

Best Practice

Contractor Recognition Scheme



Construction Management Systems;
The cidb Standard

CIDB BEST PRACTICE CONTRACTOR RECOGNITION SCHEME;
STANDARD FOR CIDB CONSTRUCTION MANAGEMENT SYSTEMS

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1.	Scope	6
2.	Normative References	7
3.	Terms and Definitions	8
4.	Construction Management System	9
4.1	General	9
4.2	CMS Manual	10
4.3	CMS Policy	11
4.4	CMS Objectives	12
4.5	Control of Documents	13
4.6	Control of Records	14
5.	Planning	16
5.1	Construction Management System Planning	16
5.2	Construction Management Plans	16
5.3	Legal and Other Requirements	17
6.	Implementation and Operation	18
6.1	Roles, Responsibilities and Authorities	18
6.2	Competency, Awareness and Training	18
6.3	Other Resources	19
6.4	Internal and External Communication	20
6.5	Operational Control	21
6.6	Purchasing	22
6.7	Control of Nonconformity	22
7.	Measurement, Monitoring and Improvement	24
7.1	Measurement and Monitoring	24
7.2	Internal Audit	25
7.3	Management Reviews	25
7.4	Improvement	26
7.4.1	Continuous Improvement	26
7.4.2	Corrective Action	26
7.4.3	Preventive Action	27
Appendices		29
A1.	Audit Checklist	29
A2.	Construction Management Plan	34

1. SCOPE

This cidb standard specifies the cidb requirements for minimum standards for a Construction Management System (CMS) to be used for construction works covering:

- health and safety management;
- environmental management (covering air, water, land and waste); and
- quality management.

Contractors would apply and obtain certification to this standard if they wish to apply for cidb accreditation in terms of the cidb *Best Practice Contractor Recognition Scheme*¹.

¹ cidb (2011). *Requirements and Guidelines for cidb Accredited Construction Management Systems*. Construction Industry Development Board, Pretoria. <http://www.cidb.org.za>

2. NORMATIVE REFERENCES

Relating standards and legislation that can be read in conjunction with this standard include:

- OHSAS 18001 Occupational Health & Safety Management Systems;
- ISO 14001 Environmental Management Systems;
- ISO 9000 Quality Management Systems – Fundamentals and Vocabulary; and
- ISO 9001 Quality Management Systems.

3. TERMS AND DEFINITIONS

Explanation of terms and definitions used in this standard:

Term	Definition
<i>Accreditation</i>	act of granting credit or recognition/authorisation, approval or recognition of meeting a standard
<i>Audit</i>	a systematic, independent and documented process for obtaining audit evidence and evaluating it objectively to determine whether the audit criteria are fulfilled
<i>Auditee</i>	the party being subjected to an audit
<i>Auditor</i>	any person with the competence to conduct an audit
<i>Certification</i>	refers to the confirmation of certain characteristics of an object, person, or organization and the procedure by which a third party gives written assurance that a product, process, or service conforms to specific requirements
<i>CMP</i>	Construction Management Plan. See 5.2 <i>Construction Management Plan</i>
<i>CMR</i>	Construction Management Representative. See "Management Representative" in 6.1 <i>Roles, Responsibilities and Authorities</i>
<i>CMS</i>	Construction Management System
<i>Corrective Action</i>	a process to eliminate causes of nonconformity
<i>Contractor</i>	a person or body of persons who undertakes to execute and complete construction works
<i>Construction Works</i>	the provision of a combination of goods and services arranged for the development, extension, installation, repair, maintenance, renewal, removal, renovation, alteration, dismantling or demolition of a fixed asset including building and engineering infrastructure
<i>Competent</i>	having suitable or sufficient skill, knowledge and experience
<i>Customer</i>	a person or organisation that receives the product or service and can also refer to an entity calling for proposals and awarding contracts
<i>Document</i>	is any management system information that is subject to change and version control; is also referred to as "Controlled Document"
<i>Environment</i>	is the surroundings in which an organization operates - including air, water, land, natural resources, flora, fauna, humans, and their interrelation
<i>Exclusion</i>	If any requirement(s) of this Standard cannot be applied due to the nature of the business and its products/services, it can be considered for exclusion. Exclusions are only acceptable if they do not affect the Contractor's ability to meet customer/legislative requirements.
<i>Hazard</i>	the situation with a potential for harm to people, reputation, assets and environment
<i>Health</i>	refers to the state of an individual in terms of injury or disease
<i>Incident</i>	work related event in which an injury or ill health could have occurred
<i>ITP</i>	Inspection and Test Plan. See 7.1 <i>Measurement and Monitoring</i>
<i>Legislative Requirements</i>	typically refers to bills, acts, regulations, by-laws and any amendments as issued by the national government, local government or appointed bodies e.g. cidb
<i>Nonconformity</i>	non-fulfilment of a requirement and can also be referred to as "non-conformance"
<i>Policy</i>	a documented statement indicating rules/guidelines for decision making and behaviour, that have been adopted by the people in the Contractor's organisation
<i>Preventive Action</i>	process to eliminate the possible causes of potential nonconformity
<i>Procedure</i>	documented way to carry out a set of activities or a process
<i>Process</i>	set of interrelated or interacting activities which transforms inputs into outputs
<i>Product</i>	the result of a process and can also refer to "Services"
<i>Record</i>	any evidence that a process has taken place
<i>Remedial Action</i>	a process to eliminate causes of nonconformity
<i>Risk</i>	the documented likelihood of an occurrence of a hazardous event (product of likelihood and severity)
<i>Safety</i>	refers to the state of the work environment in terms of hazards
<i>SHEQ</i>	safety, health, environment and quality
<i>Sub-Contractor</i>	one who takes a portion of a contract from the principal contractor or from another sub-contractor
<i>Supplier</i>	party that supplies Goods and Services
<i>Work Instruction</i>	detailed sequence of steps (tasks) required to perform an activity

4. CONSTRUCTION MANAGEMENT SYSTEM

4.1 General

The Contractor shall establish, document, implement, maintain and continually improve an integrated Construction Management System (CMS) in accordance with the requirements of this standard.

The Contractor shall ensure that all the processes required for the CMS:

- i are identified;
- ii documented; and
- iii that their sequence and interaction are detailed.

Requirements Guidelines

This requirement is a broad introduction to this Construction Management System (CMS) and sets out the need to create and use the system in compliance with all the requirements of clauses 4 to 7 of this Standard.

This requirement relates to the creation of a system of policies and procedures that demonstrates how the Contractor complies with the requirements of this standard. It is an integrated system that addresses the combined requirements of safety, health, environment and quality management.

The Contractor shall:

- **establish;** develop the arrangement of the CMS in terms of processes, documentation, roles and responsibilities and other resources;
- **document;** formalise (write up) their processes into procedures in electronic or paper form;
- **implement;** put the documented processes into practice by training affected staff and making sure the processes are always followed;
- **maintain;** ensure the CMS is kept up to date and people are always informed about changes; and
- **continually improve;** review the CMS on an ongoing basis, look for opportunities to improve and turn “opportunity” into value adding changes.

The Contractor shall:

- **identify processes;** list all the processes that impact on safety, health, environment and quality (SHEQ) matters;
- **document processes;** verify that they are all addressed in written procedures and/or work instructions that are applicable across all the Contractor’s areas of activity; and
- **detail sequence and interaction of processes;** once the processes are listed and understood, the Contractor must detail their interactions, dependencies and order of flow. This is normally achieved at a high level i.e. not at detailed operational level. Use a flow chart and detail the input requirements (e.g. customer and legislative requirements), then management, operational and support processes, and conclude with the output (e.g. the required products and/or services).

Guideline for Implementation

The first paragraph relates to the careful planning required to create, apply and to improve your CMS. Ensure that each step is very well thought out, carefully undertaken. Proactively manage each step, rather than waiting for events to occur and then scrambling to try to respond to them afterwards.

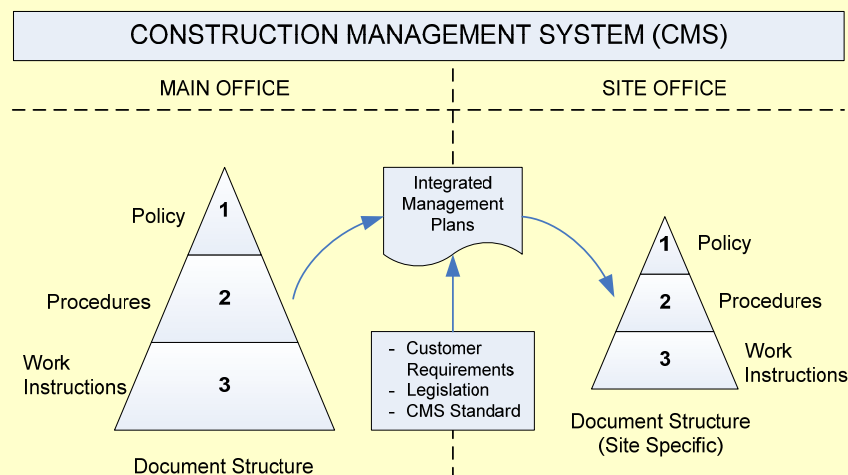
Treat the implementation of your CMS as a project, with a specific beginning, middle and end point. The end point may be that your implemented CMS will be assessed for certification by a certification body. Use project management techniques to control the development and implementation of your CMS. Once the project is completed the requirement for maintenance and continuous improvement of the system becomes relevant.

The arrangement of the documented components of the CMS will typically be in three tiers:

- level 1 - policy;
- level 2 - procedures; and
- level 3 - work instructions.

Review all processes necessary to comply with the requirements of this standard and list them. To better understand the processes, detail their inputs and outputs and identify possible measures of success. Then ensure each process is addressed in a written procedure (and/or work instructions as appropriate to the complexity of its activities).

The successful implementation of document control is dependent on a documentation system that is “well communicated and understood by all relevant staff”. The following is a model of the relationship of CMS documents:



4.2 CMS Manual

The CMS shall include a documented manual which will define:

- i the scope of the CMS, including details of and justifications for any exclusions;
- ii documented procedures, or references to them; and
- iii a description of the interaction of the CMS processes.

Requirements Guidelines

A documented manual is required which lays out the Contractor's approach to complying with each of the CMS Standard requirements.

The CMS Manual should detail as a minimum;

- the **scope** of the system; what parts of the business are addressed by the CMS ;
- **exclusions**; those parts of the business where the CMS Standard requirements do not apply, however such cases must be justifiably permissible, e.g. a painting contractor might not use measuring and monitoring devices as in 7.1 *Measurement and Monitoring*;
- **documented procedures**; or a clear reference to what they are and where they can be found; and
- **interaction of processes** as discussed in 4.1 *General*.

Guideline for Implementation

The CMS Manual is unique to your organisation, and has to contain the minimum requirements as indicated in 4.2 *CMS Manual*.

Unless there are very few procedures (which is unlikely) they may be referred to in the Manual rather than incorporating their content in full. This will prevent the Manual from becoming too bulky.

Whilst compiling the Manual the target audience must be kept in mind. Typical interested parties include:

- **customers** (including potential customers) who may be interested in how your construction processes are controlled;
- **certification bodies** interested in how the CMS complies with the requirements of the CMS Standard; and
- **new staff** who require orientation regarding the arrangement and functions of your CMS.

It is preferable that the contents of the Manual follow the same sequence as the requirements of this Standard, including using titles (and even numbering) that match these clauses. This makes the contents easier to follow and compare to the requirements of this Standard.

The most important thing is to ensure that the Manual is simple, clear, flows logically, does not contain too much construction jargon and will add value to the reader's understanding.

4.3 CMS Policy

The Contractor's top management team shall define and approve a CMS Policy which:

- i is appropriate to the Contractor and their organisation;
- ii details a commitment to complying with the requirements of this Standard;
- iii identifies the importance of the customer and meeting their needs;
- iv addresses safety, health, environment, quality, legal and other requirements;
- v addresses continuous improvement of the performance of the CMS;
- vi is communicated and made aware to all the Contractor's staff and, where appropriate, other affected parties; and
- vii is reviewed regularly for ongoing suitability.

Requirements Guidelines

A formal CMS Policy is required which states the Contractor's commitment to the CMS, and typically also to a set of shared values, principles, methods and objectives.

As the CMS is an integrated management system it is preferable that the policy combine all aspects: safety, health, environment, and quality (SHEQ). However it is still permissible to have them documented separately.

Writing the Policy in itself will not totally address this requirement. The Policy must be visible and understood by all staff. Therefore training should be conducted and records should be available to prove that staff understands the policy.

The Policy must be approved by top management and signed off by them. The Policy must be reviewed regularly (at least twice a year) to ensure that it is still correct and relevant to the Contractor. The review may form part of the Management Review process as detailed in 7.3 *Management Reviews*.

Guideline for Implementation

The layout of your CMS Policy typically;

- contains the vision of the organisation ;
- contains the mission of the organisation;
- describes the commitment of the organisation to the CMS (e.g. to this Standard, to the customer, to meeting legislation, to partnering with suppliers, to training staff, etc.); and
- should be in alignment with your CMS objectives.

To be truly effective, all the Contractor's employees should be given an opportunity to be involved in its creation so that ownership is achieved across the board.

The CMS Policy represents the essence of your CMS in a one page document. Keep the language and format simple and clear. Keep the message inspiring.

4.4 CMS Objectives

The Contractor shall document construction management objectives that are consistent with their stated CMS Policy. These objectives should be SMART:

- i specific;
- ii measurable;
- iii attainable;
- iv realistic; and
- v time based.

These stated objectives shall be regularly reviewed and updated by top management.

Requirements Guidelines

Construction management objectives (or goals) are focused on continuous improvement and are set to provide benchmarks for performance management. These objectives should manifest in real action in pursuit of their achievement. It is important that the SMART principles are followed to define objectives and that they are documented and communicated to those personnel required to participate in their achievement. Furthermore regular review by top management (typically monthly) is important to gauge actual performance against the objectives.

Guideline for Implementation

Construction management objectives are the map you will use to reach the SHEQ goals you have for your organisation. Construction management objectives could include, for example, organisation wide reductions or absolute targets for:

- disabling injury frequency rates (DIFR) on all construction works sites and related activities;
- quality nonconformities and/or rework;
- wastage of construction materials;
- pollution resulting from construction operations (air, water, noise, etc.).

Objectives should be measured on a regular basis (at least monthly) and shared with the staff who are affected by them. Make them as visual as possible (graphical displays). Objectives should be a challenge to motivate staff. Revise them when necessary.

Document Corrective Actions in the event of not achieving stated objectives.

4.5 Control of Documents

All documents required by the CMS shall be controlled. Controlling the documents will address:

- i approval of the documents prior to use;
- ii managing the changes to documents;
- iii making sure that the right personnel receive the latest documents and obsolete documents are removed from circulation;
- iv that electronic documents are backed up and can be restored;
- v that documents remain clear and legible when in use; and
- vi that documents of an external origin are controlled by the Contractor (e.g. drawings, building plans, customer specifications, standards, acts, etc.).

Contractors shall document a procedure that details how documents are controlled.

Records shall be maintained.

Requirements Guidelines

Documents provide the guidelines, instructions and/or information that show how the organisation operates, and how all of this Standard's requirements are complied with. Documents include: policies, procedures, work instructions, contracts, organisational structures, product specifications, drawings, etc.

The CMS documents guide behaviour and instruct staff on how the business processes must be executed. Therefore controlling, creation, change and distribution of documents is vitally important to prevent confusion of information and instructions. This in turn prevents unnecessary safety, health, environmental or quality incidents, and ensures a consistent standard of product or service provision.

Controlling the documents will address:

- **approval prior to use;** a qualified authority checks that they are correct, accurate and complete, then signs them off granting permission for them to be used;
- **managing changes;** changes are reviewed and checked for validity and potential impact on processes and other documents;
- **making sure that the right personnel receive the latest documents and obsolete documents are removed from circulation;** new documents are created, existing documents can change, and such new or changed information may have an impact on safety, health, environment or quality. Everyone who uses the information or follows the instructions must have access to the latest version and all older versions must be removed from circulation to prevent outdated information impacting negatively on safety, health, environment or quality;
- **documents remain clear and legible;** firstly they must be inerasable and be produced in a neat and easily readable script; secondly they must be protected from any damage that may destroy them or make them illegible; and
- **controlling documents of an external origin;** some activities depend on accurate and complete information or instruction from an outside source e.g. customer specifications or government legislation, so circulating to relevant people, removal of obsolete versions, and protection from damage must apply to these too.

Note: this requirement applies to paper and electronic documents.

Whatever measures the Contractor puts in place to address this requirement, they must be compiled into one documented procedure.

Guideline for Implementation

Documents should ideally be controlled centrally, that is, registered, stored and issued from one central point. Where at a different construction works site or related activity to the head office, documents will be controlled from the site office/structure or by the site manager where there is no office structure.

All controlled documents must be approved by an authorised signatory upon creation or application of changes. Changes that may impact safety, health, environment or quality could be controlled by using a Change Request form. That would ensure a proper impact assessment process is completed and that all the necessary role-players are consulted before the changes are finalised.

Controlling getting the right document to the right people at the right time begins with the identification of all documents that require control on a Master List. This list should identify the document title, latest version, author and all required recipients. When issue of a new or changed document must take place, the recipients are verified against the list, adequate copies of the latest approved "master" document are produced, and issued by the use of a distribution record which must be signed by each recipient. Obsolete documents must be removed as part of the same distribution activity. Obsolete documents should be filed separately from latest versions, and preferably marked in some way to clearly distinguish them. It is normally only necessary to keep one copy of each obsolete version of a document.

Where further distribution must occur outside the sphere of control of the central office, e.g. on the construction works site or related activity; the site office (or site manager) should maintain a separate Master List and distribution records.

Storage of documents should be done so that degradation is prevented and the integrity of the documents is maintained. In addition storage systems should facilitate ease of access, security of confidential information, and backup and restore processes for electronic documents.

Documents generated external to the Contractor's organisation but which are used internally in the course of providing the service, can also be identified on the same Master List and follow the same controls for distribution, storage and obsolescence .

For construction works site or related activity application, documents would be controlled by the site. That is, copies made externally and sent to site would be registered on receipt at the site. The site would manage the storage and issuing of the documents at the site.

4.6 Control of Records

All records required by the CMS to demonstrate compliance shall be controlled. The extent of the control will address:

- i record formats, storage, protection, retention, retrieval and disposal; and
- ii record retention may be governed by applicable legislation.

Contractors shall document a procedure that details how records are controlled.

Records shall be maintained.

Requirements Guidelines

A record is proof that a management system activity has taken place and what the results were. Records could typically include; evidence of compliance to work standards (e.g. inspection checklists) or evidence of the operation of the CMS (e.g. corrective and preventive action records, non-conformance records, audit records).

Records could be in any medium such as paper, photographs, videos, audio recordings, microfiche, scans, emails, faxes, etc. For electronic records additional controls are required to ensure regular, safe backup and a facility to easily restore.

Records are historical proof of how your organisation's operational processes have been running and of the conformance of processes, products and services to customer requirements and the requirements of this Standard. Records are vital for the making of informed decisions. Records need to be easily and quickly accessible to prevent delays in analysis and decision-making.

Storage of records should be done so that degradation is prevented and the integrity of the record is maintained. In addition storage systems should facilitate ease of access and security of confidential information where required.

Some records are required to be kept for specific periods of time as typically defined by legislation or generally accepted accounting practices (GAAP). Other than those specific retention requirements, the Contractor may set their own standard time periods for the retention of other records. Typically compliance with this requirement requires an archiving capability.

Whatever measures the Contractor puts in place to address this requirement, they must be compiled into one documented procedure.

Guideline for Implementation

Control of records can begin with identifying types of records required by your company. This can be done through the use of a Record Schedule (which is essentially a list that acts like a catalogue in a library). The Record Schedule would typically include: a description of the record type, the storage location(s) where it can be accessed, retention duration and the person(s) with authority to dispose of records when no longer required.

Typical record types to be referenced on a Record Schedule include: customer contracts; supplier contracts; employee contracts and other personnel files; purchase orders, delivery notes, invoices, customer complaints, correspondence, inspection reports, test reports, certificates of conformity, non-conformance reports, corrective action reports, audit findings, etc.

Note: the Record Schedule describes "types" of records, i.e. it does not list each and every record. That means that, for example, where processed purchase orders are concerned the Record Schedule states where all such purchase orders can be found e.g. "top drawer, filing cabinet #2 in finance office", rather than listing each and every purchase order document.

Creating standard forms and record templates will improve the consistency of the quality of records generated across your organisation.

The importance of the control of records could not be overstated as records are vital to the organisation being able to provide evidence of process performance in the conducting of business.

5. PLANNING

5.1 Construction Management System Planning

The Contractor shall document policies, procedures, requirements for Construction Management Plans (CMPs) and Standard Operating Procedures (SOPs)/work instructions necessary to comply with customer requirements, legislation and the requirements of this standard.

5.2 Construction Management Plans

The Contractor shall create CMPs covering safety, health, environmental and quality (SHEQ) issues for each construction works site or related activity.

CMPs will address:

- i the purpose and scope of the CMP;
- ii resources to be used, including management structure/personnel and their training (if required) for the work;
- iii details of relating customer and legal requirements;
- iv planning (site project plan, process plan, sub-plans);
- v objectives (safety, health, environmental and quality matters);
- vi the responsibilities and authorities of personnel (including sub-contractors);
- vii identification and assessment of the risks (including hazards) as defined in legislation;
- viii process controls to be used to deal with the work and risks involved, as defined in legislation;
- ix methods to be used to identify nonconformities, and implement corrective and preventive actions;
- x interaction of processes diagram explaining how the key processes interrelate;
- xi methods to be used for document control and records management; and
- xii methods to be used to monitor and audit implementation.

Requirements Guidelines

Creation of the CMPs is part of the planning process, e.g. to understand the requirements that will impact on the project. For each construction works site or related activity it is required to create a project specific CMP. The inputs to the CMPs will be from legislation (safety, health and environment) and from customer requirements (SHEQ conditions).

CMPs are to be documented and made available on-site according to 4.4 *Control of Documents*.

The CMPs needs to address, as a minimum the requirements indicated in this Standard.

Guideline for Implementation

CMPs provide a review process step when reviewing customer requirements and legislative requirements. They should ensure that all applicable requirements of this Standard are addressed.

A formal review of the CMP is advisable before use to verify conformance to all applicable legislative and customer requirements, and to the requirements of this Standard. Often Contractors will have the Customer sign off the CMP prior to commencement of the operational phase of the project

A template for a typical CMP is provided in the annexure to this guideline (A2 *Construction Management Plan*). You can use this to guide the development of your own CMPs, however remember to make them specific to your project and your operational processes.

The CMP should be the primary input to site inspections, and could also be the subject of an internal audit as per clause 7.2 *Internal Audit*.

Once documented, the CMPs should be carried through the construction phase to the final handover of the site. The CMPs are reviewed throughout the life of the project to ensure compliance to requirements.

5.3 Legal and Other Requirements

The Contractor shall identify and determine the impact of all applicable legislation and statutory obligations that may have an impact on SHEQ conditions.

Requirements Guidelines

The Contractor needs to be aware of any legislation that may impact on the construction works project or related activity. This then must be addressed in terms of the planning process, and incorporated into CMPs.

Guideline for Implementation

Legal and other requirements typically refers to bills, acts, regulations, by-laws and any amendments that define:

- legislated requirements for safety, health, environmental and quality;
- legislated requirements specific to construction; and
- requirements from local authorities (e.g. permits, licenses, and approval of sub-plans for safety, health, environmental and quality matters, such as "traffic control", "dust emission", "noise control" , etc.).

Legal and other requirements can be determined by:

- consulting the customer;
- consulting local government representatives; and
- researching the latest government publications.

The Customer should know all the legal and other requirements pertaining to the project or related activity. These would typically be communicated to the Contractor in contract documentation. However, the onus is still on you to ensure that all legal and other requirements applicable to your construction works site operations and related activities are determined and complied with. Therefore ensure that you are aware of and comply with all the applicable legal and other requirements because you are accountable for them. Ignorance is no excuse.

6. IMPLEMENTATION AND OPERATION

6.1 Roles, Responsibilities and Authorities

The Contractor shall formally appoint a specific member of the management team as the representative(s) responsible for the CMS. This Construction Management Representative (CMR) will coordinate the maintenance of the CMS and report the status of the system to the top management team.

The CMR will promote awareness of the CMS throughout the organisation.

The Contractor shall define and communicate roles, responsibilities and authorities for all those persons in the organisation that have an impact on SHEQ.

Requirements Guidelines

A CMR must be formally appointed to act as overall coordinator for the CMS. It is their responsibility to coordinate the establishment, documentation, implementation, maintenance and continual improvement of the CMS. They connect/interface the system operation internally from top management through to the lowest level, and externally to interested parties such as customers, suppliers, certification bodies, etc.

It is important that all individuals that form part of the CMS understand what they are responsible for. Their ability to carry out assigned responsibilities depends on the clarity of their understanding of this. Clear definition of individual responsibilities need to be documented and communicated.

Authority for decision-making must be specified. There can be different levels of authority involved in the same process e.g. approval of a purchase for ±R 500 would typically be made at a different level than one over R5 000.

Guideline for Implementation

It is required that a CMR be formally appointed as overall coordinator for the CMS. They are not responsible for doing everything on the CMS but as a coordinator. They should have sufficient seniority in the organisation to be taken seriously and when necessary have access to top management. The size of the organisation will determine if this is a full-time position or not. In larger organisations it is usual to have a lead management representative (full-time) with a supporting CMR in each department (acting alongside their normal responsibilities)

Each CMR must be formally appointed to their duties by means of a signed document.

CMRs coordinate all the CMS data and information and present it for discussion to top management

CMRs are also required to ensure that there is a level of awareness of the CMS within the organisation. This may take the form of training sessions, briefings, discussions and use of awareness material (e.g. posters, booklets, badges and buttons)

It is vital for an effective management system that everybody understands what they are responsible for and what authority they have. There are many ways to document these e.g. organisational charts, job profiles, responsibility and authority matrices, procedures and work instructions. Once documented the content must be communicated to the affected parties (usually via training).

Project specific responsibilities and authorities will be defined in the Construction Management Plan (CMP).

6.2 Competency, Awareness and Training

Any roles that have an impact on CMS issues shall have their competency requirements defined.

The Contractor shall ensure that all staff are made aware of the CMS and their responsibilities regarding it.

Training needs will be defined. For training conducted, training records will be kept together with evidence of education, training, skills and experience for all affected staff.

Requirements Guideline

The competencies, awareness and training requirement relates to human resources.

Competencies are defined as the abilities needed to carry out a particular role. These must be defined (documented) and measurable so that they can be verified. Checking an individual's actual competencies against those required to perform a particular role may form the basis to identify skills gaps. Once identified, that will serve as an input to training requirements that should correct the skills gap.

It is part of top management's responsibilities to ensure that staff are aware (or conscious) of the CMS. Awareness is achieved by briefing staff of the systems' existence and what it is for and their role in it. Ongoing awareness can only be achieved by continually reinforcing the awareness and by making the system visible (posters, signage, etc.).

Training relates to the gaining of knowledge that results in specific competencies being achieved. The training process usually starts with training needs being identified (from the skills gaps), training then being planned and executed, and then some sort of check to verify that the training objectives have been met. To underpin the training process records must be kept; of training conducted and individuals' educational qualifications.

Guideline for Implementation

The success of an organisation lies in ensuring that their employees are competent to meet the safety, health, environment and quality requirements of the CMS. Some Contractors may even extend this to ensuring the competence of selected suppliers.

A competency assessment/training needs analysis should be conducted at least quarterly. This entails use of a Competency Matrix to identify skills/competencies required. The matrix is a document containing a mapping of all the skills/competencies required by the Contractor along one axis of a table grid, then identification of current employees along the other. This forms a grid where each employee can be matched against a skill and marked or graded according to their current competence, e.g. "Training Required"; "Training in Progress"; "Trained"; or "Can Train Others". A lack of sufficient trained employees reveals gaps, which can then be addressed by identifying suitable training and including this in a training plan.

Note 1: competency assessment/training needs analysis should also form part of the development of the CMPs to ensure that all the necessary skills are available to perform the work required.

Note 2: when introducing new or making changes to existing processes, products or services, more training may be required, and this should be added to the training plan.

Make use of competent employees to train others internally where possible. When an external trainer is required, locate competent/accredited training providers to conduct training. Once training is complete an evaluation must be performed to ensure that the skill/competency requirement has been met.

In some cases (e.g. rolling out new policy) it is sufficient to conduct an awareness programme to inform all staff. This is best accomplished by use of competent, trained internal awareness facilitators who conduct short informative briefing sessions with groups of employees according to a schedule.

Records of training and awareness attendance must be kept.

6.3 Other Resources

The Contractor shall provide all the resources necessary to achieve customer and legal requirements (e.g. infrastructure that is expected on the construction works site or related activities, site offices and equipment).

Requirements Guideline

Other resources relate to resources other than human resources (which have been addressed in requirement 6.1 *Roles, Responsibilities and Authorities* and 6.2 *Competency, Awareness and Training*).

What infrastructure (physical structures) are required to carry out the implementation of the management system on the construction works site or related activity? These would typically relate to site resources required.

Guideline for Implementation

Inadequate infrastructure contributes significantly to substandard quality and poor service delivery. It is therefore vital for companies to ensure that adequate infrastructure is allocated.

Typical infrastructure requirements include:

- **immoveable** resources: buildings and permanent structures; etc.
- **moveable** resources:
 - tools and power-tools;
 - ladders and scaffolding;
 - light road vehicles and heavy plant; and
 - computer hardware and software; etc.

The size of your administrative and operational units often dictates infrastructure needs.

Resources need to be controlled so that they are available, in working order, and adequate to requirements whenever and wherever they are needed. That means that they must be identifiable for purposes of traceability through issue, inspection and maintenance, and analysis of nonconformity.

Use an asset register to log and uniquely identify your infrastructure, marking the item with the asset number by suitable means.

Conduct maintenance planning and identify buildings/structures and mechanical/powered equipment/vehicles requiring regular inspection and maintenance. Plans should show frequency of inspections/maintenance required and due dates for each item or for groups of items. Inspections should cover health, safety and operability of these resources. Adequate records should be kept to ensure a full history of maintenance and inspections conducted.

All equipment issued to construction works sites and related activities should be recorded and rechecked when returned to ensure that what was issued is returned, paying particular attention to their condition.

When new assets are acquired or old assets are disposed of, the asset register must be updated.

6.4 Internal and External Communication

The Contractor shall document procedures and requirements for communication:

- i internally to staff regarding the policies, procedures and objectives of the CMS; and
- ii externally to customers, other service providers and visitors (and other affected parties) as appropriate on relevant details that they require concerning the CMS.

Records of communication shall be maintained.

Requirements Guideline

Communication is required to share information and understanding between groups; in this case between management and staff, and between the coordinators of the management system and other interested parties. Interested parties include customers, suppliers, regulatory bodies and any community that may be affected by the Contractor's operations.

Internally all staff have a role to play, whether merely living out the CMS Policy or making day to day use of management system documentation (usually in the form of policies, procedures and work instructions).

Communication to both internal and external parties needs to be planned and methods established to improve

its effectiveness.

Communication can take many different forms. Typical types of communication include; awareness training, agendas, meetings, minutes, notices, memo's, schedules, letters, faxes, emails, voice calls, video or audio recordings, posters, banners, billboards, signs, websites, etc.

Guideline for Implementation

A well structured communication plan should remove all ambiguity of what's happening in the Contractor's organisation by clearly identifying standard communication issues and the preferred medium of communication.

A Communication Plan could include

- a list of required communication types based on legislative requirements or internal administrative needs
- for each type of communication:
 - the recipients (internally this could be certain management, supervisors or staff, or whole divisions and departments; externally this could be customers, suppliers, regulatory bodies and any community leaders)
 - frequency if required (e.g. daily, weekly, monthly, quarterly, etc.)
 - type of communication
- Conduct regular reviews of the "Communication Plan" ensuring continuing suitability

6.5 Operational Control

The Contractor shall document all those key processes identified that impact on SHEQ matters, including:

- i descriptions of product/service characteristics;
- ii use of CMPs together with SOPs/work instructions, as required;
- iii operation of required construction equipment; and
- iv identification and traceability of product and service.

The methods used for project management of construction works shall be defined (including handover of plans, site meetings, systems audits, inspections, technical reviews, etc.).

Requirements Guideline

Operational control governs the execution of the management system in the field (on the construction works site and related activities). The system has been planned to use documented procedures, work instructions and the CMPs to ensure that all work complies with customer and legislative requirements in terms of: safety, health, environmental and quality matters.

Operational control applies to all identified management system elements that:

- identify product requirements;
- define processes;
- manage resources; and
- ensure traceability of nonconformity.

Processes used to manage projects are defined in the CMPs.

Guideline for Implementation

The CMPs should contain all construction processes for the construction works site and related activities. This lays out the key processes including receipt of plans, site establishment, construction, site meetings, inspections, etc.

CMPs are covered in more detail under 5.2 *Construction Management Plan*.

6.6 Purchasing

Formal management of the purchasing process shall be defined, including:

- i supplier approval;
- ii supplier specifications used;
- iii placing of orders;
- iv receiving and validation methods; and
- v supplier performance management.

Records shall be maintained.

Requirements Guideline

The requirement aims to ensure that the purchasing process is efficient and effective. This means that clear unambiguous purchasing processes are established, that nonconformity is reduced by only appointing competent suppliers, and that supplier performance is managed to ensure consistency.

The "supplier" can be an entity that supplies general goods and services to the Contractor, or a sub-contractor entrusted to provide product or services relevant to the project deliverables on behalf of the Contractor.

The process used to conduct purchasing will be documented as a procedure.

Guideline for Implementation

The effective management of sub-contractors and suppliers is vital to the success of the construction process.

Identify what key services and products are frequently required, and then select appropriate sub-contractors and suppliers based on those key services and products.

Conduct a formal evaluation on the key sub-contractors and suppliers to ensure that they have the ability to supply products and services according to your needs. You can use a simple checklist for this.

Compile an "Approved Suppliers List" which would only include sub-contractors and suppliers that have met your evaluation criteria. The "Approved Suppliers List" applies to operations on all construction works sites and related activities.

Record supplier performance in terms of nonconformity or non-delivery by means of the process for control of nonconformity in 6.7 *Control of Nonconformity*. Regularly review supplier performance using records of nonconformity raised. Decide your tolerance level of supplier nonconformity in a 12 month period - is it one or none. Re-evaluate suppliers who perform outside your tolerance and determine action appropriately, which could be a warning letter or notification of removal from your "Approved Suppliers List".

Review and update the "Approved Suppliers List" quarterly to ensure that all the information of the sub-contractors and suppliers is relevant.

Ensure that all purchase orders raised include detailed and complete purchase requirements to ensure that the sub-contractors and suppliers understand what you want, and are aware of their obligation to provide products and services that meet your SHEQ requirements.

When the products or services are delivered conduct an inspection of the product or service received to ensure that it complies with your specification or requirements.

6.7 Control of Nonconformity

The Contractor shall identify, document and control all nonconforming products or operations to ensure that they are rectified and that actions to eliminate the nonconformity are recorded.

The Contractor shall document methods of emergency preparedness and response for health and safety and for environmental issues. This should include responses to emergency situations and prevention of further health and safety or environmental consequences.

The Contractor shall conduct incident investigations for health and safety and for environmental incidents and document corrective/remedial actions.

Contractors shall document a procedure that details how non-conformances are controlled.

Records shall be maintained.

Requirements Guideline

Nonconformity refers to non-compliance of a product or operation to any safety, health, environment or quality requirement. Once identified the non conforming item should be isolated from conforming items to prevent accidental use. Following this the item should be reviewed to decide what action is necessary to return it to conforming or to discard it completely.

For safety, health and environmental nonconformity this requirement relates to non-conformance to incident prevention and safe operating procedures detected prior to an incident.

Where a safety, health or environmental incident occurs, this is seen as a special nonconformity and the Contractor must have an emergency preparedness and response plan in place. This plan should address all types of incidents as defined in legislation and should include an organised and managed response to mitigate the consequences. A formal investigation follows any such incident to determine the facts surrounding it, and corrective, remedial and preventive action will be applied to ensure that the cause is eliminated and that future similar incidents do not occur.

Guideline for Implementation

Non-conforming product or Non-compliance with safety procedures and protocols may come to light at any stage in the business process e.g. receiving supplier product, conducting site or safety and health inspections, audits, or simple observation.

Once discovered it is vital that the Nonconformity be clearly identified (labelled "do not use" or "unsafe") and segregated wherever possible to prevent inadvertent use. All instances of Nonconformity must be recorded so that they provide a history for later Corrective Action analysis (see 7.4.2 *Corrective Action*). It is sound management to cost these Non-conformances to quantify the financial magnitude of them. It will also justify any later Corrective Action to prevent them from happening again.

With product Non-conformances there are only three responses: scrap the product, rework the product back to its original specification or apply to the Customer for concession to accept the product "as is". After you have decided on a suitable response and taken action the outcome must be formally verified.

From a safety, health and environmental perspective procedures need to be developed to detail how emergency situations are responded to. It is good practice to periodically test these procedures from a training and effectiveness perspective. Typically emergency situations may include;

- serious injury or death;
- fires and explosions;
- services being cut, e.g. electricity, water, etc.;
- equipment failure; or
- labour unrest, e.g. strikes.

In response to safety, health and environmental incidents a formal incident investigation process should be followed to investigate and analyse the incident. All incidents need to be investigated. Take care not to under investigate incidents. Those responsible for carrying out incident investigations must be competent.

7. MEASUREMENT, MONITORING AND IMPROVEMENT

7.1 Measurement and Monitoring

The Contractor shall establish, implement and maintain procedures to measure and evaluate compliance to:

- i legal requirements;
- ii customer requirements (including customer satisfaction);
- iii product specifications;
- iv safety, health, environmental and quality management plans; and
- v calibration parameters for inspection measuring and checking equipment.

Contractors shall document planned inspections on Inspection and Test Plans (ITP's). These typically will define: inspection hold points, inspection responsibilities, inspection records and inspection specifications.

Requirements Guideline

Measurement and monitoring forms the basis of the CMS's performance management, and is necessary to verify compliance to requirements.

Measurement and monitoring typically takes the form of on-site inspections and physical measurements using checklists against CMPs or other requirements. Where determination of conformance is not under the direct control of the Contractor, assurance of conformity is provided by suppliers' letters of compliance, laboratory test results, calibration certificates, etc.

Guideline for Implementation

Measurement and monitoring requires the implementation of some key interventions to ensure that requirements are achieved in the delivery of services to the customer and to monitor and measure the performance of your CMS.

The CMP should include measurement and monitoring arrangements, identifying what areas require interventions.

Measuring and monitoring activities include:

- **audits** to measure the performance of the CMS (refer to 7.2 *Internal Audit*);
- **inspection and testing** which verify compliance of products and construction works site operations and related activities with safety, health, environment and quality requirements (measurement criteria and methods are defined in the CMPs and in inspection and test plans). Construction works site and related activity inspections should be planned i.e. identified in the project schedule and prepared using checklists; and
- **calibration** verifies and corrects measuring devices used in inspection and testing (criteria are international standards and metrics - a millimetre is a millimetre no matter what country you're in). Measuring devices should be recorded on a register with unique numbers (could be asset numbers from the asset register). The register indicates calibration intervals and due dates for calibration. Calibration laboratories must provide calibration certificates which must be kept on file for traceability.

Inspection and Test Plans (ITP's) should be used to define the process and measurement criteria that will be used to determine whether a particular construction process/product conforms to specified safety, health, environment and quality requirements. Non-conformance to the specified criteria must be dealt with according to either the process of 6.7 *Control of Nonconformity* or 7.4.2 *Corrective Action*. Results must be recorded.

Inspection and Test Plans:

The content of ITPs is influenced by contract drawings, specifications and conditions, and the construction management plan (and other sources such as: standards and legislative requirements). The ITP should consist of the following:

- detail of inspections and tests required, including hold and witness points; sampling and testing methods; and frequency of sampling/testing;

- identification of acceptance criteria; the target range of values or characteristics meant to be achieved;
- identification of responsibilities for inspection and testing;
- identification of authority for ITP approval and product/service acceptance; and
- detail of the records to be provided e.g. reports and completed checklists.

7.2 Internal Audit

The Contractor shall use trained and competent internal auditors to plan and conduct documented audits to confirm that the CMS conforms to planned arrangements and is effectively applied and updated regularly.

An Audit Program shall be implemented addressing key processes to be audited and considering prior audit outcomes.

The CMR shall ensure that findings raised during audits are followed up and closed out timeously.

Contractors shall document a procedure that details how Internal Audits are managed.

Records shall be maintained.

Requirements Guideline

Internal auditors are required to check actual application of system procedures; i.e. are they being understood and followed; can they be improved? To be effective these audits need to be conducted by trained and competent auditors. Auditor competence should be evaluated from time to time. Audits must be thoroughly planned to ensure that compliance of all the requirements shall be assessed.

Guideline for Implementation

An internal audit is an excellent tool through which you measure the performance of your CMS.

You should compile an annual "Audit Program" to identify the different types of audits and dates when these audits will be conducted

A few weeks prior to each scheduled audit you should produce an "Audit Plan" detailing the scope and objectives, and the criteria to be assessed. Auditors should compile an "Audit Checklist" based on the audit criteria and conduct the audit on the scheduled date using the "Audit Checklist" as a guide.

For each Nonconformity or Preventive Action identified during the audit the auditor raises documented findings reports and recommends Corrective Action to be taken. Post audit the auditors compile and present an "Audit Report" to the department/construction works site or related activity manager. Auditors will arrange an appropriate date to conduct a follow up to close out "Audit Findings".

Audit results must become input to Management Review meetings (see 7.3 Management Reviews).

You should identify people with the potential to become auditors and who have considerable knowledge of the administrative departments or construction works site or related activity operations to be audited. Send them on formal auditor training and ensure they are suitably competent to perform as auditors.

7.3 Management Reviews

The Contractor shall conduct Management Reviews at least annually to ensure the continuing suitability, adequacy and effectiveness of the CMS. The inputs to the Review should include:

- i analysis of Non-conformances, corrective, remedial and preventive actions;
- ii analysis of internal audits;
- iii analysis of external audits;
- iv customer feedback (including complaints);

- v performance to stated objectives;
- vi follow-up from previous Management Reviews;
- vii improvements and changes that could affect the CMS;
- viii review and on-going applicability of the CMS Policy; and
- ix outputs of the Review including actions shall be documented.

Requirements Guideline

Management Reviews are periodic formal system reviews to check that the system is achieving its stated objectives. To answer this effectively objective review of data should be undertaken. Requirement 7.3 lists input data to the review process.

Once discussed the resulting actions should be documented for implementation and later review.

Guideline for Implementation

Management Reviews are to be conducted by the Contractor's top management and so be focussed on those topics that warrant their involvement. Typically it is organised and chaired by the senior management representative. It will be conducted at least annually, preferably six monthly.

The agenda and contributions should be compiled (per the minimum requirements detailed in this Standard) in good time and circulated prior to the meeting for review to the meeting members. It is important that all representatives of top management attend and participate in the Management Review as this indicates their commitment to the CMS.

During the Management Review ensure that the actions agreed upon are specifically minuted (the action, planned completion date and responsibility).

Ensure that thorough records are kept of the Management Review process e.g. agenda, contributions and minutes (with detail actions recorded). Post the Management Review the Management Representative can assist in following up on the agreed actions with the responsible managers by the due dates.

7.4 Improvement

7.4.1 Continuous Improvement

The Contractor shall define and document processes and plans to continually improve the effectiveness and efficiency of the CMS.

Records shall be maintained.

Requirements Guideline

The requirement means that the process of Continuous Improvement must be formally planned and executed. This would be addressed by the application of the CMS policy, objectives, audit outcomes, Management Reviews, Corrective and Preventive actions.

Guideline for Implementation

The proposition here is that if you use your CMS effectively Continuous Improvement will result. The process of collecting the CMS output data, analysing it and deciding on actions needs to be documented in a Continuous Improvement procedure.

7.4.2 Corrective Action

The Contractor shall identify and correct Non-conformances to mitigate their safety, health, environmental and quality impact. Corrective Action requirements will address:

- i review of the Non-conformance (including customer complaints, remedial actions and incidents);
- ii identifying the root cause of Non-conformances;
- iii detailing actions required to address Non-conformances;
- iv documenting actions to prevent recurrence; and
- v review of Corrective Actions taken.

Contractors shall document a procedure that details how Corrective Actions are managed.

Records shall be maintained.

Requirements Guideline

Corrective Action is the process to fix Non-conformances so that they do not reoccur. To arrive at meaningful Corrective Action a clear analysis and understanding of the cause of the Non-conformance is required. Once analysed, detail Corrective Actions together with responsibilities and planned completion dates on a corrective/remedial action plan.

Ensure that Corrective Actions are not closed out until an impartial review of their completion is conducted (physically and via documentation and records).

Guideline for Implementation

Corrective Action is one of the Continuous Improvement processes. It should be a formal problem solving process to understand non-conformances and how they can be prevented from recurring. The outcome may require changes to documentation or work methods, or training.

Agreed Corrective Actions once implemented should be monitored on an ongoing basis to confirm that Non-conformances have been effectively dealt with.

It must be noted that not all Non-conformances require Corrective Actions

7.4.3 Preventive Action

The Contractor shall evaluate and document the actions required to eliminate potential Non-conformances.

Preventive Action requirements will address:

- i review of the potential Non-conformance;
- ii identifying the potential causes of Non-conformances;
- iii detailing actions required to address potential Non-conformances;
- iv documenting actions to prevent potential occurrence; and
- v review of Preventive Actions taken.

Contractors shall document a procedure that details how Preventive Actions are managed.

Records shall be maintained.

Requirements Guideline

Preventive Action differs from corrective/remedial action in that its objective is to prevent the Non-conformance from occurring in the first place. To achieve this management must be able to predict a situation where a Non-conformance might occur. This can be done via review of data and trending the results or by knowledgeable staff with insight agreeing on Preventive Actions.

Guideline for Implementation

Preventive Action is another of the Continuous Improvement processes. It is a lot more challenging than the Corrective Action process as the need is to predict potential Non-conformances before they happen.

This can be seen as a hazard analysis and risk management process (be they safety, health, environment or quality). This process can be accommodated in the planning activity and documented in the CMPs.

APPENDICES

A1. Audit Checklist

The audit checklist has been designed to guide and support the audit process, and not to be a definitive checklist. It can also be used by organisations as a guide when developing their Construction Management Systems (CMSs).

Process Requirement	Clause	Auditor		Site		Mandatory	Score			
		Company		Date			0	1	2	
		Auditee		Not compliant	Partially compliant					Fully compliant
4. Construction Management System										
General	4.1	i	Have key business processes needed for the CMS been identified (e.g. a populated business process plans listing all processes and their inputs, outputs, etc)?		M					
		ii	Have you documented the processes (e.g. procedures; flow-charts; work instructions)							
CMS Manual	4.2	-	Is there a documented CMS Manual?		M					
		i	Does the CMS Manual define the scope of your CMS with exclusions and justifications for them?							
		ii	Does the CMS Manual include documented procedures or make reference to them?		M					
		iii	Does the CMS Manual describe the interaction of the CMS processes?		M					
		-	Does the CMS Manual provide context to your business? e.g. nature of business, overview of products/services, target market (customers), service delivery arrangement, identification of organisation structure, etc?		--					
Policy	4.3	-	Is the CMS Policy defined and approved?		M					
		i	Is the policy appropriate to your organisation and your business?		M					
		ii	Does it include commitment to complying with cidb CMS Standard?		M					
		iii	Does it stress the importance of the customer and meeting their needs?		M					
		iv	Does it address safety, health, environmental and quality requirements?							
		v	Does it address continuous improvement of the CMS?		M					
		vi	Has the policy been communicated (see below):							
			• to all management?		M					
			• to all staff?		M					
		vii	Is the policy being regularly reviewed to ensure ongoing suitability?		M					
-	Is the policy visually/graphically displayed in prominent locations in the workplace?		--							
CMS Project Objectives	4.4	-	Have high level construction management objectives been documented?		M					
		-	Have project work/operational specific objectives been documented?		M					

		-	Do objectives meet the S.M.A.R.T criteria:	M			
		i	Are the objectives specific about what must be achieved?	M			
		ii	Can the objectives be measured/quantified as a numeric/percentile value reflecting quality, quantity or time?	M			
		iii	Are the objectives attainable, i.e. can they really be achieved or are they "pie in the sky"?	M			
		iv	Are the objectives realistic in terms of current resources/capability?	M			
		v	Are there time based criteria/deadlines specified for each objective (e.g. daily or in 2 weeks time)?	M			
		-	Are objectives being reviewed regularly?	M			
		-	Are objectives visually/graphically displayed e.g. on notice boards, web pages?	--			
Control of Documents	4.5	-	Is there a documented procedure covering the requirements of 4.5 <i>Control of Documents</i> ?	M			
		i	Are controlled documents that are in use approved by the responsible manager/approval authority?	M			
		ii	Are document changes identified, assessed for possible risk/impact on safety, health, environmental and quality requirements and then approved before being re-issued?	M			
		iii	Is distribution controlled (the right people have the right documents and obsolete documents are not in circulation)?	M			
		-	Is each controlled document given a unique document ID number?	--			
		-	Are versions controlled?	M			
		-	Is there a Master List identifying all documents to be controlled?	--			
		-	Are documents available where required/on site?	M			
		iv	Are electronic document backup/restore processes in place and are they being followed as required?	M			
		v	Are all documents clear and legible?	M			
		-	Are standard templates used, e.g. layout/structure, fonts, logo, etc?	--			
		vi	Are documents of external origin in use and are they controlled for distribution (e.g. drawings, building plans, customer specifications, etc.)?	M			
		Control of Records	4.6	-	Is there a documented procedure covering the requirements of 4.6 <i>Control of Records</i> ?	--	
-	Are standard record formats in use?			M			
i	Is storage used adequate to protect the records and ensure the records are easily retrievable?			M			
	Are electronic record backup/restore processes in place and are they being followed as required?						
	Is there clear authority as to who may dispose of records?						
ii	Do the record retention periods comply with legislative requirements?			M			
5. Planning							
Management System Planning	5.1		Have policies, procedures, construction management plans (CMPs) and standard operating procedures (SOP)/work instructions (necessary to comply with customer requirements, legislation and the requirements of this standard), been documented?				
Construction Management Plan	5.2	-	Have CMP's for each been documented and approved for each project?	M			
		i	Do the CMP's identify their purpose and scope?	M			
Construction Management Plan	5.2	ii	Do the CMP's identify resources required, including competencies/training required for personnel to perform their work?	M			
		iii	Are applicable customer and legislative requirements detailed in the CMP's?	M			

		iv	Are plans (project plans, process plans, sub-plans) identified in the CMP's where necessary?	M			
		v	Are safety, health, environment and quality objectives specified in the CMP's?	M			
		vi	Are responsibilities and authorities for site personnel and sub-contractors/suppliers defined in the CMP's?	M			
		vii	Have the outcomes of hazard identification and risk assessments (according to legislative requirements) been documented in the CMP's?	M			
		viii	Have process controls been defined (e.g. in sub-plans) to deal with the work required and any risks/hazards involved?	M			
		-	Have methods for controlling purchasing on the construction works site or related activity been defined in the CMP's?	--			
		-	Have methods for handling and preservation of product been included in CMP's?	--			
		ix	Have methods for controlling nonconformities, Corrective Action and Preventive Action been described in the CMP's?	M			
		x	Do the CMP's include interaction of processes diagrams explaining how the key processes interrelate?	M			
		xi	Have construction works site or related activity methods for Document Control and Record Control been defined in the CMP's?	M			
		xii	Have methods to monitor and audit implementation of the plans been documented in the CMP's?	M			
		Legal and Other Requirements	5.3	-	Has the Contractor identified and determined the impact of legislative and statutory obligations on the safety, health, environment and quality of their processes and products/services?	M	
-	Have customers provided info on legal requirements?			--			
6. Implementation and Operation							
Roles, Responsibilities and Authorities	6.1	-	Has a Construction Management Representative (CMR) been appointed from the members of the management team?	M			
		-	Does the CMR regularly report the status of the system to the management team?	M			
		-	Does the CMR promote awareness of the CMS throughout the organisation?	M			
		-	Are roles, responsibilities and authorities of all personnel that have an impact on SHEQ defined and communicated?	M			
Competency, Awareness and Training	6.2	-	Have competencies been defined for all staff that have an impact on CMS issues (i.e. safety, health, environment or quality)?	M			
		-	Competencies could typically be defined as:	--			
			<ul style="list-style-type: none"> generic non-critical competencies e.g. basic computer use, office cleaning, etc? specific SHEQ critical competencies requiring NQF qualifications/certifications, e.g. design/engineering, surveying, preparation of fall protection plans, erection/stripping of formwork, first aid, driving, use of fire equipment, welding, etc? 	M			
		-	Is awareness of the CMS being conducted and are staff aware of their responsibility towards it?	M			

Competency, Awareness and Training	6.2	-	Is awareness material being used to enhance the message e.g. posters, badges, buttons, slide shows, etc?	--			
		-	Is Training planned (including awareness)?	--			
		-	Are training needs being assessed?	M			
		-	Are records of training and awareness available and adequate?	M			
Other Resources	6.3	-	Have resources (other than human resources) required to meet legislative and customer requirements been identified and provided?	M			
		-	Have processes regarding these other resources been included in the operational business process plans?	--			
		-	Have preventive maintenance plans been developed and implemented for:	--			
		•	permanent facilities (head office, stores)?	--			
		•	temporary facilities (site, site office)?	--			
		•	heavy plant and equipment?	--			
		•	tools?	--			
		•	safety equipment (fire equipment; protective clothing, barricades, etc)?	--			
-	Are records of maintenance inspections and Corrective Action available?	--					
Internal and External Communication	6.4	-	Is there a documented communication plan?	--			
		i	Are there documented records of internal communications with staff regarding the policy, procedures and objectives of the CMS?	M			
		ii	Are there documented records of external communications with customers, suppliers, visitors and other affected parties?	M			
Operational Control	6.5	i	Are descriptions of product/service characteristics included in the relevant documented procedures?	M			
		ii	Are operational methods described in work instructions (addressing SHEQ requirements) where required?	M			
		iii	Are documented operational instructions for required construction equipment available and do they address SHEQ requirements?	M			
		iv	Have methods for identification traceability of products/services been adequately identified in procedures?	M			
		-	Are project management methods defined and in use (e.g. project plans, etc.)?	M			
Purchasing	6.6	-	Is there a documented procedure covering the requirements of 6.6 <i>Purchasing</i> ?	M			
		i	Is there a process in place for supplier approval?				
		ii	Are supplier specifications defined?	M			
		iii	Is there a formal purchasing method in use for placing orders with suppliers?	M			
		iv	Is there a formal purchasing method in use for receiving and checking of goods?	M			
v	Is there a formal supplier performance management process?	M					
Control of Non-conformity	6.7	-	Is there a documented procedure covering the requirements of 6.7 <i>Control of Nonconformity</i> ?	M			
		-	Are there emergency preparedness and response methods defined for incidents related to safety, health and environment?	M			
		-	Have formal incident investigations been conducted?	M			
		-	Are there documented corrective/remedial actions?	M			
		-	Are nonconformities registered/recorded?	M			

7. Measurement, Monitoring and Improvement						
Measurement and Monitoring	7.1	-	Are there formal documented methods to measure and evaluate compliance to:	--		
		i	• legal requirements?	M		
		ii	• customer requirements?	M		
		-	• customer satisfaction?	M		
		iii	• product specifications?	M		
		iv	• construction management plans (CMPs)?	M		
		v	• calibration parameters?	M		
		-	Are there Inspection Test Plans (ITP's)?	M		
Internal Audits	7.2	-	Is there a documented procedure covering the requirements of 7.2 <i>Internal Audits</i> ?	M		
		-	Are auditors trained and competent and is competence reassessed over time?	M		
		-	Is there a formal audit programme?	M		
		-	Are audit findings followed up and closed out timeously?	M		
		-	Is there a documented procedure detailing how audits are managed?	M		
Management Review	7.3	-	Is there a documented procedure covering the requirements of 7.3 <i>Management Review</i> ?	M		
		-	Are Management Reviews planned and conducted?	M		
		i-v	Has analysis of Management Review inputs been conducted as per the standard requirements for inputs (i) through (v)?	M		
		vi	Have actions from previous Management Reviews been followed up?	M		
		vii	Have improvements and changes that could affect the CMS been documented?	M		
		viii	Has the CMS Policy been reviewed?	M		
		ix	Has the output from the review (including actions) been documented?	M		
Improvement	7.4.1	-	Have processes and plans for Continuous Improvement of the CMS been defined and documented?	M		
	7.4.2	-	Is there a documented process to review nonconformity and address root cause as per the requirements of 7.4.2 <i>Corrective Action</i> ?	M		
		i	Are nonconformities being reviewed?	M		
		ii	Are root causes identified?	M		
		iii	Are detailed actions recorded that are required to address the nonconformity?	M		
		iv	Are detailed actions recorded regarding prevention of the nonconformity from recurring?	M		
		v	Are Corrective Actions that were taken reviewed to verify completion and effectiveness?	M		
	-	Have Corrective Actions been registered?	M			
	7.4.3	-	Is there a documented process to predict nonconformity and address potential cause as per the requirements of 7.4.3 <i>Preventive Action</i> ?	M		
		i	Are potential nonconformities being assessed?	M		
		ii	Are potential causes of nonconformity identified?	M		
		iii	Are detailed actions recorded that are required to address the nonconformity?	M		
		iv	Are detailed actions recorded regarding prevention of the nonconformity from occurring?	M		
		v	Are Preventive Actions that were taken reviewed to verify adequacy/effectiveness?	M		
	-	Have Preventive Actions been registered?	M			

Audit Scoring Regime	
There are 92 checklist items which if fully compliant give a score of: 184 points	
Each checklist item is only scored during the audit where the auditor determines from the evidence gathered whether it is a MAJOR non-conformity (unacceptable), MINOR non-conformity (borderline) or COMPLIANT respectively.	
The auditor then ticks off the appropriate column on the checklist i.e. either NOT COMPLIANT, PARTIALLY COMPLIANT, FULLY COMPLIANT which can be seen as MAJOR, MINOR or COMPLIANCE respectively.	
MAJOR Scores a 0	the finding is MAJOR , in that the cidb CMS standard requirement has not been addressed by the system; or the documented system requirements have not been implemented at all (there may be no MAJOR findings)
MINOR Scores a 1	the finding is MINOR in that a cidb CMS standard requirement has been addressed by the system documentation but is inadequately defined to ensure compliance to the cidb CMS standard requirement; or where the documented requirements is compliant to the cidb CMS standard requirement but has not been fully implemented (there may only be a maximum of 30 MINOR findings, and no more than 6 per main element)
COMPLIANCE Scores a 2	the finding is COMPLIANCE in that the documented system requirement fully meets the cidb CMS standard requirement and the documented requirement has been fully implemented and is consistently maintained (there must be at least 64 items in full compliance)

A2. Construction Management Plan

The recommended structure/content outline for a comprehensive construction works project specific Construction Management Plan (CMP) follows.

1. Introduction

1.1. Purpose of this Construction Management Plan

Explains the need for the plan and the use it is to the project.

1.2. Scope of the Construction Management Plan

1.3. Scope of the Construction Works Project

Describes what is being constructed, why it is being constructed (its purpose), where it is being constructed and for whom it is being constructed.

1.3.1. Customer Requirements

State how the customer requirements will be met or refer to the relevant section of this CMP. Include reference to any customer documentation.

Customer Reference	Requirement	Where it is addressed in this CMP

1.4. Construction Management System Policy

Insert the approved CMS Policy here.

2. Customer and Legislative Requirements

2.1. Applicable Legislation and Standards

List all the legislation and standards by title, act/reference number and year of enactment/publication.

You can include a brief purpose statement under each document title to explain its role.

2.2. Customer Approvals for Construction Work

This section describes the process and responsibility for:

- Sign off of this CMP;

- Sign off of the Hazard Identification and Risk Assessment (HIRA); and
- Sign off of the construction management system (CMS) procedures for Emergency Procedures, Control of Non-conforming Product, Corrective Action, and Preventive Action.

2.3. *Local Authority Approvals for Site and Construction Work*

- Explain the approvals/consultations required for this project i.e. regulatory body and any other agencies who must sign off on plans and/or give specific input to these plans. Identify construction phase and post-construction phase requirements.
- Who is the final approver within the organisation?
- Identify other regulatory authorities and the approvals required in the table below. Under "Responsibility" indicate your organisation, a partner, a sub-contractor, or a combination. Legislative/Regulatory Construction Management Plan requirements.

Authority/Agency	Approval/Consultation Required	Responsibility

In addition to the above, the following Contractor permits/licenses required:

Legislation and Responsible Authority/Agency	Provision of the Legislation	Licence or Action Required to Gain Approval

2.4. *High Level Project Plan*

2.4.1. *Phase Deliverables*

Activity (Phase/Step)	Deliverable Description	Timing

2.5. *Project Gantt Chart*

Gantt chart.

2.6. *Project Team*

2.6.1. *Organisation chart*

Insert an organogram diagram appropriate to your project.

2.6.2. *Roles and Responsibilities*

Identify each role-player using the following format, and include as appropriate: the project manager; architect/designer; construction manager; inspectors, sub-contractors; site foreman; and general responsibilities of all other site employees.

Project Manager		
Role Description: The Project Manager responsibilities and authorities are defined here.		
Name: Name Surname	Telephone: Fax: Mobile: Email:	

2.7. *Safety and Health Committee and Safety Representatives*

Define their Roles and responsibilities.

2.8. *Project SHEQ Objectives*

High level project objectives e.g. budget, completion time, number of injuries, number environmental incidents.

Quality, Health and Safety, and Environmental Objectives			
Analysis Perspective	Objective	Key Performance Indicator	Target
Safety and Health			
Environmental			
Quality			

3. *Construction Management*

3.1. *Competence, Awareness and Training*

Briefly describe processes (training needs analysis/competency assessments) and refer to applicable records and forms as an appendix.

3.2. *Communication, Participation and Consultation*

Describe communication arrangement for the following indicating when it might be required, who it concerns and how it will be communicated.

3.2.1. *Internal Communication*

3.2.2. *External Stakeholders and Community Consultation*

3.2.3. *Public Availability of Documents*

3.2.4. *Advertisement of Forthcoming Works*

3.2.5. *Activity Internet Site*

3.2.6. *Construction Complaints Management*

3.2.7. *Communication with Media*

3.3. *Handling, Storage, Packing, Preservation, and Delivery of Materials*

Define methods for handling and preserving any materials stored on site: site office, shed, storage tanks, bins, yard, etc.

3.4. *Identification and Traceability*

Applies to purchased materials. Describe methods to be used and where it applies.

3.5. *Purchasing and Supplier Management*

Refer to your purchasing procedure.

3.6. *Control of Documents and Records*

Refer to your procedures and include the project specific Master List and record schedule.

3.7. *Quality Management*

3.7.1. *Inspection of Key Quality Characteristics*

Construction Specifications and test/inspection criteria.

3.7.2. *Control of Monitoring and Measuring Devices (if required)*

List of devices, verification methods, calibration laboratory and schedule.

3.8. *Safety and Health Sub-plans*

Identify specific safety and health arrangements using this format (shown below) for each safety/health aspect applicable to the specific operations of this project.

Sub-plan Title e.g. Personal Protective Clothing and Equipment	
Objective	
Statutory Requirements	
Performance Criteria	
Risk Control	
Monitoring & Reporting	
Corrective Actions	

3.9. Environmental Sub-plans

Identify specific environmental aspect management arrangements using the same format as 3.8 above for each environmental aspect applicable to the specific operations of this project.

3.10. Incident Investigation

Describe your procedures.

3.11. Project Change Control

Describe your procedures.

3.12. Control of Non-conforming Product

Describe your procedures.

3.13. Corrective Action

Describe your procedures.

4. Auditing, Monitoring and Review

4.1. Monitoring Program

Reference applicable schedules and checklists for each of the following:

- 4.1.1. Routine Daily Walkthrough Inspections
- 4.1.2. Weekly Field Inspections & Reports
- 4.1.3. Monthly Field Inspections & Reports

4.2. Audits

If any audits of the Site will occur identify the processes that will be followed for in terms of:

- 4.2.1. Client Audits
- 4.2.2. Approval Authority Audits
- 4.2.3. Internal Audits

Refer to your procedure and provide a schedule/plan.

4.3. Project Reporting and Recording

Identify responsibility, format/template in and when due dates.

4.4. Performance Management

Objectives, indicators, baselines and targets.

4.5. Management Review of CMP

Provide a schedule and agenda.

Best Practice

Contractor Recognition Scheme



Construction Management Systems;
The cidb Standard