14
11-5-11-37

M.R.O. 1—32,400—28-11-36.

MADRAS RECORD OFFICE.

Government of Madras.

DEPARTMENT.

G.O. No.	1254	Press Mis.
Dated	17 7	1837

Not to be folded or roughly handled

Fort Saint George, Public Works Consultation of 20th July 1858.

No. 52. Read the following letter from Major E. LAWFORD, Superintending Engineer Southern Circle, in charge of Central Office P. W; to W. H. BAYLEY, Esq., Acting Secretary to Government, dated 18th June 1858, No. 1272.

SIR,

With reference to the concluding part of the Extract from the Minutes of Consultation No. 1030, of the 31st Ultimo, I have now the honor to forward herewith, as particularized in the annexed Memo. such Surveys and reports connected with the harbours on the Western Coast, as have been found among the records in this Office; which I beg may be returned when no longer required by the Officiating Consulting Engineer for Railways.

2. The Charts noted in the margin forming the greater portion of the plans now forwarded, with the exception of those mentioned 1, 2 and 3 in red ink, pending further particulars, which have been applied for, from Lieutenant Taylor, have all been lithographed to the extent specified opposite each, for distribution to all Collectors and District Engineers, and for sale to navigators.

Chart of Tuddree river entrance, 300 copies.
Do Baypoor do do do
Do Cochin do do do
Canal Chart of the coast of Canara No. 1, with the Southern portion of the Portuguese Territory of Goa, 1855.
1 Chart of do do do
2 do of the coast of Canara from Hog Island to Mangalore.
3 do of do from Mangalore to Kurnool.

3. One only report by Lieutenant Taylor on the rivers and harbours of Canara which is at present with Colonel F. C. Cotton, and which has been called for, will be forwarded so soon as it is received.

MEMO.

1. Report on the state of the Mangalore harbour, by Lieutenant J. Goddard, Assistant Civil Engineer, Canara District, No. 100, of the 23rd July 1856.

2. Do. on the works necessary for the Mangalore harbour, by Lieutenant G. W. Walker, Civil Engineer 3rd Division, Canara District, No. 85, of the 25th February 1856.

3. Do. on the Beypoor Harbour and Bar, by Major G. Selby, Civil Engineer, No 18, of the 6th October 1856.

Chart of the Survey of Cochin Bar entrance and harbour, taken after the monsoon of 1852.

Chart of the Tuddree river entrance surveyed in December 1854.

Do. of the entrance to Beypoor river on the Malabar Coast, surveyed in December 1856.

Canal Chart of the coast of Canara No. 1, with the Southern portion of the Portuguese Territory of Goa, 1855.

Three Charts of the coast of Canara, marked Nos. 1, 2 and 3, in red ink, 1855 and 1856.

(Signed) E. LAWFORD, Major,
Supg. Engr. Southern Circle in charge of Central Office of P. W.

Letter from Lieutenant J. GODDARD, Assistant Civil Engineer; to Colonel C. E. FABER, Chief Engineer, dated Bellekerry, near Ankola, 23rd July 1856, No. 100.

SIR,

The Collector of Canara several times urged by pressing letters, that I should not only visit the Mangalore Harbour, but proceed thither (a march of 16 days in fine weather) to establish myself and Office for the monsoon; the country to be passed over in this route, is very much

intersected with backwaters, nullahs &c., which are only in a few instances bridged, and the ferries over the majority of them, are of a very mean description and not adequate to pass bandies, horses and bullocks without much delay and entirely dismantling bandies. The monsoon had set in, and many difficulties and objections presented themselves.

I had then just completed a march of three months from Rajahmundry to this place, and my servants were, several of them, absent in Sedasheghur suffering from fever, and receiving medical aid from the Medical Officer in charge of detachment at that station, and I could not supply the vacancies thereby occasioned.

My monsoon head quarters had by the advice of Lieutenant Walker, and from the purport of a private communication from yourself, been established at Bellekerry near Sedasheghur.

Under these circumstances, I considered it inexpedient then to proceed to Mangalore to visit the harbour, and more particularly so, as it would be folly to attempt any more work there at the present season.

However, upon receipt of your letter No. 3961, under date the 10th June 1856,* I proceeded by dawk to Mangalore (of necessity leaving my Office at Bellekerry) there personally to consult with the Collector and to inspect the harbour.

* Calling upon me to report, whether I was prepared to relieve the Revenue Officers from further connexion with P. W. D.

The result of my visit to the Collector, has no doubt ere this become known to you, and I now proceed to report upon what I saw of the harbour at Mangalore, which I visited in company with Lieutenant Law, Executive Officer in charge thereof, to wit.

The Island to the northward of the harbour mouth, is being cut away and presents the most hopeless appearance.

It is useless as intimated by Lieutenant Walker, to attempt doing any thing more at present, all traces of the groynes placed by Lieutenant Walker's orders being completely obliterated, and not even a trace to be seen. The wall of the old fort which Lieutenant Law informed me formerly existed, is no where to be seen, and the ground is being cut away.

Lieutenant Walker has explained the nature of the action which causes this cutting away, viz., the sand which is loosened and held in suspension by the waves, is carried away by the force of the current of the Buntwal river during the monsoon. The small balance remaining in hand of the original estimate is so trifling, that it would be injudicious to attempt making use of it.

I am under the impression, with all due deference to Lieutenant Walker's superior professional knowledge and experience, that, the works now undertaken, have been planned and executed on a scale which I feel inclined to term insignificant, when compared with the powerful natural forces we have to deal with; and I here take an opportunity of giving you a sketch of the method which I deem it my duty to estimate for, and submit for sanction, and the great cost of which will be fully compensated for, I imagine, by its accomplishing the end desired.

I propose having the groynes in the Dam placed, as proposed by Lieutenant Walker, and exceeding his in number by one, but mean to construct the outer part of stones of an average weight of 7 tons, such as are used at the Kistnah annicut.

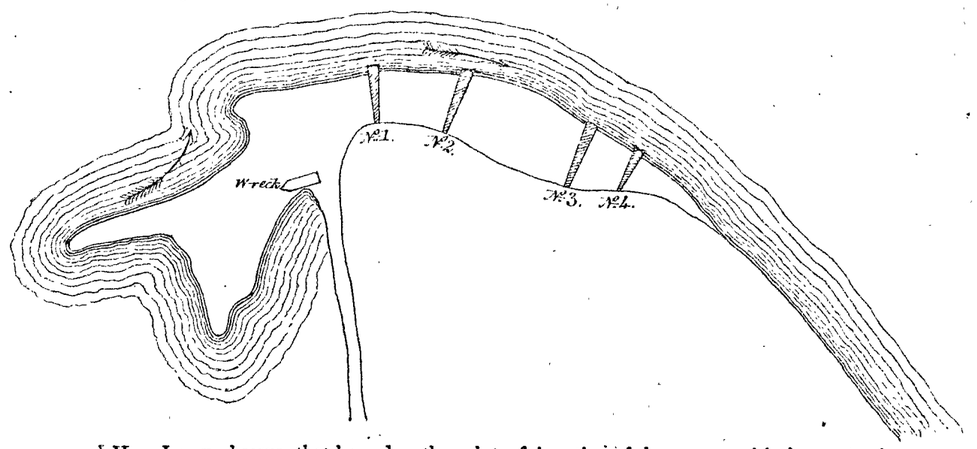
These stones will be the outer shell of the groynes, and will not be laterite, but hard stone, which I learn from the Collector, who is kindly obtaining information for me regarding the price &c. of such material, may be obtained in the neighbourhood of the Buntwal river, and brought down to the neighbourhood of their eventual place of deposit on boats, and from thence removed on Railway wagons, similar to those in use on the Kistnah works, and from which wagons I shall lay down about a mile of tramway. Cranes will also be used for loading and unloading the boats.

The inner part of the groynes, I propose to make of any convenient small stone, obtainable in the neighbourhood, say laterite.

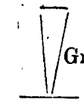
I should almost feel myself justified in using sand for the very interior, having seen groynes so constructed, and some 250 or 300 yards in length and 30 or 40 feet high, act quite beyond what was expected of them in the Godavery (when the river was encroaching *very much* indeed in the neighbourhood of the village of Coola) under the superintendence of Mr. Eyles of the Europeans. Many other groynes were also constructed and of greatest service, but I am personally well acquainted with the Coola groyne, and would scarcely have credited the amount of shoal thrown up subsequent to its construction, had I not been an eyewitness of the fact. It is impossible for me now to state exactly what the position of my works will be, because immediately before undertaking work, I shall have a Survey and Sketch made of the site of the work, and act as seems requisite under the then existing state of affairs.

The direction of Lieutenant Walker's groynes, I shall take upon me to alter, and also their shape, viz.

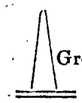
This represents the groynes proposed by Lieutenant Walker.



Here I may observe, that he makes the point of junction of the groynes with the connecting wall (which connecting wall I propose constructing of the large 7 ton stones above spoken of) smaller



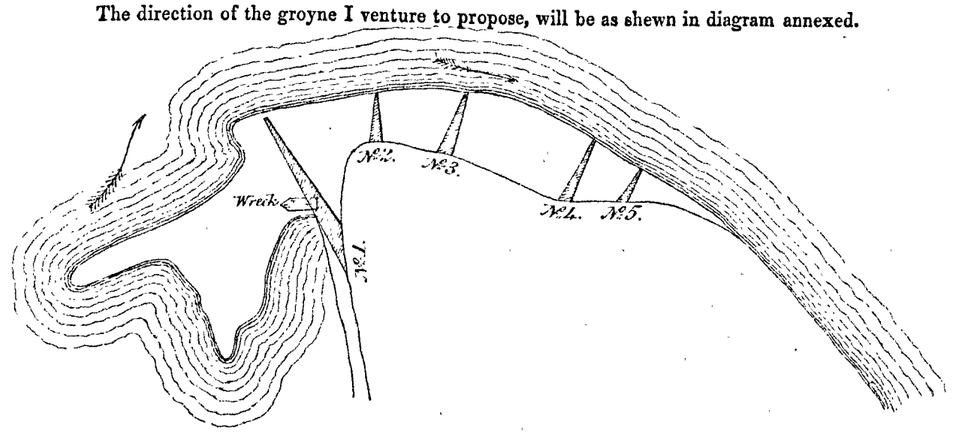
than any where else thus ═ Connecting wall. but I propose a contrary shape,



viz. ═ Connecting wall.

All the large stones, will have a bed cleared out for them in the sand, of a yard deep, both those in the groynes and connecting sea wall, and if possible the interior of the groynes will be cleared out to a similar depth, for the deposit of the rubble.

The direction of the groyne I venture to propose, will be as shewn in diagram annexed.



You will here observe, that I have represented one more groyne than is proposed by Lieutenant Walker.

To render these groynes and the connecting sea wall permanent, I propose surrounding the site of the groynes with piles of teak wood, thereby confining the sand and obtaining as good an artificial foundation as I am acquainted with, viz., confined sand to support the weight of the groyne, and at the same time prevent the disturbance of the sand inside, and under the groyne, by the action of the waves, which in the case of a groyne not so protected, would be a likely result, and would terminate in its disappearance, as has been the case with Lieutenant Walker's groynes.

The piles will be driven 10 feet, or if requisite further; they will be sheet piles with iron points (chisel.)

I have represented in the plan, the shape of the deposit, and having seen groynes used very effectually when stable and on a large scale, feel considerable confidence as to the success of the project.

Our groynes effectually securing the southern end of this Island, we need not be under any immediate apprehension about the Harbour mouth moving further to the northward, and may then hope to see it by the aid of the current of the Goorpoor river, after the close of its mouth more gradually to the southward; and possibly the eventual result of the groynes may be, the re-formation of a great part of the Island now being cut away.

These groynes and connecting sea wall, will be two feet above the general level of the ground in their neighbourhood.

We will commence with No. 1, in the bar mouth, and gradually proceed onwards with the other numbers 2, 3, 4, 5, and the intermediate connecting wall.

Surveys and sections are now being prepared, to forward with the estimate and plan when ready.

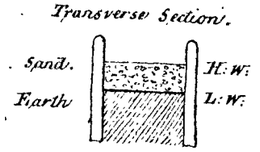
Regarding the failure of the Dam at the Goorpoor mouth, I differ with Lieutenant Walker; inasmuch, as I attribute its failure to the nature of the soil with which the top part of the dam was constructed, namely sand. Lieutenant Walker's directions were (as far as my enquiries among the natives who superintended the work tend to shew) that that part of the Dam which was above low water mark, should be constructed of sand.

I am led to believe this statement correct, as the Dam did not bodily give way, but the sand in some places above low water mark, washed away inwards, upstream of the river at high water, and a small breach being once effected, we all know very well how soon the work of destruction must have been completed. This is what I collected from natives, as no European on the spot was able to give me information relative to the original cause of failure. It is said, that in some places the Dam was rather weak and had a tendency to bulge. It consisted of two rows of piles driven in at intervals and connected by hurdles, and the intervening space was filled in with earth, thus.

Plan.



Transverse Section.



The piles might perhaps, many of them, have been of a large scantling with advantage, and struts and waling might have been introduced, and I propose having both these appliances during the next operations. I propose also to place the Dam on the old site, should our soundings before the commencement of operations, not alter. Soundings will be taken immediately prior to the work being entered on.

I do not attempt to pass any remarks as to the probability or otherwise, of the Dam producing the desired end, as my orders are to re-construct the Dam and to take care that it is begun sufficiently early, to ensure the desired object being attained.

Should you desire it, I will from time to time furnish you with plans of the mouth of the harbour taken at various periods, and sections of the Goorpoor mouth at different stages of the monsoon.

Letter from Lieutenant G. W. WALKER, Civil Engineer 3rd Division; to Colonel C. E. FABER, Chief Engineer, dated Mangalore, 25th February 1856, No. 85.

SIR,

1. Extract No. 1053 from your Proceedings of the 16th February giving cover to Lieut. Colonel Cotton's Memo. on the principles to be attended to in closing the Goorpoor bar of Mangalore backwater, reached me on the 21st Instant. I had employed the period from my landing at Mangalore up to that date, in having copies taken of the Survey of Mangalore backwater made by Lieutenant A. D. Taylor of the Indian Navy in January, and most obligingly placed at my disposal by that Officer; in Surveying for myself and laying down on my own former plans to larger scales, the exact changes of the preceding twelve-month; and in the general study of the locality and the question of its improvement. I was consequently at once enabled to decide on the necessary operations on receipt of Lieutenant Colonel Cotton's Memo. which so clearly defines the correct principles of action.

2. On Survey No. 1, (Lieutenant Taylor's) which accompanies this letter, I have marked in red, the outline of high water mark of last year's opening of the Goorpoor river to shew the great and extraordinary change; and in supra tint and by the letters A B C, D E F, are denoted the positions of the 2 Dams whereby I propose carrying out Colonel Cotton's views. The former will be first undertaken, and would suffice without the other were time no object; but to hasten matters, both will have to be constructed. Battery point which projects between A and F, being entirely of rock, I do not think the discharge of the Goorpoor river can be conveniently conducted through or behind it, clear of the space between the two Dams, into which it must be allowed to flow by a surplus Calingulah between A and the sunken rock off that point.

3. That no time may be lost in carrying out the above noted work, the Collector has placed at my disposal Rupees 500, for laying in at once such a stock of poles and hurdles as I think may be necessary to strengthen the embankments, and I have invited tenders for contracts for their supply as well as for the actual execution of the work, which is of a kind that the country people are quite accustomed to. Estimate No. 1 for this portion of the work, submitted with this letter amounts to Rupees (3,000) three thousand.

4. Survey No. 2 is identical with that forwarded by me last year, but comprises my observations of this Mouth on the present state of the real entrance of the Mangalore Harbour (which Goorpoor Bar is not,) the position of the North and South Beaches of which, is shewn by the deep blue tints which define the high water mark. The damage done on the North Beach during last monsoon may be accurately estimated by the plan, and will be seen to have increased gradually from the point C, my landmark of last year, and the only one of the outermost trees that has stood, to where the mass of earth mixed with a few stones presented by the old Fort acted as a groyne to retard encroachments. That the point C and ground inside of it have been saved is owing to the protection afforded by the wreck which lies stranded there and has caused an accumulation of sand.

5. Survey No. 3 shews the present Beach, North of the harbour mouth laid down on thrice the scale of Survey No. 2, for better identification of its actual state, and future changes, the outermost trees being laid down accurately. On it is also shewn the position of such works as I think it necessary to throw up for the protection of the land, pending the interval that must elapse, before the closure of the Goorpoor mouth exercises its full effect in counteracting the destructive influences of the monsoon surf and freshes of the Buntwal River.

6. These I propose in the shape of rough stone groynes to be laid down at right angles to the Beach, and end on to the direction of the Southwest swell. From the trees to high water mark they would only be a yard high above the sand, with a section of 2 square yards, expanding into greater width down to low water mark where their slopes must be very considerable

which the estimate allows for by supposing an average section throughout of 6 square yards. The object of the groynes is to arrest the outward sweep of the river freshes, which now carry out to Sea the particles of the North Beach loosened by the violence of the surf. As such current might work round the head of one groyne, and impinge on the Beach to seaward of it, four are proposed, effectually to secure the extent of coast affected; and a sea-wall of 1 cubic yard section connecting their inner extremities as shewn in the plan will complete the safeguard, at a cost as per estimate No. 2 of Rupees 385.

7. As the stones for these groynes are available close at hand from the large groyne constructed last year in the backwater, and which is no longer calculated to be of use after the failure of the cut it was intended to keep open, their cost will merely be that of carriage for a short distance. After the first year these groynes will have done their work, and possibly much of their cost may hereafter be realized by sale of the stones, if it be found that their removal may be ventured on.

8. The head of the groyne in the backwater having as it appears to me a sensible, and, (as far as it goes,) a beneficial action on the river current as shewn by the recession of the advanced point of the southern sand bank since last year, the stones required will be taken from its inner extremity where it joins the original pair of groynes constructed at the mouth of the Culsunkoo stream, and to strengthen which the materials of the second large groyne that was commenced may be advantageously applied.

9. To superintend the work there are at present available the services of Lieutenant Drever, but it is not to be denied that Trunk roads Nos. 2 and 3 and their branches, must suffer if his attention is thus distracted from them. And since at any rate other Officers must shortly be appointed to fill up the proposed Executive charges of the District, I would suggest the immediate nomination of another besides Lieutenant Drever for duty in South Canara. Captain Smart who was formerly employed on the Mangalore Harbour-work, may perhaps again be available and is within easy reach.

Letter from Captain G. SELBY, 1st Assistant Civil Engineer of Malabar; to the Civil Engineer in charge of Malabar, dated Calicut, 6th October 1856, No. 18.

SIR,

I have the honor to forward herewith the Survey of Beypoor Bar, and to offer the following remarks.

2. It seemed to me necessary in order to shew the gradual deepening of the narrow outlet of the river, to send a copy of a Survey taken in 1816 by Captain Montrion. The line of adjacent shore has changed considerably, it will be observed.

No. 1, Survey in 1856.
„ 2, do 1846.
„ 3, Position of Waggany &c.

3. The subject will of course be laid before competent judges, and I therefore write with less anxiety, because unless the project seem almost certain of success, it will never be attempted.

4. I propose to close the small channel D, vide plan 3, by a line of Cocoanut Piles and Planking; my object is of course to reduce the breadth of water-way by any means, and this will be done here for a less sum than half the same distance on the other side.

5. The bank of sand which will accumulate on both sides of the piling might I should think, be turned to good account by the Railway. Their boats might then unload here when a strong ebb rendered the passage of the narrow Channel H extremely laborious, if not impossible.

Estimate.—(say)

	Rs.
2300 feet of piling and planking, at 10 Rupees per running foot.....	23,000
100 by 80 by 3 cubic feet of rough laterite, at 2 annas.....	30,000
500 feet piling and planking (near Island,) at 5 Rupees running foot	2,500
Sundries.....	5,000
Total.....	60,500

6. On the other side I would construct a Waggany as formerly proposed; I would give the line of piling the direction shewn in the plan and that not by a curve but by a succession of straight lines.

7. I think it would be well to try 200 feet first, commencing from the shore; if the sand did not collect, the project might be abandoned with only a trifling loss; if it did, we should then have good reason to look for entire success and the piling and planking would then be extended (provided the accumulation continued to favor us) till the required length had been obtained.

8. The sand above and below the Wagganies at Ponany has accumulated to a great depth and that is in a river 23 feet deep at the groyne-head and which obtains a velocity of 4¼ miles per hour. The two Wagganies there stood till the accumulation took place though exposed to the direct action of this heavy stream. I write this only to submit the probability of the piles and planking at the mouth of the Beypoor River resisting the indirect action of its waters.

9. I have traced the course I think the Waggany should take and its probable effects; I have also shewn the position the Buoys should occupy should it be determined to try the effect of deepening over the bar by dredging. The distance to be dredged would be about 1,600 feet to secure 17 feet water.

10. The worst part of the Bar is where there is only 7 feet at low-water, but I could only find it so in 2 places. The extent of this bank is evidently extremely limited.

11. The bar is hard sand; as the water deepens, mud is found mixed with it, and at 20 feet or so it is all mud.

12. Thus far respecting the original proposition and deepening the bar N of the Island; the examination of this place leads me to think that the deepening of the rocky Channel G should be attempted, but the opening this passage for Ships drawing 17 feet water (that is removing 5 feet of laterite) would avail nothing unless a basin for their reception were provided. This question also I think merits attention.

P. S.—On mentioning the suggestion contained in the last para. to Mr. Glasson who has long resided on this Coast and knows Beypoor well, he told me that he had originally thought it possible to unite the reef rocks at KKK and that vessels should enter to the south of it, as at LL, but for many reasons, I think I see in this still greater difficulties.

No. 53. ORDER THEREON, No. 1384; dated 17th July 1858.

Ordered that the above letter and its enclosures be forwarded to the Financial Railway Department, with reference to Extract Minutes Consultation in that Department, dated 20th April 1858, No. 197.

(Signed) T. PYCROFT,
Chief Secretary.

Central Office of Pbo.
Fort St. George 18 June 1858.

No. 1272

From

The Superintending Engineer &c
in charge of Central Office Pbo

To

The Secretary to Government Pbo

Sir.

Public

With reference to the concluding
part of the Extract from the Minutes
of Consultation No 1030 of the 31st Ultimo
I have now the honor to forward here-
with, as particularized in the annexed
Memo, such Surveys and Reports
connected with the Harbours on
the Western Coast, as have been
found among the Records in this
Office; which I beg may be re-
turned when no longer required
by the Officiating Consulting Engineer
for Railways.-

Enclosures 10

Charts & Tracing Paper entrance 300 Copies.-
Chart of Bay for Paper entrance 300 Copies.-
Chart of Cochin River entrance 300 Copies.-
Canal Chart of the Coast of Canara &c with the boundaries for-tion of the Portuguese Territory of Goa 855.-
Chart of Do Do 2 Do of the Coast of Canara from Goa Islands & harbour 3 Do of Do from harbour & River mouth.-

2. The Charts noted in the margin
forming the greater portion of the Plans
now

Plans now forwarded, with the exception of those mentioned in 2 & 3 in red ink, pending further particulars, which have been applied for, from Lieutenant Taylor, have all been lithographed to the extent specified opposite each, for distribution to all Collectors and District Engineers, and for sale in Navigators.-

3. One only Report by Lieut. Taylor on the Rivers and Harbours of Canara, which is at present with Colonel S. C. Cotton, and which has been called for, will be forwarded so soon as it is received.-

I have the honor to be,
Sir,
Your most obedient Servt
Lawrence
Actg: Dpy: Secy: to Govt
Central Office
18 June 1858

To
The Secretary to Government
Bombay

Inclosure

1. Report on the State of the Mangalore Harbour, by Lt. S. Goodard Asst. Civil Engineer, Canara District, No 100, of the 23d July 56

2. Do— on the works necessary for the Mangalore Harbour by Lt. G. W. Walker Civil Engineer 3d Division Canara District, No 85, of the 25th February 1856.-

3. Do— on the Beypore Harbour and Bar by Major G. Selby, Civil Engineer No 18 of the 6th October 1856.-

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Chart of the Survey of Cochin Bar entrance and Harbour, taken after the monsoon of 1852.-

Chart of the Sunora River entrance Surveyed in December 1854

Do— of the entrance to Beypore River on the Malabar Coast, Surveyed in December 1856.-

Coast Chart of the Coast of Canara 1851 with the Southern portion of the Portuguese Territory of Goa 1855.-

Three

The charts of the Coast of Cavara, marked Nos 1, 2, & 3 made with, 1885 and 1886.—

Surveying Dept. Hydrographic Office
Central Office Jan 12th.

Comm. 1st June 58 Rec. 9 & 9th
— 20th Sept. — " — 54 - 55 -

7 Sep. Dispatch

Nos 52 & 53.

Public Works 1858 Departt
Rec'd in Secretariat 19th July
Transmitted to the Secretariat Office for
The Secretary to Govt. Public Works Dept.

Transmitted 20th July 58 No 711
Date 24 Aug
No. of Enclosures 15
Pages 21
Rec'd 1858

Enclo=10 Nos 12 & 12 A
From the Secy 31st Aug 1858
Public Works Dept.
Submitted with a Report
to Govt. No 1036 dated
31st Augt 58 Chief Engr
and Secretary Committee
the Harbours on the Western
Coast as have been framed
among the Records of
the Committee's Office for

Wm Andrew
Sec. 1384 - 17th July 1858.

No. 1384

Ordered that the
above letter and its enclo
sures be forwarded to the
Financial Railway Depart
ment with reference to
Colonel Mains of Com.
nication in that De
partment dated 20th June
1855 at 197.

Fort St. George
19th July 1858

W. H. B.

To Colonel the Hon. Railway Depart. Engr 19th
with 4 Charts