THE NEWS LETTER
OF THE
BUREAU OF PUBLIC ROADS

VOL. 1, NO. 2 DECEMBER, 1925.

CONTENTS

THE PRESIDENT'S ATTITUDE ON FEDERAL-AID ROAD BUILDING

EXTRACTS FROM MESSAGES DELIVERED TO THE SIXTY-NINTH CONGRESS.

FROM THE MESSAGE OF THE PRESIDENT (HOUSE DOCUMENT NO. 2), DEC. 8, 1925.

"A MORE INTIMATE RELATION SHOULD BE ESTABLISHED BETWEEN AGRICULTURE AND THE OTHER BUSINESS ACTIVITIES OF THE NATION. THEY ARE MUTUALLY DEPENDENT AND CAN EACH ADVANCE THEIR OWN PROSPERITY MOST BY ADVANCING THE PROSPERITY OF THE OTHER. MEANTIME THE GOVERNMENT WILL CONTINUE THOSE ACTIVITIES WHICH HAVE RESULTED IN AN UNPRECEDENTED AMOUNT OF LEGISLATION AND THE POURING OUT OF GREAT SUMS OF MONEY DURING THE LAST FIVE YEARS. THE WORK FOR GOOD ROADS, BETTER LAND AND WATER TRANSPORTATION, INCREASED SUPPORT FOR AGRICULTURAL EDUCATION, EXTENSION OF CREDIT FACILITIES THROUGH THE FARM LOAN BOARDS AND THE INTERMEDIATE CREDIT BANKS, THE ENCOURAGEMENT OF ORDERLY MARKETING AND A REPRESSION OF WASTEFUL SPECULATION, WILL ALL BE CONTINUED."

FROM THE MESSAGE OF THE PRESIDENT (DEC. 9, 1925) TRANSMITTING THE BUDGET FOR THE FISCAL YEAR ENDING JUNE 30, 1927.

"FEDERAL AID TO STATES IS ANNUALLY REQUIRING MORE THAN $109,000,000. THE ESTIMATES FOR THIS PURPOSE FOR 1927 AMOUNT TO SOMETHING IN EXCESS OF $110,000,000. THE PRINCIPAL ITEM IS FOR RURAL POST ROADS, FOR WHICH AN APPROPRIATION IS REQUESTED OF $80,000,000. THE LAW AUTHORIZING FEDERAL AID TO STATES FOR THE CONSTRUCTION OF RURAL POST ROADS DOES NOT EXTEND BEYOND THE FISCAL YEAR 1927. THE AMOUNT OF $80,000,000 DOES NOT DISCHARGE OUR ENTIRE OBLIGATION UNDER EXISTING LAW. IN ADDITION TO THIS AMOUNT, THE AUTHORIZATIONS FOR WHICH MONEYS HAVE NOT YET BEEN APPROPRIATED AMOUNT TO $116,700,000. WITHOUT FURTHER LEGISLATIVE ACTION WE THEREFORE FACE AN OBLIGATION OF $116,700,000 OVER AND ABOVE THE AMOUNT CARRIED IN THIS ESTIMATE.

"THE FEDERAL GOVERNMENT HAS BEEN GENEROUS IN ITS PARTICIPATION IN STATE ROAD CONSTRUCTION, HAVING AUTHORIZED APPROPRIATIONS AMOUNTING TO $690,000,000. FEDERAL CONTRIBUTION TO STATE HIGHWAY CONSTRUCTION WAS PROBABLY NECESSARY IN THE BEGINNING. IT HAS EXPEDITED AND SO COORDINATED CONSTRUCTION THAT ALL EXPENDITURES WOULD BE REFLECTED IN A DEFINITE AND APPROVED CONNECTING HIGHWAY SYSTEM. ON THE OTHER HAND, THERE IS NO QUESTION BUT THAT FEDERAL CONTRIBUTIONS HAVE MATERIALLY ADDED TO STATE EXPENDITURES OF STATE FUNDS. I AM SPEAKING FOR WHAT I CONSIDER THE BEST INTEREST OF THE PEOPLE. WHILE FEDERAL TAXES HAVE BEEN REDUCED, STATE AND OTHER GOVERNMENTAL TAXES HAVE BEEN STEADILY INCREASING. FEDERAL AID TO STATES HAS INFLUENCED THIS LATTER CONDITION. WE SHOULD KEEP IN MIND THAT THE MONEYS WHICH WE HAVE CONTRIBUTED TO THE STATES ARE TAKEN FROM THE PEOPLE, WHO IN TURN ALSO PAY THE MONEYS REQUIRED BY THE STATES TO FINANCE THEIR OWN PORTION OF THE COST. THE ENTIRE COST FALLS UPON THE PEOPLE.

IT IS TRUE THAT THE NECESSITY AND DEMAND FOR GOOD ROADS ARE CONSTANTLY INCREASING, BUT THEY SHOULD NOT BE CONSTRUCTED FASTER THAN THE TAXPAYERS CAN AFFORD TO PAY FOR THEM. THE AMOUNT THAT TAXPAYERS CAN AFFORD TO PAY CAN BEST BE DETERMINED BY THE CITIZENS OF EACH STATE.

"SINCE THE INAUGURATION OF THE PRESENT PLAN OF FEDERAL AID FOR ROAD CONSTRUCTION THE STATES HAVE CHANGED THEIR METHODS OF FINANCING THEIR PORTION OF THE EXPENSES. A LARGE MAJORITY OF THE STATES NOW EXACT A GASOLINE TAX, THEREBY DISTRIBUTING THE COST OF ROAD CONSTRUCTION AND MAINTENANCE TO THOSE WHO BENEFIT BY THEIR USE. THE CONSTRUCTION OF ROADS WITHIN A STATE IS PURELY A STATE MATTER AND ULTIMATELY SHOULD BE FINANCED BY STATE FUNDS. WITHOUT FURTHER LEGISLATIVE ENACTMENT THE STATES WOULD CARRY ON THEIR CONSTRUCTION TO AN AMOUNT WHICH THEY CAN AFFORD TO SPEND ON IT. BUT THE NATIONAL GOVERNMENT IS COMMITTED TO THE POLICY OF ASSISTING IN THE BUILDING OF GOOD ROADS. COMMITMENTS HAVE BEEN MADE BOTH BY THE STATES AND THE NATION IN THIS DIRECTION. IT IS NECESSARY TO CONTINUE THEM FOR THE PRESENT.

"I DO, HOWEVER, RECOMMEND FOR THE CONSIDERATION OF THE CONGRESS THAT FUTURE LEGISLATION RESTRICT THE GOVERNMENT'S PARTICIPATION IN STATE ROAD CONSTRUCTION TO PRIMARY OR INTERSTATE HIGHWAYS, LEAVING IT TO THE STATES TO FINANCE THEIR SECONDARY OR INTERCOUNTY HIGHWAYS. THIS WOULD OPERATE TO DIMINISH THE AMOUNT OF FEDERAL CONTRIBUTION."

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MR. MACDONALD, IN HIS DETROIT ADDRESS ON SOUTH AMERICAN RELATIONS, POINTED OUT THAT THE RAPID PROGRESS IN HIGHWAY DEVELOPMENT WHICH IS TAKING PLACE IN THIS COUNTRY, BECAME APPARENT WHEN CONTRASTED WITH THE CONDITIONS EXISTING IN THE SOUTHERN REPUBLICS. "THE FIRST PRINCIPLES OF OUR MODERN HIGHWAY LEGISLATION ARE NOW MORE THAN THIRTY YEARS OLD AND WE HAVE FORGOTTEN THE ACTUALITIES THEN. TO BE SUDDENLY CONFRONTED WITH THE IDENTICAL CONDITIONS THAT EXISTED IN OUR OWN STATES UPWARDS OF TWO DECADES SINCE PRODUCED A SHOCK OF REALIZATION OF THE TREMENDOUS INFLUENCE THAT IMPROVED HIGHWAYS HAVE HAD IN, AND THEIR QUALITIES INDISPENSABLE TO, THE DEVELOPMENT OF THIS COUNTRY. WE HAVE RETURNED WITH A FAITH IN THE ABSOLUTE NECESSITY AND THE ENDURING UTILITY OF ADEQUATE HIGHWAYS SUCH AS NO EXPERIENCE, NO KNOWLEDGE HAS YET PRODUCED. EVERY MEMBER OF THE DELEGATION RETURNED WITH A GREAT DESIRE TO DRIVE HOME TO THE HIGHWAY OFFICIALS OF THIS COUNTRY A GREATER CONVICTION, A DEEPER FAITH IN THE WORK THEY HAVE DONE AND ARE DOING. WITHOUT MODERN HIGHWAY TRANSPORT THIS COUNTRY WOULD BE SO FAR BEHIND ITS PRESENT DEVELOPMENT THAT NO DESCRIPTION IS ADEQUATE."

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS

TABLE F-1 (1924) — B.P.R. R.R.S.-A1

RURAL ROAD STATUS SURVEY, 1924

TOTAL INCOME AND FUNDS AVAILABLE FOR ROAD AND BRIDGE PURPOSES BY OR UNDER SUPERVISION OF THE STATE HIGHWAY DEPARTMENTS.

STATES	FISCAL YEAR ENDS	TOTAL FUNDS AVAILABLE (100%)	BALANCE AT BEGINNING OF YEAR	% OF TOTAL FUNDS	TOTAL INCOME DURING YEAR	% OF TOTAL FUNDS	STATE HIGHWAY BONDS, NOTES, ETC., SOLD	% OF TOTAL FUNDS	STATE TAX LEVIED FOR HIGHWAYS, ETC	% OF TOTAL FUNDS	APPROPRIATION BY STATE FOR HIGHWAYS	% OF TOTAL FUNDS	MISCELLANEOUS STATE INCOME FOR HIGHWAYS	% OF TOTAL FUNDS	MOTOR VEHICLE FEES, ETC. FOR USE ON ROADS	% OF TOTAL FUNDS	GASOLINE TAX APPLICABLE TO HIGHWAYS	% OF TOTAL FUNDS	TRANSFERRED FUNDS, FROM COUNTIES, ETC	% OF TOTAL FUNDS	FEDERAL AID POST ROAD FUNDS USED	% OF TOTAL FUNDS
ALABAMA	9/30	$ 9,784,968	$ 1,968,388	20.1	$ 7,816,580	79.9	$ 3,450,000	35.3	— —	—	— —	—	$ 135,790	1.4	$ 1,578,445	16.1	(1) — —	—	$ 111,508	1.2	$ 2,540,907	25.9
ARIZONA	12/31	3,561,152	936,599	26.3	2,624,553	73.7	— —	—	$ 646,865	18.2	$ 10,000	0.3	55,690	1.6	341,481	9.6	$ 360,630	10.1	241,702	6.8	968,125	27.1
ARKANSAS	12/31	12,081,813	839,625	6.9	11,241,988	93.1	— —	—	— —	—	— —	—	83,218	0.7	2,333,240	19.3	2,600,357	21.5	4,680,000	38.7	1,544,573	12.8
CALIFORNIA	12/31	27,208,650	4,416,334	16.3	22,792,316	83.7	5,681,500	20.8	3,800,434	13.9	225,000	0.8	403,596	1.5	2,762,029	10.2	6,063,073	22.3	300,000	1.1	3,556,685	13.1
COLORADO	11/30	7,556,374	1,976,624	26.2	5,579,750	73.8	1,500,000	19.9	860,973	11.4	72,300	0.9	69,389	0.9	(2) 574,568	7.8	844,248	11.2	76,046	1.0	1,562,226	20.7
CONNECTICUT	6/30	14,338,858	5,157,750	35.9	9,181,108	64.1	— —	—	— —	—	2,100,750	14.7	328,843	2.3	5,058,309	35.2	962,479	6.9	315,267	2.2	414,860	2.9
DELAWARE	12/31	4,402,531	480,901	10.9	3,921,630	89.1	1,038,778	23.6	— —	—	— —	—	99,065	2.3	604,709	13.7	302,143	6.8	1,516,866	34.5	360,069	8.2
FLORIDA	12/31	7,496,481	624,088	8.3	6,872,393	91.7	— —	—	424,393	5.7	75,905	1.0	87,708	1.1	1,758,699	23.5	2,575,181(3)	34.3	879,220	11.9	1,071,287	14.3
GEORGIA	12/31	8,104,530	1,119,644	13.8	6,984,986	86.2	— —	—	— —	—	— —	—	28,681	0.3	2,446,196	30.1	1,120,133	13.9	1,301,579	16.1	2,088,397	25.8
IDAHO	12/31	2,898,889	489,885	16.9	2,409,004	83.1	— —	—	303,447	10.4	— —	—	29,909	1.0	326,028	11.3	545,672	18.8	430,777	14.9	773,871	26.7
ILLINOIS	12/31	41,992,342	3,165,083	7.5	38,827,269	92.5	23,404,316	55.7	— —	—	— —	—	300,045	0.7	11,557,839	27.6	(4) —	—	— —	—	3,565,059	8.5
INDIANA	12/31	16,861,261	1,254,456	7.4	15,606,805	92.6	— —	—	759,730	4.5	— —	—	(5) 1,603,725	9.5	3,881,826	23.2	5,537,611(6)	32.8	118,973	0.7	3,704,940	21.9
IOWA	11/30	21,606,414	3,576,011	6.6	18,030,403	83.4	— —	—	— —	—	— —	—	— —	—	8,542,511	39.5	(4) —	—	7,674,135	35.5	1,813,757	8.4
KANSAS	12/31	6,638,899	— —	—	6,638,899	1.1	— —	—	— —	—	44,250	0.6	— —	—	(7) —	—	(4) —	—	3,384,825	51.0	3,209,824	48.4
KENTUCKY	12/31	10,345,932	229,529	2.2	10,116,403	97.8	— —	—	913,289	8.9	— —	—	106,619	1.0	3,103,388	29.9	1,738,500	16.8	2,045,636	19.8	2,208,911	21.4
LOUISIANA	12/31	9,461,550	145,185	1.5	9,316,365	98.5	— —	—	— —	—	— —	—	63,348	0.6	2,730,348	29.5	1,455,542	15.4	3,483,408	36.9	1,523,719	16.1
MAINE	12/31	8,168,383	1,243,994	15.2	6,924,389	84.8	396,750	12.2	672,768	8.2	300,000	3.7	469,149	5.7	2,140,592	26.3	542,414	6.7	1,057,784	12.9	744,332	9.1
MARYLAND	9/30	13,622,360	3,433,711	25.2	10,188,649	74.8	2,203,739	16.2	— —	—	3,399,646	25.0	164,158	1.2	1,449,427	10.6	750,325	5.6	1,585,409	11.7	635,945	4.7
MASSACHUSETTS	12/31	16,071,627	2,831,876	17.6	13,239,751	82.4	— —	—	— —	—	791,109	4.9	— —	—	9,113,253	56.8	(4) —	—	2,291,160	14.2	1,044,299	6.5
MICHIGAN	6/30	26,294,512	3,929,338	14.9	22,365,174	86.1	10,108,603	38.4	— —	—	797,000	3.0	206,727	0.8	5,783,312	22.0	(4) —	—	3,152,358	12.0	2,317,174	8.9
MINNESOTA	12/31	17,110,010	619,919	3.6	16,490,091	96.4	(8) —	—	— —	—	— —	—	69,614	0.4	8,559,630	50.0	(4) —	—	(8) 4,038,608	23.6	3,822,241	22.4
MISSISSIPPI	12/31	7,001,448	1,237,245	17.7	5,764,203	82.3	— —	—	— —	—	— —	—	122,875	1.8	617,036	8.9	623,392	8.9	2,146,713	30.4	2,254,487	32.3
MISSOURI	12/31	31,585,479	12,133,967	38.5	19,451,512	61.6	9,876,419	31.2	— —	—	— —	—	497,593	1.5	4,526,914	14.4	(4) —	—	456,031	1.5	4,095,555	12.9
MONTANA	12/31	2,030,644	235,410	11.6	1,795,234	88.4	— —	—	— —	—	— —	—	(9) 79,682	3.9	(10) —	—	97,522	4.7	461,405	22.9	1,156,625	66.9
NEBRASKA	12/31	9,418,646	1,648,323	7.5	7,770,323	82.5	— —	—	1,847,383	19.6	— —	—	— —	—	3,594,438	38.2	(4) —	—	566,004	5.9	1,762,498	18.8
NEVADA	11/30	3,343,481	83,088	2.5	3,260,393	97.5	— —	—	119,467	3.5	— —	—	288,954	8.6	96,877	2.9	60,000	1.8	548,505	16.5	2,146,590	64.2
NEW HAMPSHIRE	12/31	4,596,426	660,399	14.3	3,936,027	85.7	— —	—	— —	—	35,000	0.8	72,973	1.5	1,411,734	30.7	658,245	14.4	1,306,864	28.5	451,151	9.8
NEW JERSEY	12/31	28,326,381	9,070,003	32.1	19,256,378	67.9	5,000,000	17.7	4,375,126	15.4	— —	—	6,355	0.0	8,373,182	29.5	(4) —	—	397,521	1.4	1,106,194	3.9
NEW MEXICO	12/31	4,651,896	807,454	17.4	3,844,442	82.6	1,000,000	21.5	608,882	13.0	— —	—	57,131	1.2	248,855	5.4	182,857	3.9	— —	—	1,746,717	37.6
NEW YORK	12/31	65,569,455	30,805,526	44.3	38,763,929	55.7	4,655,754	6.7	— —	—	7,471,936	10.7	1,354,623	1.9	18,066,930	25.9	(4) —	—	4,063,170	5.9	3,251,516	4.7
NORTH CAROLINA	6/30	36,088,522	1,150,484	3.2	34,938,038	96.8	22,852,990	63.3	— —	—	— —	—	994,835	2.7	3,975,658	11.0	2,931,927	8.2	2,715,113	7.6	1,467,515	4.0
NORTH DAKOTA	6/30	2,173,235	223,966	10.3	1,955,269	89.7	— —	—	— —	—	142,118	6.5	98,567	4.5	309,272	14.2	(11) —	—	122,270	5.6	1,283,042	58.9
OHIO	12/31	34,172,150	14,287,480	41.8	19,884,670	58.2	— —	—	— —	—	338,214	0.9	— —	—	4,771,290	14.0			12,184,781	35.7	2,590,385	7.6
OKLAHOMA	12/31	10,838,570	3,136,146	28.9	7,702,424	71.1	— —	—	— —	—	— —	—	350,995	3.2	(12) —	—	1,616,200	14.9	3,187,944	29.5	2,547,285	23.5
OREGON (13)	11/30	12,284,874	3,295,526	26.8	8,989,349	3.2	— —	—	256,863	2.0	— —	—	250,446	2.0	3,419,809	27.8	2,358,277	19.2	1,586,176	13.0	1,118,778	9.2
PENNSYLVNIA	12/31	64,660,759	23,282,554	42.6	31,378,205	57.4	1,484,478	2.7	— —	—	— —	—	792,736	1.4	21,724,533	39.8	(14) —	—	3,737,885	6.8	3,638,573	6.7
RHODE ISLAND	11/30	3,665,745	498,264	13.6	3,167,481	86.4	400,000	10.9	485,409	13.3	478,210	13.0	35,185	0.9	1,536,156	41.9	(4) —	—	— —	—	232,521	6.4
SOUTH CAROLINA	12/31	5,907,264	52,981	0.9	5,854,283	99.1	— —	—	— —	—	209,254	3.5	122,441	2.0	921,586	15.7	728,890	12.4	2,698,495	45.6	1,173,617	19.9
SOUTH DAKOTA	6/30	6,268,914	1,453,874	23.2	4,815,040	76.8	— —	—	5,965	0.0	— —	—	(15) 376,264	6.1	1,567,859	25.0	899,314	14.8	— —	—	1,935,647	30.8
TENNESSEE	11/30	9,437,939	1,411,805	14.9	8,026,134	85.1	— —	—	61,907	0.6	— —	—	25,713	0.2	1,251,263	13.3	2,159,522(16)	22.9	1,418,438	15.0	3,116,291	33.1
TEXAS	12/31	26,119,753	844,049	3.2	25,275,704	96.8	— —	—	— —	—	— —	—	218,235	0.8	7,225,991	27.7	2,919,577	11.1	9,730,000	37.3	5,181,301	19.9
UTAH	12/31	3,673,579	— —	—	3,673,579	10.0	— —	—	— —	—	241,000	6.7	179,830	4.8	427,509	11.6	682,985	18.5	760,529	20.8	1,381,726	37.6
VERMONT	12/31	3,342,000	930,000	27.8	2,412,000	72.2	— —	—	142,000	4.3	87,034	2.6	175,000	5.2	1,252,101	37.6	230,865	6.9	— —	—	525,000	15.7
VIRGINIA	9/30	14,788,550	1,129,836	7.6	13,658,714	92.4	— —	—	1,725,587	11.7	3,357,098	11.7	333,661	2.3	3,755,238	25.4	2,156,384	14.6	42,440	0.3	2,288,306	15.4
WASHINGTON	12/31	7,671,089	— —	—	7,671,089	10.0	— —	—	113,316	1.4	— —	—	— —	—	3,709,960	48.5	2,635,410	34.4	— —	—	1,212,403	15.7
WEST VIRGINIA	12/31	19,353,843	6,134,231	31.7	13,219,612	68.3	8,000,000	41.3	— —	—	— —	—	199,475	1.0	3,035,438	15.7	1,244,074	6.5	21,447	0.1	719,178	3.7
WISCONSIN	12/31	10,751,389	3,643,102	33.8	7,108,887	66.2	— —	—	— —	—	8,500	0.0	391,694	3.7	3,843,199	35.8	(4) —	—	1,071,181	10.0	1,794,313	16.7
WYOMING	12/31	4,905,480	231,850	4.8	4,673,630	95.2	— —	—	160,074	3.2	— —	—	(17) 2,019,844	41.1	448,664	9.2	203,506	4.2	90,255	1.8	1,751,287	35.7
TOTALS		$ 712,223,747	$156,826,702 (18)	22.1	$555,397,045	77.9	$101,653,327	14.3	$18,282,878	2.6	$ 20,084,324	2.8	$ 13,349,610	1.9	$174,816,973	24.5	$47,810,615	6.7	$ 87,938,486	12.3	$ 91,400,832	12.8

REMARKS: ABOVE FUNDS, GENERALLY, COVER MONEY APPLIED TO FINANCING STATE ROADS; IN SOME STATES COUNTY ROAD WORK IS SUPERVISED BY STATE HIGHWAY DEPARTMENT.

NOTES: (1) GASOLINE TAX, ALL TO COUNTY FOR ROAD MAINTENANCE, $1.635,924. (2) USED TO RETIRE STATE HIGHWAY BOND ISSUES. (3) GASOLINE TAX INCLUDES $126,326 FROM INSPECTION FEES OF 1/8 CENT PER GALLON. (4) NO GASOLINE TAX IN 1924. (5) INCLUDES $1.119,542 FROM INHERITANCE TAXES. (6) INCLUDES OVER $2.000.000 OF 1923 COLLECTIONS. (7) FOR COUNTY ROADS. (8) RECEIPTS FROM COUNTY BOND SALES FOR TRUNK HIGHWAY FUND INCLUDED AMONG FUNDS TRANSFERRED FROM COUNTIES. (9) INCLUDES $42,120 FROM FEDERAL GOVERNMENT FOR OIL ROYALTIES. (10) MOTOR VEHICLE FUNDS TO COUNTIES. (11) ALL TAX COLLECTED TO STATE GENERAL FUND. (12) EXPENDED BY COUNTIES UNDER REGULATION OF STATE HIGHWAY COMMISSION. (13) EXCLUDES MARKET ROAD AND FOREST AID ROAD INCOME. (14) GASOLINE TAX RECEIPTS DISTRIBUTION 25% TO COUNTY ROADS AND 75 % TO STATE GENERAL FUND. (15) INCLUDES TRANSFER OF $150,000 FROM BOND INTEREST AND SINKING FUND. (16) RECEIPTS FOR 15 MONTHS, JULY 1, 1923 TO SEPTEMBER 30, 1924. (17) INCLUDES $1,526,699 FROM OIL ROYALTIES (FEDERAL MINERAL LEASING ACT). (18) IN A FEW STATES THE BALANCE IS APPROXIMATE.

GAA-12-7-1925

REPORT OF JOINT BOARD ON INTERSTATE HIGHWAYS

REPORTED BY E. W. JAMES, CHIEF OF DIVISION OF DESIGN.

THE REPORT OF THE JOINT BOARD ON INTERSTATE HIGHWAYS WHICH WAS APPROVED BY THE SECRETARY OF AGRICULTURE ON NOVEMBER 18, 1925 WAS ADOPTED BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS IN SESSION AT DETROIT, MICHIGAN, FROM NOVEMBER 18-20, 1925 AND RECOMMENDED TO BE SUBMITTED TO THE SEVERAL STATES FOR OFFICIAL ACCEPTANCE. SUCH REVISIONS AS THE STATE HIGHWAY DEPARTMENTS MAY HAVE TO SUGGEST, THEY HAVE BEEN REQUESTED TO FILE WITH MR. W. C. MARKHAM, EXECUTIVE SECRETARY OF THE ASSOCIATION FOR FURTHER CONSIDERATION. THE MOTION RECOMMENDING THE ACCEPTANCE OF THE BOARD'S REPORT GAVE THE EXECUTIVE COMMITTEE OF THE ASSOCIATION, FINAL AUTHORITY TO ADJUDICATE ALL MATTERS UNDER ADJUSTMENT IN CONNECTION WITH THE ROUTES SELECTED AND THE NUMBERING OF THE ROUTES.

THE EXECUTIVE COMMITTEE WILL HOLD A MEETING IN CHICAGO ABOUT JANUARY 10. AT THIS SESSION ALL REQUESTS FOR ADJUDICATION WILL COME BEFORE THEM FOR SETTLEMENT AND THE COMMITTEE HOPES THAT THE ENTIRE MATTER MAY BE FINALLY DISPOSED OF AND FOLLOWED BY THE ISSUE OF A MAP FOR GENERAL DISTRIBUTION.

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IN THE SOUTH AMERICAN ADDRESS AT DETROIT, MR. MACDONALD POINTED OUT THAT HIGHWAY SERVICE WAS THE BEGINNING AND THE END OF TRANSPORTATION. THE EFFECT OF THE LACK OF HIGHWAY DEVELOPMENT UPON SOCIAL CONDITIONS WAS ALSO MENTIONED. "THERE IS NO WAY TO ESCAPE THE PRINCIPLE THAT TRANSPORTATION REQUIRES A COMPLETED SERVICE. IN THE FINAL ANALYSIS PRODUCTION MUST START WITH THE HIGHWAYS AND DISTRIBUTION MUST END ON THEM. WATERWAYS AND RAILWAYS NOT ONLY CAN NOT PERFORM A COMPLETED TRANSPORT SERVICE FOR THE PUBLIC BUT MUST THEMSELVES BE FED BY HIGHWAY TRAFFIC. EVEN FOR THE INDUSTRIES WHERE THERE ARE DIRECT RAIL LOADINGS SUCH AS SHIPMENTS FROM MINES A LARGE AMOUNT OF INCIDENTAL HIGHWAY TRAFFIC IS NECESSARY."

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"AN INEVITABLE RESULT OF THE LACK OF HIGHWAY DEVELOPMENT IS THE BUILDING OF MAGNIFICENT CITIES SUCH AS SANTIAGO, BUENOS AIRES, SAO PAULO AND RIO DE JANEIRO AT THE EXPENSE OF THE COUNTRY DEVELOPMENT. IS IT TO BE WONDERED THAT A GULF IS PRODUCED BETWEEN THE WEALTHY CLASS AND THE LABORER THAT IN DEGREE IS SO WIDE AS TO BE ALMOST UNKNOWN IN OUR OWN COUNTRY. TRULY MANY ECONOMIC CONDITIONS ARE RESPONSIBLE, BUT ONE OF THE WAYS OUT, ONE OF THE SUREST WAYS TO LIFT THE CONDITION OF THOSE WHO TOIL, IS THROUGH THE INFLUENCES THAT ARE MADE POSSIBLE ONLY BY ADEQUIATE HIGHWAY IMPROVEMENT."

RECENT DEVELOPMENTS IN SNOW REMOVAL

AN ABSTRACT OF DATA COMPILED BY THE DIVISION OF CONSTRUCTION FROM REPORTS BY THE STATE HIGHWAY DEPARTMENTS AND FROM OTHER SOURCES.

DATA COMPILED DURING THE LAST THREE YEARS SHOW $760,000 WAS EXPENDED FOR SNOW REMOVAL DURING THE WINTER SEASON OF 1922 AND 1923; APPROXIMATELY $960,000 IN 1923 AND 1924; AND APPROXIMATELY $1,380,000 IN 1924 AND 1925. AS EACH YEAR SHOWS A MATERIAL INCREASE OVER THE LAST IN EXPENDITURES, IT SEEMS SAFE TO SAY THAT SNOW REMOVAL IS GAINING IN POPULARITY. THE SNOW REMOVAL PROGRAM FOR THIS WINTER (1926) EXCEEDS THAT FOR THE PAST WINTER BY AT LEAST 600 MILES.

THE METHODS EMPLOYED AND THE EQUIPMENT USED IN SNOW REMOVAL VARY IN DIFFERENT SECTIONS OF THE COUNTRY. THEY RANGE FROM THE USE OF THE PRIMITIVE WOOD SHOVEL TO THE MOST MODERN DEVELOPMENT OF THE LATERAL-TYPE ROTARY PLOW. THIS MACHINE WHEN OPERATED IN CONNECTION WITH A CATERPILLAR TRACTOR WILL REMOVE DRIFTS OF PRACTICALLY ANY DEPTH. FOR CONVENIENCE OF DISCUSSION THE TYPES OF EQUIPMENT NOW IN GENERAL USE MAY BE SEGREGATED INTO THE FOLLOWING CLASSES:

1. STRAIGHT-BLADE PLOWS ATTACHED TO TRUCKS.
2. V-SHAPED PLOWS ATTACHED TO TRUCKS
3. V-SHAPED PLOWS ATTACHED TO TRACTORS.
4. THE ROTARY TYPE OF SNOW AGITATOR.

THERE ARE OTHER TYPES OF EQUIPMENT IN USE SUCH AS THE STRAIGHT-BLADE PLOWS MOUNTED ON TRACTORS BUT THE CLASSES GIVEN ABOVE SEEM TO BE REPRESENTATIVE OF STANDARD EQUIPMENT AT THE PRESENT TIME.

DESCRIPTION OF EQUIPMENT

STRAIGHT-BLADE PLOWS ATTACHED TO TRUCKS ARE QUITE COMMON AND MAY BE USED ECONOMICALLY WHERE THE SNOWFALL IS LIGHT. THE BLADE IS MOUNTED USUALLY IN FRONT OF AND OCCASIONALLY BENEATH THE TRUCK. THE LATTER METHOD IS ADOPTED WHEN THE SNOW REMOVAL WORK IS UNDERTAKEN SHORTLY AFTER THE BEGINNING OF THE SNOWFALL AND IS CONTINUED THROUGHOUT THE STORM. THE ORDINARY OUTFIT WILL USUALLY REMOVE A DEPTH OF NEW SNOW TWICE AS GREAT AS IT CAN HANDLE WHEN THE SNOW HAS BECOME WET AND HEAVY. MANY OF THE STATE HIGHWAY DEPARTMENTS BELIEVE THE STRAIGHT-BLADE PLOW AND TRUCK IS A SERVICEABLE OUTFIT. ORDINARILY SINGLE TRUCKS ARE USED BUT WHEN THE SNOW IS DEEP, AND MORE POWERFUL EQUIPMENT IS NOT AVAILABLE, IT IS BELIEVED NECESSARY TO EMPLOY THE TRUCKS IN TAMDEM.

V-SHAPED PLOWS ATTACHED TO TRUCKS ARE USED TO A CONSIDERABLE EXTENT. A NUMBER OF STATE DEPARTMENTS THAT USE STRAIGHT-BLADE PLOWS ON TRUCKS AND V-SHAPED PLOWS ON TRACTORS, DO NOT BELIEVE IT ADVISABLE TO COMBINE V-SHAPED PLOWS WITH TRUCKS. THE OPINION SEEMS TO PREVAIL THAT THE V-SHAPED PLOW IS A HEAVIER TOOL ADAPTED TO DEEP SNOWFALLS AND THEREFORE

THE TRACTOR WITH ITS INCREASED POWER SHOULD BE USED TO SUPPLY THE MOTIVE FORCE. SOME OF THE STATES THAT USE THE V-SHAPED PLOW MOUNTED ON A TRUCK, REPORT THAT IT IS NO MORE EFFICIENT THAN THE STRAIGHT-BLADE PLOW MOUNTED ON A TRUCK FOR THE SAME DEPTH OF SNOWFALL, WHILE OTHERS FIND THAT COMPACTED SNOW AS DEEP AS 5 FEET MAY BE MOVED WITH THE V-SHAPED PLOW AND TRUCK.

V-SHAPED PLOWS ATTACHED TO TRACTORS ARE REPORTED AS HIGHLY EFFICIENT UNITS BY ALL LOCALITIES WHERE THERE IS CONSIDERABLE SNOWFALL AND IN WHICH EFFECTIVE SNOW-REMOVAL CREWS HAVE BEEN ORGANIZED. THIS UNIT IS RECOMMENDED BY NUMEROUS STATES FOR REMOVING SNOW FROM 12 INCHES DEEP OR LESS IF COMPACTED, TO AS MUCH AS 4 OR 5 FEET DEEP IF FAIRLY LOOSE. IT MUST BE REMEMBERED THAT THE V-SHAPED PLOW VARIES AS TO STRENGTH OF CONSTRUCTION AND LENGTH OF BLADE. THE MATERIAL VARIES FROM TIMBER REINFORCED WITH STEEL AS ASSEMBLED BY STATE AND COUNTY MAINTENANCE SHOPS AND HAULED BY TWO TO SIX HORSES TO MANUFACTURED STEEL PLOWS WITH A DEPTH OF BLADE RANGING FROM 8 INCHES TO 3 FEET. MANUFACTURED PLOWS ARE DESIGNED USUALLY FOR TRUCKS OR TRACTOR MOUNTS BUT SEEM TO BE MORE EFFICIENT ON THE LATTER. THIS CLASS OF EQUIPMENT IS UTILIZED TO ITS HIGHEST EFFICIENCY BY ORGANIZATIONS SUPPLIED WITH A NUMBER OF SUITABLE TRACTORS IN LOCALITIES WHERE THERE ARE FREQUENT SNOWFALLS OF ONE TO THREE FEET IN DEPTH.

THE ROTARY TYPE OF SNOW AGITATOR FOR ECONOMIC REASONS IS CONFINED TO HIGHLY DEVELOPED SNOW-REMOVAL ORGANIZATIONS AND TO THOSE LOCALITIES WHERE THE SNOWFALL IS EXCESSIVE. IT IS USED TO CLEAR THE SNOW FROM MOUNTAIN PASSES OR FOR CUTTING A PATH THROUGH LONG DEEP DRIFTS WHERE THE SNOW CANNOT BE PUSHED LATERALLY FROM THE ROADWAY AS IS NECESSARY WITH THE ORDINARY V-PLOW. THE STATES REPORTING THE USE OF THIS TYPE OF EQUIPMENT ARE WASHINGTON, NEBRASKA, WISCONSIN AND MICHIGAN. IN THE LAST MENTIONED STATE, 16 COUNTY AND 5 STATE-OWNED ROTARY PLOWS WERE IN USE DURING THE PAST WINTER. THE STATE HIGHWAY COMMISSIONER FOUND THIS TYPE, IN GENERAL, TO BE VERY SATISFACTORY.

CAPABILITY OF VARIOUS TYPES OF EQUIPMENT

WITH RESPECT TO THE VARIOUS DEPTHS OF SNOW FOR WHICH THE FOREGOING OUTFITS ARE SUITABLE, THE INFORMATION FURNISHED BY THE STATE HIGHWAY DEPARTMENTS IS SUMMARIZED AS FOLLOWS:

1. STRAIGHT-BLADE PLOWS ATTACHED TO TRUCKS ARE CAPABLE OF REMOVING SNOW FROM 6 INCHES IN DEPTH ON THE LEVEL TO BETWEEN 15 AND 18 INCHES IN DEPTH IN SHORT DRIFTS.

2. V-SHAPED PLOWS ATTACHED TO TRUCKS ARE CAPABLE OF REMOVING A DEPTH OF 15 INCHES OF LIGHT SNOW ON THE LEVEL OR 18 TO 30 INCH DEPTHS IN SHORT DRIFTS.

3. V-SHAPED PLOWS ATTACHED TO TRACTORS (ESPECIALLY THE CATERPILLAR TYPE) ARE CAPABLE OF REMOVING WET, HEAVY, COMPACTED SNOW FROM 12 INCHES TO 3 FEET DEEP ON THE LEVEL AND ARE ABLE TO BUCK DRIFTED SNOW THAT IS NOT TOO HEAVY UP TO 4 FEET OR MORE IN DEPTH.

4. THE ROTARY TYPE OF SNOW AGITATOR IS CAPABLE OF CLEARING AWAY SNOW FROM 2 TO 9 FEET IN DEPTH. THE DEPTH VARIES WITH THE CONDITION OF THE SNOW, THE TYPE OF EQUIPMENT AND THE TOPOGRAPHY OF THE COUNTRY.

COST OF SNOW REMOVAL

THE COST OF SNOW REMOVAL VARIES WITH THE LOCAL CONDITIONS, WIDTH OF CLEARED PATH, THE CHARACTER OF THE ORGANIZATION, AND THE TYPE OF EQUIPMENT. IT DIFFERS SO WIDELY IN VARIOUS LOCALITIES THAT THE DATA MAY BE VERY MISLEADING IF ACCEPTED AT THEIR FACE VALUE WITHOUT CAREFUL ANALYSIS AND COMPARISON WITH LIKE CONDITIONS ELSEWHERE. THE STATISTICS WHICH FOLLOW SERVE ONLY AS A GENERAL GUIDE TO THE COST OF THE WORK.

ONE MID-WESTERN STATE WITH CONSIDERABLE SNOW TO CONTEND WITH, REPORTS THAT 2,580 MILES OF ROAD WERE MAINTAINED DURING 1924 AND 1925 AT AN AVERAGE SEASONAL COST OF $22.52 PER MILE. THE AVERAGE WIDTH OF SNOW REMOVED WAS 24 FEET AND THE AVERAGE SEASONAL SNOWFALL WAS 46 INCHES. THE AVERAGE COST WAS CONSIDERED LOW WHEN COMPARED WITH $59.12 PER MILE FOR THE YEAR 1922. THE IMPROVEMENT WAS ATTRIBUTED TO THE GREATER NUMBER OF UNITS OF MODERN EQUIPMENT WHICH DID AWAY WITH EXPENSIVE HAND SHOVELING.

A NORTHWESTERN STATE WITH CONSIDERABLE SNOW CLEARED 406 MILES OF ROAD LAST WINTER (1924-1925) AT AN AVERAGE COST OF $44.80 PER MILE FOR A WIDTH OF 24 FEET.

ONE OF THE NORTH-CENTRAL STATES REPORTS 400 MILES CLEARED AT AN AVERAGE SEASONAL COST OF $44.96 PER MILE. IN THIS AREA THE SNOWFALL TOTALED FROM 53 TO 70 INCHES IN DEPTH AND THE WIDTH CLEARED WAS 24 FEET.

IN ORDER TO ILLUSTRATE THE VARIABLE COST OF SNOW REMOVAL THE FOLLOWING IS QUOTED FROM AN EASTERN STATE:

"THE NUMBER OF MILES IN THE 1924-25 PROGRAM WAS 816. THE TOTAL COST OF SNOW WORK WAS $223,117 AND THE AVERAGE COST WAS $273 PER MILE, BUT THE AVERAGE COST DOES NOT HAVE MUCH SIGNIFICANCE AS THE COST ON THE MINIMUM SECTION WAS $8.70 PER MILE AND IN THE MAXIMUM SECTION $2,033. SNOW IS REMOVED TO A UNIFORM WIDTH OF 20 FEET EXCEPT IN A VERY FEW INSTANCES WHERE IT IS REMOVED UP TO 30 FEET."

Prevention of Snow Drifts

It is highly desirable to erect suitable obstacles to prevent snow drifting and blocking the roads. Drifts are most common in excavations but they are also found on practically level roads across a prairie. The latter condition can be overcome by elevating the grade line of the road during construction and the former may often be eliminated by suitably constructed snow fences properly placed. Usually the cost of preventing snow drifts is extremely low as compared with the seasonal cost of snow removal over a period of years. Wherever possible drift prevention measures should be adopted. Detailed information concerning the methods used by some of the States will be sent to the District Engineers upon application to the Division of Construction.

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Effect of Size and Shape of Test Specimen on Compressive Strength of Concrete

Bulletin 16 of the Structural Materials Research Laboratory, Lewis Institute, Chicago contains data of interest to testing engineers. The booklet is entitled "Effect of Size and Shape of Test Specimen on Compressive Strength of Concrete" by Harrison F. Gonnerman. The report is reprinted from the 1925 Proceedings of the American Society for Testing Materials.

Tests were made on 1755 concrete specimens at ages of 7 days to 1 year. The relative strength of the different forms of specimen was compared with the strength of 6 by 12-inch cylinders from the same concrete.

The principal conclusions are:

1. The 6 by 12-inch cylinder generally used for compression tests of concrete, as recommended by the American Society for Testing Materials, is a satisfactory form of specimen.

2. For cylinders of length equal to 2 diameters, lower strengths were generally obtained with the larger cylinders.

3. Concrete cylinders having a ratio of length to diameter of from 0.5 to 4.0 gave the following average strength-ratios at 28 days:

Ratio of length to Diameter	0.5	1.0	1.25	1.5	2.0	3.0	4.0
Strength Ratio, percentage of strength of 6 by 12-inch cylinder	178	115	107	103	100	95	20

4. The 6 and 8-inch cubes tested at ages of 7 days to 1 year gave strengths averaging 18 and 13 per cent higher than 6 by 12-inch cylinders.

5. For all forms of specimens, the compressive strength increased with the age for moist curing.

United States, Department of Agriculture
Bureau of Public Roads

Table F-1 (1924)

B.P.R. R.R.S.-A1

Rural Road Status Survey, 1924

Total Income and Funds Available for Road and Bridge Purposes by or Under Supervision of the State Highway Departments.

States	Fiscal Year Ends	Total Funds Available (100%)	Balance at Beginning of Year	% of Total Funds	Total Income During Year	% of Total Funds	State Highway Bonds, Notes, Etc., Sold	% of Total Funds	State Tax Levied for Highways, Etc	% of Total Funds	Appropriation by State for Highways	% of Total Funds	Miscellaneous State Income for Highways	% of Total Funds	Motor Vehicle Fees, Etc. for Use on Roads	% of Total Funds	Gasoline Tax Applicable to Highways	% of Total Funds	Transferred Funds, from Counties, Etc	% of Total Funds	Federal Aid Post Road Funds Used	% of Total Funds
Alabama	9/30	$ 9,784,968	$ 1,968,388	20.1	$ 7,816,580	79.9	$ 3,450,000	35.3	— —	—	— —	—	$ 135,720	1.4	$ 1,578,445	16.1	(1) — —	—	$ 111,508	1.2	$ 2,540,907	25.9
Arizona	12/31	3,561,152	936,599	26.3	2,624,553	73.7	— —	—	$ 646,866	18.2	$ 10,000	0.3	55,690	1.6	341,481	9.6	$ 360,630	10.1	241,702	6.8	968,125	27.1
Arkansas	12/31	12,081,613	839,626	6.9	11,241,988	93.1	— —	—	— —	—	— —	—	83,218	0.7	2,333,240	19.3	2,600,957	21.6	4,680,000	38.7	1,544,573	12.8
California	12/31	27,208,650	4,416,334	16.3	22,792,316	83.7	5,681,500	20.8	3,800,434	13.9	225,000	0.8	403,595	1.5	2,762,029	10.2	6,063,073	22.3	300,000	1.1	3,556,685	13.1
Colorado	11/30	7,536,374	1,976,624	26.2	5,559,750	73.8	1,500,000	19.9	860,973	11.4	72,300	0.9	69,389	0.9	(2) 574,568	7.8	844,248	11.2	76,046	1.0	1,562,226	20.7
Connecticut	6/30	14,336,858	5,157,760	35.9	9,181,108	64.1	— —	—	— —	—	2,100,750	14.7	328,843	2.3	6,058,909	35.2	962,479	6.9	315,267	2.2	414,860	2.9
Delaware	12/31	4,402,531	480,901	10.9	3,921,630	89.1	1,038,778	23.6	— —	—	— —	—	99,065	2.3	604,709	13.7	302,143	6.9	1,516,866	34.5	360,069	8.2
Florida	12/31	7,496,481	624,088	8.3	6,872,393	91.7	— —	—	424,393	5.7	75,905	1.0	87,708	1.1	1,758,699	23.5	2,575,181 (3)	34.3	879,220	11.8	1,071,287	14.3
Georgia	12/31	8,104,630	1,119,644	13.8	6,984,986	86.2	— —	—	— —	—	— —	—	28,681	0.3	2,446,196	30.1	1,120,133	13.9	1,301,579	16.1	2,088,397	25.8
Idaho	12/31	2,898,889	489,885	16.9	2,409,004	83.1	— —	—	303,447	10.4	— —	—	29,209	1.0	326,028	11.3	545,672	18.8	430,777	14.9	773,871	26.7
Illinois	12/31	41,992,342	3,166,083	7.5	38,827,259	92.5	23,404,316	55.7	— —	—	— —	—	300,045	0.7	11,657,839	27.6	(4) —	—	— —	—	3,565,059	8.5
Indiana	12/31	16,861,261	1,254,456	7.4	15,606,806	92.6	— —	—	759,730	4.5	— —	—	(5) 1,603,725	9.5	3,881,826	23.2	5,537,611 (6)	32.8	118,973	0.7	3,704,940	21.9
Iowa	11/30	21,606,414	3,576,011	6.6	18,030,403	83.4	— —	—	— —	—	— —	—	— —	—	8,542,511	39.5	(4) —	—	7,674,135	35.5	1,813,757	8.4
Kansas	12/31	6,638,899	— —	—	6,638,899	1.1	— —	—	— —	—	44,250	0.6	— —	—	(7) —	—	(4) —	—	3,384,825	51.0	3,209,824	48.4
Kentucky	12/31	10,345,932	229,529	2.2	10,116,403	97.8	— —	—	913,289	8.9	— —	—	106,619	1.0	3,103,388	29.9	1,738,500	16.8	2,045,636	19.8	2,208,911	21.4
Louisiana	12/31	9,461,550	145,185	1.5	9,316,366	98.5	— —	—	— —	—	— —	—	63,348	0.6	2,730,348	29.5	1,455,542	15.4	3,483,408	36.9	1,523,719	16.1
Maine	12/31	8,168,383	1,243,994	16.2	6,924,389	84.8	996,750	12.2	672,768	8.2	300,000	3.7	469,149	5.7	2,140,592	26.3	542,414	6.7	1,057,784	12.9	744,932	9.1
Maryland	9/30	13,622,360	3,433,711	25.2	10,188,649	74.8	2,203,739	16.2	— —	—	3,399,646	26.0	164,158	1.2	1,449,427	10.6	750,325	5.6	1,585,409	11.7	635,945	4.7
Massachusetts	12/31	16,071,627	2,831,876	17.6	13,239,751	82.4	— —	—	— —	—	791,109	4.9	— —		9,113,253	56.8	(4) —	—	2,291,160	14.2	1,044,229	6.5
Michigan	6/30	26,294,512	3,929,338	14.9	22,365,174	85.1	10,108,603	38.4	— —	—	797,000	3.0	206,727	0.8	5,783,312	22.0	(4) —	—	3,152,358	12.0	2,317,174	8.9
Minnesota	12/31	17,110,010	619,919	3.6	16,490,091	96.4	(8) —	—	— —	—	— —	—	69,614	0.4	8,559,630	50.0	(4) —	—	(8) 4,038,608	23.6	3,822,241	22.4
Mississippi	12/31	7,001,448	1,237,245	17.7	5,764,203	82.3	— —	—	— —	—	— —	—	122,875	1.8	617,036	8.9	623,092	8.9	2,146,713	30.4	2,254,487	32.3
Missouri	12/31	31,585,479	12,133,967	38.5	19,461,512	61.6	9,876,419	31.2	— —	—	— —	—	497,593	1.5	4,526,914	14.4	(4) —	—	456,031	1.5	4,095,555	12.9
Montana	12/31	2,030,644	235,410	11.6	1,795,234	88.4	— —	—	— —	—	— —	—	(9) 79,682	3.9	(10) —	—	97,522	4.7	461,405	22.9	1,156,625	56.9
Nebraska	12/31	9,418,646	1,648,323	7.5	7,770,323	82.5	— —	—	1,847,383	19.6	— —	—	— —	—	3,594,438	38.2	(4) —	—	566,004	5.9	1,762,498	18.8
Nevada	11/30	3,343,481	83,088	2.5	3,260,393	97.6	— —	—	119,467	3.5	— —	—	288,954	8.6	96,877	2.9	60,000	1.8	548,505	16.5	2,146,590	64.2
New Hampshire	12/31	4,596,426	660,399	14.3	3,936,027	85.7	— —	—	— —	—	35,000	0.8	72,973	1.5	1,411,794	30.7	658,245	14.4	1,306,864	28.5	451,151	9.8
New Jersey	12/31	28,326,381	9,070,003	32.1	19,258,378	67.9	5,000,000	17.7	4,375,126	15.4	— —	—	6,355	0.0	8,373,182	29.5	(4) —	—	397,521	1.4	1,106,194	3.9
New Mexico	12/31	4,651,896	807,454	17.4	3,844,442	82.6	1,000,000	21.6	608,882	13.0	— —	—	57,131	1.2	248,855	5.4	182,857	3.9	— —	—	1,746,717	37.6
New York	12/31	69,569,456	30,805,626	44.3	38,763,929	55.7	4,655,754	6.7	— —	—	7,371,936	10.7	1,354,623	1.9	18,066,930	25.9	(4) —	—	4,063,170	5.9	3,251,516	4.7
North Carolina	6/30	36,088,522	1,150,484	3.2	34,938,038	96.8	22,852,990	63.3	— —	—	— —	—	994,835	2.7	3,975,658	11.0	2,931,927	8.2	2,715,113	7.6	1,467,516	4.0
North Dakota	6/30	2,179,235	223,966	10.3	1,966,269	89.7	— —	—	— —	—	142,118	6.5	98,567	4.5	309,272	14.2	(11) —	—	122,270	5.6	1,283,042	58.9
Ohio	12/31	34,172,150	14,287,480	41.8	19,884,670	58.2	— —	—	— —	—	338,214	0.9	— —	—	4,771,290	14.0			12,194,781	35.7	2,590,385	7.6
Oklahoma	12/31	10,838,570	3,136,146	28.9	7,702,424	71.1	— —	—	— —	—	— —	—	350,995	3.2	(12) —	—	1,616,200	14.9	3,187,944	29.5	2,547,285	23.5
Oregon (13)	11/30	12,284,874	3,296,625	26.8	8,989,349	3.2	— —	—	255,863	2.0	— —	—	250,446	2.0	3,419,809	27.8	2,358,277	19.2	1,586,176	13.0	1,118,778	9.2
Pennsylvania	12/31	54,660,759	23,282,564	42.6	31,378,205	57.4	1,484,478	2.7	— —	—	— —	—	792,736	1.4	21,724,533	39.8	(14) —	—	3,737,885	6.8	3,638,573	6.7
Rhode Island	11/30	3,665,745	498,264	13.6	3,167,481	86.4	400,000	10.9	485,409	13.3	478,210	13.0	35,185	0.9	1,536,156	41.9	(4) —	—	— —	—	232,521	6.4
South Carolina	12/31	5,907,264	52,981	0.9	5,854,283	99.1	— —	—	— —	—	209,254	3.5	122,441	2.0	921,586	15.7	728,890	12.4	2,698,495	45.6	1,173,617	19.9
South Dakota	6/30	6,268,914	1,463,874	23.2	4,815,040	76.8	— —	—	5,965	0.0	— —	—	(15) 376,264	6.1	1,567,850	25.2	999,314	14.8	— —	—	1,935,647	30.8
Tennessee	11/30	9,437,939	1,411,806	14.9	8,026,134	85.1	— —	—	61,907	0.6	— —	—	26,713	0.2	1,251,263	13.3	2,152,522 (16)	22.9	1,418,438	15.0	3,116,291	33.1
Texas	12/31	26,119,753	844,049	3.2	25,275,704	96.8	— —	—	— —	—	— —	—	218,235	0.8	7,226,991	27.7	2,919,577	11.1	9,730,000	37.3	5,181,901	19.9
Utah	12/31	3,673,579	— —	—	3,673,579	10.0	— —	—	— —	—	241,000	6.7	179,830	4.8	427,509	11.6	682,985	18.5	760,529	20.8	1,381,726	37.6
Vermont	12/31	3,342,000	930,000	27.8	2,412,000	72.2	— —	—	142,000	4.3	87,034	2.6	175,000	5.2	1,252,101	37.5	230,865	6.9	— —	—	525,000	15.7
Virginia	9/30	14,788,550	1,129,836	7.6	13,658,714	92.4	— —	—	1,725,587	11.7	3,357,098	11.7	333,661	2.3	3,755,238	25.4	2,156,384	14.6	42,440	0.3	2,288,306	15.4
Washington	12/31	7,671,089	— —	—	7,671,089	10.0	— —	—	113,316	1.4	— —	—	— —	—	3,709,960	48.5	2,635,410	34.4	— —	—	1,212,403	15.7
West Virginia	12/31	19,363,843	6,134,231	31.7	13,219,612	68.3	8,000,000	41.3	— —	—	— —	—	199,475	1.0	3,035,438	15.7	1,244,074	6.5	21,447	0.1	719,178	3.7
Wisconsin	12/31	10,751,989	3,643,102	33.8	7,108,887	66.2	— —	—	— —	—	8,500	0.0	391,694	3.7	3,843,139	35.8	(4) —	—	1,071,181	10.0	1,794,313	16.7
Wyoming	12/31	4,906,460	231,860	4.8	4,673,630	96.2	— —	—	160,074	3.2	— —	—	(17) 2,019,844	41.1	448,664	9.2	203,506	4.2	90,255	1.8	1,751,287	35.7
Totals		$ 712,223,747	$166,826,702 (18)	22.1	$555,397,045	77.9	$101,653,327	14.3	$18,282,878	2.6	$ 20,084,324	2.8	$ 13,349,610	1.9	$174,816,973	24.5	$47,810,615	6.7	$ 87,998,486	12.3	$ 91,400,832	12.8

Remarks: Above funds, generally, cover money applied to financing State roads; in some States county road work is supervised by State highway department.

Notes: (1) Gasoline tax, all to county for road maintenance, $1,635,924. (2) Used to retire State highway bond issues. (3) Gasoline tax includes $126,326 from inspection fees of 1/8 cent per gallon. (4) No gasoline tax in 1924. (5) Includes $1,119,542 from inheritance taxes. (6) Includes over $2,000,000 of 1923 collections. (7) For county roads. (8) Receipts from county bond sales for trunk highway fund included among funds transferred from counties. (9) Includes $42,120 from Federal Government for oil royalties. (10) Motor vehicle funds to counties. (11) All tax collected to State General Fund. (12) Expended by counties under regulation of State highway commission. (13) Excludes market road and forest aid road income. (14) Gasoline tax receipts distribution 26% to county roads and 75 % to State General Fund. (16) Includes transfer of $150,000 from bond interest and sinking fund. (16) Receipts for 15 months, July 1, 1923 to September 30, 1924. (17) Includes $1,526,699 from oil royalties (Federal Mineral Leasing Act). (18) In a few States the balance is approximate.

WAA-12-7-1925

TABLE F-2 (1924)

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS

R.P.R.R.R.S.S.-A-1

RURAL ROAD STATUS SURVEY, 1924
TOTAL DISBURSEMENTS FOR ROAD AND BRIDGE PURPOSES
BY OR UNDER SUPERVISION OF STATE HIGHWAY DEPARTMENTS

STATES	FISCAL YEAR ENDS	TOTAL DISBURSEMENTS DURING YEAR (100%)	CONSTRUCTION ON ROADS AND BRIDGES	% OF TOTAL DISBM'TS	MAINTENANCE ON ROADS AND BRIDGES	% OF TOTAL DISBM'TS	ADMINISTRATION AND ENGINEERING	% OF TOTAL DISBM'TS	BONDS, NOTES ETC. PAYMENTS ON PRINCIPAL (1)	% OF TOTAL DISBM'TS	BONDS, NOTES ETC. PAYMENTS ON INTEREST	% OF TOTAL DISBM'TS	EQUIPMENT, MACHINERY AND MATERIAL (2)	% OF TOTAL DISBM'TS	A-COUNTY FUNDS B-RIGHT-OF-WAY C-TRAFFIC, ETC (3)	% OF TOTAL DISBM'TS	MISCELLANEOUS EXPENSES	% OF TOTAL DISBM'TS	UNEXPENDED BALANCE AT THE END OF YEAR	STATES
ALABAMA	9/30	$ 7,779,311	$ 6,351,998	81.7	$ 264,622	3.6	$ 261,330	3.3	$ 427,769	5.5	$ 403,057	5.1	$ 70,535	0.9	— —	—	— —	—	$ 2,005,657	ALABAMA
ARIZONA	12/31	3,070,998	2,245,141	73.1	442,610	14.4	383,247	12.5	— —	—	— —	—	— —	—	— —	—	— —	—	490,154	ARIZONA
ARKANSAS	12/31	11,214,248	7,368,608	65.9	1,276,230	11.4	262,500	2.3	— —	—	— —	—	308,010	2.7	(A) $1,999,900	17.8	— —	—	867,565	ARKANSAS
CALIFORNIA	12/31	21,509,288	12,071,044	56.1	3,252,652	15.1	1,759,598	8.2	775,000	3.7	3,025,434	14.0	625,560	2.9	— —		— —	—	5,699,362	CALIFORNIA
COLORADO	11/30	6,490,567	4,589,396	70.7	804,727	12.4	163,481	2.3	500,000	7.7	326,000	5.1	94,922	1.4	(C) 22,041	0.4	— —	—	1,045,807	COLORADO
CONNECTICUT	6/30	8,689,959	5,013,036	57.7	3,380,657	38.9	296,266	3.4	— —	—	— —	—	— —	—	— —	—	— —	—	5,648,899	CONNECTICUT
DELAWARE	12/31	3,658,216	2,863,165	78.3	94,663	2.6	123,289	3.4	192,000	5.3	317,700	8.7	7,898	0.0	(C) 59,501	1.7	— —	—	744,315	DELAWARE
FLORIDA	12/31	6,949,135	5,338,381	76.8	942,026	13.5	359,283	5.2	— —	—	— —	—	309,445	4.6	— —	—	— —	—	547,346	FLORIDA
GEORGIA	12/31	7,301,255	4,313,624	59.0	1,564,142	21.5	764,900	10.6	— —	—	— —	—	552,388	7.5	(A) 106,201	1.4	— —	—	803,375	GEORGIA
IDAHO	12/31	2,584,747	1,931,096	74.7	302,544	11.7	61,461	2.4	— —	—	162,358	6.3	127,288	4.9	— —	—	— —	—	314,142	IDAHO
ILLINOIS	12/31	40,851,149	33,442,772	81.8	2,044,961	5.0	2,368,148	5.8	— —	—	1,386,813	3.4	429,662	1.1	(A) 1,176,993	2.9	— —	—	1,141,193	ILLINOIS
INDIANA	12/31	14,919,566	6,709,745	44.9	3,913,961	26.3	497,917	3.4	— —	—	— —	—	3,239,756	21.7	(A) 559,187	3.7	— —	—	1,941,695	INDIANA
IOWA	11/30	17,910,634	9,706,575	54.2	2,722,077	15.2	746,168	4.2	(5) 3,391,000	18.9	(5) 597,503	3.4	117,400	0.6	(B) 629,911	3.5	— —	—	3,695,780	IOWA
KANSAS	12/31	6,638,899	6,254,649	94.2	(6) — —	—	384,250	6.9	— —	—	— —	—	— —	—	— —	—	— —	—	— —	KANSAS
KENTUCKY	12/31	15,469,977	10,447,875	67.5	3,971,571	25.7	256,339	1.7	— —	—	— —	—	414,925	2.7	(7) 377,420	2.4	$ 1,749	0.0	(8) (DEFICIT)	KENTUCKY
LOUISIANA	12/31	8,842,682	7,169,073	81.1	762,023	8.6	329,960	3.7	29,800	0.4	26,000	0.3	373,217	4.2	(C) 152,609	1.7	— —	—	618,968	LOUISIANA
MAINE	12/31	6,959,668	4,259,194	61.2	1,537,761	22.2	(9) 71,759	1.0	119,000	1.7	395,564	5.6	271,301	3.9	(C) 140,494	2.0	164,595	2.4	1,209,725	MAINE
MARYLAND	9/30	12,727,535	7,815,284	61.4	1,449,427	11.4	(10) — —	—	2,391,946	18.8	1,007,700	7.9	— —	—	— —	—	63,178	0.5	894,825	MARYLAND
MASSACHUSETTS	12/31	13,239,751	5,514,460	41.7	5,723,455	43.2	1,010,724	7.7	540,500	4.1	250,609	1.9	200,003	1.4	— —	—	— —	—	2,831,876	MASSACHUSETTS
MICHIGAN	6/30	24,269,601	16,878,177	69.5	2,621,550	10.8	333,695	1.4	1,526,034	6.3	1,999,580	8.3	855,680	3.5	(A) 55,885	0.2	— —	—	2,024,911	MICHIGAN
MINNESOTA	12/31	16,761,906	8,080,664	48.2	3,021,064	18.0	990,380	5.9	(11) 175,217	1.4	(11) 1,592,628	9.4	391,797	2.2	(12) 2,499,103	14.9	11,053	0.0	348,104	MINNESOTA
MISSISSIPPI	12/31	5,320,565	4,462,872	83.9	702,693	13.2	(13) 80,000	1.5	— —	—	— —	—	55,000	1.0	(A) 20,000	0.4	— —	—	1,680,883	MISSISSIPPI
MISSOURI	12/31	26,106,781	20,418,612	78.2	2,019,323	7.7	770,017	2.9	2,000,000	7.7	585,000	2.2	— —	—	— —	—	313,829	1.3	5,478,698	MISSOURI
MONTANA	12/31	1,788,362	1,451,517	81.2	134,802	7.5	193,034	10.8	— —	—	— —	—	9,009	0.5	— —	—	— —	—	242,282	MONTANA
NEBRASKA	12/31	6,804,402	3,052,541	44.9	1,246,306	18.3	284,337	4.2	— —	—	— —	—	— —	—	(A) 2,221,218	32.6	— —	—	2,614,244	NEBRASKA
NEVADA	11/30	3,174,385	2,544,510	80.1	122,789	3.9	326,542	10.3	— —	—	32,000	1.0	113,336	3.6	— —	—	35,208	1.1	169,096	NEVADA
NEW HAMPSHIRE	12/31	3,848,014	1,865,052	48.5	1,753,547	45.6	76,971	2.0	— —	—	3,938	0.1	148,506	3.8	— —	—	— —	—	748,412	NEW HAMPSHIRE
NEW JERSEY	12/31	21,487,690	13,742,768	63.9	1,587,205	7.4	1,268,407	5.9	891,349	4.1	— —	—	50,747	0.2	(14) 3,712,397	17.3	234,817	1.2	6,840,691	NEW JERSEY
NEW MEXICO	12/31	4,609,403	4,031,746	87.5	382,083	8.3	119,306	2.6	— —	—	34,820	0.7	23,940	0.5	— —	—	17,508	0.4	42,493	NEW MEXICO
NEW YORK	12/31	42,257,627	17,804,409	42.1	11,873,484	28.1	1,591,188	3.8	1,802,636	4.3	4,280,000	10.1	— —	—	(A) 4,905,910	11.6	— —	—	27,311,828	NEW YORK
NORTH CAROLINA	6/30	34,732,806	24,195,514	69.7	3,226,581	9.3	1,917,158	5.6	360,000	1.0	1,891,692	5.4	2,601,637	7.5	(A) 540,224	1.5	— —	—	1,355,716	NORTH CAROLINA
NORTH DAKOTA	6/30	1,844,276	1,445,724	78.4	89,316	4.8	307,650	16.7	— —	—	— —	—	— —	—	(A) 1,586	0.1	— —	—	334,959	NORTH DAKOTA
OHIO	12/31	27,079,560	19,399,434	71.7	6,760,846	25.0	914,293	3.3	— —	—	— —	—	— —	—	— —	—	4,987	0.0	7,092,590	OHIO
OKLAHOMA	12/31	6,637,866	5,874,648	88.5	91,300	1.3	568,985	8.6	— —	—	— —	—	102,932	1.6	— —	—	— —	—	4,200,705	OKLAHOMA
OREGON	11/30	(15) 9,360,380	5,287,116	56.5	1,647,981	17.7	218,746	2.3	334,500	3.6	1,824,340	19.5	19,849	0.2	(C) 27,848	0.2	— —	—	2,924,494	OREGON
PENNSYLVANIA	12/31	48,333,185	22,664,141	46.9	15,260,150	31.6	3,242,845	6.8	— —	—	— —	—	4,065,901	8.4	(16) 1,611,233	3.3	(17) 1,488,915	3.0	6,327,574	PENNSYLVANIA
RHODE ISLAND	11/30	2,769,649	1,750,440	63.2	472,060	17.0	143,644	5.2	38,680	1.4	96,020	3.5	234,471	8.5	— —	—	34,334	1.2	896,096	RHODE ISLAND
SOUTH CAROLINA	12/31	5,887,432	3,982,924	67.7	1,284,771	21.8	416,324	7.0	— —	—	— —	—	203,413	3.5	— —	—	— —	—	19,832	SOUTH CAROLINA
SOUTH DAKOTA	6/30	(18) 5,695,620	4,379,090	78.3	278,216	5.0	423,301	7.5	— —	—	— —	—	464,411	8.3	(C) 13,768	0.2	36,834	0.7	673,294	SOUTH DAKOTA
TENNESSEE	11/30	8,405,114	5,796,142	68.9	1,795,611	21.4	474,400	5.7	— —	—	— —	—	338,361	4.0	— —	—	— —	—	1,032,825	TENNESSEE
TEXAS	12/31	25,230,460	10,211,258	40.5	3,793,714	15.0	433,995	1.7	— —	—	— —	—	1,061,493	4.2	(A) 9,730,000	38.6	— —	—	889,293	TEXAS
UTAH	12/31	3,627,151	2,005,674	55.3	530,443	14.6	270,524	7.6	350,000	9.6	325,000	8.9	49,196	1.4	— —	—	96,314	2.6	46,428	UTAH
VERMONT	12/31	2,832,000	1,590,000	56.2	987,000	34.9	110,000	3.8	— —	—	— —	—	145,000	5.1	— —	—	— —	—	510,000	VERMONT
VIRGINIA	9/30	14,611,112	9,582,119	65.6	3,445,765	23.6	340,143	2.3	— —	—	— —	—	969,100	6.6	— —	—	273,985	1.9	177,438	VIRGINIA
WASHINGTON	12/31	(19) 7,671,089	5,323,005	69.4	1,735,986	22.7	515,469	6.7	— —	—	— —	—	— —	—	— —	—	96,629	1.2	— —	WASHINGTON
WEST VIRGINIA	12/31	14,124,144	11,002,593	77.9	464,501	3.3	465,139	3.3	1,100,000	7.8	775,268	5.5	(20) 217,063	1.5	(A) 93,798	0.7	5,782	0.0	5,229,639	WEST VIRGINIA
WISCONSIN	12/31	8,681,798	6,780,282	65.1	2,393,330	26.9	451,894	5.1	— —	—	— —	—	246,064	2.8	— —	—	10,258	0.1	1,870,191	WISCONSIN
WYOMING	12/31	4,805,355	3,071,970	63.9	635,141	13.2	197,823	4.1	450,000	9.4	159,625	3.4	283,360	5.9	(C) 1,800	0.0	5,636	0.1	100,125	WYOMING
TOTALS		$ 605,655,207	$ 381,080,058	62.9	$ 104,806,557	17.3	$ 27,536,829	4.6	$ 17,394,431	2.8	$ 21,500,649	3.6	$ 19,793,166	3.3	A- 28,669,628 B- 1,255,637 C- 732,662	4.7 0.2 0.1	$ 2,895,590	0.5	$106,568,540 (21)	TOTALS

REMARK: THE DISBURSEMENTS SHOWN ABOVE, IN GENERAL, COVER MONEY SPENT ON STATE ROADS; IN SOME STATER COUNTY ROAD WORK IS SURERVISED BY STATE HIGHWAY DERARTMENT

NOTES: (1) ON RETIREMENTS AND SINKING FUNDS. (2) INCLUDES REPAIRS, RENTALS, AND PURCHASES. (3) INCLUDES REIMBURSEMENTS TO COUNTIES, TOWNS, ETC., PURCHASES OF RIGHT-OF-WAY AND TRAFFIC CONTROL (POLICING AND SIGNS) (4) CONSISTS OF $500,000 TO COUNTIES AND $58,187 FOR PURCHASE OF RIGHT-OF-WAY (5) ON PRIMARY ROAD BONDS ISSUED BY COUNTIES. (6) MAINTENANCE OF ROADS BY COUNTIES TOTAL $2,998,069. (7) COUNTY TRANSFERS, $372,221, AND PURCHASE OF RIGHT-OFWAY $5,200. (8) OUTSTANDING WARRANTS ON ROAD FUND $11,072,321, BUT DEFICIT GIVEN AS $5,123,945. (9) ENGINEERING INCLUDED IN CONSTRUCTION AND MAINTENANCE. (10) INCLUDED IN CONSTRUCTION AND MAINTENANCE. (11) PAYMENT FROM HIGHWAY REIMBURSEMENT FUNDS ON COUNTY BOND OBLIGATIONS ASSUMED BY STATE. (12) INCLUDES $462,339 FOR PURCHASE OF RIGHT-OFWAY AND $2,036,763 FOR COUNTY REIMBURSEMENT. (13) ADMINISTRATION ONLY AS ENGINEERING IS INCLUDED WITH CONSTRUCTION AND MAINTENANCE. (14) INCLUDES $100,000 FOR PURCHASE OF RIGHT-OFWAY (TOLL-BRIDGE), $3,115,169 ON COUNTY ROADS AND $497,228 ON TOWN ROADS. (15) EXCLUDES EXPENDITURES ON MARKET ROADS AND FOREST AID ROADS. (16) INCLUDES $314,601 TRAFFIC CONTROL, AND $1,296,632 TRANSFER FOR TOWNSHIP REWARD. (17) INCLUDES $1,442,628 FOR EXPENSES MOTOR VEHICLE REGISTRATION. (18) STATE BRIDGE FUND RECEIPTS AND DISBURSEMENTS NOT INCLUDED. (19) FOREST AID ROAD EXPENDITURES OMITTED. (20) INCLUDED IN CONSTRUCTION AND MAINTENANCE. (21) DEFICIT IN KENTUCKY OF $5,123,945 ALLOWED FOR IN THIR TOTAL

L.A.A.-12-7-25

NO SHORTAGE OF FEDERAL-AID FUNDS IN TEXAS

In published accounts of the recent trial at Austin, Texas, a statement was attributed to the Federal-aid clerk of the State Highway Department to the effect that there was a shortage of Federal-aid funds amounting to approximately $250,000.

Although there is little likelihood that anyone familiar with Federal-aid procedure will be misled by the published statement, engineers of the Bureau will perhaps be glad to receive positive assurance from headquarters that no shortage of Federal-aid funds exists. The condition that is alleged to exist is that counties have not been reimbursed by the State for payments advanced by them on Federal-aid work. Although vouchers presented by the Highway Department have been paid promptly, the testimony was to the effect that the funds in the State Treasury were short by approximately $250,000 of the amount of the county claims.

The Bureau is not responsible to contractors or counties for the payment of estimates by the States; and we have, hitherto, felt no obligation to insure the promptness of such payments. It is desirable, however, that such payments shall be promptly made in order that contractors shall not be embarrassed and the prosecution of the work hampered or delayed.

As the contracts involved in the Texas litigation were for maintenance only the Bureau has not been concerned in that phase of the situation.

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Extract from Detroit address of the Chief of the Bureau on South American relations: "Eventually transportation will mean only a fully completed service. It will be so visualized. Time, distance and cost will be the totality for the completed service. When this meaning of transportation is accepted and no other, many of the problems now intricate will be simplified. Many changes will be made that will have a very great effect upon the elements of time and total cost. Distance has always had too great weight in the consideration of transportation. Time and total cost are the really important elements. The history of the pioneer is after all and more than anything else a record of transportation limitations and difficulties. It is true today that our conceptions of transportation are lagging behind the times. The addition of the motor vehicle, the airplane and other improved equipment and instruments, has made possible a perfecting of transportation as a completed service, yet we are regarding them too much as separate entities. We are reluctant to treat the whole problem and to fit the various means and available equipment together to produce the most efficient completed service."

U. S. DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS

TABLE M-4 (1924)

RURAL ROAD STATUS SURVEY, 1924

B.P.R. - R.R.S.S. - A-1

TOTAL MILES OF EXISTING ROADS IN STATE HIGHWAY SYSTEMS,
AT END OF REPORTED YEAR, 1924

States	Year Report Ends	Grand Total Mileage In Systems	Unimproved, and Earth Partially Graded	Earth, to Established Grade, & Drained	Total Miles of Road Surfaced	Sand-Clay	Gravel, Etc., Untreated	Waterbound Macadam, Untreated	Surface-Treated Macadam & Gravel	Bituminous Macadam, By Penetration	Sheet Asphalt	Bituminous Concrete	Cement Concrete	Block Pavements				States
														Brick	Asphalt	Wood	Stone	
Alabama	12/31	3,958.0	2,147.7	157.8	1,652.5	589.0	874.6	35.9	25.3	(1) 30.8	5.7	74.9	16.1	--	--	0.2	--	Alabama
Arizona	12/31	1,984.4	310.5	306.0	1,367.9	--	1,189.8	--	--	--	15.0	24.3	138.8	--	--	--	--	Arizona
Arkansas	12/31	6,718.0	2,248.0	1,606.0	2,864.0	--	2,065.0	183.0	48.0	144.0	32.0	261.0	131.0	--	--	--	--	Arkansas
California	12/31	6,400.0	2,618.8	(2) 550.0	3,231.2	--	(2) 750.0	39.4	--	378.6	--	332.9	1,730.3	--	--	--	--	California
Colorado	12/31	8,928.0	223.4	5,296.2	3,408.4	--	3,208.5	--	--	--	--	--	199.9	--	--	--	--	Colorado
Connecticut	6/30	1,821.7	--	153.9	1,667.8	--	75.1	--	1,030.5	193.4	--	125.2	241.9	1.7	--	--	--	Connecticut
Delaware	12/31	417.8	--	--	417.8	--	--	--	1.3	20.1	--	--	390.0	6.4	--	--	--	Delaware
Florida	12/31	3,508.5	1,409.3	44.7	2,054.5	385.0	23.0	142.3	604.4	175.0	192.0	25.8	112.0	337.0	58.0	--	--	Florida
Georgia	12/31	6,235.9	3,792.1	118.2	2,325.6	1,530.0	402.0	35.1	26.4	115.8	21.6	12.2	181.9	0.6	--	--	--	Georgia
Idaho	12/31	4,071.3	2,192.9	380.0	1,498.4	68.2	1,327.5	--	--	--	5.4	56.2	41.1	--	--	--	--	Idaho
Illinois	12/31	4,819.5	339.1	1,063.8	3,416.6	--	0.4	0.5	--	3.4	4.6	22.0	3,305.7	80.0	--	--	--	Illinois
Indiana	9/30	3,916.4	9.3	130.7	3,776.4	--	1,845.6	990.6	29.1	136.2	--	24.1	680.1	70.2	--	0.5	--	Indiana
Iowa	12/31	6,659.7	2,058.6	1,934.4	2,666.7	--	2,164.4	--	--	--	--	--	448.4	53.9	--	--	--	Iowa
Kansas	12/31	7,147.0	5,990.4	319.8	836.8	65.0	160.1	--	--	72.9	--	--	426.5	112.3	--	--	--	Kansas
Kentucky	12/31	8,000.0	5,315.3	435.7	2,249.0	--	545.1	481.2	875.0	(3) 217.1	--	13.8	111.6	5.2	--	--	--	Kentucky
Louisiana	12/31	7,000.0	3,598.8	--	3,401.2	--	3,256.6	--	87.1	20.2	--	12.4	9.9	15.0	--	--	--	Louisiana
Maine	12/31	1,455.5	271.0	--	1,184.5	7.3	643.5	--	304.5	176.1	--	--	53.1	--	--	--	--	Maine
Maryland	9/30	2,247.2	--	--	(4)2,247.2	--	(5) 383.1	--	1,004.2	--	56.0	28.2	768.0	7.7	--	--	--	Maryland
Massachusetts	11/30	1,515.5	--	12.8	1,502.7	2.7	--	--	(6) 533.7	640.3	--	177.6	145.7	0.8	--	0.1	1.8	Massachusetts
Michigan	12/31	(7)6,581.7	36.1	674.8	5,870.8	10.5	3,614.8	--	682.3	107.0	--	188.3	1,257.7	10.2	--	--	--	Michigan
Minnesota	11/1	6,982.4	183.2	1,328.3	5,470.9	191.1	4,691.1	14.8	--	10.6	--	66.2	473.9	10.7	--	12.5	--	Minnesota
Mississippi	12/31	5,398.9	2,679.3	346.0	2,373.6	2.5	2,079.3	10.7	49.4	4.7	6.7	13.8	187.3	19.2	--	--	--	Mississippi
Missouri	12/31	7,640.0	4,120.4	1,860.2	1,659.4	--	1,079.5	--	--	80.7	--	--	(8)499.2	--	--	--	--	Missouri
Montana	12/31	7,957.0	6,956.7	280.1	720.2	--	679.7	--	0.6	5.5	--	2.3	32.1	--	--	--	--	Montana
Nebraska	12/31	5,742.3	3,350.2	1,465.5	926.6	239.7	615.4	--	--	--	2.6	8.2	41.7	19.0	--	--	--	Nebraska
Nevada	12/31	2,704.3	1,931.6	182.2	590.5	--	509.6	--	(9) 10.2	24.0	--	1.6	45.1	--	--	--	--	Nevada
New Hampshire	12/31	(10)1,367.4	246.2	10.4	1,110.8	--	209.9	9.7	728.4	95.6	--	59.2	8.0	--	--	--	--	New Hampshire
New Jersey	12/31	(11)1,030.3	--	19.3	1,011.0	--	129.0	19.2	146.9	7.4	47.3	229.9	407.7	4.1	3.1	6.3	10.1	New Jersey
New Mexico	11/30	7,963.0	6,300.7	185.0	1,477.3	--	1,413.2	--	--	--	--	0.7	63.4	--	--	--	--	New Mexico
New York	12/31	11,260.0	1,973.5	6.7	9,279.8	--	119.4	--	2,399.1	4,080.6	--	198.6	2,189.9	264.5	23.4	0.6	3.7	New York
North Carolina	12/31	6,200.0	--	889.6	5,310.4	2,905.6	565.6	125.1	--	151.6	--	791.7	734.0	46.8	--	--	--	North Carolina
North Dakota	6/30	(12)6,174.0	4,057.2	1,544.0	572.8	--	568.0	--	--	--	--	--	4.8	--	--	--	--	North Dakota
Ohio	12/31	10,546.0	4,805.7	--	5,740.3	--	564.4	1,462.9	--	(13)1,122.2	39.9	193.1	1,113.5	1,244.3	--	--	--	Ohio
Oklahoma	12/31	5,589.0	4,173.5	47.0	1,368.5	--	885.5	--	--	--	--	80.0	383.0	20.0	--	--	--	Oklahoma
Oregon	12/31	4,464.0	1,319.0	318.0	2,827.0	--	1,949.0	--	--	--	--	684.0	194.0	--	--	--	--	Oregon
Pennsylvania (14)	12/31	10,768.0	--	3,913.6	6,854.4	--	592.7	--	2,681.1	332.2	206.1	283.5	2,373.3	371.3	6.1	3.4	4.7	Pennsylvania
Rhode Island	12/31	761.6	177.9	178.0	405.7	--	--	--	148.5	82.4	2.9	141.4	30.5	--	--	--	--	Rhode Island
South Carolina	12/31	4,740.0	1,616.6	33.5	3,089.9	2,637.8	186.9	14.8	13.5	16.8	65.3	41.7	113.1	--	--	--	--	South Carolina
South Dakota	12/31	(15)5,663.2	200.0	3,987.7	1,475.5	--	1,474.3	--	--	--	--	--	1.2	--	--	--	--	South Dakota
Tennessee	12/31	4,644.4	1,905.5	259.0	2,479.9	--	829.4	932.1	171.5	388.3	19.6	50.9	88.1	--	--	--	--	Tennessee
Texas	12/31	16,668.0	8,445.7	995.0	7,227.3	609.1	4,462.5	245.4	1,289.2	114.3	25.0	66.6	372.8	42.4	--	--	--	Texas
Utah	11/30	3,132.3	1,525.0	667.6	939.7	--	690.5	--	--	--	10.5	41.4	197.3	--	--	--	--	Utah
Vermont	12/31	4,453.0	1,584.6	--	2,868.4	--	2,728.8	9.0	75.8	22.9	--	--	31.9	--	--	--	--	Vermont
Virginia	9/30	4,621.6	1,335.8	847.7	2,438.1	(16)	750.5	--	923.4	388.9	10.7	7.6	356.1	0.9	--	--	--	Virginia
Washington	12/31	3,133.7	673.3	142.2	2,318.2	--	1,770.9	--	--	39.6	1.9	37.3	459.3	9.3	--	--	--	Washington
West Virginia	12/31	3,594.0	2,068.2	564.7	961.1	--	113.3	92.4	--	(17)287.3	0.7	57.3	281.6	128.5	--	--	--	West Virginia
Wisconsin	12/31	(18)10,000.0	--	1,500.0	8,500.0	800.0	5,500.0	500.0	--	--	--	--	(19)1,700.0	--	--	--	---	Wisconsin
Wyoming	12/31	(20)3,136.8	1,903.6	523.2	710.0	--	669.6	--	2.2	--	--	27.1	11.1	--	--	--	--	Wyoming
Totals		259,721.3	96,094.7	35,279.3	128,347.3	10,043.5	58,357.1	5,344.1	13,891.6	9,686.5	771.4	4,453.0	22,783.6	2,882.0	90.6	23.6	20.3	Totals

NOTES: (1) - Includes 2.4 miles of patent "Rawhide" road. (2) - Partly estimated. (3) - Includes Kentucky rock (asphalt) road. (4) - Includes 38.0 miles hard pavement in Baltimore.
(5) - Includes 73.6 miles of shell road. (6) - Includes 1[illegible].5 miles of oil treated sand road. (7) - State trunk roads only. (8) - Includes 111.4 miles of road with combined 9' concrete and 7' gravel.
(9) - Oil treated sand road. (10) - Excludes 60.2 miles of road built by compact with towns of over 2,500 population.
(11) - Includes 94.8 miles taken over from county system. (12) - System increased by 1,319 miles of unimproved (or partly graded) road from state roads.
(13) - Includes 113.4 miles of Kentucky rock asphalt. (14) - Includes state aid system. (15) - 121.4 miles added to system of which 18 miles were county graded roads and 51 miles county gravel roads.
(16) - Included with gravel. (17) - Includes 22.7 miles of Kentucky rock (asphalt) road.
(18) - Approximate data: 2,500 miles of county road added to system. (19) - Includes bituminous concrete. (20) - Decrease in mileage by revision of roads in system.

8-1-1925

Table M5 (1924)

United States Department of Agriculture
Bureau of Public Roads

B.P.R.-R.R.S.S.-A-1
A-1924-M-5

RURAL ROAD STATUS SURVEY 1924
TOTAL MILES OF EXISTING COUNTY AND LOCAL RURAL ROADS
(Not on State Highway System)
At end of Year 1924.

States 1/	Grand Total Mileage Rural Roads, other than State Hwy. System	Unimproved, and earth partially graded	Earth to Established Grade & Drained	Total Miles of Road Surfaced	Sand-Clay	Gravel, etc., Untreated	Waterbound Macadam, Untreated	Surface-Treated Macadam and Gravel	Bituminous Macadam, by Penetration	Sheet Asphalt	Bituminous Concrete	Portland Cement Concrete	Brick	(w) Wood, (a) Asphalt, (s) Stone, Block	Miscellaneous	States
Alabama	67,643.2	46,586.7	-	10,857.5	5,486.1	3,311.4	653.0	224.9	121.6	19.2	29.9	1.4	-	-	-	Alabama
Arizona	20,370.9	15,746.2	1,832.3	1,693.4	548.3	716.8	-	-	-	-	67.1	251.2	-	-	-	Arizona
Arkansas	68,147.0	63,972.5	1,200.0	2,974.5	150.2	2,434.9	162.2	28.4	102.7	9.4	35.9	50.8	-	-	-	Arkansas
California	69,218.0	27,499.0	29,688.0	12,031.0	-	6,123.0	955.0	585.0	992.0	-	755.0	1,729.0	-	-	900.0	California
Colorado	58,592.4	25,543.9	27,707.1	5,341.4	2/	6,341.4	-	-	-	-	-	-	-	-	-	Colorado
Connecticut	10,395.9	7,277.9	2,376.1	742.9	-	8.4	111.6	471.3	87.4	4.0	17.7	42.5	-	-	-	Connecticut
Delaware (1923)	3,993.0	1,923.6	1,790.0	279.5	-	50.0	30.0	152.2	19.6	-	20.5	5.8	0.5	-	-	Delaware
Florida	24,905.0	17,960.5	-	6,944.4	2,786.5	1,482.5	637.1	687.4	169.2	693.2	38.9	145.3	427.2	(a) 87.0	-	Florida
Georgia	92,128.7	49,186.6	26,080.6	15,851.5	12,598.4	3,161.8	184.5	114.3	231.9	33.7	70.0	477.0	-	-	-	Georgia
Idaho	30,745.0	9,025.0	12,250.0	9,470.0	-	9,015.0	326.0	-	-	-	60.0	-	-	-	70.0	Idaho
Illinois	91,508.5	80,098.3	554.0	10,755.2	-	5,782.5	2,622.5	138.0	64.4	28.4	34.0	925.3	152.0	(w) 8.0		Illinois
Indiana	75,617.3	40,506.0	-	35,112.3	-	23,615.5	11,038.0	208.9	260.1	-	147.9	690.8	161.1	-	-	Indiana
Iowa	97,954.5	95,075.1	827.6	2,050.8	-	2,068.8	-	-	-	+	-	2.0	-	-	-	Iowa
Kansas	121,978.0	121,405.0	-	573.0	--	270.0	240.0	53.0	-	-	-	-	-	-	-	Kansas
Kentucky	60,704.0	46,535.5	251.7	14,816.7	70.0	3,153.0	10,644.3	740.3	11.0	55.0	-	36.1	4.0	(w) 6.0	97.0	Kentucky
Louisiana	32,803.0	31,526.2	-	1,276.8	-	1,266.0	-	-	3.2	-	6.6	-	3.0	-	-	Louisiana
Maine	19,484.3	15,595.6	8.9	2,779.8	0.9	2,113.3	605.4	43.1	7.5	3.8	1.5	4.3	-	-	-	Maine
Maryland	12,639.0	8,722.0	1,807.0	2,110.0	414.0	785.0	189.0	415.0	70.0	-	-	48.0		-	189.0	Maryland
Massachusetts	17,682.9	11,776.4	-	6,807.5	-	3,126.5	96.2	1,486.6	917.5	-	140.6	41.0	-	-	-	Massachusetts
Michigan	70,701.4	54,715.0	860.0	16,125.4	67.5	12,593.2	1,254.0	353.1	94.0	2.0	91.7	435.4	3.6	-	231.9	Michigan
Minnesota	100,834.6	81,457.2	2,538.1	16,839.2	3,775.2	12,832.5	68.6	67.4	-	8.5	21.9	61.5	2.5			Minnesota
Mississippi	51,481.5	43,968.5	645.5	6,867.3	364.3	5,114.0	89.5	20.0	228.2	-	6.0	45.3	-	-	-	Mississippi
Missouri	104,460.1	96,384.8	1,200.0	7,875.3	1,756.3	4,497.5	1,213.8	65.0	79.2	1.0	5.6	265.9	10.0	-	-	Missouri
Montana	59,219.9	59,009.9	-	210.0	-	210.0	-	-	-	-	-	-	-	-	-	Montana
Nebraska (1923)	81,549.6	79,549.6	1,785.7	214.3	146.8	61.0	0.7	-	-	-	2.0	3.3	0.5	-	-	Nebraska
Nevada	20,074.5	18,247.0	1,513.0	314.5	-	314.0	0.5	-	-	-	-	-	-	-	-	Nevada
New Hampshire	11,720.6	11,505.0	-	115.6	-	113.0	-	-	2.5	-	-	-	-	(a) 3.2	-	New Hampshire
New Jersey	16,689.2	74.9	10,173.9	6,440.4	-	2,709.5	1,323.2	592.4	718.4	244.1	475.9	255.4	35.8	(s) 79.5	-	New Jersey
New Mexico	39,067.7	37,638.4	495.7	833.6	731.0	202.6	-	-	-	-	-	-	-	-	-	New Mexico
New York	70,513.0	54,912.8	440.7	15,269.6	-	5,110.4	3,484.4	3,637.4	2,408.5	15.5	17.3	519.9	55.0	-	-	New York
North Carolina (1921)	61,705.7	48,867.4	-	12,839.3	9,610.1	2,726.3	276.2	119.8	35.0	12.0	20.6	20.0	19.3	(s) 0.5	0.5	North Carolina
North Dakota	100,324.4	99,842.3	-	482.1	-	482.1	-	-	-	-	-	-	-	-	-	North Dakota
Ohio (1921)	73,986.1	45,861.8	283.8	27,840.5	501.0	13,184.1	11,650.9	951.8	516.6	4.6	25.2	314.8	276.9	-	414.7	Ohio
Oklahoma	128,673.0	124,801.8	3,571.7	299.5	-	-	28.7	257.8	-	-	-	2.0	-	-		Oklahoma
Oregon	45,306.0	30,945.0	7,068.0	7,293.0	-	5,837.0	-	-	-	-	235.5	90.5	-	-	3/ 130.0	Oregon
Pennsylvania (1921)	81,262.5	72,007.7	-	9,244.8	0.5	72.5	696.2	55.7	17.2	1.2	319.8	98.3	177.0	-	7,796.3	Pennsylvania
Rhode Island	1,558.0	1,313.2	-	244.8	-	60.5	47.8	49.5	78.5	5.0	0.5	-	-	(s) 3.0	-	Rhode Island
South Carolina	59,668.5	46,422.1	7,265.4	5,991.0	5,488.1	401.8	19.1	5.0	-	1.0	26.1	48.9	-	-	-	South Carolina
South Dakota	110,142.2	109,603.7	-	538.5	-	538.5	-	-	-	-	-	-	-	-		South Dakota
Tennessee	60,082.3	39,532.6	10,596.6	9,853.1	-	4,768.0	3,933.7	659.3	99.6	343.5	17.0	30.9		(w) 1.0		Tennessee
Texas	151,017.0	137,345.4	1,850.0	11,821.5	1,500.0	9,495.8	325.8	130.0	243.2	81.4	45.4	-	-	-	-	Texas
Utah (1921)	20,248.8	16,912.9	1,322.0	2,013.9	697.6	1,230.1	12.0	3.5	7.2	-	17.7	45.7	-	-	-	Utah
Vermont (1921)	10,408.0	8,241.0	654.0	1,613.0	-	1,613.0	-	-	-	-	-	-	-	-	-	Vermont
Virginia (1921)	55,250.7	50,227.2	100.0	4,923.5	2,528.8	993.7	762.4	419.7	129.2	-	-	89.7	-	-	-	Virginia
Washington	45,750.0	22,125.0	9,417.0	14,207.0	-	12,436.0	-	-	112.0	20.0	229.0	1,198.0	53.0	-	160.0	Washington
West Virginia (1921)	31,840.9	30,924.8	200.0	715.1	-	93.7	398.7	52.2	35.1	-	7.7	56.8	55.0	-	6.9	West Virginia
Wisconsin	58,964.2	20,455.3	32,570.7	16,837.2	3,315.8	11,415.8	889.7	-	-	-	-	315.8	-	-	-	Wisconsin
Wyoming	43,182.4	43,158.2	-	14.2		14.2	-	-	-	-	-	-	-	-	-	Wyoming
Totals	2,743,195.2	2,202,621.5	201,015.2	339,558.5	53,538.4	185,925.0	54,890.6	12,789.1	7,852.5	1,488.5	2,990.5	8,362.8	1,437.4	187.2	9,996.3	Totals

1/ States not reporting 1924 data are listed with brackets and years of latest information
2/ Sand-clay included with gravel.
3/ Wood plank road

L.A.A.
3-25-1925

MAINTENANCE OF FEDERAL-AID ROADS IN CITIES

A POSSIBLE SOLUTION TO THIS PROBLEM REPORTED BY
L. E. BOYKIN, SENIOR ADMINISTRATIVE OFFICER.

UNDER THE PROVISIONS OF THE FEDERAL-AID ROAD ACT, FEDERAL AID MAY BE EXPENDED IN IMPROVING THE EXTENSION OF A PROJECT WITHIN THE LIMITS OF A MUNICIPALITY UNDER CERTAIN FAMILIAR RESTRICTIONS AS TO THE AVERAGE DISTANCE BETWEEN HOUSES. IN SOME INSTANCES WHERE PORTIONS OF FEDERAL-AID PROJECTS HAVE BEEN IMPROVED WITHIN MUNICIPALITIES, DIFFICULTY HAS BEEN ENCOUNTERED IN SECURING THE MAINTENANCE OF SUCH SECTIONS. THE REASON GENERALLY GIVEN FOR THIS CONDITION IS THAT UNDER THE LAW OF THE STATE, THE HIGHWAY DEPARTMENT IS GIVEN NO POWER TO MAINTAIN A ROAD AFTER ITS IMPROVEMENT WITHIN A MUNICIPALITY, THE DUTY BEING PLACED BY STATE STATUTE UPON THE MUNICIPAL AUTHORITIES WHO NEGLECT OR REFUSE TO HAVE SUCH MAINTENANCE PERFORMED. DIFFICULTY HAS ALSO BEEN ENCOUNTERED IN SOME INSTANCES WHERE THE CORPORATE LIMITS OF MUNICIPALITIES HAVE BEEN EXTENDED SO AS TO TAKE IN SECTIONS OF IMPROVED FEDERAL-AID PROJECTS. IN THE CASE OF ONE STATE WHERE SUCH DIFFICULTIES HAVE BEEN ENCOUNTERED THE COUNTY COMMISSIONERS HAVE AUTHORITY UNDER THE STATUTE TO GO INTO MUNICIPALITIES AND MAINTAIN ROADS IF THEY SHOULD DEEM IT TO THE INTEREST OF THE COUNTY, BUT GENERALLY THEY REFUSE TO DO IT ON THE GROUND THAT MUNICIPALITIES SHOULD MAINTAIN THEIR OWN ROADS WITHIN THEIR LIMITS.

CASES OF THE KIND ABOVE MENTIONED WHICH HAVE ACTUALLY ARISEN, AND OTHERS OF WHICH WE HAVE HAD MORE OR LESS RUMOR, CLEARLY INDICATE THAT IN THE FUTURE WE MAY HAVE MORE DIFFICULTIES ALONG THIS LINE THAN WE HAVE HAD IN THE PAST AND SUGGEST THE NEED FOR APPROPRIATE STEPS TO PREVENT, SO FAR AS POSSIBLE, A RECURRENCE OF SIMILAR SITUATIONS IN CONNECTION WITH FUTURE IMPROVEMENTS. IT, THEREFORE, IS DEEMED DESIRABLE THAT IN ALL CASES WHERE A FEDERAL-AID PROJECT EXTENDS WITHIN THE LIMITS OF A MUNICIPALITY THERE SHALL BE OBTAINED BY THE STATE FROM THE PROPER AUTHORITIES OF SUCH MUNICIPALITY BEFORE THE PROJECT AGREEMENT IS ENTERED INTO FOR THE PORTIONS LOCATED THEREIN, A RESOLUTION, AGREEMENT, OR OTHER LEGALLY BINDING PLEDGE ON THE PART OF THE AUTHORITIES OF SUCH MUNICIPALITY; THAT IF THE STATE SHALL BE WITHOUT AUTHORITY TO MAINTAIN THE PORTION OF THE PROJECT WITHIN THE CITY LIMITS THE CITY ITSELF WILL MAINTAIN THE SAME, EITHER BY ITSELF OR IN COOPERATION WITH THE STATE, UP TO THE STANDARDS OF MAINTENANCE REQUIRED ON FEDERAL-AID PROJECTS; AND THAT IF THE CITY AUTHORITIES SHOULD FAIL TO MAINTAIN THE PROJECT AT ANY TIME IN A SATISFACTORY MANNER THE STATE HIGHWAY DEPARTMENT SHOULD HAVE THE RIGHT TO GO IN AND MAINTAIN SUCH PROJECT. WE THEN WOULD LOOK TO THE STATE FOR THE MAINTENANCE OF THE PROJECT AND THE PROJECT AGREEMENT WOULD PROVIDE IN ARTICLE VI FOR ITS MAINTENANCE BY THE STATE HIGHWAY DEPARTMENT AS THE FEDERAL HIGHWAY ACT REQUIRES, BUT THE RESOLUTION, AGREEMENT, OR OTHER EVIDENCE OF APPROPRIATE ACTION BY THE CITY AUTHORITIES, WOULD INSURE THE STATE HIGHWAY DEPARTMENT THAT PROPER MAINTENANCE OF THE PROJECT

WITHIN THE CITY LIMITS WOULD BE PROVIDED AND ON FAILURE THEREOF THE HIGHWAY DEPARTMENT ITSELF WOULD HAVE AUTHORITY TO ENTER THE MUNICIPALITY AND PROVIDE FOR SUCH MAINTENANCE. A COPY OF THE RESOLUTION, PLEDGE, OR AGREEMENT, AS THE CASE MAY BE, ON THE PART OF THE CITY AUTHORITIES SHOULD BE FURNISHED FOR THE FILES OF THE WASHINGTON OFFICE IN CONNECTION WITH EACH PROJECT ENTERING A MUNICIPALITY.

WHILE THE FOREGOING WILL ASSIST IN INSURING MAINTENANCE OF SECTIONS OF PROJECTS WITHIN MUNICIPALITIES OF MORE THAN 2500 POPULATION, IT IS NOT THE BEST SOLUTION OF THAT PROBLEM. THE BEST SOLUTION WOULD BE FOR THE STATE HIGHWAY DEPARTMENT TO BE AUTHORIZED BY STATE LAW TO MAINTAIN ALL SECTIONS OF ROAD IMPROVED WITH FEDERAL AID, INCLUDING SUCH SECTIONS AS MAY BE LOCATED WITHIN THE LIMITS OF MUNICIPALITIES OF MORE THAN 2500 POPULATION, AND PAY FOR SAME OUT OF THE STATE HIGHWAY FUNDS.

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EXTRACT FROM MR. MACDONALD'S DETROIT ADDRESS ON SOUTH AMERICAN RELATIONS: "THAT THE WORK NOW STARTED MAY GO FORWARD SUCCESSFULLY, WE OF THE UNITED STATES OF AMERICA MAY GIVE FREELY OF OUR EXPERIENCE IN THE DEVELOPMENT AND UTILIZATION OF HIGHWAYS. NOTHING CAN BE OF GREATER VALUE. PERHAPS THE OUTSTANDING DIFFERENCE IN ATTITUDE BETWEEN THE DELEGATES FROM THESE UNITED STATES AND THE OTHER DELEGATES WAS THE EXTENT AND CERTAINTY OF OUR FAITH IN HIGHWAY IMPROVEMENT AND ITS OBJECT - HIGHWAY TRANSPORTATION. THIS IS NOT BORN OF CONCEIT. IT IS OUR GOOD FORTUNE TO HAVE THE ACTUAL RESULTS ON A BIG SCALE AS THE MOST RELIABLE STANDARD OF MEASUREMENT POSSIBLE. THROUGH MANY CHANNELS THESE RESULTS AND THE ACTUAL EXPERIENCE MAY BE MADE AVAILABLE AND THE PROGRESS MADE IN COORDINATION OF HIGHWAY TRANSPORT WITH OTHER FORMS OF TRANSPORTATION AND THE RESULTS OF EXTENSIVE PHYSICAL AND ECONOMIC RESEARCH WITH THEIR PRINCIPLES DEVELOPED AND NEW PROCESSES OR METHODS DISCLOSED WILL BE OF GREAT AND WELCOME VALUE.

"THE UNITED STATES OFFERS A FIELD FOR STUDY TO ENGINEERS FROM THE OTHER COUNTRIES AS PRACTICALLY ALL THE CONDITIONS TO BE MET IN LATIN AMERICA HAVE THEIR COUNTERPART IN WORK UNDER WAY OR ACCOMPLISHED IN THE UNITED STATES. THE MOST HELPFUL COURSE TO THE EXTENT POSSIBLE WILL BE TO GIVE YOUNG ENGINEERS FROM LATIN AMERICA EMPLOYMENT ON ACTUAL ROAD WORK FOR THE PARTICULAR PURPOSE OF BECOMING THOROUGHLY FAMILIAR WITH THE OPERATION AND POSSIBILITIES OF MECHANICAL EQUIPMENT. THE EXPERIENCE OF MOST VALUE IS THE QUICK RESULTS TO BE PRODUCED THROUGH HEAVY AND CONSTANT MAINTENANCE, AND BETTERMENTS OVER LONG MILEAGE AND THE USE OF PROGRESSIVE TYPES OF NEW CONSTRUCTION."

GASOLINE TAX RATES BY STATES

CONTRIBUTED BY THE DIVISION OF CONTROL

THE FOLLOWING IS THE MOST RECENT COMPILATION OF GASOLINE TAX RATES MADE BY THE BUREAU FROM LAWS PASSED UP TO OCTOBER 1, 1925. THE DATA SHOW THE TAX RATE PER GALLON AND THE DATES THAT THESE LATEST RATES BECAME EFFECTIVE:

NO TAX (4 STATES)

ILLINOIS - - -
MASSACHUSETTS -
NEW JERSEY - - -
NEW YORK - - -

1 CENT TAX (4 STATES)

CONNECTICUT - AUGUST 13, 1924
NORTH DAKOTA - MARCH 6, 1919
RHODE ISLAND - APRIL 29, 1925
TEXAS - JUNE 15, 1923

2 CENT TAX (20 STATES AND DISTRICT OF COLUMBIA)

ALABAMA - MARCH 1, 1923
CALIFORNIA - SEPTEMBER 30, 1923
COLORADO - AUGUST 1, 1923
DELAWARE - JANUARY 1, 1924
DISTRICT OF COLUMBIA - MAY 23, 1924
IDAHO - APRIL 1, 1923
IOWA - APRIL 16, 1925
KANSAS - MAY 1, 1925
LOUISIANA - AUGUST 1, 1924
MARYLAND - JANUARY 1, 1924
MICHIGAN - FEBRUARY 1, 1925
MINNESOTA - MAY 1, 1925
MISSOURI - JANUARY 1, 1925
MONTANA - APRIL 1, 1923
NEBRASKA - APRIL 1, 1925
NEW HAMPSHIRE - JANUARY 1, 1924
OHIO - APRIL 18, 1925
PENNSYLVANIA - JULY 1, 1923
VERMONT - FEBRUARY 26, 1925
WISCONSIN - APRIL 1, 1925
WASHINGTON - JANUARY 1, 1924

2½ CENT TAX (1 STATE)

WYOMING - APRIL 1, 1925

3 CENT TAX (11 STATES)

ARIZONA - JUNE 9, 1923
INDIANA - APRIL 1, 1925
KENTUCKY - JUNE 19, 1924
MAINE - JULY 11, 1925
MISSISSIPPI - MAY 9, 1924
NEW MEXICO - MARCH 17, 1925
OKLAHOMA - MARCH 23, 1925
OREGON - MAY 24, 1923
SOUTH DAKOTA - MARCH 10, 1925
TENNESSEE - FEBRUARY 9, 1925
VIRGINIA - JUNE 27, 1923

3½ CENT TAX (3 STATES)

GEORGIA - AUGUST 26, 1925
UTAH - APRIL 1, 1925
WEST VIRGINIA - JULY 1, 1925

4 CENT TAX (4 STATES)

ARKANSAS - JANUARY 1, 1924
FLORIDA - JUNE 6, 1925
NORTH CAROLINA - FEBRUARY 21, 1925
NEVADA - JULY 1, 1925

5 CENT TAX (1 STATE)

SOUTH CAROLINA - MARCH 23, 1925

STANDARD FOREST ROAD BRIDGE PLANS

REPORTED BY THE BRIDGE SECTION OF THE DIVISION OF DESIGN

AT THE RECENT MEETING OF DISTRICT ENGINEERS AND DIVISION CHIEFS OF THE BUREAU, IT WAS DECIDED TO ADOPT AT THE EARLIEST OPPORTUNITY, STANDARD BRIDGE PLANS FOR USE ON FOREST ROADS. IN LINE WITH THIS DECISION, F. L. KLEIN, ASSOCIATE HIGHWAY BRIDGE ENGINEER FROM THE REGIONAL OFFICE, L. F. COPELAND, HIGHWAY BRIDGE ENGINEER FROM DISTRICT 3, AND C. T. NITTEBERG, ASSOCIATE HIGHWAY BRIDGE ENGINEER FROM DISTRICT 6, ARE NOW AT THE WASHINGTON OFFICE WORKING ON THESE PLANS.

FOR THE PRESENT IT IS PLANNED TO MAKE UP STANDARD PLANS FOR 100, 120, 150 AND 200-FOOT STEEL BRIDGES ONLY. IN THE COURSE OF TIME THESE WILL BE EXTENDED TO A COMPLETE SET OF STANDARDS WHICH WILL INCLUDE WOOD AND CONCRETE STRUCTURES AS WELL. THE ROADWAY WIDTH WILL BE UNIFORMLY 18 FEET AND THE BRIDGES WILL BE DESIGNED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES ADOPTED THIS YEAR BY THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. THE H-15 LOADING WILL BE USED IN COMPUTING THE STRESSES. BRIEFLY THIS LOADING CONSISTS OF ONE 15-TON TRUCK FOR BRIDGES OF ONE TRAFFIC LANE PRECEDED AND FOLLOWED BY 11½-TON TRUCKS ALL SPACED 44 FEET CENTER TO CENTER. THE 18-FOOT WIDTH OF ROADWAY WILL BE CONSIDERED AS TWO TRAFFIC LANES AND WILL BE DESIGNED FOR TWICE THE LOADING USED FOR ONE TRAFFIC LANE.

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IN HIS ADDRESS AT DETROIT ON SOUTH AMERICAN RELATIONS, MR. MACDONALD CALLED ATTENTION TO SOME OF THE THINGS WHICH SLOW UP THE PROGRAMS OF ENGINEERING CONFERENCES. "THE PROGRAM TOUCHED A WIDE RANGE OF SUBJECTS AND NECESSARILY MANY OF THE PAPERS COULD NOT BE A RECORD OF EXPERIENCE WITHIN THE COUNTRY OR OF THE PERSONAL EXPERIENCE OF THE AUTHORS. THERE WERE TOO EXTENSIVE COMPILATIONS FROM EXISTING LITERATURE ON THE VARIOUS SUBJECTS. ALSO THERE WAS MUCH MORE MATERIAL PRESENTED THAN COULD BE PROPERLY DIGESTED BY THE SEVERAL COMMITTEES WITHIN THE TIME ALLOWED. THE ORGANIZATION OF THE DETAILED WORK OF THE CONGRESS WAS EXCELLENT. MANY OF THE ARRANGEMENTS AND PLANS WERE MORE COMPLETE THAN IS ORDINARILY THE CUSTOM WITH US.

"CERTAINLY THE CRITICISM THAT SEEMS MOST IMPORTANT IS UNFORTUNATELY THE SAME ONE THAT MAY FAIRLY AND FREQUENTLY BE URGED OF CONFERENCES WHERE THE MEMBERSHIP IS LARGELY FROM THE ENGINEERING PROFESSION. THERE WAS TOO MUCH WEIGHT GIVEN AND CONSEQUENTLY TIME DEVOTED TO TECHNICAL DETAIL. THE BROAD PRINCIPLES OF HIGHWAY TRANSPORT ECONOMICS, ADMINISTRATION AND FINANCING WERE NOT ACCORDED THE RELATIVE WEIGHT AND TIME CONSISTENT WITH THEIR IMPORTANCE. THERE WAS TOO MUCH CONFUSION OF MATTERS OF GOOD OR RECOMMENDED ENGINEERING PRACTICE WITH THE FUNDAMENTAL PRINCIPLES UNDERLYING HIGHWAY TRANSPORT."

WILLITE PATENT HELD INVALID BY FEDERAL COURT

DIGESTED FROM "MUNICIPAL AND COUNTY ENGINEERING" FOR AUGUST 1925.

THE WILLITE PAVEMENT PATENT WAS HELD INVALID IN AN OPINION RENDERED BY JUDGE FARIS IN THE DISTRICT COURT OF THE UNITED STATES IN AND FOR THE EASTERN DIVISION OF THE EASTERN JUDICIAL DISTRICT OF MISSOURI, AT ST. LOUIS, MISSOURI ON JULY 3, 1925. THE CASE, NO. 6745, WAS BETWEEN THE PLAINTIFFS, WESTERN WILLITE COMPANY, MISSOURI WILLITE COMPANY, AMERICAN WILLITE COMPANY AND WESTERN WILLITE ROAD CONSTRUCTION COMPANY, AND DEFENDANTS, TRINIDAD ASPHALT MANUFACTURING COMPANY, SHELBY L. HEMAN, JOHN C. HEMAN AND THE CITY OF ST. LOUIS.

IN THE MEMORANDUM STATING THE ORAL OPINION OF THE COURT IT WAS SHOWN THAT THE CAUSE FOR ACTION WAS INJUNCTION AND ACCOUNTING FOR ALLEGED INFRINGEMENT OF CERTAIN PATENTS ISSUED TO HARRY P. WILLIS. THE PATENTS PLEADED BY THE PLAINTIFFS WERE NO. 1,190,615 ISSUED BY HARRY P. WILLIS ON JULY 11, 1916; WHO ASSIGNED THE SAME TO THE TERRITORIAL LICENSEE OF THE PLAINTIFFS; AND NO. 1,328,310 ISSUED TO HARRY P. WILLIS ON JANUARY 20, 1920 WHO LIKEWISE ASSIGNED THE SAME TO THE TERRITORIAL LICENSEE OF THE PLAINTIFFS. THERE WAS PLEADED ALSO AN ALLEGED INFRINGEMENT OF A TRADE-MARK, CONSISTING OF THE WORD "WILLITE" IN GOTHIC LETTERS.

THE FIRST TWO MENTIONED WERE MECHANICAL PATENTS WHEREBY A NEW MATERIAL WAS ALLEGED TO HAVE BEEN PRODUCED. WHILE NOT STRICTLY MECHANICAL PATENTS, THE JUDGE SO DESIGNATED THEM BECAUSE THEY WERE CLEARLY NOT PROCESS PATENTS.

IN THE OPINION OF THE COURT THERE WAS NOT SUFFICIENT EVIDENCE AS TO THE INFRINGEMENT OF THE TRADE-MARK, SO THE FINDING ON THIS PHASE OF THE CASE WAS FOR THE DEFENDANTS. THE COURT SUMMARIZED THE BALANCE OF ITS OPINION BY STATING, "THE WHOLE OF THE EVIDENCE, ON BOTH SIDES, HAD TO DO WITH THE QUESTION OF THE INFRINGEMENT OF PATENT NO. 1,190,615, ALL OF THE CLAIMS OF WHICH SEEM TO BE IN ISSUE HERE. SO, SINCE THE EVIDENCE ADDUCED, PRO AND CON, LOST SIGHT OF PATENT NO. 1,328,310, I AM OF THE OPINION THAT THE FINDING AS TO IT, ALSO, SHOULD BE FOR THE DEFENDANTS, IF, IN FACT, IT IS INVOLVED HERE, WHICH I AM UNABLE, AS SAID, TO DETERMINE."

THE DEFENSES WERE THE USUAL AND CONVENTIONAL ONES. (1) LACK OF VALIDITY (A) ON ACCOUNT OF ANTICIPATION BY THE PRIOR ART, AND (B) LACK OF UTILITY AND, THEREFORE, INVALID AND NOT PATENTABLE, BECAUSE NOT USEFUL; AND (2) LACK OF INFRINGEMENT.

UPON THE QUESTION OF VALIDITY ON THE POINT OF ANTICIPATION THE COURT BELIEVED THE CASE EXCEEDINGLY CLOSE AND DIFFICULT. CONTINUING THE COURT STATED: "REGARDLESS OF THE PLEADED AND PROVEN PRIOR ART, IT IS KNOWN OF ALL MEN (AND, THEREFORE, I MAY JUDICIALLY NOTICE IT) THAT

MINERAL ASPHALT, WHETHER EXISTING IN NATURE, AS IN THE CASE OF BERMUDA ASPHALT, OR TRINIDAD ASPHALT, OR AS A DERIVATIVE DISTILLATE OF PETROLEUM, HAS LONG BEEN USED AS A BINDER FOR PAVEMENTS. SO, ALSO, HAS A FINELY - DIVIDED FILLER LONG BEEN USED AS PART OF THE AGGREGATE IN THE MAKING OF PAVEMENTS. ALSO, THESE TWO COMPONENTS, WITH OTHERS, HAVE LONG BEEN USED IN THE PRESENCE OF HIGH TEMPERATURES."

"THE PRIOR PATENTS OFFERED SHOWED THE USE, ALSO, OF DIVERS METALLIC SALTS, SULPHIDES, OXIDES AND CARBONATES, INCLUDING SULPHATE OF IRON, AND SULPHATE OF COPPER, WHICH WILLIS USED IN THE PATENT UNDER CONTROVERSY."

THE COURT FURTHER STATED: "IN THE LIGHT OF THE VIEWS I HOLD UPON THE CASE, I THINK I NEED NOT PASS ON THE QUESTION OF UTILITY."

IN REGARD TO INFRINGEMENT THE COURT HELD: "SINCE THE PATENT IS NOT A PROCESS PATENT, BUT FALLS INTO THE CATEGORY OF A MECHANICAL PATENT, I AM OF THE VIEW THAT DEFENDANTS, IF THE PATENT IS VALID, INFRINGED AS TO THE PAVEMENT HAVING A SO-CALLED 'WILLITE' WEARING SURFACE, AND THAT I NEED NOT, FOR THE REASON JUST MENTIONED, CONSIDER THE PAVEMENT AS A WHOLE, AND SO I THINK I AM NOT COMPELLED TO FIND THAT DEFENDANTS INFRINGED AS TO THE WHOLE PAVEMENT LAID AND MADE BY THEM. IN FACT, IN VIEW OF THE PROVEN FACTS THAT DEFENDANT CITY SPECIFIED 'WILLITE' PAVEMENT, AND CONTRACTED WITH ITS CO-DEFENDANTS FOR 'WILLITE' PAVEMENT, AND THAT DEFENDANTS OTHER THAN THE CITY AGREED TO LAY 'WILLITE' PAVEMENT, IT CAN HARDLY BE DENIED THAT THERE WAS AN INFRINGEMENT IN THIS CASE; AT LEAST, SO FAR AS CONCERNS THE WEARING SURFACE."

THE COURT IN CLOSING SAID: "I CONCLUDE THAT THE FINDING SHOULD BE FOR DEFENDANTS, ON THE GROUND THAT PLAINTIFF'S PATENT NO. 1,190,615 IS INVALID FOR ANTICIPATION (AND FOR THE REASONS ALREADY GIVEN, AS TO THE OTHER PATENTS SET OUT IN THE BILL, IF THEY ARE NOW IN CONTROVERSY, WHICH I AM UNABLE TO DETERMINE), AND THAT THE PRELIMINARY INJUNCTION HERETOFORE ISSUED IN THIS CASE SHOULD BE DISSOLVED, AND THAT PLAINTIFFS' BILL SHOULD BE DISMISSED, WHICH IS ACCORDINGLY ORDERED, AND A DECREE MAY BE SUBMITTED ACCORDINGLY."

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EVERY INCORPORATED CITY IN NORTH CAROLINA CHARGES FROM ONE TO FIVE DOLLARS FOR AUTOMOBILE LICENSE FEES IN ADDITION TO THE REGULAR STATE FEES.

CERTAIN CITIES AND COUNTIES IN ALABAMA COLLECT A GASOLINE TAX IN ADDITION TO THE STATE GASOLINE TAX.

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PUBLIC ROADS

STATISTICAL DATA RELATING TO HIGHWAY FINANCES OF UNITED STATES

(COMPILED BY DIVISION OF CONTROL, DECEMBER 1, 1925)

		FISCAL YEAR ENDED JUNE 30	CALENDAR YEAR ENDED DEC. 31
(1) GRAND TOTAL DISBURSEMENTS,	1923	- - - - -	$ 998,052,000
ON RURAL ROADS AND BRIDGES,	1924	- - - - -	1,143,953,000
BY STATES, COUNTIES, TOWNS, ETC.	1925	- - - - -	*1,003,125,000
*(CONSERVATIVE ESTIMATE BY STATES)			
(2) TOTAL RURAL ROAD EXPENDITURES,	1923	- - - - -	447,362,358
BY STATE HIGHWAY DEPARTMENTS	1924	- - - - -	605,665,207
*(CONSERVATIVE ESTIMATE BY STATES)	1925	- - - - -	* 539,630,400
(3) TOTAL FEDERAL AID ROAD FUNDS,	1923	69,677,242	74,883,783
PAID TO STATES ON COMPLETED WORK	1924	79,217,398	96,148,474
*(ESTIMATE FROM 11 MONTHS)	1925	95,749,998	*90 TO 95 MILLION
(4) MOTOR VEHICLE FEES, ETC. (GROSS RECEIPTS)	1923	185,123,256	188,970,992
(FOR LICENSES, TAGS, ETC.)	1924	221,202,736	225,492,252
*(ESTIMATE FROM 6 MONTHS)	1925	252,265,089	* 256,000,000
(5) GASOLINE TAXES, (GROSS RECEIPTS)	1923	15,081,771	32,118,529
(ASSESSED ON GALLONS CONSUMED)	1924	55,879,765	79,987,142
*(ESTIMATE FROM 6 MONTHS)	1925	106,677,160	* 164,463,000
(6) U.S. INTERNAL REVENUE FROM MANUFACTURERS'	1923	144,290,490	155,796,944
EXCISE TAX ON AUTOMOBILES, ETC.	1924	158,014,709	139,201,755
*(ESTIMATE FROM 10 MONTHS)	1925	124,686,745	* 130,000,000
(7) U.S. INTERNAL REVENUE FROM SPECIAL TAX	1923	1,907,400	2,088,086
ON PASSENGER AUTOMOBILES FOR HIRE	1924	2,013,839	1,893,586
*(ESTIMATE FROM 10 MONTHS)	1925	1,865,075	* 1,872,000
(8) PROPERTY TAXES LEVIED ON MOTOR VEHICLES	1923	- - - - -	* 75,000,000
BY STATES AND MUNICIPALITIES	1924	- - - - -	* 105,000,000
*(1924 ESTIMATED BY NATIONAL AUTOMOBILE	1925	- - - - -	* 129,700,000
CHAMBER OF COMMERCE; OTHER FIGURES			
ESTIMATED FROM 1924 FIGURE)			

			NUMBER OF
(9) NUMBER OF MOTOR VEHICLES REGISTERED	1923	14,620,331	15,092,177
	1924	17,641,827	17,591,981
*(ESTIMATED FROM 6 MONTHS)	1925	19,756,813	* 20,050,000

JOHN R. CHAMBERLIN

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DIED DECEMBER 15, 1925

JOHN R. CHAMBERLIN, HIGHWAY BRIDGE ENGINEER OF DISTRICT 5 DIED ON DECEMBER 15, AFTER A BRIEF ILLNESS WITH PNEUMONIA. HE WAS BORN IN ROCHESTER, OHIO, ON MARCH 16, 1876, AND WAS REARED IN THE SAME PLACE. HIS COLLEGIATE TRAINING WAS OBTAINED AT HEIDELBERG COLLEGE, OHIO, WHERE HE SPENT TWO YEARS, AND AT OHIO STATE UNIVERSITY AT COLUMBUS, FROM WHICH HE WAS GRADUATED IN THREE YEARS WITH THE DEGREE OF CIVIL ENGINEER.

IN OCTOBER 1919 MR. CHAMBERLIN RECEIVED AN APPOINTMENT AS SENIOR HIGHWAY BRIDGE ENGINEER OF THIS BUREAU WITH HEADQUARTERS IN WASHINGTON, D.C., AND IN JUNE 1920, HE WAS TRANSFERRED TO DISTRICT 5 WITH HEADQUARTERS AT OMAHA, NEBRASKA.

IN 1924 HE WAS APPOINTED ON THE SPECIAL COMMITTEE ON CONCRETE AND REINFORCED ARCHES OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS. HIS PUBLISHED CONTRIBUTIONS TO THE ENGINEERING PROFESSION ARE AS FOLLOWS: SPECIFICATIONS FOR HIGHWAY STRUCTURES, COLLABORATION IN BULLETIN 28 AND LOAD DISTRIBUTION TESTS OF REINFORCED CONCRETE SLAB FLOORS. THESE CONTRIBUTIONS WERE ACCOMPLISHED IN CONNECTION WITH THE OHIO STATE HIGHWAY DEPARTMENT.

MR. CHAMBERLIN BECAME AN ASSOCIATE MEMBER OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS IN 1914. HE WAS ALSO A MEMBER OF THE OHIO ENGINEERING SOCIETY, COLUMBUS ENGINEERS' CLUB, AND THE OMAHA ENGINEERS' CLUB.

THE PROFESSION HAS LOST AN ABLE BRIDGE ENGINEER, THE COMMUNITY A WORTHY CITIZEN AND HIS FAMILY A BELOVED FATHER AND HUSBAND. HE IS SURVIVED BY A WIFE, ADA M., AND FIVE CHILDREN, VIRGINIA, VERA, JOSEPHINE, JOHN R. JR., AND JAMES; HIS MOTHER, MATILDA, AND BROTHER, DR. WADE K. CHAMBERLIN OF TIFFIN, OHIO.