

# EM4C

Engineering Materials for Construction

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# CLEANING AND PROTECTION OF MARBLE SURFACES OF LEVADEA MUNICIPALITY



..This Presentation refers to the work of cleaning and protecting marble surfaces, stairs, parapets, metopes, seats and the fountain in the main square of the city.

# CLEANING AND PROTECTION OF MARBLE SURFACES

## CLEANING SYSTEM WITH NATURAL MATERIALS

The cleaning work was carried out using special cleaning materials as well as the special machine which is a cleaning system with materials depending on the cleaning surface.

The system includes:

- Applications machines **9lt and 3lt**
- Air compressor
- Air dehumidifier
- Water tank **Stainless Steel 24lt**
- Application pistols **with or without extension**



The final cleaning of the surfaces was done with a method based on technology using dry air, water and natural materials that under appropriate conditions of pressure, dosage and method of application that each project faces in a unique way without causing any alteration of the cleaning surfaces.

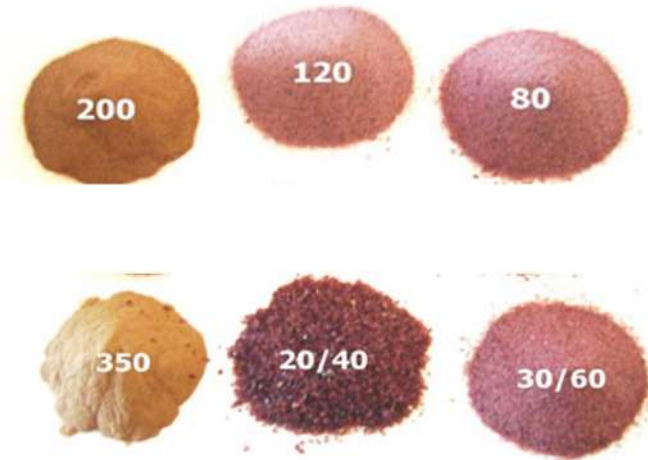
# CLEANING AND PROTECTION OF MARBLE SURFACES

## CLEANING SYSTEM WITH NATURAL MATERIALS

Calcium Carbonate (Sodium bicarbonate) was used as a natural cleaning agent and with the use of a special diamond rock of various granulometric units.

### Natural Cleaning Materials:

- **Garnet Sand** (based on adamantine)
- **Calcium Carbonate**
- **Sodium Bicarbonate**
- **Vegetal Media** (Plant Spheres)
- **Glass Beads**



# EXISTING CONDITION BEFORE SURFACE CLEANING

Fountain



# EXISTING CONDITION BEFORE SURFACE CLEANING

## Stairs



# EXISTING CONDITION BEFORE SURFACE CLEANING

## Metopes and Monuments



# DURING SURFACE CLEANING

Cleaning the surfaces initially using a pressure machine with a pressure of 250 bar.

Cleaning of **GRAFFITI** by applying a first coat of **RIMOX GRAF A** material.





# DURING SURFACE CLEANING



Wherever the cleaning with **RIMOX GRAF A** material was not achieved, the cleaning was done using a special machine and the application of the material **GRANULATS 250-300 ATH.**



The system applications are specially designed for restoration projects, where the surfaces must be cleaned without the slightest alteration.



# DURING SURFACE CLEANING

Cleaning using a special machine and application of **GRANULATS 250-300 ATH** material.



# DURING CLEANING FOUNTAIN SURFACES

Cleaning the surfaces first by using a pressure gauge with a pressure of 250 bar and removing a layer of salts using a wheel.



# DURING CLEANING FOUNTAIN SURFACES



# DURING CLEANING FOUNTAIN SURFACES



# PROTECTION OF SURFACES

## Fountain

The marble surfaces were protected with **UMBRELLA** material to protect against graffiti and salts.



# PROTECTION OF SURFACES

## Stairs

To protect the surfaces from dirt where cleaning was done, the use of strong water repellent materials and oils **PROTEX OIL 130** and **PROTEX IDRO S-K** was used.



# PROTECTION OF SURFACES

## Parapet and metopes

The marble surfaces were protected with **Primer New Pro** material and **New Pro Magic** material for antigraffiti protection.





# VIDEO – WASHING SURFACES FROM DIRT



# VIDEO – SURFACE CLEANING APPLICATION



# VIDEO – SURFACE CLEANING APPLICATION



# FINAL RESULTS AFTER CLEANING AND PROTECTION

## Square and Fountain



All cleaned surfaces were protected with special materials depending on the surface and the need.

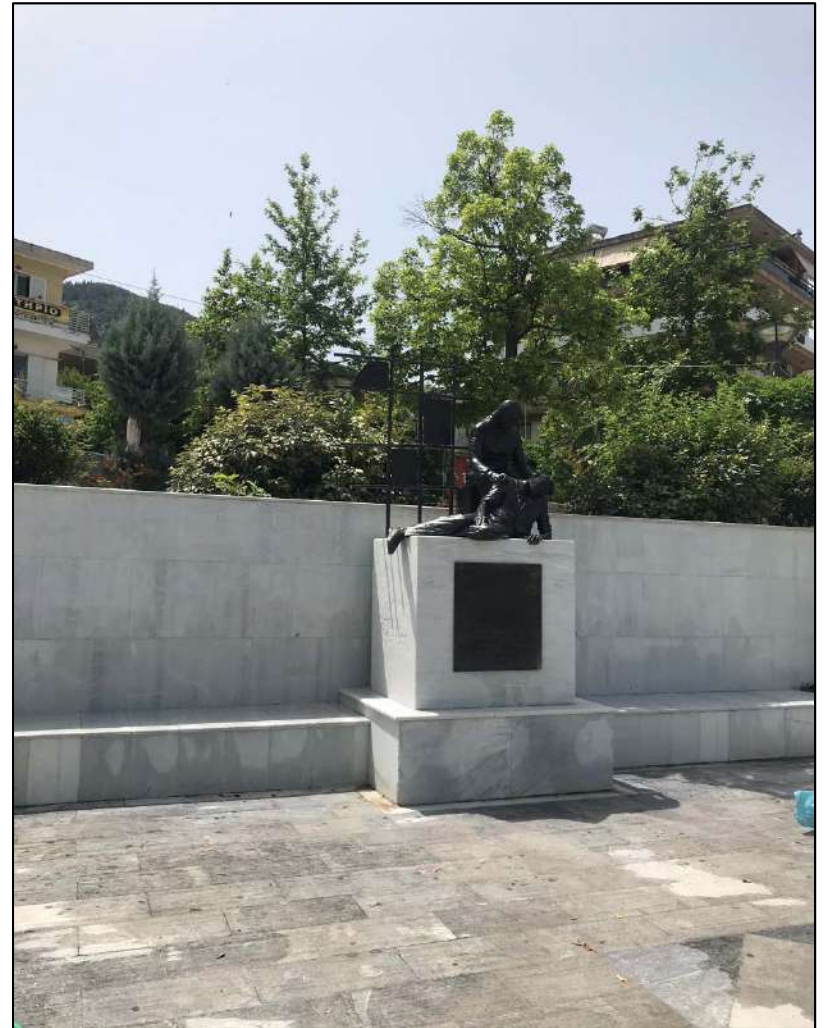
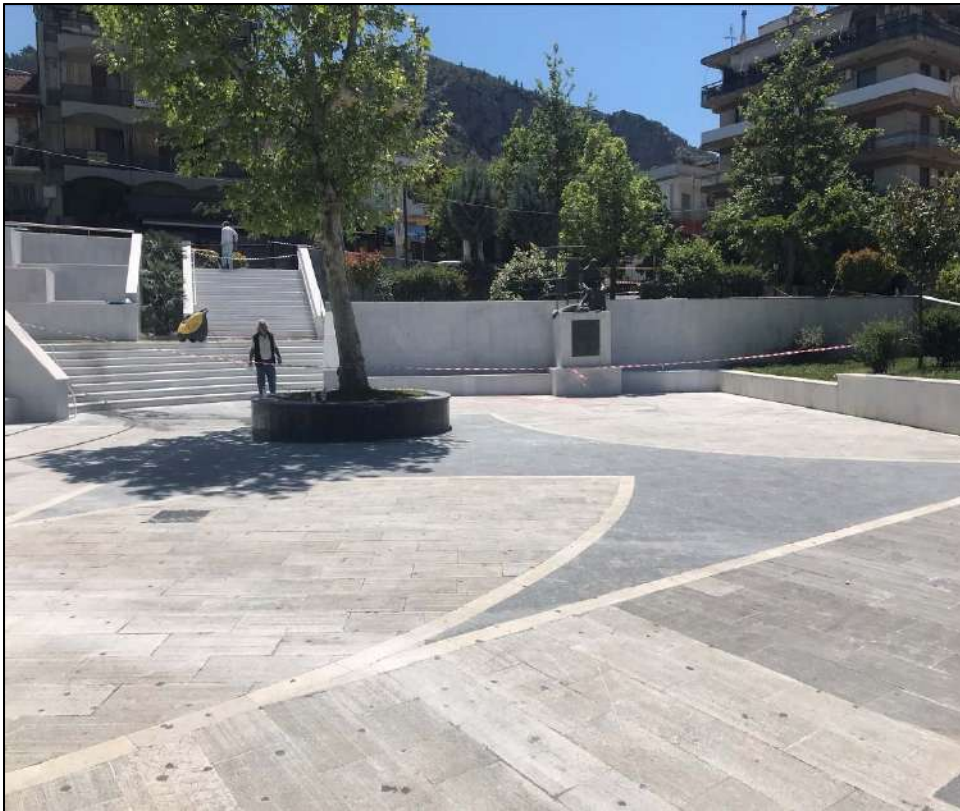
# FINAL RESULTS AFTER CLEANING AND PROTECTION

## Stairs



# FINAL RESULTS AFTER CLEANING AND PROTECTION

## Metopes and Monuments



# FINAL RESULTS AFTER CLEANING AND PROTECTION



# FINAL RESULTS AFTER CLEANING AND PROTECTION





# BEFORE AND AFTER THE FINAL CLEANING AND PROTECTION EFFECT

Before



After



Thank you for your attention!



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