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BIO

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Identifying the Cleaning Needs of Standard Computer Rooms

by Carol Blake

As computers become an integral part of our daily business operations, more companies are finding themselves with a new environment to maintain which is the computer room. Almost every company with over 500 employees has a special computer room that is the electronic heart of the organization. These sensitive areas keep a company network or mainframe computer operational 24 hours a day. These areas have limited personnel access and range in size from 350 to 50,000 square feet. They have expensive computer equipment and a floor system that has unique cleaning requirements. These rooms have removable steel flooring known as access or raised flooring. The flooring panels are 2' x 2' and nest inside a steel rigid grid raised from 6" to 24" from the sub floor. Unique products, special cleaning techniques, specific equipment and trained personnel are required to maintain these areas.

It is important to understand that almost every action taken during any cleaning process will affect the equipment, the raised floor, and the environmental conditions in the computer room. "The biggest challenge of cleaning a computer room is performing removal of contamination without disturbing its operating environment," stated Larry Mainers. Mainers is President of TEC-International, the world's largest computer room cleaning company.

For example, in addition to distributing the weight of mainframe computers, a raised floor serves as a supply plenum for underfloor air conditioning. Air is forced under the floor under static pressure and vented under critical locations with special air flow panels. Removing many tiles from the raised floor system will alter the airflow patterns and reduce temperatures of sensitive equipment. Mainers added, "Due to the static pressure and its subsequential cooling ability the cleaning crews must maintain the raised floor systems uniformity while accessing the area for a long period of time. Because these computer rooms are typically neglected, cleaning them requires more attention."

Special Considerations

A computer facility is a dynamic environment where many activities occur on a regular basis. Maintenance and upgrades are performed on the computer system, the air-conditioning system, the public telephone network and the architectural elements within the facility. Installation of new and additional power, data, security, or fire protection circuits is a recurring event. With proper planning it should be possible to perform these activities with minimal contamination.

In these indoor artificial work environments there usually is not a fresh air source vented inside. Frequent cleaning of this work environment must be performed regularly to keep equipment operational. In addition the health of the computer system, airborne contamination can be hazardous to personnel working in this area.

Surfaces

Raised floors are available in a wide range of surface coverings. The most popular is High Pressure Laminate, because of its ability to dissipate static electricity and ease of maintenance. Anti-static carpet is also available. This carpet can be factory applied, or freely laid in 24" x 24" modules over bare steel floors. Vinyl Composition Tile is not as popular because of the need to wax the surface to maintain its esthetic qualities.

Basic Maintenance

The easiest surface to maintain is High Pressure Laminate. Seventy-five percent of computer rooms have raised floor surfaced with this laminate, called HPL. We will focus on the cleaning and maintenance of HPL on raised floor panels.

Once dirt enters a raised floor environment, a host of problems starts to occur, both environmentally and structurally. It is better prevent problems before they develop. Placing a mat at the entrance to a computer room is the best defense one can take to prevent dust, dirt and grit from entering the room. This is essential to access floor maintenance. Dry soil particles come indoors from outdoor environments or created within the facility. A well-designed floor mat located outside the room or inside the door will remove most dirt or grit from the bottom of shoes and cart casters. With outdoor rainy weather, the mat will also dry the bottom of the shoe and lower the possibility of slipping on hard surfaced raised floors. Mats require vacuuming regularly to function correctly.

Matthew Traylor, a 13 year technician with Access Floor Systems, Inc. a New Orleans based Raised Floor Installation and Service company, is a strong advocate for the use of mats. He said, "When mats are used, the raised floor cleaning process is simple, quick, and efficient. He added, "Mats reduce the work normally required to clean a raised floor by 50%."

General Dust Mopping

The most common tool used for dry soil removal is the dust mop. Designed to quickly remove minor dust and dirt, they are much more efficient than brooms. Brooms are not used around computer equipment because they generate too many high flying particles, proven harmful to sensitive equipment.

Because the mop head swivels, it allows a technician to cover more area with less effort. Side-to-side motions produce the best results. Pushing the mop from behind will also work. Dust mops also extend under equipment cleaning hidden dirt in hard to reach spaces. Two dust mops increase the coverage when cleaning large areas.

Even though this is the most common method, this is not the optimum method to remove dry soil. Because the soil stays in the dust mop and used in other areas in a facility, the contamination factor of unknown particulates is an immediate threat to computer equipment. Disposable dust cloth mopping systems are excellent for daily cleaning of a hard raised floor surface. They are more efficient because soil is removed and discarded from the computer room on a daily basis.

Similar to traditional dust mops, dust cloth systems consist of a handle, frame and head. They differ slightly but have the same ability to maneuver under and around computer equipment. Disposable cloths are packaged in rolls. They are made of synthetic material with microfibers that capture dust and dirt. The disposable cloths are quickly replaced once soiled. It is important not to use any special oil treated cloth on the raised floor surface. Oil based treated cloths leave a slippery residual, which creates an unsafe walking surface.

Damp Mopping

Depending upon the amount of floor traffic and type of facility, daily or weekly wet mopping is required to keep the raised floor looking great. One of the most important considerations in maintenance is water, and its use around operating computer systems. All of the electrical wiring for the computer equipment is under a raised floor. Excessive amounts of water seeping through the cracks on a raised floor can be devastating. It is mandatory to have an aggressive chemical to work with a minimum amount of water to quickly remove surface debris. The most popular cleaner for High Pressure Laminate is

RISE Access Floor cleaner. Developed in 1989, this product is recommended by both the laminate manufacturers and the raised floor manufacturers. Jim Kennedy, President of Kennedy and Co, a DeMoines flooring company, states "We have used RISE for over a decade and have had 100% customer satisfaction."

This damp-mopping procedure is used when light soiling is widespread and spot cleaning or machine cleaning is not practical:

1. Vacuum or dust mop the floors thoroughly.
2. Damp mop with hot water and an aggressive non-ammoniated cleaner.
3. Wring out the mop frequently, making sure the dirt is being removed, not redistributed
4. Change the rinse water frequently as much as once per 400 square feet.
5. Rinsing is the most important step. The electrical properties of HPL only work on a clean surface.

Terry Rappold, Vice President of Sales and Marketing, for Premier Source in Harahan, Louisiana recalls his mentor's words to describe computer floor cleaning. "Three things must be present when maintaining computer rooms: physical agitation, chemistry and time. So that in the event that any one of these is not present, or the effort altered, all three must be constant. With the RISE Chemical, people don't need physical effort. It comes with the chemical. With computer floor cleaning, physical agitation is provided by the a mop or machine, chemistry is the RISE cleaner, and the combination of the two reduce the time. Reducing time saves money."

Rhonda Vosigen, Project Manager, Irvine Access Floors, one of the leading access floor companies, said, "The use of the RISE Chemical improves the static dissipative nature of the high pressure laminate. I have recommended RISE on all new projects and for existing floor owners."

Automatic Floor Cleaning

Professional cleaning companies use an automatic scrubber as pictured.

This machine has been proven to safely clean raised floors. It is portable, weighing only 39 pounds, making it ideal for companies that maintain more than one facility. Totally safe for sensitive computer room environments, it is non-static producing. It is compact, easily fitting into tight places -- its width is just 19".

This machine offers a superior cleaning to HPL and is a computer room favorite as it uses almost no water. The water is quickly vacuumed up at the rear of the machine.

It provides a mist application of chemical onto two rotating brushes. Then the scrubbing action of dual rotating brushes activates the chemical and loosens soils. The brushes rotate toward the rear of the machine, and the solution guided to a high powered built-in vacuum system. In seconds, this high powered built-in vacuum lifts the soil and water off the surface of the raised floor. A 19" squeegee constantly slides across the top of the floor with the movement of the machine, sucking up any liquid. The combination of the misting, scrubbing and vacuuming action is what cleans the floor and removes dirt and debris fast and efficiently. This action takes place so quickly that water does not have time to drip between the sides of the access floor panels.

This machine replaces the old method of water and buckets as a primary source of cleaning. The neat, splatter-free cleaning is preferred in many sensitive environments; because the machine is effective, excessive chemicals and water are not required.

In House Maintenance Guidelines

The following considerations may be helpful for in house maintenance personnel:

Avoid the use of harsh chemicals containing ammonia, chlorine or harsh detergents.

Do not sweep because airborne dust is generated.

Use a dry lint-free dust mop on an access floor.

Performed spot cleaning with a damp mop.

Never allow powder cleaners to clean carpet or hard surfaces.

Make sure any chemical used on a computer floor has been tested according to NEMA standards

Use chemicals that do not interfere with the static dissipating properties of the floor surface. Professionally clean the floor at least two times a year. (Automatic Scrubber)

Insist the maintenance staff use a dedicated low or lint free mop only on the raised floor.

Do not use buffing equipment in a computer room.

Untrained personnel involved cleaning a computer room can be major contributors to contamination in these facilities. They should be educated about the critical nature of operating computer equipment. These rooms are not simply another room to clean.

Routine actions taken in other rooms can be devastating around a raised floor environment.

For example, they might bring the same mops used to clean the bathrooms in to a computer room. The chemicals and wax build up in the mops and mopped onto the access floor. After the floor dries, it is contaminated. If there was wax on the mop, the raised floor is temporarily insulated by a residual barrier of wax. This can cause many computer errors. Another action routinely performed in other areas that has a devastating effect in a computer room is emptying a simple garbage can. Rolling a 64 gallon garbage receptacle into the computer room and then emptying the garbage cans in the computer room inside the room creates high flying particulates, proven to be harmful to computers. The entire buildings particulates are now in this closed room.

With that in mind, it is important to get operating facility references on anyone who represents themselves as being a computer floor cleaning company. The insurance they carry should be at least 2 million in General Liability Coverage and their personnel extensively trained on the hazards of working in an operating computer facility.

Environmental Conditions can lead to access floor problems

Conditions in which panels do not fit securely allow dust and debris to fall into the sub floor. When the sub floor area functions as the air plenum, dust and debris littering the sub floor blows into equipment by the air conditioner. Blockages of the air fans result in equipment overheating, failure and downtime. Raised floor systems should be properly maintained in order for equipment cooling systems to work efficiently and to prevent contamination of the air flow.

Surface conditions such as wax build-ups eliminate the floor's static dissipation properties, an important consideration when static control is critical. All of these undesirable conditions are corrected and prevented through proper maintenance techniques.

When problems appear within a raised floor system, it is important to determine the cause and solve the problems before they become major threats to the work environment and personnel. A good maintenance program for the raised floor environment is the first step to proper care.

Residual Wax Build-Up

When floor panels appear yellow, dingy, and dirty-looking, residual wax has built up on the surface. This is a common problem with floor systems. Residual wax rapidly ages a floor system and should be removed.

Intentional wax applications

Lack of user knowledge about high pressure laminate is a dangerous situation. Wax and access floors do not mix well. Wax is the most damaging element for a raised floor panel. Wax will eliminate the static dissipation properties of high pressure laminate and glue the raised floor panels together preventing access to subfloor. Waxing makes the panels actually "grow" and difficult to remove. In addition, it makes the edge trim brittle and easy to break. When a raised floor is repeatedly waxed, it will be ruined and total replacement of the floor system is required. Wax causes a floor system to age prematurely.

When floor panels have been mistakenly waxed, it is extremely important to remove the wax immediately. This is done with extreme care and with an approved stripping product. Some commercial wax removers will also remove the glue that holds the hpl surface covering on to the floor panel. The results are devastating. When removing the wax incorrectly, the entire surface covering becomes permanently detached from the steel flooring panel.

Mainers stated, "The Number One thing that is done incorrectly to a raised floor is using abrasive materials to clean. This destroys the natural anti-static properties of the raised floor surface."

Care of a Raised Floor System

Proper maintenance of raised floors should include structural and environmental care. All raised floors require preventative maintenance to insure safe operating conditions for equipment and personnel. Listed below are the requirements for proper access floor care:

Structural Requirements:

1. Have floor inspected yearly by a qualified Access Floor Technician.

2. Rotate panels at least four times a year in heavy traffic areas.
3. Adjust grid systems two times a year to correct structural problems.
4. Install additional support pedestals prior to the addition of new equipment or when installing cutouts.
5. Replace any missing components as needed, such as edge trim, grounding clips, stringers, gaskets, foam rubber.
6. Replace warped and/or delaminated panels immediately when found.
7. Repair untrimmed cutouts immediately.

Environmental Requirements:

1. Dust mop daily with a Disposable Cloth System.
2. Have surface professionally cleaned by an authorized Access Floor Technician with cleaning chemicals tested according to NEMA guidelines at least two times a year.
3. Clean in the interim with NEMA approved cleaning chemicals with a damp lint-free rayon mop as required.
4. Vacuum understructure and subfloor at least twice yearly.
5. Clean perforated panels twice yearly.
6. Spot clean ink stains or scuffs as needed.

7. Remove surface wax immediately from laminate surface -- NEVER WAX ACCESS FLOOR!

8. Vacuum carpet panels three times a week with a vacuum equipped with a static dissipating rod.

9. Clean carpeted access floor at least twice yearly by extraction.

10. Modify cleaning frequencies to reflect traffic and soiling conditions, detection of airborne particles, and company appearance standards.

11. Install mats at entry points to prevent dirt and debris from entering the access floor environment.

Summary

Computer room cleaning is a preventative and ongoing process that can save countless labor hours in more aggressive services. Using mats and dust mopping regularly are the foundations of all floor maintenance efforts. Designing a dry soil removal plan to accommodate the facility, environment and foot traffic may mean services are performed more frequently. The time between more costly and time-consuming services is extended. This will improve the operating efficiency and reliability of computer equipment and extends the life of a floor system.

"Computer room cleaning requires dedication and the continued education of how equipment operates. By keeping abreast with this industry the cleanroom environment can be maintained with little or no downtime due to contamination," Mainers added.

Disclaimer

This article is an overview of the unique cleaning requirements and environmental conditions of computer rooms and not intended to be a cleaning guide. Do not attempt to maintain computer room areas with raised flooring systems without professionally trained people and equipment.