Improvement works at the cemetery in the Kyrenia area
Description and details

Site Identification

- **GPS identification:** 35°20'27.73"N, 33°12'20.49"E
- **Site Category:** Village Cemetery
- **Original Use:** Cemetery
- **Current Use:** Not in use
- **Materials:** side and rear walls mainly rubble stone walls with render and a white wash finish, the front wall reinforced concrete beams and columns, infill with concrete blocks finish with render and white paint. The chapel inside the cemetery is built with concrete members, infilled with concrete bricks and render, finish with white paint. The existing openings, at the chapel, has no closure just metal gates.
- **Approximate Area:** 4416m2

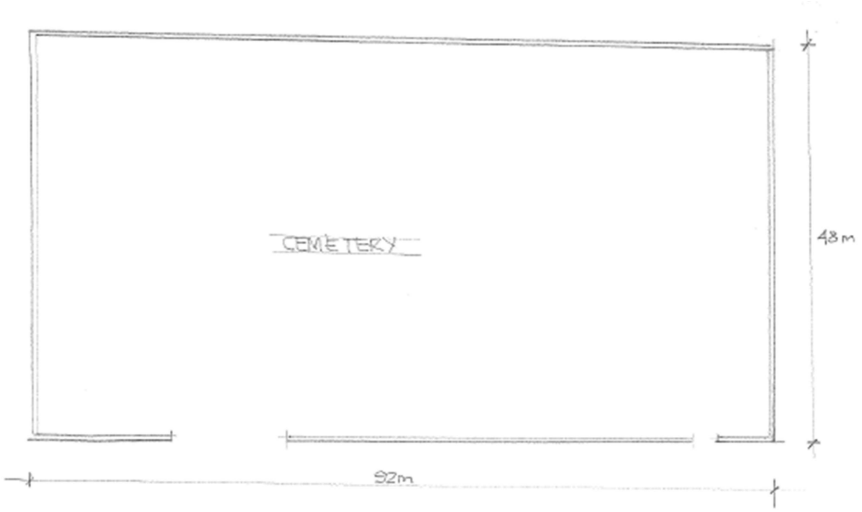

Figure 2, Site Layout

Satellite Photo

Figure 3, Satellite Photo

Photographic documentation

Figure 4, Cemetery's Yard

Figure 5, Cemetery's Yard

Figure 6, External Wall, North West View

Figure 7, External Wall, South East View

Figure 8, Cemetery Gate, North East

Figure 9, Cemetery Gate, South East

Figure 10, Chapel at the Cemetery Yard

Technical Description

The side and rear walls of the cemetery are made mainly as rubble stone walls with render and a white wash finish. The front wall (facing the main road) is constructed by reinforced concrete beams and columns and has infill with concrete blocks finish. The wall is rendered and painted white. The chapel inside the cemetery is a reinforced concrete construction, infilled with concrete blocks and rendered, with white paint finishing. The existing openings at the chapel have no closures just metal gates.

Work Description

0.0 Dealing with the burials on site

1.0 Reconstruction of the collapsed parts of the rubble stone walls at the rear wall and side walls of the cemetery

2.0 Lime wash on the reconstructed masonry area

3.0 Repairs on the existing cement plasters on the front wall

4.0 Painting of the existing metal members of the cemetery

5.0 Pruning, Removal of woody vegetation, Treating weeds

Specifications for the Works

0.0 Dealing with the Burials on site

a. All gravestones and other burial objects should be documented (in measured sketch/drawing location and description, accompanied by photograph) and remain as is, even if displaced. No burial object should be moved or removed from site.
b. The contractor should not enter to the site with heavy machinery in order not to damage the burials.
c. The contractor and contractor's crew must have understanding that the tombs, tombstones and historic markers are very fragile and that works in historic cemeteries must be conducted with outmost care as not to damage in any way the cemetery's elements.

1.0 Reconstruction of the missing parts of the rubble stone walls at the rear wall and side walls of the cemetery:

a. Carefully remove the displaced and loose stones of the masonry from the collapsed part of the wall and store safely for reuse.
b. If other stone material from the wall's collapse still exists on site this should be stored safely and reused for the reconstruction of the wall.
c. Dry cleaning of the masonry cavity of loose surface deposits on the stone surfaces, dirt, vegetation, loose mortar, and loose debris to be performed using soft flat brushes, natural fibre brooms and vacuum cleaners.

d. Make sure all loose debris is removed from the masonry cavity and rinse with potable water (PH 7 or higher) to remove dust.
e. Pre-wet adjacent surfaces with clean, potable water before initiating rebuilding of the masonry.
f. The masonry should be rebuilt with the same type of stones and mortar and in the same character with the existing wall (in similar style and workmanship, taking account of the style and shape of any coursing patterns, masonry structure, stone shapes and the like).
   Stone should be laid in an evenly filled bed of mortar, with full mortar coverage on horizontal and vertical joints. Adjust stone units to final position while mortar is soft and plastic.
   Repointing with ready-to-use mortar containing natural hydraulic lime base material to match existing color. The mortar must match in color, texture, tooling, and sand content the existing. The objective is to match the historic mortar so that the new material will not conflict visually or physically with the original materials. It must also have less compressive strength than the surrounding stone material. Periodic rewetting of the newly re-pointed area should be conducted as this will also prevent premature drying. Stones are to remain clean of any pointing overspills. Excess mortar must be cleaned before dried. When mortar is thumbprint hard, tool to match original appearance of joints. Remove excess mortar from edge of joint by brushing. Maximum tolerances from plumb and level new work, not to exceed variation from plumb and level of adjacent existing work. Clean the new wall surface with natural brush after mortar is dry.
g. Overall aim is to reuse the existing stone available for the reconstruction of the masonry. If replacement units are required, they should match original sandstone in color, texture, and size, and be free from salts and other contaminants.
h. All new materials must be checked for consistency, colour, absence of salt, ingredients, texture, etc.

2.0 Lime wash on the reconstructed masonry area

The existing external rubble wall is coated with lime wash. Some areas are exhibiting poor condition, which needs attention during the works and new layer of lime wash coating will be applied on the newly repaired areas.

a. Surface preparation; all surfaces must be sound, clean dry and free from dirt, grease and other contamination. Flaking or peeling may occur if painting over weak paint payers. If mold is present, the surface must be cleaned. Cracking or loose subsurface material must be repaired and filled with mortar and filler. New plaster application must be significantly cured.
b. Create a test area $1m^2$ to verify color and application for approval by the engineer.
c. Spray with water an area of approximately $3m^2$ at a time until the surface is damp but not running with water. Lime wash must be applied to a freshly dampened surface. Lime wash should never be applied to a dry surface, as this will cause rapid drying out of the lime wash and result in dusting.
d. Lime wash should be applied in several thin coats. Apply with a long haired or masonry paint brush

3.0 Repairs on the existing cement plasters on the front wall

a. All deteriorated and detached plasters to be removed from the wall surface using soft flat brushes, natural fibre brooms and vacuum cleaners.
b. Wet wash the area, to be ready to receive the new plaster.
c. New plastering shall be applied to wall surfaces as follows;

i. "A" layer coating: shall be sprayed with rough cast cement plaster at ratio of 1:3 (cement and coarse graded crushed sand)
ii. "B" layer coating: plaster shall be applied in ratio 1:2 (cement and coarse graded crushed sand)
iii. "C" layer coating: shall be applied after the two previous coats are completely dry. Layer "C" shall be well rubbed and repeatedly floated with use of pan floats.

The thickness of the second coating shall be approximately 1/2", while the final coat shall be 1/4" thick. In other words, combined coating thickness for all three layers shall not exceed one inch (1").

d. The western wall of the cemetery to be painted in white paint.

4.0 Painting of the existing metal members of the cemetery

All existing metal members of the western boundary of the cemetery, such as the metal gate, is exhibiting rust and should be treated:

a. All rusted metal parts of the gate should be treated for rust. Rust should be removed and the metal surfaces should be treated with an active primer, which contains active corrosion inhibiting additives and finally painted in the same colour as original. Satisfactory time should be provided to the primer to mature before proceeding with the paint coat.

b. If corrosion has reduced the cross section of the steel elements to less than 80% of its original diameter then these should be cut to the extend needed and replaced by metal members of equivalent type (material type, profile and shape should be as original). The new metal members should be welded to the existing structure and treated to match the original.

c. The contractor must ensure that the gate is in working condition

d. A lock should be supplied for the gate

Note: All materials such as undercoat and paints will be approved for quality and color by the engineer before any works proceeds.

5.0 Pruning, Removal of woody vegetation, Treating weeds

5.1 Pruning

a. Before pruning trees on site should be documented (location and type of tree to be noted on measured sketch/drawing, accompanied by photographic documentation).
b. Check cemetery trees for dead branches and other signs of ill health; the contractor to remove branches in risk of collapse. All health and safety measures should be taken to ensure that branches do not fall onto existing structures or fellow workers.
c. The contractor should provide to the engineer a method of statement for the pruning for approval taking into account that heavy machinery should not enter the site in order not to cause any damage to the burials.

5.2 Removal of woody vegetation

a. The contractor can un-root small trees, shrubs or other woody plants only upon approval from the engineer.

b. In the cases that the removal of woody plants is considered as necessary, as in the case that they are growing adjacent to the tombs, these should be cut back to ground level by using secateurs and/or pruning saw, removing smaller branches first so that the main stems can be revealed and cut.
c. Herbicides are proposed for control of woody plants ('Roudup Bio' or equivalent product approved by the engineer). The approach proposed is to cut the brunches and then paint with herbicide directly on the exposed branch. After application of herbicide the cut part should be covered with nylon and monitored for two weeks. If the plant is not dried after two weeks, the same process should be repeated. The herbicide will be transported directly to the root system, with little migration into the soil or nearby stones.

5.3 Treating Weeds

a. Weed removal should be done by manually or by the use of hand tools. In dense areas a power rake or hand raking can loosen the weeds. Rototilling is not recommended because of the potential for damage to stones, graves, and archaeological remains. Great care should be given in removing the weeds from the immediate vicinity of gravestones or tombs.
b. The use of chemical herbicides is proposed in areas of dense weeds but it is not recommended for broadcast or spray application. Many contain salts and are often acidic – conditions which can be harmful to marble and limestone. Herbicides to be used should be the least acidic one available and apply with great care ('Roudup Bio' or equivalent product approved by the engineer). Note that most herbicides are not target specific and the drift of spray or movement after rain can do a great deal of damage to adjacent vegetation (and stones). Application must always be done with the greatest care.

Note: All debris should be cleared as it accumulates; arrange for disposal to an appropriate location. Leaving debris allows new seeds to take root.