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THE COMMONWEALTH OF MASSACHUSETTS
DEPARTMENT OF LABOR
DIVISION OF OCCUPATIONAL SAFETY
OCCUPATIONAL HYGIENE / INDOOR AIR QUALITY PROGRAM
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JOHN S. ZIEMBA
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February 16, 2006

MA DOS File No. 06S-0155

Chief Ernest Horn
Chief of Public Safety
Town of Mendon
24 Main Street
Mendon, MA 01756

Introduction

On Tuesday, December 27, 2005 the Division of Occupational Safety ("DOS") visited the Mendon Fire Department-Headquarters located at 24 Main Street in Mendon, MA as a result of a call received by our office asking for technical assistance on diesel combustion gas issues. Pursuant to Mass. Gen. L. Ch. 149, section 6, DOS is charged with enforcing health standards at all county and municipal workplaces. This report contains a summary of DOS' findings from that visit as well as recommendation and requirements for corrective actions that must be taken. DOS has based the analysis contained in this report on State regulations and other relevant governmental and industry health and safety standards.

The portion of this report entitled "Recommendations and Corrective Action Needed" lists items which you should address as soon as possible in order to ensure that employees are protected. **Items listed in boldface have the greatest potential for causing harm to employees. You must take the corrective action recommended in this report in connection with each boldfaced item. Corrective action dates are given only for these boldfaced items. A corrective action date is the date by which you must take the corrective action recommended in this report.**

All reports made by you to DOS with respect to the boldfaced items must be made on the attached **Corrective Action Response Form** by the response date, Friday, March 24, 2006. **Failure to (a) take corrective action on the boldfaced items by their respective corrective action dates and file a corrective action response form by the response date stating the same, or (b) file a corrective action response form by the response date explaining why you cannot take such corrective action by such dates, and how**



and when you will take such action in the future, may result in penalties pursuant to Mass. Gen. L. Ch. 149, section 6.

Although the boldfaced items pose the most immediate threat to your employees' health and safety, DOS strongly recommends that you take the corrective action recommended by DOS with respect to all other items identified in this report as well.

Background Information

On Tuesday, December 27, 2005, I visited the headquarters building for the Mendon Fire Department located at 24 Main Street in Mendon, MA. I met with you and Deputy Chief Mark Poirier when I arrived at the station in the late afternoon. I explained that I would be sampling for diesel combustion gases and that the data logging instruments would be left overnight for an integrated, long-term sample. I retrieved the instruments on Wednesday, December 28, 2005 and brought them back to the MA DOS offices in West Newton where the data was "downloaded."

On December 27, 2005, I performed a visual inspection for building conditions at the station. No employee at the station could provide an accurate year for when the building was built. However, it is thought that the building was built in the late 1950's to early 1960's. There is another sub-station for the Mendon Fire Department but it is an unmanned station.

The headquarters building staffs 2-3 paid firefighters per shift. There are a total of five paid firefighters for the department and 20 call firefighters. Two of the call firefighters are female firefighters. The Mendon Fire Department also provides EMS and some haz-mat functions for the Town of Mendon. It was explained by you that the town is considering building a new public safety building in another part of the town along Rt. 16.

Overall, I found the two story, headquarters building to be in fair to poor condition. There is no mechanical ventilation on the apparatus floor. The department does not have a tailpipe exhaust system or other means of reducing diesel combustion gases from the fire apparatus. All vehicles on the apparatus floor are diesel operated. The firefighters have a desk/computer area on the apparatus floor. They fill out their response reports and perform other paper work in this area. There is no decontamination area for the firefighters.

There is one standard door that separates the apparatus floor from the staircase that leads up to the second floor offices/bunk area. This door is not gas tight. There had been another heating system for the building, which appears to have been a forced hot water system. The pipes for this system have been sheared off and as the digital pictures indicate, open pipe chases remain that lead to the second floor offices and bunk area.

The current heating system is a forced hot air system. It was explained during the visit that a previous heating contractor had visited the building and was not comfortable with the air for the furnace being drawn from the apparatus floor.

The building has not had any significant modernization. There is only one means of egress (staircase) from the second floor. The roof currently leaks. Water stained ceiling tiles were present throughout the second floor. There is one bathroom that serves both male and female personnel and it is located on the first floor, off the apparatus floor. There are no bathroom facilities on the second floor. The approximate distance to travel to the bathroom from the second floor dining area is approximately 150 feet. Travel to this bathroom requires that employees descend stairs from the main part of the building.

The firefighters sleep at the station, which is a non-sprinklered building. There are no bunkrooms at the station. Cots and mattresses are brought into the main room, which also serves as the dining room. Male and female personnel sleep together in the same room. There is no changing area (locker room) and no shower facilities for firefighters.

The Deputy Chief's office has some additional concerns. Heat was reported to be marginal in this office (no vents) and he has decided to use a space heater to try to heat the room. A portable extension cord is being used as semi-permanent wiring in his office. Multiple power strips are in use in this office since electrical receptacles are limited. During the visit, I asked if the electrical service in the one bathroom was GFCI protected. No one knew if it was.

His main office is located at the top of the stairs, which is the closest occupied room from the apparatus floor. As the industrial hygiene sampling indicates, the Deputy Chief has continuous exposure to diesel combustion gases that travel up the staircase from the apparatus floor.

There have been some problems with mice and carpenter ants in the building also.

Discussion of Combustion Gases

Enclosed is MA DOS Form 371-Engine Exhaust Fumes in Fire Station. (enclosure 1) In summary, it is the position of this agency that combustion gases should be controlled at their source. The primary method for achieving this in fire stations is to use a tail pipe exhaust system, such as the Plymovent, that removes, rather than filters exhaust gases. Other methods of controlling gases include using exhaust fans that have the appropriate amount of exhaust for the dimensions of the apparatus floor, regular servicing of diesel engines, and replacing older equipment with new generation equipment.

Technical Information on Carbon Monoxide

Carbon monoxide is a colorless, odorless gas that is given off by incomplete combustion. Cigarette smoke, furnaces and gasoline engine exhausts are common sources of carbon monoxide. Diesel engines tend to produce more particulate and oxides of nitrogen and less carbon monoxide than gasoline engines.

The OSHA Permissible Exposure Limit for carbon monoxide is 50 PPM as an average for an 8-hour day. However, if levels are more than 3 parts per million above ambient outdoor levels this indicate that there is a source of carbon monoxide. The Environmental Protection Agency recommends a limit of 9 parts per million when averaged over an 8 hour day in order to prevent adverse health effects for those at risk of carbon monoxide exposure (such as those with heart disease).

Health Effects of Carbon Monoxide

Carbon monoxide (CO) is the leading cause of death by toxic inhalation in the United States. It has been reported to be responsible for as many as 4,000 accidental and suicide deaths per year.

Carbon monoxide gas is formed to some extent whenever fuels are burned, especially if there is insufficient air present to permit complete combustion. The exhaust gas from gasoline engines may contain up to 38 percent carbon monoxide. The exhaust odor is produced not from the carbon monoxide but rather from other unburned hydrocarbons formed during the combustion process.

Carbon monoxide is toxic because of its inherent ability to deprive the body's cells of oxygen by reacting with the hemoglobin in the blood. Acute (short-term) exposure to carbon monoxide produces symptoms ranging from headache, weakness in the wrist, mental confusion, nausea and vomiting. Continued exposure leads to impaired judgment, a general indifference to danger, drowsiness and a condition resembling alcoholic intoxication.

Chronic (long-term) exposure to carbon monoxide at any level can aggravate existing heart conditions to the extent that it may precipitate a heart attack.

Additionally, it can increase the severity of symptoms in persons with certain cardiovascular disease, such as angina pectoris.

The OSHA PEL (permissible exposure limit) for CO is 50 PPM; NIOSH PEL is 35 PPM, with 1200 PPM being Immediately Dangerous to Life and Health (IDLH) and capable of causing death.

Carbon Monoxide Sampling at Headquarters

During the visit, four Industrial Scientific T-82 carbon monoxide dosimeters were placed throughout the premises of the Mendon Fire Department. They were laboratory calibrated prior to use. The dosimeters were allowed to perform data logging throughout December 27-28, 2005. They collected data for approximately 18 hours. Two instruments were placed on the apparatus floor. The third instrument was placed in the Deputy Chief's office and the fourth instrument was placed on the large table in the dining area (center of the main room).

The time-weighted average was drawn from the last 8 hours of the sampling period. As the results indicated in Appendix I, the average level of carbon monoxide ranged between 1-2.5 PPM. This is well below the OSHA recommended limit of 50 PPM as a time weighted average. The remainder of the sampling time showed that there was some detection of carbon monoxide in the general range of 0-2 PPM.

In carbon monoxide dosimeter, the time weighted average level is considered to be the significant reading since it integrates both high and low samples throughout the sampling period. It is also the reading that safety groups consider to be the most significant reading.

However, there were some peaks of carbon monoxide on the apparatus floor that ranged between 40-60 PPM. These occurred at approximately 7:30 AM on December 28, 2005. This is a concern at the Mendon Fire Department since the firefighters have a tendency to stand around on the apparatus floor after a response and prepare their "paperwork" (i.e. computer entries). It is prudent to continue to investigate and implement methods to ventilate the apparatus floor to keep exposure to diesel combustion gases to a minimum. (item 001)

Oxides of Nitrogen Monitoring

During the visit on December 27-28, 2005, sampling was conducted for oxides of nitrogen, one of the combustion products produced by the burning of diesel fuel. The instruments that were used were digital Draeger Gas Vision PAC III instruments that have sensors that are specific to oxides of nitrogen. One of the instruments sampled for nitrogen oxide and the other sampled for nitrogen dioxide. They were placed in the Deputy Chief's office, located near the top of the second floor, stair area.

The two instruments were downloaded upon returning to this office. Details from the instruments are outlined in Appendix II of this report. The time-weighted average of nitrous oxide obtained during the sampling period was 1.27 PPM. The time-weighted average of nitrogen dioxide could not be obtained from the instrument but as the graph represents, there was a peak exposure to nitrogen dioxide at a level of 1.2 PPM at approximately 10 AM on December 28, 2005.

The recommended exposure level to nitrous oxide that has been established by the American Conference of Governmental Industrial Hygienists is 3 PPM as a time weighted average. OSHA has established that the ceiling level (maximum concentration) of nitrogen dioxide not exceed 5 PPM. Although the sampling results indicate that there was no overexposure to either nitrous oxide or nitrogen dioxide on the two days of the field visit, efforts should be implemented to reduce exposure to oxides of nitrogen to the lowest level possible. This is especially important since the sampling results indicated that the diesel gases are traveling upstairs to the second floor office area. (item 001-cont.)

Background Discussion of Ultra-fine Particle Monitoring

Ultra-fine particles (UFPs) are defined as airborne particles having a diameter of 0.1 micron or smaller and are therefore too small to be seen. Cooking, smoking, diesel engines and many other combustion and chemical reactions produce significant levels of ultra-fine particles.

Until recently, few studies had been done on the potentially adverse health effects of ultra-fines. Preliminary studies indicate that UFPs may have adverse health effects ranging from respiratory to cardiac effects. Ultra-fine particles are not removed from the lungs at the same rate or degree of efficiency as larger particles. To date however, no definite causal link between UFPs and detrimental health effects has been established.

When there is a significant difference found in the amount of UFP in a complaint area versus an adjacent non-complaint area (i.e. ten or hundred times higher), then a source of ultra-fines is suspected and attempts are made to trace the source using the instrument. The instrument may help identify and verify migration pathways as well. Again, since there are no health or exposure standards for UFPs, the numbers recorded are only used to track potential sources rather than to indicate that there is a hazard. Anecdotal evidence indicates that in some cases the elimination of ultrafine particulate sources has led to the elimination of indoor air quality complaints.

Findings on Ultrafine Particles

A TSI Model Number 8525 P-Trak instrument was used to check ultra-fine particulate (UFP) concentrations at the Mendon Fire Department-Headquarters. It was zeroed with a HEPA filter prior to its used on December 27, 2005. Results obtained are listed on the next two pages.

P-Trak Measurements

Location on December 27, 2005	Particles per Cubic Centimeter*
Baseline, exterior of building, 5:45 PM	12,900-13,200
Simulated response at 5:55 PM, Heavy Rescue #1 and Ambulance go for a simulated response, sample taken in Deputy Chief's office, bay doors open and close	
5:58 PM, sample taken in Deputy Chief's office	7100
Datalog between 5:58-6:06 PM, sample taken in Deputy Chief's office	7400-direct reading @ 5:58 PM Min. 6770 Max. 50,500
6:00 PM, door off of apparatus floor leading to second floor opens and closes, 2 firefighters travel up to 2 nd floor for staff meeting, sample taken in Deputy Chief's office	10,400
Sample taken in Deputy Chief's office, 6:02 PM	21,000-22,000
Sample taken in Deputy Chief's office, 6:03 PM	24,000-25,000
6:04 PM, door off of apparatus floor to second floor stairs opens and closes again	26,000
6:05 PM, sample taken in Deputy Chief's office	29,100-32,000
6:06 PM, sample taken in Deputy Chief's office	34,000-38,000
6:09 PM, sample taken in Deputy Chief's office	27,000
Rescue #1 returns to station and back up, 6:10 PM, sample-Deputy Chief's Of.	50,000
6:10 PM, sample taken in Deputy Chief's office	39,000
Datalog between 6:10 PM to 6:14 PM, Sample taken in Deputy Chief's office	34,000 min. 110,000 max.

Location on December 27, 2005	Particles per Cubic Centimeter*
6:12 PM, sample-Deputy Chief's Of.	67,000
6:13 PM, door to second floor opens and closes, sample-Deputy Chief's Of.	74,000
6:14 PM, sample-Deputy Chief's Of.	38,000-48,000
6:15 PM, Ambulance #1 backs up into station, sample-Deputy Chief's Of.	11, 000
Datalog between 6:16-6:20 PM	43,700-min. 104,000-max.
6:16 PM, sample-Deputy Chief's Of.	47,000-97,000
6:18 PM, sample-Deputy Chief's Of.	79,000
6:19 PM, sample-Deputy Chief's Of.	58,000-59,000
Door to second floor opens and closes, btw. 6:19-6:20 PM, sample-Deputy Chief's Of.	71,000-75,000
6:20 PM, sample-Deputy Chief's Of.	104,000

As the particle levels indicate, airborne levels of particles in the occupied areas increase when building visitors and occupants open the door leading up to the second floor level. This action has the effect of acting like a chimney where contaminants are readily drawn up to the occupied areas on the second floor. Also, the particle levels are much higher when the vehicles are backed into the station. As the particle levels indicate, Ambulance #1 produces a greater level of particles compared to that of Heavy Rescue #1.

The station is an active station and both occupants and visitors travel up to the second floor on a regular basis to conduct fire department business. This practice will facilitate particles traveling up to the second floor.

Controls should be implemented that will reduce the amount of particles that travel up to the second floor level. There should be two major upgrades to the building. First, the Town of Mendon should install a tailpipe exhaust system to capture the diesel contaminants at their source of generation. (item 002) This issue is discussed in MA DOS Form 371 (enclosure 1)

A second upgrade that is recommended at the station is to install an exhaust fan system to purge the apparatus floor. (item 001-cont.) During the field visit, I measured the apparatus floor with the help of the Deputy Chief. The floor measures 40 feet deep by 54.5 feet wide. Using the BOCA Mechanical Code, Table M1604.3, as a reference, vehicle service garages should be provided with 1.5 CFM of exhaust ventilation air per square foot of floor space.

In this case, the Mendon Fire Department-Headquarters Building should be provided with at least 3270 CFM of exhaust. One large industrial fan located at the back of the apparatus floor should be able to deliver this amount of exhaust. A copy of the BOCA Mechanical Code, Chapter 16- Ventilation Air is enclosed for reference purposes. (enclosure 2)

A third modification to the building that is needed is for all of the former heating pipes, that have been sheared off, to be sealed along the floor interface on the second floor level. This will help prevent combustion gases and particles from entering the second floor area. (item 003) Also, this issue has always been addressed in the MA Building Code under the Hazardous Ventilation provisions. Therefore, it is important that this problem be remediated as soon as possible.

Another issue that should be revisited is the intake for the forced hot air furnace that serves the second floor. At this time, it appears that the furnace is drawing its air from the apparatus floor. This air is then heated and delivered to the second floor, occupied area of the building. I recommend that you consult with a commercial heating contractor and the Mendon Building Inspector to determine if this is problem and whether or not it needs to be remediated. (item 004) Also, the local building inspector for Mendon may determine that this also is another "hazardous ventilation" issue that is referenced in the MA Building Code, 780 CMR.

Until the apparatus floor is ventilated properly, I recommend that firefighters spend the least time as possible on the apparatus floor after a response. This will help to limit their personal exposure to diesel combustion gases. (item 001-cont.)

As a long-term upgrade, I recommend that the door at the base of the firehouse stairs, first floor level, be replaced with a door with gas tight fittings. (item 005)

Other Issues

Upgraded Sanitary Facilities Needed for Male and Female Firefighters-At this time, there are both male and female firefighters on the Mendon Fire Department. As mentioned in the Background Information section of the report, these firefighters have only one bathroom on the first floor and they do not have any decontamination (shower) facilities or changing area. It would be prudent to remodel part of the building or provide a new facility that had separate sex changing areas, bathrooms and shower facilities for personnel decontamination. (item 006)

The current bathroom does have a lock on the door and it does work. This meets the minimum requirements of the OSHA Sanitation Standard when men and women share a bathroom.

Separate Sex Bunk Rooms Suggested-As noted in the Background Information section of the report, at this time, both male and female firefighters are setting out cots and rolling beds

in the main dining area of the second floor. It would be prudent to upgrade the bunk accommodations at the Mendon Fire Department to provide separate sex, enclosed bunkrooms for male and female firefighters. This will also provide privacy when changing so that the bathroom would be available. (item 007)

Equipment Decontamination Area Needed-At this time, the firefighters and EMS personnel do not have a designated area for equipment decontamination. A designated area, such as an equipment washroom, is needed for equipment decontamination. (item 008)

Heat in the Second Floor Area-At this time, if space heaters will continue to be used on the second floor to provide adequate heating, care should be taken to insure that they are turned off when not in use and that they are not operated near combustible materials. Also, typically a 1500 watt space heater is operated from a 15 or 20-amp branch circuit. Efforts will need to be made that insure that there are no other electrical devices that are being operated from the same circuit as the space heater, when it is in use. (item 009)

Enclosed is MA DOS Form 389-Thermal Comfort Guidelines for Indoor Air Quality. (enclosure 3) It provides reference materials on proper heating of occupied areas. If possible, the occupied areas should be heated via the central furnace. Space heaters should be used as a last resort and should not be plugged into extension cords.

At this time, there are not heating ducts in the Deputy Chief's Office. Efforts should be made to provide heat ducts for proper heating in his office. (item 010)

Relocatable Power Taps-At this time, the Mendon Fire Department is using multiple "relocatable power taps" in the second floor to provide enough electrical receptacles for the amount of electronic equipment that is needed in the department. (item 011)

The Deputy Chief's office had several relocatable power taps that were plugged into each other. At this time, I suggest that no more than one relocatable power tap be plugged into any one electrical receptacle. These power taps are designed for use only with low powered equipment. The Mendon Fire Department should work with the Mendon Electrical Inspector to develop a long-term plan to upgrade electrical service in this area of the building. (item 012)

Extension Cord Stretched Across Doorway in Deputy Chief's Office-As the digital photographs indicate, there are not enough electrical receptacles in the Deputy Chief's office. An extension cord has been stretched above the doorway to try to provide additional electrical service to the opposite side of his office.

This configuration should be evaluated by the electrical inspector and a determination should be made if this wiring configuration can continue. The Deputy Chief is in need of additional outlets for his office. (item 012-cont.)

Leaking Roof-During the visit, there were numerous water stained ceiling tiles located in the second floor of the firehouse. It appeared that the building had a problem with a leaking roof. (item 013)

The status of the roof should be evaluated by an outside roofing contractor. If it is found to be leaking, the roof will need to be repaired or replaced. (enclosure 4)

Second Means of Egress for Second Floor-An evaluation should be made of the firehouse having only one means of egress from the second floor. This building is a non-sprinklered building with only one staircase. This simple wooden staircase is not encased by a fire rated enclosure; it has no enclosure.

Due to the number of occupants on the second floor, especially with firefighters sleeping on the second floor, it is prudent to evaluate whether or not a second means of egress should be provided for the employees who work in this building. (item 014)

I suggest that you and the Mendon Building Inspector work together to evaluate this issue.

GFCI Protection in Bathroom-I asked the employees on the day of the visit if anyone knew if the electrical service in the bathroom was protected by GFCI protection. No one could provide an answer to this question.

It is important to investigate whether there is GFCI protection in the bathroom for the building. GFCI's must be used in all wet/damp locations to minimize the potential for electrocution. (item 015)

Conclusions

A comprehensive building plan should be developed to determine if the Mendon Fire Department-Headquarters can be retrofitted and remodeled to accommodate the action items outlined in the body of the report. (item 016) During the time that I visited the building, there was some discussion that the Town of Mendon would be building a new public safety building along Rt. 16 in the future. In the interim, all decisions that are made regarding occupancy in the current building should be made with the expressed interest in maximizing the occupational safety and health of the employees in this building.

Also, during the visit, I had some other observations about utilities in the building. The main electrical panel is located at the base of the staircase. Care must be taken to insure that the panel covers are closed at all times so that employee may not run the risk of being exposed to live parts.

The electrical lines in the bathroom were run adjacent to the plumbing lines. Overall, there did not appear to be good planning in this building about the location of the utilities when this building was being built.

Recommendations and Corrective Action Needed

The following items must be addressed as soon as possible in order to ensure that employees are protected. Relevant safety and health standards and guidelines are referenced where appropriate. **Items that are listed in boldface have the greatest potential for causing harm to employees. You must file a corrective action response form with DOS by the response date.** We encourage you to take the action that DOS recommends with respect to all other non-boldfaced items as well, in order to protect your employees.

Item No. 001-Reduce Exposure to Diesel Combustion Gases

Corrective Action Needed: Reduce employee exposure to diesel combustion gases at the station. Apparatus floor needs to be ventilated through mechanical ventilation. An exhaust fan system that delivers at least 3270 CFM of exhaust is needed for the apparatus floor. The fan should be connected to a timer to operate for a period greater than 10-15 minutes after vehicles leave or enter the apparatus floor.

Encourage firefighters not to spend a significant amount of time on the apparatus floor after engines have operated.

Standard Referenced: MA DOS Form 371-Engine Exhaust Fumes in Fire Stations

Corrective Action Date: *March 24, 2006*

Item No. 002-Tailpipe Exhaust System Needed for Fire Apparatus

Corrective Action Needed: A tailpipe exhaust system is needed for all fire apparatus. The equipment includes the ambulance, Engine #1, and Heavy Rescue #1.

Standard Referenced: MA DOS Form 371-Engine Exhaust Fumes in Fire Stations

Corrective Action Date: *March 24, 2006*

Item No. 003-Former Heating Pipes Need to be Sealed

Corrective Action Needed: Seal the former heating pipes that have been sheared off at the floor level on the second floor of the building. The pipes should be rendered gas tight to prevent exhaust gases from entering the second floor.

Standard Referenced: MA DOS Form 371-Engine Exhaust Fumes in Fire Stations

Corrective Action Date: *March 24, 2006*

Item No. 004-Make Up Air for the Current Furnace

Corrective Action Needed: Work with a qualified heating contractor to determine if the air being drawn into the furnace can be drawn from the apparatus floor and if the current configuration for make up air is acceptable. Report back to this office with your heating contractor's findings.

Standard Referenced: MA Building Code, Hazardous Ventilation, 780 CMR 3400.6
Unsafe Ventilation

Corrective Action Date: *March 24, 2006*

Item No. 005-Door at the Base of the Staircase

Corrective Action Needed: Install a gas tight door at the base of the stairs to help prevent diesel combustion gases from traveling up to the second floor area of the station.

Standard Referenced: MA DOS Form 371-Engine Exhaust Fumes in Fire Stations

Corrective Action Date: *March 24, 2006*

Item No. 006-Upgraded Sanitary Facilities Suggested

Corrective Action Needed: Develop and implement a plan to install separate sex bathrooms, personnel decontamination (shower) facilities and changing areas.

Standard Referenced: OSHA Sanitation, 29 CFR 1910.141

Item No. 007-Upgraded Bunk Areas Suggested

Corrective Action Needed: Develop and implement a plan to provide separate sex bunk areas for male and female firefighters at the station.

Standard Referenced: OSHA Sanitation, 29 CFR 1910.141

Item No. 008-Equipment Decontamination Area Needed

Corrective Action Needed: Implement a plan to install an equipment decontamination area for the firehouse. An equipment decontamination area is needed for fire and EMS personnel to use as needed.

Standard Referenced: OSHA Bloodborne Pathogens, 1910.1030 "Decontamination"

Corrective Action Date: *March 24, 2006*

Item No. 009-Space Heater Usage in Second Floor

Corrective Action Needed: Keep space heater usage to a minimum. Insure that space heater is not operated on an overload circuit.

Standard Referenced: MA DOS Form 389-Thermal Comfort Guidelines for Indoor Air Quality and OSHA Electrical 1910.303 (b) (2) Installation and Use

Corrective Action Date: *March 24, 2006*

Item No. 010-Heat in Second Floor

Corrective Action Needed: Maintain proper heat in all occupied rooms in the second floor of the station. Install heating vents in the Deputy Chief's office.

Standard Referenced: MA DOS Form 389-Thermal Comfort Guidelines for Indoor Air Quality

Corrective Action Date

Item No. 011-Relocatable Power Taps

Corrective Action Needed: Reduce the number of relocatable power taps in fire department offices to one tap per branch circuit. Remove any electrical appliances from the power taps that are not low voltage appliances.

Standard Referenced: Relocatable Power Taps-reference 1910.304 (b)(2) Outlet Ampacity Rating and National Electric Code 210.21 and .21 (b) (2)

Corrective Action Date: *March 24, 2006*

Item No. 012-Extension Cord Used as Semi Permanent Wiring

Corrective Action Needed: Remove the extension cord from the doorway that is located in the Deputy Chief's office. Develop a plan to install additional electrical receptacles in Deputy Chief's office.

Standard Referenced: OSHA Electrical, 1910.303 (b) (2) Installation and Use and 1910.305 (a) (2) Temporary Wiring

Corrective Action Date: *March 24, 2006*

Item No. 013-Leaking Roof

Corrective Action Needed: Work with a qualified roofing contractor to determine the status of the roof. Report back to this office with the contractor's findings. Roof will need to be repaired and/or replaced as needed.

Standard Referenced: MA DOS Form 378-Water Damaged Materials and Indoor Air Quality

Corrective Action Date: *March 24, 2006*

Item No. 014-Second Means of Egress from the Second Floor

Corrective Action Needed: Work with the Mendon Building Inspector to determine if a second means of egress needs to be installed from the second floor. Report back to this office with your determination. If a second means of egress is needed, develop a plan to install a second means of egress for the building. As a minimum, firefighters should have a portable window ladder to exit windows in the case of an emergency.

Standard Referenced: MA Building Code, 780 CMR Chapter 10-Means of Egress and 1006.0 Types and Location of Means of Egress

Item No. 015-GFCI Protection

Corrective Action Needed: Work with the Mendon Electrical Inspector to determine if the bathroom is protected by GFCI. Report back to this office with his findings. Install GFCI protection if needed.

Standard Referenced: OSHA Electrical 1910.399-GFCI and National Electric Code, Article 240-Overcurrent Protection

Corrective Action Date: *March 24, 2006*

Item No. 016-Comprehensive Building Plan Needed

Corrective Action Needed: Develop a long-term plan regarding occupancy in the current building. Report back to this office with the Town of Mendon's conclusions.

Standard Referenced: Employee Health and Safety, MA Gen. Laws, Chapter 149, section 6

Please contact DOS if you need any assistance in correcting the items listed.

Sincerely,



Debra M. Gursha, CIH
Certified Industrial Hygienist

Approved:



Robert Kenrick
Program Manager

Enclosures: 5

1. MA DOS Form 371-Engine Exhaust Fumes in Fire Stations
2. BOCA Mechanical Code, 1993
3. MA DOS Form 389-Thermal Comfort Guidelines for Indoor Air Quality
4. MA DOS Form 378-Water Damaged Materials and Indoor Air Quality
5. "Relocatable Power Taps" OSHA Training Institute

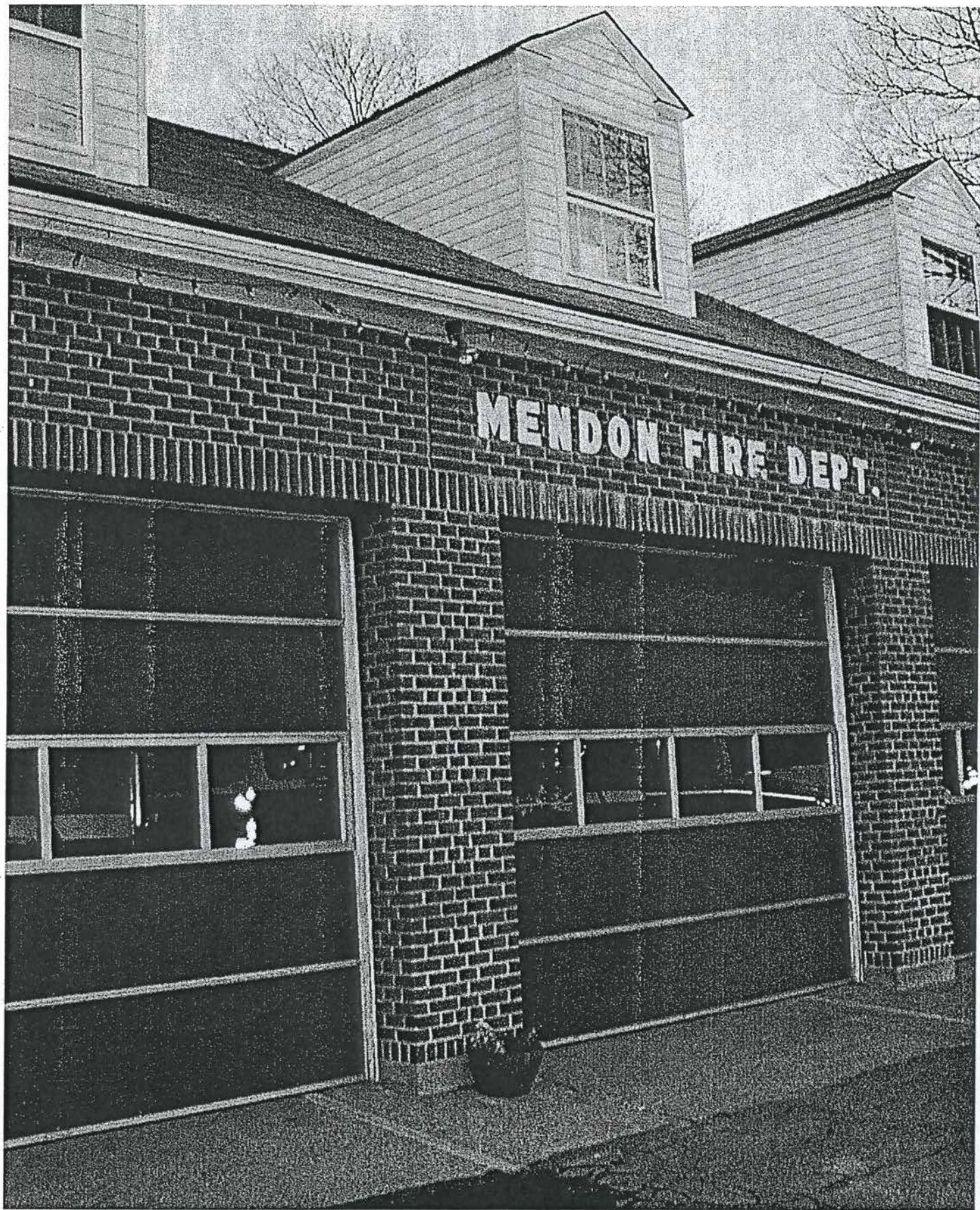
CC: Deputy Fire Chief Mark Poirier
Mendon Fire Department
24 Main Street
Mendon, MA 01756

Mr. Ken O'Brien
Selectman
Town of Mendon
40 Main Street
Mendon, MA 01756

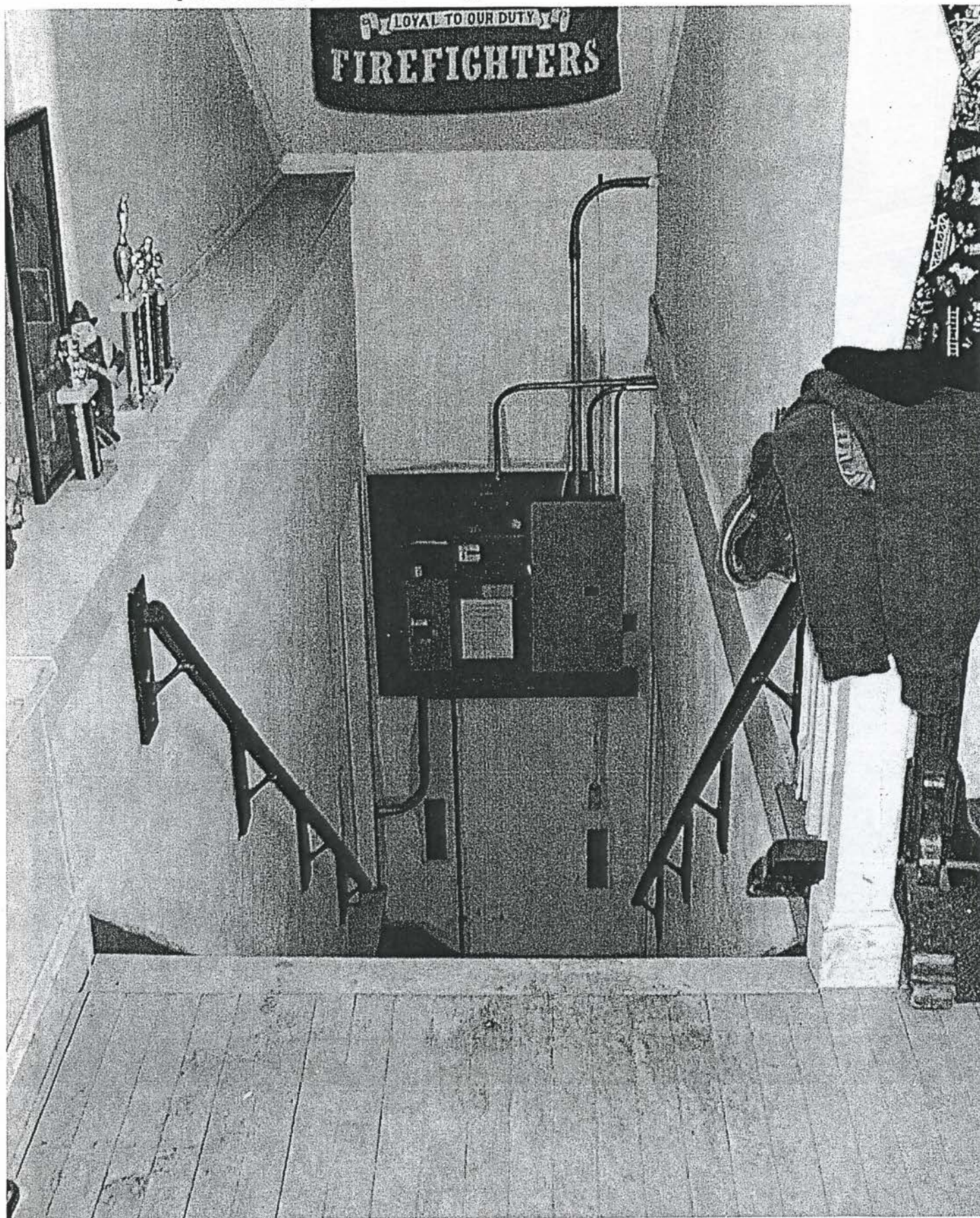
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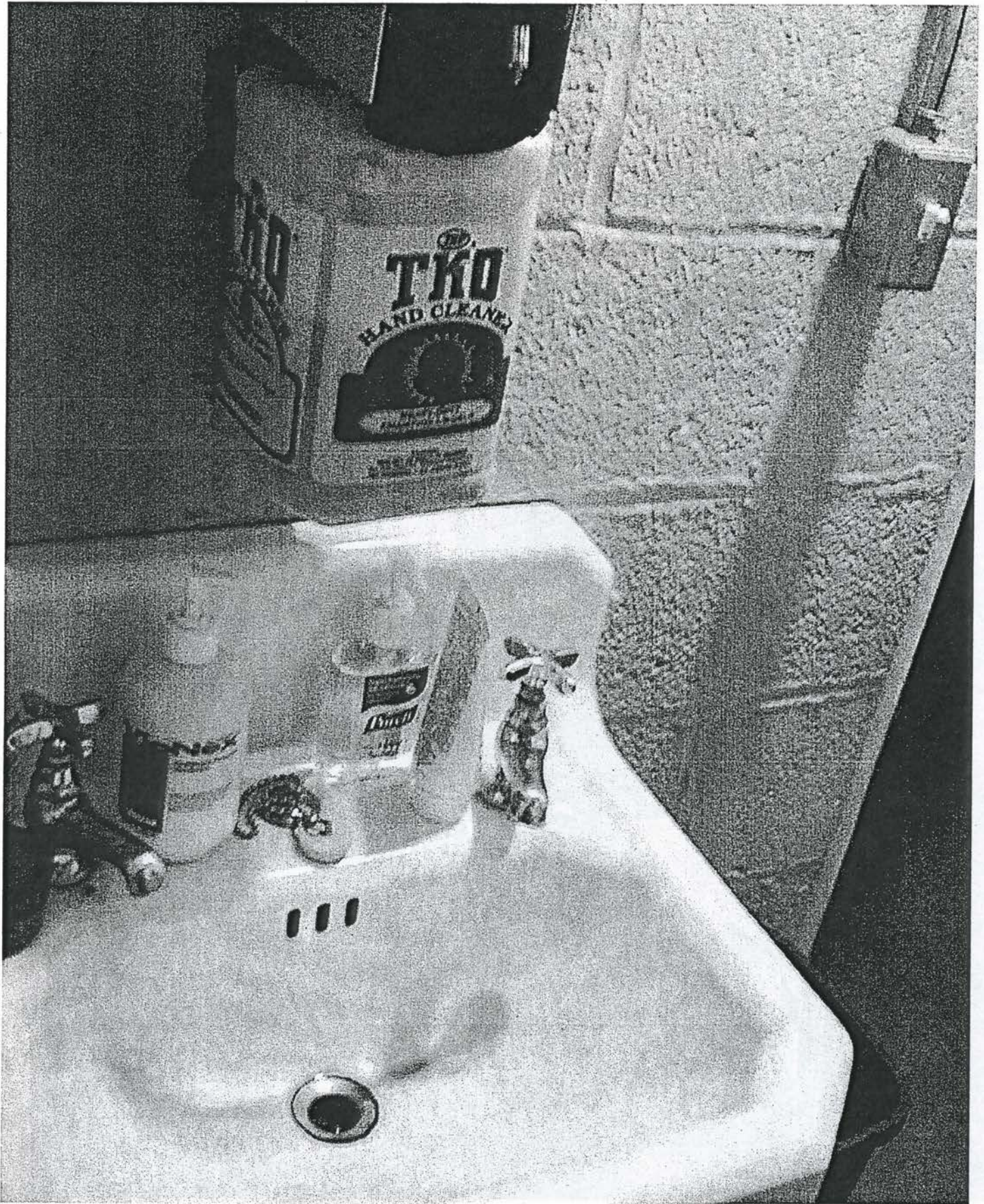
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20 Main Street
Mendon, MA 01756

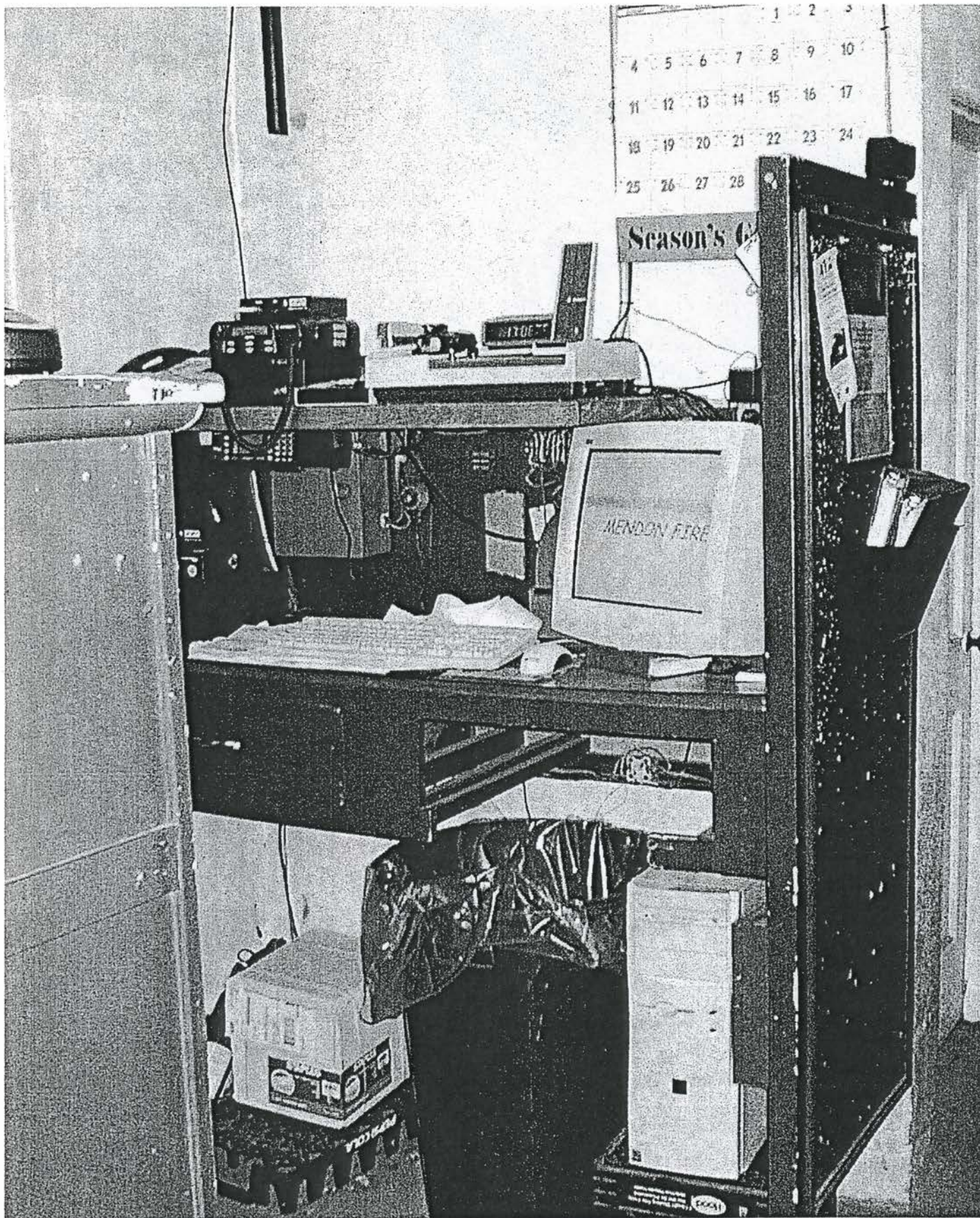


Main electyrical panel for building located at base of stairs. One open staircase leading to apparatus floor.

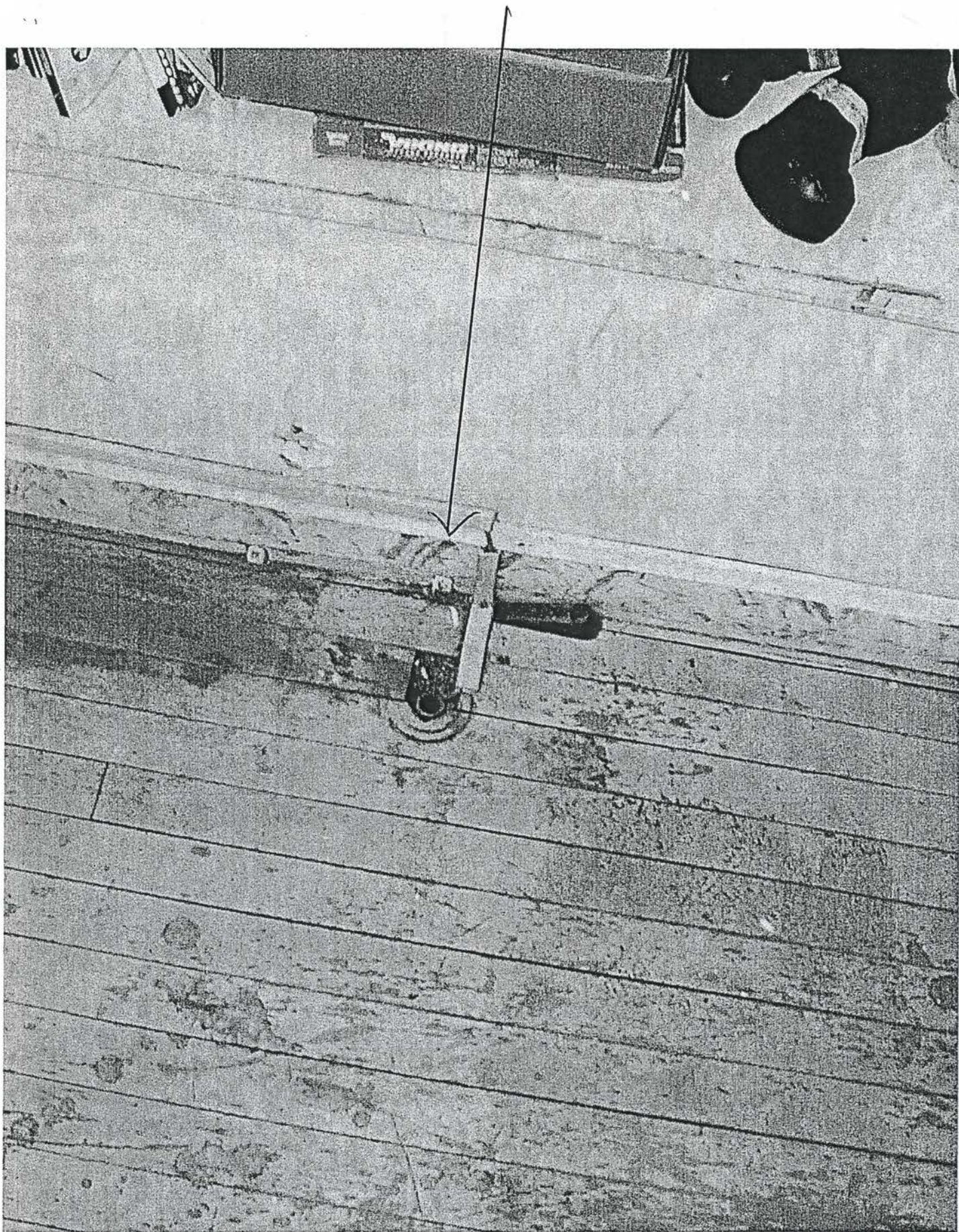




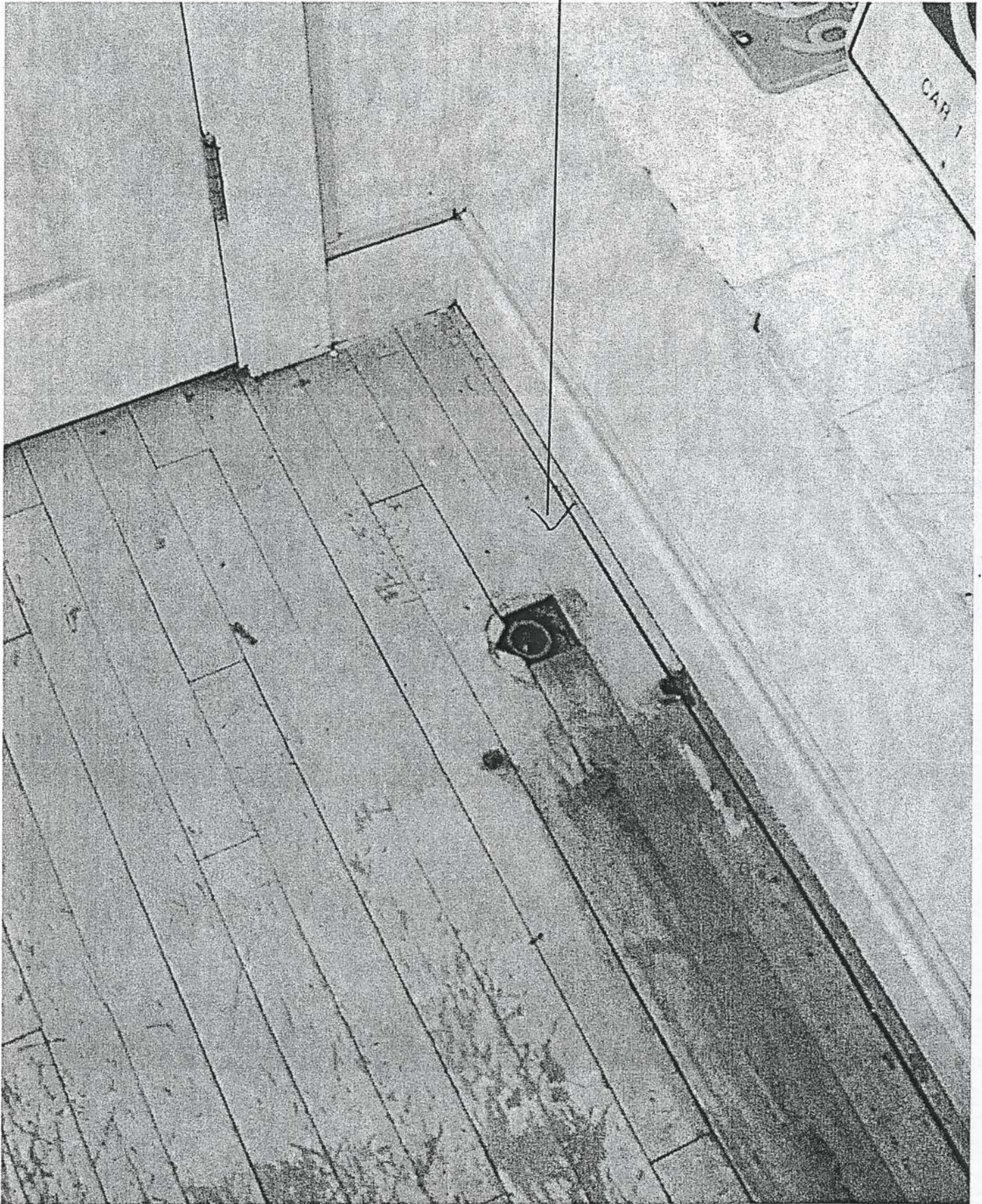
One bathroom sink in one bathroom used by all building occupants. No information if electrical service is GFCI protected.



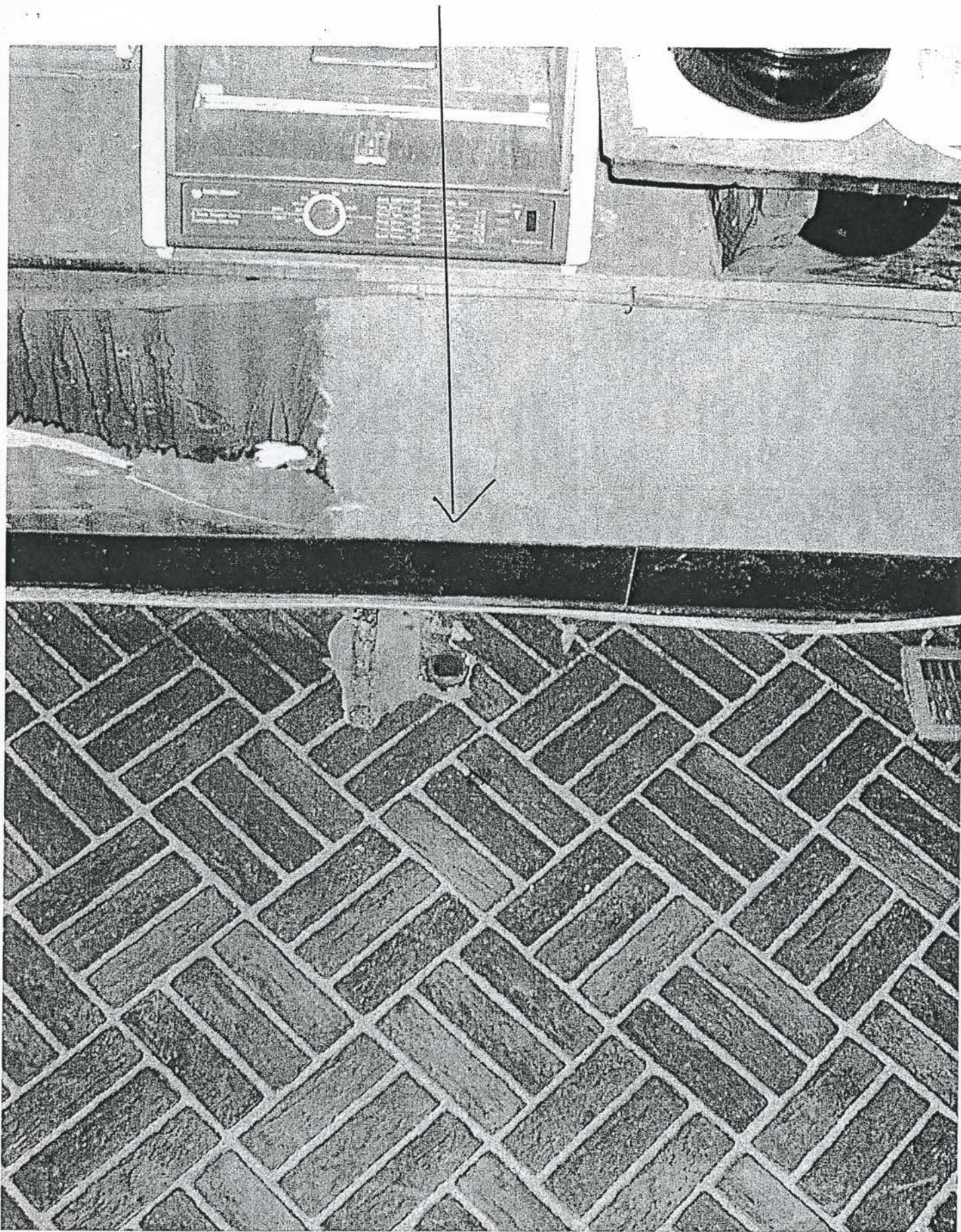
Open desk/computer area for report writing on apparatus floor.



Former pipe chase, 2nd floor area of station, appears to be from a steam heat or forced hot water system that had served the building



Another open pipe chase on 2nd floor

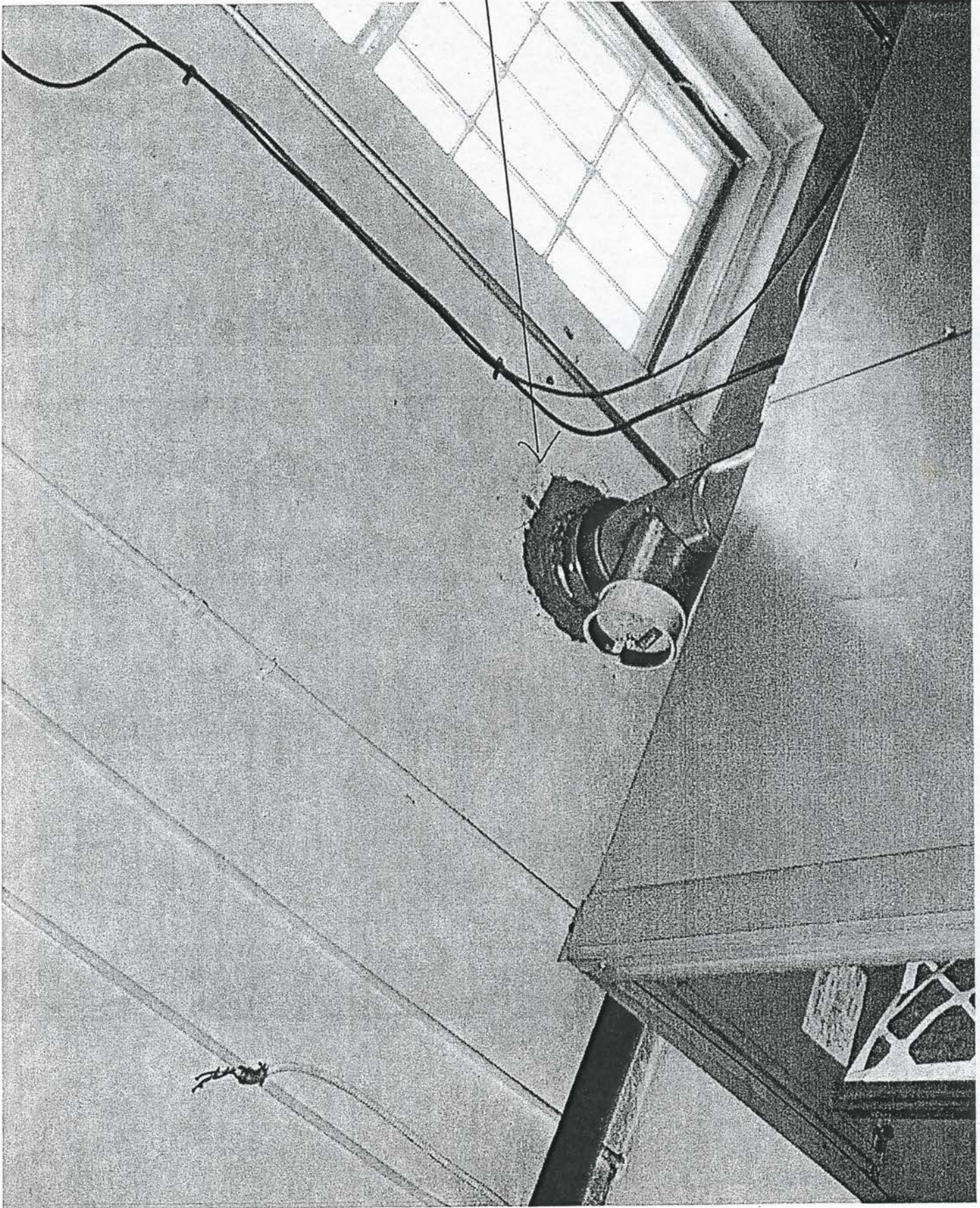


Pipe chase, 2nd floor

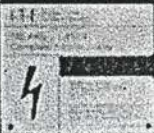


Open pipe chase, 2nd floor

Intake for forced hot air system, apparatus floor



SIEMENS



EXCITATION SWITCH

TRANSFER SWITCH

Transfer of Electrical Power to Back
Up "GFP" at power station to
this switch before opening same.
Lock with key and remove the key
and switch to the "OFF" position.
The switch cannot be moved "ON"

In Case of Power Failure Only

For Back up Generator to be started, immediately and
Promptly by the Power Headquarters.

To Transfer Emergency Generator Power to this
Headquarters:

- 1) Switch Exciter Switch to "OFF"
- 2) Disconnect Emergency Generator from system.
- 3) Switch System Switch to "Emergency Power"

When Power is Received by National Grid:

- 1) Disconnect Power Back to National Grid.
- 2) Return Exciter Switch to "ON" position.
- 3) Move Switch to "Back Up" in the "OFF" position.
- 4) Switch Transfer Switch to "Normal Grid Power"

The Generator will start running after a short delay.

ON
↑
OFF
↓
ON

FOR ELECTRIC
POWER