

quite a number of districts, resulting in damage of a much more extensive nature than usual. Extraordinarily heavy rainfall in concentrated areas caused major flooding, and severely damaged works which were not designed to meet the conditions which arose. Highways are designed with due regard to local conditions, and with reasonable allowance for a margin of safety, and this especially applies to structures such as bridges and culverts. However, the circumstances which produced some of the flooding during the past year were without precedent, and even had it been possible to anticipate them it is obvious that it would not have been practicable, even at great expense, to overcome the position. In some instances steep hillsides were heavily scoured by the intense rainfall which amounted to as much as 32 in. in three days, bringing down enormous quantities of silt, rocks, and debris which the natural watercourses could not possibly carry.

Some indication of the siltation which occurred is seen in the fact that, after the Hawke's Bay flood, up to 5 ft. of silt remained on the highway in the Esk Valley, where prior to the flood the roadway was several feet higher than the natural waterway in the valley. Also in the East Coast district north of Gisborne a deposit of silt, some feet in depth, was left on the main highway after flooding had occurred. The abnormal hydraulic conditions caused heavy scouring in rivers and streams, with consequent damage to bridges and culverts. In a few cases it was remarkable to find that concrete culverts remained bare but intact after the flood-waters had washed away the approaches, even where they had been in comparatively solid country.

The sudden disorganization of road transport necessitated urgent measures to open up detours or otherwise restore communications, and the staff of the Public Works Department lost no time in carrying out temporary repairs. Mobile plant was quickly obtained from other districts in order to remove slips and rebuild the damaged highways, temporary bridges were constructed, and railway viaducts and bridges, where available, were converted for the temporary use of road vehicles. The work of complete restoration is proceeding, and new road structures will be built as soon as circumstances permit.

RENEWALS AND IMPROVEMENT.

For the financial year covered by this report expenditure on renewals amounted to £138,274, compared with £106,404 for the previous year, and expenditure on improvements, including construction and reconstruction, amounted to £2,180,327, as against £1,394,857 for the preceding year.

As explained on previous occasions, progress in connection with the renewal of decayed or obsolete bridges is governed to a large extent by the availability of materials and the rate at which designs can be completed. Difficulty in obtaining supplies of reinforcing steel has proved a very real handicap, and construction work has been considerably delayed on this account. Other urgent public works have made great demands on the limited staff engaged on design, and, unfortunately, it has not been possible to overcome the position because efficient and trained technical staff cannot be procured. Nevertheless, substantial progress has been made with bridge renewals, as will be seen from the fact that during the year under review new bridging totalling 11,000 lineal feet was completed.

The past season was very favourable for bituminous surfacing work, and 288 miles of main highways received an initial paved surface, bringing the total length of dustless highways up to 2,415 miles, which is practically 20 per cent. of the main highways system. In addition to this new paving, a considerable amount of maintenance sealing or other bituminous treatment was carried out on sections which were paved several years ago, the surfaces of which were in need of reconditioning to prevent undue damage from increased traffic.

It is proposed to continue the policy of dustless paving as far as possible, especially where maintenance costs on gravelled sections are relatively high and where the dust nuisance is a menace to traffic safety.

Reconstruction work in the direction of widening and realignment has been continued, and last year 330 miles were improved and 240 miles were metalled. Details of these works are described more particularly in the progress report included later herein.

The table below shows the extent and types of work carried out on the main highways system by the Board and local authorities each year since the Board commenced active operations in 1924 :—

Year.	Formation and Widening.	Gravelling and Metalling.	Tar and Bituminous Sealing.	Road-and- Plant-mix Bituminous Surfacing.	Bituminous Macadam (Penetra- tion).	Bituminous Concrete.	Portland- cement Concrete.	Bridges.
	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Miles.	Ft.
1924-25.. ..	19	63	6	..	6	..	..	2,434
1925-26.. ..	45	88	16	..	45	4	6	5,168
1926-27.. ..	174	151	35	..	38	12	16	6,408
1927-28.. ..	173	133	83	..	34	..	6	7,760
1928-29.. ..	224	185	122	..	51	14	11	9,482
1929-30.. ..	173	179	133	..	39	31	12	7,547
1930-31.. ..	130	128	95	..	41	14	9	11,175
1931-32.. ..	139	69	129	..	32	9	3	4,062
1932-33.. ..	56	45	72	..	8	..	..	3,178
1933-34.. ..	44	28	75	..	7	..	1	4,988
1934-35.. ..	113	69	172	27	3	..	2	6,641
1935-36.. ..	152	98	245	91	2	..	..	8,718
1936-37.. ..	272	131	184	67	3	..	..	9,575
1937-38.. ..	329	241	282	49	..	..	..	11,106
Totals	2,043	1,608	1,649	234	309	84	66	98,242