CHAPTER 8

WATER SUPPLY

SECTION 12

CALCULATION FOR BRIGADE WATER POINT

1201. Introduction. It is a universal truth that water is a must for human existence. 70% of the human body is made of water. The direct requirement of water can be felt more seriously when a war breaks out or when we are in the field. Only effective and well-organized water supply system can meet the requirement of the fighting troops. The responsibility of various arms and services regarding efficient water supply cannot be over stressed. The Corps of Engineers will have to ensure the smooth supply of water for the combat troops in the field.

a. The info of the recce report is as fol:

(1) The water source is a pond.
(2) Length of the water source is 300 ft.
(3) Width of the water source is 100 ft.
(4) Depth of the water source at three different points are 10 ft, 12ft and 14 ft.
(5) Height of the water tank is 8 ft.
(6) Dia of the water tank is 4 ft.
(7) Time of recovery is 3 minutes (using the pumping set number 5).
(8) The inlet and outlet pipe of the tank is of same dia.

b. The following calculation is to be done.

(1) Total water available in the source.
(2) Total water requirement for a Brigade group.

(3) Time Calculation.

(1) Total time required for providing water to whole brigade.
(2) Running time for different units and sub units.

(4) Planning Aspects.

(1) Manpower required for establish water point.
(2) Time required for establishing water point.
(3) Works involved during establishing water point (according to priority).
(4) Store requirement.

d. The detail calculations are as follows:

Length	-300 ft.
Width	-100 ft.
Depth	-10ft, 12ft, 14ft, average12 ft.

Total water aval in the source =300ft x 100ft x12ft
=3,60,000 x 6.23cft
= 22,42,800 gals.

Total Water reqr for Bde Group

Armr	=	92 x 5 =460 gals
Arty	=	510 x 5 =2550 gals
Engr Coy	=	209 x 5 = 1045 gals
Sig	=	90 x 5 = 450 gals
Inf	=	739 x 5= 3695x3=11085 gals
ST Coy	=	105 x 5 = 525 gals
ADS	=	25 x 5 = 125 gals
Ord Pl	=	27 x 5 = 135 gals
EME (If any)		
MP (If any)		
Total	=	16,375 gals

Can Provides Water for 22,42,800/16,375= 137 Days

Time Calculation.

Yield of the water tank, $Y = \frac{5hd^2}{3}$
$= \frac{5x8x4^2}{3}$
= 214 gpm

1202. **Time Reqr for Different Units/Sub Units.**

a.	Armr	= 92 x 5 =460/214 ≈ 3 mins
b.	Arty	= 510 x 5 =2550/214 ≈ 12 mins
c.	Engr Coy	= 209 x 5 = 1045/214 ≈ 5 mins
d.	Sig	= 90 x 5 = 450/214 ≈ 3mins
e.	Inf	= 739 x 5= 3695/214 ≈ 18 mins
	For three units	= 18+18+18= 54 mins
f.	ST Coy	= 105 x 5 = 525/214 ≈mins
g.	ADS	= 25 x 5 = 125/214 ≈ 1 mins
h.	Ord Pl	=27 x 5 = 135/214 ≈ 1mins

1203. **Running Time.**

Running time can be shown from 1800 hours. There should be some gap between the destitution times of two separate units.

Unit	Time	
	From	To
Armr	1800	1810
Arty	1815	1835
Engr Coy	1840	1850
Sig	1855	1905
Inf	1910	1940
ST Comy	1945	1955
ADS	2000	2005
Ord Pl	2010	2015

1202. **Consumption Figures Men, Animals and Vehicle**

Serial	Consumer	Conditions of Use	Daily consumption (gals)	Remarks
(a)	(b)	(c)	(d)	(e)
1	Men	(a) On the march, Min	1/2	For period not exceeding 3 days
		(b) Biv, Min for drinking and cooking	1	do
		(c) Min for all purposes	2	do
		(d) Temp camps Min for drinking, cooking and washing. Normal for drinking, cooking and washing	5	No water-borne sewage
		(e) Semi-perm camps-Normal	15	No water-bone sewage
		(f) Perm cantt Normal	20	With water-borne sewage
		(g) Hospital per bed	30-35	
		Stage –1	25	
		Stage -2	50	
2.	Water Point	Filling water trucks and trailers	1,500	Per standpipe

3.	Horses, Mules and Oxen	(a) Normal (b) Absolute min	10 3	3 gal at a watering. Time of drink-7 minute For period not exceeding 3 days. It is possible for a horse to go without water for 48 hour but it loses condition and it is not fit for hard work
4.	Camels		10	Allow an extra 10 gal every third day. A camel takes 20 minute to drink in two bouts with 10 minute interval
5.	Fittings in Building	(a) Shower (b) Water (c) Urinal (d) Tap (e) Slipper bath (f) Basin or sink	200 40 40 40 200 20	Consumption per fitting
6.	Allowances for Certain Building	(a) Regt institute (b) Cook house (c) Officer Mess (d) Officer Quarter (e) Sgt'sQuarter (f) Stables	3/4 1-1/2 20 20 20 5	Per head do per Officer do Per WO and Sgt Per horse, for cleaning in addition to allowance for drinking
7.	Vehicle	(a) Motor Cycle (b) Mechanical transport other than Tank (c) Tanks (Average)	3 10 40	These Figure cover washing and refilling or radiators