

APPENDIX A

SHEETS FOR PERFORMANCE INDICATORS

**SPONSORED CONCESSION OF PUBLIC SERVICES FOR CONSTRUCTION, OPERATION,
CONSERVATION, MAINTENANCE AND IMPLEMENTATION OF THE INVESTMENTS
NECESSARY FOR THE OPERATION OF THE SANTOS-GUARUJÁ IMMERSED TUNNEL**

Indicator	1.1	Pavement Management System Periodic Update Compliance Indicator (ICASGP)			
Frequency	Monthly	Data source		Pavement Management System	(SGP)
Composition	Performing updates of the special pavement conservation indicators according to the measurement periodicity of each one.				

Description

The CONCESSIONAIRE shall carry out field tests/verifications/surveys to collect data regarding the special conservation of the pavement, according to the definitions and periodicity in EXHIBIT 6¹.
After conducting the complete field survey of the special conditions of the pavement, the CONCESSIONAIRE shall update all data collected (regarding surface conditions, comfort, deformability, safety, noise) in the SGP. These data shall be lagged between field collection and SGP updating by a maximum of 45 days (subject to the exceptions provided for in EXHIBIT 3).

Indicator Formula	Performance ranges	
	Binary Indicator	Grade
Not applicable	If the CONCESSIONAIRE has complied with all updates of the indicators in the SGP provided in the period.	1
	In cases of total or partial non-compliance with planned updates.	0

Comments and considerations

(1) The CONCESSIONAIRE shall carry out a complete survey of the conditions of special conservation of the pavement throughout the road, and shall obey, for each one:

- **Control of deflectometric (or deformability) conditions:**

To occur once a year. One year after the date that marks the beginning of the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the deflectometric tests performed, with a maximum delay between the field survey and the delivery/updating of the data up to 45 days. From the delivery of this data to the REGULATORY AUTHORITY, an additional 1 year will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the end of the AGREEMENT.

- **Control of surface conditions:**

To occur once a year for the first 20 years of AGREEMENT and once per semester from 21st year onwards. One year after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement surface conditions, with a maximum delay between the field collection and the delivery/updating of the data up to 45 days. From the delivery of this data to the REGULATORY AUTHORITY, an additional 1 year will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the 20th year of the AGREEMENT. From the 21st year, the

period between data deliveries shall be 6 months.

- **Control of comfort conditions:**

To occur once per semester for the first 20 years of AGREEMENT and quarterly from 21st year onwards. 6 months after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement comfort conditions, with a maximum delay between the field collection and the delivery/updating of the data of 45 days. From the delivery of this data to the REGULATORY AUTHORITY, another 6 months will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the 20th year of the AGREEMENT. From the 21st year, the period between data deliveries shall be 3 months.

- **Security control (laser scanning and grip tester):**

To occur once a year for the first 20 years of AGREEMENT and once per semester from 21st year onwards. 1 year after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement security conditions, with a maximum delay between the field collection and the delivery of the data of 45 days. From the delivery of this data to the REGULATORY AUTHORITY, an additional 1 year will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the 20th year of the AGREEMENT. From the 21st year, the period between data deliveries shall be 6 months.

- **Control of rolling noise conditions:**

To occur once a year. 1 year after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement noise conditions, with a maximum delay between the field survey and the delivery/updating of the data of 45 days. From the delivery of this data to the REGULATORY AUTHORITY, an additional 1 year will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the end of the AGREEMENT.

Although the INDICATOR has monthly periodicity, the verification of the SGP update will occur shortly after the period scheduled for the survey of the special pavement conditions, delivery and data update (considering a maximum delay of 45 days of field collection). Therefore, the ICASGP grade will be calculated in the scheduled period and will be valid for subsequent months until the next scheduled data collection period. In case of not updating the forecasted data for the period, the score for the INDICATOR will be zero and will remain for each subsequent month as zero until the next scheduled data collection period.

For the purpose of monitoring and verification of the INDICATOR, the ICASGP score will be 1 until the first survey of the special pavement conditions and planned updates.

Indicator	1.2	Pavement Comfort Condition Indicator (ICCP)
Frequency	Monthly	
Composition	IRI values (International Roughness Index) or IQ (Irregularity Quotient) of the segments.	

Description

The bearing comfort conditions shall be determined by measuring irregularities following the procedures described in EXHIBIT and the specifications of the current and/or succeeding Road Regulations¹

The value to be considered will be the average of the measurement values of irregularity in the homogeneous segment. Individual measurement values that are very discrepant from the mean shall be treated as specified in EXHIBIT 6.

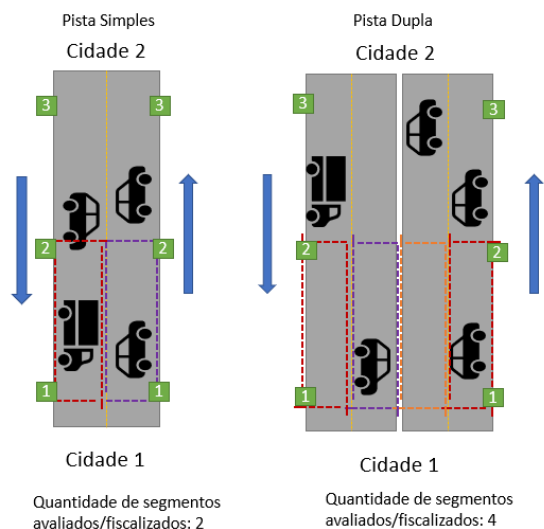
For the measurement, the road will be divided longitudinally into homogeneous segments of a maximum of three hundred (300) meters as described and detailed in EXHIBIT 6. The segment will be considered “compliant” if it meets the criteria set out in column “Segment is compliant if”. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion.

Indicator Formula	Performance ranges	Grade
$\frac{N^{\circ} \text{ of compliant segments}}{\text{Total number of segments considered for evaluation}} \times 100$	ICCP \geq 95%	1
	90% \leq ICCP < 95%	0.8
	85% \leq ICCP < 90%	0.6
	80% \leq ICCP < 85%	0.4
	ICCP < 80%	0

Assessment form – According to EXHIBIT 6

Year	Segment is compliant if:
Until the 10 th year	IRI \leq 2,69 m/km or QI \leq 35 counts/km

From the 11 th year	IRI \leq 2,46 m/km or QI \leq 32 counts/km
<p>Comments and considerations</p> <p>After carrying out the surveys, the CONCESSIONAIRE shall update all results in the SGP and deliver to the REGULATORY AUTHORITY, by the 5th business day of the month, the Pavement Monitoring Report, considering a maximum gap between the field survey and the delivery/update of the data of 45 days, as described in EXHIBIT 6. The INDICATOR may be analyzed, as described above in this form, from the Report submitted by the CONCESSIONAIRE regarding the field surveys or through an extract from the SGP containing all records of the results of the verification performed by the CONCESSIONAIRE. The Report shall be sufficient to calculate this INDICATOR.</p> <p>6 months after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement comfort conditions, with a maximum delay between the field collection and the delivery/updating of the data of 45 days. From the delivery of this data to the REGULATORY AUTHORITY, another 6 months will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the 20th year of the AGREEMENT. From the 21st year, the period between data deliveries shall be 3 months.</p> <p>For the purpose of monitoring and verification of the INDICATOR, the score will be 1 until the first survey of the special pavement conditions and planned updates.</p> <p>If the CONCESSIONAIRE feels the need to carry out other field surveys beyond those already required and planned, in order to try to improve its score in the INDICATOR for example, it may perform it in the segments where they are needed, provided that it informs the REGULATORY AUTHORITY about the procedure, updates the SGP with the new data collected and forwards the new Pavement Monitoring Report, with the results up to the 5th working day of the month, respecting the deadline for the data lag (45 days, subject to the exceptions provided in EXHIBIT 3). Eventual parameter updates will be considered only in evaluations of periods after data delivery, i.e., previously calculated INDICATORS will not be changed.</p> <p>The Total number of segments considered for evaluation will, by definition, be the total number of homogeneous segments considered valid by the REGULATORY AUTHORITY technical team as part of the review of the Periodic Pavement monitoring reports and SGP updates and projections. The segment will not be considered in this total when, for a fair reason and recognized by the Agency's technicians, it has been exempted* from the survey (example: segment actually under construction when field surveys are performed).</p> <p>*Eventually, if there are previous survey data valid for the waived segment, the values for the last valid survey shall be considered.</p> <p>Illustrative figure to illustrate the delimitation of the segment to be evaluated/inspected to calculate the ICCP:</p>	



1: Specific road rules, according to EXHIBIT 6, without prejudice to others that may replace it eventually:

- DNER PRO-159/85 - Restoration Project of Flexible and Semi-Rigid Pavements, chapters referring to the procedures for evaluation of irregularities.
- DNER PRO-164/94 - Calibration and Control of Pavement Surface Irregularity Metering Systems (IPR/USP and Maysmeter Integrating Systems). Calibration sections shall be approved by the REGULATORY AUTHORITY.
- DNER ES-173/86 - Level and Sight Method for System Calibration Response Type Irregularity Meter.
- DNER PRO-182/94 - Pavement Surface Irregularity Measurement with IPR/USP and Maysmeter Integrating Systems.

Indicator	1.3	Pavement Safety Conditions Indicator (ICSP)		
Frequency	Monthly		Data source	On-Site Survey / SGP / Report delivered by CONCESSIONAIRE
Composition	Values of Macrotexture (HS*) and Coefficient of Friction (VRD** or GN** and IFI****) of the segments.			

Description

For the determination of pavement safety conditions, methods and equipment of texture and slip resistance measurements will be employed as specified in EXHIBIT 6. The value to be considered for each condition analyzed will be the average of the measurement values in the kilometer.

For the measurement, the road will be divided longitudinally into segments of three hundred (300) meters as described and detailed in EXHIBIT 6. The segment will be considered “compliant” if it meets the criteria set out in column “Segment is compliant if”. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion.

Indicator Formula	Performance ranges	Grade	Evaluation form – According to EXHIBIT 6
			Segment is compliant if:
$\frac{N^{\circ} \text{ of compliant segments}}{\text{Total number of segments considered for evaluation}} \times 100$	ICSP \geq 95%	1	<ul style="list-style-type: none"> 0,6mm < HS < 1,2mm Skid resistance value measured by British Pendulum test = VRD > 55 or Skid resistance value measured by Grip Tester equipment = GN > 0.42 IFI \geq 0.22 for new road works IFI \geq 0.15 for restored pavements <p>All conditions shall be met for the segment to be considered compliant.</p>
	90% \leq ICSP < 95%	0.8	
	85% \leq ICSP < 90%	0.6	
	80% \leq ICSP < 85%	0.4	
	ICSP < 80%	0	
			Grade: for segments where VRD, GN and IFI indices are not measured (considering that the verification of these indices is sample), only the HS index criterion will be considered.

Comments and considerations

*HS: Sand Height, measured with surface scanning (laser) equipment and/or Sand Stain Test.

**VRD: Skid resistance value measured by British Pendulum test.

***GN: Skid resistance value measured by Grip Tester equipment.

****IFI: International Friction Index.

After carrying out the surveys, the CONCESSIONAIRE shall update all results in the SGP and deliver to ARTESP, by the 5th business day of the month, the Pavement Monitoring Report, considering a maximum gap between the field survey and the delivery/update of the data of 45 days, as described in EXHIBIT 6. The INDICATOR may be analyzed, as described above in this form, from the Report submitted by the CONCESSIONAIRE regarding the field surveys or through an extract from the SGP containing all records of the results of the verification performed by the CONCESSIONAIRE. The Report shall be sufficient to calculate this INDICATOR.

1 year after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement security conditions, with a maximum delay between the field collection and the delivery of the data of 45 days. From the delivery of this data to the REGULATORY AUTHORITY, an additional 1 year will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the 20th year of the AGREEMENT. From the 21st year, the period between data deliveries shall be 6 months.

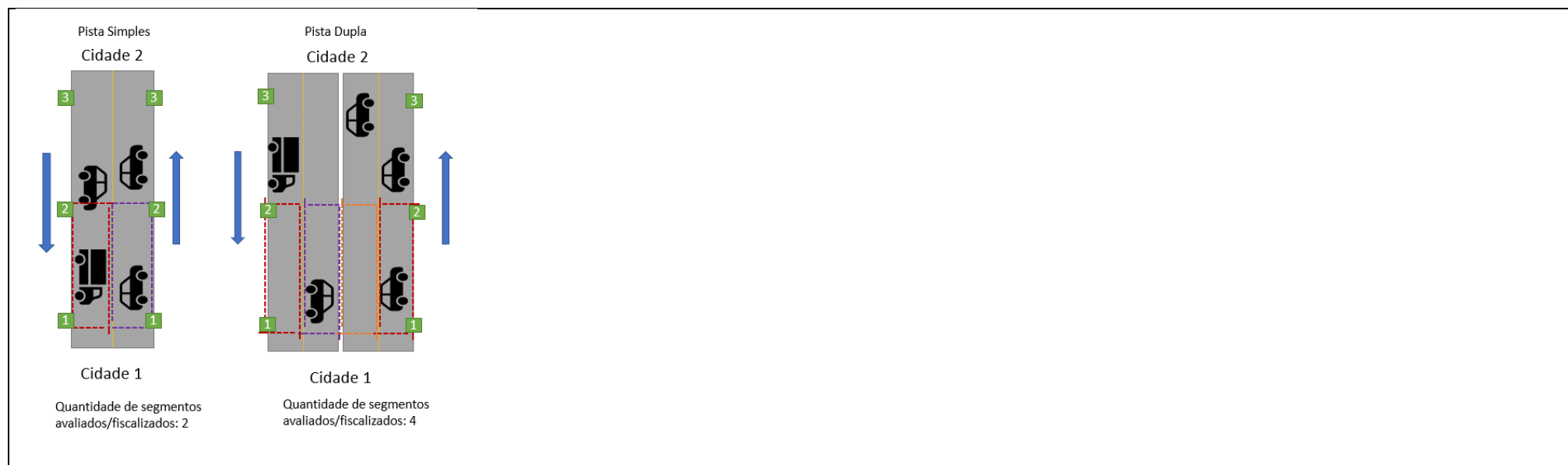
For the purpose of monitoring and verification of the INDICATOR, the score will be 1 until the first survey of the special pavement conditions and planned updates.

If the CONCESSIONAIRE feels the need to carry out other field surveys beyond those already required and planned, in order to try to improve its score in the INDICATOR for example, it may perform them in the segments where they are needed, provided that it informs the REGULATORY AUTHORITY about the procedure, updates the SGP with the new data collected and forwards the new Pavement Monitoring Report, with the results up to the 5th working day of the month, respecting the deadline for the data lag (45 days, subject to the exceptions provided in EXHIBIT 3). Eventual parameter updates will be considered only in evaluations of periods after data delivery, i.e., previously calculated Indicators will not be changed.

The Total number of segments considered for evaluation will, by definition, be the total number of homogeneous segments considered valid by the REGULATORY AUTHORITY technical team as part of the review of the periodic pavement monitoring reports and SGP updates and projections. The segment will not be considered in this total when, for a fair reason and recognized by the Agency's technicians, it has been exempted* from the survey (example: segment actually under construction when field surveys are performed).

*Eventually, if there are previous survey data valid for the waived segment, the values for the last valid survey shall be considered.

Illustrative figure to illustrate the delimitation of the segment to be evaluated/inspected to calculate the ICSP:



Indicator	1.4	Pavement Surface Conditions Indicator (ICSPP)		
Frequency	Monthly		Data source	On-Site Survey / SGP / Report delivered by CONCESSIONAIRE
Composition	Calculated IGG * / ICP ** / URCI *** values for segments.			

Description

For the determination of pavement surface conditions, methods and equipment shall be employed following the procedures described in EXHIBIT 6 and the specifications of the current Road Regulations¹. and/or others that may replace it.

The value to be considered for each condition analyzed will be the average of the measurement values in the kilometer.

For the measurement, the road (including the shoulder) will be divided longitudinally into segments of three hundred (300) meters as described and detailed in EXHIBIT 6. The segment will be considered “compliant” if it meets the criteria set out in column “Segment is compliant if”. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion.

Indicator Formula	Performance ranges	Grade	Assessment form – According to EXHIBIT 6	
			Pavement Type	Segment is compliant if:
$\frac{\text{N}^{\circ} \text{ of compliant segments}}{\text{Total number of segments considered for evaluation}} \times 100$	ICSPP ≥ 95%	1	Flexible and semi-rigid pavements****	IGG ≤ 30
	90% ≤ ICSPP < 95%	0.8		
	85% ≤ ICSPP < 90%	0.6	Coated pavements with Portland Cement Concrete	ICP ≥ 75*****
	80% ≤ ICSPP < 85%	0.4		
	ICSPP < 80%	0	Dirt roads or primary coating	URCI ≥ 75

Comments and considerations

*IGG: Global Severity Index.

****ICP:** Pavement Condition Index.

*****URCI:** Unsurfaced Road Condition Index.

********* After the completion of the works of the first special conservation cycle, the pavement, including shoulders and safety roads, shall have $IGG \leq 5$ for asphalt pavements, $ICP \geq 75$ for Portland Cement Concrete pavements.

After carrying out the surveys, the CONCESSIONAIRE shall update all results in the SGP and deliver to ARTESP, by the 5th business day of the month, the Pavement Monitoring Report, considering a maximum gap between the field survey and the delivery/update of data of 45 days, as described in EXHIBIT 6. The INDICATOR may be analyzed, as described above in this form, from the Report submitted by the CONCESSIONAIRE regarding the field surveys or through an extract from the SGP containing all records of the results of the verification performed by the CONCESSIONAIRE. The Report shall be sufficient to calculate this INDICATOR.

1 year after the OPERATION START DATE, the CONCESSIONAIRE shall submit to the REGULATORY AUTHORITY all data relating to the pavement surface conditions, with a maximum delay between the field collection and the delivery/updating of the data up to 45 days. From the delivery of this data to the REGULATORY AUTHORITY, an additional 1 year will be counted, which is the reference for the new data delivery. The process will remain in this cycle until the 20th year of the AGREEMENT. From the 21st year, the period between data deliveries shall be 6 months.

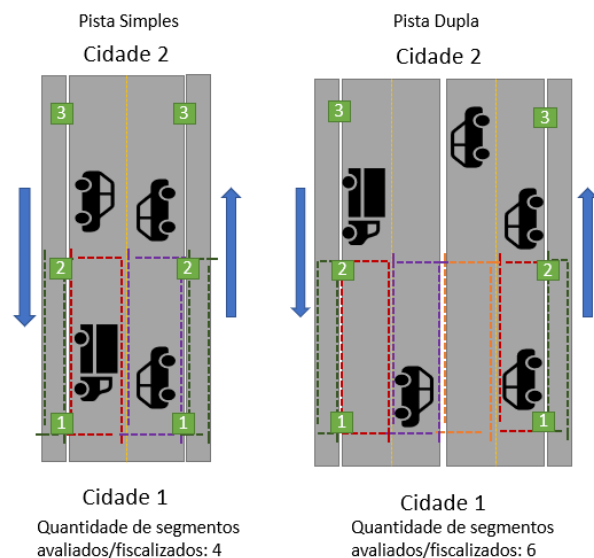
For the purpose of monitoring and verification of the INDICATOR, the score will be 1 until the first survey of the special pavement conditions and planned updates.

If the CONCESSIONAIRE feels the need to carry out other field surveys beyond those already required and planned, in order to try to improve its score in the INDICATOR for example, it may perform them in the segments where they are needed, provided that it informs the REGULATORY AUTHORITY about the procedure, updates the SGP with the new data collected and forwards the new Pavement Monitoring Report, with the results up to the 5th working day of the month, respecting the deadline for the data lag (45 days, subject to the exceptions provided in EXHIBIT 3). Eventual parameter updates will be considered only in evaluations of periods after data delivery, i.e., previously calculated Indicators will not be changed.

The Total number of segments considered for evaluation will, by definition, be the total number of homogeneous segments considered valid by the REGULATORY AUTHORITY technical team as part of the review of the periodic pavement monitoring reports and SGP updates and projections. The segment will not be considered in this total when, for a fair reason and recognized by the Agency's technicians, it has been exempted* from the survey (example: segment actually under construction when field surveys are performed).

*Eventually, if there are previous survey data valid for the waived segment, the values for the last valid survey shall be considered.

Illustrative figure to illustrate the delimitation of the segment to be evaluated/inspected to calculate the ICSPP:



1: Specific road rules, according to EXHIBIT 6, without prejudice to others that may replace it:

- DNIT 006/2003-PRO – “Objective surface assessment of flexible and semi-rigid pavements”.
- DNIT 062/2004-PRO – “Rigid Pavement – Objective Evaluation”.
- DNIT 007/2003-PRO – “Survey to assess the surface condition of homogeneous sub-section of flexible and semi-rigid pavement roads for pavement management and studies and projects”.
- Rigid Pavement Manual – DNIT 2005 for Portland cement concrete pavements of Tolls, Scales, Special Works of Art, Roads, Shoulders, Access and Marginals.
- USDA TM 5-626 / 1995 – “Unsurfaced Road Maintenance Management” for dirt roads or primary coating within INTERCONNECTION SYSTEM.

Indicator	2.1.	Arrival Time of the Winch Service Indicator (ITCSG)			
Frequency	Monthly			Data source	SIS-SAU
Composition	All times of arrival of the winch service to the service center in the month.				

Description

All arrival times for the calls made by the Winch service in the month are assessed as follows:

1. The events outlined in the TENDER NOTICE and in the Technical Specifications will be excluded;
2. For the remaining events of the month, it will be sorted by time of attendance in increasing order;
3. From the previously ordered group, it will be separated a subgroup, called subgroup 01, containing the 90% shorter arrival times;
4. Subgroup 01 analysis shall then be executed, accounting for all occurrences exceeding 20 minutes. These occurrences will be called Surpluses;
5. Verify the proportion of Surpluses in relation to the total number of calls made, as detailed below:

Formula	Performance ranges	Grade
$\frac{\text{Number of Surpluses}}{\text{Total number of winch services in the month}} \times 100$	ITCSG = 0%	1
	0% < ITCSG ≤ 0.5%	0.5
	0.5% < ITCSG ≤ 1%	0.4
	1% < ITCSG ≤ 3%	0.3
	ITCSG > 3%	0

Comments and considerations

For each registered single ticket, it shall be registered at least the start date and time, which corresponds to the activation of the service by the user, and the service hours, which corresponds to the arrival time of the vehicle for user service. From the Telecommunications and Monitoring / Geo-positioning Systems integrated among CCO, users, operational vehicles and the REGULATORY AUTHORITY, it will be possible to open calls by users (and sharing their location, in case of using the application to trigger the services), the mobilization of the vehicle by the CCO and monitoring of the vehicle's route by all parties (REGULATORY AUTHORITY, CCO and user – if the call was opened by the application). For tickets that have been opened by other means, the same call-related data shall be recorded and accounted for by the CCO. All data shall be shared in real time with the REGULATORY AUTHORITY as per EXHIBIT 5 guidelines.

For the calculation of INDICATOR, in the second week of the month following the month analyzed, a report will be extracted from the SIS-SAU containing the extract of all calls registered and maturing between 00:00:00 hrs of the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.

For the purpose of monitoring and verification of the INDICATOR, the score will be 1 until the first month of the OPERATION START DATE.

Indicator	2.2	Mechanical Help Service Arrival Time Indicator (ITCSM)		
Frequency	Monthly		Data source	SIS-SAL
Composition	All arrival times of the Mechanical Help to the place of the occurrence in the month.			

Description

All arrival times regarding the calls made by the Mechanical Help service in the month are assessed as follows:

1. The events outlined in the Tender Notice and in the Technical Specifications will be excluded;
2. For the remaining events of the month, it will be sorted by time of attendance in increasing order;
3. From the previously ordered group, it will be separated a subgroup, called subgroup 01, containing the 90% shorter arrival times;
4. Subgroup 01 analysis shall then be executed, accounting for all occurrences exceeding 20 minutes. These occurrences will be called Surpluses.
5. Verify the proportion of Surpluses in relation to the total number of calls made, as detailed below:

Formula	Performance ranges	Grade
$\frac{\text{Number of Surpluses}}{\text{Total number of Mechanical Help services in the month}} \times 100$	ITCSM = 0%	1
	0% < ITCSM ≤ 0.5%	0.5
	0.5% < ITCSM ≤ 1%	0.4
	1% < ITCSM ≤ 3%	0.3
	ITCSM > 3%	0

Comments and considerations

For each registered single ticket, it shall be registered at least the start date and time, which corresponds to the activation of the service by the user, and the service hours, which corresponds to the arrival time of the vehicle for USER service. From the Telecommunications and Monitoring / Geo-positioning Systems integrated among CCO, USERS, operational vehicles and the REGULATORY AUTHORITY, it will be possible to open calls by users (and sharing their location, in case of using the application to trigger the services), the mobilization of the vehicle by the CCO and monitoring of the vehicle's route by all parties (REGULATORY AUTHORITY, CCO and user – if the call was opened by the application). For tickets that have been opened by other means, the same call-related data shall be recorded and accounted for by the CCO. All data shall be shared in real time with the REGULATORY AUTHORITY as per EXHIBIT 5 guidelines.

For the calculation of INDICATOR, in the second week of the month following the month analyzed, a report will be extracted from the SIS-SAU containing the extract of all calls registered and maturing between 00:00:00 hrs of the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.

For the purpose of monitoring and verification of the INDICATOR, the score will be 1 until the first month of the OPERATION START DATE.

Indicator	2.3	Arrival Time of the Pre-hospital Care Services Indicator (ITCSAPH)		
Frequency	Monthly		Data source	SIS-SAU
Composition	All arrival times of the Pre-hospital Care service at the place of the occurrence in the month.			

Description
<p>All arrival times related to the calls made by the Pre-hospital Care (APH) service in the month are assessed as follows:</p> <ol style="list-style-type: none"> 1. The events outlined in the TENDER NOTICE and in the Technical Specifications will be excluded; 2. For the remaining events of the month, it will be sorted by time of attendance in increasing order; 3. From the previously ordered group, it will be separated a subgroup, called subgroup 01, containing the 90% shorter arrival times; 4. Subgroup 01 analysis shall then be executed, accounting for all occurrences exceeding 10 minutes. These occurrences will be called Surpluses. 5. Verify the proportion of Surpluses in relation to the total number of calls made, as detailed below:

Formula	Performance range	Grade
$\frac{\text{Number of Surpluses}}{\text{Total number of APH services in the month}} \times 100$	ITCSAPH = 0%	1
	0% < ITCSAPH ≤ 0,5%	0.5
	0.5% < ITCSAPH ≤ 1%	0.4
	1% < ITCSAPH ≤ 3%	0.3
	ITCSAPH > 3%	0

Comments and considerations
<p>For each registered single ticket, it shall be registered at least the start date and time, which corresponds to the activation of the service by the user, and the service hours, which corresponds to the arrival time of the vehicle for user service. From the Telecommunications and Monitoring / Geo-positioning Systems integrated among CCO, users, operational vehicles and the REGULATORY AUTHORITY, it will be possible to open calls by users (and sharing their location, in case of using the application to trigger the services), the mobilization of the vehicle by the CCO and monitoring of the vehicle's route by all parties (REGULATORY AUTHORITY, CCO and user – if the call was opened by the application). For tickets that have been opened by other means, the same call-related data shall be recorded and accounted for by the CCO. All data shall be shared in real time with the REGULATORY AUTHORITY as per EXHIBIT 5 guidelines.</p> <p>For the calculation of INDICATOR, in the second week of the month following the month analyzed, a report will be extracted from the SIS-SAU containing the extract of all calls registered and maturing between 00:00:00 hrs of the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.</p> <p>For the purpose of monitoring and verification of the INDICATOR, the score will be 1 until the first month of the OPERATION START DATE.</p>

Indicator	3.1	Compliance of Routine Conservation Programs Indicator (ICPCR)		
Frequency	Monthly		Data source	Local verification / SIGECON
Composition	It is formed by 7 Routine Conservation Indexes that comprises the following programs: Pavement, Adjustments, Drainage, Road Containment Devices, Structures, Buildings and Yards, Lighting and Ventilation.			

Description - Pavement Routine Conservation Indicator (ICRP)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRP calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, as well as other areas and structures, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Pavement Routine Conservation Indicator (ICRP)	Performance ranges	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if
$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRP ≥ 99%	1	Number of nonconformities per segment < 3	Number of nonconformities per segment ≥ 6
	98% ≤ ICRP < 99%	0.8		
	97% ≤ ICRP < 98%	0.6		
	96% ≤ ICRP < 97%	0.4		
	ICRP < 96%	0		

Description - Adjustment Services Routine Conservation Indicator (ICRSA)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRSA calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, as well as other areas and structures, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Adjustment Services Routine Conservation Indicator (ICRSA)	Performance range	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if
$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRSA \geq 99%	1	Number of nonconformities per segment < 4	Number of nonconformities per segment \geq 8
	98% \leq ICRSA < 99%	0.8		
	97% \leq ICRSA < 98%	0.6		
	96% \leq ICRSA < 97%	0.4		
	ICRSA < 96%	0		

Description - Drainage Routine Conservation Indicator (ICRD)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRD calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, as well as other areas and structures, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Drainage Routine Conservation Indicator (ICRD)	Performance range	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if
$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRD \geq 99%	1	Number of nonconformities per segment < 3	Number of nonconformities per segment \geq 5
	98% \leq ICRD < 99%	0.8		
	97% \leq ICRD < 98%	0.6		
	96% \leq ICRD < 97%	0.4		
	ICRD < 96%	0		

Description - Road Containment Devices Routine Conservation Indicator (ICRDCV)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRDCV calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Road Containment Devices Routine Conservation Indicator (ICRDCV)	Performance range	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if

$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRDCV \geq 99%	1	Number of nonconformities per segment = 0	Number of nonconformities per segment \geq 2
	98% \leq ICRDCV < 99%	0.8		
	97% \leq ICRDCV < 98%	0.6		
	96% \leq ICRDCV < 97%	0.4		
	ICRDCV < 96%	0		

Description - Structures Conservation Routine Indicator (ICRE)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRE calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, as well as other areas and structures, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Structures Routine Conservation Indicator (ICRE)	Performance range	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if
$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRE \geq 99%	1	Number of nonconformities per segment < 2	Number of nonconformities per segment \geq 3
	98% \leq ICRE < 99%	0.8		
	97% \leq ICRE < 98%	0.6		
	96% \leq ICRE < 97%	0.4		
	ICRE < 96%	0		

Description - Buildings and Yards Routine Conservation Indicator (ICRP)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRPP calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, as well as other areas and structures, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Buildings Routine Conservation Indicator (ICRP)	Performance range	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if
$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRPP \geq 99%	1	Number of nonconformities per segment < 5	Number of nonconformities per segment \geq 10
	98% \leq ICRPP < 99%	0.8		
	97% \leq ICRPP < 98%	0.6		
	96% \leq ICRPP < 97%	0.4		
	ICRPP < 96%	0		

Description - Lighting and Ventilation Routine Conservation Indicator (ICRIV)

The CONCESSIONAIRE shall comply with all activities described in EXHIBIT 6, in order to guarantee the quality and conservation of the asset. Any non-compliance with any of these activities will be considered as a “non-compliance” for ICRIV calculation purposes. It is noteworthy that the mere finding of a “nonconformity” shall be sufficient for accounting in the calculation of this index, regardless of whether the “nonconformity” is corrected/repared, within or beyond the deadline set forth in the corresponding item. All the delegated route, as well as other areas and structures, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams and/or technicians. The information collected in such evaluations will be assessed monthly.

For the purpose of allocating the “nonconformity” found, the road will be divided longitudinally into segments of 100 meters.

The segment will be considered “compliant” if it meets the criteria set out in the “Segment is compliant if” column. Similarly, the segment will be considered “non-compliant” if it does not meet this same criterion. In addition, if, beyond being considered “non-compliant”, the segment meets the criteria set out in the “aggravating factor if” column, a unit will be deducted from the “total of compliant segments” (formula numerator).

Formula: Lighting and Ventilation Routine Conservation Indicator (ICRIV)	Performance range	Grade	Assessment form	
			The segment is compliant if	The aggravating factor will be applied if
$\frac{\text{Number of compliant segments}}{\text{Total number of evaluated segments}} \times 100$	ICRIV \geq 99%	1	Number of nonconformities per segment = 0	Number of nonconformities per segment \geq 2
	98% \leq ICRIV < 99%	0.8		
	97% \leq ICRIV < 98%	0.6		
	96% \leq ICRIV < 97%	0.4		
	ICRIV < 96%	0		

Formula: Compliance of Routine Conservation Programs Indicator (ICPCR)

$$\begin{aligned} \text{Final Grade}_{ICPCR} = & (\text{Weight}_{ICRP} \times \text{Performance Grade}_{ICRP}) + (\text{Weight}_{ICRSA} \times \text{Performance Grade}_{ICRSA}) + (\text{Weight}_{ICRD} \times \text{Performance Grade}_{ICRD}) \\ & + (\text{Weight}_{ICRDCV} \times \text{Performance Grade}_{ICRDCV}) + (\text{Weight}_{ICRE} \times \text{Performance Grade}_{ICRE}) \\ & + (\text{Weight}_{ICRPP} \times \text{Performance Grade}_{ICRPP}) + (\text{Weight}_{ICRIV} \times \text{Performance Grade}_{ICRIV}) \end{aligned}$$

For purposes of calculating the ICPCR, the indices have the following weights:

- Weight_{ICRP} = 0,25
- Weight_{ICRSA} = 0,15
- Weight_{ICRD} = 0,15
- Weight_{ICRDCV} = 0,05
- Weight_{ICRE} = 0,15
- Weight_{ICRP} = 0,10
- Weight_{ICRIV} = 0,15

Comments and considerations

For the verification of this INDICATOR, local verifications will be performed by REGULATORY AUTHORITY's Support Companies and/or technicians in all segments of the extension granted, in both directions, as well as other areas and structures. Nonconformities refer to non-compliance with any activity related to the indicated programs, as described in EXHIBIT 6. In this case, non-compliance during the verifications shall be recorded in each index, regardless of the repair/correction time that is established for each item in EXHIBIT 6.

Each distinct nonconformity found during verifications shall be evidenced with photos and then all shall be stored and managed through the Integrated Digital Conservation Function Management System (SIGECON).

For the calculation of INDICATOR, in the second week of the month following the month analyzed, the REGULATORY AUTHORITY will extract a report from SIGECON containing the extract of all nonconformities recorded in each segment of analysis between 00:00:00 hrs of the first day of the month and 23:59:59 hrs of the last day of the month. The extracted report shall be sufficient for the calculation of the indices and the indicator as detailed in this sheet. This report may be supplemented by data obtained through local or remote enforcement activities, where available. The Supporting Companies will send to the REGULATORY AUTHORITY a report with the results of the field verifications to calculate the INDICATOR.

For cases of nonconforming segments that have the number of distinct nonconformities identified in the surveys performed in the month, equal to or greater than the value indicated in the column "It will be applied an aggravating factor if" for each index evaluated, there will be deduction of one unit for each segment in the total of compliant segments. If, for example, at the end of the analysis it was found that in a universe of 100 segments, 90 of them are compliant and 10 nonconforming, 3 of them with the number of nonconformities equal to the largest stipulated in the column "It will be applied an aggravating factor if", the number of conforming segments to be considered for calculation is 87.

Notes

- (1) The term "distinct nonconformities" means all those nonconformities which are not identical, that is, of a different nature and location. For example, in this definition, the same hole identified twice in the same segment cannot be counted twice for INDICATOR measurement purposes. However, if the same segment has two distinct holes, both shall be accounted for.

Indicator	4.1	Tunnel Travel Time Indicator (ITPT)
Frequency	Monthly	Data source SISMOB
Composition	Composed of Tunnel Travel Time Indexes	

Description: Tunnel Travel Time Index (ITPT)

It shall be measured the travel time of vehicles in the TUNNEL through the use of technologies (systems, cameras, among others) that enable the measurement of this data. This information shall be sent in the form of a monthly basis through SISMOB. And it will be compared with the estimates provided in the final INDICATOR as described below. The technology chosen by the CONCESSIONAIRE to perform the measurement of travel times shall be audited and previously validated by the REGULATORY AUTHORITY.

Formula: Tunnel Travel Time Index (ITPT)	Performance ranges	Grade
95 th percentile of travel times on the TUNNEL	ITPT ≥ 10 minutes	0
	8 minutes ≤ ITPT < 10 minutes	0.3
	6 minutes ≤ ITPT < 8 minutes	0.6
	4 minutes ≤ ITPT < 6 minutes	0.9
	ITPT < 4 minutes	1

Comments and considerations

To calculate the INDICATOR, by the 5th business day of the month following the month analyzed, the REGULATORY AUTHORITY shall receive a report from the CONCESSIONAIRE containing an extract of all the travel times recorded by the cameras on the section between 00:00:00 hrs of the first day of the month and 23:59:59 hrs of the last day of the month. The report shall compile the data and generate sufficient information to calculate this INDICATOR, as detailed in this sheet. The report delivered by the CONCESSIONAIRE may be supplemented by data obtained through local or remote enforcement activities, where available.

Indicator	5.1	Integrity and Conservation of Vertical Signaling Indicator (IICSV)		
Frequency	Monthly		Data source	Local verification / Plate registration
Composition	Availability of vertical signaling provided for under conditions suitable for operation of the granted roads.			

Description

The conservation status of the vertical signaling on all roads in relation to the total number of signs registered in the system as provided in the updated register (number of plates unavailable) shall be verified by visual inspection and/or retroreflectance measurement to be carried out in the field. Signs that are not available in the month will be considered signs in the delegated section that do not comply with the technical specifications, standards and manuals in force, as detailed in EXHIBIT 6, and, program “Signaling and Auxiliary Devices”. Any non-compliance with any of these specifications/activities will be considered as a “non-compliance” and unavailability of signaling for IICSV calculation purposes. It is important to note that mere finding during the field verification of a “nonconformity” will be sufficient to account for the availability of signs in the calculation of this INDICATOR, regardless of whether/not the “nonconformity” has been rectified/corrected within or beyond the deadline set forth in the corresponding item. For the composition of this INDICATOR, all types of vertical, regulatory, warning, educational, institutional and indication signals, and auxiliary devices of the type hazard and alignment markers will be considered.

Formula:	Performance ranges	Grade
$= \frac{\text{Number of signs available during the month}}{\text{Total number of signs in the system} - \text{Total number of unavailable signs during the month}} \times 100$	IICSV \geq 99%	1
	97% \leq IICSV < 99%	0.8
	95% \leq IICSV < 97%	0.6
	93% \leq IICSV < 95%	0.4
	IICSV < 93%	0
<p>* If the CONCESSIONAIRE does not send the updated record, according to guidelines established by the REGULATORY AUTHORITY, the grade in INDICATOR will be 0.</p>		

Comments and considerations

The CONCESSIONAIRE shall comply with all routine conservation programs for vertical signaling and auxiliary signaling devices as described in EXHIBIT 6, in order to ensure the quality and conservation of the asset and in compliance with technical specifications, standards, manuals, public notices in force for the section. Failure to comply with any of these standards characterizes a signaling unavailability for IICSV calculation purposes, regardless of the repair/correction time that is established for each item in EXHIBIT 6.

All the delegated route, in both directions, will be routinely evaluated by REGULATORY AUTHORITY's Support Teams and/or technicians. The Supporting Companies will send to the REGULATORY AUTHORITY a report with the results of the field verifications to calculate INDICATOR. The information collected in these verifications will be ascertained monthly (*in the second week of the month following the month analyzed*), determining the sum of unavailable signs, and then the number of signs available throughout the month will be compared with the number of signs registered throughout the road system. Surveys will occur during the month of analysis.

It will be considered that the register is updated when 100% of the existing signs in the INTERCONNECTION SYSTEM are registered, after the deadline established for its implementation.

Indicator	5.2	Integrity and Conservation of Horizontal Signaling Indicator (IICSH)	
Frequency	Monthly	Data source	Local verification
Composition	Availability of horizontal signaling provided for under conditions suitable for operation of the granted roads.		

Description

It will be verified through visual inspection and/or retro-reflectance measurement, performed in the field, the integrity of the horizontal signs considering aspects such as existence, accuracy, cleanliness and visibility of the painting and the tacks, as described in EXHIBIT 6, “Signaling and Auxiliary Devices” program”. Any non-compliance with any of these activities will be considered as a “non-compliance” for IICSH calculation purposes. It is important to note that mere finding during the field verifications of a “nonconformity” will be sufficient to account for segment compliance in the calculation of this INDICATOR, regardless of whether/not the “nonconformity” has been rectified/corrected within or beyond the deadline set forth in the corresponding item. For this INDICATOR, consideration will be given to the availability of the analysis of horizontal signaling and tacks along the road divided into segments of one hundred (100) meters. The segment will be considered compliant if it has no “non-compliance” related to horizontal signaling and tacks.

Formula:	Performance ranges	Grade
$\frac{\text{Number of compliant segments in the month} - \text{Number of non-compliant segments in the month}}{\text{Total number of evaluated segments}} \times 100$	IICSH \geq 97%	1
	95% \leq IICSH < 97%	0.8
	93% \leq IICSH < 95%	0.6
	90% \leq IICSH < 93%	0.4
	IICSH < 90%	0
Comments and Considerations		

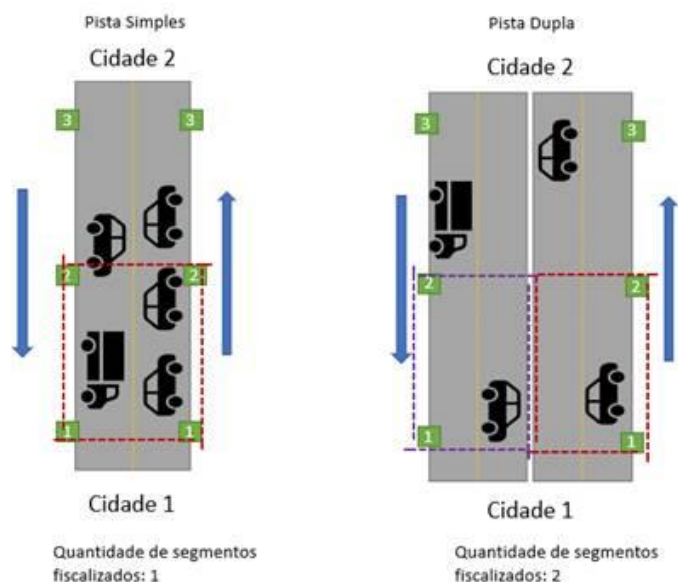
The CONCESSIONAIRE shall comply with all routine conservation programs for horizontal signaling and tacks as described in EXHIBIT 6, in order to ensure the quality and conservation of the asset. Failure to comply with any of the standards that may cause problems in horizontal roadway signaling will be considered “nonconformities” for IICSH calculation purposes, regardless of the repair/correction time that is established for each item in EXHIBIT 6. All the delegated route, in both directions, will be routinely evaluated by REGULATORY AUTHORITY’s Support Teams *and/or* technicians. The Supporting Companies will send to the REGULATORY AUTHORITY a report with the results of the field verifications to calculate INDICATOR. The information collected in these verifications will be assessed monthly (in the second week of the month following the month under review). Surveys will occur during the month of verification.

The roads will be divided into segments of one hundred (100) meters. A nonconforming segment will be considered as one that has any “non-compliance” related to horizontal signaling or tacks in the month under analysis, leading to the deduction of one unit in the total of compliant segments (formula numerator).

The number of segments will be calculated according to the formula below:

$$\text{Total number of evaluated segments} = (1 \times \text{extension of the simple lane}) + (2 \times \text{extension of the double lane})$$

Illustrative figure to illustrate the delimitation of the segment to be evaluated/inspected to calculate the IICSH between the km 1 and km 2 of a road:



Note: For the INDICATOR (IICSH) to be valid a minimum of sixty percent (60%) of the segments of the INTERCONNECTION SYSTEM shall be evaluated. If not, the weight of the INDICATOR in question should be redistributed among the remaining indicators, maintaining the due proportionality.

Indicator	6.1	Fixed PMVs Operationality Indicator (IOPMV)			
Frequency	Monthly			Data source	SIS-EQP
Composition	Hours during which all equipment with fixed PMVs remained operational and total hours scheduled in the month.				

Description
The suitability of Initial Fixed Variable Messaging (PMV) system is verified by means of the percentage of hours that the equipment became operational in a given month, as described in EXHIBIT 5. If the request for the deactivation of the equipment is accepted, the hours when it was deactivated will not be counted in the calculation base from the moment of the deactivation request by the CONCESSIONAIRE until the expected time for the reactivation of the equipment, as per the mentioned request.

Formula: PMV Suitability Indicator (IOPMV)	Performance ranges	
	Binary Index	Grade
$\frac{\text{Total number of hours during which the equipment was operational}}{\text{Total number of hours scheduled for operation in the month}} \times 100$	IOPMV ≥ 97%	1
	IOPMV < 97%	0

Comments and considerations
For the calculation of these indicators described in this item, the verification of whether the equipment is operational (active) or inoperative (inactive) will be carried out exclusively through telemetry data that the Concessionaire shall make available via system integration of the REGULATORY AUTHORITY. This integration shall allow the Agency to consult the operational status of this equipment in real time, as provided for in EXHIBIT 5 and current technical specifications.
The absence of telemetry data for a piece of equipment at a given time for which the Availability Index is calculated implies considering such equipment as inoperative at that time, although such equipment is considered in the calculation basis (total number of pieces of equipment) of the Availability Index.
For the calculation of INDICATOR, on the second week of the month following the month analyzed, a report will be extracted from the SIS-EQP containing a statement of all equipment operation between 00:00:00 hrs on the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.
The calculated value for INDICATOR represents a best case (or maximum value), i.e., it is possible to show that the operationality was not higher than the value represented by INDICATOR.
Operating equipment is defined as the full and simultaneous fulfillment of all functional requirements established for this type of equipment in the AGREEMENT, EXHIBITS and APPENDICES and current technical specifications. Inoperative equipment is defined as equipment that is not operational at a given time.
The number of pieces of equipment not yet installed and/or that have not begun operation, whose contractual or agreed-upon deadline with REGULATORY AUTHORITY for installation and/or operation has already been exceeded, will be added to the calculation basis of the Availability Index (total number of pieces of equipment in the

section). These pieces of equipment are considered inoperative during the period in which they are not installed.

Indicator	6.2	CCTV Operability Indicator (IOCFTV)
Frequency	Monthly	Data source SIS-EQP
Composition	Hours during which all CCTV equipment remained operational and total hours scheduled in the month.	

Description
The suitability of CCTV System is verified by means of the percentage of hours that the CCTV equipment became operational in a given month, as described in EXHIBIT 5. If the request for the deactivation of the equipment is accepted, the hours when it was deactivated will not be counted in the calculation base from the moment of the deactivation request by the CONCESSIONAIRE until the expected time for the reactivation of the equipment, as per the mentioned request.

Formula: CFCV Operability Indicator (IOCFTV)	Performance ranges	
	Binary Index	Grade
$\frac{\text{Total number of hours during which the equipment was operational}}{\text{Total number of hours scheduled for operation in the month}} \times 100$	IOCFTV \geq 97%	1
	IOCFTV < 97%	0

Comments and considerations
For the calculation of these indicators described in this item, the verification of whether the equipment is operational (active) or inoperative (inactive) will be carried out exclusively through telemetry data that the CONCESSIONAIRE shall make available via system integration of the REGULATORY AUTHORITY. This integration shall allow the Agency to consult the operational status of this equipment in real time, as provided for in EXHIBIT 5 and current technical specifications.
The absence of telemetry data for a piece of equipment at a given time for which the Availability Index is calculated implies considering such equipment as inoperative at that time, although such equipment is considered in the calculation basis (total number of pieces of equipment) of the Availability Index.
For the calculation of INDICATOR, on the second week of the month following the month analyzed, a report will be extracted from the SIS-EQP containing a statement of all equipment operation between 00:00:00 hrs on the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.
The calculated value for INDICATOR represents a best case (or maximum value), i.e., it is possible to show that the operability was not higher than the value represented by INDICATOR.
Operating equipment is defined as the full and simultaneous fulfillment of all functional requirements established for this type of equipment in the AGREEMENT, EXHIBITS and APPENDICES and current technical specifications. Inoperative equipment is defined as equipment that is not operational at a given time.
The number of pieces of equipment not yet installed and/or that have not begun operation, whose contractual or agreed-upon deadline with REGULATORY AUTHORITY

for installation and/or operation has already been exceeded, will be added to the calculation basis of the Availability Index (total number of pieces of equipment in the section). These pieces of equipment are considered inoperative during the period in which they are not installed.

Indicator	6.3	Wireless Data Network User Communication System Operationality Indicator (IORD)	
Frequency	Monthly	Data source	SIS-EQP
Composition	Availability Index of the User Communication System via Wireless Data Network, calculated at regular time intervals during the month of measurement		

Description
The System Availability Index at a given moment consists of the percentage of Access Point equipment that remained operational at that moment. The operationality of the User Communication System via Wireless Data Network is verified by calculating its Availability Index at regular time intervals during the month of measurement. A grade of 1 will be assigned if, in the month of measurement, no sample calculation of the Availability Index (System operability) has been less than ninety percent (90%). A grade of 0 will be assigned if, during the month of measurement, at least one of the Availability Index calculation samples is less than ninety percent (90%).

Formula: Wireless Network User Communication System Availability Compliance Indicator (ICDRD)	Performance ranges	
	Binary Index	Grade
$\frac{\sum \text{Hours during which the system had availability equal or greater than 90\%}}{\text{Valid hours scheduled for the month}}$	IORD \geq 90% during the entire month	1
	IORD < 90% in at least one availability sample during the month	0

Comments and considerations
For the calculation of these indicators described in this item, the verification of whether the equipment is operational (active) or inoperative (inactive) will be carried out exclusively through telemetry data that the CONCESSIONAIRE shall make available via SIS-EQP. This integration shall allow the Agency to consult the operational status of this equipment in real time, as provided for in EXHIBIT 5 and current technical specifications.
The absence of telemetry data for a piece of equipment at a given time for which the Availability Index is calculated implies considering such equipment as inoperative at that time, although such equipment is considered in the calculation basis (total number of pieces of equipment) of the Availability Index.
For the calculation of INDICATOR, on the second week of the month following the month analyzed, a report will be extracted from the REGULATORY AUTHORITY systems containing a statement of all equipment operation between 00:00:00 hrs on the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.
The calculated value for INDICATOR represents a best case (or maximum value), i.e., it is possible to show that the operationality was not higher than the value represented by INDICATOR.
Operating equipment is defined as the full and simultaneous fulfillment of all functional requirements established for this type of equipment in the AGREEMENT, EXHIBITS and APPENDICES and current technical specifications. Inoperative equipment is defined as equipment that is not operational at a given time.
The number of pieces of equipment not yet installed and/or that have not begun operation, whose contractual or agreed-upon deadline with REGULATORY AUTHORITY

for installation and/or operation has already been exceeded, will be added to the calculation basis of the Availability Index (total number of pieces of equipment in the section). These pieces of equipment are considered inoperative during the period in which they are not installed.

According to the rules contained in the technical specification ET-DOP-GOE-C-OPE-FOE, pieces of equipment can be deactivated in situations of force majeure and acts of God according to the procedure established therein. The amount of equipment that is deactivated at that moment, according to the deactivation request accepted by the REGULATORY AUTHORITY, will be eliminated from the calculation base of the Availability Index (total equipment of the segment) for that given moment.

Indicator	7.5	Travel Time Control System Operationality Indicator (IOSCP)		
Frequency	Monthly		Data source	SIS-EQP
Composition	Hours during which all System equipment remained operational and total hours scheduled in the month.			

Description
The operationality of the System is verified by means of the percentage of hours that the equipment was operational in a given month, as described in EXHIBIT 5. If the request for the deactivation of the equipment is accepted, the hours when it was deactivated will not be counted in the calculation base from the moment of the deactivation request by the CONCESSIONAIRE until the expected time for the reactivation of the equipment, as per the mentioned request.

Formula: Travel Time Control System Suitability Indicator (IOSCP)	Performance ranges	
	Binary Index	Grade
$\frac{\text{Total hours during which the equipment was operational}}{\text{Total operational hours scheduled for the month}} \times 100$	IOSCP \geq 97%	1
	IOSCP < 97%	0

Comments and considerations
For the calculation of these indicators described in this item, the verification of whether the equipment is operational (active) or inoperative (inactive) will be carried out exclusively through telemetry data that the CONCESSIONAIRE shall make available via system integration of the REGULATORY AUTHORITY. This integration shall allow the Agency to consult the operational status of this equipment in real time, as provided for in EXHIBIT 5 and current technical specifications.
The absence of telemetry data for a piece of equipment at a given time for which the Availability Index is calculated implies considering such equipment as inoperative at that time, although such equipment is considered in the calculation basis (total number of pieces of equipment) of the Availability Index.
For the calculation of INDICATOR, on the second week of the month following the month analyzed, a report will be extracted from the SIS-EQP containing a statement of all equipment operation between 00:00:00 hrs on the first day of the month and 23:59:59 hrs of the last day of the month. This report may be supplemented by data obtained through local or remote enforcement activities, where available.
The calculated value for INDICATOR represents a better case (or maximum value), i.e., it is possible to show that the suitability was not higher than the value represented by INDICATOR.
Operating equipment is defined as the full and simultaneous fulfillment of all functional requirements established for this type of equipment in the AGREEMENT, EXHIBITS and APPENDICES and current technical specifications. Inoperative equipment is defined as equipment that is not operational at a given time.
The number of pieces of equipment not yet installed and/or that have not begun operation, whose contractual or agreed-upon deadline with REGULATORY AUTHORITY

for installation and/or operation has already been exceeded, will be added to the calculation basis of the Availability Index (total number of pieces of equipment in the section). These pieces of equipment are considered inoperative during the period in which they are not installed.