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INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT PERFORMANCE AUDIT REPORT

ON

JAMAICA FIRST HIGHWAY PROJECT (LOAN 408-JM)

July 17, 1975

Operations Evaluation Department

PROJECT PERFORMANCE AUDIT REPORT

JAMAICA FIRST HIGHWAY PROJECT (LOAN 408-JM)

PROJECT DATA

Amount of Loan	US\$5.5 million
Amount Disbursed	US\$5.5 million
Date of Loan Negotiations	January 1965
Date of Loan Agreement	April 8, 1965
Date of Effectiveness	June 9, 1965
Original Closing Date	March 31, 1970
Final Closing Date	March 31, 1973

Exchange Rates: (Jamaican Dollar)

1965-66	-----	J\$1 = US\$1.40
1967-70	-----	J\$1 = US\$1.20
1971	-----	J\$1 = US\$1.30
1972	-----	J\$1 = US\$1.17
1973-75	-----	J\$1 = US\$1.10

PROJECT PERFORMANCE AUDIT REPORT

JAMAICA FIRST HIGHWAY PROJECT (LOAN 408-JM)

PREFACE

The Jamaica First Highway Project was partially financed with Loan 408-JM which was signed on April 8, 1965. The loan was closed on March 31, 1973, fully disbursed. The purpose of this performance audit is to assess the extent to which the original project objectives were met and to analyze the role of the Bank in meeting those objectives.

The audit is based on Bank correspondence and supervision reports, a draft completion report prepared in January 1975 by the Latin America and Caribbean Regional Office, and discussions with Bank staff.

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PROJECT PERFORMANCE AUDIT REPORT

JAMAICA FIRST HIGHWAY PROJECT (LOAN 408-JM)

SUMMARY

In April 1965, the Bank made a US\$5.5 million loan (408-JM) to the Government of Jamaica, to help finance the foreign exchange cost and some of the local cost of building three roads included in the Government's highway development program. The loan was the first Bank involvement in Jamaica after independence. Since then, the Bank has made two additional loans to the country for highway development, totalling US\$22.8 million. Loan 408-JM was closed in March 1973, fully disbursed.

The project included final engineering, construction and supervision of the Kingston-Spanish Town Road (15 mi), the Spanish Town-Bog Walk Road (7.4 mi) and the Moneague-Crescent Park Road (4 mi). The Spanish Town-Bog Walk Road and the Moneague-Crescent Park Road were two-lane roads which would be upgraded. Both roads traversed predominantly rural areas. The Kingston-Spanish Town Road was a two-lane partly urban highway which was to be expanded to four lanes. It linked Kingston, the capital, with Spanish Town, one of the largest cities. The project cost was estimated at US\$11 million, based on preliminary engineering performed by the Ministry of Communications and Works (MCW).

The Moneague-Crescent Park Road, constructed by force account, was completed on schedule in May 1968, but construction of the Kingston-Spanish Town Road was delayed four years beyond the date expected at appraisal and a year beyond the date expected after a revision of the project as a result of higher than expected construction costs. The Spanish Town-Bog Walk Road was deleted from the project in mid-1968 due to the decision to reduce the total cost.

The longer than expected implementation period for the project was the result of several occurrences. First, the Government was slow in engaging consultants, and the consultants were slow in mobilizing staff. Then the project was revised in mid-1968 because of an 84% increase in construction costs. This increase was caused by an underestimation of costs at appraisal (because of the preliminary nature of the engineering on which the costs were based) and by an escalation in right-of-way costs. The revised project, estimated to cost US\$12 million, also excluded improvement of the existing two lanes of the Kingston-Spanish Town Road. Finally, the contractors exercised poor management of subcontractors who were performing unsatisfactorily, difficulties arose in relocating public utilities and in right-of-way acquisition and labor disturbances took place.

The final project cost was US\$14.2 million, or 18% above the revised estimate. Construction costs for the Kingston-Spanish Town Road were 16% over the revised estimate (including contingencies), while engineering costs more than doubled. This is attributable to: the escalation in labor costs, larger volumes of borrow material needed, relocation of public utilities, and the need for more extensive engineering than anticipated. Construction costs for the Moneague-Crescent Park Road, which was completed before the project's revision, were 3% below the appraisal estimate (including contingencies), excluding depreciation on the MCW's equipment. If this cost is included, construction costs are 12% higher than at appraisal.

The rates of return estimated at audit are 16% for the Kingston-Spanish Town Road (which accounted for 92% of the total actual investment), compared with 25% at appraisal, and 9% for the Moneague-Crescent Park Road, compared with 10% at appraisal. The lower than expected rate of return for the Kingston-Spanish Town Road is a consequence of the substantial cost overrun and of the fact that the new estimate of the rate of return is based on a rate of traffic growth after 1974 which is lower than the rate used at appraisal. The lower return of the Moneague-Crescent Park Road is a consequence of the slight cost overrun and lower than expected growth in traffic.

Some of the delays and difficulties during project implementation might have been avoided if the Bank had insisted, as is now current practice, that detailed engineering be completed before the loan was signed. Detailed engineering probably would have revealed that stage construction of the complex Kingston-Spanish Town Road was the best approach, and that a less ambitious project was preferable, particularly from the point of view of helping the MCW expand its management experience. The Bank should also have promoted a more careful consideration of the difficulties in acquiring rights-of-way.

Finally, the successful experience with force account on one of the project roads is not enough to draw a conclusion about the adequacy of this method of construction in Jamaica. Another experience in the ongoing Second Highway Project has been much less successful.

PROJECT PERFORMANCE AUDIT REPORT

JAMAICA FIRST HIGHWAY PROJECT (LOAN 408-JM)

I. Introduction

1.01 Jamaica became an independent member of the British Commonwealth in August 1962 and thereafter a member of the World Bank. In 1963, the Jamaican Government enquired about Bank assistance in financing the expansion and improvement of its road network, the backbone of its transportation system.

1.02 In March 1964, the Bank sent a mission to the country to identify a possible project. On the basis of this visit, the following schemes were found suitable for Bank financing: (a) the replacement of the Olivier Bridge; (b) a feasibility study of the Kingston Expressway, a north-south road through the capital; and (c) the final design and construction of three highway sections on the route from Kingston to the northern coast via Spanish Town (see map).

1.03 The Bank indicated it was prepared to finance 50% of the package, but the Government limited its request for assistance to the three highway sections (Item c). The Government's decision to exclude the other items was based on the following reasons: (a) construction of the bridge was already being considered separately by the Canadian International Development Agency (CIDA) and (b) the study of the Kingston Expressway was expected to be financed by UNDP. This study was later financed under the auspices of a Bank technical assistance agreement in November 1965.

1.04 Two issues were discussed within the Bank before negotiations. The first concerned the engineering for the three road sections done by the Ministry of Communications and Works (MCW), which was considered to be preliminary and incomplete. The Bank felt it would be preferable to await the final engineering before the loan was approved but the Government was not prepared to engage consultants unless a loan were signed. The Bank consequently agreed to proceed with the loan, which included engineering. The second issue concerned the design standards of the proposed roads. Although standards were generally satisfactory in Jamaica at the time, there were no ditches because the right-of-way of only 40-50 feet for two-lane roads was very narrow. Consequently, during periods of heavy rainfall, water would run along the shoulders, and in places where the roadway was widened over the shoulders, the combination of water erosion and wear made extensive maintenance necessary. The Bank recommended increasing the right-of-way to 100 feet for a two-lane urban road and 150 feet for a two-lane primary road.

1.05 Negotiations were held in January 1965, and Loan 408-JM in the amount of US\$5.5 million was signed on April 8, 1965. In the loan covenants, the Government undertook to ensure adequate maintenance on the project roads

and to carry out traffic counts and surveys on them. It also agreed to establish a nine-member coordinating committee within the MCW. This committee would deal with all project-related matters, thus alleviating the workload of the Ministry, which was too understaffed to handle a project of this magnitude. The Government also concurred with the Bank's recommendation for a wider right-of-way, which was qualified in the loan covenants by permitting a reduction in exceptional circumstances to a minimum of 75 feet for a two-lane road and 120 feet for a four-lane divided highway. Moreover, the right-of-way requirements of the North Street to Duhaney Junction (about 5 miles on the Kingston-Spanish Town Road) would be carefully reviewed by the consultants and Government and their recommendations submitted to the Bank for comment. Finally, it was agreed that pavement and base thickness for all the roads would be determined on the basis of site investigations and traffic requirements as the project advanced.

II. The Project

2.01 The project included: (a) improvement of the existing 15-mile highway between Kingston and Angels known as the Kingston-Spanish Town Road, including construction of a supplementary two-lane road, and construction of interchanges; (b) partial relocation and widening of the 7.4-mile Spanish Town-Bog Walk Road between Angels and Bog Walk, and construction of a bridge to replace an existing structure; (c) improvement and realignment of the 4-mile Moneague-Crescent Park Road; and (d) consultants' services for preparing final engineering, designs and supervision of the construction of these works. Construction would be undertaken by foreign contractors through international competitive bidding since there was no large, local road construction industry. The Moneague-Crescent Park Road, however, would be undertaken by force account since being smaller than the other two roads, it would probably not interest foreign contractors and would therefore not justify the expense and effort of competitive bidding. Technicians and engineers from the Ministry would work on this road, acquiring on-the-job training which the Bank considered desirable.

2.02 The total estimated cost of the project was US\$11.0 million equivalent, including contingencies (10% for unforeseen quantities and 10% for price increases), and right-of-way costs of US\$1.0 million (Annex 1). The Bank's participation in the amount of US\$5.5 million covered all of the foreign exchange and a small amount of local currency costs.

III. Project Implementation

3.01 Loan 408-JM became effective on June 9, 1965. Construction of the project was estimated to take four years, including six months to a year for completion of the final designs and bidding documents. The

original closing date was March 31, 1970 but the project was completed, and the loan closed, only in March 1973, approximately four years behind the original construction schedule. The completed project is substantially different from the one approved in the Loan Agreement because of a major revision that took place in mid-1968.

3.02 The first delay arose because the consultants for the project were not engaged until March 1966, ten months after proposals were received. This was due to the Government's inexperience in evaluating firms and to confusion which arose when political pressure was exerted on the evaluation committee to include in the list of candidates a firm which had not been initially selected. The Government requested the Bank's assistance to evaluate the consultants' proposals and to participate in negotiations. Finally a contract was signed with a U.S. firm, Goodkind and O'Dea.

3.03 However, as 10 months had elapsed since proposals had been received, some staff included in the consultants' list of team members were no longer available and had to be replaced. Work on the design of the project therefore did not begin until August 1966, at which time the MCW had almost completed the design of the Moneague-Crescent Park Road and it was anticipated that construction would begin shortly. A further delay was experienced when the project manager died in August 1967; thus, final designs for the Kingston-Spanish Town/Spanish Town-Bog Walk Roads were completed in early 1968, six months behind the contract schedule and about two years behind the appraisal schedule. By that time, the MCW was successfully completing construction of the Moneague-Crescent Park Road.

3.04 After completion of the designs and receipt of bids, another delay arose because the new cost estimates were US\$9.3 million over the appraisal, representing an overrun of 84% and forcing a revision of the project. The new estimated construction costs for the Kingston-Spanish Town Road and the Spanish Town-Bog Walk Road were 72% higher than the appraisal estimate. There was also a substantial increase of about 339% in the cost of acquiring the rights-of-way and an increase of about 90% in overall engineering costs.

3.05 The increase in the construction component is attributable to the preliminary nature of the engineering performed by the MCW, which underestimated the volume of work involved, and to the lack of experience in Jamaica for projects of this magnitude, which became evident when the unit price bids were found to be substantially higher than the original estimates. Right-of-way costs had also been incompletely evaluated at appraisal; for instance, the implications of securing the right-of-way in a populous, urban area such as Kingston where relocation of utilities and displacement of persons are necessary, had not been fully appreciated. A contributing factor was the rapid escalation of land costs.

3.06 In August 1968, because of the substantially higher estimated costs, the Government decided to reduce the scope of the project. The revised cost estimate was US\$12.0 million and the minimum right-of-way standards set forth in the loan covenants were used wherever possible. The Spanish Town-Bog Walk Road was deleted from the project because, aside from the lack of funds, various routes to the north coast were being studied at the time by Canadian consultants who believed a different route might be a better solution. In addition, several changes were made on the Kingston-Spanish Town Road. The improvement of the existing two-lane road was postponed but construction of two additional lanes would still be undertaken. Although the existing road would have to be resurfaced in five years' time and subsequently reconstructed, traffic requirements would be satisfied for 10 years by the unimproved road and two additional lanes. Because the benefits of this project component were largely derived from adding two lanes, the rate of return would not be lowered and was, in fact, anticipated to be somewhat higher because it was by then clear that at appraisal, traffic had been underestimated (Annex 2). Moreover, time savings had not been included in the original calculation. Less costly interchanges would be constructed and the one at Duhaney Junction would be built on Government land to reduce right-of-way costs. Also, the North Street-Three Miles section of the Kingston-Spanish Town Road, which passed through a densely urbanized area and where right-of-way costs were exceptionally high, was deleted in favor of constructing, at Government expense, a parallel road, the Marcus Garvey Drive.

3.07 The new closing date of March 31, 1972 allowed three years to complete construction. The Government at first wanted to negotiate with the lowest bidder on the original project but the Bank persuaded it to invite new bids, which were received in April 1969. Of those received, the bidding documents for the two lowest bidders were altered and conditional letters were included as attachments. Because of these deviations in the bidding procedures, the award of bids was delayed while the legality of the documents was studied. In August 1969, a contract was signed with Raymond International, the second lowest bidder, because its bid complied most closely with the legal requirements.

3.08 Construction finally began in October 1969, three and a half years behind the appraisal schedule, after Raymond subcontracted most of the construction works to four local firms, a move which helped appease local unions and interest groups which had initially opposed the project. Raymond, however, had difficulty in managing the subcontractors and did not enforce the project schedule although its contract with the Government contained a penalty clause for tardy completion. The contractor also experienced difficulties in securing rights-of-way and in relocating power lines and water mains; the relocation and installation of utilities had not been provided for in the design of the project. These two factors caused the project by

August/September 1971 to be behind schedule, making it necessary for the closing date to be extended by nine months to December 31, 1972. The situation improved after Raymond reorganized its subcontracting arrangements, cancelling one contract and modifying two others.

3.09 The project would have been completed within this revised closing date but for interunion labor disputes in mid-March 1972 which brought work to a halt. A labor union supporting the newly elected Government forcibly entered the construction compound, demanding that its union be given 60% of the labor for the project. Raymond suspended works on March 10, 1972 and notified the Government of this development. Police protection was provided and work resumed on April 10, but three days later, and following additional threats, Raymond notified the Government it would not resume work unless its contract was revised on a cost-plus basis which would enable it to hire additional (and unnecessary) laborers from the dissenting union. The Government considered that such an arrangement would leave it with an open-ended financial liability with no incentive for the contractor to finish speedily at minimum costs. The condition was rejected, Raymond withdrew, and in May 1972 the Government undertook the remaining construction itself. It assumed the contracts with the subcontractors and the obligation to provide maintenance on the roads for six months after completion. The closing date was again extended from December 31, 1972 to March 31, 1973.^{1/}

3.10 The Kingston-Spanish Town Road was completed under the protection of an army unit in March 1973, a year behind the 1968 revised construction schedule, and about four years later than the original completion date.

3.11 In adhering to the loan covenants, the nine-member coordinating committee was established within the MCW and functioned successfully, and the commitment to ensure maintenance was complied with. In June 1973, the Bank made a subsequent loan for maintenance, 899-JM, in the amount of US\$9.3 million.

IV. Project Costs

4.01 The total cost of the project, US\$14.2 million, represents an overrun of 18% over the revised project estimate of US\$12.0 million (Annex 1). The cost of construction of the Kingston-Spanish Town Road increased 16% over the revised project estimate (including contingencies), while engineering

^{1/} These labor disputes may have had an impact beyond the project: labor problems imply a risk to a contractor coming into the country and this risk is manifested in either lack of interest in bidding or high prices, or both. It is possible that this incident with Raymond (one of the world's largest contractors) adversely affected bidding under the on-going Third Highway Project (Loan 1032-JM). In that project, the response from contractors was poor, and the few bids that were received were substantially higher than estimated.

costs more than doubled. The construction cost of the Moneague-Crescent Park Road, which was completed by the time the project was revised, appears to be about 3% under the appraisal estimate (including contingencies), however, the cost of depreciation on the MCW's construction equipment is not available and is not included in the final costs appearing in Annex 1. Equipment depreciation is estimated by Bank staff to be about 15% of construction costs, which results in a cost overrun of 12%. This rather low estimate for equipment depreciation is due to the labor intensive construction methods used.

4.02 The 16% overrun in construction costs on the Kingston-Spanish Town Road is attributed to an escalation in labor costs, larger volumes of borrow material needed, and to unforeseen costs arising from the relocation of public utilities. Unfortunately, the information available does not permit quantification of the contribution of each of these factors to the total cost overrun. The substantial overrun in engineering costs on this road resulted from the more extensive work needed, including revision of the road designs and the interchanges, and preparation of new bidding documents. The extent of this work was not fully realized when the project was revised in August 1968 and it was agreed at that time that engineering costs would be adjusted after the contractor's services were secured.

V. Economic Justification

5.01 The justification for the Jamaica First Highway Project was based on the substantial reduction in transport costs on some of the most heavily used roads. The rate of return estimated at audit for the Kingston-Spanish Town Road, accounting for 92% of the total investment, is 16-18% compared with 25% at appraisal. The rate of return of the Moneague-Crescent Park Road, accounting for 8% of the total investment, is 9% and is only slightly lower than the 10% forecast at appraisal.

5.02 The lower than expected rate of return for the Kingston-Spanish Town Road is a consequence of the substantial cost overruns and of the fact that the audit estimate is based on a rate of traffic growth after 1974 which is lower than the rate used at appraisal, largely due to the effect of fuel price increases. These factors were not fully compensated by the greater than anticipated vehicle operating cost savings and slightly higher than expected actual (1974) traffic.

5.03 The actual construction cost of the revised Kingston-Spanish Town Road is 53% higher than the original estimate, without considering improvement of the existing two lanes which was deleted from the project in 1968. If the most probable additional cost of this improvement is included as a cost in 1978, the rate of return is 16% (Annex 3) whereas if it were not necessary to improve these two lanes, the rate of return would be 18%.

5.04 In 1974, actual traffic on the Kingston-Spanish Town Road was 10% higher than expected at appraisal (Annex 2), a development which can be attributed to the explosive urban growth of Kingston in the direction of Spanish Town. After 1974, however, the lower annual traffic growth rate used at audit, (based on the appraisal forecast of 10% in the first 10 years and 5% for the remaining useful life of the road) assumes a reduction in traffic growth as a consequence of the energy crisis.

5.05 The vehicle operating costs used in this audit are derived from a recent study undertaken by T.P. O'Sullivan and Partners (TPOS) which was used in the Second Highway Project, 899-JM of 1973. It is not possible to compare the figures used in this audit with those used at appraisal since the latter are not available, but the audit figures should be greater because important benefits such as time and congestion savings have been included. If the additional savings generated by the rise in oil prices were included, the rate of return would be higher.

5.06 The 9% return on the Moneague-Crescent Park Road is slightly lower than the appraisal estimate because construction costs, including machinery depreciation, overran by 12%, and traffic for 1974 was overestimated by 5%. If the higher than expected oil prices are included in the calculation, the rate of return goes up to 10%, which is similar to the appraisal estimate. The lower than expected traffic in 1974 (1,656 vpd as against 1,751 forecast at appraisal) can perhaps be explained by the failure of traffic to divert from another road leading to the north coast, as expected at appraisal. The growth in actual traffic between 1968, when the road was completed, and 1974 is 8% as compared with the appraisal expectation of 10%. It is assumed in this audit that traffic will grow thereafter by 5%, which is slightly less than the appraisal forecast of 10% between 1975 and 1977 and 5% between 1978 and 1988, allowing for reduced traffic growth as a consequence of oil price increases.

VI. The Role of the Bank

6.01 Given the lack of experience in road construction in Jamaica and the preliminary nature of the engineering prepared by the MCW, the decision to proceed with the original project does not seem in retrospect to have been appropriate. The priority of the roads was not clearly established and the problems of acquiring the right-of-way and relocating public utilities in the populated environs of the Kingston-Spanish Town Road were not fully appreciated. If the Bank had insisted that final engineering for the three roads be prepared before loan approval, it would probably have opted for a smaller, less ambitious project than the one partially financed with Loan 408-JM.^{1/} Such an alternative would have given the Government the opportunity to expand its management experience.

^{1/} Since then it has become Bank policy that detailed engineering be required before approval of the loan.

6.02 The reduction in the project's scope in 1968 resulted in a stage construction approach to the Kingston-Spanish Town Road which turned out to be adequate. The delays caused by this revision and by the difficulties in securing the rights-of-way and relocation of public utilities, could have been reduced by insisting that detailed engineering be completed, by perhaps making the acquisition of rights-of-way a condition of Board presentation, and by considering in the project design the relocation of public utilities.

6.03 The Bank did not fully weigh the expected benefits of a wider right-of-way against the additional costs necessary to provide it. It was, however, flexible because, recognizing the problems of right-of-way acquisition, it incorporated the minimum right-of-way standard which is in line with the right-of-way recommended in the Kingston Expressway Study.^{1/}

6.04 The Bank was cooperative during project implementation and provided prompt assistance in securing the consultants. The delay incurred from the time proposals were received and consultants engaged, and the consequent personnel problems cannot be attributed to the Bank but rather to the inexperience of the Government in evaluating firms.

VII. Conclusions

7.01 Loan 408-JM was completed after many delays and complications. The ex-post rates of return of 16% for the Kingston-Spanish Town Road and 9% for the Moneague-Crescent Park Road are satisfactory. If the final engineering had been available at appraisal, some of the delays and a portion of the cost overrun could have been avoided. To a lesser degree, the delays arising from the Government's inexperience in engaging the consultants might have been avoided by implementing a less ambitious project incorporating stage construction with a view toward institution building.

7.02 The decision to reduce the scope of the project in 1968 was a good one in view of the significant cost increases. The deferment of the Spanish Town-Bog Walk Road was also a wise decision. The estimated cost of construction (without contingencies) in 1968 had increased by 178% over the appraisal estimate while actual traffic in 1968 was already lower than

^{1/} The issue about the convenience of increasing the right-of-way has a wider interest. We think it could be studied through a cost-benefit analysis where the cost of increasing the right-of-way would be the acquisition of the right-of-way and relocation of people and public utilities, while the benefits would be the reduction in road maintenance costs. The cost of relocating the people is perhaps the most difficult to quantify; however, in most cases it might not be necessary to estimate it when the rate of return, on only the other items, is already marginal.

expected (3,250 vpd as against 3,512 forecasted at appraisal). This overestimation of traffic is also confirmed by the latest traffic counts available (1972) when the actual traffic was only 78% of the appraisal forecast. These factors seem to indicate that the likely rate of return on the investment in this road would have been considerably less than the appraisal expectation of 18% and even probably less than 10%.

7.03 An interesting feature of this project was the successful completion of the work done by force account in the Moneague-Crescent Park Road. This road was completed on schedule and the quality of the work according to the Bank was excellent. This is, however, too small a sample to be able to draw a general conclusion about the appropriateness of using this method of construction in Jamaica on a large scale. Another example of the use of force account, but this time with disappointing results, is found in the on-going Second Highway Project (Loan 899-JM); construction costs were higher than similar work done by contract and the quality was worse.

JAMAICA LOAN 408-JMForecast and Actual Project Costs
(US\$ millions)

	<u>Appraisal Estimate (March 1965)</u>	<u>Reduced Project Estimate (August 1968)</u>	<u>Contract Price</u>	<u>Final Costs (PCR)^{1/}</u>
<u>Construction</u> ^{2/}				
a) Kingston-Spanish Town	6.2	8.4	7.8	11.4
b) Spanish Town-Bog Walk	1.7	-	-	-
c) Moneague-Crescent Park	0.6	0.9 ^{3/}	-	0.7 ^{4/}
<u>Engineering Services</u> ^{5/}	0.7	1.0	-	2.1
<u>Contingencies</u> (20% for unforeseen quantities and for price increases at appraisal and 17% in August 1968)	<u>1.8</u>	<u>1.7</u>		<u>-</u>
TOTAL	<u>11.0</u>	<u>12.0</u>		<u>14.2</u>

^{1/} Includes all final claims made by contractors and consultants

^{2/} Construction includes the cost of acquiring right-of-way

^{3/} This amount was tentative in 1968 because although the road was completed in May 1968, the final costs were not yet available

^{4/} Depreciation on MCW construction equipment is not included

^{5/} Engineering services include review of designs, final engineering, supervision and US\$200,000 equivalent for Ministry's cost to engage nine additional staff for a period of four years

JAMAICA LOAN 408-JM

Forecast and Actual Traffic Counts
(vehicles per day)

Year	<u>Kingston-Spanish Town</u>		<u>Moneague-Crescent Park</u>		<u>Spanish Town-Bog Walk</u>	
	<u>Appraisal Forecast</u>	<u>Actual</u>	<u>Appraisal Forecast</u>	<u>Actual</u>	<u>Appraisal Forecast</u>	<u>Actual</u>
1963	6,400	6,400	850	850	2,700	n.a.
1965	7,123	9,017	937	n.a.	2,999	2,400
1966	7,515	10,027	983	n.a.	3,161	2,900
1967	7,928	11,125	1,033	n.a.	3,332	3,250
1968	8,364	11,105	1,084	n.a.	3,512	3,250
1972	12,212	13,150	1,447	n.a.	4,695	3,660
1974	14,517	16,042	1,751	1,656	5,650	n.a.

JAMAICA LOAN 408-JMKingston-Spanish Town and Moneague-Crescent Park Roads:
Costs, Traffic and Rate of Return

	<u>Portion of Actual Total Investment</u>	<u>Actual Costs as a Percentage of Estimated Costs /¹</u>		<u>Actual Traffic as a Percentage of Estimated Traffic</u>	<u>Rate of Return</u>	
		<u>A</u>	<u>B</u>		<u>Appraisal Estimate</u>	<u>Audit Estimate</u>
		Kingston-Spanish Town	92%		153%	116%
Moneague-Crescent Park	8%	112%	n.a.	95%	10%	9%

¹ Cost Overrun A is the increase in construction costs since appraisal (including contingencies) whereas Cost Overrun B is the increase since the projects revision in 1968.

SECTION	ORIGINAL PROJECT	PROPOSED REDUCTION IN SCOPE
A-B	Widen and improve existing 4-lane urban street.	A-B deleted from project; existing 4-lane Marcus Garvey Dr., which provided better access to Kingston, used instead.
B-C-D	Reconstruct existing 2-lane roadway and construct 2 additional lanes; construct major interchange at C.	* Existing 2-lanes used and 2-additional lanes constructed; a lower cost interchange constructed slightly west of original location on government owned land.
D-E-F	Construct 2-lane by-pass of Spanish Town.	No change.
F-G	Construct new 2-lane roadway through mountainous gorge to replace existing narrow 2-lane roadway.	F-G deleted from project. Alternate route west of F-G, providing better access to a populos area having development potential, was examined under Canadian Transportation Study but never constructed.
H-I	Improvement and relocation of existing 2-lane roadway (by force account)	No change; section was completed in May 1968.

* Provision is made in reduced facility for future expansion to original project standards.

