

INDEPENDENT ENGINEER SUPERVISION OF WORKS

WEEKLY REPORT CW 02

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WEEKLY REPORT

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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

Overview of site activities is presented for each day of the current week.

2 ACTIVITIES PERFORMED DURING THE WEEK 02/23 (09.01.-15.01.)

2.1 MONDAY

- Bottom station building: No activities.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: No activities.
- Tower S8: No activities.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: No activities.
- Tower S12: No activities.
- Tower S13: No activities.
- Tower S14: No activities.
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: No activities.
- Top station building: No activities.

2.2 TUESDAY

- Bottom station building: Removal of formwork from the side walls.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: Pre-assembly activities.
- Tower S8: Pre-assembly activities.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: No activities.
- Tower S12: No activities.
- Tower S13: No activities.
- Tower S14: No activities.
- Tower S15: No activities.

- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: No activities.
- Top station building: No activities.

2.3 WEDNESDAY

- Bottom station building: Removal of formwork (wall Z1). Installation of reinforcement for walls Z3 and D1.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: Pre-assembly activities.
- Tower S8: Pre-assembly activities.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: No activities.
- Tower S12: Casting of the foundation slab.
- Tower S13: No activities.
- Tower S14: Installation of the grounding system (3rd ring).
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: No activities.
- Top station building: Removal of formwork for walls on the sanitary block. Backfilling around the administrative building.

2.4 THURSDAY

- Bottom station building: Placement of formwork and reinforcement for walls Z4 and D1.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: Pre-assembly activities.

- Tower S8: Pre-assembly activities.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: No activities.
- Tower S12: No activities.
- Tower S13: No activities.
- Tower S14: Installation of the grounding system.
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: No activities.
- Top station building: Removal of formwork for walls on the sanitary block. Backfilling around the administrative building.

2.5 FRIDAY

- Bottom station building: Placement of formwork and reinforcement for walls Z3, Z4, D1, C2, C1 Z3a.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: Assembly of the tower.
- Tower S8: Assembly of the tower.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: No activities.
- Tower S12: Placement of formwork and reinforcement for the plinth.
- Tower S13: No activities.
- Tower S14: Installation of the grounding system.
- Tower S15: Installation of the grounding system.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Delivery of components.
- Top station building: Removal of formwork for walls on the sanitary block.

2.6 SATURDAY

- Bottom station building: Placement of formwork and reinforcement for walls Z3, Z4, D1, C2, C1 Z3a.
- Bottom station: No activities.
- Tower R1: Assembly of the tower.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: No activities.
- Tower S8: No activities.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: Placement of the concrete underlay.
- Tower S12: Casting of the plinth.
- Tower S13: No activities.
- Tower S14: Installation of the grounding system.
- Tower S15: Installation of the grounding system.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Delivery of components.
- Top station building: Removal of formwork for walls on the sanitary block. Placement of formwork for the walls of the administrative building.

2.7 SUNDAY

- Bottom station building: Placement of formwork and reinforcement for walls Z3, Z4, D1, C2, C1 Z3a.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: No activities.
- Tower S8: No activities.
- Tower W9: No activities.
- Tower W10: No activities.
- Tower W11: No activities.
- Tower S12: No activities.

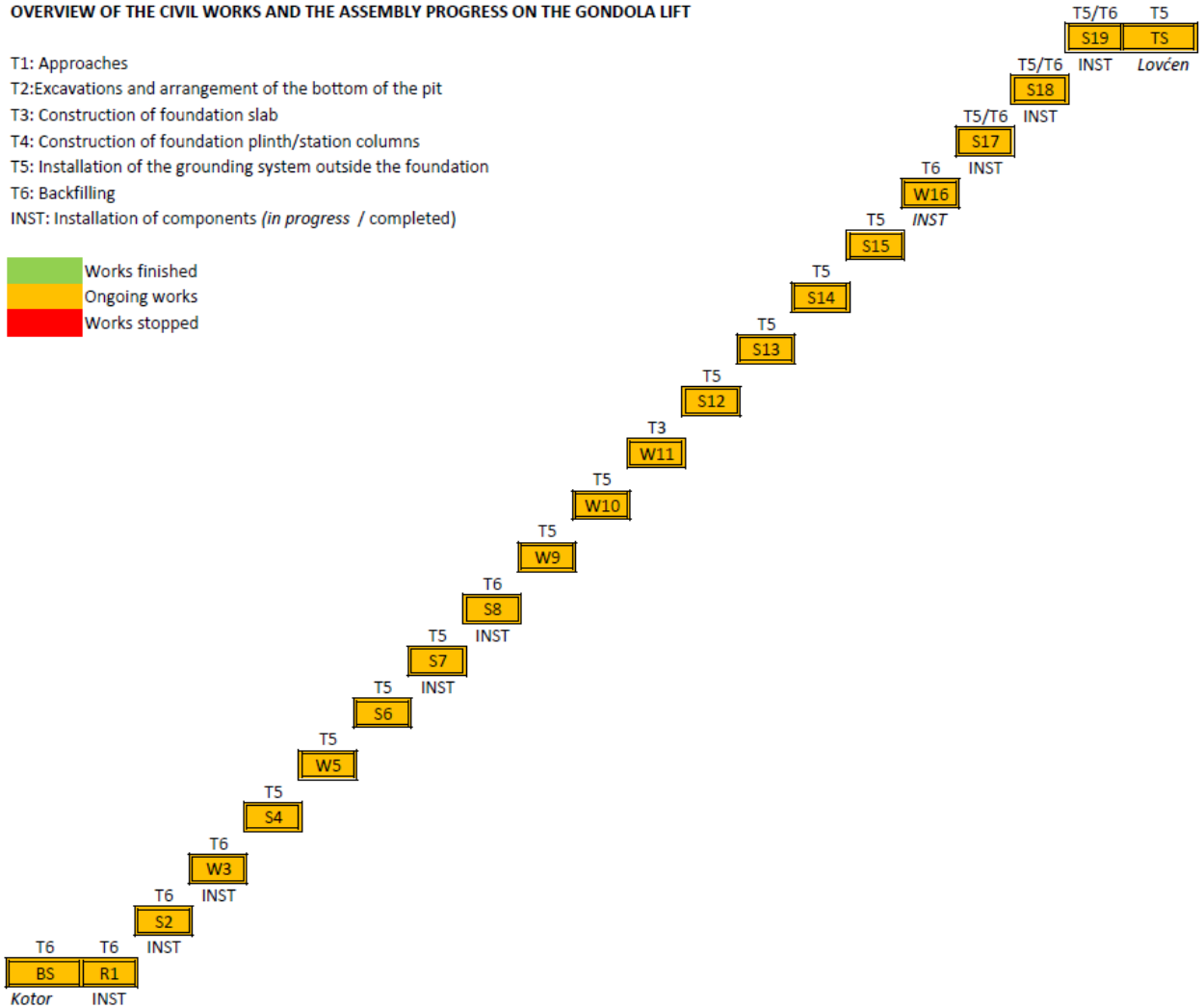
- Tower S13: No activities.
- Tower S14: No activities.
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Delivery of components.
- Top station building: Removal of formwork for walls on the sanitary block. Placement of formwork for the walls of the administrative building.

2.8 CURRENT STATUS OF WORKS ON THE GONDOLA LIFT

OVERVIEW OF THE CIVIL WORKS AND THE ASSEMBLY PROGRESS ON THE GONDOLA LIFT

- T1: Approaches
- T2: Excavations and arrangement of the bottom of the pit
- T3: Construction of foundation slab
- T4: Construction of foundation plinth/station columns
- T5: Installation of the grounding system outside the foundation
- T6: Backfilling
- INST: Installation of components (*in progress / completed*)

- Works finished
- Ongoing works
- Works stopped



3 ACTIVITIES PLANNED FOR THE WEEK 03/23

- Bottom station building: Further works on the walls.
- Bottom station: No activities.
- Tower R1: No activities.
- Tower S2: No activities.
- Tower W3: No activities.
- Tower S4: No activities.
- Tower W5: No activities.
- Tower S6: No activities.
- Tower S7: No activities.
- Tower S8: No activities.
- Tower W9: No activities.
- Tower W10: Assembly of the tower.
- Tower W11: Casting of the foundation slab.
- Tower S12: No activities.
- Tower S13: No activities.
- Tower S14: Preparation of the platform for the assembly.
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Start of the assembly (rear column).
- Top station building: Further works on the outside walls of the administrative building.
- General: Improvement of the grounding system for towers.

4 HSE

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

5 NON-CONFORMITIES

- There is no time schedule for the power lines and the power sub-station construction.
- The grounding system individual resistivity test failed for towers S15, S17, S18 and S19.
- The grounding system combined resistivity test failed for towers S17 to S19.
- Design documents do not provide enough details for the execution of the ground slab and the installation canals around the columns of the ropeway facility at the bottom station.
- Proper details for the execution of the rain water dewatering system for the roof of the garage and the canopy above the boarding area are missing.
- Current solution for the grounding system on most of the tower locations, executed as so far, does not pass the field test upon installation.
- Position of the blocks with hooks for holding down the rope has not been clearly defined in the Design.
- Information on the exact position of the foundation for the aerial cable is missing.
- The chosen roof cladding for the garage is not supposed to be installed on roofs with such a small pitch.

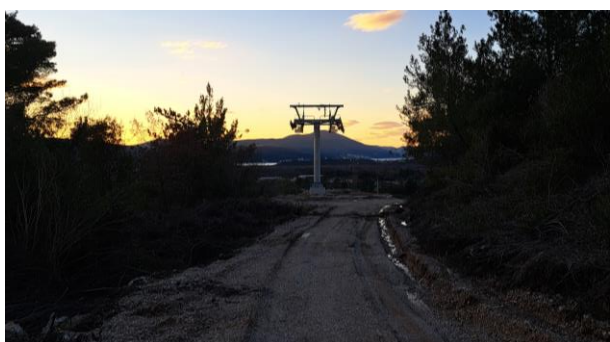
6 REMARKS AND PROPOSALS

- The missing schedules should be submitted as soon as possible.
- The grounding system for all towers with failed tests 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.
- There should be at least 7 days of dry weather left before the execution of the grounding system on-site tests. Tests on the wet soil trigger wrong results.
- More detailed information on the position of the blocks with hooks for holding down the rope has to be provided in order to enable execution of works.
- The Main Design of the bottom station needs to be amended in parts relating to the ground slab and the installation canals around the columns of the ropeway facility.
- Further inputs on the improvement of the grounding system are expected from the Designer. An update of the design is deemed necessary.
- Rain water dewatering system for the roof of the garage and the canopy above the boarding area needs to be amended with proper details for the execution.
- Further adjustments of the roof cladding on the garage and canopy at the bottom station are necessary.

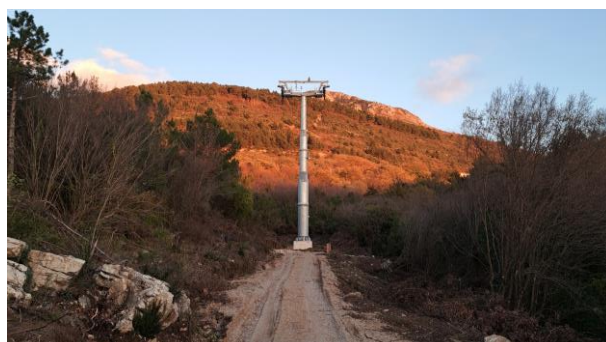
7 PHOTOS



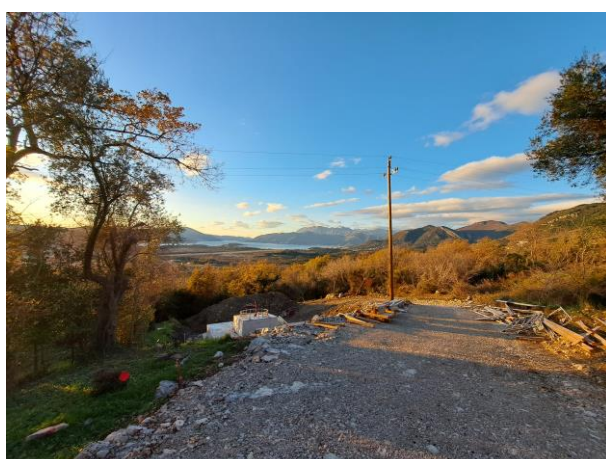
Bottom station



Towers S2 and W3

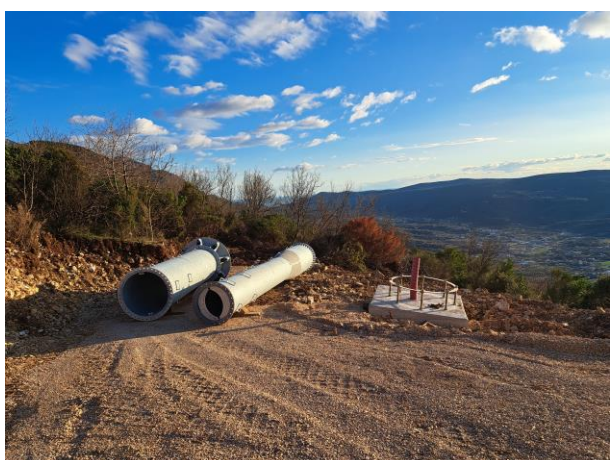


Tower S4

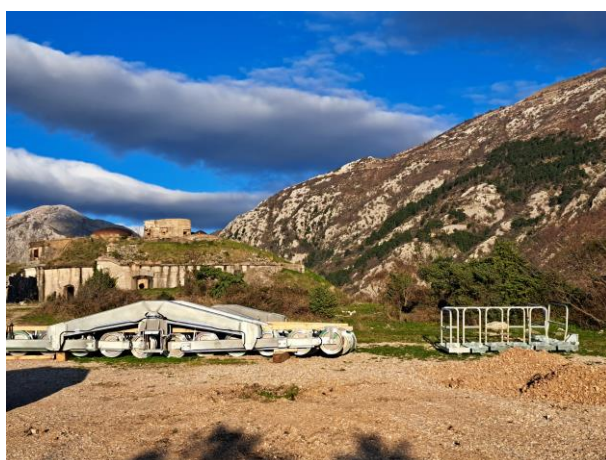




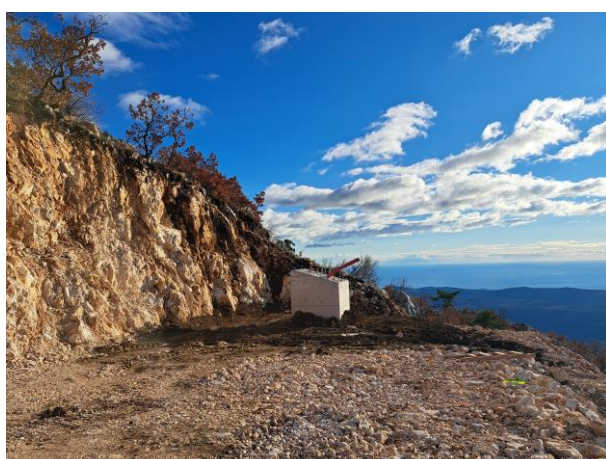
Towers S5 and S6



Towers S7 and S8



Towers S12 and S13

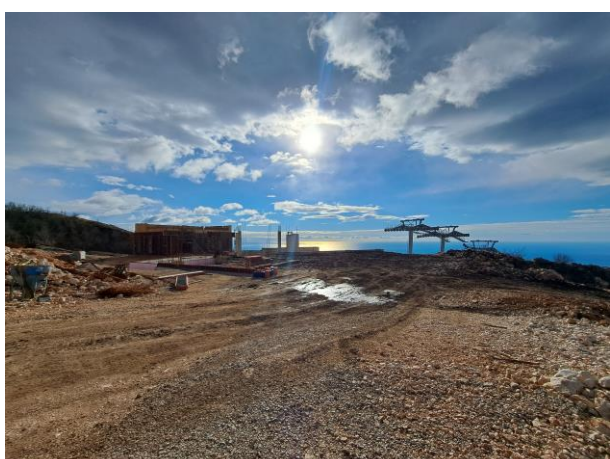




Towers S14 and S15



Tower W16 and towers S17 to S19



Top station

