TGN 01

ASUC*plus*

Recommended minimum site investigation for typical domestic 1, 2 and 3 storey buildings

THE IMPORTANCE OF THE SITE INVESTIGATION

A survey of ASUCplus members has revealed the following statistics:-

- Once on site 74% of all underpinning projects increase in scope and value
- The average increase in value is 27%
- Smaller projects suffered larger proportional increases and this correlated strongly with less adequate site investigations

From this consensus the summary conclusion is that not only is the level of site investigation important but that the content of the subsequent report vital to give loss adjusters the necessary information and contractors sufficient details to accurately price the proposed scope of works.

The purpose of these recommendations is to help insurers reduce the overall costs by defining a bare minimum standard of investigation which will provide loss adjusters and contractors with necessary information.

If these recommendations are implemented, insurers will enjoy a reduction in overall project costs. However, a minimum investigation cannot foresee all problems and while increases will be reduced from present levels, some uplift in costs must still be anticipated.

"Full" totally comprehensive site investigations are rarely carried out on domestic properties, as in the majority of cases, the expenditure would not be justifiable.

Our recommendations are very much minimum requirements and should only be carried out by an expert who is well versed with subsidence problems and who has good local geotechnical knowledge of the area in which the problem site is located.

THE PURPOSE OF THE SITE INVESTIGATION

The purpose of the site investigation is to:

1. Identify the existing ground and water conditions
2. Identify the extent and cause of subsidence/heave
3. Identify the existing foundation types and depths in the areas of subsidence and / or heave and locate the possible presence of basements
4. Identify remedial underpinning scheme options
5. Identify a suitable bearing stratum onto which the underpinning system will be constructed taking into account the ground and water conditions.
6. Identify location of manholes and drainage runs.

Only when the specifier has answered the above questions will the risk of cost over-runs be reduced.

ASUCplus RECOMMENDATIONS

STAGE 1

Walk around survey

Identify extent of distressed areas and question whether the cause is heave or subsidence?

Identify drainage, basements, trees and any topographical or constructional features which may be responsible for the problem. Contact those who have local knowledge, eg the Local Authority. Remember

the property itself is a full scale test model and an enormous amount of information can be gained at this stage.

Trial Pit Survey

Excavate one trial pit approximately every 8m of external or internal wall in the areas exhibiting signs of distress. (The number of pits being rounded up, i.e. 1 pit for 5m, 2 pits for 9m for example). In addition, as a control, excavate one pit to an area without distress.

Pits should expose the foundation profile, the underside of the bearing surface and should extend a minimum of 0.5m below this level. The trial pit logs should include - *comments on quality and type of concrete, brickwork, mortar and any damage to the footing. Report on soils, the presence of tree roots together with ground water strikes, flows and standing levels. To internal walls include slab/concrete thickness, reinforcement and the depth below any suspended flooring.*

All Pits should be extended down with a hand auger wherever possible taking further samples with depth.

Note – Risk Assessment – before any excavation the location of services (gas, water, electricity, communications and drainage) should be established.

If relevant, test drainage.

Soil Testing

In clay soils take in situ pocket penetrometer readings together with samples for moisture content tests at 0.5m intervals . If shrinkage/swelling is suspected instruct Atterberg Limit tests from a sample immediately below footings and at least one further representative sample. Instruct further Atterberg Limit tests with a change in clay lithology.

Study geological drift map and link with findings of the trial pit survey

Can questions 1 to 6 above be answered? If yes, the information can be used and included in the tender documents. If no go to Stage 2.

STAGE 2

Continue or recommence investigation work until the information from (1) to (6) above has been obtained. This may involve extending the trial excavations, constructing bore holes, carrying out further testing, dynamic probing, structural monitoring or other means. For example, if a piled scheme appears to be a preferable option, then carry out sufficiently deep investigation to allow a reasonable estimate of pile lengths.

Tendering

Once sufficient information is obtained to answer questions 1 to 6

either

a) invite tenders on the basis of a design/specification you have produced including the site investigation information

or

b) invite design and construction packages on the basis of the site investigation and a stated extent of underpinning work.

POINTS OF CAUTION

1. In locations where the expert knows his/her local geology, borehole construction to the design pile depths may not be required. It should, however, be borne in mind that even in areas known to the expert, ground conditions can vary enormously.
2. Do not terminate boreholes simply because they are obstructed – learn the cause of the obstruction and underlying soils and if possible relocate the borehole.
3. Always note ground water levels and inflow direction and rates wherever possible.
4. Always provide full geological descriptions of all soils encountered in accordance with BS5930.

SUMMARY

The more accurate the information about the ground and its relationship to the building in question the lower the risk of increases in cost of the programmed remedial works.

Remember the above are very much "minimum recommendations" and while the BRE, NHBC and Codes of practice are rarely followed, we recommend that they are consulted and the scope of these minimum recommendations expanded as may be appropriate for more complex and larger projects.

ASUCplus TIP

Ask your Site Investigation Contractor to provide package deal prices - this should reduce costs.

ASUCplus is the only association representing specialist contractors in subsidence repair techniques and engineered foundation solutions. The latent defects insurance can cover all the works carried out under contract at a property - not just the subsidence repair. Members of ASUCplus offer an extended range of foundation solutions, including new build, basements and other forms of subsidence repairs.

Members of ASUCplus are subject to annual health and safety reviews, are audited for technical expertise by an independent assessor, are monitored for financial probity and all share the common goals of setting the benchmark for standards within the industry, to lead in providing innovative solutions and maintain skills levels through education and training.

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