

EXHIBIT 05

SERVICES RELATED TO OPERATIONAL FUNCTIONS

SPONSORED CONCESSION OF PUBLIC SERVICES FOR CONSTRUCTION, OPERATION, MAINTENANCE AND INVESTMENTS NECESSARY FOR THE EXPLORATION OF THE SANTOS- GUARUJÁ IMMERSSED TUNNEL

1. INTRODUCTION

The CONCESSIONAIRE, as soon as it completes the works on the TUNNEL, URBAN ACCESSES and ACCESS BUILDINGS, within the period defined in the CONTRACT, shall adopt the measures/activities listed below regarding the services and operational systems, so that they are complete and fully operational on the OPERATION START DATE.

Any delay in the dates established for each activity will subject the CONCESSIONAIRE to the application of administrative sanctions provided for in EXHIBIT 11.

In addition to the requirements provided for in this EXHIBIT, the CONCESSIONAIRE shall submit the OPERATIONAL RULES to ARTESP, which will establish the instructions for routine procedures and for exceptional cases, such as traffic of special cargo, evasions, cancellation of undue registrations, accidents and others.

2. COLLECTION CONTROL SYSTEM

2.1. Basic Concepts

TOLL RATE collection services include the operation of the collection system for 24 (twenty-four) hours a day, collecting TOLL RATE, controlling vehicle traffic and financial and accounting control of the amounts collected.

Before starting COMMERCIAL OPERATION, the CONCESSIONAIRE shall provide the Toll Information Monitoring System (MIP), in accordance with ARTESP Ordinance 97/20 and its updates, and in accordance with the standards for standardization, implementation, operation and maintenance determined in specific regulations and their updates, for the GANTRIES of the INTERCONNECTION SYSTEM.

The MIP shall be approved and certified by the REGULATORY AUTHORITY or by an appointed entity, with regard to technical issues, as well as in relation to financial closing. The system shall be approved in accordance with the Deadlines Table in item 11.

The Collection Control System shall allow the REGULATORY AUTHORITY to collect information related to the collection of RATES and the operation of the GANTRIES online, so that it can be virtually transferred to the REGULATORY AUTHORITY's Headquarters and integrated into the CCI.

The validation activities of all information in the Collection Control System may be carried out remotely, in the State of São Paulo. However, for purposes of inspection by the REGULATORY AUTHORITY, the information shall be available in real time, outside the INTERCONNECTION SYSTEM, by a professional trained to operate the System.

For all items described in this section, the CONCESSIONAIRE shall implement a digital system for registering, managing and consulting data via the web, with the provision of username/password pairs for ARTESP, as well as integration and alignment with ARTESP's CCI.

2.2. Description, Specifications and Service Levels

The Collection Control System will be responsible for managing the collection of toll rates through the GANTRIES, allowing ARTESP to access the accounting services online.

2.2.1.1. Collection Methods

The adoption of the automatic payment method through the FREE AUTOMATIC SYSTEM, as set out in EXHIBIT 4, will be mandatory, and shall meet legal and tax obligations, as well as those arising from service and technological developments, in addition to allowing the adoption of new toll rate policies throughout the CONCESSION period for the INTERCONNECTION SYSTEM, the implementation of which will comply with the rules of the CONTRACT, EXHIBIT 4 and this EXHIBIT.

(a) Automatic Payment of the FREE AUTOMATIC SYSTEM

Payment method using identification by collection control equipment, containing the vehicle information required for collection, which will be captured and identified by the control equipment when passing through the lane designated for automatic collection of the GANTRIES.

The equipment will record the passage and vehicle data, calculate the due tariff amount, debit the amount and store the data of the automatic collection operation electronically.

In this method, there will be a speed limit for approaching the GANTRIES previously established by the REGULATORY AUTHORITY, which will be monitored by a fixed radar system, which shall be installed in all lanes covered by the aforementioned GANTRIES, duly approved by the competent authorities on the OPERATION START DATE.

Automatic payment parameters shall comply with current standardization rules issued by ARTESP throughout the CONCESSION TERM, in compliance with the CONTRACT risk matrix.

2.2.1.2. Violation Control System, Exempt Vehicles, Anomalies/Discrepancies and Irregular Use of Lanes

For the above collection methods, for exempt vehicles and for vehicles traveling with excess loads, Violation Control systems shall be implemented in all lanes to manage and record passages, as described in items “a” and “b” below.

(a) CTB Violation Records

Non-metrological systems/equipment shall be implemented to record violations of the CTB committed on the INTERCONNECTION SYSTEM lanes, duly regulated by CONTRAN/SENATRAN, including, among others, the following cases: traffic in a prohibited location and/or irregular use of any lanes.

During the entire CONCESSION TERM, for the implementation and operation of non-metrological systems/equipment, the CONCESSIONAIRE shall fully comply with current legislation. The CONCESSIONAIRE shall also comply with all requirements, specifications, procedures and quality standards defined by the REGULATORY AUTHORITY and/or the GRANTING AUTHORITY.

The CONCESSIONAIRE shall ensure that the information stored by the implemented control system, both for non-metrological equipment and fixed radars, is available for access by the authorities, so that it is possible to identify the stored content, within the requested timeframes, so that they can fine vehicles for registered non-conformities.

(b) Control and Registration of Tickets

The system shall register any type of vehicle that travels through any collection points of the INTERCONNECTION SYSTEM, even those exempt or exempt from paying RATE, anomalies/discrepancies and excess loads, identifying it unequivocally, with data and image, with its characteristics (license plate, brand, number of touching and suspended axles, single or double wheel), as well as the date and place of the occurrence.

The systems described in items “a” and “b” shall be implemented together with the Collection Control System, so that at the beginning of the COMMERCIAL OPERATION, these Systems/Equipment are approved by the competent authorities, by the REGULATORY AUTHORITY, and in full operation/function.

The CONCESSIONAIRE shall ensure access to the control and registration information of stored tickets, through the CCI.

2.2.1.3. Specifications for Collection Systems

(a) Standardization

The Collection Control System shall meet all standardization requirements existing on the highways of the State of São Paulo, in addition to those defined by the REGULATORY AUTHORITY and contained in current legislation, throughout the CONCESSION TERM. The CONCESSIONAIRE's compliance with standardization rules shall consider the provisions of the CONTRACT's risk matrix.

(b) Commercialization

The CONCESSIONAIRE shall enter into contracts with the Automatic System Operators (OSAs) duly authorized by the REGULATORY AUTHORITY, enabling the detection of vehicles at the GANTRIES. The time for updating ticket information shall comply with the determination by the REGULATORY AUTHORITY and/or current legislation and regulations throughout the CONCESSION TERM. The CONCESSIONAIRE's compliance with standardization rules shall consider the provisions of the CONTRACT's risk matrix.

(c) Premises for the Development of the Collection Systems Project applicable throughout the CONCESSION TERM

The following premises constitute the CONCESSIONAIRE's obligation to adapt and make viable, at its own expense, the implementation of TOLL RATE collection methods, as they become or may become part of the toll rate policy in force throughout the CONCESSION TERM:

- Allow collection based on the physical characteristics of the vehicles, such as number of axles, number of suspended axles, number of wheels per axle, by weight, by time slot or even by the composition of two or more items;
- Allow advance payment for automatic collection methods (pre-paid and post-paid methods), when using the INTERCONNECTION SYSTEM.

The following premises shall also be met by the project, 24 (twenty-four) hours a day, every day of the week, including holidays and weekends, without prejudice to the CONCESSIONAIRE's obligation to adopt additional operational measures aimed at USER safety and the fluidity of the INTERCONNECTION SYSTEM:

- Prevent fraud attempts;
- Unequivocally record, with data and images, system violations, exempt vehicles, anomalies/discrepancies and irregular use in all lanes;
- Enable the registration of the entire fleet of official State vehicles, and its future expansion, for purposes of TOLL RATE exemption;
- Provide supervision, control, operation and maintenance facilities;
- Provide operational resources to facilitate financial auditing;
- Allow integration and interoperability with other existing systems;

- Make information on vehicle flow (quantity and classification) available in real time at the CCO;
- Allow the monitoring of vehicle identification data, as recommended in existing traffic legislation;
- Allow modernization (upgrade), without the need for a complete system replacement;
- Be flexible in including new functions and controls;
- Comply with quality programs that may be developed by the REGULATORY AUTHORITY and/or current legislation, actively participating in pursuit of defined goals, observing the applicable deadlines, obligations and risks of the CONTRACT.
- Present audiovisual resources to instruct and inform USERS, without compromising the system flow. The purpose of these audiovisual resources shall follow the rules established by the GRANTING AUTHORITY;
- Allow remote control;
- For all equipment in the GANTRY, the collection of information shall originate directly from the sensors and/or equipment;
- It shall provide access to all information so that the MIP system can collect the necessary information. However, the provision of data through views, scripts, webservices, etc. is not permitted, that is, the information shall be collected directly from the database tables.

The Collection Control System shall have a Telemetry System, meeting the basic and operational functionalities of the collection equipment with information made available in the GANTRIES.

The service levels applicable to the Collection Control System shall comply with the standards in APPENDIX D.

3. TRAFFIC AND TRANSPORTA INSPECTION CONTROL SYSTEM AND SUPPORT FOR NON-DELEGATED SERVICES

3.1. Basic Concepts

Traffic and transport inspection activities are part of the set of NON-DELEGATED SERVICES, remaining an exclusive responsibility of the PUBLIC AUTHORITY.

3.2. Description, Specifications, Service Levels and Performance Indicators

3.2.1. Speed Control System

Speed Control System aims to enforce the provisions of current traffic legislation, regarding the maximum speed limits established for the INTERCONNECTION SYSTEM (or sections of this INTERCONNECTION SYSTEM).

The CONCESSIONAIRE shall be responsible for the implementation, completion, revitalization, approval, operation and maintenance of the systems and equipment that comprise the Speed Control System in the INTERCONNECTION SYSTEM, and shall fully and simultaneously meet all requirements, deadlines and quantities established in EXHIBITS 5, 6 and 7.

The CONCESSIONAIRE shall acquire new speed meters, whose model has been approved by INMETRO, ensuring full compliance with the current metrological regulations. Equipment that does not meet this condition will not be approved by the GRANTING AUTHORITY.

The process of implementing the speed control system will only be considered completed by the REGULATORY AUTHORITY after the approval of the speed control equipment by the GRANTING AUTHORITY, with the due publication of the act in the State Official Gazette – DOE.

The CONCESSIONAIRE shall be fully responsible for keeping the certification of all speed control equipment up to date as established by current legislation. The verification certificates shall be sent by the CONCESSIONAIRE to the REGULATORY AUTHORITY and the GRANTING AUTHORITY, within the deadlines and conditions established in the current technical specifications. To this end, the CONCESSIONAIRE shall adopt all measures it deems necessary, especially with regard to activities and deadlines involving third parties, such as certifying authorities.

During the entire CONCESSION TERM, the CONCESSIONAIRE shall fully comply with the current legislation regarding the implementation and operation of the speed control system. The CONCESSIONAIRE shall meet all requirements, specifications, procedures and quality standards defined by the REGULATORY AUTHORITY and/or the GRANTING AUTHORITY.

Fixed Speed Control

The CONCESSIONAIRE shall install, maintain and preserve “fixed” speed control equipment at points of the INTERCONNECTION SYSTEM, in accordance with the provisions of EXHIBIT 7.

The locations where fixed speed control equipment will be installed are called “fixed speed control points”.

The CONCESSIONAIRE shall develop technical studies to define the necessary and most suitable locations for the installation of fixed speed control inspection points, respecting the methodology and deadlines formally established by the REGULATORY AUTHORITY. The studies will be analyzed by the REGULATORY AUTHORITY.

Whenever requested by the REGULATORY AUTHORITY, the CONCESSIONAIRE will prepare technical studies at specific locations or reassess the fixed speed control points installed.

The studies shall consider sections that present potential risk, high accident rates and speeds above the regulated limit, whenever it is necessary to maintain the speed within the maximum limit established by law.

Based on the analysis of the technical studies carried out by the CONCESSIONAIRE, the REGULATORY AUTHORITY may request the relocation of fixed speed control points, or the installation of new equipment, with the CONCESSIONAIRE being responsible for bearing the costs of carrying out the technical studies and relocating the equipment.

The CONCESSIONAIRE shall, whenever changes occur in the study variables and/or at least every 12 (twelve) months, measure the effectiveness of the fixed speed measuring equipment through new technical studies.

All fixed speed control points shall be active, that is, fully installed, with road containment devices, boxes to house the equipment, electrical power and inductive loops (or other technology approved by the GRANTING AUTHORITY) to detect vehicles. In addition to this infrastructure, each point will also be composed of equipment capable of measuring the speed of vehicles in all lanes simultaneously, and shall record the images and characteristics of the offending vehicles.

When the REGULATORY AUTHORITY determines the installation of a fixed speed meter in critical sections and areas of user vulnerability, where there is a specific reduction in speed in relation to the road's guideline speed, the use of fixed-reducing equipment (electronic speed guns) will be mandatory. In addition to sensors to measure speed and image recording devices, this equipment shall be equipped with a device (display) that shows drivers the measured speed. There shall be an independent display for each traffic lane at the inspection site.

The installation of fixed speed control points will be mandatory at the GANTRIES of the FREE AUTOMATIC SYSTEM.

The installation of fixed speed control points installed at the GANTRIES shall be completed by the date of commencement of COMMERCIAL OPERATION, including the publication of the equipment approval, regardless of the implementation deadlines established for the other fixed speed control points.

The CONCESSIONAIRE may opt for speed measuring equipment that uses alternative technologies to surface sensors, provided that there is express authorization from the REGULATORY AUTHORITY and that these technologies, demonstrably, present performance equal to or superior to inductive loops.

The speed measuring equipment shall operate 24 (twenty-four) hours a day, 7 (seven) days a week, including holidays. If the CONCESSIONAIRE fails to comply with this determination, the period of inoperability will be computed for the monthly calculation. If equipment is inoperable as a result of preventive maintenance and/or certification procedures, the procedures, deadlines and other conditions established by the REGULATORY AUTHORITY shall be complied with.

All speed measuring equipment shall be interconnected to the CCO through the data transmission system, so that the records of the offending vehicles are grouped in a specific piece of equipment, for purposes of transmitting them to the GRANTING AUTHORITY, observing the deadlines defined for this activity in the current technical specifications. The integrity of the records and the security in the storage and transmission of data shall be guaranteed through the use of passwords or other types of access keys, confirmation of package delivery, encryption, among others.

The examination of the records, followed by any issuance of infraction notices, will be the exclusive responsibility of the GRANTING AUTHORITY and/or REGULATORY AUTHORITY.

The CONCESSIONAIRE shall monitor the quality of the photographic records of the violating vehicles, in order to ensure compliance with the standards and requirements established by the GRANTING AUTHORITY and the technical specifications of the REGULATORY AUTHORITY. According to the criteria established by the GRANTING AUTHORITY, records whose quality compromises their use for issuing traffic violation reports will be discarded by the GRANTING AUTHORITY.

The CONCESSIONAIRE shall ensure that the identification information (data check) and the names of the files of the photographic records are correctly listed, in accordance with the standards defined by the GRANTING AUTHORITY and in the technical specifications of the REGULATORY AUTHORITY. The GRANTING AUTHORITY will discard photographic records of violations that present erroneous information in the data check or in the name of the files of the records, if it is possible to identify such errors.

The CONCESSIONAIRE shall be subject to the application of the administrative sanctions provided for in EXHIBIT 11 whenever the insertion of erroneous information in the data check or in the name of the records files results in the undue issuance of a violation notice by the GRANTING AUTHORITY.

On a monthly basis, for each speed measuring equipment, the GRANTING AUTHORITY shall calculate the utilization rate of the records, based on the total number of records processed in the month and the number of records discarded by the GRANTING AUTHORITY. The CONCESSIONAIRE shall maintain the utilization rate level in accordance with the standards defined by the GRANTING AUTHORITY and the technical specifications of the REGULATORY AUTHORITY.

The CONCESSIONAIRE shall ensure that there are no irregularities in the numerical sequence of the infraction records transmitted to the GRANTING AUTHORITY.

The system shall allow, in the form of contingency, the obtaining of information on the registration of offending vehicles at a local level through portable data collection equipment. When necessary, the CONCESSIONAIRE shall manually collect the encrypted records and subsequently transmit them to the GRANTING AUTHORITY without any changes to these records.

The CONCESSIONAIRE will be responsible for retransmitting the violation records to the GRANTING AUTHORITY in the manner established in the CONTRACT and EXHIBITS, or whenever requested by the latter.

Fixed speed measuring equipment shall store the records locally for a minimum period of 30 (thirty)

days, and the CONCESSIONAIRE shall store the violation records for the CONCESSION TERM.

The speed measuring equipment installed by the CONCESSIONAIRE shall comply with the guidelines established by regulatory agencies and/or entities, in addition to having functionality that allows the accounting and classification of all vehicles that pass through the speed control point. For classification purposes, light vehicles, heavy vehicles and motorcycles shall be considered. This functionality shall also allow the storage and export of data regarding the speed practiced by all vehicles. The form of delivery by the CONCESSIONAIRE of this data and the form of integration with the systems of the GRANTING AUTHORITY and the REGULATORY AUTHORITY shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

The fixed speed control equipment installed by the CONCESSIONAIRE shall have an optical character recognition (OCR) functionality to identify the license plates of vehicles that pass through the speed control points. This functionality applies to all vehicles that pass through the fixed speed control point, whether or not they are violators. In the manner established by the CONTRACT and EXHIBITS, or whenever requested by the REGULATORY AUTHORITY, these data shall be transmitted by the CONCESSIONAIRE to the REGULATORY AUTHORITY and/or the GRANTING AUTHORITY, in real time. The manner in which the CONCESSIONAIRE delivers these data and the manner in which they are integrated into the systems of the GRANTING AUTHORITY and the REGULATORY AUTHORITY shall fully comply with the procedures, guidelines, technologies and interfaces defined by the REGULATORY AUTHORITY.

Speed measuring equipment shall be inserted into the REGULATORY AUTHORITY's registration systems using the procedures and interfaces defined by the REGULATORY AUTHORITY.

Fixed speed measuring equipment shall allow telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, guidelines, technologies and interfaces formally defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may determine that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, in accordance with procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of "fixed" speedometers shall comply with the service levels set forth in APPENDIX D.

3.2.2. Inspection and Control of Noise Emissions

The emission of noise, when the CONCESSIONAIRE or third parties subcontracted by it perform various services/works, shall comply with the provisions contained in Resolution No. 1 of the National Environmental Council (CONAMA), dated March 8, 1990, or any other resolution that may amend or replace it.

In cases of environmental problems caused by noise that is harmful to neighboring communities, the REGULATORY AUTHORITY may determine that the CONCESSIONAIRE prepare specific studies to be carried out by entities or agencies with recognized technical capacity, suitability and impartiality.

The CONCESSIONAIRE shall adopt all measures established by the aforementioned specific studies, at its own expense and within the deadlines required by the REGULATORY AUTHORITY, based on the extent of the inconvenience caused to the affected communities.

Regardless of the above conditions, the CONCESSIONAIRE shall comply with the requirements related to noise emissions established in the relevant municipal legislation and in the environmental licenses issued.

3.2.3. Management of the transportation of exceptional loads

The CONCESSIONAIRE may be remunerated for services provided in the implementation of operational schemes related to special operations for the transportation of exceptional cargo, which may directly affect the fluidity and safety of traffic, observing the rules of Ordinance SUP/DER 64/2016 and its amendments, as well as Ordinance ARTESP No. 46/2016, standards, regulations, technical specifications and/or parameters established in the notice and in the CONTRACT.

The CONCESSIONAIRE shall consider the limitations of the INTERCONNECTION SYSTEM so that the integrity of the structures and the safety of the USERS are guaranteed.

3.2.4. Management of the transportation of dangerous cargo

In view of the intrinsic safety issue, due to the submerged nature of the TUNNEL, as provided in EXHIBIT 7, the CONCESSIONAIRE shall adopt all available measures to prohibit the circulation of dangerous products through the TUNNEL.

The CONCESSIONAIRE shall publicize, through programs and signs in the INTERCONNECTION SYSTEM, the prohibition of all risk classes of transport of dangerous products in the TUNNEL, in accordance with decree no. 96,044 on 05/18/88 and resolution no. 420 on 02/12/04 of the Ministry of Transportation.

4. COMMUNICATION AND RELATIONSHIP SYSTEM

4.1. Basic Concepts

Within 6 (six) months from the date of signing the INITIAL TRANSFER INSTRUMENT, the CONCESSIONAIRE shall have implemented a telephone system for 0800 service, operating 24 (twenty-four) hours a day, 07 (seven) days a week, including holidays. The 0800 number shall be displayed on signs near the construction site and, after the completion of the IMPLEMENTATION WORKS, along the INTERCONNECTION SYSTEM.

The CONCESSIONAIRE shall provide access to the 0800 telephone system database, including all operational information, and with real-time and online interconnection to the CCI.

The services corresponding to operational functions and support for NON-DELEGATED SERVICES shall be assisted by a telecommunications system consisting of a Data Transmission System, responsible for interconnecting the various systems installed to the CCO.

On its turn, the CCO shall coordinate and control all operational functions of an USER Communication System, a network of variable message panels and the fixed and mobile telecommunications networks, installed at the fixed points of the INTERCONNECTION SYSTEM and in the mobile units of the various services, in addition to the ombudsman and other channels for interacting with the USER.

The sizing and deadlines for the implementation of all these systems are provided for in EXHIBIT 7.

For all items described in this section, the CONCESSIONAIRE shall implement a digital system for registering, managing and consulting data via the web, with integration and alignment with the CCI.

4.2. Description, Specifications and Service Levels

4.2.1. 0800 Service System

The CONCESSIONAIRE will be responsible for the implementation, revitalization, completion, operation and maintenance of the 0800 Service systems and equipment in the INTERCONNECTION SYSTEM, fully and simultaneously meeting all requirements, quantities and deadlines established in EXHIBITS 5, 6 and 7.

Users shall be served by the 0800 service at the CCO, 24 (twenty-four) hours a day, 7 (seven) days a week, including holidays, and the attendants shall observe all rules of courtesy and cordiality with the USERS.

The CONCESSIONAIRE shall provide access to the 0800 telephone system database, including all operational information, and with real-time and online interconnection to the REGULATORY AUTHORITY's CCI.

It will also be mandatory to implement a 0800 telephone service system at the CCO. This system shall allow the issuance of a Repressed Demand Report, whenever requested by the GRANTING AUTHORITY or the REGULATORY AUTHORITY.

4.2.2. Radio System

The CONCESSIONAIRE will be responsible for the implementation, revitalization, completion, operation and maintenance of the systems and equipment that comprise the Radio System in the INTERCONNECTION SYSTEM, aiming to fully and simultaneously meet all the requirements, quantities and deadlines established in EXHIBITS 5, 6 and 7 and APPENDICES.

The Radio System shall include the implementation of fixed stations, mobile stations, portable stations and repeater stations, capable of ensuring communication with all workstations, whether fixed or mobile, throughout the INTERCONNECTION SYSTEM, without any point with communication signal failure. It shall provide separate communication channels for operation, maintenance and emergency management.

The CONCESSIONAIRE shall provide portable radios exclusively for emergency management, which can be used by CBPMESP teams and other public forces, allowing these radios to connect to the Fire Department Operations Center (COBOM).

The fixed, mobile, portable and repeater stations shall be registered in the REGULATORY AUTHORITY's registration systems through the procedures and interfaces defined by the REGULATORY AUTHORITY.

Repeater stations shall allow telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feeds the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the Radio System shall comply with the service levels set forth in APPENDIX D.

4.2.3. Data Transmission System

The CONCESSIONAIRE shall be responsible for the implementation, completion, revitalization, operation and maintenance of the systems and equipment that comprise the Data Transmission System of the INTERCONNECTION SYSTEM, and shall fully and simultaneously meet all requirements, quantities and deadlines established in EXHIBITS 5, 6 and 7 and APPENDICES. The data transmission system shall have an architecture available 24 (twenty-four) hours a day, 7 (seven) days a week, including holidays, which allows coverage of all data and information generating points of the INTERCONNECTION SYSTEM, using updated technology capable of meeting the required demand without loss of performance of the entire architecture segment. The data transmission system shall enable the collection, treatment, processing and transmission, as well as access to this information in real time, from the CONCESSIONAIRE's CCO.

When equipment or systems with critical, complex and systemic failures with a significant impact on operations are detected, the CONCESSIONAIRE shall inform the REGULATORY AUTHORITY within a maximum period of 2 (two) hours.

The CONCESSIONAIRE shall have a system for managing failures, performance, configuration and security of the data transmission network.

The operation of the Data Transmission System shall comply with the service levels set forth in APPENDIX D.

4.2.4. Operational Control Center (CCO)

The CONCESSIONAIRE will be responsible for the implementation, revitalization, operation and maintenance of the CCO (building, systems and equipment) in order to fully and simultaneously meet all requirements for the CCO established in the EXHIBITS.

The CCO shall be responsible for routinely monitoring the traffic of the INTERCONNECTION SYSTEM and coordinating the actions of the SAU, activating all resources necessary for operational interventions, including those of other entities, such as the Fire Department, Environmental agencies, Civil Police and Military Police, when applicable.

The CCO shall coordinate all extraordinary events involving special operations of any nature in the INTERCONNECTION SYSTEM.

The CCO shall be equipped with a telephone dedicated to connecting to the COBOM, on a private line, allowing direct communication with the CBPMESP dispatch center.

The CCO systems and operations, as per this EXHIBIT, shall be exclusive. However, there is no prohibition on sharing a building with the ACCESS BUILDINGS, except for the rules applicable to the reversibility of CONCESSION ASSETS.

The CCO shall be operated by qualified personnel and have operational systems and databases, designed to feed an online information system of the REGULATORY AUTHORITY, adapted to the operational needs of the INTERCONNECTION SYSTEM, including, for example, telemetry data from equipment, communication systems with USERS, GANTRIES, variable message panel systems, traffic monitoring, inspection and maintenance systems.

The form of delivery by the CONCESSIONAIRE of information inherent to the CCO systems, including telemetry data, as well as the form of integration with the REGULATORY AUTHORITY systems shall comply with the procedures, technologies and interfaces formally defined by the REGULATORY AUTHORITY.

The CCO, in addition to centralizing and controlling the installed equipment, shall have a weather information system, making it available to the CCO operator and enabling decision-making in advance of climate changes that may interfere with traffic in the INTERCONNECTION SYSTEM.

The CCO shall operate 24 (twenty-four) hours a day, every day of the week, including weekends and holidays. When equipment or systems with critical, complex and systemic failures with a significant impact on operations are detected, the CONCESSIONAIRE shall inform the REGULATORY AUTHORITY within a maximum period of 2 (two) hours. The CCO operation shall comply with the service levels set forth in APPENDIX D.

In the event of failure of any equipment, system or functionality that comprises the CCO, these shall have their operability restored by the CONCESSIONAIRE within 48 (forty-eight) hours.

4.2.5. Variable Message Panel System (VMPs)

The CONCESSIONAIRE is responsible for the implementation, revitalization, operation and maintenance of the VMP systems and equipment of the INTERCONNECTION SYSTEM, in order to fully and simultaneously meet all the requirements, deadlines and quantities established in the EXHIBITS and APPENDICES. The VMPs are intended to clearly and succinctly transmit information and guidance to drivers. The messages to be conveyed by the VMPs can be classified as:.

- warning messages;
- guidance messages; and
- institutional messages.

Warning messages are intended to alert USERS about adverse traffic conditions in certain locations, and such messages shall be conveyed with appropriate informative content, in appropriate locations and through appropriate means (through PMVs and also through other available means, such as the CONCESSIONAIRE's website), which allow, to the extent possible and given the conditions reported, the USER to react to the decision to drive on the affected Section.

Guidance messages are intended to educate USERS on appropriate behavior while driving on the road, or to guide USERS on actions to be taken in certain signposted locations.

Institutional messages are intended to provide information of interest to the REGULATORY AUTHORITY, the GRANTING AUTHORITY or the CONCESSIONAIRE regarding improvements implemented, objectives achieved and goals to be achieved in the operation, maintenance and expansion of the INTERCONNECTION SYSTEM, among others.

The operation of the PMVs, including aspects such as update frequency and types of priority messages, shall follow the rules established by the REGULATORY AUTHORITY through its current technical specifications.

The CONCESSIONAIRE shall provide for the installation of a height detection sensor associated with a fixed PMV in front of the GANTRY and the entrance to the TUNNEL, in both directions, to prevent the passage of vehicles taller than 5.5 m.

The messages from the fixed PMVs will be broadcast from the CCO, which will have online control over all of this equipment installed in the INTERCONNECTION SYSTEM.

Fixed Variable Message Panel

The fixed PMV equipment shall meet the following requirements:

- the messages broadcast shall be visible and understandable from a minimum distance of 300 (three hundred) meters in clear, dry weather and with direct sunlight;
- the brightness of the panel shall be automatically adjusted according to the environment;
- The equipment shall be modular, allowing for the replacement of components for maintenance purposes;
- It shall have at least 2 (two) lines for messages, and some messages may be written on a single line, with twice the character box;
- The character box shall be at least 45 (forty-five) centimeters high;
- The panel shall allow for the configuration of traffic signals as specified in the Brazilian Traffic Code. To this end, the panel shall have a minimum of 3 (three) colors (green, red and amber);
- Each line shall have a minimum of 15 (fifteen) characters;
- It shall have fixed, flashing, sequential and bright display modes.

For operational purposes, the following requirements shall be met:

- PMVs will be considered non-operational during the time they are unable, for technical reasons, to convey messages;
- PMVs will be considered inoperative if they have malfunctioning or “off” LEDs that hinder the understanding of the messages by USERS;
- The PMVs will be considered inoperative if communication with the CCO is interrupted, preventing the broadcast messages from being updated.

The system shall have a central control system, to be installed in the operational control center (CCO) of the INTERCONNECTION SYSTEM, which will be responsible for managing the fixed panels in the field and have all the resources necessary to monitor the operation, as well as identify failures in the PMVs and issue alarms to their operators.

The central control system shall provide functionalities that allow, at least:

- programming for automatic presentation of messages at pre-established times;
- routine for monitoring deleted points;
- routine for monitoring broadcast messages;
- report, at the operator's request, of the broadcast messages broken down by panel and by time slot;
- editing and broadcasting of messages at any time; and.
- storage of 200 (two hundred) messages.

The equipment shall be registered in the REGULATORY AUTHORITY's registration systems using procedures and interfaces formally defined by the REGULATORY AUTHORITY.

The equipment shall allow telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

In addition to the telemetry information, the CONCESSIONAIRE shall feed the REGULATORY AUTHORITY's systems with information about the messages transmitted by the equipment, enabling remote and real-time consultation by the CCI.

The form in which the CONCESSIONAIRE makes telemetry data and information about equipment messages available, and the manner in which they are integrated into the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces formally defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed its systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the fixed Variable Message Panel System shall comply with the service levels set out in APPENDIX D and the Performance Indicators set out in APPENDIX 3 and APPENDIX A. The PMVs shall also meet the ABNT NBR 17050 standard and its updates.

4.2.6. Lane Marking System

The CONCESSIONAIRE will be responsible for implementing, maintaining and conserving the Lane Marking System, with the purpose of indicating to USERS the need to close lanes due to slow traffic or accidents downstream of the TUNNEL.

The system shall consist of an LED panel per lane of the arrow/X-type, with an intelligent control and activation module interconnected with the Operational Control Center. In the event of an emergency or other events, the CCO operator may send messages with standardized, pre-configured symbols to inform the operating status and guide or order actions to promote the lane change. The system shall also be capable of being programmed to automatically operate in the event of an alarm from another TUNNEL system.

The Lane Marking System shall be complete and fully operational as of the OPERATION START DATE. The equipment shall be registered in the ARTESP registration systems through the procedures and interfaces defined by ARTESP and shall support telemetry integrated with the REGULATORY AUTHORITY systems in order to allow remote and real-time consultation of the operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the Lane Marking System shall comply with the service levels set forth in APPENDIX D.

4.2.7. Abandonment Signaling System

The Abandonment Signaling System shall be used to guide USERS on escape routes from the TUNNEL in case of emergencies. The exit flows shall be indicated by means of standardized symbols on LED panels installed in the TUNNEL.

The symbols may be changed remotely by the operator of the Operational Control Center or automatically through association with other systems.

The TUNNEL shall also have signs at the emergency exits and contour lights around the emergency doors, allowing USERS to find these doors even with reduced visibility.

The Abandonment Signaling System shall be complete and fully operational as of the OPERATION START DATE. In addition, it shall comply with reference standards that address the subject, such as IT 35 of CBPMESP, NBR 17027 and NBR 15661 and their updates.

4.2.8. User Emergency Communication System

The User Emergency Communication System via Call Box (intercoms) shall be installed along the galleries, including the pedestrian gallery, near the emergency exits and near the tunnel accesses, duly marked as “EMERGENCY USER TELEPHONE”, and be fully operational as of the START OPERATION DATE. The Emergency Communication System for Users via Call Box will have direct communication with the operator at the CCO.

The User Communication System via Call Box consists of an electronic device such as a landline telephone for emergencies or information, which allows intercommunication between two or more people and shall be designed to provide the facilities described below:

- Allow communication by the USER with the CCO operator;
- Allow the recording of all communications;
- Allow the simultaneous service of at least 03 (three) users with an exclusive audio channel;
- Automatically control the volume of the loudspeaker through the noise sensor;

When the USER activates the equipment, he/she should receive a voice signal informing him/her that his/her call has been received or that the equipment is undergoing maintenance, is faulty, etc. The Call-box system should consist of a module to be placed on the wall, specifically for use in tunnels, with a “press and hold” type activation device.

From the Call-boxes, conversations can be activated in “hands-free” or conventional mode, or emergency warnings can be received throughout the entire length of the TUNNEL. USERS shall be answered by the CCO operator and the system shall be able to indicate to the operator which TUNNEL telephone the call is coming from.

The equipment shall be registered in the REGULATORY AUTHORITY registration systems through the procedures and interfaces defined by the REGULATORY AUTHORITY and shall allow telemetry integrated with the REGULATORY AUTHORITY systems in order to allow remote and real-time consultation of the operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the User Emergency Communication System shall comply with the service levels set forth in APPENDIX D.

4.2.9. Megaphones/Speaker System

The Megaphones/Speaker System comprises the set of equipment, materials and accessories duly arranged for the sound diffusion of “loud” communications, through “conversation and/or audible alarms”. The system shall cover all internal areas of the tunnels, including the main galleries, service galleries, emergency exit interconnections, entrances and technical areas, and shall also be sectorized and provide good message quality, with a minimum STI of 0.45. The system shall be able to integrate safety systems by broadcasting live warnings, pre-recorded digital safety messages, pre-recorded digital evacuation messages with a high degree of intelligibility and siren-type modulation, for TUNNEL USERS in both directions of traffic and in the pedestrian/cyclist gallery.

The CONCESSIONAIRE shall provide functions for guiding the public with routine, emergency, evacuation calls and a voice alarm system, in accordance with current standards, in order to provide the facilities described below:

- Operational Warnings issued from telephone extensions in the operations room;
- Emergency Warnings broadcast throughout the TUNNEL
- Emergency Audible Alarms, emitted from the operations room, broadcast throughout the TUNNEL.

The Megaphones System shall be complete and fully operational as of the OPERATION START DATE. The equipment shall be registered in the REGULATORY AUTHORITY registration systems through the procedures and interfaces defined by the REGULATORY AUTHORITY and shall support telemetry integrated with the REGULATORY AUTHORITY systems in order to allow remote and real-time consultation of the operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the ARTESP's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the Megaphone System shall comply with the service levels set forth in APPENDIX D.

4.2.10. User Communication System via Wireless Data Network

The User Communication System via Wireless Data Network is configured by a set of equipment and software that allows USERS of the INTERCONNECTION SYSTEM to establish communication with the CONCESSIONAIRE's CCO, with the purpose of requesting information or assistance in emergency situations, through a data communication network that uses wireless communication technology such as, for example, Wi-Fi.

It is the CONCESSIONAIRE's responsibility to implement, revitalize, operate and maintain the systems and equipment in the INTERCONNECTION SYSTEM, which comprise the User Communication System via Wireless Network, in order to fully and simultaneously meet all the requirements, deadlines and quantities established in the EXHIBITS and APPENDICES. The System shall be implemented through a wireless communication network, which uses technology compatible with the main mobile terminals available on the market, such as Wi-Fi technology, considering the requirements of the current technical specifications of the REGULATORY AUTHORITY.

The System shall be implemented throughout the INTERCONNECTION SYSTEM. When implementing the physical infrastructure, all requirements related to road safety shall be observed, as per the rules established by the applicable technical standards and the current technical specifications of the REGULATORY AUTHORITY.

The wireless communication network shall support handoff (or roaming), which consists of the automatic transfer of a user's connection, while in motion, from a radio base station (access point) to another adjacent one. Thus, the handoff shall allow a user traveling on the road at a speed compatible with the permitted limits to have uninterrupted access to the services provided through the CONCESSIONAIRE's wireless network.

The CONCESSIONAIRE may restrict the use of the wireless data network to emergency communications only and, optionally, to other services related to the concession, including operational demands, unless otherwise determined by the REGULATORY AUTHORITY or contractual requirement for the implementation of new services.

The CONCESSIONAIRE shall ensure that emergency communications traffic on the wireless data network will not be affected by data traffic from other services related to the concession, with a negative impact on the availability and quality of emergency communications.

The wireless communications network shall be adequately sized to meet capacity requirements compatible with the number of potential USERS and the services made available through the wireless network.

The CONCESSIONAIRE shall implement a transport network that enables communication between radio base stations (wireless access points) and the CCO, which may be the same optical communications network used for data transmission from ITS equipment implemented by the CONCESSIONAIRE.

The wireless communication network implemented by the CONCESSIONAIRE shall provide users with services related to the CONCESSION, including emergency services, and to meet operational needs. Sharing the network with third-party services is not permitted, unless expressly provided for in the contract or authorized by the REGULATORY AUTHORITY.

The CONCESSIONAIRE shall be responsible for the operation and maintenance of the wireless communication network that serves users in emergency situations. The use of a third-party network whose capacity, availability and coverage the CONCESSIONAIRE does not have full control over is not permitted, unless expressly provided for in the contract or authorized by the REGULATORY AUTHORITY.

The User Communication System via Wireless Data Network shall support voice communication service with the CONCESSIONAIRE's CCO in real time, such as telephone calls, for emergency assistance.

In addition, the CONCESSIONAIRE shall offer video communication services, chat communication (instant text messages) or equivalent.

Voice, video and text communication services shall be accessed through a portal (web page) to be developed by the CONCESSIONAIRE, using the wireless data network of the USER Communication System. In addition, the user shall be able to access the portal through a cellular mobile network.

Voice, video and text communication services shall be available and functioning properly throughout the entire section served by the wireless network, including shoulders.

Proper functioning is understood as the possibility of establishing emergency calls with the CCO, with voice and video quality that allows intelligible communication between the parties, and without interruptions due to variations in the wireless network signal or any network failures.

In addition, the CONCESSIONAIRE may develop an application for mobile devices that provides access to voice, video and text communication services in a manner similar to the portal.

Developing an application for voice service for emergency communication does not exclude the need for a voice communication solution through the portal.

The emergency call handling system made through the User Communication System via Wireless Data Network shall be performed by the CCO.

The user service shall enable the identification of the location of the user requesting emergency care in accordance with the current technical specifications of the REGULATORY AUTHORITY. The user service shall enable the registration and recording of calls made through the wireless data network and the calculation of statistics.

The CONCESSIONAIRE shall implement a management system for the entire communication network that supports the User Communication System via Wireless Data Network, including fault and performance management.

To ensure that USERS are aware that the User Communication System via Wireless Data Network is available for emergency services, the CONCESSIONAIRE shall install information signs in the INTERCONNECTION SYSTEM with wireless coverage, in accordance with the signaling standards established by the REGULATORY AUTHORITY. To implement and operate the User Communication System via Wireless Data Network, the CONCESSIONAIRE shall meet all the requirements established in the applicable ANATEL standards.

The Wireless Access Point equipment shall be entered into the REGULATORY AUTHORITY's registration systems using the procedures and interfaces defined by the REGULATORY AUTHORITY.

The Wireless Access Point equipment shall support telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of availability by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

4.2.10.1. Parameters for Inspection

The operation of the User Communication System via Wireless Data Network shall meet the service levels set forth in APPENDIX D and the Performance Indicators set forth in APPENDIX 3 and APPENDIX A.

The verification of the service level (operability) of the User Communication System via Wireless Data Network may be executed by analyzing the performance of the System in any section of the System and/or the availability of Wireless Access Points.

The analysis of the System's performance will be executed by establishing test calls. Given that the User Communication System via Wireless Data Network does not determine specific locations on the road for making calls, inspection is executed by testing at random points on the section of the INTERCONNECTION SYSTEM, and not necessarily throughout the INTERCONNECTION SYSTEM, in accordance with the provisions of ARTESP's technical specifications.

The analysis of the availability of wireless access points involves periodically checking whether the number of inoperative wireless access points is in accordance with the service level provided for in APPENDIX D.

The CONCESSIONAIRE shall implement the necessary network and equipment redundancies to ensure that the service level required for the User Communication System via Wireless Data Network is met.

4.2.11. Ombudsman and Other User Relationship Channels

The CONCESSIONAIRE shall implement and maintain in full operation and within the established standards, the Ombudsman and Other User Relationship Channels, provided for in the current legal and infra-legal standards, as well as in the regulatory standards and ordinances of the REGULATORY AUTHORITY, under the terms of the NOTICE and CONTRACT.

The CONCESSIONAIRE's Ombudsman's Office shall:

- (i) Receive, process and analyze the statements and suggestions of USERS or third parties affected by the provision of DELEGATED SERVICES, monitoring the processing and effective conclusion of the statements/suggestions before the CONCESSIONAIRE, formulating a response within 30 (thirty) days, counting from the date of the statement/suggestion, which may be extended once, for the same period, provided that it is duly justified;
- (ii) Prepare, annually, a management report, which shall consolidate the statements and suggestions, indicating (a) the number of statements organized by subject, (b) causes and reasons, (c) verification of recurring points and, based on them, point out and suggest improvements in the provision of DELEGATED SERVICES;
- (iii) Promote the participation of USERS in matters of interest to the SPONSORED CONCESSION;
- (iv) Monitor the provision of services, aiming to guarantee their effectiveness;
- (v) Propose improvements in the provision of services;
- (vi) Assist in the prevention and correction of acts and procedures that are incompatible with those established in this CONTRACT; and
- (v) Propose the adoption of measures to defend the user's rights, in compliance with the provisions of this CONTRACT and current legislation; and promote the adoption of mediation and conciliation between the USER and the CONCESSIONAIRE without prejudice to other competent authorities.

The management report shall be sent to the highest authority of the CONCESSIONAIRE, the GRANTING AUTHORITY and the REGULATORY AUTHORITY, as well as made available on the Internet, with information inherent to the Ombudsman and Other User Relationship Channels, and centralized in the CCI, thus ensuring the broadest publicity and social control.

4.2.12. Service to Local Authorities

The CONCESSIONAIRE shall, through SISDEMANDA, have an exclusive service channel for Local Authorities. Questions from Local Authorities shall be answered by the CONCESSIONAIRE within 5 (five) business days from the date of submission. The REGULATORY AUTHORITY shall have access to the questions sent by Local Authorities at the time of submission, and shall be immediately informed of the response given by the CONCESSIONAIRE to the authorities.

4.2.13. Communication System with the Information Control Center (CCI) of the REGULATORY AUTHORITY

As of the START OPERATION DATE, the CONCESSIONAIRE, through the CCO, shall notify the CCI of the REGULATORY AUTHORITY, via email or specific system approved by the Agency, of all occurrences and/or events considered relevant, in accordance with the technical specifications and/or current procedures of the REGULATORY AUTHORITY. Nevertheless, all communication procedures between the CCO of the CONCESSIONAIRE and the CCI of the REGULATORY AUTHORITY shall be explicitly stated in the CCO Operations Manual of the CONCESSIONAIRE.

The CONCESSIONAIRE shall make available to the CCI of the REGULATORY AUTHORITY a RESTful WEB service - Representational State Transfer - through a documented and REST-Compliant API (Application Programming Interface), where the following will be outlined:

- vehicle counting data, classified by vehicle type, collected through traffic analysis systems;
- vehicle counting data, classified according to the definitions in EXHIBIT 4, collected through the counting systems available at the GANTRIES;
- data on all occurrences and/or events;
- data on traffic conditions, weather conditions and travel time between municipalities;
- data on ongoing works;
- images from CCTV system cameras;
- inventory data; and
- other data that may be requested later by the Authority.

Requests made to the URI - Uniform Resource Identifier - made available by the API shall respond with a payload formatted in JSON, mandatorily, and other formats to be defined by the REGULATORY AUTHORITY, if necessary. The service shall provide data from the start of the concession until the current time of the request, with a maximum response time of 1 second.

The data provided shall be updated in real time and meet all criteria already defined or to be defined by the REGULATORY AUTHORITY

5. MONITORING SYSTEM

5.1. Basic Concepts

The services corresponding to the operational functions and support for NON-DELEGATED SERVICES shall be assisted by Monitoring Systems, with equipment installed at the main points of the road system, integrated with the CCO through a real-time data transmission system.

At the CCO, the data reported by the equipment that comprises the Monitoring System shall be presented to the operators of this CCO on panels (Video Wall) and video monitors, through images or other types of visualization, capable of providing all the data necessary for perfect monitoring of the operation remotely.

5.2. Description, Specifications and Service Levels

5.2.1. Traffic Sensing System

The Traffic Sensing System shall cover both directions of the TUNNEL and the URBAN ACCESS ramps in order to allow monitoring of the quantitative and qualitative evolution of the vehicle flow of the INTERCONNECTION SYSTEM. The traffic sensors shall measure the flow of vehicles, as well as the speed and weight of the vehicles traveling in the INTERCONNECTION SYSTEM.

The information shall be transmitted to the REGULATORY AUTHORITY every 15 (fifteen) minutes, without interruption, respecting the methodology defined in the technical specifications of the REGULATORY AUTHORITY.

Traffic data shall be obtained through traffic sensors installed in the INTERCONNECTION SYSTEM, so that the information collected can be audited by the REGULATORY AUTHORITY at any time of the year or period of the day.

The calibration of traffic sensor equipment shall meet the accuracy limits defined in the corresponding technical specifications of the REGULATORY AUTHORITY.

Traffic sensors shall be activated by inductive and piezometric loops or other technologies that offer similar or superior performance. They shall also offer, at least, the following functionalities:

- vehicle counting, by direction and by lane;
- vehicle length;
- vehicle classification between light and heavy, using the vehicle length as a parameter;
- speed (of each vehicle, average by vehicle class and overall average);
- distance and time interval between vehicles (GAP);
- time interval between the front of two subsequent vehicles (HEADWAY);
- occupancy rate (time during which the loop was occupied by vehicles, in relation to a time base);
- weight per axle and total gross weight of the vehicle, which will be used for statistical analyses;
- classification of the axle and type of tread that will be used for statistical analyses; and
- redundancy of electrical power (in addition to the main source, an uninterruptible power supply unit (UPS) shall be provided, with or without a generator set), with a minimum autonomy of 16 (sixteen) hours.

In order to comply with the obligations of the Traffic Sensing System, the CONCESSIONAIRE shall provide an integrated digital system, via the web, for consulting the data collected by the SATs (SIS-EQP), as per APPENDIX C.

The traffic sensors shall be registered in the registration systems of the REGULATORY AUTHORITY through the procedures and interfaces defined by the REGULATORY AUTHORITY.

The traffic sensors shall allow telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

In addition to the telemetry information, the CONCESSIONAIRE shall feed the REGULATORY AUTHORITY's systems with the counting, speed and weight data recorded by the traffic sensors, enabling remote and real-time consultation by the CCI.

The form of availability by the CONCESSIONAIRE of the telemetry data and data recorded by the equipment available, and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the Traffic Sensing System shall comply with the service levels set forth in APPENDIX D.

5.2.2. Travel Time Control System

The CONCESSIONAIRE shall implement, revitalize, operate and maintain equipment with optical character recognition functionality – OCR or similar, capable of measuring travel time by recognizing the license plates of vehicles passing through the TUNNEL entrances. The equipment shall be fully operational as of the START OPERATION DATE.

The operation of the Travel Time Control System shall comply with the service levels set forth in APPENDIX D.

5.2.3. CCTV Monitoring System

The CONCESSIONAIRE shall be responsible for the implementation, completion, revitalization, operation and maintenance of the systems and equipment that make up the CCTV Traffic Monitoring System in order to fully and simultaneously meet all the requirements and deadlines defined in the EXHIBITS and APPENDICES and provide 100% (one hundred percent) coverage of the INTERCONNECTION SYSTEM roads.

According to the deadlines and rules established in EXHIBIT 7, the implemented CCTV system shall include Intelligent Video Analysis (IVA) technology with the capacity to analyze 100% (one hundred percent) of the images recorded by all the CCTV equipment in the INTERCONNECTION SYSTEM.

The CCTV Traffic Monitoring System shall allow monitoring of the entire INTERCONNECTION SYSTEM, which is the object of the Concession, through images made available in real time, on video monitors and video walls installed at the CCO, including at night.

The System that centralizes the images from the cameras installed throughout the INTERCONNECTION SYSTEM, at the CCO, shall have an image recording system. The images shall remain stored at the CCO for a minimum period of 45 (forty-five) day. After this period, images relating to relevant incidents, accidents, and sections (including signaling) with lane closures shall be stored by the CONCESSIONAIRE for a period of 5 (five) years, and may be requested by the REGULATORY AUTHORITY at any time within this period.

All CCTV equipment that makes up the Traffic Monitoring System shall have the following minimum characteristics:

- 360° horizontal movement;
- 30x optical zoom (minimum);
- remote control of horizontal and vertical movements and image approximation (pan, tilt and zoom);
- allow automatic or manual operation through CCO commands, by the operator;
- allow pre-configuration of monitoring points (presets) with the possibility of programmed automatic movement or triggered by events;
- allow night monitoring with infrared technology or other technology with equivalent or superior performance;
- have a compatible support (pole) so that the camera at maximum zoom does not interfere with the image, due to vibration of the support pole; and
- cameras with a minimum resolution of 1920x1080 (full HD).

The Intelligent Video Analysis System shall enable the automatic detection of incidents and potentially risky situations throughout the INTERCONNECTION SYSTEM, sending alarms to the CCO regarding the corresponding images. The operation of the IVA system shall fully comply with the requirements and procedures established by the REGULATORY AUTHORITY in the current technical specifications.

Minimum characteristics of video analysis (minimum analytical functions):

- volumetric counting;
- detection of vehicles traveling in the wrong direction;
- detection of stationary vehicles or objects (shoulder or lane); and
- detection of occurrences (animals, fires, etc.).

The alarms issued shall be analyzed and stored together with information regarding time, operator, confirmation/rejection and other data necessary to record the occurrence and audit the database for future inspection and evaluation of the system's efficiency.

The CCTV system shall monitor all the GANTRIES of the INTERCONNECTION SYSTEM. It shall also allow the monitoring of all the PMVs of the INTERCONNECTION SYSTEM, enabling viewing with sufficient clarity to read the messages transmitted.

The equipment shall be registered in the REGULATORY AUTHORITY's registration systems using procedures and interfaces defined by the REGULATORY AUTHORITY.

The equipment shall allow telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The CONCESSIONAIRE shall make images from all CCTV System cameras available for remote viewing in real time by the CCI, in addition to telemetry information.

The CONCESSIONAIRE shall contract a data link between the CCO and the CCI, with capacity to guarantee the simultaneous transmission of images from at least 4 (four) cameras.

The form of availability by the CONCESSIONAIRE of the telemetry data and images from cameras, and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the CCTV Traffic Monitoring System shall comply with the service levels set out in APPENDIX D and the Performance Indicators set out in EXHIBIT 3 and APPENDIX A.

5.2.4. Fire Detection and Alarm System

The Fire Detection and Alarm System shall be delivered complete and operational by the CONCESSIONAIRE as of the OPERATION START DATE. The system shall consist of:

- Main Fire Detection and Alarm Center (Master) at the CCO;
- Satellite Fire Detection and Alarm Centers in Substations;
- Fire detection equipment by sensor cable (linear heat detector) in the TUNNEL and cable duct;
- Fire detection equipment by ambient detector in ACCESS BUILDINGS, substations, pedestrian/cyclist galleries and CCO;
- Alarm equipment in the pedestrian/cyclist gallery;
- Proprietary and exclusive fiber optic network to interconnect Fire Detection and Alarm Centers;
- Fire Department Communication Center.

The system shall be able to detect temperature variations resulting from the presence of fire, signal and indicate the location of this occurrence. The system shall also monitor the integrity of the sensor cable along its entire length, issuing an alarm in the event of breakage, damage or reading error. If any damage occurs to the cable, the system shall allow monitoring to continue to the point closest to the damage, in order to keep the detection function intact until corrective maintenance is executed.

In the case of ACCESS BUILDINGS and pedestrian/cyclist galleries, smoke or thermovelocimetric detectors shall be positioned, according to the characteristics of the compartment to be monitored and the equipment installed there. The installation of a correctly positioned manual trigger shall also be provided for in response to operator action in the event of an accident and the installation of Audible-Visual Alarm Indicators.

The equipment shall be registered in the REGULATORY AUTHORITY registration systems through the procedures and interfaces defined by the REGULATORY AUTHORITY and allow telemetry integrated with the REGULATORY AUTHORITY systems in order to allow remote and real-time consultation of the operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the ARTESP - REGULATORY AUTHORITY

At any time, the REGULATORY AUTHORITY may request that the CONCESSIONAIRE feed the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the Fire Detection and Alarm System shall comply with the service levels set forth in APPENDIX D.

6. OPERATION OF THE INTERCONNECTION SYSTEM, SAFETY AND COMFORT OF USERS

6.1. Basic Concepts

The monitoring and communication systems with the USER, listed in the previous items, offer manners to observe and transmit information regarding the operation of the INTERCONNECTION SYSTEM. This item presents details involved in the operation of the SYSTEM and in the actions related to the control and improvement of the comfort and safety of the USERS.

6.2. Operational Services and Systems

6.2.1. Operational Personnel

All personnel involved in the operation of the INTERCONNECTION SYSTEM shall be properly uniformed and identified, as specified by the REGULATORY AUTHORITY, with PPE and EPC and receive training with the objective of standardizing the procedures and services provided to the USERS from the OPERATION START DATE, and the CONCESSIONAIRE will have a period to make any adjustments and adaptations that may be necessary due to the request of the REGULATORY AUTHORITY. The uniform shall comply with Standard NBR 15292/2013, which deals with High Visibility Safety Clothing, and contain the CONCESSIONAIRE's identification.

All operational personnel shall receive periodic training, provided by professionals, collaborators, or companies, both with experience in the subject matter of the respective training, on emergency signaling, programmed signaling, operation, first aid, among others.

6.2.2. User Service Centers (SAU)

On the OPERATION START DATE, the CONCESSIONAIRE shall provide for the installation of service stations in the ACCESS BUILDINGS to assist users. USER service shall be provided by on-site attendants, 24 (twenty-four) hours a day, 7 (seven) days a week, until the remote service platforms are implemented and have been approved by the REGULATORY AUTHORITY.

The User Assistance Services in the INTERCONNECTION SYSTEM include APH services for accident victims, with possible removal of victims to backup hospitals, mechanical assistance services for damaged vehicles and towing services, with road clearing and possible removal of the vehicle to a safe location, accredited workshops or system exit points.

The CONCESSIONAIRE shall prove the service time (time from call by the USER until arrival at the scene of the incident) to USERS and/or incidents, including by geopositioning.

6.2.2.1. Operational vehicles

All User Assistance Services vehicles shall remain available throughout the INTERCONNECTION SYSTEM, provide entirely free services, be characterized, identified by operational prefix and in good condition, as well as operate 24 (twenty-four) hours a day, 7 (seven) days a week, including holidays. Operational vehicles may be parked in ACCESS BUILDINGS, provided that suitable locations are reserved and in accordance with the project approved by the REGULATORY AUTHORITY.

The CONCESSIONAIRE shall provide vehicles in the quantities and types that are compatible with the need to maintain the quality and continuity of the service in the INTERCONNECTION SYSTEM, since it is the CONCESSIONAIRE's responsibility to design the system for executing the services granted capable of meeting the IQD.

The quantities of vehicles shall be constantly reviewed throughout the CONCESSION TERM, at the CONCESSIONAIRE's discretion, considering the forecast growth in demand and seasonality, ensuring that the service levels are met.

The CONCESSIONAIRE may opt to purchase, rent, outsource, lease or use an equivalent legal institution for the vehicles.

Operational Vehicles shall include a fleet of vehicles adapted and equipped with a non-removable intermittent or rotating lighting device in red for rescue ambulances and in amber-yellow for other operational vehicles, in accordance with current legislation.

The characterization of Operational Vehicles will be subject to inspection by the REGULATORY AUTHORITY regarding compliance with the guidelines set forth in this EXHIBIT, NBR-14.561/2000 for ambulances and current technical specifications.

These vehicles are intended to assist in the following services to USERS: towing service, first aid service and medical care for accident victims, animal seizure service, various services involving tanker trucks with irrigation systems (for fighting fires, washing roads, washing vertical signaling, among others) and mechanical rescue service.

The vehicles shall have the following useful life for replacement:

- Mechanical rescue vehicles: maximum 02 (two) years;
- Ambulances, administrative vehicles and light and medium tow trucks: maximum 05 (five) years; and

- Irrigation trucks, trailers for transporting seized large animals (VTAV) and heavy tow trucks: maximum 10 (ten) years

For all vehicles, it will be mandatory to implement a Monitoring and Geopositioning system, the module of which shall be integrated with the CCO, and shall have online and real-time positioning, control of the vehicle's status and communication between the driver and the CCO through a control data channel and/or voice.

The CONCESSIONAIRE may provide reserve vehicles, according to their dimensions, types and quantities necessary to fulfill the contractual obligations. These vehicles shall be capable of replacing damaged vehicles or vehicles undergoing preventive maintenance, without compromising the level of service to USERS and the quality of service provision, in compliance with the IQD. Reserve operational vehicles, or those that are eventually made available on a non-recurring basis, may have a different characterization from that practiced in the regular fleet, provided that this shall allow the identification, by USERS, of the vehicles as being in service of the CONCESSIONAIRE and under delegation of the REGULATORY AUTHORITY.

The CONCESSIONAIRE shall comply with the rules for alphanumeric identification of operational vehicles as determined by the REGULATORY AUTHORITY

6.2.2.2. Remote Service Equipment

The replacement of on-site attendants in ACCESS BUILDINGS with equipment that allows remote service to users is subject to prior authorization from the REGULATORY AUTHORITY, which will be issued after testing and evaluating the prototype of the equipment proposed by the CONCESSIONAIRE.

If the CONCESSIONAIRE opts for remote service to users, in the event of equipment failure (for any reason, including exclusions of culpability), or scheduled shutdown, the CONCESSIONAIRE shall immediately position one of its employees to serve users in person, until the self-service equipment is operational again.

Remote service equipment shall meet, at a minimum, the following requirements:

- Ensure accessibility conditions for users with disabilities;
- Have a flat screen of at least 22 (twenty-two) inches;
- Have an intuitive operating system and hardware, which present the user with basic instructions for using the equipment;
- Ensure the execution of video calls, which allow real-time communication between the user and the attendant at the CONCESSIONAIRE's CCO;
- Allow text communication with attendants at the CONCESSIONAIRE's CCO;
- Provide users with additional interactive resources, such as the presentation of maps and useful information about the INTERCONNECTION SYSTEM.

For each service performed on the equipment installed by the CONCESSIONAIRE, information regarding the date, time, operator, and other information shall be stored, which allows for auditing the database for future inspection and evaluation of the system's efficiency.

The equipment shall be registered in the REGULATORY AUTHORITY's systems using procedures and interfaces defined by the REGULATORY AUTHORITY.

The equipment shall allow telemetry integrated into the REGULATORY AUTHORITY's systems in order to enable remote and real-time consultation of their operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of availability by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

The operation of remote assistance equipment shall comply with the service levels set forth in APPENDIX D.

6.2.2.3. Towing Service

This comprises a network of mobile tow truck units, light, medium and heavy, duly equipped, designed to perform road clearing operations, remove vehicles and remove overturned loads inside and outside the roadbed, operated by specialized and periodically trained personnel.

The CONCESSIONAIRE shall be able to unroll vehicles, whether articulated or not.

The towing service will be responsible for removing vehicles that have crashed in the INTERCONNECTION SYSTEM and vehicles parked on shoulders or shelters, with electromechanical failures that cannot be resolved by the mechanical assistance service. This service is also responsible for removing, at the request of the PMRv, vehicles seized in the INTERCONNECTION SYSTEM (from the location of seizure to the nearest PMRv base), and the CONCESSIONAIRE may not be penalized or suffer deductions in the PERFORMANCE INDICATORS if it is unable, as a result of serving the PMRv, to meet the required service levels.

The CONCESSIONAIRE shall comply with the provisions of CONTRAN Resolution No. 552, on September 17, 2015, as well as ABNT NBR 15883-2:2010 – Part 2 – Flat Straps (or any other standard that may alter or replace them), regarding the use of fastening straps, as well as comply with current legislation that governs the matter, replacing the flat straps whenever there is evidence of deterioration.

The resources of the services, both material and human, shall be dimensioned according to the characteristics of the INTERCONNECTION SYSTEM, in order to serve small, medium and large vehicles, articulated or not, and to observe the service levels established in APPENDIX D and IQD provided for in EXHIBIT 3 and APPENDIX A.

To monitor this minimum service level, the CONCESSIONAIRE shall implement a control system as established in EXHIBIT C, which will have the function of monitoring the service times, from the moment the CONCESSIONAIRE becomes aware of the event by any existing means of communication until the moment the tow truck arrives at the event location, using geopositioning data. The occurrences provided for in the current technical specification will be excluded, in the month considered for inspection.

6.2.2.4. Mobile Pre-Hospital Care Service (APH)

It comprises a network of basic support ambulances (type B ambulance, according to Ministry of Health Ordinance No. 2048 in 2002, or any other that may amend or replace it) and advanced support ambulances (type D ambulance, according to Ministry of Health Ordinance No. 2048 in 2002, or any other that may amend or replace it), both complying with NBR 14561/2000 (or any other that may amend or replace it), duly equipped and accredited, with equipment for land, water and height rescue, for first aid, rescue and removal services, operated by their respective qualified crews, all connected to an Emergency and Urgency Regulation Center.

The Pre-Hospital Care service shall provide medical assistance or under medical direction, indirectly or remotely, as well as emergency care including removal of victims, using the correct technique and in adequate conditions, to the nearest hospital in a network of backup hospitals, indicated by the Emergency and Urgency Regulation Center.

Basic support ambulances and advanced support ambulances shall be equipped with a telecommunications system with the operational control center and a monitoring and geopositioning system interconnected to the CCO online and in real time.

The CONCESSIONAIRE shall have at least 1 (one) Advanced Support Ambulance (type D ambulance) for the INTERCONNECTION SYSTEM.

The CONCESSIONAIRE shall define the procedure for responding to accidents with victims trapped/trapped in wreckage and train the ambulance crew to perform this procedure, in compliance with the guidelines of NBR 14561/2000 (or any other that may amend or replace it).

The service resources, both material and human, shall be suitably dimensioned by the CONCESSIONAIRE according to the characteristics of the INTERCONNECTION SYSTEM, in order to meet the service levels established in APPENDIX D and IQD provided for in EXHIBIT 3 and APPENDIX A.

To monitor these service levels, the CONCESSIONAIRE shall implement a control system as established in EXHIBIT C, which will have the function of monitoring service times, from the moment the CCO became aware of the occurrence until the arrival of the APH service at the event site, using geolocation data. The occurrences provided for in the current technical specification will be purged in that month considered for inspection.

6.2.2.5. Animal Seizure Service

The animal seizure service shall have boxes and cages with appropriate sizes for transporting small and medium-sized animals and 1 (one) trailer-type vehicle, with a cage-type authority, with capacity for transporting up to 2 (two) large animals, pulled by a motor vehicle with compatible traction capacity, connected via radio to the CCO, available 24 (twenty-four) hours a day in order to guarantee the safety of USERS. The seized animals will be transported to municipal zoonosis centers, specific animal seizure yards or to partner/agreed institutions.

The CONCESSIONAIRE may create its own seizure yard or enter into agreements with municipal governments or third parties that have an animal seizure yard.

The team, whether in-house or subcontracted, shall be trained and qualified to trigger appropriate decisions and actions according to the situation encountered (wild/domestic animal, alive/injured/dead, small/medium/large, etc.).

Domestic animals captured alive shall be sent to specialized partner institutions in order to receive treatment (feeding, zoonosis control, etc.), depending on the type of animal. A police report or equivalent document shall be filed to identify the animal and its owner, in order to create a registry of seized animals and their respective owners. The CONCESSIONAIRE shall reimburse the GRANTING AUTHORITY and the REGULATORY AUTHORITY in the event of liability resulting from accidents caused by the presence of animals in the INTERCONNECTION SYSTEM.

The CONCESSIONAIRE shall promote awareness campaigns on responsible animal ownership among USERS and the surrounding population.

Captured wild animals shall be sent to environmental agency triage centers (Wildlife Triage Centers - CETAS, Wild Animal Rehabilitation Centers - CRAS, among others) and/or institutions capable of receiving wild animals (zoos, veterinary hospitals at veterinary colleges, research institutes, universities, among others). The REGULATORY AUTHORITY shall be informed of any partnerships that have been established or concluded. The CONCESSIONAIRE shall adopt the practices recommended by the Integrated Environmental Management System for Wildlife in São Paulo for the management and rescue of victimized wild fauna or for the disposal of dead animals.

If it is not possible to establish agreements and partnerships, the CONCESSIONAIRE shall agree with the Secretary of Environment, Infrastructure and Logistics on the specific procedures to be adopted.

6.2.2.6. Mechanical Assistance Service

It comprises a group of mobile units equipped to provide mechanical and electrical assistance, operated by specialized personnel (this service may be provided by operational tow truck vehicles, exclusive vehicles are not required).

The Mechanical Assistance Service shall assist vehicles with electromechanical failure, stopped on the shoulder or in shelters of the INTERCONNECTION SYSTEM, aiming to return them to circulation quickly.

The service resources, both material and human, shall be dimensioned according to the characteristics of the INTERCONNECTION SYSTEM, in order to serve small, medium and large vehicles, and to observe the service level expressed by the indexes contained in EXHIBIT 3 and APPENDIX D.

To monitor these service levels, the CONCESSIONAIRE shall implement a control system in accordance with the provisions of EXHIBIT C, which will have the function of monitoring service times, from the moment Mechanical Assistance was requested from the CCO until the moment the service arrives at the event location, using geolocation data. The occurrences provided for in the current technical specification will be excluded in that month considered for inspection.

6.2.3. Automatic Barrier System

The Automatic Barrier System shall be complete and fully operational as of the OPERATION START DATE. This system is configured as the first mechanism for controlling access to the TUNNEL in emergencies, completely blocking entry access if an alarm system is activated. Each entry point of the TUNNEL will consist of two barriers, one on each side of the lane, interrupting all lanes. At the locations where barriers are installed, traffic light signaling systems shall be installed, consisting of blocks in the colors GREEN (activated whenever the tunnel is in operation), YELLOW (when the transition to tunnel closure is made) and RED (while the tunnel is closed). The barrier may only be activated after the traffic light has changed to red. The traffic light signaling system shall comply with CONTRAN's BRAZILIAN TRAFFIC LIGHT SIGNALING MANUAL.

The equipment shall be registered in the REGULATORY AUTHORITY registration systems through the procedures and interfaces defined by the REGULATORY AUTHORITY and shall support telemetry integrated with the REGULATORY AUTHORITY systems in order to allow remote and real-time consultation of the operational status by the CCI. The telemetry information delivered by the CONCESSIONAIRE to the REGULATORY AUTHORITY shall reflect the availability of communication between the CCO and the equipment.

The form of delivery by the CONCESSIONAIRE of the telemetry data and the form of integration with the REGULATORY AUTHORITY's systems shall fully comply with the procedures, technologies and interfaces defined by the REGULATORY AUTHORITY.

At any time, ARTESP may request that the CONCESSIONAIRE feeds the REGULATORY AUTHORITY's systems with additional information about the operation of the equipment, according to procedures and interfaces similar to those used by the CONCESSIONAIRE.

The operation of the Automatic Barrier System shall comply with the service levels set forth in APPENDIX D.

6.2.4. Fire Fighting System

The TUNNEL's fire fighting system shall include fire extinguishers, hydrant systems and hoses and shall be complete and fully operational as of the OPERATION START DATE.

The CONCESSIONAIRE shall comply with all current standards related to fire protection and fighting, such as ABNT NBR 15661, ABNT NBR 17027, ABNT NBR 17175, ABNT NBR 15981, ABNT NBR 15775, ABNT NBR 17050, ABNT NBR 16736, ABNT NBR 5181 and ABNT NBR ISO 23431, noting those specific to tunnels, including the current Technical Instructions of the Fire Department of the State of São Paulo. To supply the system, a pumping system with backup pumps and an automatic process for switching on and off between pumps and manual shutdown shall be provided, since only the fire department is authorized to shut down the network. The operation of the main and backup pumps can be monitored by the main fire-fighting system.

At the end of the TUNNEL, pumping valves shall be provided so that the system can be supplied by fire trucks, if necessary. Buried/embedded pipes shall be protected with anti-corrosion tape and painted red to identify the line in future maintenance and to distinguish the fire line from any other lines that may be installed, buried/embedded in the future, with the expansion of the facilities in the TUNNEL.

The CONCESSIONAIRE shall also implement adequate infrastructure for preventing and fighting fires in URBAN ACCESSES and ACCESS BUILDINGS. The main objective is to reduce the occurrence of fires and to extinguish them in their initial stages.

Prevention should include monitoring through the CCTV-IVA system in order to identify the beginning of fires, the dissemination of educational and informative messages on Message Boards, on the CONCESSIONAIRE's website and participation in campaigns stipulated by the GRANTING AUTHORITY or the REGULATORY AUTHORITY.

In addition to the systems installed in the TUNNEL and inside the ACCESS BUILDINGS, the CONCESSIONAIRE shall have 1 (one) mobile irrigation truck unit, connected via radio to the CCO, available 24 hours a day, equipped with special equipment and materials for fighting fires, such as a motor pump and flexible tank, dampers, gloves, boots, tools and other items deemed necessary, as well as water tanks. The sprinkler truck shall contain all the equipment necessary for firefighting services, in order to act effectively in controlling and extinguishing the outbreak, without prejudice to the actions of the Fire Department in more serious situations.

The CONCESSIONAIRE shall have personnel trained in the use of the sprinkler truck, in order to periodically: (i) perform firefighting services, (ii) assist in washing the road, and (iii) clean vertical signs and road safety devices, in order to guarantee the safety of USERS.

The CONCESSIONAIRE shall have its own water tanks, in order to guarantee the water supply in case of fires. The water tank shall be filled automatically, with potable water of controlled quality. The tank supply system shall have the capacity to fill the entire tank, when empty, in a maximum of 24 hours.

The service resources, both material and human, shall be dimensioned by the CONCESSIONAIRE according to the characteristics of the INTERCONNECTION SYSTEM, in order to meet the demand for this service.

6.2.5. Ventilation System

The TUNNEL shall have a complete ventilation system in full operation from the OPERATION START DATE. The system shall be dimensioned and installed in accordance with the current Technical Instruction 35 and, also, in accordance with the ABNT NBR 17175 standard - Ventilation systems in highway and urban tunnels — Requirements. The CONCESSIONAIRE shall comply with all current regulations, ensuring that the system is capable of: (i) diluting carbon monoxide and other pollutants, such as nitrogen dioxide (NO₂), present in the combustion gases of vehicle engines, to concentration levels that are permissible to preserve the health of users, (ii) diluting particulate matter, also from engine combustion, to levels that do not compromise drivers' visibility and (iii) ensuring the minimum air speed inside the TUNNEL to carry away smoke from fires in vehicles inside it, or the flow rate required to extract the smoke.

The CONCESSIONAIRE shall provide a forced ventilation system that is designed so that gases and smoke do not take the opposite path to the ventilation in the first 120 minutes of an incident, in the event of a fire. The ventilation shall also be reversible, so that it can also be applied in the event of counterflow. The ventilation system shall be activated either automatically or manually (by pressing an emergency button at the CCO and control stations).

Nitrogen dioxide, carbon monoxide and opacity sensors shall be installed. In addition to the typical pollutants from vehicle exhaust, monitoring opacity can help identify signs of a fire. Anemometers shall also be installed to measure air speed to manage the forced ventilation system.

An independent ventilation system shall be provided for the pedestrian/cyclist gallery. Since it is a gallery with constant occupancy, it shall be continuously ventilated for reasons of comfort and hygiene. The existing duct in this gallery is therefore not for smoke control, but for ventilation and pressurization in the event of a fire in the TUNNEL.

The pedestrian and cyclist gallery will be used as an escape route in the event of an emergency. USERS occupants of vehicles in both directions of the TUNNEL may use the 1.0 meter side corridor provided in the TUNNEL section, as established in EXHIBIT 7, to access the emergency doors. Each door shall have a sensor to detect its opening and close automatically. The CCO Operator shall be alerted whenever a door is opened. The doors shall be of the horizontal axis type (sliding) operated either manually or by means of an emergency button next to the door.

The ventilation system design shall provide a safe way to maintain pressurization, renewal and minimum air quality in the pedestrian/cyclist gallery and, at the same time, allow the safe opening of the emergency doors. If doors are adopted to close the gallery at the ends, these shall operate automatically and safely, creating a protective antechamber.

ACCESS BUILDINGS shall also have a ventilation system for smoke control in accordance with current standards specific to buildings.

6.2.6. Lighting System

As of the OPERATION START DATE, the CONCESSIONAIRE shall have implemented the Lighting System in the TUNNEL, in order to ensure good visibility for USERS. Lighting shall be at its maximum during maintenance or emergencies, but shall be designed to vary according to natural lighting, allowing gradual adaptation for drivers' eyes when entering and exiting the TUNNEL. Unless otherwise specified, the lighting system will be implemented in accordance with ABNT (Brazilian Association of Technical Standards) standards, in particular ABNT NBR 5181. In order to meet operating conditions, when a failure occurs in the normal Lighting System, part of the lighting system shall be connected to the UPS system, as defined in ABNT NBR 15661 and ABNT NBR 5181 standards.

The CONCESSIONAIRE shall provide an Emergency Lighting System in the TUNNEL, which is intended to allow the safe exit of users and emergency operations, especially fires. The Emergency Lighting System will guarantee a minimum level of lighting within the pedestrian/cyclist gallery, as well as in the TUNNEL, in order to mark the path and ensure minimum lighting to allow the CCTV monitoring system to operate, to obtain operationally usable images. Emergency lighting shall comply with ABNT NBR 15661 and ABNT NBR 5181 standards, in addition to having a monitoring and telemetry system so that defective lamps and/or circuits can be easily located for repair or replacement.

The Lighting System shall be in operation 24 hours a day, 7 days a week, including Saturdays, Sundays and holidays, with immediate replacement in the event of equipment failure.

6.2.7. Supervision and Control System

The Supervision and Control System includes the control and monitoring of electrical and ventilation systems, as well as the monitoring of Fire Detection and Alarm System alarms related to the TUNNEL and other facilities.

In the case of normal operation, the control system will monitor the air quality inside the TUNNEL through carbon monoxide, opacity and nitrogen dioxide sensors. This information will be displayed to the CCO operator in real time and stored in a history, for issuing reports or later research.

The TUNNEL shall be divided into zones based on the comparison of the value read by the installed sensors and a reference value, and the Forced Ventilation System shall be activated automatically in order to maintain the concentration of pollutants at acceptable levels.

In the event of an emergency, in the event of a vehicle collision or in the event of a fire, the system shall inform the operator at the Operational Control Center and make it available for them to activate emergency control strategies for smoke extraction. The beginning of a fire can be detected by the operators in the CCO visually through the CCTV system, as well as automatically by the detection of a temperature rise sensor cable inside the TUNNEL. If the operator does not acknowledge the alarm within the programmed time, the system shall automatically initiate the strategy pre-established by the automation supervisory software.

6.3. User Safety Plan

The USER Safety Plan shall be based on knowledge of the USER's safety and comfort needs, which the CONCESSIONAIRE will obtain through a survey of risk situations, occurrence of accidents and registered victims, statistical analyses and field observations.

The road safety plan shall be composed of the following elements: NBR ISO 39001 certification – road safety management system, traffic accident reduction program (PRA), accident database, road safety committee, speed and risk situation management, road safety communication program and analysis and approval of the road safety manager in the projects according to the rules in APPENDIX E.

The CONCESSIONAIRE shall implement, in all its areas of action, the guidelines established in NBR ISO 39.001 – Road Safety Management System.

6.3.1. NBR ISO 39001 – Road Safety Management System

ISO 39001 – Road Safety Management System is an international standard, published in Brazil in 2015, whose objective is the implementation of a Road Safety Management System with a Road Safety Policy and Action Plans that encompass all areas and employees of the organization.

The CONCESSIONAIRE shall prepare and implement its road safety management system, as well as certify the organization and maintain certification with the certifying authorities. The certification process shall be completed within the deadline set forth in item 11 of this EXHIBIT.

The CONCESSIONAIRE shall implement, in all its areas of activity, the guidelines established in NBR ISO 39.001.

At the end of the deadline, the CONCESSIONAIRE shall submit a report on the road safety management system to the REGULATORY AUTHORITY, together with the documents (digital) that comprise the process (policy, procedures, instructions) and that prove the certification.

Audit reports, as well as renewals of certification and any revisions to the documents that comprise the process, shall be submitted annually to the REGULATORY AUTHORITY for its information.

6.3.2. Accident Reduction Program – PRA

The accident reduction program (PRA) is a document that contains studies of accidents that occurred in the INTERCONNECTION SYSTEM, correlated with the goals set by the REGULATORY AUTHORITY, the goals set by the GRANTING AUTHORITY, the ISO 39.001 system and the results obtained from the ISR and speed management, so that acceptable road safety indicators are achieved. It shall be carried out in an ongoing and updated process.

Its content, form and frequency will be established through technical specifications of the REGULATORY AUTHORITY, and the CONCESSIONAIRE shall comply with the documents in force when preparing the PRA.

The PRA shall:

- (a) focus on reducing the number of accidents and victims (injured and fatal);
- (b) consist of a regular and systematic study;
- (c) present a detailed diagnosis of accidents that occurred in the previous 3 (three) years;
- (d) contain an assessment of the causes and factors that determine the diagnosed safety conditions;
- (e) propose and implement actions to reduce the number and severity of accidents, identifying whether they meet the goals set by the REGULATORY AUTHORITY and the GRANTING AUTHORITY;
- (f) present a schedule for carrying out the proposed actions; and
- (g) determine performance indicators for the proposed actions.

The actions to be proposed in the PRA may be engineering, operational, educational and coercive.

- (a) engineering actions shall include physical interventions identified in the safety studies carried out by the CONCESSIONAIRE and shall be aimed at improving the safety of USERS. When not included in the CONCESSIONAIRE's obligations, they shall comply with the SISDEMANDA rules;
- (b) operational actions shall focus on both scheduled and emergency events (accidents, landslides, floods, animals on the road, adverse weather conditions, etc.), in order to guarantee road safety for USERS;
- (c) educational actions shall focus on encouraging USERS to adopt road safety behaviors, and should reach not only drivers, but also the communities surrounding the INTERCONNECTION SYSTEM, as well as promoting simulations involving all public and governmental entities and neighboring communities. These actions should include campaigns, lectures, training, research, etc.;
- (d) coercive inspection actions are the responsibility of the agents of the GRANTING AUTHORITY. However, the CONCESSIONAIRE shall provide information and data on accidents and non-compliance with the CTB (Brazilian Traffic Code), necessary for planning these activities, including proposing joint actions, based on studies, information, analyses and needs arising from road operations.

The critical safety points/sections of the system shall be identified, according to the methodology proposed by the REGULATORY AUTHORITY through technical specifications and considered in the PRA.

The CONCESSIONAIRE shall provide resources not only for the preparation of the PRA, but also for the implementation of actions in order to achieve the goals and mitigate the identified risk points.

The period of coverage and delivery of the PRA may be changed by the REGULATORY AUTHORITY through formal communication and/or review of the relevant technical specification.

The CONCESSIONAIRE shall also present a monthly report monitoring the PRA according to the technical specification in force at the time of preparation.

6.3.3. Accident Database

The CONCESSIONAIRE shall provide the REGULATORY AUTHORITY with an accident database containing all accidents that have occurred in the INTERCONNECTION SYSTEM, with information on their nature, type of vehicle involved, time, consequences generated, georeferencing and other information, according to the model indicated by the REGULATORY AUTHORITY.

The CONCESSIONAIRE shall, throughout the CONCESSION TERM, at its own expense, comply with the REGULATORY AUTHORITY's specifications regarding the classification of occurrences, as well as the minimum data to be collected and made available in its database.

6.3.4. Road Safety Committee

The CONCESSIONAIRE shall establish a road safety committee to deal with safety issues related to the INTERCONNECTION SYSTEM under its responsibility.

The CONCESSIONAIRE shall have at least one professional with knowledge in the area of road safety, who will be part of the committee.

The establishment of the committee involves communicating to the REGULATORY AUTHORITY its formation, as well as its members. Any change in its composition shall be formalized with the REGULATORY AUTHORITY within 30 (thirty) days of its occurrence.

The committee shall establish an internal regime, in accordance with the following organizational scheme:

- (a) it shall be composed of at least 2 (two) members who are part of the CONCESSIONAIRE's technical staff.
- (b) the committee may include other professionals from the CONCESSIONAIRE or external consultants, as temporary members, to substantiate the studies;
- (c) the committee may establish partnerships with people outside the CONCESSIONAIRE, to exchange information;
- (d) the topics covered, the teams involved, the studies and the results obtained shall be presented in the PRA, and the topics scheduled for discussion in the subsequent period shall also be indicated in the PRA.

Every two months, the CONCESSIONAIRE shall forward to the REGULATORY AUTHORITY, together with the monthly monitoring of the PRA, the minutes of the Committee meetings held in the two-month period containing the topics discussed, the defined action plans, as well as the results of the analysis.

6.3.5. Road Safety Communication Program

The CONCESSIONAIRE shall promote actions, events and campaigns, alone or in conjunction with other concessionaires, to guide and educate on the safe use of the road, ensuring that USERS are aware of road safety.

To this end, the CONCESSIONAIRE shall include in its annual budget costs for the production of safety campaigns that include: (i) media broadcasting (TV, radio, newspaper and internet), (ii) production and printing of graphic materials (leaflets, banners and banners), (iii) press relations activities, and (iv) holding events with the community bordering the INTERCONNECTION SYSTEM. The costs for the safety campaigns in this paragraph are not included in the EVTE.

Priority should be given to the dissemination of campaigns during peak seasons, raising awareness among the largest possible number of USERS and the neighboring community regarding road safety issues, and the actions shall follow the standards established by the REGULATORY AUTHORITY and will be subject to its prior approval.

The CONCESSIONAIRE shall provide resources to meet this item, emphasizing that these actions go beyond those eventually provided for in the PRA. The obligation is considered fulfilled whenever the CONCESSIONAIRE adheres to the road safety campaigns and actions of the GRANTING AUTHORITY and/or the REGULATORY AUTHORITY.

6.4. Intervention Plans in the INTERCONNECTION SYSTEM (PISR)

The interventions shall be carried out at night. Due to some specificity, the CONCESSIONAIRE may request the REGULATORY AUTHORITY, with justification, that the work be carried out during the day.

In this case, the CONCESSIONAIRE shall prepare and submit, in advance, for approval by the REGULATORY AUTHORITY, an INTERCONNECTION SYSTEM Intervention Plan (PISR) for interventions in the INTERCONNECTION SYSTEM that cause a reduction in road capacity, containing at least the following information:

- average daily volume (VDM), peak hour volume (VHP), service level and current capacity of the section and with the intervention;
- traffic simulation with forecast of delay time and queue length;
- description of additional works to mitigate negative impacts on traffic; and
- schedule of interventions to be carried out and design of traffic diversions containing all necessary signaling.

After approval of the Intervention Plan by the REGULATORY AUTHORITY, the CONCESSIONAIRE shall comply with the maximum delay time and maximum queue length.

7. OPERATIONAL MANUALS

All technical, operational and administrative procedures related to the services described in items 2, 3, 4, 5 and 6, shall be set out in a specific manual, individualized by subject, which shall be prepared by the CONCESSIONAIRE and delivered to the REGULATORY AUTHORITY for approval, in accordance with the deadlines described in the Deadline Table in Item 11. This manual shall describe the activities of all employees involved in the administration and operation of the respective services, in compliance with the requirements of the REGULATORY AUTHORITY in Technical Specifications.

Any changes made by the CONCESSIONAIRE or determined by the REGULATORY AUTHORITY that are necessary, in any item of the operation manual, will only come into force and be effective after approval by the REGULATORY AUTHORITY for the entire concession period.

Changes made to the Manuals, when initiated by the CONCESSIONAIRE, will be submitted to the REGULATORY AUTHORITY, which shall respond within 15 (fifteen) days from the date of the request. Changes requested by the REGULATORY AUTHORITY shall be implemented by the CONCESSIONAIRE and sent to ARTESP within 15 (fifteen) days from the date of receipt.

In all cases, the REGULATORY AUTHORITY may question the changes made by the CONCESSIONAIRE if they fail to comply with applicable standards or constitute a breach of contract.

8. INSPECTION AND AUDIT

The REGULATORY AUTHORITY will monitor the services corresponding to operation, traffic and road safety, with the purpose of verifying compliance with the minimum standards required, through:

- inspections carried out by the REGULATORY AUTHORITY or carried out by companies contracted for this purpose;
- analysis of data available in the REGULATORY AUTHORITY's systems;
- analysis of images collected remotely;
- analysis of data or reports provided by agencies of the GRANTING AUTHORITY;
- analysis of data (raw or processed), reports or systems of the CONCESSIONAIRE; and
- specific, regular or extraordinary audits.

For all items described in this section, the CONCESSIONAIRE shall implement a digital system for registering, managing and consulting data via the web, with the provision of user name/password pairs for the REGULATORY AUTHORITY, as well as integration and alignment with the REGULATORY AUTHORITY's CCI.

8.1. Information System

The CONCESSIONAIRE shall implement an information system consisting of statements and/or reports that allow the REGULATORY AUTHORITY to monitor data related to all services related to operation, traffic and road safety, in order to allow and facilitate inspection and audit processes.

The information to be provided by the CONCESSIONAIRE shall comply with standardized models provided by the REGULATORY AUTHORITY.

The information system shall include access to daily, weekly, monthly and annual information, observing the following system:

8.1.1. Daily and weekly information

The CONCESSIONAIRE shall keep a computerized database available to ARTESP, allowing real-time access, with information including, but not limited to:

- hourly traffic volume recorded at each GANTRY, sorted by vehicle class;
- daily collection results, by GANTRY;
- traffic volume and speed, subdivided into 15 (fifteen) minute intervals, by lane, obtained through automatic collectors installed, as established in this EXHIBIT; the volumes shall be identified by type of vehicle, at least in the "light" and "commercial" categories;
- Registration of operational and administrative vehicles;

- Registration of operational and administrative buildings;
- In the GANTRY sections, specifically indicate the hourly volume of buses and motorcycles;
- Number of USER service events, ordered by event type, according to the services involved;
- Indication of the service time intervals of each service involved in the events, so as to allow their tabulation;
- Characterization of all accidents that occurred in the road system, with indications of their nature, type of vehicle involved and consequences generated, according to the model to be delivered by the REGULATORY AUTHORITY;
- Indication of Relevant Events and their updates according to the model standardized by the REGULATORY AUTHORITY, and
- Summary of the main traffic occurrences in the INTERCONNECTION SYSTEM.

In real time and online, the CONCESSIONAIRE shall provide updates on occurrences/events:

DISCRIMINATION	UPDATE FREQUENCY	STATUS
OCCURRENCES IN GENERAL	15 MINUTES	CLOSED
INCIDENTS	15 MINUTES	CLOSED
ACCIDENTS	6 MINUTES	CLOSED
TRAFFIC JAM	6 MINUTES	CLOSED
LANE CLOSED	6 MINUTES	CLOSED
RESOURCES ACTIVATED	6 MINUTES	CLOSED
EXTERNAL RESOURCES	6 MINUTES	CLOSED
MEASURES	6 MINUTES	CLOSED
VEHICLES INVOLVED	6 MINUTES	CLOSED
PROCESS	15 MINUTES	CLOSED
RELATE PROCESSES	15 MINUTES	CLOSED
EVENTS OF A PROCESS	6 MINUTES	CLOSED
PMV MESSAGES	6 MINUTES	CLOSED
MONITORS EQUIPMENT	6 MINUTES	CLOSED
MONITORS LOCAL EQUIPMENT	6 MINUTES	CLOSED
SAT VEHICLE COUNT	6 MINUTES	CLOSED
MAINTENANCE	15 MINUTES	CLOSED
WORKS AND SERVICES	15 MINUTES	CLOSED
WORKS AND SERVICES GROUP DOMAIN	15 MINUTES	CLOSED

NOTE: The table above will be updated to reflect the level of integration of the data and systems involved between the REGULATORY AUTHORITY and the CONCESSIONAIRE.

8.1.2. Monthly, half-yearly and annual information

The CONCESSIONAIRE shall issue, and/or make available through the CCI, monthly and annual reports containing summaries of statistical data and operational occurrences, in order to allow

analysis of seasonal traffic behavior, operations at the GANTRY, routine and special traffic operations and USER services.

(a) Monthly

The CONCESSIONAIRE shall monthly:

- Calculate the minimum, average, maximum and percentile travel time in the TUNNEL.
- Present the traffic volumes recorded by the traffic sensors.
- inform the registry formed by linear assets (continuous elements, maintained in segments with beginning and end, measuring in meters or kilometers and non-linear (non-continuous, watertight elements, located and georeferenced in linear assets, such as: vertical and horizontal signaling, aerial, safety equipment, ITS (Intelligent Equipment System), buildings, buildings, vehicles, etc.).
- provide the quantity of human resources, equipment and vehicles made available in the operational areas in the format of a monthly scale for each SAU service, including the CCO;

(b) Annual

The CONCESSIONAIRE shall annually:

- provide ARTESP with an update of the registry of buildings, according to the Technical Specification.
- provide the REGULATORY AUTHORITY with information on the evolution of the various types of vehicles that circulate in the INTERCONNECTION SYSTEM, as well as the USER profile, with emphasis on motorcyclists, pedestrians and truck drivers;
- provide ARTESP with digital aerial images of color with resolution through SIGGIS minimum spatial dimension of 50 cm (fifty centimeters), compatible with the geographic coordinate system used by the REGULATORY AUTHORITY, of the entire INTERCONNECTION SYSTEM. This survey shall contain the registration of all elements pertinent to the CONCESSION, such as GANTRIES and buildings in general, as well as all horizontal and vertical signaling, continuous protection devices (metal defenses, rigid concrete barriers, anti-glare devices, etc.), bridges, viaducts, walkways, etc. Each type of information shall be presented in an independent layer in order to allow the REGULATORY AUTHORITY to create a database of the INTERCONNECTION SYSTEM.

8.1.3. CCO database

The CONCESSIONAIRE shall keep all available operational data and information available to the GRANTING AUTHORITY, allowing real-time access at any time, through the CCO database, including those related to tolls, speed control, traffic incidents and conservation/maintenance, for inspection and auditing purposes.

8.1.4. Systematic sending of information

The form and frequency of the information to be sent to the REGULATORY AUTHORITY will be identified, as necessary. The REGULATORY AUTHORITY will provide standardized models to be completed by the CONCESSIONAIRE, by means of technical standards.

8.1.5. Information Systems Audit

The Audit will be carried out through the MITS System (or another system indicated by the REGULATORY AUTHORITY) which shall track the fields of dates and times of occurrences, times and durations of service and services provided to USERS to identify the CONCESSIONAIRE operator who changed/modified the data and its justification.

8.2. Quality Management System

The CONCESSIONAIRE shall provide external and internal quality assurance, through its certification, ISO 9.000 system (Standards NBR ISO 9.002 and NBR ISO 9.004-2), with regard to services corresponding to operational functions, including support activities for non-delegated services, namely:

- operation of the toll system;
- operation of the traffic and transportation inspection system; and
- operation of the road system, safety and comfort of USERS.

9. COMPLEMENTARY SERVICES

The complementary services, to be performed directly by the CONCESSIONAIRE or by third parties, as provided for in EXHIBIT 1, will depend on prior approval by the REGULATORY AUTHORITY, in the cases provided for in the CONTRACT.

The CONCESSIONAIRE, in compliance with current legislation, will define the conditions for providing the services, especially with regard to operational aspects.

10. CARBON NEUTRAL PROGRAM (Carbon Neutral Operation)

The Carbon Zero Program shall be implemented by the CONCESSIONAIRE with the objective of neutralizing Greenhouse Gas (GHG) emissions, calculated in carbon equivalent (CO₂e), from the CONCESSIONAIRE's operating activities in the INTERCONNECTION SYSTEM.

For the exclusive purposes of said Program, the following list of operating activities is considered as complete:

- towing and mechanical assistance services;
- Ambulances;
- incident response (firefighting and animal seizure); and
- operation of the CCO and other administrative buildings managed by the

CONCESSIONAIRE.

The Program will consist of three phases described and specified below.

10.1. Inventory

The CONCESSIONAIRE shall conduct an annual inventory to calculate all of its GHG emissions and quantify the emissions (in carbon equivalent) related to the CONCESSIONAIRE's operating activities to be neutralized.

The deadline for submitting the first inventory is set out in item 11 of this EXHIBIT. The inventories shall cover the period from January to December of the previous year, and shall be prepared based on internationally recognized methodologies and standards in the market, such as ABNT NBR ISO 14.064-1, GHG Protocol and/or other equivalent standards.

The inventories shall cover all emissions related to operating activities.

The CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY certification of its inventory. The certification shall be carried out by an independent, reputable company with renowned specialization and that has the necessary qualifications with the competent authorities, such as INMETRO.

The emissions inventory and its certification shall be submitted to the REGULATORY AUTHORITY attached to the Annual Environmental Performance Report (RADA), together with the definition of voluntary targets for reducing GHG emissions, in carbon equivalent (CO₂e), for the next period.

10.2. Compensation

The CONCESSIONAIRE shall offset greenhouse gas emissions with the aim of neutralizing, at a minimum, the emissions resulting from the activities of operating the INTERCONNECTION SYSTEM.

The compensation program shall be executed every five years, consolidating the demands indicated in the annual Inventories. The following are considered compensatory measures, among others: (i) compensatory planting and/or reforestation project; (ii) purchase of carbon credits in the Regulated or Voluntary Market; and (iii) Clean Development Mechanism.

In the case of the option of neutralizing emissions through a reforestation project, this may not be linked to environmental licensing processes or other legal obligations of the CONCESSIONAIRE, and its maintenance shall be guaranteed until the planting becomes self-sustainable.

The CONCESSIONAIRE shall adopt compensatory measures preferably in the State of São Paulo.

10.3. GHG neutralization certification

In order to guarantee the effectiveness of this program, the CONCESSIONAIRE shall obtain, at the end of each five-year cycle described in item 10.2 above, a certificate and/or equivalent document issued by an independent, reputable company with recognized specialization and with the necessary qualifications from the competent authorities, to certify to the REGULATORY AUTHORITY that the objective of neutralizing GHG emissions from operating activities has been met.

The aforementioned certificate will be used by the REGULATORY AUTHORITY to confirm the neutralization of emissions that occurred during the period, which will be done by comparing the information contained in the inventories with the certified neutralizations.

11. DEADLINES TABLE

OTHER DEADLINES		
Submission of the Operational Vehicles operating manual to ARTESP for approval	7	Up to 12 (twelve) months prior to the OPERATION START DATE.
Approval of MIP system in the INTERCONNECTION SYSTEM	2.1	Up to 180 (one hundred and eighty) days from the COMMERCIAL OPERATION
Submission of the Operation Manual of the Collection Control System to ARTESP for approval	7	Up to 60 (sixty) days before the start of the GANTRY operations.
Submission of the operation manual of the Traffic and Transportation Inspection Control System and Support for NON-DELEGATED SERVICES	7	Up to 12 (twelve) months prior to the OPERATION START DATE.
Definitive characterization of the Operational Vehicles	6.2.2.1	on the START OPERATION DATE.
Establish a definitive 0800 telephone system	4.2.1	Up to 180 (one hundred and eighty) days from the date of signing the INITIAL TRANSFER INSTRUMENT

OTHER DEADLINES		
Implementation, operation and dissemination of other channels for interacting with the USER provided for in current legislation	4.2.6	Up to 12 (twelve) months prior to the OPERATION START DATE.
Compliance with requirements related to human, material and technological resources established in current legislation regarding ombudsman channels and other channels for interacting with the USER	4.2.6	Up to 90 (ninety) days from the date of signing the INITIAL TRANSFER INSTRUMENT.
Compliance with operational, administrative and procedural requirements set forth in current legislation regarding the ombudsman's office and other channels for interacting with the USER	4.2.6	Up to 90 (ninety) days from the date of signing the INITIAL TRANSFER INSTRUMENT.
Compliance with the requirements and quality indicators and deadlines set forth in current legislation regarding the ombudsman's office and other channels for interacting with the USER	4.2.6	Up to 90 (ninety) days from the date of signing the INITIAL TRANSFER INSTRUMENT.
Submission of the Communication and Relationship System Operation Manual to ARTESP for approval	7	Up to 12 (twelve) months prior to the OPERATION START DATE.
Submission of the Traffic Sensing System Operation Manual to ARTESP for approval	7	Up to 12 (twelve) months prior to the OPERATION START DATE.
Road Safety Management System Certification	6.3.1	Up to 12 (twelve) months prior to the OPERATION START DATE.
Road Safety Committee	6.3.4	Up to 12 (twelve) months prior to the OPERATION START DATE.
Submission of the Road System Operation, Safety and User Comfort Manual	7	Up to 12 (twelve) months prior to the OPERATION START DATE.
Provision of color digital images of the entire INTERCONNECTION SYSTEM	8.1.2	Up to 3 (three) months as of the OPERATION START DATE.
Quality Assurance Certification	8.2	Up to 12 (twelve) months as of the OPERATION START DATE.
First annual inventory of GHG emissions	10.1	Up to 12 (twelve) months as of the OPERATION START DATE.