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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

CAPITAL ASSISTANCE PAPER

Project Number - 504-22-310-050
Loan Number - 504-L-004

Proposal and Recommendations
For the Review of the
Development Loan Committee

GUYANA - CORENTYNE AND WEST DEMERARA ROADS

AID-DLC/P-604

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DEPARTMENT OF STATE
AGENCY FOR INTERNATIONAL DEVELOPMENT
Washington, D.C. 20523

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AID-DLC/P-604
June 15, 1967

MEMORANDUM FOR THE DEVELOPMENT LOAN COMMITTEE

SUBJECT: Guyana - Corentyne and West Demerara Roads

Attached for your review are the recommendations for authorization of a loan in an amount not to exceed \$7,500,000 to the Government of Guyana to assist in financing the costs of reconstruction and improvement of the New Amsterdam-Crabwood Creek Road, the Parika-Uitvlugt Road and the Black Bush Polder Inter settlement Road.

This loan proposal is scheduled for consideration by the Development Loan Staff Committee at a meeting on Wednesday, June 21, 1967.

Rachel C. Rogers
Assistant Secretary
Development Loan Committee

Attachments:
Summary and Recommendations
Project Analysis
ANNEXES I-IV

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GUYANA - CORENTINE AND WEST DEMERARA ROADS

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AID-DLC/P-604

June 15, 1967

GUYANA - CORENTYNE AND WEST DEMARARA ROADS

SUMMARY AND RECOMMENDATIONS

1. **BORROWER:** The Government of Guyana (Borrower) acting through the Ministry of Finance. The Ministry of Works and Hydraulics will be responsible for implementing the loan.
2. **AMOUNT:** Up to \$7,500,000.
3. **COST OF THE PROJECT:**

	<u>US \$</u>	<u>Local Currency</u>	<u>Total</u>
AID	7,500,000		7,500,000
GOG	<u>1,220,000</u>	<u>2,360,000</u>	<u>3,580,000</u>
	8,720,000	2,360,000	11,080,000

4. **PROJECT DESCRIPTION:** The project consists of substantial improvement to approximately 59 miles of two existing coastal roads (including widening of road surface and shoulders, improvement and widening of bridges, partial relocation and asphalt surfacing) between New Amsterdam - Crabwood Creek in the east and Parika - Uitvlugt on the west. In addition, a 22 mile settlement road, the Black Bush Polder Road will be resurfaced and shoulders improved; little or no bridge work or realignment will be done on this section.
5. **PURPOSE:** The purpose of the loan is to convert sections of the most important road in the country, presently in deplorable condition, into an effective means of transport. The improved roads will more adequately serve the needs of a large portion of the country's population and the primary rice producing area of the country.
6. **OTHER SOURCES OF FINANCING:** On March 2, 1967, the Export-Import Bank indicated no interest in this financing. IERD on February 17, 1967 indicated no interest. Guyana is not a member of the IDB and does not have borrowing rights from that institution.
7. **VIEWS OF COUNTRY TEAM:** The Country Team recommends authorization of this loan as an integral part of the overall U.S. assistance program in Guyana.
8. **STATUTORY CRITERIA:** All statutory criteria have been met (see Annex I for details).

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9. ISSUES: None
10. RECOMMENDATIONS: Authorization of a loan of up to \$7,500,000 to the Government of Guyana to be repaid in U.S. dollars on the following terms:
 - a. Amortization of principal over forty (40) years including a grace period of ten (10) years. Interest at the rate of one percent (1%) during the grace period, two and one-half percent (2½%) thereafter.
 - b. Equipment, materials and services (except shipping and marine insurance financed under the loan) shall have their origin in and be procured from the United States. Shipping financed under the loan shall be procured in the United States, and marine insurance financed under the loan shall be placed in the United States with a company authorized to do business in any state of the United States.
 - c. Prior to signing of the loan agreement, the GOG will confirm in writing its commitment to make available financial resources, equipment, personnel and other resources as required to fulfill the needs of the project indicated in a financial and construction schedule to be agreed upon.
 - d. Prior to initial disbursement of the loan for contract construction costs, Borrower shall submit a national road maintenance plan satisfactory to AID. Periodic A.I.D.-GOG reviews of maintenance practices and load control will be held.
 - e. The loan shall be subject to such other terms and conditions as A.I.D. may deem advisable.

PROJECT COMMITTEE:

Loan Officer	: Van Dyne McCutcheon
Engineer	: Fitzhugh L. McRee
Economist	: Carl A. Bischoff, Jr.
Attorney	: Duncan Cameron

June 15, 1967

SECTION I - THE PROJECT

A. Background

Large-scale AID efforts in Guyana began in early 1965 after the election victory of two moderate coalition parties over the ruling PPP party. AID assistance so far has been oriented principally toward development of new transportation arteries and improvement of existing ones.

In 1965, AID made a loan of \$5,500,000 (later increased to \$7,500,000) to construct a penetration road from the Atkinson airport to Mackenzie, a mining town 50 miles up the Demerara River. After a slow start on the part of the American contractor, progress has improved and completion is expected to be on or ahead of schedule in mid-1968. AID has also provided assistance to the GOG in the form of equipment and technical assistance to develop a capability for maintenance and force account work since there are no road contractors in Guyana.

Most of Guyana's citizens reside on the coast and a large portion of them live in houses facing a road extending from the Essequibo River in the west to the Corentyne River in the east with ferries across the intervening Demerara and Berbice Rivers. This road is the primary connecting link among the economically active areas of the country. Much of this road is in bad shape, due to inadequate design and poor maintenance under the prior government, and is deteriorating rapidly. One major stretch, between the Demerara and Berbice Rivers, is being reconstructed by force account, with AID support, and is expected to be completed by the fall of 1967. This loan would assist the GOG in reconstructing two other major portions of the coastal road and in improving a settlement road which loops off the main road. It thus represents a logical extension of AID activities to date. Moreover, the major part of these road segments lie in the heart of the rice producing area and their improvement will directly complement a projected rice industry modernization program.

Construction of this road would provide a highly visible show of the Government's interest in the welfare of the rural population of Guyana where much of its opposition lies.

B. Borrower

The Borrower will be the Government of Guyana (GOG) acting through the Ministry of Finance. The Ministry of Works and Hydraulics will be responsible for implementation of the Loan.

AID has had good experience in dealing with the Ministry of Works and Hydraulics and has developed a close working relationship with its personnel. It is considered capable of proper administration of these funds.

C. Relation to Development Program of Guyana

The GOG has adopted an official Development Program for 1966-1972 which calls for the expenditure of approximately G\$ 64.8 million,* or over 22 percent of total planned public investment, in the transportation sector. Of this amount, G\$ 37.8 or 58 percent would be spent on roads. The IBRD mission, in its report of April 1967, suggested that the amount for roads be increased to G\$ 67.5 million. The two major segments included in this loan have the highest priority in the thinking of AID, GOG and IBRD. The third is closely related to the rice modernization scheme.

D. CAEC Action on IRR

ANNEX III, contains CAEC comments on the IRR and a summary of later communications to USAID/G about the project. This paper is consistent with them.

* G\$ 1.00 = US\$ 0.58.

SECTION II - ENGINEERING ANALYSIS

A. General Description of Project

The proposed project covers reconstruction and improvement of the following three roads:

New Amsterdam to Crabwood Creek	50.7 miles
Black Bush Polder Inter settlement	22.0
Parika - Uitvlugt	<u>8.5</u>
Total Length	81.2 miles

The New Amsterdam-Crabwood Creek Road is a part of the coastal road system leading eastward from New Amsterdam toward the border of Surinam. In general, the reconstruction will follow the existing road which has an asphalt surface with an average width of approximately 18 feet and with certain sections having very narrow shoulders. The existing pavement is too narrow for present traffic and is badly deteriorated in some sections. Proposed reconstruction includes short relocations, patching of the original base and pavement where required, widening to a width of 22 feet, and overlaying with either sand asphalt or bituminous concrete, widening the embankment to provide shoulder widths of eight feet, and widening of structures. In urban areas, the shoulders will be paved with a light asphalt surface to provide for bicycle and cart traffic.

The Black Bush Polder Inter settlement Road is a loop road lying south of the New Amsterdam-Crabwood Creek Road leaving this road at approximately 20 miles from New Amsterdam and rejoining it at approximately mile 29.5. This road has an existing asphalt pavement varying from 13 to 15 feet in width which is badly deteriorated in some sections. Proposed reconstruction will follow the present alignment and contemplates patching of the existing base and pavement and adding an overlay of sand asphalt or bituminous concrete. The present embankment has adequate width to provide additional width of pavement when the traffic justifies a two lane road.

The 8.5 mile unpaved section of the Vreed-en Hoop Parika Road starts near the dock and railway station in Parika and extends eastward to the village of Uitvlugt. Some relocation of the present road is proposed with reconstruction of the remainder. Reconstruction will include widening the existing road to a width of 38 feet and paving a width of 22 feet using either sand asphalt or bituminous concrete. In urban areas, the shoulders will also be paved with a light asphalt surface to accommodate bicycle and cart traffic.

On both the New Amsterdam-Crabwood Creek and Parika-Uitvlugt Roads it is proposed that initially a lighter asphalt surface will be constructed which will be adequate for traffic for some six years and then that an additional overlay of asphalt surfacing will be added.

B. Engineering Plan

1. Technical Feasibility. The feasibility study as presented by Miller-Warden-Western established design standards which are consistent with the traffic requirements and the standards established by the Government of Guyana. A wheel load limit of 9,000 pounds is used for pavements and 15,000 pounds for bridges which conforms to GOG and AID requirements. Detailed design standards are given in Annex II.

Preliminary engineering plans have been developed to the extent necessary for the determination of reasonably firm estimates of cost. The cost estimates are based on an analysis of the costs of manpower, equipment and materials, plus a reasonable allowance for overhead, profit and mobilization costs. Unit costs in the estimate compare favorably with those obtained in the bidding on the Atkinson-Mackenzie Road. Therefore, the preliminary plans and cost estimates are considered to be reasonable for the scope of the project and thus meet the requirements of section 611 of the Foreign Assistance Act. Cost estimates and benefit-cost analysis of all project roads are included in Annex II.

2. Engineering Plan of Implementation of Project. The GOG proposes to retain Miller-Warden-Western for the preparation of construction plans, specifications, bid documents and for engineering supervision of construction. Since this firm performed the feasibility survey, the selection does not require the usual procedure of advertising in the Commerce Business Daily for proposals, which means that this phase of the work, and thus the project as a whole, can be expedited, which is an important political consideration.

The GOG contemplates that the geometric design of the 8.5 miles of the Parika-Uitvlugt Road will be performed by their Highway Division under the direction of Miller-Warden-Western and with Miller-Warden-Western performing the structural design of the pavement and bridges.

The GOG proposes that the work from eight miles east of New Amsterdam to Crabwood Creek (42.7 miles) be constructed by contract and that the contract be let on a unit price basis. Only U.S. construction contractors will be considered (there are no qualified Guyana highway contractors) and prequalifications will be required in accordance with AID policy.

It is proposed that the Black Dush Polder Inter-settlement Road (22 miles) which will be primarily a paving operation, together with the first eight miles from New Amsterdam of the New Amsterdam-Crabwood Creek Road and the west 3.5 miles of Vreed-en-Hoop Parika Road (Parika to Uitvlugt), be constructed by the GOG on a force account basis. The work proposed to be constructed by force account is estimated to cost \$3,873,000 which is 35 percent of the estimated total cost of the project (\$11,079,000). Loan funds will be used on the force account work to defray only the cost of imported materials such as asphalt, culverts, reinforcing steel, cement and engineering services.

In addition to the usual engineering supervision, the consultant will furnish to the Highway Division a four man technical assistance team in the field of construction, materials, planning and cost accounting for the supervision of the force account work. Miller-Warden-Western is currently providing technical and supervisory assistance in the first three fields under an AID grant which is funded through September 31, 1967. It is proposed that the funding of the three present positions plus that for the cost accountant be under the loan through the engineering contract.

Duties of the four man team are summarized as follows:

Construction Superintendent - The construction superintendent will act in the capacity of a general superintendent of the force account work and will be responsible for the progress of construction. His duties will be essentially the same as those of a contractor's superintendent on highway construction.

Materials Engineer - The materials engineer will advise the Highway Division on foundation and pavement design, be responsible for quality control of construction materials, including soil and material tests for the project roads, and work with personnel of the materials laboratory in improving their organization and testing procedures.

Planning Engineer - The planning engineer will assist the Roads Division in planning the construction work for the force account work and assist in strengthening the construction section of the Roads Division.

Cost Accountant - The cost accountant will be responsible for the cost and accounting records of the force account work and will assist the Roads Division in setting up a construction cost accounting system.

The initial phases of the consultant's contract (final design and preparation of contract documents) are being financed under the feasibility study loan in order to facilitate the earliest possible start of construction on both the force account and contract work. It is anticipated that the construction of the first eight miles of the New Amsterdam-Crabwood Creek Road by force account will be completed before the completion of mobilization and start of construction of the remainder of this road by contract.

3. Implementation Schedule

a. Contract Work

New Amsterdam (Mile 8) to Crabwood Creek

Contracting with U.S. engineering firm	1 month
Preparation of plans, specifications and bid documents	6 months) Two month
Advertising, prequalification and receipt of bids	4 months) Overlap
Analysis of bids and award of contract	1 month
Mobilization by contractor	3 months <u>1/</u>
Construction of road	2 years

b. Force Account Work

(1) New Amsterdam to Mile 8

Preparation of plans and specifications	3 months
Construction	7 months

(2) Black Bush Polder

Preparation of plans and specifications	3 months
Construction	6 months

(3) Parika to Uitvlugt

Surveys, preparation of plans and specifications	8 months
Construction	9 months

c. Force Account Work

At the present time Guyana does not have construction contractors with sufficient experience or resources to qualify as bidders for this project. It is anticipated that by subcontracting with the U.S. contractor and the GOG for the force account work the local contractors will gain more experience and increase their capability in this field.

In the past the GOG has been doing all of its road construction and maintenance by force account with the exception of the Atkinson-Mackenzie Road construction project which is being done by a U.S.

1/ Could be reduced if present contractor in Guyana wins bid.

contractor. Since the engineering for all the construction work cannot be completed within the desired time limit to let the entire contract for the main section of the road from New Amsterdam to Crabwood Creek to a U.S. contractor, it was considered expedient to complete the engineering and have the construction completed on the first eight miles of the road out of New Amsterdam by force account. This work would be completed before the U.S. contractor would be mobilized for construction of the remaining portion of the New Amsterdam-Crabwood Creek Road. The Black Bush Polder section of road is primarily resurfacing of the present road and could be done expeditiously by the GOG with maintenance equipment, and personnel trained by U.S. maintenance engineers, furnished by AID under a previous grant. The Parika to Uitvlugt road work consists of upgrading of 8.5 miles in an area isolated from the main project to be constructed by the U.S. contractor and is similar to the road betterment work now being done by the GOG road maintenance organization.

D. Equipment for Force Account Work

Through grant assistance funding, AID has furnished the Ministry of Works and Hydraulics of Guyana highway equipment having a total cost of \$1,165,000, a list of which is given in Appendix II. This equipment was to be used primarily for highway rehabilitation and maintenance and was to be used for other Works and Hydraulics maintenance operations when not needed for highway purposes. This equipment is now being used primarily for road rehabilitation by the Roads Division and will be used for the force account work on the portion of the project roads to be constructed by force account.

In addition, \$65,000 was expended for a modern highway maintenance shop building and \$220,000 for shop equipment for the building. This equipment came principally from U.S. excess stocks.

In connection with use of the equipment, AID has also furnished technical and supervisory assistance to the Roads Division through a contract with a U.S. consulting firm to supply two road construction superintendents, a materials engineer and a quarry superintendent, at a total cost of \$145,000. Also, a direct hire equipment specialist is aiding in setting up the highway maintenance shop equipment.

E. Road Maintenance

The Roads Division, which is a subdivision of the Ministry of Works and Hydraulics, operates under a chief engineer, with highway maintenance being the responsibility of an executive engineer

reporting directly to the chief engineer. As presently organized, road maintenance is accomplished through the equivalent of task orders by seven districts, each under a district engineer or commissioner administratively responsible to the Minister of Works and Hydraulics. In addition to road maintenance, these district engineers are also responsible for maintenance of sea walls, airports, buildings, potable water suppliers, irrigation and drainage docks and wharves, etc. Prior to 1965 road maintenance was entirely inadequate and was accomplished mainly by hand methods. The inadequate design of the old roads is also a major contributing factor to the road condition.

Under the AID grant program, technical assistance and equipment for road maintenance have been provided to the Roads Division. With this nucleus it is considered essential that the maintenance of the primary roads be accomplished by field forces directly responsible to the executive maintenance engineer of the Roads Division. The first step in this direction was taken under the Atkinson-Mackenzie Road loan when the Government of Guyana agreed to set up a separate field highway maintenance organization responsible to the Roads Division for the maintenance of this highway. It is now considered that additional districts responsible to the Roads Division should also be established for the primary coastal roads. It is also considered that secondary roads outside these areas should remain under the Ministry's general maintenance districts. The Government of Guyana agrees with this proposal and, accordingly, it is proposed that one of the covenants of this loan agreement will be for the Roads Division to establish two new maintenance districts for the maintenance of coastal roads between Parika on the west and Crabwood Creek on the east.

SECTION III - ECONOMIC ANALYSIS

A. Physical Background

Guyana, with a national area the size of the United Kingdom and a population of only 650,000, is probably not underpopulated. With nine-tenths of the population living on the only three per cent of the land considered economically useful, population density is high in the coastal strip, while vast inland areas are uninhabited.

Even the coastal strip is handicapped by geography, being restricted to the south in many places by flooded marshes only narrowly separated from the seacoast which is Guyana's northern boundary. This corridor is fragmented on its east-west axis by large, unbridged rivers which divide the coastal strip effectively into four islands. Continuous east-west mobility is made possible only by the extensive use of ferries, which provide remarkably good service, given the circumstances. Much of the length of the coast lies behind seawalls, the building and maintenance of which, along with drainage and irrigation canals, have been a sine qua non of the most important elements of Guyana's agriculture and commerce. Canals also provide an important means of transport for those bulk cargoes which are not adversely affected by slow progress to processing centers or shipping points.

Two of the four "islands" have railroads paralleling their coastal roads: The "East Coast" railway connecting Georgetown with Rosignol (opposite New Amsterdam on the Berbice); the "West Coast" railway connecting Vreed-en-Hoop (opposite Georgetown on the Demerara) with Parika, a ferry point on the Essequibo. The former is said to be the oldest railroad in South America.

The transport picture is roughly rounded out with mention of the barge traffic on the Berbice and Demerara which is the first stage of the rather complicated shipping arrangements by which Guyana's bauxite reaches overseas destinations. Planning, operations and financing of this traffic is, however, almost entirely in the hands of the private interests holding the inland mining concessions (Reynolds Metals Company and Demerara Bauxite, Ltd.).

B. The Road System

There are 1,227 miles of roads in the national network, of which only 561 are classified as public roads. Of the latter, 219 miles

are paved, but only 100 miles can be considered to be in good condition. The last decade has seen the addition of only 22 miles of paved road to the national total, in the form of a "loop" road serving the Black Bush Polder irrigation and drainage development scheme and joining the Corentyne Road at two points. Both the latter and the loop road are in urgent need of substantial improvement, which would be financed in large part by the proposed loan. The road from Parika east, approximately half way to the Demerara River opposite Georgetown, is not paved and its improvement would round out the scope of the financing being considered here. Rehabilitation of the important link between Georgetown and the west bank of the Berbice River opposite New Amsterdam, which lies between the two essential elements of this project, has been the object of a reconstruction and maintenance demonstration program which is now nearing completion under force account, assisted by U.S. and Canadian grant assistance (technicians and equipment). The rehabilitation of this major connection is generally considered a resounding success by knowledgeable Guyanese and foreign observers.

The coastal road segments described above constitute far and away the most important transport links in Guyana. They are generally characterized by high traffic counts, and the relatively high population densities which straddle their lengths. That the remaining segments should be brought back to a standard of acceptable serviceability would seem self-evident on the strength of the intensity of their utilization even in their present deplorable condition and because of the axial nature of population distribution and productivity potential. The essentiality of the improvements being proposed for financing is underscored by the plans and prospects for greatly expanding rice production as well as for greater diversification of Guyanese agriculture, and further development of processing industries.

C. The World Bank Mission's Report and the Road Program

The Guyanese economy, with particular reference to the Government's development program for 1966-1972, has been the subject of a recently completed, comprehensive study. This was carried out at the request of the GOG by a World Bank team of some ten economists and technical experts whose specialties spanned every facet of the national economy.

The Bank mission concluded that while financial viability should be the subject of continuing review, the aggregate level of Guyana's public investment program through 1972 is probably not a critical issue. What was seen as more important is the "mix" of investment among sectors and types of projects. Here the mission proposed

major changes in the composition of the program and in the investment levels assigned to program components, concluding that emphasis should be placed on basic infrastructure, including transportation, seawall defenses, communications and power, somewhat at the expense of direct public financing of irrigation and drainage works, industrial projects and social service programs (other than education). The suggested allocation for transportation was the highest of any activity, with the recommendation that 31 percent of the 1966-1972 program's resources be invested in transportation, as compared to 22 percent in the official plan.

Further, the Bank mission recommended that road projects receive the lion's share (G\$ 67.5 million over the 1966-1972 period) of the total transportation allocation, that the two railroads be phased out of operation as soon as alternative transport capacity is assured, that as little Government investment as possible go to shipping, and that appropriate but modest investments be made in civil aviation services, which provide the only means of access to the widely scattered small population centers in the interior. Given the strong emphasis on roads in the context of the total government program, the Bank mission drew up, in agreement with the Ministry of Works and Hydraulics, a priority list for road construction.

Two of the three road segments to be financed by the proposed loan are among the top three items on the priority list which are not already under construction. The third segment being considered for financing, the Black Bush Polder Intersettlement Road, has other features to recommend it: Notably, it is closely linked to the rice industry rationalization program, largely designed and strongly backed by AID. Financing for this segment would be at a very modest level, in any case.

A final commentary by the Bank mission relevant to consideration of this loan is that the appropriate proportion of external financing to be expected, given Guyana's economic and financial situation, should be in the range of 60-70 percent. It will be noted that the recommended financing arrangements for the project fall within this range.

D. Road-User Savings

The GOG engaged a U.S. consulting firm to study the project's economic and engineering feasibility. This work has recently been completed, and results include projected financial returns imputable to the project. Since the road segments in question involve extensive rehabilitation rather than new construction, quantification

of benefits is here limited to considerations of road-users' (vehicle-operators') savings. Induced productivity effects following on assured superior access to the important regions in question have been set at zero. The savings to users have been calculated on the basis of fairly current traffic counts and projected growth rates (both given in tables 2, 3 and 4 of Annex II).

Benefit-cost ratios and internal rates of return for the three projects individually, and for the three in combination, are summarized in the following table:

Estimated Cost	Parika-Uitvlugt	New Amsterdam-Crabwood Creek	Black Bush Polder	Combined Projects
U.S. dollars	1,741,000	8,556,000	782,000	11,079,000
Local component	-	-	-	-
Benefit-cost ratio	23.1%	20.1%	29.9%	21.3%
Internal rate of return	3.10	3.82	1.78	3.43
	33%	41%	20%	38%

Imputed cash flow projections and other figures used in the above calculations are given in tables 5 through 8 of Annex II

E. Foreign Exchange Effects

The feasibility study indicates that important net foreign exchange returns (in the form of import savings) would result from the proposed investment. The consultant's calculations indicate an average annual foreign exchange savings of US\$ 222 per vehicle (based on the present percentage "mix" of vehicle types) following reconstruction. This is based on the consultant's estimate that the new operating conditions will save an average of 37 percent in consumption of imports by users, and takes into full account the differential foreign exchange costs of reconstruction and maintenance to the new, higher standard.

The foreign exchange benefit-cost ratio then becomes 2.999 for the whole project. The ratios for the individual segments are: Parika-Uitvlugt, 3.679; New Amsterdam-Crabwood Creek, 2.458; Black Bush Polder, 3.891.

SECTION IV - FINANCIAL ANALYSIS

A. Cost Breakdown

The total cost of the project is estimated at US\$ 11,080,000, of which AID will provide \$7,500,000 and the GOG will provide \$3,580,000.

The foreign exchange component is estimated at \$3,720,000 because of the high import requirements whether the work is done by contract or by force account. The GOG will thus finance all local costs and over \$1,200,000 of foreign exchange costs.

Under the proposed financing plan, AID would finance slightly over 68 percent of total costs. This is a smaller percentage of total project costs than AID is financing in the Atkinson-Mackenzie Road and represents a substantial self-help effort on the part of Guyana.

B. Terms

The terms recommended for this loan are:

1. Amortization - Within forty (40) years from the first disbursement, including a ten (10) year grace period;
2. Interest Rate - One percent (1%) during the grace period, two and one-half percent (2½%) thereafter;
3. Currency of Repayment - U.S. Dollars.

C. Impact on U.S. Economy

All funds disbursed under this loan will be spent for U.S. goods and services procured from private enterprise. U.S. consulting engineers will be employed for design, supervision and technical assistance. A large proportion of the loan funds will be used to contract with a private U.S. construction company.

In addition, Guyana will use part of its contribution to the project for foreign exchange costs, including procurement of U.S. goods and services from private firms.

Without this loan, Guyana would continue its modest program of road maintenance and improvement, using materials imported largely

from non-U.S. sources. This loan will therefore not only increase U.S. exports absolutely, it will also help to shift trade to this country which would otherwise be purchased from other countries.

The loan will not result in competition with U.S. private industry.

D. Payment to Contractor

It is planned to include a covenant in the Loan Agreement that AID payments to contractors will be made after the corresponding payments have been made by the GOG.

E. Balance of Payments

Guyana has developed a relatively dynamic export sector over the last few years, particularly in bauxite, alumina, rice and sugar. Imports have expanded even faster however, in large part due to the satisfaction during 1965-1966 of pent-up consumer demand and heavy investments in the bauxite industry. Lack of domestic manufacturing and diversified food production and processing industries makes Guyana dependent upon a consistently high level of imports.

Guyana's existing foreign exchange resources have recently increased to the point where they are sufficient for four months imports. Although no major difficulties are anticipated in the near future, early in 1967 Guyana entered into a standby with the IMF to provide breathing room while it works out of the present tight situation.

Exports should expand considerably in 1968 as present investments in bauxite result in added production. Agricultural exports, led by rice, are also expected to increase moderately over the next few years. However, imports will continue to rise which, along with a heavy deficit in invisibles, will cause a gradually increasing current account deficit.

Substantial inflows of foreign assistance will be required to finance the necessary imports to achieve a five percent level of growth. The IBRD has recommended that international lenders to Guyana continue to make available soft term loans for some time to come.

Therefore, the proposed terms seem reasonable and proper under the circumstances.

F. Fiscal Policies

The Government of Guyana follows generally conservative fiscal policies. The current budget (for CY 1967) provides for a slight surplus with estimated revenues of \$G94.5 million and expenditures of G\$89.4. The internal debt at \$G58.5 is low and the government's internal borrowing is primarily for developmental purposes. Foreign debt, at \$G108.1 million is also comparatively low although the government has been increasing its borrowing - from the U.S., U.K., and Canada - on concessional terms for developmental purposes.

In Guyana central government spending accounts for more than 90% of total public spending. The ratio of government spending to GDP is now (65-66) 28%. Current revenues over the past decade have grown at the rate of 7+% annually. The percentage of total expenditure financed out of current revenues and capital receipts was 89.5 in 1966. Current expenditures in 1966 were \$G85.4 million and capital (developmental) expenditures were 30.4 million. 40% of current expenditures are wage and salary payments and between 15 and 20% are in the form of subsidies to Government corporations. Corrective steps are being taken to make the corporations (Guyana Airways, Rice Market Bd, Guyana Credit Corp.) rely less on the government. Import duties account for 34% of current revenues, income taxes for 28.6% and excise taxes for 10%.

To meet its growing requirements the present government has been able to tap local sources by issuing long term internal securities. G\$13.4 million was raised in 1965 and G\$8.1 million in 1966 from sales to insurance companies, large foreign firms, and bank. Treasury bills are also issued by the Central Bank.

The IMF has estimated that the newly revised tax structure may yield G\$98 million in 1967 and expenditures are estimated at G\$86 million. The anticipated current account surplus will be devoted to the capital budget of G\$35 million, the bulk of which will come from the U.K., Canada and the U.S.

Sources of revenue, including internal borrowing ability of the GOG, are sufficient to assure that it will be able to provide the required funds for the project.

SECTION V - IMPLEMENTATION PLAN

It is anticipated that a loan agreement will be signed within sixty (60) days of authorization. Design, selection of contractor and construction of all the roads will take approximately 37 months after signing of the loan agreement, as outlined in Section II.

No departures from AID policies and requirements are expected. The Ministry has had previous experience with an AID loan and is familiar with our requirements. The Borrower will submit regular reports. USAID/G has a capable engineer who will be able to follow closely the progress of the project.

There will be two different methods of use of the funds under this loan. In the force account work, specific items such as asphalt, concrete pipe and reinforcing steel will be purchased directly by the GOG and financed through AID letters of commitment. The contract will be a unit price type. The bidders will quote prices for specific units of work. Units can have both a foreign exchange and local component and will be quoted in both currencies by the contractors. AID in this case finances only the dollar portion and the GOG finances the local portion.

Because there are four components of the project, the specific items and unit portions to be financed by AID cannot be determined precisely at this time. AID will work closely with the GOG and the engineering consultant in determining for each component of the project the portion which will be financed by AID. Similarly, the bid documents will be carefully prepared and coordinated to assure a proper mixture of foreign exchange and local costs.

The project should proceed without major problems.

June 15, 1967

CHECK LIST OF STATUTORY CRITERIA

(Alliance for Progress)

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AID-DLC/P-604
ANNEX I
Page 1 of 7

In the right-hand margin, summarize for each item the information or conclusion requested. As necessary, reference the section(s) of the Capital Assistance Paper, or other clearly identified and available document, in which the matter is further discussed. This form may be made a part of the Capital Assistance Paper.

The following abbreviations are used:

FAA - Foreign Assistance Act of 1961, as amended by the Foreign Assistance Act of 1966.

App. - Foreign Assistance and Related Agencies Appropriations Act, 1967.

1. FAA §.102. Precautions that have been or are being taken to assure that loan proceeds are not diverted to short-term emergency purposes (such as budgetary, balance of payments, or military purposes) or any other purpose not essential to the country's long-range economic development.

The proceeds of this loan will be used for reconstruction and improvement of roads in Guyana which will contribute to its economic development.

2. FAA §.102. Information on measures taken to utilize United States Government excess personal property in lieu of the procurement of new items.

To the extent new equipment required for force account work, excess property will be used if available. This section not applicable to contracted work since contractor will be a private firm.

3. FAA §.102. Information whether the country permits, or fails to take adequate measures to prevent, the damage or destruction by mob action of United States property.

Guyana has taken adequate measures to protect U.S. property.

4. FAA §.201(d). Information and conclusion on legality (under laws of country and U. S.) and reasonableness of lending and relending terms of the loan.

The proposed terms are considered legal and reasonable by both Guyana and the U.S.

5. FAA §.251(a). Manner in which loan will promote country's economic development and contribute to the welfare of its people.

Project will improve communications, reduce transportation costs and promote the general welfare of a large number of people living near it. See Section III.

6. FAA §.251(b)(1). Extent to which country is adhering to the principles of the Act of Bogota and Charter of Punta del Este and is showing a responsiveness to the vital economic, political, and social concerns of its people, and extent to which country has demonstrated a clear determination to take effective self-help measures.

Although the Act of Bogota and the Charter of Punta del Este are not applicable to Guyana, the country is showing a responsiveness to the concern of its people and has demonstrated clear self-help measures.

7. FAA §.251(b)(2). Information and conclusion on activity's economic and technical soundness. The Project is economically and technically sound. See Sections II and III.

The activity is consistent with and related to other development activities and will contribute to long range objectives. See CAP and Sections I and III.
8. FAA §.251(b)(3). Information and conclusion on activity's relationship to and consistency with other development activities, and its contribution to realizable long-range objectives.

The loan will have no foreseeable adverse effect on the U.S. economy. See Section IV.
9. FAA §.251(b)(4). Information and conclusion on possible effects on U. S. economy, with special reference to areas of substantial labor surplus.

The country recognizes freedom of expression and of the press and the importance of individual freedom, initiative and private enterprise. The democratically elected government has respected the rule of law.
10. FAA §.251(b)(5). Information and conclusion on the degree to which the country is making progress toward respect for the rule of law, freedom of expression and of the press, and recognition of the importance of individual freedom, initiative, and private enterprise.

The country has taken measures to promote private investment.
11. FAA §.251(b)(6). Information and conclusion on the degree to which the country is taking steps to improve its climate for private investment.

The activity will contribute to self-sustaining growth by improving transportation facilities in an economically active part of the country.
12. FAA §.251(b)(7). Information and conclusion on whether or not the activity to be financed will contribute to the achievement of self-sustaining growth.

The activity will not measurably contribute to the economic and political integration of Latin America.
13. FAA §.251(b)(8). Information and conclusion on the extent to which the activity will contribute to the economic and political integration of Latin America.

Other free world financial sources are not interested in financing this project.
14. FAA §.251(b). Information and conclusion on availability of financing from other free-world sources, including private sources within the United States.

The terms of the loan are such as to permit Guyana to repay.
15. FAA §.251(b). Information and conclusion on capacity of the country to repay the loan.

16. FAA §.251(b). Information and conclusion on country's efforts to repatriate capital invested in other countries by its own citizens. The country has made efforts to repatriate capital by attempting to create a political, social and economic atmosphere attractive to private investment.
17. FAA §.251(b). Information and conclusion on reasonable prospects of repayment. Terms of the loan are such that there are reasonable prospects of repayment.
18. FAA §.251(e). Information and conclusion on availability of an application together with sufficient information and assurances to indicate reasonably that funds will be used in an economically and technically sound manner. An application for this loan has been received. A feasibility study by a private U.S. consulting firm provides sufficient information to indicate reasonably that the funds will be used in an economically and technically sound manner.
19. FAA §.251(g). Information and conclusion on use of loan to assist in promoting the cooperative movement in Latin America. The loan will have no visible effect on the cooperative movement in Latin America.
20. FAA §.251(h). Information and conclusion on whether the activity is consistent with the findings and recommendations of the Inter-American Committee for the Alliance for Progress in its review of national development activities. Guyana is not a member of CIAP.
21. FAA §.252(a). Total amount of money under loan which is going directly to private enterprise, is going to intermediate credit institutions or other borrowers for use by private enterprise, is being used to finance imports from private sources, or is otherwise being used to finance procurements from private sources. It is anticipated that all loan funds will be used for procurement of goods and services from private enterprise.
22. FAA §.281. Extent to which the loan will contribute to the objective of assuring maximum participation in the task of economic development on the part of the people of the developing countries, through the encouragement of democratic private and local governmental institutions. The loan will assist the Government of Guyana in the development of its ability to serve its people. The project will help to improve mobile communication of a large number of Guyanese.
23. FAA §.601(a). Information and conclusions whether loan will encourage efforts of the country to: (a) increase the flow of international trade; (b) foster private initiative and competition; (c) encourage development and use of cooperatives, credit unions, and savings and loan associations; (d) discourage monopolistic practices; (e) improve technical efficiency of industry, agriculture, and commerce; and (f) strengthen free labor unions. The loan will help to reduce costs of transport within Guyana, providing greater incentive to private initiative, a smoother flow of commerce, etc.

24. FAA §.601(b). Information and conclusion on how the loan will encourage U. S. private trade and investment abroad and how it will encourage private U. S. participation in foreign assistance programs (including use of private trade channels and the services of U. S. private enterprise).

Proceeds of the loan will be used for procurement of U.S. goods and services. It is anticipated that a private engineering firm and private construction company will perform services in Guyana.
25. FAA §.601(d). Conclusion and supporting information on compliance with the Congressional policy that engineering and professional services of U. S. firms and their affiliates are to be used in connection with capital projects to the maximum extent consistent with the national interest.

U.S. engineering services will be utilized on the project.
26. FAA §.602. Information and conclusions whether loan will permit American small business to participate equitably in the furnishing of goods and services financed by it.

U.S. small business will have an opportunity to participate equitably in furnishing goods and services to the project.
27. FAA §.604(a); App. §.108. Compliance with restriction of commodity procurement to U. S. except as otherwise determined by the President and subject to statutory reporting requirements.

Procurement with loan funds will be restricted to the U.S.
28. FAA §.604(b). Compliance with bulk commodity procurement restriction to prices no higher than the market price prevailing in the U. S. at time of purchase.

Will be complied with.
29. FAA §.604(d). Compliance with requirement that marine insurance be purchased on commodities if the host country discriminates, and that such insurance be placed in the U. S.

Will be complied with
30. FAA §.604(e). Compliance with requirement that funds not be used for procurement of any agricultural commodity or product thereof outside the United States when the domestic price of such commodity is less than parity.

Will be complied with.
31. FAA §.611(a)(1). Information and conclusion on availability of engineering, financial, and other plans necessary to carry out the assistance and of a reasonably firm estimate of the cost of the assistance to the United States.

Necessary substantive technical and financial planning have been completed and a reasonably firm estimate of cost has been obtained.
32. FAA §.611(a)(2). Necessary legislative action required within recipient country and basis for reasonable anticipation such action will be completed in time to permit orderly accomplishment of purposes of loan.

Legislative approval of the loan is required before the Loan Agreement may be signed. It is expected that this approval will be obtained within a short period of time to permit orderly accomplishment of the purposes of the loan.

33. FAA §.611(b); App. §.101. If water or water-related land resource construction project or program, information and conclusion on benefit-cost computation. Not applicable.
34. FAA §.611(c). Compliance with requirement that contracts for construction be let on competitive basis to maximum extent practicable. Will be complied with.
35. FAA §.612(b) and 636(h). Appropriate steps that have been taken to assure that, to the maximum extent possible, the country is contributing local currencies to meet the cost of contractual and other services and foreign currencies owned by the U. S. are utilized to meet the cost of contractual and other services. The loan will finance U.S. dollar costs only. The Borrower will supply needed local currency from its own resources.
36. FAA §.619. Compliance with requirement that assistance to newly independent countries be furnished through multilateral organizations or plans to maximum extent appropriate. Other lenders have expressed no interest in the project. The project is consistent with IBRD approach toward assistance to Guyana.
37. FAA §.620(a); App. §.107(a) and (b). Compliance with prohibitions against assistance to Cuba and any country (a) which furnishes assistance to Cuba or failed to take appropriate steps by February 14, 1964, to prevent ships or aircraft under its registry from carrying equipment, materials, or supplies from or to Cuba; or (b) which sells, furnishes, or permits any ships under its registry from carrying items of primary strategic significance, or items of economic assistance to Cuba. Guyana furnishes no assistance to Cuba.
38. FAA §.620(b). If assistance to the government of a country, existence of determination it is not controlled by the international Communist movement. Guyana is not controlled by the international communist movement.
39. FAA §.620(c). If assistance to the government of a country, existence of indebtedness to a U. S. citizen for goods or services furnished or ordered where such citizen has exhausted available legal remedies or where the debt is not denied or contested by such government or the indebtedness arises under an unconditional guaranty given by such government. Not applicable.
40. FAA §.620(d). If assistance for any productive enterprise which will compete in the U. S. with U. S. enterprise, existence of agreement with the recipient country to prevent export to the U. S. of more than 20% of the enterprise's annual production during the life of the loan. Not applicable.

41. FAA §.620(e)(1). If assistance to the government of a country, extent to which it (including government agencies or subdivisions) has, after January 1, 1962, taken steps to repudiate or nullify contracts or taken any action which has the effect of nationalizing, expropriating, or otherwise seizing ownership or control of property of U. S. citizens or entities beneficially owned by them without taking appropriate steps to discharge its obligations. Guyana has taken no such action.
42. FAA §.620(f); App. §.109. Compliance with prohibitions against assistance to any Communist country. Guyana is not a communist country.
43. FAA §.620(g). Compliance with prohibition against use of assistance to compensate owners for expropriated or nationalized property. Will be complied with.
44. FAA §.620(h). Compliance with regulations and procedures adopted to insure against use of assistance in a manner which, contrary to the best interests of the U. S., promotes or assists the foreign aid projects or activities of the Communist-bloc countries. This loan will not promote or assist aid projects of the Communist Bloc countries.
45. FAA §.620(i). Existence of determination that the country is engaging in or preparing for aggressive military efforts. Guyana is not engaging in such activity.
46. FAA §.620(i). Information on representation of the country at any international conference when that representation includes the planning of activities involving insurrection or subversion against the U. S. or countries receiving U. S. assistance. No determination has been made that Guyana has been so represented.
47. FAA §.620(k). If construction of productive enterprise where aggregate value of assistance to be furnished by U. S. will exceed \$100 million, identification of statutory authority. Not applicable.
48. FAA §.620(1). Consideration which has been given to denying assistance to the government of a country which after December 31, 1966, has failed to institute the investment guaranty program for the specific risks of inconvertibility and expropriation or confiscation. Guaranty agreement is in effect.
49. FAA §.620(n); App. 107(b) and 116. Compliance with prohibition against assistance to countries which traffic or permit trafficking with North Viet-Nam. Guyana does not traffic or permit trafficking with North Vietnam.

50. FAA §.620(o). If country has seized, or imposed any penalty or sanction against, any U. S. fishing vessel on account of its fishing activities in international waters, information on the consideration which has been given to excluding the country from assistance. Not applicable.
51. FAA §.620(q). Existence of default under any Foreign Assistance Act loan to the country. Guyana is not in default under any FAA loan.
52. FAA §.621. Information and conclusion on how the loan in providing technical assistance will utilize to the fullest extent practicable goods and professional and other services from private enterprise on a contract basis. If the facilities of other Federal agencies will be utilized, information and conclusion on whether they are particularly suitable, are not competitive with private enterprise, and can be made available without undue interference with domestic programs. Technical assistance will be contracted with a private U.S. firm.
53. App. §.102. Compliance with requirement that payments in excess of \$25,000 for architectural and engineering services on any one project be reported to Congress. Will be complied with.
54. App. §.104. Compliance with bar against funds to pay pensions, etc., for military personnel. Will be complied with.
55. App. §.106. If country attempts to create distinctions because of their race or religion among Americans in granting personal or commercial access or other rights otherwise available to U. S. citizens generally, application which will be made in negotiations of contrary principles as expressed by Congress. Will be complied with.
56. App. §.111. Compliance with existing requirements for security clearance of personnel. Will be complied with.
57. App. §.112. Compliance with requirement for approval of contractors and contract terms for capital projects. Will be complied with.
58. App. §.114. Compliance with bar against use of funds to pay assessments, etc., of U. N. member. Will be complied with.
59. App. §.115. Compliance with regulations on employment of U. S. and local personnel for funds obligated after April 30, 1964 (Regulation 7). Will be complied with.
60. App. §.401. Compliance with bar against use of funds for publicity or propaganda purposes within U. S. not heretofore authorized by Congress. Will be complied with.

June 15, 1967

ANNEX II

DETAILED TECHNICAL ANALYSIS

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Annex II

Page 1 of 31TECHNICAL DESCRIPTION OF PROJECT

This project comprises the improvement and reconstruction of three of the coastal roads in Guyana which have an aggregate length of approximately 81 miles. Following is a detailed description of each of the three roads.

NEW AMSTERDAM - CRABWOOD CREEK (50.7 MI)

This road has an existing asphalt surfaced pavement which was originally constructed to a width of 18 feet but which, through raveling of the edges, is somewhat less than 18 feet in many places. Portions of the surface were constructed of asphalt hot mix varying from 2 inches to 4 inches in thickness and other portions were of penetration asphalt 4 inches in thickness. The base course was constructed of burnt earth with a thickness of from 3 inches to 9 inches. The subbase, where required, was constructed of quarry sand with quarry cleanings used in a few places. Some sections of the pavement and base have deteriorated badly through overloading and maintenance. Also, the shoulders are very narrow in places (3 to 4 feet) with steep side slopes ending in narrow borrow ditches. Very few fill and no cut sections exist as the country is very flat with all of the subgrade material coming from the borrow ditches.

Proposed reconstruction includes patching of the original base and paving where required, widening the crown width to 38 feet to provide for a 22 ft. pavement and 8 ft. shoulders, widening the base (both sides) to accommodate the 22 ft. pavement, widening of structures, and adding an overlay of either sand asphalt or bituminous concrete. In urban areas, the shoulders will be paved with a light-asphalt surface treatment to provide for bicycle and cart traffic.

BLACK BUSH POLDER INTERSETTLEMENT ROAD (22.0 MI)

This is a loop road leading south from the New Amsterdam-Crabwood Creek Road at approximately Mile 20 and rejoining it at approximately Mile 29.5. Originally, the road was paved with sand asphalt on a burnt earth base to a width of 13 to 15 feet. The road runs parallel to canals throughout its length, the road bed being built from the canal excavation. Adequate width of

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roadway exists for the construction of an additional lane of pavement when required. Also, this additional width of roadway provides adequate passing room for vehicles.

Reconstruction will include patching of base and surface where required and adding an overlay of either sand asphalt or bituminous concrete. The present shoulders will be brought up to the level of the new bituminous overlay.

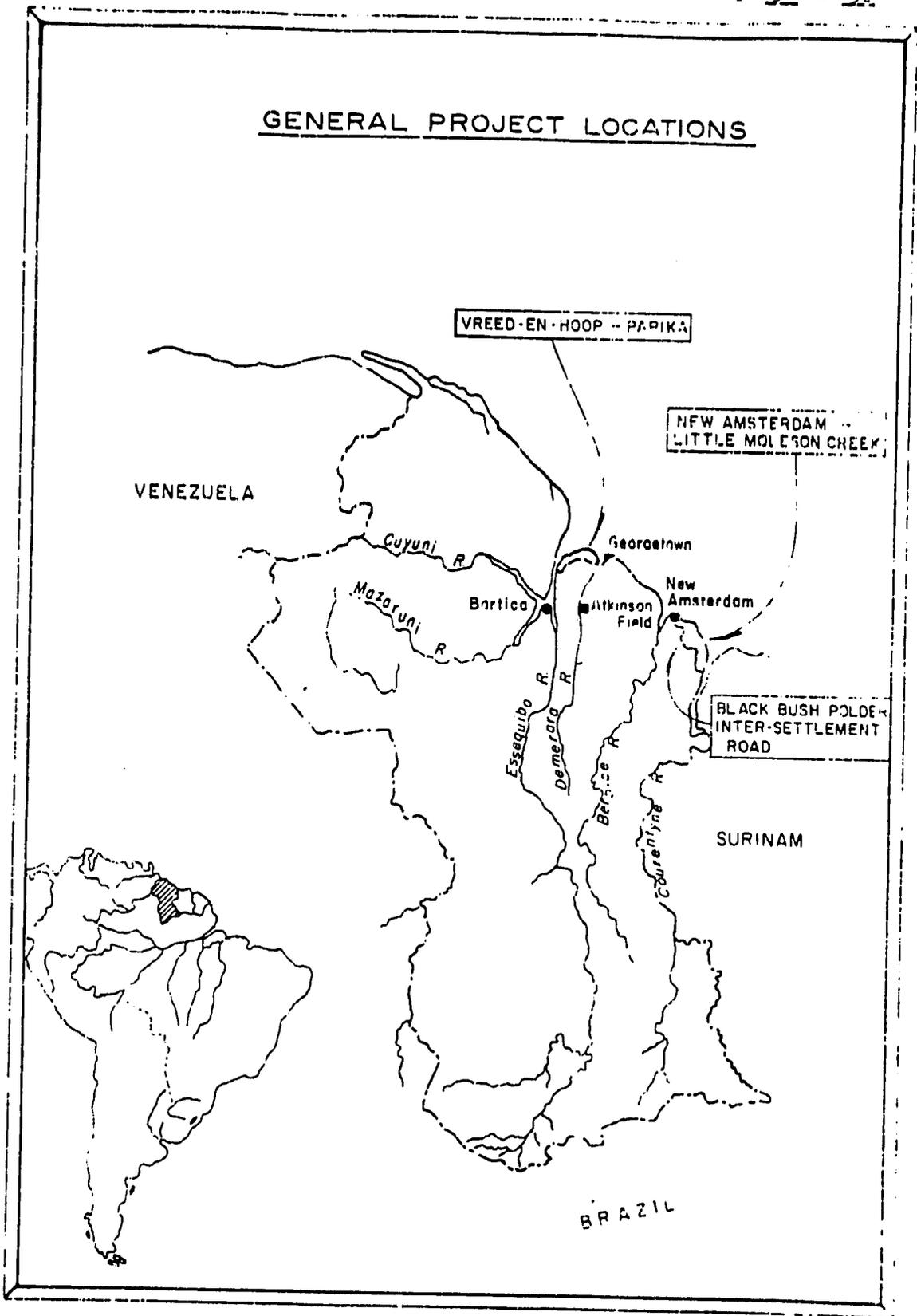
Existing drainage structures (all small) have a traveled width of 11 feet and will be left at this width until a new lane of pavement is added.

PARIKA - UITVLUGT (8.5 MI)

This unpaved section of the Vreed-en-Hoop-Parika road starts near the dock and railway station in Parika and extends to the village of Uitvlugt where it joins the paved section extending to Vreed-en-Hoop. The present road section is narrow, the crown width varying from 14 ft. to 35 ft., except in the villages where it is somewhat wider. Steep side slopes ending in narrow borrow ditches are prevalent. The subgrade is predominately clay to which has been added from time to time burnt earth and quarry cleanings as a surfacing material.

Proposed reconstruction includes some relocation and flattening of curves, widening the crown width to 38 ft. to provide for a 22 ft. pavement and 8 ft. shoulders, widening of drainage structures, adding of new drainage structures where required, construction of a sand base course and either a sand asphalt or bituminous concrete surface. In urban areas the shoulders will be paved with a light asphalt surface to provide for bicycle and cart traffic.

GENERAL PROJECT LOCATIONS



RECOMMENDED DESIGN STANDARDS

	<u>Uitvlugt Parika</u>	<u>New Amsterdam Crabwood Creek</u>	<u>Black Bush Polder Inter-Settlement Road</u>
Design Speed	30 mph urban 45 mph rural	30 mph urban 45 mph rural	* 35 mph
Max. degree curvature	20°	20°	* 51°
Max. grade	negligible	negligible	negligible
Width of Pavement	22 ft.	22 ft.	13 ft.
Width of Shoulders	8 ft. (paved in urban section)	8 ft. (paved in urban section)	Use existing (raise to sur- face height)
Min. Width of Bridges	** 38 ft. for spans under 30 ft. 26 ft. for spans over 30 ft.	** 38 ft. for spans under 30 ft. 26 ft. for spans over 30 ft.	Use existing
Width of ROW	varies	varies	Use existing
Embankment Slopes	3:1	3:1	Use existing
Bridge Loading	H 15-44	H 15-44	Use existing
Pavement Loading	*** 41 & 75 equiv. daily 18 kip axles	*** 48 & 112 equiv. daily 18 kip axles	21 equiv. daily 18 kip axles

* Except at "T" intersections and narrow bridges where hazard signs are suggested.

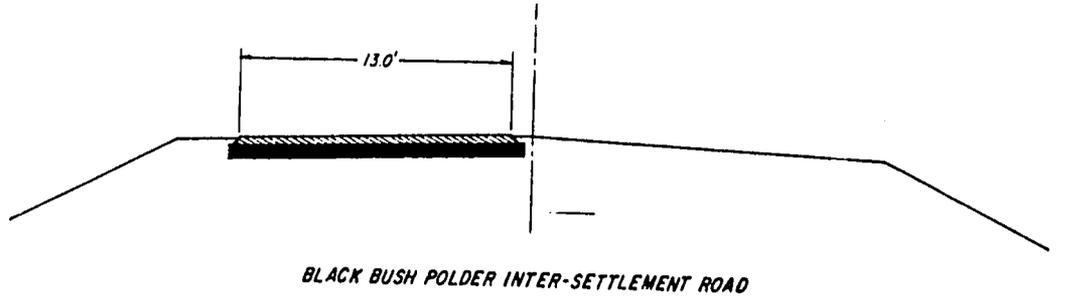
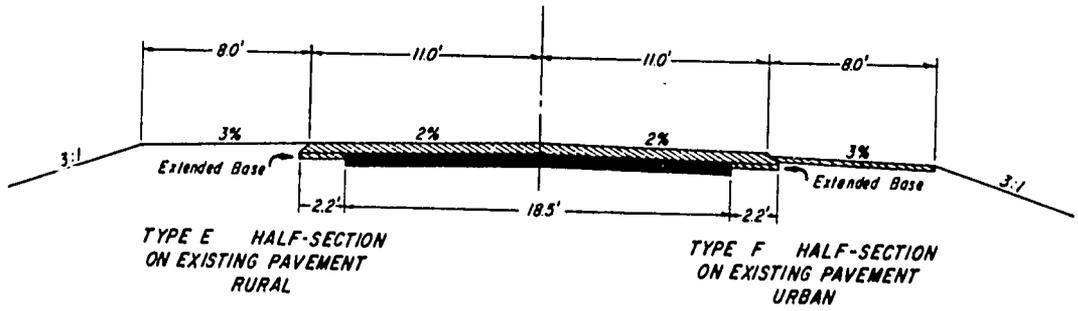
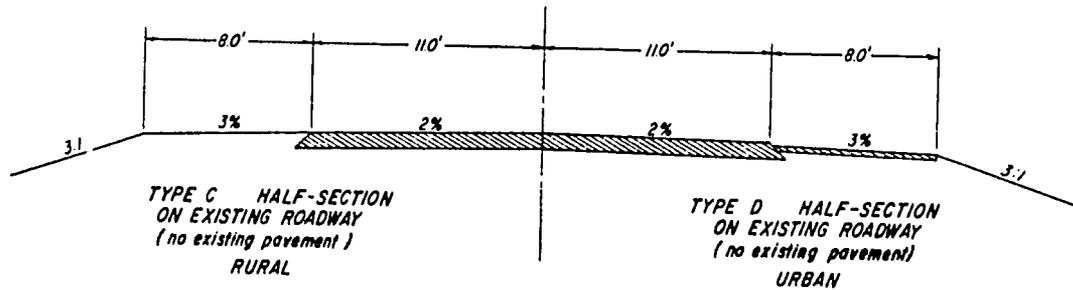
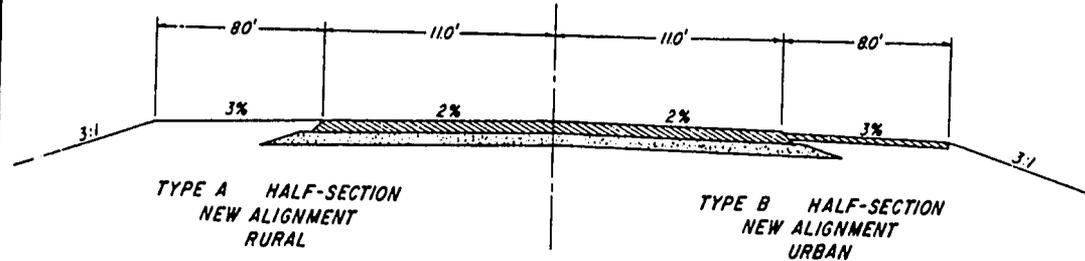
** Except where using in place where hazard signs are suggested.

***. Two designs suggested, depending on traffic volume.

-  Sand Asphalt
-  Sand
-  Existing Pavement

TYPICAL SECTIONS

NOTE: Sections A-F apply to both Vreed-en-hoop - Parika and New Amsterdam - Little Moleson Creek roads.



SUMMARY OF QUANTITIES AND COST ESTIMATE

NEW AMSTERDAM - CRABWOOD CREEK

	<u>Quantity</u>	<u>Unit Price</u>		<u>Amount</u>	
		<u>Guyana</u>	<u>U.S.</u>	<u>Guyana</u>	<u>U.S.</u>
<u>GRADING ITEMS</u>					
General clearing and grubbing	2685.0 sta.	1.36	1.20	3,651.60	3222.00
Scarifying, relaying and compacting existing Subgrade	2587.2 sta	10.20	20.00	26,389.44	51,744.00
Embankment	678,161 cu.yds.	0.85	1.92	<u>576,436.85</u>	<u>1,302,069.12</u>
TOTAL GRADING ITEMS				606,477.89	1,357,035.12
<u>BRIDGE AND CULVERT ITEMS</u>					
Removal of Existing Structures	9 ea.	306.00	120.00	2,754.00	1,080.00
Preparation of Existing Structures	72 ea.	272.00	140.00	19,584.00	10,080.00
Excavation for Structures	1,780 cu.yds.	2.55	1.50	4,539.00	2,670.00
Concrete Structures	20,594 sq.ft.	6.80	11.00	140,039.20	226,534.00
24" Culvert Pipe	56 l.f.	6.00	13.00	336.00	728.00
36" Culvert Pipe	344 l.f.	7.00	22.00	2,408.00	7,568.00
42" Culvert Pipe	56 l.f.	10.00	38.00	560.00	2,128.00
48" Culvert Pipe	188 l.f.	14.00	40.00	<u>2,632.00</u>	<u>7,520.00</u>
TOTAL BRIDGE AND CULVERT ITEMS				172,852.20	258,308.00

RIGHT-OF-WAY ITEMS

Moving Buildings	9 ea.	1800.00	-	16,200.00	-
Rice Crop Damage	2.8 ac.	65.00	-	182.00	-
Removing Power Lines	50.8 miles	4250.00	-	<u>215,900.00</u>	-
Total Right-of-Way Items				232,282.00	

SURFACING ITEMS

White Sand	216,022 Br. tons	2.05	3.20	442,845.10	691,270.40
Reef Sand	-	-	-	-	-
Rapid cure asphalt (RC-2)	130,696 Imp. Gal.	.10	.32	13,069.60	41,822.72
Asphalt cement (40-50)	4,598,841 Imp Gal.	.10	.39	459,884.10	1,793,547.99
Cement	490,215 bags	.46	1.76	<u>225,498.90</u>	<u>862,778.40</u>
Total Surfacing Items				1,141,297.70	3,389,419.51
Mobilization (prorated)	-	-	-	-	<u>455,000.00</u>
Subtotal				2,152,909.79	5,459,762.63
Contingencies (20%)				<u>430,581.96</u>	<u>1,091,952.53</u>
Subtotal				2,583,491.75	6,551,715.16
Subtotal (Equiv. U.S.)				1,519,713.19	6,551,715.16
				8,071,428.35	
Foreign engineering				-	282,499.99
Local engineering				<u>201,785.71</u>	-
TOTAL U.S. DOLLARS				1,721,498.90	6,834,215.15
				(20.19)	(79.97)

8,555,714.05

SUMMARY OF QUANTITIES AND COST ESTIMATE

UITVLUCHT - PARIKA

	<u>Quantity</u>	<u>Unit Price</u>		<u>Amount</u>	
		<u>Guyana</u>	<u>U.S.</u>	<u>Guyana</u>	<u>U.S.</u>
<u>GRADING ITEMS</u>					
General clearing and grubbing Scarifying, relaying and compacting existing Subgrade	435.14 sta.	1.36	1.20	591.79	522.17
Embankment	109,892 cu. yd.	0.85	1.64	<u>93,408.20</u>	<u>180,222.88</u>
TOTAL GRADING ITEMS				93,999.99	180,745.05
<u>BRIDGE AND CULVERT ITEMS</u>					
Removal of Existing Structures	13 ea.	306.00	120.00	3,978.00	1,560.00
Preparation of Existing Structures	-	-	-	-	-
Excavation for Structures	680 cu. yd.	2.55	1.50	1,734.00	1,020.00
Concrete Structures	17,901 sq.ft.	6.80	11.00	121,726.80	196,911.00
36" Culvert Pipe	240 l.f.	7.00	22.00	1,680.00	5,280.00
60" Culvert Pipe	62 l.f.	17.00	56.00	1,054.00	3,472.00
72" Culvert Pipe	86 l.f.	17.00	58.00	<u>1,462.00</u>	<u>4,988.00</u>
TOTAL BRIDGE AND CULVERT ITEMS				131,634.80	213,231.00

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RIGHT-OF-WAY ITEMS

Moving Stores	2 ea.	3,000.00	-	6,000.00	-
Moving Buildings	10 ea.	900.00	-	9,000.00	-
Rice Crop Damage	24.5 ac	250.00	-	3,050.00	-
Removing Power Lines	5.2 miles	4,250.00	-	<u>22,100.00</u>	-
				TOTAL R.O.W.	41,742.50

SURFACING ITEMS

White Sand	68,990 Br. tons	2.00	3.01	137,980.00	207,652.90
Reef Sand	13,440 Br. tons	.85	1.50	11,424.00	20,160.00
Rapid cure Asphalt (RC-2)	21,317 Imp. Gal.	.10	.32	2,131.70	6,821.44
Asphaltic Cement (40 - 50)	643,110 Imp. Gal.	.10	.39	64,311.00	250,812.90
Cement	68,628 bags	.42	1.65	<u>28,823.76</u>	<u>113,236.20</u>

TOTAL SURFACING ITEMS 244,670.46 598,698.44

Mobilization (prorated) - 75,000.80

SUBTOTAL 512,047.75 1,967,666.49
102,409.55 213,533.30

SUBTOTAL 614,457.30 1,281,199.79

SUBTOTAL (Equiv. U.S.) 361,448.36 1,281,199.79

1,642,648.15

Foreign engineering
Local engineering

	-	57,492.68
	<u>41,066.20</u>	<u>-</u>
TOTAL U.S. DOLLARS	402,514.56	1,338,692.47
	(23.1%)	(76.9%)
	1,741,207.03	

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SUMMARY OF QUANTITIES AND COST ESTIMATE
BLACK BUSH POLDER INTER-SETTLEMENT ROAD

	<u>Quantity</u>	<u>Unit Price</u>		<u>Amount</u>	
		<u>Guyana</u>	<u>U.S.</u>	<u>Guyana</u>	<u>U.S.</u>
<u>GRADING ITEMS</u>					
General clearing and grubbing	1,134.7 sta.	2.38	.60	2,700.59	680.82
Shouldering and shaping	1,134.7 sta.	40.00	12.00	<u>45,388.00</u>	<u>13,616.40</u>
TOTAL GRADING ITEMS				48,088.59	14,297.22
<u>SURFACING ITEMS</u>					
White sand	30,240 Br. tons	5.25	1.32	158,760.00	39,916.80
Rapid cure asphalt (RC-2)	27,501 Imp. gal.	.10	.32	2,750.10	8,800.32
Asphaltic cement (40-50)	643,200 Imp. gal.	.10	.39	64,320.00	250,848.00
Cement	68,760 bags	.46	1.76	<u>31,629.60</u>	<u>121,017.60</u>
TOTAL SURFACING ITEMS				257,459.70	420,582.72
SUBTOTAL				305,548.29	434,879.94
Contingencies (20%)				<u>61,109.66</u>	<u>86,975.99</u>
SUBTOTAL				366,657.95	521,855.93
SUBTOTAL (EQUIV. U.S.)				215,668.21	521,855.93
				737,524.14	
Foreign engineering				-	25,813.34
Local engineering				<u>18,438.10</u>	-
TOTAL U.S. DOLLARS				234,106.31	547,669.27
				(29.9%)	(70.1%)
				78,775.58	

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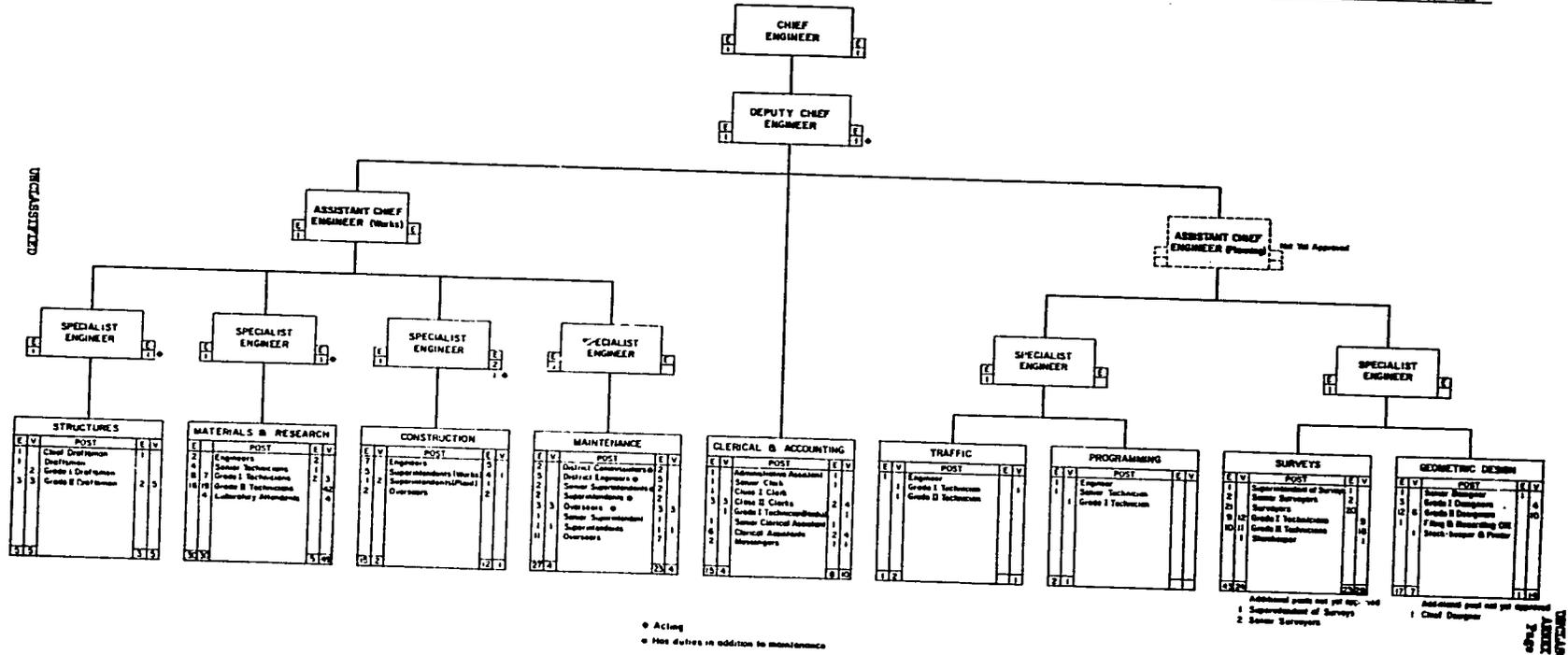
PROPOSED CONSTRUCTION SCHEDULE

CONSTRUCTION PHASE	1967	1968	1969	1970
	M J J A S O N D J F M A M J J A S O N D J F M A M J J A S O N D J F M A M	M J J A S O N D J F M A M J J A S O N D J F M A M	M J J A S O N D J F M A M J J A S O N D J F M A M	M J J A S O N D J F M A M J J A S O N D J F M A M
<i>New Amsterdam (mile 8) to Crabwood Creek</i>				
<i>Engineering Selection</i>				
<i>Plans + Spec.</i>				
<i>Adv., Prep, & Rec. of Bids</i>				
<i>Analysis & Award of Cont.</i>				
<i>Mobilization</i>				
<i>Construction</i>				
<i>New Amsterdam to Mile 8</i>				
<i>Plans + Spec.</i>				
<i>Construction</i>				
<i>Black Bush Polder</i>				
<i>Plans + Spec.</i>				
<i>Construction</i>				
<i>Parika to Uitylugat</i>				
<i>Surveys, Plans + Spec.</i>				
<i>Construction</i>				

MATERIALS TO BE PURCHASED
IN THE UNITED STATES

<u>ITEM</u>	<u>QUANTITY</u>	<u>UNIT COST</u>	<u>TOTAL COST</u>
Asphalt	6,100,000 gal.	0.10	\$610,000
Cement	628,000 bags	1.25	760,000
Reint Steel	225,000 lbs.	.0.08	18,000
Culvert Pipe	1,000 ft.	15.00 Av.	<u>15,000</u>
		Total	\$1,403,000

ROADS DIVISION ORGANIZATIONAL CHART



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TRAFFIC ANALYSIS

In the improvement of existing roads, one of the most important elements in determining the feasibility of a proposed improvement is a reasonable and rational evaluation and prediction of the volume and nature of the traffic which may be expected to use the facility.

Available Traffic Data

In the Miller-Warden-Western feasibility report, traffic projections are based on Motor vehicle registration data and traffic counts made by the Roads Division of the Ministry of Works and Hydraulics.

The traffic counts were made twice yearly for 24 hour seven day periods with three count locations on the Vreed-en-Hoop-Parika section, four locations on the New Amsterdam-Little Moleson Creek section, and two locations on the Black Bush-Polder section. These counts cover the period 1961-1966 inclusive. Table I shows the breakdown of average daily traffic for the years 1964-1966 inclusive. Some of the counts for the years 1964 and 1965 appear unreasonably high. However, the 1966 counts were supervised more closely and are considered to be reasonably accurate.

Traffic Projections

Traffic data collected by the Roads Division does not cover a sufficient period of years to establish growth trends. In the absence of other reliable data, growth rates of vehicle registration adjusted proportionally downward were considered to be applicable on the New Amsterdam-Crabwood Creek and Parika-Uitvlugt Roads. This decision was reached after a study of areas where the major growth in vehicles will most likely occur and where growth rates will probably exceed the national growth rates of vehicle registration.

For the Black Bush Polder Intersettlement Road, two-thirds of the planned 1252 families are already settled in the area. It was estimated that traffic growth rates would be the same as the predicted National growth in vehicle registration through 1975 and then follow the same rate of growth as the New Amsterdam-Crabwood Creek Road from 1975 through 1989.

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Annex II

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Due to the traffic estimates being required for design analysis as well as road user benefits, projections were made for cars and similar type vehicles such as vans, jeeps and station wagons and also for trucks and busses. Traffic projections are shown in Table 2 for Parika-Uitvlugt, Table 3 for New Amsterdam-Grabwood Creek and in Table 4 for the Black Bush-Polder Inter-settlement Road.

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Table I
BREAKDOWN
OF
AVERAGE DAILY TRAFFIC

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1964 - 1966

<u>Road</u>	<u>Year</u>	<u>Buses</u>	<u>Lorries</u>	<u>Cars</u>	<u>Vans</u>	<u>ADT</u>	<u>Carts</u>	<u>Motorcycles</u>	<u>Total Vehicles (Excluding Bicycles)</u>	<u>Bicycles</u>
<u>Vreed-en-Hoop - Parika</u>										
Vreed-en-Hoop	1964	-	114	965	59	1138	35	128	1301	2069
	1965	-	162	940	58	1160	33	147	1340	1888
	1966	-	244	1502	137	1883	43	301	2227	2114
Uitvlugt	1964	-	980	1779	799	3558	414	777	4749	4247
	1965	-	972	1738	858	3568	284	904	4756	3756
	1966	-	549	1341	553	2443	131	588	3162	3292
Parika	1964	-	26	101	24	151	34	14	199	651
	1965	-	33	102	28	163	21	25	209	559
	1966	-	25	116	29	170	23	45	238	479
<u>New Amsterdam - Little Moleson Creek</u>										
Springlands	1964	41	461	1227	204	1933	95	187	2215	1735
	1965	26	131	1014	134	1365	44	159	1568	1774
	*1966	35	184	1033	196	1448	57	206	1711	1640
No. 66 Bridge	*1966	29	92	574	79	774	13	115	902	714
Port Mourant	1964	80	464	1636	214	2394	52	156	2602	3753
	*1965	91	907	2328	371	3597	58	309	3964	2375
	*1966	81	1013	1215	413	2722	64	370	3156	1208
Canje Bridge	1964	121	309	1346	156	1932	68	140	2140	3007
	*1965	145	565	1585	365	2660	131	358	3149	2248
	*1966	152	784	2427	451	3814	206	664	4684	4671
<u>Black Bush Polder Inter-Settlement</u>										
Adventure	*1966	10	101	359	-	470	10	58	538	177
Joppa	*1966	10	14	73	21	118	3	12	133	30

* Note - The data shown is based on a 24-hour, 7-day count in November.

Source: See Reference 53.

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Table 2
TRAFFIC PROJECTIONS
1966 - 1989
VREED-EN-HOOP - PARIKA

Year	Cars ^{1/}			Percent Growth Rate	Buses and Trucks			Percent Growth Rate	Average Daily Traffic		
	Vreed-en- Hoop	Uitvlugt	Parika		Vreed-en- Hoop	Uitvlugt	Parika		Vreed-en- Hoop	Uitvlugt	Parika
1966	1639	1894	145	*	244	549	25	*	1683	2443	170
1967	1770	2046	157		259	582	27		2029	2628	184
1968	1912	2209	169	8.0	274	617	28	6.0	2186	2826	197
1969	2065	2386	183		281	654	30		2356	3040	213
1970	2230	2577	197	*	308	693	32	*	2538	3270	229
1971	2375	2745	210		323	728	34		2698	3473	244
1972	2529	2923	223	6.5	340	764	35	5.0	2869	3687	258
1973	2694	3112	238		357	802	37	5.0	3051	3914	275
1974	2869	3315	253	*	374	842	39	*	3243	4157	292
1975	3055	3531	270		393	884	41		3448	4415	311
1976	3223	3725	285		407	915	42		3630	4640	327
1977	3400	3930	301	5.5	421	947	44		3821	4877	345
1978	3587	4146	317		436	980	45		4023	5126	362
1979	3785	4374	334	*	451	1014	47		4236	5388	381
1980	3993	4615	353		467	1050	49		4460	5665	402
1981	4153	4800	367		483	1086	51		4636	5896	418
1982	4319	4992	381	4.0	500	1125	52	3.5	4819	6117	433
1983	4492	5191	397		518	1164	54		5010	6355	451
1984	4671	5399	413		536	1205	56		5207	6604	469
1985	4858	5615	429	*	554	1247	58		5412	6862	487
1986	5028	5812	444		574	1291	60		5602	7103	504
1987	5204	6015	460	3.5	594	1336	62		5798	7351	522
1988	5386	6225	476		615	1383	64		6001	7608	540
1989	5575	6443	492	*	637	1431	66	*	6212	7874	558

^{1/} Cars, vans, jeeps, station wagons.

Table 3
 TRAFFIC PROJECTIONS
 1966 - 1989
 NEW AMSTERDAM - LITTLE MOLESON CREEK

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Year	Cars ^{1/}					Buses and Trucks					Average Daily Traffic			
	Spring-lands	No. 66 Bridge	Port Mourant	Canje Bridge	Percent Growth Rate	Spring-lands	No. 66 Bridge	Port Mourant	Canje Bridge	Percent Growth Rate	Spring-lands	No. 66 Bridge	Port Mourant	Canje Bridge
1966	1229	653	2413 ^{2/}	2878	*	219	121	496 ^{2/}	936	*	1448	774	2909	3814
1967	1327	705	2606	3108	8.0	232	128	526	992	0.0	1559	833	3132	4100
1968	1434	762	2815	3357	8.0	246	136	557	1051	0.0	1680	898	3372	4408
1969	1548	823	3040	3625	*	261	144	591	1115	*	1809	967	3631	4740
1970	1672	888	3283	3915	*	276	153	626	1182	*	1948	1041	3909	5097
1971	1781	946	3496	4169	*	290	161	657	1241	0.5	2071	1107	4153	5410
1972	1896	1007	3724	4440	6.5	304	169	690	1303	0.5	2200	1176	4414	5743
1973	2020	1073	3966	4729	6.5	320	177	725	1368	0.5	2340	1250	4691	6097
1974	2151	1142	4223	5036	*	335	186	761	1437	*	2486	1328	4984	6473
1975	2291	1217	4498	5364	*	352	195	799	1509	*	2643	1412	5297	6873
1976	2417	1284	4745	5679	*	364	202	827	1562	*	2791	1486	5572	7221
1977	2549	1355	5006	5970	5.5	377	209	856	1616	5.5	2926	1564	5862	7586
1978	2690	1429	5282	6299	5.5	390	216	886	1673	5.5	3080	1645	6168	7972
1979	2838	1508	5572	6645	*	404	224	917	1732	*	3242	1732	6489	8377
1980	2994	1591	5879	7010	*	418	232	949	1792	*	3412	1823	6828	8802
1981	3113	1655	6114	7290	4.0	432	239	982	1855	3.5	3545	1894	7096	9145
1982	3238	1721	6359	7582	4.0	448	248	1016	1920	3.5	3686	1961	7375	9502
1983	3368	1790	6613	7885	4.0	464	257	1052	1987	3.5	3832	2047	7665	9872
1984	3502	1861	6878	8200	*	480	265	1089	2057	*	3982	2126	7967	10257
1985	3643	1936	7153	8529	3.5	496	275	1127	2129	*	4139	2211	8280	10658
1986	3771	2003	7403	8828	3.5	514	285	1167	2203	*	4285	2288	8570	11031
1987	3902	2074	7662	9136	3.5	532	295	1207	2280	*	4434	2369	8869	11416
1988	4039	2146	7931	9456	*	551	305	1250	2360	*	4590	2451	9181	11816
1989	4180	2222	8208	9787	*	570	316	1293	2443	*	4750	2538	9501	12230

^{1/} Cars, vans, jeeps, station wagons.

^{2/} Adjusted.

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Table 4
TRAFFIC PROJECTIONS
1966 - 1989
BLACK BUSH POLDER INTER-SETTLEMENT

<u>Year</u>	<u>Cars</u> ^{1/}	<u>Percent Growth Rate</u>	<u>Trucks and Buses</u>	<u>Percent Growth Rate</u>	<u>Average Daily Traffic</u>
1966	359				
1967	402		111	*	470
1968	450		121		523
1969	504		132	0.0	582
1970	565		144		648
1971	622		157	*	722
1972	684		167		789
1973	752		180	7.0	864
1974	827		192		944
1975	909		206	*	1033
1976	954		220		1129
1977	1012		228		1182
1978	1067		236		1248
1979	1126		244		1311
1980	1188		252		1378
1981	1236		261		1449
1982	1285		270		1506
1983	1336		280	3.5	1565
1984	1390		290		1626
1985	1445		300		1690
1986	1496		310		1755
1987	1548		321		1817
1988	1602		332		1880
1989	1658		344		1946
			356		2014

^{1/} Cars, vans, jeeps, station wagons.

ROAD USER BENEFIT-COST ANALYSIS

Road User Benefits

In analyzing road user costs, Miller-Warden-Western uses the usual items of cost-fuel, oil, tires, depreciation, maintenance, interest, and occupants time. Allowances for accident reduction and comfort and convenience were not included as these items were considered to be too difficult of quantification with the meager data available in Guyana.

In analyzing the various items of road user cost, extensive use was made of the AASHO Manual Road User "Benefit Analysis for Highway Improvements" and IBRD publication "Quantification of Road User Savings". Also, in order to apply the principles of these publications, the MWW team interviewed representatives of numerous organizations and companies using, servicing and selling motor vehicles in Guyana.

The estimated costs per mile of operating a motor car on the project roads before and after reconstruction are shown in the following table:

VEHICLE OPERATING COSTS
 (Cents per Mile)

ITEM	BEFORE RECONSTRUCTION		AFTER RECONSTRUCTION	
	G-\$ GUYANA	\$ U.S.	GUYANA	U.S.
Fuel	2.007	1.181	1.231	0.724
Oil	0.172	0.101	0.119	0.070
Tire Wear	1.450	0.853	0.220	0.129
Depreciation	4.434	2.608	2.955	1.738
Interest	4.247	2.498	2.155	1.268
Maintenance	1.526	0.897	0.749	0.441
Occupants Time	4.627	2.722	2.313	1.361
TOTAL	18.463	10.860	9.742	5.731
SAVINGS			8.721	5.129

Comparison of truck and bus operating costs to those of passenger cars show a ratio of from 2 to 4 in rural areas. MWW estimated that a ratio of 2 was reflective of the operating costs in Guyana. Therefore, the savings from improved operating conditions for trucks and busses would be \$0.1026 per vehicle mile.

In computing road user savings, the traffic stations and estimated average trip length at the stations are as follows:

<u>Traffic Station</u>	<u>Average Trip Length in Miles</u>
Average of Traffic at Vreed-en Hoop and Uitvlugt Count Locations	17.1
Traffic at Parika Count Location	2.2

Average of Traffic at Canje Bridge and Port Mourant Count Locations	14.2
Average of Traffic at Port Mourant and No. 66 Bridge Count Locations	25.9
Average of Traffic at No. 66 Bridge and Springlands Count Locations	10.7
Black Bush Polder	9.0

Tables 5, 6, and 7 show the discounted benefits and costs for the three project roads with the resulting benefit-cost ratios as follows:

Parika-Uitvlugt	-	3.10
New Amsterdam-Crabwood Creek	-	3.82
Black Bush Polder	-	1.78

Table 8 shows the combined benefit-cost ratio for the three roads as having a value of 3.43.

Following are sample computations for determining the discounted benefits to traffic using an opportunity interest rate of 10%.

Parika-Uitvlugt Road (1971)

Parika Traffic

Cars	-	210 x 365 x 2.2 x 0.0513	= 8,700
Trucks & Busses	-	34 x 365 x 2.2 x 0.1026	= 2,800

Uitvlugt Traffic

Cars	2745 x 365 x 6.3 x 0.0513	= 323,800
Trucks & Busses	278 x 365 x 6.3 x 0.1026	= <u>171,800</u>
Total traffic benefits		= \$507,100

Present Worth = 507,100 x 0.909 = \$460,000

New Amsterdam - Crabwood Creek (1970)

Canje Bridge - Port Mourant (Average traffic count)

Cars	-	3599 x 365 x 14.2 x 0.0513	=	956,900
Trucks & Busses	-	904 x 365 x 14.2 x 0.1026	=	480,700

Port Mourant - No. 66 Bridge (Average Count)

Cars	-	2085 x 365 x 25.9 x 0.0513	=	1,011,200
Trucks & Busses	-	390 x 365 x 25.9 x 0.1026	=	378,300

No 66 Bridge - Springlands (Average Count)

Cars	-	1280 x 365 x 10.7 x 0.0513	=	256,500
Trucks & Busses	-	215 x 365 x 10.7 x 0.1026	=	<u>86,200</u>

Total traffic benefits = \$3,169,800

Present Worth = 3,169,800 x 0.909 = \$2,882,000

Black Bush Polder Road (1975)

Cars	-	909 x 365 x 9.0 x 0.0513	=	153,200
Trucks & Busses	-	220 x 365 x 9.0 x 0.1026	=	<u>74,100</u>

Total traffic benefits - \$ 227,300

Present Worth = 227,300 x 0.513 = \$116,000

TABLE 5
UITVLUGT - PARIKA
BENEFIT COST RATIO
AND
RETURN ON INVESTMENT

Year	Present Worth	Expenditures		Benefits		Net	Cumulative Balance
	1 @ 10% Annual Discount	Investment Construction Costs	Maintenance Costs	Road User Benefits	Present Worth	Present Worth	Present Worth
(U.S. Dollars - Thousands)							
1970	1.0000	1,741			1,741	-1,741	-1,741
1971	0.9091		13	12	506	460	-1,293
1972	0.8264		13	11	536	442	-862
1973	0.7513		13	10	568	427	-445
1974	0.6830		13	9	604	413	-41
1975	0.6209		13	8	641	398	+349
1976	0.5645		263	148	671	379	+580
1977	0.5132		13	7	706	362	+935
1978	0.4665		13	5	739	345	+1,274
1979	0.4241		13	6	776	329	+1,597
1980	0.3855		13	5	815	314	+1,906
1981	0.3505		13	5	847	297	+1,298
1982	0.3186		13	4	880	280	+2,474
1983	0.2897		13	4	913	264	+2,734
1984	0.2633		13	3	950	250	+2,981
1985	0.2394		13	3	986	236	+3,211
1986	0.2176		13	3	1,021	222	+3,433
1987	0.1978		13	3	1,056	209	+3,639
1988	0.1799		13	2	1,092	196	+3,833
1989	0.1635		13	2	1,131	185	+4,016
1990	<u>0.1486</u>		<u>13</u>	<u>2</u>	<u>1,131</u>	<u>168</u>	<u>+4,182</u>
				1994		6176	

Benefit Cost Ratio = 6,176/1,994 = 3.10

TABLE 6

NEW AMSTERDAM - CRABWOOD CREEK
BENEFIT COST RATIO
AND
RETURN ON INVESTMENT

Year	Present Worth	Expenditures		Benefits		Net	Cumulative Balance	
	1 @ 10% Annual Discount	Investment Construction Costs	Maintenance Costs	Present Worth	Road User Benefits	Present Worth	Present Worth	
				(U.S. Dollars - Thousands)				
1969	1.0000	8,556		8,556		-8,556	- 8,556	
1970	.9091		76	69	3,170	2,882	2,813	- 5,743
1971	.8264		76	63	3,356	2,773	2,710	- 3,033
1972	.7513		76	57	3,565	2,678	2,621	- 412
1973	.6830		76	52	3,780	2,582	2,530	+ 2,118
1974	.6209		76	47	4,010	2,490	2,443	+ 4,561
1975	.5645		1,348	-1,100	4,255	2,402	1,302	+ 5,863
1976	.5132		76	39	4,467	2,292	2,253	+ 8,116
1977	.4665		76	35	4,682	2,184	2,149	+10,265
1978	.4241		76	32	4,915	2,084	2,052	+12,317
1979	.3855		76	29	5,160	1,989	1,960	+14,277
1980	.3505		76	27	5,415	1,898	1,871	+16,148
1981	.3186		76	24	5,624	1,792	1,768	+17,916
1982	.2897		76	22	5,841	6,692	1,670	+19,586
1983	.2633		76	20	6,069	1,598	1,578	+21,164
1984	.2394		76	18	6,303	1,509	1,491	+22,655
1985	.2176		76	17	6,547	1,425	1,408	+24,063
1986	.1978		76	15	6,777	1,340	1,325	+25,388
1987	.1799		76	14	7,013	1,262	1,248	+26,636
1988	.1635		76	12	7,260	1,187	1,175	+27,811
1989	.1486		76	11	7,514	1,117	1,106	+28,917
				10,259		39,176		

Benefit Cost Ratio = 39,176/10,259 = 3.82

Note: Revised May 12, 1967

TABLE 7

BLACK BUSH POLDER INTER-SETTLEMENT ROAD
BENEFIT COST RATIO
AND
RETURN ON INVESTMENT

Year	Present Worth 1 @ 10% Annual Discount	Expenditures		Benefits		Net Present Worth	Cumulative Balance Present Worth
		Investment Construction Costs	Maintenance Costs	Present Worth	Road User Benefits Present Worth		
(U.S. Dollars - Thousands)							
1968	1.0000	782		782		-782	-782
1969	0.9091		17	15	132	105	-677
1970	0.8264		17	14	148	108	-569
1971	0.7513		17	13	161	108	-461
1972	0.6830		17	12	176	108	-353
1973	0.6209		17	11	191	108	-245
1974	0.5645		278	157	209	-39	-284
1975	0.5132		17	9	227	107	-177
1976	0.4665		17	8	238	103	-74
1977	0.4241		17	7	250	99	+25
1978	0.3855		17	6	262	95	+120
1979	0.3505		17	6	274	90	+210
1980	0.3186		17	5	288	87	+297
1981	0.2897		17	5	299	82	+379
1982	0.2633		17	4	311	78	+457
1983	0.2394		17	4	323	73	+530
1984	0.2176		17	4	335	69	+599
1985	0.1978		17	3	348	66	+665
1986	0.1799		17	3	361	62	+727
1987	0.1635		17	3	372	58	+785
1988	<u>0.1486</u>		<u>17</u>	<u>3</u>	<u>386</u>	<u>57</u>	<u>+839</u>
				1,074		1,913	

Benefit Cost Ratio = 1,913/1,074 = 1.78

Note: Revised May 12, 1967

TABLE 8

UITVLUGT - PARIKA
NEW AMSTERDAM - CRABWOOD CREEK
BLACK BUSH POLDER INTER-SETTLEMENT ROAD

BENEFIT COST RATIO
AND
RETURN ON INVESTMENT

Year	Present Worth 1 @ 10% Annual Discount	Expenditures		Benefits		Net Present Worth	Cumulative Balance Present Worth
		Investment Construction Costs	Maintenance Costs	Present Worth	Road User Benefits Present Worth		
(U.S. Dollars - Thousands)							
1968	1.0000	782		782		- 782	- 782
1969	.9091	8,556	17	7,794	132	-7,674	- 8,456
1970	.8264	1,741	93	1,516	3,318	1,226	- 7,230
1971	.7513		106	80	4,023	3,022	- 4,288
1972	.6830		106	72	4,277	2,921	- 1,439
1973	.6209		106	66	4,539	2,818	+ 1,313
1974	.5645		367	207	4,823	2,723	+ 3,829
1975	.5132		1,978	1,015	5,123	2,629	+ 5,443
1976	.4665		356	166	5,376	2,508	+ 7,785
1977	.4241		106	45	5,638	2,391	+10,131
1978	.3855		106	41	5,916	2,281	+12,371
1979	.3505		106	37	6,210	2,177	+14,511
1980	.3186		106	34	6,518	2,077	+16,554
1981	.2897		106	31	6,770	1,961	+18,484
1982	.2633		106	28	7,032	1,852	+20,308
1983	.2394		106	25	7,305	1,749	+22,032
1984	.2176		106	23	7,588	1,651	+23,660
1985	.1978		106	21	7,881	1,559	+25,198
1986	.1799		106	19	8,159	1,468	+26,647
1987	.1635		106	17	8,441	1,380	+28,010
1988	.1486		106	16	8,738	1,298	+29,292
				12,035		41,327	

Benefit Cost Ratio = 41,327/12,035 = 3.43

Note: Revised May 12, 1967

List of Highway Equipment
(Financed by AID)

- 8 ea. Diesel graders with tandem drive and power shift moldboard. Caterpillar Model 12, Allis Chalmers M-70, ITW Model 440 or equal.
- 1 ea. Diesel grader with tandem drive Caterpillar Model 112, ITW model 330 H, Huber Warco 9-D or equal.
- 10 ea. Front-end diesel loaders (Hi-lift Shovels) 1 cubic yard buckets, rubber tired. Michigan Model 55A Model, Allis Chalmers TL-12D, Hough Model H-30 B or equal.
- 4 ea. Diesel crawler tractors with angle dozer blades. Caterpillar D-7, Allis Chalmers HD-16, IH TD-20 or equal.
- 1 ea. Diesel Wheeled Tractor with towing bar and power take off.
1 H Farmall I-706, Allis Chalmers D-19 or equal.
- 4 ea. 1000 gallon water tank sprinkler trucks, gasoline engines and pumps, 13 foot spray bar.
- 6 ea. 1000 gallon Bitumen distributor trucks, rubber tired, gasoline engine, 13 foot spray bar.
- 4 ea. 1000 gallon Bitumen Tank Truck transports, gasoline engine, rubber tired.
- 28-31 ea. 5 ton dump trucks, twin rear wheels, gasoline engines.
- 5 ea. Jeeps, From AID-owned stocks.
-
- 1 ea. House trailer, suitable for four (4) persons, air conditioned, independent power and suitable for towing by jeep.
- 1 ea. Self propelled Stabilization Mixer. Pettibone Wood Model 42S or 48S or equal.

- 1 ea. 5-8 Ton Steel Diesel Wheel Roller, single front roll and double rear rolls.
 - 1 ea. Self propelled rubber tired Diesel Road Roller - 15 Tons Capacity.
 - 2 ea. Hand operated vibrating plate compactors, gasoline engine.
 - 2 ea. Bitumen Patching Mixers, 10 cu. ft. capacity with Kerosene burners, hand spray attachment, dial thermometers for asphalt tanks and aggregate hopper. Wylie Model PM-310 Patchmix or equal.
 - 1 ea. Self propelled gasoline driven pavement marking machine. Mark Rite Model 9000 or equal. With 100 gallon white quick drying Traffic type paint.
 - 2-6 ea. "Sea Mules" for pushing barges. Murray & Tregurtha Model Harbormaster 6LP-6-110 or equal (Approx. 200 Hp).
 - 4 ea. Binoculars (7 x 50), Baush & Lomb or equal.
 - 3 ea. Diesel Self propelled Pulvimixer Rex Model HDTW or equal.
 - 4 ea. Cement-Lime spreaders, Rex Trailer Type or equal.
 - 1 ea. Asphalt Plant - Barber Greene Model KA-40 Mixer with accessories or equal.
 - 1 ea. Paving Finisher. Barber Greene Model 873 or equal.
 - 7 ea. Radio Transceivers - 2 Fixed Base, 5 Mobile with Antennas and accessories. 5 Collins Model KWM 2 or equal. 2 Johnson Messenger III or equal.
- Steel and other material as required for construction of Pontoon Barges.
- NOTE: Spare parts for the above equipment were procured in amounts approximating 10% of equipment cost.
- 4 ea. Rippers for Allis Chalmers TD-16 Tractors with 12 extra teeth.
 - 4 ea. Pressure lubrication units, trailer mounted.

- 4 ea. Right hand drive Jeeps from A.I.D. stocks.
- 3 ea. 15 ton Rubber tired road rollers, Diesel Engine.
- 1 ea. Street Sweeper, Wayne or equal (from Excess).
- 2 ea. 30 Passenger buses (from Excess).
- 4 ea. 15-20 ton Low Bed Trailers and Tractors (from Excess).
- 4 ea. Pull Hooks for Allis Chalmers HB-16 Tractors.

MINUTES

L.A. CAPITAL ASSISTANCE EXECUTIVE COMMITTEE

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AID-ILC/P-604
ANNEX III, Page 1 of

February 16, 1967

GUYANA - COASTAL ROAD PROGRAM - IRR - (LA-CAEC/P-67/49)
(with LA/CD Comments)

The CAEC gave approval to proceeding with an intensive review of one of two sections of the proposed road program, New Amsterdam-Little Moleson Creek and the related Black Bush Folder loop, subject to the following recommendations and comments:

Discussion began with a question about the applicability of the recent Arthur Lewis Report. Although the report did not establish priorities, rice development and coastal roads were viewed as important economic projects for Guyana's future development.

- 1) AA/LA raised the question whether the IDRD has expressed any interest in financing a portion of the project. It was stated that the transportation section of the World Bank Study Mission to Guyana included these roads in its list of top priority projects. Therefore the US AID and the GOG should coordinate the proposed road construction program with the IDRD.
- 2) A question was raised about the provisions made for maintenance of the entire road network, including load control. A recommendation or condition to this effect will be included in the loan paper.
- 3) Concern was expressed about the high component of local cost financing in the project (at least 50%). The necessity for A.I.D. financing any substantial percentage of local costs needs to be carefully examined during the intensive review.
- 4) The LA/ING raised an objection to constructing the roads by use of "force account" as opposed to contract financing. The CAEC recommended that the use of "force account" financing should not be excluded, that an examination be made analyzing its pros and cons, and that a supported recommendation be included in the CAP. If "force account" is adopted for any portion of the work, A.I.D. would insist that the consulting engineer have supervisory control.

In addition, if any road construction were done under "force account," the possibility of using "Food for Work" (Title II) commodities as partial payment in kind for local labor costs should be explored.

- 5) With regard to the financing of the Vreed-en-Hoop to Parika Road at this time, the US AID and the GOG should make every effort to seek other external sources of financing, either IDRD and/or Great Britain. This does not preclude the possibility of future A.I.D. financing, but given the present shortage of Alliance funds and AID/W's desire to support fully the upcoming rice program, it is unlikely that funds will be available in the near future.

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On April 13, 1967, a message was sent to US AID/G after preliminary AID/W review of the feasibility study. The cable indicated that all road segments studied could not be financed by A.I.D. at this time and established a maximum funding level of \$7.5 million.

It requested a realistic appraisal of GOB capability in force account at the same time meeting normal maintenance requirements.

Also it questioned the effect on cost estimates of force account work as compared to contract work.

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LOAN AUTHORIZATION

D R A F T

Provided From: Alliance for Progress Funds
GUYANA -- Coastal Roads

Pursuant to the authority vested in the Deputy U.S. Coordinator, Alliance for Progress, by the Foreign Assistance Act of 1961, as amended, and the delegations of authority issued thereunder, I hereby authorize the establishment of a loan pursuant to Part I, Chapter 2, Title VI, Alliance for Progress of said Act to the Government of Guyana ("Borrower") of not to exceed seven million five hundred thousand United States dollars (\$7,500,000) to assist in financing the costs of reconstruction and improvement of the New Amsterdam-Crabwood Creek Road, the Parika-Uitvlugt Road and the Black Bush Polder Inter-settlement Road.

The loan shall be subject to the following terms and conditions:

1. Interest and Terms of Repayment

Borrower shall repay the loan to the Agency for International Development ("A.I.D.") in United States dollars within forty (40) years from the first disbursement under the loan, including a grace period of not to exceed ten (10) years. Borrower shall pay to A.I.D. in United States dollars on the disbursed balance of the loan interest at the rate of one (1) percent per annum during the grace period and two and one-half (2½) percent per annum thereafter.

2. Other Terms and Conditions

(a) Equipment, materials and services (except shipping and marine insurance financed under the loan) shall have their origin in and be procured from the United States. Shipping financed under the loan shall be procured in the United States, and marine insurance financed under the loan shall be placed in the United States with a company authorized to do business in any state of the United States.

(b) Prior to execution of the Loan Agreement, the GOG will confirm in writing its commitment to make available financial resources as necessary to fulfill the needs of the project indicated in a financial and construction schedule to be agreed upon between AID and the GOG.

(c) Prior to initial disbursement of the loan for contract construction costs, Borrower shall submit a national road maintenance plan satisfactory to A.I.D. Provision shall be made in the Loan Agreement for periodic AID-COG reviews of maintenance practices, including load control.

(d) The loan shall be subject to such other terms and conditions as A.I.D. may deem advisable.

Deputy U.S. Coordinator
Alliance for Progress

Date