

## **Standard Operating Procedures (SOP) and Policy**

### **Intent of this section**

The intent of this Section has multiple purposes, they are

1. To provide the DCI with applicable Standard Operating Procedures (SOP) and Policy of the MAA Office of Technology that have a direct impact on the performance and acceptance of work performed.
2. Reduce redundant information that applies across multiple sections of the OT and possible conflicting county or national standards
3. Provide a very detailed level of key items the DCI shall include in final product.

### **Warrantee**

All work performed shall have a (2) year warrantee period for performance of products installed.

### **Existing Conditions**

In the event, existing conditions do not meet the most current edition of the OT standard the existing conditions shall be brought up to this standard as part of the work being performed.

All abandoned communications facilities shall be cleared per NEC and NFPA back to the source unless specifically approved by the OT and OFM

### **Approved Products**

The Office of Technology has established this section of the standards based on performance of the products and best practices at the MAA. Only products in this section shall be used. OT use of product names and model or part number are used for the convenience of the DCI for reference and ease of evaluation, functional equivalents and approved equals will NOT be allowed without OT approval. If an

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inadvertent use of a product name is used elsewhere in the OT Standards, it is to be brought to the attention of the OT Engineer for evaluation and is to be considered an error in the standard.

### Definitions:

The generic term Communications Room or Telecommunications Room are often used to describe any of the following:

Main Distribution Frame Room (MDF) is defined as the primary serving/distribution point for communications services to a major facility or grouping of facilities.

***Example of such rooms would be NT109, NTE261C***

Intermediate Distribution Frame Room (IDF) is defined as a local distribution point for communication services to a locally confined area. ***Example of such rooms would be C106H, E1107***

Computer Room (CR) is defines as an environmentally conditioned room with full power conditioning (UPS), FM200 etc and associated services ***Example of such rooms would be C139J, NTE261C, C134A***

Extended tenant DEMARC defines communications facilities that are extended from a (MDF, IDF or CR) to a tenants or Airlines leased space for connection to the MAA network, MAA Emergency Paging, PSN, or other communications providers.

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### **Reserving MAA Communications Resources**

During the design of new projects if MAA Communications Resources are required a Resources allocation request that must be submitted and approved by OT.

MAA Communications Resources is defined as any object or communications requirement that will be placed in or run thru a MAA Communications room. For example

- Request for fiber optics

- Placement of Equipment, to include foot print of cabinets, BTU output of equipment, power requirements

### ***Communications Room naming convention***

All facilities shall be documented and referenced by the door number. OT does not recognize room numbers in any of our record keeping.

### ***Computer rooms (CR) facilities***

OT engineer shall assist with design.

As a minimum requirement, full diverse and alternate fiber and copper interconnection is required to other computer rooms (NT109, C134A or NTE261C)

OT will make the final termination pertaining to which locations get the pathways.

### **Systems Not Permitted Within a Communications Room:**

These rooms are for the exclusive use of MAA/OT. No tenant or MAA contractor is to install equipment, frames or electronics in these rooms without written permission from an OT Engineer.

All cabling to these rooms should be kept to a minimum to conserve space.

All cabling shall be installed and dressed to present a professional installation.

All cabling shall be in cable tray. No unsupported cabling shall be permitted

**Flexible Response System:** Raceway, conductors and/or signaling devices.

**Lightning Protection:** Down conductors or grounding components.

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**Equipment:** Any Tenant or MAA hardware, electronic equipment, wiring or racks that have not been approved by the OT Engineer

**Electronic Noise Emitters** Any equipment that emits EMI/EMF  
Certification by the manufacturer shall be required.

**Water, waste or drain lines** The installation in, thru or above the room

Restrict routing of conduit, pipes, ducts etc thru communications Room(s). The routing (if approved by OT) shall not be over electronic equipment or racks.

### Communications Rooms Planning Considerations:

The following factors shall be considered when designing an area to be occupied by a Communications room:

(1) The room shall have a minimum dimension of 8' x 10', and a floor to ceiling clearance of 10-feet. The final size of the room will depend on the quantity of racks/cabinets and other equipment associated with systems.

(2) Future growth shall also be factored into the final size of the room without the need for moving existing equipment,

(3) The door shall be a metal hollow door fire-rated and sized at 36" wide for an IDF and double 36" wide for an MDF,

(5) A minimum of two walls shall be provided with 3/4" FRT (Fire Retardant Treated) grade plywood, painted with 2 coats of light colored fire-retardant paint

(6) No windows

(7) The flooring shall have electrostatic-safe vinyl tile and with a minimum floor loading capacity of 150 lbs/sq-ft

(8) Space IDF's so that the furthest workstation cabling does not exceed **90-meters** in total length. (allows for 10 meters of patch and station cords)

### Mechanical Systems:

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The following factors shall be considered when designing an area to be occupied by OT systems:

- (1) HVAC equipment
- (2) Humidity control,
- (3) Dust and contaminant control,
- (4) HVAC redundancy,
- (5) Type of fire protection (*See Fire Protection section of this document*)
- (6) AC Power redundancy

**HVAC:** The system shall be designed to function properly for 24X7 operations. The system shall be designed to operate under positive pressure with respect to its surroundings. The equipment shall be sized and dedicated for the room it serves and be located outside of the room. This will reduce the possibilities of condensate water entering the racks/equipment. However, any equipment located inside the room shall be provided with drip pans and condensate pumps to shield the equipment below from potential water damage. A fire damper shall also be provided to maintain the room's 2-hour fire rating.

The general design criteria for HVAC systems shall be: Temperature shall be maintained not to exceed 85-degrees F with a relative humidity from 30% to 55%. All temperature sensors and controls shall be located within the room the HVAC equipment serves and at no more than 5-feet above the finished floor. For the Primary Communications Rooms and MDF, in addition to the requirements above, a dual/redundant HVAC system shall be provided.

NOTE: The above planning considerations are not to be considered the only design. The final design shall be based on actual requirements of the space. All design work shall be to a fully built out communications room. Example if 3 rack/cabinets are

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installed but the room can fit 5 racks/cabinets the HVAC shall be sized for 5 racks/cabinets.

### Fire Protection:

**Consult with MAA OT at concept design phase to determine required level of fire protection.** Pre-Action system shall not be installed serving the room. The location of the Pre-Action Fire Alarm Control Panel shall be in a nearby room, but not within the same room it serves.

Wet or misting systems shall not be used unless approved by OT and the Fire Marshal and then only 2 stage systems shall be allowed.

Depending on what equipment is to be located inside the Communications Room; a Clean Agent type fire suppression system may be required in lieu of a Pre-Action system. A Clean Agent system will also require a separate room to house the system. The Communications Room served by the Clean Agent system will also be required to be fire-stopped and sealed per the system requirement. The DCI shall coordinate with MAA OT on the need for a Clean Agent system.

All communications rooms that have existing Clean Agent Fire Extinguishing Systems or Communications rooms that will have Clean Agent Fire Extinguishing Systems shall fully comply with **NFPA (most current edition)**. This includes any new work in the rooms. Example running a new conduit, pipe etc thru the space. Smoke/pressure leakage testing in accordance with NFPA Standard for Clean Agent Fire Extinguishing Systems shall be required to check all work and that room sealing integrity has been maintained.

### NFPA 2001 Standard on Clean Agent Fire Extinguishing Systems

**NOTE: All clean agent systems SHALL be designed and sized ceiling to floor, EXCLUDING drop ceilings if present.** All clean agent rooms shall be designed for code compliance of the clean agent from floor (including space under any raised flooring) up to and including the bottom of the deck above. The design shall assume no special ceiling tile or tile clips, specialized lighting fixtures etc to meet FM200 requirements

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### 7.4 Enclosure Inspection.

Other than as identified in 7.4.1, the enclosure protected by the clean agent shall be thoroughly inspected at least every 12 months to determine if penetrations have occurred that could lead to agent leakage or other changes have occurred that could change volume of hazard, or both. Where the inspection indicates conditions that could result in the inability to maintain the clean agent concentration, the conditions shall be corrected. If uncertainty still exists, the enclosures shall be retested for integrity in accordance with 7.7.2.3.

7.4.1 An enclosure inspection shall not be required every 12 months if a documented administrative control program exists that addresses barrier integrity.

7.7.2.3\* Review Enclosure Integrity. All total flooding systems shall have the enclosure examined and tested to locate and then effectively seal any significant air leaks that could result in a failure of the enclosure to hold the specified agent concentration level for the specified holding period. The currently preferred method is using a blower door fan unit and smoke pencil. Quantitative results shall be obtained and recorded to indicate that the specified agent concentration for the specified duration of protection follows Section 5.6, using an approved blower fan unit or other means as approved by the authority having jurisdiction. (For guidance, see Annex C.)

### **ELECTRICAL SYSTEM:**

Power receptacles are to be labeled with circuit number, panel numbers and receptacle type with in a permanent manner per MAA design standards

All power and communications to racks and cabinets shall be top fed when raised flooring is not present.

Where raised flooring is present all communications cables shall be top fed and all power shall be bottom fed.

Power and communications cables shall maintain a 3-foot separation at all times.

Power Strips with circuit protection: Each rack/cabinet containing powered equipment shall have two independent Power Distribution Units (PDU) vertically installed, one on each side. See approved product section.

One PDU shall be dedicated to commercial power, the other to conditioned commercial power. The PDU shall have sufficient outlets to provide service to the entire fully populated rack.

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The UPS PDU shall be on the left side (facing from rear) shall be delineated as UPS either with orange receptacles or permanently marked "UPS POWER", conditioned commercial power shall be on the right.

**Blade Power Receptacle:** Computer rooms shall be equipped with a 30A/208V normal power twist lock receptacle(s) capable of supporting an emergency cooling unit. **Confirm requirement with OT Engineer**

The minimum power requirements for each equipment PDU are 30A/120V.

Reference approved products section.

DCI will coordinate with OT and the electrician for final connections

Coordinate with MAA OT on the need for twist-lock receptacles at the rack, utilizing 30A, 120V circuits.

**Normal Power:** Commercial power (dedicated 20A/120V circuit) shall be provided to duplex convenience receptacles serving the Communications Room per NEC. The receptacles shall be accessible at all times and not be blocked by racks, cabinets or other equipment.

**System Power Requirements:** All systems requiring A/C power in shall be provided with an uninterruptible power system (UPS). The UPS shall be sized to accommodate calculated load plus 200% with run time of 15 minutes. Minimum size of floor mount UPS units shall be 20 kVA, minimum size of rack mount units shall be 1400 VA. Floor units shall be equipped with a Battery Cabinet and Emergency Bypass Cabinet. Output panel board for UPS power distribution should be in the communication room. The UPS shall be provided with (1) network interface cards for Simple Network Management Protocol (SNMP) connection for OT monitoring. The UPS shall also be provided with (1) network interface card and components for the Building Automation System (BAS) connection, compatible with the Johnson Controls' Metasys System.



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### Edge Device (MAA End User Edge Equipment)

A/C UPS Power Receptacles: All IT equipment shall be protected by a UPS with the ability to provide 20A/120VAC power filtering and power backup for a period of not less than 15 minutes under full load. The load shall be calculated under the assumption that a minimum of (1) CPU and (1) monitor will be connected to a single AC outlet. The purpose of the UPS is not to provide power during power outages. The primary function is to provide power filtering and to provide 15 minutes of backup power, so the system can be shut down in a regulated fashion.

A duplex 20A/120V UPS receptacle shall be installed adjacent to workstation communication faceplates to support MAA IT PC's and associated hardware is required. The receptacle shall be orange in color and shall be associated with UPS support.

Modular furniture power outlets maybe exempt from the orange outlet requirement. Industry approved marking may be used. Example and orange triangle on outlet.

**NOTE: There shall be (1) duplex 20A/120V UPS receptacle next to every installed communications outlet (copper)**

All MAA networked printers shall have a 20/120 VAC outlet protected by individual surge suppression device installed instead of a "standard outlet".

**Electrical Panel boards:** Electrical panel boards shall not be located within Communications Rooms except when required by code. Where necessary, panel boards shall be dedicated to loads within the Communications Room only and shall be located to minimize electromagnetic interference. All panel boards if required will be "Clustered" within the room to reduce overall clearance requirements and for employee safety near the entrance door.

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**Transformers:** Transformers shall not be located within Communications Rooms. Where necessary, transformers shall be dedicated to loads within the Communications Room only and shall be located to minimize electromagnetic interference. Transformer shall have a Faraday Shield installed to further improve noise immunity and be K-rated to accommodate non-linear loads. As an alternative, the transformer can use harmonic canceling techniques to mitigate the effects of harmonics.

**Lighting:** Lighting shall be limited to the use of 4-foot industrial style with 20% up light fluorescent, two lamp fixtures minimum (with wire guards) controlled via a light switch at each exit. The design luminance shall be 50-foot-candle measured at 3-foot above the finished floor, while taking into account equipment in the room. Suspend all light fixtures from a UL listed strut-type channel raceway. Provide one light fixture inside the Communications Room to function during a power outage (connection to generator or UPS). Lighting shall follow MAA electrical standards. Lighting shall be designed and installed to provide maximum coverage in front and behind equipment. No motion sensor type switch shall be allowed, only manual toggle light switches shall be allowed.

**Access Control System:** All Communications Rooms shall have a Controlled Access Security System entry system installed in accordance with current MAA Standards

**Voice:** A wall mounted phone and all associated wiring shall be installed 48-inches above the finished floor located near the entrance/exit.

**Raceways and Supports:** A cable tray system shall be installed around the entire perimeter of the room and routed above each equipment rack/cabinet. The mounting height shall be a minimum of 12-inches above the racks and shall be supported directly to the structural steel.

Contact OT engineer for specifications. Reference approved products section. Cable tray specification varies depending on room usage.

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**Fire Alarm System Interface:** A Fire Marshal approved monitoring module and smoke detector shall be installed at the location of the Pre-Action (or Clean Agent) Fire Alarm Control Panel that protects the Communications Room(s). The monitoring module serves as the interface between the fire protection system protecting the room and the BWI's Fire Alarm System. In general, the fire protection system will have pull stations and audio/visual devices within the Communications Room.

### **High Density Protection Field:**

Shall be required on all OSP facilities entering the room when exiting the splice case, the copper cabling shall be routed to a high-density protector frame using stub cables. The protector frame shall be located as close to the entry point as feasible and adjacent to the splice case. Distribution stub cables shall be extended from the protector frame to the main distribution frame.

The OT standards and specifications shall be used for all communications Designs, installations and testing.

These standards shall apply to any concessionaire tenant or Airline communications facilities installed at MAA owned properties unless a variance approved by OT Engineer.

Temporary or emergency installations may be exempt from these standards with written permission of the OT Engineer.

Any design work or work performed as part of a contract that does not use these OT standards along with other information provided by the Office of Technology shall be considered non-compliant and will be rejected.

OT Engineer shall approve all product cut sheets prior to purchasing and installation by contractor.

OT engineer shall approve all related cut sheets, change orders, Extra Work Orders in conjunction with the designer of record if applicable. The OT Engineer shall make all final determinations.

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All Life Safety and Public Safety infrastructure (Copper and Fiber) shall be installed in conduit unless approved by OT Engineer.

Termination point(s) will be specified by the OT Engineer.

**ONLY THE OFFICE OF TECHNOLOGY** shall terminate connections or circuits to live communications system(s)

OT staff does not provide escorts for tenant services. All tenant vendors shall be badged or escorted by tenant.

Security access to communications rooms shall only be granted by OT Authorized signers as defined by the Office of Airport Security (OAS).

Wall Penetrations: Wall penetrations shall be the preferred method of presenting communications outlets; floor penetrations shall be avoided. All wall penetrations to a work station shall be recessed in the wall and terminate in a device box and have a device wall plate. Conduit stub out is not required and preferred NOT to be used to accommodate future MAC work.

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### Testing and Acceptance

The OT Engineer reserves the right to witness the testing for verification of testing methods.

If the OT Engineer does not witness the testing, The OT Engineer reserves the right to have a 10% retest done at no cost to the MAA.

The 10% retest shall consist of the OT Engineer selecting 10% of the facilities previously tested for a retest. If any of the 10% retests fails, then the entire facility will be considered failed and shall be retested and witnessed by the OT Engineer.

### **Outside Plant (OSP)**

#### **High Density Protection Field:**

All terminations of OSP shall be provided with OT approved protection fields at both ends of the cable and shall be required on all OSP facilities entering the room when exiting the splice case, the copper cabling shall be routed to a high-density protector frame using stub cables. The protector frame shall be located as close to the entry point as feasible and adjacent to the splice case. Distribution stub cables shall be extended from the protector frame to the main distribution frame.

Cable Shield: End-to-end continuity isolated from ground; no connection to ground shall be present.

Splicing enclosures shall be re-enterable and filled with re-enterable flooding compound.

All OSP conduits shall be buried to a minimum depth of 48 inches unless approved by OT Engineer.

***NOTE: SHA requires 60 inches for some applications where roadway may be widened***

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### The Standardization of Communication Cabling shall be as follows:

All backbone Copper and Fiber cabling shall be installed in conduit with proper sizing. Fiber shall be installed within conduit and the proper rated inter duct.

#### ***Communications rooms (IDF) facilities***

Single Mode Fiber Optic Minimum fiber count 24 strands, Terminated with SC connector

Multi Mode Fiber Optic Minimum fiber count 12 strands, Terminated with ST connector

#### ***Communications rooms (MDF) (Back Bone Facilities)***

##### ***Fiber***

Single Mode Fiber Optic Minimum fiber count is 144 strands

Multimode Fiber Optic Minimum fiber count 24 strands

Copper feeder cable Minimum copper count 100 pair, CAT 3

*Note: when redundant and diverse feeds are used ½ the fill count to EACH redundant communications room meets the fill counts above.*

### **Planning Considerations when designing pathway systems:**

The following factors shall be considered when designing an underground pathway system:

(1) The overall length of the raceway from source to destination, (2) the length of raceway between pulling points, (3) the quantity of bends and offsets between pulling points, (4) the maximum pulling tension recommended by the cable manufacturer, (5) the minimum bend radius recommended by the cable manufacturer, (6) the minimum depth raceway shall be installed under runways, taxiways, apron areas, roadways, walkways, etc., (7) location and quantity of manholes, (8) size, weight and quantity of cable reels, (9) impact on airport operations during installation and future maintenance.

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### **Conduit and inter-ducts:**

All ISP inter duct must be plenum rated within a plenum ceiling. PVC inter-duct will be approved provided the conduit path is continuous end to end via junction boxes, and that it does not enter the plenum ceiling.

When installing new conduit exceeding (2) two inch (duct bank or single duct) the contractor shall install inter-duct in the conduit. The purpose of the inter-duct is to allow future use of the duct system.

Minimum number and size of inter duct to conduit size shall be

2-inch conduit, install (1) 1 1/4-inch wall inter duct

4-inch Conduit, install (3) 1 1/4-inch wall inter duct

All conduits including inter-duct shall have a MULE tape installed in all empty ducts. The MULE tape can determine length of the conduit run in the future.

No “weave or cloth type” inter duct shall be allowed without a variance from OT

### **Reserving MAA Communications Resources**

During the DCI of projects if MAA Communications Resources are required a request for resource allocation permit must be submitted and approved by OT prior to start of work. Without the approved permit OT, does not guarantee resource available and will give preference to permit holders in the event of conflict.

MAA Communications Resources is defined as any object or communications requirement that will be placed in or run thru a MAA Communications room. For example

1. Fiber optics
2. Copper cable
3. Placement of Equipment, to include foot print of cabinets and wall space
4. Power, both commercial outlets and conditioned (UPS)

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### 5. Environmental (HVAC)

#### **Drawings**

The drawings shall show all systems within the Communications Room, coordinated with each other and shown on a composite drawing (Coordinated Drawing). The composite drawing will have related elevations, sections and plan views to validate coordination. In addition, the composite drawing shall show all floor and wall penetrations.

Composite drawing shall also show at a minimum 2 adjacent rooms in all directions include floor above and floor below and shall show its location on a terminal plan.

#### **Qualifications of Designers, Contractors and Installers (DCI)**

**Company Experience:** The DCI for a project's communications system shall submit documentation demonstrating that the company has successfully designed built, and customer has accepted to a minimum of (3) projects of similar size, complexity and scope within the last 3-years.

**Staff Experience:** Information shall be provided regarding the certification, training and experience of all key members of the project team. The project team shall include at a minimum one Registered Communication Distribution Designer (RCDD) certified by BICSI. The project team shall be identified, and resumes provided for the project team to the OT. The resumes shall include copies of all certifications and licenses required.

Installers of all communications facilities shall be supervised at a minimum by a BICSI certified IT Technician, in the discipline of the work to be performed

#### **Project Planning Considerations**

All Information Technology (IT) related projects including related support infrastructure shall be coordinated with MAA OT. The DCI shall contact a MAA OT Engineer to arrange a meeting prior to the initial submittal of the project (30%). The



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project coordination shall include all MAA projects as well as all Tenant related projects. The DCI shall also coordinate this with MAA OT Engineer.

All Information Technology (IT) related projects including related support infrastructure shall be coordinated with MAA OT. The Architect/Engineer shall contact a MAA OT Engineer to arrange a meeting prior to the initial submittal of the project. The project coordination shall include all MAA projects as well as all Tenant related projects. Depending on the magnitude of the project, "Break-Out Session" meetings may also be necessary. The Architect/Engineer shall also coordinate this with MAA OT Engineer.

### **Communications Subject Matter Expert (CSME)**

When large Projects impact tenants and/or Airlines communications facilities and will be significantly impacted (as determined by the OT Engineer). The prime contractor shall employ at their cost a CSME to coordinate all communications activities between the tenants, Office of Technology and communications vendors. This Communications SME shall also work under the direction of OT for compliance with standards and coordination of all MAC work. Reference section S7 271333

### **As Built Drawings**

They shall be compatible with the record system being maintained by MAA/OT at the time of installation. Detail will also include sufficient information to determine excess capacity for future use.

### **Use of MAA owned Copper and Fiber Resources**

*Note: The resources discussed here do not include facilities installed at tenant's expense from the MAA communications room to the tenant communications room.*

Upon receipt of the permit request OT will establish the path, test for continuity, and test for length where applicable. This information will be given to the requesting authority.

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### Tenant Fiber Optic

All installed tenant fiber shall be installed as to “Touch” MAA communications rooms so that the MAA can reuse the facilities for the next tenant to reduce abandoned cables and strand count shall not be less than 12 strands of Fiber Optic cable.

MAA Leased Facilities (Fiber).

Leasing of MAA Facilities shall be coordinated with MAA Office of Commercial Management. Rate fees can be found at

[http://www.marylandaviation.com/\\_media/client/passur/bwitenantdirectives/TD-BWI-401.1.pdf](http://www.marylandaviation.com/_media/client/passur/bwitenantdirectives/TD-BWI-401.1.pdf)

As part of the lease fees for the use of these facilities the MAA/OT has a responsibility to maintain the facilities in good working order. If a MAA leased communications facility fails, the MAA/OT will repair it at no charge to the customer. The MAA/OT is not responsible for the edge devices; including communications facilities attached to the MAA leased communications facility.

### **Unauthorized Users of the system**

Unauthorized use is defined as any connections found that have not been approved by or installed by OT without full documentation.

Unauthorized entry or connections into these facilities is prohibited.

Upon discovery of unauthorized use of the facilities

1. OT will make every effort to identify the user
2. If user can be identified and the use of the facilities is determined to be within OT guidelines the customer will be invoiced back to last physical inventory date

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including installation charges plus actual time (troubleshooting charge) spent identifying user of the system.

**3. If the user can not be identified the services will be disconnected.**

4. The MAA/OT will suspend access to all MAA Communications rooms for 30 days first offense, 60 days second offense, permanently 3rd offense to tenant and/or contractor performing work.

MAA/OT reserves the right to charge for repair or troubleshooting services rendered to non-MAA communications facilities or in the event the trouble reported is determined not to be a MAA responsibility. The actual rates and charges can be obtained in the MAA 401 rate and charges directive. These rates can be adjusted to reflect changing conditions. The Manager, Division of Telecommunications will determine the means and methods of repair, this includes if MAA forces or contract support will perform the work. Users are not required to use the MAA services for repair. They can use their own badged maintenance personnel or contractor

Example. If Tenant system is not communicating properly and they believe it is an MAA Communications issue. The tenant will ask for repair dispatch. The MAA will trouble shoot the problem. If the problem is MAA communications facility the MAA will repair at no charge. If the problem is determined to be a non-MAA facility the tenant will be invoiced for service call.

Procedures for requesting repair of leased MAA Communications facilities:

1. Call the MAA Help Desk (410-859-7599).
2. If emergency dispatch is required after normal working hours (follow voice prompts) to the Telecommunications group.
3. E-mail the MAA help desk if next business day service is what is required.
4. Give call back information and description of the problem.

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5. The responding MAA technician will work with caller to determine priority and discuss potential costs. (note: caller shall have authority to authorize potential Time and Material costs)
6. Service will be performed as agreed to between MAA and customer
7. There shall be a minimum 4-hour charge on all after hours call outs