Governo de Mato Grosso
MT PARTICIPAÇÕES E PROJETOS S.A.

LED DISPLAY

TREE OF LIFE

TECHNICAL SPECIFICATIONS BOOKLET

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1. INTRODUCTION

This document establishes the technical specifications and guidelines to be observed for participation in the international public bidding process for the acquisition of outdoor LED displays. These displays will be installed in the Tree of Life building, located at Parque Novo Mato Grosso, Cuiabá/MT, Brazil.

2. OBJECTIVE

The flexible mesh and rental-type LED panels will be installed on the Árvore da Vida structure with the purpose of composing the scenographic cladding of the building, providing an immersive visual experience for visitors to the Parque Novo Mato Grosso through the projection of dynamic images, animations, and synchronized visual content.

The selection of these systems was guided by the need to enable technically complex visual scenarios, supported by dedicated control centers capable of delivering fluid image projection and the creation of adaptable visual compositions. The technical requirements established herein prioritize high performance, operational efficiency, system availability, interoperability between the two types of panels, and an appropriate cost–benefit ratio.

The technical specifications set forth in this document constitute minimum requirements and must be fully complied with by all bidders, under penalty of disqualification of the proposal.

3. SUMMARY OF SPECIFICATIONS AND QUANTITIES

The table below presents the two items that comprise the single lot of this procurement, including their respective technical descriptions, units of measurement, and quantities. The items will be detailed individually according to each panel type, including installation areas, specific technical parameters, and the expected system sizing. Although they have distinct technical characteristics, the two types of panels are components of a single, integrated scenographic system and must operate jointly and harmoniously to compose the visual identity of the Árvore da Vida.

For this reason, the supplied equipment must be mutually compatible in terms of control platform, communication protocols, color calibration, brightness, and refresh rate, ensuring that the projected visual content is perceived by viewers as a continuous and uniform composition.

To ensure the full operation of the system, the supply scope shall include all controllers, sub-controllers, video processors, cables, power supplies, management software, and any other accessories required for the installation, configuration, and operation of the panels. The bidder shall be responsible for sizing and detailing in its commercial proposal the quantity of each controller and accessory, considering the screen dimensions, the pixel pitch of the proposed panels, and the requirement for integrated operation between the two panel types, thereby ensuring stable operation, image synchronization, and the maintenance of the performance specified in this document.

The quantity of controllers and accessories indicated in the table below is estimated and is provided solely as a reference for price composition. The bidder may propose a different quantity, either higher or lower, provided that the sizing presented in its commercial proposal demonstrates, in a substantiated manner, that the proposed system is sufficient to ensure the full functionality, integrated operation, and performance specified in this document for the entirety of the mesh and rental panels.

ITEM	SPECIFICATION	UNIT	QUANTITY
LOTE 01			
1	**Outdoor flexible MESH-type LED panel, with a pixel pitch equal to or less than 31.25 mm**, SMD 2727 LEDs or equivalent, brightness equal to or greater than 5,000 nits, and pixel density equal to or greater than 1,024 pixels per square meter; panel dimensions of 1000 × 1000 mm or 1000 × 500 mm; IP67 ingress protection on both front and rear, suitable for outdoor environments; manual and automatic brightness control; adjustable color temperature; viewing angle equal to or greater than 140° horizontal and 140° vertical; contrast ratio equal to or greater than 4000:1, with 14-bit processing depth and refresh rate equal to or greater than 3840 Hz. Maximum power consumption shall be equal to or less than 800 W per square meter, with typical power consumption equal to or less than 300	m²	≥ 1200

	W per square meter; input voltage between 200 and 240 Vac, with input frequency of 60 Hz; service life equal to or greater than 100,000 hours, with a minimum warranty of 3 years. **The scope shall include all equipment required for the control and operation of the LED panel, as well as mounting and connection components**, such as: main controllers, sub-controllers, video processors, signal and power cables, steel cable tensioners, converters, power supplies, management software, and other accessories compatible with the dimensions and resolution of the installed panel, ensuring stable operation, image synchronization, and maintenance of the specified performance.		
2	**Outdoor rental LED panel: with a pixel pitch equal to or less than 3.91 mm**, 3-in-1 SMD LEDs; brightness equal to or greater than 4,000 nits and pixel density equal to or greater than 62,500 pixels per square meter; dimensions less than or equal to 500 mm in width and length; rear or front serviceability; IP65 ingress protection on both front and rear, suitable for indoor and outdoor environments; die-cast aluminum cabinet; manual and automatic brightness control; adjustable color temperature; viewing angle equal to or greater than 140° horizontal and 120° vertical; contrast ratio equal to or greater than 4000:1, with 14-bit processing depth and refresh rate equal to or greater than 3840 Hz. Maximum power consumption shall be equal to or less than 800 W per square meter, with typical power consumption equal to or less than 350 W per square meter; input voltage between 200 and 240 Vac, with input frequency of 60 Hz; service life equal to or greater than 100,000 hours, with a minimum warranty of 3 years. **The scope shall include all equipment required for the control and operation of the LED panel, as well as mounting and connection components**, such as: main controllers, sub-controllers, video processors, signal cables, converters, power supplies, management software, and other accessories compatible with the dimensions and resolution of the installed panel, ensuring stable operation, image synchronization, and maintenance of the specified performance.	m²	130

4. ITEM 01 – OUTDOOR FLEXIBLE MESH-TYPE LED PANEL P31.25

It shall be the responsibility of the bidder to define the dimensions of the screens to be supplied. However, all screens must have identical dimensions in order to standardize maintenance procedures and facilitate replacement, if necessary. The LED panel shall be P31.25 or smaller, suitable for outdoor applications, with dimensions of 1000 × 500 mm or 1000 × 1000 mm.

Technical Parameters	
Pixel Pitch	Pixel Pitch
LED type	LED type
Brightness	Brightness
Pixel Density	Pixel Density
Panel Dimensions	Panel Dimensions
Weight	Weight
Maintenance	Maintenance
IP Rating	IP Rating
Installation	Installation
Calibration	Calibration
Color Temperature	Color Temperature
Viewing Angle (H)	Viewing Angle (H)
Viewing Angle (V)	Viewing Angle (V)
Maximum Input Power	Maximum Input Power
Operating Input Power	Operating Input Power
Input Voltage	Input Voltage
Input Frequency	Input Frequency
Processing Depth	Processing Depth
Refresh Rate	Refresh Rate
Video Frame Rate	Video Frame Rate
Service Life	Service Life
Warranty	Warranty
Operating Temperature/Humidity	Operating Temperature/Humidity
Storage Temperature/Humidity	Storage Temperature/Humidity
Packaging	Packaging

The details of the screens that will use this type of cabinet are displayed below.

4.1 DISPLAY DESIGN – TREE OF LIFE MESH LED SCREEN

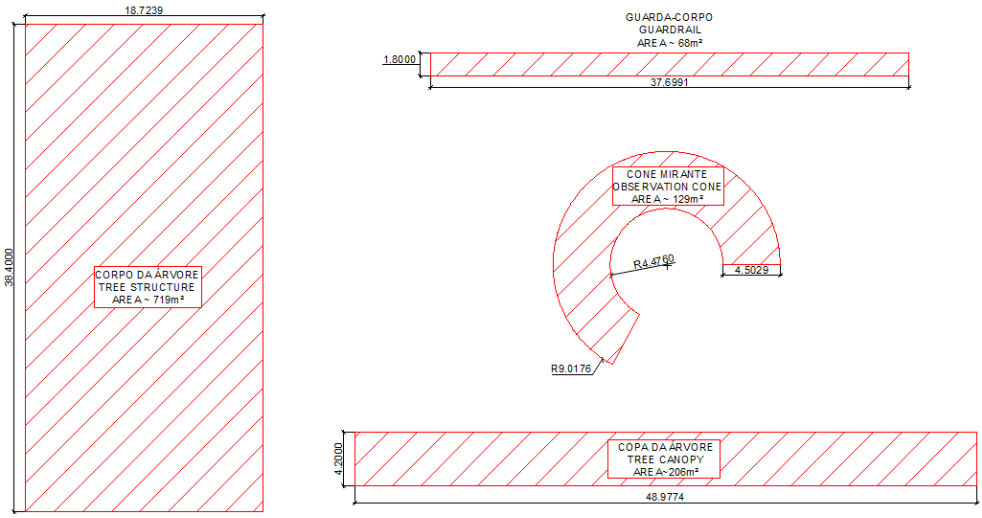

Figure 1 – Mesh display areas

Figure 2 – Tree of life Render

DISPLAY DESIGN #1	
Technical Parameters	
Pixel pitch	31.25 mm
Display size	719m² – Tree Structure 129m² – Observation Cone 68m² – Guardrail 206m² – Tree Canopy 78m² – Reserve
Total	1200 sqm

5. ITEM 02 – OUTDOOR RENTAL LED PANEL P3.91

The second type of screen to be procured shall be of the rental type. The cabinets will be installed on the ceiling of the Tree of Life viewing deck, with a dedicated metal structure to be provided for the fixation of the panels. The purpose of these displays is to complement the scenic experience, integrating with the set of visual systems and equipment already installed in the building.

The cabinets forming the screen shall allow for simple and safe assembly, featuring an interlocking system between modules and fast-lock mechanisms, enabling installation without the use of tools. The display shall be supplied with all accessories required for its proper operation, including power supply cables and data transmission cables.

Parâmetros Técnicos	
Pixel Pitch	≤ 3.91 mm
LED type	3-in-1 SMD
Brightness	≥ 4000 cd/m²
Pixel Density	≥ 62500 pixel/m²
Panel Dimensions	≤500 x ≤500 mm
Weight	≤ 8 kg/m²

Maintenance	Front
IP Rating	≥IP65
Installation	Rental - Outdoor
Calibration	Aluminum
Color Temperature	Brightness e Chroma
Viewing Angle (H)	≥140 °
Viewing Angle (V)	≥120 °
Maximum Input Power	≤ 800 W/m²
Operating Input Power	≤ 350 W/m²
Input Voltage	200 ~ 240VAC
Input Frequency	60 Hz
Processing Depth	14 bit
Refresh Rate	≥ 3840 Hz
Video Frame Rate	60 Hz
Service Life	≥100.000 hours
Warranty	3 years
Operating Temperature/Humidity	≥ -20℃~+50℃/10~80%RH
Storage Temperature/Humidity	≥ -30℃~+60℃/10~80%RH
Packaging	Wood Crate or Equivalent

5.1 DISPLAY DESIGN – VIEWPOINT CEILING MESH LED SCREEN

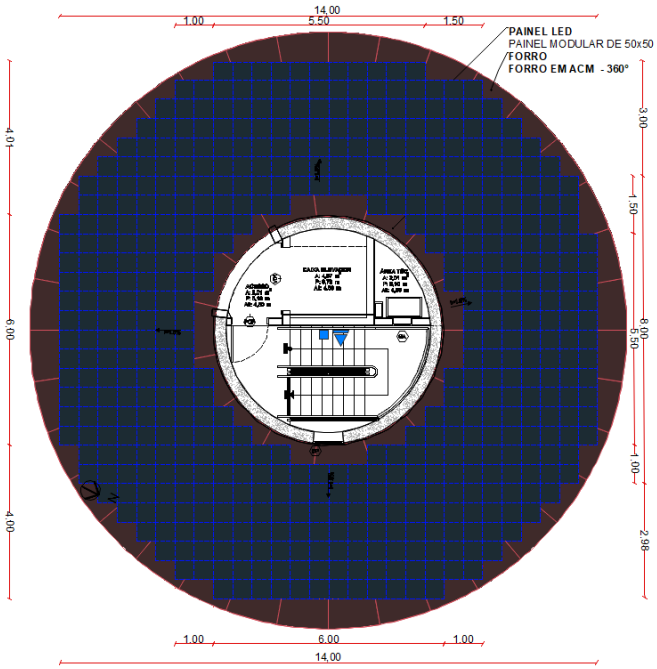

Figure 3 – LED Panel Installation Area

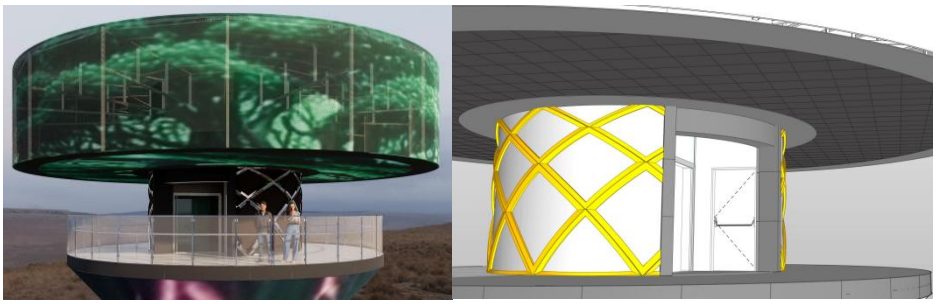

Figure 4 - LED Panel Installation Render

DISPLAY MODEL	
Technical Parameters	
Pixel pitch	3.91 mm
Tamanho do Gabinete	500x500 mm
Total Cabinets	520 und
Total	130 sqm

6. CONTROLLERS AND ACCESSORIES

O The image transmission and control system shall consist of a main controller and subcontrollers. The bidder shall be solely responsible for properly sizing the equipment required to ensure the full operation of the video system under the best possible resolution conditions, considering the dimensions of the screens and the pixel pitch of both mesh and rental LED panels.

The control system shall be capable of simultaneously managing both types of panels, ensuring content synchronization, brightness uniformity, and consistent color temperature across the different display areas of the Tree of Life.

Due to the limited physical space available within the building for the installation of the subcontrollers, the bidder shall prioritize the use of the minimum possible number of such devices, provided that system performance, reliability, and transmission quality are fully maintained. If necessary, the subcontrollers may be customized to comply with the dimensional constraints of the installation location.

In addition to the controllers, the bidder shall supply all accessories required for the installation, configuration, operation, and control of the LED panels, including, but not limited to: signal and power cables, steel cable tensioners, converters, power supplies, management software and respective licenses, as well as any other components necessary and compatible with the proposed system.

The bidder shall include in its commercial proposal a complete list of controllers and accessories, indicating the respective quantities, technical specifications, and the function of each component within the system, demonstrating that the proposed sizing is sufficient to support the total number of panels specified in Chapters 4 and 5.

7. SUPPLY CONDITIONS

LED panels must be supplied ready for installation and connection to the power network and accessories. All internal connections of the panels must be delivered already assembled and ready for immediate use. Including, but not limited to:

- Receiving cards + HUB board
- Cascading signal cable
- Cascading energy cable
- Main signal cable
- Main energy cable
- LED module
- Power supply units
- Software
- Flat cables
- Cabinets

The above list is illustrative. Any other internal components required for the proper operation of the panel as a standalone unit shall also be supplied, even if not expressly listed.

Controllers, media servers, transceivers, and other accessories external to the panel shall be supplied in accordance with the specifications set forth in Chapter 6 of this document.

8. PACKAGING

The LED panels, controllers, and accessories shall be packed in rigid packaging, such as plywood wooden cases or equivalent, properly closed and suitable for long-distance maritime transportation. The packaging shall provide adequate protection against impact, moisture, salinity, vibration, and stacking, and shall also be compatible with standard loading, unloading, handling, and storage operations at port and road transport terminals.

Each package shall include clear external identification of its contents, including item description, quantity, gross and net weight, package dimensions, and handling instructions, using standardized symbols in accordance with applicable international standards for the transportation of sensitive electronic equipment.

9. SPARE PARTS

In addition to the equipment and accessories required for the operation of the system (detailed in Chapter 6), the bidder shall provide a set of spare parts exclusively intended for the establishment of a reserve stock for preventive and corrective maintenance of the panels. These spare parts shall not be considered part of the operational system components and shall be delivered separately, properly identified and packaged.

The minimum quantities of spare parts are as follows:

SPARE PARTS ITEM 1 – MESH PANEL P31.25 1000x1000 or 500x1000	
Item	Quantity
Receiving cards complete with HUB cards	20
LED diodes	500
LED driver integrated circuits (ICs)	100
Power supply units	30

SPARE PARTS ITEM 2 - P3.91 RENTAL LED 500x500	
Item	Quantity
Receiving cards complete with HUB cards	5
LED diodes	300
Driver ICs	50
LED panel front masks	50
Power supply units	20
Main data cables – 10 m	20
Main power cables – 10 m	20

The spare parts shall be identical in specification and quality to the original components installed in the supplied panels.

The supplier shall also ensure that components and replacement parts for the supplied panels remain available for purchase by MT Par for a minimum period of five (5) years from the date of final acceptance. Products that are discontinued (end-of-line) at the time of proposal submission shall not be accepted.

10. TECHNICAL REQUIREMENTS COMPLIANCE, CERTIFICATIONS AND TEST REPORTS

After contract award and prior to the shipment of the equipment, the contractor shall submit to MT Par's inspection authority test reports attesting compliance with the technical requirements set forth in this document and in the Terms of Reference. All test reports shall be issued by laboratories certified by INMETRO and/or laboratories accredited under the ILAC MRA framework. The submission of this documentation shall be a condition for approval in the pre-shipment inspection provided for in the Terms of Reference.

The certification documentation shall be complete and provide evidence that the tests were carried out in accordance with the procedures established in the applicable standards, and shall include:

a. RoHS Certificate of Conformity;

b. FCC Certificate of Conformity;

c. Test report for the determination of restricted substances, in accordance with IEC 62321;

d. Electronic product safety test report, in accordance with IEC 62368;

e. Electromagnetic compatibility (EMC) test report, in accordance with EN 55032 and/or IEC 61000;

f. Electromagnetic immunity test report, in accordance with EN 55035;

g. Ingress protection (dust and water) test report, in accordance with IEC 60529;

h. Photometric measurement test report (luminous flux, illuminance, luminous intensity, luminance, spectrum, etc.).

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