

**PRICE VARIATION CLAUSE FOR
CIVIL ENGINEERING CONTRACT
ESTIMATION OF DIESEL CONSUMPTION**

Note :

- a) The Tenderer is required to fill in all plant and equipment (diesel engine type) which shall be employed by him for the works together with the estimation of consumption of each plant.
- b) The quantities estimated by the tenderer shall be supported with documentary evidence and are subject to verification and adjustment by the Engineer.
- c) All plant and equipment shall be categorised as follows :

Category A - Earth moving plant and other equipment (diesel engine type) e.g. Track-type tractors (bulldozers), motor graders, excavators, back-hoe/loaders, self-propelled scrappers, off-highway trucks (dump trucks), earth compactors, wheel loaders, track loaders, asphalt pavers, agricultural tractors, rollers, compressors, mobile cranes etc.

Category B - Vehicles (diesel engine type) e.g. tippers (6 cu. Yd.), 5-ton lorry flat bottom etc.

Category C - Miscellaneous equipment e.g. water pumps, concrete mixers etc.

SUMMARY OF DIESEL CONSUMPTION

Category A - Earth moving plant & other equipment	=	litres
Category B - Vehicles	=	litres
Category C - Miscellaneous plant and equipment	=	litres
TOTAL ESTIMATED CONSUMPTION	=	<u> </u> <u> </u> litres

ESTIMATED DIESEL CONSUMPTION FOR
CATEGORY A - EARTH MOVING PLANT AND OTHER EQUIPMENT

Item	Plant	Capacity (in b.h.p.)	No. of Plant	Total Plant Hours to be Employed	Average Consumption (per plant hours)	Total Estimated Consumption (in litres)

Total Carried to Summary: _____

(Use separate attachment if necessary)

ESTIMATED DIESEL CONSUMPTION FOR
CATEGORY B - VEHICLES (DIESEL ENGINE TYPE)

Item	Vehicle	Capacity (in tons)	No. of Vehicles	Total Vehicle- Kilometer	Average Consumption (per vehicle-km)	Total Estimated Consumption (in litres)

Total Carried to Summary: _____

(Use separate attachment if necessary)

ESTIMATED DIESEL CONSUMPTION FOR
CATEGORY C - MISCELLANEOUS PLANT AND EQUIPMENT

Item	Plant	Capacity (in b.h.p.)	No. of Plant	Total Plant Hours to be Employed	Average Consumption (per plant hours)	Total Estimated Consumption (in litres)

Total Carried to Summary:

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(Use separate attachment if necessary)

JADUAL 'A' (C.E.W)

JADUAL BAGI MEMBUAT ANGGARAN KUANTITI DIESEL

CATEGORY	PLANTS	AVERAGE CONSUMPTION
A.	Earth moving plant & other equipment (Diesel Engine Type) e.g. Track-type tractor (bull-dozers), motor graders, excavators, back-hoe/loaders, self-propelled scrappers, off-highway trucks (dump trucks), earth compactors, wheel loaders, track loaders, asphalt pavers, agriculture tractors, rollers, compressors, mobile cranes.	15 litres (3.5 Imp. Gallons) per 100 b.h.p. hour
B.	Vehicle (Diesel Engine Type) a) Tippers - 6 cu.yd. b) Tippers - 8 cu.yd. c) 5-Ton Lorry Flat Bottom	4.2 km/litre (12 miles/imp. gallons) 3.5 km/litre (10 miles/imp. gallons) 4.9 km/litre (14 miles/imp. gallons)
C.	Miscellaneous Equipment, water pumps, concrete mix etc.	5 litres (1 imp. gallon) per 10 b.h.p. hour.

- Notes :**
- a) The above schedules are for the purpose of estimation the quantities of diesel to be used for the project at the time of tendering.
 - b) The actual quantities of diesel consumed shall be based on the documentary evidence for the diesel consumption of each item of plant to be submitted by the Contractor monthly.

JADUAL 'B' (C.E.W)

JADUAL BAGI MEMBUAT KUANTITI FUEL OIL

- a) For the purpose of estimating the quantities of Fuel Oil at the time of tendering, the following average consumption factor can be applied :-

9.0 litres (2 imp. Gallons) per
metric ton of bituminous materials
- b) The actual quantity of Fuel Oil consumed shall be based on documentary evidence submitted by the Contractor monthly.

**JADUAL BAGI MENETAPKAN KUANTITI BITUMEN
(80/100 Gred Penusukan)**

**TABLE OF ESTIMATING QUANTITIES OF BITUMEN
(80/100 Penetration Grade)**

Type	Materials	Max	Optimum Bitumen Content (%)	Average Bitumen Content (%)	Average Compacted Density (lb/cu.ft.)	Quantity Of Bitumen (tonne)	
						Per M.Ton Of Materials	Per Cu. M Of Materials
1.	Bituminous Macadam Base Course	1½" Nominal Size aggregate	3.0-3.8	3.4	138	0.034	0.752
2.	Dense Bituminous Macadam Wearing Course	¾" Nominal Size aggregate	4.4-5.4	4.9	138	0.49	0.1083
3.	Asphaltic Concrete Base Course (Marshall mix)	1½" Nominal Size aggregate	4.5-6.0	5.25	146	0.525	0.1228
4.	Asphaltic Concrete	1½" Nominal Size aggregate	5.0-6.5	5.75	146	0.575	0.1345
5.	Asphaltic Concrete Wearing Course	¾" Nominal Size aggregate	5.5-7.0	6.25	146	0.625	0.1462

- Note : a) The above schedule are for the purpose of estimating quantities of Bitumen at the time of tendering.
- b) The actual quantities of Bitumen incorporated into the Works shall be based on the actual test result of the 'Average Bitumen Content' and 'Average Compacted Density'.
- c) Example: ¾" Nominal size Asphaltic Concrete with 60% Bitumen Content and density of 146 lb/cu. ft.

$$\begin{aligned}
 &\text{Quantity of Bitumen per a cubic of Mix laid} \\
 &= \frac{146 \times 35.31467 \times 0.06}{2204} \\
 &= 0.1404 \text{ M. Ton}
 \end{aligned}$$