

## Report on National Construction Program 1935-40

### I. Preface:

1. In the preparation of the proposed program a canvass was made of all feasible avenues of Federal expenditures along construction lines on a repayable basis which would furnish the maximum of employment and economic stimulation.

2. Where the program affects private initiative, the purpose has been to have the government proceed only so far as necessary to aid business recovery.

3. It is believed that the program is sound economically if emphasis is placed upon its continuing character for at least a 5-year period.

### II. Economic basis for program:

1. A government construction program involving the expenditure of 5 billion dollars per year would provide a volume of employment equal to that prevailing in the period 1925-29.

Basis of calculation: from 1925 to 1929 total dollar volume of annual construction ranged between 11 billion and 13 billion dollars. The price level now is 25 per cent lower than during that period. Therefore, it is estimated that construction amounting to  $7\frac{1}{2}$  to 8 billion dollars a year would be equivalent in employment, both direct and indirect, and in real income to the higher dollar volumes of construction in the 1925-29 period. Private construction at the present time is at the rate of  $2\frac{1}{2}$  to 3 billion dollars per year so that the addition of a government program of 5 billion dollars per year would bring the total construction volume up to the required figure of  $7\frac{1}{2}$  to 8 billion dollars.

2. Assumes that the government program would be so carried out that it would not further undermine the privately financed construction; also assumes that over a 5-year period private construction would greatly increase as a result of improving business under the stimulus of large government expenditures.

3. The decision may be made at a later stage as to the need for maintaining a 5 billion dollar year expenditure over the whole 5-year period.

4. A 5-billion dollar annual expenditure would provide direct employment for about 2 million men per month, and indirect employment of 2 million per month - in production, transportation, and merchandising of construction materials, making a total of 4 million.

To this figure of 4 million per month must also be added so-called secondary indirect employment which is variously estimated. The amount depends on the assumptions that are made as to the proportion of the expenditure that becomes income, and the proportion of the income that is spent and not saved by the various groups of recipients all along the line. The proportion which is spent will depend in part upon the total volume of construction including that privately financed and in part upon whether the total volume of construction is rising or falling.

The present Public Works Administration programs have been relatively ineffective for two reasons: (a) the amount was too small, and (b) the duration of expenditure was too short.

### III. Statistical summary:

The program provides for a total expenditure of \$21,146,000,000 over a period of 5 years. The following statistical summary shows a breakdown of this total by types of projects and also indicates the employment that may be expected from the operation of the program for each of the 5 years through 1940.

Proposed 5-Year Construction Program  
by Types of Projects in Millions of Dollars

	1936	1937	1938	1939	1940	Total
Non-Federal projects	2,000	1,500	1,500	1,500	1,000	7,500
Urban Housing	1,000	1,500	1,500	1,000	1,000	6,000
Rural Housing	300	500	500	400	300	2,000
Grade Crossing	300	300	300	200	100	1,200
Express Highway		300	300	300	300	1,200
Railroads	310	60	60	60	60	550
Rural Electrification	200	100	-	-	-	300
Federal Self-liquidating	240	120	115	85	85	645
Federal Projects	550	550	550	550	550	2,750
<b>Totals</b>	<b>4,900</b>	<b>4,930</b>	<b>4,825</b>	<b>4,095</b>	<b>3,395</b>	<b>21,145</b>

Summary of Expenditures and Employment

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$4,900,000,000	2,084,000	2,084,000	4,168,000
1937	4,930,000,000	2,054,000	2,054,000	4,108,000
1938	4,825,000,000	2,010,000	2,010,000	4,020,000
1939	4,095,000,000	1,707,000	1,707,000	3,414,000
1940	3,395,000,000	1,415,000	1,415,000	2,830,000
<b>Total</b>	<b>\$21,145,000,000</b>			



# Non-Federal Projects

## 1. Statistical summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$2,000,000,000	833,000	833,000	1,666,000
1937	1,500,000,000	625,000	625,000	1,250,000
1938	1,500,000,000	625,000	625,000	1,250,000
1939	1,500,000,000	625,000	625,000	1,250,000
1940	1,000,000,000	417,000	417,000	834,000
Total \$7,500,000,000				

2. Description: Construction enterprises by states, cities, and other local government for streets, sewers, water, buildings, bridges, flood control, and power.

3. Need: The present demand is indicated by the  $4\frac{1}{2}$  billion dollars of applications received by the Public Works Administration in the seven months immediately following its establishment, when the terms were only a 50 per cent grant with interest at 4 per cent on the balance. This was three times the annual expenditures in the prosperous years; also there are \$2,800,000,000 in applications, a large part of which could be favorably considered if more liberal terms were applied.

States, cities, and other local government spent approximately  $7\frac{1}{2}$  billion dollars from 1925 to 1929.

Under a liberalized financing plan of no interest or a 50 per cent grant, it is estimated that during the 5-year period, the  $7\frac{1}{2}$  billion dollars would be expended.

4. Time required to start program: There would be no delay in starting the program as applications could be received and handled promptly by existing state engineer offices.

5. Repayment: This is assured by the obligation of the public body obtaining the loan. (Reference is to repayment of 50% of the total amount expended.)

### Urban Housing

#### 1. Statistical summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$1,000,000,000	417,000	417,000	834,000
1937	1,500,000,000	625,000	625,000	1,250,000
1938	1,500,000,000	625,000	625,000	1,250,000
1939	1,000,000,000	417,000	417,000	834,000
1940	1,000,000,000	417,000	417,000	834,000
Total	\$6,000,000,000			

2. Description: Adequate housing for the low income families, clearing and rebuilding slum areas, etc.

3. Need: The need for this type of housing for the next 5 years:

(a) Housing Division of Public Works Administration: It is estimated there is need for 4,337,000 dwelling units of the low cost and slum clearance types; 1,362,000 required immediately, and an additional 695,000 for each of the 5 years.

(b) Need is also reflected by the more than 500 limited dividend applications on file in the Housing Division, amounting to approximately 1 billion dollars, and requests from sponsoring groups and authorities for over 2 million dollars of direct Federal housing projects in excess of the  $1\frac{1}{2}$  million dollars previously made available to the Division.

(c) The proposed program of a 6-billion dollar expenditure in 5 years is made up as follows: (1) \$4,875,000,000 to be expended in cities with a population of 25,000 or over, which would supply 1,390,000 units at an average cost per unit of \$3,500 inclusive of land; this figure is 28 per cent of the total estimated need of 4,837,000 units; it provides for taking care of two-thirds of immediate housing requirements, and one-third of the normal demand of the next 5 years. (2) For cities under 25,000 an additional  $1\frac{1}{2}$  billion dollars is provided, making a total of 6 billion dollars.

4. Repayment: A 60-year amortization period without interest is proposed, as the employment created by the proposed housing program is expected to diminish relief expenditures, and since only with considerable government aid can satisfactory housing be produced at a rental commensurate with the present need. Private enterprise cannot produce adequate housing for the low income families, nor can it clear and rebuild slum areas without replacing low income tenants with a low moderate income group which on a large scale operation would disrupt the whole population of a city.



## Rural Housing

### 1. Statistical Summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$500,000,000	125,000	125,000	250,000
1937	500,000,000	208,000	208,000	416,000
1938	500,000,000	208,000	208,000	416,000
1939	400,000,000	167,000	167,000	334,000
1940	300,000,000	125,000	125,000	250,000
Total \$2,000,000,000				

2. Description: Rural Housing includes industrial workers' garden homesteads, projects for stranded populations, projects for Negro problem areas, projects to be wholly cooperatively owned, projects to be located in Southern States for aged and superannuated people, projects for industrially handicapped workers, particularly those handicapped through industrial injury, and projects for the resettlement of relief families.

3. Need: Estimates as to the possibilities of expenditure in the rural housing field reach a maximum of 2 billion dollars to be expended during a 2-year period, but on the basis of practicability the program here recommended carries a total of 2 billion dollars over a 5-year period. On the basis of not to exceed \$3,000 per unit, which would include land and community facilities, this expenditure would provide homesteads for approximately 600,000 families. From the number of applications received, and other studies, there is no question but that the demand would justify a program of this magnitude.

4. Time required to start program: The initial portion would comprise projects calling for an expenditure of about 600 million dollars. Immediate

already completed. By June 30, 1938 it would be planned to have approximately one-half of the projects in the initial group completed.

5. Repayment: Straight amortization basis over a 30-year period without interest.

### Grade Crossings

#### 1. Statistical summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$300,000,000	125,000	125,000	250,000
1937	300,000,000	125,000	125,000	250,000
1938	300,000,000	125,000	125,000	250,000
1939	200,000,000	84,000	84,000	168,000
1940	100,000,000	42,000	42,000	84,000
Total \$1,200,000,000				

2. Description: This program contemplates the elimination of grade crossings on heavy duty highways and in rural areas and upon highways in general in the neighborhood of cities.

3. Need: It is estimated that <sup>at</sup> an average cost of \$100,000 for each grade crossing a total of 12,000 grade crossings could be eliminated. The program could be carried through a 5-year period at the rate of 300 million dollars per year.

4. Time required to start program: Program could be inaugurated at once and carried through a five year period.

5. Repayment: The total cost of 1,200 million dollars would be paid in 20 years by a tax of 1/2¢ per gallon on gasoline.



## Express Highways

### 1. Statistical summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$ 0	125,000	125,000	250,000
1937	300,000,000	125,000	125,000	250,000
1938	300,000,000	125,000	125,000	250,000
1939	300,000,000	125,000	125,000	250,000
1940	300,000,000	125,000	125,000	250,000
Total \$1, 200,000,000				

2. Description: This project includes the work projected for high speed heavy duty highway travel, involving: (a) Sections of highways crossing urban density and difficult terrain. These structures, generally of bridge type, are a part of complete high speed highways. (b) Heavy traffic high speed roads with elimination of principal highway and rail intersections, wide turns and low percentage gradients and generally connecting with the facilities provided in (a). (c) Secondary highways of the improved type carrying heavy traffic not a part of the general state trunk systems covered in (a) and (b).

Since by present highway funds appropriated for issue January 1, 1935 and utilized during that year, the application of this new program is not contemplated until the beginning of 1936, at which time again Federal funds will become available in addition, in some amount, to this program.

3. Need: The program contemplates the construction of new highways and of the widening and improvement of existing highways. The bridge type highway construction will probably cost \$2,300,000 per mile; \$800,000 of which would go for right-of-way and produce no work. New heavy duty highway construction will probably cost \$125,000 per mile, \$25,000 of which would go for right-of-way

and produce no work. Secondary type of highway construction will probably cost \$10,000 per mile with no cost for right-of-way, - this latter work would be done largely over existing right-of-way.

4. Repayment: Tolls or other local systems of revenue cannot be depended upon for any large return in this program. Revenue will be produced with a gas tax of  $\frac{1}{16}$  per gallon beginning in 1936 and continuing for 20 years at that rate, estimated at 60 million dollars per year, or a total of 1,200 million dollars.

### Railroads

#### 1. Statistical summary:

Year	Expenditures	Average No. Men employed through year		
		Direct	Indirect	Total
1936	\$510,000,000	129,000	129,000	258,000
1937	60,000,000	30,000	30,000	60,000
1938	60,000,000	30,000	30,000	60,000
1939	60,000,000	30,000	30,000	60,000
1940	60,000,000	30,000	30,000	60,000
<u>Total \$550,000,000</u>				

2. Description: This program contemplates the expenditure of \$550,000,000 for railroad repair and maintenance, and includes an expenditure of 60 million dollars per year for 5 years for rails, including fastenings and labor, and an expenditure of 250 million dollars for the first year for roadway maintenance and new equipment.

3. Need: 22 per cent of locomotives and 15.3 per cent of freight cars of Class 1 roads reported in bad order September 1, 1934, etc.

4. Repayment: The terms of this system of loans would be on the basis of no charge for interest nor payment of principal for the first three years, amortization to begin with the fourth year and to be completed in 15 years. Security for the loan would be in the form of junior bonds or receivers' certificates.

### Rural Electrification

#### 1. Statistical summary:

Year	Expenditures	Average Employment Per Month Throughout Year		
		Direct	Indirect	Total
First year	\$200,000,000	84,000	84,000	168,000
Second year	100,000,000	42,000	42,000	84,000
Total	\$300,000,000			

The total employment by the expenditure of the 300 million dollars would involve 4,125,000 man months, of which 2,760,000 would be direct labor and 1,375,000 indirect labor.

2. Description: Construction of 500,000 miles of electric service lines in rural areas.

3. Need: There are at present in the United States 6,288,648 farms, of which 13.4 per cent are equipped with electricity, leaving a possible field for total rural electrification of approximately 5,447,338 farms. Of this number the present program is based on surveys which indicate that at least 1,200,000 farms are immediate potential users of electricity. These farms are so located that at the rate of four customers per mile 500,000 miles of service lines would be required. Such lines would cost not to exceed \$1,000 per mile, or a total of 300 million dollars.



4. Time required to start program: This work could be begun immediately upon inauguration of the program.

5. Repayment: The service lines could be built through the agency of boards of county commissioners, public service corporations, farmers' co-operatives, or by existing power companies. If no interest is charged, it has been estimated that a charge of \$1.05 per customer per month for twenty years would repay the entire cost of installation.

#### Federal Public Works Program

Two proposals are offered (A) Self-liquidating Projects, and (B) Program of Essential Federal Public Works.

(a) Self-liquidating projects:

1. Statistical Summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$240,000,000	100,000	100,000	200,000
1937	120,000,000	50,000	50,000	100,000
1938	115,000,000	48,000	48,000	96,000
1939	85,000,000	35,000	35,000	70,000
1940	85,000,000	35,000	35,000	70,000
Total	\$645,000,000			

2. <u>Description:</u>	Highway construction	\$12,800,000
	Utilities	125,000
	Buildings	69,600,000
	Reclamation	139,375,000
	Agricultural aids	10,500,000
	Miscellaneous	<u>7,600,000</u>
	Total	\$240,000,000

After first year expenditures are for Reclamation projects.

3. Need: Careful study has been made of the requests of each construction agency of Federal government with the view of developing a program of public works of a self-liquidating nature.

4. Time required to start program: If funds are made available by March, 1935, the 240 million dollars will be expended by the end of the calendar year, 1938, leaving only the Reclamation projects to be completed.

5. Repayment: Included in this program would be reclamation projects, repayable under the reclamation laws; quarters for military personnel now drawing commutation for quarters; and the elimination of obsolete buildings, the maintenance costs of which now exceed amortization charges for new buildings. An expenditure for modern tools and equipment at Navy Yards is considered self-liquidating since government-owned yards would be enabled to produce vessels at a lower cost. This would furnish to the Federal government a better yardstick by which bid prices for similar work in private yards can be measured.

Other works included as self-liquidating are certain improvements in the national forests such as fire breaks, lookout houses, towers, observatories and telephone systems. These are self-liquidating in that they would make possible better control of forest fires which in the past have caused losses in the national forest alone, in a single season, as high as \$25,000,000. The sale value of the timber which will be saved from destruction by forest fires is calculated to be greater than the estimated expenditure for such preventative methods.

(B) Essential Federal Public Works

1. Statistical summary:

Year	Expenditures	Average No. Men Employed Through Year		
		Direct	Indirect	Total
1936	\$550,000,000	229,000	229,000	458,000
1937	550,000,000	229,000	229,000	458,000
1938	550,000,000	229,000	229,000	458,000
1939	550,000,000	229,000	229,000	458,000
1940	550,000,000	229,000	229,000	458,000
Total	\$2,750,000,000			

2. Description: A careful study of the requests made to the Public Works Administration by the Federal agencies indicates that a program of essential Federal projects can be undertaken in the amount of \$1,000,000,000 for the fiscal year 1936, or so much thereof as may be determined upon in connection with any enlarged program. The type of work which is proposed for inclusion in the program is that for which appropriations have previously been made by Congress and which have been accomplished by prior public works allotments. The approval of such an expanded program would make unnecessary the allocation by the Bureau of the Budget of more than \$250,000,000 now requested, for the fiscal year 1936 for public works. A breakdown of types under this program is as follows:

Highway construction	\$448,000,000
Utilities	19,500,000
Buildings	158,350,000
Reclamation	184,215,000
Water navigation aids	214,100,000
Vessels	26,500,000
Agricultural aids	9,030,000
Aviation aids	5,250,000
Miscellaneous	17,555,000
Total	\$1,077,500,000



3. Need: Included in the proposed Public Works Administration program are projects which can be justified from an economical standpoint.

4. Repayment: (Presumably are direct Federal expense.) There is included in this program 250 million dollars per year, which is equivalent to the government's regular expenditure for construction over a term of years, and 300 million dollars annually for CCC camps, making a total of 550 million dollars per year.

### Program of National Resources Board

#### 1. Statistical summary:

Year	Expenditures Total	National Resources Board	Coast and Geodetic Survey	Geological Survey
1936	\$20,500,000	\$12,000,000	\$3,500,000	\$5,000,000
1937	20,500,000	12,000,000	3,500,000	5,000,000
1938	20,500,000	12,000,000	3,500,000	5,000,000
1939	20,500,000	12,000,000	3,500,000	5,000,000
1940	20,500,000	12,000,000	3,500,000	5,000,000
	<del>105,500,000</del>	\$60,000,000	\$17,500,000	\$25,000,000

2. Need: It is absolutely necessary to carry out the plans of the National Resources Board that there be a budget sufficient to take care of engineering, to select water and drainage area projects, and to make available the basic information throughout the country necessary for the surveys by the Board. The Geological Survey and the Coast and Geodetic Survey should have sufficient funds to do the base work over the entire country.

	Total.Amt. (Millions of Dollars).	Percent Self Liquida- ting (Assuming no defaults).	Amt.Liquidated (Assuming no defaults) (Millions of dollars)	Estimated Percent Liquidation with allow- ance for some defaults.	Amt.Liquidate assuming some defaults (Millions of dollars.
1. <u>Non-Federal Projects:</u>					
A 50 percent grant is equivalent to an amor- tized loan of 52 years without interest, assum- ing a 3 percent rate;at 4 percent,41 years. In addition some allowances would also have to be made for defaults.	7,500	50	3,750	50	3,750
2. <u>Urban Housing:</u>					
A 50 year amortized loan 6,000 without interest would give a return of 45.1 percent,assuming a 3 per cent rate. If payments are collected for only 40 ps the 50 years, the return is equal to 35.5 percent. Additional losses will result from failures to pay taxes and principal. Other losses will occur through selection of poor location, etc.	6,000	45.1	2,706	35.5	2,310
3. <u>Rural Housing:</u>					
A 50 year amortized loan 3,000 without interest would give a return of 65.3 per- cent. If payments are col- lected for only 30 years, the return is equal to 45.5. These projects are for most part experimental and it is difficult to estimate losses resulting from the unsuc- cessful ventures.	3,000	65.3	1,959	50	1,000
4. <u>Grade Crossing:</u>	1,200	none	none	none	none
<u>Express Highway:</u>					
Subsidy is probably not 1,200 large enough to induce borrowing of amt.indicated	1,200	none	none	none	none
5. <u>Railroads:</u>					
A waiver of 3 percent for 500 5 years is equal to 51.5 per.return. If no interest is paid and no principal until fourth year,the re- turn is 72.5 percent. 1/	500	51.5	257.50	55.5	275.75
6. <u>Rural Electrification:</u>					
A 50 yr.amortized loan 300 without interest is equal to 74.4 percent return.	300	74.4	223.20	74.4	223.20
7. <u>Federal Self-Liquidating:</u>	545	none	none	none	none
8. <u>Federal Projects:</u>	2,750.	none	none	none	none
TOTAL.	23,145	55.0	8,548.45	35.0	7,753.95

\* This figure includes \$50 million dollars per year or 1,250 million dollars which is equivalent to the Government's regular expenditures for construction over a term of years.

1/ Subsidy is probably not large enough to induce borrowing of the amount indicated.