# Brisbane City Council

# Reference Specifications for Engineering Work

# S170 Stonework

## Amendment Register

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| --- | --- | --- | --- |
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## GENERAL

### Section Content

Specified in this section: Stone pitching and rock walling.

### Standards

|  |  |  |
| --- | --- | --- |
| Australian Standard | AS 3700 | Masonry structures |

### References

Refer to the following other Reference Specifications: for Civil Engineering Works

|  |  |
| --- | --- |
| S110 | General Requirements |
| S140 | Earthworks |

## QUALITY

### Inspection

Witness points

*Refer annexure*. Give sufficient notice so that inspection may be made at the following stages:

* Geotextile in place prior to backfilling.
* Gravel filter layer prior to backfilling.
* Alignment control devices in place.

## MATERIALS

Rock

Provide rock that is clean, hard, durable and free from seams and imperfections.

Mortar

Standard: *To AS 3700*.

Mix: Provide mortar with proportions of 1:3 (cement:sand) by volume. Do not use mortar in which initial set has occurred. Mortar may be re-tempered for up to 90 minutes by mixing in extra water as required.

## EXECUTION

### Stone Pitching and Concrete Jointed Walls

General

Placing: Clean and thoroughly wet all rocks before placing. Place rocks with the greatest area towards the face and the longest side horizontal. Break joints as much as possible.

Rock size: Use spalls with sizes ranging from 75 mm to 300 mm.

Mortar: Place rocks in cement mortar beds in horizontal layers. Construct face joints with a nominal width of 25 mm.

Open face: Set the mortar back 50 mm behind the exposed face of the stone.  *Refer annexure*.

Closed face: Trowel the mortar flush with the face of the stone. Use where stone pitching is part of a drainage structure or where specified. *Refer annexure*.

Finishing: Clean down the exposed rock faces to remove any coating of cement mortar.

Capping: Construct capping along the top of all stone pitched walls. Capping width must be the specified wall thickness. Cut control joints at 2 m centres. Construct capping using 50 mm thick mortar bed or 100 mm thick (approximately) precast concrete blocks or 100 mm thick concrete grade 15 MPa.

Curing: The provisions of *Reference Specification* *S200 Concrete Work – Clause 6.0* do not apply. Provide mortar and capping with no cracks greater than 0.3 mm wide other than at control joints.

Tolerances exposed stone surface

Relative (in 1 metre) tolerance: ±20 mm.

Relative (in 3 metre) tolerance: ±30 mm.

Absolute tolerance: ±20 mm.

Tolerances concrete capping

Vertical alignment: ±20 mm absolute.

Horizontal alignment: ±30 mm absolute, ±10 mm relative to a 3 m straightedge.

**Drainage**

Position: Provide 100 mm diameter weepholes at 1 m spacings along the toe of the wall or stone pitching. Provide 100 mm diameter weepholes every 2 m2 elsewhere.

Earth face: Cover rear of weepholes with Type 2 geotextile securely taped in place.

Backfilling: Backfill rock walling progressively with a layer at least 300 mm thick of porous material such as coarse aggregate or crushed rock. In stone pitching, surround weep hole inlets with at least 0.03 m3 of 10 mm granular drainage material.

Grated outlets: Provide securely fixed grated outlets to all weepholes.

Scour protection

Cut-off walls: Construct stone pitched cut-off walls at the toe and sides of all stone pitching in waterways (except at the toe where it is protected by a slab or footing). The cut-off walls must be a minimum 0.45 m deep from finished surface and at least 0.3 m wide.

### Dry Rock Walls

General

*Refer annexure*. Select the stones for their locations and lay them in the wall with a minimum of stone cutting so that:

* Each stone is stable, non-rocking and firmly locked to its neighbours without the use of mortar.
* The wall face shows reasonably regular, flat and vertical stone faces.
* Vertical joints (perpends) between stones are spanned by the next stone above.
* Stones are laid generally as through stones wherever possible.
* At least 50% of footings, 30% of wall stones and all coping stones are laid as through stones.

Footings

Select the largest, flattest and most regular stones for footings. Set them one-third of their depth into the ground.

Copings

Select stones of reasonably uniform size and finish the top of the wall to level.

Retaining walls

Construction: Where dry stone walls act as retaining walls, construct the stonework to be free draining through the wall. Place Type 3 geotextile between the stonework and the backfill. Batter the face of the wall back 50 - 70 mm for every 300 mm in height. Cap the top of the wall. Backfill progressively with a layer of porous material such as coarse aggregate or crushed rock with a minimum thickness of 300 mm