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ANNUAL PROGRESS REPORT

OF

PUBLIC WORKS,

IN THE

CENTRAL PROVINCES,

FOR THE YEAR 1864-65.

BY THE

CHIEF ENGINEER.

DATED 23RD JULY 1865.

NAGPORE:

PRINTED AT THE ALBION PRESS.

1865.

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FOR THE YEAR 1864-65.

BY THE

CHIEF ENGINEER.

DATED 25TH JULY 1865.



This Report is so framed as to show, first, the Divisions in the Central Provinces, together with the Officers in charge of them; and secondly, the works carried on in these Divisions, taken together, under the heads of (1) Military, (2) Civil Administration, (3) Public improvement, (4) Communications.

The Central Provinces are divided into twelve separate and distinct Divisions; of these, three—1st Division Great Northern Road, 2nd Division Great Northern Road, and Saugor Division—are in the Jubulpore Circle; two—1st and 2nd Barrier Divisions—are in the Godavery Circle; while the others belong to the Nagpore Circle.

The following Tabular Statement shows in a clear manner the designation of the Divisions, and the Officers in charge of them.

Circle.	No.	Name of Officer.	Rank.	Division.
JUBBULPORE.	1	Mr. J. W. O'Donnell C. E.	Executive Engineer 3rd Grade.	1st Division Great Northern Road.
	2	Mr. J. S. Heyman C. E.	Executive Engineer 2nd Grade.	2nd Division Great Northern Road.
	3	Captain H. B. Faber R. E.	Executive Engineer 4th Grade.	Saugor Division.
NAGPUR.	4	Major E. A. Saunders M. S. C.	Executive Engineer 4th Grade.	Kamptee Division.
	5	Major F. Tyrrell M. S. C.	Executive Engineer 2nd Grade.	Eastern Road Division.
	6	Captain H. G. Fuckle M. S. C.	Executive Engineer 4th Grade.	Southern Road Division.
	7	Major T. H. Keyes M. N. I.	Executive Engineer 4th Grade.	Nagpore Division.
	8	Captain A. G. Priestley D. S. C.	Executive Engineer 1st Grade.	Nerbudda Division.
	9	Lieut. E. L. Marryat R. E.	Assistant Engineer 1st Grade.	Nimar Division.
	10	Mr. S. Hanna C. E.	Executive Engineer 3rd Grade.	Irigation Division.
GODAVARI CIRCLE.	11	Mr. T. S. Isaac C. E.	Executive Engineer 1st Grade.	1st Barrier Division.
	12	Lieut. P. Montgomerie R. E.	Executive Engineer 4th Grade.	2nd Barrier Division.

ARMY—MILITARY.

SAUGOR. Family Quarters, with out-offices, for European Infantry, have been about 3/4ths finished during the year; expenditure about 6,500 Rupees, amount of Estimate Rupees 12,449.

The Annual Repairs to the Cantonment Roads have been effected. The expenditure amounted to 3,377 Rupees, while the sanctioned amount is 4,139 Rupees.

Annual Repairs to the European Infantry and Royal Artillery Buildings have been made. The expenditure has been 6,779 Rupees, the sanctioned amount is 8,224 Rupees.

The works here are of a temporary character; time would be lost were mention to be made of them individually. Suffice it to say that the erection of temporary buildings for troops, and repairs of those already built, have been carried out.

The works are temporary in consequence of the moot question as to the advisability of transferring the Station of Saugor to another site.

Expenditure on Military Works during the past year 42,907 Rupees; Original Works 19,580, Repairs 22,927.

JUBBULPORE. A Reading Room and Library for the European Infantry were commenced, and stopped by order, but, beyond the laying of foundations, no progress has been made. The expenditure has been 505 Rupees. Of two ranges of workshops for the Royal Artillery commenced during the year, one is finished, and the other nearly so. The expenditure has been 2,598 Rupees, the amount sanctioned is 2,665 Rupees.

The European Infantry Hospital has been raised, re-roofed, and much improved during the year, at an expenditure of about Rupees 5,500. Of two ranges of Family Quarters for the Royal Artillery, one is finished, and the other half done. Expenditure amounts to 10,847 Rupees, the sanctioned amount is 18,914 Rupees.

The Annual Repairs to Military Buildings are completed.

Draining the Eastern Swamp has been sanctioned, and work put in hand.

KAMPTEE. Family Quarters for European Troops are under execution. The expenditure came to 63,282 Rupees, the sanctioned

amount is 1,57,220 Rupees. The laying down of metalling on the Cantonment Roads is in hand. Expenditure 1,654 Rupees; sanctioned amount 2,385 Rupees.

Alterations to the Lascars' Hospital have been carried out. Expenditure 1,138 Rupees; amount sanctioned 1,196 Rupees. Special repairs to European Infantry Barracks are in hand. The expenditure during the year came to 15,665 Rupees; the amount sanctioned is 26,360 Rupees.

Repairs to the Garrison Battery Lines are being carried out. Expenditure 2,388 Rupees, amount sanctioned 8,680 Rupees. Verandahs to the Artillery Barracks have been put up, at a cost during the year of 4,447 Rupees. The sanctioned amount is 6,107 Rupees.

CHINDWARRA. Special repairs have been under execution to the Temporary Buildings.

MOHTOOR. The construction of Temporary Buildings for European Troops has been proceeded with. The expenditure is 15,372 Rupees.

The construction of Temporary Officers' Quarters has progressed favorably. The expenditure has been 3,494 Rupees; the sanctioned amount is 4,852 Rupees. Mohtoor and Chindwarra, it should be mentioned, are the proposed Sanatoria for these parts of the Central Provinces.

EASTERN ROAD DIVISION. In this Division the construction of Military Buildings has been trilling. A Powder Magazine is well in hand. Expenditure 2,290 Rupees; sanctioned amount 3,442 Rupees.

Solitary Cells have been built at Raepore. The expenditure has been 913 Rupees, estimated amount 1,069 Rupees.

At Seroncha, Officers' Quarters have been built, and Native Infantry Lines nearly completed, at a cost of Rupees 15,442.

The Drainage of the Cantonment of Raepore has been brought satisfactorily to a close.

The works mentioned in this report under the head of Military are the chief or principal works—works for which the largest expenditure either has been, or will have to be incurred. Other works there

are, not mentioned here—regarding which it will be sufficient to say that, whether as regards repairs or construction, they have progressed satisfactorily.

CIVIL ADMINISTRATION.

SAUGOR DIVISION. A Cutcherry at Dumoh is in hand. The expenditure comes to 4,804 Rupees; amount sanctioned is 30,000 Rupees.

1ST DIVISION GREAT NORTHERN ROAD.

A Post Office at Hoshungabad is nearly finished, expenditure 1,555 Rupees; amount sanctioned 1,490 Rupees.

A Telegraph Office has been nearly finished at Myhere. Expenditure is 3,464 Rupees; amount sanctioned 4,465 Rupees.

2ND DIVISION GREAT NORTHERN ROAD.

New Record Rooms to the Deputy Commissioner's Court house at Seonce were so far advanced as to be ready for the timbering of the roof &c. Expenditure is 2,075 Rupees; amount sanctioned is 3,564 Rupees.

EASTERN ROAD DIVISION. A Court House for the Deputy Commissioner at Raepore is nearly finished. Expenditure during the year 6,888 Rupees, sanctioned amount 29,949 Rupees.

NIMAR DIVISION. This Division was established on the 1st November 1864.

A Deputy Commissioner's Court House has been commenced at Khundwah.

The principal operations having been the collection of materials, no expenditure is mentioned.

SOUTHERN ROAD DIVISION. A Court House for the Deputy Commissioner has just been commenced. The amount sanctioned is 23,725 Rupees.

Tehseelee at Hingunghat well in hand. Expenditure 4,750 Rupees, sanctioned amount 5,681 Rupees.

The Tehseelee at Wurdah is in hand. The expenditure is 1,991 Rupees; sanctioned amount is 5,822 Rupees.

The Tehseelee at Wurrorah, in the Chanda District, is nearly finished; Expenditure is 3,181 Rupees; sanctioned amount 4,645 Rupees.

Wells have been sunk at each Tehseelee.

NAGPORE DIVISION. The building of a Small-Cause Court has been commenced at Nagpore. The progress of this can hardly be said to be satisfactory. It should be stated however, that great difficulty was experienced in digging the foundations on account of the depth it was necessary to go. The expenditure is 469 Rupees; sanctioned amount is 9,999 Rupees. A Deputy Commissioner's Court House has been completed during the year at Bhundara, expenditure up to date 31,412 Rupees, sanctioned amount 30,752 Rupees. At Seroncha a Court House for the Deputy Commissioner has been finished, at a cost of Rupees 14,979.

CHARITABLE INSTITUTIONS.

Alterations to the Lunatic Asylum at Nagpore have been effected at an expenditure of 3,830 Rupees. The sanctioned amount is 4,279 Rupees.

ECCLESIASTICAL.

NAGPORE DIVISION. A Church is in course of construction at Bhundara; 1,250 cubic feet of stone have been laid in the foundations. Expenditure comes to 3,021 Rupees, sanctioned amount is 6,928 Rupees. During the past year the roof of All Saints Church at Nagpore has been covered with galvanized iron, and one-third of a portico at the main entrance finished. There remain to be executed the steeple portico, and internal decorations and fittings.

A wall surrounding the Cemetery has been built at an expense of 3,173 Rs.

NIMAR DIVISION. A Church is building at Khundwah, and about one-fourth finished. Expenditure has been 1,019 Rs.

KAMPTEE DIVISION. A Church is in course of construction at Chindwarra, the expenditure on which is 7,073 Rs., sanctioned amount 8,233 Rupees.

EASTERN ROAD DIVISION. A Church is building at Raepore, which, setting aside some internal fittings, may be considered

finished. The expenditure is 6,133 Rupees, sanctioned amount is 6,148 Rupees.

JUDICIAL.

Police lines have been repaired at Mundla and Chindwarra at a cost of 599 Rupees, sanctioned amount is 1,643 Rupees.

At Seroncha police buildings have been erected at a cost of 5,318 Rupees.

Police Barracks have been erected at Raepore, and only require roofing to be ready for use. The materials for completing them lie at site; expenditure has been 3,290 Rupees.

At Khundwa, in Nimar, a Police Hospital has been commenced. As to progress, the masonry is finished, the trusses are fixed, and doors and windows nearly completed; all that remains is to complete the roof, plaster the interior, and fix the doors.

At Hoshungabad a Police Hospital has also been commenced, and is about half finished.

Police Lines have been commenced; the superstructure has been raised to a height of 3½ feet in one barrack, and ¾ths of the foundations have been laid in another, at a cost of 2,510 Rupees.

At Nagpore a large Central Jail has been commenced; of this, one Barrack is finished, and two wards of two other Barracks are completed; three wells have been sunk; a boundary wall has been built; and materials to a large extent collected. The expenditure has been 53,607 Rupees.

Some materials for the construction of a Central Jail at Jubbulpore have been collected.

Some materials for Jails at Mundla and Hoshungabad have been collected.

At Wurda a Jail is building, the foundations of which are in hand. Expenditure is 855 Rupees; the amount sanctioned is 22,000 Rupees.

At Seroncha a Jail is in course of construction. It will probably be completed about the end of 1865. The expenditure has been 16,437 Rupees.

At Raepore a Jail is building, on which the expenditure has been 38,802 Rupees. Two wards of this building are finished; two are nearly completed; and the others raised about eight feet above the ground.

AGRICULTURAL—IRRIGATION CANALS.

An Executive Engineer, Mr. S. Hanna, early in the season was deputed to make search for suitable places for the storage of water in these Provinces. His efforts were directed to three points.

The first was a project for supplying the Godavery River with a continuous stream of water, with a view to lessening the difficulties of the navigation thereof during the dry season.

The second was a project for the storage of water in large volumes for the irrigation of extensive tracts of country.

The third was a project for taking advantage of peculiarities in the features of the country immediately adjoining Stations, for the storing up of water, so that local advantages might be secured.

One project, called the Sconeo Scheme, and which may be classed under the third head, has arrived at completion in respect to the work done in the Field. There is every expectation that the plans for the proper development of the scheme will be ready at the end of this rainy season.

Another scheme, which has for its object the utilisation of about one half of the Koolar valley above Sonair, for the purpose of irrigating the land lying between the Koolar and Kanhan Rivers, may be said to be nearly as far advanced.

A third scheme, called the Kuttungeo Project, is completed, so far as the preliminary work for the first and principal of a series of irrigation works is concerned.

The sites of reservoirs have been settled, their areas computed, and numerous levels taken for the computation of the cubic amount of water they are capable of holding.

Moreover, examination has been made of the valley of the Wyne-Gunga, the river channel everywhere inspected, and several cross sections taken; skeleton or rough surveys have been made of possible storage sites, and measurements taken at the gorges.

Data touching the drainage areas and discharges of all the large rivers have been collected.

Hence, it may be understood a mass of information has been collected which may prove very useful in taking up future works, even should the schemes, on account of which these data have been sought, never be brought to birth.

COMMUNICATIONS—METALLED ROADS.

NORTHERN ROAD 1st DIVISION. The northern road runs southward from Mirzapore to Nagpore.

The 1st Division extends from the North West Provinces frontier, or Kutra Pass, to Jubbulpore, a distance of 195 miles.

The 2nd Division extends from Jubbulpore to Korai, 107 miles.

The 3rd Division Korai to Nagpore, 55 miles.

1st DIVISION. A bridge of three arches each 15 feet span, has been erected over the Girwa Nulla. Expenditure has been 3,574 Rupees, sanctioned amount is 4,043 Rupees.

A bridge over the Kutney River of five arches each 45 feet span, has progressed favorably; three piers have been raised to a height of 34 feet; Northern abutments and wing walls have been carried up to a height of 29 feet; the foundation and masonry of the Southern abutment are nearly finished. Expenditure has been about Rupees 41,631, amount sanctioned is 53,791 Rupees.

A bridge over the Hurdooch Nulla, of 3 arches of 20 feet span, is nearly finished; expenditure has been 1,802 Rupees, amount sanctioned is 3,914 Rupees.

A bridge over the Nirha Nulla, of three arches of fifteen feet span, is nearly finished; the expenditure has been 3,353 Rupees, amount sanctioned is 4,351 Rupees.

A bridge over the Belwa Nulla of 3 arches of 20 feet span is nearly finished; the expenditure has been 4,902 Rupees, amount sanctioned is 6,060 Rupees.

A bridge over the Goharaya Nulla of three arches of fifteen feet span, is all but finished; expenditure has been 4,685 Rupees, amount sanctioned is 5,086 Rupees.

A bridge over the Nimnee Nulla of three arches of five feet span is finished; expenditure has been 4,423 Rupees.

A bridge over the Goosroo Nulla of three arches of forty-five feet span, is finished; expenditure has been 23,515 Rupees.

A bridge over the Umrah Nulla of three arches of fifteen feet span is finished. Expenditure has been 4,949 Rupees.

The arching of a bridge of five spans of fifty feet over the Tonse River, is finished, expenditure has been 65,415 Rupees.

The superstructure of Bugeylah Nulla Bridge of three arches of fifteen feet span, is well in hand. Expenditure has been 2,421 Rupees, sanctioned amount is 8,905 Rupees.

The arching of a bridge over the Gbirna Nulla of three arches of fifteen feet span, is in hand. Expenditure 2,557 Rupees, sanctioned amount 4,661 Rupees.

The superstructure of a bridge over the Bhogae Nulla of three arches of eighteen feet span, has been raised four feet. Expenditure has been 3,008 Rupees, amount sanctioned is 5,629 Rupees.

A bridge over the Kaika Nulla of three arches of 15 feet span, is completed up to springing. The expenditure has been 2,226 Rupees.

Of another, similar, over the same stream, the superstructure has been raised 3 feet above bed.

Metal for annual repairs has been collected, and all annual repairs to Chowkees and Bridges effected. The whole of the road in this Division is metalled.

Metal consisting of moorum, kunkur, and broken stone has been collected, to an extent enough for 44 miles.

2ND DIVISION. In this Division the work stated below has been executed during the year.

Earthwork, ...	13½ miles.
Metalling laid down, ...	10½ miles.
" stacked, ...	11½ miles.
Number of Bridges and Culverts built, ...	56
Nursery gardens formed, ...	4
Wells sunk, ...	5

The Shere River Bridge (five arches of 50 feet span,) has been built up to springing; two of the arches have been turned, the third is in progress, and the centering of the fourth is about to be put up. Expenditure has been 13,043 Rupees; amount sanctioned is 40,100 Rupees.

The Goorda Stream Bridge of three arches of 50 feet span has been built up to springing; one arch is turned, and the centerings for the others are in progress. Expenditure has been 3,887 Rupees.

The Bijna Bridge of five arches of 50 feet span, is in the same state of progress. Expenditure has been 11,691 Rupees, the amount sanctioned is 40,746 Rupees.

Bridges 29, 30, 31 have been finished entirely.

The Korai Ghât—a pass ~~from~~ the low plains of Nagpore to the elevated table land of Seonee—is led up a spur or prolonged length belonging to the Sautpoora Range. The elevation of the plateau above the plain below is about 500 feet.

The sides of the hills are covered with trees of fine growth; and as far as the eye can reach from the summit of the ascent, the plain below appears to be hidden with one unbroken sheet of rich foliage.

Before the present pass was traced out, two other tracks at different times led up the hill side. The first was steep and bad, and necessitated a search for another path; this, when found, proved to be only a little better than the first. The third and last, which is now in progress of construction, may be considered not only better than the previous ones, but altogether satisfactory. The steepest gradient on the road will be only 1 in 30.

As the construction of the Ghât was commenced about the end of the Official year, much work has not been done.

Seven lacs of bricks and 15,000 cubic feet of stone have been collected, and three-fourths of a mile of earthwork thrown up. Expenditure has been 5,571 Rupees, sanctioned amount is 1,52,771 Rupees.

The road from Korai to Kamptee, forming a portion of the Northern Road, is attached to the Kamptee Division, and will therefore be considered separately.

The length of this Section is about 49 miles: of this 29 miles are absolutely finished; 9 miles are very nearly so; and the last Section

of 3 miles (from Kowassa to Korai) requires but little to complete; it is estimated that 50,000 Rupees will complete this length of road from Kamptee to Korai, in every respect.

During the cold weather, a Trestle Bridge has been constructed across the Kanhan River in the space of five weeks, at a cost of 5,500 Rupees. It proved of great help in passing the traffic.

In respect to the Masonry Bridge which was commenced and built to some extent over the River Kanhan, nothing has been done since it was injured during the rains of 1864-65; steps are being taken to submit a revised Project for this important work. The design was a Bridge of twelve arches of 50 feet span, with the springing at about 50 feet from the bed of the river. Of the foundations and superstructure, built according to that design, only the two abutments, with the two neighbouring piers on either bank of the river, are at the present time sound, the others have given way.

It has been discovered that some years ago, a flood came down the river, which rose ten feet higher than the flood level assumed in the design spoken of above. Thus, the height of the flood is said to be 40 feet, instead of 30 feet, above the bed of the river. This fact increases very much the difficulty of constructing a Bridge at that particular site.

The remaining portion of the Northern Road from Kamptee to Nagpore, 9 miles in length, is attached to the Nagpore Division.

This road is well metalled throughout its whole length; over a Nulla named Kyree a few miles out of Kamptee, there used to be a Timber Girder Bridge of 50 feet span; the Girder having given way a few months ago, it was necessary to take the structure down, and to build in its stead a stone Bridge of five arches of fifteen feet span each. Two arches have been finished, and a third is very nearly so. The expenditure has been 1,385 Rupees, amount sanctioned is 5,371 Rupees.

SOUTHERN ROAD. Commences at the end of the Northern Road. Starting from Nagpore, the Northern Road runs in a northerly direction to Mirzapore; while the Southern Road, having its origin in the same place, takes a line almost due south to Chanda.

The distance from Nagpore to Chanda is 97 miles; in about a place distant from Nagpore about 59 miles, a branch Road leads to Hinganghat the great mart for Cotton in these regions.

The Northern and Southern Roads are very different in their conditions, and may be said to be antitheses of each other. One runs over undulating ground and elevated plateaus; the other passes over plains of unknown fertility; while the one is ever and anon hindered and checked in its course by impetuous streams, the other pursues its way with little hindrance.

It is from the district bordering on the Road that the cotton is produced which has obtained for itself a name "Hinganghat." The soil is what is termed black cotton soil, the constituents of which are 48.2 silica, 20.3 alumina, 16.60 carbonate of lime, 10.2 carbonate of magnesia, about 5% of organic matter, and a little oxide of iron; where the soil itself is not so thick, trap boulders are found, with a more or less hard substratum. From the disintegration of the trap boulder the black cotton soil is produced.

During the past year, on the direct line between Nagpore and Chanda, a distance of 97 miles, 55 miles have been metalled; metalling has been stacked for eight miles; and seven and a half ordinary road Bridges have been built. To finish this road, 6½ miles of metalling require to be laid; four small Bridges and three large ones—at Boree over the Wauna, at Kandee over the Wauna, and at Kuabara over the Potra, have to be built.

A branch road, six miles in length from Boree to Assolch on the Bombay Road, has been finished entirely this year.

On the road from Jambh via Hinganghat to Deoloe, 31 miles in length, metalling for a distance of 19 miles has been laid down; 20 culverts have been finished, and 5 built up to springing; eleven Culverts are in hand.

The Great Indian Peninsula Railway crosses the Southern Road five times on the level; at these places, crossings paid for by the Railway Company, but constructed by the Department of Public Works, have been finished.

Miles of road completed.....	108
Done bridged and passable.....	28½
Done surveyed and marked out.....	44
Done surveyed, but not yet sanctioned.....	18½

Total Miles Southern Road 190

Amount sanctioned for the Road is 6,86,600 Rupees; the expenditure is 6,41,170 Rupees.

Bungalows have been built along the road at Boree, Jam, Chichara, Sonagaon, Wurrorah, Buraj, Wyagaon and Hingunghat.

The foundation of the Bungalow at Deolee has been laid.

The Nandooree, Dhotra, and Arvee, Bungalows have been commenced. The expenditure has been 23,573 Rupees; the sanctioned amount for all the Bungalows 26,981 Rupees.

The whole length of the Eastern Road from Nagpore to Sumbulpore is 339 miles. The places of principal importance along it are, starting from Nagpore, Bhundara, Raepore and Sumbulpore.

EASTERN ROAD. Of this Road, attached to the Nagpore Division, is a portion of 91 miles in length from Nagpore to Bagh Nuddee.

Of the 91 miles of road, 52½ miles are finished in respect to metalling; twenty nine Culverts have been built and finished; three have been built to springing of arches. To finish the work twenty nine Culverts have to be built, and large Bridges over the Kanhan, Wynegunga and Sindoorwapah Rivers. In addition, there remain the last 20 miles before arriving at the Bagh Nuddee, which have not even been surveyed. The expenditure on this portion of the road is 2,97,949 Rupees; the sanctioned amount is 2,88,294 Rupees. It is probable that all, but the last 20 miles just mentioned as not surveyed, will be finished during 1865-66.

Very little has been done on that portion of road belonging to the Eastern Road Division—from Bagh Nuddee to Sumbulpore, 249 miles in length—and forming the prolongation of the road just mentioned.

About 5½ miles of earthwork have been done; the consolidation of the metalling on Section No. 12 of this road brought to an end, and 16 miles of Road from Bagh Nuddee to Chicholie surveyed.

But the little work here spoken of lies to the West of Raepore. All that part lying to the East of Raepore, and between Raepore and Sumbulpore, is at present unsurveyed. The track followed by travellers is a fair one during the dry season; many of the minor streams are crossed by Temporary Bridges.

The tracks from Sumbulpore to Cuttack and Calcutta have been repaired and put generally in order.

NORTH WESTERN ROAD. The North Western Road takes the traveller from Kamptee to Chindwarra, a station on a plateau

raised a considerable height above the plain. The length of this road is 76 miles. The first two sections of this road leading from Chindwarra, about 23 miles in length, may be said to be finished as regards the earthwork. The expenditure has been 23,067 Rupees, of which 16,000 have been spent in collecting metal. The third section from Sonair to Kamptee has been repaired, at a cost of 3,197 Rupees as to its surface; this part is a well metalled road.

SAUGOR DIVISION. Annual repairs to the Saugor and Dumohi road have been effected, and to the Suspension Bridge over the Beas River near Saugor.

NIMAR DIVISION. The road from Bulwara to Nargaum is 212 miles in length. This road is divided into two Sections, from Nargaum to Boorhanpore, and from Boorhanpore to Bulwara: along the former of these, seven ten feet Culverts have been built, at a cost of 3,500 Rupees. It appears that the road was badly made from the first in respect to the Bridges; for, not only was insufficient waterway given, but in lieu of mortar white earth was used, so that the Bridges are falling to pieces.

The other section, from Boorhanpore to Bulwara, has been kept in repair, but no new works have been executed.

Trap is the prevailing formation in this part of the country; but as the District lies on the confines of the trap region, other stone is met with.

At Burwai sandstone, fine schist, and limestone are to be obtained; while at Hurdah, a few miles beyond the Nimar District, granite and red marble are to be found.

The lime used in this district is that obtained by burning kunkur nodules of the yellow clay formation, and is of good quality. The limestone found in this part also yields a good lime, but the expense of extracting it is greater than in the former case.

As to wood, no large teak is to be had; all that is required comes from Baitool or Burwai. Small teak is obtainable at Gondwanah about 44 miles from Khundwa.

RAILWAYS.

The North Eastern extension of the Great Indian Peninsula Railway enters the Nimar Division of the Central Provinces 29 miles to the

east of its junction with the Nagpore Branch line, and traverses the Nerbudda valley, till it meets the East Indian Railway at Jubbulpore, a length of 310 miles.

The Nagpore Branch, after crossing the boundary of the Bombay Presidency, runs due East through Berar, and enters the Wurda District of the Central Provinces, at the Wurda River, 63 miles from Nagpore. The total length of the Great Indian Peninsula Railway, therefore, in these Provinces, is 378 miles.

Three miles from the junction the main line crosses the river Taptee by a Viaduct only 5 yards short of $\frac{1}{2}$ a mile in length, consisting of 20, 40 feet arches, 14, 60 feet openings, and 5 of 135 feet, spanned by Iron Girders. The connection is now complete, and an Engineer will shortly be able to cross the river. Beyond this the rails are laid for 50 miles, and it is expected that the Line will be opened to Khundwa, 77 miles from the junction, early in 1866. Khundwa is the Station for Mhow, Indore, and Agra. Beyond this the earthwork and smaller masonry works are well forward; 90 per cent of the earthwork is completed; 253 Bridges are finished; 97 in progress; and 31 not commenced. The Viaducts over the Chota-Towa, Towa, Doodhye-Sukker, Shere and Nerbudda Rivers are more backward, and the opening of the Line to Jubbulpore depends upon the time required to complete them; 50 per cent of the ballast is laid, and 40 miles of Rail on different portions of the Line.

It is not likely that through communication will be established before 1868, although the Line may be opened to within 120 miles of Jubbulpore a year earlier. The Site for the Junction Station at Jubbulpore was fixed in February 1865, after 5 years discussion.

The Nagpore Branch is in a more advanced state, and will be opened by the end of the year to Budmatta, the Station for Oomrattee, distant 108 miles from Nagpore. The works are completed throughout, with the exception of the Plate-laying, Fencing, Girders, and Stations. The Contractor's Engine now runs to within 100 miles of Nagpore, and the Line ought to be ready for opening by the end of 1866.

Attached is an account of Appropriation and Outlay for the year

WILLIAM MAXWELL, Lieut-Colonel R. A.
CHIEF ENGINEER, CENTRAL PROVINCES.

No notice is here taken of Works on the Godavary River, as separate Half-Yearly Reports regarding them are submitted to Government of India.

ACCOUNT of Appropriation and Outlay for Public Works
Imperial, in the Central Provinces, for the year 1864-65.

SERVICE HEADS.	Grant as per Budget Orders.	Expenditure.	Difference.	
			Less than Grants.	More than Grants.
ORIGINAL WORKS.				
Military.	2,40,823	1,74,341	66,482	
Civil Buildings.	2,48,654	2,66,334	"	11,700
Agricultural.				
Communications.	13,56,520	13,00,462	56,057	"
Miscellaneous Public Improvements.	18,45,986	17,35,945	1,22,549	12,508
REPAIRS.				
Military.	74,000	1,02,081	"	28,081
Civil Buildings.	38,050	21,516	16,534	"
Agricultural.	300		300	"
Communications.	78,900	1,47,456	11,444	"
Miscellaneous Public Improvements.	200		200	"
	2,71,450	2,71,075	28,474	28,081
ESTABLISHMENT.				
Director.	91,826	62,054	9,772	
Construction.	4,02,046	3,38,715	63,331	"
Accounts.	72,120	38,818	33,302	"
Transport.	10,524	36,818	3,706	"
Medical.	16,218	11,793	4,425	"
	5,22,564	5,08,198	1,14,366	"
Tools and Plant.	10,000	90,608	"	80,608
Profit and Loss.		733	"	733
Total.	27,50,000	26,06,341	2,67,591	1,21,942
Add amount of additional grants as per annexed Statement.	1,62,628	"	1,62,628	
Reductions as per ditto	29,12,628	26,06,341	4,28,219	1,21,942
	91,924			91,924
Increase in Stock Balance.	28,20,704	26,06,341	4,28,219	2,13,858
	1,94,849	"		1,94,849
Deduct Expenditure from Grants, and More from Less.	26,25,855	26,06,341	4,28,219	4,08,765
	26,06,341	"	4,08,765	"
Net Savings.	Rs. 19,514	"	19,514	"

* These figures contain Rupees 71,552 transferred from Rupees 10 Original Works Contingent, precedent of last year having been approved of by Accountant General.

B. PRIOR, CAPTAIN.

Offy. Controller P. W. Accounts,

CENTRAL PROVINCES.

No 3728
Public Works Dep^t H. C. P.
17th Nov 1865
From No 4102
Secy to Chief Commis^r

To: The Secy to Govt
P. W. Department
Madras.

With one spare copy

Forwards Copy of
the Annual Progress
Report of Public Works
in the Central Province
1864/65.

Wm. J. ...
Secy to Chief Commis^r
Sodged 60
22nd Oct/65

Added
24. Oct 1865
The Com^r Eng^r will be re-
spected to expedite the work.
in view of the required in-
formation
The Com^r Eng^r will be re-
spected to expedite the work.
in view of the required in-
formation

No 370 d/19 May 1865
" 653-4/17 August "

No. 910 R
MEMO.
Public Works Department.
RAILWAY.

22 4/1860
10th October 1865
To

The Secy to Govt
of Madras
Railway Dept^t

The undersigned
has the honor to invite
attention to the com-
munications which in
the margin and to
request early trans-
mission of the in-
formation called
with an order.

in the subject of the
pecuniary benefit to the
State arising under
certain clauses of the
Guaranteed Railway
Contracts -

Spokane Capital

under long standing order

13

No. 9181
MEMO.

Public Works Department.
RAILWAY.

11/14/1

11th October 1905

Recd 29.

To

The Secretary to the
Railway Department
Madras

The undersigned
has the honor to
invite attention to the
communications
inserted in the margin
and to request that
they may be
forwarded as early
as possible
Yours faithfully
55

P.L.D. 6071. 22nd July 1905
- 60412 8/13 1905 -

is possible with a
copy of the agreement
that may have been
entered into with
the Indian Traming
Company for the
construction of
tramways in the
Madras Presidency

Yours truly,
Capt. R. S. S. S.
Under Secy to Govt. of Madras

1340

1/25/88
Madras 16th October 1868.

From: Lieut. Colonel J. J. Hoberg P.E.
Superintending Engineer S. D.
To: Colonel C. A. Orr P.E.
Secretary to Govt. P. W. Dept.

Sir,
I have the honor to request
that you will favor me with a copy
of Mr. Clark's report on Salt works
in Timorelly referred to in S. G. O.
2991, dated the 10th Instant.

I have the honor to be
Sir,

Yours most Obedt Servant.

J. Hoberg Lieut. Col. P.E.
Superintending Engineer S. D.

is possible with a

W 1865 Dept
for October 1865
No 4109
The Secy to the
S. Division

The Secy to the
S. Division

Dated 16th
Oct 20th October 18

Request to forward him
with a copy of the
report on the
S. Division
For the Secy
23rd Oct 1865

No 51

Superintending Engineer's Office
Waltham 11. October 1865.

No 1234

From

Captain J. Beatty R.E.
Offg. Superintending Engineer R.E.

To

Colonel C. A. Orr R.E.
Secretary to Government R.W.D.
Madras

Sir,

With reference to your Memo. No. 191
of 5th instant, I have the honor to report that
the Statements of Works in progress exceeding
Rupees 20,000 in estimated cost for the month
of August were duly despatched on the dates
below specified:-

Statement of the Ganjam District. — 26 Sept: /65.

Do. of Vizagapatnam — Do. — Do.

Do. of Godavery — Do. — 6 Oct: /65.

2 I also beg to observe that the report of the
Ganjam District was remarked upon in
your Memo. No 190 of 1st instant.

3 The cause of the great delay in submitting
the Return of the Godavery District was
due to the non receipt from N. IV Range
Godavery until the 2^d instant of
the information required — I have

Seattle - Captain R.E.
Superintending Engineer, 1st Divⁿ

Account. Sir,

From The Secretary to the Gov^t of India,
Public Works Department,
To The Chief Secretary to the Gov^t of Madras,
Public Works Department,
Simla, 6th October 1865.

Sir,

I am directed to acknowledge receipt of your endorsement No. 160 dated 2nd August 1885, transmitting returns of expenditure incurred in the month of June last on the Madras, North West and South West Railways, and in reply to intimate that these returns need not be submitted to the Government of India for the future, they being no longer required.

I have the honour to be,
Your most obedient servant,
A. D. M. Lenthall 1841
Secretary to the Govt of India, Pres.

Nov 17. 42 - 2
 The City of New York
 1852

Ordinance Department

Nova.

Inspector General's Office
Fort Saint George
19 October 1865.

From
Colonel J. L. Sarnau
Deputy Inspector General of Ordnance & Magazine
To
The Secretary to Government
Department Public Works

Sir,

Reference having been made to this
Office, by the Officer Commanding Ordnance
Division, through the Quarter Master General, re-
garding the legal ownership of the "Emmer Hall"
of the Fort at Trincomalee, and the papers on the
subject having been transferred to the Department
Public Works, I beg to request you will be so good as
to furnish the Quarter Master General with the
information sought.

2. The papers will be found in Letter 2 ²⁴ Shells ⁴⁶ 175
as transferred from the late Military Board to the Depart-
ment Public Works.

I have the honor to be

Sir,

Your Most Obedient Servant,

J. L. Sarnau Col.
Deputy Inspector General of Ordnance & Magazine.

From the Secretary to the

General of the Ordnance

October 6th 1865
Received 21st 1865

1865

Deferring the receipt of the return
of expenditure incurred in
June 1865 on the Madras
North-West and South-West
Railways, and stating
that the return need
not be submitted in
future.

23rd Oct 1865

53

Superintending Engineer's
Office, Tth Pro. Station,
12th October 1865.

N^o 1258

From

Captain J. Beatty R.E.

Off^r Superintending Engineer, Tth Pro.

To

Colonel C. A. Orr R.E.

Secretary to Govt, D. & W.

Madras.

Sir,

With reference to G. O. N^o 63^x
of 20th October/64, I have the honor to
report that the survey duties on
which Supervisor Laskey has been
employed in the Caujam & Niza-
gapatam Districts will be com-
-pleted by the end of this month and
to request permission to place him
from the Tth Procons in charge of the
Colgondah Range of the Nizagapatam
District, as Supervisor Rungiah
has

* G. O. N^o 2443
of 24th Aug^r/64.

For the Department
of Public Works

1865

The Survey Range of Colgondah

The Survey Range of Colgondah

of the Department of Public Works

1865

Approved to forward the

information required by the
all General Department, the local
surveyors of the Survey Range of the
Colgondah Range, as the Survey
Range has been transferred to the
D. & W.

N^o 56

N^o 56

Procons

The undersigned has

the honor to inform the
Inspector General of
Madras & Nizagapatam,
with reference to his
letter No 171, 27 19 instant

that the papers therein
referred to regarding
the Nizagapatam Range
have been forwarded
to the D. & W. at that
Station, with reference
to a list which is now
being -

2 The Ins^r Genl.
of D. & W.
1865

has not proved very efficient in his present position: owing to his defective knowledge of English.

2. I would then employ Rangiah on miscellaneous duties in the Division on which his services will doubtless be found very useful.

3. I may also mention that the above arrangement is proposed at the suggestion of Captain Dykes R.E.

I have the honor to be

Sir

Your most obedient servant

I Seattle - Capt. R.E.

Off. Superintendent of Engineers &c.

No 680
10,000
Memorandum

The Quarter Master General
requests the Secretary to Government
Public Works Department will be
satisfied as to any if there is anything
in the Rules printed in the enclosed
General Order pages 430, 431, which is
unauthorized for this Presidency.
It is proposed to reprint them and
to furnish Officers Commanding
Divisions and Troops with a copy,
to ensure that uniformity of practice
which is so much needed. Any vari-
ation between these and Madras rules,
or omissions, it is requested may be
obligingly communicated.

By order.

Thos Pitt. Secy to Q.M.G.

In the Office,
112, 113, Colaba
16th October 1865

Works Secretary to Genl Q.M.G.

27/10/65
To the Quarter Master General
Madras
The 11th Division
Madras

Madras
No 57.

To the Quarter Master General
Madras

11/10/65
11/10/65
11/10/65

The Quarter Master General
Madras
The 11th Division
Madras

Madras
11/10/65

11/10/65

The arrangements for the
in this letter and approved.

To the Quarter Master General
Madras
The 11th Division
Madras

11/10/65

11/10/65

Memorandum showing the Rules in force in Bengal and those prevailing in the Madras Presidency for dealing with Military books to be undertaken by the P. & D. —

Bengal

Madras.

Rule for dealing with proposals for New Military books.

No 43 of 1865.

Para 75, 76, 77, 78. Chap. V of the Code.

Excepting in cases of real error. Excepting in cases of important books, all proposals for undesignated Military books likely to cost more than Rs 500 are in the first instance submitted to Government by the Head of the Department to which its building belongs through the Military Secretary and Government if approving of the proposition directs the Supt Engineer to cause a detailed estimate to be prepared. On receipt of the estimate the Supt Engineer obtains thereon the approval of the Head of the Dep., the Divisional Officer, and of his Ex. the Com-in-Chief, and then forwards it to Government for sanction. If the cost of the book is likely to be within Rs 500, the detailed estimate is prepared without the previous sanction of Govt, but prior to its submission the same course is followed in respect to obtaining the approval of his Ex. the Com-in-Chief and the Divisional Officer and Departmental Officer in the case of works estimated to cost more than Rs 500.

Powers of Ex Engineer's sanction repairs to Military books.

No 44 of 1865.

Ex Engineer is authorized to sanction repairs for any Dept to the extent of Rs 200 for each book under the rules laid down in Standing Order No 45 of 1865. para 4.

Ex Engineer proposes no authority to sanction repairs to buildings of any Department.

2. 1865
for Distribution
No 4103

from

The Engineer

To
Major. 1st Lt.
P. & D.

dated 16.
Sept 19.
Recd 20 } Secy to Govt

81 (10) 680
10000.

Request to say if there is any thing in the rules provided in the schedule. P.O. No 1231. which is under the rules for this case?

1865

Bengal

Machos-

Procedure with regard to works

No 45 of 1865 - for Military

Pair 12. (Lap xx 14 of the Code.

1- Commanding Officers have power to sanction Expenditure whether for new works, additions, alterations or repairs, within the unexpended limits, and subject to the conditions prescribed in the three following paragraphs:-

An Officer Commanding a Division or a District - \$500 for each work.

A Brigade General Commanding a Brigade or Station - \$200 for each work -

12-45-1865-

An Officer Commanding a Division may sanction the following works

1- Repairs to Military Buildings within five hundred rupees provided that the estimate does not exceed one fourth the value of the building.

II - Emergent work for Military Buildings when the health of the troops is affected and emergent work to Municipal Buildings within \$500 without estimate, the bill being accompanied by a statement of the work performed & signed by the Controller of the Accounts -

Pages 75 to 78. Chap I of the code.

2. The following procedure will be adopted in the case of new books or additions required by Military Authorities, the cost of which is not likely to exceed \$200 —

75- When any new building or the improvement of an old building is required, the divisional or local officer of the Department shall apply to the authority of his own district.

II - The Lt Engineer or Assistant Engineer or Subordinate empowered by him to act in such cases will decide on the requisition his own opinion as to what work is proper to be done and give a rough estimate on the face of the requisition of its probable cost under the head of Lt Engr's Superiors is the Head of Co, Bty or the Commandant of the Division or Station in the case may be, to the Lt Engr for a rough or proximate estimate of the cost, without any plan or detail.

76- This proximate estimate, if made by the Lt Engr, shall be submitted to the

III The countersignature of the Brigadier General Commanding Madras or Station or of the Officer Commanding the Division or District, & the recommendation of the P. B. functionaries will be sufficient authority for executing the work recommended without any public notification in order —

75- When any new building or the improvement of an old building is required, the divisional or local officer of the Department shall apply the building belongs shall apply under the authority of his own head of his office.

Superior" is the Head of Lt. Col. or the Commandant of the Division or Station as the case may be, to the Sup. Engineer for a rough or approximate estimate of the cost, without any plan or detail-estimate, if

76- This proximate estimate, if exceeds 500 Papers, shall be submitted to Genl. by the Head of the Department ~~to the Government~~ to which the building belongs, through the Military Secretary, and Government if approving of the proposition will direct the Genl & Engineer to cause a detailed estimate to be prepared. The estimate should be accompanied by a report —

Benzol

Marius -

IV. In case of the commanding Officer not being satisfied with the report of the subordinate Officer of the P.W.D., he should refer the matter to the Executive Engineer -

V. If the new building is the 77- If the new building is the same as a standard plan, the estimate shall be made by the Sub-Engineer and submitted for sanction. If not, a plan shall be prepared by the Sub-Engineer.

V - Should the Subordinate Officer be prepared by the Divisional Officer
see any reason to do so, he will in communication with the local
Refer the matter to the Divisional Officer or divisional departmental officer
who will be guided by the rules by whom it shall be countersigned.
For like cases for works estimated & signed, such countersignature need
to cost more than Rs 200 each that representing the approval, as far as may
be question the propriety of the work that may be necessary of the
Divisional authority.

VI - When the approximate estimate makes it appear that the cost may be above Rs 200 a detailed estimate must be prepared and should this amount to more than Rs 200 it must be submitted and sanctioned under the Rules laid down for works of that class -

13- If the work be likely to recapitulate, and of the circumstances, in all cases — in brief. If the proximate cause must be observed —

I - The work must be reported
recapitulating the Regiment or Detachment
by the Officer in local charge of the
department for whose use or convenience
it is designed -

II - A definite design and estimate with a proper report and specification must be prepared under the orders of the Engineer and countersigned by him in token of approval of the same and of the manner proposed.

III - The estimate will then be sent for the countersignature of the Officer Commanding the Station and will be forwarded by him to the Officer Commanding the Division.

IV - Should the amount of the estimate be less than \$500 the letter can sanction the work. Such sanction cannot be withheld. Division makes a certified copy before sent to the Division. The original estimate to be in Division.