

INDEPENDENT ENGINEER

MONTHLY REPORT MARCH 2023

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MONTHLY REPORT

Contents

1	Introduction.....	4
1.1	Purpose.....	4
1.2	Scope	4
2	General update and the time schedule.....	5
2.1	Major activities during March	5
2.2	The overall progress of works	5
2.3	Activities performed by the Concessionaire	5
2.3.1	The ropeway facility	5
2.3.1.1	Civil works and manufacturing	5
2.3.1.2	Delivery and installation of components	5
2.3.2	The gondola parking.....	5
2.3.3	Ancillary structures at the Bottom Station (Administrative).....	5
2.3.4	The top station building (Administrative and sanitary).....	6
2.3.5	Ancillary structures at the Top Station (Restaurant).....	6
2.4	Obligations of the Authority.....	6
2.4.1	Electricity and power infrastructure	6
2.4.2	Road infrastructure	6
2.5	Lagging activities and/or events that can impede the course of works.....	6
3	Overview of works on the Ropeway facility.....	7
3.1	Civil works.....	7
3.1.1	Bottom station.....	7
3.1.2	Line	7
3.1.3	Top station.....	7
3.2	Installation of components	7
3.2.1	Deliveries	7
3.2.2	Progress of installation	7
4	The Bottom Station Structures.....	8
4.1	Gondola parking	8
4.1.1	Civil works.....	8
4.1.2	Architecture.....	8
4.1.3	Hydro technical works.....	8

4.1.4	Electro technical works	8
4.1.5	Mechanical works.....	8
4.2	Administrative block.....	8
4.2.1	Civil works.....	8
4.2.2	Architecture.....	8
4.2.3	Hydro technical works	8
4.2.4	Electro technical works	8
4.2.5	Mechanical works.....	8
4.3	Works in the scope of the Authority	8
4.3.1	Parking lot.....	8
5	The Top Station Structures.....	9
5.1	Administrative and Sanitary Block	9
5.1.1	Civil works.....	9
5.1.2	Architecture.....	9
5.1.3	Hydro technical works	9
5.1.4	Electro technical works	9
5.1.5	Mechanical works.....	9
5.2	Ancillary structures – restaurant.....	9
5.2.1	Civil works.....	9
5.2.2	Architecture.....	9
5.2.3	Hydro technical works	9
5.2.4	Electro technical works	9
5.2.5	Mechanical works.....	9
5.3	Works in the scope of the Authority	9
5.3.1	Approach road.....	9
5.3.2	Power supply	10
6	Quality control.....	10
6.1	General overview	10
6.2	Quality Assurance Documents, Test Results and Certificates of Materials	10
7	HSE.....	10
8	Non-conformities	11
9	Remarks (Issues for further clarification, proposals)	11
10	Photos.....	12

Appendix 1: The time schedule for the whole project (Contract)

1 INTRODUCTION

1.1 PURPOSE

This document is issued on basis of the Independent Engineer Services contract signed between IPSA Institute, Government of Montenegro and Žičara Kotor - Lovćen Ltd. Podgorica, number 8854 (IPSA Institute), as a report on monitoring and supervision of works on construction of the Kotor – Lovćen Ropeway, on weekly level.

1.2 SCOPE

All major aspects of the construction process are commented within different chapters of the document. Proposals are given for eventual open issues between the participants of the project. Any ongoing process relevant for further development of project is analysed and its potential to impede the time schedule assessed.

2 GENERAL UPDATE AND THE TIME SCHEDULE

2.1 MAJOR ACTIVITIES DURING MARCH

- During March, Contractor's site activities were mostly focused on the construction of the bottom station building and installation of the ropeway components to enable the rope assembly.

2.2 THE OVERALL PROGRESS OF WORKS

Comparisons between planned and executed (finished) activities will be given with respect to the time schedule (Gantt chart) adopted for the whole project, i.e. all the activities related to the project and necessary for its implementation.

Important milestones:

- Signing of the contract: 15/12/2021.
- Approval of design documents: 08/07/2022.
- Notification on start of works: 12/07/2022.
- Target date of completion: 13/07/2023

Progress of works (ahead, in line with or behind the schedule) is assessed on monthly level. The real-time start of activities displayed on the Gantt chart (Annex 1) is the date of the notification of start of works (12/07/2022). The overview is shown below. "Days" refer to calendar days.

2.3 ACTIVITIES PERFORMED BY THE CONCESSIONAIRE

2.3.1 THE ROPEWAY FACILITY

2.3.1.1 CIVIL WORKS AND MANUFACTURING

Start: 78 days after the Notification on start of works

- 1) Preparation of the approaches (deadline 90 days): behind the schedule.
- 2) Manufacturing of components (270 days): in line with the schedule.
- 3) Civil works (150 days): in line with the schedule.

2.3.1.2 DELIVERY AND INSTALLATION OF COMPONENTS

- 1) In line with the schedule.

2.3.2 THE GONDOLA PARKING

Start: 78 days after the Notification on start of works

- 1) Manufacturing of components (deadline 90 days, duration 45 days): in line with the schedule.
- 2) Construction of foundations (deadline 150 days, duration 30 days): in line with the schedule.
- 3) Assembly of components on the site (deadline 210 days, duration 30 days): in line with the schedule.
- 4) Craftsmen works and installation of equipment (deadline 300 days, duration 30 days): in line with the schedule.

2.3.3 ANCILLARY STRUCTURES AT THE BOTTOM STATION (ADMINISTRATIVE)

- 1) Civil works (deadline 60 days, duration 40 days): behind the schedule.
- 2) Craftsmen works (deadline 150 days, duration 60 days): works have not started yet.

- 3) Installation of equipment (deadline 240 days, duration 60 days) works have not started yet.
- 4) Landscaping (deadline 330 days, duration 60 days): works have not started yet.

2.3.4 THE TOP STATION BUILDING (ADMINISTRATIVE AND SANITARY)

- 1) Civil works (deadline 60 days, duration 40 days): behind the schedule.
- 2) Craftsmen works (deadline 150 days, duration 60 days): works have not started yet.
- 3) Installation of equipment (deadline 240 days, duration 60 days) works have not started yet.
- 4) Landscaping (deadline 330 days, duration 60 days): works have not started yet.
- 5) Utility facilities (deadline 360 days, duration 90 days): works have not started yet.

2.3.5 ANCILLARY STRUCTURES AT THE TOP STATION (RESTAURANT)

- 1) Civil works (deadline 120 days, duration 120 days): behind the schedule.
- 2) Craftsmen works (deadline 420 days, duration 210 days): works have not started yet.
- 3) Installation of equipment (deadline 240 days, duration 120 days) works have not started yet.
- 4) Landscaping (deadline 690 days, duration 60 days): works have not started yet.
- 5) Utility facilities and equipping of the restaurant (deadline 690 days, duration 360 days): works have not started yet.

2.4 OBLIGATIONS OF THE AUTHORITY

2.4.1 ELECTRICITY AND POWER INFRASTRUCTURE

- Transformer station TS 10/0.4 kV Dub with connection to transformer station TS 35/10 kV Grbalj and TS 10.04 kV Tunel: no information.
- 10 kV cable (conduit) for TS 10/0.4 kV Dub to TS 35/10 kV Grbalj: no information.
- 10 kV cable (conduit) for TS 10/0.4 kV Kuk to TS 35/10 kV Kuk: works have not started yet.
- Transformer station TS 10/0.4 kV with connection to transformer station TS35/10 kV Kuk: works in progress.
- Double overhead lines 35 kV from TS 35/10 kV Kuk to the connection point with the existing overhead lines 35 kV Cetinje – Škaljari: works in progress.

2.4.2 ROAD INFRASTRUCTURE

- Parking lot near the Bottom Station Dub with utility facilities and the connection road: only preparatory works.
- The approach road from the top station Kuk to the main road Njeguši – Ivanova korita with utility facilities: excavations.

2.5 LAGGING ACTIVITIES AND/OR EVENTS THAT CAN IMPEDE THE COURSE OF WORKS

After having an insight into the time schedule for construction of the Kotor – Lovćen Ropeway with utility facilities, it can be seen that the deadline for building of the public infrastructure is May 2023. **Based on the current state on the day of preparation of this Report, the Independent Engineer must express concern regarding the implementation of this project within deadlines prescribed in the time schedule.**

3 OVERVIEW OF WORKS ON THE ROPEWAY FACILITY

3.1 CIVIL WORKS

3.1.1 BOTTOM STATION

- Preparation of the RC canal for cables.
- Backfilling.

3.1.2 LINE

- Construction of the aerial cable foundation between towers 9 and 10.
- Landscaping

3.1.3 TOP STATION

- Preparation of the RC canal for cables. Backfilling.

3.2 INSTALLATION OF COMPONENTS

3.2.1 DELIVERIES

- Delivery of cabins (all cabins delivered).

3.2.2 PROGRESS OF INSTALLATION

- Assembly of towers 11 and 12 (completed).
- Installation of missing parts on towers 16, 17, 18, 19 (assembly completed).
- Fine tuning of the line (alignment of the line).
- Assembly of the bottom station completed.
- Assembly of the top station completed.
- Installation of the garage in progress.
- Installation of the carrying-hauling rope in progress. Helicopter used on March 24.

4 THE BOTTOM STATION STRUCTURES

4.1 GONDOLA PARKING

4.1.1 CIVIL WORKS

- Assembly of the steel structure.
- Installation of the automatic garage components in progress.

4.1.2 ARCHITECTURE

- Installation of cladding.

4.1.3 HYDRO TECHNICAL WORKS

- Works have not started yet.

4.1.4 ELECTRO TECHNICAL WORKS

- Works have not started yet.

4.1.5 MECHANICAL WORKS

- Works have not started yet.

4.2 ADMINISTRATIVE BLOCK

4.2.1 CIVIL WORKS

- Works on the reinforced concrete structure. The structure finished up to the roof.

4.2.2 ARCHITECTURE

- Works have not started yet.

4.2.3 HYDRO TECHNICAL WORKS

- Works have not started yet.

4.2.4 ELECTRO TECHNICAL WORKS

- Works have not started yet.

4.2.5 MECHANICAL WORKS

- Works have not started yet.

4.3 WORKS IN THE SCOPE OF THE AUTHORITY

4.3.1 PARKING LOT

- Preparatory works and some excavations.

5 THE TOP STATION STRUCTURES

5.1 ADMINISTRATIVE AND SANITARY BLOCK

5.1.1 CIVIL WORKS

- No activities due to severe weather conditions.

5.1.2 ARCHITECTURE

- Works have not started yet.

5.1.3 HYDRO TECHNICAL WORKS

- Works have not started yet.

5.1.4 ELECTRO TECHNICAL WORKS

- Works have not started yet.

5.1.5 MECHANICAL WORKS

- Works have not started yet.

5.2 ANCILLARY STRUCTURES – RESTAURANT

5.2.1 CIVIL WORKS

- Excavations and casting of foundations.
- Construction of side walls.

5.2.2 ARCHITECTURE

- Works have not started yet.

5.2.3 HYDRO TECHNICAL WORKS

- Works have not started yet.

5.2.4 ELECTRO TECHNICAL WORKS

- Works have not started yet.

5.2.5 MECHANICAL WORKS

- Works have not started yet.

5.3 WORKS IN THE SCOPE OF THE AUTHORITY

5.3.1 APPROACH ROAD

- Excavation works (blasting and excavations using machinery).

5.3.2 POWER SUPPLY

- Preparation of the approaches for the overhead lines.
- Excavation works for the sub-station.

6 QUALITY CONTROL

6.1 GENERAL OVERVIEW

- For all built-in materials, products and the equipment installed, proper certificates and/or test results are to be submitted to the Supervisor.

6.2 QUALITY ASSURANCE DOCUMENTS, TEST RESULTS AND CERTIFICATES OF MATERIALS

- No documents or information provided during the period to which this report refers to.

7 HSE

- No severe HSE incidents noted.
- Personal protective equipment is not used by all workers present on the site.

8 NON-CONFORMITIES

- For the works in the scope of the Authority (grantor), no time schedule has been submitted as so far. Serious delays may be expected.
- The ropeway's grounding system issues have not been resolved as so far.
- Design of the gondola parking building and LEITNER's automatic garage are not in full compliance. Additional girders have to be installed.

9 REMARKS (ISSUES FOR FURTHER CLARIFICATION, PROPOSALS)

- **The Independent Engineer highly recommends the Authority/grantor to speed up the construction of the electricity and power infrastructure and the road infrastructure in order to enable timely completion of works on the construction of the Kotor – Lovćen ropeway.**
- The grounding system for the ropeway line and stations shall be improved in order to keep its resistivity below the prescribed limits. It's up to the Designer to propose proper measures for further reduction of the resistivity.
- Mixing of bentonite with natural soil makes its application for reduction of the soil resistivity less effective. Much better results are usually achieved when the grounding rope or band is embedded in a layer of wet bentonite and then backfilled. We recommend such an approach to be considered for the improvement of the grounding system.
- To avoid further problems and delays with construction of the gondola parking, the modified Design (i.e. the one that includes the missing girders) shall also be checked separately by LEITNER. Designer is obliged to provide missing details asap.

10 PHOTOS



Figure 10-1: The bottom station

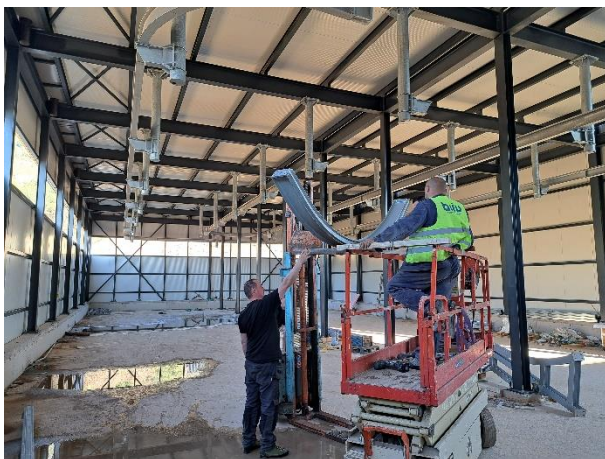


Figure 10-2: Gondola parking

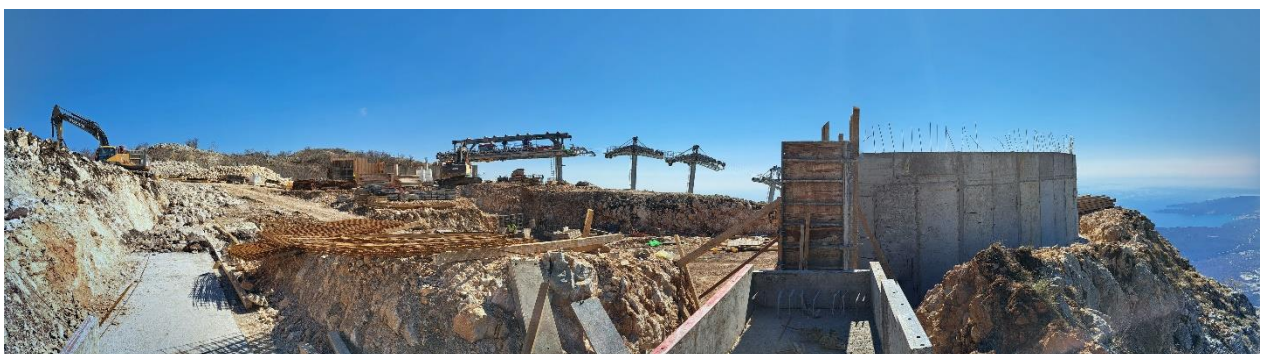
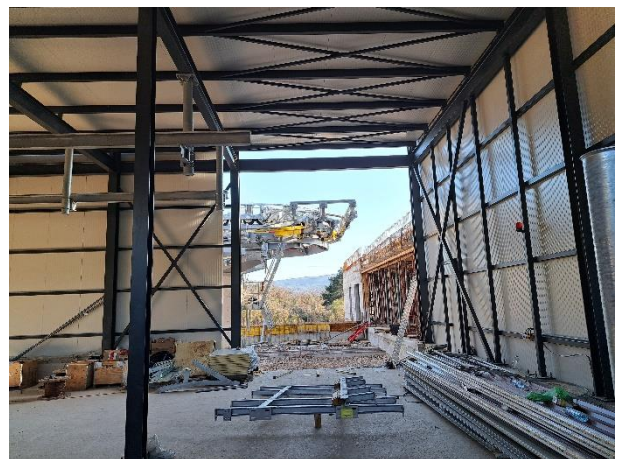


Figure 10-3: Top station



Figure 10-4: Top station / start of the rope assembly



Figure 10-5: The helicopter operating on the site

