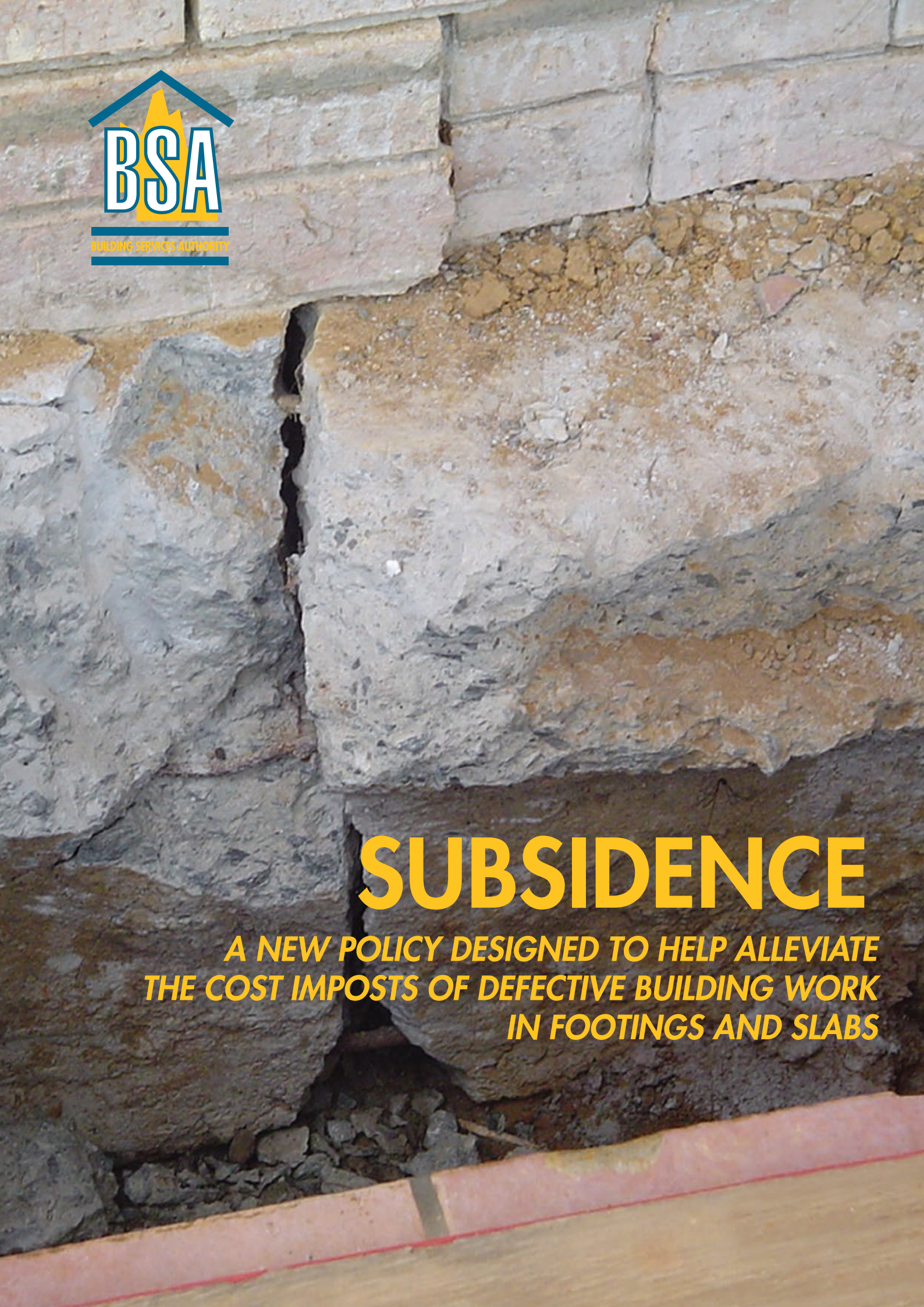


BSA
BUILDING SERVICES AUTHORITY

SUBSIDENCE

A NEW POLICY DESIGNED TO HELP ALLEVIATE THE COST IMPOSTS OF DEFECTIVE BUILDING WORK IN FOOTINGS AND SLABS

THE NEW POLICY - EVERYONE PLAYS A PART.

PLEASE NOTE:
The diagrams and photographic material in this publication are indicative only and are not intended to address specific requirements.

This Fact Book is a guide only and should be read in conjunction with the requirements of the Queensland Building Services Board Policy.

BSA hopes this Fact Book will help you understand the greater responsibilities the new Subsidence Policy places on builders, engineers and homeowners.

In April 2003 the Queensland Building Services Board instigated a review of the causes of footing and slab movement. The review focused on design and construction of footings and slabs including legislation and standards as well as skill levels and education of practitioners. It also considered the escalating costs to BSA's statutory insurance fund.

Preliminary findings of a research project commenced in May 2003 identified two areas that required special attention. They were: Engineering Investigation and Design and Construction Practices.

After informing industry of the review in September 2003, the Queensland Building Services Board recently endorsed a new Policy for Rectification of Building Work in residential construction. This includes work that causes footing and slab movement.

This Fact Book, distributed throughout Queensland, is aimed at ensuring that all participants in the building industry are properly informed about, and understand how to comply with, the no fault provisions of the new policy. Similarly, a further BSA education initiative will endeavour to ensure homeowners are made more aware of their responsibilities for the ongoing maintenance of their homes.

Please read this book, make use of the resources from BSA's web site, ensure you fully comprehend the requirements of the relevant sections of the Building Code of Australia and have an understanding of Australian Standard 2870.

Your understanding and compliance with these requirements and your assistance in ensuring home owners are aware of their own maintenance responsibilities will help minimise the incidence of footing and slab movement. This in turn will reduce your costs for rectification, and ultimately, the burden that industry bears due to problems created by defective work.

RESPONSIBILITIES - EVERYONE HAS THEIR OWN.

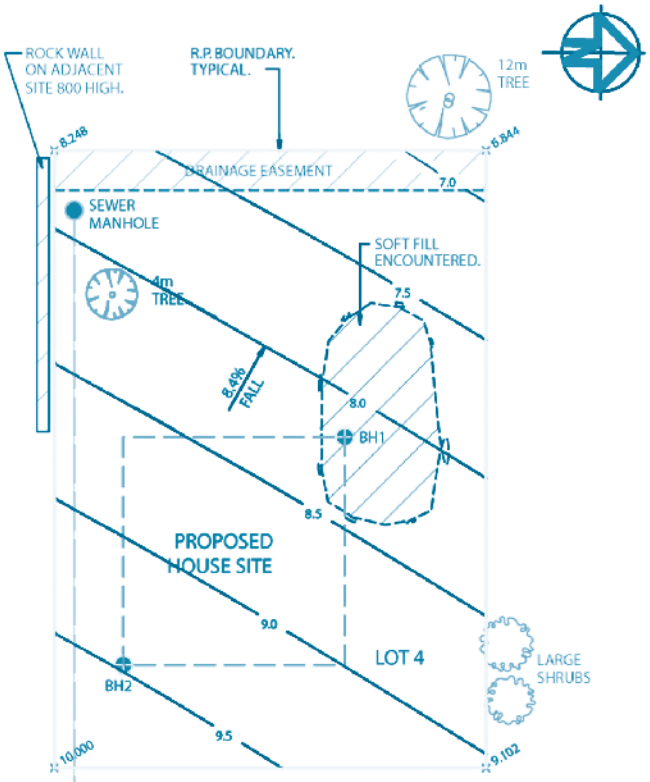
PREVIOUS POLICY

To avoid responsibility for rectification of subsidence under the previous policy, the contractor had only to rely on information provided by an engineer, follow the requirements of the engineer as specified and have the work certified by a competent person.

This is NOT the case now.

Where contracts or preliminary agreements are entered into after 1 September 2004, the contractor must ensure that the engineer is provided with all the information relevant to the construction. The contractor must also ensure that the engineer provides a design ***and certifies that it complies with*** the information the contractor has provided and the requirements of the relevant codes and standards.

Both the performance of footing and slab systems and the continued serviceability of buildings rely on the contractor and the homeowner complying with construction practices and site maintenance conditions. The Australian Standard relies on normal conditions being maintained throughout the life of buildings.



LOT 4, BRUCE STREET, MINIMAX WATERS
R.P. 235 984

CONTOUR PLAN
SCALE 1:200

Both the contractor and the home owner have a duty to know their individual responsibilities.

THE CONTRACTOR'S RESPONSIBILITY.

It is the responsibility of the ***contractor*** to ensure that relative performance in residential construction is achieved by compliance with ***three strategic areas.***

THE FIRST OF THESE STRATEGIC AREAS RELATES TO *SITE INVESTIGATION*

Under this section the contractor must provide the engineer/site classifier with all relevant information and conditions to enable site identification and investigation to be completed.

The information the ***contractor*** must give to the engineer/site classifier is:

- ❑ Property Description and site address.
- ❑ Evidence to ensure site is correct. i.e. Survey plan and or photograph to assist in correctly identifying the site.
- ❑ The contours of the site.
- ❑ The location of trees on the site and adjoining sites.
- ❑ Location and identification of existing overland flows.
- ❑ The footprint of the proposed building and an indication of platform levels.
- ❑ Location of proposed cut and fill line.
- ❑ Land searches including potential flooding, any underground infrastructure,easements,vegetation and subdivisional fill.

NOTE: For the purpose of the policy the contractor is to ensure that all care is taken to identify any existing impediments that may influence the site classification and the design at the time of the investigation (where possible), e.g. identifying and plotting trees currently existing including any known recently removed trees.

INFORMATION - EVERYONE NEEDS TO KNOW.

This information, noted on the site plan, will assist the engineer to correctly locate test sites over the area of the building platform and to consider the effects of cut and fill operations and any other influences that may affect the proposed structure.

It will also assist in alleviating a key factor in footing failures - that of the design engineer and/or site classifier ***not*** taking into account ***all*** of the conditions of the site and adjacent sites.

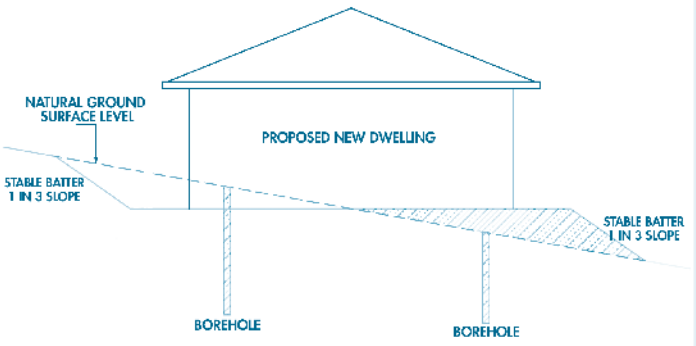
The information provided to the engineer will also assist the ***contractor*** in determining the extent of work required under the contract and who is responsible for that work. For example, the contractor can incorporate into the contract, who is responsible for building and paying for any retaining walls, paths or spoon drains that may be required for site drainage.

This should prevent any contractual arguments.

Other notes in relation to builder responsibility that may be helpful include:

a) The contractor may require that the Site classifier and/or the designer obtain certain information noted on page 3 but not supplied by the contractor. In such instances, the site classifier and/or the designer must satisfy themselves that they have obtained all the relevant information necessary to complete the design ***and*** meet the requirements of the Queensland Building Services Board Policy. The relevant information should be noted in the engineer design certification.

b) Where the owner has engaged the site classifier and/or engineer, the contractor must ensure that the engineer ***certifies*** that the information was obtained and taken into account for the purpose of site classification and/or design, in accordance with requirements of the Queensland Building Services Board Policy.



THE SECOND STRATEGIC AREA OF CONTRACTOR RESPONSIBILITY UNDER THE NEW POLICY IS *SITE CLASSIFICATION AND DESIGN.*

Under this section the contractor must obtain written confirmation from a Registered Professional Engineer in Queensland (RPEQ), that the policy requirements have been met in identifying and classifying the site and in completing the engineers design.

For ***Site Classification,*** the contractor must obtain from the engineer **written** confirmation that:

- ❏ The engineer or their representative has visited the site.
- ❏ The soil testing has been undertaken by a Registered Professional Engineer in Queensland or a soil tester licensed under the *Queensland Building Services Authority Act 1991.*
- ❏ The minimum of two (2) boreholes have been located over the proposed footprint of the building and below the final platform level.
- ❏ Soil samples have been taken for the purpose of laboratory testing where required.
- ❏ A laboratory test and a soil report have been obtained for the design engineer.

For the ***Engineers Design***, the contractor must obtain confirmation that:

- ❏ The design engineer has referenced and taken into account all the relevant information supplied .
- ❏ The design has been certified by a Registered Professional Engineer in Queensland.
- ❏ The design drawings include and detail all the the requirements outlined in paragraph B(b)(x) of the new policy.
  - ❍ selected footing system,
  - ❍ specific site works,
  - ❍ site drainage,
  - ❍ control joints,
  - ❍ retaining wall,
  - ❍ flexible joints in storm water and sanitary drainage

DESIGN - EVERYONE NEEDS TO TAKE CARE.

Where an alternate footing system to that described in Part 3.2 of the BCA is proposed, it must comply with *Performance Requirement 2.1* and *Performance Requirement P2.2.3* in section 2 of the BCA.

Where alternate footing systems other than those recognised by AS 2870 and described in the BCA are proposed, ***the contractor should obtain from the engineer,*** written confirmation of the validity of the design using engineering principles conforming to and deemed to satisfy requirements of the BCA and relevant Australian Standards.

It is noted in AS2870 that the expectations and parameters of the design of all footing and slab systems including alternate footing systems using engineering principles should take into consideration that: *"foundation movement shall be assessed as the level which has less than a 5% chance of being exceeded in the life of the structure which may be taken as 50 years." Clause 1.4.2 AS2870 1996*

Where ***abnormal conditions*** exist on a site it is usual that an engineer classify the site as Class "P" and indicate the expected movement potential depending on the reactive soil characteristics. i.e. A,S,M, H, & E Classifications.

Design of the footing systems on "P" sites shall use conforming engineering principles detailed in AS2870 and the Australian Standard for Concrete Structures - AS3600.

Abnormal site conditions should be identified as part of site identification and investigation and may include:

- ❏ Soft soil - such as uncontrolled fill or development fill sites including soft clay or silt or loose sand. (bearing capacity less than 100 kpa);
- ❏ Landslip
- ❏ Mine subsidence and collapsing soils
- ❏ Soils subject to erosion
- ❏ Reactive sites subject to abnormal moisture conditions
- ❏ Sites that cannot be classified otherwise

Abnormal moisture conditions that affect the site classification for the design assessment may include:

- ❏ Recent removal of an existing building structure
- ❏ Unusual moisture conditions caused by drains, channels, ponds, dams or tanks which are to be maintained or removed from the site. *Canal developments that have deep seated clays are an example where abnormal moisture conditions may prevail over time.*
- ❏ Removal of large trees prior to construction
- ❏ Trees located too close to a footing *(including trees on adjoining sites within the relevant distance of the mature height of the tree from the building depending on site classification).*

Information on drawings for reactive sites shall include site classification, selected footing system and any special sitework or site drainage. *(Clause 1.10 AS2870 1996)*

Additional requirements for H & E site classifications pursuant to *AS 2870 1996, Clause 5.5 - Additional Requirements for Class H & E Sites,* shall be included.

NOTE: Examples of information that should typically be specified is shown in the diagram on page 7 of this document.

CERTIFICATION - EVERYTHING MUST BE RIGHT

THE THIRD STRATEGIC AREA OF CONTRACTOR RESPONSIBILITY UNDER THE NEW POLICY IS *COMPLIANCE WITH THE DESIGN.*

Under this section the contractor must comply with the design and the relevant Australian Standard both during and on completion of construction.

To comply with the design and relevant Standards, ***the contractor must obtain*** the following certification:

- ❏ Certified design drawings and specification to be obtained from RPEQ prior to commencing siteworks and construction.
- ❏ Certification by RPEQ or Building Certifier that the building platform, site drainage and any other special siteworks comply with the certified design.
- ❏ Certification by RPEQ or Soil Tester licensed under the QBSA Act 1991 of compaction tests carried out on controlled fill. Note: Certification to be compliant with relevant standard i.e. AS3798 or AS1289.
- ❏ Certification by RPEQ or Building Certifier that footing and slab systems comply with the certified design and relevant Australian Standards. Certification must include confirmation that the original site classification has not altered. Any altered site conditions or construction requirements not in the certified design ***must comply*** with any instruction from the RPEQ or building certifier.
- ❏ Certification by RPEQ, Building Certifier and/or approval by the local government plumbing inspector that installed plumbing, drainage and stormwater flexibility for the relevant site classification is in accordance with certified design requirements and relevant Australian Standard.
- ❏ Certification by RPEQ or Building Certifier that masonry articulation, site drainage requirements, roof storm water, location of retaining walls and any other special site works have been completed as specified.

Builders are reminded that they have a duty of care to be aware of all aspects of the ***Building Code of Australia 1996 (BCA) Volume 2 Parts 3.1 & 3.2,*** which clearly set out the acceptable construction practices in relation to construction requirements for Site Preparation and Footings & Slabs for residential construction.

ADDITIONAL INFORMATION

The new subsidence policy document, an "Owner Information And Responsibility Form" and Guidelines for: ❏ Site Classifiers ❏ Design Engineers and ❏ Responsible Certifiers can be obtained from the "TechInfo" section of BSA's website at

www.bsa.qld.gov.au

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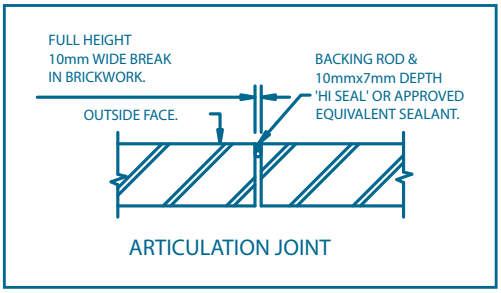
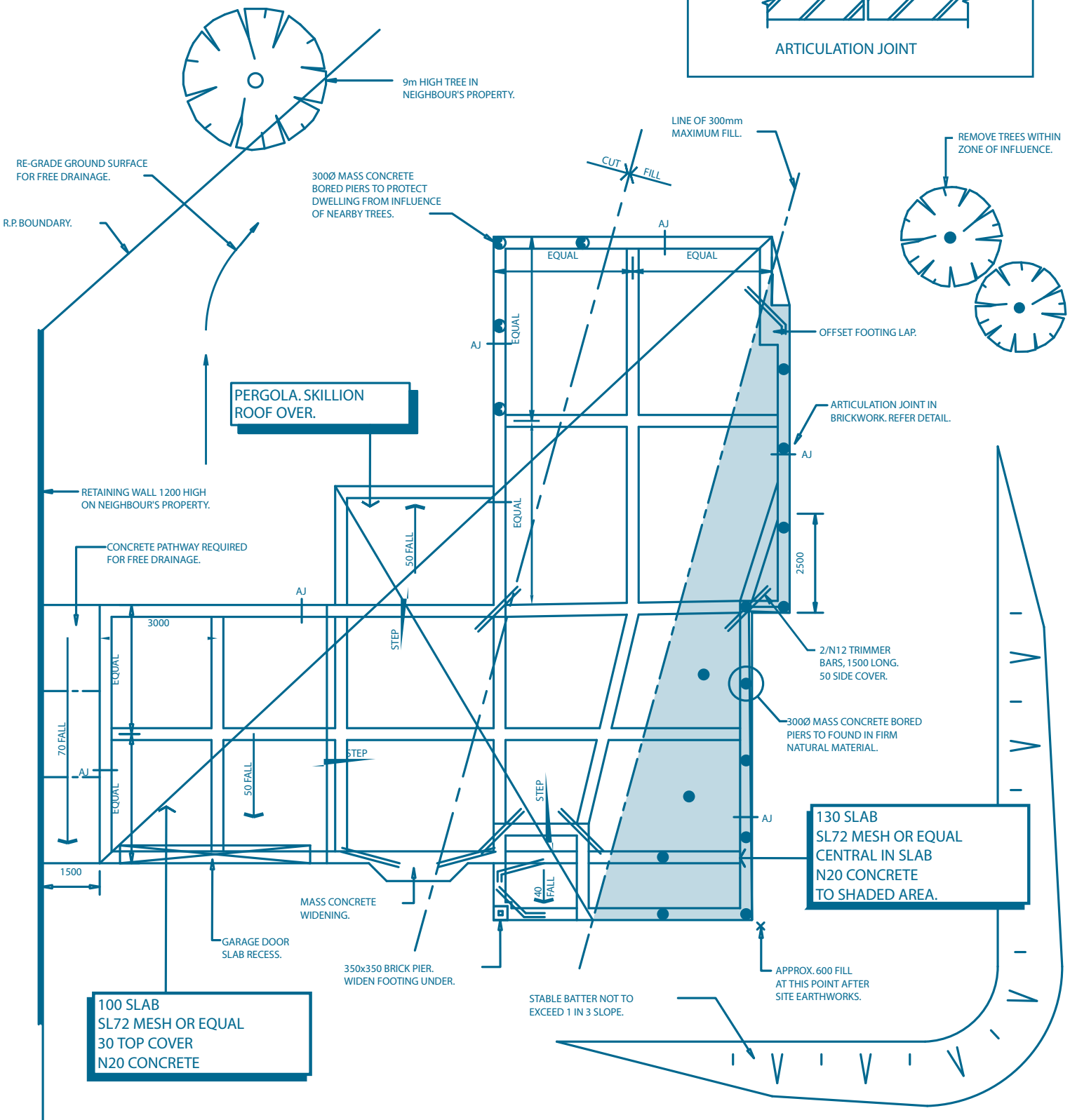
TYPICAL SITE INFORMATION REQUIRED

DETAIL ANY SPECIFIC REQUIREMENTS FOR H & E CLASS SITES





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