

Section 01 Document Information	Centeris Data Centers - Critical Facilities Work Rules - 01052016		
<i>Creation Date:</i>	01/05/2016	<i>Revision Date:</i>	<i>Author:</i>
Section 02 Site Information	Site Information		
<i>Customer Name:</i>	Centeris Data Center	<i>Document Number:</i>	
Section 03 Details	Details		

Application

- Critical Facility Work Rules apply to any technical operation or procedure under the direct or indirect supervision of the Data Center Manager and/ or the Facilities Operations Management team.
- All personnel under this supervision must abide by the following rules.
- By signing this document, the person agrees to comply with all rules set forth in the document. Failure to comply with these rules will result in automatic ejection from the facility.

Procedure

1. **Method of Procedure (MOP) Usage** - All work on or around any critical facility equipment is prohibited without a MOP that has been approved for use on the specific procedure being conducted. MOP's shall also be used in non-critical operational areas that directly support the critical application (e.g. NOC, Security, Engineering), or when determined to be a prudent safety or operational measure.
 - 1.1. Critical Facility Equipment includes the following:
 - 1.1.1. All electrical equipment from site utility entrance to individual computer room equipment circuits, and all distribution panels and circuits in between. This includes (but is not limited to) all protective power systems including generators, battery plants, UPS systems etc.... Redundant components are also considered elements of the Critical Facility Equipment.
 - 1.1.2. All mechanical equipment that provides cooling to the essential heat loads within the technical facility. This includes (but is not limited to) all air-handling units, heat exchange equipment, pumps, piping etc.... Redundant mechanical components are also considered elements of the Critical Facility Equipment.
 - 1.1.3. Protective equipment includes (but is not limited to) all fire and smoke detection and suppression systems, leak detection systems, security systems and any remote monitoring equipment.
 - 1.1.4. Control equipment includes (but is not limited to) all PLC, SCADA, Building/Facility Management Systems (BMS/FMS) or other systems that are in any way connected to critical facility equipment elements for control and/or monitoring purposes.

- 1.2. Every MOP will be directly overseen by a duly appointed Facilities Operations MOP Supervisor, who is in charge of all work activity.
- 1.3. The MOP Supervisor will submit the MOP to QA for review and approval at least five (5) business days prior to the procedure being performed.
- 1.4. All personnel performing the MOP (both Facilities Operations and third party vendors, when present) must review the approved MOP prior to commencing work.
- 1.5. Any steps in the approved MOP that could have potential impact on the critical facility equipment must be approached with extreme caution. All settings need to be double checked and appropriate notifications made when applicable.
- 1.6. The MOP Supervisor must physically witness all portions of the critical work, unless otherwise specified in the MOP. If the MOP supervisor must leave the immediate vicinity of the activity, all work must stop until their return.
- 1.7. The MOP Supervisor must directly witness all changes of state, connections, tests, identifications, measurements, and adjustments. Contractors must independently document all measurements and identifications.
- 1.8. The MOP Supervisor must respond to any alarms/failures occurring within the facility during the execution of the approved MOP. If it is determined that the MOP activities have caused or contributed to the alarm/fault condition, all work will stop (at the next safe or logical juncture) until the cause of the alarm/fault is investigated, verified and corrected.
- 1.9. The MOP Supervisor will verify that all related equipment is operating normally at the conclusion of the MOP activities. The MOP will include back out steps to address any possible service impacting issues that may arise during the procedure.
- 1.10. In case of an emergency, the Data Center Manager has the authority to waive the formal MOP QA process.
 - 1.10.1. Except in the most extreme circumstances, a MOP will still be necessary to ensure that all work required for restoration of normal service is executed without adversely affecting facility operations.
 - 1.10.2. All instances of emergency procedure implementation must be documented in an Incident Report, which will contain the details of the procedure that was conducted.
2. **Safety** – All personnel performing work in the critical facility must read and abide by OSHA Safety Policy and Procedures.
3. **Prohibited Work** - Includes (but is not limited to) the removal or opening of any protective panels or doors from critical facility equipment that could potentially lead to the exposure of mechanical or electrical components, unless specifically identified in an approved MOP. Unauthorized tampering with any equipment will result in automatic ejection of contractor from the facility.
4. **Work Area Containment** - All equipment in the vicinity of the work area will be physically protected against accidental damage and/or contact.

5. **Cable Connections** – Caution will be taken when connecting or removing cables.
 - 5.1. No cable will be terminated (connected) until the possibility of a short circuit or fault current is ruled out using a Digital Volt Meter (DVM).
 - 5.2. No cable will be disconnected (removed) until verification by clamp-on ammeter that it is not carrying any current. In the case of parallel runs, ensure that remaining circuit is adequately sized to carry the increased load.
6. **Labeling** - All cables, fuses, breakers, and other related items being installed must be correctly identified and labeled at the time of installation per the labeling schema provided.
7. **Emergency Power Off (EPO)** – EPO switches are typically located near the data center entrance door and are also present on the front panel of devices such as UPS and PDU modules. These devices are designed to cut power to the critical load, and their activation is an extremely serious event. Make sure you are aware of the placement and function of all EPO switches in the vicinity of your activities and that you do not confuse them with other devices such as fan actuators, fire alarm stations or door openers. **Emergency Power Off switches are for emergency use and are to be used ONLY in the event of personnel injury (e.g. electrical shock) or catastrophic fire.**
8. **Airborne Contaminants** – Any activity in the critical facility that produces or has the potential of producing smoke, dust or other airborne contamination must be specifically identified in the MOP as having this risk. When this work is being performed, adequate precautions must be taken for ventilation and disabling of the fire detection and suppression systems as appropriate.
9. **Debris Containment** - Any activity in the critical facility that produces or has the potential to produce debris such as (but not limited to) dust, shavings, residue or other loose debris must utilize an appropriate containment system to prevent release into the environment. When vacuum systems are used, a HEPA filter must be utilized.
10. **Liquid Discharges** - Any activity in the critical facility that produces or has the potential to produce a liquid discharge must be specifically identified in the MOP as having this risk. When this work is being performed, adequate precautions must be taken for isolation, containment and removal using appropriate methods.
11. **Penetration Sealing** – Permanently fire stop all fire wall/barrier penetrations.
12. **Cleanup** – All activities in the critical facility will be cleared of trash and large debris as the work progresses. Once completed, the work area will be left as clean or cleaner than the condition in which it was found.
13. **Site/Customer Specific Items:**
 - 13.1. **Building Security**
 - 13.1.1. **Access Badges**
 - 13.1.1.1. All personnel granted site access will wear their access badges in a visible fashion on the front of their chest or waist.

13.1.2. Tailgating

13.1.2.1. Tailgating (more than one person passing through a door on one person's access) is prohibited. Each person will swipe their access badge at all controlled access points.

13.2. Raised Floor Tiles

13.2.1. Loading

13.2.1.1. This facility uses ASM FS400 and FS500 tiles. See chart below for tile details. Due to the mixing of tiles on the Data Hall floor we will use the more restrictive FS400 tile details.

Panel	Ultimate Load		Concentrated Load		Impact Load		Rolling Load 10-Pass		Rolling Load 10,000-Pass	
	lb.	(kN)	lb.	(kN)	lb.	(kN)	lb.	(kN)	lb.	(kN)
FS400	6300	(28.02)	2000	(8.90)	200	(0.89)	1500	(6.67)	1200	(5.34)
FS500	7000	(31.14)	2500	(11.12)	200	(0.89)	2000	(8.90)	1800	(8.01)

13.2.1.2. To preserve tile life, maximum load will be limited to 1200 lbs per wheel for any rolling load provided no more than one wheel can rest on an individual tile.

13.2.2. Protection

13.2.2.1. Whenever heavy equipment will be moved over the raised floor, plywood will be laid out to distribute the load and protect the finish.

13.2.2.2. Whenever significant numbers of equipment will be moved over the raised floor, plywood or other suitable covering will be laid out to protect the finish.

13.2.3. Cutouts

13.2.3.1. All cutting of floor tile will be performed in a suitable work area, **not on the Data Center Floor.**

13.2.4. Perforated Tile Placement

13.2.4.1. All perforated/Grated tile will be placed in accordance with the Hot Aisle containments.

13.2.5. Maximum Allowable Open Tiles

13.2.5.1. No more than 3 adjacent solid tiles or 6 solid tiles across the Data Center will be removed at a time. This will prevent decreased air flow through the server pods.

13.3. Shipments and Deliveries

13.3.1. Contractor will be onsite to receive all materials designated to use for the authorized work.

13.4. Housekeeping

13.4.1. Food and Drink/Smoking

13.4.1.1. In accordance with Washington State law, there will be no smoking allowed inside. Smoking will be allowed outside in designated smoking areas.

13.4.1.2. Foods and drinks are prohibited in the Data Center.

13.4.2. Packing/Flammable Material

13.4.3. All equipment will be unpacked in the designated unpacking area. All packing material shall be removed by the person doing the unpacking and disposed of accordingly.

13.4.4. Weapons

13.4.4.1. No weapons will be allowed on site. Switchblades, stiletto, and any knife with a blade longer than 4 inches will be considered a weapon.

13.4.5. Cameras, Cell Phones, Photo Capable Devices

13.4.5.1. No Cameras, Cell Phones or Photo Capable Devices will be permitted without prior authorization from site management. All pictures within the Data Center must be approved by management.

13.4.6. Permits

13.4.6.1. At a minimum, the following activities will require permits.

- 13.4.6.1.1. Welding/Cutting/Sawing/Anchoring
- 13.4.6.1.2. Fire System Shutdown
- 13.4.6.1.3. Electrical distribution systems additions and or modifications.
- 13.4.6.1.4. Confined Space
- 13.4.6.1.5. Excavation

13.4.6.2. Permits will be administered by Facility Operations.

13.4.6.3. Work requiring permits will require a minimum 5 business days advanced notification.

Section 4 Acknowledgement	Acknowledgement		
Vendor Acknowledgement :	<i>Vendor Name:</i>	<i>Vendor Title:</i>	<i>Date:</i>
<i>Centeris FO:</i>	<i>Witness Name:</i>	<i>Witness Title:</i>	<i>Date:</i>