

**ROCKERY WALL CONSTRUCTION
SOUTHERN NEVADA LOCAL STANDARD
DEVELOPED BY SNBO STRUCTURAL COMMITTEE
DRAFT: February 14, 2005**

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100 Scope

101 This document provides a standard throughout Southern Nevada for the structural analysis and construction of Rockery Walls.

200 Definitions

201 **Rock** is natural solid mineral matter occurring in large masses or fragments.
202 **Rockery Wall** is a system of stacked rocks constructed to retain soil.
203 **Landscape Materials** such as vegetation, “landscape rock/gravel,” chad, mulch and similar materials that are used are decorative elements.

300 Permit Application Requirement/Submittal Criteria

301 Construction of Rockery Walls four feet (4') high and greater shall require a permit issued by the authority having jurisdiction. The height of a Rockery wall shall be measured from the bottom of the base rock layer to the top of the uppermost rock layer.

302 Permit Documents

- 302.1 A dimensioned drawing that identifies the location of each Rockery Wall with respect to the property lines, easements, streets, and other rights-of-way. Existing construction, required setbacks as noted below, and drainage features shall clearly be identified on drawings.
- 302.2 Cross section of wall showing the rock size for each lift, maximum height, backfill, drainage, slope of ground, embedment, cuts, and batter.
- 302.3 Structural Analysis. All Rockery Walls four feet (4') and greater shall require engineering analysis.
- 302.4 Geotechnical Report. All Rockery Walls four feet (4') and greater shall require a geotechnical report.

303 Construction and Limitations

303.1 Construction

- 303.1.1 The base rock shall be embedded at least 12” into the soil. Placement of base rocks at grade followed by subsequent backfilling of the “toe area” shall not be permitted unless specific recommendations are provided by the Geotechnical and/or Structural Engineers.
- 303.1.2 The wall shall be battered to a ratio of at least 1 Horizontal to 6 Vertical (1H:6V) measured at the exposed face of wall.
- 303.1.3 The surrounding site shall be graded such that water cannot flow over the top of the wall.
- 303.1.4 Landscape materials, if used, shall not have detrimental effect on the wall. The use of landscape materials in close proximity to Rockery Walls shall be specifically addressed in the structural analysis.
- 303.1.5 Walls greater than eight feet high (8’) shall have Mechanically Stabilized Earth reinforced with geogrid or geotextile reinforcement as designed by Geotechnical Engineer or have a slope stability analysis.
- 303.1.6 Caliche and other “cemented soils” formed by precipitation shall not be used in Rockery Wall construction unless special design considerations are provided to address their suitability for use.

302.2 Limitations

- 303.2.1 The height of any single Rockery Wall shall not exceed 16 feet.
- 303.2.2 Walls shall be in a continuous alignment without abrupt changes in direction.
- 303.2.3 A minimum radius of curvature shall be four times the wall height.

304 Setbacks

- 304.1 The setback from a Rockery Wall to a building or structure shall be not less than the height of the retained earth. The distance shall be measured from the outside of the foundation of the structure to the exposed face of the Rockery Wall. This provision applies to buildings or structures at the low side of the wall.
- 304.2 Multiple Rockery Walls, designed as terraced retaining walls, shall be a minimum distance of ½ the height of the lower Rockery Wall to another Rockery Wall.
- 304.3 Ornamental fences, guards, or screen walls shall be a minimum of 2 feet from the top of the Rockery Wall. Ornamental fences, guards, or screen walls shall have their own foundations and not rely on the Rockery Wall for structural support.

304.4 Rockery walls shall be set back the required distances from fire hydrants, light standards, gas meters, water meters, electrical transformers, utility boxes or similar features. These distances shall be established and enforced by the authority having jurisdiction. Where permitted, Rockery Walls located within a utility or other easement shall be in accordance with the published standards of the department or agency having authority of the easements.

305 Structural Analysis

- 305.1 All structural analysis shall be in accordance with adopted building code of the jurisdiction having authority, the local amendment adopted by the authority having jurisdiction, and this document.
- 305.2 The minimum factor of safety for sliding and overturning of each rock in a Rockery Wall shall be 1.5. This shall include load combinations with seismic forces.
- 305.3 The following analysis provisions shall apply:
 - 305.3.1 The maximum unit weight of the rocks used in the design of a Rockery Wall shall be 155 pcf unless field verified by special inspection.
 - 305.3.2 The maximum coefficient of friction between rocks in a Rockery Wall shall be 0.5.
 - 305.3.3 Surcharge load shall be taken into consideration in the analysis
 - 305.3.4 Specifications shall be provided to clearly define acceptance criteria for rock materials.

400 Inspections

401 Inspections shall be performed as required by the authority having jurisdiction.

402 Special Inspections

- 402.1 Special inspection of Rockery Wall construction shall be required for all walls four feet (4') tall and greater.
- 402.2 Continuous or periodic special inspection shall be specified on the construction documents.
- 402.3 Qualification of the special inspector shall comply with the requirements of the authority having jurisdiction.
- 402.4 Details of special inspection:
 - 1. Type of rock
 - 2. Unit weight, if design exceeds 155 pcf
 - 3. Rock size
 - 4. Rock placement
 - 5. Drainage layer
 - 6. Embedment
 - 7. Wall face slope (batter)
 - 8. Mechanically Stabilized Earth, if specified
- 402.5 A final report shall be submitted to the authority having jurisdiction.

500 Reference Standards

- 501 “Rock Wall Construction Guidelines,” by the Associated Rockery Contractors, August 15, 2000 edition.

Request for input and comments:

1. Any and all comments or criticisms are welcome. Please provide you input to:
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2. Research of other rockery construction guidelines indicates that utilizing an inclined base to achieve batter of the front wall face is a preferred method. There are other supposedly less desirable methods of achieving batter; see section 303.1.2 and attachment.
3. The intent of section 303.2.3 is to prohibit positive or protruding corners from rockery construction. What do you think?
4. Copies of similar standards or more current versions of ARC Guidelines would be appreciated.