



ASPASA AT WORK

Technical / Quality



Technical Bulletin

1st Edition – 2018



23 August 2018 – Technical Committee Meeting

Introduction

Aspasa in 2017 had a major focus shift, changed its name, added services and created new committees for specialist focus area in the business.

One of the focus areas that seemed to not have been seen as important in the past was that of Technical/Quality issues in the business of our members.

Now some year later it is becoming clear that supplying a quality product is crucial in the business lives of our members.

This committee under the Chairpersonship of Saartjie Duvenhage has made some major strides, which we will highlight in this newsletter.

One of the major challenges Aspasa and the committee has is that there seems to be member companies that are not concerned in supplying quality products. This is evident from the poor attendance to these meetings which are timeously set up and well-advertised, but seems to not attract the people who deal with quality.

A plead is made to Top/Senior managers to ensure that Quality/Technical employees attend these meetings. If not they could find themselves in a wilderness of which they will battle to escape. The next meeting is in August 2018. Only two major meetings are held per year.

Review of SANS 1083 – Aggregates from Natural Stone

At this last meeting, Ray Bonser from Afrisam did his presentation that he also delivered at the Aspasa/IOQ conference in April 2018 in Durban.

This presentation goes to the heart of the standards that the member companies have to use when producing aggregates. As noted in the introduction above, it seems as if there is an apathy amongst members not to pay attention to this important issue as it became clear that there is a huge misunderstanding of this issue of sieve sizes, product processes and costs.

Delivery of a Quality Product

The crux of what Ray Bonser explained in the above is that we as an industry must supply a quality product to the client.

Let's have a look at what this means:

We in industry talk a lot about 'quality' of almost everything – be it a gadget, appliance, raw material, clothing, food, etc. Every person seems to have his own idea of quality. It is difficult to agree on a single definition of quality, yet we can define different dimensions or parameters against which quality of something is measured. These dimensions include reliability, usability, ease of use, value for money and fit for purpose.

The question naturally comes in 'How do we deliver a quality product which can satisfy the customer?'

Traditional Versus Modern concept of Quality

Quality is an attribute that can be ascribed to any product in different contexts. In early ages, craftsmen who produce a product were responsible for the quality of their products because the scale of production was small.

A major breakthrough in the concept of quality occurred when mass production started. Companies tried to produce with certain degree of quality that conformed to standards. As time passed, customers became choosier and their demands increased.

With this change in circumstances, the businesses needed to keep pace with the customer's requirements to survive and eventually grow. This led to evolution of quality approaches and changed the viewpoints about how quality can be achieved.

Inspection vs Prevention

Inspection was one of the key elements in traditional quality paradigm. The product was developed and after it is completely developed, inspection was performed. The aim of inspection was to check the product against some standards. The team needed to do rework if any fault was found.

However, the modern era believes in the principle of prevention. It refers to proactive approach towards the development process to assure a quality product comes out of it. This includes the processes, tools and methods.

Quality as a Cost vs Quality as a Profit

Previously, acquiring quality was considered as a cost. Any investment in tools, methods and processes to achieve higher quality were considered as a cost. The management was not convinced of investing too much in the quality.

Gradually, management realized that good quality serves as the profit in the long run. If company invests in the tools, methods or process to produce a high quality product, this results in satisfied and returning customers. Eventually, the profit received through the increased quality exceeds the incurred cost.

Therefore, the contemporary approach encourages to invest in processes and tools to deliver quality products.

Responsibility of Quality Department vs Responsibility of Everyone.

In the traditional environment, employees were held responsible for poor quality. A separate quality department was deemed responsible for maintaining and controlling the quality of the produced output.

The contemporary approach instills the responsibility of quality into every team member. It operates on the principle that every team member is responsible for the quality of work he/she is doing, i.e. business analyst will be responsible for documenting good requirements, architects will be responsible for the architecture of application, developers will be responsible for the quality of code and testers will be responsible for the execution of testing process. Together, they are all responsible for delivery a quality product.

If everyone contributes to the project taking quality into consideration, a good quality product is likely to be developed.

Meeting Standards vs Continuous Improvement

You may be surprised to read this. In the past, companies strived to manufacture products that meet a certain standard. An acceptable deviation range was defined for product which means that certain degree of defects were allowed in the product. The quality standards were set by the management.

Yes, you see it right. The aforementioned approach did not inspire anyone to exceed the set expectations – the company only wanted to meet it. If the company is already meeting standards, they don't see the need of improving the process any further.

On the contrary, the modern approach of quality seeks continuous improvement. It is customer focused and takes measures on the basis of feedback received from customers. This feedback can include complaints, requests for new features and appreciation. While developing and delivering a product, we don't only see the conformance to requirements, rather we try to exceed the expectation to satisfy the clients and customers.

Understanding Quality

- **Training:** Training is at the centre of the wheel. In good organisations, training is an essential part of their employee skill enhancement program. Training enhances the skill set of employees and polishes their skills. Training sessions and workshops on the latest tools and technologies help them to adapt new technologies and stay competent in the field.
- **Customer Focus and Requirements:** As discussed, today's industry has become customer focused. It is important to note here that the customer is not only the person who is paying bucks to develop the product. Instead, there are other people involved in the project who are classified as external or internal customers. Identify all customers and include them in your process.

Customers provide requirements for your project or develop your product. These requirements can fall in the spectrum of general needs to explicit specifications. Skilled business analysts in your team can play an important role in deriving and documenting good requirements. Customers' expectations set your quality standards. They can give feedback about your product in the form of appreciation, suggestions, recommendations and complaints. Customer's feedback sets your next targets and help you to improve further.

- **Variation and Processes:** Variation is a characteristic of any production process and variations may introduce defects. Although every project is unique, yet there can be several tasks in different projects that are repeated. Identifying such tasks and defining a procedure for them is a step towards improved quality

You can establish standard procedures for different activities in your organisation. Internal audits and reviews can be conducted to make sure that processes are duly followed in the organisation

A process uses techniques to transform customer requirements into required outputs.

An improved process leads to delivery of an improved product. This is in accordance with the 85/15 rule which states that : *85% of the problems in our work lay within the process itself and are under the control of management. 15% (or less) of process problems are under the control of employees.*

- **Continuous improvement and Controls:** As the name implies, your organisation shall strive for continuous improvement. The strategy of meeting required specifications only means you are working only enough to escape punishments or penalties. It means you are keeping your interest safe but it does not enhance your competitiveness. Exceeding customer expectations is the key towards fully satisfied customers.

Controls refer to the means available to completely develop the product. Continuous improvement means you regularly check your processes and practices for any room for improvements. This also includes working on the elimination of root causes of problems to avoid them occurring again in the future.

- **Leadership**: Leadership is the unifying force that keeps all the components of quality together.

Leadership is responsible to steer the company towards its vision. Effective leaders know their job. The goal is to improve performance and quality of output while taking adequate care of the employees and their morale.

Quality control for construction works

Quality control is the part of quality management that ensures products and service comply with requirements. It is a work method that facilitates the measurement characteristics of a unit, compares them with the established standards and analyses the difference between the results obtained and the desired results in order to make decisions which will correct any differences.

Technical specifications define the type of controls that must be carried out to ensure the construction works are carried out correctly. They include not only products/materials but also the execution and completion of the works.

One way of controlling quality is based on the inspection or verification of finished products. The aim is to filter the products before they reach the client so that products that do not comply with requirements are discarded or repaired. This reception control is usually carried out by people who were not involved in the production activities which means that costs can be high and preventative activities and improvement plans may not be effective.

It is a final control, located between producer and client and although it has the advantage of being impartial, it has a large number of drawbacks, such as slow information flows and that the inspectors are not familiar with the circumstances of production and are not responsible for the production quality.

When tests are destructive, the decision to accept or reject a full batch must be made on the basis of the quality of a random sample. This type of statistical control provides less information and contains sampling risks. However, it is more economical, requires few inspectors and speeds up decision-making while the rejection of the whole batch encourages suppliers to improve their quality. This type of control can also identify the causes of variations and so establish procedures for their systematic elimination.

Quality Assurance in accordance with ISO

Quality assurance is a set of planned and systematic actions to ensure that products comply with specified requirements. It not only involves checking the final quality of products to avoid defects as is the case in quality control, but also checking product quality in a planned way in all the production stages.

Quality control in our business

From the above it could be said, ‘yes but we are not producing cars, watches or other mass products’.

Well let’s look at what Quality Control for construction looks like.

Some issues in South Africa

If one reads the CIDB document – “The Building and Construction Materials Sector, Challenges and Opportunities” – one sees the following issues being raised:

- **Quality standards:** While South Africa has a well- developed set of national standards which enable manufacturers and contractors to provide consumers with high quality products, concerns have been raised in the industry about increasing non-compliance of materials and products with national standards, including:
 - Many building projects are poorly specified, and artisans and foremen are not accredited in terms of their performance in achieving the necessary standards;
 - Many of the current specifications are perceived to present a barrier to entry to small scale entrepreneurs and exclude their participation in particular markets, and a limited amount of clients are reportedly not requiring materials to comply with SANS standards; and
 - There is a lack of capacity amongst building inspectors to evaluate compliance requirements.

As a result, owners of buildings and infrastructure are not always satisfied with the end product.

- **Skills Shortages:** are also being experienced in the materials manufacturing and distribution supply chain – and cross-sectoral synergies should be explored between the various skills development initiatives
-

How and where do we get the material from?

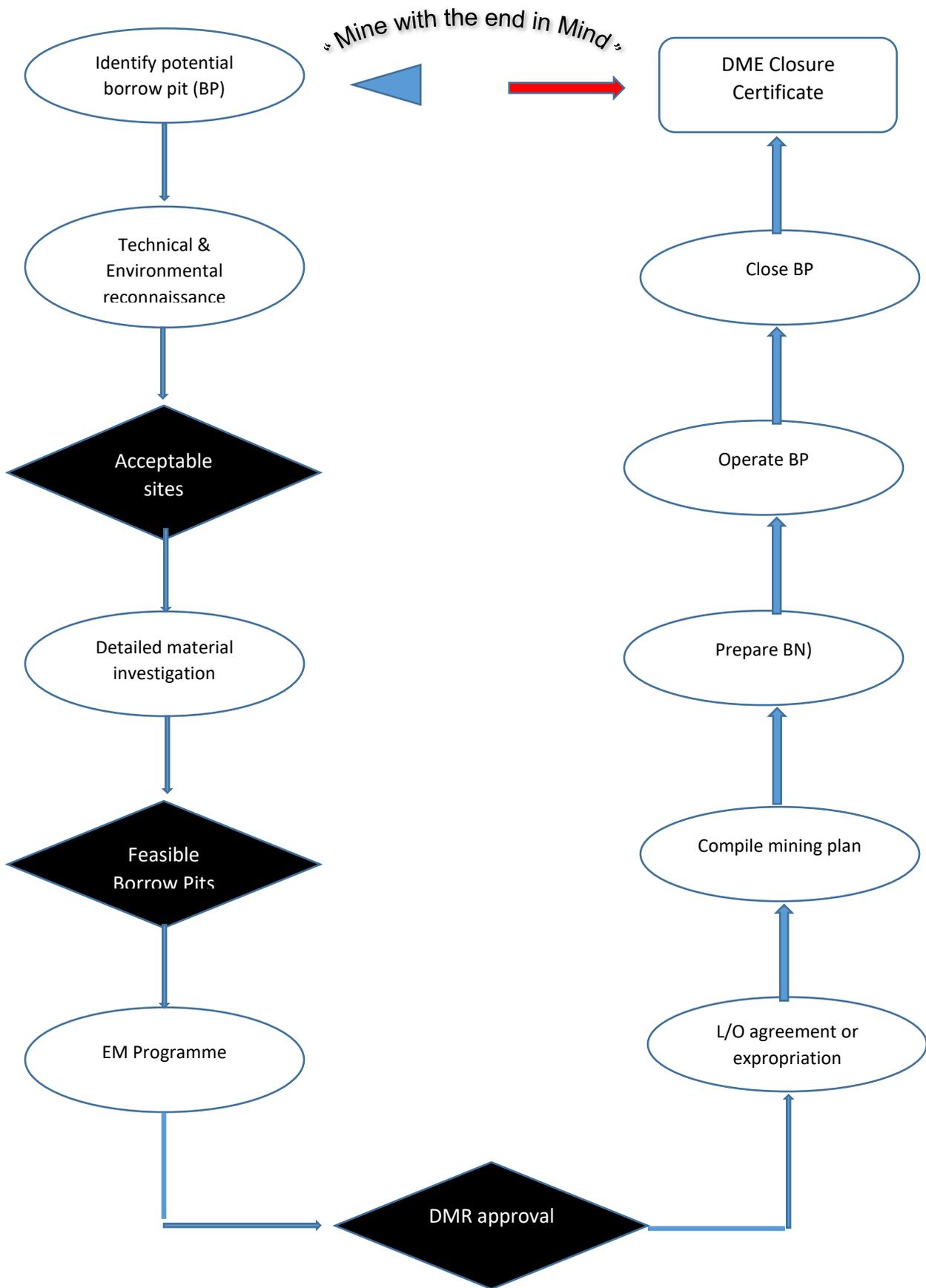
When one reads the “SA Pavement Engineering Manual, chapter 8, Material Sources” published by SANRAL – January 2013, then we see that provision is made on page 4 of the report for project quarries and borrow pits.

In this discussion of Technical/Quality it is interesting to see that other sources are used.

What the quality of the material from these sources are – need to be looked at. What the Aspasa members therefore need to know is that if a quarry exists, then it must produce a high quality product. This will ensure a standard is set.

Included here is a “map” to help set the process out.

The required steps in the identification, proving, authorizing, operation and closure of material sources are shown.



Maybe some steps to help with “Managing Quality”

QA Procedures: Review adequacy of the quality assurance plan:

- Determine if the work practices are such that the expected quality standards will be met.
 - Examine the quality of the ongoing and completed work to determine that it meets or exceeds the project requirements.
 - Ensure that the material used meets project quality standards.
 - The finished work is sufficiently protected from harm or damage.
 - Issue a report of acceptable work as well as any substandard work.
 - Track the corrective work and issue status report until satisfactory completion
 - Examine the quality control methods being used to determine if the supervisor is properly controlling construction activities.
 - Review processes, practices and procedures and identify possible areas for change so as to improve the quality of the resulting work.
 - Recommend any changes to project staff and/or management.
 - Review QC documentation to ensure adequacy of systems.
-

Back to Aspasa (Ray Bonser’s presentation)

We all have to understand what the history and requirements of the Review is about that Ray has so diligently shared.

1. There are new standards – do we know them and understand?
2. Will we be able to supply to spec?
3. Must we make adjustments at the quarry?
4. Must we re-train those who work with this?
5. Do we understand the problem of who is responsible for the quality – up to which point?
6. Must we still use the Aspasa Exclusion clauses?

Common issues that arise

- Materials fail to comply with the specification requirements
 - Tests are not carried out to specified frequencies
 - Test results are not available in a timely manner
 - Damage occurs to materials after they have been placed on site
 - Incomplete QA records
 - Inspections on site do not support test results
 - The material is not performing correctly on site
 - Test certificates are incomplete
 - Commercially sensitive issues
-

Back to Aspasa Technical Committee Meeting

As mentioned up front we had a meeting on 10 May at Soillab in Pretoria. Unfortunately only 13 attendees attended, however the meeting was very informative.

Some highlights from this meeting:

- Lengthy discussion was held on the grading envelopes. We hope all members and their operations understand the requirements.
At our Gauteng Regcom on 7 June 2018, we will again discuss this issue – please therefore attend if you are still not sure. It might if not handled correctly cost the company some serious money.
- Aspasa quality audit system for member companies is being started. This will be in the same format as what the other 2 Aspasa audits are like. Marks and subsections will be developed. Maybe in a years' time an award will be given to the best "Quality" operation or individual. Something to look forward to.
- Aspasa through the Technical Committee will develop a short 1 ½ hour presentation for Civil Engineers in their final year. The focus will be to bring them up to speed on what is legally required from operators and all the legislation and red tape.
- Some information on the Salts in our material that could detrimentally affect our product. The meeting minutes has a few attachments setting out the problems and challenges.

To obtain a copy of the last minutes, please contact office@aspasa.co.za

So what is the status at present of various technical issues?

Twice a year Aspasa in conjunction with Barry Pearce, does a summary of what the status of Technical/Quality issues are in the industry.

Summary

MatCivils & NLA BoD

Meeting Dates		
	MatCivils	8 th November 2017
	NLA BoD	9 th November 2017
Future meeting dates		
	MatCivils	27 th March; 4 th July & 12 th November
	NLA BoD	28 th March, 5 th July & 16 th November

The request for the NLA to draft legislation on BBEE requirements applicable to laboratory tenders for work on SANRAL contracts for the civil industry laboratories, the NLA Board of Directors took the decision not to assist on the laboratories behalf due to the mandates of the NLA with their members. The mandate states that the NLA will assist with quality & technical matters & not get involved in management & political assistance. The NLA has however agreed to assist in workshopping the draft document with the MatCivils members so as to assist them to better understand the requirements and assist in providing assistance in how best to prepare for the implementation of the policy document where it's applicable to 2nd tier procurements tenders of which the laboratories currently are situated.

The MatCivils subcommittee meets 3 times per year to discuss various industry issues and covers the following standard agenda items at each meeting:

- Education and training
- Proficiency testing
- Client liaison
- SABS
- SANAS
- T & M annual conference

Minutes for the meeting are uploaded on the NLA websites on the following link

http://www.home.nla.org.za/?page_id=2509

Proficiency Testing Scheme PTS

The NLA PTS is an area where quarry laboratories can hone their testing skills against the accredited facilities to gauge how comparable their results are as a starting point to improve quality.

2018 Overview for PTS rounds relevant to ASPASA members				
	Shipping Date	Return of results	Prelim results report	Final PTS report
Granular	5 th March	26 th March	3 rd April	23 rd April
Aggregate	9 th April	20 th April	4 th May	28 th May
Granular	13 th August	3 rd September	7 th September	1 st October
Aggregate	10 th September	1 st October	5 th October	29 th October

The test methods covered include the following:

AGGREGATE METHODS	
SANS 3001-AG1:2014 (Ed.1.02)	Particle size analysis of aggregates by sieving
SANS 3001-AG2:2009 (Ed 01.00)	Determination of the average least dimension of aggregates by direct measurement
SANS 3001-AG3:2014 (Ed.1.01)	Determination of the average least dimension of aggregates by computation
SANS 3001-AG:2015 (Ed. 1.02)	Determination of the flakiness index of coarse aggregate
SANS 3001-AG5: 2015 (Ed. 1.01)	Sand equivalent value of fine aggregates
SANS 3001-AG10:2012 (Ed.1.00)	ACV (Aggregate crushing value) and 10% FACT (fines aggregate crushing test) values of coarse aggregates
SANS 3001-AG20:2014 (Ed. 1.01)	Determination of the bulk density, apparent density and water absorption of aggregate particles retained on the 5mm sieve for road construction materials
SANS 3001-AG21:2014 (Ed 1.01)	Determination of the bulk density, apparent density and water absorption of aggregate particles passing the 5mm sieve for road construction materials
SANS 3001-AG22:2012 (Ed 1.00)	Apparent density of crushed stone base
SANS 3001-PR5:2011 (Ed. 1.01)	Computation of soil-mortar percentages, coarse sand ratio, grading modules and fineness modulus

GRANULAR METHODS	
SANS 3001-GR10:2013 (Ed. 1.02)	Determination of the one-point liquid limit, plastic limit, plasticity index and linear shrinkage
SANS 3001-GR11:2013 (Ed.1.02)	Determination of the liquid limit with the two-point method
SANS 3001-GR12:2013 (Ed. 1.02)	Determination of the flow curve liquid limit
SANS 3001-GR20:2010 (Ed. 1.01)	Determination of the moisture content by oven-drying
SANS 3001-GR30:2015 (Ed. 1.02)	Determination of the maximum dry density and optimum moisture content
SANS 3001:GR40:2013 (Ed 1.01)	Determination of the California bearing ratio
SANS 3001-PR5:2011 (Ed. 1.01)	Computation of soil-mortar percentages, coarse sand ratio, grading modules and fineness modulus

This is an area that we believe can great assist Aspasa members in the following ways:

- to get a better sense of how their results compare to industries norms and SANAS accredited commercial facility results
- provide them with a means of evaluating how well their testing is being undertaken
- providing a means of pointing to testing errors that they are encountering with the opportunity of improving round for round

Civil Engineers and Aspasa

Aspasa as part of the mining industry has to comply to the same legislation as what a big mine does.

Those members who supply to the construction industry are aware that they also have to when off the mine, comply with the Construction Industries legislation, which is or the Occupational Health and Safety Act, or even the Mine Health & Safety Act.

The Aspasa Technical Committee has raised the issue of Aspasa informing, sharing or helping the Civil Engineers with some information that is relevant to their work when the mining operation is relevant.

What specific civil engineering health and safety considerations need to be made?

There are a number of activities that are specific to the civil engineering sector, and as well as covering the general hazards, a civil engineering health and safety plan needs to take these additional hazardous activities into account. These hazardous activities include:

- Working at height
- Working at depth, including tunneling
- Work over water
- The use of extremely heavy machinery
- The use of explosives

How do you develop a civil engineering health and safety plan?

As with any health and safety plan, the basic approach for developing a civil engineering health and safety plan is to:

- Identify the hazards that your business faces
- Eliminate those hazards if possible.
- Minimise the potential impact of those hazards if it is not possible to eliminate them completely.

Elimination of a hazard could be achieved by a change in work procedures, but it is not always possible to eliminate a hazard. If you are building a bridge, often that will mean working over water, for instance.

Where a hazard cannot be eliminated, minimizing the impact of the hazard will include both reducing the chance of an accident occurring as well as reducing the potential impact should an accident occur.

Developing a civil engineering health and safety plan will involve some site surveys, but it is about a lot more than walking around a construction site with a clipboard. A lot of the work will be office based, analyzing working procedures and best practices.

As well as an overall civil engineering health and safety plan, there may also be a need to develop specific health and safety plans for specific activities or projects, such as the use of explosives or the construction of a tunnel.

Who is responsible for civil engineering health & safety?

Every business should have a health and safety policy, and that will nominate the person with overall responsibility for health & safety. It may also name certain individuals with day to day responsibility for specific areas of health and safety.

Even though there will be specific people named in the health and safety policy, health and safety is the responsibility of everyone, including:

- The Board of Directors
- Site supervisors and managers
- The workforce
- Any subcontractors
- Any visitors to the construction site

All of these people are responsible for their own health and safety as well as the health and safety of others.

Important Conference and Workshop to be attended

The National Laboratory Association – SA is having its 2018 Conference on 8 – 10 October 2018 in Cape Town. This conference would be a very relevant conference for Aspasa member's Technical people to attend. For enquiries contact 012 349 1500 or visit www.nla.org.za

Personal details:	
Surname: _____	First Name: _____
Company: _____	Position: _____
PO Box: _____	
Tel: _____	Fax: _____
Cell: _____	E-mail: _____
NLA-SA Member? YES <input type="checkbox"/> NO <input type="checkbox"/>	Are you presenting a paper? YES <input type="checkbox"/> NO <input type="checkbox"/>
Are you a student? YES <input type="checkbox"/> NO <input type="checkbox"/>	Are you an exhibitor? YES <input type="checkbox"/> NO <input type="checkbox"/>
Are you presenting a poster? YES <input type="checkbox"/> NO <input type="checkbox"/>	
Please specify any special dietary requirements _____	
NB: It is essential that a separate registration form is completed for each attendee.	
Registration Form:	
Test & Measurement 2018 Conference & Workshop • 8 - 10 October 2018	
Attendance (No Accommodation)	
3 Days (8 - 10 October 2018)	NLA R 5 500 Non-NLA R 6 325
Per Day - Mark which Days	8/10 9/10 10/10 R 3 000 R 3 450
Presenters - (Gold) 3 Days (8 - 10 October 2018)	R 2 750
Presenters - (Silver) 3 Days (8 - 10 October 2018)	R 4 125
Abstracts must be received by 30 April 2018 or as arranged by the organisers	
Posters 3 Days (8 - 10 October 2018)	R 4 000
Abstract submission for poster/s to be received by 31 July 2018	
Students	R 2 000
Student Poster 3 Days (8 - 10 October 2018)	
Copy of student card required when registering	R 2 500
Student 3 Days (8 - 10 October 2018)	
Packages (Attendance & Accommodation)	
Accommodation 3 nights R 4 665 + Attendance 3 days	NLA R 9 800 Non-NLA R 11 300
Accommodation 2 nights (Mark nights) R 3 110 + Attendance 3 days	R 8 400 R 9 650
Gold (Accom 3 nights R 4 665 + Attendance 3 days)	R 7 465
Gold (Accom 2 nights (Mark nights) R 3 110 + Attendance 3 days)	R 5 900
Silver (Accom 3 nights R 4 665 + Attendance 3 days)	R 8 850
Silver (Accom 2 nights (Mark nights) R 3 110 + Attendance 3 days)	R 7 300
For any other accommodation requirements you are kindly requested to contact the Lord Charles Hotel directly.	
Please mark the option required and insert price here	
Total: Excluding 15% VAT	R _____ R _____
Exhibitors	
Includes one full 3 day Conference package per stand, see website for details. Accommodation excluded.	
1) Package prices are complete and no refunds will apply for non-attendance. 2) Payment must be received in full before registration will be confirmed. 3) Multiple attendances on a single Full Conference Package will not be accepted. No exceptions. 4) Accommodation cannot be guaranteed after the 31 st August 2018. 5) Cancellations received before 31 st August 2018 will be entitled to an 80% refund. After this date no refunds will be entertained. Registrations can be transferred to an alternate delegate at a 10% substitution fee. Refunds will be processed after the Conference.	

In Conclusion

Maybe it will be worth it for companies to send their people to this committee. It is not “What does Aspasa do for me”, but rather it is Aspasa is doing something, I must just participate and extend my knowledge.

The next meeting is scheduled for 23 August 2018. We are trying to hold it at the University of Pretoria’s premises in Pretoria.

Please pay attention to the quality issues at your operations. We don’t want to be blamed for supplying poor materials – let’s up the standard.

NICO PIENAAR
DIRECTOR