

108M - FERRIS WHEEL BIIDDING - NOVO MATO GROSSO PARK

ITEM/SYSTEM	SPECIFICATION	REQUIREMENT PHASE
Ferris Wheel height	108 meters	BIDDING PROPOSAL
Ferris wheel design	a) Cable-stayed (spoke type)	BIDDING PROPOSAL
	b) Truss type steel;	BIDDING PROPOSAL
	c) Six columns	BIDDING PROPOSAL
Number of cabins and load capacity	c) Rim diameter ≥ 88 m	BIDDING PROPOSAL
	42 cabins for 8 people;	BIDDING PROPOSAL
	336 passengers;	BIDDING PROPOSAL
	30 standard cabins and 12 premium cabins;	BIDDING PROPOSAL
Delivery time	≤ 10 months	BIDDING PROPOSAL
Sound system	a) At least 2 6" speakers in 2-way kits with individual power of 50w;	≥ 6" - 2x50W
	b) Bluetooth system with 5.1 version or better;	Bluetooth 5.1 or superior
	a) Colour: RGBW	RGBW
Technical specs: LED Pixels	b) Working voltage: 24Vcc	24 Vcc
	c) light source: SMD LEDs	SMD LEDs
	d) CRI: CRI 80	CRI 80
	e) Control: ON/OFF, DMX512	ON/OFF, DMX512
	f) Grayscale: 8/16 bit	8/16 bit
	g) Lifespan: ≥ 50.000 h	≥ 50.000 h
	i) Chipboard brand: Cree, OSRAM, Lumileds, Epistar, or similar.	Cree, OSRAM, Lumileds, Epistar or similar
	j) Coverage: Translucid PC lens.	PC transparent lens
	k) Case: PC+ABS	PC+ABS
	l) Installation: Aluminum profile	Aluminum profile
	m) Working temperature: -40°C a 60°C	-40°C a 60°C
	n) Source light intensity: 22cd	22cd
External lighting system	o) Water/Dust protection: ≥ IP66	≥ IP66
	p) Lighting efficiency: 30 lm/W (RGBW)	30 lm/W (RGBW)
	r) Beam angle: 120°/80°*120°	120°/80°*120°
	a) High performance RGB+W LED system (independent white);	BIDDING PROPOSAL
	b) Configuration of visual effects by programming or synchrony;	BIDDING PROPOSAL
	c) The lighting must be present at:	BIDDING PROPOSAL
	- The entire side of the trussed rim;	BIDDING PROPOSAL
	- On both sides of the cables;	BIDDING PROPOSAL
Ferris wheel warranty	- Semi-reflectors in the columns; (with color variation);	BIDDING PROPOSAL
	Total equipment warranty: 5 years;	BIDDING PROPOSAL
	To provide relevant information about the factory	BIDDING PROPOSAL
	Proof of reputation is required	BIDDING PROPOSAL
Manufacturer reputation	Necessary to provide proof of international recognition	BIDDING PROPOSAL
International Recognition	Required to have quality and environmental management certification	BIDDING PROPOSAL
Quality and environmental certifications	Required to include statements	BIDDING PROPOSAL
Statements and partners	To inform manufacturer policies and guidelines	BIDDING PROPOSAL
Safety and quality policies	To prove experience in similar projects	BIDDING PROPOSAL
Experience in similar projects	To prove that it has made projects similar to or higher than 108 meters.	BIDDING PROPOSAL
Magnitude and complexity	To inform emblematic projects made around the world	BIDDING PROPOSAL
Flagship projects	To highlight if the company has experience in cable-stayed Ferris wheel of similar heights	BIDDING PROPOSAL
Experience on a cable-stayed ferris wheel	a) Technical drawing in 3rd diheral containing:	PRODUCT 01 - EXECUTIVE PROJECT
Project detailing	- Dimensional specifications;	PRODUCT 01 - EXECUTIVE PROJECT
	- Degrees of tolerance for looseness;	PRODUCT 01 - EXECUTIVE PROJECT
	- Materials used in all parts;	PRODUCT 01 - EXECUTIVE PROJECT
	- Weight of each component;	PRODUCT 01 - EXECUTIVE PROJECT
	b) The manufacturer must send the design details in at least three documents, being them V1, V5 and V10 and also a projection in 3D;	PRODUCT 01 - EXECUTIVE PROJECT
	c) The quantity of screws, connections and details of connections of the parts must be informed;	PRODUCT 01 - EXECUTIVE PROJECT
	(d) all parts shall be numbered and listed;	PRODUCT 01 - EXECUTIVE PROJECT
	(e) The manufacturer shall provide:	PRODUCT 01 - EXECUTIVE PROJECT
	- The set of efforts to verify the ultimate limit states (ELU), the service limit states (ELS);	PRODUCT 01 - EXECUTIVE PROJECT
	- Efforts generated by the loads in each column;	PRODUCT 01 - EXECUTIVE PROJECT
	- Efforts generated at the point of support of the structure;	PRODUCT 01 - EXECUTIVE PROJECT
	f) Electrical:	PRODUCT 01 - EXECUTIVE PROJECT
Accessibility	- Technical detailing of each part;	PRODUCT 01 - EXECUTIVE PROJECT
	- List of material quantity;	PRODUCT 01 - EXECUTIVE PROJECT
	- Installation instructions;	PRODUCT 01 - EXECUTIVE PROJECT
	a) Boarding and disembarking platform: Ramps with indication for wheelchair users and people with motor limitations;	PRODUCT 01 - EXECUTIVE PROJECT
Electrical and communication system with the cabins	b) Accessible cabins: Controls and panels at 1.10 m tall;	PRODUCT 01 - EXECUTIVE PROJECT
	a) 220V/DC12V intercom supply;	220V/DC24+12V
	b) 220V air conditioning power supply;	220V
	c) Lighting inside the cabins powered by AC220/DC12V	220V
Electrical and communication system with the cabins	(d) Aviation obstacle lamps: five units;	≥ 5 units
	a) Intercom inside the cabin, located in the column, above the bluetooth connection system and the lighting system;	PRODUCT 01 - EXECUTIVE PROJECT
	b) Signs in the command and control sector to identify the cabin that is speaking to the intercom;	PRODUCT 01 - EXECUTIVE PROJECT
	c) Activation and control of the air conditioning by the operation team of the platform;	PRODUCT 01 - EXECUTIVE PROJECT
Cabin ventilation system	d) Three electrical circuits to supply the air conditioning;	PRODUCT 01 - EXECUTIVE PROJECT
	e) Installation of the electrical control board above the maintenance board;	PRODUCT 01 - EXECUTIVE PROJECT
	(f) Aviation obstacle lamps: four installed on top of cabins separated at 90°, one installed in the main column;	PRODUCT 01 - EXECUTIVE PROJECT
	a) Mechanical exhaust fans installed in the upper and/or lower part of the cabin;	PRODUCT 01 - EXECUTIVE PROJECT
	b) Exhaust fans with metallic finish in the color of the internal structure of the cabin;	PRODUCT 01 - EXECUTIVE PROJECT
	a) LEDs with indication of 8 spots per meter;	8 pixels per meter

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Crane connection spot on the main columns	(a) They shall contain spots of handles at: - All columns; - The Axis; - The Rim sections; (b) Safety coefficient of 1.5; (c) Detailing of the lifting points in the project; (d) Detailing of the lifting points in an assembly manual, with: - Dimensions; - Materials; - Cuts; - Details; - Technical notes;		PRODUCT 01 - EXECUTIVE PROJECT
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Connection spots for cables on the Ferris wheel assembly	(a) Detailing of the lifting spots in the project; (b) Detailing of the lifting spots in the assembly manual; (c) High-resistance cables shall be used; (d) Meet the minimum breaking load, by cable category, of NBR ISO 2408; (e) The requirements shall be: - A 20-year warranty on stage cables; - Mechanical protection on white cables; - Resistance of cables; - Pre-tensions; - Final voltage of the cable; - Origin; - Report from the manufacturer with resistance tests of the material; - Total rupture tension; (f) Length check report done by the manufacturer;		PRODUCT 01 - EXECUTIVE PROJECT
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Cable type and regulatory resistance	(a) Needs to be designed to withstand the maximum tensile loads applied during the rim assembly phase; (b) It must be delivered by the manufacturer along with the plates and inserts; (c) Made of structural steel beam I; (d) The manufacturer must send the design and loads of the gantry 30 days after signing the contract; (e) If an equivalent steel will be used, the supplier shall demonstrate its performance;		PRODUCT 01 - EXECUTIVE PROJECT
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Assembly gantry	(a) The type of connection must be specified in the project; (b) Detailing about the welds; (c) Tests carried out at the end of the inspection; (d) Identification of the screwed parts; (e) Screws resistance report;		PRODUCT 01 - EXECUTIVE PROJECT
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Type of assembly connections (welded and/or screwed)	(a) The connection of the foundation with the equipment must be done by way of welding; (b) A Strengthening of the connection with fins around the columns; (c) The first section of the columns shall be chamfered; (d) The sides of the reinforcing fins, which will be in contact with the base plate and the column, must also have a chamfer; (e) The fins need to be detailed in design; (f) The weld must be designed aiming at the compatibility between base-metal and welding metal, referencing NBR 8800; (g) The mechanical properties of steel must be in accordance with NBR 6648-2014; (h) In addition to the hole in the inserts, the plates shall contain a hole for the ventilation of the concrete; (i) NBR 8800 in item 6.7.3.1 provides that the connections of the screwed parts may not be separated by any metals other than structural steel; (j) The holes may be punched, subpunched, widened or drilled and shall be free from rolling scales, burrs or dirt preventing any direct contact between the plate and the insert;		PRODUCT 01 - EXECUTIVE PROJECT
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Specifications of the connection of the foundation to the equipment	(a) Motors equipped with brakes; (b) Brakes with a manual lever for emergencies; (c) One relay current per motor; (d) Detailed assembly of the motor fixation; (e) 16 three-phase electric motors (f) Rated voltage 380V (g) Frequency: 50Hz (h) IPW66 protection (i) Electric reducer system and brakes (j) EE system parameter with closely closed brakes system (k) Temporary arm supports shall be designed so that they are able to safely withstand the loads applied during the rim assembly step (l) The steel used for the manufacturing of the supports must be of the structural type, and the properties must be in accordance with the standard, according to the technical guidelines booklet. (m) The steel must comply with item 4.5.2.2 of NBR 8800, which defines the maximum yield strength (RE) at 450 Mpa and L/E ratio of not less than 1.18; (n) The weld must be designed aiming at the compatibility between metal-base and metal of the welding according to NBR 8800 (o) The manufacturer is obliged to provide: - New temporary supports; - Exact measurements stated in the project; - Detailing of the fixation to the shaft; - Detailing of the attachment to the rim; - Detailing of connections between support sessions; - Detailing the dimensions of screws, nuts and washers; - Detailing of the screws torque; - Detailing of the assembly of the supports;		PRODUCT 01 - EXECUTIVE PROJECT
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Connection details of inserts and discs with the foundation	(a) 1) Grounding; a-2) Proper sizing of the conductors; a-3) Electrical equipment protection; (b) LPS installation instructions; (c) LPS maintenance instructions; (d) LPS tests; (e) The manufacturer shall provide the exact axle load with load details; (f) Display all calculations in the assembly manual; (g) The necessary moments for the structural calculations must follow the current technical standards, considering the influence of the wind. They should be embedded to the assembly manual. (h) Structural calculations shall take into account climatic conditions, external loads and all relevant variables.		PRODUCT 01 - EXECUTIVE PROJECT
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Typology of electric motors and brands	(a) Exact loads of all parts detailed in the manual; (b) Use the international system (SI), bringing its fundamental mass quantity in kilograms (kg). (c) The total load of the Ferris wheel shall be the sum of all loads from its parts and components: - Columns; - Axis; - Temporary supports;		PRODUCT 01 - EXECUTIVE PROJECT
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Electric motors specs	(a) 16 three-phase electric motors (b) Rated voltage 380V (c) Frequency: 50Hz (d) IPW66 protection (e) Electric reducer system and brakes (f) EE system parameter with closely closed brakes system (g) Temporary arm supports shall be designed so that they are able to safely withstand the loads applied during the rim assembly step (h) The steel used for the manufacturing of the supports must be of the structural type, and the properties must be in accordance with the standard, according to the technical guidelines booklet. (i) The steel must comply with item 4.5.2.2 of NBR 8800, which defines the maximum yield strength (RE) at 450 Mpa and L/E ratio of not less than 1.18; (j) The weld must be designed aiming at the compatibility between metal-base and metal of the welding according to NBR 8800 (k) The manufacturer is obliged to provide: - New temporary supports; - Exact measurements stated in the project; - Detailing of the fixation to the shaft; - Detailing of the attachment to the rim; - Detailing of connections between support sessions; - Detailing the dimensions of screws, nuts and washers; - Detailing of the screws torque; - Detailing of the assembly of the supports;	≥ 16 380 V 50 Hz IPW66	PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT PRODUCT 01 - EXECUTIVE PROJECT
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Temporary supports analysis	(a) 1) Grounding; a-2) Proper sizing of the conductors; a-3) Electrical equipment protection; (b) LPS installation instructions; (c) LPS maintenance instructions; (d) LPS tests; (e) The manufacturer shall provide the exact axle load with load details; (f) Display all calculations in the assembly manual; (g) The necessary moments for the structural calculations must follow the current technical standards, considering the influence of the wind. They should be embedded to the assembly manual. (h) Structural calculations shall take into account climatic conditions, external loads and all relevant variables.		PRODUCT 01 - EXECUTIVE PROJECT
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Lightning strikes protection system	(a) 1) Grounding; a-2) Proper sizing of the conductors; a-3) Electrical equipment protection; (b) LPS installation instructions; (c) LPS maintenance instructions; (d) LPS tests; (e) The manufacturer shall provide the exact axle load with load details; (f) Display all calculations in the assembly manual; (g) The necessary moments for the structural calculations must follow the current technical standards, considering the influence of the wind. They should be embedded to the assembly manual. (h) Structural calculations shall take into account climatic conditions, external loads and all relevant variables.		PRODUCT 01 - EXECUTIVE PROJECT
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Guarantees of equipment calculations (engineering calculations)	(a) 1) Grounding; a-2) Proper sizing of the conductors; a-3) Electrical equipment protection; (b) LPS installation instructions; (c) LPS maintenance instructions; (d) LPS tests; (e) The manufacturer shall provide the exact axle load with load details; (f) Display all calculations in the assembly manual; (g) The necessary moments for the structural calculations must follow the current technical standards, considering the influence of the wind. They should be embedded to the assembly manual. (h) Structural calculations shall take into account climatic conditions, external loads and all relevant variables.		PRODUCT 01 - EXECUTIVE PROJECT
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Moments necessary to perform structural calculations referencing the standard, considering wind load actions	(a) 1) Grounding; a-2) Proper sizing of the conductors; a-3) Electrical equipment protection; (b) LPS installation instructions; (c) LPS maintenance instructions; (d) LPS tests; (e) The manufacturer shall provide the exact axle load with load details; (f) Display all calculations in the assembly manual; (g) The necessary moments for the structural calculations must follow the current technical standards, considering the influence of the wind. They should be embedded to the assembly manual. (h) Structural calculations shall take into account climatic conditions, external loads and all relevant variables.		PRODUCT 01 - EXECUTIVE PROJECT
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Loads of each part	(a) 1) Grounding; a-2) Proper sizing of the conductors; a-3) Electrical equipment protection; (b) LPS installation instructions; (c) LPS maintenance instructions; (d) LPS tests; (e) The manufacturer shall provide the exact axle load with load details; (f) Display all calculations in the assembly manual; (g) The necessary moments for the structural calculations must follow the current technical standards, considering the influence of the wind. They should be embedded to the assembly manual. (h) Structural calculations shall take into account climatic conditions, external loads and all relevant variables.		PRODUCT 01 - EXECUTIVE PROJECT
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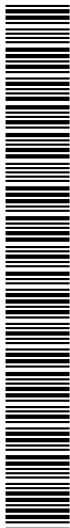
Total load	- Rim sections;		PRODUCT 01 - EXECUTIVE PROJECT
	- Cabins;		PRODUCT 01 - EXECUTIVE PROJECT
	- Bearings;		PRODUCT 01 - EXECUTIVE PROJECT
	- Spokes;		PRODUCT 01 - EXECUTIVE PROJECT
Wind calculation memorial	- Motors structures;		PRODUCT 01 - EXECUTIVE PROJECT
	b) This information must be provided up to 30 days after the signing of the contract with the Government of Mato Grosso;		PRODUCT 01 - EXECUTIVE PROJECT
	c) Use the international system (SI) must be used, bringing its fundamental mass quantity in kilograms (kg);		PRODUCT 01 - EXECUTIVE PROJECT
	a) In the assembly manual it shall be included the calculation memorial, containing:		PRODUCT 01 - EXECUTIVE PROJECT
Ferris wheel calculation memorial	- Structural loads;		PRODUCT 01 - EXECUTIVE PROJECT
	- Total loads;		PRODUCT 01 - EXECUTIVE PROJECT
	- Statistical wind loads;		PRODUCT 01 - EXECUTIVE PROJECT
	- Dynamic wind loads;		PRODUCT 01 - EXECUTIVE PROJECT
Traction calculation memorial for the rim assembly	(b) The compliance with the applicable technical standards and regulations;		PRODUCT 01 - EXECUTIVE PROJECT
	The manufacturer shall submit the following calculations upon 30 days after the contract has been signed with:		PRODUCT 01 - EXECUTIVE PROJECT
	a) Moments of the equipment related to the wind;		PRODUCT 01 - EXECUTIVE PROJECT
	b) Structural calculation of the equipment for structural dimensioning;		PRODUCT 01 - EXECUTIVE PROJECT
Tolerance of each part	c) Calculation to size the inserts and foundation covers;		PRODUCT 01 - EXECUTIVE PROJECT
	(d) calculation of cabin supports;		PRODUCT 01 - EXECUTIVE PROJECT
	(e) Motor's calculations;		PRODUCT 01 - EXECUTIVE PROJECT
	(f) Cabin's resistance calculations;		PRODUCT 01 - EXECUTIVE PROJECT
Wind tests and report	g) Calculations of sizing of temporary supports;		PRODUCT 01 - EXECUTIVE PROJECT
	(h) calculation of the size of the pantograph;		PRODUCT 01 - EXECUTIVE PROJECT
	(i) finite element calculation;		PRODUCT 01 - EXECUTIVE PROJECT
	(j) Calculation of traction dimensions of the assembly of the equipment related to traction;		PRODUCT 01 - EXECUTIVE PROJECT
Foundation plates /inserts	k) Calculation of the sizing of the mechanical traction cables for the assembly of the rim;		PRODUCT 01 - EXECUTIVE PROJECT
	(l) Calculation of the brake to lock the rim at its end of assembly;		PRODUCT 01 - EXECUTIVE PROJECT
	m) Calculation of sizing of the scenic light;		PRODUCT 01 - EXECUTIVE PROJECT
	n) Calculation of electrical voltage of the equipment;		PRODUCT 01 - EXECUTIVE PROJECT
Introduction and general information	o) Calculation of SPDA sizing;		PRODUCT 01 - EXECUTIVE PROJECT
	p) Dimensioning of electrical panels;		PRODUCT 01 - EXECUTIVE PROJECT
	a) Dimensioning of electrical wiring;		PRODUCT 01 - EXECUTIVE PROJECT
	The traction calculation memorial shall contain:		PRODUCT 01 - EXECUTIVE PROJECT
Assembly instructions	- Finite elements of the rim;		PRODUCT 01 - EXECUTIVE PROJECT
	- Finite elements of temporary supports;		PRODUCT 01 - EXECUTIVE PROJECT
	- Gravity center data;		PRODUCT 01 - EXECUTIVE PROJECT
	a) It is necessary that all the parts fit perfectly;		PRODUCT 01 - EXECUTIVE PROJECT
Markings between assembly connections	b) Annex B of NBR 16683 deals with the dimensional tolerances of the bars that make up the metal structure of the wheel components.		PRODUCT 01 - EXECUTIVE PROJECT
	- Flat bar;		PRODUCT 01 - EXECUTIVE PROJECT
	- Round bar;		PRODUCT 01 - EXECUTIVE PROJECT
	- Square bar;		PRODUCT 01 - EXECUTIVE PROJECT
Lifting Plan	- Hex bar;		PRODUCT 01 - EXECUTIVE PROJECT
	c) NBR 13021 specifies some parameters on the tolerances of dimensions of the tubes of the columns according to dimensions;		PRODUCT 01 - EXECUTIVE PROJECT
	- Tolerances in wall thickness: A variation of $\pm 12,5\%$ of the nominal thickness is allowed;		PRODUCT 01 - EXECUTIVE PROJECT
	- Length tolerances should be at -0 mm +100 mm;		PRODUCT 01 - EXECUTIVE PROJECT
Pantograph assembly	a) Consider the wind history of Mato Grosso of 35m/s;		PRODUCT 01 - EXECUTIVE PROJECT
	b) The equipment must withstand that operations occur normally with winds of up to 15m/s;		PRODUCT 01 - EXECUTIVE PROJECT
	Foundation bonding plates	Delivery within 30 days after signing of the contract	PRODUCT 03 - PLATES/INSERTS
	Inserts	Delivery within 30 days after signing of the contract	PRODUCT 03 - PLATES/INSERTS
Cleaning instructions	Two (2) torque wrench units for the foundation inserts;	Delivery within 30 days after signing of the contract	PRODUCT 03 - PLATES/INSERTS
	(a) Information on the manufacturer;		PRODUCT 02 - MANUALS
	b) General presentation of the ferris wheel;		PRODUCT 02 - MANUALS
	(a) Dimensions;		PRODUCT 02 - MANUALS
Instructions for use	(b) total weight;		PRODUCT 02 - MANUALS
	(c) load capacity;		PRODUCT 02 - MANUALS
	(d) speed;		PRODUCT 02 - MANUALS
	(e) number of cabins;		PRODUCT 02 - MANUALS
Ferris Wheel technical specs	(f) cabin dimensions;		PRODUCT 02 - MANUALS
	(g) the weight of the cabins;		PRODUCT 02 - MANUALS
	(h) radius of the rim;		PRODUCT 02 - MANUALS
	(i) the weight of the rim;		PRODUCT 02 - MANUALS
Assembly instructions	(j) rim dimensions;		PRODUCT 02 - MANUALS
	(k) number of columns;		PRODUCT 02 - MANUALS
	(l) the dimensions of the columns with the thickness of the plate;		PRODUCT 02 - MANUALS
	(m) the height of the axle attachment;		PRODUCT 02 - MANUALS
Markings between assembly connections	(n) axle weight;		PRODUCT 02 - MANUALS
	(o) unit dimensions per piece;		PRODUCT 02 - MANUALS
	(p) unit weight per piece;		PRODUCT 02 - MANUALS
	a) Loads of the structure when transferred to the ground;		PRODUCT 02 - MANUALS
Lifting Plan	(a) assembly order;		PRODUCT 02 - MANUALS
	(b) hoisting plan;		PRODUCT 02 - MANUALS
	(c) The removal sequence of the temporary media;		PRODUCT 02 - MANUALS
	d) Detailing for hoisting of the scenic light;		PRODUCT 02 - MANUALS
Pantograph assembly	Order of removal of temporary supports;		PRODUCT 02 - MANUALS
	(a) Markings shall be detailed in the assembly manual;		PRODUCT 02 - MANUALS
	(b) Markings shall be printed on the manufactured parts in such a way that they cannot be removed.		PRODUCT 02 - MANUALS
	a) a plan for lifting the parts, containing at least:		PRODUCT 02 - MANUALS
Cleaning instructions	- information in technical drawing;		PRODUCT 02 - MANUALS
	- Calculation of resistance using the Poisson coefficient;		PRODUCT 02 - MANUALS
	- Calculation of tearing of the parts;		PRODUCT 02 - MANUALS
	- Detailing of the welds, if the handles are welded;		PRODUCT 02 - MANUALS
Instructions for use	c) Calculation of tearing of the parts if they have only holes;		PRODUCT 02 - MANUALS
	d) if the handles are welded, the detailing of the welds and their resistance must be presented.		PRODUCT 02 - MANUALS
	a) The assembly manual shall provide a breakdown of the pantograph assembly procedure;		PRODUCT 02 - MANUALS
	seal;		PRODUCT 02 - MANUALS
Cleaning instructions	(c) detail the assembly sequence, tools and equipment required;		PRODUCT 02 - MANUALS
	(d) the pantograph shall be weather-protected;		PRODUCT 02 - MANUALS
	(a) instructions for safe operation of the Ferris wheel after assembly;		PRODUCT 02 - MANUALS
	a) Cleaning instructions, detailing, procedures and products that can be used on the Ferris wheel elements;		PRODUCT 02 - MANUALS



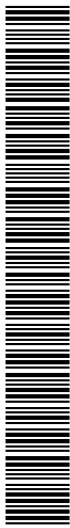
Caution and restrictions	a) Guidelines on specific care for the preservation of the Ferris wheel over time;		PRODUCT 02 - MANUALS
	b) Restrictions of use such as adverse weather conditions;		PRODUCT 02 - MANUALS
Preventive and corrective maintenance	a) To detail information for periodic maintenance and corrective actions in case of failures or problems, including verification of the steps, plumbs and checking of measures;		PRODUCT 02 - MANUALS
	(a) A description of the recommended activities;		PRODUCT 02 - MANUALS
	(b) periodicity;		PRODUCT 02 - MANUALS
	(c) procedures;		PRODUCT 02 - MANUALS
Preventative maintenance plan	(d) regular inspections;		PRODUCT 02 - MANUALS
	(e) lubrication;		PRODUCT 02 - MANUALS
	(f) wear checks;		PRODUCT 02 - MANUALS
	(g) operational tests;		PRODUCT 02 - MANUALS
	(h) replacement of components;		PRODUCT 02 - MANUALS
	(a) Cabin temperature: external display;		PRODUCT 02 - MANUALS
	(b) smoke detector: one per cabin;		PRODUCT 02 - MANUALS
Parameter monitoring	(c) Wind strength: To monitor during operation on the control panel;		PRODUCT 02 - MANUALS
	(d) Unbalance of the Ferris wheel: display on the control panel, where it shows in real time the monitoring of eventual overload of the motors in the course of the rim rolling track;		PRODUCT 02 - MANUALS
	(e) Motor failures: Light signal in the operating cabin;		PRODUCT 02 - MANUALS
	(f) Brake failures: Light signal in the operating cabin;		PRODUCT 02 - MANUALS
	The user manual should provide the safety guidelines for operation, including:		PRODUCT 02 - MANUALS
	(a) a guide detailing the daily safety instructions that the control room operator must take before starting daily operation;		PRODUCT 02 - MANUALS
Operation manuals	(b) Instructions guide and a chart detailing the necessary daily/weekly/monthly inspections and/or maintenance;		PRODUCT 02 - MANUALS
	(c) Guide and instructions for evacuation in cases of emergency, considering different scenarios such as fires, storms, wind incidence and lightning strikes;		PRODUCT 02 - MANUALS
	(d) Guide and instructions for operation and/or evacuation in cases of electrical or mechanical breakdown;		PRODUCT 02 - MANUALS
	(e) Guide to emergency rescue plans;		PRODUCT 02 - MANUALS
	a) Ensure all procedures and instructions to be adopted for the good performance, durability, safety and efficiency of the Ferris wheel;		PRODUCT 02 - MANUALS
	b) Detailing the steps required to:		PRODUCT 02 - MANUALS
	- Turn the Ferris wheel on and off;		PRODUCT 02 - MANUALS
	- Control the speed;		PRODUCT 02 - MANUALS
	- Ensure a safe boarding and disembarking of passengers;		PRODUCT 02 - MANUALS
	- Monitor the operation effectively;		PRODUCT 02 - MANUALS
	(c) detail evacuation procedures in the event of an emergency;		PRODUCT 02 - MANUALS
	(d) address the importance of regular maintenance and inspections of equipment;		PRODUCT 02 - MANUALS
	a) Speed control by the operator;		PRODUCT 02 - MANUALS
Speed control	b) Speed adjustment button in the control room;		PRODUCT 02 - MANUALS
	(II) OPERATIONS PANEL:		PRODUCT 02 - MANUALS
	a) Start button;		PRODUCT 02 - MANUALS
	b) Stop button;		PRODUCT 02 - MANUALS
	c) Next button;		PRODUCT 02 - MANUALS
	d) Reverse button;		PRODUCT 02 - MANUALS
	e) Emergency stop button;		PRODUCT 02 - MANUALS
	f) Brake button;		PRODUCT 02 - MANUALS
	g) Reset button - To reconnect the emergency stop system;		PRODUCT 02 - MANUALS
	h) Air conditioning buttons;		PRODUCT 02 - MANUALS
	i) Scenic lighting buttons;		PRODUCT 02 - MANUALS
	(III) LUMINOUS PANEL:		PRODUCT 02 - MANUALS
	a) alert codes;		PRODUCT 02 - MANUALS
	b) Indicative of engine failure - One per motor and one per electrical cabinet;		PRODUCT 02 - MANUALS
	c) Indicative of brake failure - one per brake;		PRODUCT 02 - MANUALS
	d) Indicative of improper closing of the cabin doors;		PRODUCT 02 - MANUALS
	e) Indication of connected energy;		PRODUCT 02 - MANUALS
	f) An indication that the equipment is ready for operation;		PRODUCT 02 - MANUALS
	(III) CONTROL PANEL, it must present:		PRODUCT 02 - MANUALS
	(a) digital wind speed information;		PRODUCT 02 - MANUALS
	b) Only a few units of information;		PRODUCT 02 - MANUALS
	(c) grayscale for the interface;		PRODUCT 02 - MANUALS
	d) Warm colors for the emphasis (alarm, failures, locks, inhibitions, setpoints and interlocks);		PRODUCT 02 - MANUALS
	(e) quantity per line length;		PRODUCT 02 - MANUALS
	f) Hierarchy by size difference;		PRODUCT 02 - MANUALS
	(g) grouping by contours and fillings;		PRODUCT 02 - MANUALS
	h) Change of the shape of the object for exchange of status;		PRODUCT 02 - MANUALS
	i) luminous contrast;		PRODUCT 02 - MANUALS
	j) Movement only in situations of attention;		PRODUCT 02 - MANUALS
	(k) Flat positioning;		PRODUCT 02 - MANUALS
	(a) Motor brakes;		PRODUCT 02 - MANUALS
Redundant systems	(b) closing of the cabin door;		PRODUCT 02 - MANUALS
	(c) the method of opening the doors of the cabins;		PRODUCT 02 - MANUALS
	(e) emergency button;		PRODUCT 02 - MANUALS
	a) RGBW environment lighting;	RGBW	PRODUCT 02 - MANUALS
	b) The internal control of the cabin must have:		PRODUCT 02 - MANUALS
	- Brightness intensity adjustments;		PRODUCT 02 - MANUALS
	- Lighting adjustments;		PRODUCT 02 - MANUALS
	- Color adjustments;		PRODUCT 02 - MANUALS
	a) Bluetooth sound system with interface in Portuguese;		PRODUCT 02 - MANUALS
	b) Certification by bluetooth sig;		PRODUCT 02 - MANUALS
	c) antenna for FM signal and USB input;		PRODUCT 02 - MANUALS
	d) Acoustic insulation of the cabin;		PRODUCT 02 - MANUALS
	a) Camera: High resolution = full hd 1080p;	1080p FHD	PRODUCT 02 - MANUALS
	a-4) Camera: Infrared;	Infrared Sensor	PRODUCT 02 - MANUALS
	b) Monitoring system: Storage capacity for 2 months;	≥ 60 days	PRODUCT 02 - MANUALS
	a) Monitoring systems: nonstop monitoring by video inside the cabins and platform;		PRODUCT 02 - MANUALS
	a-1) Monitoring systems: Monitoring screens next to the control room;		PRODUCT 02 - MANUALS
	b) Emergency stopping device: a button to determine emergency stop;		PRODUCT 02 - MANUALS
	c) Door closing and opening system: automatic with redundant system of manual closing by lever;		PRODUCT 02 - MANUALS
	c-1) Door closing and opening system: light sensor indicating correct closing of the cabin doors;		PRODUCT 02 - MANUALS
	d) Lighting system: insulated electrical wiring: generator, panels and electrical equipment blocked to the public and with a warning sign;		PRODUCT 02 - MANUALS
	(d-1) emergency lighting system: cabin lights always on and light signalling indicating exit on the platform;		PRODUCT 02 - MANUALS
	e) Communication system: interior of each cabin with a speaker kit and an intercom;		PRODUCT 02 - MANUALS
	f) Fire system: Smoke detection sensors;		PRODUCT 02 - MANUALS
	f-1) Fire suppression system: Fire extinguisher inside each cabin and on the boarding platform;		PRODUCT 02 - MANUALS
Ferris wheel security system			PRODUCT 02 - MANUALS



	(g) aircraft warning system: four units installed on top of cabins separated at 90°; (h-1) aircraft warning system: a light signal installed on top of one of the main columns; (h-2) aircraft warning system: a light signal installed on top of one of the main columns; (i) internal cabin lights must continue to function in the absence of power in the ferris wheel; (j) emergency lights strategically positioned on the boarding platform.		PRODUCT 02 - MANUALS
Emergency lighting system	(a) internal cabin lights must continue to function in the absence of power in the ferris wheel; (b) emergency lights strategically positioned on the boarding platform.		PRODUCT 02 - MANUALS
Emergency communication system	(a) intercoms on the boarding platform and cabins; (b) loudspeakers;		PRODUCT 02 - MANUALS
Fire protection system	(a) smoke detectors; (b) Fire alarm; (c) fire extinguishers; (d) emergency signs; (e) smoke exhaust system;		PRODUCT 02 - MANUALS
Brake system	(a) smooth operation without sudden braking or instant braking; (b) Three-phase voltage; (c) Needs to have redundancy; (d) Manual operation lever at the rear end of the motor (separation of the two brake discs); (e) Light signal on the brake indicator to activate the equipment; (f) Restart stop and brake button to release the brakes;		PRODUCT 02 - MANUALS
Fault detection and monitoring system	(a) Physical barriers considered in design to prevent access to hazardous areas; (b) Engines: Luminous signs identifying each motor, in case of failure the light will turn on; (b-1) Brakes: Light signal indicating release. If there is a failure in the system, a red light must be lit on the panel; (b-2) Brakes: Redundancy by a manual lever; (b-3) Brakes: Emergency stop button; (c-1) Air conditioning: Each cabin must contain a thermostat in Cabins; (c-2) Air conditioners: External digital monitor indicating the regulated and actual temperature of the cabin; (c-3) Air conditioners: Signal in the cockpit indicating circuit failure; (d-1) Electrical failures: System of identification of interruption in the power supply; (d-2) Electrical failures: Alternating Chain Supervision Unit (USCA); (d-3) Electrical failures: Generator activation in persistent power outage. Deactivation of the generator when the power returns; (d-4) Electrical failures: QGBT generator project;		PRODUCT 02 - MANUALS
Alarm and evacuation system	(a) Speakers in the cabins and boarding platform for guidance of the public; (b) light signals on the boarding platform indicating the emergency exit; (c) The emergency signs must follow the signs in Table A - annex - according to Brazilian standards; (d) a button on the boarding platform to warn the control room of emergencies;		PRODUCT 02 - MANUALS
Cabin cleaning instructions	(a) It shall not interfere with the continuous movement of the wheel; (b) Cabin materials need to be easy to clean; (c) Indication of cleaning products and guidance for use;		PRODUCT 02 - MANUALS
Cabin air conditioning system	(a) internal thermostat; (b) Control of the internal climate of the cabin by an operator; (c) External display showing ambient and internal cabin temperature; (d) air conditioners with particle filters; (e) Evaporator located in the upper part of the cabins; (f) Condenser installed on the outside of the cabin, on top of the bearings, with a mechanical protection in flexible plastic;		PRODUCT 02 - MANUALS
HVAC equipment drainage system	(a) specification of the draining points in the cabins;		PRODUCT 02 - MANUALS
Temperature control system in the control cabin	(a) Temperature control system (Cooling of electrical components); (b) Thermostat for control; (c) Indication of ideal temperature for operation of the equipment;		PRODUCT 02 - MANUALS
CCTV	(a) Camera: one per cabin; (b) Monitoring system: Data backup; (b-1) Monitoring system: Compliance with privacy regulations; (b-2) Monitoring system: Continuous recording; (c) Instructions for use; (d) Team training instructions;		PRODUCT 02 - MANUALS
Power backup system instructions Ferris wheel speed for emergencies	The equipment must have an energy backup system through a diesel generator - power to be indicated by the manufacturer (a) Provide increased speed of rotation of the ferris wheel for emergency evacuation;		PRODUCT 02 - MANUALS
Emergency evacuation tests	(a) Maximum evacuation time per cabin; (b) the maximum evacuation time; (c) Necessary to prevent an action plan in different emergency situations;		PRODUCT 02 - MANUALS
Materials and specifications	(a) The type of steel used per component and/or part; (b) The mechanical specification of the steel used; (c) cables; (d) Dimensions; (e) Type of steel; (f) Type of mechanical protection (coating); (g) Cabins; (h) Material; (i) Thickness; (j) Mechanical protection; (k) UV protection; (l) Transparency of acrylics; (m) Mechanical strength of acrylics; (n) engines; (o) Brand; (p) Model; (q) Power; (r) Connection scheme; (s) Quantity; (t) LEDs; (u) Brand; (v) Model; (w) Power; (x) Luminous flux; (y) Other features; (z) Ade; (aa) Materials used; (ab) Details of the bearings; (ac) Cabin covering; (ad) Description of the internal components; (ae) Description of external components;		PRODUCT 02 - MANUALS



	Padding	PRODUCT 02 - MANUALS
	- floor;	PRODUCT 02 - MANUALS
	- wall;	PRODUCT 02 - MANUALS
	- roof;	PRODUCT 02 - MANUALS
	(i) air conditioning;	PRODUCT 02 - MANUALS
	- Brand;	PRODUCT 02 - MANUALS
	- Model;	PRODUCT 02 - MANUALS
	- Power;	PRODUCT 02 - MANUALS
	- BTUs;	PRODUCT 02 - MANUALS
	(j) Sound system;	PRODUCT 02 - MANUALS
Electrical components brand	- Brand;	PRODUCT 02 - MANUALS
	- Model;	PRODUCT 02 - MANUALS
	- Power;	PRODUCT 02 - MANUALS
	- Bluetooth system version;	PRODUCT 02 - MANUALS
	- Size of the speaker;	PRODUCT 02 - MANUALS
	- Other descriptions;	PRODUCT 02 - MANUALS
	(k) details of the intercoms;	PRODUCT 02 - MANUALS
	- Elements of the control panels;	PRODUCT 02 - MANUALS
	- Safety devices;	PRODUCT 02 - MANUALS
	- Lighting systems;	PRODUCT 02 - MANUALS
Fixation and connections	- Any other equipment related to the electrical part;	PRODUCT 02 - MANUALS
	- Technical specifications;	PRODUCT 02 - MANUALS
	(a) type of weld per part;	PRODUCT 02 - MANUALS
	(b) Electrode used by welding;	PRODUCT 02 - MANUALS
	(c) Screws;	PRODUCT 02 - MANUALS
	- Dimensions;	PRODUCT 02 - MANUALS
	- Class;	PRODUCT 02 - MANUALS
	- Type;	PRODUCT 02 - MANUALS
	- Material;	PRODUCT 02 - MANUALS
	- Quantity;	PRODUCT 02 - MANUALS
	(d) nuts and washers;	PRODUCT 02 - MANUALS
	- Dimensions;	PRODUCT 02 - MANUALS
	- Class;	PRODUCT 02 - MANUALS
	- Type;	PRODUCT 02 - MANUALS
	- Material;	PRODUCT 02 - MANUALS
	- Quantity;	PRODUCT 02 - MANUALS
	(a) identification of the degree of tolerance for looseness in bolted and pinned connections	PRODUCT 02 - MANUALS
	(a) wrench;	PRODUCT 02 - MANUALS
	(b) screwdriver;	PRODUCT 02 - MANUALS
Specifications of all tools for the assembly process	(c) the philips key;	PRODUCT 02 - MANUALS
	(d) allen key;	PRODUCT 02 - MANUALS
	(e) torx wrench;	PRODUCT 02 - MANUALS
	(f) Ratchet wrench	PRODUCT 02 - MANUALS
	(g) torque wrench;	PRODUCT 02 - MANUALS
	(h) hydraulic jacks;	PRODUCT 02 - MANUALS
	(i) welding machines;	PRODUCT 02 - MANUALS
	(j) Torch;	PRODUCT 02 - MANUALS
	(k) Electrodes;	PRODUCT 02 - MANUALS
	(l) capacity and types of cranes (with or without track, telescopic, road cranes, etc.);	PRODUCT 02 - MANUALS
	m) Screwdriver;	PRODUCT 02 - MANUALS
	(n) drill;	PRODUCT 02 - MANUALS
	(o) Electric sander;	PRODUCT 02 - MANUALS
	(p) Cutting machine and disc types;	PRODUCT 02 - MANUALS
	(q) grinder;	PRODUCT 02 - MANUALS
	(r) Specific tools for torque measurement	PRODUCT 02 - MANUALS
	(s) Digital hook scale (dynamometer) - Capacity;	PRODUCT 02 - MANUALS
	(t) Load cell - Capacity;	PRODUCT 02 - MANUALS
	(u) pulley and cable block;	PRODUCT 02 - MANUALS
	(v) Crane winch;	PRODUCT 02 - MANUALS
Necessary equipments	(w) Key for tightening of the cables (specific by ferris wheel model);	PRODUCT 02 - MANUALS
	(x) Shackle (load, size, thickness... Etc)	PRODUCT 02 - MANUALS
	(y) other hand, electric and pneumatic tools;	PRODUCT 02 - MANUALS
	(z) lifting devices;	PRODUCT 02 - MANUALS
	(aa) any other technical resources required;	PRODUCT 02 - MANUALS
	The manufacturer must send the list of the necessary equipment and tools, with quantity and description of use, dimensions, weights and specifications:	PRODUCT 02 - MANUALS
	(a) cranes;	PRODUCT 02 - MANUALS
	(b) shackles;	PRODUCT 02 - MANUALS
	(c) pulley block;	PRODUCT 02 - MANUALS
	(d) hoists;	PRODUCT 02 - MANUALS
Brand of pantograph equipment	(e) hydraulic jacks;	PRODUCT 02 - MANUALS
	(f) hand tools;	PRODUCT 02 - MANUALS
	(g) power tools;	PRODUCT 02 - MANUALS
	(h) welding equipment;	PRODUCT 02 - MANUALS
	(i) specific tools;	PRODUCT 02 - MANUALS
	(j) cables;	PRODUCT 02 - MANUALS
	(a) the brand of the equipment used in the pantograph;	PRODUCT 02 - MANUALS
	(b) the brand of the start system equipment;	PRODUCT 02 - MANUALS
	(a) Details;	PRODUCT 02 - MANUALS
	(b) specifications;	PRODUCT 02 - MANUALS
Warranty manual details	(c) Warranty periods for each part and component;	PRODUCT 02 - MANUALS
	(a) Precise information on guarantees is necessary to obtain technical assistance from both the supplier and the elements of the equipment;	PRODUCT 02 - MANUALS
	(b) the warranty manual shall provide maintenance guidance and guidelines;	PRODUCT 02 - MANUALS
	(c) The manufacturer shall detail the service life of each component in its manual.	PRODUCT 02 - MANUALS
	Total equipment warranty: 5 years	PRODUCT 02 - MANUALS
	(a) Details of warranties: Total manufacturing; Extended to specific parts; Separated for special components;	PRODUCT 02 - MANUALS
	(b) Warranty manual with guidelines and conditions of validity of warranties;	PRODUCT 02 - MANUALS
	(a) Warranty on the quality and durability of the paints and primer (anticorrosive bottom) applied to the equipment.	PRODUCT 04 - DIGITAL DOCUMENTS
	(b) the technical specifications of the paint;	PRODUCT 04 - DIGITAL DOCUMENTS
	(c) Adherence test;	PRODUCT 04 - DIGITAL DOCUMENTS



Paintings warranty	d) Layer thickness test;	PRODUCT 04 - DIGITAL DOCUMENTS
	e) corrosion resistance testing;	PRODUCT 04 - DIGITAL DOCUMENTS
	f) chemical resistance testing;	PRODUCT 04 - DIGITAL DOCUMENTS
	g) impact testing;	PRODUCT 04 - DIGITAL DOCUMENTS
	h) Accelerated aging test;	PRODUCT 04 - DIGITAL DOCUMENTS
Responsibilities and contacts	- The equipment must leave The Factory painted and with protective insulation to avoid damage during transport.	PRODUCT 05 - FERRIS WHEEL
	- The supplier must forward a sample of the paint with the equipment;	PRODUCT 05 - FERRIS WHEEL
	The manual should contain information about the companies, suppliers and contacts for technical support;	PRODUCT 02 - MANUALS
	a) The supply of spare parts for out-of-warranty replacement (maintenance and natural wear);	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Have the immediate delivery or indicate outsourcers who have the component of the ferris wheel in the same quality and origin;	PRODUCT 04 - DIGITAL DOCUMENTS
Parts supply	c) Send the following items along with the delivery of the ferris wheel:	PRODUCT 04 - DIGITAL DOCUMENTS
	10% of each screw, nut and washer set (except inserts);	PRODUCT 04 - DIGITAL DOCUMENTS
	2 sets of insert, nut, counter nut and washer;	PRODUCT 04 - DIGITAL DOCUMENTS
	10 units of cables;	PRODUCT 04 - DIGITAL DOCUMENTS
	2 units of tires;	PRODUCT 04 - DIGITAL DOCUMENTS
	2 complete premium model cabins;	PRODUCT 04 - DIGITAL DOCUMENTS
	5 bluetooth system units;	PRODUCT 04 - DIGITAL DOCUMENTS
	2 complete air conditioning systems;	PRODUCT 04 - DIGITAL DOCUMENTS
	Extra acrylic for assembling 2 cabins;	PRODUCT 04 - DIGITAL DOCUMENTS
	100 m² of rubber flooring;	PRODUCT 04 - DIGITAL DOCUMENTS
Ferris wheel life time	4 complete sets of cabin bearings;	PRODUCT 04 - DIGITAL DOCUMENTS
	6 sets of internal lighting system;	PRODUCT 04 - DIGITAL DOCUMENTS
	1 unit of aviation signaling component;	PRODUCT 04 - DIGITAL DOCUMENTS
	a) Structural = 30 years;	PRODUCT 02 - MANUALS
	b) cables = 20 years;	PRODUCT 02 - MANUALS
	c) Cabins = 10 years;	PRODUCT 02 - MANUALS
	d) Cabin axle system = 10 years;	PRODUCT 02 - MANUALS
	e) engine mechanism = 10 years;	PRODUCT 02 - MANUALS
	f) Electrical panels = 20 years;	PRODUCT 02 - MANUALS
	g) Stage lighting: minimum of 50 thousand hours/10 hours per day;	PRODUCT 02 - MANUALS
Assembly time (Estimated by the manufacturer)	h) Equipment = 30 years;	PRODUCT 02 - MANUALS
	i) engines = 10 years;	PRODUCT 02 - MANUALS
	a) columns;	PRODUCT 02 - MANUALS
	b) axle;	PRODUCT 02 - MANUALS
	c) Rim;	PRODUCT 02 - MANUALS
Technical support from the manufacturer before, during and after the start of equipment assembly	d) cabins;	PRODUCT 02 - MANUALS
	e) Control system;	PRODUCT 02 - MANUALS
	f) the type of crane;	PRODUCT 02 - MANUALS
	a) Clarification of doubts;	PRODUCT 02 - MANUALS
	b) technical guidance;	PRODUCT 02 - MANUALS
	c) Support to the assembly team;	PRODUCT 02 - MANUALS
	d) the supply of parts;	PRODUCT 02 - MANUALS
	e) testing;	PRODUCT 02 - MANUALS
	f) Update and improvements;	PRODUCT 02 - MANUALS
	g) Warranty;	PRODUCT 02 - MANUALS
24/7 online technical support	h) Continuous technical support during assembly;	PRODUCT 02 - MANUALS
	i) Availability of technical support after assembly;	PRODUCT 02 - MANUALS
	a) immediate assistance;	PRODUCT 02 - MANUALS
	b) step-by-step guidance;	PRODUCT 02 - MANUALS
	c) real-time problem solving;	PRODUCT 02 - MANUALS
Technical and maintenance support	d) verification of conformities;	PRODUCT 02 - MANUALS
	e) Monitoring of progress;	PRODUCT 02 - MANUALS
	f) Communication channels for remote support: E-mail and online chat;	PRODUCT 02 - MANUALS
	a) A line of communication with the manufacturer of the Ferris wheel;	PRODUCT 02 - MANUALS
	b) User manual;	PRODUCT 02 - MANUALS
Technical visit from the manufacturer during assembly	b-1) User manual: Detailed maintenance procedures;	PRODUCT 02 - MANUALS
	a) Technical team monitoring the entire assembly of the ferris wheel;	PRODUCT 05 - FERRIS WHEEL
	b) Technical visits after 6 months of equipment installation;	PRODUCT 05 - FERRIS WHEEL
	Test report;	PRODUCT 04 - DIGITAL DOCUMENTS
	a) Reports of operation;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and reports	b) Reports of resistance;	PRODUCT 04 - DIGITAL DOCUMENTS
	c) Durability reports;	PRODUCT 04 - DIGITAL DOCUMENTS
	d) any others that may be necessary;	PRODUCT 04 - DIGITAL DOCUMENTS
	a) LEDs on both sides of the equipment - being 8 LEDs per meter;	PRODUCT 01 - EXECUTIVE PROJECT
	b) Full colors with high grayscale, high refresh frequency and no flickering;	PRODUCT 01 - EXECUTIVE PROJECT
	c) operational tests;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Luminous flux (lm);	PRODUCT 04 - DIGITAL DOCUMENTS
	- Luminous efficiency (lm/W);	PRODUCT 04 - DIGITAL DOCUMENTS
	- Luminous Intensity (cd);	PRODUCT 04 - DIGITAL DOCUMENTS
	- Correlated Color Temperature;	PRODUCT 04 - DIGITAL DOCUMENTS
Scenic lights, specifications, typology, warranty and tests	- Color Reproduction Index;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Luminous Intensity Distribution Curve;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Power;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Current;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Frequency;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Power factor;	PRODUCT 04 - DIGITAL DOCUMENTS
	f) information on available colour varieties, lighting effects and programs;	PRODUCT 04 - DIGITAL DOCUMENTS
	g) Warranty periods of the LED manufacturer;	PRODUCT 04 - DIGITAL DOCUMENTS
	h) Luminous Intensity Distribution Curve	PRODUCT 04 - DIGITAL DOCUMENTS
	- Visual test and magnetic powder;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests of temporary supports	- Specification of thickness and diameter of the pipes that are used in the structure;	PRODUCT 01 - EXECUTIVE PROJECT
	- Numbering of the parts in the project and structure;	PRODUCT 01 - EXECUTIVE PROJECT
	- Fit the elements with the heat map in all situations of traction and compression in the rim assembly;	PRODUCT 01 - EXECUTIVE PROJECT
	- Detailing guiding the order of removal of The temporary supports after closing The rim;	PRODUCT 02 - MANUALS
	- Plan of inspections;	PRODUCT 02 - MANUALS
Tests and operative reports on cabin air conditioning devices	- Periodic maintenance;	PRODUCT 02 - MANUALS
	- Specification of cleanings;	PRODUCT 02 - MANUALS



Structure resistance tests and report	(a) static load testing;	PRODUCT 04 - DIGITAL DOCUMENTS
	(b) Dynamic load test;	PRODUCT 04 - DIGITAL DOCUMENTS
	(c) extreme wind tests;	PRODUCT 04 - DIGITAL DOCUMENTS
	(d) overload tests;	PRODUCT 04 - DIGITAL DOCUMENTS
	(e) Structure fatigue test;	PRODUCT 04 - DIGITAL DOCUMENTS
	(f) impact testing;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and report of resistance of the cabins	a) Static and dynamic analysis tests, considering different load and vibration scenarios;	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Structural report;	PRODUCT 04 - DIGITAL DOCUMENTS
	(c) the strength of acrylics;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and stability report of the Ferris wheel	(a) extreme winds;	PRODUCT 04 - DIGITAL DOCUMENTS
	(b) seismic events;	PRODUCT 04 - DIGITAL DOCUMENTS
	(c) static loads;	PRODUCT 04 - DIGITAL DOCUMENTS
	(d) dynamic loads;	PRODUCT 04 - DIGITAL DOCUMENTS
	(e) overload;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and vibration report of the Ferris wheel	a) Vibration frequency with the measurement of the regular, and working frequency allowing the identification of resonances at certain frequencies;	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Vibration amplitude by measuring the amplitude of vibrations generated during normal operation of the Ferris wheel;	PRODUCT 04 - DIGITAL DOCUMENTS
	c) Vibration at different points of the Ferris wheel including columns, axle, trusses and cabins;	PRODUCT 04 - DIGITAL DOCUMENTS
Wind tests and reports	a) Analysis of factors such as:	PRODUCT 04 - DIGITAL DOCUMENTS
	- Wind speed;	PRODUCT 04 - DIGITAL DOCUMENTS
	- height of the structure;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Aerodynamic characteristics of the surface;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and reports of lighting and internal LED lights per cabin	The following tests must be done and reported separately in the 42 cabins:	PRODUCT 04 - DIGITAL DOCUMENTS
	a) Functional test;	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Light intensity test;	PRODUCT 04 - DIGITAL DOCUMENTS
	c) Color test;	PRODUCT 04 - DIGITAL DOCUMENTS
	d) Visual effects testing;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and sound reports of each cabin	e) Energy consumption test;	PRODUCT 04 - DIGITAL DOCUMENTS
	To ensure optimal performance of the speaker set, the manufacturer must provide a technical report that ensures the correct functioning of the sound system in each of the 42 cabins.	PRODUCT 04 - DIGITAL DOCUMENTS
	The certificates must be followed by an internal footage of all cabins demonstrating the correct functioning of the system.	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and safety report	(a) control system;	PRODUCT 04 - DIGITAL DOCUMENTS
	(b) brakes;	PRODUCT 04 - DIGITAL DOCUMENTS
	(c) emergency evacuation system;	PRODUCT 04 - DIGITAL DOCUMENTS
	(d) security systems;	PRODUCT 04 - DIGITAL DOCUMENTS
	(e) any other mechanic who ensures the safety of the passenger in matters of emergency;	PRODUCT 04 - DIGITAL DOCUMENTS
	(f) welding of the flanges of the column joints;	PRODUCT 04 - DIGITAL DOCUMENTS
	(g) welds present on the shaft;	PRODUCT 04 - DIGITAL DOCUMENTS
	(h) axle bearings and cabins;	PRODUCT 04 - DIGITAL DOCUMENTS
	(i) cabin support;	PRODUCT 04 - DIGITAL DOCUMENTS
	(j) the main structure of the engines;	PRODUCT 04 - DIGITAL DOCUMENTS
	(k) lattice rim;	PRODUCT 04 - DIGITAL DOCUMENTS
	(l) The reports submitted must be of:	PRODUCT 04 - DIGITAL DOCUMENTS
	- Visual test inspection;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Inspection of penetrating liquid;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Radiographic and ultrasonic welding inspection;	PRODUCT 04 - DIGITAL DOCUMENTS
Brake and control system tests	(m) on the stairs, to be used only visual and penetrating liquid testing;	PRODUCT 04 - DIGITAL DOCUMENTS
	- The brake test reports must present:	PRODUCT 04 - DIGITAL DOCUMENTS
	- Testing procedures;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Response time;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Total stop time;	PRODUCT 04 - DIGITAL DOCUMENTS
Tests and reports of operation of air conditioning equipment by cabin	Stability;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Emergency tests;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Procedures for maintenance;	PRODUCT 04 - DIGITAL DOCUMENTS
Bluetooth operating reports per cabin	- test records;	PRODUCT 04 - DIGITAL DOCUMENTS
	a) Correct functioning;	PRODUCT 04 - DIGITAL DOCUMENTS
	- The reports must be individual per cabin;	PRODUCT 04 - DIGITAL DOCUMENTS
	a) Bluetooth system information:	PRODUCT 04 - DIGITAL DOCUMENTS
	- Version used;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Range capacity;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Maximum number of devices connected simultaneously;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Other technical specifications;	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Tests to be performed and reported:	PRODUCT 04 - DIGITAL DOCUMENTS
	- Connectivity test;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Latency test;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Range test;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Interference test;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Stability and reliability;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Safety;	PRODUCT 04 - DIGITAL DOCUMENTS
Drilling test and inspection report of the parts	- A set of reports per cabin must be presented;	PRODUCT 04 - DIGITAL DOCUMENTS
	(a) tests on all parts of the equipment that have holes, such as:	PRODUCT 04 - DIGITAL DOCUMENTS
	- Columns;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Rim;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Axis;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Structure of the engines;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Connection between the support of the cabins and the flange of the cabins;	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Perform pre-assembly of the parts;	PRODUCT 04 - DIGITAL DOCUMENTS
	c) pre-assembly images;	PRODUCT 04 - DIGITAL DOCUMENTS
	- Visual test and magnetic powder;	PRODUCT 04 - DIGITAL DOCUMENTS
Testing temporary arm supports	a) Two (2) units of a torque pistol for the inserts of foundations;	PRODUCT 04 - DIGITAL DOCUMENTS
	b) Two (2) units of a torque pistol for the column screws;	PRODUCT 05 - FERRIS WHEEL
	c) Two (2) units of a torque pistol for the screws of the temporary supports;	PRODUCT 05 - FERRIS WHEEL
	d) Two (2) units of a torque pistol for fixation of the rim sections;	PRODUCT 05 - FERRIS WHEEL
	(a) two (2) units of a torque pistol for the cabin supports;	PRODUCT 05 - FERRIS WHEEL
	(b) Two (2) units of a pin puller for the removal of temporary supports;	PRODUCT 05 - FERRIS WHEEL
	(c) Two (2) torque pistol units for the stayed cables;	PRODUCT 05 - FERRIS WHEEL
	(d) Three (3) load cell units to measure the stress of the stayed cables;	PRODUCT 05 - FERRIS WHEEL
	(e) Two (2) units of mechanical elements to measure the torque of the cables;	PRODUCT 05 - FERRIS WHEEL
	(f) Two (2) torque meter units for the fixation of the stayed cables to the axle;	PRODUCT 05 - FERRIS WHEEL
Necessary equipment	(g) Two (2) units of a torque pistol for the inserts of foundations;	PRODUCT 05 - FERRIS WHEEL
	(h) Two (2) units of a torque pistol for the column screws;	PRODUCT 05 - FERRIS WHEEL
	(i) Two (2) units of a torque pistol for the screws of the temporary supports;	PRODUCT 05 - FERRIS WHEEL
	(j) Two (2) units of a torque pistol for fixation of the rim sections;	PRODUCT 05 - FERRIS WHEEL
	(k) Two (2) units of a torque pistol for the cabin supports;	PRODUCT 05 - FERRIS WHEEL
	(l) Two (2) units of a pin puller for the removal of temporary supports;	PRODUCT 05 - FERRIS WHEEL
	(m) Two (2) torque pistol units for the stayed cables;	PRODUCT 05 - FERRIS WHEEL
	(n) Three (3) load cell units to measure the stress of the stayed cables;	PRODUCT 05 - FERRIS WHEEL
	(o) Two (2) units of mechanical elements to measure the torque of the cables;	PRODUCT 05 - FERRIS WHEEL
	(p) Two (2) torque meter units for the fixation of the stayed cables to the axle;	PRODUCT 05 - FERRIS WHEEL



Insulation for maritime transport	(a) Cabins:		PRODUCT 05 - FERRIS WHEEL
	- Metal support with rubberized insulation at the points of contact between the support itself and the cabins;		PRODUCT 05 - FERRIS WHEEL
	- Protective foil on acrylics;		PRODUCT 05 - FERRIS WHEEL
	- Transported individually;		PRODUCT 05 - FERRIS WHEEL
	(b) Columns:		PRODUCT 05 - FERRIS WHEEL
	- Mechanical protection along the tube;		PRODUCT 05 - FERRIS WHEEL
	- Circular protection spacers along the section;		PRODUCT 05 - FERRIS WHEEL
	- Extra mechanical protection at the edges;		PRODUCT 05 - FERRIS WHEEL
	(c) Rim:		PRODUCT 05 - FERRIS WHEEL
	- Insulated sections with mechanical protection;		PRODUCT 05 - FERRIS WHEEL
	- Extra mechanical protection at the edges;		PRODUCT 05 - FERRIS WHEEL
	(d) Axes:		PRODUCT 05 - FERRIS WHEEL
	- Mechanical protection throughout its area;		PRODUCT 05 - FERRIS WHEEL
	- Transport inside a container if the dimensions allow to;		PRODUCT 05 - FERRIS WHEEL
	(e) Electrical:		PRODUCT 05 - FERRIS WHEEL
	- Exclusive container for materials and electrical components;		PRODUCT 05 - FERRIS WHEEL
	- Mechanical insulation with bubble wrap in all items;		PRODUCT 05 - FERRIS WHEEL
	- Pantographs and cabinets of the operation must be individually packaged;		PRODUCT 05 - FERRIS WHEEL
	(f) Cables:		PRODUCT 05 - FERRIS WHEEL
	- Exclusive and closed container;		PRODUCT 05 - FERRIS WHEEL
	- Mechanical protection to the fullest extent;		PRODUCT 05 - FERRIS WHEEL
	(g) temporary support:		PRODUCT 05 - FERRIS WHEEL
	- Open frame container;		PRODUCT 05 - FERRIS WHEEL
	(h) screws, nuts and washers:		PRODUCT 05 - FERRIS WHEEL
	- Separated by type in identified boxes;		PRODUCT 05 - FERRIS WHEEL
	- Boxes wrapped in bubble wrap with proper identification;		PRODUCT 05 - FERRIS WHEEL
	- Torque pistols must be sent in boxes of naval plywood;		PRODUCT 05 - FERRIS WHEEL
	- Exclusive container;		PRODUCT 05 - FERRIS WHEEL
	(i) Connecting plates with the foundation and set of inserts:		PRODUCT 05 - FERRIS WHEEL
	- Insulated with mechanical protection;		PRODUCT 05 - FERRIS WHEEL
	- Closed container;		PRODUCT 05 - FERRIS WHEEL
	- Comes with a torquing tool;		PRODUCT 05 - FERRIS WHEEL
Isolation of equipment for maritime transport	a) Extra mechanical protection with EVA (Ethylene Vinyl Acetate) of 30 mm in the sections of the columns.		PRODUCT 05 - FERRIS WHEEL
	b) Extra mechanical protection with EVA (Ethylene Vinyl Acetate) of 30 mm in the end sections of the rim sections;		PRODUCT 05 - FERRIS WHEEL
	c) Scenic lighting must be stored in boxes of reinforced plywood = 16 mm in a closed and exclusive container;		PRODUCT 05 - FERRIS WHEEL
	d) Plates connecting with the foundation and inserts must be sent in the first shipment, 30 days after signing of the contract		PRODUCT 03 - PLATES/INSERTS

