MINISTERIO
DE TRANSPORTE
Y OBRAS PÚBLICAS

MONTEVIDEO - PASO DE LOS TOROS PPP

RAILWAY PROJECT

Ferrocarril Central

TECHNICAL TERMS AND CONDITIONS

December 2017

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1. PURPOSE

This document contains the technical conditions and basic procedures for the construction and maintenance of the infrastructure, track and sidings of the Montevideo–Paso de los Toros rail section. The activities mentioned are those required to ensure the safety of the railway traffic and the transported goods and to maintain the volumes of transport and railway traffic as set out in Appendix A (Scope of the Railway Project).

Appendices from B to R show a basic project developed to comply with the indications of the previous paragraph.

All the Appendices are listed below:

A. Scope of the Railway Project
B. Technical specifications
C. Maintenance Standards
D. Construction Quality Requirements
E. Drawings
F. Support Material
G. List of Objects (Singular Works)
H. Drawing Type
I. Cross-sections
J. Bridges Design
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L. Road and Street Design
M. Signaling System and Centralized Traffic Control System
N. Risk Assessment
O. Reference Data
P. Additional works
Q. Disarmament and transfer of the existing track and rehabilitation of secondary roads in stations
R. Interference with public and private services.
S. Basic Schedule of works.

The proposals by the Contractors may improve the design on the basis of recognized International Technical Standards, which shall be studied at the time of the proposals assessment. In all cases, the Contractor assumes the risks for the technical solution submitted in their proposal.

The necessary activities to achieve the above goals and keep them during the term of the contract are the following:

- Construction, on the section which is the subject matter of this call, of a railway track to reach the objectives set out in these documents, including the main road and the side tracks, sidings, embankments and cuttings, drainage systems, bridges, signaling and safety system, works in railway stations, other railway works and civil works.
- Conservation of the quality of the railroad, security systems and signaling, and of all the works and structures related to the track and the referred systems.
- Ensuring the proper functioning of all the elements of the railway track under safety conditions.
- Maintaining the systems of longitudinal and transverse drainage, the signaling and safety system, and all structures and facilities related to the railway.
- Implementing the immediate corrective actions in cases of incidence.

- Establishment of surveillance and preventive measures.

1.1. Description of the Purpose of the Project

1.1.1 Project Location

The purpose of the project consists in carrying out the necessary works for the improvement and maintenance of the next section of railway tracks:

Section Name	Section Start	Section End
Montevideo–Paso de los Toros. (MVD-PT)(1) (2)	Nueva Terminal Passenger Station (km 0+555 approx. Station Terminal (km 0+555 approx.)	Paso de los Toros Station (switch points to the South - approx. km 264+600)
Branch - New access to the Port (approximate length of 266 meters)	Km 0 of the Branch (Km 1+375 approximately)	Km 0+266 approx. of the Branch (access gate to the Port)
Sayago to Peñarol Station Section. (Approximate length of 2.150 meters approx.)	Km 8+150 approx. (junction with the East line)	100 meters to the East from the Paso axis at level with Cno. Casavalle (10 +300 km approx. of the East line)
North side Triángulo Sayago (length of approximately 550 meters)	Km 8+820 approx. line to Paso de los Toros (junction with East line from the north side of Triángulo)	Km 8 +900 approx. line to the East.
Access Branch to the Pulp Mill on the South Side (length of approximately 4.860 meters)	Km 255 +740 approx. (Change of access to the branch of the Mill)	Pulp Mill, Km 260+600 approx.
Triangle of Access to the Mill on the North Side. (Approximate length of 1.392 meters approx.)	Km 258+900 approx.(MVD-PT)	Km 258+200 approx. of the access branch to the South side of the Mill

(1) This section includes the renovation of the current way of connection to the port up to the gate of the port including the complete renewal of the crossing over the port promenade.
(2) Double track between Montevideo (0 +900 km) and Progreso (28 +475 km).

1.1.2 Standards of the new railway infrastructure

The new track must be constructed in accordance with the criteria and technical standards set out in the Appendices A (Scope of the Railway Project), B (Technical Specifications) and M (General Requirements for Signaling) and must be maintained during the term of the contract according to the technical standards contained in the Appendix C (Maintenance Rules)

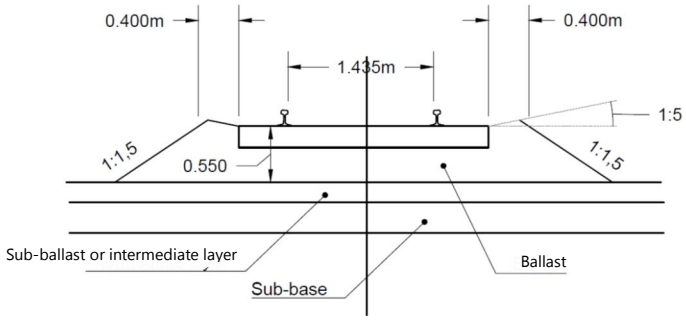
The aim of the project is to reconstruct the railway tracks to reach the standards of speed, load capacity, track structure, traffic volume and rail transport specified in detail in the Appendix A (Scope of the Railway Project), summarized below:

Maximum run speed: 80 km/h

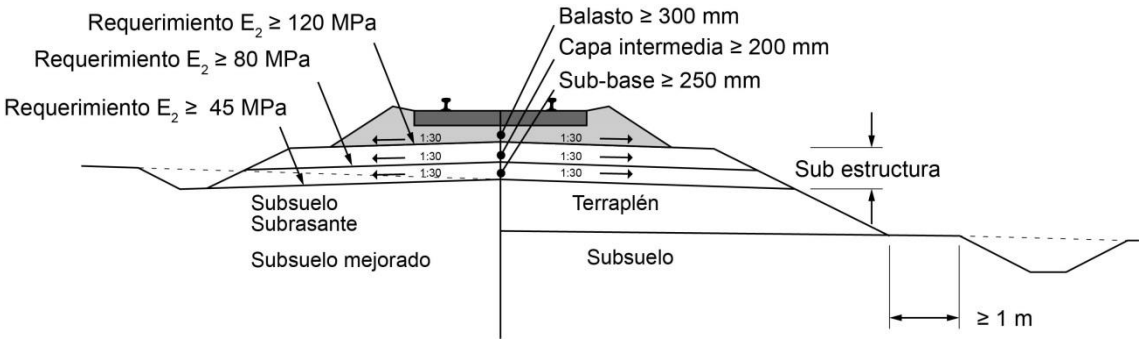
Maximum permissible load: 22.5 tons/axle.

Structure of the required track:

- Type of rail: UIC54 E1 with steel 900 (UIC) or R260 (EN 13674).
- Track welded continuously throughout all sections
- Monobloc concrete sleepers with elastic fixing separated to a maximum of 61 centimeters.
- Ballast layer with a minimum of 30 centimeters under the sleeper and 55 centimeters measured from the upper surface of the sleeper according to the following cross section:



- Sub-ballast and sub-base layers according to the provisions indicated in the Appendix B (Technical Specifications)
- Conditions for the embankments and cuttings according to the provisions indicated in the Appendix B (Technical Specifications)



- Switch devices will be new and unused with manganese steel Monobloc crossings and with rail profile UIC 54 E1 or UIC of a greater weight per meter, and with steel 900A (UIC) or R260 (EN 13674). They will allow train traffic by switch tracks to a speed greater than or equal to 40 km/h.

1.1.3 Structures (Trenches, Bridges and Culverts)

The trenches, bridges and culverts that will be rebuilt, as the bridges that will strengthen, will be indicated in the appendices: G, H, J, and K

The interference with public and private services must be taken into account, and coordination is needed with the competent bodies and the removal and relocation of these. In addition, the operating services that connect Palacio de la Luz with Central José Battle y Ordóñez (km 1+430) must be maintained in coordination with UTE.

Level Crossings

The level crossings are detailed in appendices G, H and L.

1.1.5 Signaling System

A new system of signaling and safety according to indicated in Appendix M and other appendices of the contract will be installed. In the double track stretch between Montevideo and Progreso, there will be a one-way traffic on the right side. However, in this double track stretch, the contractor may submit an alternative offer with a bi-directional signaling system.

1.1.6. Loading, passengers and railroad crossing stations.

Loading and passenger stations, junction stations, industrial deviations and connections to the Montevideo port that comprise this project are listed in the appendix G6.

The tracks will be built with profile rails UIC 54 E1 and concrete monobloc sleepers according to the appendices of the project, with exceptions for some secondary tracks that are presented in the appendix Q.

1.1.7 Traffic Demand

The amount of loading estimated annually between Paso de los Toros and the Montevideo port will be of 4 million net tons, with approximately 8 million gross tons;

There will be railway activity over the twenty-four (24) hours of the day, the three hundred and sixty-five (365) days of the year.

The infrastructure will allow a feasible standard schedule of loading trains for more than 15 trains per day in each direction (more than 15+15) between Montevideo and Paso de los Toros, with a train length of up to 800 meters.

In addition, the infrastructure will allow passenger traffic with peaks of up to 4 trains/hour for each direction between Montevideo and Progreso, and up to 4 trains per day up to 25 de Agosto.

1.1. 8 Track disarmament and existing facilities, classification, transport and stowage of produced materials

The disarmament of tracks and existing facilities, the material classification, as well as the transfer and collection of these, are specified in Appendix Q.

The grid of the existing track must be removed, dismantling it by sections, for which the joint bars shall be disconnected while retaining its elements (including its bolts); for this operation, cutting any of the elements (rails, joint bars, bolts, ties, etc.) is prohibited. Once the track is disassembled by stretches of short bars, these will be charged, transported and discharged in the Línea Rio Branco, from Km. 26 to the Km. 334.

The existing track switches may be transported in whole, in parts or dismantled depending on the chosen transport system. If they are transported in parts or dismantled, they must be properly numbered and related for their later identification and assembly at the following stations of the Línea Río Branco: San Ramón, Cerro Colorado, Illescas, Mansavillagra, Nico Pérez, Zapicán, José Pedro Varela and Treinta y Tres</g>.

All the remaining railway material of the existing track shall be selected according to the Contract Supervision instructions and then delivered successfully and stored in the previously mentioned stations.

1.1.9 Additional or related works

The subject matter of the contract includes the project and construction of the (additional) related works contained in the appendix 9 of the Administrative Bidding Terms and Conditions.

The appendix 9 includes the preliminary works and the particular technical specifications for the design and construction of Additional Works.

These are structural and building road works related to the railway road (the passages at a different level, the modification of the routes layout and roads near the railway, the construction of platforms, reserves and other works.)

The subject matter of the contract does not include subsequent maintenance to the final acceptance of the additional works included in the list of the Appendix 9.

1.1.10 Quality Control

The Contractor shall submit a quality plan in accordance with the provisions of the appendix D.

All activities and trials related to the quality control testing on materials, equipment, works, facilities and maintenance work performed in accordance with the provisions of the appendices A, B, C, D and other contract documents, will be in charge of the Contractor. In the case that the standard to be applied is not specified, or that it does not cover some necessary aspect for controlling the quality of works or supplies, the Supervisor of the Contract will stipulate it according to the recognized international standards.

The laboratories, facilities and equipment to perform the tests shall be approved by the Contract Supervisor.

The Contractor will warn with a minimum of 48 hours to the Contract Supervisor on the works to be carried out so that the latter can have control of them.

The choice of samples, places and periods for the trials must have the approval of the Contract Supervisor.

2. REMUNERATION OF THE CONTRACTOR COMPANY

2.1. Availability Payment

1. The remuneration of the Contractor Company for the execution of this contract is determined by the income it receives from the Contracting Administration as an Availability Payment (hereinafter, AP). This payment shall be the value mentioned in the offer, adjusted according to the level of actual availability and the quality of the state of the infrastructure, as described below.

2. Availability Payment (AP) is defined as the quantities that the Contracting Administration shall pay to the Contractor Company as remuneration for the execution of the different works and services which are the subject matter of this contract, in connection with the provision of railway infrastructure capacity and the technical sustainability in safety and quality conditions, in accordance with the indicators of availability, response to incidents and events, quality and comprehensive management of the infrastructure, defined in the Chapter 3 of these terms and conditions.

3. Such amounts shall be automatically adjusted to the value received for such service, in the manner indicated below.

4. Availability Payments only begin to accrue once the total length of the infrastructure has been fully enabled according to the specifications set out in clause 1.1 of these terms and conditions, and the commissioning of the infrastructure has been completed, as set out in the Appendix A 3.4, and it is so recorded in the Final Infrastructure Verification Certificate.

5. The incomes that the Contractor Company has the right to receive for this shall be settled and paid every two calendar months in arrears, after the verification of compliance with the criteria of availability and compliance with the indicators of response to incidents and events, quality and comprehensive management, including levels or minimum thresholds for certain indicators, as described in the following paragraphs.

6. For the indicators of availability, response to incidents and events and comprehensive management of the infrastructure, the totality of the distance from Montevideo to Paso de los Toros shall be considered as a single section.

The deductions for the non-compliance with the quality indicators shall affect the availability payment according to the number of sub-sections in which the non-compliance occurred. To these effects, the infrastructure shall be divided into four sub-sections:

Sub-section	Progressive Start(1)	**Progressive End(1)**
Sub-section 1: Montevideo - Progreso(2)	0+555	28+600
Sub-section 2: Progreso - Florida	28+600	104+000
Sub-section 3: Florida - Durazno	104+000	195+000
Sub-section 4: Durazno-Paso de los Toros(3)	195+000	264+600

(1) The progressive ones are the Montevideo–Paso de los Toros sections corresponding to the basic project contained in the Appendices.
(2) Sub-sections of double tracks include new branch to Puerto, the stretch Sayago - Peñarol and the connection with the North of Sayago triangle.
(3) It includes the triangle and the access branch to the Plant.

Each sub-section shall be equally weighted, as indicated in the sub-chapter 3.3.

2.1.1. Introduction to the calculation of the Availability Payment

1. In order to measure the availability in units and adapt the payment to the value of the service received/paid, its accrual basis shall be considered for unit periods of time, being the minimum unit to such effects, the period of 4 hours.

2. The indicators of availability, response to incidents and events, quality and comprehensive management, including the definitions, the requirements of each one of them and the way to determine if there is a failure, are described in detail in the chapter3 of these terms and conditions.

3. In conceptual terms, the availability payment accrued during a "t" period shall be:

$$AP_t = MP_t x (1 - AF_t)$$

Where:

- ***AP*$_t$** is the Availability Payment accrued during a "t" period
- **MP$_t$** is the Maximum Payment established in the contractor's offer during a "t" period
- **AF$_t$** is the corresponding Adjustment Factor for the "t" time period. This is represented by a set of sub-factors, which shall be detailed in the formulas included in section 2.2, and explained later.

Thus, the annual AP earned by the contractor shall be the sum of the payments accrued in each period for the railway infrastructure.

The AP due on a certain day shall be the sum of the six payments corresponding to in a day, each by a block of 4 hours.

2.2. Availability Criteria, Availability Categories and Availability Payment Adjustments

2.2.1. Availability Criteria

For the contractor to have the right to receive income in the form of availability payment in each time period considered, the infrastructure must comply with the following:

- It shall not be closed or locked, so as to prevent the movement of trains, in any part of the length of the railway infrastructure subject matter of this contract, and throughout the period of availability considered, unless this is motivated by the events described in paragraph2.3(EXCEPTIONS TO THE CONSIDERATION OF NON-AVAILABILITY).
- No fault or non-availability event which should have been remedied or rectified by the Contractor within the expected response time, when applicable, and was not, shall occur in any section or zone.
- No fault of the type which has not been assigned a response time shall occur, that is to say, if its response time is zero or null (RT=0).

2.2.2. Lack of Availability

If there were periods that do not comply with the criteria of availability, an "Adjustment Factor" shall be applied to the corresponding payment for the duration of the failure, on the basis of indicators of availability, response to incidents and events, quality and comprehensive management, as defined in the Chapter 3. Such chapter presents the functional availability and infrastructure quality requirements, as well as the minimum thresholds, if any, of the objective indicators for the monitoring of compliance with these requirements which may lead to the occurrence of lack of availability. In this sense, a lack of availability can refer not only to the disruption of rail traffic, but also to failures in the quality of the infrastructure or its comprehensive management.

It is considered that there has been a lack of availability in the infrastructure when there is a failure to comply with the technical specifications laid down in the chapter 3 or, if a Response Time was considered for such an event of availability, the event had not been rectified in the maximum time foreseen for rectification. In such cases, the adjustment shall be applied retroactively from the moment in which the lack of availability was detected.

When a lack of availability occurs, it shall be considered that the conditions of functional availability have not been complied with, and the deductions or adjustments described in this document shall be applied, depending on the seriousness of the missing availability as defined in Chapter 3. The adjustment factor corresponding to the "Available" category is equal to zero (AF=0) and the adjustment factor corresponding to "Not Available" is equal to 1 (AF=1). The adjustment factor can take intermediate values, depending on the seriousness of the fault, as indicated in this chapter.

2.3. Exceptions to the Consideration of Non-Availability

Exceptionally, the railway infrastructure shall not be considered unavailable when the following events occur:

a. The closure or partial or complete blockage of the infrastructure is motivated for reasons attributable to the Administration itself, to a direct action of the Contracting Administration or to direct and express orders of the competent authorities in the field of rail traffic security or management, which are not motivated by non-compliance by the Contractor.

b. There has been a lack of availability due to a case of force majeure.

c. The closure or partial/complete blockage of the railway infrastructure is motivated by tasks and work of ordinary or extraordinary maintenance provided that they are conducted in a manner consistent with the previously defined maintenance program, or its corresponding amendment has been requested in advance and it has been duly authorized, with the contractor having to ensure at all times that this work has the minimum possible impact on rail operations.

d. During the time to respond to incidents and events foreseen in paragraph 3.2 in case of accidents or other events foreseen in it.

2.4. Determination of the Availability Payment

2.4.1. Procedure for Calculating the Availability Payment

The Availability Payments System seeks to provide the necessary incentives to resolve effectively and quickly the non-conformities that take place, since the application of the deductions automatically affects the entire period during which the resolution of the indicated fault is delayed. For these purposes, the time that elapses between the detections a non-conformity, or an incident or event occurs shall be counted, until the contractor achieves the resolution.

For the purposes of the procedure for calculating the AP, the following concepts relating to the response times (RT) are defined, as well as the adjustment factor by indicator (Fj):

- **Response time, RT**: time available for the solution of non-conformities, from the moment of their detection, which initially is exempt from deduction from the availability payment. The response time shall begin to apply the adjustment factor, retroactively from the time of the incident that triggered the failure.
- **Adjustment Factor by Indicator, Fj**: the percentage deduction applied to the payment formula, which depends on the severity of the non-compliance in the "j" indicator. The appropriate adjustment factor shall be applied to the whole of the duration of the non-conformity.

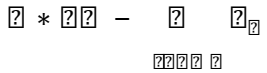
Depending on the time elapsed to resolve or address a failure or event, and depending on the value of the defined Response Time for this indicator, it shall determine the value of the corresponding adjustment factor by indicator, as indicated in Chapter 3. The elapsed time shall be expressed in units of 4 hours in the following manner: the measured duration in hours shall be divided by 4 and, if the ratio is not a whole number, it shall be rounded down to the nearest whole number. In other words, it shall be the minimum whole number that is greater than or equal to the measured duration in hours divided by 4.

The discount corresponding to each non-compliance shall be calculated as the product of the Adjustment Factor by indicator, by the number of 4-hour units of non-compliance, by MP/6, where MP is the Maximum Payment per day established in the contractor's offer.

That is to say, for the *k*-th non-compliance of the payment period, being:

- AF_k the corresponding adjustment factor by indicator
- M_k, the duration of the non-compliance measured in hours
- N_k the minimum whole number that is greater than or equal to $M_k/4$ (the duration of the non-compliance measured in units of 4 hours)
- Z_k the value of the discount: $AF_k * N_K * MP / 6$.
- MP the Maximum Payment per day as established in the contract.

In a payment period of D days, the availability payment shall be: D times MP minus the sum of the discounts for the non-compliances occurred in the payment period, if they occurred in different moments. In this case, the formula to obtain the calculation of the Availability Payments shall be the following:



In the case that more than one breach had occurred at the same time, the following shall be performed:

Each one of the days of the period shall be divided into 6 parts: 0 to 4 hours, 4 to 8 h, 8 to 12 h, 12 to 16 h, 16 to 20 h and 20 to 24 h. In a payment period with *D* days, there are 6*D parts, which shall be indexed with *p* = 1, 2, 3… 6*D*.

The time elapsed until the attention or solution of each incident, event or non-conformity, expressed in units of 4 hours, as it was said before, shall be allocated to the parts of the payment period that most closely represent the time in which the non-compliance actually occurred. That is to say, for every day of the payment period, each of its sixths shall be assigned the corresponding adjustment factor(s) by indicator, which shall be indicated with: {$F1_p$, $F2_p$, $F3_p$… $F14_p$}, where FJ means the Adjustment Factor of the Indicator J*y*p = 1, 2, 3… 6*D*.

For each *p* = 1, 2, 3… 6*D* part of the payment period, the corresponding General Adjustment Factor shall be the greatest of the adjustment factors by indicator, plus 0.1 times the sum of the other adjustment factors by indicator, as long as the sum does not exceed one. This is equal to:

$$\square\square_{\square} = 0{,}9\square\ \square\square\square(\square 1_{\square}, \square 2_{\square}, \square 3_{\square} \ldots, \square 14_{\square}\square + 0{,}1(\square 1_{\square} + \square 2_{\square} + \square 3_{\square} \ldots + \square 14_{\square})$$

Or $\square\square_{\square} = 1$, whichever is less.

In a period with D days, the Availability Payment shall be calculated as follows:

$$\square * \square\square - \frac{\square\square}{6} * \sum_{\square\square\square}^{\square\square} \mathrm{FA}_{\square}$$

The annual payment due to the Contractor shall be the sum of the payments earned by each of the payment periods of the year, which in turn shall be the sum of the payments earned by each of the periods of 4 hours that make up the payment period.

2.4.2. Penalties

For each indicator, a maximum time for the resolution of non-compliances is also defined. If such non-compliances had not been corrected when the maximum defined period for correction had passed, additional contractual penalties may be applied, not to be confused with deductions, which are automatic.

- **Non-Compliance Time with Deduction**: The time indicated in each table is the maximum period of correction granted before the corresponding penalties are implemented.

Upon expiration of the non-compliance time, the adjustment factor shall continue to be applied for as long as the non-compliance of the indicator in question continues but, in addition, it shall cause contractual penalties in accordance with the general regime of penalties of the contract.

2.5. Procedure of Payment to the Contractor

2.5.1. Quarterly Settlements

1. Payments to the contractor shall be settled every four calendar months in arrears (except for the first and the last, the details of which are set out in the contract). For such purpose, the

Contractor Company shall submit, in each period, an Availability Payment request, calculated in accordance with the rules contained in these terms and conditions, relating to the period immediately preceding it.

2. Such a request shall contain the details of the settlement breaking down the discount elements corresponding to such period, as defined in paragraph 2.4.

3. The calculations contained in the Contractor's request shall be based on and justified in the information relating to incidents occurring during the reference period and all the necessary information, as well as the information that may be required by the Administration for the calculation of the AP, collected in the reports provided for in chapter 4.

4. In the event that, on the request preparation date, the solution to the non-conformities initiated in the reference period was pending, the calculations shall be presented with the adjustment factors determined as if the solution had occurred at the end of the period. On the request for the next period, the adjustment factors shall be detailed for these indicators corresponding to the time for the solution and, if necessary, the correction of the calculation shall be made in the Availability Payment.

5. After the corresponding payment request has been received, within a maximum term of fifteen (15) calendar days from its receipt, the Administration shall review the calculations and forward the revision to the contractor, either with the acceptance of the request or with the comments and corrections and requests for clarification, as appropriate. This response must contain the payment proposal that the Administration makes for the reference period. If, within such term, the Contracting Party failed to submit its payment proposal, the Contractor's proposal shall be deemed as accepted.

6. The contractor may thereafter submit the invoice for the amount that is not in dispute. The Contractor may respond to the request for clarification and to the revision of the settlement calculations, duly corrected, together with a request for final payment, or raise the objections that may be relevant. The lack of response by the Contractor within a period of 10 days shall mean that the Contractor accepts the calculation presented by the Administration.

7. In the event that there have been discrepancies within the maximum term of ten (10) days from the date of receipt of the comments issued by the Contractor, the Administration shall send the final and properly adjusted calculations so that the Contractor proceeds to issue the final invoice, without prejudice to the processing of the payment corresponding to the partial invoice for the undisputed amount.

8. The payment to the Contractor Company shall be made within thirty (30) days from the receipt of each invoice.

2.5.2. Annual Settlement of Availability Payments

1. A settlement by adjustment shall be carried out annually, in accordance with the result of the annual audit in accordance with the provisions laid down in the special administrative terms and conditions.

2. Taking into account the result of the above-mentioned audit, before March 30th of each financial year, the final settlement shall be determined as the difference between the sum of the values indicated in Clause 3.1 and 3.2 with the audit data and the sum of the monthly payments made in the previous year, minus the possible penalties that may apply.

3. A certificate signed by the Administration and the Contractor Company shall be attached to the final settlement in which the degree of compliance with the quality and availability criteria and its impact on the amounts to be charged for this in relation to the previous year is perfectly detailed.

4. The amount resulting from the final settlement shall increase in the next payment to the contractor if it is in favor of the Contractor Company and shall be subtracted from it if it is in favor of the Administration.

2.6. Additional works (work related)

With regard to additional works that will be carried out in the form of Public Works Contract, the remuneration will be according to the executed measurements and they will be paid in Uruguayan pesos. The contracting Administration will set the price of each work (see appendix 9 of the Administrative Conditions), where the offeror should establish the specific content corresponding to each one of them, and the total price for the work may not in any case be greater than that established by the contracting party. The contractor party shall maintain additional works **only** until the Administration issues the final acceptance of it.

3. INDICATORS

In this chapter, the technical conditions of the contract for the infrastructure operation stage are defined. These conditions are defined through the use of indicators that adequately and effectively reflect the value of the parameters defining the actual infrastructure conditions.

The considered indicators allow defining the levels of availability and quality of the railway infrastructure elements subject matter of the contract, as well as its management, which are used in the procedure for determining the availability payments to which the contractor is entitled.

The essential function of the indicators is to allow setting the level of quality of the work carried out by the contractor, as well as the quality perceived by the end user of the infrastructure.

In order to assess and control, during the infrastructure operation period, the quality of the design, the execution of the work and the maintenance, indicators are set out for the concepts of:

- Availability
- Response to incidents and events
- Quality
- Comprehensive management of the infrastructure

The first two concepts are linked to the result of the operation and maintenance, while the third one depends on the intrinsic quality of the installation (conditioned by its definition and the quality of execution) and its evolution with time and traffic (which depends on the initial quality and maintenance).

In addition, comprehensive management indicators are important to ensure that the maintenance of the infrastructure is based on a corrective and preventive strategy.

Using these indicators, the quality of the infrastructure shall be measured throughout the life cycle, both from the point of view of the system availability and its proper functioning. The result of these measurements shall serve to assess the contractor and establish the payment amount according to the established payment mechanism.

All the deadlines set for the indicators in days correspond to calendar days.

3.1. Availability (Indicator 1)

Required Standard

No part of the railway infrastructure under this contract is closed or blocked so as to prevent the movement of trains in any part of its length, and throughout the period of availability considered, unless it is motivated by the events described in paragraph 2.3.

Response Time

The Response Time shall be null.

Adjustment Factor

The Adjustment Factor corresponding to the **F1** availability indicator shall be applied in the following manner:

Not available	Available
1	**0**
Any part of the railway infrastructure under this contract is closed or blocked so as to prevent the movement of trains in any part of its length, and throughout the period of availability considered, unless it is motivated by the events described in paragraph 2.3.	No part of the railway infrastructure under this contract is closed or blocked so as to prevent the movement of trains in any part of its length, and throughout the period of availability considered. If it is closed, it is because of the events described in paragraph2.3.

Penalties

The Contract Supervisor shall establish the maximum and the minimum conditions for the restitution of the transit of all trains and vehicles in the area of the railway infrastructure affected by a lack of availability.

In the case of unjustified non-compliance with the maximum term or the minimum track conditions, the penalties laid down under the contract may be applied.

The reasons considered as justified are only those of force majeure or those affecting the actions of the Contractor and clearly left out of its orbit of action.

If the deadline established by the Contract Supervisor is unjustifiably exceeded by more than a 100%, the Contracting Party may terminate the contract.

3.2. Response to incidents and events (Indicator 2)

Required Standard

The contractor shall respond to incidents and events, with the required and practicable speed to minimize the unavailability of the infrastructure and restore its use. Any situation preventing or presenting a risk for the movement of trains under safety conditions shall be deemed to be an incident or event. In case of incidents or events of importance, with victims or possible third-party conditions, as well as spills of hazardous substances or similar situations, the Contractor must report the Administration immediately. In addition, the appropriate report shall be delivered.

If the incident or event involves rolling stock that is not the responsibility of the Contractor, the latter must wait for the arrival of the breakdown train. The Contractor is also obliged to pay

attention and bring to the task the support elements defined in the Protocol for Management of Incidents and Events as defined below.

In any case, the damage to the infrastructure subject matter of the contract that these terms and conditions refer to shall be corrected by the Contractor prior to the first movement on that site, regardless of the cause of the incident. The Contractor may then request a compensation to whom it may concern in accordance with the regulations currently in force. The responsibility for the incident shall be determined in the manner prescribed by the regulations.

In the event that this situation had arisen due to the Contractor's actions, the Availability Indicator 1 shall apply (with an adjustment factor equal to one). Otherwise, this Response to Incidents and Events Indicator 2 shall apply as described below.

The Contractor shall design a Protocol for managing incidents and events that include the procedures and actions that the Contractor shall carry out in case of incidents and events. This protocol should be based on what was presented as part of the technical bid. The changes must be approved by the Contract Supervisor. This protocol shall include specific procedures for the most frequent and also most serious incidents, including, at least, the following:

- Derailments
- Spill of hazardous substances
- Detachment of slopes in embankments and cuttings
- Occupation of the track and its affected stretch
- Fires
- Floods
- Defects in the railway tracks, not attributable to the contractor, which put at risk the safety and/or circulation.

In case of any incident or event in the infrastructure, a patrol shall be present at the place and proceed to carry out the tasks needed to restore the operation in the case that is possible or to initiate the appropriate procedures to restore the operation in case of requiring additional construction means. The actions corresponding to this patrol shall be described in the Protocol for management of incidents and events.

The incidents and events notice shall be performed by any of these agents:

- Railway Administrator
- Contract Supervisor
- Contractor
- Railway Operator(s)

For this, the Contracting Party shall establish the means of communication to be used.

The Response to incidents and events indicator shall be determined as indicated, for the following actions:

- Attention: time it takes for the patrol to show up at the scene of the incident and to initiate appropriate actions in accordance with the defined Protocol.
- Immediate resolution: time it takes for the Contractor to restore the railway operation in the case of incidents and events whose resolution can be achieved with the equipment defined in the Protocol of management of incidents and events.

- Resolution with additional construction means: time it takes for the contractor to restore the railway operation in the case of incidents and events whose resolution requires additional construction means.

Response time (RT)

The Response Time (RT) values for each concept are the following:

Concept	Value
Attention	90 minutes in the Montevideo - Progreso section 120 minutes in the Progreso - Paso de los Toros section
Immediate resolution	12 hours
Resolution with additional construction means	48 hours

The response time in the case of immediate resolution may be increased by the Contract Supervisor at the request of the contractor by up to 100%.

In the event that additional construction means are required, exceptionally, the Contractor may request an extension of the response time, if the severity of the incident or the size of the corrective actions so require it. The request shall be resolved by the Contract Supervisor. In no case may the extension be granted if the incident or damage is attributable to the Contractor.

Deduction

A deduction to the availability payment by the ***F2*** *Response to incidents and events* Indicator shall be deemed to apply once the solution exceeds the defined response time.

Adjustment Factor

The Adjustment Factor corresponding to the **F2** indicator shall be applied in the following manner:

Not available	Serious fault	Minor fault	Available
1	**0.7**	**0.3**	**0**
The solution occurs after 2 times the defined RT.	The solution occurs after 1.5 times the defined RT.	The solution occurs after the defined RT.	The solution occurs before the defined RT.

Penalties

The contracting party may apply penalties and fines to the contractor if the time for the solution to the incident or event exceeds the one indicated in the following table:

Concept	Value
Attention	6 hours
Immediate resolution	36 hours
Resolution with additional construction means	6 days

In the event that additional construction means are required, exceptionally, the Contractor may request an extension of the non-compliance time of up to 100% if the severity of the incident or the size of the corrective actions so require it. The request shall be resolved by the Contract Supervisor. In no case may the extension be granted if the incident or damage is attributable to the Contractor.

3.3. Quality

The quality of the subsystems and their evolution is measured by a series of indicators. These quality indicators are, in addition, a basic element for the management of the availability payment. These indicators and their mode of operation are described in the subchapters below.

The inspection of the data management on these indicators shall be the direct responsibility of the Contracting Administration. However, the Contractor shall implement a Monitoring System (see chapter 4) and the results of this monitoring shall be, at all times, at the disposal of the Administration. All data, ultimately, shall be managed within the operations of the Contract Comprehensive Management described in chapter 4.

The indexes of quality control, the method to determine them and the frequency of execution are specific for each functional set and/or item to be evaluated.

Quality indicators are applied when non-compliances allow to keep train traffic through the affected section, even though it is established to reduce the travel speed (precautions) of the concerned section. The precautions will be established according to the Contract Supervisor who might take into account for this purpose what is established in the ALAF 5-026 standard or other recognized international standards </g>. It is the Contractor's responsibility to inform about precautions, both through the established communications systems as well as the signs located on the track in the corresponding section.

From the moment in which penalties may be applied according to the provisions for each quality indicator, the Administration may also apply an adjustment factor equal to 1 for the indicator presenting the failure that has created the possibility of applying these penalties.

3.3.1. Conservation of slopes (Indicator 3)

Required Standards

The elements of stabilization, protection and monitoring of the earth works shall be maintained in good working order. Any defect occurring shall be marked and the appropriate measures shall be taken.The objective shall be to maintain the geometry and initial stability of the earth works.

The protection ditch shall be free of silting up or objects.

If there is an embankment slope detachment, the response shall be prompt and effective for the withdrawal of the track structure and curbs of the detachment elements.

The slopes conservation indicators are the response times of the different actions to correct the detachment of slopes. The indicators are:

- Attention: The patrol appears in the place and begins to apply the corresponding actions in accordance with the defined protocol
- Correction of defects of meshes, walls or other elements of protection
- Withdrawal of materials by detachment
- Having new containment systems

In the event that a slope detachment in either remove cutting or embankment, affects or obstructs the track, and has not been caused by an atypical climatic event, as determined by the Contract Supervisor, it shall be deemed to affect the availability indicator.

Response Time

The Response Time (RT) values for each concept are the following:

Concept		Value
Attention		90 minutes in the Montevideo - Progreso section 120 minutes in the Progreso - Paso de los Toros section
Correction of defects of meshes, walls or other elements of protection		48 hours
Withdrawal of materials by detachment and reconstruction of the platform and slopes.	< 500 m^3	72 hours
	> 500 m^3	Special Status*
Having new containment systems	< 500 m^3	1 week
	> 500 m^3	Special Status*

* The response time in special situations shall be determined by the Administration once the Contractor has proposed an Action Plan. In these cases, the contractor has 24 hours to present this plan.

Deduction

The deduction to the availability payment by the indicator of Conservation of slopes shall be deemed to apply if the Response Time is not complied with.

Adjustment Factor

The Adjustment Factor corresponding to the **F3** indicator of Conservation of slopes shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time is greater than twice the defined RT.	The time is greater than the defined RT.	The time is less than the defined RT.

Where **s**∈{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the elapsed time of correction exceeds the one indicated in the following table:

Concept		Value
Attention		6 hours
Correction of defects of meshes, walls or other elements of protection		8 days
Withdrawal of materials by detachment and reconstruction of the platform and slopes.	< 2,000 m^3	8 days
	> 2,000 m^3	Thrice the given RT
Having new containment systems	< 2,000 m^3	21 days
	> 2,000 m^3	Thrice the given RT

3.3.2. Drains (Indicator 4)

The design and dimensioning of the ditches and other facilities and drainage structures (sewers, drains, pumping facilities and equipment, among others) are the responsibility of the Contractor. All of these shall have an adequate size and construction to be able to route without problems the expected flow of water out of the railway infrastructure.

Any track condition or obstruction that occurs by flooding (except for events considered exceptional) shall be deemed to affect the availability indicator.

Required Standards

Drainage elements shall be maintained in good conditions of operation and maintenance. The required conditions are the following:

- All the elements of drainage shall be clean, free of obstacles and without structural damage.
- All drainage facilities shall be in perfect operating condition.
- The channels of the water courses shall not present undercuts or obstructions within the track line.
- In the case of drainpipes, chambers, wells, sewers and similar, these shall be protected to prevent their deterioration or silting up.

Particular attention must be paid to the drainage conditions in the trenches, areas of track switches, level crossings, ends of the track in bridges, and to all the places where conditions may restrict the proper drainage of rain water.

The indicator of cleaning and repair of drainage works is the response time of the different actions to correct the non-conformity.

Response Time

The Response Time (RT) values for each concept are the following:

Concept		Value
Correction of the non-conformity	When affecting the platform	18 hours
	When not affecting the platform	3 days

Platform is understood as the surface on which the ballast is supported.

In the event of structural damage, the indicator 13 (bridges and other structures) shall apply.

Deduction

The deduction to the availability payment by the indicator of Drainage shall be deemed to apply if the Response Time is not complied with.

Adjustment Factor

The Adjustment Factor corresponding to the **F**4 indicator of Drains shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time was greater than 1.5 times the RT	The time was greater than the RT	The time was less than the RT

Where **s**ϵ{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the time to correct the non-conformity exceeds the one indicated in the following table:

Value	
When it affects the platform	36 hours
When it does not affect the platform	7 days

3.3.3. Ballast (Indicator 5)

The ballast shall provide the ties with uniform and correct side support maintaining the correct cross-section and, especially, the uniformity of the shoulders of the track (crowns or sidewalks). The ballast may not cover or be at a level higher than the ties. In the switches, it shall not interfere with the moving parts of the points or with the switch throw bars.

The ballast shall comply with the cross-section of the project and, in general, with the specifications of Appendices A, B and C.

The added ballast for main tracks and deviations of the crossing stations must comply with the granulometric classification F, other granulometric curves may be submitted for consideration to the Infrastructure Manager. The Offeror must quote ballast with Los Angeles abrasion ($LA_{RB)}$ of less than or equal to 20 and the source of the ballast will be indicated, as well as the supplied amounts of each quarry and the technical characteristics of each material.

The sections of ballast and sub-ballast must be free of vegetation.

The ballast should be kept clean and free from contamination. The ballast of a sector of the track shall be considered to be contaminated when it is affected by any of the functions laid down in the Appendix C, such as its drainage capacity, ties support, etc., forcing a reduction of speed in the sector.

The new ballast which may be necessary to incorporate during maintenance shall comply with the same conditions as the ballast used for the construction of the track.

Thresholds

It is considered that the ballast is unacceptable when it does not comply with the provisions laid down in the preceding paragraphs of this section or when it is contaminated.

Response time (RT)

The response time shall be 90 days.

Deductions

A deduction to the availability payment shall be deemed to apply when the presence of contaminated ballast is detected, or it does not comply with the provisions laid down in the preceding paragraphs.

Adjustment Factor

The Adjustment Factor corresponding to the **F5** indicator of Ballast shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault
0.2*s	**0.1*s**
The time until the conformity exceeds the RT by 50%.	The time until the conformity is greater than the RT.

Where **s**ϵ{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the conformity occurs after twice the response time (RT) from known non-compliance.

3.3.4. Tiesand Fastenings (Indicator 6)

New ties used for the maintenance must be of the same type and meet the same technical standards than those used for the construction of the track.

The ties must be installed perpendicularly to the rails, properly spaced, compacted and properly attached to the rail.

A concrete tie is out of tolerance when:

- It does not allow for the correct seat of one of the rails or does not transmit correctly the vertical, transverse or longitudinal efforts.
- The mismatch exceeds in absolute value the 10 mm with respect to the perpendicular of the rails.
- The existing distance difference between each adjacent tie and the distance of the project exceeds, in absolute value, 20 mm.
- The difference in absolute value of the existing distance between 6 adjoining ties and 5 times the distance of the project exceeds 30 mm.
- It is broken, fissured or cracked under one or both seats of the rail. (The rail seat is the inner surface between two lines located 5 centimeters from the outer edges of the fastenings set).
- It presents any surface defect of irregular shape with a depth greater than 1.5 millimeters under the seat rail and greater than 5 millimeters in the rest.
- Outside the area of the seat rail, it has cracks greater than 0.2 millimeters.
- It is broken, fissured or cracked through the center, showing signs of deterioration, loss of voltage in pre-stressed cables, exposed cables, hulling, etc.
- It presents roughly circular surface holes under the seat rail with a diameter greater than 5 mm greater than 2.5 millimeters or in depth.
- When there is spalling, with loss of material on the edges or vertices, in a length greater than 70 millimeters or greater than 10 millimeters in depth. If the measures are inferior, they shall not be permitted if their number is greater than 6.
- It is broken lengthwise, resulting in the loss of the proper capacity for the support in the place of one or both of the mounting inserts.
- When the elastic fastening does not properly fulfill its function. It is considered that a fastening does not fulfill its function when it detects that it is disconnected or tight defectively, or does not comply, at the Contract Supervisor's discretion, with one of the objectives set out in Appendix C. It is also considered out of tolerance if the fastening does not meet the manufacturer's specifications.

indicators

The quality of the ties shall be controlled by two indicators:

- Tie out of tolerance
- Contiguous ties out of tolerance.

Threshold values

The threshold values of these indicators are the following:

Indicator	Threshold
Tie out of tolerance	Not Allowed
Contiguous ties out of tolerance (*)	Not Allowed

(*) In these cases, a caution sign with the speed restriction shall be implemented until the defect is corrected.

If the ties are out of tolerance as a result of an incident or event, the indicator 2 shall apply (see section 3.2).

Response Time

The Response Time shall be:

Indicator	Threshold
Tie out of tolerance	10 days
Contiguous ties out of tolerance.	Null (zero)

Deductions

The deduction to the availability payment shall be deemed to apply when it exceeds one of the indicators thresholds whose response time is null, or when the correction for the indicator with a positive response time is given in a time greater than this time.

Adjustment Factor

The Adjustment Factor corresponding to the **F6** indicator of *Ties and Fastenings* shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time exceeds 75% of the time of non-compliance referred to in the Penalties paragraph.	If the time exceeds the RT. (From the time in which the non-compliance is known, when RT = 0).	If the fault is corrected within the RT.

Where **s**ϵ{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the elapsed time for the solution exceeds the times indicated in the following table:

Indicator	Non-compliance Time
Tie out of tolerance	20 days
Contiguous ties out of tolerance	48 hours

3.3.5. Rail (Indicator 7)

The rails shall comply with the provisions laid down in Appendices A, B, C and D.

The rails shall not be cut by flame in any way (oxy-fuel, etc.). This includes all types of cut that may be needed, including the opening of holes. The rails shall only be cut by using chainsaws or some other appropriate abrasive tool.

In all routine maintenance inspections, the condition of the rails shall be reviewed visually.

In the pieces of rail or rails formed by welding more than one piece, it shall not be admitted for the welded rails to have a length less than 4 meters.

A continuous inspection in search of internal defects shall be carried out by the Contractor, using ultrasonic inspection techniques over the entire length of the rails at least once every 5 years.

Indicators

The quality indicators that apply to the rail are the following:

- Tolerance to rate of wear (H) measured according to Appendix C
- Tolerance to vertical wear (h) measured according to Appendix C
- Tolerance to side wear (s) measured according to Appendix C
- Tolerance to the wear of the skid (decrease in the width of the skid due to wear and corrosion on the supporting surface of the rail on the tie)
- Presence of fissures, cracks and breaks: All fissures, cracks and breaks that appear shall be immediately eliminated by changing the rail.
- The presence of damage or defects in the rolling surface: All damages or defects which appear on the rolling surface shall be repaired immediately, by restoring the correct rolling surface. The damaged sector may be cut, forming the rail by means of exothermic or electric welding, reshaped, or another procedure adopted by the contracting party may be applied.

The UIC 712 R tab may be used to classify defects on the rails

Threshold values

The threshold values of these indicators are the following:

Indicator	Threshold
Tolerance to vertical wear	12 mm

Indicator	Threshold
Tolerance to side wear	12 mm
Tolerance to the wear rate	17 mm
Tolerance to the skid wear	6 mm
Presence of fissures, cracks or breaks	Not Allowed
Presence of damage or defects in the rolling surface	Not Allowed

Response time (RT)

The response time for the correction is null (equivalent to RT = 0), except for this indicator:

Indicator	Response Time
Presence of damage or defects in the rolling surface	24 hours

Deductions

The deduction to the availability payment shall be deemed to apply when it exceeds one of the indicators thresholds whose response time is null, or when the correction for the indicator with a positive response time is given in a time greater than this time.

Adjustment Factor

The Adjustment Factor corresponding to the **F7** Rail indicator shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time exceeds 75% of the time of non-compliance referred to next in the Penalties paragraph.	If the time exceeds the RT. (From the time in which the non-compliance is known, when RT = 0).	If the fault is corrected within the RT.

Where **s**∈{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the elapsed time to correct the non-conformity exceeds 30 days, except for the indications in the following table:

Indicator	Non-compliance Time
Presence of fissures, cracks or breaks	8 hours
Presence of damage or defects in the rolling surface	48 hours

3.3.6. Geometry of the track (Indicator 8)

The construction works shall be built, accepted and maintained in accordance with the provisions laid down in the Appendices A, B, C and D.

The quality indicators for the maintenance of the track geometry defined in Appendix C are:

- Track width (gauge)
- Track horizontal alignment
- Track longitudinal leveling
- Track twist
- Cross-sectional leveling (difference between the measured peak cant and the design cant)

The threshold values of these indicators are the *intervention limits* set out in the Appendix C for each indicator, except for the cant that is set to 20 mm, and the standard deviation of the longitudinal leveling with a wave length of 5 meters (D1) set to 2.7 millimeters.

In no case are the D2 wavelengths considered for not applying to this range of speeds.

Indicator	Threshold
Track width (gauge) - isolated defect - nominal to peak	+30/-9 mm
Track width (gauge) - nominal to average above 100 meters	+28/-7 mm
Longitudinal leveling - isolated defect - 5-meter (D1) wavelength - average to peak	19 mm
Longitudinal leveling - 5-meter (D1) wavelength - standard deviation	2.7 mm
Cross-sectional leveling - Cant (difference between the measured peak cant and the design cant)	20 mm
Alignment - isolated defect - 5-meter (D1) wavelength - average to peak	15 mm
Twist with 3-meter base - maximum values - isolated defects - zero to peak	5 mm

Response time (RT)

The response time, if *immediate action limits* are exceeded as set out in Appendix C, shall be null (equivalent to RT = 0).

For cases in which the threshold of the indicator is exceeded but not the *immediate action limit*, the response time shall be 15 days.

Deductions

The deduction to the availability payment shall be deemed to apply when it exceeds one of the indicators thresholds whose response time is null, or when the correction for the indicator with a positive response time is given in a time greater than this time.

Adjustment Factor

The Adjustment Factor corresponding to the **F8** indicator of *Track Geometry* shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time exceeds 75% of the time of non-compliance referred to in the Penalties paragraph.	If the time exceeds the RT. (From the time in which the non-compliance is known, when RT = 0).	If the fault is corrected within the RT.

Where **s**∈{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the elapsed time to correct a non-conformity exceeds 30 days.

3.3.7. Switches. Switches and Crossings (Indicator 9)

All switches shall be built, accepted and maintained in accordance with the provisions laid down in the Appendices A, B, C and D.

All switches must comply with to the following:

- Be designed and built in the factory
- Be of the appropriate weight and cross section
- Be properly installed
- Not possessing cuts or holes made by oxy-fuel or a similar procedure.

Within the limits of the switches, the rails shall be of the same weight and section and interlocked or joined ties shall not be allowed.

Indicators

The quality indicators for the maintenance of the switches as defined in the Appendix C are:

- Maximum value of free wheel passage in the switch
- Minimum value of swing nose protection
- Maximum value of free wheel passage of crossing nose
- Maximum value of the free wheel passage of the entry to the guard rail/wing rail
- Minimum width of the flangeway
- Minimum depth of the flangeway
- Maximum raising of the guard rail

- Track switches in general
    - Tamping of the ties. It shall be out of tolerance if any of the ties of the track switch is properly is not properly compacted in accordance with the requirements set out in Appendix C.

- Other failures: The track switch shall be out of tolerance if it has other defects that prevent its proper operation such as: incorrect pointing, loose nose bolts, bearings that do not function properly, defects in alignment, width, or leveling, loose, missing or damaged pieces, lack of cleaning or lubrication, etc.

Threshold values

The threshold values of these indicators are the following:

Indicator	Threshold
Maximum value of free wheel passage in the switch	1.375 mm
Minimum value of swing nose protection	1.397 mm
Maximum value of free wheel passage of crossing nose	1.352 mm
Maximum value of free wheel passage of the entry to the guard rail/wing rail	1.375 mm
Minimum width of the flangeway	41 mm
Minimum depth of the flangeway	42 mm
Maximum raising of the guard rail	60 mm
Defective tamping of the ties.	Not allowed
Other failures	Not allowed

Response Time

The response time, if *immediate action limits* are exceeded as set out in Appendix C, shall be null (equivalent to RT = 0).

For defective tamping indicators for the ties and other faults, the response time shall be null (equivalent to RT = 0).

For cases in which the threshold of the indicator is exceeded but not the *immediate action limit*, the response time shall be 15 days.

Deductions

The deduction to the availability payment shall be deemed to apply when it exceeds one of the indicators thresholds whose response time is null, or when the correction for the indicator with a positive response time is given in a time greater than this time.

Adjustment Factor

The Adjustment Factor corresponding to the F9 *Switches. Switches and Crossings* indicator shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time exceeds the 75% of the time of non-compliance referred to in Penalties paragraph	If the time exceeds the RT. (From the time in which the non-compliance is known, when RT = 0).	If the fault is corrected within the RT.

Where **s**∈{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the elapsed time for the correction of a non-conformity exceeds 30 days, except for the indicators with RT=0 whose time of non-compliance shall be 24 hours.

3.3.8. Cleaning of the platform (Indicator 10)

Required Standards

The vegetation in and around the platform shall be kept clean to ensure the railway operation in safety conditions.

Also, the entire track line between the boundaries of the railways property shall be kept clean of all kinds of elements outside the necessary items for the operation of the railroad (trash, debris, branches, deposits of materials not needed for the railways, etc.)

The vegetation should be controlled so that:

- It does not grow on the platform or obstructs the drainage of the ballast.
- It does not grow more than 20 centimeters off the platform within the area of the railway property in urban areas.
- It does not invade the track clearance.
- It does not interfere with the adequate visibility at level crossings
- It does not obstruct the visibility of the kilometer posts, signs, railway signals in general, among others.
- It does not block the drainage
- It does not interfere with the safety conditions of trains
- It does not prevent or hinders the inspection of the railroad and works of art
- It does not present a risk of fire in the railway structures that may be affected by the fire.

The conditions are such that the height of the vegetation does not affect the rail safety by reducing visibility or concealing the signaling.

The cleaning of the platform indicator is the time of the different actions to correct the blockage.

Any situation that impedes the normal movement in safety conditions, or obstructs a track shall be deemed to affect availability (Indicator 1).

Response time (RT)

The Response Time (RT) values for each concept are the following:

Concept	Value
Vegetation control when exceeding 20 centimeters in height in urban areas.	15 days
Vegetation control in other situations that may require it	15 days
Removal of all types of items other than those necessary for the operation of the railroad (trash, debris, branches, deposits of unauthorized materials, etc.)	7 days
Control or eradication of the vegetation when it interferes with the visibility or the safe operation of the trains.	Null (RT =0)

Deduction

The deduction to the availability payment by the Cleaning of the Platform indicator shall be deemed to apply if the Response Time is exceeded for the solution to the non-compliance.

Adjustment Factor

The Adjustment Factor corresponding to the **F10***Cleaning of the Platform* indicator shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its solution:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time exceeds 75% of the time of non-compliance referred to in the Penalties paragraph.	The solution occurs after the RT From the time in which the non-compliance is known, when RT = 0	The solution occurs within the RT

Where **s**ϵ{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the time for the solution to the incident or event exceeds the one indicated in the following table:

Concept	Value
Vegetation control when exceeding 20 centimeters in height in urban areas.	40 days
Vegetation control in other situations that may require it	40 days

Concept	Value
Removal of all types of items other than those necessary for the operation of the railroad (trash, debris, branches, deposits of unauthorized materials, etc.)	20 days
Control or eradication of the vegetation when it interferes with the visibility or the safe operation of the trains.	8 hours

3.3.9. Signaling and switch pointing (Indicator 11)

Required Standards

The signaling system and security shall comply with the provisions laid down in Appendices A, B, C and M.

All signaling elements located on the section shall be kept in conditions of visibility to ensure the railway operation in safety conditions.

The visibility of the signals shall be understood as out of tolerance when they are not correctly visible at the right distance by the staff of a moving train in normal conditions of operation.

All signals, switch pointing and interlocking systems shall be kept in conditions of correct operation.

A signal or a switch pointing system shall be understood as out of tolerance when they do not operate correctly.

The visibility of signals indicator is the response time of the different actions to correct the visibility failures.

The signals and switches operation indicator is the response time of the different actions to correct the system pointing failures.

Any failure of the signals and security system resulting in the disruption of train traffic shall be deemed to affect the availability and shall be treated according to the provisions laid down in the indicator 1.

Response Time

The Response Time shall be null.

Deduction

The deduction to the availability payment shall apply since the non-compliance is known.

Adjustment Factor

The Adjustment Factor corresponding to the **F11** Signaling indicator shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault
0.2*s	**0.1*s**
Visibility of signals: Over 6 hours Operation of signals and switches: over 6 hours	From the time in which the non-compliance is known

Where **s**∈{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the time for the correction to the incident or event exceeds the one indicated in the following table:

Concept	Non-compliance Time
Visibility of signals	12 hours
Operation of signals and switches	12 hours

3.3.10. Level crossings (Indicator 12)

The level crossings shall be built and protected according to the provisions laid down in the Appendixes A, B, and C.

The level crossings shall be out of tolerance when:

- The drains are not properly installed or maintained free of debris.
- The water is stagnant on the roadway at the level crossing or on the track near an area close to it.
- The width of the throat between the rail and the guard rail, or between the rail and the pavement is less than 50 mm or greater than 75 mm.
- The depth of the throat between the rail and the guard rail, or between the rail and the pavement is less than 50 mm.
- The difference in the absolute value of the dimension between the surface of the rail and the pavement is greater than 5 mm.
- The throat is obstructed with materials beyond the values of width and depth set as minimum.
- When the pavement or the road surface on the level crossing present defects.
- When the cattle gates are not in correct conditions of operation.
- When the diamond of visibility specified in Appendix C contains vegetation, weeds or debris that prevent or impede the visibility of the crossing, from the street or route to the track or vice versa.

- When the state or the maintenance of electrical or electromechanical systems of protection and signaling of the level crossing presents failures or does not comply with the recommendations of the manufacturer, or with the security conditions required by the legislation and regulations in force.
- When a month has elapsed between maintenance inspections of protection systems of the level crossing.

In all cases, applicable restrictions or security measures shall be established and, if deemed unsafe for the movement of trains, the availability shall be deemed to be affected (Indicator 1) with an adjustment factor equal to one.

Response time (RT)

The values of the response time for the level crossings out of tolerance are:

Concept	Value
When the level is out of tolerance without involving the protection system and the movement of trains is not affected.	7 days
When the level crossing is out of tolerance because of the protection system or any other reason affecting the movement.	Null

Adjustment Factor

The Adjustment Factor corresponding to the **F12** Level Crossings indicator shall be applied in the following manner, depending on the elapsed time between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.2*s	**0.1*s**	**0**
The time exceeds 75% of the time of non-compliance referred to in the Penalties paragraph.	The solution occurs after the RT From the time in which the non-compliance is known, when RT = 0	The solution occurs within the RT

Where **s**ϵ{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the time for the correction to the incident or event exceeds the one indicated in the following table:

Concept	Value
When the level is out of tolerance without involving the protection system and the movement of trains is not affected.	20 days

Concept	Value
When the level crossing is out of tolerance because of the protection system or any other reason affecting the movement.	48 hours

3.3.11. Bridges and Other Structures (Indicator 13)

The bridges and other structures must comply with the provisions laid down in Appendices A, B and C.

The damages that are detected on the bridges should be evaluated and their repairs included in the scheduling of maintenance.

The contractor shall draw up a program of inspections every six-month for all bridges and other structures subject matter of the contract.

In these inspections, at least the following aspects shall be taken into account:

- Obtaining a photographic survey, necessary for further study and identification of the typology of the structure and the anomalies or failures found, including side views from both sides, general views of abutments, piles, boards, arcs, etc. and any other significant structural element. Detail of damage and defects observed in the structure.
- Observation of the foundations, piles and abutments, with special attention to the possible cracks, crevices, turns or undercuts and mismatches.
- Recognition of the joints and support devices, functional feasibility, type, degree of conservation, maintenance and possible interlocking.
- Inspection of the condition of the boards, with recognition of fissures, deteriorations, cracks and other damage.
- Inspection of the condition of the arcs or vaults, tympanums and paths of inspection with detailed recognition of the cracks, damage and breakage.
- In the metallic bridges, in addition, special attention shall be paid to the existence of corrosion, loss of section, state of conservation of the rivets, bolts, welding, etc.
- Observation of the retaining walls, with special attention to the possible cracks, crevices, turns or seats, undercuts, mismatches, deteriorations, breaks, widening, leaks and waterways.

The maintenance programs for bridges and other structures shall also include all the necessary tasks and routines to extend their lifespan, in order to avoid future costs of repair and to ensure the safety of the traffic (painting, supports maintenance, cleaning of sections of drainage, grading of access roads, etc.) The contractor shall submit to the Contract Supervisor all tasks included in the routine maintenance and their periodicity. The Contract Supervisor may provide for changes and modifications to the program. In no case shall the routine maintenance tasks have a greater frequency than two years.

When a malfunction is detected, its severity shall be immediately evaluated and measures shall be taken to ensure that it does not jeopardize the safety of train traffic. If it is not possible to keep the movement, the indicator 1 (availability) shall be applied with an adjustment factor equal to one.

In the other cases, the necessary repairs shall be scheduled in coordination with the contract supervision and according to their severity, they may be performed together with routine maintenance in the case they do not involve a reduction of speed or, to be agreed with the Contract Supervisor, a term for an extraordinary maintenance of the structure when the malfunction involves reducing the speed of movement.

The indicators are listed in the following table.

Response Time

The Response Time (RT) values for each concept are the following:

Concept	Value
Implementation of the routine maintenance	Term agreed between the Contractor and the Contract Supervisor
Presence of defects in joints	7 days
Presence of defects in footpaths or railings	8 hours
Presence of clogged drains	7 days
Undercuts: Presence of levels in the bed of the water below the upper face of the blocks, heads of piles or the grade beam coating, unless projected or authorized by the Contract Supervisor.	7 days
Presence of stains of moisture out of drains or false joints and joints of cords and sidewalks.	45 days
Presence of exposed frames.	45 days
Presence of lesions in the concrete over 10 mm in depth in bridges and 20 mm in culverts.	45 days
Presence of cracks of thickness greater than or equal to 0.4 mm in the concrete and reinforced concrete or 0.2 mm in the pre-stressed concrete.	45 days
Presence of deteriorations in the metallic elements such as corrosion, defects in the paint or galvanized steel, etc.	45 days
Presence of supports with deteriorations such as the introduction in the structure of different links on the design that may cause damage or malfunction in the rest of the structure, signs of degradation, crushing, displacement, etc.	45 days
Presence of supports with dirt.	60 days
Cracks that may cause material leakage, cracks, subsidence or missing coating	45 days
Cracks, crevices, breaks by separation of the wing or header in sewers	45 days
Correction of other damage (*)	Period of time determined by the Contract Supervisor

* The deadline for the repair of the damage shall be determined by the Administration once the contractor has proposed a Plan of Action. In these cases, the contractor has 48 hours from the identification of the existence of the failure to present this plan.

Deduction

The deduction to the availability payment by the *Bridges and Other Structures* indicator shall be deemed to apply if the Response Time is not complied with.

Adjustment Factor

The Adjustment Factor corresponding to the **F13***Bridges and Other Structures* indicator shall be applied in the following manner, depending on the time elapsed between the detection of a non-conformance and its correction:

Serious fault	Minor fault	Available
0.4*s	**0.2*s**	**0**
The time is 50% greater than the defined RT The time is 50% greater than the term defined by the Contract Supervisor when RT=0	The time is greater than the defined RT. From the time in which the non-compliance is known, when RT = 0	The time is less than the defined RT

Where **s**ϵ{1, 2, 3 or 4} is the number of sub-stages in which the non-compliance occurs.

Penalties

The contracting party may apply penalties and fines to the contractor if the elapsed time of correction exceeds twice the response time:

3.4. Comprehensive Management of the Infrastructure (Indicator 14)

In accordance with the next chapter 4, monitoring activities shall lead to the timely updating of the database, as well as follow-up reports. Follow-up reports shall include standardized forms that incorporate all the requested information. The georeferenced information must be provided in digital and editable format (text and spreadsheet).

The deadline for the update of the database is two weeks after the last day of the event that may need to be entered.

Follow-up reports shall be delivered to the contract supervisor within one month after the day on which the reconnaissance linked to them is concluded, or the deadline for the completion of such reconnaissance has expired.

Indicators

Taking into account that, without prejudice to the audits and inspections, the system relies on the correct monitoring of the contractor activity, there should be no delays in the updating of terms and conditions or in the delivery of the reports such contractor is required to submit in accordance with Chapter 4.

Response Time

The response times are null.

Deductions

Deductions shall apply when a delay exists in updating the database or in the delivery of any of the reports that the contractor is obliged to submit in accordance with Chapter 4.

Adjustment Factor

The Adjustment Factor corresponding to the **F14** Comprehensive Management indicator shall be applied in the following manner:

Serious fault	Minor fault	Available
0.2	**0.1**	**0**
The database update or the presentation of any of the reports that the Contractor is obliged to submit in accordance with the Chapter 4 is carried out in a period greater than twice the time set.	The database update or the presentation of any of the reports that the Contractor is obliged to submit in accordance with the Chapter 4 is carried out in a period greater than the time set and less than the time established for a serious fault.	Does not apply.

Penalties

The contracting party may apply penalties and fines to the contractor if the delay in the update of the database or the delivery of a report exceeds a month from the time set for serious fault in the above table, from the moment in which the contractor is in non-compliance.

4. OBLIGATIONS OF THE COMPREHENSIVE MANAGEMENT OF INFRASTRUCTURE

During the period of operation of the infrastructure, conservation works modify the status of the railway elements and their environment. For this reason, the knowledge of the activity performed on an item must be supplemented with the measurement of the impact of such activity on the item. This requires to go from an initial situation and assess the changes that are taking place in each element, as a result of conservation actions.

If not specified in this text, you shall comply with the provisions laid down in Appendices A, B, C and D.

The comprehensive management of the contract consists of three elements:

- Development and maintenance of a georeferenced database.
- Monitoring and recognition of the state of the infrastructure.
- Follow-up reports.

4.1. Database

Required Standards

The Contractor has the basic, initial obligation to have an extensive inventory of all railway elements and their environment. This inventory should be the most effective tool for the preparation of the mandatory annual programs.

The contractor has to implement a Geographic Information System. The Geographic Information System shall refer to the following groups of data:

- Inventory of rail infrastructures, as well as their systematic upgrades.
- Incidents in the network (incidents, accidents and other events).
- Management of the indicators
- Comprehensive management of the exploitation
- Conservation Management System

The Contractor shall include in the database the information required by the Contractor Supervisor.

The information contained in the monitoring reports as well as all the actions taken and planned should be incorporated into a database associated with the contract. The planned measures include the planning of rehabilitation actions scheduled to be incorporated into the database.

The database shall be kept up-to-date throughout the contract. In the event that the database associated with the contract is not updated in a timely manner, deductions shall apply as specified in section 3.5.

The update term shall be of two weeks from the last day of the event that may be registered.

The Contract Supervisor should have access to the server where the database corresponding to the Geographical Information System is found, implemented by the Contractor. The Contractor must provide internet access to the database in the computers indicated by the Contract Supervisor.

The contractor will provide and maintain three computers up-to-date and running in which the Contract Supervisor indicates all the software used for the examinations and everything necessary for its interpretation and processing.

4.2. Monitoring and Recognition of the State of the Infrastructure

Required Standards

Periodic registers should be based primarily on measurable parameters, whenever possible, with continuous measurement systems and data loggers information. They should aim to avoid the visual or subjective criteria, which can easily be replaced by optical media and digital instrumentation or monitoring if necessary.

In any case, the contractor shall have the necessary means to carry out the measurements to be determined, as well as completion of the measuring instruments maintenance in perfect condition and calibrated by an approved laboratory. Quality checks shall be carried out periodically to those subsystems or functional sets that can objectively determine quality.

The quality controls, auscultation, walkthroughs and cabin trips shall not affect the availability of the infrastructure and in no case shall be considered as grounds for exceptions to the obligation to have the track available. The contractor has the obligation to inform the Contract Supervisor, at least 4 working days in advance, about the day and time of such quality controls mentioned in this paragraph. The Contract Supervisor, or the person designated by it, may be present on these occasions. The Contractor shall provide at the time it is requested all records of the inspections requested by the Contract Supervisor through their representatives in the inspections.

The Contract Supervisor will have total access to travel in the train cab and moving railway vehicles in charge of the Contractor.

Examination and inspection systems:

- **Auscultation and inspection.** The performance of a series of examinations on the subject matter of this Agreement must be programed with the minimum frequency indicated herein. The main aspects to consider are:
    - **Auscultation of the track:** the entire path of the track shall be auscultated in order to detect and control a series of parameters relating, at least, to: wear on the track in curve, wear on the track in a straight line, state of the rail track geometry, ties and fastenings, welding, wear, etc.
    - **Auscultation of the switch**: switches shall be auscultated in order to detect and control a series of parameters relating at least to: wear of the mechanical elements of the switch, tight and clearance of elements of the track switch, geometry of the switch, the general state of the sidings (grease, cleaning, etc.), dimension of protection, proper operation of sidings, etc.
    - **Inspection of civil works:** All the aspects of civil work, at least, listed below shall be inspected: platform general state, state of the drains, pavements, bridges, culverts, ditches and other works of art, urbanization, etc.
    - **Auscultation of the signaling system:** The entire signaling and safety system shall be inspected by auscultating all the elements necessary for the correct diagnosis of the state of the system, among which are those listed in Appendix C.
    - **Auscultation of the CTC:** The correct operation of the communications equipment and CTC operation and the command or control local jobs should be inspected and supervised.
    - **Walkthroughs**: they should be carried out with the minimum frequency indicated in the table below going through a series of walkthroughs programmed by specialized personnel of the contractor company. In these walkthroughs, all those aspects that may have an impact on the normal development of the exploitation shall be reviewed. In particular, it shall monitor and report the following items:
        - Ballast: state, pollution, presence of herbs, dimensions of the superstructure.
        - Ties: state, presence of fissures or cracks, damage caused by railway machinery, placement
        - Fastenings: state, correct positioning and operation
        - Rail: state, apparition of surface defects, fissures or cracks, defective joints.
        - Signalling Equipment Needle driving motors, barriers, signs and state sensors and interlocking.

      In addition, the state of the earth work, nets, breakwaters, elements of protection, retaining walls, drains, sanitation actions and level crossings shall be inspected in detail.
    - **Cab trips** The performance of a series of cab trips shall be programed with the minimum frequency set out below in the cabin of a commercial train to be carried out by specialized personnel of the company which was awarded the contract. To this end, this person shall be designated, at least, a week in advance, communicating it to the person responsible for the National Railway Transport Direction (DNTF) which shall manage the relevant permission with the railway company operating the service.

The results of the examinations and inspections shall be recorded in standardized forms where the operations carried out and their results shall appear in order to use them for the monitoring and basic design of the scheduling of maintenance activities.

These controls are independent of the corresponding external audits to be carried out by the contractor, with the periodicity set out in the Contract, to determine the status of all the facilities in accordance with the maintenance control parameters, the phase of the life cycle in which they find themselves, among others.

The monitoring activities mentioned above shall give rise to their corresponding follow-up reports. The monitoring reports shall have standardized forms that incorporate all the requested information. The information must be provided in digital and editable format (text and spreadsheet).

The monitoring reports must be submitted within 7 days after the day on which the reconnaissance linked to them is concluded.

The table below sets out the frequency of inspection and auscultation for the tasks referred to above:

Recognition	Periodicity
Auscultation of the main track	Semiannually
Auscultation of side tracks	Annually
Auscultation of switches in the main track	Quarterly
Auscultation of switches in the side tracks	Annually
Auscultation of rails by ultrasound	Annually
Auscultation of the signaling system and CTC	Semiannually
Visual inspection of the civil works (including bridges)	Semiannually
Inspection by structures engineer (bridges, trenches, etc.)	Five-Yearly
Walkthroughs	Quarterly
Cab trips	Monthly