

LED Display Technology Maintenance

1.0 Basic Services

1.1 Maintenance and Support Services

1.1.1 Remote Access

1.1.1.1 An acceptable approach to providing the required maintenance and support service is through the provisioning of remote access. If the Contractor desires to provide remote access support, all current HAS security policies and procedures shall be followed.

1.1.2 Other Service Requirements

1.1.2.1 The Contractor shall conduct a full equipment inventory including spare components and parts for replacement bi-annually during the warranty period or as requested by the Director and/or designee and provide HAS a full accounting of all parts.

1.1.2.2 If HAS recognizes the contractor is not maintaining adequate stock of spare components and parts for replacements, the Contractor, at no additional cost to the City, shall replenish the stocks within 5 business days.

1.2 Preventative Maintenance Services

1.2.1 The Contractor shall perform Preventive Maintenance (PM) on all systems covered under the Agreement.

1.2.2 A preventative maintenance plan, to be submitted to HAS for review and approval upon commissioning of the system, shall detail how and when the preventative maintenance services will be conducted on the Oculus display technology.

1.2.3 At a minimum the Preventive Maintenance shall include but is not limited to the following:

1.2.3.1 Cleaning of LED tiles and other public facing elements

1.2.3.2 Equipment monitoring, performed at predefined intervals, that indicates any abnormal status conditions

1.2.3.2.1 Equipment monitoring can include but is not limited to automatic monitoring, remote system checks, and full system walkthroughs

1.2.3.3 Reporting of any abnormal activity to HAS

1.2.3.4 Backup and archiving of any relevant data

1.2.3.5 System software updates

1.2.3.6 Replenishing of any consumable items

1.2.3.7 A regular inspection and cleaning of the Oculus display technology, tertiary structure, and any other customer facing elements

- 1.2.3.8 Quality control that will assure HAS that the Oculus functions in accordance with the highest standards prevailing in the industry
- 1.2.4 The Contractor shall ensure preventative maintenance services on the Oculus LED technology are conducted in accordance with standards and procedures recommended as required by the Original Equipment Manufacturer (OEM) for keeping the system in First-Class condition.
 - 1.2.4.1 Preventative Maintenance services and associated parts, labor, sub-contracted services, and other associated costs shall be considered included in the operations and maintenance cost unless specifically allowed under a provision of this contract.
 - 1.2.4.2 Appropriate personnel shall be trained by Contractor to implement the preventative maintenance services.
- 1.3 Response Time
 - 1.3.1 Contractor must provide 24/7/365 (including Holidays) remote help desk support.
 - 1.3.1.1 Where applicable, an acceptable approach to providing the maintenance and support service is through the provisioning of remote access. If the Contractor desires to provide remote access support, all current HAS security policies and procedures shall be followed.
 - 1.3.1.2 The Contractor shall respond to all requests within the following Response Times. The determination of the request classification shall be in the sole judgement of the Director and/or designee.

Table 4: Response Times				
Response Time Matrix				
Type	Time To Respond Remotely	Time To Respond during peak hours	Time to Respond during off-peak hours	Time To Restore
Operational Failure	15 Minutes	4 Hours	8 Hours	24 Hours
Critical Failure	15 Minutes	1 Hour	2 Hours	24 Hours
Emergency Failure	5 Minutes	30 Minutes	1 Hour	24 Hours
Peak hours are from 0500 until 0100 24/7/365				
Off-Peak Hours are from 0101 until 0459 24/7/365				
Remote Support shall be 24/7/365				

Attachment F.1

LED Display Technology Warranty

1.0 Warranty

- 1.1 Provide standard warranty agreements for review and acceptance with a total of three (3) years parts and labor at no cost to HAS. Provide extended warranty options in one (1) year increments
- 1.2 The starting point for the warranty shall be from final system acceptance.
- 1.3 Hardware Warranty
 - 1.3.1 All hardware shall have a minimum warranty of three (3) years.
 - 1.3.2 Hardware warranty replacement and repair shall be considered inclusive of all labor, materials, shipping, rentals, and hardware necessary to service the defective equipment and return the system back to fully operational status.
 - 1.3.3 The warranty shall allow for replacement or repair of failed items at the discretion of HAS.
 - 1.3.4 Warranty hardware replacement for items not included in spare parts shall be delivered to the Airport within 72 hours.
 - 1.3.5 Warranty hardware replacement for items included in spare stores shall be delivered to the Airport within ten (10) business days.
 - 1.3.6 Warranty hardware refurbishment for items included in spare stores shall be delivered to the Airport within ten (10) business days.
 - 1.3.7 All LED tiles should be refurbished when possible.
 - 1.3.8 Individual pixels shall be covered under the warranty and not subject to a percentage of failure and/or failure rate relative to the overall pixel quantity. An individual pixel failure shall constitute a warranty replacement or repair.
 - 1.3.9 During the warranty period, replacement parts are not to be taken from stock when feasible but replaced immediately if it is unavoidable.
 - 1.3.10 Refurbished parts shall be placed into shelf stock.
 - 1.3.11 Certain repairs can be done in a designated area on site with prior approval from HAS.
 - 1.3.12 If any equipment experiences a rate of failure over 25% it is considered a defective part and must be entirely replaced.
 - 1.3.12.1 Rate of failure is defined as a percentage of failure of a set of devices over a duration of two (2) months. For example, if a given part installed in ten locations fails more than three times or more in the noted duration, all ten devices shall be replaced. Failures are counted per device or per instance of an individual device failure.

- 1.3.12.2 Exemptions may apply to devices that have system-wide quantities at or below four.
- 1.3.12.3 Rate of failure replacement shall not supersede or inhibit applicable warranty service for a given individual device. Any individual device failure shall be replaced or refurbished under the applicable warranty terms regardless of rate of failure.
- 1.3.12.4 Individual components or devices shall not be refurbished more than two (2) times during the warranty period. Any equipment or device, including LED tiles, failing more than two times shall be replaced with new.
- 1.3.13 Warranty plans must involve strategies to limit impact to the overall system. As such, warranties for LED tiles may differ from other equipment, such as LED processors. Contractor shall clearly identify any difference between warranty of specific devices and equipment compared to the overall system and warranty requirements as stated herein.
- 1.4 System Failure Definitions
 - 1.4.1 Inoperative: A device shall be considered inoperative when the device does not perform its intended function(s) within defined performance criteria. Response services shall include inspections and necessary tests to determine the causes of equipment or software malfunction or failure. The failure services shall include the furnishing and installation of components, parts, or software changes required to replace malfunctioning system elements.
 - 1.4.2 Operational Failure – Defined as a user interface end device that is inoperative. Operational failure may impact the ability of the end user to modify operations of the Oculus but does not cause any direct failure of the Oculus to display content.
 - 1.4.3 Critical Failure – Defined as a redundant head end component that is inoperative or when a system failure results in ten percent (10%) or less LED tiles being inoperable. A Critical Failure does not impact the remainder of the Oculus to display content and operate normally. Additionally, the fourth and subsequent occurrence of an operational failure with the same root cause shall be deemed a critical failure.
 - 1.4.4 Emergency Failure – Defined as a head end failure that results in the Oculus display being inoperative or when more than ten percent (10%) of the display tiles are inoperative. Additionally, the fourth and subsequent occurrence of a critical failure with the same root cause shall be deemed an emergency failure. A formal report shall be submitted to HAS on the cause and resolution of the problem. Resolution shall not be considered formally complete until written approval is provided by HAS.
 - 1.4.5 Pixel Failure – Defined as a failure of an individual pixel on any given LED tile. There shall be no minimum percentage of failed pixels necessary to constitute warranty replacement and/or refurbishment of the affected LED tile(s). The manufacturer warranty for the LED tiles shall cover individual inoperable pixels and not be limited to a minimum pixel failure rate.