

(1) Number of pages 90
(2) Date of repair 14.4.40
(3) Initials of the Referencer _____

MADRAS RECORD OFFICE

Government of Madras

Public Works

DEPARTMENT

G.O. No. 177
~~B.P. No.~~

Press
~~Mis.~~

Original

Dated 24th January 1876

Not to be folded or roughly handled

*Proceedings of the Madras Government, Public Works Department,
24th January 1876.*

Read the following papers —

No 380	Endorsement of the Military Dept,	dated	4th May 1875,	No 2,125.
No 381	From District Engineer, Bangalore,	"	7th June "	" 47.
No. 382	From " " "	"	8th July "	" 57.
No 383	From " " "	"	24th " "	" 63.
No 384.	From " " "	"	26th " "	" 64.
No 385.	From " " "	"	2nd Aug. "	" 74.
No 386	From " " "	"	16th Sept. "	" 100.
No 387	From " " "	"	17th " "	" 101.
No. 388	From " " "	"	25th Oct "	" 119.

MEMORANDUM.

No 389

With reference to the letter* of the District Engineer, Bangalore, of the 25th October, I visited the Ulsoor Water Works on the 25th ultimo with Major Vibart.

* No 119

2 The site of the ruptured filter will have to be definitively abandoned, as there is no possibility of constructing reliable foundations for such a work on such ground at a reasonable cost. Major Vibart's reports marginally noted are conclusive on this point.

No 101, dated 17th September 1875
" 119, dated 25th October "

3 A second filter is desirable, as it is advisable, and indeed necessary, to turn off the water for cleansing purposes. The sand at the surface which forms the upper layer must be frequently renewed, and it must be expected that eventually the lower layers of gravel and animal charcoal will become ineffective in their action and will require to be removed.

4 A site for a second filter to supplement the compartment of the original filter which is now in use can be found near the engine-house attached to the Dhobies' Wells. As this ground is below the level of the water in the tank, a supply could be drawn from the tank by a syphon and led on to the filter when required. A small tank for pure water connected with the pumping well of the Dhobies' Well engine by a pipe and valve would be necessary, and in this way when the filter at the Ulsoor rock was under repair or being cleaned the tank water could still be made available for the troops.

5 Major Vibart recommends strongly the extension of the wells, or at any rate the pushing of a drift-way in either direction from those now being pumped from, so as to tap still further the stratum saturated by the leakage from the tank.

6 It will be remembered that some additional wells were commenced close to the toe of the bund, and that operations were suspended on the representation of the Military authorities that the bund was being endangered. There would not be this objection to a drift-way since the excavation would be small. Major Vibart, however, recommends the purchase of the ground (belonging to the Municipality) below the tank and outside the excavation which were objected to. If this purchase were effected, the wells or drift-way could be located sufficiently far from the bund to be unobjectionable, and a larger supply of admittedly excellent water would be obtained.

7 It is suggested that the District Engineer should be called on to submit estimates.

Proceedings of the Madras Government, Public Works Department,
24th January 1876.

- I — For a filter and pure water tank with syphon and necessary connections at the most convenient site near the Dhobies' Well engine-house
II — For purchasing the land under the tank belonging to the Municipality or so much of it as may be required, and constructing a drift-way or additional wells connected with a drift-way

8 The iron roof recently placed over the pure water basin at the Ulsoor rock is reported by Mr Smith, the Mechanical Engineer, to have been very beneficial in preventing dust from reaching the water-supply

9. The estimates for roofing in the service tanks at the Bakery, the Ulsoor, and Agram Barracks, forwarded by the Military Department with endorsement, No 2,125, dated 4th May 1875, were detained pending the receipt of the supplementary estimate for the filter, and with a view to the submission of a general estimate to the Government of India It may be desirable no longer to delay their transmission

FORT ST GEORGE,
19th January 1876

(Signed) A DLU SCOTT, Major, R E,
Under Secy to Govt, P W D

No 390.

ORDER THEREON, 24th January 1876, No 177

MILITARY WORKS, No 10

THE Government concur in the opinion expressed in the foregoing memorandum that the restoration of the

compartment of the filter at the Ulsoor rock, which has given way, is impracticable. It also appears that the compartment which is intact cannot well be continuously used, and another filter must therefore be constructed

2 The District Engineer, Bangalore, will accordingly prepare and submit as early as practicable estimates as described in the 7th paragraph of Major Scott's memorandum with, of course, any modification of details which may appear to be necessary on closer investigation.

3 It is desirable that, as far as practicable, all the additional work which may be necessary to render the Water Works efficient should be brought before the Government of India collectively, and

Ulsoor Barracks	Rs	10,450	therefore the detailed estimates, as per
Agram Barracks	..	16,320	margin, for covering the cisterns at the
Bakery	...	4,230	several barracks, and the bakery which

have been received from the District Engineer will be retained till those now called for are submitted.

(True Extract)

(Signed) G. W. WALKER, Major-General, R E,
Secretary to Government

To the District Engineer, Bangalore.
" Military Department

Exd E C Shunker.
Spare Copies

No 47.

From

The District Engineer
Bangalore

The Under Secretary
to Government, P. W. Dept.

Sir
With reference to your letter of 11th June 1875, dated the 5th Instant, I have the honor to forward a statement shewing the required information called for in the above.

2. The estimate for providing iron roof to the Pure water Basin is not included in the general estimate of the water works.

I have the honor to be
Sir,

Your most Obedt Servt.

Henry W. Walker
Major G.E.
District Engineer

Forwarding in
Statement showing
the required information
called for in Memorandum
No 60 of 5th instant
regarding the
Water Works.

Dated 7th June 1895
Recd. P. W. D.
Encl. 1 statement

To the Quarter Secretary
to Govt. P. W. D.

No: 27464
The District Engineer
13 August

1895
10/12/95. Dec 1

Statement showing the expenditure incurred on the Bellary Water Works
prepared in accordance with No 60 dated 5th June 1895. from the Quarter Secretary
to Government, P. W. Department.

Name of Work.	Amount of the General Estimate of the Govt. which same. Order conveying has been been accorded.	Date & etc. of the Govt. the sanction.	Amount by. Allot. Expenditure		Remarks.
			provided up to end of -	current year -	
			to end of -	current year -	up to saving.
			year.	date.	

Drinking water scheme
from the Bellary Tank and
Sholay wells.

30,695. • • • B. O. No 1132 V.
2338 dated 13 May
1895. October 1895.

277,347 21 • • • 24,350 13 11 Completed.

actual

Providing iron roof to
Pure water Basin at
Bellary Rock.

6700 • • • B. O. No 3406 -
dated 14 Feb 1895.
1894

4,685 82 • • • 57803

The work is in progress.
I am but applying
for from the Revenue.

District Engineer's Office
Bangalore 7 June 1895.

Henry T. Hall

Major P. C.

District Engineer, Bangalore.

No. 57

DISTRICT ENGINEER'S OFFICE.

Bangalore 8th July 1875

From

The District Engineer,

Bangalore.

To

The Chief Engineer,

Public Works Department.

Madras

Sir

With reference to G.O. No. 122 dated 14th June 1875 I have the honor to forward herewith for sanction an Estimate of Rs. 19,200 with specification for Dismantling and rebuilding the walls at the East, West and South sides of the Ruptured Filter on the Ulsoor Bank at this station.

The Estimate has been approved of both by the Officer Commanding the ^{Station} ~~Division~~ and His Excellency the Commander in Chief.

I have the honor to be

Sir

Your Most obed^t servant

Henry Stewart Major D. E.
District Engineer

Particulars of worth ^{Measure} ^{ment} ^{Contents} ^{to} ^{be} ^{had}
N. 29030

Side walls East & South.

sides = $144 \times 6 \times 8\frac{1}{2} = 7344$

Dr. West " 86 $\frac{1}{2}$ $\frac{1}{2}$ 2558 $\frac{1}{2}$

Foundation to W. 235121027600

Total cft of Dismantling walls and
foundations 37522

Inside _____ 2009 1800

Lab 1/2 of removing floor 3 deep 18.00

— W^{ts} under the above floor — 200.97 12600

No outside 24 5 10 6000

Lab. eff. of earth work will be—

removed under the floor—18600

Concrete

No. to side walls 23 1/2 4 10580

No. under floor 2009 7/16650

Total life of Loueribo 27250

1842 June 22
1842 North Carolina.
Notes of General
Crawford's Expedition to

1850
No. 2461
1850
No. 2461

Die Nacht beginnt

Benjamin

The City of Burlington

By

dated 8th July 1953
 Recd. 9th July 1953

Wm. J. Edwards for
and due to Edward

Archives de l'Est

of the 1920s for his

was strong & building

As follows, the each

the Richard Miller

at the West Point

Walter

Particulars of work Measurement contents Total
Rs. Ls. Ps.

Foundation

Do. to side walls : 230 9 6 12420

Total cft of Foundation shown in churam 12,420

Superstructure

Do. to side walls : 230 4 8 8740

Total cft of Superstructure bricks in churam 8,740

Rft of stone coping over the side walls of Filter 2 3/4 ft broad and 6" thick

230 (27 6) 230 230

Filling in with earth

Superfluous excavation : 240 5 10 6000

Total cft of Filling in with clay 6000

Brick in cement

Floor : 200 10 3/4 1600

Total cft of Brick on edge in cement for floor 1600

Cement Plastering inside

Walls inside : 230 8 1/2 1955

Completing floor : 200 15 3000

Total Sq of Plastering with cement inside 4955

Plastering outside

Walls outside : 235 9 2115

Total Sq of Plastering with two coats - churam outside 2115

Laying up pipes & relaying the same : 86 86 Rs 86

Making road

Total

Abstract Estimate of the probable cost of Dismantling and rebuilding the walls at the East, West and South sides of the Ruptured Filter on the Ulsoor Rock at Bangalore

Quantity Description of works Rate Per Amount Total

37503 cft of Dismantling walls & foundation : 3 cft 586

1800 Sq of Do floor 3 ft deep : 96 169

18600 cft of removing earth work : 2 cft 194

Rebuilding

27230 cft of concrete : 4 6808

12420 Foundation shown in churam : 36 2717

8740 Superstructure bricks in churam : 4 2185

230 Rft of stone coping over the side walls of Filter 2 3/4 x 6" thick : 12 173

6000 cft of Filling in with clay : 3 cft 94

1500 Brick on edge in cement for floor : 9 844

4955 Sq of Plastering inside with two coats of Portland cement : 22 1090

2115 Churam Plastering out side two coats : 28 53

Carried over 14,913

Quantity Description of works Rate Per Amount Total

Brought over 14913

86 Pft of taking up pipes and relaying the same 8.04 43

Levelling rock at bottom 1000

Making road 500

Filtering materials 1000

17456

Sundries at 10 Per cent 7744

Total Estimate Rupees 19200

Accepted by Major P. & C.

District Engineer Bangalore

Sub

Distt Engr's office
Bangalore
23rd June 1875

Lat

Specification to accompany
Estimate for Dismantling and rebuilding
the walls at the East, West and South sides
of the Puftared Filter on the Pelsoor
Rock at Bangalore

Amount of Estimate Rupees 19200

The present walls of the filter on
the East, West and South sides will be dismantled
and excavated till reaches the rock which
will be levelled so that the foundations may
have a firm foothold on this rock a bed
of concrete 12 in thickness and 12 ft at
bottom and 11 ft at top will be laid, over
which stone in chunam foundation will
be built 6 ft in depth 8 ft wide at top
10 ft at bottom The walls of the filter with
brick in chunam will be built on the
foundation 8 ft in height bottom thickness
7 ft and top 3 ft with stone coping at
top.

The surplus excavation
inside is to be filled in with concrete and
outside with good stiff clay in layers
not exceeding 12 inches in thickness
well watered and rammed

The present floor is in
good order so it will only be necessary
to rebuild that portion near the wall
with

with two courses brick on edge w/cement
under which concrete will be laid.

The whole of the interior
will be plastered with Portland cement
and exterior with chunam each with
two coats.

The perforated cast
iron pipe is to be laid along the junction
of North wall with floor so as to receive
filtered water into Basin.

The road on the south
side of the Filter leading to Dhoby wells
is to be widened and reformed with
new materials.

The filtering bed to be
composed of the materials and laid in the
order as specified below.

- 1st One foot of flag stones.
- 2nd One foot of road metal
- 3rd Six inches of Latrito gravel
- 4th One foot of charcoal
- 5th Two feet of clean sharp sand.

Sd/-
Distt Engr's Office

Bangalore

23rd June 1875

Chief District Magistrate

District Engineer Bangalore

15
District Engineer
Bangalore
23rd June 1875

No. 63

District Engineer's Office
Bangalore 24th July 1875.

From

The District Engineer
Bangalore.

S.

The Under Secretary
to Government P. W. D.

Sir,

With reference to your Memo-
randum No. 270 dated the 22nd Instant,
I have the honor to inform you that
the Estimate referred to, was despatched
on the 8th Idem with this Office No. 57.
A duplicate will be sent at once.

I have the honor to be
Sir,

Your Most Obedt. Servt.

Henry Robert Major P. B.
District Engineer.

From

The District Engineer
Bangalore

To
The Chief Engineer
Maddur.

Dated 8th July 1875.
Recd. Mr. 1561/75

Estimate of Expenses

for Dismantling and
Rebuilding the walls
of the East-West and
South Sides of the
Captured Fort on the
Nizam Road at Bangalore
Amounting to Rs. 19200-
Mysore 14/787

N^o 64.

District Engineer's Office
Bangalore 26th July 1875

From

The District Engineer
Bangalore

To.

The Under Secretary to
Government
P.W.D.
Madras

Sir

In continuation of my letter
N^o 63 dated 26th July 1875. I have the
honor to forward herewith a copy of
the Estimate and Specifications for
Dismantling and rebuilding the
walls at the East, West, and South
sides of the Ruined Filter on the
Ulsoor Rock at this station.

I have the honor to be

Sir

Your Most obedient Servant.

Wm. Stuart Major R.E.
District Engineer

Recd. 18th 1875
From No. 4981.

The District Engineer
of Bangalore.
To the Under Secretary
to Govt. P.W.D.

Dated 24th
Recd. 29th July 1875.
21/2/75.

Enclosed herewith
Estimate for Dismantling
& rebuilding the walls
of the Ruined Filter
on the Ulsoor Rock
at this station was
separated on the 24th
into a duplicate
will be sent at once.

District Engineers Office
Bangalore 2nd August 1875

N^o 74.

From

The District Engineer
Bangalore

To

The Under Secretary to
Government
P. W. &
Madras

Sir:
With reference to your
Memo N^o 508 dated 29th July 1875.
I have the honor to forward here-
with a Plan showing the proposed
side walls of the Filter at the Upper
Rock Bangalore

I have the honor to be
Sir

Your Most obed^t servant
Henry W. Robert
Major R. E.
District Engineer

rates of the District School
and the following
Item

With 1875 DE ME
From No 4987.
The District Engineer
& Bangalore.
The Under Secretary
to Govt. P. W.
Ch: Mr. Wm. 10308
Date 26th
Aug 29th 1875

Ch: Mr. Wm.
Wm. 10308

Forwarded copy of
the Estimate referred to
= estimate for dismount
= being & rebuilding the
walls at the Lower Rock
= about 100 ft. of the Rock
= found better in the
Lower Rock at the
station

Notes of Triumark

An Estimate for dismantling and rebuilding
the walls at the East, West and South sides of
the captured gillie on the Uluva Rock -

Bangalore.

1st September 1875.

No plan has been
submitted with the
Estimate for the dis-
-mantling and rebuilding

of the walls of the gillie
at Bangalore in ac.

- accordance with para

9. Section 1. Chap. II.

Book of India Pro.

The figures in the
Estimate have been
checked, and the rates
compared with the
rates of the District
and the following

Sheet

1875 Dec

Drawn No 5038 &

the District

Bangalore.

of the Superintendent

to Bangalore.

Rate of 1875
Road 1875.

of 1875
East: 1. 1875.

Forward 1875

showing the proposed

side walls in the street

at the Uluva Rock

Bangalore.

are in excess.

Concrete
Stone in Chumam in foundations.
Stone coping over the sides
walls of fallis $2\frac{3}{4} \times 6$.

Comparative Statement showing difference in Rates between the
Estimate Submitted by the District Engineer, and District
Schedule for Dismantling & Rebuilding the Walls at the East
West & sides of the Refined Fallis on the Alsor Rock at Bangalore.

Description of Work.	Rate as per Estimate submitted by the District Engineer	Rate as per District Schedule	Difference	Remarks
Dismantling Walls of foundation Cft. " " 3			" " "	
do floor 3ft deep Sq. yds 9 6 "			" " "	
Removing Earth Work Cft. " " 2			" " "	
Concrete do " 4 " " " 8			" " "	
Foundation Stone in Chumam do " 3 6			" " "	
Superstructure Brick do do " 4 " " " 8			" " "	
Stone Coping over the sides Walls of Fallis $2\frac{3}{4} \times 6$ Rft. " 12 "			" " "	
Filling in with Clay Cft. " " 3			" " "	
Brick on Edge in Cement for floor do " 9 "			" " "	
Plastering inside with 2 Coats of Portland Cement Sq. yds 22 " " " " "			" " "	
Chumam Plastering outside 2 Coats do 28 " " " " "			" " "	
Laying up pipes & relaying the same Rft. " 8 "			" " "	

Govt. Litter: Department.
Forth St. Surge. —
Madras. September 1875.

[Signature]

No 1—ESTIMATE PARTICULARS

Main Budget Head to which chargeable

Imperial

Purpose of work as given by District Engineer

Dismantling & re-building a Filter at the Ulsoor Water Works

Original sanction for the preparation of the detailed estimate Date and number sanctioning and Public Works Department *Mily.*

Dep't. No 2156 of 22/5/75 & P.W. No 122 of 11/6/75

Amount of present estimate and its district number

Rs. 19,200. No 48 of 18/5/76

Budget head to which chargeable if sanctioned, (in detail)

Military

Provision has been made in the Budget of in anticipation.

(Yes or no)

Not stated

Funds can be made available during the current year

(Yes or no, and state how in former case)

No funds available

Brought forward as urgent

(Yes or no, and if former state by who)

Not stated

Number on last revised list of works approved and brought forward in due order of precedence

Not entered in list
No yes no.

DOCUMENTS IN FILE

From District Engineer—*Bangalore*

1 Covering letter No *57*, date *8/7/75*

~~1 Letter from Range Officer, No , date~~

1 Detailed Estimate

1 Abstract do

~~1 Plan~~

1 Specification Report

From Office—

Original sanction, No *2456*, date *22/5/75* *h.d.*
for detailed estimate preparation.
P.W.D. No 122 of 14/6/75

Orders and Proceedings	No	Date	Under P W D G. O	
			No	Date
P W Department				
Public do.				
Revenue do				
Financial do				
Military do	<i>2456</i>	<i>22/5/75</i>	<i>122</i>	<i>14/6/75</i>

FORMER CASES

Current No 1737 of 1875
 " " " " " " " "

M WORKS FORM No .

Current No 3746 A 1461, 1985, 1987, 1988 A
 From D C - Bangalore

Public Works 1876 Dept
 Rev 21. Aug 1/76

No 17, 57, 63, 64, 87
 Dated 7th June, 8th 21, 22, 26 July 1876

Subject - Filter at the Elloor Rock

LATER CASES

Current No of 187
 " " " " " " " "

ENCLOSURES to C. No 2

From

to

"

"

G O No 144 24 176
 Orders and Proceedings in file

Department	No	Date	ENDORSEMENTS		
			Department.	No	Dated

381

381 C 385

No 492

Memo.

Information is requested with reference to the working of the Elloor water supply filters at Bangalore in order to the application of the experience gained in testing a project for the filtration of the Madras water supply, and the D.C. Bangalore is requested to supply information on the points noted below.

1. Surface area of filtering tank now in use
2. Depth and composition of filtering material specifying the average size of stones, in layers of gravel and the depth of each layer of stone, gravel, sand, charcoal, &c and the order in which placed.
3. The arrangements for discharging the water on the filtering bed (it is understood that the top of the bed is traversed with perforated wheels)

whence the water is discharged,

4. The arrangements for collecting the water after it has passed through the material are the collecting pipes (perforated) or dry brick drains laid along the floor, or does the water which runs through at the farther part of the tank from the outlet have to form its way through the material to the outlet.

5. What is the maximum depth of water allowed to stand over the filtering bed i.e. the depth measured from the top of the filtering bed to the surface of the water.

6. What is the discharge in gallons per hour or day from the outlet into the pure water cistern with this head of water above the filtering materials.

7. Is any of the finer filtering carried into the pure water reservoir when the discharge is at its maximum

(By order)

Sgt. Adol. Scott. Major R.E.

Under Secy to Govt. Madras.

for a command
4th Sep 1875

N/100.

From

To

Sir,

District Engineer's Office
Bangalore 16th September 1875

The District Engineer
Bangalore

The Chief Engineer
Public Works Dept.
Madras.

In reply to Memo No. 492 of

the 7th Instant with reference to the work-
ing of the above Filter at this station.

I have the honor to state as follows:

Queries

Answers.

Surface area of filtering
tank now in use.

Area 5842 sq. feet.

Depth and composition of
filtering material specifying
the average size of stones in layer
of gravel and the depth of
each layer of stone, gravel,
sand, charcoal &c. and the
order in which placed.

On the bottom of the filter
are placed stone slabs 3" thick
of different sizes varying from
2 to 4 sq. ft. placed so as to
form conduits thru
floor of cistern.

The stone is then brought
up to a depth of 1 foot by
small flat stones.

on

- Water 3
- Sand 2-6
- Charcoal 4
- Gravel 3
- Stone jelly 1 ft
- Slab stones 1 ft
- Bottom of filter

On this is large stone jelly material, air there collect. the water is discharged into 1 foot in depth capable of being - air pipes (perforated) or dry the Pure water basin. the passed through a 2 1/2" ring, above brick drains laid along the water passes vertically, this 3" of small quarry sweepings floor or does the water which down through the filtering covered by 4" of vegetable char- runs through at the farther materials to the stone con- coal on which rests a layer - part of the tank from the ducts placed on the floor of 2-6" of Bangalore sand outlet have to force its - and from these pipes into (rather fine) way horizontally through - an arched brick conduit the material to the outlet. built along that side of the filter which contains the outlet to the Pure water Cistern.

3. The arrangements for discharging the water on to the filtering bed (It is under- stood that the top of the bed is traversed with perfo- rated iron pipes whence the water is discharged). The water from the tank is pumped into a trough run- ning the width of the filter, which allows the water to pass quietly over a smooth curved surface into the filter as shown.



The vertical iron pipes in the filter are air pipes introduced to prevent the air from below from disturbing the sand when the filter is being filled.

4. The arrangements for collecting the water after it has passed through the materials. The floor of the filter has a gentle inclination towards that corner where the water

5. What is the maximum depth of water allowed to stand over the filtering bed i.e. the depth measured from the top of the filtering bed to the surface of the water. The maximum depth of water over filtering bed is 3 feet 5 1/2 inches.

6. What is the discharge in gallons per hour or day from the filter was carefully taken the outlet, into the pure from 7 a.m. on 15th to 7 p.m. water cistern with this - this day the water being a head of water above the filtering material. allowed to flow into clear water basin as fast as it was

27
was filtered and the
result was found to be that
48,000 gallons were filtered in 24 hours.
This filtration took place under most favourable
circumstances as the day before trial the surface
of the sand was scraped and the sand dug up to a depth
of 18". The head of water above the sand varied from
3' 7" to 2' 3". The filter having now been in use some
time the depth of sand by repeated scrapings has been
reduced 7" the sand will shortly be brought up to
its original thickness by the addition of fresh sand.

It will thus be seen that under most favourable
conditions, the filter at this station, cannot filter
more than 8,216 gallons per sq. foot in the 24 hours.
As any of the finer No. directly the water
filtering material carried discharged shows any
into the pure water reserve appearance of imperfect
-air when the discharge filtration the flow from
is at its maximum. the filter is checked by
means of a valve.

I have the honor to be
Sir,
Your most Obedt Servt
Humphreys Walter Major A.S.
District Engineer.

10th Dec. 1895
 From No: 5957
 The District
 of the Surgeon
 of the West
 India
 Public Works
 Dept.

Date 10th Dec 1895
 1895
 1895

Supplies in form
 of various in connection
 with the working of
 the Moor Road
 supply system as
 required.

386

1895-1896

FORMER CASES

Current No of 187
 " "
 " "
 " "
 " "

M WORKS FORM No 3

Current No 5957
 From D 8 Bangalore

Public Works Dept
 2025 Dary 176

No 100
 Dated 16 Sept 1875.

Subject —
 Mysore Water Supply —
 Information regarding
 method of filtering

Chief Engineer Mysore.

It is considered that the
 quantities of material in the
 detached & distant pits for
 repairing the brickwork filter
 at Bangalore are excessive.
 Actual sections of the wall
 & its foundations are existing
 & proposed are necessary at
 several points as shown in
 pencil in the tracing herewith
 submitted and the excavations
 to ascertain the nature of the soil as
 should be carried down to
 the depths at which it is
 proposed to place the foundations
 whether such a hard soil
 being specified in each section
 2. The section drawn in the
 tracing already referred to
 is probably not a means

LATER CASES

Current No of 187
 " "
 " "
 " "

ENCLOSURES.

Memorandum from H S No 492 -
 to

B O No 144 24/1/76
 Orders and Proceedings in file

Depart- ment	No	Date	ENDORSEMENTS		
			Depart- ment	No	Dated

No 386

Lin 20-1-76.
 46/8/10/175

Section: but considerably
 in excess of the mean foundation
 required which would
 work of course be less than
 the rock.

3- ~~off~~ no allowance is made in
 the est. for the use of old
 materials which would
 apparently be available.

The stone of the existing wall
 should be used up for
 rebuilding it as far as
 practicable & the remainder
 broken up for concrete.

The brick in cement in the
 broken up from the latrine
 pit & the following materials
 found in latrine pit would
 also be available for concrete.
 & should reduce its cost
 materially.

The operation of benching
 up should be confined
 simply to the breaking

down of the surface of the
 rock sufficiently to seat
 in a good bed any stone
 which may rest in it
 - 12 to 15 ft to improve the
 work so as to enable the
 concrete to tie in bond in
 with it instead of resting
 on a smooth sloping surface.

The cost of such preparation
 will probably not exceed
 half the same proportion.

5- The section given shows
 the excavation material
 at the edge of the floor
 which is to remain. It
 would be dangerous to the
 stability of the cage to carry
 this out. The side of the
 excavation should slope
 if any slip occurs from under
 the floor it will have to be
 dismantled & written back
 rebuilt.

Ans S
 Ch. R. Messrs
 362 of 10/8/75

No 101. District Engineers Office
 Bangalore 11 September 75
 From The District Engineer
 Bangalore.

To The Chief Engineer
 Public Works Department
 Madras.

Sir,

With reference to Major Scott's

Memo No 352 dated 10th August, regard-
 ing the fractured filter, I have the
 honor to state, that, so far from the
 quantities entered in the estimate
 being excessive, they are, I find, very
 considerably under that required.

I have carried down exca-
 vations at the points A, B, C, D & E
 outside the present wall, at A & B
 rock is found at depths of only 3'-5"
 and 2'-8" below the floor respectively,
 at C, D and E, the material is, however,
 very different - at C the soil was
 tested

- Incl. 3. 1. Survey of
 1. Plan of filter
 on the Alluvial Rock.
 1. Section of
 levels.

tested for $2\frac{1}{2}$ feet below the floor, but no rock was found; at D it was tested to $28\frac{2}{3}$ feet. no rock; and at E no rock was found at $26\frac{1}{4}$ feet.

3. I then dug up the wall at point C and below floor level we found $1\frac{1}{4}$ feet of brick in Chumam, then $3\frac{3}{4}$ feet of stone in Chumam, and below that $4\frac{1}{2}$ feet of boulders, in earth; altogether the wall was ten feet high.

4. An iron rod was forced down below this, for a further depth of $15\frac{1}{4}$ ft. but no rock was found, the total depth being $25\frac{1}{4}$ feet.

5. After this, I removed a portion of the floor, just inside the wall; and having excavated to a depth of $15\frac{1}{2}$ feet, forced an iron rod down to a further distance of $5\frac{1}{2}$ ft. without finding solid rock, although in the excavation we found pieces of disintegrated rock.

rock and some boulders evidently placed by hand. It appears from this, that along the whole length of the wall, by the roadside, no rock can be found at depths varying from $25\frac{1}{4}$ to $28\frac{2}{3}$ feet below floor.

I beg to enclose a section showing the relative levels of the filter floor, the road and the ground. Below the road, from which it is seen that the floor of the filter is 18.43 feet above the ground and 26.67 feet above excavation made for the road embankment.

8. I have obtained from Mr. Leonard (formerly employed under the late Major General Lawford, and who has been brought up at Bangalore) some very valuable information regarding the site of the filters.

9. He states that he remembers when the bank of the Meoor Tank

present
piped between the filters and the pure
water cistern to the rock.
10. Some little time before the
filters were built, the road round the
rock was formed, the top of the road
being some 18 1/2 feet above the ground,
and nearly 27 feet above the eleva-
tion required for the necessary earth
work.

11. Before this time, the ground
between the old tank bank, and
the new road embankment, was
a marsh full of reeds.

12. Shortly after the road was
formed the space between the two
banks was selected as a suitable
site for the filters.

13. I enclose a survey and
sketch showing (of course approxi-
mately) the Ulloor Rock as it
appeared at that time, on which
are marked the buildings subse-
quently erected.

14. A good deal of rock had,
I believe,

I believe, to be blasted on the side of
the upper filter but in the lower portion
the marshy place had to be filled in
with the rock thus procured, as well
as with a large quantity of disinte-
grated rock obtained from all
parts of the surface of the Ulloor
Rock.

15. When this made earth, rock,
was brought up to what was consi-
dered a sufficient level, boulders
in earth were built on it as founda-
tion for the wall; on this stone in
Chinnam, and again brick in Chinnam
up to the level of floor.

16. This having been the method
of building it is not surprising
that the work failed; in fact it
is strange that it lasted so long.

17. I can only attribute this
to the wall having been backed up
by a very large embankment which
carried the road.

From

18. From the information which we now have, I consider it would be useless to attempt to build the wall of the filter as proposed; the result of so doing, in my opinion, would be another failure.

19. It now appears to me that if the wall is to be rebuilt on its present site, the foundations will have to be taken down to a depth of 30 feet, and even at that depth it is very unlikely that we shall find rock, although we may come to firm soil.

20. Of course this great height of wall will very largely increase the cost of the reconstruction, so much so, that I fear the Government would not consent to spend as much as would be required, which, I believe, would not fall far short of 4,000 Rupees.

21. In going down so far for foundations, the quantity of masonry below

below the floor along the road would be more than 4 times that required for a 10 feet wall.

22. Besides this the whole of the road outside would have to be removed and remade; and so much of the floor must be taken up that fully half of it would have to be rebuilt.

23. If the new wall was built just inside the present wall, and the foundations carried down to 20 feet and laid upon a good bed of concrete the wall might possibly stand, but I would not recommend this procedure as there would be great likelihood of the wall giving way as before.

24. By diminishing the area of filter by one half as shown in plan, it is probable that rock would be found at a not very considerable depth, and the wall being much shorter

shorter than that at present, the work would not be nearly so costly as if it was built on site of old wall.

25. I may here mention that at 15 feet below the floor a good deal of water was found apparently percolating beneath the tank bank, as it flowed from that direction.

26. From the appearance of the rock to the east of the filters (which I have attempted to show in the survey) I think it unlikely that any rock will be found even at a depth of 40 feet below floor near the road, as the strike of the rock is very steep, more especially just above where it is concealed by road bank - ment the fall being about 1 foot in $1\frac{1}{2}$.

27. I am at present engaged in enlarging the excavation, to enable us to go down to a greater depth - but I think it desirable to send

to send you this report in order that you may know how the matter stands, and be enabled to give me such instructions as you may think desirable.

28. Shall I continue the excavations to 30 feet, or if no rock is found at that depth, still further.

29. The masonry found in the wall is of a fair quality, and the failure of the wall cannot be attributed to bad workmanship, but solely to a mistaken design.

I have the honor to be
Sir,

Your Most Obedt Servant,
Hurst Albert Major R.E.
District Engineer, Bangalore

Handwritten notes on the left page, appearing as a list or series of entries, possibly related to a survey or inventory.

Handwritten notes on the right page, appearing as a list or series of entries, possibly related to a survey or inventory.

1888. Naupali: 110101.
 17 Sept 1895
 The Chief Engineer, President, it
 unnecessary to carry further the
 present excavations in the foundation
 of the Ulam filter wall as it is
 already demonstrated that the site
 cannot be relied on for the con-
 struction of a wall there would involve
 an expenditure entirely disproportionate
 to the result sought. It is recommended
 that two capitals be
 open to consideration by the Board
 of the lower filter in its
 existing position. But this is restricted
 solely by building the lower wall first
 as proposed by the A.E.

20th June 1954

Q. M. 1895 Sep. 13
 from the Robert Rogers
 Congratulate.

3/ Mexico No 547.
The Chief of Dept ^{12/14} and ^{1/16}
Dr. to Department.

Madam.

Dated 17th 3rd April 1905.
 Recd 18th 3rd April 1905.
 J. P. 101.

Endorse - 3.

Reporting on the progress
filled at Moor Rock &
the great improvement
as to how deep (under
within 1000) Circum-
stances) it would
be advisable to continue
the excavations.

✓ 11.38

thus reducing the area to one half
 its present amount: & the
 higher Abandonment of the
 lower floor & the construction of
 a new flooring tank on another
 site to which the water could be
 conveyed by pipes.
 The District Engineer is requested
 to give the latter alternative his
 attention & to advise me as to
 the time it will be desirable
 to ascertain exactly at what depths
 along the line of the suggested wall
 & where met with a reasonable
 depth estimate for the wall
 may be prepared.

The position of the existing excavations
 their depths & the nature of the soil
 met with should be accurately laid
 down on plan sections for record
 in the Office & therefore the
 holes may be filled up.

A. S.

51

No 119 District Engineer's Office
Bangalore 25th October 1875.

From
The District Engineer
Bangalore

To
The Chief Engineer
Public Works Deptt

Sir,

In reply to your letter
No 547 dated 22nd Sept 1875 regarding the
design filter, I have the honor to
inform you that I cannot find
another site for the 2nd filter. It seems
to me that if it is to be placed
all it must be built on the same site
as before.

I have sunk five pits through
the floor as shown in the enclosed sketch.
In four of these rock was found as follows

- | | |
|-------|----------------------|
| No 1. | 10 feet below floor. |
| No 3. | 12-6 — do |

in
to
along
rock
depth
may

I

[Faint handwritten notes, possibly bleed-through from the reverse side.]

W. 1875-76 Del.
From N. 6928
The District
Bangalore

To
The Chief Engineer
D. M. S.

Def 25 (1875)
Res. 28 in —

E. 1. No. 119.

In this case the
site for 23 plots
cannot be formed
and offering certain
opportunities for the
existing case for
approval.

FORMER CASES

M WORKS FORM NO.

Current No of 187 .

Current No 5973-4628

From *C. A. Bingham*

Public Works Depart

Per 26 Aug 1876

No. *5973-4628*

Dated *17th Sept 1875*

Subject - *Planting on the island of St. John's Rock*

*Dispt. with
Adm. Secy
Transfr. Secy
Enclosure 62 C. 10 4*

From to

"

"

"

G.O. No 177 26-1-76

Orders and Proceedings in file

Depart- ment	No	Date.	ENDORSEMENTS.		
			Depart- ment.	No	Dated.
<i>Adm. Secy</i>	<i>54</i>	<i>27-1-76</i>			
<i>Adm. Secy</i>	<i>102</i>	<i>28-1-76</i>			

Public W. Dept.
15-5-75.

*Requested for reference a
copy of G.O. No 832 of 19th February
1875. No. 2.*

R.A.
2nd Sept. P.W. Dept.

*To
The Military Department.*

*same - wrong - run
2/26/76*

LATER CASES

Current No of 187 .

"

"

"

No 337-338.

Can 20-1-76.

For C. No. 2985

MEMORANDUM

REQUESTED for reference the under-mentioned papers:-

Copy of G. O. No. 232 of 19 January 1875. 1b-D

GOVERNMENT OFFICE,
Public Works Department,
7 May 1875

R. Pereira
Registrar.

To The Registrar of the Military Department

*... are ...
... up to ...*

ts.

Da

... ..

It is not necessary to refer to the Budget Dept. in their memo refer to G.O. No. 2330 of 15 Oct. 72 & 2765 of 25 Nov. 72. but neither are put up.

... ..

...

Mr Parsons

The Budget Dept. in their memo refer to G.O. No. 2330 of 15 Oct. 72 & 2765 of 25 Nov. 72. but neither are put up.

Memo submitted to D.D. to report 1, 2, 3, 4 of draft in memo - W. See attached to what is likely to be the ^{suppl. estimate} ~~suppl. estimate~~ _{saving in the existing estimate} of estimates.

Are there no forms I & II Particulars of estimates here? Such a form (II) should have been attached at vouchers & should accompany all estimates which come up. Memo to that effect to Chf. Secy.

Mr. Persius

This file requires

Completion -

1 The Budget Department should supply all the particulars regarding the amount of the original cost for Wilson Water Works project to Govt of Madras & Madras Govt

Sanctions & the ~~subject~~ subsequent additional sanctions showing how the expenditure up to date with the expenditure how proposed, compared with the original estimate. -

2 There is a go with reference to the crisis of the Pure Water Basin on 10.2.12 letter regarding an order - change by Pattai workshops - This should be sent up. &

Some previous letters to Govt. of India concerning Est. for closure of the Project are required explaining any action for subsequent sanction & the closure of Govt. of India —

Atul

Directly legation are reminded that When forwarding ~~and~~ supplementary estimates (the following information) they should be recorded in the covering letter.

- 1 The amount of the General estimate to which sanction has been last accorded & the Date & Number of the Order of Government Envoys of such sanction.
- 2 The amount expended up to the end of the previous year & to the end of the ^{each} year in which expenditure was incurred.
- 3 The allotment of the current year.
- 4 The expenditure of the current year up to date as nearly as it can be given.

~~The probable additional expenditure which will be required to complete the work in accordance with the existing sanctioned~~

Memorandum.

With reference to the letter of the W. S. Waples of the 25 Oct. I visited the Wilson Water Works on the 26 with Major Vibart.

2 The site of the impetunel filter will have to be definitely abandoned as there is no possibility of constructing suitable foundations for such a work on such ground at a reasonable cost. Major Vibart's reports marginally noted are conclusive on this point.

3. A second filter is desirable as it is advisable and indeed necessary to turn

no 101 - of 17 Sept 75
119 - " 25 Oct 75

the strata saturated
by the leakage from the
tank.
It will be remembered that
some additional walls
were commenced close
to the top of the bank &
that operations were suspended
on the representation of the
Mil. Authorities that the
bank was being endangered.
There would not be this
objection to a driftway
since the excavations could
be small. Major Vebach
has recommended the
purchase of the ground
(belonging to the Municipality),
below the tank & outside
the excavations, which
were objected to. If this
purchase were effected the
walls & driftway could
be located sufficiently
far from the bank to be
perfectly unobjectionable
& a larger supply of excellent
water would be obtained.

It is suggested that the
District Engineer should
be called on to submit
estimate

1. for a filter & pump
water tank with siphons
& necessary connections at
the most convenient site
near the Oakes Hill
Engine house

2. For purchasing the
land under the Tank
belonging to the Municipality
or so much of it as may
be required & constructing
a driftway & additional
walls connected with
a drift way.

3. The Iron roof recently
placed over the pump
water basin at the below
by the Committee, the
Arch is reported to have
been very beneficial in
preventing dust from reaching

Memorandum

No 119 With reference to the letter of the District Engineer Bangalore of the 25 October I visited the below water works in the 25th ultimo with Major Vibart.

2 The site of the captured filter will have to be definitely abandoned as there is no possibility of constructing reliable foundations for such a work on such ground at

No 101 d/17 Sept for a reasonable cost. Major Vibart's reports "119" - 25 Oct - marginally noted are conclusive on this point.

3 A second filter is desirable as it is advisable and indeed necessary to turn off the water for cleansing purposes. The land at the surface which forms the upper layer must be frequently renewed, and it must be expected that eventually the lower layers of gravel and animal charcoal will become ineffective in their action and will require removal.

4. A site for second filter to supplement the

37 5.1.16
by W.P. 16

Public Works Department

Memorandum

Dated 19 July 1876

Proc. 26 July 1876.
N. 389.

the water supply
The estimates for roofing
in the service tanks
at the Waker, the labour
& Agnew branches forwarded
by the ~~Department~~
The Dept. order endorsement
No 2125 of 4 May 75
were detained pending
the receipt of the
supplementary list for
the filter with a view
to the submission of a
General estimate to the
Gov. of India. It may
be desirable to confer to
delay their transmission.

Asst.

13 17
10 26 July 16. 1777

the compartment of the original filter which is now in use can be found near the Engine house attached to the Whobee's wells. As this ground is below the level of the water in the tank, a supply could be drawn from the tank by a siphon and fed into ^{the} filter when required. A small tank for pond water connected with the pumping well of the Whobee's well engine by a pipe and valve, would be necessary, and in this way when the filter at the blower rock was under repair or being cleaned, the tank water could still be made available for the troops.

5. Prof. Libart recommends strongly the extension of the wells or at any rate the pushing of a drift way in better direction from those now being prosecuted, so as to tap the ^{still further stratum} saturated by the leakage from the tunnel.

6. It will be remembered that since additional bills were commenced close to the tail of the bond and that operations were suspended on the representation of the Military Authorities that the bond was being endangered. If

This objection to a driftway since the excavation would be small. Major Vibart however recommends the purchase of the ground (belonging to the Municipality), below the tank and outside the excavation which were objected to. If this purchase were effected, the well or driftway could be located sufficiently far from the land to be inobjectionable, and a larger supply of admittedly excellent water would be obtained.

6 - It is suggested that the District Engineer should be called on to submit estimates.

1 For a filter and pure water supply with
Siphon and necessary connections at the
most convenient site near the Ohio
well Engine house.

2. For purchasing the land under the
Land belonging to the Municipality or so
much of it as may be required, and con-
-structing a driftway or additional wells
connected with a driftway

87. The Iron roof recently placed over the pure water basin at the ulsoor rock is reported by Mr Smith the Mechanical Engineer to have been very beneficial.

in preventing dust from reaching the water supply.

The Estimates for roofing in the service halls at the Battery, the Police and Azam Bazaar forwarded by the Military Department with endorsement No 2125 dated 1st May 1875 were detained pending the receipt of the supplementary Estimate for the better and with a view to the submission of a general Estimate to the Government of India. It may be desirable no longer to delay their submission.

Adm Secy

Major R

Under Secy to Govt
Ct Dept

Fort St George
19 January 76

To
The Chief Engineer
D.R.

Public Works Dept
19 Jan 76

111
Public Works Dept
No 177
Proceedings of the Madras Government
Under date the 24th Jan 76
Read the following

Endorsement of the Military Dept (No 2125 dtd 1st May 1875)
From The District Engr Bangalore (No 47 - 7th June -)
" do do (No 57 - 8th July -)
" do do (No 63 - 24th -)
" do do (No 64 - 26th -)
" do do (No 74 - 2nd Aug -)
" do do (No 100 - 16th Sept -)
" do do (No 101 - 17th -)
" do do (No 117 - 25th Oct -)

Memo by Major Adol Scott
Under Secy to Govt
(No 2125 dtd 19 Jan 76)

The Government
concur in the opinion ex-
pressed in the foregoing
Memorandum that the
restoration

restoration of the compart-
ment of the filter at the
Uleer rock, which has given
way, is impracticable. It
also appears that the
compartment which is
intact cannot well be
continuously used and
another filter must there-
fore be constructed.

2. The District Engineer
Bangalore will accord-
ingly prepare and submit
as early as practicable
estimates as described in
the 1st para of Major
Scott's Memo with, of
course, any modification
of details which may
appear

Uleer Barracks	Rs 11,450
Agram	" 16,520
Bakery	" 4,230

37
appear to be necessary on
closer investigation.

3. It is desirable
that as far as practicable
all the additional work
which may be necessary
to render the Water Works
efficient should be
brought before the Govern-
ment of India collectively
and therefore the detailed
Estimates, as per margin,
for covering the cisterns
at the several Barracks
and the Bakery which
have been received from
the District Engineer will
be returned till those
now called for
are

the water supply.

The estimates for roofing
in the servants
at the Bazar, the Cess
& Agrar branches forwarded
by the ~~Revenue~~

Genl Dept. vide endorsement
No 2125 of 4 May 75.

were detained pending
the ~~receipt~~ of the

supplementary Rs. for
the filter with a view
to the submission of a
General estimate to the
Gov. of India. It may
be desirable no longer to
delay this transmission.

Order

27 Jan 76
by W/15-

Public Works Department

Memorandum

Dated 19 Jan 1876

Proc. 26 Jan 1876.
N. 387.

10 17
10 26 Jan 16 1877

83
Memorandum

No 119 With reference to the letter of the
District Engineer Bangalore of the 25 October
noted the below water works in the 25
volume with Major Vibart.

2 The site of the captured filter will
have to be definitely abandoned as there is
no possibility of constructing reliable founda-
tions for such a well on such ground at

No 101 d/17 Sept for a reasonable cost. Major Vibart's reports
"119" - 25 Oct - marginally noted an enclosure on this
point.

3 A second filter is desirable as it is
advisable and indeed necessary to turn
off the water for cleansing purposes. The
sand at the surface which forms the upper
layer must be frequently renewed, and
it must be expected that eventually
the lower layers of gravel and animal
charcoal will become ineffective in their
action and will require removal.

4 A site for second filter to supplement
the

the compartment of the original filter which is now in use can be found near the Engine house attached to the Dhobee's wells. As this ground is below the level of the water in the tank, a supply could be drawn from the tank by a siphon and led ^{to} the filter when required. A small tank for pure water, connected with the pumping well of the Dhobee's well engine by a pipe and valve, would be necessary, and in this way when the filter at the blue rock was under repair or being cleaned, the tank water could still be made available for the troops.

5. Major Vibart recommends strongly the siting of the wells or at any rate the pushing of a driftway in either direction from those now being supplied from, so as to tap the ^{still further stratum} saturated by the leakage from the tank.

6. It will be remembered that some additional wells were commenced close to the top of the bund and that operations were suspended on the representation of the Military Authorities that the bund was being endangered. There would not be

this objection to a driftway since the excavation would be small. Major Vibart however recommends the purchase of the ground (belonging to the Municipality) below the tank and outside the excavation which were objected to. If this purchase were effected, the well or driftway could be located sufficiently far from the bund to be unobjectionable, and a larger supply of admittedly excellent water would be obtained.

6. It is suggested that the District Engineer should be called in to submit estimates.

1. For a filter and pure water tank with siphon and necessary connections at the most convenient site near the Dhobee's well Engine house.

2. For purchasing the land under the tank belonging to the Municipality or as much of it as may be required, and constructing a driftway or additional wells connected with a driftway.

7. The iron roof recently placed over the pure water basin at the blue rock is reported by Mr Smith the Municipal Engineer to have been very beneficial

in preventing dust from reaching the water supply.

The Estimates for roofing in the service halls at the Rattery, the Police and Grain Bazaar forwarded by the Military Department with endorsement No. 2125 dated 1st May 1875 were delayed pending the receipt of the supplementary Estimate for the bills and with a view to the submission of a general Estimate to the Government of India. It may be desirable no longer to delay this transmission.

Adm Secy

Majr R. L.

Under Secy to Govt

18 Sept

Fort St George
19 January 76

To
The Chief Engineer
D.R.L.

No. 177

Public Works Dept

Proceedings of the Madras Government

Under date the 24th Jan 76

Read the following

Endorsement of the Military Dept (No. 2125 of 1st May 1875)
From The District Engr Bangalore (a. n. 47 - 4th June - a.)
" do do (a. n. 57 - 8th July - a.)
" do do (a. n. 63 - 24th - a. - a.)
" do do (a. n. 64 - 26th - a. - a.)
" do do (a. n. 74 - 2nd Aug - a.)
" do do (a. n. 100 - 16th Sept - a.)
" do do (a. n. 101 - 17th - a. - a.)
" do do (a. n. 119 - 25th Oct - a.)

Memo by Major A. L. Scott
Under Secy to Govt (No. 177 of 19 Jan 76)

The Government
concur in the opinion ex-
pressed in the foregoing
Memorandum that the
restoration

in preventing dust from reaching the water supply.

The Estimates for roofing in the service bungalows at the Rattery, the Police and Agrim Barracks forwarded by the Military Department with endorsement No. 2125 dated 1st May 1895 were delayed pending the receipt of the supplementary Estimate for the bills and with a view to the submission of a general Estimate to the Government of India. It may be desirable no longer to delay this transmission.

Adm Secy

Majr R. L.

Under Secy to Govt

18 Sept

Fort St George
19 January 1896

To
The Chief Engineer
D. R. L.

No. 177

Public Works Dept

Proceedings of the Madras Government

Under date the 24th Jan 96

Read the following

Endorsement of the Military Dept (No. 2125 of 1st May 1895)
From The District Engr Bangalore (a. n. 47 - 4th June - a.)
" do do (a. n. 57 - 8th July - a.)
" do do (a. n. 63 - 24th - a. - a.)
" do do (a. n. 64 - 26th - a. - a.)
" do do (a. n. 74 - 2nd Aug - a.)
" do do (a. n. 100 - 16th Sept - a.)
" do do (a. n. 101 - 17th - a. - a.)
" do do (a. n. 119 - 25th Oct - a.)

Memo by Major A. L. Scott
Under Secy to Govt (No. 177 of 19 Jan 96)

The Government
concur in the opinion ex-
pressed in the foregoing
Memorandum that the
restoration

restoration of the compartment of the filter at the Uleor rock, which has given way, is impracticable. It also appears that the compartment which is intact cannot well be continuously used and another filter must therefore be constructed.

2. The District Engineer Bangalore will accordingly prepare and submit as early as practicable estimates as described in the 7th para of Major Scott's Memo with, of course, any modification of details which may appear

Uleor Barracks -	Rs 10,450
Agram - " -	" 16,520
Bakery -	" 4,230

appear to be necessary on closer investigation.

3. It is desirable that as far as practicable all the additional work which may be necessary to render the Water Works efficient should be brought before the Government of India collectively and therefore the detailed Estimates, as per margin, for covering the cisterns at the several Barracks and the Bakery which have been received from the District Engineer will be returned till those now called for are.

