

# INDEPENDENT ENGINEER SUPERVISION OF WORKS

## WEEKLY REPORT CW 51

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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 51/22 (19.12.-25.12.)

### 2.1 MONDAY

- Bottom station building: Preparation of formwork and reinforcement for the basement walls (axis G) of the main building. Casting of the ground slab inside the garage.
- 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: Installation of the grounding system.
- Tower W11: Preparation of the approach road.
- Tower S12: No activities.
- Tower S13: No activities.
- Tower S14: Preparation of the platform for the tower assembly.
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Backfilling.
- Top station building: No activities.

### 2.2 TUESDAY

- Bottom station building: Installation of anchors (axis 6), placement of formwork and reinforcement for the attic wall of the garage. Casting of 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: No activities.
- Tower W11: Preparation of the approach road.
- Tower S12: No activities.

- Tower S13: Preparation of the platform for the tower assembly.
- Tower S14: Preparation of the platform for the tower assembly.
- Tower S15: No activities.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Backfilling. Works on the improvement of the grounding system.
- Top station building: No activities.

### 2.3 WEDNESDAY

- Bottom station building: Installation of anchors (anchor assemblies, axis 6), placement of formwork and reinforcement for the attic wall of the garage.
- 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: Preparation of the approach road.
- Tower S12: No activities.
- Tower S13: Works on the improvement of the grounding system. Preparation of the platform for the tower assembly.
- Tower S14: Works on the improvement of the grounding system. Preparation of the platform for the tower assembly.
- Tower S15: Works on the improvement of the grounding system.
- Tower S16: Assembly of the tower.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Works on the improvement of the grounding system.
- Top station building: No activities.

### 2.4 THURSDAY

- Bottom station building: Installation of anchors (anchor assemblies, axis 6), placement of formwork and reinforcement for the attic wall of the garage. Placement of formwork and reinforcement for the side wall POS Z2 between the axes E and H of the main building.
- 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: Excavations for the foundation.
- Tower S12: No activities.
- Tower S13: Works on the improvement of the grounding system. Preparation of the platform for the tower assembly.
- Tower S14: Works on the improvement of the grounding system. Preparation of the platform for the tower assembly.
- Tower S15: Works on the improvement of the grounding system.
- Tower S16: No activities.
- Tower S17: No activities.
- Tower S18: No activities.
- Tower S19: No activities.
- Top station: Works on the improvement of the grounding system.
- Top station building: No activities.

## 2.5 FRIDAY

- Bottom station building: Casting of the attic wall of the garage. Placement of formwork and reinforcement for the side wall POS Z2 between the axes E and H of the main building.
- 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: Preparation of the gravel underlay.
- Tower S12: Preparation of the gravel underlay.
- Tower S13: Works on the improvement of the grounding system. Preparation of the platform for the tower assembly.
- Tower S14: Works on the improvement of the grounding system. Preparation of the platform for the tower assembly.
- Tower S15: Works on the improvement of the grounding system.
- 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.

## 2.6 SATURDAY

- Bottom station building: No activities. Placement of formwork and reinforcement for the side wall POS Z2 between the axes E and H of the main building. Casting. Grouting of the anchorage assemblies in the garage.
- 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: Compaction of the gravel underlay and check of the modulus of deformation (> 50 MPa).
- Tower S12: Compaction of the gravel underlay and check of the modulus of deformation (> 50 MPa).
- 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: Placement of formwork and reinforcement for the lower slab of the utility installations canal.
- Top station building: No activities.

## 2.7 SUNDAY

- Bottom station building: Placement of formwork and reinforcement for the side wall POS Z1.
- 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: Placement of formwork and reinforcement for the lower slab of the utility installations canal.
- Top station building: Placement of formwork and reinforcement for the side walls of the sanitary block.

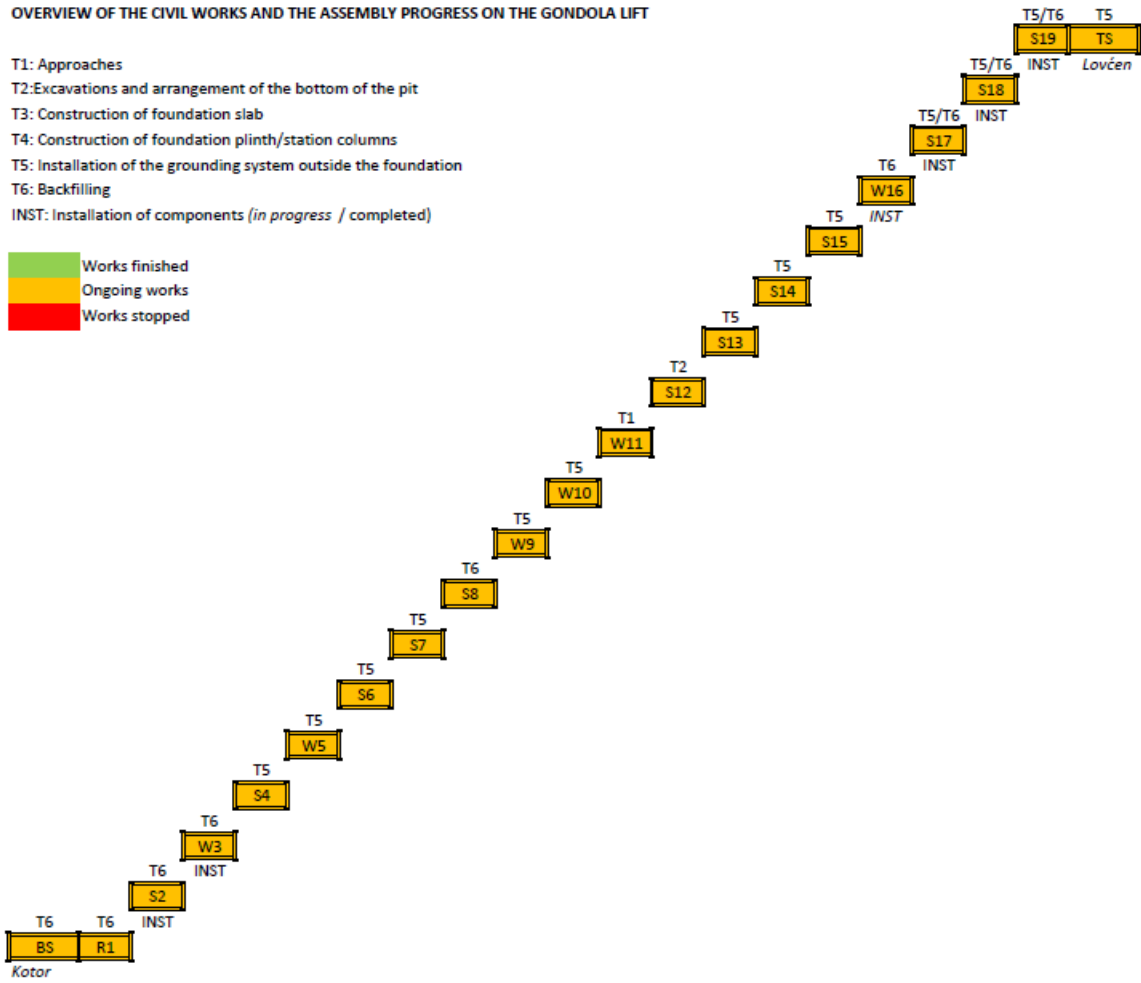


## 2.8 CURRENT STATUS OF WORKS ON THE GONDOLA LIFT

### 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 52/22

- Bottom station building: Installation of the garage steel structure. Placement of formwork and reinforcement for the side walls of the main building.
- 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: Placement of the concrete underlay. Placement of formwork and reinforcement for the foundation slab.
- Tower S12: Placement of the concrete underlay. Placement of formwork and reinforcement for the foundation slab.
- Tower S13: Works on the improvement and testing of the grounding system.
- Tower S14: Works on the improvement and testing of the grounding system.
- Tower S15: Works on the improvement and testing of the grounding system.
- Tower S16: Works on the improvement and testing of the grounding system.
- Tower S17: Works on the improvement and testing of the grounding system.
- Tower S18: Works on the improvement and testing of the grounding system.
- Tower S19: Works on the improvement and testing of the grounding system.
- Top station: No activities.
- Top station building: Casting of the side walls of the sanitary block. Delivery of the steel structure.

## 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.

## 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.

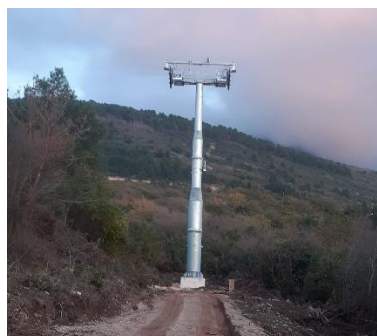
## 7 PHOTOS



Bottom station



Towers S2 and W3



Tower S16



Top station

