Job done!

Construction OS&H

Integration & Conclusion

Summary

Systems integration
General proposal for training objectives for the four groups of ‘actors’
Checklists
Project
Purpose, aims and objectives
Description of the construction project
Construction project and contract organisation
Course participants’ tasks
Reporting and recording
Specific aspects of this project
Course evaluation
Concluding case study

Systems integration 1

All management systems have a similar ‘anatomy’.

They:

- Advocate a ‘whole organisation’ view
- Have a well-defined framework
- Develop formal directives and operating procedures
- Are pro-active, seeking to be preventative or quickly re-active, rather than retrospective in the actions that they expect
- Have measurable indicators of success
- Have formal audit and review procedures

Systems integration 2

Management systems are based on standards, with key features:

- Policy
- Aims and objectives
- Programmes
- Documentation
- Working procedures
- Record keeping
- Audit and review

Systems integration 3

To be useful, a management system should:

- Be simple to understand, interpret and implement by the people who work with and around it.
- It should give reliable and consistent outcomes.
- Be capable of being translated into easily conducted sets of procedures and tasks.

Systems integration 4

An integrated management system has eight levels of documentation:

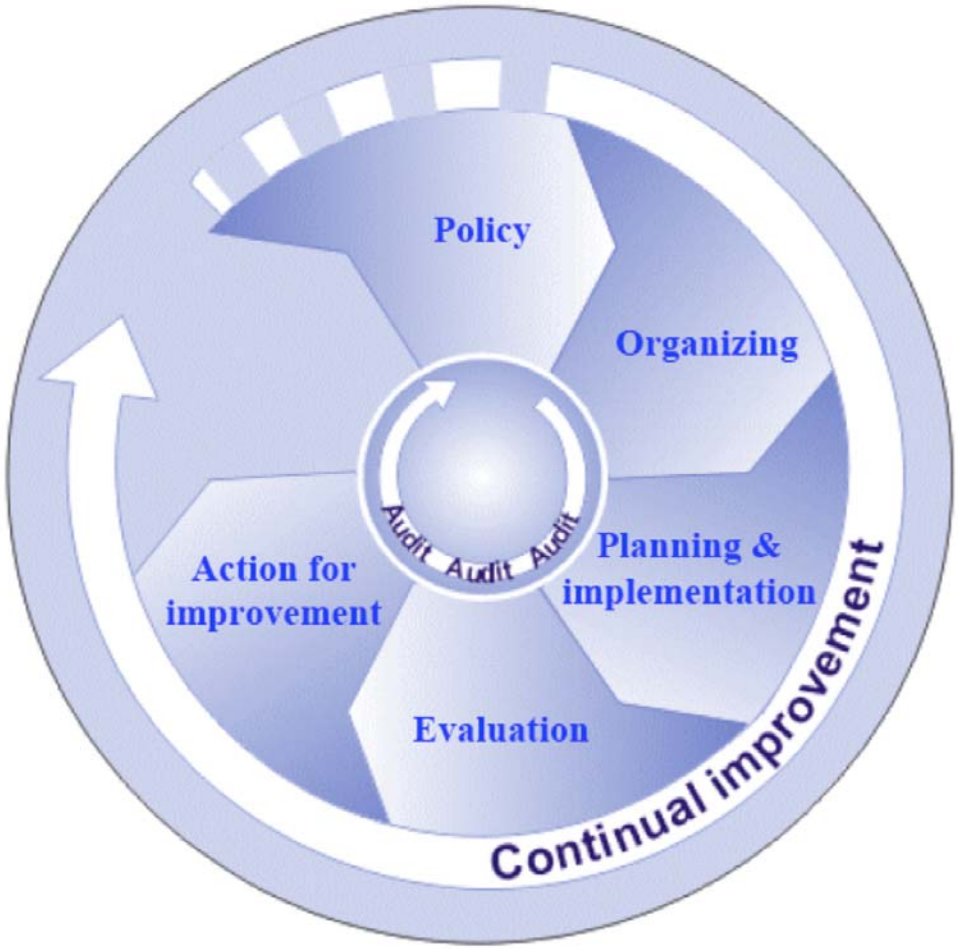
- System manual
- Management procedures
- Technical support services
- Company support services
- Project management
- System management
- Working instructions
- Project plans

Systems integration: conclusions

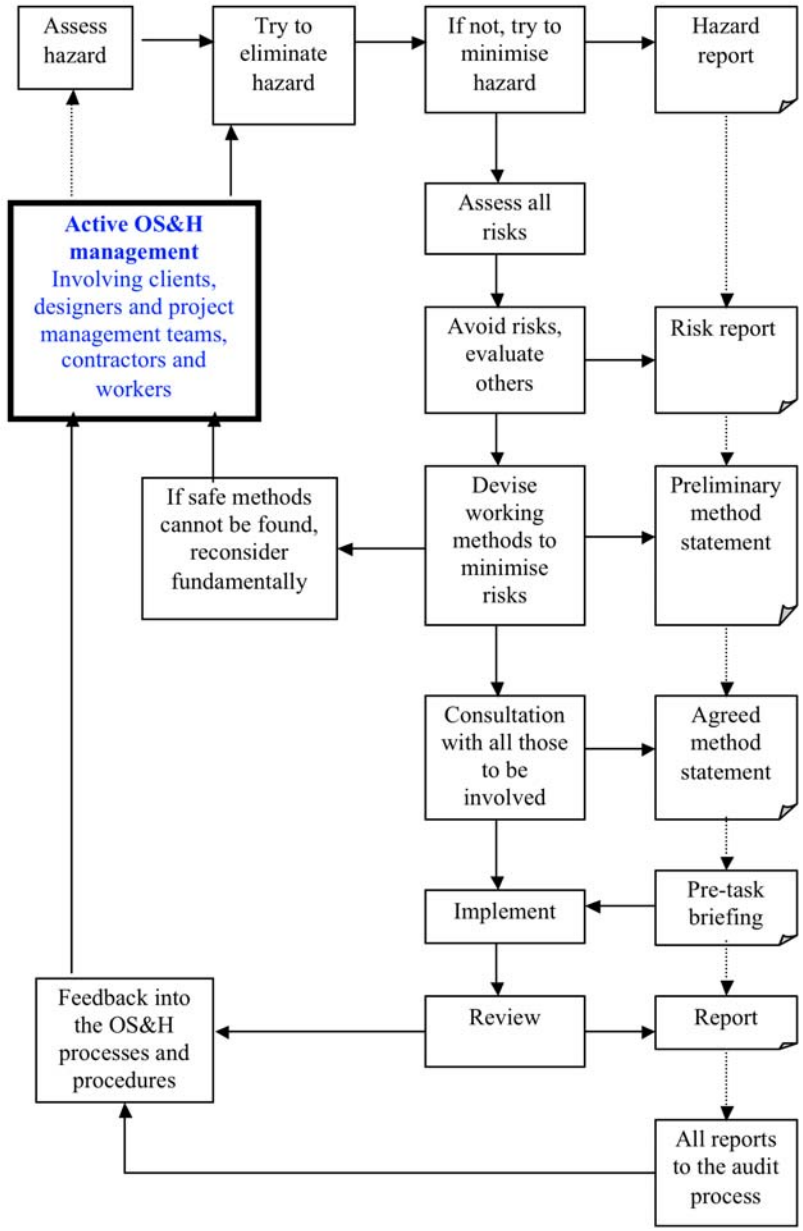
Although **Construction OS&H** has argued strongly that a systems approach is vital to providing a safe and healthy environment, it must be recognised that OS&H systems must be designed and implanted within the framework and operating practices of other systems within an organisation.

Systems designed in isolation will fail, through confusion, duplication of information, demands for excessive effort, and the consequential inaccurate information. Since most modern systems follow a similar 'anatomy', this should not be too difficult.

As reminders, the following diagrams, used previously in Construction OS&H, illustrate the essential elements of OS&H management systems.


Policy
Organizing
Planning & implementation
Evaluation
Action for improvement
Audit Audit Audit
Continual improvement

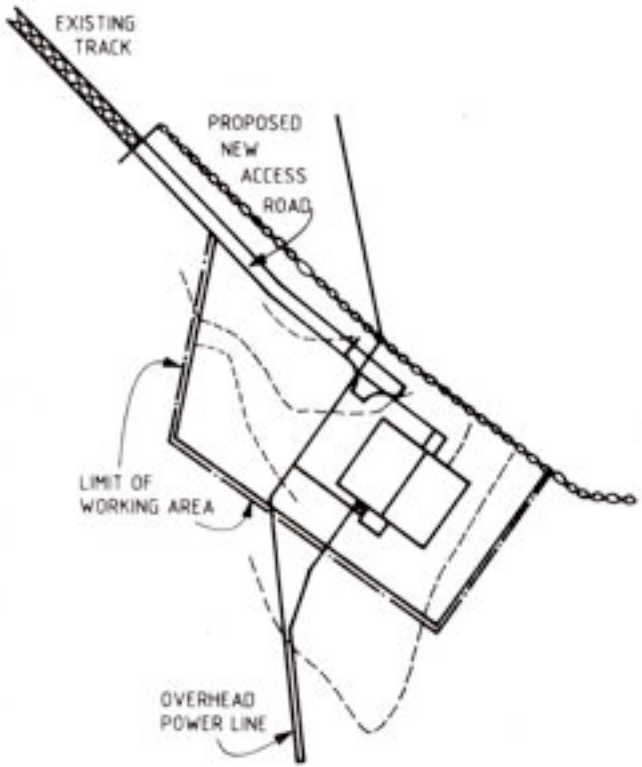
The ILO Construction OS&H 'Active management process'



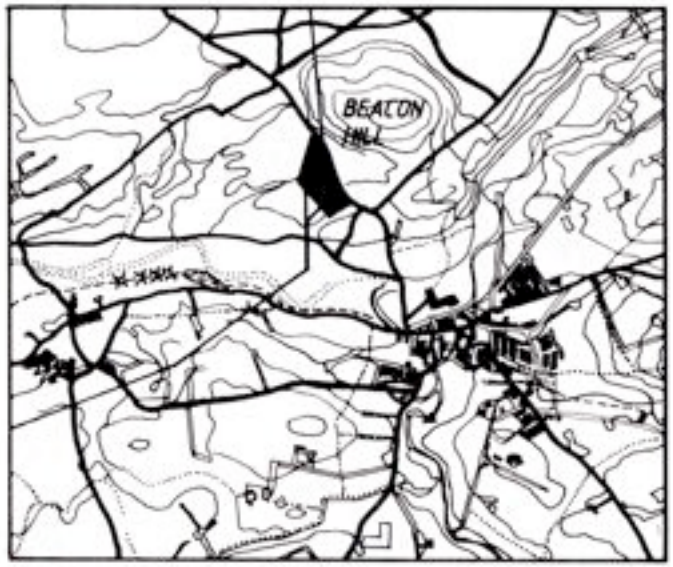
Project

This assignment is described in the briefing paper given to the course participants.

The following slides introduce it briefly

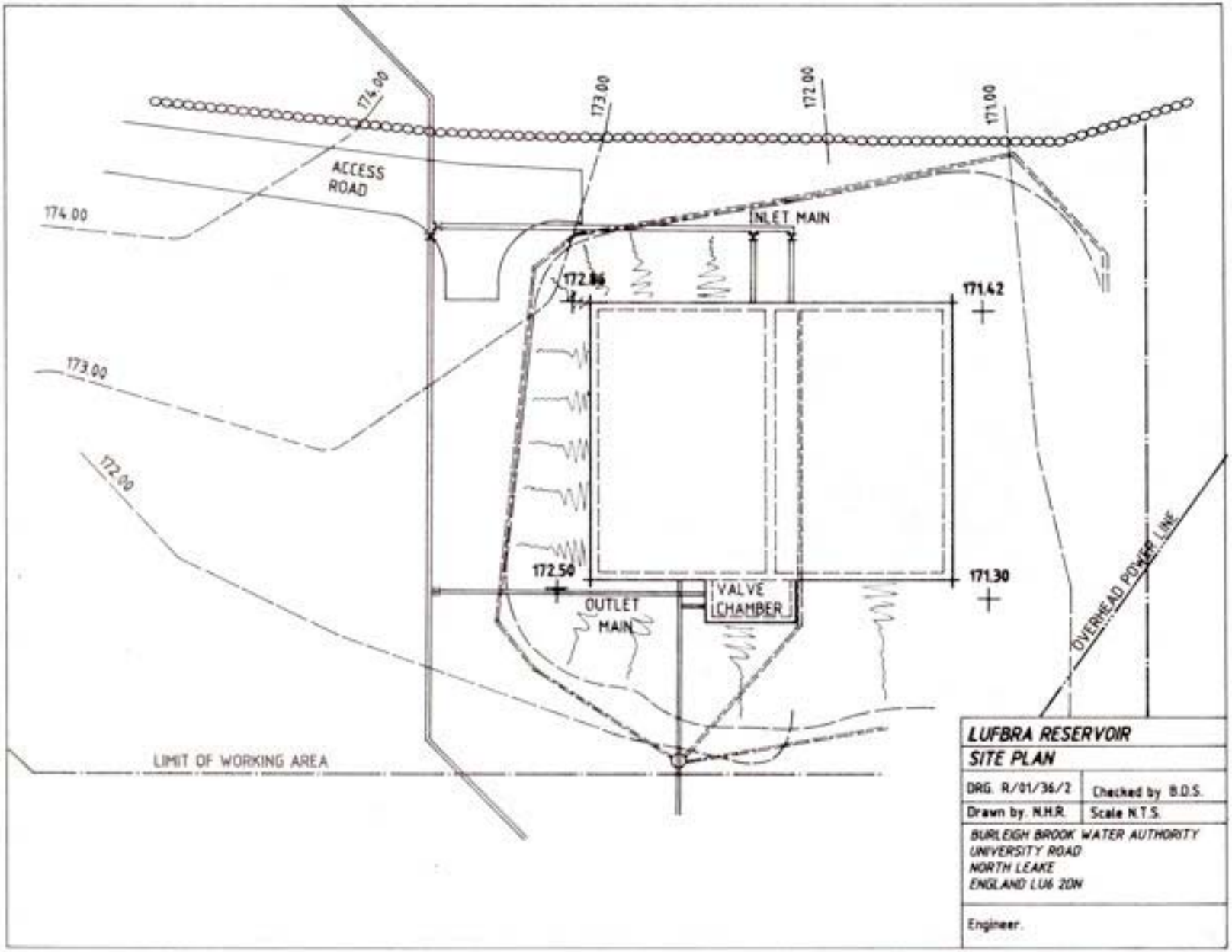


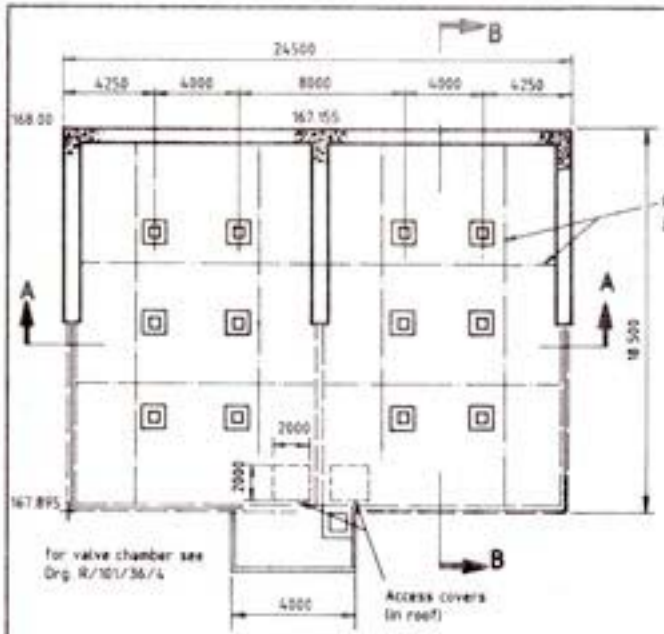
SITE PLAN

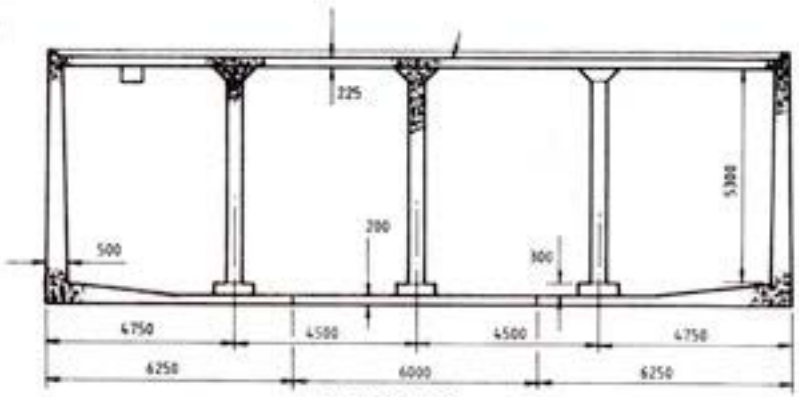


LOCATION PLAN

LUFBRA RESERVOIR	
LOCATION & SITE PLAN	
DRG. R/01/36/1	Checked by B.D.S.
Drawn by N.H.R.	Scale N.T.S.
BURLEIGH BROOK WATER AUTHORITY *UNIVERSITY ROAD* *NORTH LEAKE* *ENGLAND LU6 2DN*	
Engineer.	


174.00
173.00
172.00
171.00
ACCESS ROAD
174.00
INLET MAIN
172.86
171.42
173.00
172.00
172.50
171.30
VALVE CHAMBER
OUTLET MAIN
OVERHEAD POWER LINE
LIMIT OF WORKING AREA
LUFBRA RESERVOIR
SITE PLAN
DRG. R/01/36/2
Checked by B.D.S.
Drawn by. N.H.R.
Scale N.T.S.
BURLEIGH BROOK WATER AUTHORITY
UNIVERSITY ROAD
NORTH LEAKE
ENGLAND LU6 2DN
Engineer.

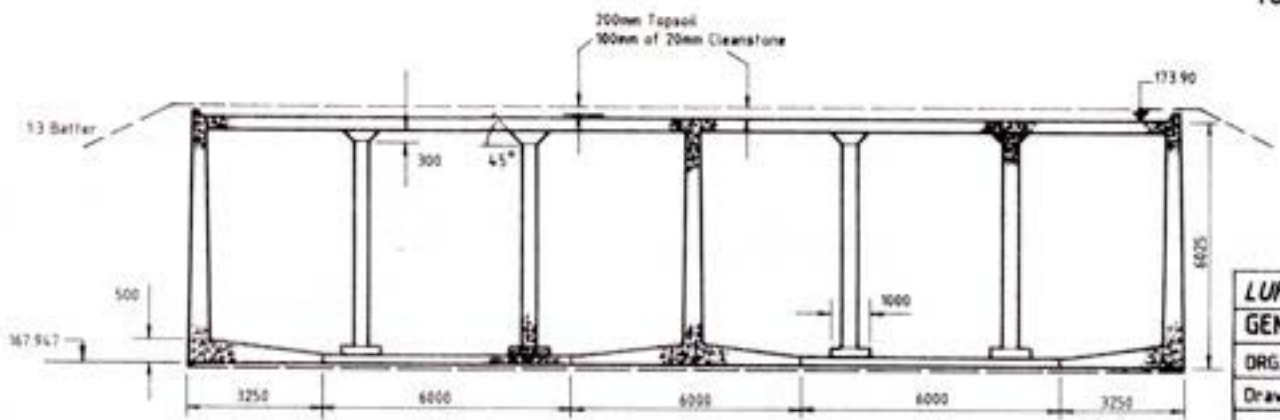




SECTION B-B

NOTE.

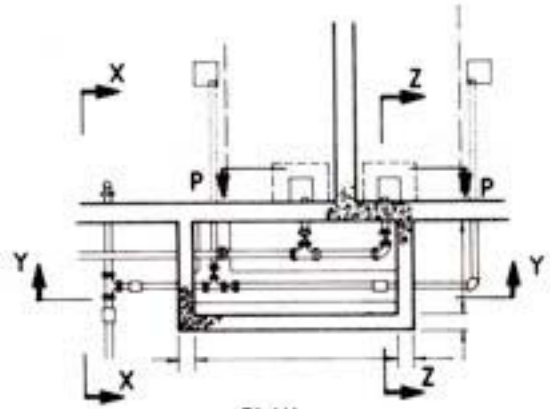
THIS DRAWING IS NOT TO SCALE.



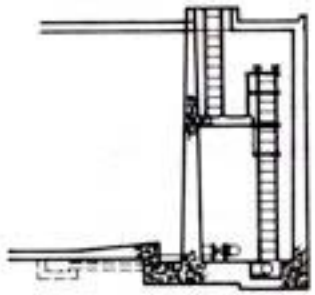
SECTION A-A

LUFBRA RESERVOIR	
GENERAL ARRANGEMENT	
DRG. R/01/36/3	Checked by B.D.S.
Drawn by N.H.R.	Scale N.T.S.
BURLEIGH BROOK WATER AUTHORITY *UNIVERSITY ROAD* *NORTH LEAKE* *ENGLAND LU6 2DN*	
Engineer	

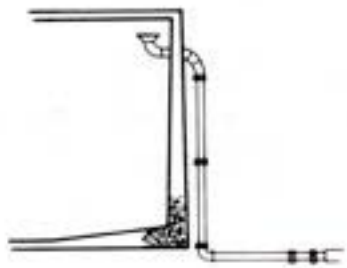
PRELIMINARY DRAWING



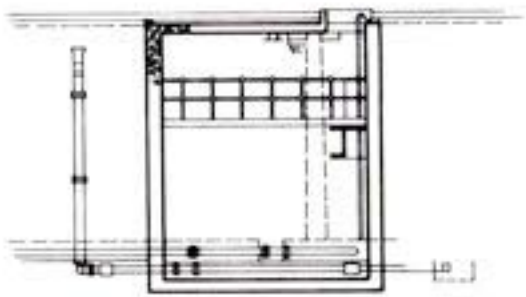
PLAN



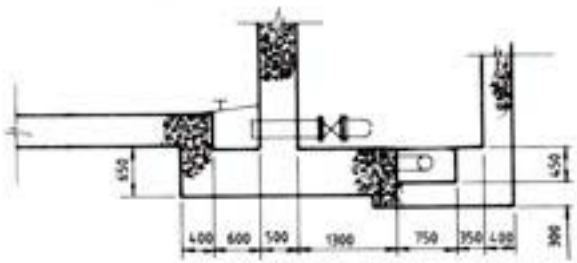
SECTION Z-Z



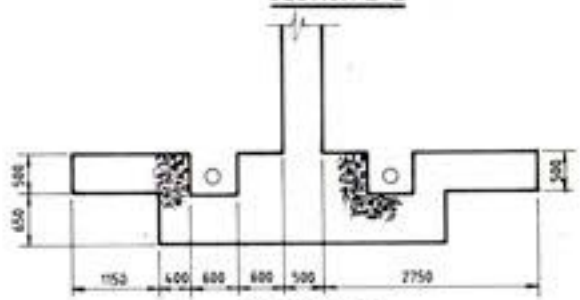
OVERFLOW SECTION X-X



SECTION Y-Y



SECTION Z-Z



SECTION P-P

LUFBRA RESERVOIR	
VALVE CHAMBER	
DRG. R/01/36/4	Checked by B.D.S.
Drawn by N.H.R.	Scale N.T.S.
BURLEIGH BROOK WATER AUTHORITY *UNIVERSITY ROAD* *NORTH LEAKE* *ENGLAND LU6 2DN*	
Engineer.	

Reporting & recording

Each group will write a succinct, illustrated report on their work, which will be copied for all participants and retained by the Tutor.

Each group will nominate a reporter who will present the work of the group.

The presentations will be followed by discussion leading to clear conclusions and recommendations.

The Tutor will summarise the conclusions and recommendations and provide each participant with a copy.

Concluding case study

The case study is the collapse of the side of an excavation for a large building project, which killed eight people (seven on site and one later in hospital).

The case study shows a photo and gives extracts from the preliminary report by the Ugandan official investigation team.

The ILO is grateful to Evelyn Katusabe of the Occupational Safety and Health Department, Ministry of Gender, Labour and Social Development, Uganda, for providing this case study.

The building as planned

The collapse

Eye witness

According to one worker, at the time of the accident occurrence, workers were reinforcing the excavation with iron bars and wood.

Further, there was a compactor that was reportedly compacting soil close to the cave-in point.

He also said that there had been a spate of soil cave-in the past, including one in which part of the site offices collapsed into the excavation

Official observations at the scene (1)

The plot comprising of the site had been excavated to nearly 100%.

The excavation is about 15m deep and nearly vertical.

Most parts of the excavation base up to the height of about 7m were supported by strutting of metal and wood.

In addition, the rest of the excavation above the strutting had a plaster covering of about 2 inches (as viewed at the point of collapse).

At the western part there seemed to have been a previous cave-in, downing part of the site offices, as cleavage markings were observed from the site office structure.

Official observations at the scene (2)

Near to the accident point was an excavator with fresh marking on the ground; an indication that it was in use probably at the time of the accident occurrence. Above the accident point was a house that also caved into the site with the soil cave-in.

On site, seven (7) bodies were recovered and two injured workers were taken to hospital.

There were reports that one of the injured workers had also passed away in hospital. The identities of the dead and injured could not immediately be established.

Further, terms and conditions of employment of the workers could not be established.

Contractor compliance with the OSH Act, 2006

Pursuant to Section 40(2) of the OSH Act, the site was notified to the Commissioner for Occupational Safety and Health on 12th May 2008.

In addition, the Contractor submitted to the Department of Occupational Safety and Health a Construction Phase Safety, Health and Environment Plan for the project. This was in compliance with Section 14.

The Construction Phase Safety, Health and Environment Plan for the project was reviewed for adequacy and a response requesting the Constructor to further submit safety method statements for particular operations among others was sent as the Plan was inadequate. To date, no response has been received.

Issues that could have contributed to the accident

The presence of a house is an indication of disturbed ground and the water run-off from the house enabled water percolation in the ground which could have been compounded by the rainy season.

An excavation of such magnitude could have been undertaken progressively i.e. section by section proceeded by strutting and backfilling.

Previous cave-in at the site wasan indication of poor methods of work.

The methods of excavation protection were inadequate and did not provide protection to the ground level.

Excavator vibrations at the time of the accident could have triggered the event.

Progress of the investigation

Further investigations shall be undertaken and there is a need to work with other stakeholders to establish the circumstances of the accident and propose actions to avoid reoccurrence of such tragedies. In addition, it shall be established how the safety, health and environment plan was operationalised on site.

Conclusions by **ILO Construction OS&H** (1)

This is a clear case of inadequate support to a major excavation, and also failure to take due care not to make it even more unsafe by restricting the movement of plant and equipment at the surface near to the excavation. No realistic hazard and risk analysis or method statement would have allowed this excavation to proceed in this way.

The project was delayed for months while the parties argued about who was to blame.

The case study shows that everyone involved suffers through such incidents.

Conclusions by **ILO Construction OS&H** (2)

The **clients'** dream of an impressive building has been tarnished by such loss of life. The project will be delayed considerably while the excavation is cleared, the OSH investigation takes place and the excavation process is re-engineered to provide a safe method of working.

Conclusions by **ILO Construction OS&H** (3)

The **designers** have allowed unsafe practices, which will have damaged their reputation as competent supervisors of construction work on behalf of their clients.

The question has to be asked about the need for such a deep basement in ground of this nature and whether a different design of the building would have provided similarly useful areas and facilities which are easier and safer to build.

If the deep basement was necessary, the designers may have considered the use of such construction methods as contiguous piling, which supports the ground while constructing the wall, reducing the need for working space which reduces the excavated volume, so offseting the cost to some extent.

Conclusions by **ILO Construction OS&H** (4)

The **contractor** will suffer increased costs, delays, legal action and compensation costs, and may find it difficult to attract good workers to a site with such a reputation. In a tightly regulated procurement system, the contractor may find it more difficult to get future work.

And of course it was eight **workers** and their families who suffered the ultimate loss. Surely this is a good example of the need for worker participation in the construction OS&H process?

This case study emphasises why
the training offered by

ILO Construction OS&H

is so important to all those involved in
construction projects worldwide

As a final summary, let us watch the ILO's 'wordless cartoon show':

"How to prevent accidents
on small construction sites"