



AGÊNCIA DE TRANSPORTE DO ESTADO DE SÃO PAULO

APPENDIX G

PROCEDURE FOR PRESENTATION, REVIEW AND APPROVAL OF PROJECTS, TO START AND TO RECEIVE THE WORKS

SPONSORED CONCESSION TO PROVIDE PUBLIC SERVICES FOR OPERATION, MAINTENANCE AND MAKING OF INVESTMENTS NECESSARY FOR EXPLORATION OF THE ROAD SYSTEM CALLED THE RODOANEL NORTE LOT

1. INTRODUCTION

- 1.1. All engineering projects must be fed into SISPROJ, from their implementation by the CONCESSIONAIRE, and must be prepared in compliance with the applicable technical specifications and standards, based on the norms, design instructions, ordinances and standards in force at the time of preparation (ARTESP, DER / SP, DNIT, ABNT, and, failing these, observing internationally recognized standards), as well as the forms of development and availability, as described in ANNEXES 5, 6 and 7.
- 1.2. The FUNCTIONAL PROJECTS must be delivered by the CONCESSIONAIRE to ARTESP no later than 390 (three hundred and ninety) days before the date of commencement of the physical execution of the works, as applicable.
 - 1.2.1. IMPLEMENTATION WORKS will only require FUNCTIONAL PROJECTS approved in case of change in the functional solution, pursuant to the rules of ANNEX 18, in which case the advance provided for in Clause 1.2 above will not apply.
- 1.3. The FUNCTIONAL PROJECTS must be delivered based on the EXECUTIVE PHYSICAL SCHEDULE presented in the current INVESTMENT PLAN approved by ARTESP, as applicable.
 - 1.3.1. Obtaining the QUALITY CERTIFICATE of the EXECUTIVE PROJECTS does not exempt the responsibility of the design company or the CONCESSIONAIRE, for the preparation of the respective projects, without prejudice to the penalties applicable to the CONCESSIONAIRE.
- 1.4. For the processing of SPONSORED CONCESSION engineering projects, the provisions of the CONTRACT and ANNEXES shall prevail in case of divergence with ARTESP regulations.
- 1.5. Except as expressly provided, the terms set forth in this APPENDIX are counted in calendar days, excluding the commencement day and the expiration day.
- 1.6. In addition to the sharing of documents through SISPROJ, upon its implementation by the CONCESSIONAIRE, the CONCESSIONAIRE shall provide ARTESP, upon request, 01 (one) complete copy of the written and drawn study pieces, functional plan and material projects, allowing the reproduction and with computer support, within 5 (five) days from the receipt of the request.
- 1.7. Until the SISPROJ platform is implemented, the CONCESSIONAIRE MUST submit to ARTESP all documentation for the FUNCTIONAL AND EXECUTIVE PROJECTS on printed boards - and their digital copies in pdf format or equivalent - covering all the details of the works, according to the procedures provided in the instructions. DER / SP and ARTESP in force at the time of project design.
- 1.8. The procedure provided for in this APPENDIX, with the exception of any project delivery deadline, which will be defined by the contract between ARTESP and CONCESSIONAIRE, applies to the processing and content of FUNCTIONAL AND EXECUTIVE PROJECTS to be prepared by CONCESSIONAIRE in implementation of new investments, pursuant to the SPONSORED CONCESSION CONTRACT.

2. GENERAL RULES OF BIM MODELING (*Building Information Model*)

- 2.1. From the first year of the SPONSORED CONCESSION, all documentation referring to the FUNCTIONAL and EXECUTIVE PROJECTS must be designed and elaborated using the technology in BIM modeling, with the exception of the GANTRIES, the completion works of LOT RODOANEL NORTE and the works of civil infrastructure of operational equipment, mandatory

for the release of the ROAD SYSTEM operation. The generated models must be georeferenced using the SIRGAS2000 global coordinate system or another that may be officially adopted by ARTESP.

2.2. For works starting from the second year of the SPONSORED CONCESSION, all documentation referring to the As Built documentation must be designed and prepared using BIM modeling technology, with the exception of GANTRIES, the completion works of the North Beltway, and the civil infrastructure works of the operational equipment, mandatory for the release of the Rodoanel operation. The generated models must be georeferenced – SIRGAS2000 global coordinate system or another that may be officially adopted by ARTESP.

2.3. BIM designs and models must be made available on SISPROJ with each delivery. Once available, there will be no possibility of alteration of versions in the system by the CONCESSIONAIRE without proper registration and versioning control activated through alert work, warning, communication and / or science to the USERS registered by ARTESP. The coding standards (Work Id) of work item / service and project document coding in force and defined by ARTESP shall be maintained.

2.4. The final files generated in BIM modeling and boards shall be made available in full to ARTESP through SISPROJ, in IFC format, without loss of information and properties of the elements in relation to the original model. While it is not possible to make available without loss of data, the CONCESSIONAIRE shall make available in SISPROJ the model in the original, editable format - in a format compatible with the platform (s) used by ARTESP - in addition to the IFC model.

2.5. The information and attributes generated in the models elaborated in BIM must be integrated, whenever possible, and whenever requested by ARTESP, to the electronic management systems to be implemented by the CONCESSIONAIRE, especially SIGIS.

2.6. Such models shall also serve as a basis for maintaining and updating the MDSR, described in greater detail in ANNEX 6.

2.7. The CONCESSIONAIRE shall present a PD-BIM within twelve (12) months from the date of signature of the INITIAL TRANSFER TERM, for ARTESP's approval. Such document must include:

a) phased implementation schedule and gradual evolution of the Level of Development (LOD) of the BIM models, for each of the project disciplines, to be contemplated in the projects to be implemented each year of the SPONSORED CONCESSION, based on the current regulations and instructions; and

b) phased implementation schedule and gradual evolution of the dimensions of the BIM models (3D, 4D, 5D etc) for each of the project disciplines, to be contemplated in the projects to be implemented each year of the SPONSORED CONCESSION, based on the norms and current instructions.

2.8. The CONCESSIONAIRE shall review the PD-BIM annually, submitting it for ARTESP's approval. The document will be analyzed considering the following assumptions:

a) PD-BIM compatibility with technologies available in Brazil; and

b) PD-BIM compatibility with current regulations and national and international best practices.

2.9. The PD-BIM initially presented shall allow the gradual evolution of the level of development (LOD) of the BIM models, requiring as a minimum parameter LOD 400 within 6 (six) years. For reference purposes of this CONTRACT, the following table sets forth the initial qualitative definitions of LOD. Such definitions may be further detailed and specified through design instructions issued by ARTESP.

Table - Qualitative definitions of LOD (Level of Development) for this contract

LOD	Detail level equivalence of elements	Need to complement the project with detail boards not necessarily linked to the model	Geometric precision of elements					Amount of information related to material specification and executive methods					Geometric location accuracy of elements (location axis, etc.)					Topographic base accuracy					Amount of information related to project monitoring and technology control data				
			null	low	medium	high	Very high	null	low	medium	high	Very high	null	low	medium	high	Very high	null	low	medium	high	Very high	null	low	medium	high	Very high
100	Equivalent to conceptual design	yes																									(not applicable)
200	Equivalent to the functional project (preliminary project)	yes																									(not applicable)
300	Equivalent to basic design	yes																									(not applicable)
350	Equivalent to executive project with median level of detail	no, except in very specific cases																									(not applicable)
400	Equivalent to high-detail executive project	no, except in very specific cases																									(not applicable)
500	Equivalent to As-Built Documentation	no, except in very specific cases																									

Note: The ratings 'low', 'medium', 'high' and 'very high' are generic terms that refer in terms of the degree of detail in relation to the possibilities of available technology at the time of updating the PD document. -BIM.

2.10. For all project documentation, as long as it is not possible to reach the LOD 400, or to reach the appropriate level of detail for analysis or construction of a particular building element, additional drawings (as many as necessary) must be generated, even if necessary, than in 2D format (two dimensions) and not linked to the BIM model, to complement the project documentation. This obligation will not place any burden on the GRANTING AUTHORITY.

3. CERTIFICATION

3.1. The CONCESSIONAIRE shall obtain for all extension works, further improvements and special conservation provided for in the SPONSORED CONCESSION, at its expense, the QUALITY CERTIFICATE of the EXECUTIVE PROJECT and the QUALITY CERTIFICATE of the works. The certificate must be issued by an inspection body accredited by INMETRO, in accordance with Ordinance No. 367/2017, or certifier previously approved by ARTESP.

3.1.1. In the impossibility, duly justified, of the CONCESSIONAIRE to obtain QUALITY CERTIFICATION pursuant to item 3.1, the CONCESSIONAIRE may obtain certification before an entity that is not accredited by INMETRO or approved by ARTESP. In this case, you must submit a triple list for choosing ARTESP, observing the criteria of wide technical reputation and the absence of prohibitions to contract with the PUBLIC ADMINISTRATION.

3.1.2. The criteria of technical reputation will be considered satisfied if one of the candidates on the triple list, with notoriously specialized professionals or companies, is recognized by ARTESP and/or by another entity of recognized capacity, with respect to the certification's scope.

- 3.1.3. Within 5 (five) days from the presentation of the triple list, ARTESP shall express its opinion on the choice, and may request the preparation of a new triple list within the same period.
- 3.1.4. Within 7 (seven) days from the request mentioned in item 3.1.3 above, the CONCESSIONAIRE shall submit a new triple list to ARTESP, with the substitution of the three candidates.
- 3.1.5. ARTESP shall manifest within 5 (five) days of receipt of the new triple list referred to in item 3.1.4 above.
- 3.1.6. The CONCESSIONAIRE shall submit the triple list mentioned in item 3.1.1 above in an advance compatible with the fulfillment of the deadlines for the early presentation of EXECUTIVE PROJECTS.
- 3.1.7. The certifier shall be technically responsible, for all legal purposes, for the accredited inspection of projects and works.
- 3.1.8. All costs and eventual responsibilities related to the contracting of the certifier will be exclusively attributed to the CONCESSIONAIRE, not being any burden to ARTESP or to the GRANTING AUTHORITY
- 3.2. The CONCESSIONAIRE shall, in the terms set forth in item 3.1. above, obtain the applicable certifications for the civil infrastructure of the PGFs.
- 3.3. The CONCESSIONAIRE will be exempt from obtaining a QUALITY CERTIFICATE for the EXECUTIVE PROJECT, only if it uses the DERSA approved project, except in signaling and safety projects, for which it must always obtain a QUALITY CERTIFICATE.
- 3.4. If the CONCESSIONAIRE chooses a technical alternative for part of the stretch or the entire stretch, it must submit a new project and obtain, at its own expense, a QUALITY CERTIFICATE for the EXECUTIVE PROJECT, in addition to the QUALITY CERTIFICATE for the works.
- 3.5. The CONCESSIONAIRE shall, in addition to certification, submit the signaling projects and safety devices to ARTESP.

4. FUNCTIONAL PROJECTS

- 4.1. At least 30 (thirty) days in advance of the scheduled date for sending the FUNCTIONAL PROJECTS, including in the case of new investments, the CONCESSIONAIRE shall send to ARTESP the DISG.
- 4.2. The FUNCTIONAL PROJECTS may only be sent to ARTESP after DISG has been accepted, whose deadline for ARTESP's manifestation is up to fifteen (15) days from dispatch by the CONCESSIONAIRE.
 - 4.2.1. If requested by ARTESP, the CONCESSIONAIRE shall make adjustments to the DISG and submit it to ARTESP within 10 (ten) days from the request, which shall express its opinion on the adjusted DISG within 10 (ten) days from receipt.
 - 4.2.2. If the CONCESSIONAIRE deems it necessary, after sending or approving the DISG, it may generate or forward to ARTESP the DICG (Document Index Change Guide). The time elapsed between the submission or approval of DISG and the submission of DICG will be increased to the time initially set forth for ARTESP to comment on DISG.
- 4.3. FUNCTIONAL PROJECTS must address interference with existing and future public service and infrastructure systems, according to available information, especially road systems and the

establishment of access to transport systems, as well as the compatibility of new infrastructure with any existing accesses.

4.4. The FUNCTIONAL PROJECTS shall contemplate countermeasures indicated by the road safety inspection / audit (governed by ANNEX 5) in order to mitigate risky locations and improve the safety classification of the ROAD SYSTEM. FUNCTIONAL PROJECTS shall also be reviewed and approved by the CONCESSIONAIRE's road safety professional, who shall ensure that the proposition outlined in the FUNCTIONAL PROJECT meets all road safety parameters.

4.5 The FUNCTIONAL PROJECTS shall be prepared having as minimum reference the Technical-Economic Feasibility Study - EVTE, whenever applicable, and the orientative functional studies published with the REQUEST FOR BIDS documentation. FUNCTIONAL PROJECTS will only be considered delivered if they include:

- a) Highway Class: The highway shall be classified according to item 5.1 (Road Technical Classification) of the Instruction for the elaboration of DER geometric designs (IP-DE-F00 / 001 - 2005), as class 0;
- b) Project Speed: the speed of project, before and after the execution of the investment;
- c) 1: 2000 Aerial Image / Photo: The entire project must be submitted with an updated aerial image or photo (minimum of 6 (six) months);
- d) Magnetic North: the magnetic north as well as the nearest cities shall be represented in the project;
- e) Right-of-Way: Current and projected RIGHT OF WAY. Indication in the area of influence of the work of the district of CONCESSIONAIRE, municipal road, federal road, other concessions, among others;
- f) Status of the neighboring properties throughout the area of influence of the works, listing the following data:
 - i. Indicate the limits of all properties and their respective registration;
 - ii. Indicate all areas that will be expropriated;
 - iii. Present the accessibility options for all neighboring lands. The accessibility option cannot, under any circumstances, invade the limits of the RIGHT OF WAY;
 - iv. In the event that the CONCESSIONAIRE provides for easement of passage to guarantee the unblocking of properties, this must be registered in the real estate registry before the works start.
 - v. If the right of way is not possible, the CONCESSIONAIRE must provide and implement another accessibility option for the property, without invading the boundaries of the right-of-way.
- g) Radii used and widths adopted: the adoption of radii and widths according to the project type vehicle WB-20, WB30T and WB-33D on all curves, accesses and devices, in accordance with the provisions of ANNEX 7;
- h) Work adhesion (configuration and location): equation of interference with existing and future infrastructure and utilities systems, especially road systems. Report justifying if there is a change in the location of the work in relation to its position under the terms of the AGREEMENT and ANNEXES, it is unnecessary to submit if the change is due to the change of device typology, provided that all project movements required by the REQUEST FOR BIDS are met and that it is validated by the traffic study;
- i) Traffic study: traffic study for the validation of the presented typologies, analysis of interlacings, convergences and divergences, technical basis for the expansion of the work and definition of

the project type vehicle, based on the HCM, AASHTO, technical manuals. DER and DNIT. Declared counts / surveys and studies pertinent to non-motorized traffic cases and collective stopping points to identify demand, origin / destination, etc.;

- j) Longitudinal Profiles, Typical Cross Sections, Vertical Templates, OAE Sections: The profiles, sections and templates shall meet the technical characteristics required in the ANNEXES;
- k) Direction hand indication: the indication of steering hands according to the projected track classification;
- l) Length of Acceleration and Deceleration Bands and Tapers in accordance with IP.DIN.002: The length of acceleration and deceleration bands and tapers in accordance with IP.DIN.002. The SAU project, PGF, Rest Area, Exceptional Load Stops and other Road System works shall be dimensioned by IP.DIN.002;
- m) traffic movements provided for in the orientative functional studies;
- n) Compliance with DER / SP Design Instructions, including for BIM models: IP-DE-A00 / 001 (Preparation and Presentation of Technical Documents), IP-DE-A00 / 002 (Codification of Technical Documents) and IP -DE-A00 / 003 (Preparation and Presentation of Project Drawings in Digital Media), in its most recent revisions, in addition to IP.DIN / 001 - ARTESP Functional Project and other applicable standards;
- o) Synthesis Report containing the descriptive memorial of the work, list of all produced documents (LD) and their traceability, work implementation plan (segmentation and deadlines), all assumptions, guidelines and criteria that will guide the detailing of the EXECUTIVE PROJECT, besides the list of the main technical specifications to be followed;
- p) As appropriate, the identification of non-motorized traffic points with pedestrian presence, cyclists and bus stops / stops (regular and / or irregular), collective stop points (regular and irregular) with relevant counts and studies. to identify demand, source and destination, current infrastructure, etc.; and
- q) Identification of all future investments provided for in the CONTRACT and in the area of influence of the work.

4.6. ARTESP shall pronounce on the admissibility of the FUNCTIONAL PROJECTS within 45 (forty-five) days of their receipt, expressing their formal acceptance or any adjustments, if necessary.

4.6.1. ARTESP's manifestation of the inadmissibility of the Functional Project due to the non-compliance with the requirements set forth in items 4.5 and 4.6 above does not change the term set forth in item 1.3 above so that those referred to FUNCTIONAL PROJECTS.

4.7. The adjustments requested pursuant to item 4.6 above shall be submitted by the CONCESSIONAIRE within 20 (twenty) days from the receipt of the ARTESP request, which shall express its opinion on the adjustments made within 60 (sixty) days from the submission by the CONCESSIONAIRE.

4.8. If ARTESP justifiably understands that the adjustments made by the CONCESSIONAIRE do not allow the FUNCTIONAL PROJECT to be considered admissible, pursuant to items 4.4 and 4.5 above, the controversy shall be considered by the Board of Institutional Affairs for issuing an opinion on admissibility, within 30 (thirty) days, the CONCESSIONAIRE is subject to a penalty for non-delivery of the FUNCTIONAL PROJECT, pursuant to Annex 11.

4.9. Once the FUNCTIONAL PROJECT is admitted, ARTESP shall express, in a consolidated and non-fragmented manner, its approval within up to 75 (seventy-five) days from the admission, renewable for

the same period, provided that by duly motivated act and may request corrections and adjustments to the CONCESSIONAIRE.

4.9.1. If ARTESP requests corrections to the FUNCTIONAL PROJECT pursuant to item 4.9 above, the CONCESSIONAIRE shall implement them within 30 (thirty) days.

4.10. In view of the corrections presented by the CONCESSIONAIRE pursuant to item 4.9 above, ARTESP shall pronounce, in a consolidated and non-fragmented manner, within up to 60 (sixty) days from receipt, and may request final corrections that must be implemented by the CONCESSIONAIRE within 7 (seven) days from the receipt of the request.

4.11. Regarding the corrections provided for in item 4.10 above, ARTESP shall express its opinion within up to twenty (20) days from receipt, extendable for the same period, provided that by duly motivated act.

4.12. If ARTESP justifiably understands that the adjustments made by the CONCESSIONAIRE do not allow the FUNCTIONAL PROJECT to be considered approved, the dispute shall be considered by the Institutional Affairs Director, for the issuance of an opinion on the approval, within 10 (ten) days, subjecting the CONCESSIONAIRE to the penalty for non-delivery of the FUNCTIONAL PROJECT, pursuant to ANNEX 11.

4.13. At the end of the approval process, the CONCESSIONAIRE shall make available a final version of the Integrated BIM Model of the FUNCTIONAL PROJECT (MBIM - PF) in SISPROJ.

4.14. Considering the provisions of the risk matrix of the CONTRACT, without prejudice to the assessment of the extent of the consequences of each event, the following adjustments of the FUNCTIONAL PROJECT prepared by the CONCESSIONAIRE in relation to the REQUEST FOR BIDS's orientative functional study shall not be rebalanced:

(i) Expansion of the scope of the work provided for in the POI to suit the new traffic demands detected at the time of the CONCESSIONAIRE 's preparation of the FUNCTIONAL PROJECT, provided that the expansion does not result from risk allocated to the GRANTING AUTHORITY;

(ii) Adjustment of the scope of the work to suit the interference detected at the time of the CONCESSIONAIRE 's preparation of the functional project (examples: interference with local roads, with local OAEs, with other service CONCESSIONAIRES', infrastructure systems and public utilities). transportation), provided that the extension does not result from risk allocated to the GRANTING AUTHORITY; and

(iii) Expansion of the scope of the work to adapt to the requirements of the environmental agencies in the scope of the licensing for the execution of the services.

5. EXECUTIVE PROJECTS

5.1. The EXECUTIVE PROJECTS shall follow the premises, concepts and eventual caveats of the previously approved FUNCTIONAL PROJECT, as applicable.

5.2. EXECUTIVE PROJECTS must also address interference with existing and future infrastructure and utility systems, according to available information, especially road systems and the establishment of access to transportation systems.

5.3. The EXECUTIVE PROJECTS shall be delivered to ARTESP through SISPROJ, upon their implementation, to register in full all documentation related to the processing of such projects, at least thirty (30) days prior to the scheduled start date. duly certified works.

5.3.1. The DISG must be delivered at least 30 (thirty) days in advance for the delivery of EXECUTIVE PROJECTS, as initially established.

5.3.2. If during the development of the EXECUTIVE PROJECT, for any reason, there is an impediment to the implementation of a solution in accordance with the concepts, assumptions, guidelines and eventual restrictions set forth in the FUNCTIONAL PROJECT previously approved by ARTESP, the CONCESSIONAIRE may present the possible problem, its justifications, and eventual suggested solutions for ARTESP's further analysis, prior to the issuance of the EXECUTIVE PROJECT for certification by the certifier.

5.3.3. After the DISG has been sent, the CONCESSIONAIRE may send the DICG to ARTESP, whenever necessary.

5.3.4. For the executive projects of signaling and safety devices, after certification, the projects must be sent for analysis by ARTESP, following the times and steps of item 5.3.

5.4. ARTESP shall pronounce on the execution schedules provided for in the EXECUTIVE PROJECTS within 20 (twenty) days of receipt, expressing their formal acceptance or any adjustments, if necessary.

5.5. Adjustments to the execution schedule of the EXECUTIVE PROJECT shall be submitted by the CONCESSIONAIRE within 20 (twenty) days from the receipt of the request submitted by ARTESP.

5.6. The CONCESSIONAIRE shall make available the final version of the Integrated Project Executive BIM Model (MBIM-PE) before the start of the works.

5.7. ARTESP may request clarifications or corrections to the EXECUTIVE PROJECT certificate submitted within 30 (thirty) days. ARTESP's request for clarifications or corrections to the submitted projects will result in the resumption of the deadline for approval.

5.8. The EXECUTIVE PROJECT documentation shall include the study of at least two alternative areas (by type) with potential to be used as support areas. This condition becomes especially important for the following support areas: boot-off areas; loan areas and areas for installation of flowerbeds.

5.9. Without prejudice to obtaining the EXECUTIVE PROJECT QUALITY CERTIFICATE, the CONCESSIONAIRE shall submit the EXECUTIVE PROJECTS necessary to obtain the LI for the Major Extensions to the competent Environmental Authority, observing the deadlines that must be met in order to be able to properly comply with the requirements, milestones (including intermediaries) and deadlines provided for in the ARTESP approved POI PHYSICAL EXECUTIVE SCHEDULE.

5.10. The CONCESSIONAIRE shall insert, within 12 (twelve) months after the implementation of SISPROJ, all engineering projects previously submitted to ARTESP.

6. DOCUMENTATION AS BUILT

6.1. The CONCESSIONAIRE shall issue "As built" documentation of all works provided for in the INVESTMENT PLAN.

6.2. "As built" documentation must be generated from the final update of MBBIM-AB and MBIM-COMP Comparative Integrated (MBIM COMP) models. The documentation shall contain a comparative analysis based on the Comparative Integrated BIM model (MBIM-COMP). Such analysis shall certify that the work was carried out in accordance with what was foreseen in the EXECUTIVE PROJECT.

6.3. The CONCESSIONAIRE is responsible for any and all information contained in the "As built" documentation and may be penalized if omissions of relevant information or unjustified inconsistencies between the EXECUTIVE PROJECT and the work performed that could compromise the good performance of the SPONSORED CONCESSION are detected.

6.4. The “As Built” documentation must be sent to ARTESP within 45 (forty-five) days of the conclusion of the works, thus being read by ARTESP according to item 10 below, and must be made available to SISPROJ if this digital system is already implemented by CONCESSIONAIRE, and the DISG or DICG must be available within 15 (fifteen) days of the conclusion of the works.

6.5. If SISPROJ has not yet been implemented or, even if it has already been, ARTESP expressly requests it, the final “As built” documentation shall be delivered to ARTESP by the CONCESSIONAIRE, as per ARTESP's rule:

Name of the CONCESSIONAIRE
Highway
Work
Service Item

6.6 As Built documentation will be deemed to meet at least the following requirements:

- (i) Delivery of complete Documentation, including Works Completion Certificate issued by CERTIFIER pursuant to this Contract;
- (ii) Delivery of properly updated BIM Models (MBIM-AB and MBIM-COMP), as applicable, and with the level of detail required by ARTESP;
- (iii) Proof of updating of road registration and asset registration information in the SPONSORED CONCESSION's Digital Systems (SISATIVOS and SIR);
- (iv) Proof of update / final consolidation of information in the SPONSORED CONCESSION's digital systems (SISOBRAS, SIGECON, SISQUALI, SGP etc.);
- (v) Proof of MDSR update; and
- (vi) Proof of updating information in SISGIS.

7. CONDITIONS TO START THE WORKS

7.1. The CONCESSIONAIRE's works, which involve the presentation of engineering projects, may be initiated, subject to the following conditions, as applicable:

- (i) To Obtain and maintain the approval of the FUNCTIONAL PROJECT before ARTESP;
- (ii) To obtain and maintain LP and LI before the responsible environmental agencies;
- (iii) Presentation of the EXECUTIVE PROJECT and its respective QUALITY CERTIFICATE to ARTESP, when applicable, as provided in item 5;
- (iv) Issuance of Public Utility Decree; and
- (v) Necessary expropriations or resettlement.

7.2. The presentation of the EXECUTIVE PROJECT QUALITY CERTIFICATE does not exclude the functional responsibility of the CONCESSIONAIRE's Technical Responsible Engineer, nor does it exempt the CONCESSIONAIRE from repairing any and all nonconformity in the works started, and it is certain that the burden of redoing the work will be the CONCESSIONAIRE 's responsibility.

7.3. The delay in the delivery of the certified EXECUTIVE PROJECT will not be considered as apt justification for the delay of the works, and the CONCESSIONAIRE will be punishable also for the delay in the beginning of the works in this case, in accordance with ANNEX 11.

7.4. As foreseen in the item 1.2, the execution of the IMPLEMENTATION WORKS by the CONCESSIONAIRE does not require the presentation of a FUNCTIONAL DESIGN, requiring only the presentation of an executive project with quality certification, without the approval of ARTESP.

8. MONITORING OF THE WORKS USING BIM TECHNOLOGY

8.1. For works scheduled for the second year of SPONSORED CONCESSION onwards, information on the progress of works in the BIM model initially prepared in the EXECUTIVE PROJECT (MBIM-PF), with details to be defined in the specification, shall be inserted and updated weekly. ARTESP technique. This will lead to the development of the BIM Integrated Works Tracking Model (MBIM-AB).

8.2. The weekly monitoring must include the registration and maintenance in a database of georeferenced high definition aerial images to be made available for viewing in SISGIS for linear works (duplications, additional tracks, extensions etc.).

8.3. For road elements that require further detailing or supplementary detailing (OAEs, tunnels, walkways, buildings, etc.) to record and determine the progress status of the works, complementary topographic surveys must be performed using georeferenced reality capture instruments (high definition photo survey using drones or equivalent technology or higher) that provide adequate level of detail (in terms of image and point cloud), for recording and determining the progress of each front and fully covering the area of said work in progress.

8.4. The reality capture must be presented in the form of digital elevation models (three-dimensional models) of the work elements with sufficient detail for dimensional and qualitative verification of the elements. The results of the complementary surveys must be fed back into the BIM Integrated Works Tracking / As Built Model, as well as in the SISGIS every two weeks.

8.5. Such follow-up must also lead to the generation of the Comparative BIM Model (MBIM-COMP) between the executive project initially prepared in the EXECUTIVE PROJECT (MBIM-PE) and the BIM Works Tracking Model (MBIM-AB). All comparative models (MBIM-COMP) generated shall be made available in SISPROJ, from their implementation, also every two weeks.

8.6. At the delivery of the work, a topographic survey with laser scanning or equivalent or superior technology shall be performed, covering all elements of the work, including signaling and safety elements. For road elements requiring greater or additional detail (OAEs, tunnels, walkways, buildings, etc.), complementary topographic surveys must be performed using georeferenced reality capture instruments (high definition drone photo survey or equivalent technology). or superior).

8.7. This survey must contain sufficient information (in terms of images and point cloud) to generate the final version of the Integrated Tracking / As Built BIM Model (MBIM-AB), as well as to generate the final version. Comparative BIM model (MBIM-COMP). Both topographic surveys and BIM models generated from the indicated procedure must contain sufficient qualitative and quantitative information for the ARTESP Works Inspection team to attest to the proper completion of the works.

8.8. In the case of the Rodoanel Norte Completion Works, the Concessionaire will be exempted from monitoring BIM works.

9. CONCLUSION OF THE WORKS NOTIFICATION

9.1. The CONCESSIONAIRE shall notify ARTESP of the completion of the work, by means of a "Completion Notification", to be sent up to thirty (30) days prior to the date stipulated for its completion. This document, which must be approved by ARTESP within 30 (thirty) days from the receipt of the Completion Notice sent by the CONCESSIONAIRE, after the competent inspections attesting to the safe release of the road, will serve as a parameter for stipulation of the date of completion of works

9.1.1. The CONCESSIONAIRE shall submit to ARTESP all supporting document of request to obtain the LO, observing the requirements set out in ANNEX 06.

9.2. If during the inspections, “nonconformities” are identified (with reference to the projects, compliance with the rules and specifications and contractual obligations), ARTESP will issue a technical report notifying the CONCESSIONAIRE about the irregularities found. By means of this report, the CONCESSIONAIRE, at its expense, shall provide the necessary corrections and issue a new “Completion Notice”. After sending this notification, ARTESP will conduct new surveys to certify the clearance of the road.

9.3. The safe release to the traffic of the road may occur before the acceptance of the work, always with the authorization of ARTESP, subject to the overcoming of the “nonconformities” identified within 30 (thirty) days, extendable at ARTESP's discretion, under penalty of application of the penalties set forth in ANNEX 11. In no event may the CONCESSIONAIRE proceed with the clearance of the road without the prior authorization of ARTESP.

9.4. Upon completion of the expansion works and concurrently with the preparation of the documentation “As Built”, the CONCESSIONAIRE shall conduct a new detailed topographic survey contemplating the new physical conformation of the entire area modified by the project to the limits of the RIGHT OF WAY. Based on this survey, information relevant to the road safety analysis (track slopes and other relevant information that may be requested by ARTESP) shall be updated in the CONCESSIONAIRE Digital Management Systems.

10. CONDITIONS TO RECEIVE THE WORKS BY ARTESP

10.1 Works may only be considered fully completed when:

- (i) the CONCESSIONAIRE submits the respective QUALITY CERTIFICATE of the Works to ARTESP; and
- (ii) ARTESP expressly acknowledges the completion of the planned investments in accordance with the FUNCTIONAL AND EXECUTIVE PROJECTS.

10.2 The CONCESSIONAIRE remains responsible for the projects even after the receipt of the works by ARTESP.