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MIL NADU ARCHIVES

ERNMENT OF TAMIL NADU

Public works DEPARTMENT

No.	4673	Press.
No.		Mis.

Dated	9-12-1878	197 .
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GOVERNMENT OF MADRAS.
PUBLIC WORKS DEPARTMENT.

9th December 1878, No. 4,673 W.

General.
Account.

Read the following papers:—

- No. 85. From Captain A. AWDRY, R.E., Acting District Engineer, Coimbatore, to the Chief Engineer, Public Works Department, dated Coimbatore, 16th February 1878, No. 214 CI.

WITH reference to your memorandum, No. 738, of 12th instant, I have the honor to inform you that cement has not yet been specially made in this district as far as I can ascertain, but I have recently ordered some to be prepared in the Irrigation Range and will report the result.

2. It is difficult to estimate the annual requirement; but, roughly speaking, I should say that a truck load of 8 tons each would be required in the Coimbatore, Karur, and Irrigation Ranges, making a total of 24 tons.

- No. 86. From Captain R. F. MORRIS, R.E., Acting District Engineer, Trichinopoly, to the Chief Engineer, Public Works Department, dated Trichinopoly, 18th February 1878, No. 947.

REFERRING to your memorandum, No. 738, of 12th February 1878, I have the honor to report that no cement is locally procurable in this district. It is not in general use and has only been used on one or two occasions in works of an exceptional character.

- No. 87. From J. D. GRANT, Esq., Officiating District Engineer, Tinnevely, to the Chief Engineer, Public Works Department, dated Palamcottah, 18th February 1878, No. 191.

REFERRING to your memorandum, No. 738, of 12th instant, I have the honor to report that cement is not procurable in this district, but when required it is obtained from Colombo.

2. I beg further to state that cement is not now required in this district.

- No. 88. From Major H. R. MEAD, R.E., District Engineer, South Arcot, to the Chief Engineer, Public Works Department, dated Villupuram, 18th February 1878, No. 311.

IN reply to your memorandum, No. 738, dated 12th February, I have the honor to report that there is no cement procurable in this district.

2. With regard to the approximate quantity of the Madras Portland cement likely to be consumed annually in this district, I can only give my opinion that it will be but small, as I do not propose to use it for any but special work such as pointing, crests and aprons of anicuts; as a rule the lime in this district is very good and if mixed with surki it forms an hydraulic mortar fit for all ordinary purposes. When I have an opportunity I propose trying it for flooring of buildings.

No. 89. From Colonel F. J. MOBERLY, R.E., District Engineer, Bangalore, to the Chief Engineer, Public Works Department, dated Bangalore, 21st February 1878, No. 239.

WITH reference to paragraph 2 of your circular memorandum, No. 738, dated the 12th instant, I have the honor to state that no cement is procurable at this station and that about twelve casks have been consumed annually in this district.

No. 90. From Major J. PENNYCUICK, R.E., District Engineer, Salem, to the Chief Engineer, Public Works Department, dated Oosoor, 21st February 1878, No. 2,060 L.

WITH reference to your memorandum, No. 738, of 12th instant, I have the honor to state that good "surki" cement can be made in this district at from Annas 4 to Annas 8 per cubic foot according to circumstances, and that I do not consider that any appreciable quantity of the Madras cement is likely to be used here, unless it can be supplied at a considerably lower price than Rupees 45 to Rupees 50 per ton.

2. As I have lately devoted considerable attention to the subject of cements, a few remarks thereon may be considered as not out of place.

3. Not long ago I wrote to the Madras Cement Works for information regarding the cement made there, and was informed amongst other things that a cubic foot weighed 112 lbs. and that three bushels weighed 336 lbs.; which of these statements is correct I cannot say, probably the latter, in which case a ton of cement would contain 25 cubic feet, and its cost per cubic foot would be Rupees 2 plus the cost of carriage from Madras, which would be from Rupees 10 to Rupees 20 per ton, or, say, Annas 6 to Annas 13 per cubic foot, making the total cost from six to ten times the rate at which good hydraulic mortar can be locally made.

4. The object of using a superior cement in preference to a cheaper but inferior one may be either to obtain a greater absolute strength than is possible with the latter, or to obtain an equal strength with a smaller proportion of cement to sand, and so by the use of a smaller quantity of material compensate for its greater cost.

5. It is only in very rare cases that the first object can be required, good surki mortar is quite strong enough for all ordinary hydraulic works, and I have never known or heard of a case in which moderate care was taken and the work failed from want of sufficient strength in the mortar. In special cases, such as a great masonry dam, it might be desirable to use a mortar stronger than could be obtained from the materials in ordinary use, but in most such cases the quantity required would be such as to justify the manufacture of the cement on the spot, when it would certainly cost far less than the Madras-made article. The cases in which a small quantity of very strong mortar is required are likely to be exceedingly few in number, and from their very nature cannot be predicted beforehand.

6. There remains the second object, which is simply a matter of calculation; if a cubic foot of sand costs 2 Pies, ordinary surki mortar in the proportion of one to one will cost from Annas 2-1 to Annas 4-1 per cubic foot; to bring the cost of Portland cement down even to the latter rate it must be used in the proportion of nine to one, and for the former of twenty to one.

7. The causes which have led to the enormous development of the use of Portland cement which has taken place of late years in England, do not exist to any great extent in India.

8. The greater part of the lime obtained in England is from chalk, and is of the purest description, utterly useless for any hydraulic work, or even for ordinary building where any great strength is required; it is therefore necessary to treat the lime in some way before using it in important works, and the cost of land is so great as to render it worthwhile to avoid as far as possible the erection of kilns and other buildings. Competition and the division of labor have brought the price of Portland cement down to a rate not much exceeding the cost of manufacture, and

thus the difference between the cost of the latter and that at which a decent hydraulic mortar can be locally made is reduced to an amount which is in most cases nearly, is not quite, covered by the saving in quantity due to the use of the superior material.

9. Again, owing to the high prices paid for skilled labor, the cost of the mortar forms a much smaller proportion of the total cost of masonry work in England than it does in India, and the proportionate increase in the total cost, if that of the mortar itself be increased, is much less. It may also be noticed that masonry of the highest class, in which the cost of the mortar is a very small fraction of the total, as well as special works requiring great strength at any cost, are much more common in England than here.

10. It is difficult to understand why the cost of the Madras cement should be so high; the English price of Portland cement is from £1-15-0 to £2 per ton, and it seems inconceivable that the cost of manufacture, if done on a sufficiently large scale to meet the cost of supervision, should be greater here than in England. If a high class cement could be manufactured at a moderate price (say Rupees 15 per ton) it might be used with advantage within a certain distance of the place of manufacture, but the cost of carriage would soon become prohibitory except in the special cases contemplated in paragraph 5.

Note to para. 5.—It may however be remarked that the Ban and Furens dams (each 50 metres in height) were built with the Jheil lime which is not a cement but a good hydraulic lime. The former of these was calculated for a pressure of eight and the latter for six kilogrammes on the square centimetre, and in future constructions of the same kind probably ten or even twelve kilogrammes will be allowed. A kilogramme on the square centimetre is 14 lbs. on the square inch or 2,000 lbs. on the square foot very nearly. I have been unable to obtain any information as to the resistance to compression of the Madras cement.

No. 91. From Major H. W. WOOD, R.E., District Engineer, Vizagapatam, to the Chief Engineer, Public Works Department, dated Waltair, 25th February 1878, No. 2,624.

WITH reference to paragraph 2 of your memorandum No. 738, dated 12th February 1878, I have the honor to report that no cement has been used during the past two years (or is ordinarily required for use on hydraulic works) in this district.

No. 92. From E. H. PRINGLE, Esq., District Engineer, South Canara, to the Chief Engineer, Public Works Department, dated Mangalore, 2nd March 1878, No. 96.

WITH reference to your memorandum, No. 738, dated the 12th February 1878, I have the honor to inform you that Portland cement is not procurable in the local market.

2. It has been the custom to procure what cement has been required from Messrs. Nicol & Co., Bombay, who supply it in dammared casks, in which it can be kept unimpaired for years.

3. Messrs. Nicol & Co.'s cement is more highly priced than that manufactured by General Morgan; 4 cwt. casks, guaranteed at 700 lbs. breaking strain, cost us in 1874 Rupees 20 per cent. landed in Mangalore; price of cement in undammared casks then ruling Rupees 15 per cwt., or Rupees 75 per ton. By Messrs. Nicol & Co.'s price current I find the cement quoted at Rupees 13 per cwt. now, or Rupees 65 per ton. Freight by pattimar would increase this to about Rupees 75 per ton.

4. I doubt if the cement from Madras could be packed in casks and landed at Mangalore for much less than this sum.

5. The average annual consumption of cement in the district is about 4 tons.

No. 93. From the District Engineer, Cuddapah, to the Chief Engineer, Public Works Department, dated Cuddapah, 4th March 1878, No. 3,161.

With reference to your memorandum, No. 738, dated 12th ultimo, I have the honor to report that no cement as that referred to therein is ever used in this district; all the irrigation and other works are carried out with ordinary mortar, or where it is necessary to make it hydraulic, one part of brick dust is substituted for one of sand in the following:—

Chunam 1 part.
Sand 2 parts.

In the Sidhout Range a fair cement is made with chunam kunker, burnt clay, and river sand when the latter is good, or from kunker and burnt clay only where good clean sharp sand cannot be obtained.

No. 94. From Major J. L. L. MORANT, R.E., District Engineer, Nilgiris, to the Chief Engineer, Public Works Department, dated Ootacamund, 9th March 1878, No. 74.

With reference to memorandum, No. 738, of 12th February 1878, I have the honor to state that Morgan's cement is the only local cement that can be procured and has been used in this district.

2. The approximate quantity likely to be consumed in this district is about 50 tons annually.

No. 95. From J. W. RUNDALL, Esq., District Engineer, Bellary, to the Chief Engineer, Public Works Department, dated Bellary, 12th March 1878, No. 548.

With reference to your memorandum, No. 738, dated 12th February 1878, I have the honor to report that the approximate quantity of the Madras manufactured Portland cement likely to be consumed in the Bellary Range during the next official year is 20 tons.

2. No cement is locally procurable in this district.

No. 96. From Captain R. R. E. BROCKMAN, R.E., District Engineer, Tanjore, to the Chief Engineer, Public Works Department, dated Tanjore, 14th March 1878, No. 564.

With reference to your circular memorandum, No. 738, dated 12th February 1878, I have the honor to inform you that the price of the (Madras-made) Portland cement therein referred to is altogether prohibitory, as it costs from 16 to 20 times as much as ordinary slaked lime which in this district is slightly hydraulic in itself. None can therefore be used.

No. 97. From Lieutenant-Colonel R. B. KENNEDY, District Engineer, Malabar, to the Chief Engineer, Public Works Department, dated Calicut, 15th March 1878, No. 180.

With reference to your memorandum, No. 738, dated 12th February 1878, I have the honor to furnish you with the following information:—

		Price of Cement obtainable.	Quantity of Cement required
1. Cannanore Range	...	90 Rs. per ton	5 tons annually.
2. Calicut Range	...	90-10 " "	4 tons annually.
3. Ernad Range	...	90-10 " "	
4. Kurambazal Range	...	92 " "	
5. Palghat Range	...	100 " "	2 " "

No. 98. From Lieutenant-Colonel J. BEATTY, R.E., Superintending Engineer, Godavari, to the Chief Engineer, Public Works Department, dated Tadepillygudem, 15th March 1878, No. 3,961.

I HAVE the honor to inform you in reference to your memorandum, No. 738, of 12th February 1878, that it does not seem to me practicable to forecast with any accuracy the quantity of Madras-made Portland cement that can be used annually in this district, especially as we have not as yet any experience of that material.

2. But if the cement can be securely packed so as to admit of storage for a considerable time, say a year, this district will take 20 tons at once.

3. If the cement cannot be securely packed for storage, two tons may be sent up at once for trial, and a further report will be made as soon as possible after receipt.

4. At present I am not aware where the cement works are or to whom I should apply for information.

5. The price of the best cement locally procurable is about 18 Rupees a garce, but it is a very inferior article apparently as compared with Portland cement.

No. 99. From Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, to the Chief Engineer, Public Works Department, dated Madras, 23rd March 1878, No. 414.

In reply to your memorandum, No. 738, dated 12th February 1878, I have the honor to state that the price paid by the Madras and the South Indian Railways for Portland cement landed in Madras is Rupees 36-12-4 and Rupees 44-13-6 per ton respectively.

2. The cement has not been tested for tensile strain in this country by the officers of either Company.

No. 100. From Lieutenant-Colonel H. L. PRENDERGAST, R.E., Officiating Superintending Engineer, North Arcot, to the Chief Engineer, Public Works Department, dated Vellore, 10th April 1878, No. 233.

With reference to your memorandum, No. 738, of the 12th February 1878, I have the honor to report that the price of the cement locally procurable is about Rupees 20 per ton, and no cement of the Madras Portland manufacture is likely to be wanted in this district.

PORTLAND CEMENT.

No. 101. STATEMENT of Local Price and Quantity required 1878-79.

Cost of Portland cement in local market	...	None procurable.
Quantity that will be probably required in the	...	...
Nellore District in 1878-79	...	About 50 tons.

(Signed) J. O'SHAUGHNESSY,
District Engineer, Nellore.

KORATUR,
17th April 1878.

No. 122.

FORWARDED to the Chief Engineer.—Vide his memorandum, No. 738, dated 12th February 1878.

(Signed) J. O'SHAUGHNESSY,
District Engineer, Nellore.

No. 102

With reference to your memorandum, No. 738, dated 12th February last, and to your reminder No. 738-1 of the 12th instant, I have the honor to state that Portland cement has never been used in the Dindigul or Madura Division of this district, nor do I think it is needed at any rate for the present. The masons and bricklayers of the country manufacture when required a very good cement and one that answers every purpose but the extraordinary, such as inner lining of cisterns, &c. I cannot therefore undertake to indent for any Portland cement.

No. 103.

In reference to your memorandum, No. 728, dated 12th February 1878, directing me to submit a statement showing the prices of the best cement locally procurable, &c., I have the honor to report as follows:—

Karnal Division.—No cement is locally procurable and no Portland cement has been used in this division.

Kumbham Division.— in this di
Nandial Division.— Do.

Judicial Division.—No. 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 91

showing the prices of country-made best hydraulic cement locally procurable fit for ordinary work is annexed.

Data showing the Rate of a Ton of Country-made best Hydraulic Cement.

Quantity.	Description.	Per	Rate.	Amount	Total
763	lbs. or 104 parabs of slaked lime ...	Parab.	Rs. A. P. 0 5 0	Rs. A. P. 3 4 6	Rs. A. P. ...
1,477	lbs. or 104 parabs of surki or brick dust finally ground ...	"	1 4 0	13 2 0	15 6 6
	Sundries ...	...	...	...	0 9 8
	Total ...	...	...	...	17 0 0

The required information on the subject was only received on the 22nd instant from the Divisional Officer, Nandial.

No. 101. From Major ROSS THOMPSON, R.E., District Engineer, Presidency,
to the Chief Engineer, Public Works Department, dated Fort St. George,
1st May 1873, No. 575.

With reference to your memorandum, No. 738, dated 12th February 1873, I have the honor to submit a statement showing the prices of the best cement locally procurable in the Presidency District, and to report that about 58 tons of the Madras manufactured Portland cement is likely to be consumed in this district.

English Portland Cement.—70 Rupees per ton for any quantity over 2 tons.
Do. —80

No. 105. From Colonel P. O'CONNELL, R.E., Superintending Engineer, Chingleput, to the Chief Engineer, Public Works Department, dated St. Thomas Mount, 20th May 1878, No. 1,966.

In reference to your circular memorandum, No. 734, of 12th February 1978, I have the honor to enclose a statement showing the price of the best mortar locally

procurable, and the approximate quantity of the Madras manufactured Portland cement likely to be required annually for use on works in the several ranges in this district.

2. Cement is not procurable in the district and appears not to have been used in any range except No. 2, and obtained in this case from Madras at a cost of Rupees 79-6-0 per ton.

3. The quantity of the Madras-made Portland cement required for No. 3 Range is entered at 200 tons, as this is the quantity reported to be used annually on all Irrigation works in that range. This must, however, be reduced if the cement is to be used on important works only, or if expenditure continues to be limited by the rules applicable to a famine district. The quantities entered for Nos. 1 and 2 Ranges are those said to be required for particular works only.

Statement showing the Price of the best Mortar locally manufactured and the Approximate Quantity of the Madras manufactured Portland Cement likely to be required for use annually on Works in the several Ranges of the Chingleput District.

Range.	Price of best Mortar locally procurable per Ton.	Approximate Quantity of Madras Manufactured Portland Cement annually required.	Remarks.
No. 1	RS. 6 12 6	TONS. 5	
No. 2	5 0 0	5	
No. 3	6 12 6	200	

No. 106. From Lieutenant-Colonel J. O. HASTED, R.E., Superintending Engineer, Kistna, to the Chief Engineer, Public Works Department, dated Masulipatam, 22nd June 1878, No. 64.

With reference to your memorandum, No. 738, dated 12th February 1878, I have the honor to report that cement is not locally procurable in this district.

2. A small quantity of Portland cement was obtained from the Public Works Stores, Madras, some time since, which cost Rupees 88 per ton delivered at Bezwada, Rupees 18 being the cost of carriage.

3. Cement has been manufactured and used in both delta divisions, sometimes being made of pounded brick, lime and sand, and sometimes by mixing Kistna silt or potters' clay with lime, drying the mixture in cakes, and burning it. Lately, however, a cement-grinding mill driven by steam has been put up at Bezvada, and experiments are being made, the result of which I believe will show that we can manufacture a sufficiently good cement at a price considerably less than it can be procured from Madras for.

4. Should the new Irrigation works be commenced in the delta, a considerable quantity of cement will be required on ordinary repair works; it is estimated that we require about 8 tons, allowing that all pointing or re-building masonry exposed to the action of water is to be done with cement.

No. 107. From Colonel J. H. M. SHAW-STEWART, R.E., Consulting Engineer for Railways, to the Chief Engineer, Public Works Department, dated Madras, 28th November 1878, No 1,843.

In reply to your memorandum, No. 5,157, dated 14th November 1878, I have the honor to state that I learn from the Agent of the Madras Railway that the Portland cement referred to was despatched from London to Madras *via* the Suez Canal

in April 1877; that the original cost of one barrel of this cement (weighing 305 lbs.) in England was 9s. 10½d. or at the rate of exchange 1s. 10d. per Rupee, was Rs. 5-6-2; and that when landed in Madras it was Rupees 6-7-9,* the difference, Rs. 1-1-7, being cost of freight, insurance, and landing charges.

2. The Portland cement on the South Indian Railway was received in November 1875, and the following details show how the quotation was arrived at—

	£.	s.	d.	Rs.	A.	P.
Ninety-eight casks value	44	2	0			
Freight	25	0	0			
Insurance	1	12	0			
Duty and landing charges				70	14	0
Total				737	11	10
				47	0	0
				784	11	10
Ninety-eight casks at 400 lbs. each = tons 17½ value				784	11	10
Value per ton				44	13	6

3. The price paid by the South Indian Railway in London was 9 Shillings per cask, which is rather less than that paid by the Madras Railway. The freight paid by the former Company appears to have been exceptionally high.

No. 108.

ORDER THEREON, 9th December 1873, No. 4,671 W.

THE foregoing reports are of interest, and are calculated to lead to the impression that Indian local cements, such as Surki and Madras Portland, will effect all that is needed, and that the expense and loss on exchange for English Portland cement may be saved by its disuse everywhere except on the Harbour Works, where the quantity capable of being supplied would be insufficient. This remark applies also to the Railways in this Presidency, where the use of English cement should be discouraged.

2. Ordered that a copy of these Proceedings be forwarded to the Governments of India and Bombay for information.

(True Extract.)

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

To Superintending Engineers.
To General Morgan.
To the Chief Engineer for Irrigation.
" Consulting Engineer for Railways.
" Superintendent, Madras Harbour Works.

No. 109.

(DOCKET No. 4,672 W, dated 9th December 1873.)

COPY of the above forwarded to the Government of India.

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

No. 110.

(DOCKET No. 4,673 W, dated 9th December 1873.)

COPY of the above forwarded to the Government of Bombay.

(Signed) E. A. FOORD, Colonel, R.E.,
Secretary to Govt., P.W.D.

Ed. E. C. Shunker.
Spare Copies

4673
5.

No: 214 ^{CE}

Dist. Engineer's Office
Coimbatore 16th February 1978

From,

The Dy. Dist. Engineer
Coimbatore

To
The Dy. Chief Engineer
P.W. Department
Madras.

With reference to your Memo No: 43
of 12th Jan^y, I have the honor to inform
you that cement has not yet been
specially made in this District
as far as I can ascertain; but
I have recently ordered some to be
prepared in the Irrigation Range
and will report the result.

2. It is difficult to estimate
the annual requirement, but roughly
speaking I should say that a
truck load of 3 tons would
be required in the Coimbatore,
Karur, and Irrigation Ranges.

making a total of 21 tons.

I have the honor to be

Sir,

Your most obedient servant.

A. Loring, Captain R.C.

Sgt. Dist. Engineer Fremont.

4673
7

From
The Asst. Engrs.
Comblatone
To The Chief Engineer
P. O. Madras

No 214, 11
Dated 16th } February 1878
Recd

Portland Cement

Reports upon the
requirement of—
and states that cement
has not yet been
specially made in
the Comblatone Dist.

W. S.

District Engineer Office
Trichinopoly 18th February

No 947

16th Feb

From.

The District Engineer.
Trichinopoly.

To.

The Chief Engineer.
W. P. W.
Madras.

Sir,

Referring to your Memorandum No. 738 of 12th February 1878, I have the honor to report that no cement is locally procurable in the district. It is not in general use, and has only been used on one or two occasions, in work of an exceptional character.

I have the honor to be,
Sir,

Your Most Obedient Servant.

W. S. (Capt. D.)
District Engineer.

N^o 191

Sinnivelly Dist^l Engr^y Office
Palanicothah 18th February 1878

General

From District Engineer
Kicheep^l

General

C. 747

Dated 18th Feb^y 1878

Reports that no
Cement is locally procur-
able in this District.

From,

A^g 73
9.

J. D. Grant Esquire
Off^{ce} District Engineer
Sinnivelly

to

Colonel E. A. Ford R. E.
Chief Engineer D. P. W.
Madras.

Sir,

Referring to your Memoran-
dum No 738 of 12th instant, I
have the honor to report that cement
is not procurable in this District
but when required, it is obtained
from Colombo.

2. I further to state that
cement is not now required in this
District.

I have the honor to be

Sir,

Your most obed^t serv^t.

J. D. Grant.

Off^{ce} District Engineer
Sinnivelly

General

From

The District Engineer
Tinnevely.

To

The Chief Engineer
D. P. W.

No. 191.

Dated 18th February 1878.

No. of Enclosures.

Cement

Reports that cement
is not procurable
in this District.

D. P. W.
SOUTH ARCOT.

No. 211

DISTRICT ENGINEER'S OFFICE.

Camp

Villapuram

Dated

18th Feb 1878

FROM

THE DISTRICT ENGINEER.

SOUTH ARCOT.

TO

THE CHIEF ENGINEER

*Roads &
Building
General*

Enclosures

D. P. W.

Sir,

In reply to your Memorandum
No. 738 dated 12th Feb. I have the
honour to report that there is no ce-
ment procurable in this district.

With regard to the approximate
quantity of the Madras Portland ce-
ment likely to be consumed annually
in this District, I can only give my
opinion that it will be but small as
I do not propose to resort for any
but special work such as painting,
cribs and repairs of crinoids; as a rule
the lime in this district is very good and
if mixed with sand it forms a
hydraulic mortar fit for all ordinary
purposes.

4673
11

purpose. When I have an opportunity I propose laying it for flooring of buildings.

I have the honor to be
Sir

your most obedient servant

Wm. H. Hays
Dist. Engineer

Robert B. B. B.
General

FROM DISTRICT ENGINEER
SOUTH ARCADE

No. 311

Dated 18th February 1878
Despatched 20th
Received

No. of Enclaves - 11

Madras Portland Cement
Reporting the quantity
likely to be consumed in the
District, and also stating that
there is no Cement procurable
in this District.

22.2.78

General
No 239

From

To

District Engineer's Office
Bangalore, 21st February 1878.

The District Engineer
Bangalore.

The Dy. Chief Engineer, P. & O.
General.
Madras.

Sir,

With reference to para 2. of
your circular memorandum No 738. of
dated the 12th Instant, I have the
honor to state that no cement is
procurable at this station and that
about 12. bags have been consumed
annually in this District.

I have the honor to be
Sir,

Your most Obedt. Servt.
H. B. B. Colonel A. B.
District Engineer.

1878
21/2

From
The District Engineer
Bangalore.

To
The Chief Engineer
P. W. D.

Dated 21 February 1878.

Re.

No. 239.

Cement. Informing
that — is not procurable
in the Station and that
12 Casks of — have been
annually consumed
in the District.

No. 20602. District Engineer's Office,
Camp Basser 21st February, 1878.

From
The District Engineer,
¹⁶¹³/₁₃

To
Salem.
The Chief Engineer,
D. P. W.

With reference to your Memorandum
No. 738 of 12th instant, I have the
honor to state that good "Scott's"
Cement can be made in this District
at from annas 10 to annas 8 per cubic
foot according to circumstances, and
that I do not consider that any
appreciable quantity of the Madras
Cement is likely to be used here,
unless it can be supplied at a
considerably lower price than
Rs. 45 to Rs. 50 per ton.
2. As I have lately devoted

considerable

considerable attention to the subject of Cements, a few remarks thereon may be considered as not out of place.

3. Not long ago I wrote to the Madras Cement Works for information regarding the Cement made there, and was informed amongst other things that a Cubic foot weighed 112 lbs and that three bushels weighed 336 lbs; which of these statements is correct I cannot say, probably the latter, in which case a ton of Cement would contain twenty five Cubic feet, and its cost per Cubic foot would be Rs. 2, plus the cost of carriage from Madras which would be from Rs. 10 to Rs. 20 per ton or say annas 6 to annas 13 per Cubic foot, making the total cost from six to ten times the rate at which good hydraulic Mortar can be locally made.

4. The object of using a superior Cement in preference to a cheaper but inferior one may be either to obtain a greater absolute strength than is possible with the latter, or to obtain an equal strength with a smaller proportion of Cement to sand, and so, by the use of a smaller quantity of material, compensate for its greater cost.

5. It is only in very rare cases that the first object can be required. good Soorhee Mortar is quite strong enough for all ordinary hydraulic works, and I have never known or heard of a case in which moderate care was taken, and the work failed from want of sufficient strength in the Mortar. In special cases, such as a great masonry dam, it might be desirable to use a Mortar stronger than could be obtained from the

the materials in ordinary use, but in most such cases the quantity required would be such as to justify the manufacture of the Cement on the spot, when it would certainly cost far less than the Madras made article. The cases in which a small quantity of very strong mortar is required are likely to be exceedingly few in number, and from their very nature cannot be predicted beforehand.

b. There remains the second object, which is simply a matter of calculation; if a Cubic foot of sand costs two pice, ordinary Soorkee Mortar in the proportion of one to one will cost from annas 2.1 to annas 4.1 per Cubic foot; to bring the cost of Portland Cement down even to the latter rate it must be used in the proportion of nine to one and for the former of twenty to one.

7. The causes which have led to the

enormous

enormous development^{page 673} of the use of Portland Cement which has taken place of late years in England, do not exist to any great extent in India.

8. The greater part of the lime obtained in England is from Chalk, and is fat lime of the present description, utterly useless for any hydraulic work, or even for ordinary building where any great strength is required; it is therefore necessary to treat the lime in some way before using it in important works, and the cost of land is so great as to render it worthwhile to avoid as far as possible the erection of kilns and other buildings. Competition and the division of labor have brought the price of Portland Cement down to a rate not much exceeding the cost of manufacture, and thus

the

the difference between the cost of the latter and that at which a decent hydraulic Mortar can be locally made is reduced to an amount which is in most cases nearly if not quite covered by the saving in quantity due to the use of the superior material.

9. Again, owing to the high prices paid for skilled labor the cost of the Mortar forms a much smaller proportion of the total cost of Masonry work in England than it does in India, and the proportionate increase in the total cost, if that of the Mortar itself be increased, is much less.

It may also be noticed that masonry of the highest class, in which the cost of the Mortar is a very small fraction of the total, as well as special works requiring

great

great strength at any cost, are much more common in England than here.

1673
16

10. It is difficult to understand why the cost of the Madras Cement should be so high; the English price of Portland Cement is from £1-15-0 to £2-0-0 per ton, and it seems inconceivable that the cost of manufacture, if done on a sufficiently large scale to meet the cost of supervision, should be greater here than in England. If a high class Cement could be manufactured at a moderate price (say Rs. 15 per ton) it might be used with advantage within a certain distance of the place of manufacture, but the cost of carriage would soon become prohibitory except in the

the special cases contemplated in para 5.

I have the honor to be,

Sir,

Your most obedient servant,

Ben Pong and Major R.D.,

District Engineer, Salins.

A 673.
17

Note to para 5.—

It may however be remarked that the Ban and Turens dams (each 50 metres in height) were built with the Thiel lime which is not a cement but a good hydraulic lime. The former of these was calculated for a pressure of eight and the latter for six Kilogrammes on the square Centimetre, and in future constructions of the same kind probably ten or even twelve Kilogrammes will be allowed. A Kilogramme on the square Centimetre is fourteen pounds on the square inch or two thousand pounds on the square foot very nearly. I have been unable to obtain any information as to the resistance to compression of the Madras Cement.

To The Chief Engineer
D. A. W.

Date 21st Feb. 1875.
 Recd. 2 Feb. 1875.

7:206

Enc.

Reporting upon the
price & quantity of cement;
and offering certain
remarks on the subject.

of
from

The District Engineer
Vizagapatam

7/10

The Chief Engineer. P.W.D.
Madras

Sir,

With reference to para 2 of your Memo No. 713 dated 12th February 1878, I have the honor to report that no Cement has been used during the past two years (or is ordinarily required for use on Hydraulic works) in this District.

I have the honor to be

Se

Your most obdt. Servt.

145775006 Major R.E.
District Engineer, Tirapattanam

General
From
The District Engineer
Mangalore
To
The Chief Engineer P.W.D.
Madras

N. 2624

Dated 25th February, 1878

No of Enclasures none

Cement

Reporting that, no — has
been used during the past two
years in this District.

11
District Engineer Office
Mangalore March 1878
No. 96
From
The District Engineer
South Canara
To
The Chief Engineer
P.W.D. Madras
With reference to your Memo No. 2738
dated the 12th February 1878, I have the honor to
inform you that Portland Cement is not
procureable in the local market.
2. It has been the custom to pro-
cure what cement has been required from
Messrs. Hind & Co. Bombay, who supply
it in 50 lb and 100 lb casks, in which it can
be kept unimpaired for years.
3. Messrs. Hind & Co's cement is
more highly priced than that manufac-
tured by Gault Morgan & Co. 4. 50 lb casks,
guaranteed at 700 lbs breaking strain
cost us in 1874 (Rupees 20) twenty per cent
landed in Mangalore, price of cement

1673
20

in undamaged casks then selling at Rs 15) fifteen per cask or Rs 75) seventy five per ton. By Messrs. Hind & Co's price current I find the cement quoted at Rs 13) thirteen per cask now, or Rs 65) sixty five per ton. Freight by steamer would increase this to about Rs 75) seventy five per ton.

4. I doubt if the cement from Madras could be packed in casks and landed at Mangalore for much less than this sum.

5. The average annual consumption of cement in the District is about 4 tons.

I have the honor to be,
Sir,
Yours sincerely,
[Signature]
District Engineer

From

The District Engineer
Madras

To

The Chief Engineer
S. P. Madras.

Dated 27 March 1878.

No 96

Encls:

Portland Cement - information with reference to which mentioned Memo that - is not procurable in the Local Market.

General

No 3161

From

The District Engineer
Buddapah

To

The Chief Engineer
Public Works Department
Madras

District Engineer's Office
Buddapah

Dated 14th March 1878

4673
21

12

Sir With reference to your Memorandum No. 738 dated 12th Ultimo, I have the honor to report that no Cement as that referred to therein is ever used in this District. all the irrigation and other works are carried out with ordinary mortar or where it is necessary to make it Hydraulic one part of brick dust is substituted for one of sand in the following:

Chunam 1 part

Sand 2 parts

In the Siddhant. Rang - a fair Cement is made with Chunam. Kunkar, Burnt clay and River sand. when the latter is good or from Kunkar and burnt clay only where good clean sharp sand cannot be obtained.

I have the honor to be

Sir
Your most obedient servant

R. S. 16

Assistant Engineer
for District Engineer Buddapah

From
The District Engineer
of Pondicherry

To The Chief Engineer
Public Works Department
Madras

Dated 11th }
Filed } March 1878

No 3161

This Memorandum sets
forth that no Cement
as that referred to therein
is ever used in this Dis-
trict -

No 71
I am

District Engineer Office
Cotacamund 9th March 1878

1873
72

The District Engineer
Nilgiris

Sir

The Dy Chief Engineer P.W.D.
Madras

Sir

With reference to Memorandum
No 738 of 12th February 1878, I
have the honor to state that
Morgan's cement is the only local
cement that can be procured and
has been used in this District.

2. The approximate quantity
likely to be consumed in this District
is about 50 Tons annually -

I have the honor to be

Sir

Your most obed^t Servant
Jee. Morant Mafu R.E.
District Engineer

Roads and Buildings

Survey

The District Engineer
Bellary

To

The Dy. Chief Engr
P. M. D.
Madras

c/o M.

Order of the Madras

c/o of Enclosures.

Concrete Cement

Reports that - is the
only local cement
that can be procured,
and has been used
in this district -
and states the approx-
imate quantity of
to be consumed annually
with reference to the
supply of the 12 to 15 tons
per year.

No. 5548

District Engineer's Office,

BELLARY.

12th March 1878.

From

The District Engineer
Bellary

To

The Deputy Chief
Engineer P. M. D.

Sir,

Enclosures.

With reference to your
Memorandum No. 738 dated 12th
February 1878, I have the honor
to report that the approximate
quantity of the Madras manu-
factured Portland Cement likely
to be consumed in the Bellary
Range during the next official
year is 20 tons.

No cement is locally pro-
curable in this district.

I have

Roads near Per

I have the honor to
ack
Your most obedient
J. to Russell
District Engineer
Bellary To
The Dy. Chief Engineer
Bellary

D. P. W.

Dated 12th March 1878.
Recd.

No. 5548

Subject

Cement
Reporting the agree-
ments in and official
spec. of the quantity
of Portland - & that as
Cement is locally pro-
curable in the District

No. 554

District Eng's office -
Tanjore 14th March 1878.

From,

$\frac{23}{24}$

J. 15

Captain R. R. E. Brothman. R.E.
District Engineer Tanjore.

To,

Colonel E. A. Ford. R.E.
Chief Engineer Buildings
and Roads.

Sir,

With reference to your circular
Memo no 738, dated 12th February 1878,
I have the honor to inform you that the
price of the (Madras made) Portland Cement
therein referred to is altogether prohibitory
as it costs from 16 to 20 times as much as
ordinary slaked lime which in this
District is slightly hydraulic in itself.
None can therefore be used.

I have the honor to be
Sir,

Your most obed^t Serv^t
Melbourn Capt. R.E.
District Engineer Tanjore.

From
The Distt Engineer
Travancore
To
The Chief Engineer
Buildings.

No. 504.

Dated 14 March 78
Hd.

Portland Cement.

Reports that the price
of the machines made
Portland Cement is
altogether prohibitory

No. 180

Malabar Distt Engineer's Office
Calicut 15th March 1878

From,

The Distt Engineer
AG 23/24 Malabar.

To,

The Chief Engineer
D. P. W.

Sir,

With reference to your memo
No. 488 dated 12th February 1878, I have the honor
to furnish you with the following
information.

	Price of Cement Obtainable	Quantity of cement required
1 Cannanore Range	90 Rs. per ton	5 Tons annually
2 Calicut Range	90. 10 per ton	} 4 Tons annually
3 Cincaud Range	90. 10 . . .	
4 Kuroombranaad. Range	92. " . . .	2 do
5 Pulghat Range	100 . . .	2 do

I have the honor to be
Sir,

Your most obedient servant

M. B. K. St. Coll.
District Engineer
Malabar

General Miscellaneous

From the District Engineer
Malabar

No. 180.

Dated 15th March 1878.

Enclosures - "

Furnishing information
as to price of Cement obtain
Table and Quantity required

No. 3961

Thamir.

The Superintending Engineer

Godavery District

To,

The Chief Engineer.

Public Works Department

Madras

Tadepilly-gudem 15th March 1878

Sir,

I have the honor to inform you in
reference to your Memo No. 738 of 12th
February 1878, that it does not seem
to me practicable to forecast with any
accuracy the quantity of Madras-made
Portland cement that can be used
annually in this District, especially as
we have not as yet any experience of
that material.

2. But if the cement can be securely
packed so as to admit of storage for
a considerable time, say a year, this Dis-
trict will take (20) Twenty Tons at once.

3. If the cement cannot be securely
packed

packed for storage, two tons may be
sent up at once for trial, and a
further report will be made as soon
as possible after receipt.

4. At present I am not aware where
the Cement works are or to whom I
should apply for information.

5. The price of the best cement, lo-
cally procurable is about 18 Rupees
a garce, but it is a very inferior ar-
ticle apparently as compared with
Portland Cement.

I have the honor to be
Sir

Yours Most Obedt Servt.

Henry. Licut. Col. R.E.

Superintending Engineer G. E. F.

A 673
27.

General

From,
The Super Engineer
Godavery Dist
To
The Chief Engineer
P.W. Dept
Madras

Dated 15 March 1878
Recd.

No 3961

Encls.

Madras made Port

= Land Cement =

Replies to Memo No

2738 of 12th February

1878 — regarding

RAILWAY DEPARTMENT.

CONSULTING ENGINEER'S OFFICE,

Madras, 23rd March 1878.

No. 414

4673

FROM

LIEUT.-COLONEL J. H. M. SHAW-STEWART, R.E.,

TO

Consulting Engineer for Railways,

The Chief Engineer

Public Works Department

SIR,

For A. George

Enclosures.

In reply to your memorandum
No 739 dated 12th February 1878, I have the
honour to state that the price paid by the Stat-
es and ^{the} South Indian Railways for Portland
Cement landed in Madras is Rs 36.12.4 and
Rs 44-13-6 per ton respectively.

The difference
is Rs 8.1.0

The cement has not been tested for tensile
strain in this country by the officers of either Com-
pany.

I have the honour to be, Sir,

Your most obedient servant

W. H. Stewart

Colonel R.E.

For A. George, Sec. Railways

General.

No. 233

NORTH ARCOT,

Suptdy District Engineer's Office.
Tellico 10" April 1878.

FROM

Abby Suptdy
THE DISTRICT ENGINEER,

NORTH ARCOT,

TO

*The Chief Engineer,
Public Works Department*

Sir,

Madras.

With reference to your Memorandum No. 438 of the 12th February 1878, I have the honor to report, that the price of the cement locally procurable is about Rs. 20 per ton, and no cement of the Madras Portland manufacture is likely to be wanted in this district.

I have the honor to be,

Sir,

Your most obedient servant,

Abby Suptdy

Abby Suptdy District Engineer, North Arcot.

From

The District Engineer

for Railways.

To

The Chief Engineer

P. W. Dept.

Dated

23rd April 1878

Received

No. 1114

IN 100/100

*Being submitted
as to the same and
by the Department
in this proceeding
for the same
Standard of the same*

From

The District Engineer,
North Arcot.

Dated 10th April 1878.

No. 233

ENCLOSURE.

SUBJECT.

Prices of Cement

Informing about
the —

Portland Cement

Statement of Local price and quantity
required 1878-79 — ⁴⁶⁷³/₂₀.

Cost of Portland Cement in } some procurable.
Local Market. —

Quantity that will be probably }
required in the Kallakur District } About 50 Tons.
in 1878-79. —

District Engineer's Office
Camp Gorakur
17th April 1878.

Whampsey
District Engineer

No 122

Forwarded to the Chief Engineer vide his
Memo No. 78 dated 12th February 1878

Copy
to
the
Chief
Engineer

Whampsey
Dist. Eng.

From
The District Engineer
Bellore

To
The Chief Engineer
D.P. 27
Madras

No 122

Date 17 April 78

Recd. 20

Portland Cement

Statement of Local
price and quantity
required 1878-79.

No. 27. District Engineer's office
Madras 24th April 1878
From
The District Engineer,
Madras
To,

The Deputy Chief Engineer,
P. W. D. Madras.

Sir,

With reference to your
Memorandum No 738 dated 12th February
last and to your reminder No 738 of
the 12th Instant, I have the honor to
state that Portland cement has never
been used in the Cindigul or Madras
Division of this District, nor do I think
it is needed, at any rate for the present.
The masons & Bricklayers of the country
manufacture when required a very
good cement, and one that answers
every purpose but the extraordinary such
as inner lining of cisterns &c. &c. I cannot
therefore undertake to indent for any
Portland cement.

I have the honor to be,
Sir,

Your most obedient servant,
P. W. Harrington
District Engineer

No. 18

179

From

Yelkurty 25: April 1878.
Sept 26

The District Engineer,

Kurnool.

93
10/33

To

The Chief Engineer P. N. S.
Madras

Sir,

In reference to your Memo,
No. 738, dated 12: February 1878,
directing me to submit a statement
showing the prices of the best cement
locally procurable, &c. I have the
honor to report as follows.

Kurnool Division - No cement is locally
procurable and no Port-
land cement has been
used in this Division.

Chambam Division - &c. — &c. —

Madras - &c. - No Portland cement
has been used in this
Division & statement
showing the prices of cement

From

The District Engineer
Kurnool

To

The Deputy Chief
P. N. S. Madras

No. 27

Dated 25: April 1878.
Received

Portland cement

Noting that our
indent shall be
as per when

Country made best Hydraulic
Cement locally produced

price for ordinary work is
annexed.

Data showing the rate of a ton of
Country made best Hydraulic Cement.

Quantity	Description	Per	Rate	Amount	Total
763	the or 10 1/2 barrel Slaked Lime	50	5	3 46	
1477	the or 10 1/2 barrel of Limestone or Brick dust for a Green	14	13	20	16 66
	Sundries				96
	Total Required				17 00

The required information on the subject
was only received on the 22nd instant
from the Divisional Office, Amritsar.

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34

I have the honor to
be

Your most Obedient

M. W. Hinde Major S. C.

District Engineer

London & Co. Ltd.

From

The District Engineer
Munro

To The Chief Engineer
J. P. H.
Madras

Dated 25th } April 1878

Received

No 18/179

Enclosure -

Cements

Submits statement
showing the price
of best - locally
procured -

(No 575)

From

The District Engineer,
Presidency.

To

The Chief Engineer,
S.P.H.

Sir,

With reference to your Memorandum
No 38 of 12th February 1878, I have the
honour to submit a statement showing the
prices of the best cement locally procur-
able in the Presidency District, and to
report that about 50 tons of the Madras
Manufactured Portland Cement is likely
to be consumed in this district.

I have the honour to be,
Sir,

Your most obedient servant

William

Major R.E.

District Engineer

Presidency.

Fort St. George
1st May 1878.

W.C.

General.

From

The District Engineer,
Presidency.

No. 575.

Dated 1st May 1878.
Recd.

No. of enclosures, one.

Cement.

Submits statement
showing the prices of the best
locally procurable.

Statement showing the prices of the
best Cement locally procurable in the
Presidency District.

4673
36

English Portland
Cement } 70 Rs per ton for any quantity
over 2 tons.

do. } 80 Rs per ton for any quantity
under 2 tons.

W. R. R. R.
District Engineer,
Presidency.

1 May 1878.

Recd.

No. 1906

Chingleput Superintending Engineer's Office
Saint Thomas' Mount, 20th May 1878.

1673
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From

THE SUPERINTENDING ENGINEER,

Chingleput.

To

The Chief Engineer
Public Works Department.

Sir,

Encs

In reference to your Circular Memo-
randum No 738 of 12th February 1878,
I have the honor to enclose a statement
showing the price of the best Madras
locally procurable, and the approxi-
-mate quantity of the Madras ma-
-nufactured Portland Cement likely
to be required annually for use on
works in the several Ranges in this
District.

2. Cement is not procurable in
the District, and appears not to have
been used in any Range except
No 2, and obtained in this case
from Madras at a cost of Rs 79-6-0
per Ton.

3. The quantity of the Madras
made Portland Cement required

for No 3 Range is entered at 200 tons
as this is the quantity reported to be
used annually on all Irrigation works
in that Range. This must however be
reduced if the cement is to be used
on important works only, or if ex-
penditure continues to be limited by
the rules applicable to a Famine
District. The quantities entered
for No 1 and 2 Ranges are those
said to be required for particular
works only.

I have the honor to be
Sir

Your most obedient servant

For J. J. Connel, Colonel A.D.
Superintendent, Ching Report

A 673
38

From the Supd Engrs Ching

No 1906

Dated 20th }
 Recd " } May 1878

Enclosure No.

Moston - enclosing
 a statement shewing
 the price of the best

Statement showing the price of the best Madras locally manufactured and the
 approximate quantity of the Madras Manufactured Portland Cement likely
 to be required for use annually on works in the several Ranges of the
 Chingleput District.

Range	Price of best Madras locally manufactured Cement annually re- quired per Ton	Approximate quantity of Madras Manufactured Cement Portland Cement likely to be required annually per Ton	Remarks
No 1 Range	5 12 6	5 Tons	
No 2 Range	5 0 0	5 Tons	
No 3 Range	6 12 6	200 Tons	

7673
 39

Chingleput Supd Engrs Office
 Saint Thomas Mount May 1878

Wm Smith Colonel R.E.
 Supd Engineer, Chingleput.

No 64 Supg. Engineer's Office Kistna
Manufacture }
22nd June 1878 }

From ¹⁸⁷³
The Superintending Engineer,
Kistna.

To
The Chief Engineer,
Public Works Department,
Madras.

Sir.

In reply to your Memorandum No 738
dated 12th February 1878, I have the honor to report
that cement is not locally procurable in this District.

2. A small quantity of Portland Cement was
obtained from the P. W. Stores, Madras, some time
since, which cost Rs 22 per ton delivered at Berhampore.
Rs 18 being the cost of carriage.

3. Cement has been manufactured and used in
both Delta Divisions, sometimes being made of powdered
brick, lime and sand, and sometimes by mixing Kistna
Silt, or potter's clay with lime, drying the mixture in
cakes and burning it. Lately however, a Cement grinding
mill driven by steam has been put up at Berhampore,
and experiments are being made, the result of which

71673
41

I believe will show that we can manufacture a
sufficiently good cement at a price considerably less
than it can be procured from Madras.

As should the new Durgaher works be commenced
at the Wells, a considerable quantity of cement
will be required; an ordinary repair works it is calcu-
lated that we require about 8 tons; Allowing that
all pointing & rebuilding masonry exposed to the
action of water, is to be done with cement.

I am the honor to be

Yours most obedient servant

J. H. M. Esq.

Superintending Engineer,

Madras.

Wm

CEho 7397/12 Feb 78

General-

From

The Supg Engineer
Riviera

To

The Chief Engineer
P W Deptt

Dated 22nd June 78
Riviera

No 611

Cement Riviera District

Reports on the manufacture
of — with experiments
made and costs.

RAILWAY DEPARTMENT.

CONSULTING ENGINEER'S OFFICE,

Madras, 28th November 1878.

No.

1846
A623
A2

From

COLONEL J. H. M. SHAW-STEWART, R.E.,

Consulting Engineer for Railways.

To

The Chief Engineer
Public Works Department.

SIR,

Enclosures.

In reply to your Memorandum No. 5157, dated 14th November 1878, I have the honour to state that I learn from the Agent of the Madras Railway that the Portland Cement referred to was despatched from London to Madras, via the Suez Canal in April 1877; that the original cost of one barrel of this Cement (weighing 39.5 lbs.) in England was 7^s. 10^d., or at the rate of exchange 1^s. 10^d. per rupee, was Rs 5-6-2; and that when landed in Madras it

it was £6.7.9. The difference ^{equals} ~~£36-12-4~~ ^{per ton}
 £1.1.7 being cost of freight, insurance,
 and landing charges.

2. The Portland Cement on the
 South Indian Railway was received
 in November 1875, and the following
 details show how the quotation
 was arrived at.

98 Casks value £44-2-
 Freight — 28 —
 Insurance — 1-12 —
 £ 70-11-
 Duty and landing charges. 117 —
 £ 784-11-10
 98 Casks @ 400 lbs each = 6517½ value £ 734-11-10
 Value per ton — £ 45-13-

3. The price paid by the South
 Indian Railway in London was 9
 shillings per cask which is rather
 less

less than that paid by the
 Madras Railway. The freight
 paid by the former Company
 appears to have been exceptionally
 high.

$\frac{4673}{43}$

I have the honour to be,
 Sir,
 Your Most Obedt Servant
 W. C. ...
 Captain, ...
 for Messrs. ... for Railway

PROCEEDINGS OF THE MADRAS GOVERNMENT.

Under date the

A673
44.

Read the following:—

From the Dist. Inqrs. Comtee. (M.C. No. 212. C.S. d/16 Feb'y '78)
 do do Trichinopoly (" 947 d/18 Feb'y '78)
 do do Tirunelveli (" 191 d/ " ")
 do do S. Arcot. (" 311 d/ " ")
 do do Bangalore. (" 259 d/ 21 " ")
 do do Salem. (" 206 S.L. d/ " ")
 do do Vizagapatam. (" 2624 d/ 25 " ")
 do do S. Coara (" 96 d/ 20 March '78)
 do do Gaddah. (" 3161 d/ 4 " ")
 do do Kilgiri. (" 74 d/ 9 " ")
 do do Bellary. (" 5548 d/ 12 " ")
 do do Tanjore (" 534 d/ 14 " ")
 do do Melalur (" 180 d/ 15 " ")
 do do Kodaikanal (" 3961 d/ 15 " ")
 do do S. Arcot (" 233 d/ 10 April '78)
 do do Tellur (" 162 d/ 17 " ")
 do do Madurai (" 27 d/ 24 " ")
 do do Kurnool. (" 18/179 d/ 25 " ")
 do do Presidency (" 575 d/ 1 May 1878)
 do do Chengalpattu (" 1906 d/ 20 " ")
 do do Kichev. (" 64 d/ 22 June 78)
 The Consgr. Inqrs. for Railways. (M.C. No. 414. d/ 25 March 1878)

CS 5757 5/11-1878
 - 738 8/12-1-78.
 - 739 8/12-2-78.

The freight charges in S. C.

are in dispute.

From the District Inqrs.

in the form of a letter.

in the form of a letter.

in the form of a letter.

in the form of a letter.

in the form of a letter.

in the form of a letter.

in the form of a letter.

in the form of a letter.

Received

Dated

25th November 1878

No. 1074-78

ENCLOSURES.

RAILWAY DEPARTMENT.
1878.From
The Consulting Engineer
for Railways.To
The Chief Engineer.

P. P. 1878

General instructions

as to the manner of

appearance of cases

of post office accounts

on 11/11

on 2/11

From these papers it appears that in eleven Districts in the Presidency cement of a sufficiently good description for ordinary purposes is obtainable at infinitely cheaper rates than that of the Madras-made Portland cement - the cost of which per ton being in the opinion of some officers such as to render its use prohibitory. No doubt if the manufacturer could see his way to reducing the cost of his cement

per ton to what it costs in England ⁴⁶⁷³ ~~45~~ some where about Rupees 20, the cement would come into very general use throughout the Presidency. It further should not be lost sight of that carriage to a distance by land or sea it is essential that the cement should be packed so as to ensure its preservation from wet and exposure.

The Annual supply recorded as likely to be at present required amounts to three hundred

Place	Price per 100 lbs.
Chengalput Dist. about 30.	50.
Madras —————	50.
Tellur —————	50.
Kadur —————	20.
Kudalur —————	10.
Malabar —————	12.
Kilgiri —————	50.
Bellary —————	20.
S. Canara —————	4.
Bangalore —————	3.
Channarayana —————	3.
Karjuna —————	3 1/4

301

alt. 7/7

[illegible]

Read the following:—

From the Dist. Engrs.	Combitore (H.C. No. 214 C.I. of 16 th Feb 1878)
" do do Trichingopoly	(H.C. No. 947 of 18 th Feb 1878)
" do do Tanjavur	(H.C. No. 191 of 18 th Feb 1878)
" do do S. Street	(H.C. No. 311 of 21 st Feb 1878)
" do do Bangalore	(H.C. No. 239 of 21 st Feb 1878)
" do do Salem	(H.C. No. 206 of 21 st Feb 1878)
" do do Vizagapatam	(H.C. No. 2624 of 25 th Feb 1878)
" do do S. Canara	(H.C. No. 96 of 2 nd March 1878)
" do do Cuddalore	(H.C. No. 3161 of 4 th March 1878)
" do do Kilgiris	(H.C. No. 74 of 7 th March 1878)
" do do Bellary	(H.C. No. 5548 of 12 th March 1878)
" do do Tirupur	(H.C. No. 564 of 14 th March 1878)
" do do Malabar	(H.C. No. 180 of 15 th March 1878)
" do do Godavari	(H.C. No. 3961 of 15 th March 1878)
" Consgr. Engrs. for Railways	(H.C. No. 4114 of 23 rd March 1878)
" Dist. Engrs. S. Street	(H.C. No. 233 of 10 th April 1878)
" do do Bellary	(H.C. No. 122 of 17 th April 1878)
" do do Madurai	(H.C. No. 27 of 24 th April 1878)
" do do Tirunelveli	(H.C. No. 18 of 25 th April 1878)
" do do Presidency	(H.C. No. 575 of 1 st May 1878)
" do do Cuddalore	(H.C. No. 1406 of 20 th May 1878)
" do do Kistna	(H.C. No. 64 of 23 rd June 1878)
" Consgr. Engrs. for R.R.	(H.C. No. 1843 of 23 rd July 1878)

The foregoing

copied

reports are of interest, and are calculated to lead to the impression that Indian local cements, such as Surki & Madras Portland, will effect all that is needed, and that the expense and loss on exchange for English or Portland Cement may be ~~entirely~~ saved by its disuse everywhere except on the Harbour Works, where the quantity capable of being supplied would be insufficient. This remark applies also to the Railways in this Presidency ^{the use of it} ~~where it is~~ ^{should be discouraged.}

Ordered that a copy of these proceedings be forwarded to the

Government of India and Bombay for information.

1673/27

M.C. 14672 WD 19th Decr/8

Copy of the above forwarded to the Govt of India ~~and Bombay~~.

M.C. 14673 WD 19th Decr/8

Copy of the above forwarded to the Government of Bombay.

1673/27

Staff A-1-79-
with 28 Dec.

Staff A-1-79-
with 6 Dec.

Supg. Engineers 100
General Morgan
Ch. Engr. for S. P.
Supt. M. H. Works

Staff A-1-79-

Chr 13382 900



Sub. of 18781 21100015
PUBLIC WORKS

The Secretary to the Govt. of

Bombay

Dated

Recd.

O. S. 9 Decr 1878 No. $\frac{4671}{4672 \frac{1}{2}} / 4673$

Nos. 85-108

109

110

Indian local cement

Reg. I

Same as above

Reg. B

Same as above

Reg.