Plumbing and Drainage Notes

Re: AS 2870-2011

Compiled by

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Section 1

Scope and General . . . Clause 1.11.2

The site classification shall be stated on the drawings. The selected footing systems and any required site work and required site drainage shall be documented.

Section 5

Site Classification . . . Clause 5.2.1

General requirements
The building and site drainage design and height of the floor level above finished ground level may be affected by factors other than structural design requirements. Such factors include the following:

(f) Plumbing and drainage requirements.

NOTE: For example, the height of the overflow relief gully relative to the top of the lowest plumbing fixture, and the surrounding ground level (see AS/NZS 3500).

Drainage Requirements . . . Clause 5.6.3

Buildings on moderately, highly or extremely reactive sites shall be provided with drainage systems designed in accordance with the following:

(a) Surface drainage shall be considered in the design of the footing system and necessary modification shall be included in the design documentation. Surface drainage of the site shall be controlled from the start of site preparation and construction. The drainage system shall be completed by the finish of construction of the building.

(b) The base of trenches shall be sloped away from the building. Trenches shall be backfilled with clay in the top 300 mm within 1.5 m of the building. The clay used for backfilling shall be compacted. Where pipes pass under the footing system, the trench shall be backfilled full depth with clay or concrete to restrict the ingress of water beneath the footing system.

(c) Where pipes pass under the footing system, the trench shall be backfilled full depth with clay to act as a barrier to the ingress of water beneath the footing system. Alternatively, a plastic membrane across the cross-section of the trench, taped to the pipe and keyed into the sides and base of the trench may be used.

(d) Subsurface drains to remove groundwater shall not be used within 1.5 m of the building unless designed in accordance with engineering principles.

Plumbing requirements . . .Clause 5.6.4

Buildings on highly or extremely reactive sites shall be provided with a system of plumbing detailed in accordance with the following:

(a) Penetrations of the edge beams of a raft and perimeter strip footings shall be avoided where practicable, but where necessary shall be detailed to allow for movement. Closed-cell polyethylene lagging shall be used around all stormwater and sanitary plumbing drain pipe penetrations through footings. The lagging shall be a minimum of 20 mm thick on Class H1 sites and 40 mm thick on Class H2 and Class E sites.

Vertical penetrations do not require lagging.

NOTE: Sleeves allowing equivalent movements may be used as an alternative to the lagging.

(b) Drains attached to or emerging from underneath the building shall incorporate flexible joints immediately outside the footing and commencing within 1 m of the building perimeter to accommodate a total range of differential movement in any direction equal to the estimated characteristic surface movement of the site (ys). In the absence of specific design guidance, the fittings or other devices that are provided to allow for the movement shall be set at the mid-position of their range of possible movement at the time of installation, so as to allow for movement equal to 0.5ys in any direction from the initial setting. This requirement applies to all stormwater and sanitary plumbing drains and discharge pipes.

(d) Drainage under a slab shall be avoided where practicable.

NOTES:

1 Pipes may be encased in concrete or in recesses in the slab when provided with flexible joints at the exterior of the slab.

2 Methods used should comply with the AS/NZS 3500 series.

Section 6.6

Additional Requirements for Moderately, Highly and Extremely Reactive Sites

For stiffened rafts, waffle rafts, or strip footings on moderately, highly and extremely reactive sites, the following requirements apply to the building services and footing system in addition to the requirements of Clauses 6.4 and 6.5:

(a) Where the design of the footing system relies on particular detailing of masonry construction to minimize any damage caused by foundation movement, that detailing shall be included on the drawings.

(b) Penetrations of the edge beam and footing by drain pipes shall be sleeved using closed-cell polyethylene lagging or similar.

(c) During construction, water run-off shall be collected and channelled away from the building.

(d) Excavations near the edge of the footing system shall be backfilled in such a way as to prevent access of water to the foundation as described in Clause 5.6.3(b).

NOTES:

1 For example, excavations should be backfilled above or adjacent to the footing with moist clay compacted by hand-rodding or tamping.

2 Porous material such as sand, gravel or building rubble should not be used.

(e) Water shall not be allowed to pond in the trenches.

For slab or strip footings on highly and extremely reactive sites, the following requirements apply:

(i) Drains attached to or emerging from underneath the building shall incorporate flexible joints immediately outside the footing and commencing within 1 m of the building perimeter to accommodate a total range of differential movement in any direction equal to the estimated characteristic surface movement of the site (y_s). In the absence of specific design requirements, the fittings or other devices that are provided to allow for the movement shall be set at the mid position of their range of possible movement at the time of installation, so as to allow for movement equal to 0.5y, in any direction from the initial setting. This requirement applies to all stormwater and sanitary plumbing drains and discharge pipes.

(ii) Concrete in beams shall be mechanically vibrated.

Appendix B

B2.3 Classes M, H1, H2 and E sites

Sites classified as M, H1, H2, or E should be maintained at essentially stable moisture conditions and extremes of wetting and drying prevented. This will require attention to the following:

(a) Drainage of the site.
The site should be graded or drained so that water cannot pond against or near the building. The ground immediately adjacent to the building should be graded to a uniform fall of 50 mm minimum away from the building over the first metre. The subfloor space for buildings with suspended floors should be graded or drained to prevent ponding where this may affect the performance of the footing system. The site drainage recommendations should be maintained for the economic life of the building.

(d) Repair of leaks
Leaks in plumbing, including stormwater and sewerage drainage, should be repaired promptly.