DHET New Universities Project Management Team

Framework for the determination of professional fees for consulting services

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Introduction

Methods of payment for professional services

Consultants providing standard professional services associated with building works and engineering works can be paid for their services on the basis of one or more of the following:

- **Priced contract with activity schedule**: lump sums for completed activities or tasks
- **Time based contract:** time properly spent on the work multiplied by an agreed staff rate
- **Target contract**: time properly spent on the work multiplied by an agreed staff rate plus the difference between an agreed lump sum price (target) and the total time charge at the completion of the service
- **Percentage fee contract:** a percentage of the construction cost based on the budget for the works or the value of the contract at the time that the contract with the contractor is concluded or upon the value of the contract upon completion.

Expenses such as printing, modeling, travelling and accommodation costs may either be included in the time charges, lump sums or fee percentages or paid for separately.

NOTE 1 The NEC3 Professional Service Contract makes provision for the following pricing options:

Option	**Prices**	**Price for Services Provided to Date**	**Typical usage**
Option A Priced contract with activity schedule	The lump sum prices for each of the activities on the Activity Schedule	The total of the Prices for the activities which have been completed	Option A is normally used when the scope of services is well known and capable of being priced with a high degree of accuracy. Once the Consultant has priced the service described he carries the full risk for doing the work for that price.
Option C Target contract	The lump sum prices for each of the activities on the Activity Schedule	The Time Charge for the work which has been completed	Option C is normally used when the Employer wishes to incentivize the Consultant to perform better during the life of the contract by receiving a share of the savings if he does the work for less than the agreed sum (the target). Equally if the payments to the Consultant exceed the original agreed sum he pays the Employer towards the cost overrun. This type of contract is generally used when the original price (the target) can be determined with a fairly good degree of certainty and the parties are prepared to work closely together to better the target.
Option E Time based contract	The Time Charge	The Time Charge for the work which has been completed	Option E is normally used when the scope of work is not well known at time of award and therefore cannot be priced accurately, or is likely to change considerably during the life of the contract. The Consultant is paid for the time his staff spends properly on the services, plus expenses itemised in the contract. The parties are required to continuously forecast the final outcome to avoid end of contract surprises, but in effect the Employer carries most of the risk of the Consultant's productivity and this form of contract needs to be well managed by the Employer.
Option G Term contract	The Time Charge for items described as time based on the Task Schedule and . the lump sum price in the Task Schedule for each other item	For each Task, the total of the Time Charge for work which has been completed on time based items on the Task Schedule and a proportion of the lump sum price for each other item on the Task Schedule which is the proportion of work completed on that item.	Option G is a term contract in which various items of work are priced or stated to be on a time basis. Thus the risk of being able to perform the instructed Tasks at the agreed prices or staff rates is largely borne by the Consultant, whilst the Employer retains control over the individual Tasks to be carried out.

NOTE 2 The amount due in terms of the NEC3 Professional Service Contract also includes the expenses incurred by the consultant in providing the services. The items of expenses are defined in the Contract Data. Only expenses stated in the Contract Data are payable in addition to the price for services provided to date in all payment options.

NOTE 3 The percentage of the construction costs can be used to estimate lump sum prices, based either on the budget for the works or the agreed amount for the construction of the works when the instruction to proceed with construction is issued.

Staff rates

There are three main drivers underpinning staff rates, namely expenses, billable hours and profit. Staff rates vary considerably depending upon factors such as location, experience, the supply of skills, overhead structures and profit expectations. The expenses of a built environment consulting company which undertakes all professional work with its own staff typically comprises:

a) the cost of employment of fee earning staff (i.e. professional and technical staff);
b) the cost of employment of non-fee earning staff (i.e. administrative staff); and
c) company overheads which may include:
    - telephones, cell phones and internet connectivity
    - rental of premises including water, electricity and rates
    - transport not directly covered by projects
    - paper, stationary and consumables
    - audit, bank charges, interest, insurance
    - marketing
    - office equipment
    - training and development
    - project direct expenses not recoverable; and
    - head office expenses; and
    - insurances.

Billable hours relates to staff utilisation which can vary considerably between different companies. A staff member can typically only work for 1760 hours per annum if the number of days in a year after weekends and public holidays and allowances for leave and sick leave are taken into account. However staff members cannot be fully employed for these hours as time needs to be allowed for non-productive activities relating to staff mentoring and training, continuing professional development, management of the practice, marketing and promotion, capacity building, etc. The staff utilization rate usually reduces with increasing seniority in a practice and is also dependent upon the continuity of the work load.

Detailed guidance on the build-up of hourly charge out rates can be obtained from the Department of Public Service Administration's Guide on Hourly Fee Rates for Consultants - see www.dpsa.gov.za/dpsa2g/documents/gics/GUIDE_CONSULTANT_FEES_JAN_2.pdf. .

The staff rates may include unrecoverable time e.g. all or some of the time expended in travelling to and from a site, meetings or any other activity associated with the provision of the service. In such cases, the rates need to be adjusted to accommodate unrecoverable time spent in connection with a project.

Estimating the quantum of professional fees

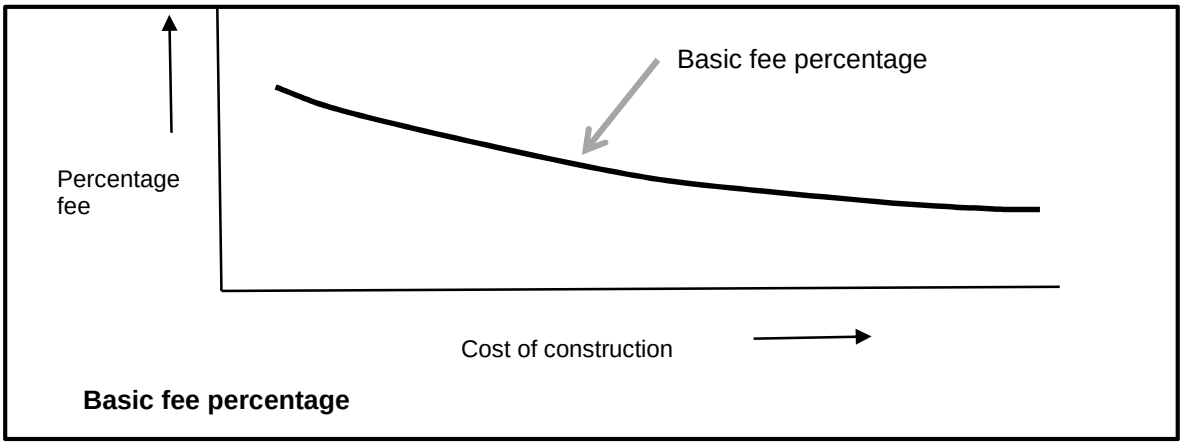
The total professional fee for an engineering and construction project can be estimated either on the basis of:

- the staff rates and the estimated number of hours or days to perform the tasks associated with a work plan; or
- a methodology which is based on a percentage of the construction cost.

Fixed fees can only be established at the outset of a project if the scope of the project, schedule for design approvals, the construction schedule and other variables can be determined with reasonable accuracy. Such information is most often not available at the outset of a project.

Time charges vary considerably between different geographical regions, levels of experience and seniority of staff. They can also be affected by requirements for staff to work overtime to meet employer demands.

A fee relating to a percentage of the cost of construction which reduces as the cost of construction increases allows a price to be established in the absence of the detailed information required to prepare a comprehensive estimate of the hours involved in a project and overhead costs to arrive at a fixed fee. This can then be converted into a lump sum.



Basic fee percentage

The basic fee derived from a standard curve needs to be adjusted to reflect:

- level of effort required in a particular project,
- the consultant's profit and overheads; and
- the consultant adjustment factor for the project in terms of the following formula:

Fee percentage applicable to a project = BPF x F_{LE} x F_{PO} x F_{CON}

where:

BPF is the basic percentage fee derived from a curve or a mathematical expression of a curve

F_{LE} is an adjustment factor that reflects the level of effort that is required which is made up by applying standard adjustments for different demands upon the required services and project specific factors that are finalized with the employer when the full scope of work is understood.

F_{PO} is an adjustment factor which takes into account the difference between the consultant's overheads and profit structure and the standardized value for overheads and profit upon which the basic fee percentage curve is based

F_{CON} is an adjustment factor made by the consultant to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

The fee payable in terms of the above formula allows a fee to be established after the award of a contract on a single or multi-discipline basis when the full scope is known on the basis of level of effort, based on commercial risk and efficiency considerations.

The basic fee percentage and the standard level of effort factors are different for different built environment professions. The non-standard level of effort factors need to be negotiated between the parties to a contract on a case by case basis against a standard checklist.

A consultant's staff falls into two categories of staff, namely professional and technical staff (fee earning) and support staff (non-fee earning staff such as those fulfilling administrative, clerical, accounting, IT support and secretarial functions). Support staff costs are recovered through overheads applied to professional and technical staff costs in the buildup of the time charges for technical staff. The average hourly time charges for professional and technical staff may be calculated by multiplying the average total annual cost of employment of technical staff by an overhead factor which includes profit divided by the number of available hours in a year (typically 1760 hours).

An average multiplier for overheads and profit is 16 c per hundred Rand of total annual cost of employment (or 2,815 times the total annual cost of employment) can be assumed. Accordingly, the adjustment factor F_{PO} is as follows:

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

The fee payable accordingly comprises the BPF and F_{LE} which are derived from this document. The F_{PO} and the F_{CON} are derived from tendered parameters and can result in an increase or decrease in the fee percentage applicable to a project.

Example:

If the total cost of employment is R 400 000 per annum and the cents per R 100 or part thereof of total employment is 16 c, the hourly staff rate is 16 / 100 /100 x 400 000 = R 640 per hour.

If on the other hand, the multiplier is 2.815 times the total cost of employment and a staff member on average works 1760 hours in a year, then the hourly staff rate = 2.815 x 400 000 / 1760 = R 640 per hour

If the BPF is 6.5%, the F_{LE} is agreed to be 1.15, the tendered cents / R 100 or part thereof of total cost of employment is 14.5 cents and the tendered F_{CON} is 0.9, the fee percentage applicable to the project = 6.5 x 1.15 x 14.5 / 16 x 0.9 = 6.10%

Framework contracts

The NEC3 Professional Service Contract (PSC) has a Main Option for a term contract (Option G) which makes provision for the issuing of task orders. These standard provisions for task orders enable "call offs" to be made as Option G requires such orders to include:

- a detailed description of the work required;
- either a priced list of items and the total of Prices or a forecast of the total of Prices for the order based on the provisions of the contract;
- the starting and completion dates for a task order; and
- the amount of delay damages for late completion.

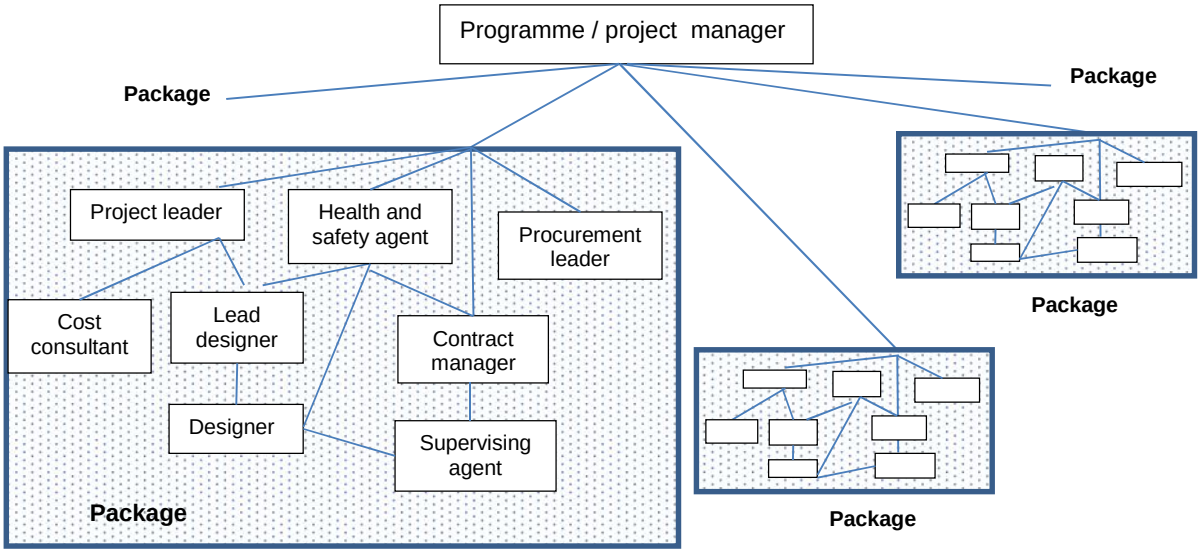
A Consultant is not permitted to start the task until a task order is received and is required to complete the task before the completion date. The Employer is not permitted to issue a task order after the end of the term of the contract.

It is possible to issue a task order for one or more stages in the delivery cycle (see Procurement and Delivery Management System for Infrastructure Projects). This can be done either on a time charge basis or on a lump sum basis whereby the lump sum is based on a percentage of the cost of construction or the estimated times required for the services multiplied by the staff rates.

Roles and responsibilities

The Standard Scope of Professional Services associated with the Delivery of a Package provides a scope of work for the functional roles described in the tabulation on the next page. There are many options available to an implementer in assigning functional responsibilities to particular persons (own staff or consultant). This ensures flexibility. For example, in some programmes of projects different persons will be assigned functional responsibilities for each of the identified roles. In other programmes it may be desirable to combine functional roles and responsibilities e.g. the project leader can also be the procurement leader or the same person can be appointed to function as

project leader, lead designer, designer and cost consultant or the contract manager and supervising agent



Designation	Overview of responsibilities
Programme / Project manager	Manage the implementation of a programme of projects / an independent project involving the delivery and / or planned maintenance of infrastructure in a manner that: a) enables both the implementer and its client to achieve their objectives; and b) all projects are developed and managed in terms of a common procedural approach and integrated with the implementer's administrative processes and are institutionalised
Project leader	Direct the project team including: a) the establishment of the overall strategy for the development and delivery of the deliverable; b) the monitoring and integration of the activities of the project team; c) the development and maintenance of a schedule and the monitoring of progress towards the attainment of the deliverable; and d) the briefing of, the reporting to and the obtaining of decisions and acceptance of a deliverable
Lead designer	Establish and refine the design approach or solution to achieve the required quality, health and safety and other required standards and is co-ordinated within the project team Co-ordinate the advice and input of designers and cost consultants
Designer	Provide design or conditional assessment services relating to the provision or maintenance of infrastructure
Cost consultant	Provide independent and impartial estimation and control of the cost of constructing, rehabilitating and refurbishing infrastructure by means of one or more of the following: a) accurate measurement of the works, b) comprehensive knowledge of various construction systems and the costs of alternative design proposals, construction methods and materials, or c) the application of expert knowledge of costs and prices of work, labour, materials, plant and equipment required
Procurement leader	Oversee the development of the procurement documents and manage the procurement process from the advertisement of tenders to the award of the contract as a single point of responsibility including the conducting of clarification meetings
Contract manager	Administer a package on behalf of the employer and perform duties relating to the overall management of such contract from the implementer's point of view
Supervising agent	Confirm that the works are proceeding in accordance with the provisions of the scope of work associated with a package and notify the contract manager of any non-conformance on the part of a contractor to requirements
Health and safety agent	Assume the responsibilities imposed upon the implementer as a "client" in terms of the Construction Regulations issued in terms of the Occupational Health and Safety Act, 1993, perform specific duties in terms of established procedures and lead health and safety risk management compliance processes

This document needs to be read in conjunction with the Standard Scope of Professional Services associated with the Delivery of a Package.

Framework for the determination of professional fees for consulting services

1 Scope

This document establishes:

a) the basis for time based fees for any professional service including those provided in accordance with the provision of the Standard Scope of Professional Services associated with the Delivery of a Package; and

b) a competitive and auditable procedure for the determination after the award of a professional services contract of an appropriate percentage fee for architectural, cost consulting and engineering services which are provided in accordance with the provisions of the Standard Scope of Professional Services associated with the Delivery of a Package.

NOTE 1 This document does not provide fee percentages based on cost of construction for performing the role of programme / project management, procurement leader and health and safety agent and, in the case of building works, the role of contract manager. Services associated with these roles can be paid for on a time charge, a lump sum (activity schedule) or a target cost basis. Although fee percentages based on the cost of construction are provided for architectural, cost consulting and engineering services, such services can also be paid for on a time charge, lump sum or target cost basis.

NOTE 2 The NEC3 Professional Service Contract does not include a percentage fee type of contract. The percentage fees derived from this document can be converted into lump sums which can then be incorporated into the activity schedule under Option A (Priced contract with activity schedule) or Option C (Target Contract) or the task schedule under Option G (Term Contract).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced standard (including any amendments) applies.

New Universities Project Management Team. *Standard Scope of Professional Services associated with the Delivery of a Package*

New Universities Project Management Team. *Procurement and Delivery Management System for Infrastructure Projects*

SANS 10400, *The Application of National Building Regulations*

3 Definitions

For the purposes of this document, the following terms and definitions apply:

building works: construction works that has the provision of shelter for its occupants or contents as one of its main purposes including any construction works or landscape work on land associated with and adjacent to such works

consultant: person providing services using the skill and care normally used by professionals providing services similar to the services that are required

cost of construction:

a) the amount of money which is allocated or made available by the employer to construct, refurbish rehabilitate, extend or alter construction works or a part thereof including a *pro rata* amount for general items, associated with a project or package excluding site costs,

professional fees, all service and planning charges, value added tax, risk allowances and provision for price inflation; or

b) the total of the prices excluding VAT at the award of a construction works contract or the issuing of a package order to construct, refurbish rehabilitate, extend or alter construction works or a part thereof including a *pro rata* amount for general items, plus the fair market value of materials and equipment provided by the employer and market related estimates of specialist works which are to be subcontracted after the award of the contract, excluding any amounts provided for the performance of work or services that are unforeseen and cannot be specified at the time that the contract was concluded, provision for price adjustment for inflation and value added tax

engineering works: everything that is constructed or results from construction operations other than building works

employer: person who enters into a contract with the consultant

fee: the remuneration paid to a consultant excluding expenses which are recoverable from the employer in terms of the contract

general items: items which relate to a contractor's general contractual obligations, site services such as water and electricity and site facilities

package order: the instruction to provide works under a framework agreement

stage: a collection of logically related activities in the infrastructure delivery cycle that culminates in the completion of a major deliverable

time charge: is the sum of the products of each of the staff rates multiplied by the total staff time appropriate to that rate properly spent on work in this contract.

total annual cost of employment: the total amount borne by the consultant in respect of the employment of a staff member per year comprising basic salary and fringe benefits not reflected in the basic salary, including:

a) normal annual bonus,

b) consultant's contribution to medical aid, unemployment insurance fund, pension or provident fund,

c) group life insurance premiums borne by the consultant; and

d) all other benefits or allowances payable in terms of a letter of appointment excluding any share of profit and payment for overtime.

4 Fees on a time charge basis

The staff rates are the prices charged for staff excluding VAT but including:

a) all the costs to the Consultant including total annual cost of employment, overhead charges incurred as part of normal business operations including the cost of management, as well as payments to administrative, clerical, IT support and secretarial staff used to support professional and technical staff in general and not on a specific project only;

b) where stated in the pricing assumptions, the time expended in travelling to and from a site, meetings or any other activity associated with the provision of the service;

c) non-recoverable expenses;

d) unless otherwise specified, all protective clothing and all standard equipment such as office furniture, copiers, plotters, computers and software used to perform the services; and

e) profit.

Fees on a time charge basis shall be determined using one of the methods set out in Table 1 as stated in the pricing data associated with the contract.

The rate per month shall include all leave taken in accordance with the letter of appointment and non-working days.

NOTE: The staff rates can conveniently be established in one of three ways, namely rates for named staff, rates for categories of staff or rates related to salaries paid to staff.

Examples:

Method 1: If 1000 hours are properly spent on the work and the maximum hourly rate is R 850 per hour, the time charge is 850 x 1000 = R 850 000
Method 2: If a consultant tenders 12c per hour for every R100 total annual cost of employment, the total annual cost of employment is R750 000 and 1000 hours are properly spent on the work, then the time based charge is 12 / 100/ 100 x 750 000 x 1000 = R 900 000
Method 3: If 6 months are properly spent on the work and the maximum monthly rate is R 120 000 per month, the time charge is 6 x R 120 000 = R720 000
Method 4: If a consultant tenders a factor of 1.7, the total annual cost of employment is R 750 000 and deploys the staff member for 7 months, then the time charge is 1.7 x 750 000 / 12 x 8 = 850 000.

Table 1: Basis of staff rates

Method	Basis of staff rate	Tendered parameter
1	Rate per hour in Rand	R . . . . .
2	Rate per hour in Rand based on cents per hour for every R100 total annual cost of employment	. . . . . .cents
3	Rate per month in Rand where payment is made for leave and non-working days	R . . . . .
4	Rate per month based on total annual cost of employment divided by 12 multiplied by a factor where payment is made for leave and non-working days*	factor = ...

*Site allowances for construction monitoring staff should either be paid separately as expenses or included in in the total annual cost of employment if stated in the letter of appointment.

5 Fees based on a percentage of the construction cost

5.1 General principles

The fees based on a percentage of the construction cost for architectural, cost consulting and engineering services are based on the following assumptions:

a) the services are provided in accordance with the provisions of the Standard Scope of Professional Services associated with the Delivery of a Package;

b) the services associated with stages 1 (infrastructure planning) and 2 (procurement planning) are excluded from the fee based percentage of the cost of construction (see Procurement and Delivery Management System for Infrastructure Projects);

c) the employer has not fully developed a strategic brief as described in the Procurement and Delivery Management System for Infrastructure Projects at the time that the consultant is appointed;

d) the required services exclude those relating to:

1) the securing of finance;

2) acquisition of land;

3) the resolution of disputes in terms of the contract using an adjudication process or a tribunal (i.e. arbitration or court of law);

4) litigation associated with the project;

5) attending courts and commissions of enquiry, select committees and similar bodies convened by statute, regulation or decree

6) the appointment as agent in accordance with Regulation 4(5) of the Construction Regulations 2003 issued in terms of the Occupational Health and Safety Act of 1993 (Act 85 of 1993);

7) drafting of contract documents which require extensive modification to the employer's standard templates;

8) drafting of non-standard contracts or additional Z clauses to those contained in the standard templates;

9) the procurement of the professional team;

10) dealing with matters of law;

11) obtaining statutory approvals other than those required in terms of the National Building Regulations issued in terms of the National Building Regulations and Building Standards Act, 1977 (Act No. 103 of 1977), licences or permits; and

12) services resulting from damages to or destruction of the works and insurance matters;

e) the fees, unless otherwise specified in the pricing assumptions, includes the travelling time and travel costs associated with the provision of the service;

f) the parties to the construction contract do not default on their contracts;

g) the contractor executes the works competently;

h) use is made of the NEC3 family of contracts;

i) the total of the prices excluding VAT and any price adjustment for inflation at the completion of the construction works contract or, in the case of a framework agreement, package order, does not exceed the construction cost at the time of the award of the contract or the issuing of an order by more than:

1) 10% in the case of building works; and

2) 15% in the case of engineering works;

j) completion is achieved within a period which is not more than 20% longer than the period allowed for completion at the start date of a construction works contract or a package order; and

k) the values of all estimated parameters used in the determination of the adjustment factor that reflects the level of effort (F_{LE}) are agreed by both the employer and the consultant.

NOTE: The cost of construction used to determine the basic fee percentage excludes price adjustment for inflation. A consultant can be compensated for price inflation under Secondary Option X1 (Price adjustment for inflation) of the NEC3 Professional Service Contract.

5.2 Architectural services

5.2.1 Assumptions

The architectural services shall be provided in accordance with the relevant provisions of the Standard Scope of Professional Services associated with the Delivery of a Package as a lead designer, designer and supervising agent, and where specifically required by the employer, as the project leader.

Unless otherwise stated by the employer, a level 2 monitoring service is required (see Standard Scope of Professional Services associated with the Delivery of a Package).

The following constitute additional services which shall be remunerated on a time charge and / or expense basis:

a) town planning, urban design, master planning (i.e. the defining and planning the layout of future development of buildings or services on the same site), interior design (i.e. the design of interiors and the selection of furnishings, fixtures and special finishes) and landscape design services;

b) preparation of promotional materials and art work;

c) participation in the definition of plant and production layouts;

d) work for which no deemed to satisfy design rules are provided in SANS 10400 and which is required in terms of the National Building Regulations or the provisions of SANS 10400 require that the work be carried out by a person registered in terms of the Engineering Profession Act of 2000 or the Natural Scientific Professions Act of 2003 including specialist fire design services identified in the Standard Scope of Professional Services associated with the Delivery of a Package;

e) work associated with the satisfying the provisions of Part XA (Energy usage in buildings) of the National Building Regulations using a method other than the application of the orientation, shading, services and building envelope rules provided in SANS 10400-XA;

f) specialist studies such as those relating to site selection and feasibility, environmental, energy usage and traffic studies;

g) cost and evaluation services; and

h) extraordinary inspection services during construction.

The architectural services include the provision of architectural inputs into procurement documents but exclude the evaluation of tenders.

The fee percentage for architectural services is based on the consultant applying the deemed to satisfy provisions of the National Building Regulations contained in SANS 10400, *The Application of National Building Regulations* which provide design and construction rules.

5.2.2 Basis for determining the fee for architectural services

5.2.2.1 The basic percentage fee (BFP) shall be derived as follows:

Step 1: Identify the section in Table 2 within which the cost of construction representing the works which require architectural services falls and identify the values in columns C and D which correspond to that section.

Step 2: Calculate the fee by adding the value identified in column C of Table 2 to the product of the construction cost and the percentage value identified in column D of Table 2 divided by 100.

Step 3: Divide the fee calculated in step 2 by the cost of construction and multiply by 100.

EXAMPLE: The fee for a cost of construction of R 5 300 000 **=** 51 000 + 5 300 000 x 7.25 / 100 = R 435 250
Basic fee percentage = 435 250 / 5 300 000 x 100 = 8.212%

Table 2: Basic fee based on cost of construction

Section	Cost of construction		Fee (Base (column C) plus percentage cost (column D)	
	A	B	C	D
1	1	600 000	0	12.50%
2	600 001	1 200 000	15 000	10.00%
3	1 200 001	2 400 000	45 000	7.50%
4	2 400 001	4 800 000	51 000	7.25%
5	4 800 001	9 600 000	63 000	7.00%
6	9 600 001	19 200 000	87 000	6.75%
7	19 200 001	38 400 000	135 000	6.50%
8	38 400 001	76 800 000	231 000	6.25%
9	76 800 001	153 600 000	423 000	6.00%
10	153 600 001	307 200 000	807 000	5.75%
11	307 200 001	614 400 000	1 575 000	5.50%
12	614 400 001	+		5.75%

5.5.2.2 Determine the adjustment factor that reflects the level of effort that is required (F_{LE}) as follows:

$$F_{LE} = F_{LE1} \times F_{LE2} \times F_{LE3} \times F_{LE4} \times F_{LE5} \times F_{LE6}$$

where the values of F_{LE1}, F_{LE2} , F_{LE3}, F_{LE4}, F_{LE5} and F_{LE6} are calculated in accordance with the provisions of the following Steps 1 to 6, respectively:

Step 1: Identify the building category or categories which are to be designed in terms of the consultant's contract or a task order issued in terms of such contract from Annexure 1. Establish the value or values of the adjustment factor for building category and complexity from Table 3 (F_{LE1}). Interpolate between the values for different building categories, if necessary, based on the estimated cost of the different parts of the building.

Table 3: Adjustment factor for building category and complexity (F_{LE1})

Building category (see Annexure 1)	Adjustment factor for building category and complexity (F_{LE1})		
	Complexity		
	Simple: Utilitarian character without complication of design, a minimum of finishes and very basic structural mechanical and electrical design	**Average**: Conventional character requiring normal integration, coordination, detailing, structural mechanical and electrical designs and systems	**Complex:** Exceptional character and complexity of design requiring more advanced systems, integration and coordination of structural, mechanical and electrical design.
1	0,64	0,75	0.86
2	0,73	0,80	0,93
3	0,76	0,85	0,95
4	0,76	0,90	1,04
5	0,85	1,0	1,15

NOTE Building category (see Annexure 1) is linked to the class of building occupancy and detailed descriptions in the South African Council for the Architectural Profession's Demarcation of Architectural Work Matrix published in Board Notice 154 of 2011.

EXAMPLE A multiple occupancy building has a construction cost or R 30 million comprising:

- a place of instruction for a university (occupancy A4.5) of average complexity with a construction cost of R16m; and
- a research facility (E4.3) of complex complexity with a construction cost of R 14 million

FL_{E1} = 0,90 x 16 / 30 + 1,15 x 14 / 30 = 1,017

Step 2: Establish the adjustment factor for repeat buildings (F_{LE2}) as follows:

a) where there are no repeat buildings

F_{LE2} = 1,0

b) where there are repeat buildings

F_{LE2} = 1 – 0,455 A / B

where

A = estimated cost of construction of the repeat buildings

B= cost of construction used in the determination of BFP

NOTE: F_{LE6} which is determined in Step 6 allows an appropriate adjustment to be made where the services are required on separate non-contiguous sites, or continuity is interrupted, unusually fragmented or are constructed as separately documented phases or sections.

EXAMPLE The estimated cost of construction associated with repeat buildings is R 900 000 while the cost of construction is estimated to be R 5 300 000.

F_{LE2} = 1 – 0,455 x A / B = 1 – 0,455 x 900 000 / 5 300 000 = 0.923

Step 3: Establish the adjustment factor where the employer pays separately for others to undertake work covered by the deemed-to-satisfy design and construction rules contained in SANS 10400 (F_{LE3}) as follows:

a) where the consultant applies the relevant deemed to satisfy design and construction rules for all parts of the National Building Regulations

F_{LE3} = 1,0

b) where the consultant applies not all the relevant deemed to satisfy design and construction rules for all parts of the National Building Regulations

F_{LE3} = 1 – (1 –n / 100) x C / B

where B = cost of construction used in the determination of BFP

C = the estimated cost of the systems or elements of a building which are covered by the deemed to satisfy rules contained in SANS 10400 but are undertaken by others appointed by the employer

n = the estimated percentage of C which needs to be included in the cost of construction to provide a reasonable fee to the consultant for dealing with aspects of the system or element which is undertaken by others in the design of the building as a whole

NOTE 1 The fee percentage needs to be adjusted where wet services and fire protection specialists are appointed by the employer to provide design and inspection services relating to the application of the deemed to satisfy provisions of Parts P (Drainage), Q (Non-water-borne means of sanitary disposal) R (Stormwater disposal), T (Fire protection) and W (Fire installations). The fee percentage also needs to be adjusted where specialists advisors are appointed to advise on Part S (Facilities for persons with disabilities) or structural engineers to provide design and inspection services relating to the application of the design and construction rules provided in Parts G (Excavations), H (Foundations), J (Floors), K (Walls), L (Roofs), M (Stairways) and N (Glazing).

NOTE 2 A consultant providing architectural services may elect to subcontract work covered by the deemed to satisfy design and construction rules contained in SANS 10400 to a wet services engineer, fire protection specialist, structural engineer etc, in which case there is no reduction in the fee percentage. A reduction in fee is only applicable where the employer requires such work to be undertaken by the aforementioned persons.

EXAMPLE: A wet services specialist is appointed by the employer to design the wet services which are covered by SANS 10400-P. The cost of the wet services in the building is estimated to be R 500 000 while the cost of construction is estimated to be R 5 300 000. It is agreed that the percentage of the cost of the wet services which is included in the fee calculation is 60 %.

$FL_{E3} = 1 – (1- n / 100) \times C / B = 1 – (1- 60 / 100) \times 500\,000 / 5\,300\,000 = 0,964$

Step 4: Establish the adjustment factor for the range of services that are provided (F_{LE4}) as follows:

a) where services are provided as project leader, lead designer, designer and supervising agent

$F_{LE4} = 1,0$

b) where services are provided as lead designer, designer and supervising agent

$F_{LE4} = 0,925$

Step 5: Identify the adjustment factor for the type of services (F_{LE5}) as follows:

a) where definition services are only required.

$F_{LE5} = 1,0$

b) where definition and review services are required

$F_{LE5} = 1- f + D / (B \times BFP / 100)$

where f = the sum of the proportions for stage completion in Table 4 for the stages for which review services are required divided by 100

= 0,80 in the case of a design and construct contracting strategy and 0,45 in the case of a develop and construct contracting strategy

B = cost of construction used in the determination of BFP

BFP = basic percentage fee derived from Table 2 for the value of B

D = the total estimated time charge for identified review services

NOTE: Definition services are services which develop the deliverable associated with an end of a stage. They are encountered in the design by employer contracting strategy and in the stages prior to the mobilisation of a contractor in the design and construct and develop and construct contracting strategies. Review services are services which review the definition service of a stage undertaken by others for general conformity with the scope of work selected for a particular contracting strategy. These services are required after the mobilisation of a contractor in the design and construct and develop (after stage 4) and construct contracting strategies (after stage 5).

EXAMPLE: A develop and construct contractor is appointed after the completion of stage 5 (Design development stage). The basic percentage fee (BFP) derived from Table 2 for a cost of construction of R 5,3m is 8,212%. The estimated total time charge for identified review services is R 60 000.

$F_{LE5} = 1 – f + D / (B \times BFP / 100) = 1 – 0,45 / 100 + 60\,000 / (5\,300\,000 \times 8,212 / 100) = 0,688$

Table 4: Apportionment of fees between stages where definition services are required

Stage (see Procurement and Delivery Management System for Infrastructure Projects)	**Proportion**
3 Package preparation	5%
4 Package definition	15%
5 Design development	35%
6 Design documentation	15%
7 Works	20%
8 Handover	8%
9 Close out	2%

Step 6: Identify from Table 5 the factors which were not known or were unforeseen prior to the formation of the consultant's contract or the issuing of a task order to a consultant which impact upon the services. Assess the additional time charge for each factor, based on reasonable estimates of the additional time required to address each of the identified factors and applying the staff rates provided for in the contract in order to calculate the time charge. Calculate the adjustment factor for project specific variations in level of effort (F_{LE6}) as follows:

a) none of the factors in Table 5 apply

$F_{LE6} = 1,0$

b) one or more of the factors in Table 5 apply

$F_{LE6} = 1 + E / (B \times BFP / 100)$

where B = cost of construction used in the determination of BFP

BFP = basic percentage fee derived from Table 2 for the value of B

E = the sum of all the estimated time charges for identified project specific variations described in Table 5

EXAMPLE: The sum of the total time charge determined for the applicable areas contained in Table 5 total R 70 000. The basic percentage fee (BFP) derived from Table 2 for a cost of construction of R 5,3m is 8,21%.

$F_{LE6} = 1 + E /(B \times BFP / 100) = 1 + 70\,000 / (5\,300\,000 \times 8,212 / 100) = 1,161$

5.2.2.3 Calculate the applicable fee percentage in accordance with the following formula:

$$\text{Fee percentage} = BFP \times F_{LE} \times F_{PO} \times F_{CON}$$

where

BFP = basic percentage fee determined in accordance with the provisions of 5.2.2.1

F_{LE} = calculated adjustment factor that reflects the level of effort that is required as determined in accordance with the provisions of 5.2.2.2

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

F_{CON} = tendered adjustment factor to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

Table 5: Methodology to establish the values of for project specific variations which were not known or could not be foreseen prior to the formation of the contract in level of effort (F_{LE6})

Factor no	Area	Considerations
1	Experience and reliability of the contractor	The experience of the contractor requires additional effort in ensuring the required quality, particularly in respect of historical buildings.
2	Joint venture requirements	Joint venture assembled by the employer after the formation of the contract with other consultants may attract additional management costs.
3	Schedule	Fast track projects may necessitate the hiring of additional staff, pay staff for overtime, and re-schedule other work to accommodate project priorities.
		Long protracted projects can place additional demands on staff availability and frequency of interactions.
4	Employer Project documentation and computer modelling demands	The employer may have unique requirements which may require customising of standard templates, more extensive communications, providing documentation in different format etc.
5	Co-ordination of specialist consultants	Where there is an unusually high number of specialist consultants whether or not they are retained by the employer or the consultant e,g, acoustic, heritage, environmental, interior design, economist, energy management, facilities management, information technology, hospital services, lighting, laboratory, security, signage or graphic, specifications writer, way finding etc.
6	New technologies	New technologies can introduce unknown risks in using products or systems that don't have a track record or there may be additional requirements for certifications, testing, submittals, approvals etc. There may also be additional specialist consultants to be retained and co-ordinated. They may also be a need to undertake research.
7	Renovation and alterations	Work associated with renovation and alternations can have unknowns or require additional work in establishing reliable record information. Work associated with alterations can introduce complexities in linking common buildings together on a site.
8	Stop and start up workforce	On some projects it is necessary to stop work on the design or preparation of production information. This can lead to additional costs associated with loss of productivity etc.
9	Heritage buildings	Buildings that are affected by heritage legislation may not require the development of a concept report (stage 4: Package definition). It may, however, require abnormal research and specialist expertise to provide the services which need to be offset against the reduction in stage 4 services.
10	Phased building occupancies	Phased occupancies can occur on some projects. This can lead to increased resources to address fragmented commissioning.
11	Repeat buildings on different sites or different contracts	Repeat buildings on different sites or executed by different contractors.
12	Level of monitoring	Reduce fee if level 1 monitoring service is required. Increase if level 3 or 4 level service is required and not dealt with on a time charge basis.

5.2.3 Payment for stage completion

Payment for stage completion where definition services are required shall, unless otherwise motivated by the consultant and agreed to by the employer, be based on the percentages shown in Table 4.

5.3 Cost consulting services for building works

5.3.1 Assumptions

The cost consultancy services for building works shall be provided in accordance with the relevant provisions of the Standard Scope of Professional Services associated with the Delivery of a Package under the assumption that the cost consultant is:

a) delegated by the project manager to deal with all matters relating to the assessment of amounts due to the contractor and changes to the prices where use is made of the NEC3 Engineering and Construction Contract (ECC); and

b) delegated by the employer to correct wrongly assessed amounts in the contractor's application for payment and to deal with all matters relating to the prices where use is made of the NEC3 Engineering and Construction Short Contract (ECSC).

The cost consulting services shall, unless otherwise stated in the pricing assumptions or instructed by the employer, include the finalization of the procurement documents (expressions of interest, tenders, contracts and package orders) following inputs from the lead designer, designers, project leader and employer and include the basic evaluation of tenders and the preparation of a tender evaluation report.

Financial viability studies and other pre-design studies involving an economic investigation and appraisal of a project constitute additional services which shall be remunerated on a time charge and / or expense basis.

5.3.2 Basis for determining the fee for cost consulting services

5.3.2.1 The basic percentage fee (BFP) shall be derived as follows:

Step 1: Identify the section in Table 6 within which the cost of construction representing the works which require cost consulting services falls and identify the values in columns A, C and D which correspond to that section.

Table 6: Basic fee based on cost of construction

Section	Cost of construction		Fee (Primary charges (C) + marginal rate (D)	
	A	B	C	D
1	Up to	1 000 000	11 000	6.40 % on balance over R 0
2	1 000 000	2 000 000	75 000	6.10 % on balance over R 1 000 000
3	2 000 000	4 000 000	136 000	6.00 % on balance over R 2 000 000
4	4 000 000	8 000 000	256 000	5.4 % on balance over R 4 000 000
5	8 000 000	16 000 000	472 000	5.06 % on balance over R 8 000 000
6	16 000 000	32 000 000	876 800	4.47 % on balance over R 16 000 000
7	32 000 000	64 000 000	1 592 000	4.00 % on balance over R 32 000 000
8	64 000 000	128 000 000	2 872 000	3.90 % on balance over R 64 000 000
9	128 000 000	256 000 000	5 368 000	3.10 % on balance over R 128 000 000
10	256 000 000	500 000 000	9 336 000	3.00 % on balance over R 256 000 000
11	500 000 000	1 500 000 000	16 656 000	2.65 % on balance over R 500 000 000
12	1 500 000	3 000 000 000	43 156 000	2.35 % on balance over R 1 500 000 000
13	3 000 000	>3 000 000 000	78 406 000	1.85 % on balance over R 3 000 000 000

Step 2: Calculate the fee by adding the value identified in column C of Table 6 to the product of the construction cost less the threshold identified in column A and the percentage value identified in column D divided by 100

Step 3: Divide the fee calculated in step 2 by the cost of construction and multiply by 100.

EXAMPLE: The fee for a cost of construction of R 5 300 000. **=** 256 000 + (5 300 000 – 4 0000 000) x 5.4 / 100 = 326 200
Basic fee percentage = 326 200 / 5 300 000 x 100 = 6.154%

5.3.2.2 Determine the adjustment factor that reflects the level of effort that is required (F_{LE}) as follows:

$$F_{LE} = F_{LE1} \times F_{LE2} \times F_{LE3} \times F_{LE4} \times F_{LE5}$$

where the values of F_{LE1}, F_{LE2} , F_{LE3}, F_{LE4} and F_{LE5} are calculated in accordance with the provisions of the following Steps 1 to 5, respectively:

Step 1: Identify the building category or categories for which cost consulting services are required in terms of the consultant's contract or a task order issued in terms of such a contract from Annexure 1. Establish the value of the adjustment factor for building category from Table 7 (F_{LE1}). Interpolate between the values for different building categories, if necessary, based on the estimated cost of the different parts of the building.

Table 7: Adjustment factor for building category (F_{LE1})

Category of building (see Annexure 1)	Adjustment factor for building category and complexity (F_{LE1})
1	0,75
2	0,80
3	0,85
4	0,92
5	1,0
6	1,10

NOTE Building category is linked to the class of building occupancy and detailed descriptions in the South African Council for the Architectural Profession's Demarcation of Architectural Work Matrix published in Board Notice 154 of 2011.

EXAMPLE A multiple occupancy building has a construction cost or R 30 million comprising:

- a place of instruction for a university (occupancy A4.5) of average complexity with a construction cost of R16m; and
- a research facility (E4.3) of complex complexity with a construction cost of R 14 million

FL_{E1} = 1,0 x 16 / 30 + 1,10 x 14 / 30 = 1,047

Step 2: Establish the adjustment factor for replication of prototype (F_{LE2}) as follows:

a) where there is no replication of prototype

$F_{LE2} = 1,0$

b) where there is replication of prototype

$F_{LE2} = 1 – 0,4 \times A / B$

where A = estimated cost of construction associated with replications

B = cost of construction used in the determination of BFP

EXAMPLE The estimated cost of construction associated with the replications are R 900 000 while the cost of construction is estimated to be R 5 300 000.

$F_{LE2} = 1 – 0,4 \times A / B = 1 – 0,4 \times 900\,000 / 5\,300\,000 = 0.932$

Step 3: Identify the adjustment factor for the scope of services (F_{LE3}) as follows:

F_{LE3} = adjustment factor contained in Table 8 for definition services.

Table 8: Adjustment factor for scope of services

Scope of service	Adjustment factor for the scope of services (F_{LE3})
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option A: Price based contract with activity schedule	0,75
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option B: Price based contract with bill of quantities	1.0
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option C: Target contract with an activity schedule	1,0
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option E: Cost reimbursable contract	0,70
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option F: Management contract	0,70
Cost consulting services for design by employer contracting strategy under NEC3 ECSC*	0,55

* The contractor assesses amount due and cost consultant corrects wrongly assessed amounts in terms of this form of contract.

Step 4: Identify the adjustment factor for the type of services (F_{LE4}) as follows:

a) where definition services are only required.

F_{LE4} = 1,0

b) where definition and review services are required

F_{LE4} = the value obtained from Table 9

NOTE: Definition services are services which develop the deliverable associated with an end of a stage. They are encountered in the design by employer contracting strategy and in the stages prior to the mobilisation of a contractor in the design and construct and develop and construct contracting strategies. Review services are services which review the definition service of a stage undertaken by others for general conformity with the scope of work selected for a particular contracting strategy. These services are required after the mobilisation of a contractor in the design and construct and develop and construct contracting strategies.

Table 9: Adjustment factor for review services

Contracting strategy	Description	Stage after which contractor is appointed	F_{LE4} associated with a form of contract	
			NEC3 ECSC and NEC3 Option A	NEC3 ECC Options C and F
Design and construct	Contract in which a contractor designs the works based on a brief provided by the client and constructs it	4	0,70	0,80
Develop and construct	Contract based on a scheme design prepared by the client under which a contractor finalises the production information and constructs it	5	0,80	0,85

Step 5: Identify from Table 10 the factors which were not known or were unforeseen prior to the formation of the consultant's contract or the issuing of a task order to a consultant which impact upon the services. Assess the additional time charge for each factor, based on

reasonable estimates of the additional time required to address each of the identified factors and applying the staff rates provided for in the contract in order to calculate the time charge. Calculate the adjustment factor for project specific variations in level of effort (F_{LE5}) as follows:

a) none of the factors in Table 10 apply

F_{LE5} = 1,0

b) one or more of the factors in Table 6 apply

F_{LE5} = 1 + C / (B x BFP / 100)

where B = cost of construction used in the determination of BFP

BFP = basic percentage fee derived from Table 6 for the value of B

C = the sum of all the estimated time charges for identified project specific variations described in Table 10

EXAMPLE: Sum of the total time charge determined for the applicable areas contained in Table10 total R 35 000. The basic percentage fee (BFP) derived from Table 6 for a cost of construction of R 5,3m is 6,15%.

F_{LE5} = 1 + E /(B x BFP / 100) = 1 + 35 000 / (5 300 000 x 6,154 / 100) = 1,107

Table 10: Methodology to establish the values of F_{LE5}

Factor no	Area	Considerations
1	Joint venture requirements	Joint venture which is put together by the employer may attract additional management costs
2	Renovation and alterations	Work associated with renovation and alternations can have unknowns or require additional work in establishing reliable record information.
3	Stop and start up workforce	On some projects it is necessary to stop work on the design or preparation of production information. This can lead to additional costs associated with loss of productivity etc.
4	Locational bills of quantities	Employer may require that bills of quantities be separated into blocks, elements, functions or other locations. This may attract additional costs.
5	Multiple procurement contracts	Separate documentation and related services may be required for work executed under a large number of subcontracts where a principal contractor is appointed, or executed under a large number of direct contracts where no principal contractor is appointed. This may attract additional costs.
6	Development of cost norms	Services may be required for developing reports on the calculation of space and cost limits from given accommodation lists, monitoring and adjusting for cost against an advanced or elemental cost plan as necessary in order to maintain it within the prescribed limits and on completion of the contract the submission of reconciliation statements confirming compliance with the prescribed space limits and costs limits.

5.3.2.3 Calculate the fee percentage payable in accordance with the following formula:

Fee percentage = BFP x F_{LE} x F_{PO} x F_{CON}

where

BFP = basic percentage fee determined in accordance with the provisions of 5.3.2.1

F_{LE} = adjustment factor that reflects the level of effort that is required as determined in accordance with the provisions of 5.3.2.2

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

F_{CON} = tendered adjustment factor to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

5.3.3 Payment for stage completion

Payment for stage completion where definition services are required shall unless otherwise motivated by the consultant and agreed to by the employer be based on the percentages shown in Table 11.

Table 11: Apportionment of fees between stages where definition services are required

Service required	**Proportion for stages**						
	3	4	5	6	7	8	9
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option A: Price based contract with activity schedule	2.5	7.5	10	20	52.5	-	7.5
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option B: Price based contract with bill of quantities	2.5	5	7.5	35	45	-	5
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option C: Target contract with an activity schedule	2.5	7.5	10	15	57.5	-	7.5
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option E: Cost reimbursable contract	2.5	7.5	10	15	57.5	-	7.5
Cost consulting services for design by employer contracting strategy under NEC3 ECC Option F: Management contract	2.5	7.5	10	15	57.5	-	7.5
Cost consulting services for design by employer contracting strategy under NEC3 ECSC*	2.5	7.5	10	20	52.5	-	7.5

5.4.1 Engineering services

5.4.1 Assumptions

The fee percentage shall only be applied to projects having a construction cost in excess of R 1,0 million. Time based charges shall apply to projects having a cost below this threshold.

Engineering services shall be provided in accordance with the relevant provisions of the Standard Scope of Professional Services associated with the Delivery of a Package as:

a) building works: designer and supervising agent; and

b) engineering works: project leader, lead designer, designer, cost consultant, contract manager and supervising agent.

Unless specifically stated by the employer, a level 2 monitoring service is required (see Standard Scope of Professional Services associated with the Delivery of a Package).

The following constitute additional services which shall be remunerated on a time charge and / or expense basis:

a) services not directly relating to the design and construction of the works and its subsequent utilisation;

b) consultation with authorities having rights or powers of sanction as well as consultation with public stakeholders;

c) searching for, obtaining, investigating and collating available data, drawings and plans relating to the works;

d) arrangements for servitudes, expropriations and diversion of services not forming part of the works,

e) obtaining formal approval of government departments and utilities and revising or realigning work to comply with decisions relating to such approvals;

f) feasibility and economic studies;

g) topographical and environmental surveys, analyses, tests and site or foundation or other investigations, model tests, laboratory tests and analysis carried out on behalf of the employer;

h) setting out and staking out the work and indicating of boundary beacons and other reference marks;

i) detailed inspection, reviewing and checking of designs and drawings prepared by others and submitted as alternatives to those embodied in a contract for the provision of the works;

j) offsite inspection and testing of materials and plant during manufacture or prior to delivery;

k) preparing and setting out particulars and calculations in a form required by any relevant authority;

l) executing or arranging for the periodic monitoring or adjustment of the works, after final handover and completion of construction and commissioning, in order to optimize or maintain proper functioning of any process or system;

m) life cycle costing and considerations;

n) advance ordering or reserving of materials and obtaining licenses and permits; and

o) preparing detailed operating, operation and maintenance manuals.

The engineering services for engineering projects include the finalization of the procurement documents

NOTE In projects involving building work persons appointed to provide services other than engineering services are appointed to perform the roles of project leader, lead designer, cost consultant and contract manager and the cost consultant is responsible for the finalization of procurement documents.

5.4.2 Basis for determining the fee for engineering services

5.4.2.1 The basic percentage fee (BFP) shall be calculated from the following formula provided that BFP is not less than 4.0%:

$$BFP = 24.1 - 2.3 \times \log B$$

where B = cost of construction in Rands provided that the cost of construction is equal to or greater than R 1,0 million and does not exceed R 1,0 billion.

BFP shall be negotiated where the formula indicates that the value of BFP is less than 4% or where the cost of construction exceeds R 1,0 billion.

NOTE: BFP equals 10,3% where C is R 1 000 000 i.e. 24.1 - 2.3 x log 1 000 000
BFP equals 8.0% where C is R 10 000 000 i.e. 24.1 – 2.3 x log 10 000 000
BFP equals 5.7% where C is R 1 00 000 000 i.e. 24.1- 2.3 x log 100 000 000
BFP equals 4.0 % where C is R 1 000 000 000 i.e 24.1 – 2.3 x log 1 000 000 000 = 3.4 which is less than 4.0%. As a result, the value of BFP will be negotiated.

5.4.2.2 Determine the adjustment factor that reflects the level of effort that is required (F_{LE}) as follows:

$$F_{LE} = F_{LE1} \times F_{LE2} \times F_{LE3} \times F_{LE4}$$

where the values of F_{LE1}, F_{LE2} , F_{LE3} and F_{LE4} are calculated in accordance with the provisions of the following Steps 1 to 4, respectively:

Step 1: Identify the project type or types which are to be designed in terms of the consultant's contract or a task order issued in terms of such a contract and the associated fee category from Annexure 2. Establish the adjustment factor for level of complexity (F_{LE1}) by considering the applicable influencing factors on the norm (average level of complexity) contained in Table 12 and categorize complexity of a project on a scale of 1 (simplest of projects) to 5 (most complex of projects). Determine F_{LE1} from Table 13 documenting the motivation for the selection of the adjustment factor. Interpolate between values for different types of projects, if necessary, based on the estimated cost of the different types of project.

NOTE The starting point in the categorisation of the complexity of a project is to assume in the first instance that the norm applies i.e. level 3 complexity. The influencing factors in Table 12 enable adjustments up or down from the norm to be made.

Table 12: Influencing Factors

Project Type	Less Effort	More Effort
Civil engineering services		
Bridges	Few load cases, uniform foundations, short, straight and rectangular spans	Many load cases, seismic loads, variable foundations and complex geometry
Building civils	Few interfaces and good project management and few uncertainties	Many interfaces and uncertainties that need to be resolved by the engineer
Building Structures	Uniform foundations, uniform and simple architecture and good project information	Variable foundations, seismic loads , complex architecture and many uncertainties
Minor structures	Uniform foundations, straight and rectangular	Variable foundations and complex geometry and load calculations
Municipal Services	Greenfield site with few interfaces	Complex existing site with many service interfaces
Parking lots	Few accesses, few stormwater options and few interfaces	Many accesses and routes, many stormwater paths and interfaces
Pipelines	Relatively straight and level pipelines with minimal requirements in respect of removal of air and silt	Complex pipe geometry with many thrust blocks and valves. High wave energy for submarine pipes.
Road Rehabilitation	Relatively uniform conditions and minimal road furniture and drainage improvements	Variable conditions with many requirements in respect of road furniture and drainage improvements
Roads	Flat topography, few intersections and minimal obstructions and interfaces.	Difficult topography with many accesses, intersections, interchanges and interfaces with existing infrastructure and utilities
Stormwater Pipes	Straight pipelines with minimal inlet and catchment designs	Complex pipe networks with extensive catchment modelling requirements
Stormwater structures and canals (Designed)	Uniform foundations, straight and rectangular	Variable foundations and complex geometry and load calculations
Underground Structures	Uniform geology and hard ground	Complex geology and soft ground

Project Type	Less Effort	More Effort
Civil engineering services (continued)		
Unique structures	Uniform foundations, straight and rectangular	Variable foundations, seismic loads and complex geometry and load calculations
Water Retaining Structures	Uniform foundations and shape with simple inlet and outlets	Variable foundations and complex shapes as well as complex inlet and outlet works
Mechanical engineering services		
Commercial retail and office complexes	Simple architecture with uniform open plan layouts and single tenant or owner-occupier and well defined service requirements and provision	Complex and unique architecture, high rise buildings and multi-tenant buildings. Many uncertainties and interfaces requiring coordination
Educational facilities	Well-established, standard teaching and hostel facilities with well defined simple service requirements	Complex building design with many interfaces and service coordination and involving unusual or new and untried service design
Healthcare facilities	Simple primary healthcare facilities involving uniform, well established building services	Complex secondary and academic facilities involving complex building and services design with many interfaces and coordination and high consequences of failure
Industrial building services	Large open plan buildings with little interface between services, utilities and processes	Many interfaces, complex geometry with much service coordination, high service level requirements and severe consequences of failure
Industrial project utilities and process systems, including piping and instrumentation	Greenfield site and simple process and plant layout with single or few utilities and simple well-established or predetermined process design	Complex and existing building and plant layout with multiple utilities and poorly defined process design with serious consequences of failure. May involve high level of detail drawing.
Institutional buildings and facilities	Simple architecture with well established and defined layouts and basic service requirements and provision	Complex architecture with sophisticated and unusual service requirements. Many uncertainties and interfaces with coordination and a high consequence of failure.
Public buildings (Airport buildings, museums, theatres, libraries, and public entertainment)	Simple architecture with uniform and simple layouts and well defined service requirements and provision	Complex and unique architecture with many uncertainties and with many interfaces and coordination
Tourism and leisure industry (hotels, resorts, conference facilities, casinos)	Simple architecture with uniform layouts and well defined service requirements and provision	Complex and unique architecture with many uncertainties and with many interfaces and coordination
Unique and specialized engineering systems	Simple design using standard, well established design codes and principles regularly used in the industry	Unique and unusual systems requiring specialised knowledge and experience. Often involves special regulatory requirements. Unusual level of responsibility and high consequence of failure
Electrical engineering services		
Commercial retail and office complexes	Simple architecture with uniform open plan layouts and single tenant or owner-occupier and well defined service requirements and provision	Complex and unique architecture, high rise buildings and multi-tenant buildings. Many uncertainties and interfaces requiring coordination
Communications, instrumentation, data and IT cabling systems	Use of proprietary systems with performance specification	Complex systems, purpose-designed
Distribution (MV & LV) including substations	Greenfield site with few interfaces and large erven (> 250m^2) LV only or single substation	Complex existing site with many service interfaces and small erven (< 250m^2) Multi-substation interlinked systems with differential and/or directional protection
Educational facilities	Well-established, standard teaching and hostel facilities with well defined simple service requirements	Complex building design with many interfaces and service coordination and involving unusual or new and untried service design
Healthcare facilities	Simple primary healthcare facilities involving uniform, well established building services	Complex secondary and academic facilities involving complex building and services design with many interfaces and coordination and high consequences of failure

Project Type	Less Effort	More Effort
Electrical engineering services (continued)		
Industrial building services	Large open plan buildings with little interface between services, utilities and processes	Many interfaces, complex geometry with much service coordination, high service level requirements and severe consequences of failure
Industrial project utilities and process systems, including piping and instrumentation	Greenfield site, simple process and plant layout with single or few utilities and simple well-established or predetermined process design	Complex and existing building and plant layout with multiple utilities and poorly defined process design with serious consequences of failure. May involve high level of detail drawing.
Institutional buildings and facilities	Simple architecture with well established and defined layouts and basic service requirements and provision	Complex architecture with sophisticated and unusual service requirements. Many uncertainties and interfaces with coordination and a high consequence of failure.
Motor control and electrical installations for machinery and equipment	Greenfield site with few interfaces and excluding process cabling	Complex existing site and work involving plant shutdown/maintenance of supply during construction
Public buildings (Airport buildings, museums, theatres, libraries, and public entertainment)	Simple architecture with uniform and simple layouts and well defined service requirements and provision	Complex and unique architecture with many uncertainties and with many interfaces and coordination
Street, area and sportsfield lighting	Uniform geometry and use of proprietary systems	Complex site with specialized lighting purpose-designed from first principles
Tourism and leisure industry (hotels, resorts, conference facilities, casinos)	Simple architecture with uniform layouts and well defined service requirements and provision	Complex and unique architecture with many uncertainties and with many interfaces and coordination
Transmission (HV) including substations	Flat topography and uniform founding conditions	Difficult topography, variable founding conditions
Unique and specialized engineering systems	Simple design using standard, well established design codes and principles regularly used in the industry	Unique and unusual systems requiring specialised knowledge and experience. Often involves special regulatory requirements. Unusual level of responsibility and high consequence of failure

Table 13: Adjustment factor for level of complexity (F_{LE1})

Fee category	Complexity of project				
	1 (simplest)	**2**	**3 (norm)**	**4**	**5 (most complex)**
A	0,75	0.81	0.88	0.94	1.0
B	0.88	0.94	1.0	1.06	1.13
C	1.0	1.06	1.13	1.19	1.25
D	1.13	1.19	1.25	1.31	1.44
E	1.25	1.34	1.44	1.53	1.63
F	1.38	1.47	1.56	1.66	1.75
G	1.5	1.59	1.69	1.78	1.88

EXAMPLE A consultant is required to provide services for buildings works having a construction cost or R 30 million comprising:

- structural services for an educational building having a level 4 complexity with a construction cost of R16m; and
- site works (building civils) with a level 2 complexity with a construction cost of R 14 million

FL_{E1} = 1,66 x 16 / 30 + 1,19 x 14 / 30 = 1,441

Step 2: Establish the adjustment factor for duplication or repetitive work (F_{LE2}) as follows:

a) there is no duplication of work

$F_{LE2} = 1,0$

b) there is duplication of work

$F_{LE2} = 1 – (1 – n / 100) \times A / B$

where A = the estimated cost of works which are duplicated or where repetition exists

B = cost of construction used in the determination of BFP

n = the estimated percentage of A which needs to be included in the cost of construction to provide a reasonable fee to the consultant for dealing with duplication or repetitive aspects of the work

EXAMPLE: The cost of works is R 10 000 000. The estimated cost of the duplicated work is R 2 000 000. The estimated percentage of A is 75%.

$FL_{E2} = 1 – (1- n / 100) \times A / B = 1 – (1- 75 / 100) \times 2\ 000\ 000 / 10\ 000\ 000 = 0,950$

Step 3: Identify the adjustment factor for the type of services (F_{LE3}) as follows:

a) where definition services are only required.

$F_{LE3} = 1,0$

b) where definition and review services are required

$F_{LE3} = 1 – f + C / (B \times BFP / 100)$

where f = the sum of the proportions for stage completion in Table 14 for the stages for which review services are required divided by 100

B = cost of construction used in the determination of BFP

BFP = basic percentage fee derived from the formula 5.4.4.1 for the value of B

C = the total estimated time charge for identified review services

NOTE: Definition services are services which develop the deliverable associated with an end of a stage. They are encountered in the design by employer contracting strategy and in the stages prior to the mobilisation of a contractor in the design and construct and develop and construct contracting strategies. Review services are services which review the definition service of a stage undertaken by others for general conformity with the scope of work selected for a particular contracting strategy. These services are required after the mobilisation of a contractor in the design and construct (after stage 4) and develop and construct contracting strategies (after stage 5).

EXAMPLE: A develop and construct contractor is appointed after the completion of stage 5 (Design development stage) for civil engineering works. The basic percentage fee (BFP) derived from the formula contained in 5.4.2.1 for a cost of construction of R 10,0m is 8,0%. The estimated total time charge for identified review services is R 150 000.

$F_{LE3} = 1 – f + C / (B \times BFP / 100) = 1 – (15 + 20 + 7 + 3) / 100 + 150\ 000 / (10\ 000\ 000 \times 8,0 / 100) = 0,738$

Table 14: Apportionment of fees between stages where definition services are required

Stage	Civil: Engineering and building works	Structural: Engineering works	Structural: Building works:	Mechanical, electrical and electronic works
3 Package preparation	5	5	5	5
4 Package definition	25	25	20	15
5 Design development	25	30	30	25
6 Design documentation	15	10	15	5
7 Works	20	20	20	33
8 Handover	7	7	7	10
9 Close out	3	3	3	7

Step 4: Identify from Table 15 the factors which were not known or were unforeseen prior to the formation of the consultant's contract or the issuing of a task order to a consultant which impact upon the services. Assess the additional time charge for each factor, based on reasonable estimates of the additional time required to address each of the identified factors and applying the staff rates provided for in the contract in order to calculate the time charge. Calculate the adjustment factor for project specific variations in level of effort (F_{LE4}) as follows:

a) none of the factors in Table 15 apply

$F_{LE4} = 1,0$

b) one or more of the factors in Table 5 apply

$F_{LE4} = 1 + D / (B \times BFP / 100)$

where B = cost of construction used in the determination of BFP

BFP = basic percentage fee derived from the formula 5.4.4.1 for the value of B

D = the sum of all the estimated time charges for identified project specific variations described in Table 5

EXAMPLE: The sum of the total time charge determined for the applicable areas contained in Table 15 total R1 70 000. The basic percentage fee (BFP) derived from the formula contained in 5.4.2.1 for a cost of construction of R 10,0m is 8,0%

$F_{LE4} = 1 + D /(B \times BFP / 100) = 1 + 170\ 000 / (10\ 000\ 000 \times 8,0 / 100) = 1,121$

5.4.2.3 Calculate the fees payable in accordance with the following formula:

Fee percentage = $BFP \times F_{LE} \times F_{PO} \times F_{CON}$

where

BFP = basic percentage fee determined in accordance with the provisions of 5.4.2.1

F_{LE} = adjustment factor that reflects the level of effort that is required as determined in accordance with the provisions of 5.4.2.2

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

F_{CON} = tendered adjustment factor to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

Table 15: Methodology to establish the values of F_{LE4}

Factor no	Area	Considerations
1	Experience and reliability of the contractor	The experience of the contractor can require additional effort in ensuring the required quality, particularly in respect of historical buildings
2	Joint venture requirements	Joint venture which is put together by the employer may attract additional management costs
3	Lead consultant	Requirements to lead the engineering team comprising a number of consultants may attract additional management costs in terms of administration, overall programming, financial control , processing fo claims for payment etc
4	Schedule	Fast track projects may necessitate the hiring of additional staff, pay staff for overtime, and re-schedule other work to accommodate project priorities
		Long protracted projects can place additional demands on staff availability and frequency of interactions.
5	Employer Project documentation and computer modelling demands	The employer may have unique requirements which may require customising of standard temples, more extensive communications, providing documentation in different format etc
6	New technologies	New technologies can introduce unknown risks in using products or systems that don't have a track record or there may be additional requirements for certifications, testing, submittals, approvals etc. There may also be additional specialist consultants to be retained and co-ordinated. They may also be demands for research.
7	Renovation, rehabilitation and alterations	Work associated with renovation, rehabilitation and alternations can have unknowns or require additional work in establishing reliable record information.
8	Stop and start up workforce	On some projects it is necessary to stop work on the design or preparation of production information. This can lead to additional costs associated with loss of productivity etc
9	Quality assurance system	Employer requirements for quality management systems or quality management services over and above monitoring services can place additional demands on resources.
10	Phased hand over	Phased occupancies can occur on some projects. This can lead to increased resources to address fragmented commissioning.
11	Level of monitoring	Reduce fee if level 1 monitoring service is required. Increase if level 3 or 4 level service is required and not dealt with on a time charge basis.
12	Integration with Existing Works	Extensive integration with many detailed surveys required to facilitate good integration and involving extensive re-use of existing works may necessitate the deployment of additional resources
13	Labour Intensity	Extensive design to suite labour based construction and additional supervision or longer duration due to involvement of labour may necessitate the deployment of additional resources
14	Review the application of design and construction rules by others	An employer can in the case of building works require the review of the application by others of the design and construction rules contained in parts of SANS 10400 for a drainage, stormwater disposal, fire protection, fire installation or structural, system or element which are deemed-to-satisfy the National Building Regulations. This typically involves the confirmation of the correct interpretation and application of these rules.

Factor no	Area	Considerations
15	Design of parts of the structural, fire protection, artificial ventilation, stormwater disposal or non-water borne sanitary disposal, fire installation or drainage installation system by others	Regulation A19(7) of the National Building Regulations requires that the person appointed as an approved competent person assume responsibility for satisfying the functional regulations relating to that particular system in its entirety as a single point of responsibility. Regulation A19(8)(a) recognises that parts of a system may be designed by others but requires the approved competent person to ensure that: a) the component designs are generally in accordance with the approved application and in accordance with the requirements of the regulations; b) the component designs will achieve the necessary co-ordination and interaction of the different elements so as to achieve the objectives of the systems; and c) in the case of the structural system, the interaction of the various component elements will be such that the structural adequacy of all the parts of the building and the overall stability of the building is assured Regulation A19(8)(a) excludes responsibility for the detailed design of elements carried out by the other competent persons. Regulations 19(8)(b) enables the approved competent person for the design of system to requires those responsible for designing parts of the system to complete a standard form contained in part A of SANS 10400 and to provide information and documents relating to their designs.

5.4.3 Payment for stage completion

Payment for stage completion where definition services are required shall unless otherwise motivated be based on the percentages shown in Table 14.

5.5 Supporting documentation for the determination of fee percentage

Supporting documentation shall be prepared to determine the applicable fee percentage. Such documentation shall contain all assumptions made regarding the cost of construction and the determination of the adjustment factor (F_{LE}) and contain sufficient notes to enable an independent reviewer to arrive at a similar determination.

The supporting documentation shall be agreed with the employer's representative and signed off by such person.

The supporting documents shall be retained by both the employer and the consultant for audit purposes.

Annexure 1: Fee categories for architectural services for different class of buildings

The fee categories for the different classes of architectural work are as follows:

Class	Occupancy	Detailed description	Fee category	
			Architectural	Cost consultancy
A PLACES OF ASSEMBLY				
A1	Restaurants	A1.1 A la Carte Restaurant	3	4
		A1.2 Fast Food Outlet / Snack Bar / Coffee Shop	2	4
		A1.3 Drive-through / Drive-in Food Outlets	2	4
A2	Entertainment / Assembly	A2.1 Community Hall	2	3
		A2.2 Multi-Purpose Hall	3	3
		A2.3 Dance Hall	2	3
		A2.4 Night Club / Disco	2	4
		A2.5 Civic Centre	4	5
		A2.6 Pub / Bar / Ladies Bar	2	4
		A2.7 Shebeen / Tavern	2	3
		A2.8 Open Air Amphitheatre	2	2
A3	Theatrical / Music	A3.1 Opera House / Concert Hall	5	6
		A3.2 Theatre	5	5
		A3.3 Auditorium	4	4
		A3.4 Cinema	4	4
		A3.5 Drive-in Cinema	2	2
		A3.6 Recording Studio	5	5
A4	Places of Instruction	A4.1 Small School / Farm School / Small Rural School	2	3
		A4.4 Primary & Secondary School	3	4
		A4.5 College / University / Place of Higher Learning	4	5
		A4.6 Specialised Training Facility	4	5
		A4.7 Conference Centre	4	5
		A4.8 Convention Centre	4	5
A5	Places of Worship	A5.1 Religious Assembly Hall	2	4
		A5.2 Church / Temple / Mosque / Synagogue < 150 people	2	4
		A5.3 Church / Temple / Mosque / Synagogue >150 people	3	4
A6	Indoor Sport	A6.1 Sports Club Building	3	4
		A6.2 Gymnasium	3	4
		A6.3 Health Club / Centre / Spa	4	4
		A6.4 Indoor Swimming Pool / Sports Track / Arena / Covered Stadium / Squash Court / Bowling Alley	3	4
		A6.5 Covered Stadium	4	4
A7	Outdoor Sport	A7.1 Arena	2	3
		A7.2 Stadium	3	3
		A7.3 Sports Field / Track / Court / Bowling Green	2	3
		A7.4 Domestic Swimming Pool	1	1
		A7.5 Swimming Pool / Diving Centre	3	3
		A7.6 Specialised Facilities e.g. Wave Pools / Climbing Walls / Skateboard Rinks	3	3
B COMMERCIAL				
B1	High risk commercial	B1.1 Facilities where Noxious / Toxic / Flammable Materials are Used / Sold	3	3
		B1.2 Petrol Station	3	4
B2	Moderate risk commercial	B2.1 Max 500sq m / max 1 storey	2	3
		B2.2 Max 1000sq m / max 3 storeys	2	3
		B2.3 Unlimited size / Multi-storey	2	3
B3	Low risk commercial	B3.1 Max 500sq m / max 1 storeys	2	2
		B3.2 Max 500sq m / max 2 storeys	2	2
		B3.3 Max 1000sq m / max 3 storeys	2	2
		B3.4 Unlimited size / Multi-storey	2	2
C EXHIBITION SPACES				
C1	Exhibition Building	C1.1 Individual Exhibition stand within Major Hall / Exhibition Space	1	2
		C1.2 Exhibition Hall	3	4
		C1.3 Private Art Gallery < 500 sq m	3	4
		C1.4 Private Art Gallery > 500 sq m	3	4
C2	Museums	C2.1 Heritage Precinct / Building	4	4
		C2.2 Town Museum	4	5
		C2.3 Regional / National Museum or Art Gallery	4	5
		C2.4 Planetarium / Specialised Exhibition Space	4	5

Class	Occupancy	Detailed description	Fee category	
			Architectural	Cost consultancy
C EXHIBITION SPACES (continued)				
C3	Library	C3.1 Community / School Library	3	5
		C3.2 Higher Education / Regional / National Library	4	6
		C3.3 Multi-Media Centre	3	6
C4	Outdoor Exhibition Space	C4.1 Permanent Structure max 500 sq m	2	3
		C4.2 Permanent Structure - unlimited size	2	3
D INDUSTRIAL				
D1	High Risk Industrial	D1.1 Examples Petrochemical / Nuclear Reactor	3	3
D2	Moderate Risk Industrial	D2.1 Food & Pharmaceuticals Processing	3	3
		D2.2 Other to max 1500sq m / max 3 storeys	3	3
		D2.3 Unlimited size	3	3
D3	Low Risk Industrial	D3.1 Max 500sq m / max 1 storey	2	2
		D3.2 Max 1000sq m / max 2 storeys	2	2
		D3.3 Max 2000sq m / max 3 storeys	2	2
		D3.4 Unlimited size	2	2
D4	Plant Room	D4.1 Max 750sq m / max Double storey	3	3
		D4.2 Unlimited size	3	3
E INSTITUTIONAL				
E1	Correctional & Judicial	E1.1 Regional Police Station	3	5
		E1.2 Community Police Station	3	4
		E1.3 Satellite Police Station	2	4
		E1.4 Radio Control Centre	3	4
		E1.5 Prison (All grades)	3	4 -5
		E1.6 Courts (All grades)	4	5
E2	Hospital / Medical Facility	E2.1 Private Doctors Consulting Rooms	3	5
		E2.2 Medical Consulting Rooms	3	5
		E2.3 Medical Centre	3	5
		E2.4 Satellite Clinic	3	5
		E2.5 Community Health Centre	3	5
		E2.6 Frail Care / Hospice	4	6
		E2.7 Hospital / Trauma Unit	5	6
E3	Residential Institution	E3.1 Home for the Elderly / Children	4	4
		E3.2 School Hostel max 3 storeys	2	3
		E3.3 School Hostel over 3 storeys	2	3
		E3.4 Student & Youth Hostel max 3 storeys	3	3
		E3.5 Student & Youth Hostel over 3 storeys	3	3
		E3.6 Workers Hostel max 3 storeys	2	3
		E3.7 Workers Hostel over 3 storeys	2	3
		E3.8 Community Care Centre	4	4
		E3.9 Sanatorium / Health Spa	4	4
E4	Research Facility	E4.1 School Laboratory	4	5
		E4.2 Privately Owned / Corporate Laboratory	5	5
		E4.3 Regional / National / University Research Institute	5	6
F SHOPPING CENTRES				
F1	Large Shop	F1.1 Shop Interior	3	3
		F1.2 Department Store maximum 2 storeys	4	2
		F1.3 Department Store more than 2 storeys	4	2
		F1.4 Local Convenience / Neighbourhood Retail Centre - maximum 1 000 sq m	3	2
		F1.5 Suburban Shopping Centre	4	2
		F1.6 Regional Shopping Centre	4	2
F2	F2 Small Shop	F2.1 Corner Store / Home (Spaza) Shop - maximum size 500 sq.m.	3	2
F3	Wholesaler's Store	F3.1 Max 2000sq m / max 3 storeys	3	1
		F3.2 Unlimited size	3	1
G OFFICES				
G1	Offices	G1.1 Individual Studio / Offices to max 500 sq m / max 1 storey	2	3
		G1.2 Individual Studio / Offices to max 500 sq m / max double storey **L**	2	3
		G1.3 Office Building / Park max 3 storeys	3	3
		G1.4 Multi-storey Office Building / Office Park	3	3
		G1.5 Office building higher than 30m, Service Towers & Skyscrapers	3	3

Class	Occupancy	Detailed description	Fee category	
			Architectural	Cost consultancy
H RESIDENTIAL				
H1	Hotel / Hospitality	H1.1 Guest House (max 12 bedrooms)	2 to 3	2
		H1.2 Game Lodge	2 to 3	2
		H1.3 Holiday Apartments to max 3 storeys	3	2
		H1.4 Motel / Hotel / max 30 bed / max 3 storeys	3	2
		H1.5 Multi-storey Hotel / Holiday Apartments	4	2
H2	Multi-Unit Residential	H2.1 Multi-storey Apartment Building	4	2
		H2.2 Block of Apartments max 3 storeys	4	2
		H2.3 Block of Apartments max 2 storeys, max no units 10	4	2
		H2.4 Townhouse Development of max 2 storeys, max no units 10	3	2
		H2.5 Townhouse Development of max 3 storeys, max no units 40	3	2
		H2.6 Townhouse / Residential Village Development - unlimited size	3	2
		H2.7 Recreational Estate (Marina Golf etc)	3	2
H3	Dwelling House	H3.1 Single / Double Dwelling 2 storeys, max 500 sq m	2 to 4	2
		H3.2 Single / Double Dwelling max 2 storeys, max 750 sq m	3 to 4	2
		H3.3 Single / Double Dwelling unlimited size	3 to 5	2
J STORAGE				
J1	High Risk Storage	J 1 Example Petrochemical / Toxic Waste / Flammables	3	2
J2	Moderate Risk Storage	J2.1 Max 500sq m / max double storey	2	1
		J2.2 Max 1000sq m / max 3 storeys	2	1
		J2.3 Unlimited size	2	1
J3	Low Risk Storage	J3.1 Max 1000sq m / max double storey	1	1
		J3.2 Max 2000sq m / max 3 storeys	1	1
		J3.3 Unlimited size	1	1
J4	Parking Garage	J4.1 Single Storey Parking Garage	2	1
		J4.2 Max 3 Storey Parking Garage	2	1
		J4.3 Multi-Storey Parking Garage	2	1
		J4.4 Underground Parking	2	1
J5	J5 Cold Storage	Example Cold Chain Facilities / Ice Bunkers	3	3
K AGRICULTURAL				
K1	Farm Building	K1.1 Feed Storage	1	1
		K1.2 General Livestock Housing / Stables	2	1
		K1.3 General Use Barns & Sheds	1	1
		K2.3 Cold Storage	3	2
		K2.4 Grain Silos	3	2
		K2.5 Wine Cellars / Stills	3	2
L TRANSPORTATION				
L1	Terminal Building	L1.1 Airport	3	5
		L1.2 Harbour	3	5
		L1.3 Regional / City Main Railway Station / Subway Station	3	5
		L1.4 Suburban / Rural Railway Station	3	5
L2	Goods Handling Facilities	L2.1 National / Regional Depot	2	3
		L2.2 Suburban Depot	2	3
M FACILITIES FOR HANDLING MORTAL REMAINS				
M1	Human Remains	M1.1 Crematorium	4	5
		M1.2 Mortuary	4	5
		M1.3 Funeral Parlour (without Mortuary)	3	5
M2	Animal Remains	M2.1 Abattoir (Also Food Processing)	4	4
		M2.2 Crematorium	3	4

Annexure 2: Fee categories for engineering services for different project types

The fee categories for engineering services in different projects types are as follows:

Project Type	Fee Category
Civil and structural engineering and building works	
Pipelines	
Pipelines – Water	A
Pipelines – hazardous substances, submarine pipeline	D
Transport Infrastructure	
Airports and runways, taxiways and aprons	A
New and Improved Urban Roads	C
New Paved Rural Roads	A
New Rural Freeways	B
New Urban Freeways	D
Railway trackwork	A
Railways (excluding cost of tracks)	A
Road Rehabilitation	A
Rural Road Expansion	B
Water	
Concrete dams	A
Earth and rockfill dams	A
Stormwater Pipes (Pre-cast Units)	A
Municipal and Building Civils	
Building civils	C
Municipal Services	C
Parking lots	A
Water and Sewage Treatment Works	F
Geotechnical	
Underground Structures	A
Reinforced Concrete and Structural Steel	
Complex load bearing structures, quay walls and jetties	F
Minor structures	C
Overpasses and Freeway Bridges	E
Powerstation civils and buildings	C
River bridges	F
Stormwater structures, breakwaters and canals (designed)	C
Unique structures	E
Water Retaining Structures	D
Water Towers	E
Building Structural	
Iconic and Unique Buildings and Structural Alterations	G
Hospitals, Hotels, Airports, Stadia, Exhibition Halls and Retail Shopping Centres	F
Residential, Offices, Educational and Industrial	E
Warehouses	D

Project Type	Fee Category
Mechanical engineering works	
Green building design and energy management	F
Specialised fire protection systems such as gas, foam extinguishing etc	D
Hazardous material systems	F
HVAC systems	D
Industrial process, piping and instrumentation	E
Mechanical plant and equipment	C
Pressure vessel design	F
Pumping and pipeline systems	D
Refrigeration and cold storage	C
Vertical transportation systems and materials handling	D
Mechanical building works	
Industrial building services and utilities	E
General – commercial, retail, offices, schools, hostels, clinic, hotels and resorts	E
Specialised – airport buildings, theatres, libraries, public entertainment, hospitals, research facilities, universities, labortaories, conference facilities, institutional buildings and facilities	F
Residential – individual luxury housing units and apartment buildings	F
Residential – multiple (>50) standard housing units	C
Electrical engineering works	
Green building design and energy management	F
Communications, data and IT cabling systems	E
Energy generation and transmission	D
Fire protection, security and access control	E
Industrial process, wiring and instrumentation	E
Mining	D
Motor control and electrical installations for machinery and equipment	E
MV and LV Distribution	C
Street, area and sportsfield lighting	D
Electrical building works	
Industrial building services and utilities	E
General – commercial, retail, offices, schools, hostels, clinic, hotels and resorts	E
Specialised – airport buildings, theatres, libraries, public entertainment, hospitals, research facilities, universities, labortaories, conference facilities, institutional buildings and facilities	F
Residential – individual luxury housing units and apartment buildings	F
Residential – multiple (>50) standard housing units	C
Electronic engineering	G

Annexure 3: Recording the determination of a fee percentage based on the application of the framework

NOTE: Clause 5.5 of *Framework for the determination of professional fees for consulting services* requires that Supporting documentation be prepared to determine the applicable fee percentage. Such documentation is required to contain all assumptions made regarding the cost of construction and the determination of the adjustment factor (F_{LE}) and contain sufficient notes to enable an independent reviewer to arrive at a similar determination.

Contract no:	
Title of contract:	
Task Order no:	
Consultant:	
Type of Service: (tick relevant box)	☐ architectural ☐ cost consulting ☐ engineering
Nature of services: (provide short description)	

We the undersigned have applied the *Framework for the determination of professional fees for consulting services* in respect of the abovementioned services and have determined that the applicable fee percentage for the abovementioned Task Order is:

. . . . . % (in words) . . . . . % (in figures)

The supporting documentation containing the assumptions made in arriving at this fee percentage is as set out in the attached supporting documentation.

Consultant's **representative**	***Employer's*** **Agent**
Signature:.	Signature:. . .. .
Name:	Name: . . . . .
Date:	Date: . . . . .

Supporting documentation for determination of architectural fee percentage

1 Cost of construction

Cost of construction excluding VAT = R . . . . . ❶

Briefly describe how the cost of construction was arrived at:

. . . . . .

2 Basic fee

Fee base (see column C of Table 2)	= R	❷
Percentage cost (see column D of Table 2)	percentage = ...	❸
	percentage cost = ❸ / 100 x ❶	
	= . . . . . / 100 x	
	= R	❹
basic fee	= ❷ + ❹	
	= . . . . . + ...	
	= R	❺
basic percentage fee (BFP)	= ❺ / ❶ x 100	
	= . . . . . / . . . . . x 100	
	=	❻

3 Level of effort

3.1 Adjustment factor for building category and complexity (F_{LE1})

Category of building(s) from Annexure 1: . . . . . .

Adjustment factor for building category and complexity from Table 3 (F_{LE1}) = ...

Provide motivation for selected complexity in Table 3:

. . . . . .

Where more than one category applies, provide calculation for interpolation of F_{LE1}

. . . . . .

3.2 Adjustment factor for repeat buildings (F_{LE2})

Check one of the following boxes:

☐ no repeat buildings: $F_{LE2} = 1,0$

☐ repeat buildings occur:

Estimated cost of construction associated with repeat buildings: R . . . . . ❼

Briefly describe how the cost of construction associated with repeat buildings was arrived at:

. . . . . .

F_{LE2} = 1 – 0,455 x ❼ / ❶

= 1 – 0,455 x . . . . . / . . . . . .

= . . . . . .

3.3 Adjustment factor where employer appoints others to undertake work covered by the deemed to satisfy design and construction rules contained in SANS 10400 (F_{LE3})

Check one of the following boxes:

☐ consultant applies the relevant deemed to satisfy design and construction rules for all parts of the National Building Regulations: F_{LE3} = 1,0

☐ consultant applies not all the relevant deemed to satisfy design and construction rules for all parts of the National Building Regulations

Estimated cost of the systems or elements of a building which are covered by the deemed to satisfy rules contained in SANS 10400 but are undertaken by others appointed by the employer: R . . . . . ❽

Briefly describe how such cost of the systems or elements of a building was arrived at:

. . . . . .

Estimated percentage of ❽ which needs to be included in the cost of construction to provide a reasonable fee for dealing with aspects of the system or element which is undertaken by others in the design of the building as a whole . . . . . % ❾

Briefly describe how such percentage was arrived at:

. . . . . .

F_{LE3} = 1 – (1 – ❾ / 100) x ❽ / ❶

= 1 – (1 - . . . . . / 100) x . . . . . / . . . . . .

= . . . . . .

3.4 Adjustment factor for the range of services that are required (F_{LE4})

Check one of the following boxes:

☐ services are provided as project leader, lead designer, designer and supervising agent: F_{LE4} = 1,0

☐ services are provided as lead designer, designer and supervising agent: F_{LE4} = 0,9

3.5 Adjustment factor for the type of services required (F_{LE5})

Check one of the following boxes:

☐ definition services are only required: F_{LE5} = 1,0

☐ definition and review services are required

Check one of the following boxes:

☐ design and construct contracting strategy in which case f = 0,8 ❿

☐ develop and construct contracting strategy in which case f = 0,45 ❿

The total estimated time charge for identified review services is. . . . . ⓫

Briefly describe how such time charge was arrived at:

. . . . . .

F_{LE5} = 1- ❿ + ⓫ / (❶ x ❻ / 100)

3.6 Adjustment factor for unknown / unforeseen additional time charge (F_{LE6})

Check one of the following boxes:

☐ no unknown or unforeseen additional factors listed in Table 6 apply : F_{LE5} = 1,0

☐ unknown or unforeseen additional factors listed in Table 6 apply:

applicable factor no(s) and description(s) from Table 6: . . . . . .

detailed estimated time charge for each identified factor:

. . . . . .

. . . . . .

Total of all estimated time charges = ... ⓬

F_{LE6} = 1 + ⓬ / (❶ x ❻ / 100)

= 1 + ... / (. . . . . + ... / 100)

= . . . . . .

3.7 Determination of F_{LE}

$F_{LE} = F_{LE1} \times F_{LE2} \times F_{LE3} \times F_{LE4} \times F_{LE5} \times F_{LE6}$

F_{LE} = ... x . . . . . x . . . . . x . . . . . x . . . . . x . . . . .

= . . . . . ⓭

4 Fee percentage

Fee percentage = ❻ x ⓭ x F_{PO} x F_{CON}

where

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

F_{CON} = tendered adjustment factor to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

Fee percentage = ... x . . . . . x . . . . . / 16 x . . . . . .

= . . . . . .

Supporting documentation for the determination of cost consulting fee percentage

1 Cost of construction

Cost of construction excluding VAT = R . . . . . ❶

Briefly describe how the cost of construction was arrived at:

. . . . . .

2 Basic fee

Primary charge (see column C of Table 6)	= R	❷
Marginal rate (see column D of Table 6)	percentage balance over column A = ... %	❸
	column A = ...	❹
	= ❸ / 100 x (❶ – ❹)	
	= **. . . . . .** / x (. . . . . - . . . . .)	❺
Basic fee	= ❷ + ❺	
	= . . . . . + ...	
	= R	❻
basic percentage fee (BFP)	= ❻ / ❶ x 100	
	= . . . . . / . . . . . x 100	
	=.	❼

3 Level of effort

3.1 Adjustment factor for building category and complexity (F_{LE1})

Category of building(s) from Annexure 1: . . . . . .

Adjustment factor for building category and complexity from Table 7 (F_{LE1}) = ...

Where more than one category applies, provide calculation for interpolation of F_{LE1}

. . . . . .

3.2 Adjustment factor for replication of prototype (F_{LE2})

Check one of the following boxes:

☐ no replication of prototype: $F_{LE2} = 1,0$

☐ replication of prototype occurs

Estimated cost of construction associated with replications: R . . . . . ❽

Briefly describe how the cost of construction associated with repeat buildings was arrived at:

. . . . . .

F_{LE2} = 1 – 0,4 x ❽ / ❶

= 1 – 0,4 x . . . . . / . . . . . .

= . . . . . .

3.3 Adjustment factor for the scope of services (F_{LE3})

Applicable NEC3 contract option – see Table 8: . . . . . .

Applicable adjustment factor contained in Table 8 for scope of services ($F_{LE3)}$ = ...

4.4 Adjustment factor for the type of services (F_{LE4})

Check one of the following boxes:

☐ definition services are only required: F_{LE4} = 1,0

☐ definition and review services are required

contracting strategy (see first column Table 9): . . . . . ,

adjustment factor for the type of services from Table 9 (FL_{E4}) = ...

3.5 Adjustment factor for unknown or unforeseen additional time charge (F_{LE5})

Check one of the following boxes:

☐ no unknown or unforeseen additional factors listed in Table 10 apply : F_{LE5} = 1,0

☐ unforeseen unknown or additional factors listed in Table 10 apply:

applicable factor no(s) and description(s) from Table 10: . . . . . .

detailed estimated time charge for each factor identified:

. . . . . .

. . . . . .

Total of all estimated time charges = ... ❾

F_{LE5} = 1 + ❾ / (❶ x ❼ / 100)

= 1 + ... / (. . . . . + ... / 100)

= . . . . . .

3.6 Determination of F_{LE}

$F_{LE} = F_{LE1} \times F_{LE2} \times F_{LE3} \times F_{LE4} \times F_{LE5}$

$F_{LE} =$ . . . . . x . . . . . x . . . . . x . . . . . x . . . . .

$=$ . . . . . ❿

5 Fee percentage

Fee percentage = ❼ x ❿ x F_{PO} x F_{CON}

where

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

F_{CON} = tendered adjustment factor to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

Fee percentage = ... x . . . . . x . . . . . / 16 x . . . . .

= . . . . .

Supporting documentation for the determination of engineering fee percentage

1 Cost of construction

Cost of construction excluding VAT = R . . . . . ❶

Briefly describe how the cost of construction was arrived at:

. . . . . .

2 Basic fee

BFP = 24,1 – 2,3 x log ❶

= . . . . . ❷

Note: if BFP < 4,0% or where cost of construction exceeds R1,0 billion, the fee is negotiated.

3 Level of effort

3.1 Adjustment factor for level of complexity (F_{LE1})

Project type (s) from Annexure 2: . . . . . .

Applicable influencing factor for project type from Table 12 (less effort / norm / more effort) together with brief motivation for selecting the level of effort:

. . . . . .

F_{LE1} selected from Table 13: . . . . . .

Brief motivation for selection of F_{LE1}: . . . . . .

Where more than one project type applies, provide calculation for interpolation of F_{LE1}

. . . . . .

3.2 Adjustment factor for duplication of or repetitive work (F_{LE2})

Check one of the following boxes:

☐ no duplication of or repetitive work: $F_{LE2} = 1,0$

☐ duplication or repetition of work occurs:

Estimated cost of works which are duplicated or where repetition exists: R . . . . . ❸

Briefly describe how the cost of construction associated with such works was arrived at:

. . . . . .

Estimated percentage of ❸ which needs to be included in the cost of construction to provide a reasonable fee to the for dealing with duplication or repetitive aspects of the work: . . . . . % ❹

Briefly justify percentage value for ❹:

. . . . . .

F_{LE2} = 1 – (1 – ❹ / 100) x ❸ / ❶

= . . . . . .

3.3 Adjustment factor for the type of services (F_{LE3})

Check one of the following boxes:

☐ definition services are only required: F_{LE4} = 1,0

☐ definition and review services are required

Check one of the following boxes:

☐ design and construct contracting strategy in which case, f:

= 0,70 for civil engineering and building works and structural engineering works ❹
= 0,75 for structural building works ❹
= 0,80 for mechanical and electronic works ❹

☐ develop and construct contracting strategy in which case, f:

= 0,45 for civil engineering and building works and structural engineering works ❹
= 0,40 for structural building works ❹
= 0,55 for mechanical and electronic works ❹

total estimated time charge for identified review services : R . . . . . ❺

provide break down of time charges:

. . . . . .

F_{LE3} = 1 – ❹ + ❺ / (❶ x ❷ / 100)

= . . . . . - . . . . . + ... / (. . . . . x . . . . . / 100)

= . . . . . .

3.4 Adjustment factor for unknown and unforeseen additional time charge (F_{LE4})

Check one of the following boxes:

☐ no unknown and unforeseen additional factors listed in Table 15 apply : F_{LE4} = 1,0

☐ unknown and unforeseen additional factors listed in Table 15 apply:

applicable factor no(s) and description(s) from Table 15: . . . . . .

detailed estimated time charge for each identified factor:

. . . . . .

. . . . . .

Total of all estimated time charges = ... ❻

F_{LE5} = 1 + ❻ / (❶ x ❷ / 100)

= 1 + ... / (. . . . . + ... / 100)

= . . . . . .

3.5 Determination of F_{LE}

$F_{LE} = F_{LE1} \times F_{LE2} \times F_{LE3} \times F_{LE4}$

F_{LE} = ... x . . . . . x . . . . . x . . . . . .

= . . . . . ❼

4 Fee percentage

Fee percentage = ❷ x ❼ x F_{PO} x F_{CON}

where

F_{PO} = tendered professional and technical staff rate expressed in cents / R 100 or part thereof of total cost of employment / 16

F_{CON} = tendered adjustment factor to reflect factors such as risk, productivity, efficiency, locality, local knowledge, particular methods or systems for delivering services, level of expenses that are not recoverable etc.

Fee percentage = ... x . . . . . x . . . . . / 16 x . . . . . .

= . . . . . .