

CITY OF DURBAN

STANDARD ENGINEERING SPECIFICATION

PART "AB"

GENERAL SPECIFICATION

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PART "AB" : CONCRETE WORK

AB.1 **DEFINITIONS**

The following definitions shall apply to all technical specifications:

Approved	:	approved by the Engineer.
Approved tip	:	an area either approved by the Engineer or the nearest Municipal tip site where discarded material is to be deposited.
Base (Basecourse)	:	a layer of specified material of designed thickness that is placed immediately below a bituminous or an asphalt surface.
Bedding	:	(i) the material in the bedding cradle and selected fill blanket up to the underside of the main fill. (ii) the operation of placing and compacting bedding as specified.
Bedding cradle	:	the area in which bedding material is placed and compacted under and at the side of a pipe, duct or cable.
Evenly graded	:	material in the form of separate particles having approximately 90% by mass of the grains distributed between stated limits.
Flexible pipe	:	a pipe, the diameter of which is reduced by more than 1% under an external radial force before the appearance of cracks.
Formation	:	the surface of the subgrade in its final shape below roadways after completion of earthworks.
Freehaul	:	haul that is included in the scheduled rate and is not measured separately.
Joint hole	:	a depression formed in the bedding cradle to accommodate a joint in a pipeline.
Natural ground level	:	the level of the surface of an area before the commencement of clearing.
Nest (or batch) (of ducts)	:	two or more ducts laid parallel to one another in a regular pattern in the same trench.
Overbreak	:	excavation carried out in excess of the nett design dimensions.

AB.1 **DEFINITIONS (CONT'D)**

Overhaul	:	haul in excess of freehaul and measured separately.
Rigid pipe	:	a pipe, the diameter of which is reduced by not more than 1% under an external radial force before the appearance of cracks.
Section	:	an area having a size not greater than 2 000 m ² or less than 500 m ² .
Selected fill blanket	:	material placed and compacted to form a blanket from the top of the bedding cradle up and over a pipe, duct or cable.
Singularly graded	:	material in the form of separate particles having over 90% by mass of the grains retained on a single sieve of any specified size aperture between stated limits.
Spoil	:	unsuitable or excess material removed (or intended to be removed) to waste.
Sub-base	:	a layer of specified material of designed thickness placed between the sub-grade and the base.
Sub-grade	:	the uppermost earthworks layer/layers.
Suitable material	:	material complying with the following minimum A.A.S.H.T.O. classifications : A-1, A-2-4 and A-3.
Ton	:	metric ton (1 000 kg).
Top soil	:	the top layer of soil containing a proportion of decomposed organic material nominally 150 mm thickness.
Unrestricted area	:	an area not subject to loads from road traffic or to loads from other specified sources.
Vegetation	:	vegetable growth such as grass, bushes, hedges, undergrowth, trees or crops.

AB.2 **OFFICES FOR ENGINEER AND STAFF**

AB.2.1 **General**

Unless otherwise specified in Part "AA" Project Specification, the Contractor shall provide the facilities for the Engineer and staff detailed hereunder.

Either one or more Type 1 or Type 2 offices, as stated in the schedule of quantities, shall be provided and furnished.

AB.2 OFFICES FOR ENGINEER AND STAFF (CONT'D)

AB.2.1 General (Cont'd)

The offices shall be sited in a position decided upon by the Engineer. Each office shall be weatherproof, shall have a wooden boarded floor that is at least 150 mm above ground and shall be provided with a ceiling and lining to the walls or equivalent insulation, with an approved type of door with a secure lock and 4 keys and two opening windows of glazed area at least 3 m². Each office shall be well ventilated and shall be so insulated as to provide comfortable working conditions.

The Contractor shall supply toilet facilities for the exclusive use of the Engineer and his representatives. The facilities shall include a suitable drinking water supply, a water closet toilet or other acceptable toilet facilities should sewerage not be available within 20 m of the proposed office site, a wash hand basin, soap and towel.

The Contractor shall provide for the duration of the contract period proper maintenance of the offices and toilets and their approaches and arrange for the daily cleaning of the offices and toilets which shall be completed by 08:00.

The Contractor, upon completion of the contract, shall arrange for the complete removal of the office and toilets together with the disconnection of all services.

AB.2.2 Types of Offices

(a) Type 1

This office shall be of minimum size 4 m x 6 m with a minimum of height to ceiling of 2,5 m. It shall be provided with an air conditioner whose capacity is acceptable by the Engineer as reasonably adequate for the size of office actually provided and shall have adequate fluorescent lighting. It shall be furnished with one desk having a top size of at least 1,5 m x 0,9 m with one lockable drawer, 6 (six) suitable chairs, a notice board minimum size 2 m long x 1 m high, a 4 drawer filing cabinet and an angled smooth-topped plan table of minimum size 1,8 m long x 0,9 m wide with suitable provision underneath for the storage of plans.

(b) Type 2

The requirements for a Type 2 office shall be the same as for a Type 1 office except for the following variations:

Size - 4 m x 4 m; no air conditioning or filing cabinet required; acceptable alternative lighting if no electricity supply available for fluorescent lighting; 4 (four) only suitable chairs required.

AB.2 OFFICES FOR ENGINEER AND STAFF (CONT'D)

AB.2.3 Measurement and Payment

The unit of measurement for the offices shall be a combination of a fixed charged item and a time related item.

The fixed charged item shall cover the cost of the provision and establishment on site of the offices, toilets and furnishings, the provision of services together with the payment of all necessary fees and the removal of the office's toilets and services together with the restoration of the camp site to the Engineer's satisfaction, upon completion of the contract.

The time related item shall cover the cost for the duration of the contract of the maintenance of the office and furnishings, site rentals (if applicable) and the daily cleaning.

AB.3 TELEPHONES

Unless otherwise specified in Part "AA" Project Specification, the Contractor shall, subject to the availability from the Department of Posts and Telecommunications, arrange for the installation of a telephone in the office for the exclusive use of the Engineer and his staff.

The Council will reimburse the Contractor for the cost of the telephone calls and rental on this service on production of the telephone account. The Contractor shall ensure that the telephone account is paid promptly.

AB.4 CONTRACTOR'S CAMP SITE/STORE YARD

When the Contractor is permitted to establish a camp site on Council owned land then the use of this site is subject to the following conditions:

- (i) the camp site shall be used solely for storage and administrative purposes for this contract and under no circumstances must the site be used for the accommodation of the Contractor's employees other than a night watchman for security purposes;
- (ii) when no waterborne sewerage facilities are available on the camp site, the necessary temporary toilet/ablution facilities shall be provided by the Contractor to the prior approval and satisfaction of the City Medical Officer of Health and shall be suitably screened;
- (iii) the area of the camp site shall be maintained in a clean and tidy condition throughout the period of occupation and it must be ensured that no ponding of water occurs on the site through the storage of materials;
- (iv) it shall be the responsibility of the Contractor to make good any damage caused to the camp site area and improvements on it including services and for reinstating it to its former condition to the satisfaction of the Engineer when vacated;

AB.4 **CONTRACTOR'S CAMP SITE/STORE YARD (CONT'D)**

- (v) the Council shall have the right of entry upon the camp site at all times for inspection purposes and to construct and maintain services without the Contractor having the right of claim for any damages which may occur;
- (vi) a security fence shall be erected around the whole of the camp site occupied by the Contractor;
- (vii) existing ground levels on the camp site shall not be altered in any way without the prior approval of the Engineer.

AB.5 **NOTICE BOARD**

Within 2 weeks of the commencement of the contract, the Contractor shall supply and erect in an approved location a notice board which shall comply as regards to size, painting, wording and detail as shown on Drawing No. 40918. All wording to be included on the notice board shall be as ordered by the Engineer.

The notice board shall be made of tempered hardboard of thickness at least 12 mm, or similar approved. It shall be braced on the reverse side to prevent warping and mounted on two or more poles.

Subject to the approval of the Engineer, the Contractor may, if he so desires, erect further notice boards on site.

An approved notice board shall be kept in a good state of cleanliness and repair for the duration of the contract and removed from site within 2 weeks of completion of the contract.

AB.6 **TESTING**

Details of the specific tests to be carried out are included in the relevant Departmental Specification and such tests fall into the following three categories:

(i) Preliminary Testing of Materials

These tests will be carried out by the Contractor to confirm that all relevant requirements of the materials specification are achieved. The results obtained of the tests on the materials should be presented to the Engineer for approval prior to being used in the works.

The Contractor shall make allowance for the cost of this testing in the Preliminary and General Section of the Schedule of Quantities unless the costs are included in the relevant unit rates.

AB.6

TESTING (CONT'D)

(ii) Site Control Testing

These tests will be carried out by the Contractor to confirm that all relevant site work is in accordance with the specification. The results of these tests must be presented to the Engineer when acceptance testing to be done by the Engineer, is requested.

The Contractor shall make allowance for the cost of this testing in the Preliminary and General Section of the Schedule of Quantities unless the costs are included in the relevant unit rates.

(iii) Acceptance Testing

Throughout the contract acceptance testing will be necessary to ensure that the various design elements are constructed to the required standards and the cost thereof will be borne by the Council.

The Engineer will arrange for acceptance testing to be carried out by the Physical Environment Service Unit's Materials Laboratory or by a reputable, independent materials testing company.

The Contractor must provide a minimum of 8 normal working hours notice to the Engineer when works will be available for testing and allow a further 8 normal working hours for the results to be processed.

All testing shall conform to one of the following methods:

- (a) the standard method of testing of the Department of Transport of the Republic of South Africa, as detailed in the latest edition of "Standard Methods of Testing Road Construction Materials - TMH - 1";
- (b) the standard methods of testing of the South African Bureau of Standards which methods will apply to the testing of lime, cement, bituminous road binders, crushed stone, sand, steel, concrete and certain concrete products;
- (c) the standard methods of testing of the American Association of State Highway Officials; or
- (d) the standard methods of testing of the British Standards Institute.

Any tests not covered by the first two of the above-mentioned methods, will be carried out in accordance with the methods detailed in (c) or (d), whichever is relevant.

AB.7

ROAD DEVIATIONS AND TRAFFIC CONTROL

AB.7.1

Road Deviations

Road deviations will be built to the standard specified in Part "AA" Project Specifications and will be one of three types conforming to the specification below.

AB.7**ROAD DEVIATIONS AND TRAFFIC CONTROL (CONT'D)**

AB.7.1

Road Deviations (Cont'd)

Description	Type A	Type B	Type C	
<u>Geometrics</u>				
Design speed	km/h	60	40	20
Roadway width - straights	m	3,6	3,6	3,6
- curves	m	4,0	4,0	4,0
Shoulder widths	m	2,0	1,0	1,0
<u>Pavement Specification</u>				
Asphalt surfacing - depth	mm	30	30	-
Graded crushed stone base compacted to 98% Mod. A.A.S.H.T.O.	mm	150	75	75
Subgrade minimum CBR at 98% Mod. A.A.S.H.T.O.		12	12	8
<u>Signs</u>				
Road traffic signs will be placed as required in clause AB.7.2				

Only those road deviations detailed on the contract drawings will be reflected in the Schedule of Quantities and will be paid for under the relevant items. The cost of any deviations not provided for in the schedule and required by the Contractor to enable him to comply with the necessary traffic requirements etc., shall be at the Contractor's expense.

AB.7.2

Temporary Traffic Signs

The Contractor shall provide, erect and maintain on the site and at such positions on the approaches to the site all traffic signs necessary for the direction and control of traffic.

The details of all such signs, which shall conform to the current Road Traffic Ordinance and Regulations, must be approved by the Engineer before erection, and a departmental publication entitled "Safety in Road Construction" will form part of the tender documents if applicable.

The signs shall be reflectorised or adequately illuminated at night in a manner approved by the Engineer and kept clean and legible at all times. The Contractor shall reposition, cover or remove signs as required during the progress of the works.

AB.7 ROAD DEVIATIONS AND TRAFFIC CONTROL (CONT'D)

AB.7.3 Traffic Safety and Control

Single line working will not generally be permitted on main traffic routes. However, where single file traffic is necessary on a highway by reason of the construction of the works the Contractor shall provide and maintain a minimum roadway width of 3,6 m or wider where necessary at curves and junctions as agreed by the Engineer.

Traffic control signals if required will be provided by the Council.

The Contractor shall phase the work in a manner acceptable to the Engineer for the operation of traffic and shall before commencing work produce an agreed phased programme.