

**SPI PROCESS n° 021.00000891/2024-87
INTERNATIONAL COMPETITION No. 02/2024
PPP LOTE ALTO TIETÊ**

**EXHIBIT II.F – MANDATORY BASIC GUIDELINES FOR ROLLING STOCK,
AUXILIARY VEHICLES, EQUIPMENT AND INFRASTRUCTURES**

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OBJECTIVE

This EXHIBIT deals with the mandatory guidelines exclusively related to ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT and maintenance infrastructures for the FIXED SYSTEMS.

GENERAL CONSIDERATIONS

The CONCESSIONAIRE shall maintain throughout the CONCESSION period:

- i. EXISTING TRAINS and OPERATIONAL TRAINS in the SERVICES of LINES 11, LINE 12, LINE 13 and the AIRPORT EXPRESS SERVICE, in sufficient quantity in circulation to meet the operational guidelines and PERFORMANCE INDICATORS;
- ii. AUXILIARY VEHICLES AND EQUIPMENT, at the expense and risk of the CONCESSIONAIRE in order to meet the service levels and the expected demand, as well as the PERFORMANCE INDICATORS, provided that the minimum mandatory quantity contained in the "Table 1 - Assets and Resources for Maintenance to be acquired by the CONCESSIONAIRE";
- iii. PARKING LOTS, described in EXHIBIT I;
- iv. MAINTENANCE COMPLEXES and MAINTENANCE BASES, described in EXHIBIT I.

Interoperability is a mandatory guideline for the entire CONCESSION and railway network of the STATE OF SÃO PAULO, requiring that the OPERATIONAL TRAINS, NEW TRAINS and AUXILIARY VEHICLES AND EQUIPMENT have the necessary constituent elements and are fully compatible with all lines, auxiliary tracks, yards and parking lots of the METRO-RAIL SYSTEM, allowing their operation on all existing lines, without restrictions.

The interoperability standard for the entire existing railway network is the one provided for in this AGREEMENT and its EXHIBITS. In the event that part of the state network operated by third parties does not follow the interoperability standard defined in this AGREEMENT, the guideline provided for in item 0 shall not apply to the CONCESSIONAIRE, unless (i) the third-party operator bears the costs necessary for the compatibility of OPERATIONAL TRAINS, NEW TRAINS and AUXILIARY VEHICLES AND EQUIPMENT with infrastructures and systems shared between the CONCESSIONAIRE and third parties, (ii) upon prior APPROVAL of the INDEPENDENT AUDITOR and no objection by ARTESP.

All ROLLING STOCK used in the provision of SERVICES must comply with accessibility standards, including ABNT NBR 14021, NBR 9050 and NBR 16537.

The equipment park and the maintenance infrastructure of the FIXED SYSTEMS, the ROLLING STOCK and the AUXILIARY VEHICLES AND EQUIPMENT used in the provision of the SERVICES of LINE 11, LINE 12, LINE 13 and the AIRPORT EXPRESS may be shared as provided for in EXHIBIT III.C observing the strategy defined by the CONCESSIONAIRE.

The CONCESSIONAIRE shall provide maintenance infrastructures that are in line with the specific maintenance strategies and needs of each set of items belonging to the FIXED SYSTEMS, ROLLING STOCK and AUXILIARY VEHICLES AND EQUIPMENT, in order to ensure their execution and, thus, promote the highest quality of service, meeting the contractual requirements and complying with the stipulated PERFORMANCE INDICATORS.

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Provided that there is no prejudice to the quality and compliance with the PERFORMANCE INDICATORS, the CONCESSIONAIRE will have the right to choose the operational solution that best suits it, including the adoption of any outsourcing for the provision of services.

In cases where there is an obligation stipulated by the AGREEMENT and its EXHIBITS to build new infrastructure to replace the existing one, there may be temporary situations of sharing these, until there is the effective delivery of new infrastructure.

UNDERCARRIAGE GUIDELINES

EXISTING TRAINS and OPERATIONAL TRAINS

The CONCESSIONAIRE shall use the fleet of EXISTING TRAINS listed in EXHIBIT I.

The CONCESSIONAIRE will be responsible for the implementation of its visual communication in all EXISTING TRAINS and OPERATIONAL TRAINS, replacing the CPTM name and logo, which must occur prior to the end of the PRE-OPERATIONAL PHASE. Within the same period, the CONCESSIONAIRE shall present a schedule for the replacement of the logo on the other public equipment listed in EXHIBIT I.

All OPERATIONAL TRAINS must circulate in the configuration of eight cars, except for exceptional situations and duly registered and approved in the operational procedures, in the OPERATIONAL PLAN and in the SEAT OFFER PLAN

Guidelines for monitoring the condition of EXISTING TRAINS and acquisition of NEW TRAINS

The CONCESSIONAIRE is responsible for the constant monitoring of the performance of the EXISTING TRAINS and their operating conditions, considering the procedures and the schedule of preventive and corrective maintenance necessary until the end of the concession.

- 1.1.1.1 If the CONCESSIONAIRE identifies the loss of operating conditions of the EXISTING TRAINS, in whole or in part, in such a way as to**

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reflect negatively on the PERFORMANCE INDICATORS and on the adequacy and safety of the SERVICES, it must submit a reasoned report to the INDEPENDENT AUDITOR, as a condition to start the preparation of the ROLLING STOCK ACQUISITION PLAN.

1.1.1.2 The reasoned report referred to in the previous item must demonstrate that the preventive and corrective maintenance provided for in the MAINTENANCE PLAN, and which would be reasonably required, under the terms of the AGREEMENT, are not sufficient to ensure compliance with PERFORMANCE INDICATORS or the adequate and safe operation of the LINES, including due to equipment obsolescence or impossibility of acquiring spare parts under normal market conditions.

1.1.1.3 If it is proven that the loss of the capacity to fulfill the intended functions of the EXISTING TRAINS is not due to action or omission of the CONCESSIONAIRE, considering the operation and maintenance requirements provided for in the AGREEMENT and the provisions of the items above, the INDEPENDENT AUDITOR will present a reasoned report to ARTESP, which may (i) authorize the preparation of the ROLLING STOCK ACQUISITION PLAN, and/or (ii) flexibilize the goals defined for the applicable PERFORMANCE INDICATORS while the respective trains remain in operation.

3.2.1.4. If the operation of EXISTING TRAINS fits the hypothesis described in item 1.1.1.1 compromises the safety of the USERS or the system, ARTESP must authorize the suspension of its use, and the CONCESSIONAIRE cannot be penalized if such suspension impacts its ability to comply with the PERFORMANCE INDICATORS.

If the preparation of the ROLLING STOCK ACQUISITION PLAN is authorized, under the terms of item 1.1.1.3, or by unilateral request, the CONCESSIONAIRE shall submit it to the INDEPENDENT AUDITOR with sufficient notice to meet the need to order the first new train, contemplating the number of new TRAINS to be acquired and following the characteristics defined in this EXHIBIT.

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1.1.1.4 The referred ROLLING STOCK ACQUISITION PLAN must be presented detailing the respective technical characteristics such as gauge, catenary, tension and acceleration and must follow the guidelines for EXISTING TRAINS, or distinct characteristics, if authorized by the GRANTING AUTHORITY.

1.1.1.5 The ROLLING STOCK ACQUISITION PLAN must be submitted, after the APPROVAL of the INDEPENDENT AUDITOR and ARTESP, subsidizing the approval of the GRANTING AUTHORITY and, if approved, it must be submitted to the rite of ORDINARY or EXTRAORDINARY REVIEW, according to the indicated schedule.

GUIDELINES FOR VEHICLES AND ANCILLARY MAINTENANCE EQUIPMENT

For maintenance activities, AUXILIARY VEHICLES AND EQUIPMENT will be required, from specialized machines, auxiliary railway vehicles for maintenance of the PERMANENT WAY and the OVERHEAD TRACTION NETWORK, to common road vehicles for the transport of maintenance teams.

With the signing of the TERM OF DELIVERY OF THE EXISTING INFRASTRUCTURE, the CONCESSIONAIRE will receive from CPTM the AUXILIARY VEHICLES AND EQUIPMENT currently used in the LINES and AIRPORT EXPRESS SERVICE, detailed in EXHIBIT I, for the beginning of the maintenance activities of the FIXED SYSTEMS.

In addition to the assets transferred by CPTM, the CONCESSIONAIRE must acquire a minimum number of self-propelled or traction vehicles and equipment to start the COMMERCIAL OPERATION PHASE, in order to promote the achievement of the PERFORMANCE INDICATORS and operational safety through the maintenance activities of the PERMANENT TRACK and OVERHEAD TRACTION NETWORK, including emergency assistance to notable occurrences, such as derailments.

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The following table presents the list of assets and minimum mandatory resources for maintenance to be acquired by the CONCESSIONAIRE until the deadline of the ASSISTED OPERATION STAGE, or exercise the prerogative described in item 4.4.1, to start the COMMERCIAL OPERATION, without prejudice to any over-sizing, which will be at its own risk, for the full fulfillment of the contractual obligations.

1.1.1.6 The acquisition period may be extended for up to twelve (12) months upon justification by the CONCESSIONAIRE, which shall also address the solution(s) adopted by the CONCESSIONAIRE to comply with the corresponding maintenance obligations.

1.1.1.7 The impact of the extension provided for in item 1.1.1.6 in PERFORMANCE INDICATORS and compliance with contractual obligations constitutes a risk for the CONCESSIONAIRE.

Table 1 - Assets and Resources for Maintenance to be acquired by the CONCESSIONAIRE

ITEM	QUANT.	DESCRIPTION
1	1	Tamping, leveling and universal track aligner machine, ratoon bench formed by 16 blades, for 1600mm gauge
2	1	Universal tamping machine, leveler and turnout aligner, with 3-rail lifting jaws, for 1600mm gauge
3	1	Universal Slab Regulating Machine, for 1600mm Fork
4	2	Line Truck Set equipped with a 5ton capacity crane and two 12m trailers, for 1600mm gauge
5	1	Acquisition of a road truck, capacity 12t, equipped with a crane type Munck with a capacity of 5t
6	1	Acquisition of a set of road-rail equipment, 1600mm gauge, for extraction/positioning of wooden/concrete sleepers
7	1	Hydraulic crawler excavator
8	1	Tractor (truck), lowered flatbed trailer with a useful length of 15m
9	1	Rail grinder, minimum capacity 500m/h, for 1600mm gauge
10	1	Road-rail truck, 1600mm gauge, equipped with 500kV generator set

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ITEM	QUANT.	DESCRIPTION
11	1	Road-rail truck, 1600mm gauge, with trunk equipped with equipment and tools for railroad vehicle wrapping and emergency service
12	1	Road-rail crane, 1600mm gauge, electronic ganking system, telescopic boom with a capacity of 150t.
13	1	Control carriage, 1600mm gauge, equipped with ultrasound and laser scanner for surveying the track geometry
14	3	Three 100t and 2000 hp locomotives
15	20	20 Flatbed wagons (14m long for TLS) without crane
16	4	4 Rail wagons (14m long) with crane
17	10	10 hopper type vagões for ballast unloading
18	1	Overhead network maintenance train
19	1	Truck for 12t with Munck
20	6	Loco-tractor vehicles (for yard work)
21	7	2.5t Forklift
22	7	5t Forklift
23	10	Electric pallets
24	7	Height Working Platform
25	1	Mobile Rail Welding Unit
26	1	Chemical Weeding Wagon
27	1	Fuel Tank Wagon
28	1	Road-rail Backhoe Loader (+ Multitask Implements); Wheel Loader (With Ladle + Fork Type Implement + Hydraulic Implement for Concrete Sleepers);

The CONCESSIONAIRE shall submit to the INDEPENDENT AUDITOR its dimensioning for AUXILIARY VEHICLES AND EQUIPMENT during the PRE-OPERATIONAL PHASE, contemplating the number of AUXILIARY VEHICLES AND EQUIPMENT to be acquired and/or leased, according to Table 1 - Assets and Resources for Maintenance to be acquired by the CONCESSIONAIRE

The CONCESSIONAIRE may define the best strategy for the use of the equipment, and it is possible to opt for leasing instruments, provided that there is the proper acquisition of the asset in the minimum quantities provided for in Table 2 at the end of the contractual period, in view of the need to revert the assets to the GRANTING AUTHORITY.

GUIDELINES FOR MAINTENANCE INFRASTRUCTURE

MAINTENANCE BASES

The MAINTENANCE BASES aim to address and resolve failures in all FIXED SYSTEMS, 24 (twenty-four) hours a day.

1.1.1.8 The MAINTENANCE BASES must have a minimum infrastructure to support the scheduled maintenance teams in the FIXED SYSTEMS and AUXILIARY VEHICLES AND EQUIPMENT, including with regard to the organization and preparation for the start of activities right after the daily end of the COMMERCIAL OPERATION.

1.1.1.9 The CONCESSIONAIRE's schedule may count on the sharing of the Lapa Yard, according to the rules of coexistence established in EXHIBIT III.C, until the end of the period provided for in the PHYSICAL-EXECUTIVE SCHEDULE for the modernization and construction of the MAINTENANCE BASES.

1.1.1.10 The planning for the transition of the MAINTENANCE BASES must be submitted to ARTESP 12 months in advance of the first transfer and must be subject to the non-objection of the Agency.

MAINTENANCE COMPLEXES

The **MAINTENANCE COMPLEXES** are used for the maintenance of trains and railway vehicles, workshops and logistics of materials, and must meet all maintenance processes, preventive and corrective, for items such as: bogies, wheel sets, engines, among others.

MAINTENANCE COMPLEXES can house parking spaces, directing part of their structure as patios, to be dealt with in the item 1.5 of this EXHIBIT.

During the **CONCESSION TERM**, in order to avoid interruption of the operation and maintenance of the **SERVICES**, the existing **MAINTENANCE COMPLEXES** must ensure the continuity of the maintenance of the **EXISTING TRAINS**, as well as any **NEW TRAINS**, observing the rules of coexistence provided for in EXHIBIT III.C in cases of infrastructure sharing.

The **CONCESSIONAIRE** may, at its sole expense and discretion, decide to implement another workshop(s) for maintenance services of **ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT** in a location other than the **MAINTENANCE COMPLEXES**, provided that the minimum requirements of operation, safety and accessibility are met, as well as other requirements to be defined by ARTESP for the workshop to be implemented.

- 1.1.1.11 In the event provided for in this item, the workshop may contain maintenance ditches, support rooms, technical areas and access roads, among other places with functionalities complementary to maintenance activities.

Washer

The **WASHER** is a Yard with electrified or non-electrified railroad tracks, intended for washing **TRAINS** and **AUXILIARY VEHICLES AND EQUIPMENT**.

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The CONCESSIONAIRE's schedule may rely on the existing WASHER in Jundiapéba, according to EXHIBIT I and II.A, in order to continue its ROLLING STOCK maintenance activities, until the end of the period provided for in the PHYSICAL-EXECUTIVE SCHEDULE for the construction and effective installation of a new WASHER, under the terms of EXHIBIT II.A.

1.1.1.12 The transition plan for the transfer of the Washers must be presented by the CONCESSIONAIRE, subject to the non-objection of ARTESP.

1.2 PARKING LOTS and parking lanes

The PARKING LOTS and parking lanes are areas with electrified or non-electrified railways, intended for the parking of TRAINS and/or AUXILIARY VEHICLES AND EQUIPMENT.

The CONCESSIONAIRE shall park the largest number of EXISTING TRAINS and AUXILIARY VEHICLES AND EQUIPMENT within the PARKING LOTS and Lanes, seeking to optimize the occupation of all available spaces.

1.3 RAIL YARD

The CONCESSIONAIRE should, preferably, weld rails in long pieces, aiming at the least number of joints along the railroad track and, consequently, have advantages in terms of seating of the parts and stability.

The CONCESSIONAIRE may count on the temporary use of the equipment located in the Yard in Pirituba, sharing them with CPTM, according to the rules of coexistence established in EXHIBIT III.C, until the end of the period provided for in the PHYSICAL-EXECUTIVE SCHEDULE for the execution of VENTURE PAT 007, under the terms of EXHIBIT II.A.

MAINTENANCE PLAN FOR ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT

1.4 Basic guidelines

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The mandatory basic guidelines presented in this item shall be adopted by the CONCESSIONAIRE in the preparation of its MAINTENANCE PLANS for ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT and that will also include all its respective FIXED SYSTEMS.

The CONCESSIONAIRE must define the infrastructures capable of providing means for the teams to develop the activities within the expected times and meeting the maintenance planning, as well as for them to act in critical systems.

The MAINTENANCE PLANS apply to the entire fleet of ROLLING STOCK, and it is up to the CONCESSIONAIRE to establish the best operational strategy to carry out maintenance according to the age and technical-operational conditions of each of the vehicles, in order to meet the PERFORMANCE INDICATORS.

The form, typology and content of the MAINTENANCE PLANS are described in this EXHIBIT, which should be considered mandatory.

Preventive maintenance should use technologies that avoid service interruption, such as redundancies or fault-tolerant systems.

The MAINTENANCE PLAN for ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT must be submitted for approval under the terms and deadlines contained in the AGREEMENT and EXHIBIT II.E.

1.5 The MAINTENANCE PLAN for ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT must contain, according to each type of maintenance infrastructure, the elements described below:

MAINTENANCE COMPLEX:

- i. Detailed planning regarding the use and, when applicable, sharing of the maintenance complexes of trains and railway vehicles, workshops, logistics of materials and washer, to meet all maintenance processes (including preventive and corrective) of all systems, such as: bogies, wheel sets, engines, among others.

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- ii. Indication, if applicable, of the possible use of the complexes as a shelter for parking spaces, specifying that part of their structure will be used as a patio.
- iii. Dimensioning of the preventive and corrective maintenance teams of the ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT, including third party subcontractors, which shall be available 24 (twenty-four) hours a day and 7 (seven) days a week, considering the responsibilities of the CONCESSIONAIRE in the contractual phases.

MAINTENANCE BASES:

- i. Detailed planning of restoration bases to attend, during all 24 (twenty-four) hours a day, 7 (seven) days a week, preventive and corrective maintenance of auxiliary vehicles and equipment, failures and emergency services in all FIXED SYSTEMS.
- ii. Detailing of the minimum infrastructure to support the scheduled maintenance teams in the FIXED SYSTEMS, for organization and preparation of the start of activities soon after the end of the COMMERCIAL OPERATION.

Land-track vehicle entrances:

- i. Detailed planning regarding the construction or maintenance of infrastructure that allows the access of land-road vehicles, through level access to the road in support of the maintenance bases.

PARKING LOTS and ROLLING STOCK parking lanes:

- i. Detailed planning regarding the appropriate parking lots for the ROLLING STOCK, including AUXILIARY VEHICLES AND

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EQUIPMENT, avoiding any operational risks and failures, including the provision of illuminated areas and work platforms between the tracks, for trains and for auxiliary maintenance vehicles, with support to the drivers and operational teams.

1.6 Maintenance of ROLLING STOCK, AUXILIARY VEHICLES AND EQUIPMENT

The CONCESSIONAIRE shall assume the preventive and corrective maintenance of all ROLLING STOCK from the beginning of the COMMERCIAL OPERATION PHASE.

- 1.6.1.1 The provisions of the item above will only apply to the 8000 series trains after the termination of Administrative Concession Agreement No. 876408301100 signed between the CTRENS Concessionaire and CPTM.
- 1.6.1.2 The CONCESSIONAIRE will be obliged to make available to CTRENS, as soon as it is notified to do so, the 8000 series trains that will be subject to preventive and corrective maintenance, having the prerogative, as the operator of the trains, to monitor the maintenance activities, under the terms of contract No. 876408301100.
- 1.6.1.3 All events occurring by virtue of CPTM's instruments held by third parties, in relation to the maintenance contracts in force, as well as any obligations arising from contractual terminations related to the contracts in force, will be the exclusive responsibility of CPTM.

For the maintenance and adequacy of the ROLLING STOCK, with regard to guidelines, standards and general characteristics, the CONCESSIONAIRE must also meet the requirements described in the technical documents contained in Appendix I of this EXHIBIT, especially with regard to the preventive maintenance plans of the respective series of EXISTING TRAINS.

The maintenance and adjustments of the **EXISTING TRAINS** must be included in the engineering performance reports provided for in **EXHIBIT III.A**.

For the maintenance and adaptation of existing **AUXILIARY VEHICLES AND EQUIPMENT**, with regard to guidelines, standards and general characteristics, the **CONCESSIONAIRE** must also meet the requirements described in the manufacturers' technical documents, contained in the maintenance manuals, which will be delivered to the **CONCESSIONAIRE** in the **PRE-OPERATIONAL PHASE**.

1.7 Operating Manuals

By the end of the **PRE-OPERATIONAL PHASE**, **CPTM** shall make available to the **CONCESSIONAIRE** all the operating manuals of the **ROLLING STOCK**, including the **AUXILIARY VEHICLES AND EQUIPMENT**.

Upon receipt of the existing manuals provided by **CPTM**, the **CONCESSIONAIRE** shall prepare and submit its own operating manuals to **ARTESP** for each of the **ROLLING STOCK** series, including when in the case of acquisition of **NEW TRAINS** and **VEHICLES** and each one of the **AUXILIARY VEHICLES AND EQUIPMENT**, containing operational technical information, such as load capacities, operating conditions, fuel tank capacities, hydraulic fluid, engine oil, maintenance plan, alarm signaling, among others.

- 1.7.1.1 The operating manuals prepared by the **CONCESSIONAIRE** will have the purpose of instructing and guiding its employees and do not replace the manufacturers' manuals.

Once prepared, the manual should be properly disseminated to the operator and technical professionals of operation and maintenance, in order to contribute to the analysis and diagnosis of failures and operational tests.

The operating manual must contain, at least,

- i. Description of the main features of the equipment;

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- ii. Presentation and overview of the equipment;
- iii. Description of the equipment and its systems;
- iv. Detailing of all commands and controls;
- v. Detailing of all indications and commands;
- vi. System operating procedures;
- vii. Solution and correction of chronic and/or recurrent problems;
- viii. Operation of equipment in degraded conditions;
- ix. Procedures for washing, cleaning and conservation of equipment;
- x. Preventive and corrective maintenance processes;
- xi. Predictive maintenance process, if any;
- xii. Spare parts plan, including replacement logistics;
- xiii. Employee allocation; and
- xiv. Maintenance plan for the equipment and machinery necessary to carry out the routines.

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All manuals should contain highlighted alerts for safety issues, both for operators, and for operating conditions with safety warnings.

Maintenance manuals

By the end of the PRE-OPERATIONAL PHASE, CPTM shall make available to the CONCESSIONAIRE all maintenance manuals for the ROLLING STOCK, including those related to AUXILIARY VEHICLES AND EQUIPMENT.

After receipt by CPTM of the existing maintenance manuals and procedures, the CONCESSIONAIRE shall prepare and submit its own maintenance manuals to ARTESP for each of the ROLLING STOCK series, including for any NEW TRAINS, as well as for each of the AUXILIARY VEHICLES AND EQUIPMENT, containing the maintenance planning, in order to guide its employees and ensure their performance specified by the manufacturers.

The maintenance manual must be prepared to meet each of the series of OPERATIONAL and NEW TRAINS, AUXILIARY VEHICLES AND EQUIPMENT together with the parts catalog and operating manual and does not replace the manufacturer's manual.

The manuals must contain, as appropriate, the following sections:

- i. safety aspects;
- ii. disassembly and assembly sequence;
- iii. correct positioning of components;
- iv. use of special tools, maintenance support equipment and spare parts stock, including replacement logistics;
- v. technical procedures for failure analysis, diagnosis and operation testing;

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- vi. periodic maintenance plan, torque specifications;
- vii. preventive, corrective and predictive maintenance procedures, if any;
and
- viii. employee allocation, among others.

Maintenance manuals must be divided and delivered into 2 groups, (i) Equipment Corrective Maintenance Manual and (ii) Equipment Preventive Maintenance Manual, as described below. They must contain all the description of the machinery and the associated labor, as well as the frequency of preventive maintenance and revisions.

Group 1 – Equipment Corrective Maintenance Manual that:

- 1.7.1.2 It must show the phases of corrective and preventive maintenance, as well as describe the main maintenance operations with their sequences and safety measures in this phase. Electrical, hydraulic or pneumatic diagrams should be placed in this chapter, including the parts and/or components (code and manufacturer) that make up these systems.
- 1.7.1.3 it must consist of nine chapters, aiming to detail the equipment used in the ROLLING STOCK overhaul operations, characteristics of the machinery and related services such as:
 - i. Description and operation: it must describe all the equipment, its operation, its technical characteristics, operational functions, technical requirements, applicable standards, etc.
 - ii. Removal and Installation: the mode of removal and installation of the equipment, the details, the care and the tools and equipment required in this operation must be described.

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- iii. Defect Finding: a logical sequence of action in solving a problem must be described, and the necessary instruments, drawings, electrical, mechanical and electronic diagrams and any other documents that help the investigation must be described. Also in this chapter, a list of possible failures and their probable causes should be listed in tables.
- iv. Disassembly and assembly: the disassembly and installation of the equipment must be described in detail, the care and the tools and equipment necessary in this operation.
- v. Inspection of Standards, Adjustments and Tests: the inspections and interventions that must be carried out on the equipment, the needs and forms of adjustments to be carried out, describing the details, care and necessary tools and equipment. When in this chapter there is a need to use software, its use should be described in detail, illustrating step-by-step windows for each type of intervention required etc.
- vi. Complementary services: some services included in the manuals must include additional work, determined by the manufacturer, such as reconditioning of components, laboratory tests, changes in parameters, etc.,
- vii. Storage: it must define the care to be taken in the storage of spare materials, equipment, special tools and inputs acquired.
- viii. Use of the parts catalog: the parts catalog will contain the detailed description of the components with their associated characteristics and drawings, the total number of parts, the commercial references of the component manufacturer (sub-supplier indicator) and the manufacturer (sub-supplier and locomotive manufacturer code), and a remarks column.

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- ix. Diagrams and drawings: The plans and diagrams of the equipment must contain the description and, to clarify the operation, list all the technical schematics and drawings associated with the equipment.

x.

Group 2 – Equipment Preventive Maintenance Manual

1.7.1.4 The manual must cover all preventive maintenance activities to be carried out on the ROLLING STOCK, and these activities must be divided according to the periodicity of the maintenance plan, acting in the prevention of failures and breakdowns in equipment, anticipating unscheduled stops and even avoiding accidents, and these activities must be divided according to the periodicity of the maintenance plan. They should consider predictive maintenance to ensure the functionality, operability, productivity and safety that are relevant.

1.7.1.5 This manual should present a summary view of the activities and should be presented in the form of a table, containing at least the following columns:

- i. Maintenance element;
- ii. Periodicity;
- iii. Brief description of the activity;
- iv. Hours/Man (h/H) for the execution of the activity;
- v. Tools needed;
- vi. Required materials; and

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- vii. Research documents for this activity (with hyperlink).

COMPUTERIZED SYSTEM FOR RECORDING MAINTENANCE PROCESSES

The CONCESSIONAIRE shall provide infrastructure for logistics and control of its maintenance processes in order to allow traceability of all its actions in maintenance events, integrated with the CMMS and SIGO, under the terms of EXHIBIT III.A. With this, the CONCESSIONAIRE must provide a computerized system integrated with the CMMS, whose guidelines are described in EXHIBIT II.C, which allows the issuance of specified monitoring reports of the transport activities carried out and their indicators, as well as present additional information related to the Maintenance and Operation processes, so that they can be permanently monitored by ARTESP, by the GRANTING AUTHORITY and by the INDEPENDENT VERIFIER.

The computerized system must maintain, in a continuous and secure manner, the entire history proving the maintenance activities specified and carried out, with sufficient details to allow its traceability and point out responsibilities. The system must also be able to store and control maintenance documents and reports related to operational occurrences of greater relevance as well as images and other evidence collected in these events.

The CONCESSIONAIRE must provide the INDEPENDENT VERIFIER, the GRANTING AUTHORITY and ARTESP with username/password pairs for access to the CMMS system (mandatorily on a web platform).

All maintenance units must be equipped with all the necessary resources for the development of technical activities and support for them, allowing these activities to be integrated into the CMMS system and other electronic management systems of the CONCESSION, as detailed in EXHIBIT III.D.