

ANNEX 06

SERVICES CORRESPONDING TO CONSERVATION FUNCTIONS

ANNEX 06

SERVICES CORRESPONDING TO CONSERVATION FUNCTIONS

INTERNATIONAL TENDER No 01/2019

CONCESSION TO PROVIDE PUBLIC SERVICES FOR OPERATION, MAINTENANCE AND MAKING OF INVESTMENTS REQUIRED FOR EXPLOITATION OF THE HIGHWAY SYSTEM CALLED THE PIRACICABA-PANORAMA LOT

INDEX

1. INTENSIVE INITIAL PROGRAM, ADDITIONAL INTENSIVE PROGRAM AND INITIAL ADAPTATION PROGRAM	5
1.1. Georeferenced video record survey	5
1.2. Pavement	7
1.3. Domain Range	8
1.4. Drainage	8
1.5. Road containment devices	9
1.6. Signaling	9
1.7. Structures	10
1.8. Buildings and yards	10
1.9. Control and automation system	10
1.10. Lighting	11
1.11. Deadlines of PII, PIC and P.A. I. (Initial Suitability Program of the Transferred System)	11
1.11.1. Table of deadlines of PII	11
1.11.2. Table of deadlines of PIC	12
1.11.3. Table of deadlines of P.A. I. (Initial Suitability Program of the Transferred System)	12
2. ROUTINE CONSERVATION	14
2.1. Basic Concepts	14
2.1.1. Maintenance / routine maintenance	14
2.1.2. Planning	14
2.1.3. Road inventory	14
2.1.4. Conservation / Maintenance Standards	17
2.1.5. Annual work program	18
2.2. Program structuring	18
2.3. Description and standards for the programs	21
2.4. Conservation Reports and Scheduling	45
2.4.1. Monthly report of the activities developed	45
2.4.2. Annual drainage report	53
2.4.3. Annual and Monthly Conservation Schedules	53
2.4.4. Instability-prone slope / slope monitoring system	53
2.5. Inspection	53

3.	SPECIAL CONSERVATION / MAINTENANCE	54
3.1.	Basic Concepts	54
3.1.1.	General provisions	54
3.1.2.	Investment Schedule Adequacy	54
3.1.3.	Track Instrumentation	55
3.1.4.	Prerequisites for starting and continuing works	55
3.1.5.	Prerequisites for receiving works	55
3.1.6.	Functional Projects	55
3.1.7.	Executive Projects	55
3.2.	Description and standards of services	56
3.2.1.	Pavement	56
3.2.2.	Recovery of special artwork, chains and walkways	67
3.2.3.	Road containment devices	73
3.2.4.	Signaling and auxiliary devices	74
3.2.5.	Slope Monitoring	75
3.3.	Inspection	75
4.	EMERGENCY CONSERVATION / MAINTENANCE	77
4.1.	Basic concepts	77
4.2.	Procedures	77
4.3.	Inspection	77
5.	CORRESPONDING ENVIRONMENTAL, HEALTH AND SAFETY SERVICES	78
5.1.	Initial program	78
6.	TABLE OF DEADLINES	88

For the execution of any services specified in this ANNEX where the presentation of engineering projects is required, they must be fed SISPROJ. The specifications of this system are presented in APPENDIX H to the CONTRACT.

Inclusions of new investments and details of relevant activities, related to the functions specified in this ANNEX, shall be registered and made available in the SISDEMANDA system, according to the rules established in the CONTRACT, and especially in accordance with the processing described in APPENDIX J, observing the applicable rules to the ORDINARY REVIEWS.

1. INTENSIVE INITIAL PROGRAM, ADDITIONAL INTENSIVE PROGRAM AND INITIAL ADAPTATION PROGRAM

The reports, documents and data of any surveys and inventories carried out during the PII, PIC and P.A. (Initial Suitability Program of the Transferred System) shall be recorded in the digital management systems pursuant to this ANNEX and APPENDIX H.

Except for those not bound by specific contractual milestones, the deadlines applicable to the services corresponding to the conservation functions are set out in the Deadlines of the PII, PIC and P.A. (Initial Adaptation Program of the Transferred System) schedules. The delay in the dates established for each activity will subject the CONCESSIONAIRE to the administrative sanctions provided for in Annex 11.

The PII shall be held in the EXISTING SYSTEM in the first year of CONCESSION, immediately after the signing of the INITIAL TRANSFER CONTRACT, and its conclusion will be linked to the opening of the TOLL STATIONS.

The PIC shall be performed on the EXISTING SYSTEM in the second year of CONCESSION.

The P.A. (Initial Suitability Program of the Transferred System) shall be carried out on the REMAINING SYSTEM, upon signature of the REMAINING SYSTEM TRANSFER TERM.

The diagnosis of the Consolidated Survey Report will present the specifications and characteristics at the moment of the transfer of the ROAD SYSTEM, according to the rules established in ANNEX 18.

If any services provided for in the PII, PIC and / or the Initial Suitability Program of the Transferred System (PAI) depend on a license, environmental authorization, grant or consent of the competent authority, the CONCESSIONAIRE shall prove that it has forwarded the documentation required by the agency (s) involved within the period provided for in this ANNEX.

For services provided for in the IIP and the Initial Suitability Program of the Transferred System (PAI), whose execution time is less than the total program term (namely: 12 (twelve) month PII and the Initial Suitability Program of the Transferred System) in 6 (six) months), the CONCESSIONAIRE, as soon as it completes the services, shall issue a technical report confirming this execution so that ARTESP can validate it. Upon conclusion, ARTESP will issue the acceptance of the service. From the issuance of this acceptance, this activity will be ruled according to chapters 2, 3 and 4 of this ANNEX for the entire remaining period of the CONCESSION.

The following technical conditions shall be observed by the CONCESSIONAIRE in PII, PIC and PAI (Initial Adaptation Program of the Transferred System):

1.1. Georeferenced video record survey

The CONCESSIONAIRE shall make available to the GRANTING AUTHORITY, video-record survey of the ROAD SYSTEM, covering the pavement and other elements of the ROAD SYSTEM, such as: geometry, signaling, drainage, slopes, OAEs, walkways, etc. One (1) digital copy must be provided to ARTESP of the result of the survey. The minimum standards for performing this service are as follows:

- full length of the running and shoulder roads of each of the tracks; and

- full length of the shoulder and shoulder roads, junction and turnabout device handles (clovers) and fringes within the ROAD SYSTEM DOMAIN RANGE.

The services must be performed with the aid of a vehicle equipped with at least the following equipment:

- precision pedometer with a maximum permissible error of 1 (one) meter per kilometer;
- GPS navigation with maximum permissible error of 10 (ten) meters;
- digital barometer with maximum permissible error of 1 (one) meter;
- One (1) camera with a minimum resolution of eight (8) megapixels exclusive for recording the surface conditions of the pavement - spacing of five (5) meters; and
- Arrangement of at least 4 (four) cameras with a minimum resolution of 8 (eight) megapixels, arranged equidistantly covering a viewing angle of at least 140 (one hundred and forty) degrees each camera, to record the other elements on the roads (signs, safety, drainage, slopes) - spacing of 5 (five) meters.

The vehicle shall have devices and features that meet the needs of surveys regarding aspects of its sensitivity to temperature, humidity, dust, shocks and vibration. The suspension system must be reinforced with adaptations that contribute to the stability and efficiency of the lifts, and to absorb sudden movements caused by pans and dips in the pavement and swinging bends.

All data produced by the equipment must be synchronized by records indexed by positioning systems composed by the precision odometer and GPS.

To view the photographs in 360 (three hundred and sixty) degrees, a computer system must be delivered capable of synchronizing the information recorded by the attributes when reproducing the images.

Based on this survey, a basic information register must be performed along the evaluated routes, as follows:

- track number and section type registration (single and double track);
- location and identification of start and end of urban perimeters and mountain ranges;
- location and identification of start and end of marginal roads, footpaths and cycle paths;
- location and identification of trunking devices (type and number of handles);
- location and identification of accesses;
- location and identification of start and end of bridges and viaducts (OAEs); location and identification of start and end of additional tracks; location and identification of start and end of shoulders; single road / dual road start location and identification;
- location and identification of start and end of metal fenders, rigid barriers and railing; grass beds;
- location and identification of TOLL STATIONS;
- location and identification of walkways;
- location and identification of bus stops and special stops;
- location and identification of surface drainage devices (trenches, gutters, hydraulic ladders, collection boxes);

- location and identification of mileage markers;
- location and identification of horizontal signs;
- location and identification of vertical signs (measures, type, condition, height);
- location and identification of service stations; and
- location and identification of traffic control devices (cameras, radar, counter loops, etc.).

1.2. Pavement

Under the programs, the CONCESSIONAIRE shall:

- (a) delivery of report containing initial survey of pavement quality indices (IGG, IRI / IQ and deflection). The video record will serve as a basis for determining the IGG and completing the pavement surface inventory sheets;
- (b) execution of roadblock operation throughout the road;
- (c) corrections of dips;
- (d) crack sealing;
- (e) performing superficial and deep repairs;
- (f) milling and asphalt pavement restoration;
- (g) construction of asphalt coating cloths;
- (h) execution of the regularization and elimination of step between runway and shoulder; and
- (i) delivery of individual program completion report

The CONCESSIONAIRE shall submit a report containing surveys of IGG, IQ / IRI indexes and deflection of the entire ROAD SYSTEM. This report shall establish permissible indices (in accordance with the provisions of ANNEX 03 to the CONTRACT and APPENDIX C) and shall also present an analysis of the current pavement situation.

Upon completion of the implementation of all investments and services that are part of the PII, PIC and PAI (Initial Suitability Program of the Transferred System), the CONCESSIONAIRE shall deliver to ARTESP the individualized "Completion Report" for each program, containing a survey of pavement quality - IGG, IQ / IRI, and deflection of flexible and semi-rigid pavements, and ICP, IQ / IRI and deflection in case of hard pavement (including shoulders and safety roads).

Recoverable deflections shall be determined for single-road highways every twenty (20) meters of road, that is, forty (40) to forty (40) meters of road. In the case of dual carriageways, recoverable deflections shall be determined from 40 (forty) to 40 (forty) meters in the heavy traffic road and from 80 (eighty) to 80 (eighty) meters in the other rolling roads.

The minimum parameters required for the pavement conditions described in this ANNEX and APPENDIX C shall be met from the first conservation cycle and throughout the CONCESSION TERM. Any corrections or interventions will be at the CONCESSIONAIRE's expense.

To attest to the conclusion of the PII (pavement), the CONCESSIONAIRE shall prove, by means of a

new index survey, that at least 50% of those homogeneous segments of analysis that showed nonconformities (quality indices outside the PII limits) were corrected. relation to the initial survey. Priority must be given to segments whose initial indices indicate more precarious conservation conditions. There must also be no pans or holes without repair in one hundred percent (100%) of the EXISTING SYSTEM upon completion of the PII.

To attest to the conclusion of the PIC, the CONCESSIONAIRE shall prove, by means of a new index survey, that 100% (one hundred percent) of those homogeneous analysis segments that presented indices outside the limits indicated in the PIC were corrected in relation to the initial survey.

In the case of trunk roads that do not have paved shoulders, but which have a free land area of at least 2 (2) meters wide, leveling (step elimination) must be performed, with the use of primary coating as an obligation to the PII. This structure must be properly sized in the light of current regulations and may not have a thickness of less than 20 (twenty) centimeters. It will also be necessary to contemplate the drainage of these devices.

For places that do not have paved shoulders and there is no free area at least 2 meters wide, road restraint devices shall be installed. These adjustments must be made at the expense of the CONCESSIONAIRE and under its responsibility.

1.3. Domain Range

(a) to prune the Pavement covering along the entire length of the road, across the area of the grassy central beds and on the sides of the road from the outer edge of the shoulder to the boundary of the DOMAIN RANGE (about the fence). In all clovers, fringes, level intersections, operational and supporting buildings and courtyards, monuments and rest areas, manual and mechanized pruning of the plant cover must be done within the DOMAIN RANGE limit;

(b) to perform general cleaning (including debris, solid debris and debris) of runways, shoulders, central site and sides of the DOMAIN TRACK;

(c) to perform graffiti removal across the DOMAIN RANGE, such as concrete barriers, special artwork, signposts, walls, slopes, etc ;

(d) recovery of erosions and landslides, and emergency actions (in places at risk to the ROAD SYSTEM and / or USERS) shall be performed within 24 (twenty four) hours and definitive actions within 12 (twelve) months;

(e) pruning and removal of trees and shrubs that pose a danger to road safety (dead / dry individuals, at risk of falling or disposed of in imminent risk area) or that compromise the drainage system. The other isolated tree individuals that are in the free safety zone of the highway (according to current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) norms) and whose suppression is restricted by the current legislation, shall have the suppression requested from CETESB under the specific license, according to the term established in item 6 of this ATTACHMENT. If, within 30 (thirty) days prior to the end of the PII / P.A.I.(Initial Suitability Program of the Transferred System) , no authorization has been issued for the suppression, the trees and shrubs shall be protected by road restraint devices;

(f) removal of any obstacles that pose a danger to road safety or that compromise the drainage system; and

(g) revitalization of vines (fences, walls and fences) existing within the boundary of the DOMAIN RANGE.

1.4. Drainage

- (a) clearing manholes and surface drainage elements;
- (b) repairs to drainage elements (including disposal of drainage elements that constitute a fixed obstacle in the safety clearance area such as manholes, channels etc.); and
- (c) placement / recomposition of grids and covers of captation boxes.

1.5. Road containment devices

- (a) repair and / or replacement of defective (flexible and / or rigid) road restraint devices such as: metal fenders, concrete barriers, impact absorbers, absorber terminals, etc., in accordance with the criteria and guidelines set forth in ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical standards in force at the time of the intervention. In places where the malfunctioning device poses a risk to users, the device must be removed, the location flagged and its replacement prioritized; and
- (b) recomposition of defenses of the OAE, in accordance with the criteria and guidelines established in the ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical standards in force at the time of the intervention.

1.6. Signaling

For horizontal signs:

In the EXISTING SYSTEM, in order to comply with the current manuals and standards established in sub-item e.1.2 of item 2.3 of this ANNEX, the execution schedule regarding the revitalization and / or complementation of horizontal signaling (trunk, access roads, devices, marginals, etc.) shall monitor the execution of the activity provided for in item 1.2, that is:

- At the end of the period defined for this activity in the PII, the revitalization and / or complementation of the horizontal signs shall be performed in the 50% (fifty percent) of the homogeneous segments of the EXISTING SYSTEM that had their pavement intervention executed and attested in the conclusion report. - PII Pavement;
- At the end of the period defined for this activity in the PIC, the revitalization and / or complementation of the horizontal signs shall be revitalized in 100% (one hundred percent) of the EXISTING SYSTEM. In order to ensure that, during the first year of CONCESSION, there will be minimum and necessary signaling throughout the EXISTING SYSTEM, the CONCESSIONAIRE shall maintain the segments provided for in the PIC with a minimum retro reflectance of 80 mcd / lux.m²

For the REMAINING SYSTEM road network, which is part of the scope of Concession Contract 008 / CR / 1998, in view of the guarantee defined in the conditions of turnabout of that concession, the CONCESSIONAIRE does not need to revitalize and / or complement the horizontal signs in the Initial Suitability Program of the Transferred System (PAI), and shall perform the services no later than six (6) months after the end of the Initial Suitability Program of the Transferred System (PAI).

For the remaining sections of the REMAINING SYSTEM, the revitalization and / or complementation of the horizontal signs in order to comply with the current manuals and standards established in sub-item e.1.2 of item 2.3 of this ANNEX, must be completed by the end of the Initial Suitability Program of the Transferred System).

For vertical signaling and auxiliary devices:

- (a) repair and / or replacement and / or supplementation of regulatory and warning vertical (ground and aerial) warning signs throughout the system (trunk, access ways, devices, marginals etc.) as well as

other warning signs vertical (ground and aerial) deteriorated, damaged, depredated (with rust points, wrinkles, graffiti, etc.) or absent, according to the manuals, standards and specifications in force at the time of the intervention, in order to ensure safety and guidance to USERS;

(b) repair and / or replacement of other vertical (ground and aerial) signs throughout the system (trunk, access ways, devices, fringes, etc.) deteriorated, damaged and depredated (with rust, dent, graffiti) etc.) following the manuals and rules in force at the time of the intervention.

(c) cleaning of all signs and vertical signaling elements (ground and air);

(d) complementation and / or restoration and / or cleaning of auxiliary devices (tacks and reflective tacks, beacons, cylinders, hazard markers, alignment and obstacle etc.) throughout the system (trunk, access ways, devices, marginals, etc.) that are damaged, deteriorated, damaged (with rust points, wrinkles, graffiti etc.) or absent in order to comply with the manuals, norms and specifications in force at the time of the intervention.

(e) installation of type 0800 institutional signage and start and end of stretch granted throughout the system (trunk, access ways, devices, marginals etc.) according to existing ARTESP manuals and specifications or others indicated by it.

(f) complementation / adequacy of the vertical signaling indicating the orientation of the main turnabout and access devices, in order to guarantee the safety and orientation of the USERS on the system highways (trunk, access roads, devices, marginals, etc.).

(g) implementation, on the reverse side of the vertical signage or relevant auxiliary devices, of the ARTESP register, in accordance with Agency guidelines. For the signage implemented, adequate and / or repaired by the CONCESSIONAIRE, the date of manufacture of the signage must also be considered; and

(h) measurement and reporting of 100% retro-reflectance reporting of horizontal and vertical signaling. For horizontal signaling, the CONCESSIONAIRE shall perform the measurement in the segments where repair and / or replacement and / or recomposition and / or complementation services have been completed.

At the end of the period, the CONCESSIONAIRE shall present a photographic report that proves the execution of the services.

1.7. Structures

(a) correction of dips in the pavement near the headwaters of the OAE, identifying the causes and priorities of intervention, regarding structural aspects, stability and deformation of the soil and drainage;

(b) opening correction of expansion joints;

(c) cleaning of drainage devices (horns); and

(d) surface drainage repairs to OAE headwaters.

1.8. Buildings and yards

Preventive conservation and corrective maintenance in operational and supporting buildings and courtyards must be continuous in order to keep them in full operating condition.

1.9. Control and automation system

Control systems shall be operable and covered in accordance with ANNEX 5 and APPENDIX I. For this

purpose, the CONCESSIONAIRE shall rely on equipment or vital parts of the systems implemented in the Initial Suitability Program of the Transferred System (PII) and PAI for immediate replacement in the event of non-operation or partial operation of system components.

1.10. Lighting

Maintenance and conservation services for public and building lighting must be started immediately after the signing of the INITIAL TRANSFER TERM and the REMAINING SYSTEM TRANSFER TERM, in order to restore the existing lighting in the ROAD SYSTEM (burnt out lamps, interrupted power supply, etc.).

The CONCESSIONAIRE shall maintain the existing public and building lighting in full operation, at its expense, on all stretches of the highway system, turnabout and access devices, walkways, OAE, main accesses, urban urban cores, mountain sections, level intersections, viaducts, underpasses etc. The criteria established in the current rules of ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS), NBR, DER / SP and ARTESP must be observed.

1.11. Deadlines of PII. PIC and P.A. I. (Initial Suitability Program of the Transferred System)

1.11.1. Table of deadlines of PII

The CONCESSIONAIRE, as soon as it takes over the administration of the EXISTING SYSTEM, shall undertake the PII which will aim to identify and remedy the various problems observed in the EXISTING SYSTEM within the limits of the DOMAIN RANGE. The IIP shall be completed within a total of twelve (12) months.

Description of Activities	Activity Completion Month Limit	Operation Month											
		1	2	3	4	5	6	7	8	9	10	11	12
1.1 georeferenced Video Record Survey	3												
1.2 pavement													
a. initial report of quality scores of the pavement	3												
b. pot-hole filling operation throughout the highway	10												
c. correction of dips	10												
d. crack sealing	10												
e. shallow and deep repairs	10												
f. milling and recomposition of the asphalt pavement	11												
g. asphalt coating cloths	11												
h. step regularization and elimination between road and shoulder	11												
i. PII Completion Report (pavement)	12												
1.3 Domain range													
a. pruning of the vegetable covering to the fullest extent	10												
b. general road cleaning, shoulder, center and side of the track	6												
c. graffiti removal throughout the domain range	3												
d. erosion and landslide recovery	12												
e. pruning and removal of trees and shrubs that pose a danger to road safety or compromise the drainage system	6												
f. removal of obstacles that pose a danger to road safety or compromise the drainage system	6												
g. revitalization of fences, walls and fences on the edge of the domain	6												
1.4 Drainage													
a. manhole clearance and surface drainage elements	6												
b. drainage elements repair	12												
c. placing / recomposing grids and captation covers	12												
1.5 Road containment devices													
a. repair or replacement of faulty road restraint devices	6												
b. replenishment of defenders and markers of meetings of OAEs	6												
1.6 Signaling													

Annex 06 – Piracicaba – Panorama lot

Description of Activities	Activity Completion Month Limit	Operation Month											
		1	2	3	4	5	6	7	8	9	10	11	12
a. repair and / or replacement and / or completion of deteriorated, damaged or absent regulatory and warning vertical (ground and aerial) warning signs	6												
b. repair and / or replacement of other deteriorated, damaged and damaged vertical signs throughout the system (ground and aerial)	10												
c. revitalization and / or complementation of horizontal signage throughout the system to meet current manuals and standards	10												
d. cleaning of all signs and vertical signaling elements (ground and air)	6												
e. supplementation and / or restoration and / or cleaning of system-wide auxiliary devices that are damaged, deteriorated, damaged or missing ones	10												
f. installation of 0800 type institutional signage and start and end of stretch granted throughout the system	6												
g. complementation / adequacy of the vertical signaling indicating the orientation of the main turnabout and access devices on the system highways	6												
h. implementation, on the reverse side of the vertical signage or relevant auxiliary devices, the ARTESP	10												
i. to measure and provide 100% retro-reflectance reporting of horizontal signage and vertical signage	10												
1.7 Structures													
a. correction of dips at the headboards of the OAEs	11												
b. opening correction of expansion joints	6												
c. cleaning of drainage devices (horns)	6												
d. surface drainage repairs at the headboards of the OAEs	6												
1.8 buildings and yards	12												
1.9 control and automation system	12												
1.10 lighting	12												

1.11.2. Table of deadlines of PIC

The PIC will commence on the 13th (thirteenth) month from the signing of the INITIAL TRANSFER CONTRACT and will be closed by the 24th (twenty-fourth) month, with the purpose of complementing the resolution of the problems observed in the EXISTING SYSTEM within the limits of the DOMAIN RANGE.

Description of Activities	Month Limit for Activity Completion	Operation month											
		13	14	15	16	17	18	19	20	21	22	23	24
1.2 Pavement													
a. shallow and deep repairs	22												
b. milling and recomposition of asphalt pavement	23												
c. asphalt coating cloths	23												
d. CIP completion report (pavement)	24												
1.6 Signaling													
a. revitalization and / or complementation of horizontal signage throughout the system to meet current manuals and standards	23												

1.11.3. Table of deadlines of P.A. I. (Initial Suitability Program of the Transferred System)

The Initial Suitability Program of the Transferred System (PAI) shall commence from the date of signature of the REMAINING SYSTEM TRANSFER TERM and will end within six (6) months for the purpose of identifying and remedying the various issues observed in the REMAINING SYSTEM within the limits of the DOMAIN RANGE

Description of the Activities	Month Limit for Activity Completion	Operation month					
		1	2	3	4	5	6
1.1 Type Survey: georeferenced video record	3						
1.2 Pavement							
a. quality score report of the pavement	3						

Annex 06 – Piracicaba – Panorama lot

Description of the Activities	Month Limit for Activity Completion	Operation month					
		1	2	3	4	5	6
b. pot-hole filling operation throughout the highway	2						
c. correction of dips	6						
d. crack sealing	6						
e. shallow and deep repairs	6						
f. milling and recomposition of asphalt pavement	6						
g. asphalt coating cloths	6						
h. regulation and elimination of step between road and shoulder	6						
i. completion report of P.A. I. (Initial Suitability Program of the Transferred System) (pavement)	6						
1.3 Domain range							
a. pruning of the vegetable covering to the fullest extent	6						
b. general road cleaning, road shoulder, central worksite and on the sides of the domain range	6						
c. graffiti removal throughout the domain range	3						
d. erosion and landslide recovery	6						
e. removal of trees and shrubs that pose a danger to road safety or compromise the drainage system	2						
f. removal of obstacles that pose a danger to road safety or compromise the drainage system	2						
g. revitalization of fences, walls and fences on the edge of the domain range	6						
1.4 Drainage							
a. manhole clearance and surface drainage elements	6						
b. drainage elements repair	6						
c. placing / recomposing grids and captation covers	6						
1.5 Road containment devices							
a. repair or replacement of faulty road restraint devices	6						
b. replenishment of defenders and markers of meetings of OAEs	6						
1.6 Signaling							
a. repair and / or replacement and / or completion of deteriorated, damaged or absent regulatory and warning vertical (ground and aerial) warning signs	3						
b. repair and / or replacement of other deteriorated, damaged and damaged vertical signs throughout the system (ground and aerial)	6						
c. revitalization and / or complementation of horizontal signage throughout the system to meet current manuals and standards	6						
d. cleaning of all signs and vertical signaling elements (ground and air)	3						
e. supplementation and / or restoration and / or cleaning of system-wide auxiliary devices that are damaged, deteriorated or missing	6						
f. installation of 0800 type institutional signage and start and end of stretch granted throughout the system	3						
g. complementation / adequacy of the vertical signaling indicating the orientation of the main turnabout and access devices on the system highways	3						
h. implementation, on the reverse side of the vertical signage or relevant auxiliary devices, the ARTESP	6						
i. to measure and provide 100% retro-reflectance reporting of horizontal signage and vertical signage	6						
1.7 Structures							
a. dips correction along OAE headlands	6						
b. opening correction of expansion joints	6						
c. cleaning of drainage devices (horns)	6						
d. surface drainage repairs to OAE headlands	6						
1.8 Buildings and yards	6						
1.9 Control and automation system	6						
1.10 Lighting	6						

- 2. ROUTINE CONSERVATION:** For services defined as routine servicing and covered by the initial programs (PII, PIC and PAI (Initial Suitability Program of the Transferred System)), the deadlines and standards set out in this chapter are effective upon acceptance of the service by ARTSP. The other services follow the deadlines and standards defined herein since the signing of the INITIAL TRANSFER TERM and the REMAINING SYSTEM TRANSFER TERM.

2.1. Basic Concepts

2.1.1. Maintenance / routine maintenance

Set of services that are performed in the ROAD SYSTEM, according to pre-established standards or levels, aiming at preserving investments, ensuring traffic safety, the comfort of the USER, and maintaining the rational and economic flow of vehicles.

2.1.2. Planning

Routine maintenance / maintenance of the ROAD SYSTEM is a basic function of its operation. Conservation / maintenance constantly requires services to be performed during the CONCESSION TERM that require a wide range of labor, equipment, vehicles, materials and tools resources.

In order to manage conservation / maintenance efficiently and economically, the CONCESSIONAIRE must have an information and management system whose essential components are outlined below:

- (a) road inventory, which identifies and quantifies all constituent elements of the ROAD SYSTEM that generate conservation / maintenance services;
- (b) conservation / maintenance standards;
- (c) identification of the conservation / maintenance services required to maintain those elements at an appropriate level;
- (d) annual work program; and
- (e) computerized reports for analysis at various managerial, efficiency and cost levels.

In the end, these components contribute to the conservation / maintenance activities being timely fulfilled as a result of the best combination of planning and allocated resources.

2.1.3. Road inventory

Road inventory is the quantification, survey and registration of the ROAD SYSTEM, including but not limited to the following elements: embankment, pavement, special artwork, running artwork, surface and deep drainage, plant cover, road restraint devices, horizontal, vertical (ground and aerial) signs, safety and traffic control equipment, fences, street lighting, utilities, buildings and operating and support yards.

The first road inventory shall be delivered together with the georeferenced video record survey described in item 1.1, and shall be kept up to date monthly and available for consultation at any time to allow its transfer through the communication channels established by ARTESP, whenever it sees as something fit.

2.1.3.1 Type Survey: georeferenced video record

In order to provide greater subsidies to the road inventory, the CONCESSIONAIRE shall conduct annually, from the second year of CONTRACT, a video-record survey of the ROAD SYSTEM as described in item 1.1.

2.1.3.2 Topographic survey of the ROAD SYSTEM

To provide greater subsidies to the road inventory, as well as to manage the risks associated with the need for safety elements, slopes and drainage system adjustments, among others, and to subsidize the elaboration of any emergency projects, at the initial topographic survey of the ROAD SYSTEM.

The survey must include:

- point platform cloud survey and processing so that slopes, steps and drainage and safety elements can be detailed;
- survey and point cloud processing of the runway platform, so that it is possible to detail slope boundaries, drainage elements, fences and buildings to the limits of the DOMAIN RANGE;
- the surveys must be processed using as reference system the UTM - *Universal Transversa de Mercator*, based on SIRGAS2000;
- The applicable standards of the DER / SP and ARTESP design rules and instructions shall be observed;
- drawings in dwg or equivalent format shall be generated in accordance with applicable standards of the DER / SP and ARTESP design rules and instructions, as well as a dwg or equivalent DTM (digital terrain model);
- From this survey, a record of SOAs and CAOs must also be generated, containing at least the location, type and dimensions of each of the elements. This information must be entered in the CRS. This register must be updated when new devices are deployed.
- At the end of the deadlines established for withdrawals, a copy of the products must be made available to ARTESP in digital format, preferably through SISPROJ, as of its implementation by the Concessionaire; and
- At the end of each intervention carried out on the road system by the CONCESSIONAIRE, or when requested by ARTESP, the topographic surveys shall be duly updated when preparing the built as documentation, as per the rule contained in APPENDIX J.

2.1.3.3 Register survey of DOMAIN RANGE

The CONCESSIONAIRE shall carry out a research work with the responsible agencies (DER, Notary's Offices etc.) in order to obtain the supporting documentation of the updated register of DOMAIN RANGE limits and non *aedificandi area*. The information obtained in this research, as well as the digital copies of the relevant documentation shall be registered with the CRS.

Additionally, consolidated drawings in dwg or equivalent format must be generated, containing the updated register, based on UTM coordinates (SIRGAS2000 base), as well as a kmz or equivalent file. Copies of these files shall be made available to SISPROJ upon their implementation by the CONCESSIONAIRE.

2.1.3.4 Integrated Digital Model of the ROAD SYSTEM

Based on the surveys mentioned above and the integration with the executive projects elaborated in BIM modeling, the CONCESSIONAIRE shall carry out a program aimed at the full restitution of the BIM modeling ROAD SYSTEM, covering all elements of the ROAD SYSTEM. At the end of this work the

integrated digital model of the Highway System (MDSR) must be generated. The information generated in the CONCESSION digital model shall be manageable within SIGSIS.

The MDSR will be a model designed using concepts from BIM modeling / methodology in accordance with current standards and best practice manuals. It must contain segregation of elements that allow the management of the concession assets, as well as the management and visualization of the road register and other elements of the ROAD SYSTEM. The level of development (LOD) of the model to be generated will depend on the level of information required by ARTESP for management purposes (network level) and will be defined by ARTESP technical teams in specific Ordinance.

The MDSR must be used, from its development, to perform the management of CONCESSION assets and integration with the other electronic management systems provided for in the CONCESSION, especially SIGSIS.

To comply with this obligation, the CONCESSIONAIRE shall prepare and submit to ARTESP an action plan, containing a schedule of the phases of preparation and implementation of the program.

The schedule must include as a deadline for the beginning of the program implementation, the end of the second year of CONCESSION, covering the entire ROAD SYSTEM. It must also include that all phases of program implementation are completed by the deadline defined in item 6 of this ANNEX.

The MDSR to be developed during the program implementation phases must be updated and shared with ARTESP at least six (6) months, as well as to meet the technical specifications of current regulations as well as best practice guides.

Integration must also be defined, as far as possible, with the other electronic management systems provided for in the CONCESSION, especially SISATIVOS.

At each completed work, the CONCESSIONAIRE shall update the MDSR based on the models generated from the follow-up of the works (MBIM-AB and MBIM-COMP).

2.1.3.5 Hydrological and drainage study

Based on the topographic survey and the registration of OAEs and CABs obtained through items 1.1 and 2.1.3, the CONCESSIONAIRE shall conduct a hydrological study of the entire ROAD SYSTEM, in order to verify the suitability of each device registered to the rules and legislation. (mainly in terms of maximum flow rates, rainfall recurrence time, maximum slope and flow velocities).

This study shall be updated with each new work implemented, together with the register field surveys, and shall be partially delivered to ARTESP every six (6) months from the beginning of the CONCESSION, and the information shall be duly registered in the CONCESSIONAIRE's SIR system. Final delivery of the study must be performed according to the deadline defined in item 6 of this ANNEX.

Through the hydrological study and based on the topographic survey, the survey of the use and occupation of the linero soil to the DOMAIN RANGE, the CONCESSIONAIRE shall conduct a study with the objective of identifying critical areas regarding the occurrence of surface dynamics processes (erosions, gullies, siltings, etc.) such as commercial establishments, plantations, crops, residences, contemplating grounds, lakes, streams and other susceptible occupations, due to the high concentration of stormwater runoff from the DOMAIN RANGE, especially high slope areas and extensive contribution basin.

For these areas, the provision of drainage devices with adequate capacity to the volume and intensity of the flow must be provided, aiming at the control and dissipation of energy, such as damping basins or other typologies, as well as devices for retention and / or accumulation. rainwater that provides gradual discharge, reducing the impact on the surrounding properties.

2.1.3.6 Additional Areas

If additional areas outside the DOMAIN RANGE are identified due to space constraints or unfavorable topographic conditions for deployment within the DOMAIN RANGE, the CONCESSIONAIRE shall forward to ARTESP studies, documents and justifications to support the process of expropriation. Upon expropriation, the CONCESSIONAIRE shall update the topographic survey of the limits of the new DOMAIN RANGE.

The conclusive study of the need for adequacy of drainage elements must be submitted for analysis by ARTESP and must have a proposal of schedule for the adequacy of elements, prioritizing the places that present the greatest risk to the safety of users, pedestrians and bordering properties.

If the conclusive study indicates the proven insufficiency of the drainage elements of the ROAD SYSTEM, the works that may be necessary for the adequacy of the drainage system will be subject to financial economic rebalancing, to the exact extent of the proven imbalance, except in the event of failures and / or defects in the construction project, maintenance or arising from other risks attributed to the Concessionaire, as part of the ORDINARY REVIEW.

After verifying the pertinence of the indicated needs and the presented schedule, the inclusion of investments will follow the rules defined for the ORDINARY REVIEW, including the need to elaborate projects and budget.

2.1.4. Conservation / Maintenance Standards

The pre-set conservation / maintenance standards establish a performance and quality criterion for the services, as they define the aspect or function that the ROAD SYSTEM must present as a result of these works. These standards are understood as guidelines for the staff involved in the CONCESSION, as well as establishing budget values for the ROAD SYSTEM.

The use of conservation standards / maintenance can be affected by numerous variables such as type and class of road and its surroundings, topography, soil, weather conditions, volume and type of traffic, age of pavement and structures, geometric designs, signage, safety features, road containment device etc.

Conservation / maintenance standards can be established in a number of ways: by numerical value, by a description or by determining how often services are performed, among other criteria.

The standards of the conservation / maintenance services in the performance of the CONCESSIONAIRE's work must comply with at least the following conditions:

- (a) road maintenance / maintenance services shall be performed, having as references, specifications, current standards, procedures existing at the time of the performance of the services and / or others that may be approved, modified or adopted by ARTESP at the time of the performance of services;
- (b) in the event that the objects of the services do not have ARTESP specifications, the rules issued by ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) shall prevail and, in case of nonexistence, shall prevail the indications of ARTESP in the light of applicable international standards; and
- (c) the conservation / maintenance standards stated in this item will apply to all elements and devices located within the DOMAIN RANGE boundaries, including marginal roads, device loops, bike roads, and other issues.

To guarantee the established conservation standards, the CONCESSIONAIRE shall implement a process of identifying anomalies in the ROAD SYSTEM or forecasting the useful life of the elements contemplated in the ROAD SYSTEM and making the adjustments so that the standards do not fall below the minimum required.

This process must be submitted to ARTESP within the period provided for in this ANNEX and must obtain the ISO 9001 certificate within 1 (one) year after its implementation.

2.1.5. Annual work program

In order to meet the routine maintenance / maintenance standards established in this ANNEX, the CONCESSIONAIRE shall prepare and present to ARTESP an annual work program following the structure established in this chapter.

Computerized reports, for analysis at various management levels, efficiency and costs, without prejudice to the updated availability of all information and data specified in this ANNEX, which must be made by the CONCESSIONAIRE to ARTESP through the digital conservation management systems, In order for ARTESP to be able to monitor the routine maintenance / maintenance services performed by CONCESSIONAIRE, the CONCESSIONAIRE shall submit to ARTESP monthly and annual reports of the services performed in accordance with the structure established in this ANNEX.

2.2. Program structuring

To organize and facilitate the maintenance / maintenance of the routine ROAD SYSTEM, the programs and subprograms were subdivided as follows:

- a. The Pavement
 - a.1. Flexible Pavement
 - a.2. Hard Pavement
- b. Domain range
 - b.1. Conservation of vegetal coating
 - b.2. Cleaning
 - b.3. Erosions
 - b.4. Bus stops, monuments and utilities
 - b.5. Graffiti
 - b.6. Lateral conformation
 - b.7. Sidings - fences, walls, fences and roofs
- c. Drainage
 - c.1. Platform surface drainage
 - c.2. Surface drainage off platform
 - c.3. Manholes, galleries and drains
 - c.4. Captation Boxes
 - c.5. Tunnel drainage
 - c.6. Wildlife Passages
 - c.7. Retention and leakage boxes
- d. Road containment device
 - d.1. Flexible devices (metal fenders, cable fenders and the like)

- d.2. Rigid devices (concrete barriers and the like)
- d.3. Anti Glare Devices
- d.4. Railing and balusters
- e. Signaling and auxiliary devices
 - e.1. Horizontal signage
 - e.2. Vertical signage
 - e.3. Boundary Devices
 - e.4. Plumbing device
 - e.5. Alert Signaling Devices
 - e.6. Temporary use device
 - e.7. Traffic light
- f. Structures - bridges, viaducts and walkways
- g. Operating and Supporting Buildings and Patios
- H. Collection control system
 - h.1. Collection system
 - automatic payment
 - semi-automatic payment
 - manual payment
- i. Traffic and Transportation Inspection Control System and Support for Non-Delegated Services
 - i.1. General Inspection Post - PGF
 - road policing module
 - scale module
 - ✓selective weighing system
 - ✓moving weighing system
 - ✓fixed precision weighing system
 - ✓vehicle presence detectors and image records
 - ✓control equipment
 - ✓peripheral equipment
 - ✓signaling devices and safety features
 - ✓approach speed detection devices
 - i.2. Speed control system

- fixed speed control points static type speed meters

i.3. Vehicle License Plate Decoding (OCR) System

j. Communication and User Relationship System

j.1. Radio system

- fixed stations
- mobile stations
- portable stations
- repeater stations

j.2. 0800 Attendance System

j.3. Data transmission system

j.4. Operational Control Center

j.5. Emergency telephone call communication system

j.6. User communication system via wireless data network

j.7. Variable Message Board System (PMVs)

- fixed variable message board
- mobile variable message board

j.8. Ombudsman and other channels of relationship with the User

k. Traffic monitoring system

k.1. Traffic sensing system

k.2. CCTV traffic monitoring system

i. Lighting

i.1. Road lighting

i.2. Building lighting

i.3. Light signaling

m Electrification

m.1. High voltage lines

m.2. Low voltage lines

m.3. Substations and Primary Cabins

m.4. Motor generators

m.5. Break system

2.3. Description and standards for the programs

Failure to comply with the activities set forth in this item shall subject the CONCESSIONAIRE to the rules set forth in ANNEX 3 - PERFORMANCE INDICATORS IN THE SERVICES PROVIDED AND DISCOUNTS FOR DELAY OR INEXECUTION OF WORKS, and the application of the administrative sanctions provided for in Annex 11 - PENALTIES. The deadlines for correction / regularization of nonconformities found shall be counted in calendar days / hours.

a. Pavement

Description

This program comprises the roads, shoulders and refuges of the highways and their intersections, as well as other paved surfaces, including access, courtyards, surroundings of operational buildings, support buildings, utilities, junction devices and marginal roads, to the limits of the DOMAIN RANGE.

Standards

a.1. Flexible Pavement

a.1.1. Pan or hole or rolling strip displacement: provisional emergency repair within a maximum of 24 (twenty-four) hours;

a.1.2. Definitive repair with cut-out, programmable for execution in a maximum of 1 (one) month;

a.1.3. Dip in artwork meeting: repair in a maximum of 2 (two) weeks;

a.1.4. Small extension dip or repression: repair within a maximum of one (1) month;

a.1.5. compromised rolling cloth when a section in the same rolling range, shoulder or refuge has surface wear, block cracks (longitudinal, transverse or fatigue - "alligator leather"), lateral slip , ooze, damaged or poorly executed patches, corrugation or corrugation: replacement of the rolling track, shoulder and / or refuge in their full widths, respecting the same type of asphalt coating of the final layer used in the last special pavement maintenance performed , although not by the CONCESSIONAIRE, within a maximum of one (1) month;

a.1.6. moderately compromised running cloth, when any stretch of 50 (fifty) continuous meters has, in the same rolling range, shoulder or refuge, 3 (three) or more pavement repairs: replacement of rolling range, shoulder or refuge , transversely in their total widths and longitudinally from the first to the last repair, restoring to the original conditions of the executive project of the last special pavement conservation intervention carried out, even if not by the CONCESSIONAIRE, within a maximum of one (1) month. When a repair is located between two bearing roads, between bearing road and shoulder, or between

bearing road and refuge, the repair for characterization of this condition shall be accounted for on both sides and shall be regularized;

a.1.7. Crack sealing: programmable to perform at least one (1) time per month; and

a.1.8. Step between road and shoulder: repair within a maximum of 1 (one) month.

a.2. Hard Pavement

a.2.1. Pans or holes in the rolling track: provisional emergency repair in a maximum of 24 (twenty-four) hours;

a.2.2. Definitive repair with clipping: execution in a maximum of 1 (one) month;

a.2.3. Dip in artwork meeting: repair in a maximum of 2 (two) weeks;

a.2.4. joints and cracks: programmable cleaning and resealing to perform at least once a year;

a.2.5. Broken edges or slabs: provisional emergency repair in a maximum of 24 (twenty-four) hours and definitive repair with clipping in a maximum of 1 (one) month.

b. Domain range

Description

This program comprises the services of manual and mechanized pruning of the lining, cleaning and sweeping of the platform of the road, removal of common and building and demolition (RCD) of the DOMAIN, paved central site cleaning, erosion correction, conservation of bus stop and monuments.

Material resulting from pruning and cleaning must be collected to a predetermined location that does not affect the road drainage system and natural drains, or cause the USER to look bad.

Platform cleaning and sweeping must be performed on runways, shoulders and refuges.

In the surroundings of TOLL STATIONS, scales and PMRv stations, this service must be intensified given the high passage of vehicles and pedestrian traffic.

Waste, debris, or plant debris within the track's DOMAIN RANGE boundary and at its intersections must be removed, transported, and disposed of in an appropriate location, as required by applicable law.

Dead animals must be removed from the DOMAIN RANGE, destined according to the CETESB Board Decision No. 141/2018 / I of 08/14/2018, or existing legislation that may change or replace it.

The cleaning of the paved central working site includes the sweeping and eradication of all vegetation in it.

Bus stops and monuments must be cleaned and / or painted, with the corresponding covers, if any, checked and repaired, as well as properly maintained pedestrian walkways.

Areas within the boundaries of the DOMAIN RANGE, with the exception of the road platform, other paved areas and areas with rocky outcrops and altered rocks, shall be flawless, including sloping or embankment slopes, and shall remain clean and endowed. of drainage system. Locations with poor soils must be subject to appropriate techniques, including fertilization and specific corrections, and technologies available on the market for such situations.

Standards

b.1. Conservation of vegetal coating

Manual and / or mechanized pruning of the cladding, which includes trimming, crowning and removal of the resulting pruning mass, shall be performed to the full extent of the central grass beds and the length of the pathways. At the sides, at least once a year, pruning services (manual and / or mechanized) must cover the entire DOMAIN RANGE, ie from the outer edge of the shoulder or the drainage element (whichever is outer) to the domain range limit (about to about). At other times the service must cover a minimum width of 4 (four) meters from the outer edge of the shoulder or drainage element (whichever is more), even if in a sloping region (eg slope).

For all clovers, fringes, level intersections, operational and supporting buildings and courtyards, monuments and rest areas, manual and mechanized pruning of the plant cover must be done within the DOMAIN RANGE limit.

- b.1.1. Manual or mechanized pruning of vegetation: when the height of the vegetation reaches 30 (thirty) centimeters in generic sections of the highway or, 10 (ten) centimeters in the vicinity of operational facilities, support and surroundings of monuments and obelisks, including the services of trimming, crowning and removal of the pruning mass;
- b.1.2. Weeding: programmable execution for at least four (4) times per year;
- b.1.3. Firebreaks: conservation of firebreaks comprising mowing and / or weeding, with a width of 1.5 m (one and a half meters) along the boundary fences of the DOMAIN RANGE, programmable for at least 1 (one) time per year. , and this activity must be completed by June 1 of each year
- b.1.4. Plague removal: programmable execution for at least two (2) times a year in grass areas surrounding buildings, yards, monuments and obelisks;
- b.1.5. Maintenance of trees and shrubs: fertilization, protection and placement of mulch, programmable for at least 1 (one) year;
- b.1.6. Cutting and pruning trees and shrubs: Dead or cursed trees and shrubs must be cut and removed from the DOMAIN RANGE within 1 (one) month. They must also be cut and removed. out of the DOMAIN RANGE, trees and shrubs that pose a traffic hazard or whose roots compromise the drainage system or obstruct the visibility of the signage. These services must be performed, whenever one of the above situations is found, within a maximum of 24 (twenty-four) hours.

In the event of occurrence of arboreal individuals whose suppression is restricted by current legislation, the relevant authorizations must be obtained within the period stipulated by the agency. Unauthorized deletion shall be protected by road restraint devices.

The following situations are considered to be a danger to road safety: i) exposed

trees, that is, within the free zone and without road restraint device between them and the track; ii) trees and shrubs with branches outside the vertical projection limit of the outer edge of the shoulder or refuge, but within the radius of eventual fall; and (iii) trees and shrubs with branches within the vertical projection of rolling roads, shoulders, refuges, device loops and marginal roads at any time; and

b.1.7. restoration of vegetation cover throughout the ROAD SYSTEM, except for paved areas and areas with rocky outcrops and altered rocks, including replacement of faulty sites within a maximum of one (1) month.

When it is not possible to perform the vegetable coating, the CONCESSIONAIRE shall prove the situation by means of a Technical Report signed by a duly qualified professional. In places where it is not proven that there is a condition of vegetation cover (through a report issued by a qualified professional), appropriate geotechnical treatment must be applied, so that the site is protected against erosion in a maximum of 1 (one) month, in order to comply with the provisions of items “d” and “e” of section 7.3.1 of NBR 11.682 or other that may replace or change it. In this case the CONCESSIONAIRE shall submit a report and project prepared by geotechnician, and, if necessary, must have the support of a qualified professional (eg agronomist) to justify the need for solutions and proposed treatments.

b.2. Cleaning

Waste from cleaning services must be disposed of in appropriate places.

b.2.1. Solid waste removal from operating and support facilities at least one (1) per day, selective collection and priority disposal for recycling programs;

b.2.2. Solid wastes, debris or plant debris (eg twig, trunk, etc.) within range limits: removal within a maximum of one (1) week, including full length of roads and turnabout devices and ACCESS, with priority destination for recycling programs;

b.2.3. Cleaning and sweeping paved areas subject to debris deposition: programmable execution for at least 01 (one) time per week;

b.2.4. Cleaning paved central garden: programmable for at least 1 (once) month, including eradication of all vegetation there;

b.2.5. Dead animals: if within range, immediate removal, if within range and outside range, removal within 18 (18) hours for animals run over at night and at maximum of 06 (six) hours for animals run over in the daytime. The procedures for final disposal of carcasses shall comply with CETESB DD.141 / 2018 / I of 08/14/2018 or current legislation that may complement or replace; and

b.2.6. Canals and rivers: general programmable cleaning for at least one (1) time per year, and this activity must be completed by October 31 of each year.

b.3. Erosions

In cutting or embankment erosions, emergency platform cleaning, eroded material removal, slope protection, water diversion and signaling services shall be provided

within a maximum of 24 (twenty-four) hours.

The erosion remediation services or definitive recomposition in cutting and embankment, including the drainage and vegetal covering, will have a maximum correction period of fifteen (15) days.

New cross-section configurations may be allowed, provided they are duly justified.

b.4. Bus stops, monuments and utilities

Bus stops, monuments and utilities damaged, damaged or in poor condition: correction / regularization within a maximum of one (1) week.

b.5. Graffiti

Graffiti on monuments and other DOMAIN RANGE locations, except for graffiti on vertical signage, removal within a maximum of one (1) week.

b.6. Lateral conformation

Lateral conformation for step removal and terrain regularization in the DOMAIN RANGE (lower level terrain) near the side of the paved shoulder or between the runway refuge and central working site or at the side of the clovers and access handles: correction / regularization in a maximum of one (1) month. Maximum allowed difference of 1 (one) centimeter.

b.7. Sidings - fences, walls, fences and roofs

The CONCESSIONAIRE shall throughout the concession term analyze the ROAD SYSTEM in order to identify points that for any changes (interventions, border occupation, presence of pedestrians) that require alteration or complementation of the type of fence (fence, wall, fence and screen). .

The CONCESSIONAIRE throughout the CONCESSION TERM shall monitor the OAEs of the ROAD SYSTEM, and in places where actions of throwing objects on the highway are identified, causing the users insecurity, the CONCESSIONAIRE shall proceed with the installation of roofing in the OAE.

The conservation of fences, walls, fences and screens (at the edge of the DOMAIN RANGE, on footbridges or under them, along the central working site, etc.) comprises the replacement of posts, supports, wires and other elements that constitute these types of fence, and which are damaged, deteriorated or end of life.

Damaged or defective walls (fencing, fence or roofing): repair or replacement within a maximum of 24 (twenty-four) hours.

c. Drainage

Description

This program comprises the clearance and cleaning services of the entire surface drainage system on and off the road platform, as well as intersections, building installations, play areas, bus stops, etc.

The drainage system is mainly composed of gutters, gutters, passage boxes, wolves, platform and deep culverts, galleries, sub-horizontal drains etc.

This service also includes the replacement of grids and covers of captation boxes.

Standards

c.1. Platform surface drainage

c.1.1. General cleaning, programmable for at least four (4) times per year;

c.1.2. Damaged or defective drainage elements: repair or replacement within a maximum of one (1) month;

c.1.3. Lateral conformation: whenever the lateral land segment exceeds the shoulder or central refuge height: correction / regularization in a maximum of 1 (one) month; and

c.1.4. Completely or partially obstructed drainage element: Clearing no more than 1 (one) week, regardless of the general cleaning schedule.

c.2. Surface drainage off platform

c.2.1. Off-platform drainage: general cleaning, programmable for at least one (1) time per year, and this activity must be completed by October 31 of each year for the overall system;

c.2.2. Off-platform drainage: programmable general cleaning for at least four (4) times a year on saw runs;

c.2.3. Damaged or destroyed drainage elements: repair or replacement within 1 (one) month; and

c.2.4. Drainage element totally or partially obstructed: clearing within a maximum of one (1) week.

c.3. Manholes, galleries and drains

c.3.1. Programmable general cleaning for at least one (1) year, this activity must be completed by October 31 of each year; and

c.3.2. Damaged or defective drainage element: repair or replacement within 1 (one) month; and

c.3.3. Totally or partially obstructed drainage element: Clearing no more than 1 (one) week, regardless of general cleaning schedule.

c.4. Captation Boxes

c.4.1. Programmable general cleaning for at least run once per quarter; and

c.4.2. Damaged or destroyed drainage elements: repair or replacement within 1 (one) month; and

c.4.3. Totally or partially obstructed drainage element: Clearing no more than 1 (one) week, regardless of general cleaning schedule.

c.5. Tunnel drainage

c.5.1. Programmable general cleaning for at least every 3 (three) months;

c.5.2. Occurrence of water on the runway inside the tunnel: carry out repairs and adjustments in order

to eliminate the conditions that allowed it, within a maximum of 1 (one) month; and

c.5.3. Totally or partially obstructed drainage element: Clearing no more than 1 (one) week, regardless of general cleaning schedule.

c.6. Wildlife Passages

c.6.1. Programmable general cleaning for at least two (2) times a year at the beginning and end of the rainy season;

c.6.2. Vegetation management in the dry portion of the programmable walkway for at least four (4) times per year; and

c.6.3. Totally or partially obstructed drainage element: Clearing no more than 1 (one) week, regardless of general cleaning schedule.

c.7. Leakage Retention Boxes

c.7.1. Programmable general cleaning for at least four (4) times per year;

c.7.2. Monthly inspection;

c.7.3. General cleaning immediately after any leakage; and

c.7.4. Immediate transportation of leaked materials to a qualified and duly licensed destination; and

c.7.5. Totally or partially obstructed drainage element: Clearing no more than 1 (one) week, regardless of general cleaning schedule.

d. Road containment device

Description

Road restraint devices are used to contain and redirect uncontrolled vehicles as they leave the highway so as not to hit stationary objects or dangerous areas along the road.

Standards

d.1. Flexible devices (metal fenders, cable fenders and the like, shock absorbers / attenuators, absorber terminals, transitions, connections, etc.)

d.1.1. The CONCESSIONAIRE shall perform the adaptation of the road restraint devices existing flexible devices in the EXISTING SYSTEM and highways that were under DER / SP that integrate the REMAINING SYSTEM, in order to meet the criteria and guidelines established in ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical standards and other relevant standards at the time of the intervention.

Where the CONCESSIONAIRE concludes that the best fit solution is the complementation (extension) of the road restraint device, the implementation of this device segment shall occur in order to meet the deadline stipulated in this item.

The adjustments necessary to meet this item shall be included in the executive project provided for in APPENDIX 7.

The CONCESSIONAIRE shall present a spreadsheet detailing for each element to be appropriate to its location (highway, km and direction), service to be performed, extent of intervention in the existing device and date (month / year) for execution. The adjustment must be completed within 24 (twenty-four) months from the date of signing of the INITIAL TRANSFER TERM.

At the end of the adequacy services, the CONCESSIONAIRE shall present a photographic report that proves the execution of the services;

- d.1.2. The CONCESSIONAIRE shall, throughout the concession term, analyze the Road System in order to identify points that, due to any alterations (interventions, MDV, incidence of accidents), no longer need the existing device or need road restraint devices of flexible type, in order to meet the criteria and guidelines established in ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) 's technical norms and other pertinent norms.

In such cases, the CONCESSIONAIRE shall perform the intervention (removal, relocation, adaptation or implementation) of the devices in compliance with the parameters established in said standards and forward to ARTESP the update of the road restraint device register;

- d.1.3. Damaged, end-of-life or corrosion-compromised and misaligned devices that pose a safety risk to USERS: immediate signaling with cones, easels and tapes. Removal, repair and / or replacement and / or replacement and / or realignment, complying with the rules in force at the time of the intervention, within a maximum of 24 (twenty-four) hours;
- d.1.4. Damaged, end-of-life or compromised corrosion and misaligned devices that do not pose a safety risk to Users: removal, repair and / or replacement and / or realignment, in compliance with the rules in force at the time of intervention, on, at maximum, one (1) week; and
- d.1.5. Cleaning, washing or painting: programmable for at least 2 (two) times per year. The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution. In the event of a dirty condition that impairs the visibility of the elements, the cleaning must be performed within 24 (twenty four) hours

d.2. Rigid devices (concrete barriers and the similar items)

- d.2.1. the CONCESSIONAIRE shall perform the adaptation of rigid road restraint devices, pre-existing in the EXISTING SYSTEM and highways that were under the DER / SP of the REMAINING SYSTEM, in order to meet the criteria and guidelines established in ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical standards and other relevant standards at the time of the intervention.

Where the CONCESSIONAIRE concludes that the best fit solution is the complementation (extension) of the road restraint device, the implementation of this device segment shall occur in order to meet the deadline stipulated in this item.

The adjustments necessary to meet this item shall be included in the EXECUTIVE PROJECT provided for in APPENDIX 7.

The CONCESSIONAIRE shall present a spreadsheet detailing for each element to be appropriate to its location (highway, km and direction), service to be performed, extent of intervention in the existing device and date (month / year) for execution. The adjustment must be completed within 24 (twenty-four) months from the date of signing of the INITIAL TRANSFER TERM.

At the end of the adequacy services, the CONCESSIONAIRE shall present a photographic report that proves the execution of the services;

- d.2.2. The CONCESSIONAIRE shall throughout the CONCESSION TERM analyze the ROAD SYSTEM in order to identify points that by any changes (interventions, VDM, incidence of accidents) no longer need the existing device or need road restraint devices. of rigid type in order to meet the criteria and guidelines established in the ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical norms and other pertinent norms in force at the time. The CONCESSIONAIRE must pay attention to corrections that may be necessary due to surface drainage problems.

In such cases, the CONCESSIONAIRE shall perform the intervention (removal, adaptation or implementation) of the devices in compliance with the parameters established in said standards and forward to ARTESP the update of the road restraint device register;

- d.2.3. Damaged device that poses a risk to USER safety: immediate signaling with cones, easels and ribbons. Removal within a maximum of 24 (twenty-four) hours and recomposition in compliance with the rules in force at the time of the intervention, within a maximum of 1 (one) week.
- d.2.4. Damaged device that does not pose a risk to the safety of USERS: repair or replacement in compliance with the rules in force at the time of the intervention in a maximum of one (1) week; and
- d.2.5. Cleaning, washing or painting: programmable for at least 2 (two) times per year. The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution. In the event of a dirty condition that impairs the visibility of the elements, the cleaning must be performed within 24 (twenty-four) hours.

d.3. Anti Glare Devices

- d.3.1. The CONCESSIONAIRE shall throughout the CONCESSION DEAL analyze the ROAD SYSTEM in order to identify points that for any changes (interventions, VDM, incidence of accidents) that need anti-glare devices.

In such cases, the CONCESSIONAIRE shall perform the intervention in compliance with the parameters established in the norms and specifications in force at the time of the intervention and forward to ARTESP a registration update.

d.3.2. Damaged and / or deteriorated and / or stolen and / or damaged and / or misaligned device presenting a safety risk to USERS: immediate signaling with cones, easels and tapes. Removal within a maximum of 24 (twenty-four) hours and replacement and / or replacement and / or realignment meeting the norms and specifications in force at the time of the intervention, within a maximum of one (1) week;

d.3.3. Damaged and / or deteriorated and / or stolen and / or damaged and / or misaligned device that does not pose a safety risk to USERS: repair and / or replacement and / or realignment meeting the norms and specifications in force at the time of the intervention, in at most one (1) week; and

d.3.4. Cleaning, washing or painting: programmable for at least 2 (two) times per year. The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

d.4. Railing and balusters

d.4.1. Damaged device that poses a risk to USER safety: immediate signaling with cones, easels and ribbons. Removal within a maximum of 24 (twenty-four) hours and recomposition in compliance with the norms and specifications in force at the time of the intervention within a maximum of one (1) week

d.4.2. Damaged device that does not pose a safety risk to USERS: repair or replacement in compliance with the norms and specifications in force at the time of the intervention, within a maximum of one (1) week; and;

d.4.3. Cleaning, washing or painting: programmable for at least 2 (two) times per year. The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

e. Signaling and auxiliary devices

Description

Road signs comprise a set of elements implemented on the highway for the purpose of regulating, warning, indicating and educating users on road use, as well as providing institutional information, contributing to the comfort and safety of drivers and road workers.

The elements are the horizontal and vertical signaling (regulation, warning, educational, indicative, institutional and services), temporary devices, plumbing devices, bounding devices, signaling systems and other elements provided for in the Brazilian Traffic Code (CTB), in technical specifications issued by ARTESP, DER / SP and CONTRAN signaling manuals.

The standards defined in this item must be met in all the ROAD SYSTEM (highways, marginals, access roads, devices, handles, stretches, etc.) always complying with the Brazilian Traffic Signal Manual - Contran, in the Road Signaling Manual - DER / SP, the Brazilian Traffic Code - CTB, technical standards and specifications in force at the time of the intervention.

Standards

e.1. Horizontal signage

e.1.1. Cleaning: Horizontal signposts subject to debris deposition must be cleaned by mechanical sweeping, washing or spraying of compressed air or water. This procedure must be performed at most every 6 (six) months.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first schedule regarding the horizontal signage cleaning shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the signing of the INITIAL TRANSFER TERM, for the EXISTING SYSTEM and 30 (thirty) days after the signing of the REMAINING SYSTEM TRANSFER TERM. for the REMAINING SYSTEM.

In the event of a dirty condition that impairs the visibility of the horizontal signage, the cleaning must be performed within 24 (twenty four) hours;

e.1.2. retro-reflectance: the CONCESSIONAIRE shall permanently maintain the retro-reflectance of all horizontal signaling within the following parameters:

Speed allowed on the highway	Minimum index of retro reflectance	Painting color
≤ 80 km/h	120 mcd/lux.m ²	White and yellow
> 80 km/h	120 mcd/lux.m ²	Yellow
	150 mcd/lux.m ²	White

In sections where the speed of the road is reduced, the minimum rate of retro-reflectance shall be in accordance with the highest speed established for the road.

Retroreflectance assessment shall be performed using hand-held or dynamic measurement equipment using a competent agency-certified retroreflectometer, in accordance with the specifications and procedures set forth in ARTESP Technical Specifications and, in their absence, in technical standards ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) NBR 14723 and NBR 16410, or others that may replace or change them, in effect at the time of measurement. In the case of use of dynamic measuring equipment, points with retro reflectance below the minimum value shall be confirmed using manual measuring equipment.

In order to verify the quality standards and to plan the maintenance of the horizontal signs, the CONCESSIONAIRE shall evaluate every six months the retroreflectance of all horizontal signs (longitudinal lines, channel marks, transverse marks and inscriptions on the pavement) throughout the ROAD SYSTEM, by individuals. or legal entity with proven expertise in this type of service.

The regular measurement of horizontal signaling retro-reflectance indices may not be performed at intervals of less than six months between one measurement and another. Due to the expected increase in traffic volume, this service cannot be performed in January, July and December.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first schedule regarding the evaluation of the retro-reflectance must be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the PII and / or PIC and / or P.A. (Initial Suitability Program of the Transferred System) service acceptance corresponding to the activity.

Measurement reports of horizontal signaling retro-reflectance indices shall be prepared by CONCESSIONAIRE according to the models defined by ARTESP and delivered within 15 (fifteen) days from the date of the measurements, in a digital copy.

ARTESP may also, when the supervision requires such action, at any time request the evaluation of the horizontal signaling retro-reflectance index in specific section (s) to confirm its quality, being the obligation of the CONCESSIONAIRE, within the deadlines defined by ARTESP, evaluate and present the results following the same procedures as regular measurements;

e.1.3. painting or overcoating: the painting or overcoating service shall be provided, within a maximum of one (1) week, of a horizontal signage segment or sub-stretch in which a retroreflectance index lower than the limits established in this Annex is detected. The CONCESSIONAIRE must send ARTESP a retroreflective report of the revitalized signaling proving the performance of the

services; and

e.1.4. In sections with pavement restoration work, after recapping or localized repair must be provided

e.1.5. (painting or repainting) damaged by the work, albeit provisionally, before its total or partial release to traffic, in accordance with the provisions of article 88 of CTB, the Brazilian CONTRAN Signaling Manual and the DER / SP. The definitive signage shall be implemented no later than 30 (thirty) days after the completion of the work on site.

In a stretch of road where there was pavement recovery at several nearby points (distance between them less than or equal to 1 (one) kilometer), the recomposition of the horizontal signaling of the roads (axis and edges) where the intervention took place, must be done throughout continuously, and not just at each point that has been intervened.

When the horizontal signaling is recomposed there must be no conflict between the new signaling and the previous one. Horizontal signage erasure, when necessary, shall be performed by appropriate mechanical removal or similar equipment that preserves the Pavement structure, and black paint shall be prohibited for signage coverage. The inadequacies identified in the signs provided for in this item must be corrected within a maximum period of 24 (twenty four) hours, in sections where the absence of horizontal signs is found, the CONCESSIONAIRE shall paint and / or repaint the signs within a maximum period of one (1) week.

e.2. Vertical signage

e.1.1. Cleaning: All vertical signs (ground and air) must be cleaned every 4 (four) months by properly trained staff, using products, equipment and methods to ensure their perfect cleanliness, without deteriorating materials. used in its manufacture (films and substrates), ensuring the perfect visibility and readability of your messages on a daily basis, as established by traffic laws.

In sections with a high level of dirt, cleaning must be done every 2 (two) months. If the dirt compromises the readability of the signage, it must be cleaned within 24 (twenty-four) hours.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first schedule regarding the cleaning of the vertical signs must be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the PII and / or P.A. (Initial Suitability Program of the Transferred System) service acceptance corresponding to the activity.

e.1.2. retro-reflectance: the CONCESSIONAIRE shall permanently maintain the retro-reflectance of all vertical signs (aerial and ground) within the parameters defined by ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical standards or related specifications in force throughout the concession.

To verify the quality standards and plan the maintenance of vertical signs, the CONCESSIONAIRE shall annually evaluate the retro-reflectance of all vertical signs (aerial and soil) throughout the ROAD SYSTEM, through an individual or legal entity with proven expertise in this type of service.

Retroreflectance assessment shall be made using retroreflectometer equipment with calibration not exceeding 1 (one) year, whose calibration certificate shall be issued in Portuguese by a competent body. The service shall be performed in accordance with the specifications and procedures set forth in the technical standards ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) NBR 14644 and NBR 15426, or any other that may replace or change it, in force at the time of measurement or others that may replace them or change them.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first schedule regarding the evaluation of the retro-reflectance shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the acceptance of the PII and / or P.A. (Initial Suitability Program of the Transferred System) service corresponding to the activity.

Measurement reports of vertical signaling retro-reflectance indices (aerial and ground) shall be prepared by the CONCESSIONAIRE according to the models defined by ARTESP and delivered within 15 (fifteen) days from the date of the measurements, in a digital copy.

ARTESP may also, when the supervision requires such action, at any time request the evaluation of the retro-reflectance index of vertical signage at specific point (s) to confirm its quality, being obligation of the CONCESSIONAIRE, within the deadlines defined by ARTESP, evaluate and present the results following the same procedures as regular measurements;

- e.1.3. Regulatory and warning signs (air and ground) shall be replaced, repaired or replaced within 24 (24) hours, whenever signs are found in violation of manuals and / or standards and / or specifications, absence of signaling, retroreflectance inferior to that defined in norm and / or specification, malfunction, depredation or vandalism;
- e.1.4. Other signs (aerial and soil) must be replaced, repaired or replaced within 1 (one) week, whenever signs are found in disagreement with manuals and / or standards and / or specifications, absence of signaling, retroreflectance less than that defined in standard and / or specification, malfunction, depredation or vandalism.

For signaling replaced due to the retroreflectivity inferior to that defined in the norm and / or specification, the CONCESSIONAIRE MUST send to ARTESP the revitalized signaling retroreflectance report proving the accomplishment of the service;

- e.1.5. Damaged gantries and semi-gantries that endanger Highway USERS must be removed within 24 (twenty-four) hours and replaced within 30 (thirty) days. The signs contained therein shall be provisionally installed on the ground, obeying the following maximum terms: 24 (twenty four) hours for regulatory or warning signs and 1 (one) week for other types of signs; and
- e.1.6. In construction sites, inadequacies in vertical (ground and aerial) signaling regarding cleanliness, retro-reflectance, signaling in disagreement with manuals and / or standards and / or specifications, absence of signaling, malfunction, depredation or vandalism, must be overcome by maximum period of 24 (twenty four) hours; and
- e.1.7. In signage where it is found the absence of ARTESP record and / or date of manufacture, the availability of information in signage must be provided within 1 (one) week.

e.2. Boundary Devices

- e.2.1. Cleaning: The reflective studs or tacks must be cleaned quarterly, using products, equipment and methods that guarantee their perfect condition, without deteriorating the materials used in their manufacture, ensuring perfect visibility, as established by traffic laws. .

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first cleaning schedule shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the PII and / or P.A. (Initial Suitability Program of the Transferred System) service acceptance corresponding to the activity;

- e.2.2. Cleaning: Beacons, liners and demilitating cylinders must be cleaned every 4 (four) months, using products, equipment and methods that guarantee their perfect condition, without deteriorating the materials used in their manufacture, ensuring perfect visibility, as required by traffic law.

In sections with a high level of dirt, cleaning must be monthly. In cases where dirt compromises the visibility and / or functionality of the devices, cleaning must be at most 24 (twenty four) hours.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first cleaning schedule shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the PII and / or P.A. (Initial Suitability Program of the Transferred System) service acceptance corresponding to the activity;

- e.2.3. Studs and tacks shall be installed, supplemented or replaced within a maximum period of one (1) week, whenever an absence, retroreflectance lower than that defined in the norm and / or specification, damage or sinking is found. The implementation, complementation or replacement must be done in compliance with the recommendations of the Brazilian Traffic Signal Manual - CONTRAN, Road Signaling Manual - DER / SP and technical norms or related specifications; and markers, outlines and bounding cylinders shall be implanted or replaced within a maximum period of one (1) week, whenever the absence, retroreflectance less than that defined in the norm and / or specification, damage or depredation is found. The implementation, complementation or replacement must be done in compliance with the recommendations of the Brazilian Traffic Signal Manual - CONTRAN, Road Signaling Manual - DER / SP and technical norms or related specifications.

e.3. Plumbing device

- e.3.1. Cleaning or painting: must be performed every 6 (six) months. In sections with a high level of dirt, cleaning or painting must be monthly.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first cleaning schedule shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the PII and / or P.A. (Initial Suitability Program of the Transferred System) service acceptance corresponding to the activity; and

- e.3.2. Replacement of damaged or non-existent devices must be arranged within one (1) week. Completion of plumbing devices must be based on the recommendations of the Brazilian Traffic Signal Manual - CONTRAN and the Road Signal Manual - DER / SP.

e.4. Alert Signaling Devices

- e.4.1. Cleaning: Warning signaling devices must be cleaned at most every four (4) months, by properly trained staff, using products, equipment and methods that guarantee their perfect cleanliness, without deteriorating the materials used in its manufacture (films and substrates), ensuring the perfect visibility and readability of your messages on a daily basis, as established by traffic laws.

In cases where dirt compromises the visibility and / or functionality of the devices, cleaning must be at most 24 (twenty four) hours.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first cleaning schedule shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the PII and / or P.A. (Initial Suitability Program

of the Transferred System) service acceptance corresponding to the activity; retro-reflectance: the CONCESSIONAIRE shall permanently maintain the retro-reflectance within the parameters defined by ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) 's technical norms or related specifications in force throughout the CONCESSION.

To verify the quality standards and plan the maintenance of warning signaling devices, the CONCESSIONAIRE shall annually evaluate the retro-reflectance of all devices throughout the ROAD SYSTEM, through an individual or legal entity with proven expertise in this type of service.

Retroreflectance assessment shall be made using retroreflectometer equipment with calibration not exceeding 1 (one) year, whose calibration certificate shall be issued in Portuguese by a competent body. The service shall be performed in accordance with the specifications and procedures established in the technical standards ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) NBR 14644 and NBR 15.426, or any other that may replace or change it, in force at the time of measurement or others that may replace them. change them.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The first schedule regarding the evaluation of the retro-reflectance shall be filed by the CONCESSIONAIRE within 30 (thirty) days after the issuance of the acceptance of the PII and / or P.A. (Initial Suitability Program of the Transferred System) service corresponding to the activity.

Measurement reports of the retro-reflectance indices of warning signaling devices shall be prepared by CONCESSIONAIRE according to the models defined by ARTESP and delivered within 15 (fifteen) days from the date of the measurements, in a digital copy.

ARTESP may also, when the supervision requires such action, at any time request the assessment of the retro-reflectance index of warning signaling devices at specific point (s) to confirm their quality, being obligation of the CONCESSIONAIRE, in accordance with deadlines defined by ARTESP, evaluate and present the results following the same procedures as regular measurements; and

- e.4.2. Warning signaling devices shall be replaced, repaired or replaced within one (1) week at the most, whenever there is no signaling, retroreflection lower than that defined in the standard and / or specification, malfunction, depredation or vandalism.
- e.4.3. For signaling replaced due to the retroreflectivity inferior to that defined in the norm and / or specification, the CONCESSIONAIRE MUST send to ARTESP the revitalized signaling retroreflectance report proving the accomplishment of the service.

e.5. Temporary use device

- e.5.1. cleaning: it must be performed whenever the level of dirt is compromising the visibility and back reflection of these devices. The deadline for execution is 24 (twenty four) hours;
- e.5.2. replacement or supplementation of temporary use devices not in accordance with manuals and / or standards and / or specifications, with low retro-reflectance, deterioration, depredation, stolen, insufficient or nonexistent shall be provided within 24 (twenty four) hours. In the case of complementary lighting elements, their permanent operation shall be guaranteed by stocking lamps or other components necessary for their corrective maintenance.

Completion of temporary use devices must be based on the recommendations of the Brazilian Traffic Signal Manual - Contran and the Road Signal Manual - DER / SP.

e.6. Traffic light

- e.6.1. Focus group cleaning must be performed every 4 (four) months.

If there is a dirty place that impairs the visibility of the semaphore foci, its cleaning must be provided within 24 (twenty four) hours.

The CONCESSIONAIRE shall provide ARTESP, through a document filed between November 1st and November 10th of each year, the programming of this service to be performed in the subsequent year, in a digital file. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

- e.6.2. In the case of components that compromise the functionality of the semaphore signaling, the corrective maintenance must be done within a maximum of 24 (twenty four) hours. For the other components, within a maximum of one week.

For this, the CONCESSIONAIRE shall have a reserve of equipment, parts and vital parts of the system, for immediate replacement in case of breakage.

f. Structures - bridges, viaducts and walkways

Description

This program includes the cleaning of drainage devices for special works of art and containment structures, as well as the replacement of deteriorated support devices and damaged expansion joints, and periodic evaluations in addition to inspections of special works of art as per the Technical Specification in force. "Control of Special Works of Art" (ET-00.000.000-0-C21 / 002) established by ARTESP, which will serve as the basis for the ongoing maintenance management of works. The painting or galvanizing of metal railings and balusters is also defined.

Standards

f.1. cleaning internal drainage devices (horns in lost coffins): programmable for at least 2 (two) times a year and external devices (on platform and accesses) for at least 1 (once) every 2 (two) months;

f.2. painting or galvanizing of metal railing and balusters: programmable for at least 1 (one) time every 2 (two) years;

f.3. cleaning or painting of surfaces exposed to traffic: programmable for at least one (1) time

every two (2) years and, in case of graffiti, comply with sub-item b.5 of item 2.3;

f.4. Damaged or destroyed expansion joint: correction in a maximum of 24 (twenty four) hours;

f.5. replacement of support apparatus; immediately whenever deteriorated or excessively deformed apparatus is detected;

f.6. inspections according to the Technical Specification in force for “Control of Special Works of Art” (ET-00.000.000-0-C21 / 002) established by ARTESP; and

f.7. specific inspections and preservations for works of art in metal structure.

g. Operating and Supporting Buildings and Yards

Description

The conservation / maintenance of buildings and patios foresees the replacement and / or repair of the structures, waterproofing and covers that constitute the operational and support buildings and patios, their masonry and coverings.

It also provides for the replacement and / or repair of plumbing and sewage installations, conservation of streets, gardens, garbage collection, preservation of frames, locks and glass, cleaning of septic tanks, maintenance of seepage ditches, maintenance of painting and possibly deep wells for supply etc.

Standards

f.1. preventive conservation and corrective maintenance in buildings and operating and supporting yards must be continuous in order to keep them in full operating condition. Any nonconformities identified will have a period of 30 (thirty) days for correction / regularization.

g. Collection control system

Description

This program provides for the conservation / maintenance of all components and equipment that make up this system and its subsystems ensuring operation as specified in ANNEX 05 of the CONTRACT.

Standards

f.1. Collection system

All equipment / subsystems that make up the collection control system shall have the operation provided for in APPENDICES C and I and ANNEX 5.

For this, the CONCESSIONAIRE must have equipment or vital parts of the reserve systems for immediate replacement.

g. Traffic and transport inspection control system and support for NON-DELEGATED SERVICES.

Description

This program provides for the conservation / maintenance of all components and equipment that make up this system and its subsystems ensuring operation as specified in Annex 05 of

the Contract.

It consists of the following subsystems:

g.1. General Inspection Post – PGF

- road policing module
- scale module
 - ✓ selective weighing system
 - ✓ moving weighing system
 - ✓ fixed precision weighing system
 - ✓ vehicle presence detectors and image records
 - ✓ control equipment
 - ✓ peripheral equipment
 - ✓ signaling devices and safety features
 - ✓ approach speed detection devices

g.1. Speed control system

- fixed speed control points static type speed meters

g.2. Vehicle License Plate Decoding (OCR) System

Standards

From the implementation and / or receipt of systems and equipment, according to the deadlines defined in ANNEX 7, all equipment / subsystems that make up the traffic and transportation inspection control system and support to NON-DELEGATED SERVICES, must fully and simultaneously attend, to all the requirements established by ANNEX 05 and 06 of the CONTRACT, being risk of the CONCESSIONAIRE the sizing and management of personnel, parts, spare parts, stock and whatever is necessary for the immediate correction of defects, malfunctions or nonconformities.

The CONCESSIONAIRE must have a maintenance management system that must allow, at a minimum, the opening, monitoring and management of work orders open to maintenance teams. It is essential that at least the following information is recorded:

- Date and time of fault identification and opening of the work order;
- Type of defect identified;
- Action required for correction; and
- Date and time of completion of maintenance actions, with restoration of operation of the equipment (s).

The CONCESSIONAIRE shall supply ARTESP's systems with information related to equipment maintenance actions, enabling remote and real-time consultation by the JRC.

The CONCESSIONAIRE's availability of equipment maintenance information, and the way it is integrated with ARTESP's systems, must comply fully with the procedures, technologies and interfaces defined by ARTESP.

ARTESP may at any time request that CONCESSIONAIRE feed ARTESP's systems with additional equipment maintenance information, in accordance with procedures and interfaces that are similar to those used by CONCESSIONAIRE.

h. Communication and relationship system with USER

Description

This program provides for the conservation / maintenance of all components and equipment that make up this system and its subsystems ensuring operation as specified in ANNEX 05 of the CONTRACT.

It consists of the following subsystems:

h.1. Radio system

- fixed stations
- mobile stations
- portable stations
- repeater stations

h.2. 0800 Attendance System

h.3. Data transmission system

h.4. Operational Control Center

h.5. Emergency telephone call communication system

h.6. User communication system via wireless data network

h.7. Variable Message Board System - PMVs

- fixed variable message board
- mobile variable message board

Standards

From the implementation and / or receipt of the systems and equipment, according to the deadlines defined in ANNEX 07, all equipment / subsystems listed in item j.1 to item j.8 must fully and simultaneously meet all the requirements established by ANNEX 05 and 06 of the CONTRACT, being risk of the CONCESSIONAIRE the sizing and management of personnel, parts, spare parts, stock and whatever else is necessary for the immediate correction of defects, malfunctions or nonconformities.

The CONCESSIONAIRE must have a maintenance management system that must allow, at a minimum, the opening, monitoring and management of work orders open to maintenance teams. It is essential that at least the following information is recorded:

- Date and time of fault identification and opening of the work order;
- Type of defect identified;
- Action required for correction;
- Date and time of completion of maintenance actions, with restoration of operation of the equipment (s).

The CONCESSIONAIRE shall supply ARTESP's systems with information related to equipment maintenance actions, enabling remote and real-time consultation by the JRC.

The CONCESSIONAIRE's availability of equipment maintenance information, and the way it is integrated with ARTESP's systems, must comply fully with the procedures, technologies and interfaces defined by ARTESP.

ARTESP may at any time request that CONCESSIONAIRE feed ARTESP's systems with additional equipment maintenance information, in accordance with procedures and interfaces similar to those used by CONCESSIONAIRE.

Ombudsman and other relationship channels with the USER

Description

The CONCESSIONAIRE shall maintain in full operation and within the established standards, the ombudsman and other channels of relationship with the USERS, provided for in the current legal and infra-legal rules, as well as in the ARTESP regulations and ordinances, pursuant to the NOTICE and CONTRACT.

Standards:

h.1.1. maintenance, operation and disclosure of the 0800 telephone system: as of the date of signing of the INITIAL TRANSFER TERM.

h.1.2. maintenance, operation and disclosure of the ombudsman: as of the date of signing of the INITIAL TRANSFER TERM.

h.1.3. maintenance, operation and disclosure of other channels of relationship with the user provided for in current legislation: after 45 (forty-five) days from the date of signing of the Initial Transfer Agreement.

h.1.4. compliance with the requirements related to human, material and technological resources established in the current legislation regarding the Ombudsman and other channels of relationship with the USER: after ninety (90) days from the date of signing of the INITIAL TRANSFER AGREEMENT.

h.1.5. compliance with operational, administrative and procedural requirements set forth in the current legislation regarding the Ombudsman and other channels of relationship with the USER: ninety (90) days after the date of signing of the Initial Transfer Agreement.

h.1.6. compliance with the requirements and quality indicators and deadlines provided for in the current legislation regarding the ombudsman and other channels of relationship with the user: after ninety (90) days from the date of signing of the Initial Transfer Agreement.

i. Traffic monitoring system

Description

This program provides for the conservation / maintenance of all components and equipment that make up this system and its subsystems, ensuring the operation as specified in ANNEX 05 of the CONTRACT.

It consists of the following subsystems:

- i) 1. Traffic sensing system
- i) 2. CCTV traffic monitoring system

Standards

Upon the implementation and / or receipt of the systems and equipment, according to the deadlines defined in Annex 07, all equipment / subsystems listed in item k.1 to item k.2 must fully and simultaneously meet all the requirements established by Annex 05 of CONTRACT, being risk of the CONCESSIONAIRE the sizing and management of personnel, parts, spare parts, stock and whatever else is necessary for the immediate correction of defects, malfunctions or nonconformities.

The CONCESSIONAIRE must have a maintenance management system that must allow, at a minimum, the opening, monitoring and management of work orders open to maintenance teams. It is essential that at least the following information is recorded:

- Date and time of fault identification and opening of the work order;
- Type of defect identified;
- Action required for correction;
- Date and time of completion of maintenance actions, with restoration of operation of the equipment (s).

The CONCESSIONAIRE shall supply ARTESP's systems with information related to equipment maintenance actions, enabling remote and real-time consultation by the JRC.

The CONCESSIONAIRE's availability of equipment maintenance information, and the way it is integrated with ARTESP's systems, must comply fully with the procedures, technologies and interfaces defined by ARTESP.

ARTESP may at any time request that CONCESSIONAIRE feed ARTESP's systems with additional equipment maintenance information, in accordance with procedures and interfaces that are similar to those used by CONCESSIONAIRE.

Description

This program provides for the conservation / maintenance of external lighting systems for toll square

s, scale squares, Military Road Police stations, vehicle seizure yards, clovers and tunnels, walkways, bus stops, highway-level pedestrian crossings. , lighting in the OAEs, stretches of highway that cross urban areas and stretches in mountain ranges. It also provides for the conservation / maintenance of all building lighting and existing light signals in the system.

Indoor and outdoor lighting systems shall provide a lighting standard compatible with specific functions and weather conditions, during the required day or night periods and in accordance with applicable ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standards for street lighting.

Maintenance / upkeep and complementation services for public lighting upon transfer of the REMAINING SYSTEM shall be commenced immediately upon signature of the REMAINING SYSTEM TRANSFER TERM.

It consists of the following subsystems:

- i) .1. Road lighting
- i) .2. Building lighting
- i) .3. Light signaling

Standards

Lighting maintenance / maintenance services are basically as follows:

- replacement of lamps or luminaires;
- replacement of reactors and ignitors;
- replacement of posts;
- replacement of circuit breakers or fuses;
- cleaning of light fixtures; and
- recomposition / complementation of electrical system.

Replacement, repair and cleaning must be performed within a maximum of one (1) week.

These indoor and outdoor lighting systems must offer standard compatible with specific functions and local weather conditions. The illumination level at any point on a surface shall not be less than seventy-five per cent (75%) of the projected level, in accordance with applicable and applicable regulations.

- j. Electrification

Description

This program provides for the maintenance / maintenance of high and low voltage lines, repair and replacement of substations and transformers, repair of generator sets, control panels, replacement of connectors, circuit breakers and fuses, switchboard repairs, battery banks, conservation of lightning protection systems, etc.

It consists of the following subsystems:

- j) 1. High voltage lines
- j) 2. Low voltage lines
- j) 3. Substations and primary cabins.

j) 4 Generators

j) 5. Break systems

Standards

The conservation standard of the high and low voltage lines, substations, transformers, motor generators and UPS systems shall be in accordance with the local utility standard.

2.4. Conservation Reports and Scheduling

2.4.1. Monthly report of the activities developed

All routine maintenance / maintenance services performed by the CONCESSIONAIRE will be subject to daily appointments. These notes must include the highway, the kilometer, the runway, the location (eg central site, road 1, side) and the type of service performed.

For the purpose of rationalization, compilation and future analysis, routine conservation services must be appointed according to the following program:

a Program - pavement

a.1. Subprogram - Flexible Pavement

a.1.1. Activity - Pan, Hole or displacement

a.1.2. Activity - definitive repair with clipping

a.1.3. Activity - dip in encounter with OAE

a.1.4. Activity - small extension dip or repression

a.1.5. Activity - compromised rolling cloth

a.1.6. Activity - Medium compromised rolling cloth

a.1.7. Activity - Crack Sealing

a.1.8. Activity - step between road and shoulder

a.2. Subprogram - Hard Pavement

a.2.1. Activity - pan or hole

a.2.2. Activity - definitive repair with clipping

a.2.3. Activity - dip in encounter with OAE

a.2.4. Activity - joints and cracks

a.2.5. Activity - Broken Edges and / or Slabs

b Program – DOMAIN RANGE

b.1. Subprogram – conservation of plant cover

- b.1.1. Activity - manual or mechanized pruning
 - b.1.2. Activity - weeding
 - b.1.3. Activity - firebreaks
 - b.1.4. Activity – plague removal
 - b.1.5. Activity - Maintenance of trees and shrubs
 - b.1.6. Activity - Cutting and pruning trees and shrubs
 - b.1.7. Activity - Vegetal Coating Failure
 - b.2. Subprogram – cleaning
 - b.2.1. Activity - waste removal
 - b.2.2. Activity - Garbage, Waste, Rubble or Plant Debris
 - b.2.3. Activity - cleaning and sweeping paved areas
 - b.2.4. Activity - cleaning paved central working site
 - b.2.5. Activity - Dead Animals
 - b.2.6. Activity –channels and rivers
 - b.3. Subprogram – erosions
 - b.4. Subprogram – bus stops, monuments and public utilities
 - b.4.1. Activity - Damaged or malfunctioning bus stops, monuments, and utilities
 - b.5. Subprogram – Graffiti
 - b.5.1. Activity - Graffiti
 - b.6. Subprogram – Activity - lateral conformation
 - b.7. Subprogram – sidings - fences, walls, fences and roofs
 - b.7.1. Activity - repair
 - b.7.2. Activity - Replacement (Theft / Wear / Predation)
 - b.7.3. Activity - Removal
 - b.7.4. Activity - Deployment
 - b.7.5. Activity - Painting
- c Program – drainage
 - c.1. Subprogram – platform surface drainage

- c.1.1. Activity - General Cleaning
 - c.1.2. Activity - damaged drainage element
 - c.1.3. Activity - lateral conformation
 - c.1.4. Activity - Completely or partially blocked drainage element
- c.2. Subprogram – surface drainage off platform
 - c.2.1. Activity - General Cleaning
 - c.2.2. Activity - damaged drainage element
 - c.2.3. Activity - Completely or partially blocked drainage element
- c.3. Subprogram – manholes, galleries and drains
 - c.3.1. Activity - General Cleaning
 - c.3.2. Activity - damaged or destroyed drainage element
 - c.3.3. Activity - Completely or partially blocked drainage element
- c.4. Subprogram – captation boxes
 - c.4.1. Activity - General Cleaning
 - c.4.2. Activity - damaged or destroyed drainage element
 - c.4.3. Activity - Completely or partially blocked drainage element
- c.5. Subprogram – tunnel drainage
 - c.5.1. Activity - General Cleaning
 - c.5.2. Activity - Runway water occurrence
- c.6. Subprogram – wildlife passages
 - c.6.1. Activity - General Cleaning
 - c.6.2. Activity - Vegetation Management
 - c.6.3. Activity - Completely or partially blocked drainage element
- c.7. Subprogram – hazardous goods leakage and retention boxes
 - c.7.1. Activity - General Cleaning
 - c.7.2. Activity - Monthly Inspection
 - c.7.3. Activity - transportation of materials with holes
 - c.7.4. Activity - Transportation of cast materials

c.7.5. Activity - Completely or partially blocked drainage element

d Program – road containment device

d.1. Subprogram – flexible devices

d.1.1. Activity - Standardization

d.1.2. Activity - Repair

d.1.3. Activity - replacement (corrosion / theft)

d.1.4. Activity - Removal

d.1.5. Activity - Deployment

d.1.6. Activity - Cleaning

d.1.7. Activity - Relocation

d.1.8. Activity - Painting

d.2. Subprogram – rigid devices

d.2.1. Activity - Standardization

d.2.2. Activity - Cleaning / Painting

d.2.3. Activity - Reconstruction

d.2.4. Activity - Deployment

d.3. Subprogram –anti glare devices

d.3.1. Activity - Standardization

d.3.2. Activity - cleaning / realignment

d.3.3. Activity - repair

d.3.4. Activity - Replacement (Theft / Wear / Predation)

d.3.5. Activity - Removal

d.3.6. Activity - Deployment

d.4. Subprogram - Railing and Balusters

d.4.1. Activity - Cleaning / Painting

d.4.2. Activity - repair

d.4.3. Activity - replenishment (balusters)

d.4.4. Activity - Replacement (DER type by rigid road restraint or equivalent)

- d.4.5. Activity - Deployment
- d.4.6. Activity - Railing Repair / Support / sidewalk with *call box*
- e Program -signaling and auxiliary devices
 - e.1. Subprogram – horizontal signage
 - e.1.1. Activity - repainting or mechanical reapplication
 - e.1.2. Activity - thermoplastic mechanical overcoating or reapplication
 - e.1.3. Activity - Acrylic or emulsified mechanical water repainting or reapplication
 - e.1.4. Activity - Mechanized Removal
 - e.1.5. Activity - manual overcoating or reapplication
 - e.1.6. Activity - thermoplastic manual overcoating or reapplication
 - e.1.7. Activity - manual overcoating or reapplication acrylic or emulsified in water
 - e.1.8. Activity - Cleaning
 - e.2. Subprogram – vertical signage
 - e.2.1. Activity - Cleaning (soil / aerial)
 - e.2.2. Activity - removal (soil / aerial)
 - e.2.3. Activity - Repair (Soil / Aerial)
 - e.2.4. Activity - relocation / installation (ground / aerial)
 - e.2.5. Activity - Foundation
 - e.2.6. Activity - Retroreflectance Measurement
 - e.2.7. Activity - replacement (low retro-reflectance / theft / malfunction) (ground / aerial)
 - e.2.8. Activity - Implementation (ground / aerial)
 - e.3. Subprogram – bounding devices
 - e.3.1. Activity - Cleaning
 - e.3.2. Activity - Reset
 - e.3.3. Activity - Deployment
 - e.3.4. Activity - Removal
 - e.4. Subprogram - plumbing device
 - e.4.1. Activity - Cleaning / Painting

- e.4.2. Activity - Repair
 - e.4.3. Activity - Reset
 - e.4.4. Activity - Deployment
 - e.4.5. Activity - Removal
- e.5. Subprogram – warning signaling devices
- e.6. Subprogram – temporary use device
- e.7. Subprogram – semaphore signaling
 - e.7.1. Activity - Repairs
 - e.7.2. Activity - Substitution
 - e.7.3. Activity - Deployment
- f Structures
 - f.1. Subprogram – bridges, viaducts, tunnels and walkways
 - f.1.1. Activity - cleaning internal drainage
 - f.1.2. Activity - cleaning external drainage
 - f.1.3. Activity - Painting / galvanizing balusters
 - f.1.4. Activity - cleaning / painting of surfaces exposed to traffic
 - f.1.5. Activity - expansion joints
- g Program - operational and support buildings and courtyards
 - g.1. Subprogram - Each operational or support building or yard represents a specific subprogram
 - g.1.1. Activity - each system toll station represents an activity of this subprogram
- h Program – collection control system
 - h.1. Subprogram –collection system
 - h.1.1. Activity - each system toll station represents an activity of this subprogram
- i Program –surveillance control system
 - i.1. Subprogram - General Inspection Post - PGF (road policing module and scale module)
 - i.1.1. Activity - each PGF represents an activity of this subprogram
 - i.2. Subprogram – speed control system (fixed and mobile)

- i.3. Activity - Within this subprogram is not detailed the activitySubprogram – vehicle license reading and decoding system (OCR)
 - i.3.1. Activity - Within this subprogram is not detailed the activity
- j Program – User communication and relationship system
 - j.1. Subprogram – radio system
 - j.1.1. Activity - Within this subprogram is not detailed the activity
 - j.2. Subprogram – commercial telephone system and 0800
 - j.2.1. Activity - Within this subprogram is not detailed the activity
 - j.3. Subprogram – data transmission system
 - j.4. Activity - Within this subprogram is not detailed the activitySubprogram – operational control center
 - j.4.1. Activity - Within this subprogram is not detailed the activity
 - j.5. Subprogram – emergency telephone communication system (call box)
 - j.5.1. Activity - Call Box Repair and Replacement
 - j.5.2. Activity - Cable Repair and Replacement
 - j.5.3. Activity - Control Desk Repair
 - j.5.4. Activity - Telephone Sub-Center Repair
 - j.6. Subprogram – variable message board - PMV (fixed and mobile)
 - j.6.1. Activity - Within this subprogram is not detailed the activity
 - j.7. Subprogram – electronic information exchange system with the USER via data network
 - j.7.1. Activity - Within this subprogram is not detailed the activity
 - j.8. Subprogram – communication system with USER via wireless data network
 - j.8.1. Activity - Within this subprogram is not detailed the activity
 - j.9. Subprogram –ombudsman and other relationship channels with the USER
 - j.9.1. Activity - Within this subprogram is not detailed the activity
- k Program - Traffic Monitoring System
 - k.1. Subprogram – traffic sensing system
 - k.1.1. Activity - each system used for this purpose corresponds to an activity within this subprogram

k.2. Subprogram – CCTV traffic monitoring system

k.2.1. Activity - each system used for this purpose corresponds to an activity within this subprogram

l Program – lighting

l.1. Subprogram – road lighting

l.1.1. Activity - off or malfunctioning

l.2. Subprogram – building lighting

l.2.1. Activity - off or malfunctioning

l.3. Subprogram – light signaling

l.3.1. Activity - Within this subprogram is not detailed the activity

m Program – electrification

m.1. Subprogram - high voltage lines

m.1.1. Activity - Within this subprogram is not detailed the activity

m.2. Subprogram –low voltage lines

m.2.1. Activity - Within this subprogram is not detailed the activity

m.3. Subprogram –substations and primary cabins

m.3.1. Activity - Within this subprogram is not detailed the activity

m.4. Subprogram – motogeradores

m.4.1. Activity - Within this subprogram is not detailed the activity

m.5. Subprogram –*no break* systems

m.5.1. AActivity - Within this subprogram is not detailed the activity

Based on the daily appointments of the services, the CONCESSIONAIRE shall feed SIGECON and, from the system, generate the “monthly report of routine conservation services” and make it digitally available in a system with online access by ARTESP.

The monthly reports of routine conservation services will be formally delivered by the CONCESSIONAIRE to ARTESP, in one (1) latest technology magnetic copy, by the 10th (tenth) business day of the month following the subject of the report.

This system shall be adopted from the end of the PII and P.A. (Initial Suitability Program of the Transferred System) and shall be continuous until the end of the CONTRACT.

Data surveys and reports to enable specific analysis may be requested if the information provided is not satisfactory.

2.4.2. Annual drainage report

Based on the road drainage inventory, the CONCESSIONAIRE shall prepare the “drainage report” and its conservation conditions, including a photographic report of all crossings under the highway roads and roads, which will be formally delivered to ARTESP in a magnetic copy on the most up-to-date technology until May 31 of each year. These activities will commence upon completion of the PII for the EXISTING SYSTEM and upon completion of the P.A. (Initial Suitability Program of the Transferred System) for the REMAINING SYSTEM.

The problems found must be fully solved according to the deadlines established in item 2.3 - Description and standards for the programs - Program “c” - drainage, of this ANNEX.

2.4.3. Annual and Monthly Conservation Schedules

The CONCESSIONAIRE shall prepare an annual and monthly schedule for conservation / routine maintenance services, which shall comply with the same programmatic criteria used in the “monthly report of routine maintenance / maintenance services”.

The annual schedule of the conservation services shall be formally delivered by the CONCESSIONAIRE to ARTESP, through a document filed between the 1st and the 10th of November of each year, in a digital file, the schedule of this service to be performed in the subsequent year. The execution of the services presented in the annual schedule shall be confirmed by monthly schedule, detailed by weeks and days, to be filed with ARTESP in a digital file, between the 1st and the 10th of the months preceding the months of execution.

The annual schedule of conservation / maintenance services must be detailed by highway, program, subprogram and activity, with monthly time intervals.

The monthly schedule of the conservation / maintenance services to be performed must be detailed by highway, sections and dates of execution, always in line with the periods indicated in the annual schedule by activity.

Annual and monthly schedules shall be prepared according to the models defined by ARTESP.

2.4.4. Instability-prone slope / slope monitoring system

The BIDDER, based on the inspection carried out prior to the submission of its bid, shall estimate the quantities related to the implementation of a slope and slope monitoring system prone to instability. Monitoring will consist of instrumentation of slopes and slopes with greater risk of landslides, and the development of an effective monitoring system to detect any problems in a timely manner by the CONCESSIONAIRE, especially after the rains.

An annual report must be submitted to ARTESP with the interpretation of a geologist and geotechnical engineer of the monitoring data.

Any problems detected must be prioritized in the CONCESSIONAIRE's routine and emergency conservation / maintenance programs.

2.5. Inspection

All activities of the CONCESSIONAIRE will be supervised by ARTESP or its technical agent, in the form of the “operational procedure for routine road maintenance inspection - PO.DIN / 041”, or another that will replace it - of ARTESP, in its last revision.

All data collected, generated and updated shall be updated in the digital system SIGECON according to the deadline standards required in the notice

3. SPECIAL CONSERVATION / MAINTENANCE

3.1. Basic Concepts

3.1.1. General provisions

Special conservation / maintenance is the set of works and services necessary for preserving the initial investment and adapting the ROAD SYSTEM to the standards established by ARTESP standards and technical specifications and parameters.

These are, therefore, interventions including adaptations to new technologies, constituting appropriate works and services of greater size or technical complexity required due to the end of the useful life of portions of the road system. These activities and services recompose the useful life of the road component, ensuring compliance with the standards established in the PUBLIC NOTICE.

To this end, the CONCESSIONAIRE will be responsible for all maintenance and maintenance measures regarding:

- (a) periodic surveys of the surface, structural, comfort and safety conditions of the pavements to control the minimum parameters required in the PUBLIC NOTICE;
- (b) dimensioning of the special conservation project;
- (c) studies and projects, in accordance with the requirements of environmental licensing; and
- (d) planning and execution of works and installation.

Each of these steps will be monitored by ARTESP, and the CONCESSIONAIRE shall maintain a permanent consultation and approval scheme, observing the necessary environmental licensing processes with the competent agencies.

Any work can only be started after the delivery of certified executive projects and the presentation of the respective “environmental installation license” or document that proves the negotiations with the environmental agency, in accordance with the legislation in force ”.

EXECUTIVE SPECIAL CONSERVATION PROJECTS and their respective quality certificates shall be submitted to ARTESP pursuant to APPENDIX J.

The identification of services related to special conservation / maintenance will be the responsibility of the CONCESSIONAIRE except those already described in this APPENDIX. During the CONCESSION new recoveries may be dimensioned according to the needs of the special conservation program, including the improvements and new technologies that may be introduced by the CONCESSIONAIRE itself or required by legislation.

Certification will be in accordance with APPENDIX J.

The CONCESSIONAIRE shall submit a BIM Modeling Project Implementation and Development Plan (PD-BIM) in accordance with the terms and deadlines set forth in APPENDIX J.

3.1.2. Investment Schedule Adequacy

The anticipation of the work defined in the current POI or INVESTMENT PLAN, by proposal of the CONCESSIONAIRE, shall be submitted to ARTESP, which shall approve the implementation and the consequent economic-financial rebalancing shall be performed in the ORDINARY REVIEW, or EXTRAORDINARY REVIEW, if that is the case.

In the case of anticipation of duplication works in areas adjacent to investments already in progress, as well as the anticipation of the respective device (s) of that stretch (s) that are (m) essential for the release of the road for safe operation, at the initiative of the CONCESSIONAIRE, these will only depend on the prior consent of ARTESP. In these cases, the CONCESSIONAIRE may start the works immediately after obtaining the prior consent and does not constitute an imbalance event.

In the cases provided for in the above paragraph, the request for prior consent shall be submitted to ARTESP in isolation, separately from any other investment advance or postponement claim, and instructed with the identification of the item (s) in the Physical Schedule and documentation pertinent to the investment (s) to be anticipated, including the respective device (s), if any.

The CONCESSIONAIRE shall provide written justification for any delays in the start and end of the work (and the stages that constitute it, according to the INVESTMENT PLAN), without prejudice to the analysis and validation by ARTESP regarding the merit and application of AD, penalties and restoration of the economic and financial balance due to the delay.

3.1.3. Track Instrumentation

Not applicable to the present case.

3.1.4. Prerequisites for starting and continuing works

The works may only be started and continued to be fully guaranteed in accordance with the terms and conditions of Appendix J.

In the event of revocation or alteration of the status of any of the documents provided for in the APPENDIX, the CONCESSIONAIRE may be notified by the Agency to stop works. In this case, CONCESSIONARIA shall take all measures to timely regularize the documentation and resume the works, under penalty of the penalties provided for in the contract, notice and its attachments.

3.1.5. Prerequisites for receiving works

The works can only be considered fully completed if the CONCESSIONAIRE proves compliance with the requirements set forth in Appendix J.

3.1.6. Functional Projects

Not applicable

3.1.7. Executive Projects

a) General Provisions

EXECUTIVE PROJECTS for the implementation of the works will follow the terms and deadlines set forth in APPENDIX J.

The EXECUTIVE PROJECT shall follow the premises, concepts and eventual caveats of the FUNCTIONAL PROJECT previously approved by ARTESP.

(b) Quality Certification of Executive Projects

The CONCESSIONAIRE shall obtain the certification under the terms and deadlines of APPENDIX J and shall use SISPROJ, from its implementation, to fully register all documentation regarding the processing of EXECUTIVE PROJECTS.

(c) Environmental Licensing

Without prejudice to obtaining the Quality Certificate of the Executive Project, the CONCESSIONAIRE shall submit the EXECUTIVE PROJECTS necessary to obtain the Installation License for the Major Extensions to the competent Environmental Authority, observing the deadlines that must be met in order to be able to the due compliance with milestones (including intermediaries) and deadlines provided for in the POI Physical Executive Schedule approved by ARTESP.

3.2. Description and standards of services

3.2.1. Pavement

Description

The CONCESSIONAIRE shall prepare a program, with detailed studies and executive projects, in accordance with the provisions of its POI and other INVESTMENT PLANS. In this program, the deadlines for the execution of special conservation interventions for the various segments of the ROAD SYSTEM throughout the CONCESSION deadline shall be set to meet the standards and specifications required in the CONTRACT.

EXECUTIVE PROJECTS for the special conservation of Pavements are the responsibility of the CONCESSIONAIRE.

On the date of delivery of the project to ARTESP, the CONCESSIONAIRE's SGP database shall be updated with the new survey values of the surface, structural, comfort and safety conditions of the pavements, as well as any new counts traffic volume, results of complementary geotechnical tests and mechanical properties of the constituent materials of Pavement structures and, finally, with the proposed solutions for special conservation. Any revisions of the projects may be submitted for analysis during the course of the special conservation works, but early enough so that there is sufficient time for ARTESP's analysis before beginning the execution of the service that corresponds to that revision.

The minimum interval between special conservation interventions will be 5 (five) years in the same segment.

At the conclusion of the work of the first special conservation cycle, the pavement, including shoulders and safety roads, as well as the ground or primary lining shall comply with the levels set forth in APPENDIX C and APPENDIX J.

If the CONCESSIONAIRE chooses to implement an alternative solution that justifiably disregards the periodicity defined for special conservation as provided for in ANNEX 21 to the CONTRACT (EVTE), may submit for approval of ARTESP a separate program, without causing economic-financial rebalancing, without prejudice to full compliance with the IQD and Performance Indicators provided for in ANNEX 3 and ANNEX 6 of the CONTRACT.

Standards

Surface Conditions

The surface defect conditions may be evaluated according to the methodologies and procedures adopted by the National Department of Transport Infrastructure - DNIT and DER / SP in the following road rules or others that may replace or change them:

- DNIT 006/2003-PRO - "objective assessment of the surface of flexible and semi-rigid pavements";
- DNIT 062/2004-PRO - "hard Pavement - objective evaluation";
- DNIT 007/2003-PRO - "Survey to assess the surface condition of homogeneous sub-stretch of flexible and semi-rigid pavement roads for pavement management and studies and projects";

- Rigid pavement manual - DNIT 2005 for Portland cement concrete pavements for tolls, scales, special works of art, runways, shoulders, accesses and marginals; and
- USDA TM 5-626 / 1995 - "Unsurfaced Road Maintenance Management" for ground roads or primary lining within the domain range of system highways.

Comfort Conditions

Rolling comfort conditions will be determined by measuring irregularity in all road traffic roads, including hard pavements. For this, the "quotient of irregularity - Q.I." measured by "response type" equipment or "longitudinal profilometers", preferably use laser profilometers.

Reporting of irregularities shall be at least in accordance with the procedures and specifications of the following road rules, or others that may replace or supplement them:

- DNER PRO-159/85 - Restoration project for flexible and semi-rigid pavements, chapters referring to the procedures for the evaluation of irregularities;
- DNER PRO-164/94 - calibration and control of pavement surface irregularity measuring systems (IPR / USP and Maysmeter integrating systems). Calibration sections must be approved by ARTESP;
- DNER ES-173/86 - Level and cross-sectional method for calibrating response type irregularity meter systems and
- DNER PRO-182/94 - measurement of Pavement surface irregularities with IPR / USP and Maysmeter integrating systems.

Deflectometric Conditions

Recoverable deflections shall be determined for single-road highways at every twenty (20) meters of road, ie 40 (forty) at forty (40) meters of road. In the case of dual carriageways, recoverable deflections shall be determined from 40 (forty) to 40 (forty) meters in the heavy traffic road and from 80 (eighty) to 80 (eighty) meters in the other rolling roads.

For the determination of recoverable deflections, Benkelman beam, electronic beam or *Falling Weight Deflectometer* impact deflectometers may be used, and shall comply with the DNIT rules indicated below, or others that may replace or alter them:

DNER ME 024/94 - Pavement - determination of deflections by the Benkelman beam;

- DNER ME 061/94 - Pavement - delineation of the longitudinal influence line of the deformation basin through the Benkelman beam;
- DNER ME 039/94 - Pavement - determination of deflections by Dynaflect;
- DNER PRO 175/94 - Benkelman beam measurement; and
- DNER PRO 273/96 - Determination of deflections using the Falling Weight Deflectometer - FWD Impact Deflectometer.

In addition to the determination of the recoverable deflections in all the above mentioned locations, delineation of the longitudinal influence line of the elastic deformation basin must be performed every four hundred (400) meters of rolling range, in case of *Benkelman* beam use.

When performing the deflectometric survey the temperatures of the asphalt coating layer shall be measured every 60 (sixty) minutes. If a temperature divergence from the reference temperature of 21 ° C is noted, the temperature adjustment factors given in test method DNER ME-024/94 shall be used.

In addition to the deflectometric survey campaign, there must be a rotary sounding campaign on the pavement with a 10-cm diameter “cup saw” type equipment. Surveys must be conducted near highway milestones for location reference, with an average frequency of one survey every 5,000 (5,000) meters of track in the first 5 (five) years of CONCESSION. From the sixth year of CONCESSION onwards, the frequency shall be one poll every 25,000 (25,000) meters of track. Points must be alternated in each campaign. The materials and thicknesses of the cover and base layers must be recognized, and a cumulative record maintained to provide a gradual mapping of existing road network Pavement structures and use of data in studies and projects, as well as in the GSP. .

The procedures for calculating structural reinforcements assume the use of *Benkelman* beams for lifting recoverable deflections. If other equipment is used, it is essential to perform a deflectometric survey with the Benkelman beam, with a minimum length of 5,000 (five thousand) meters to determine the correlation coefficient between the equipment.

Notes:

- The equipment to be used in the deflectometric survey must be checked at the beginning of the work;
- The truck's rear axle weighing certificate used for the *Benkelman* beam or electronic beam survey must be submitted to ARTESP, together with the survey results; and
- In the case of the FWD and the electronic beam, copies of field data acquisition files must be sent to ARTESP in digital media.

Safety conditions

To determine the safety conditions of the pavement, methods and equipment of texture and slip resistance measurements are employed.

For the evaluation of pavement macrotexture, surface scanning equipment (laser technology) capable of acquiring 3D and 2D image data of the road surface with a minimum resolution of one (1) millimeter over a minimum width of four (4) shall be used) meters on track with speeds up to 100 (one hundred) km / h. The minimum interval of measurements shall be two points (inner and outer tracks) per 100 (one hundred) meters of track length. All bearing ranges must be evaluated.

Sand spot tests may be used for possible calibration / confirmation of results obtained with surface scanning equipment.

In addition to pavement macrotexture data, the following track geometry data shall be collected with surface scanning equipment: longitudinal slope (i), superelevation or transverse slope (e), horizontal radius of curvature (R). The same range of 100 (one hundred) meters shall be used in each bearing range.

Based on the macrotexture data and wet road accident rates, the segments for friction coefficient evaluation (minimum 20% (twenty percent) mesh sampling) and at least one segment on each of the running roads shall be defined each of the highways of the ROAD SYSTEM).

For the assessment of the coefficient of friction of Pavement coverings, Grip Tester (or similar) equipment must be used, and for possible calibrations and measurements, the British pendulum type equipment. For the *Grip Tester test*, the water slide shall be at least 0.50 mm.

Grip Tester evaluation segments shall be 100 (one hundred) meters long (individual values determined per 100 (one hundred) meters of evaluation length). It is also recommended to program continuous stretches with a length of not less than one kilometer.

The adhesion values of a pavement, ie the macrotexture and microtexture will be quantified using the indices HS (sand height), VRD (skid resistance value), GN (Grip Number) and IFI (*International Friction Index*).

Rolling noise conditions

For the measurements to be carried out, a popular vehicle representative of the passenger car fleet with mileage below 15,000 (fifteen thousand) kilometers and tires in good condition (new) shall be used.

Surveys must be performed by measuring internal vehicle noise using properly calibrated digital decibel meter equipment.

The vehicle shall maintain the maximum speed regulated for the road segment under study. The windows of the vehicle must be completely closed and the meter positioned on the left shoulder of the driver.

The driver must be careful not to cause any additional noise that may interfere with the measurement, other than that caused by his own driving (steering, shifting, etc.). Other sources that generate internal noise must also be turned off (radio, mobile phones, air conditioning, etc.).

Whenever external elements and / or random events, other than those related to the surface condition of the Pavement, interfere with noise measurements, they must be disregarded and redone so that a faithful picture of the average condition of hearing comfort can be obtained / safety in free flowing conditions due to tire-pavement interaction.

The procedure described above may be changed or updated by the publication of new standards and instructions by ARTESP.

Required Minimum Parameters

The component roads of the ROAD SYSTEM (including shoulders, safety roads, fringes and junction devices to the limits of the domain road) shall be analyzed for their surface conditions, comfort, deformability, remaining life and safety. The pavement acceptability parameters for these conditions shall be fully met during the CONCESSION TERM after the first scheduled intervention. Some of them are:

- (a) surface conditions
- (b) For a minimum evaluation length of 200 (two hundred) meters and a maximum of 1,000 (one thousand) meters, per rolling range, according to the summary tables of pavement performance parameters; and
- (c) comfort conditions.

For extension of minimum evaluation of 200 (two hundred) meters and maximum of 1,000 (thousand) meters, per bearing range, according to table.

The value to be considered will be the average of the individual values (of homogeneous segments with a minimum length of 200 (two hundred) meters and a maximum of 1000 (thousand) meters) of irregularity measurement in the kilometer, with no individual values greater than 15% (fifteen per cent) of the average. If there are individual values greater than 15% (fifteen percent) of the average, the CONCESSIONAIRE will act on the stretches to fit the kilometer in these standards.

(d) deformability conditions and remaining life

- recoverable deflections

The characteristic recoverable deflections (D_c), for a minimum evaluation range of 200 (two hundred) meters and a maximum of 1,000 (thousand) meters, per bearing range, shall be represented by the sum of the arithmetic mean of the individual deflections measured with the sample standard deviation. .

The CONCESSIONAIRE shall use the HDM-4 program for the establishment of remaining life, using models developed specifically for performance curves or another program that ARTESP may indicate.

Remaining Life

The condition to be required for the remaining life at the end of the system highway CONCESSION period shall be:

$VR > 5$ (five) years

In which:

VR - Remaining life of each of the homogeneous segments, maximum 1000 (thousand) meters

Remaining life of a Pavement means the minimum period of time that the intervention performed provides structural and functional parameters above the maximum values previously established.

The assessment of VR shall be made on all tracks of each track, in accordance with current ARTESP, DER / SP and DNIT standards, and using established performance models such as HDM- 4

(e) security conditions / macrotexture

- macrotexture

The individual values and mean per kilometer of parameter HS shall be evaluated. The measurement shall be performed on the inner and outer wheel tracks, on all rolling tracks, with a maximum spacing of 100 (one hundred) meters.

(f) Sand Height (HS), measured with surface scanning equipment (laser) and / or sandblot test, according to Tables summary of pavement performance parameters.

- coefficient of friction

(g) The individual values of the measured segments (100 (one hundred) meters) and the average per kilometer of the VRD index and GN index shall be evaluated, according to Summary table of pavement performance parameters:

- value of skid resistance measured by testing with the British pendulum and / or Grip Tester equipment (preferred) as per tables in item f.
- value of skid resistance measured by Grip Tester equipment, according to the tables in item f.

In addition to the individual control of macrotexture measured by the sandblot test and the coefficient of friction obtained by the skid resistance test as measured by the British pendulum or by any of the equipment covered by ASTM E-1960 (2001), the International Friction Index (IFI) must be determined.

The recommended minimum IFI values for new and restored highways are as follows (individual values determined per 100 (one hundred) meters and average per kilometer) as provided in the applicable APPENDICES.

(h) rolling noise conditions

- criterion for all existing roads, up to the fourth year of CONCESSION:

During measurement on highway roads, neither segment may present noise levels predominantly higher than 77 (seventy-seven) dBA (decibel) for more than 10 (ten) uninterrupted seconds of measurement (50% (fifty percent)). or more of the individual values measured in the period shall be less than 77 (seventy-seven) dBA).

In the rolling ranges, the average value per homogeneous segment of evaluation (maximum length of 1,000 (thousand) meters) cannot be higher than the value of 77 (seventy-seven) dBA.

- criteria for the roads implemented by the CONCESSIONAIRE and for all existing roads from the 5th year of CONCESSION onwards:

During measurement in the roadway roads, neither segment may present noise levels predominantly greater than 75 (seventy five) dBA (decibel) for more than 10 (ten) uninterrupted seconds of measurement (50% (fifty percent)). or more of the individual values measured in the period shall be less than 75 (seventy-five) dBA).

In the rolling ranges, the average value per homogeneous segment of evaluation

(maximum length of 1,000 (thousand) meters) may not exceed 75 (seventy-five) dBA.

During measurement on the roadside, neither segment may present noise levels predominantly below 70 (seventy) dBA (decibel) for more than 5 (five) uninterrupted seconds of measurement (50% (fifty percent) or more of measured in the period shall exceed 70 (seventy) dBA).

On the side of the road, the average value per homogeneous segment of evaluation (maximum length of 1,000 (thousand) meters) cannot be lower than the value of 70 (seventy) dBA.

All roadway roads must be evaluated.

(i) Summary tables of pavement performance parameters:

Pavement Performance Parameters - Branches and Devices		
Parameters	Validity: From 3rd year of grant onwards Valid	The whole system of branches and devices on the date of delivery of the concession.
Maximum percentage of area with pans and breakdown	0%	0%
Percentage of cracked area, class 3	FC-3 ≤ 2%	FC-3 ≤ 2%
Percentage of cracked area, class 2	FC-2 ≤ 15%	FC-2 ≤ 15%
Wheel Track Sinking (F)	F ≤ 7 mm	F ≤ 7 mm
Maximum difference between the raceway and the shoulder	12 mm	12 mm
Maximum number of patches in good condition (low severity level)	20 patches. Over 20 patches over a length of 1,000 meters and over 4 patches over a length of 100 meters, continuous surface intervention is essential.	20 patches. Over 20 patches over a length of 1,000 meters and over 4 patches over a length of 100 meters, continuous surface intervention is essential.
Maximum number of patches in poor condition (high severity level)	0	0
Global Severity Index (1)	IGG ≤ 30	IGG ≤ 30
Pavement condition index (2)	ICP ≥ 75	ICP ≥ 75
Unsurfaced Road Condition Index (3)	URCI ≥ 75	URCI ≥ 75
Irregularity Quotient (Q.I) or International Roughness Index (IRI) (4)	Q.I. ≤ 45 counts / km or IRI ≤ 3.46 m / km for paved roads	Q.I. ≤ 45 counts / km or IRI ≤ 3.46 m / km for paved roads
	Q.I. ≤ 78 counts / km or IRI ≤ 6 m / km on land or primary coating	Q.I. ≤ 78 counts / km or IRI ≤ 6 m / km on land or primary coating
Recoverable Deflections Characteristics (Dc)	Allowable deflection (Dadm) as a function of requesting traffic (estimated N-number until next scheduled intervention)	Allowable deflection (Dadm) as a function of requesting traffic (estimated N-number until next scheduled intervention)
Macro Texture, Sand Height (HS)	0,6mm < HS < 1,2 mm	0,6mm < HS < 1,2 mm
Skid Resistance Value	VRD > 55	VRD > 55
International Friction Index (IFI)	IFI ≥ 0.22 new road works IFI ≥ 0.15 for restored pavements	IFI ≥ 0.22 new road works IFI ≥ 0.15 for restored pavements
* Surface and comfort conditions for minimum 200m (two hundred meters) and maximum 1000m (one thousand meters) evaluation length, per bearing range (1) - Obtained by survey through procedures DNIT 006 / 2003- PRO - "Objective assessment of the surface of flexible and semi-rigid pavements" (2) - Portland cement concrete paving		

Annex 06 – Piracicaba – Panorama lot

(3) - Unpaved roads

(4) - The value to be considered shall be the average of the individual irregularity measurement values in the homogeneous segment of a maximum of 1000 (thousand meters), and there may not be individual values greater than 15% (fifteen percent) of the average. If there are individual values greater than 15% (fifteen percent) of the average, the CONCESSIONAIRE will act on the stretches to fit the kilometer in these standards.

Annex 06 – Piracicaba – Panorama lot

Pavement Performance Parameters - Arterial Highways (SPs, SPis, SPAs) and Marginal Roads						
Parameters	Existing System	Remaining System	Road System			The whole system on the date of grant delivery
	Validity: Delivery of PIL, Delivery of PIC and 1st to 3rd Concession.	Validity: Delivery of P.A.I. (Initial Suitability Program of the Transferred System), and 1st to 3rd Concession.	Validity: From 4th Year of Concession to 15th Year of Concession	Validity: From 16th to 25th Year of Concession	Validity: From the 26th year of Concession	
Maximum percentage of area with pans and breakdown						0%
Percentage of cracked area, class 3			FC-3 ≤ 2 %	FC-3 ≤ 2 %	FC-3 ≤ 2 %	FC-3 ≤ 2 %
Percentage of cracked area, class 2			FC-2 ≤ 15%	FC-2 ≤ 15%	FC-2 ≤ 15%	FC-2 ≤ 15%
Wheel Track Sinking (F)			F ≤ 7mm	F ≤ 7mm	F ≤ 7mm	F ≤ 7mm
Maximum difference between the raceway and the shoulder			12 mm	12 mm	12 mm	12 mm
Maximum number of patches in good condition (low severity level)			20 patches. Over 20 patches in a length of 1,000 meters and over 4 patches in a length of 100 meters it is essential to perform continuous surface intervention.	20 patches. Over 20 patches in a length of 1,000 meters and over 4 patches in a length of 100 meters it is essential to perform continuous surface intervention.	20 patches. Over 20 patches in a length of 1,000 meters and over 4 patches in a length of 100 meters it is essential to perform continuous surface intervention.	20 patches. Over 20 patches in a length of 1,000 meters and over 4 patches in a length of 100 meters it is essential to perform continuous surface intervention.
Maximum number of patches in poor condition (high severity level)			0	0	0	0
Global Severity Index (1)	IGG ≤40	IGG ≤30	IGG ≤30	IGG ≤30	IGG ≤30	IGG ≤30
Pavement Condition Index (2)			ICP ≥ 75	ICP ≥ 75	ICP ≥ 75	ICP ≥ 75
Unsurfaced Road Condition Index (3)	URCI ≥ 75	URCI ≥ 75	URCI ≥ 75	URCI ≥ 75	URCI ≥ 75	URCI ≥ 75
Irregularity Quotient (Q.I.) or International Roughness (IRI) (4)	Q.I. ≤45 counts / km or IRI ≤ 3.46 m / km for paved roads	Q.I. ≤35 counts / km or IRI ≤ 2.69 m / km for paved roads	Q.I. ≤35 counts / km or IRI ≤ 2.69 m / km for paved roads	Q.I. ≤32 counts / km or IRI ≤ 2.46 m / km for paved roads	Q.I. ≤26 counts / km or IRI ≤ 2.00 m / km for paved roads	Q.I. ≤26 counts / km or IRI ≤ 2.00 m / km for paved roads
	Q.I. ≤78 counts / km or IRI ≤ 6m / km on the ground or primary coating	Q.I. ≤78 counts / km or IRI ≤ 6m / km on the ground or primary coating	Q.I. ≤78 counts / km or IRI ≤ 6m / km on the ground or primary coating	Q.I. ≤78 counts / km or IRI ≤ 6m / km on the ground or primary coating	Q.I. ≤78 counts / km or IRI ≤ 6m / km on the ground or primary coating	Q.I. ≤78 counts / km or IRI ≤ 6m / km on the ground or primary coating
Recoverable Deflections Features (Dc)	Allowable Deflection (Dadm) as a function of requesting traffic (estimated N number until next scheduled intervention)	Allowable Deflection (Dadm) as a function of requesting traffic (estimated N number until next scheduled intervention)	Allowable Deflection (Dadm) as a function of requesting traffic (estimated N number until next scheduled intervention)	Allowable Deflection (Dadm) as a function of requesting traffic (estimated N number until next scheduled intervention)	Allowable Deflection (Dadm) as a function of requesting traffic (estimated N number until next scheduled intervention)	Allowable Deflection (Dadm) as a function of requesting traffic (estimated N number until next scheduled intervention)
Macro Texture, Sand Height (HS)			0,6mm sHS ≤ 1,2mm	0,6mm sHS ≤ 1,2mm	0,6mm sHS ≤ 1,2mm	0,6mm sHS ≤ 1,2mm
Skid Resistance Value			VRD ≥55	VRD ≥55	VRD ≥55	VRD ≥55
International Index of friction: IFI (International Friction Index)			IFI ≥0.22 new road works IFI ≥0.15 for restored pavements	IFI ≥0.22 new road works IFI ≥0.15 for restored pavements	IFI ≥0.22 new road works IFI ≥0.15 for restored pavements	IFI ≥0.22 new road works IFI ≥0.15 for restored pavements
<p>* Surface and comfort conditions for minimum 200m (two hundred meters) and maximum 1000m (one thousand meters) evaluation length, per bearing range</p> <p>(1) - Obtained by survey through procedures DNIT 006 / 2003- PRO - "Objective assessment of the surface of flexible and semi-rigid pavements" or specification adopted by ARTESP</p> <p>(2) - Por the ground cement concrete paving</p> <p>(3) - Unpaved roads</p> <p>(4) - The value to be considered shall be the average of the individual irregularity measurement values in the homogeneous segment of a maximum of 1000 (thousand meters), and there may not be individual values greater than 15% (fifteen percent) of the average. If there are individual values greater than 15% (fifteen percent) of the average, the CONCESSIONAIRE will act on the stretches to fit the kilometer in these standards.</p>						

Periodicity of control of minimum required parameters	1st to 20th year	21st to 30th year
Deflectometric Control	Yearly	Yearly
Surface Inventory	Yearly	Semiannual
Control of comfort conditions	Yearly	Semiannual
Safety conditions control	Yearly	Yearly
Control of rolling noise conditions	Yearly	Yearly
Pavement monitoring reports must be submitted no later than 45 days after field surveys. This deadline must also be obeyed for updating the data in the SGP. Delivery dates for annual or semi-annual reports will be based on the anniversary date of the contract. Failure to surrender these will result in a fine as per Attachment 11 - PENALTIES.		

The roads implemented by the CONCESSIONAIRE (duplications, additional and marginal roads) must meet the same acceptability standards of the section in which they will be inserted, respecting the limits defined for that period, as shown in the table presented in this item.

Note: There are specific parameters for the section that is part of the so-called “area of influence” (approach and departure areas) of traffic counters (SATs) and dynamic scales (SISPESMOV). Such parameters are contained in the technical specification. **ET-DOP-GOE-C-TRA-RNS-01/02 - Metodologia para Obtenção dos Parâmetros de Tráfego** da ARTESP (or another that may replace or change it) and, for all purposes, shall override the obligations set forth in this item.

(j) Performance curves

Based on the periodic surveys required to control the minimum parameters, a document containing the pavement performance curves defined for the remaining years of the Concession shall be submitted to ARTESP.

Control of minimum required parameters

The CONCESSIONAIRE SHALL present the periodicity of control of the minimum required parameters proposed for the term of the Concession, but must obey from the 1st (first) to the 30th (twentieth) year:

- deflectometric control: annual
- surface inventory: every 6 (six) months
- control of comfort conditions: every 6 (six) months
- control of safety conditions (laser scanning and grip tester): annual
- Control of rolling noise conditions: annual.

Pavement monitoring reports shall be submitted no later than 45 (forty-five) days after the

Anexo 06 – Lotação de Serviços Públicos
Field survey. This deadline must also be obeyed for updating the data in the SGP. Delivery dates for annual or semi-annual reports will be based on the anniversary date of the contract.

The CONCESSIONAIRE will present the reports, in digital form, according to the standard established by ARTESP and will feed this data into the Pavement management system.

Failure to comply with the above indices will result in the CONCESSIONAIRE being fined according to the stipulations of this Notice and the CONCESSIONAIRE is required to correct the sections in which the pavement indexes are not in accordance with the required, within the term established by ARTESP. . Within 15 (fifteen) days after this period, the CONCESSIONAIRE shall carry out a new survey to verify the Pavement Indices and, if there is no understanding, a sanctioning administrative proceeding will be initiated.

In order to verify the compliance of the services with the required minimum parameters of ARTESP, it will request, at the CONCESSIONAIRE's expense, regular or extraordinary audits in order to ascertain any disparities in compliance with the established.

Methodologies to be applied (Pavement)

The premises to be applied in special pavement conservation are:

- compliance with the minimum required parameters indicated throughout the Concession period;
- the minimum interval between scheduled interventions will be 5 (five) years;
- The surface of the Pavement must be covered with bituminous layer at every intervention (except for concrete Pavements). Trunking devices up to the limit of the road jurisdiction are part of the pavement surface, as well as marginals, shoulders, scales, tolls, bus stops, SAU Post etc; and
- sections that eventually underwent restoration and / or recent implementation by DER / SP (last 3 (three) years, in relation to the date of signing of the contract), will be exempt from the obligation to be included in the first cycle special conservation of pavement.

The procedures and tests mentioned may be replaced by other equivalents during the term of the Concession, according to the most updated ARTESP specifications at the time.

For pavement restoration services, special attention must be paid to the surface drainage of the runways, especially by the interaction with the concrete barriers. Pavement drains shall be part of the special pavement conservation project, and shall include their application location, cross section and hydraulic calculation memory. Pavement drains shall be installed on the extensions of the highways where they have not been built, in a manner compatible with the progress of pavement recovery, conservation or maintenance services. In the sections where they have already been implemented, the CONCESSIONAIRE shall assess their sufficiency and if they are deficient, replace or resize them. Particular attention must also be paid to the slope (transverse and longitudinal) of the track, which may be corrected and appropriate to meet the minimum standards provided for in current regulations.

Description

The CONCESSIONAIRE shall comply with the current technical specification for CONTROL OF SPECIAL ART WORKS “ET-00.000.000-0-C21 / 002” established by the CONTRACTING PARTY, for special conservation of OAEs and walkways, during all CONCESSION time, and the costs of the recoveries of these works are fully assumed by the CONCESSIONAIRE.

The CONCESSIONAIRE shall present a monitoring and management program, within the first six (6) months from the signing of the INITIAL TRANSFER CONTRACT, to apply it throughout the CONCESSION TERM, all special works of art and walkways located within the DOMAIN RANGE limits, ensuring the maintenance and adequacy of the safety and functionality required along the lines of the technical specification for maintenance and management of OAEs “control of special works of art - ET-00.000.000-0-C21 / 002 - Rev. 1” Of ARTESP / SUPERVISION. Failure to deliver this program will incur a penalty as per Exhibit 11 to the CONTRACT.

In the first two years of CONCESSION, the CONCESSIONAIRE shall perform the adjustment of horizontal pattern for the OAEs that do not meet the minimum standard of road widths, refuge and shoulders provided in item 5.3.9 - Road Recovery of IP Project instruction. -DE-F00 / 001 from DER / SP or another that will replace or change it.

In this adaptation, the implementation / adjustment of widths of rolling roads and shoulders (width equal to or greater than the existing road and in compliance with the current rules, as well as other contractual provisions), as well as pedestrian (longitudinal and transverse) pavement must be considered, meeting the dimension provided for in the technical standards in force at the time of implementation, whether in urban or not.

In places where there is a forecast / need for implementation of bicycle paths, the OAEs must also consider in their pattern the continuity of this bicycle path, meeting the technical standards in force at the time of implementation.

The CONCESSIONAIRE shall comply with current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standards for structural projects, including recoveries and / or reinforcements and / or extensions.

The BIDDER, based on inspection and design investigation of works of art, shall estimate the quantities of priority services relating to the recovery of special works of art, chains and walkways, as well as point out arrangements for such services in the monitoring and management plan. for all of them.

The CONCESSIONAIRE shall implement SISOAES. The system must provide web access. The CONCESSIONAIRE shall provide username / password pairs for use by ARTESP. The implementation shall be performed by the 1st (first) year of CONCESSION and shall follow the rules provided for other electronic management systems.

The monitoring and management program must be available and up to date. Your database must contain, soon after performing the recovery of OAE and catwalk, photos of recognition of the pathologies and their therapies performed and dated with methodology and materials employed.

The monitoring and management program shall also present the updated conditions with classification of structural, functional and durability aspects of the SOEs and walkways, with electronic files containing the reports of the special inspections and projects that were used, including the projects that may come, altering original geometric records such as flares, extensions, rigid fender deployments or OAE replacements and walkways.

The database shall be updated with additional information on implantation and enlargement works, with geotechnical data and mechanical properties of the materials constituting the structures of these works, accidents and information on the passage of special loads.

The CONCESSIONAIRE shall always present complete electronic files of inspections of all OAEs with photos, including recoveries, identifying services and dates.

The recovery of special artworks and walkways in compliance with the OAEs recovery monitoring, management and scheduling plan shall address the services required to conform to the technical specification ratings in force for “SPECIAL ART CONTROL - ET-00,000. 000-0-C21 / 002” established by ARTESP, described below:

(a) Pavement

The recovery of existing pavements over the OAEs may be included in the global highway pavement recovery program, provided that the structural damage does not indicate a compromise in the safety of the work.

(b) surface drainage

Provision must be made for the placement or replacement of horns to ensure rainwater drainage of the runway, as well as drainage upstream of the OAEs, with adequate water descents and concrete channels.

(c) support equipment and expansion joints

The CONCESSIONAIRE shall ensure respect for the design parameters falling on these parts by replacing the expansion joints whenever they are ruptured and / or crushed and / or blocked and the supporting apparatus broken and / or crushed and / or distorted and relocated, if they are outside the project positions. These elements must comply with ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) 's beacon parameters.

Repairs and replacements to guarantee these parameters must comply with the monitoring and management plan.

(d) concrete and / or steel and / or mixed structures

The CONCESSIONAIRE shall identify all the problems presented by the concrete and / or steel and / or mixed structures, respecting the current technical specification for “SPECIAL ART CONTROL - ET-00.000.000-0-C21 / 002” established by the CONTRACTING PARTY. applying it to both OAEs, ACOs and walkways, quantifying the services needed for their recovery, which include, among others:

- treatment of cracks;
- combat the action of chlorides and carbonation state;
- treatment of exposed and / or corrosive reinforcement;
- treatment of disaggregated or disaggregated concrete;
- Rehabilitation of the work to acceptable levels of deformation and displacement, according to ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standards;
- internal (in lost caskets) and external (in trays and accesses) drainage;
- insufficient horizontal road patterns requiring widening due to lack of shoulders or additional road due to OAE platform being obsolete for track traffic levels;

- Insufficient minimum height between the maximum flood quota and the underside of the superstructure beams or slab, being design instruction IP-DE-C00 / 001 - "Special artwork structure design" of DER / SP (or standard technique that alters or replaces it), requiring conformation of the riverbed flow section and / or greide elevation for suitability.
 - full walkway lighting in accordance with the specifications of this Annex and Annex 07 (for both implantation and conservation);
 - Adequacy of walkways for people with disabilities and / or reduced mobility according to NBR 9050, or any other that may alter, complement or replace it;
 - Adequacy of pedestrian crossing OAEs according to NBR 9050, or any other that may alter, complement or replace it;
 - head of the SOEs;
 - elimination of steps by the meetings of the OAEs;
 - implementation of rigid concrete fenders;
 - structural reinforcement;
 - maintenance restoration;
 - demolition;
 - replacement;
 - sludge retrofitting;
 - machining of the OAE;
 - OAE instrumentation;
 - protective paintings; and
- access to OAEs for inspections / evaluations

(a) Slopes of OAEs meetings

The CONCESSIONAIRE shall recompose the slopes of the eroded meetings of the OAEs, installing the drainage devices upstream of the OAE and leading the low-energy downstream slope to a location that no longer interferes with them. It must also protect slopes with concrete coatings and / or containment works that prevent erosion and / or make use of containment works where technically necessary.

In the case of bridges, the CONCESSIONAIRE shall identify the maximum flood water level to intervene with works that guarantee the stability and durability of the meeting slopes.

The timing of the adjustments shall be in accordance with the classification given in OAE inspections.

(b) road containment devices

The services related to safety devices in the OAEs, including the restoration of existing railings and the implementation of wheelchairs (current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standard), must be included in the recovery services.

All OAEs longer than or equal to 5.0 (five) meters shall have rigid or equivalent road restraint devices,

The rigid road restraint device shall be in place as a wheelchair and providing protection to pedestrians in case of walking OAEs.

At the exit of the OAEs, the rigid type road restraint devices shall have continuity with the flexible type road restraint devices (approximation of OAEs), and the transition shall comply with the rules in force at the time of the intervention.

In existing OAEs, their implementation requires structural analysis to be provided.

Its implementation must be expected within two (2) years.

(c) type of OAE type train for recoveries, reinforcements and / or extensions.

The CONCESSIONAIRE shall analyze the OAE class and its needs.

The choice of the most suitable type train for the OAE is because the OAE requires recovery, reinforcement and / or widening; thus the maintenance of the class is analyzed or if it must be elevated.

To define the type train to be adopted, the existing work must be analyzed in specific inspection with survey of the typology of the work, the original train and its pathologies, focusing mainly on the structural aspects. Thus, we can have two cases:

Work without structural pathologies:

- recovery

In this case, the work will be subject to restoration and repair, keeping the type train of the work.

- enlargement

In the case of enlargement, the executive project shall contemplate sizing the entire work to the TB-45 tf, or the current type train in the applicable current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standard, NBR 7,188 and its revisions and amendments.

In this case, at the time of adaptation, the adequacy of the horizontal pattern must also be provided, including the installation of shoulders (width equal to or greater than the existing runway and in compliance with current rules, as well as other contractual provisions), as well as paving (longitudinal and pedestrian) meeting the technical standards in force at the time of implementation.

In places where there is a forecast / need to implement bicycle roads, the new OAEs must include in their pattern to the continuation of this bicycle road, meeting the technical standards in force at the time of implementation.

If this project results in the need for reinforcement of the existing structure and if it does not present structural pathologies, the possibility of defining two executive phases opens up.

The first phase with execution of the new part of the work, as projected, and submitting the existing part of the work only repair recovery.

Anexo 06 – Lote Piracicaba and the second phase of reinforcement of the existing structure may be performed when structural anomalies arise in it. Forma 7-1 de 196

The executive project must clearly show in detail these two phases and the constraints of the second phase.

Works with structural pathologies

If structural pathology leads to the need for theoretical verifications to prove the need for interventions that alter the shape and / or frame of structural elements, the class of work shall be raised to TB 45 tf, or to the type train specified in the applicable standard of ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) , both for recovery and enlargement.

In this case, at the time of adaptation, the adequacy of the horizontal pattern must also be provided, including the installation of shoulders (width equal to or greater than the existing runway and in compliance with current rules, as well as other contractual provisions), as well as paving (longitudinal and for pedestrian meeting the technical standards in force at the time of implantation meeting the technical standards in force at the time of implantation.

In places where there is a forecast / need to implement bicycle roads, the new OAEs must include in their pattern to the continuation of this bicycle road, meeting the technical standards in force at the time of implementation.

(d) compliance with accessibility and full citizenship standards for people with disabilities and / or reduced mobility.

It is the responsibility of CONCESSIONAIRE to comply with accessibility and full citizenship rules for people with disabilities and / or reduced mobility in OAEs and pedestrian walkways.

In addition to the ramps, the catwalks must also be provided with stairs to minimize the walking of USERS who do not have difficulty walking.

The adequacy of existing works must be planned for up to 2 (two) years

(e) walkway protection for highways USER protection

All existing walkways on the highways must have galvanized metal roofing.

The roofing must be installed in the main beams on the highway, extending its ends at 3.50 (three and a half) meters.

If the ramps are at a distance of less than or equal to 3.50 (three and a half) meters, they must also be covered.

The roofing must be durable, effective and resistant to vandalismo.

On double-road highways, under existing walkways, a longitudinal blocking system (chain-link fence, "hedge" fence or high concrete barrier) shall be installed, with a minimum length of 300 (three hundred) meters on each side of the walkway. If the walkway is up to 500 (five hundred) meters from another device that enables the uneven crossing, the longitudinal locking system must be extended to ensure the pedestrian's safe driving for the use of both devices.

(f) walkway lighting for pedestrian safety

All existing walkways must be illuminated to their full extent.

The lighting must be implemented in the roofing and / or in a specific post and / or post for lighting the highway that is next to the walkway.

Its implementation must be planned for up to 2 (two) years.

Lighting shall be implemented in such a way as to enable the view of the opposite end of the walkway by the USER, as specified in ANNEX 7 and in accordance with current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standards.

(g) deployment of flexible road containment devices in OAEs

All OAEs shorter than 5 (five) meters may have flexible road containment devices.

These devices are the same as those provided for in the approach of OAEs, so they will continue over the OAE. Their fixation cannot compromise the durability of the OAE reinforcement.

Its implementation must be planned for up to 2 (two) years.

The OAE pillars shall be protected by road restraint devices, to an extent and distance that there is no danger of the pillar being impacted by vehicle. The types of road restraint devices in each case shall be defined in a project to be submitted to ARTESP in accordance with the obligations set forth in ANNEX 7. The rules in force at the time of their implementation shall be observed.

(h) implementation of rigid road containment device in OAEs

Rigid road containment devices will be implemented in the OAEs according to the rules in force at the time of implementation.

The pillars of all OAEs of the ROAD SYSTEM, which are within the free zone, shall have guards with road restraint devices, to an extent and distance that there is no danger of the pillar being impacted by vehicle, as established by current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standards.

Its implementation must be planned for up to 2 (two) years.

(i) adequacy of vertical pattern from the SOEs

Existing SOEs shall have their appropriate vertical patterns at 5.50 (five and a half) meters. If the OAE does not meet this requirement, provision must be made for OAE elevation or greide downgrade or both.

For the other SOEs, non-adequacy requires a statement. The implantation must be planned for up to 2 (two) years.

(j) OAE technical recognition inspections

The BIDDER shall perform OAE inspections with specialists, identifying the interventions necessary to comply with the good ratings of ET-00.000.000-0-C21 / 002 revision 1, (control of special works of art), regarding structural aspects, functionality and durability and current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) standards. Representative photos of the pathological manifestations and other anomalies of the works must be presented.

The CONCESSIONAIRE shall provide special interventions and conservation in the OAEs and walkways for the entire Concession time. Forma 73 de 116

The BIDDER shall submit a recovery schedule identifying all SOEs and walkways, focusing on the classifications according to said ET (technical specification), under structural, functional and durability aspects with the discrimination of pathological manifestations and intervention services necessary for the adequacy of the conditions. construction.

(k) transit of cargo vehicle combinations - CVCs in the OAEs

The CONCESSIONAIRE MUST have knowledge of the universe of the OAEs and their traffic that operate in them to assess their needs and commitments, assessing their condition and adapting them to the traffic of cargo vehicles on the highway. Thus, all active structural systems, pathologies and CVCs must be identified through research and updated technical inspections in the OAEs, structural calculation checks and interventions for the use of CVCs.

It is not fitting to sample some works on a stretch of highway.

Special conservation must ensure compatibility with CVCs, respecting the safety standards standardized for the OAEs, preventing damage to them.

(l) transposition of special overweight in OAEs

The CONCESSIONAIRE MUST have knowledge of the universe of the OAEs and the respective traffic they operate in them, to assess their needs and commitments, assessing their condition and adapting them to the traffic of highway cargo vehicles. Thus, all structural systems, pathologies and PBTs acting through research and updated technical inspections in the OAEs, structural calculation checks and interventions for the use of special overweight loads must be identified.

It is not fitting to sample some works on a stretch of highway.

Special conservation must ensure compatibility between special overweight loads, respecting the standardized safety coefficients for OAEs, preventing damage to them.

(m) pipelines for affluent collectors in the OAEs

The CONCESSIONAIRE shall maintain the effluent collection system supported by the OAEs superstructures, in adequate operating conditions.

(n) adequacy of the horizontal pattern of the EEOs

Existing SOEs must have their appropriate horizontal patterns. Must the OAE fail to meet this requirement, provision must be made for the adequacy of the OAE's horizontal pattern.

The adequacy must be for up to 2 (two) years.

3.2.3. Road containment devices

Description

They are elements or systems designed to reduce the severity of accidents, to prevent vehicles, pedestrians or both from entering dangerous areas or locations, as well as to reduce noise levels. They are: metal fenders, rigid concrete fenders, anti-glare devices, impact dampening devices, noise barriers and others.

The CONCESSIONAIRE shall estimate the amount of necessary and sufficient services related to the implementation of the above mentioned road restraint devices.

The CONCESSIONAIRE, over the term of the CONCESSION, shall assess the need and implement these road containment devices in other locations.

The design, implementation, replacement, restoration, restoration and reinforcement of road restraint devices shall comply with the relevant technical standards in force at the time of the intervention.

Special care with surface drainage must be taken when rigid road restraint devices are installed (for example: concrete barriers).

In stretches of works, the site must be protected with road restraint devices implemented in accordance with the technical standards in force at the time of the intervention.

3.2.4. Signaling and auxiliary devices

Description

It is the set of traffic signs and other elements placed on the public road, in order to ensure their proper use, enabling better traffic flow and greater safety of vehicles and pedestrians that circulate there.

Traffic signs are elements of road signs that use signs, road markings, light control equipment, auxiliary devices, whistles and gestures, intended solely to direct or direct the traffic of vehicles and pedestrians.

Auxiliary devices, for the purpose of this Concession, are the elements applied to or near the road pavement in order to make the road operation safer. These are bounding devices (studs, studs, beacons, bounding cylinders and delineating), channeling devices (prisms and segregators), warning signaling devices (obstacle markers, hazard markers and alignment markers) and devices. temporary use (cones, cylinders, moving beacons, drums, zebra tape, easels, fixed and movable barriers, siding, railing, complementary light elements, flags, banners).

Execution Standards

Defined standards must be met throughout the GRANT TERM.

(a) Horizontal signage, boundary devices and channeling devices

Horizontal signage, boundary devices and plumbing devices shall comply with the standards and specifications in force in the Brazilian Traffic Signal Manual - CONTRAN, the Road Signal Manual - DER / SP and the relevant and applicable ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) technical standards, in addition to institutional signaling manual and other technical specifications of ARTESP.

In sections on pavement restoration works, immediately after resurfacing the sub sections of the construction site and prior to the release to traffic of these sub sections, provisional horizontal signage appropriate to safety standards shall be maintained, according to the DER / SP road signs manual, or another that replaces or complements. According to the provisions of Article 88 of the Brazilian Traffic Code, after 30 (thirty) days of resurfacing, the sub-sections of the work shall be marked with the definitive horizontal signage - road painting and reflective tacks, following the contained in the EXECUTIVE PROJECT of site signage.

(b) vertical (ground and aerial) signaling and warning signaling devices

Vertical signaling and warning signaling devices shall comply with the standards and specifications in force in the Brazilian Traffic Signal Manual - CONTRAN, the Road Signal Manual - DER / SP, the Institutional Signaling Manual and other ARTESP technical specifications and standards. relevant and current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) techniques.

(c) Temporary Use Devices

The use of temporary use devices is mainly aimed at complementing the signaling of works and emergency traffic diversions. Due to its importance in guaranteeing traffic safety, its use must comply

with the norms, standards and specifications in force in the Brazilian Traffic Signal Manual - Contran, in the Road Signal Manual - DER / SP, ARTESP technical specifications and in Relevant and current ABNT (BRAZILIAN ASSOCIATION OF TECHNICAL STANDARDS) . The preparation and presentation of executive projects for signaling works and traffic diversions shall be in accordance with APPENDIX J.

For stretches in works, the signage of works (vertical signage, warning signage devices and temporary use devices) must be implemented in accordance with the Brazilian traffic sign manual - Contran, in the road sign manual - DER / SP, ARTESP technical specifications and the Brazilian traffic code - CTB.

For routine conservation works, the presentation of a certified executive project shall not be obligatory, and the CONCESSIONAIRE shall submit to ARTESP's analysis relevant documentation up to thirty (30) days prior to the commencement of the work.

3.2.5. Slope Monitoring

The CONCESSIONAIRE shall perform technical inspections and deliver a consolidated technical report every 2 years, beginning in the second year of CONCESSION and contemplating all cutting and embankment slopes higher than 2 meters.

In this inspection, the physical characteristics of the slope such as geometry, soil characteristics, drainage etc. shall be identified. The inspection report shall contain for each of the highway slopes:

- Slope geometric characteristics sheet with photographic records;
- Design of the slope in plan and elevation, including the type of vegetation cover, drainage elements and eventual containment (gabions etc.);
- Estimated slope safety factor for slopes with non-standard geometry: 1: 1.5 (H: V) for cuts or 1: 1 (H: V) for landfills; or for slopes with a history of sliding; or even for slopes that have characteristics of instability (presence of cracks in the massif, small or large erosions, etc.).
- From the surveys, a schedule of interventions on slopes that are outside the normative standards or that pose a risk or danger to users must be established;
- The information obtained from the surveys must be registered and updated in the relevant digital management systems provided for in the CONCESSION (SIR) as well as in the Digital Model of the Highway System (MDSR) and SISGIS, as required by ARTESP.

For this obligation, at each monitoring, an amount must be provided for sounding and testing, including at least: 10 (ten) percussion soundings; 5 (five) inspection wells with sample collection; 5 (five) auger drilling with sample collection; 10 (ten) mixed or rotary soundings; 10 (ten) tests of direct shear or shear failure in the triaxial equipment.

In case the slope monitoring report indicates the need for mitigating measures, such as: vegetation cover, drainage installation, use of geomants, among others, as pointed out in the routine preservation obligations, the adjustments shall be made by the Concessionaire. , at your expense. If the slope monitoring report indicates the proven inadequacy of mitigation measures through routine conservation obligations and the slope monitoring report indicates the need for containment or retraining works, any works that may be required to adequately contain or prevent the mitigation and the backslashing will be rebalanced to the exact extent of the proven imbalance. The rules set forth in the CONTRACT FOR ORDINARY REVIEW shall be followed, except in cases where the stability problem results from design and construction failures and / or defects arising from other risks attributed to the CONCESSIONAIRE. or maintenance vices attributed to the CONCESSIONAIRE. In the latter case, the works must take place at the CONCESSIONAIRE's expense.

3.3. Inspection

(a) General provisions

Each special conservation/maintenance service will be the object of a specific project, which must be submitted for ARTESP's approval. Página 76 de 116

The CONCESSIONAIRE shall establish a program of inspection, monitoring of execution, technological control and quality of services. The costs of developing and implementing the inspection program will be borne by the CONCESSIONAIRE.

The CONCESSIONAIRE shall justify, in writing, any delays in the beginning and end of the work, even if there is a delay in complying with intermediate milestones presented in the current INVESTMENT PLAN, without prejudice to the analysis and validation by ARTESP of the merits.

The inspectorate will conduct acceptance surveys of the services performed by the CONCESSIONAIRE in recovering, reinforcing, modifying and or replacing OAEs, as well as inspecting their management.

In case of divergence of compliance with required parameters ARTESP will request, at the CONCESSIONAIRE's expense, regular or extraordinary audits, including tests provided for in the current technical specification for "SPECIAL ART CONTROL - ET-00.000.000-0-C21 / 002" Established by ARTESP (or ARTESP technical standard that amends or replaces it), to complement data for assessments of the work's status, in order to determine any disparities in compliance with the established.

(b) Quality Certification of Works

The CONCESSIONAIRE shall obtain a Works Quality Certificate for all Special Conservation works provided for in the CONCESSION, pursuant to the terms and conditions of APPENDIX J.

(c) Construction Quality Control Management

The CONCESSIONAIRE shall implement the operationalize an Integrated Digital System for Technological Control and Quality of Works Management (SISQUALI), under the terms and deadlines of APPENDIX J.

The quality control information must be fed into the system, concurrently with the progress of the works.

(d) Follow-up of the works using BIM Technology

The CONCESSIONAIRE shall enter information regarding the monitoring of works in an appropriate BIM model, under the terms and deadlines contained in APPENDIX J.

(e) Conclusion

Once approved the POI and the respective Physical Executive Schedules by ARTESP, the dates for completion of each service / investment item must be met by the CONCESSIONAIRE. Failure by the CONCESSIONAIRE to comply with the Physical-Executive Schedule, or delay in the fulfillment of these dates, stages, segments and milestones will subject the CONCESSIONAIRE to the penalties provided for in the NOTICE, the CONTRACT and its ANNEXES. The CONCESSIONAIRE shall issue Completion Notification, pursuant to the terms and deadlines set forth in APPENDIX J.

The CONCESSIONAIRE shall provide *As Built* documentation for all works provided for in the CONCESSION, pursuant to the terms and conditions of APPENDIX J.

4. EMERGENCY CONSERVATION / MAINTENANCE

4.1. Basic concepts

Emergency conservation / maintenance is defined as the service or work required to repair, replace, rebuild or restore sections or structures of the highway that have been sectioned, obstructed or damaged by an extraordinary event of public calamity, causing partial or partial interruption. total road traffic.

Such an event could be a landslide, a landslide, flood, domain fire, a major road accident, a special artwork malfunction etc.

The conservation / maintenance standards stated in this item will apply to all elements and devices located within the DOMAIN RANGE limits, including marginal roads, device loops, bike roads, and others.

The need for presentation of executive projects for this item will be at ARTESP's discretion. Must the Agency determine the need for the submission of executive projects for these items, the standards to be followed will be the same as those set out in APPENDIX J, except where ARTESP expressly authorizes the waiver of one or more contractual obligations.

4.2. Procedures

In the event of an emergency event, the CONCESSIONAIRE shall primarily:

- Install the appropriate traffic signs in place according to the DER / SP signaling manual or other manuals that may be adopted by ARTESP (in force at the time of the occurrence);
- When there is a need to implement traffic diversion, it must be properly signaled in its entirety according to the DER / SP signaling manual or other manuals that may be adopted by ARTESP (in force at the time of the occurrence);
- immediately mobilize resources for the necessary corrective action;
- report the event immediately to ARTESP; and
- In case of immediate technical actions in OAE, OAC and walkways, the current technical specification for “SPECIAL ART CONTROL - ET-00.000.000-0-C21 / 002” established by ARTESP shall be observed.

4.3. Inspection

Emergency conservation / maintenance services shall be the subject of specific reports by the CONCESSIONAIRE and shall contain at least the following:

- the precise location of the emergency event (highway, kilometer, road, municipality);
- date and time of the event;
- the type of emergency occurrence (barrier drop or cut slope, flood);
- the type of interdiction (full, partial, shoulder, roundabout);
- the emergency measures adopted (signage of the place, detours executed, including map, sketch of the detour route, resources mobilized, etc.);
- preliminary assessment of the causes of the event;

• preliminary planning for damage correction, including the expected date for the restoration of normal road traffic;

- future programming within routine or special conservation programs; and
- photographic report of emergency event, detours and signs etc.

This emergency report shall be submitted to ARTESP no later than 24 (twenty-four) hours after the event occurs, electronically, and shall be updated weekly until the release of the total or partial ban on traffic, with the remaining services, accompanied by special or routine conservation, as appropriate.

5. CORRESPONDING ENVIRONMENTAL, HEALTH AND SAFETY SERVICES

5.1. Initial program

The CONCESSIONAIRE, as soon as it takes over the administration of the ROAD SYSTEM, shall present a detailed supplementary survey containing the diagnosis of the aspects and impacts of the ROAD SYSTEM environmental liabilities, mitigation and environmental compensation measures (Federal Law No. 9,985 of July 18, 2000 and (NATIONAL ENVIRONMENT COUNCIL) Resolution 371/2006 or others that may change, supplement or replace them), TCRAs or similar, resulting from environmental licensing processes or road construction works, not yet fully (partially).

The CONCESSIONAIRE shall, together with the detailed supplementary survey, submit to ARTESP initial inspection reports indicating the type of environmental liability and all its associated environmental impacts / damages. The necessary measures to correct the environmental liabilities identified in the detailed supplementary survey and in the initial survey reports shall be made by the CONCESSIONAIRE at its expense.

The maximum term of recovery and / or compliance with liabilities is that established in the licensing processes, the legislation and the determination of the competent environmental agencies, which may not exceed five (5) years. It will also have to be presented a detailed schedule, containing all the measures and recovery steps to be implemented of all environmental liabilities presented in ANNEX 2 and in the complementary survey, as provided in ANNEX 18 to the CONTRACT.

The CONCESSIONAIRE shall recover at least twenty per cent (20%) of the total liabilities each year of CONCESSION, and at least fifty per cent (50%) of these shall be environmental liabilities that present the potential for serious risks to the system.

Environmental non-conformities identified after the detailed supplementary survey will not constitute environmental liabilities and will follow recovery rites and deadlines according to the Environmental Performance Assessment (ADA) or methodology that replaces it.

All liability relating to the mitigation of environmental liabilities and / or environmental compensation (Federal Law No. 9,985, of July 18, 2000 and CONAMA (National Environment Council) Resolution 371/2006 or others that may change, supplement or replace them), existing and / or generated throughout the CONCESSION TERM, as well as the implementation and execution of all environmental programs of the operation stage, shall be the responsibility of the CONCESSIONAIRE, which shall perform at its expense the necessary activities.

The CONCESSIONAIRE will be responsible for the implementation and costing of all studies, construction and adaptation of structures for wildlife passages already provided and available at EVTE.

Annually, the CONCESSIONAIRE shall carry out, annually and through the ROAD SYSTEM, studies on the identification of wildlife trampling hotspots and the implementation of road kill mitigation measures. If a hotspots not defined in EVTE are identified, the studies carried out by the CONCESSIONAIRE will be submitted to ARTESP's approval, through its insertion in SISDEMANDA for processing in ORDINARY or EXTRAORDINARY REVIEWS, as the case may be. In conjunction with the studies, the CONCESSIONAIRE shall submit projects and their budget, indicating the costs required for implementation, operation and conservation of this Expansion, pointing to the exact measure of the eventual imbalance of the financial economic balance of the CONCESSION AGREEMENT.

For this issue, the methodology of IBAMA (Brazilian Institute of Environment and Renewable Natural Resources) Normative Instruction, Number 13/2013 may be used. These *hotspot* surveys must take into account the results of the run-over fauna survey as requested by CETESB (DD.141 / 2018 / I of CETESB). The annual period refers to the need to cover all seasonal cycles.

In all *hotspots* throughout the road system, educational signs with images of the animals occurring in the surrounding environment must be in place. The signs must be approved by the responsible areas of the Contractor. The studies, designs and costs of any changes in the geometry and current works of the existing runways, as well as the implementation of special works of art, wildlife passages, etc., to ensure the gene flow of fauna and flora will also be the sole responsibility of the CONCESSIONAIRE. The fauna passages to be implemented must consider in addition to the hotspots, the type, size and degree of threat of the fauna that occurs in the region. Arboreal species (such as primates) must be provided with air tickets. Wildlife passages (lower or upper) must be deployed in conjunction with steering fences. Fences must follow DNIT Standard 077/2006 / ES - "Hedge or screen for wildlife protection". The fences must have a buried part (aiming to prevent the passage of the excavating fauna), screen with a minimum height of 2 meters above the ground, smaller opening mesh near the surface (avoiding the passage of smaller animals) and drivers. in the extremities. Technological alternatives of guiding fences may be used, as long as previously approved by CETESB.

Guiding fences must be at least 200 m long on each side of the wildlife passage on both roads of the highway. In fencing projects must be considered the occurrence of watercourses and fragments of native vegetation in order to connect them in the landscape. In the case of interface of fences with access to neighboring properties, provision must be made for cattle guard

Annually, the CONCESSIONAIRE shall carry out, annually and throughout the ROAD SYSTEM, studies to identify the trampling of domestic fauna and the implementation of mitigation measures for trampling. At critical points in rural areas mitigation measures must include the implementation of fences, gates, donkeys and cattle passes and the owners' awareness of responsible ownership. The CONCESSIONAIRE shall annually develop educational and awareness campaigns with USERS, collaborators and providers and bordering on the need to safeguard animal life.

All waterproofed areas, already deactivated or that may be deactivated as stretches of track, access loops, access to third parties (determined by the GRANTING AUTHORITY) etc., must be removed and recovered by the CONCESSIONAIRE, which will bear all the costs arising. The recovery of these areas must reach at least the depth of the layer with draining material, and then level with the soil and finalize with the recomposition of the vegetation cover. The CONCESSIONAIRE shall conduct a survey of the pre-existing areas and present it to the GRANTING AUTHORITY within 24 months after the signing of the INITIAL TRANSFER TERM. Areas that are later deactivated must be removed within 06 months or until the completion of the respective works or other services schedule, except in cases where the stretches continue to be used.

Within 24 (twenty four) months from the signing of the INITIAL TRANSFER CONTRACT, the CONCESSIONAIRE shall implement an Integrated Management System, including an Environmental Management System in accordance with the requirements and guidelines of ISO 14.001 and 14.004, and a Health and Safety System. Occupational Safety, according to NBR ISO 45.001. Within this period, the Environmental Management System and the Occupational Health and Safety System must be 100% (one hundred percent) operational and able to be certified, and the hiring of the certifying company is proven.

Environmental and Occupational Health and Safety Management Systems must include in their scope service providers and suppliers that perform activities in the Road System, even if the CONCESSIONAIRE's subcontractors and / or partners or partners do not fall within the scope of the Management System. Environmental and Occupational Health and Safety System.

Within 30 (thirty) months from the signing of the INITIAL TRANSFER CONTRACT, the CONCESSIONAIRE shall obtain the ISO 14.001 and 45.001 certificates.

Regarding the services corresponding to the Environment:

- ARTESP will assist, when requested, with the understanding with the competent agencies in matters related to environmental licensing and other approvals and authorizations that may be necessary;
- ARTESP will evaluate: a) the mandatory environmental audit report, carried out at least annually in the environmental management system (EMS) and in the CONCESSIONAIRE's occupational health and safety system. The contracting of the mandatory environmental audit and its respective costs are attributions of the CONCESSIONAIRE; and b) the mandatory external environmental audit report, carried out at least every six months in the first 3 (three) years and annually within the remaining term of the concession, referring to the obligations contained in item 0– b.6 to b.14 of this ANNEX. The contracting of the obligatory external environmental audit and its respective costs are attributions of the CONCESSIONAIRE; and c) monthly the environmental performance of the CONCESSIONAIRE through the ADA - Environmental Performance Assessment or methodology that replaces it; and
- ARTESP will notify the CONCESSIONAIRE about the fulfillment of any recommendations provided for in the reports, under penalty of penalty provided for in ANNEX 11.

In addition to the obligations provided for in this APPENDIX and applicable law, the CONCESSIONAIRE shall provide:

a.1. To prepare and submit to ARTESP in the form and frequency in which it has:

- Full copy of all environmental licenses and permits, including their technical advice, and other documents as may be requested by the CONTRACTING PARTY;
- Copy of all notifications of environmental and administrative violations and fines arising from these violations
- Copy of all notifications of occupational health and safety and administrative violations and fines arising from these violations;
- Annual Health, Safety and Environmental Performance Assessment Report - RADA, structured based on ISO 14.031 and 45.001;
- Copy of Management System implementation / renewal Certificates based on ISO 14.001 and ISO 45.001;
- External environmental audit report showing compliance with the requirements of the IFC Performance Standards of January 1, 2012, every six months for the first 3 (three) years and annually for the remainder of the CONCESSION;
- Copy of civil inquiry and / or civil action; and
- Annual inventory of greenhouse gas emissions and proof of neutralization of emissions from the ROAD SYSTEM operating services in accordance with Annex 5.

a.2. to make available the reports and information provided for in the previous sub-item electronically, in real time and unrestricted access to ARTESP.

a.3. to give immediate notice: (i) of any environmental event that may hinder or prevent the timely and timely fulfillment of contractual obligations and that may constitute cause for intervention in the CONCESSIONAIRE, expiration of the CONCESSION or termination of the CONTRACT; and (ii) any situation that corresponds to environmental facts that materially alter the normal development of the CONCESSION's services or exploitation, providing, in writing and within the minimum necessary period, a detailed report on these facts, including, if applicable,

Anexo 06 – Lote Piracicaba – Contribution of technicians or specialized entities, external to the CONCESSIONAIRE, with the measures taken or ongoing to overcome or remedy the facts referred to. Página 87 de 116

b) In the performance of the services:

b 1) to maintain, throughout the CONCESSION term, Adequate Service conditions and methodology that ensure environmental preservation and avoid environmental impacts for all services under its responsibility, and it is also their responsibility to mitigate environmental and / or passive impacts. survey provided for in Annex 2, without prejudice to the risk allocation contractually provided for.

b 2) to prepare all environmental studies and obtain and maintain all permits (LP, LI and LO) and environmental permits, grants etc. necessary for the continued operation of the ROAD SYSTEM. To obtain the mentioned environmental licenses and authorizations, the CONCESSIONAIRE shall comply with the deadlines provided for in the applicable legislation. Any and all supplementary requests from the environmental licensing agencies must be fulfilled within 30 (thirty) days. Alteration of this deadline must be authorized by the environmental agencies and / or by ARTESP.

b 3) to bear all costs related to the studies and licensing / authorization fees under its responsibility, implementing all the necessary measures and investments to meet the requirements, within the deadlines and values established by the competent bodies and ARTESP.

b4) to elaborate and implement an environmental and health and safety management plan of the works (for any work in the system), with measures to avoid environmental impacts during their execution. Environmental supervision must be part of the management plan. Monthly reports of the works environmental management plan must be presented or at shorter intervals, depending on the environmental attributes of the intervention areas.

b5) to submit to ARTESP all landscaping projects to be implemented in the system. In preparing these projects, native and regional plant species must be prioritized, and road safety standards must be observed in projects within the free zone.

b6) to meet the criteria and requirements defined by the Environmental Performance Assessment (ADA), or a methodology that may replace it.

b7) to ensure compliance with the requirements set forth in the IFC Performance Standards of 1 January 2012 listed below available in the *Data Room*:

- Performance Standard 1: Risk and Socio-Environmental Impact Assessment and Management
- Performance Standard 2: Working Conditions and Employment
- Performance Standard 3: Resource Efficiency and Pollution Prevention
- Performance Standard 4: Community Health and Safety
- Performance Standard 5: Land Acquisition and Involuntary Resettlement
- Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Performance Standard 7: Indigenous Peoples
- Performance Standard 8: Cultural Heritage

The CONCESSION's conformity assessment, both in relation to Brazilian law and in relation to ARTESP's contractual requirements, demonstrated compatibility with most of the requirements of the Performance Standards mentioned above, but there are occasional gaps that must be remedied by the CONCESSIONAIRE and evidenced to ARTESP, through the External Environmental Audit Reports, within the limits of the following specific obligations:

It will be up to the CONCESSIONAIRE, within two (2) months from the INITIAL TRANSFER CONTRACT, to meet the following requirements of PD1, which will be later integrated, as applicable, to the environmental management system (EMS):

- Definition of the future organizational structure of the Concessionaire's Socio-environmental area;
- Definition of the main social and environmental goals to be adopted;
- Establishment of the Socio-Environmental Policy;
- Conceptual Design of the Management System (management programs to be adopted, guarantee procedures);
- Stakeholder Engagement Plan and definition of public report disclosure procedures;
- Schedule of detailing of procedures and records of management programs;

Presentation of procedure for environmental impact assessment of capacity improvement and extension works not subject to licensing (scope of PII and P.A. I. (Initial Suitability Program of the Transferred System) services. This procedure must include the following activities:

- o Location and general characterization of the area of interest and the intervention works;

Mapping of land use and land cover at an appropriate scale for the improvement work, including Permanent Preservation Areas - APP, watercourses and population bordering the stretch of work;

- o Identification and assessment of social and environmental impacts arising from activities to be performed;

- o Identification of mitigation measures to be implemented;

the Technical Report consolidating the information, accompanied by photographic record of the area of interest; and

- Schedule of training and implementation of the Environmental Management System (EMS) in order to achieve its operation within 2 (two) years from the Initial Transfer Agreement.

c1) to submit to ARTESP semi-annual follow-up reports during the first 3 (three) years of the CONTRACT and annual reports after this period, showing that all projects developed during the CONCESSION, as well as the operation and conservation activities of the system, are in progress to comply with the requirements of Brazilian law and the IFC Performance Standards (version 1 January 2012), within the limits of the obligations specified in paragraphs b.6 to b.14. To this end, the CONCESSIONAIRE shall contract at its expense independent and independent external auditors to monitor and measure the effectiveness of the Concessionaire's Socio-Environmental Management Programs required by the CONTRACT, compliance with legal, regulatory and contractual obligations;

c2) to report annually to the Affected Communities, addressing aspects of the Concessionaire's Action Plan to meet the Performance Standards, as well as other key socio-environmental indicators of the Project;

c3) to develop, implement and maintain a Human Resources Policy consistent with paragraphs 8 and 9 of Performance Standard 2 whose content in addition to that required by Brazilian law and applicable to Lot Piracicaba-Panorama consists of establishing formal guidelines and implementing (i) the training and qualification of the workforce, including outsourced workers and (ii) mechanisms for consultation and complaint of workers, including outsourced workers, duly disclosed and guaranteeing wide access and anonymity;

c4) to develop and implement a security code for security officials (own or outsourced) that is compliant with Performance Standard 4 (paragraphs 12 to 14) and with the guidelines set forth in United Nations documents "Code of Conduct for Law Enforcement Officials "(UN Resolution 34/169 of 17 December 1979) in the " Basic Principles on the Use of Force and Firearms by Law Enforcement Officials "(adopted by the Eighth Congress of the United Nations Crime Prevention and Treatment of Offenders), the "Guiding Principles for the Effective Enforcement of the Code of Conduct for Law Enforcement Officials" (UN Resolution 1989/61 of 24 May 1989) and the "Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment" (adopted by the United Nations General Assembly at its X L Session, held in New York on December 10, 1984 and promulgated by Decree No. 40 of February 15, 1991)";

c5) In the event of any need to conduct reallocation processes of residences, trades or any other irregular occupation of the ROAD DOMAIN RANGE, submit the following information:

- Registration of occupations with socioeconomic profile;
- Definition of compensation and / or assistance measures;
- Proof of creation of a direct and permanent communication channel with the occupation representative to be relocated from the domain;
- Descriptive report of the follow-up actions of the process of relocation of the range and execution of the indemnity and / or assistance measures initially agreed;

Descriptive report on the situation of those affected after completion of the relocation process and termination of compensation and / or assistance measures.

d1) to present, by the end of the 1st year of the Concession, Study of Occurrence of Critical Habitats in the area under influence of the Highways under study, according to the guidelines of the Guidance Notes arranged between items 63 and 97 of IFC PD6;

d2) In case the study of item b.12 concludes that Critical Habitats have occurred, present a Biodiversity Action Plan, in the case of new impacts (new "footprints") due to capacity expansion works. The objective will be to demonstrate that the activities of the Concession will not cause net loss and that there will also be net gains for the threatened or severely threatened species identified, as provided for in paragraphs 16 to 19 of IFC PD6;

d3) to present a complementary impact assessment study on ecosystem services in accordance with PD6 (Guidance Notes 135 to 142), which may be carried out in conjunction with the environmental and social impact assessment studies provided for in the licensing of works provided in the Investment Plan.

(d) on system operation,

Anexo 06 – Lote Piracicaba 1) To apply for license to operate the ROAD SYSTEM, according to the procedure to be determined by the environmental agency. The CONCESSIONAIRE will bear all costs related to this requirement, as well as those related to the implementation of the necessary measures and investments to meet the requirements of the competent agencies.

d2) to manage potential risks during the operation of the ROAD SYSTEM. To this end, you must develop a Risk Analysis Study in advance to identify, analyze and evaluate the risks involved, knowing the different types of adverse events that may occur, as well as their associated consequences, which may cause harm to people. (employees, users, borderline, providers, road operators, etc.), assets (private and public) and the environment.

This step, prior to risk management, called risk analysis and assessment, must include at least:

- hazard identification (accidents that may occur);
- estimation of the frequency of occurrence of hazards (accidents);
- estimation of the potential consequences of potential accidents and estimation of the different levels of risk (a combination of the frequency of occurrence and the different severity levels resulting from the consequences); and hazard considerations or existing control systems / measures and any recommendations to be implemented for risk reduction or control.

It is recommended that the Preliminary Hazards Analysis (PHA) technique be used for the development of this activity, which is a technique widely used in Risk Analysis Studies (EARs). In the identification of hazards, the possibility of accidents that have the potential to paralyze the operation, even partially (limited time), of material damage to public or third party equipment, facilities or property, damage to physical integrity must be considered. employees, traffic operators or third parties and environmental impacts (acute or chronic), including accidental events that cause water, air and / or soil pollution.

The events must consider, among others, unwanted situations on the highway and in operational and administrative facilities such as:

- traffic accidents;
- accidents involving dangerous products;
- spills or leaks of products on water bodies;
- extreme weather events (fog, heavy rain, flood, gusts, etc.)
- landslide / landslide / fall of barriers;
- Soil and groundwater contamination;
- explosions;
- Fires.

The final report of the Risk Analysis Study must be submitted to ARTESP within 12 (twelve) months from the signing of the Initial Transfer Term, including at least the following scope:

- Introduction and objective;
- Description of facilities, equipment and activities;

- Results, conclusions and recommendations;
- Action Plan and implementation schedule of risk mitigation measures; and
- Responsible technical staff.

Based on the results of the risk analysis and assessment, the Thematic Programs and Plans must be prepared, such as the PGR for the transport of dangerous products, the User Safety Plan, the

Accident Reduction Program - PRA, the Road Safety Communication Program, the Road Safety Management System among others, and the respective Emergency Action Plans, as the case may be, such as the PAE for hazardous goods accidents, Action Plan, in which responsibilities, guidelines and information must be defined, aiming at the adoption of technical and administrative procedures, structured to provide fast and efficient responses in emergency situations.

e1) to develop, approve in the appropriate agency and implement the Risk Management Program (PGR) and Emergency Action Plan (PAE) for the transportation of hazardous products, in accordance with current environmental legislation (currently SMA Resolution 70, of 11 June 2018 and Executive Decision numr 70/2016 / C, of April 12, 2016), for the entire system in operation, bearing all the costs necessary for the implementation of said plan. The CONCESSIONAIRE will also be responsible for the revision of the existing PGR / PAE, being responsible for the implementation of mitigation measures, such as measures to reduce the frequency of accidents and their social and environmental consequences, stretch containment systems. critical, among others resulting from the studies and / or requested by CETESB. In cases in which the need for expropriation of additional areas for the implementation of these measures is verified, the CONCESSIONAIRE shall send to ARTESP subsidies (studies, documents and justifications) to support the expropriation process.

e2) to comply with the provisions contained in the legislation in force and the license conditions related to noise prevention and mitigation measures resulting from the operation of the system and / or the performance of services / works; In the event of environmental problems caused by noises harmful to communities bordering the system granted, the CONCESSIONAIRE shall bear all costs related to surveys and specific studies of noise levels required by the competent bodies or the CONTRACTING PARTY. The CONCESSIONAIRE will also be obliged to take all the measures established by the mentioned specific studies, at its expense and within the deadlines required by the competent agencies and ARTESP, depending on the size of the inconveniences brought to the affected communities;

e3) to conduct proactively periodic surveys to detect environmental and occupational health and safety nonconformities in the DOMAIN RANGE and correct them promptly, complying with contractual and legal requirements.

e4) to submit within 24 (twenty-four) months from the signing of the INITIAL TRANSFER TERM, the Fire Action Plan including:

* • Mapping of fire risk areas along the highways, based on land use and occupation characteristics and occurrence history, and other supplementary information to identify points with high potential for fire occurrence, as well as high vulnerability within and around the CONCESSION domain, such as Conservation Units, significant forest fragments, plantations (eucalyptus and sugar cane, for example), presence of communities bordering the highway, etc.). This mapping must contribute to assist the CONCESSIONAIRE in prioritizing fire prevention and

- The establishment of procedures that allow the CONCESSIONAIRE to decrease the response time between firing and the start of combat and increase the proportion of attendance in relation to the total of fires started;

e5) to know, promote, comply with and enforce legal and normative determinations related to occupational health and safety, as well as technical rules, ARTESP procedures and road safety for all workers, contractors, subcontractors or outsourced workers that perform activities in the System. Road, including training and all accident prevention measures, implementation of collective protective equipment (EPCs), provision and guarantee of the use of personal protective equipment (PPE), provision of adequate and sanitary sanitary facilities, adequate areas and shelters for food and rest, adequate means of transport, emergency preparedness, etc.

e6) to ensure that noise levels and pollutant concentration in toll booths and system installations are in accordance with the standards set out in the relevant legislation.

e7) to notify the competent bodies and ARTESP of the occurrence of environmental damage caused by third parties in the ROAD SYSTEM, as well as take all legal measures to eliminate them;

e8) to record all outbreaks of fire (probable origin, size, etc.) occurring in the domain and bordering range, as well as the running over and destination of all domestic and wild animals, in accordance with DD 141/2018 / I of CETESB or subsequent legislation throughout the Concession period.

e9) to send live captured domestic animals to specialized partner / partner institutions in order to receive treatments (feeding, zoonosis control), according to the type of animal. An incident report or equivalent identifying the animal and the owner must be drawn up in order to form a register of seized animals and their owners;

e10) to promote and / or participate in government environmental awareness programs regarding outbreaks of fire and running over fauna on the highways. In addition, the CONCESSIONAIRE shall indicate and register in SISGIS and keep up-to-date registry, existing institutions around the ROAD SYSTEM to be used as support for the destination of captured / trampled wildlife / domestic fauna.

(f) system conservation,

f1) to conserve and restore, throughout the CONCESSION term, the ecosystems in the domain range, including preserving and highlighting the scenic landscapes existing in the system;

f2) to implant the vegetation cover in the whole domain where there is no vegetation cover, except for paved areas and areas with rocky outcrops and altered rocks, prioritizing areas susceptible to erosive processes. Locations with poor soils must be subject to appropriate techniques, including fertilization and specific corrections, and technologies available on the market for such situations. When it is not possible to perform the vegetal covering, the CONCESSIONAIRE shall prove the situation by means of a Technical Report signed by a duly qualified professional, as well as to indicate to the CONTRACTING PARTY additional soil protection actions in order to avoid the risk of erosion, in order to avoid erosion and to comply with the provisions of items 7.3.1 of section 7.3.2 of NBR 11682 or other standard that may replace it;

f3) to recover the clean and out-of-range areas within the domain and other support areas within 30 (thirty) days after their use and / or deactivation;

f4) to recover all non-conformities and degraded areas within the terms established in the CONTRACT or at most within fifteen (15) days. In case of need for a longer period for recovery, it must be officially requested from the CONTRACTING PARTY, without prejudice to the analysis and validation by ARTESP of the merit;

f5) to implement and maintain properly the fauna transposition structures or wildlife protection measures in critical locations, resulting from technical studies originated from roadkill records and survey of the surrounding native fauna. All fauna passage structures shall be monitored every four months by succeeding cameras or more advanced technologies and by footprints installed inside and outside the passages, with a minimum sampling effort of 6 (six) days, in order to evaluate efficiency and need for adjustments, in order to evaluate its efficiency and need for adjustments. During the period of the monitoring of the passages must be intensified the monitoring of the trampling of fauna on the road around the evaluated passage (including the area along the length of the driving fences), also aiming to evaluate the efficiency of the measures to reduce occurrences in the highway operation. During the period of the monitoring of the passages must be intensified the monitoring of the trampling of fauna on the road around the evaluated passage (including the area along the length of the driving fences), also aiming to evaluate the efficiency of the measures to reduce occurrences in the highway operation;

f6) to remove solid residues and construction residues that exist in the domain and that come from operation or road construction activities, along the full length of the highways, as provided in CONTRACT, to an appropriate location, as understood in the law. in force. Recycling programs must be prioritized. The CONCESSIONAIRE will be required to inspect the surroundings of the DOMAIN RANGE, in order to avoid the deposition of solid waste and debris from the activities of third parties around the domain. In places of frequent irregular disposal of waste, the CONCESSIONAIRE shall act with the City Hall and / or bordering to the installation of appropriate dumpsters or containers, the inclusion of path in the public waste collection and also conducting awareness campaigns with the borderline.

f7) to remove common solid waste from operating facilities, as set forth in the CONTRACT, to an appropriate location, as understood in accordance with applicable law. Priority programs for generation reduction, reuse and recycling must be prioritized;

f8) to remove residues from cleaning, sweeping, drainage and cutting, natural drainage, among other drainage elements to a suitable location, as understood in the legislation in force.

f9) to manage the generation and disposal of Pavement mill waste, which may be put on hold in the domain, provided that it is stored in an environmentally appropriate manner, for a maximum of ninety (90) days, for reuse and recycling, on-site or forwarding to asphalt recycling plants. At the end of this period, they must be allocated according to the legislation in force. It is recommended that the milled material be covered (tarpaulin for example) to minimize the incidence of rain and sunlight to reduce the potential for leaching and solubilization of organic compounds from asphalt to soil and groundwater.

f10) to remove immediately dead animals found in the rolling roads and domain road within 18 (eighteen) hours for animals run over at night and at 06 (six) hours for animals run over during the daytime. The registration of run-over and carcass disposal must comply with the provisions of CETESB DD.141 / 2018 / I or any subsequent legislation, including information on the size of the animals. Preliminarily, the CONCESSIONAIRE shall submit to ARTESP a survey of all the existing Institutions in the municipalities surrounding the ROAD SYSTEM and which may receive the run over animals.

f11) do not use herbicide in the weeding etc. in the ROAD SYSTEM DOMAIN RANGE. In case of use of other competing vegetation growth inhibitors, the CONCESSIONAIRE shall follow the current legislation and send the application plan for prior approval by ARTESP. If herbicide application still occurs in the DOMAIN RANGE by third parties, the CONCESSIONAIRE shall immediately recover the area and take all legal action against the violator;

f12) to control mandatorily pests such as termites, ants, ticks, weeds and ensure proper management when identifying bats etc. in the DOMAIN RANGE and in the operational and service tunnels;

f13) to destine oils and greases coming from equipment and vehicles destined to the expansion, operation, conservation of the system in accordance with the legislation;

f14) to eliminate immediately the affected areas and recompose any phenomena that may occur in the DOMAIN RANGE, such as erosion, abatement, landslides, siltation, spillage of hazardous products, oils and greases etc., which are causing environmental damage, or according to the schedule approved by ARTESP or competent bodies;

f 15) to carry out an assessment of the potential for contamination of soil and groundwater, if contaminated land of any kind is identified during the preservation work, in accordance with CETESB Executive Board Decision 37/2017, or another that may complement or replace it, to be conducted by a specialized company to be hired by CONCESSIONARIA. If there is a need for remediation of the area, the remediation costs must also be the CONCESSIONAIRE. On the other hand, in case of contamination identification, of any nature, but with suspicion of generating fact outside the DOMAIN RANGE, the CONCESSIONAIRE shall bring the legal responsible for the surrounding area, which will be responsible for the management of the contaminated area, The CONCESSIONAIRE shall only evaluate the interference that may occur mutually between the work and the contamination from this area.

f 16) to obtain authorization from ARTESP, prior to the implementation of any support area in the DOMAIN RANGE. Loan areas, outside boots and cutter deposits in the central garden, device handles and / or cava-shaped areas that endanger the system are prohibited. The implementation of support areas outside the domain must be preceded by authorization from the competent environmental agency, according to SMA 30/2000 or another that replaces it.

For the external audit, the CONCESSIONAIRE shall, in addition to the other obligations provided for in the CONTRACT, ATTACHMENTS and APPENDICES, hire a company with a notorious technical reputation, to be verified in a manner analogous to the rule set forth in item 3. OF APPENDIX J CERTIFICATION.

6. TABLE OF DEADLINES

ACTIVITY	ANNEX ITEM	DEADLINE
PII Conclusion	1	Up to twelve (12) months from the date of signature of the Initial Transfer Term
PIC Conclusion	1	Within 24 (twenty-four) months from the date of signature of the Initial Transfer Term
P.A. I. Conclusion (Initial Suitability Program of the Transferred System)	1	Up to six (6) months from the date of signature of the Remaining System Transfer Term
Obtaining of license, environmental permit, grant or consent from competent authority for Existing System	1	Up to ninety (90) days from the date of signature of the Initial Transfer Term
Obtaining of license, environmental permit, grant or consent from competent authority for Remaining System	1	Up to ninety (90) days from the date of signature of the Remaining System Transfer Term
Initial Road Inventory	2.1.3	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Initial topographic survey of the road system	2.1.3.2	Within 24 (twenty-four) months from the date of signature of the INITIAL TRANSFER TERM
Register survey of Domain Range	2.1.3.3	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Action plan for the implementation of the integrated digital road system model (MDSR)	2.1.3.4	Up to six (6) months from the date of signature of the INITIAL TRANSFER TERM

ACTIVITY	ANNEX ITEM	DEADLINE
Program implementation of the integrated digital road system model (MDSR)	2.1.3.4	Up to ninety-six (96) months from the date of signature of the INITIAL TRANSFER TERM
Hydrological study of the road system	2.1.3.5	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Study of critical areas regarding the occurrence of surface dynamics processes	2.1.3.5	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Anomaly identification process in the road system	2.1.4	Up to twelve (12) months from the date of signature of the INITIAL TRANSFER TERM
Device Suitability	2.3 d1.1.	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Device Suitability	2.3 d.2.1	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Monitoring and management program	3.2.2	Within six (6) months from the date of signature of the INITIAL TRANSFER TERM
Implementation of road containment devices	3.2.2 f	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Compliance with Decree, number 5.296 / 2014 and NBR 9050	3.2.2 h	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Walkway roofing	3.2.2 i	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Walkway Lighting	3.2.2 j	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Flexible road containment devices	3.2.2 k	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Rigid containment device	3.2.2 l	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Vertical pattern suitability	3.2.2 m	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Horizontal pattern suitability	3.2.2 r	Within 24 (twenty four) months from the date of signature of the INITIAL TRANSFER TERM
Meeting PD1 Requirements	5.2.2 b6	Within 2 (two) months from the date of signature of the INITIAL TRANSFER TERM
First Slope Monitoring Report	3.2.5	Within 24 (twenty four months) from the date of signature of the TERM OF INITIAL TRANSFER.
Detailed complementary survey of environmental liabilities	5.1.	Up to thirty (30) days from the date of signing of the INITIAL TRANSFER TERM, justifiably extendable.
To implement an Integrated Management System, including an Environmental Management System in accordance with the requirements and guidelines of NBR ISO 14.001 and 14.004, and an Occupational Health and Safety System, in accordance with NBR ISO 45.001.	5.1.	Within 24 (twenty four) months from the signature of the TERM OF INITIAL TRANSFER.

ACTIVITY	ANNEX ITEM	DEADLINE
To obtain NBR ISO 14.001 and 45.001 certificates	5.1.	Within 30 (thirty) months from the signature of the INITIAL TRANSFER TERM