renovated and fully updated to comply with modern Fire station construction standards and wants to pursue a greener alternative, then it is suggested that the town consider the following HVAC improvements to address Indoor air quality concerns and improve the overall comfort of the facility:

New Geothermal Wells:
If Geothermal wells were installed on site it would allow for many options to heat and cool the building throughout the year. Hydronic based heating and cooling, water source Heat pumps or Water source VRF (Variable Refrigerant Flow) could be implemented for greater efficiencies year-round.

New Dedicated Outside Air System (DOAS):
To accomplish the goal of healthy indoor air quality a Dedicated Outside air System would need to be installed. The new DOAS unit would likely be installed along the exterior of the building and ducted up into the attic space to be distributed. Attic installation may be possible, but only through additional evaluation during a design phase.

New exhaust system for apparatus floor:
Installation of new general-purpose exhaust fans that are controlled by a Carbon Monoxide and Nitrous oxide monitoring system. Designed to maintain a constant negative pressure relationship in the apparatus and rescue vehicle bays and then ramp up in volume when the presence of exhaust gasses are detected to eliminate transmission to the upper level.

New Building Management System (BMS):
It is recommended that a BMS is installed to help manage the many control points of the system and allow for remote 3rd party monitoring and diagnosis of the system.

remotely (by the town or 3rd party service) before deploying town personnel to investigate. A BMS will also allow for greater fine tuning of HVAC components from a single interface.

Upgraded Electrical Service:
With the additional equipment, it is likely the electrical service may need to be upgraded. Further evaluation is required.

Potential impact to operations:
All of the work outlined in this section could be performed while the Fire Station remains operational. However, some work (such as removal of the old air handlers) would require temporary heating or cooling to be provided while the work is being done. With proper coordination and phasing, this work could be performed in a relatively short timeframe.

SECTION 3 – ELECTRICAL STUDY

3.1 - Purpose of Electrical study:

This Electrical Service study was conducted in conjunction with the HVAC Existing Conditions Study in order to confirm the capacity of the existing electrical service to support potential upgrades to the Fire Station.

3.2 - Description of Existing Electrical Service:

The existing electric utility service to the Fire Station is a 120/240V Single Phase Service. The existing service approaches the building underground and terminates at a meter socket mounted approximately 3 feet above grade on the exterior of the building. From the meter socket, the service goes back underground to eventually penetrate up into the building through the concrete slab floor of the electric room. The service, comprised of 600 KCMIL Copper wiring, first lands at a 400A Main Circuit Breaker. From the main circuit breaker, 500 KCMIL Copper conductors travel through a wireway and a splice block that reduces the conductors to 350 KCMIL Copper. From the wireway, the 350 KCMIL conductors travel through a combination of EMT and Flexible Conduit overhead to a terminate on the Normal lugs of a 400A ATS. **This length of 350 KCMIL wiring is not properly protected. 350 KCMIL copper wiring is only rated for 310A, but the breaker protecting this run is rated at 400A.**

The ATS is also fed from a Cummings Generator. The generator is mounted on a pad outside the Fire Station and is in a weatherproof enclosure. From the generator, 350 KCMIL Copper Conductors penetrate the building and come down the wall of the electric room to feed a 400A Generator Main Circuit Breaker. From the Main Circuit Breaker, 350 KCMIL Conductors feed the Emergency terminals of the ATS.

From the load terminals of the ATS, conductors travel through a combination of EMT and flexible conduit across the floor and eventually re-enter the wireway beneath the Main Circuit Breaker. The conductors are spliced within the wireway into multiple sets smaller conductors.

One set of these smaller conductors continues through the wireway to feed two 'Main Lug Only' (MLO) panels, LP1 and LP2. **The feeders to LP1 and LP2 and the panels themselves are not properly protected. The only protection ahead of the feeders is the 400A Main Breaker. The wires feding LP1 and LP2 could not be identified by their written information, but appeared to be 1/0 copper, which is only rated for 150A.**

Another set terminates at an enclosed circuit breaker labeled "Emg. Power." Within the breaker enclosure, the single set of conductors are split into two sets of conductors. These two sets of conductors travel through the wireway and overhead via EMT to a wireway across the room and ultimately terminate at two MLO panels, EP1 and EP2. **While MEI could not confirm the size of the breaker labelled "Emg. Power," MEI assumes that it is not appropriately sized to protect the conductors that travel between the breaker and EP1 and EP2.**

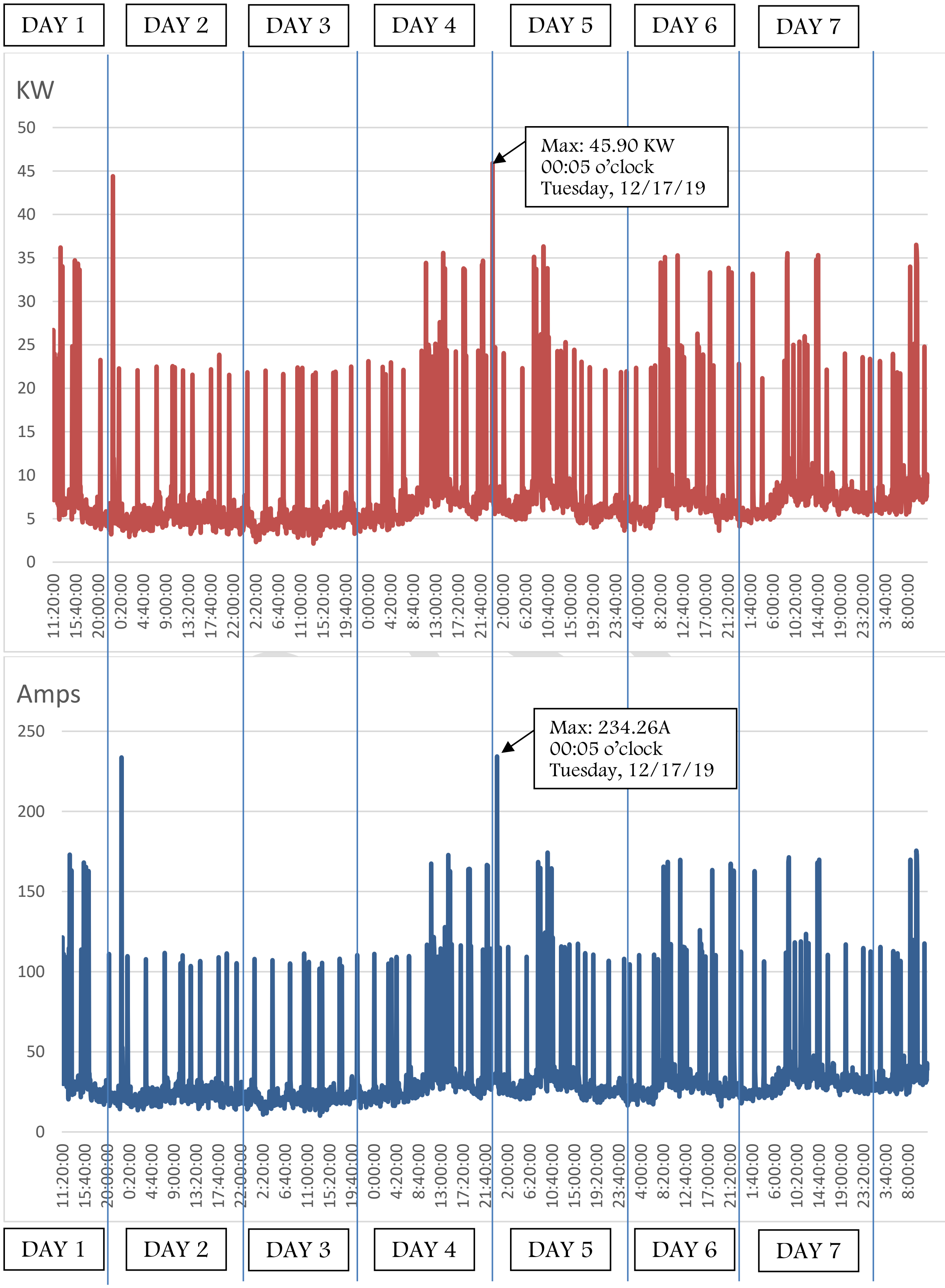
3.3 - Survey Work Performed:

On December 13, 2019, MEI installed recording power meters within the ATS enclosure in the electric room. The meters recorded data for a week before being retrieved by MEI on December 20, 2019. While installed, the meters recorded the total load (power) and draw (current) of the Fire Station at five minute intervals.

The most relevant data are the amperage (A) and power (KW), which are mapped out on the graphs on the following page. The maximum load on the fire station's service is 45.90 KW, and the corresponding maximum amperage was 234.2A. There is currently a compressor at the Fire Station that was not active during this study since the power meters were installed during December with a full load amperage of 22.8A. MEI assumes that this is counterbalanced by the Electric Unit Heaters that were active during the study but will not be active during the summer.

3.4 - Conclusions:

MEI concluded that while the existing 400A 120/240V service does have a moderate amount of capacity for growth, the existing service should be replaced, even if in kind, to resolve the issues noted in the analysis of the existing conditions above.


DAY 1
DAY 2
DAY 3
DAY 4
DAY 5
DAY 6
DAY 7
KW
50
45
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35
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25
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15
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