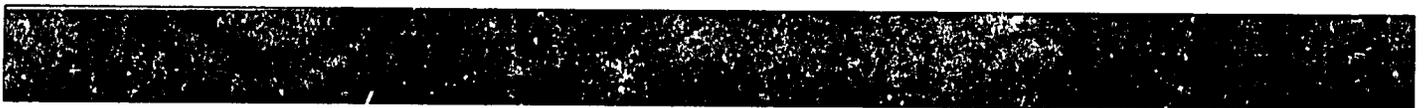
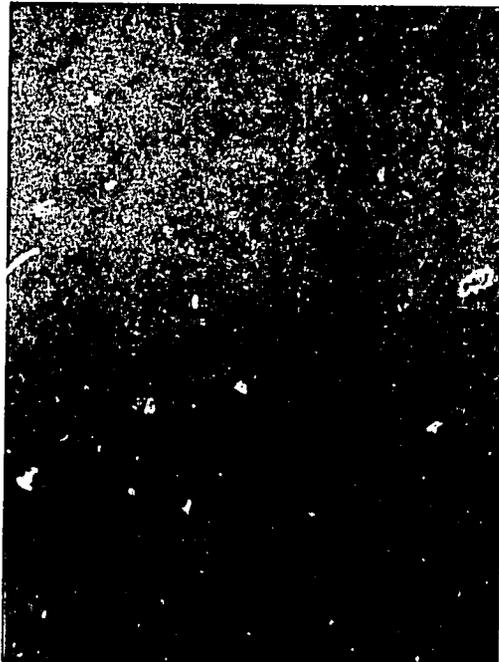


**The Development Impact of Title II
Food for Work Roads in Rural Bangladesh**

Final Report
May 1984
Volume I

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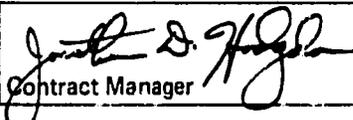
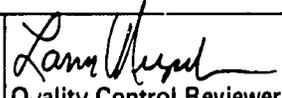
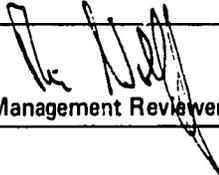
THE DEVELOPMENT IMPACT OF TITLE II (CARE)
FOOD FOR WORK ROADS IN RURAL BANGLADESH

Final Report
May 1984

Volume I: Integrated Findings

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EXECUTIVE SUMMARY

The Problem: Poor Rural Infrastructure in Bangladesh. Despite recent progress in agriculture and family planning, Bangladesh remains one of the poorest and most densely populated countries in the world. Severe structural problems, including excessive rural unemployment and primitive transportation and communication networks, continue to limit access to health and educational facilities, inhibit agricultural output, and create conditions highly vulnerable to natural disasters. Most foreign assistance in Bangladesh is targeted to the small, marginal farmers and landless laborers residing in the countryside.

U.S. Assistance. USAID supports numerous projects in Bangladesh aimed at strengthening rural infrastructure. The focus of this study, the Food for Work (FFW) Project, began in 1975 and provides payment in food grains for labor on earthwork structures. The FFW Project, implemented by CARE under the auspices of the Ministry of Food, has distributed more than 750,000 metric tons of wheat since it began and comprises about half of the Bangladesh FFW Program. In 1984, more than 2000 earthwork projects will be implemented under FFW in Bangladesh, the majority of which will be road and road/embankment projects. The primary goal of the FFW Project has been generation of short-term employment and provision of nutritional and income supplements during periods of critical need. A secondary goal has been to upgrade and improve rural infrastructures.

Study Purpose and Methodology. The objectives of this study were to (1) assess the development impact of Food for Work road and road/embankment projects, (2) identify the significant determinants of positive development impact, and (3) recommend criteria for design and implementation of FFW road projects that may result in positive development impact. The study differs from previous assessments of the FFW Project in Bangladesh in that it represents the first major assessment of the secondary effects of the project and the first independent study conducted during the post-monsoon season. The findings are based on interviews with over 900 respondents in villages near 35 randomly selected project sites (1980 and 1982 CARE roads) and 17 comparison sites (proposed 1984 CARE roads), combined with field observations of road conditions, road usage, and road environment. The major challenges faced in implementing the research design for the study were (1) dealing with respondents inherently biased in favor of the project and (2) identifying suitable comparison sites not previously reconstructed under the Food for Work Program.

Findings. The roads reconstructed under Food for Work in 1980 and 1982 were found to be in much better condition and more heavily travelled than the roads proposed for reconstruction in 1984. Only 12 percent of the comparison roads were passable at least halfway by rickshaw, compared with 39 percent of the 1982 CARE roads and 65 percent of the 1980 CARE roads. The superior condition of the older FFW roads is largely attributed to more recent maintenance. No four-wheeled motor vehicles were observed on any of the 52 roads.

Examined several different ways, the data from this study consistently support the following development impacts of the FFW Project: improved local communications, reduced travel times and transport costs, increased use of new farm technology, increased commercial activity, increased access to health services, increased use of family planning services, and increased primary school attendance. Some evidence was also found to link the project to improved flood control, increased use of health services, and increased use of the road by women. On the other hand, the FFW Project appears to have exacerbated the already severe income/land distribution problem. Insufficient evidence was obtained to support FFW impacts on crop mix, crop production, or farm prices.

The road and road/embankment projects with the highest estimated development impacts overall tended to be those (a) constructed earlier, (b) with fewer unbridged gaps, (c) recently maintained, (d) selected based on development-related criteria, (e) near electric lines, (f) in low distress areas, and (g) in areas with doash (mixed) soil rather than sandy soil.

Recommendations. The Food for Work Project appears to be meeting its secondary goal of stimulating economic and social development throughout rural Bangladesh. The FFW roads and road/embankments continue to be used, however, primarily as footpaths. This study found evidence of widespread unrealized potential for greater development impact and recommends that USAID and CARE:

1. Expand emphasis on the construction of bridges and culverts on both new and existing FFW road and road/embankment projects;
2. Target projects to unions with adequate maintenance funds or to where agreement for local maintenance can be obtained in advance;
3. Assign preference to proposed projects using development-related criteria, such as links to educational or agricultural centers;
4. Construct alternative types of roads in high distress areas with high concentrations of sandy soil and bullock cart traffic; and
5. Coordinate site selection with other rural development programs, especially the rural electrification and family planning programs.

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THE DEVELOPMENT IMPACT OF
TITLE II FOOD FOR WORK ROADS
IN RURAL BANGLADESH

I. INTRODUCTION

A. Background

With over 90 million people living in an area of about 55,000 square miles, Bangladesh is the most densely populated country in the world. The terrain is extremely flat and is interlaced with an intricate system of rivers and tidal channels which serve as regional boundaries and major transportation routes, and pose serious threats to adjacent, low-lying areas from July to October (monsoon season). The most important geo-political subdivision is the thana or upazilla (as it is called under a current national upgrading program), of which there are nearly 500 covering 20 districts. Each thana is composed of an average of nine unions which in turn are composed of about 20 villages each. Agriculture employs nearly 80 percent of the labor force and accounts for more than half of GDP. Major crops are three forms of rice (aus, aman, and boro), wheat, jute, sugar cane, and potatoes. The most common public vehicle for land transportation is the cycle rickshaw. Somewhat less common in rural areas are motorized (auto) rickshaws or baby taxis.

Bangladesh has the world's largest voluntary agency community and the largest Food for Work (FFW) Program, about half of which is supported by USAID in concert with CARE. The program, which provides payment in food grains for labor on earthwork structures, began in 1975 and operates under the auspices of the Relief and Rehabilitation Division of the Ministry of Food. In 1984, more than 2000 earthwork projects will be completed, the majority of which will be road and road/embankment projects. The USAID/CARE FFW Project has utilized approximately 750,000 metric tons of bulk wheat as payment to laborers in the eight annual work seasons since its inception. The primary goal of the project has been to provide short-term employment and nutritional and income supplements to landless and near-landless during periods of critical need. A secondary goal has been to promote self-sustaining development through the upgrading and improvement of rural infrastructures.

Although previous studies have assessed the degree to which the project is meeting its primary goal, this study represents the first major assessment of the degree to which the project is meeting its secondary goal. As the emphasis of the project (and the entire national program)

shifts away from disaster relief and toward development impact as its primary goal in coming years, it becomes especially important that the Mission identify ways in which such development impacts may be enhanced through redesign or redirection of the FFW project.

B. Study Objectives

As specified in the contract Scope of Work, the objectives of this study were:

- To assess the development impact of FFW road and road/embankment projects;
- To identify the significant determinants of positive development impact;
- To specify those determinants that may be controlled as functions of design, selection, and management of FFW road projects; and
- To recommend criteria for design and implementation of FFW road projects that may result in positive development impact, and may be incorporated into future thana-level planning documents.

Using evidence from recent studies of the impacts of rural roads in other developing countries, we identified the following potential development impacts for investigation:

Economic Impacts

- Transportation costs, farmgate prices: Transportation costs may decrease through more efficient transportation. Farm prices may change in response to increased production or decreased transportation costs.
- Farm technology: Use of fertilizer, better seeds, and more modern irrigation techniques may increase through increased access to fertilizer and agricultural extension services.
- Agricultural production: Crop yield may increase through expansion of cultivated land and/or use of new techniques. Crop mix may change in the direction of more perishable crops, through increases in transportation efficiency.

- Land values: Land values may increase through changes in the ecology of the project area and improved access to goods and services.
- Commercial activity: New businesses may appear in response to improvements in communication, road access, and usage.
- Other: Flood control and irrigation may improve or deteriorate depending upon the extent to which the road is technically well designed. Long-term employment may increase through expansions in the agricultural and commercial sectors.

Social Impacts

- Communication: The quality of communication among villages and between thana headquarters and the project area may increase. This increase may in turn stimulate other social changes.
- Education: Attendance and enrollments at primary schools may increase for males -- and even more so for females -- through improved communication with guardians and transportation to schools.
- Health: Use of family planning and other health services may increase through improved communication (including outreach) and transportation.
- Distribution of benefits: Large landholders may reap most of the economic benefits of the improved road, thereby widening the gap between the rich and poor.
- Other: Women may use the road more frequently and perhaps become more community-oriented. Robbery and theft may increase through increases in village accessibility.

Based on recent case studies of FFW road (or road/embankment) projects in Bangladesh, we also hypothesized the following conditions of effectiveness as potential key factors to be explored:

Effectiveness

- All other things being equal, there is a time lag of at least three years until the majority of the development impact of a FFW road takes place.

- All other things being equal, the development impact of a FFW road is a function of the ecology of the project area, particularly soil composition.
- All other things being equal, the development impact of a FFW road is related directly to the proximity of the road to thana headquarters, market centers, commercial and industrial enterprises, credit facilities, and social services.
- All other things being equal, the development impact of a FFW road is related directly to the extent to which the project is integrated with prior FFW projects to form a network of development infrastructure.
- All other things being equal, the development impact of a FFW road is related directly to the extent to which the project forms part of an integrated area-wide development plan.
- All other things being equal, the development impact of a FFW road is related directly to the extent to which development-related criteria are considered in project selection.
- All other things being equal, the development impact of a FFW road is related directly to the extent to which appurtenant structures, such as bridges, culverts, and sluice gates, accompany the project.
- All other things being equal, the development impact of a FFW project is related directly to the extent to which the road is maintained.

Since some of the above hypotheses are more difficult and more costly to test than others, it was not possible to address all of them equally with a single research design. The next section describes a multi-dimensional approach to impact assessment that was adopted for this study to explore most of these hypotheses within limited time and resource constraints.

II. METHODOLOGY

A. Research Design

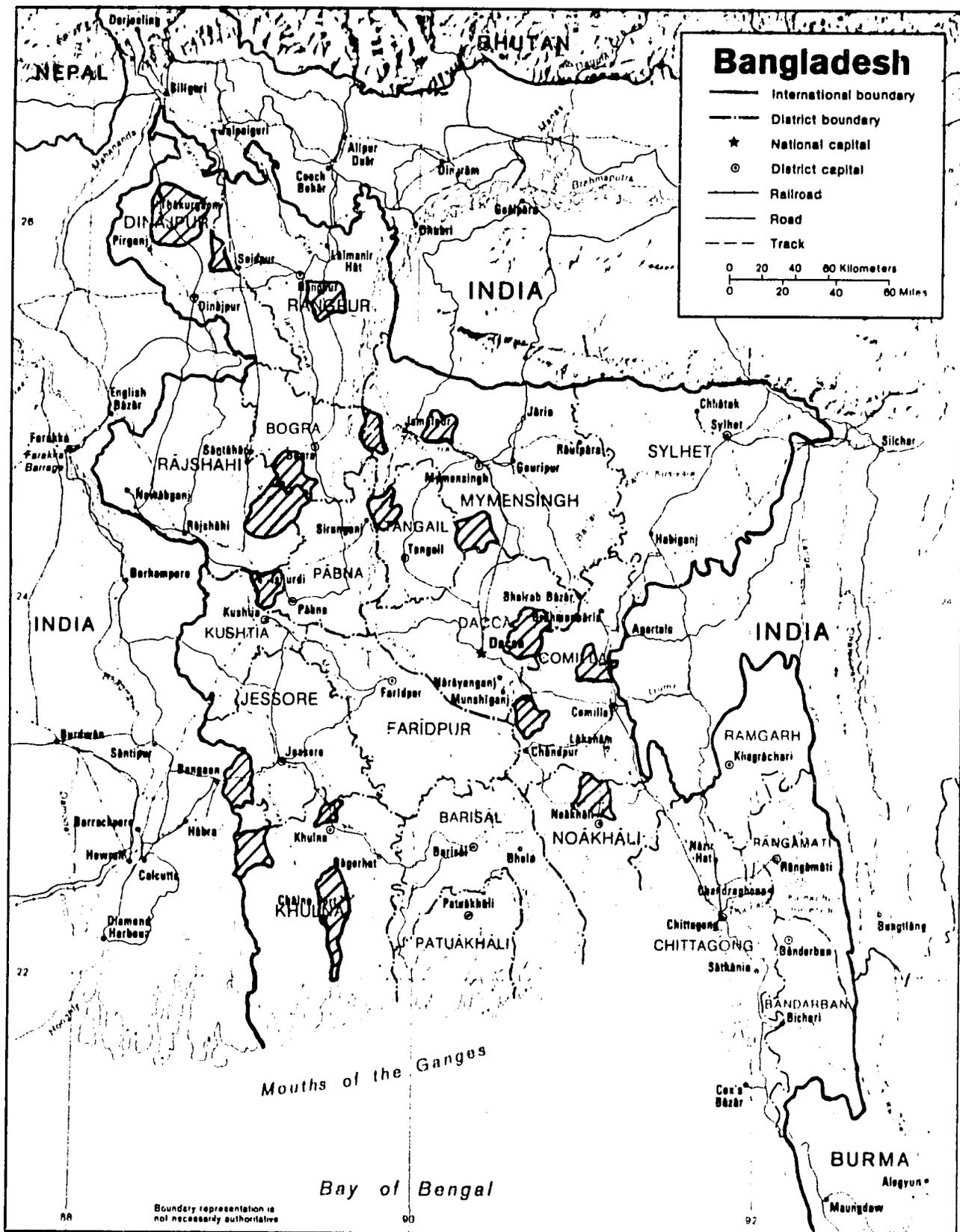
A simple random sample of 18 thanas was drawn, using the CARE/Dhaka microcomputer, from all districts where USAID and CARE continue to support Food for Work activities. Excluding Sylhet and Chittagong Districts, this sample represents about 5 percent of the total number of thanas. Staff from Abt Associates Inc., USAID, CARE, and the Ministry of Food agreed that the sample of thanas, listed below and depicted in Figure 1, were representative of the range of demographic and economic contexts within which the program currently operates:

<u>Thana</u>	<u>District</u>
1. Begumganj	Noakhali
2. Matlab	Comilla
3. Brahmanpara	Comilla
4. Gopalpur	Tangail
5. Araihasar/Narsingdi*	Dhaka
6. Bhaluka	Mymensingh
7. Madarganj	Jamalpur
8. Nakla	Jamalpur
9. Dacope	Khulna
10. Satkhira	Khulna
11. Daulatpur	Khulna
12. Sarsha	Jessore
13. Pirgacha	Rangpur
14. Singra	Rajshahi
15. Ishwardi	Pabna
16. Khansama	Dinajpur
17. Thakurgaon	Dinajpur
18. Nandigram	Bogra

In each thana, three sites (roads) were chosen for observation and data collection as follows:

*These two contiguous thanas were treated as one thana since Araihasar contained no 1980 CARE roads and Narsingdi contained no 1982 CARE roads. The second pretest thana, Gopalpur, was included in the main study.

Figure 1
Country Map Showing Selected Study Thanas



Site 1. This site was randomly selected from 1979-80 CARE road or road/embankment projects supported by USAID. If only one such project was identified, this road was selected. If no 1979-80 projects were identified, a 1978-79 road or road/embankment project was substituted. These roads are referred to throughout the remainder of the report as the Site 1 roads or the 1980 project sites.

Site 2. This site was randomly selected from 1981-82 CARE road or road/embankment projects supported by USAID. If only one such project was identified, this road was selected. If no 1981-82 projects were identified, a 1980-81 road or road/embankment project was substituted. These roads are referred to throughout the remainder of the report as the Site 2 roads or the 1982 project sites.

Site 3. This site was randomly selected from proposed 1983-84 CARE road or road/embankment projects. If it was discovered in discussions with thana officials that the road had been the site of previous FFW activity or recent major repairs, another proposed 1983-84 project was substituted. These roads are referred to throughout the remainder of the report as the Site 3 roads or the comparison sites.

Identification and detailed descriptions of the individual sites visited during the course of this study are contained in Volume II of this report.

Roads reconstructed under Food for Work in 1980 were selected for evaluation because earlier studies have postulated that most development impacts of rural roads should appear after three years' time. Choosing roads reconstructed from earlier years would threaten the validity of our retrospective survey data since fewer respondents could be expected to recall various socioeconomic conditions existing prior to reconstruction. Roads reconstructed in 1982 were also included in the evaluation because other studies have suggested that the secondary effects of earthen roads diminish over time as the physical condition of the road deteriorates. Under the assumption of little or no local maintenance, this scenario would result in a more favorable evaluation of the newer rather than older roads. Finally, roads planned for reconstruction in 1984 were selected as comparison sites to approximate more closely the true baseline environment (i.e., to screen out roads reconstructed under other programs or otherwise not appropriate for CARE reconstruction. Also, CARE records contained similar kinds of identifying information pertaining to these roads, and the data we obtained from these comparison sites may be used as baseline data in a future longitudinal study of the 1984 CARE roads.

... In the absence of a true experimental or longitudinal design for this evaluation, we employed multiple quasi-experimental approaches to minimize both respondent and interviewer bias and to isolate genuine development impacts from reported development impacts. Conducting an objective and penetrating assessment with local interviewers and respondents sympathetic to, and with self-interests in, the program was the major challenge facing the Abt Associates study team. Using agricultural production as an example, the following methods were employed to test for positive or negative impacts of road reconstruction:

1. Cross-site comparisons of the percentage of all respondents who feel that agricultural production in the area near the road has increased (or decreased) since 1980. The initial portions of the interviews focus on perceived changes in specific aspects of village conditions since 1980 without alerting respondents to road reconstruction as the focus of the study.
2. Cross-site comparisons of reported changes in crop production since 1980 among farmers interviewed and reasons given for the increase or decrease. Section I of the interviews was specific to each category of respondent and was designed to obtain more precise estimates of change since 1980 (and reasons for any change) from those respondents most qualified to address each topic.
3. Cross-site comparisons of changes at the union level in crop production since 1980 based on union statistics provided by local officials. In most comparisons, we look for changes in both the mean and the median; changes in the former but not the latter would suggest that only large landholders increased production since 1980.
4. Cross-site comparisons of roadside observations of indicators of crop production, such as deep tubewells, fertilizer shops, and traffic counts of persons or vehicles transporting produce. Since roads in this study were not randomly assigned to treatment and control groups (sites), differences across sites in such observed road characteristics are interpreted with caution.
5. The percentage of all respondents at Sites 1 and 2 who cite increases (decreases) in agricultural production as the most important or next most important good (bad) effect of the road reconstruction. Midway through the interviews, respondents are alerted to road reconstruction as the focus of the study and asked open-ended questions about good and bad effects without cueing them as to hypothesized impacts.

6. The percentage of all respondents at Sites 1 and 2 who definitely agree that agricultural production increased (decreased) as a result of the road reconstruction. Toward the end of the interviews, respondents are read a list of hypothetical impacts of the reconstructed road and are asked to what extent they would agree or disagree with each statement.

This evaluation strategy provided the study team with several "windows" through which to view any one room (impact), thereby increasing our likelihood of drawing complete and accurate conclusions from the data. At each site, our field teams sought to interview 20 respondents consisting of ten farmers, four businessmen, two union chairmen, two primary school teachers, and two health workers. The objective of this quota-type sampling was to arrive at a total sample of approximately 1,000 respondents composed of the above five categories of individuals in numbers most appropriate to the research questions being asked. Since most of the hypothesized road impacts were agricultural and since we wished to make comparisons between the responses of large and small farmers, one half of the sample was allocated to farmer interviews. Strict random sampling was not employed in the selection of individual respondents within these categories. Instead, the field teams were instructed to select one union chairman, one teacher, and one health worker from each half of the road, as well as two businessmen and five farmers. As the teams came across a primary school, health clinic, or rice mill, one of the team members would remain behind to interview the headmaster, head nurse, or mill owner, etc. About one half of the farmers were interviewed in their homes; others were selected elsewhere in the village and in the fields in order to obtain a broad cross-section including tenant farmers owning little or no land themselves. Further discussion of the survey procedures used in this study is presented in Section IID.

The research design described above incorporates numerous precautions to ensure high quality data and represented to us the most rigorous evaluation approach given time and budget constraints. Several limitations of the approach, however, should be noted. First of all, the design does not permit conclusions to be drawn at the thana level as to the aggregate impacts associated with multiple, overlapping projects. If, for example, high concentrations of FFW activity create disincentives to wheat growers in the area by forcing down wheat prices, our site-level approach would not be likely to confirm such an impact. We chose not to explore thana level relationships after encountering high turnover of local officials and revised record-keeping procedures associated with the thana upgrading process. Second, the methodology does not include a cost-benefit analysis of the FFW Project because of the same problem (changes in local staffing

and record-keeping) encountered in the pretests.* Third, the data collected are most meaningful when compared across sites or across subgroups of respondents (i.e., in relative form), and less meaningful when viewed individually (i.e., in absolute form). The inherent biases of the respondents and the retrospective nature of the inquiry threaten the validity of our sample means (for example, farmers in our study reported an average of three health care visits in the last three months) but not the validity of the variation in these means (for example, more frequent visits were reported among large farmers and farmers at Site 1 than among small farmers and farmers at Site 3). Finally, since the roads selected for study were not randomly assigned to treatment groups (sites), we cannot be assured that Site 3 roads represent true baseline/ control scenarios. If, for example, those roads selected for reconstruction (under FFW) in 1980 were more likely to be primary arterial roads and those roads selected for reconstruction in 1984 were more likely to be collector or feeder roads, then differences observed in the road environment would reflect differences in selection criteria more so than impacts of road reconstruction. For this reason, our analyses do not rely solely on Sites 1 or 2 versus Site 3 comparisons.**

B. Questionnaire Design

Appendix B contains English translations of the the survey instruments used in the study. Considerable care was taken in designing the questionnaire to minimize respondent bias. In the introduction to the interview, the interviewers identified themselves as Abt Associates employees and not CARE or government employees. The interviewers carried a letter issued by Abt Associates to verify their affiliation. No interviews with other respondents were conducted in the presence of union or thana officials. The term "Food for Work Impact" was not mentioned in the interviews until toward the end; rather, respondents were initially asked about changes in socioeconomic conditions from 1980 to 1983.

Each interview form required about 25 minutes to administer and contained five sections. Section I varied according to type of respondent and sought information that would best be provided by each. The five respondent modules are described below:

*As it turned out, many of the major impacts identified in this report, such as improvements in communication and education, are non-quantifiable.

**As such, they are not true control groups; we refer to them as comparison sites, consistent with the convention for describing such groups in quasi-experimental designs.

- Local officials. These individuals, usually union chairmen, were asked questions about their criteria for selecting of roads for reconstruction, the process of supervision during construction, union maintenance budgets, and various 1980 and 1983 union statistics.
- Health workers. Doctors, pharmacists, nurses, and other local health or family planning personnel were asked to provide information on changes in health and family planning services and practices in the area since 1980, and their perceptions of reasons for any reported changes.
- School teachers. Headmasters or teachers of primary schools provided quantitative and qualitative data on school attendance and enrollment during specific time periods and were also asked reasons for any reported changes since 1980.
- Businessmen. Mill owners, shopkeepers, and other merchants provided a profile of their businesses through such information as the number of years in operation, the amount of product produced or sold, and the number of people employed during specific time periods.
- Farmers. A cross-section of farmers along the road were asked questions on size of farm, crop mix, jute prices, use of fertilizer, transportation costs, etc. during 1980 and 1983 and their perceptions of reasons for any reported changes.

Sections II to V of the interview forms were identical for all respondents. In Section II, respondents were queried about the condition of the road, including any recent deterioration observed and the types of maintenance work done or needed on the road. In Section III, respondents were asked about changes in specific economic and social conditions in the area between 1980 and 1983. Section IV alerted respondents to the focus of the study and asked open-ended questions about the most important good and bad effects of the road reconstruction. These questions were followed by agree/disagree questions concerning possible impacts of the road reconstruction. Since this section asked questions relating only to FFW roads, it was excluded from interviews at the comparison sites. Finally, Section V obtained background information on the respondent's age group, marital status, religion, and educational level.

Two types of forms pertaining to the roads (also reproduced in Appendix B) were used in this study: (a) the Road Characteristics Form and (b) the Road Usage Form. The Road Characteristics Form recorded details of the road condition and environment at the time of the survey. One form was completed for each half of each road in the sample. The top part of the

form identifies the road and road segment, the date FFW activity was completed, the amount of wheat allocated and actually used in the process of reconstructing the road, the project type (road or road/embankment), and the road length. The latter term was defined as the distance between the starting and ending points of the portion of the road that was reconstructed (or proposed for reconstruction) under FFW.

The main body of the form is divided into three sections describing the general surface condition, number and types of gaps, and characteristics of the environment within one half mile of the road. At two representative points on each half of the road, the surface condition was rated by using letter grades signifying the following:

- E = Excellent; motorable and smooth
- G = Good; motorable but rough
- F = Fair; passable by rickshaw
- P = Poor; passable by foot or cart only.

High surface ratings do not imply that motorized vehicles or rickshaws actually travel the road but only indicate that such travel is possible on that segment of road. Whether or not the road is actually used or passable by those vehicles is determined by information from the second section of the form, on the number and type of bridged and unbridged gaps, and information from the Road Usage Form.

To collect information on the road environment, it was necessary to define an area of influence surrounding a given project. Lacking sufficient time and resources to determine the most accurate area of influence for each rural road in the study, one half mile on either side of the road was selected as a practical approximation of this area, and one that could be assessed accurately by field observers.

The Road Usage Form was used to obtain accurate hourly traffic counts for our selected sites. Each form was used to measure traffic in one direction at one point of the road for one hour in the morning and traffic in the other direction for one hour in the afternoon. This was repeated the next day at another location but in reverse directions. Field observers also noted whether the individual or vehicle was transporting produce, whether or not it was a market day, and, in the case of pedestrians, whether they were male or female.

Other data, such as thana statistics, were entered directly onto coding forms and used in the study without formal data abstraction instruments. The resulting data set consisted of about 150 variables at four different levels of aggregation (thana, union, site, and individual). Each analysis was conducted at the lowest level of aggregation for which variables were to be considered.

C. Selection and Training Procedures

Prior to the selection of interview staff, we discussed the type of individuals we would need with members of the Mission, Bangladesh Government (BDG) officials, CARE staff, and staff at Bangladesh Institute for Development Studies and other research firms. We primarily sought to employ only interviewers with field experience in similar research who could adjust to the rural environment and with whom the interviewees would be at ease. It was particularly important that the interviewers not be perceived by the respondents as members of an "urban elite."

The number of interviewers required for the study was determined by the number of sites and interviews to be completed and the period within which the interviews had to be done. Given the number of sites (53 in 18 thanas), we felt that the interviews could not be done in one wave with proper monitoring or with the evaluation team being able to visit a majority of the sites during data collection. At the same time, since the field work had to be done within four to five weeks, we could not use one group of interviewers to cover every thana, thereby ensuring uniformity in data collection procedures and standards. Considering these constraints, we decided to do our field work in three waves, covering six thanas at one time with a total of 12 interviewers. Each thana would be covered in seven or eight days by a two-member team. This team size was thought to be ideal considering our experience in pretest sites in obtaining accommodations in rural areas, and given our concern not to be too conspicuous. This three-wave approach also allowed the evaluation team to visit three to four thanas in each wave.

We selected two categories of interviewers. The six senior interviewers designated as senior research officers (SROs) were responsible primarily for inspecting the road and completing the Road Characteristic Form as well as for writing a description of the sites they visited. They were also required to interview local officials and to supervise the work of the research officers (see below). As such, in addition to their interviewing experience the SROs' writing and supervisory skills were also considered.

The seven other interviewers (including one alternate) designated as research officers (ROs) were hired to interview farmers and other groups of respondents using the structured questionnaires, and also to complete the Road Usage Form (traffic counts) at each site.

Most of the interviewers selected had baccalaureate degrees in the social sciences and had worked on various rural projects including the World Food Program's Food for Work road impact study and for such

organizations as the Bangladesh Institute for Development Studies, the Rural Electrification Board, and the Institute of Nutrition and Food Science at the University of Dhaka.

Training of the interviewers began on September 6, 1983 and involved both formal classroom instruction and practical in-field training. Classroom instruction was done in two sessions. The first covered the following topics:

- Purpose and scope of the study
- Sample thanas and sites
- Staff roles and responsibilities
- Suggested sequence of activities during data collection
- Guidelines for getting started
- Guidelines for interviewing.

Among the guidelines for interviewing, two points particularly emphasized were the importance of objective questioning and conducting interviews without the presence of local officials or other individuals. The interviewers were also instructed to identify themselves as independent researchers employed by Abt Associates and not as government or CARE employees.

In the second session, the various forms and questionnaires used in the survey were introduced. Each question was discussed separately by questionnaire type. Most of the training was done in Bangla.

The pretest at Serajdikhan, although cut short by inclement weather, provided important insights into timing and field logistics as well as the skills of each interviewer. The road forms and interviewing procedures were revised considerably based on the pretest debriefing, so data from this thana were excluded from the main study.

The second pretest at Gopalpur was a full pilot test of the main study, using all interviewers, questionnaires, and road forms. The Abt Associates evaluation team was present at all times to supervise and monitor the activities. Interviews were verified and frequently observed. Details of the Road Characteristics forms as completed by the interviewers were checked on the spot and problems were also discussed and resolved.

Although minor modifications were made to the questionnaires used in Gopalpur, the data were determined to be of sufficient quality and completeness for inclusion in the main study.

D. Field Visits and Survey Procedures

The total number of completed interviews by type of respondent, thana, and site are shown in Table 1. A total of 905 interviews were included in the analysis with virtually no refusals. Although the initial target number of interviews was 1,080 (20 respondents x 3 sites x 18 thanas), two thanas had only two sites and the number of respondents to be interviewed at the comparison sites in waves 2 and 3 was reduced due to time constraints. Also, several business and health interviews could not be completed because appropriate facilities were not found in the area of influence at certain sites.

The three waves of data collection were done over a period of four weeks between September 25 and October 22, 1983, involving visits to all 18 sampled thanas. Each thana (or upazilla) was covered by one SRO and one RO, who used available public transport to reach the thana. Once there, they met with the Circle Officer (CO) or the Thana Nirbahi Officer (TNO) and the Project Implementation Officer (PIO). They introduced themselves, explained the purpose of visit, and sought help regarding accommodations for overnight stay and locations of the various road projects in our sample. Letters of introduction issued by the Ministry of Food and Abt Associates were instrumental in stimulating cooperation at the thana level.

Once settled, the team began their data collection, usually at Site 1. Each site normally required two days to complete all interviews and road forms. On the first day, they completed the first half of the road. The SRO travelled the entire first half of the road, inspecting the road condition and completing other details of the Road Characteristics Form. He or she also interviewed the Union Parishad Chairman or other local officials, primary school teachers, and health professionals.

During this time, the RO interviewed farmers and businessmen and also took two traffic counts for one hour each at the mid-point of that half of the road. The traffic counts in the morning hours measured the traffic flow in one direction and the one in the afternoon measured the flow in the other direction. The second half of the road was completed likewise on the second day. Sites 2 and 3 were done similarly, although time constraints often forced the field teams to complete Site 3 in only one day.

During each wave, which covered seven to eight days, the Abt Associates evaluation/management team visited three to five thanas to monitor field activities and view firsthand as many sites as possible. The team usually visited local officials at the thana headquarters first, and then visited

Table 1
Total Number of Completed Interviews
by Type of Respondent, Thana, and Site

	<u>Completed Interviews</u>
Type of Respondent	
1. Local officials	77
2. Health workers	99
3. Teachers	101
4. Businessmen	166
5. Farmers	<u>462</u>
	905
Thana	
1. Begumganj	59
2. Matlab	56
3. Brahmanpara	51
4. Gopalpur	45
5. Araihasar/Narsingdi	51
6. Bhaluka	56
7. Madarganj	40
8. Nakla	57
9. Dacope	31
10. Satkhira	50
11. Daulatpur	50
12. Sarsha	51
13. Pirgacha	52
14. Singra	52
15. Ishwardi	51
16. Khansama	51
17. Thakurgaon	49
18. Nandigram	<u>53</u>
	905
Site	
1. 1979-1980 CARE roads	320
2. 1981-1982 CARE roads	339
3. Proposed 1983-1984 CARE roads	<u>246</u>
	905

the selected sites within that thana, covering as much of the road as possible and resolving any problems experienced by the interviewers.*

During these visits, the Abt Associates evaluation team completed Road Characteristics forms and verified some completed interviews by going back to the respondents and inquiring about the interview process. The evaluation team also talked informally to passersby about the roads and their importance.

Field work was hard and tiring. Interviewing for hours on exposed rural roads with poor transportation was physically exhausting. Every effort was made to minimize interviewer fatigue and discomfort. The interviewers were encouraged to use any transportation available to them. Boats were often used to travel roads that were partially or fully under water. Bicycles and motorcycles were rented from willing residents and business people. Air travel was sometimes used, where appropriate. The interviewers were given three days of rest between each wave, during which time they wrote descriptions of the sites visited.

* In Matlab Thana, the initial Site 3 was found to be inappropriate because some segments of the road had been the site of recent FFW activities. An alternative proposed 1984 project was chosen as Site 3. In Ishwardi Thana, the Site 3 project was a road going through staff quarters of a large paper mill in a fairly urban setting. This project was replaced by an alternative proposed 1984 project. In Pirgacha Thana, the original Site 2 was changed to Site 3 after it was found to have been only 16 percent completed.

III. SITE CHARACTERISTICS

A. Road Condition and Maintenance

Table 2 provides a summary of the three groups of roads as they were observed in October of 1983. More detailed statistics on each individual site are presented in Volume II: Case Study Descriptions. The 52 roads averaged 6 miles in length, ranging from 2 miles to 14 miles. An average of 824 maunds of wheat per mile were used to pay for the reconstruction of the Site 1 roads (1980 FFW projects), compared with an average of 596 maunds per mile used in the reconstruction of the Site 2 roads (1982 FFW projects). The surface condition of the project sites, rated at four intervals as described in Section IIB, was fair to good, considering that it was observed just after monsoon season, and was superior to that of the comparison sites. Somewhat surprisingly, the older (Site 1) roads were in considerably better condition than the more recent (Site 2) roads. Specifically, 35 percent of the Site 1 roads were rated good or excellent overall, compared with 22 percent of the Site 2 roads and 11 percent of the Site 3 roads (proposed 1984 FFW projects).

Recent maintenance appears to explain much of the variation in surface condition across sites since, according to our observations and the consensus of respondents at each site, local maintenance had been performed within the last year on over two-thirds of the 1980 sites compared with less than one-half of the 1982 sites and less than one-fifth of the comparison sites. Other factors possibly attributing to the superior condition of the older FFW roads may be the proximity of the newer roads to canals or rivers (all of the 1982 sites were road/embankment projects, as opposed to only five of the 1980 sites in the study) where sandy soil and severe erosion are more prevalent, and the additional 24 months' time at Site 1, allowing more settling and compacting of the soil.

Despite such fair to good surface conditions, fewer than one in five of the project sites (and none of the comparison sites) were fully passable by rickshaw. Unbridged gaps and gaps closed with bamboo bridges prevented villagers (and our field teams) from traveling even halfway by rickshaw on 35 percent of the Site 1 roads, 61 percent of the Site 2 roads, and 88 percent of the Site 3 roads. On average, one bamboo bridge or unbridged gap was observed per mile among the project sites compared with two per mile among the comparison sites. About one half of all gaps observed on the 52 roads consisted of deliberate cuts made by farmers to permit drainage of excess water. While fewer gaps and more culverts, concrete bridges, and wooden bridges were observed at the project sites than at the comparison sites, the limited accessibility of the project sites to motorized vehicles

Table 2

Summary of Site Characteristics

	Site 1 (1980 FFW Rds)	Site 2 (1982 FFW Rds)	Site 3 (Prop. FFW Rds.)
Number of roads observed	17	18	17
Mean road length (miles)*	5.5	6.3	6.1
Mean wheat allocation (maunds)	4,721	4,082	3,319
Mean union population density (persons per sq. mile)	1,958	2,290	1,546
Percentage of roads:			
recently maintained*	69	41	18
with good or excellent surfaces*	35	22	11
with fair surface conditions	42	45	24
with poor surface conditions	23	33	65
passable completely by rickshaw	12	22	0
passable halfway by rickshaw	53	17	12
passable < halfway by rickshaw	35	61	88
near a union council office*	82	72	71
near a bazar (daily market)	88	89	82
near a high school	94	89	76
near a health clinic	53	67	59
near electric lines	65	67	71
Mean number of observed:			
culverts	4.4	3.1	3.2
concrete or wooden bridges	2.8	2.9	1.8
bamboo bridges	1.3	1.7	1.1
unbridged gaps (excl. cuts)	1.5	1.9	6.7
unfilled cuts for drainage	2.2	3.5	4.9
primary schools	5.4	5.4	4.6
rice mills	5.2	3.4	3.5
hats (weekly markets)	2.6	2.3	2.4
deep tubewells	2.2	1.3	1.5
access roads	11.1	9.6	7.5
auto/cycle rickshaws per hour	2.1	0.3	0.5
motorcycles/bicycles per hour	5.3	3.5	3.3
bullock carts per hour	2.3	2.4	1.3
male pedestrians per hour	33.9	28.9	27.1
female pedestrians per hour	9.9	8.8	8.0

*As defined in Section IIB.

remained a major problem. Appendix A contains photographs of several of the types of gaps and surface conditions described above.

B. Road Environment and Usage

The 1980 and 1983 project sites in our study passed through unions with mean population densities above the national average of 1,636 persons per square mile, whereas the comparison sites were generally less densely populated than the national average. Electric lines were observed along portions of two thirds of the roads visited. More deep tubewells, rice mills, and access roads were observed within one half mile of Site 1 roads than either Site 2 or Site 3 roads, and a union council office, bazar, high school, and health clinic were more often observed near project sites than near comparison sites. These statistics, shown in Table 2, suggest that most of the FFW sites were located in favorable socioeconomic environments (i.e., near schools, clinics, and businesses) for development impact. The differences in road environment observed between project and comparison sites are explored further in Section IVA.

Using the Road Usage Form (shown in Appendix B), our field teams monitored traffic patterns from 9 to 10 a.m. and from 4 to 5 p.m. for two days at each site. No trucks, buses, jeeps, or cars were observed during these four intervals on any of the 52 roads in the study, due largely to the presence of at least one unmotorable gap on 48 (or 92 percent) of the roads. Hourly traffic summarized in Table 2 was very similar on Site 2 and Site 3 roads; nonetheless, more traffic of all types (except four-wheeled vehicles) was observed on Site 1 roads. In particular, about twice as many baby taxis, rickshaws, motorcycles, and bicycles were observed per hour on Site 1 roads than on Site 3 roads. Male pedestrians were by far the most frequent users of the roads. Site 1 roads averaged seven more male pedestrians and two more female pedestrians per hour than Site 3 roads. Not shown in Table 2 is the high within-group variation in road usage that was found in our sample. Total traffic of all types ranged from as few as seven persons or vehicles per hour to as many as 140 persons or vehicles per hour. The mean was 50. Among the project sites (Sites 1 and 2 combined), 60 percent had no rickshaw traffic while the other 40 percent had as many as ten rickshaws per hour. Bullock carts, the most undesirable form of transport from the perspective of road maintenance (see Section IV, Part C), were observed on 60 percent of the project sites; as many as 15 carts per hour were observed on some roads. Geographically, sites in the northwest region may be characterized as having the lowest levels of rickshaw traffic; sites in the southwest region tended to have the highest levels of bullock cart traffic; and sites in the east region contained the highest levels of pedestrian traffic (and highest population densities).

IV. IMPACT ASSESSMENTS

A. Economic Impacts

In this section, we review the available evidence of specific economic impacts assembled from the survey data, road observation data, and local statistics. Wherever possible, we have structured the tables and described the results in the same sequence in which the data were gathered, as follows:

- (1) Interview Section I: Estimates of actual 1980 and 1983 values by specific respondent groups constitute our strongest indicator of development impact. We present the mean and median values for each year within sites, and the average percentage increase in these values since 1980.
- (2) Interview Section III: The percentage of all respondents at each site who reported a specific change since 1980, not necessarily attributed to the road reconstruction, is presented without adjusting the percentage for missing values.
- (3) Interview Section IV (Part 1): The percentage of all respondents at each site who mentioned a specific impact as either the most important or next most important good (or bad) effect of the road reconstruction, in response to open-ended questions at Sites 1 and 2 only, is presented without adjusting for missing values.
- (4) Interview Section IV (Part 2): The percentage of all respondents at each site who definitely agreed (or disagreed) with a specific impact statement is presented without adjusting for missing values. In this study, respondents more often expressed opinions rather than replying "Don't know" to any agree/disagree item. For this reason, we focus primarily on the percentage of respondents who definitely agreed or disagreed with each impact statement.
- (5) Road Observations: Any relevant data obtained from reported road conditions (Interview Section II) or field observations (presented in Table 2) are identified in the discussion, but not in the tables, in this section.

Some relationships were explored in greater detail and/or in more ways than others depending upon their relative complexity and importance as potential development impacts.

Transportation costs, travel times, and farmgate prices. Farmers at each site were asked how much it cost them to transport one maund (80 lbs.) of produce to and from the local market in 1980 and in 1983. As Table 3 reveals, reported transport costs in 1980 were very similar for all three sites and lower than reported transport costs at the time of the survey (1983). The increases since 1980, however, are lower at the project sites (Sites 1 and 2) than at the comparison sites (Site 3). In 1983, the cost of transporting two maunds of produce to the local market was about 24 cents at the project sites versus 28 cents at the comparison sites. While transportation costs have increased (with inflation) along all of the roads in our sample, the FFW road reconstruction appears to have held down the magnitude of the increase. Increases in rickshaw traffic and decreases in travel time to the local market resulting from road reconstruction are likely explanations for the net reductions in transport costs at the project sites. Nearly two thirds of all respondents at Site 1 reported an increase since 1980 in rickshaw traffic on the road, compared with less than half at Site 2 and only one quarter at Site 3. More than three fourths of the respondents at the project sites reported reductions since 1980 in travel times to the local market, compared with less than one third at the comparison sites. Since 1980, fertilizer costs per maund have also increased about 50 percent at the roads in our study, with greater percentage increases at project sites (64 percent) than at the comparison sites (35 percent). More dramatic increases have occurred in jute prices, however, which are reported to have more than doubled at project sites and nearly doubled at comparison sites. Not knowing what happened to the prices of other goods and commodities at our study sites from 1980 to 1983, we are unable to draw any conclusions as to the impact of road reconstruction on farmgate prices. Reductions in transportation costs and travel times, however, appear to be important good effects of the road reconstruction.

Use of new farm technology. Deep tubewells pump water for irrigation and other purposes from sources directly beneath the farmers' fields and represent an alternative, but not necessarily more modern, method of irrigation as opposed to diesel or electric power pumps that transfer surface water from rivers, canals, and other sources to nearby croplands. The number of reported deep tubewells and power pumps in the unions covered by this study changed since 1980 in directions suggestive of an FFW impact, as shown in Table 4. At Sites 1 and 2, there was a distinct shift away from the use of power pumps towards the use of deep tubewells since 1980, whereas Site 3 shows a continuing reliance on power pumps. Sites 1 and 2 also show greater reported increases in the use of fertilizer since 1980, with usage having doubled at the project sites compared with an increase of about 57 percent at the comparison sites. Two out of three of all respondents interviewed at the project sites definitely agreed that the road reconstruction led to increased use of fertilizer and better seeds by local

Table 3
Transportation Costs and Farmgate Prices

	Site 1 (1980 CARE Rds)		Site 2 (1982 CARE Rds)		Site 3 (Prop. CARE Rds)	
	1980	1983	1980	1983	1980	1983
Farmers	(N = 166)		(N = 176)		(N = 120)	
Reported cost of transportation to and from the local market now and in 1980 (taka per maund)	\bar{X}	2.2 3.4	2.4 3.4	2.4 3.4	2.2 3.6	2.2 3.6
	Md.	1.8 2.9	1.9 3.0	1.9 3.0	1.9 3.4	1.9 3.4
	% Δ	+57.5	+48.8	+48.8	+70.7	+70.7
Reported price of jute in the local market now and in 1980 (taka per maund)	\bar{X}	94.5 193.2	100.3 192.4	100.3 192.4	101.1 197.9	101.1 197.9
	Md.	90.4 200.4	90.4 199.8	90.4 199.8	99.6 200.1	99.6 200.1
	% Δ	+112.9	+105.7	+105.7	+98.3	+98.3
Reported cost of urea fertilizer now and in 1980 (taka per maund)	\bar{X}	108.8 155.3	111.6 158.1	111.6 158.1	114.7 157.5	114.7 157.5
	Md.	110.5 154.8	119.6 159.4	119.6 159.4	120.0 159.5	120.0 159.5
	% Δ	+41.4	+87.3	+87.3	+35.1	+35.1
All Respondents	(N = 320)		(N = 339)		(N = 246)	
Percentage who reported an increase since 1980 in the number of rickshaws using the road	%	65.9	47.8	47.8	25.2	25.2
Percentage who reported a decrease since 1980 in the time it takes to reach the local market	%	82.8	80.8	80.8	32.5	32.5
Percentage who cited reduced transportation costs or travel times as an important good effect of the road reconstruction	%	34.4	38.3	38.3	NA	NA
Percentage who definitely agreed that the road reconstruction decreased the time it takes to reach the nearest market	%	75.0	73.7	73.7	NA	NA

\bar{X} = mean Md. = median % Δ = % change since 1980 NA = Not Applicable

Table 4
Farm Technology

		Site 1 (1980 CARE Rds)		Site 2 (1982 CARE Rds)		Site 3 (Prop. CARE Rds)	
		1980	1983	1980	1983	1980	1983
Local Officials		(N = 26)		(N = 29)		(N = 22)	
Reported number of deep tubewells in the union now and in 1980	\bar{X}	6.5	8.2	4.5	5.8	5.4	6.2
	Md.	1.5	2.5	1.5	3.5	3.2	2.8
	%Δ	+33.8		+55.0		+4.7	
Reported number of power pumps in the union now and in 1980	\bar{X}	1.7	1.4	5.0	5.1	5.3	8.6
	Md.	0.7	0.3	1.3	1.1	2.0	4.0
	%Δ	-29.2		-1.6		+72.6	
Farmers		(N = 166)		(N = 176)		(N = 120)	
Reported maunds of fertilizer used now and in 1980	\bar{X}	4.6	8.6	3.4	7.5	4.7	8.0
	Md.	2.8	4.9	1.4	3.5	2.8	3.8
	%Δ	+82.4		+129.2		+57.3	
Reported number of visits by agricultural extension workers in the last three months	\bar{X}		1.6		1.0		1.3
	Md.		0.4		0.2		0.4
Percentage who reported at least one visit by an agricultural extension worker in the last three months	%	45.0		28.3		41.5	
All Respondents		(N = 320)		(N = 339)		(N = 246)	
Percentage who definitely agreed that the road reconstruction led to increased use of fertilizer and better seeds by farmers	%	70.3		65.2		NA	

\bar{X} = mean Md. = median %Δ = % change since 1980 NA = Not Applicable

farmers. Our field teams also observed more fertilizer shops present in the area of influence around project sites than around comparison sites. When we asked farmers how often they had been visited by agricultural extension workers in the last three months, however, we found only slightly higher numbers at Site 1 than at Site 3 and even lower numbers at Site 2. The majority of all farmers reported that they had not been visited at all by any agricultural extension worker during this period. Improved agricultural extension outreach does not appear to be the critical linkage between the FFW road improvement and increased use of new farm technology.

Agricultural production. Although about 80 percent of all respondents in the project sites definitely agreed that the road reconstruction led to increased agricultural production, other information in our survey (see Table 5) as well as information on changes in crop yields missing from our survey prevent us from substantiating this claim. More respondents reported an increase in agricultural production since 1980 in the project sites (88.4 percent in Site 1 and 83.2 percent in Site 2) than in the comparison sites (73.6 percent in Site 3). About a third of the respondents in the project sites cited increased agricultural production as an important good effect of the road reconstruction. While increased agricultural production has been the general response, the difference between sites are not pronounced and therefore cannot be attributed with reasonable confidence to the road reconstruction. Somewhat more interesting is the difference in the sale of jute by farmers between 1980 and 1983 in the three sites. The amount of jute sold increased much more in Sites 2 and 3 (68.1 percent and 64.3 percent, respectively) than in Site 1 (9.4 percent). This wide difference might suggest the ability of the farmers in Site 1 to shift to the production of a more profitable crop (e.g., rice), but with the absence of more detailed data on crop mix and the production and prices of other major crops, firmer conclusions cannot be drawn. Since crop production may increase without a corresponding increase in crop acreage (through new farm technology), we recommend that future assessments include more detailed information on crop yields.

Land values and tenure. Although 80 percent of the respondents at the project sites definitely agreed that the road reconstruction led to increases in land values, other evidence presented in Table 6 suggests that the increases in land values since 1980 reported at the project sites (39 percent) were about the same as those reported at the comparison sites (42 percent). These increases are also reflected in the high percentage of all respondents at each site who reported increases in land values since 1980. Table 6 does reveal, however, the only two major negative impacts of the road reconstruction suggested in this study. The first is a shift in land distribution away from the middle categories of land ownership and toward the extreme categories (less than one-half acre and more than five acres).

Table 5
Agricultural Production

	Site 1 (1980 CARE Rds)		Site 2 (1982 CARE Rds)		Site 3 (Prop. CARE Rds)	
	1980	1983	1980	1983	1980	1983
Local Officials	(N = 26)		(N = 29)		(N = 22)	
Reported acres cultivated under aus, aman, and boro in the union now and in 1980 (in thousands)	\bar{X} 55.7	60.3	63.2	59.6	70.9	74.7
	Md. 43.0	43.5	53.0	52.0	50.6	58.0
	% Δ +5.2		-4.0		+9.2	
Reported acres cultivated under other crops in the union now and in 1980 (in thousands)	\bar{X} 14.1	18.4	14.4	19.7	9.4	12.8
	Md. 8.6	8.2	10.8	7.6	4.8	5.5
	% Δ +17.2		+8.3		+28.9	
Farmers	(N = 166)		(N = 176)		(N = 120)	
Reported maunds of jute sold now and in 1980	\bar{X} 8.2	8.9	4.3	5.6	6.5	7.4
	Md. 4.6	5.1	.4	2.3	.5	4.1
	% Δ +9.4		+68.1		+64.3	
All Respondents	(N = 320)		(N = 339)		(N = 246)	
Percentage who reported on increase in agricultural production since 1980	%	88.4	83.2		73.6	
Percentage who cited increased agricultural production as an important good effect of the road reconstruction	%	34.4	32.4		NA	
Percentage who definitely agreed that the road reconstruction led to increased agricultural production	%	80.0	77.0		NA	
Percentage who definitely disagreed that the road reconstruction led to decreased agricultural production	%	84.7	80.5		NA	

\bar{X} = mean Md. = median % Δ = % change since 1980 NA = Not Applicable

Table 6
Land Values and Tenure

	Site 1 (1980 CARE Rds)		Site 2 (1982 CARE Rds)		Site 3 (Prop. CARE Rds)	
	1980	1983	1980	1983	1980	1983
Local Officials	(N = 26)		(N = 29)		(N = 22)	
Reported value of land near the road now and in 1980 (thousand taka per 33 decimal bigha)	\bar{X}	17.5 20.4	18.7 27.1	12.3 18.3		
	Md.	9.5 13.0	12.0 19.9	7.8 10.3		
	%Δ	+23.7	+53.1	+42.3		
Reported percentage of households in union owning less than one half acre now and in 1980	\bar{X}	28.5 36.4	44.7 40.6	47.6 28.4		
	Md.	29.4 34.5	44.7 45.5	46.2 27.0		
	%Δ	+22.5	-3.7	-40.9		
Reported percentage of households in union owning more than five acres now and in 1980	\bar{X}	11.7 23.7	8.7 8.3	12.8 11.3		
	Md.	7.1 16.7	9.2 9.1	12.0 9.1		
	%Δ	+114.9	-2.8	-17.7		
All Respondents	(N=320)		(N=339)		(N=246)	
Percentage who reported an increase since 1980 in the value of land near the road	%	90.3	93.5	93.1		
Percentage who cited the loss of land near the road as an important bad effect of the road reconstruction	%	28.7	30.0	NA		
Percentage who definitely agreed that the road reconstruction led to an increase in the value of land near the road	%	77.5	81.7	NA		

\bar{X} = mean Md. = median %Δ = % change since 1980 NA = Not Applicable

At the comparison sites, the proportion of households in the two land extremes decreased since 1980 (by 41 percent and 18 percent, respectively). At the 1980 project sites, however, the proportion of households in these categories increased since 1980 (by 23 percent and 115 percent, respectively). Taken together with data presented later in this section pertaining to distribution of benefits, this dramatic shift in land distribution at the older project sites suggests (as often speculated in studies of rural road projects in developing countries) that road reconstruction may exacerbate the income/land distribution problem that already exists in Bangladesh. Since the shifts in land holdings observed in Table 6 occur at the union level (encompassing more than the area of influence around a given project site), further study of this important relationship would be needed before a definite conclusion could be drawn. The second negative impact caused by the road reconstruction is the forfeiture of land that is required by roadside dwellers for the widening and raising of the road during reconstruction. Three years later, nearly one third of all respondents interviewed near project sites mentioned the loss of portions of their own or others' land during reconstruction as an important (but unavoidable) bad effect of road reconstruction.

Commercial activity and long-term employment. Table 7 describes responses to questions concerning commercial activity. The percentage of new businesses (since 1980) among the businessmen we interviewed at each site were similar at Sites 2 and 3 (14.3 and 13.6 percent, respectively), but higher at the older FFW sites (18.5 percent). Similarly, increases in production or sales were higher for the constructed roads at Sites 1 and 2 (63.1 and 74.2 percent, respectively) than at the proposed Site 3 roads (only 50 percent).

All respondents were asked specific questions concerning increases in the number of rice mills, wheat mills, other mills, businesses, and bazars or hats (weekly or bi-weekly markets) since 1980. The proposed roads at Site 3 show dramatically lower increases in the number of all three types of businesses when compared with the 1980 roads at Site 1. Specifically, Site 3 respondents report only a 41.1 percent increase in rice and wheat mills, while Site 1 respondents report a 64.1 percent increase in these businesses. For other mills and businesses, and bazars or hats, Site 3 shows 65.4 percent and 17.9 percent increases, respectively. Site 1 shows 81.9 and 43.1 percent increases, respectively. Respondents at Sites 1 and 2 were asked open-ended questions about the most important benefit derived from construction of the roads. Approximately one fourth of the Site 1 respondents and about one fifth of the respondents at Site 2 cited increased commercial activity as an important good effect of the road reconstruction. Over 60 percent of the respondents were convinced that the road construction had led to improvements in long-term employment.

Table 7
Commercial Activity

	Site 1 (1980 CARE Rds)	Site 2 (1982 CARE Rds)	Site 3 (Prop. CARE Rds)
<u>Businessmen</u>	(N = 61)	(N = 64)	(N = 41)
Percentage whose business was new since 1980 %	18.5	13.6	14.3
Percentage who reported an increase since 1980 in production or sales %	63.1	74.2	50.0
<u>All Respondents</u>	(N = 320)	(N = 339)	(N = 246)
Percentage who reported an increase since 1980 in the number of rice and wheat mills near the road %	64.1	51.6	41.1
Percentage who reported an increase since 1980 in the number of other mills and businesses near the road %	81.9	69.3	65.4
Percentage who reported an increase since 1980 in the number of bazars or hats near the road %	43.1	22.1	17.9
Percentage who cited increased commercial activity as an important good effect of the road reconstruction %	24.9	20.3	NA
Percentage who definitely agreed that the road reconstruction led to increased long-term employment %	61.6	60.8	NA

NA = Not Applicable/Not Asked

Environment and other economic impacts. Additional survey data show some indication that FFW roads and roads/embankments may have contributed to improved flood control, among other economic impacts. All respondents were asked whether there was an increase or decrease in flooding near the road since 1980. As Table 8 shows, more respondents reported an increase in flooding in the comparison sites (35.6 percent in Site 3) than in the project sites (27.2 and 25.7 in Sites 1 and 2, respectively). Similarly, fewer people reported a decrease in flooding in Site 3 (21.1 percent) than in Sites 1 and 2 (43.8 and 39.5 percent, respectively). Further, more than a third of the respondents in the project sites (40.3 percent in Site 1 and 36.3 percent in Site 2) definitely agreed that the road reconstruction led to decreased flooding near the road. Road reconstruction may have had some negative impact on irrigation through improper drainage. Almost half the respondents in the project sites (44.4 and 37.2 percent in Sites 1 and 2, respectively) agreed that the road reconstruction did not allow for proper drainage and irrigation. Viewed together with the impact on flood control, this suggests the potential positive impact of a well-designed road on flood control and irrigation.

According to respondents, FFW roads apparently had little impact on robbery and theft in the area. As Table 8 shows, more than half the respondents definitely disagreed that road reconstruction led to increased robbery and theft. The roads have, however, helped the farmers in the processing of their commodities. A third of the respondents definitely agreed that the road reconstruction led to increased use of the road for drying jute and paddy.

B. Social Impacts

Communication. Communication was the most important improvement reported by respondents. Improved communication among villages since 1980 was reported from 90 percent of respondents at Site 1, 94.1 percent of respondents at Site 2, and only 49.6 percent at Site 3 (see Table 9, row 3). The other three questions about communications were asked of all respondents at Sites 1 and 2. Over 60 percent at both sites thought that improved communication was an important good effect from the road reconstruction, and over 85 percent agreed that the road reconstruction led to increased quality of communications. Communication between project sites and thana headquarters also appears to have increased due to road reconstruction at Sites 1 and 2.

Teachers and health workers were interviewed for their assessments of the impacts of improved communications. Teachers in Sites 1 and 2 attributed much of the increase in school attendance for both boys and girls

Table 8
Environment and Other

	Site 1 (1980 CARE Rds)	Site 2 (1982 CARE Rds)	Site 3 (Prop. CARE Rds)
<u>All Respondents</u>	(N = 320)	(N = 339)	(N = 246)
Percentage who reported an increase since 1980 in annual flooding near the road %	27.2	25.7	35.6
Percentage who reported a decrease since 1980 in annual flooding near the road %	43.8	39.5	21.1
Percentage who definitely agreed the road reconstruction has led to decreased flooding near the road %	40.3	36.3	NA
Percentage who definitely agreed that the road reconstruction did not allow for proper drainage and irrigation %	44.4	37.2	NA
Percentage who definitely disagreed that the road reconstruction led to increased robbery and theft %	59.1	55.8	NA
Percentage who definitely agreed that the road reconstruction led to increased use of the road for drying jute and paddy. %	32.8	25.7	NA

NA = Not Applicable/Not Asked

Table 9
Communication

	Site 1 (1980 CARE Rds)	Site 2 (1982 CARE Rds)	Site 3 (Prop. CARE Rds)
<u>Teachers</u>	(N = 32)	(N = 36)	(N = 33)
Percentage who cited improved communication as a reason for increased primary school attendance since 1980	%		
% (Boys)	31.3	47.2	6.1
% (Girls)	28.2	50.0	6.1
<u>Health Workers</u>	(N = 35)	(N = 34)	(N = 30)
Percentage who cited improved communication as a reason for increased use of family planning services since 1980	%		
	21.4	15.7	22.5
<u>All Respondents</u>	(N = 320)	(N = 339)	(N = 246)
Percentage who reported an increase since 1980 in the quality of communications among villages near the road	%		
	90.0	94.1	49.6
Percentage who cited improved communication as an important good effect of the road reconstruction	%		
	63.4	61.4	NA
Percentage who definitely agreed that the road reconstruction led to increased quality of communications	%		
	85.3	86.7	NA
Percentage who definitely agreed that the road reconstruction led to increased visits by thana officials	%		
	76.6	65.8	NA

NA = Not Applicable/Not Asked

to improved communications. For example, boys' attendance increased 31.3 and 47.2 percent at Sites 1 and 2, respectively, while it increased only 6.1 percent in Site 3. Improved communications in turn seems to have brought about many of the other positive development impacts indicated in this report.

Education. Primary school absenteeism near the project sites was reported to be no lower than absenteeism near the comparison sites by headmasters or teachers in our sample, as indicated in Table 10. Absenteeism for boys tended to be slightly higher than for girls, and slightly higher during the dry season than during the rainy season for all students, except for girls at the comparison sites. Our expectation was that severe road conditions during the rainy months would result in higher August absenteeism at Site 3, especially among girls. This pattern does appear, with 22 percent of girls at Site 3 reported to be absent on a typical day in August versus 21 and 20 percent at Sites 1 and 2, respectively. The differences are very slight, however, more dramatic differences were reported when respondents were asked about attendance rates (probably interpreted as total enrollments of eligible children). The increases in attendance rates for boys and girls reported at the project sites were 30 percent higher at Site 2 and 50 percent higher at Site 1 than the increases reported at the comparison sites. High percentages of the respondents at each site reported increases in attendance rates at primary schools since 1980 (97 percent at the project sites versus 84 percent at the comparison sites). When asked about the reason(s) for the increase, however, much higher percentages of the teachers at project sites identified improved transportation or communication as the reason(s) than at comparison sites. The 1983 enrollment figures for Site 1 schools were in fact higher than for Site 3 schools; however, this difference could be attributed, however, to other aspects of the site characteristics and selection for FFW. Nearly 90 percent of all respondents at Sites 1 and 2 were convinced that road reconstruction had led to increased attendance rates at nearby primary schools. Given this very high consensus, along with the support of other data in Table 10, we believe that the FFW road reconstruction had a significant positive impact on primary school enrollments but little or no impact on daily absenteeism.

Health. We asked health workers separate questions about changes in family planning practices and use of general health services since 1980. The means and percentages shown in Table 11 suggest differential positive impacts of the road reconstruction on these health areas. Health workers at Site 1 roads reported an 80 percent increase in the use of family planning services since 1980 as compared with 34 percent of Site 3 health respondents. When asked to explain this increase, a higher percentage (21 percent) of Site 1 health workers cited improved transportation or communication as major factors than at Site 3 (16 percent). Higher

Table 10
Education

	Site 1 (1980 CARE Rds)	Site 2 (1982 CARE Rds)	Site 3 (Prop. CARE Rds)
Teachers	(N = 32)	(N = 36)	(N = 33)
Reported enrollment in 1983	\bar{X} (Boys) 191.9 \bar{X} (Girls) 125.4	165.8 113.8	163.1 116.7
Reported absenteeism in February 1983	\bar{X} (Boys) 24.1 \bar{X} (Girls) 22.7	22.3 21.6	20.1 18.1
Reported absenteeism in August 1983	\bar{X} (Boys) 22.3 \bar{X} (Girls) 21.4	21.1 20.3	21.6 22.2
Reported percentage increase since 1980 in attendance rates	\bar{X} (Boys) 18.6 \bar{X} (Girls) 18.3	15.5 16.6	12.1 13.4
Percentage who cited improved transportation or communication as a reason for increased attendance rates	% (Boys) 68.8 % (Girls) 37.6	75.0 63.9	42.5 33.4
All Respondents	(N = 320)	(N = 339)	(N = 246)
Percentage who reported an increase since 1980 in primary school attendance rates	% (Boys) 97.2 % (Girls) 96.3	96.5 96.5	84.1 84.1
Percentage who definitely agreed that the road reconstruction led to increased attendance rates at local primary schools	% 88.8	89.7	NA

\bar{X} = mean

NA = Not Applicable/Not Asked

Table 11

Health

		Site 1 (1980 CARE Rds)	Site 2 (1982 CARE Rds)	Site 3 (Prop. CARE Rds)
<u>Health Workers</u>		(N = 35)	(N = 34)	(N = 30)
Reported percentage increase since 1980 in the use of family planning services	\bar{X}	80.2	54.5	34.1
	Md.	25.0	25.0	25.5
Percentage who cited improved transportation or communication as a reason for increased use of family planning services	%	21.4	15.7	16.1
Reported percentage increase since 1980 in the use of health services	\bar{X}	33.9	28.0	21.7
	Md.	24.8	19.7	19.3
Percentage who cited improved transportation or communication as a reason for increased use of health services	%	13.6	15.7	22.5
<u>Farmers</u>		(N = 166)	(N = 176)	(N = 120)
Reported number of visits by health or family planning workers in the last three months	\bar{X}	3.2	2.7	2.7
	Md.	2.5	2.5	2.5
Percentage who reported at least one visit	%	74.8	74.4	71.3
<u>All Respondents</u>		(N = 320)	(N = 339)	(N = 246)
Percentage who reported a decrease since 1980 in time taken to travel to health clinic	%	77.8	77.0	30.1
Percentage who definitely agreed that the road reconstruction has led to increased use of health services	%	47.8	42.8	NA

 \bar{X} = mean

Md. = median

NA = Not Applicable/Not Asked

percentage increases in the use of general health services since 1980 were also reported at the project sites in comparison with Site 3, but fewer respondents cited road-related factors as the reason for these increases. Health and family planning visits in the last three months were reported with higher frequencies by Site 1 farmers, with about three-fourths of farmers at project sites having been visited at least once in the last three months, and most farmers having been visited at least monthly. Health and family planning outreach appears to be much more active than agricultural extension outreach, and it also appears to be slightly enhanced by road reconstruction. Dramatic differences are observed between the project and comparison sites in the percentage of all respondents who reported a decrease in travel time since 1980 to the local health clinic, with more than three-fourths of respondents at project sites reporting a decrease, compared with only 37 percent at the comparison sites. Less than half of the Site 1 and 2 respondents definitely attributed the increased use of health services to the road reconstruction, however. The indications from Table 11, therefore, are that the FFW activity greatly increased access to health services but had only limited positive impact on the actual use of health services as reported by respondents.

Distribution of benefits. We divided the responses by farmers to several questions by the size of their landholdings in order to test for differential benefits to large farmers beyond expected economies of scale. The means and percentages shown in Table 12 suggest no greater gains in jute production for larger farmers than for smaller farmers, but greater use of health services through the increased accessibility. Most respondents definitely agreed that the road improvements benefited mostly the large landholders and mill owners. Finally, nearly every respondent at the project sites reported an increase in the use of the road by local women since 1980, compared with three-fourths of the Site 3 respondents. Nine out of ten of all respondents at the project sites attributed at least some of this increased use to the FFW reconstruction work.

Taken together with the findings presented in tables 3 to 12, we believe that the AID/CARE/BDG roads visited in this study have had a positive economic and social impact on all villagers living in the area of influence around each road, including both small and large farmers and both men and women. Larger farmers, however, may be increasing their landholding near FFW roads at the expense of marginal farmers. Larger farmers may also be taking greater advantage of the health and social benefits created by improvements in accessibility brought about by the road reconstruction.

Table 12
Distribution of Benefits

	Site 1 (1980 CARE Rds)		Site 2 (1982 CARE Rds)		Site 3 (Prop. CARE Rds)	
	1980	1983	1980	1983	1980	1983
Farmers						
Maunds of jute sold in 1982 and in 1980 among small farmers (3 acres or less)	(N = 67)		(N = 77)		(N = 60)	
\bar{X}	2.4	2.7	3.6	2.9	2.0	3.2
% Δ		12.5		-19.4		60.0
Maunds of jute sold in 1982 and in 1980 among large farmers (4 acres or more)	(N = 93)		(N = 88)		(N = 58)	
\bar{X}	12.5	13.4	6.0	8.4	9.0	9.9
% Δ		7.2		40.0		10.0
Percentage of small farmers who definitely agreed that the road reconstruction led to increased use of health services	(N = 67)		(N = 77)		(N = 60)	
%		38.8		35.1		NA
Percentage of large farmers who definitely agreed that the road reconstruction led to increased use of health services	(N = 93)		(N = 88)		(N = 58)	
%		57.0		45.5		NA
All Respondents						
Percentage who definitely agreed that the road reconstruction benefited mostly large landholders	(N = 320)		(N = 339)		(N = 246)	
%		73.4		71.4		NA
Percentage who reported an increase since 1980 in the use of the road by women						
%		97.8		96.5		75.6
Percentage who definitely agreed that the road reconstruction led to increased use of the road by women						
%		87.2		90.0		NA

\bar{X} = mean

% Δ = % change since 1980

NA = Not Applicable/Not Asked

C. Effectiveness

In this section, we explore variations in impact among the 35 project sites to test the hypotheses listed in Section IB and identify key factors relating to positive development impact. As a first step, we used three sections of the personal interview questionnaire to estimate the degree of positive development impact associated with each road or road/embankment project as follows:

A score ranging from -28 to +28 was computed using the responses to the 14 items in Section III of the questionnaire. This score reflected the extent to which socioeconomic gains or losses since 1980 were reported at a project site, but not reported at the corresponding comparison site (in the same thana). A second score ranging from -36 to +36 was computed using the responses to the single overall impact item and the 17 individual impact items in Section IV of the questionnaire. This score reflected the extent to which respondents at a project site perceived definite positive or negative impacts of the road reconstruction. The mean scores at each site for these two scales were then summed to form a total estimated development impact score ranging from -64 to +64. A score of zero for a project site would indicate either that (a) similar changes were reported at the comparison site and no impacts were attributed to the road, or (b) offsetting socioeconomic gains and losses were attributed to the road. For the 35 project sites in our sample, the total development impact scores ranged from +21.3 to +39.6 with a mean and median of 31.5 and a standard deviation of 4.5. The total impact score assigned to each FFW road and the relative ranking of each FFW road are provided in Volume II of this report.

All of the FFW roads in our sample had positive development impact, using the scoring method described above. While this method does not provide a basis for estimating the percentage of roads that had "high" or "low" development impact, it provides a meaningful ranking for analyzing project effectiveness. For purposes of analysis, however, we organized the FFW roads into four similarly sized groups and labeled them as having either low, moderate, above-average, or high total impact. Since several of the variables used to study effectiveness pertain to union characteristics rather than site characteristics, we used the union as the unit of analysis in this section.

Appurtenant structures. Tables 13A and 13B point to the importance of bridges and culverts in enhancing positive development impact. We counted the number of gaps on each road that were either unbridged or closed with bamboo bridges and adjusted for the total length of the road.

Table 13

Importance of Appurtenant Structures

13A. Total Estimated Development Impact by Gaps Observed in Road
(Column percentages for Sites 1 and 2 combined)

	Number of Gaps Per Mile			N
	Low (<1)	Medium (1-2)	High (>2)	
TOTAL IMPACT				
Low	5%	11%	60%	12
Moderate	40%	34%	7%	15
Above average	40%	11%	20%	13
High	15%	44%	13%	13

N (unions)	20	18	15	53

Spearman $\rho = -.27$ $p < .05.$

13B. Total Estimated Development Impact by Passability of Road
(Column percentages for Sites 1 and 2 combined)

	Passable by Rickshaw		N
	Less Than Halfway	At Least Halfway	
TOTAL IMPACT			
Low	40%	13%	14
Moderate	32%	23%	15
Above average	20%	27%	13
High	8%	37%	13

N (unions)	25	30	55

Spearman $\rho = .41$ $p < .01.$

Roads with fewer than one gap observed per mile on average had significantly higher total impact scores than roads with more than two gaps per mile (Table 13A). In the latter group, the majority (60 percent) of the sites had low estimated development impact compared with only a small minority (5 percent) of the sites in the former group. In either categorical or continuous form, the two variables show a moderate inverse relationship ($\rho = -.27$). Table 13B shows a stronger direct association ($\rho = .41$) between the total estimated development impact of a road and the passability of the road by cycle rickshaw. Nearly two-thirds of the FFW roads that were passable at least halfway by rickshaw at the time of our study had impact scores above the mean for all FFW roads, compared with only 28 percent of the roads that were passable less than halfway. It should be noted that two of the roads in our sample (Ishwardi Site 1 and Madarganj Site 2) coincidentally contained numerous recently constructed bridges and culverts as part of an AID-funded pilot program. These roads were estimated to have below average positive development impact. Poor surface conditions and the continued presence of major gaps probably contributed to their lower than expected impact ratings.

Local maintenance. The importance of FFW road maintenance by local unions is indicated in Table 14, which shows the relationship between total estimated development impact of a road and its overall surface condition (Table 14A) as well as its state of repair over the last 12 months (Table 14B). Roads with good or excellent surface conditions were far more likely to have high positive development impact scores than roads with poor or fair surface ratings ($\rho = .45$). Also, 37 percent of FFW roads that had been maintained within the last year had high positive development impact scores compared with 8 percent of roads that had not been maintained in the same period.* CARE estimates that 800 to 1,000 maunds of wheat are required to reconstruct one mile of road. At a cost of 149 taka per maund, this amounts to a road reconstruction cost between \$5,000 and \$6,000 per mile. Simple road maintenance, however, can be performed at a cost of less than \$150 per mile based upon salaries paid under the women's maintenance program. The mean annual budget for road maintenance for the unions in our sample (Sites 1 and 2 only) was 14,800 taka or roughly \$600, enough to maintain four miles of road per year. Assuming that simple maintenance tasks are sufficient to preserve the surface condition of the road for a period of four to five years (beyond which CARE estimates major reconstruction is again necessary), the relationships shown in Table 14 imply that local maintenance is an important and cost-beneficial factor in strengthening the rural road system.

*The reader should bear in mind that the comparison sites are not included in the analyses of effectiveness and therefore cannot account for any of the relationships observed.

Table 14

Importance of Local Maintenance

13A. Total Estimated Development Impact by Overall Road Surface Condition
(Column percentages for Sites 1 and 2 combined)

	Surface Rating			N
	Poor	Fair	Good or Excellent	
TOTAL IMPACT				
Low	39%	38%	5%	14
Moderate	38%	38%	9%	15
Above average	15%	0%	52%	13
High	8%	24%	34%	13
<hr style="border-top: 1px dashed black;"/>				
N (unions)	13	21	21	55

Spearman $\rho = .45$ $p < .001.$

13B. Total Estimated Development Impact by Recent Maintenance Performed
(Sites 1 and 2 combined)

	Road Maintained in Last Year?		N
	No	Yes	
TOTAL IMPACT			
Low	29%	20%	13
Moderate	34%	23%	15
Above average	29%	20%	13
High	8%	37%	13
<hr style="border-top: 1px dashed black;"/>			
N (unions)	24	30	54

Spearman $\rho = .28$ $p < .05.$

Project selection criteria. When union chairmen were asked why the road in question was selected for Food for Work activity, they invariably cited one of two reasons. The first was a need for major repairs that could not be accommodated by the local maintenance budget. The second related to the importance of the road to the union and its proximity to schools, health clinics, and businesses. As Table 15A indicates, 70 percent of the FFW roads selected using the latter (development-related) criteria had above average or high development impact scores compared with 26 percent of the FFW roads selected solely based upon need for major repair. (If both reasons were given for selection of the road, the road was classified as having been selected based upon development-related criteria.) A somewhat stronger positive association ($\rho = .39$) appears in Table 15B between the total estimated development impact of a FFW road and the presence of electric lines observed along the road. Since Table 2 indicated a high percentage of comparison roads with observed electric lines, we believe that electrification preceded the road reconstruction for most project sites and that the similarity of the association in Table 15B with that of Table 15A corroborates the importance of development-related criteria in the project selection process. Taken together, these factors (the selection of the road because of its proximity to educational, health, or commercial services and the presence of electricity) constitute the two most powerful predictors of positive development impact (see discussion on page 44). Although we do not know what proportion of the rice mills, wheat mills, deep tubewells, and power pumps observed along the road were electric-powered versus diesel-powered, high correlations between the presence of electric lines and these structures suggest that a significant percentage were electric-powered.

Soil and climate factors. A number of overlapping relationships are depicted in Table 16, all grouped under the heading of soil and climate factors. Table 16A shows that 45 percent of the road/embankment projects had low impact scores, compared with only 4 percent of the road projects ($\rho = -.43$). This association could be attributed to the poorer surface conditions of the embankment projects relative to the road projects and higher concentrations of sandy soil. Nevertheless, since all of the 1982 CARE roads in this study were road/embankment projects, the shorter duration of time associated with the embankments may also explain their low impact scores. Using the map shown as Figure 1, we grouped the sample of roads by region and found considerable regional variation in the degree of positive development impact, as shown in Table 16B. Roads reconstructed in thanas west of the Jamuna River had higher positive development impact scores than those in thanas east of this river, where the most severe flood conditions were observed. All of the FFW roads in the northcentral thanas (Madanganj, Gopalpur, Nakla, and Bhaluka) had below average overall development impact and nearly all were at least partially submerged in water at the time of observation.

Table 15

Importance of Project Selection Criteria

15A. Total Estimated Development Impact by Project Selection Criteria
(Column percentages for Sites 1 and 2 combined)

	Development-related Criteria Considered		N
	NO	YES	
TOTAL IMPACT			
Low	35%	15%	12
Moderate	39%	15%	13
Above average	13%	37%	13
High	13%	33%	12

N (unions)	23	27	50

Spearman $\rho = .34$ $p < .01.$

15B. Total Estimated Development Impact by Presence of Electricity
(Column percentages for Sites 1 and 2 combined)

	Electric Lines Observed Along Road		N
	NO	YES	
TOTAL IMPACT			
Low	47%	16%	14
Moderate	35%	23%	15
Above average	6%	32%	13
High	12%	29%	13

N (unions)	17	38	55

Spearman $\rho = .39$ $p < .01.$

Table 16

Importance of Soil and Climate

16A. Total Estimated Development Impact by Project Type
(Column percentages for Sites 1 and 2 combined)

	Type of Project		N
	Roads	Road/ Embankment	
TOTAL IMPACT			
Low	4%	45%	14
Moderate	31%	24%	15
Above average	31%	17%	13
High	34%	14%	13
N (unions)	26	29	55

Spearman $\rho = -.43$ $p < .001.$

16B. Total Estimated Development Impact by Geographic Region
(Column percentages for Sites 1 and 2 combined)

	Geographic Region					N
	East	North- central	North- west	West	South- west	
TOTAL IMPACT						
Low	14%	62%	30%	10%	30%	14
Moderate	36%	38%	20%	10%	20%	15
Above average	36%	0%	10%	40%	10%	13
High	14%	0%	40%	40%	40%	13
N (unions)	14	13	8	10	10	55

$\chi^2 = 25.7$ $p < .05.$

Table 16C relates positive development impact to relative levels of distress as defined by the World Food Programme (1983). Thanas have been classified by WFP as having low, above average, high, or very high relative levels of distress using several indicators such as vulnerability to natural disasters and per capita food availability. In those thanas with low relative levels of distress, more than one half (58 percent) of project sites had above average or high total impact scores compared with less than one quarter of the sites in thanas with above average or high levels of distress. A WFP map shaded by relative levels of distress reveals that high distress thanas tend to be concentrated along major rivers and are therefore more prone to severe flooding and soil erosion. As shown in Table 16D, a similar inverse association between the presence of bullock carts (steel-rimmed, single-axle carts pulled by cows or water buffalo) on the road and the total estimated development impact is also believed to be a function of soil conditions and climate. In high distress thanas, a stronger inverse relationship ($-.27$) was found between road surface conditions and bullock cart traffic than in low distress thanas, suggesting more serious road damage from carts in low-lying areas with muddy soil.

Finally, Tables 16E and 16F use information available for only half of the thanas in our sample (due to publications in print at the time of the study) to relate soil concentrations to positive development impact. FFW roads located in thanas with high concentrations (greater than 40 percent) of doash soil (Table 16E), and low or medium concentrations (less than 30 percent) of sandy soil (Table 16F) had significantly higher positive development impact scores than roads located in thanas with mostly sandy soil. In one thana (Gopalpur) where the Site 1 (1980) road was found to be in much better condition than the Site 2 (1982) road, we asked the thana officials how this situation existed. Their unanimous explanation, consistent with our own observations of adjoining roads, was that the two roads were located on opposite sides of a major river with sandy soil on one side (where the Site 2 road was located) and doash soil on the other side. In other thanas, the flooding, sandy soil, and bullock cart traffic in combination appeared to have particularly devastating effects on surface conditions of road and road/embankment projects, as depicted in Appendix A.

A moderate correlation ($\rho = .37$) between road type and distress level indicates that the project sites in high distress thanas tended to be road/embankments rather than roads, as we might expect. This characteristic no doubt contributes to the inferior condition and lower estimated development impact of roads in high distress areas, since earthen embankments exposed to swift currents, wind, and rodents were found to deteriorate more rapidly than inland FFW roads. Traditional FFW road construction methods that draw large quantities of earth from either side of a footpath or low-lying road seem to be ineffective and hence inappropriate under such severe environmental conditions.

Table 16 (continued)

Importance of Soil and Climate

16C. Total Estimated Development Impact by Relative Level of Distress
(Column percentages for Sites 1 and 2 combined)

	Level of Distress		N
	Below Average	Above Average	
TOTAL IMPACT			
Low	18%	41%	14
Moderate	24%	35%	15
Above average	34%	0%	13
High	24%	24%	13

N (unions)	38	17	55

Spearman $\rho = -.24$ $p < .05$.

16D. Total Estimated Development Impact by Presence of Bullock Carts
(Column percentages for Sites 1 and 2 combined)

	Bullock Carts Observed on Road		N
	None	Some	
TOTAL IMPACT			
Low	10%	38%	14
Moderate	21%	22%	11
Above average	48%	12%	13
High	21%	28%	13

N (unions)	19	32	51

Spearman $\rho = -.20$ $p < .10$.

Table 16 (continued)

Importance of Soil and Climate

16E. Total Estimated Development Impact by Soil Type: Doash (mixed)
(Column percentages for Sites 1 and 2 combined)

	Percentage of Doash Soil		N
	Low or Medium	High	
TOTAL IMPACT			
Below average	57%	44%	11
Above average	43%	56%	12

N (unions)	14	9	23

Spearman $\rho = .24$ $p < .10$ Missing = 32

16F. Total Estimated Development Impact by Soil Type: Sandy
(Column percentages for Sites 1 and 2 combined).

	Percentage of Sandy Soil		N
	Low or Medium	High	
TOTAL IMPACT			
Below average	36%	58%	11
Above average	65%	42%	12

N (unions)	19	32	51

Spearman $\rho = -.44$ $p < .05.$ Missing = 32

Since many of the effectiveness variables described above tended to be intercorrelated, we ran a multiple regression (with the variables in continuous or dichotomous rather than categorical form) to assist us in identifying the most useful predictors of positive development impact. The results, shown in Table 17, indicate that nearly half of the variation in total impact scores among project sites (and unions) can be explained by whether or not the road 1) had been recently maintained, 2) was selected using development-related criteria, and 3) had electricity present in the area of influence. A favorable response to all three of these conditions would result in a predicted positive development impact score that is 50 percent greater than for sites where none of these three conditions exists. The presence of electric lines tended to be highly correlated with other important variables such as thana distress level ($\rho = -.70$), surface condition ($\rho = .46$), and passability by rickshaw ($\rho = .37$) and therefore absorbed much of the predictive power of these other factors. Other variables tested in Table 17 include road type (0 = road, 1 = road/embankment), road environment (scale reflecting the presence of schools, clinics, and businesses within 1/2 mile), the number of bamboo bridges, and the number of rice mills per mile. The implication of this analysis, despite its methodological simplicity,* is that the positive development impact of FFW roads in Bangladesh is likely to be greatly enhanced by altering only a few key selection and implementation factors.

*We do not know, for example, whether the electric lines observed were backbone trunk lines or single phase feeder lines, nor whether the electric lines definitely were in place before the road was reconstructed.

Table 17

BANGLADESH FFW DEVELOPMENT IMPACT STUDY
 TOTAL DEVELOPMENT IMPACT REGRESSION
 FILE LOCOFFSV (CREATION DATE = 01/04/84)

18:05:08 01/19/84

CORRELATION COEFFICIENTS

A VALUE OF 99.00000 IS PRINTED
 IF A COEFFICIENT CANNOT BE COMPUTED.

	TDIMPACT	ROADTYPE	PASSABLE	SURFRATE	REPAIRS	CRITERIA	DISTRESS	ELECLINE	ENVIRON	BAMBOO	RICEMILL
TDIMPACT	1.00000	-0.34404	0.33986	0.39550	0.35353	0.34110	-0.32946	0.38739	-0.21487	0.03241	0.27991
ROADTYPE	-0.34404	1.00000	-0.29251	-0.15327	-0.14385	-0.30920	0.37043	-0.27206	-0.17156	0.25981	-0.16201
PASSABLE	0.33986	-0.29251	1.00000	0.41584	0.13708	0.24418	-0.39859	0.37302	0.02138	-0.33707	0.09469
SURFRATE	0.39550	-0.15327	0.41584	1.00000	0.13801	0.27883	-0.26969	-0.46041	0.15902	-0.01484	0.26620
REPAIRS	0.35353	-0.14385	0.13708	0.13801	1.00000	-0.28824	0.20511	-0.03097	0.08739	-0.30780	0.04037
CRITERIA	0.34110	-0.30920	0.24418	0.27883	-0.28824	1.00000	-0.34039	0.05506	0.02135	-0.03780	0.10678
DISTRESS	-0.32946	0.37043	-0.39859	-0.26969	0.20511	-0.34039	1.00000	-0.70405	-0.10202	-0.06376	-0.29585
ELECLINE	0.38739	-0.27206	0.37302	0.46041	-0.03097	0.05506	-0.70405	1.00000	0.32317	0.13764	0.43534
ENVIRON	0.21487	-0.17156	-0.02138	0.15902	0.08739	0.02135	-0.10202	0.32317	1.00000	-0.13372	0.77395
BAMBOO	0.03241	0.25981	-0.33707	-0.01484	-0.30780	-0.03780	-0.06376	0.13764	-0.13372	1.00000	-0.14799
RICEMILL	0.27991	-0.16201	0.09469	0.26620	0.04037	0.10678	-0.29585	0.43534	0.77395	-0.14799	1.00000

***** MULTIPLE REGRESSION ***** VARIABLE LIST 1
 REGRESSION LIST 1

DEPENDENT VARIABLE.. TDIMPACT TOTAL ESTIMATED DEVELOPMENT IMPACT

VARIABLE(S) ENTERED ON STEP NUMBER 1.. REPAIRS REPAIRS TO ROAD WITHIN LAST YEAR
 CRITERIA DEVELOPMENT CRITERIA USED IN SELECTION
 ELECLINE PRESENCE OF ELECTRIC LINES

MULTIPLE R	0.69346	ANALYSIS OF VARIANCE		DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.48089	REGRESSION	RESIDUAL	3.	491.23260	163.74420	14.20460
ADJUSTED R SQUARE	0.44704			46.	530.26718	11.52755	
STANDARD ERROR	3.39522						

----- VARIABLES IN THE EQUATION -----

VARIABLE	B	BETA	STD ERROR B	F
REPAIRS	4.525435	0.49900	1.00623	20.227
CRITERIA	4.209447	0.46416	1.00728	17.464
ELECLINE	3.655800	0.37729	1.03102	12.573
(CONSTANT)	23.73722			

----- VARIABLES NOT IN THE EQUATION -----

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
ROADTYPE	-0.03354	-0.04106	0.77796	0.076
PASSABLE	0.02283	0.02765	0.76124	0.034
SURFRATE	0.03517	0.03990	0.66829	0.072
DISTRESS	-0.02030	-0.01789	0.40287	0.014
ENVIRON	0.04454	0.05816	0.88498	0.153

ALL VARIABLES ARE IN THE EQUATION
 STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

67

V. CONCLUSIONS AND RECOMMENDATIONS

A. Conclusions

Using multiple analyses of retrospective data from local interviews, road observations, and thana/union statistics, this study found significant evidence to indicate the following positive development impacts of AID/CARE/BDG Food for Work road projects in Bangladesh:

- Improved communications among villages in the area of influence and between these villages and thana headquarters;
- Reduced travel times and transport costs to and from the local market through increased proximity to bazars, hats, and rickshaw transportation;
- Increased use of new farm technology including more fertilizer, better seeds, and better methods of irrigation;
- Increased commercial activity, including establishment of new mills and businesses and increased production and employment;
- Increased access to health services, through reduced travel time and increased proximity to local clinics;
- Increased use of family planning services, through improvements in communication, transportation, and outreach; and
- Increased primary school attendance, for both males and females, through improved communication and transportation.

Viewed several different ways, the data consistently link the above changes since 1980 to the FFW-supported road reconstruction.

Moderate evidence was found to support the following additional positive impacts of road reconstruction:

- Decreased annual flooding near the road, partially offset by a lack of proper drainage and irrigation associated with the road;
- Increased use of the road by women, possibly associated with increased commercial activity and access to health and educational services;

- Increased use of health services, particularly among large landholders, through increased access to hospitals and clinics.

Moderate evidence was also found, however, to support an apparent negative impact of road reconstruction:

- Shifts in land distribution characterized by increased proportions of households owning (a) less than one acre, and (b) five or more acres.

While the data tend to support the four impacts identified above, further research is needed to establish these causal linkages with a higher level of certainty.

No evidence or marginal evidence was found to support other hypothesized impacts, including impacts on agricultural production, land values, crop mix, farmgate prices, primary school absenteeism, robbery and theft, and agricultural extension outreach. Given the perception by an overwhelming majority of respondents of positive impacts of FFW road reconstruction on agricultural production and land values, combined with limitations of the survey design in obtaining quantitative data, we suggest further research in these two areas as well.

The following factors were found to be strong predictors of overall development impact, as estimated by a combination of two scoring methods incorporating data from all 905 respondents:

- Local maintenance. Higher estimated total impact scores are associated with roads that had been maintained within the last 12 months;
- Appurtenant structures. Roads with wooden and concrete bridges and without bamboo bridges and unbridged gaps had greater estimated development impact;
- Project selection criteria. Roads that were proposed for reconstruction because of their proximity to schools, clinics, or businesses had higher impact scores than other roads; and
- Electrification. Roads serving as corridors for electric lines had higher estimated total impact scores than roads without electric lines.

Other factors found to be moderate predictors of overall development impact were:

- Level of distress. Roads in areas of low distress tended to have higher estimates of overall development impact;
- Soil type. Roads with high percentages of doash soil and low percentages of sandy soil tended to have higher estimates of overall impact;
- Surface condition. Roads with surfaces rated good or excellent overall tended to have higher estimates of overall development impact;
- Bullock cart traffic. Roads reconstructed in areas with low levels of observed bullock cart traffic had higher estimated development impact; and
- Duration of project. Roads reconstructed at least three years prior to the period of observation had higher overall impact scores than roads constructed more recently.

Two of the relationships observed in the data, the superior physical condition of the older FFW roads and the apparent multiplier effect of electrification on the development impact of rural roads, merit further exploration. Perhaps there is a critical period for a reconstructed road, such as the first or second rainy season, beyond which its importance and usefulness depend upon its ability to withstand adverse conditions prior to settling and compacting of the soil. There also may be a host of common site selection criteria that should be considered jointly by the Rural Electrification Project and the Food for Work Project.

In summary, the Title II Food for Work Project in Bangladesh appears to have stimulated rural development in positive social and economic directions since 1980 through major improvements in local transportation and communications. Although the magnitude of development impact is not always clearly quantifiable, the data from this study indicate a potential for much greater overall effectiveness given more deliberate selection and design of road and road/embankment projects in the future.

B. Recommendations

The findings from this study lead us to several recommendations that may be incorporated into future thana level planning documents. These recommendations, listed below, give due consideration to the trade-offs that exist between efficiency (i.e., greatest impacts for the smallest expenditure) and equity (i.e., distribution of benefits to the poorest of the poor, among others):

(1) Expand emphasis on the construction of bridges and culverts on roads recently proposed for reconstruction as well as on roads reconstructed in earlier years. Considering the widespread need for appurtenant structures on the roads in this study in combination with the total absence of four-wheeled motor vehicles on these roads, there may be some merits to building less expensive appurtenant structures in greater number. Among project sites visited by the Abt Associates research team, the road most in need of a major bridge was Thakurgaon Thana Site 1 (as identified in Volume II); the road most in need of a culvert or small bridge was Ishwardi Thana Site 1 (see photo on page 63).

(2) Target projects to unions with adequate maintenance funds or where agreement for local maintenance can be obtained in advance. Although future FFW wheat allocations could be diverted to maintenance of the existing FFW road network, responsibility must ultimately be established at the local level to guarantee sustainability over the long term. The relatively small costs associated with road maintenance (excluding appurtenant structures) should be borne by local jurisdictions using income from traditional sources such as bazars and hats. CARE approval of project proposals could be made contingent on the provision of appropriate mechanisms for maintenance.

(3) Assign preference to proposed projects based on development-related criteria such as proximity to schools, clinics, and businesses. Baseline criteria such as a minimum number of persons, schools, or business establishments per square mile in the proposed project area could be incorporated into the project selection and design process to screen out proposals with relatively low likelihood of development impact. The road should be part of a connected system that provides access to agricultural, educational, or administrative centers and not simply a link to another road of higher quality.

(4) Construct alternative types of roads in high distress thanas with high concentrations of sandy soil and bullock cart traffic. Local maintenance of earthen road/embankments in high distress thanas appears to be a largely fruitless endeavor given severe climatic conditions and soil factors not conducive to earthwork structures. Construction of pucca or semi-pucca roads more resistant to erosion and bullock cart damage may represent one of the few alternatives to current road reconstruction that could stimulate economic development in these areas.

(5) Coordinate the selection of project sites with other rural infrastructure development programs, particularly the rural electrification, irrigation, and family planning programs. Given the national three-pronged approach to development in the late 1970s through electrification, irrigation, and road-building projects, combined with results of this study and

the current national emphasis on family planning, increased coordination of these four development programs is likely to yield more dramatic improvements in the development infrastructure of rural Bangladesh.

Finally, the baseline data gathered at proposed 1984 CARE project sites during this study present a unique opportunity to conduct a prospective assessment of the development impact of road reconstruction. We recommend that a follow-up survey of the Site 3 roads in this study be conducted in 1986, and again in 1988, to provide more definitive answers to many of the research questions addressed above and to test the validity of our findings and conclusions. With minor modifications to the interview instrument to include more questions pertaining to crop yields, farmgate prices, and commercial sales, the follow-up survey should use the same forms and procedures employed in this study to ensure comparability of data.

APPENDIX A: PHOTOGRAPHS



Thakurgaon Thana Site 3. A view of a rural road before reconstruction under the Food for Work Program.



Brahmanpara Thana Site 2. A cycle rickshaw travels a road reconstructed under the Food for Work Project in 1981-1982.



Ishwardi Thana Site 2. Water buffalo
in seasonal floodwaters near a road
reconstructed by CARE in 1981-1982.



Ishwardi Thana Site 1: Soil erosion threatens lifespan of newly constructed box culvert funded by AID.



Gopalpur Thana Site 1. Erosion of steep embankments prevents passage of jeep on an otherwise motorable road.



Khansama Thana Site 2. Erosion of bridge approach caused by separation of wingwall prevents passage of jeep on an otherwise motorable road.



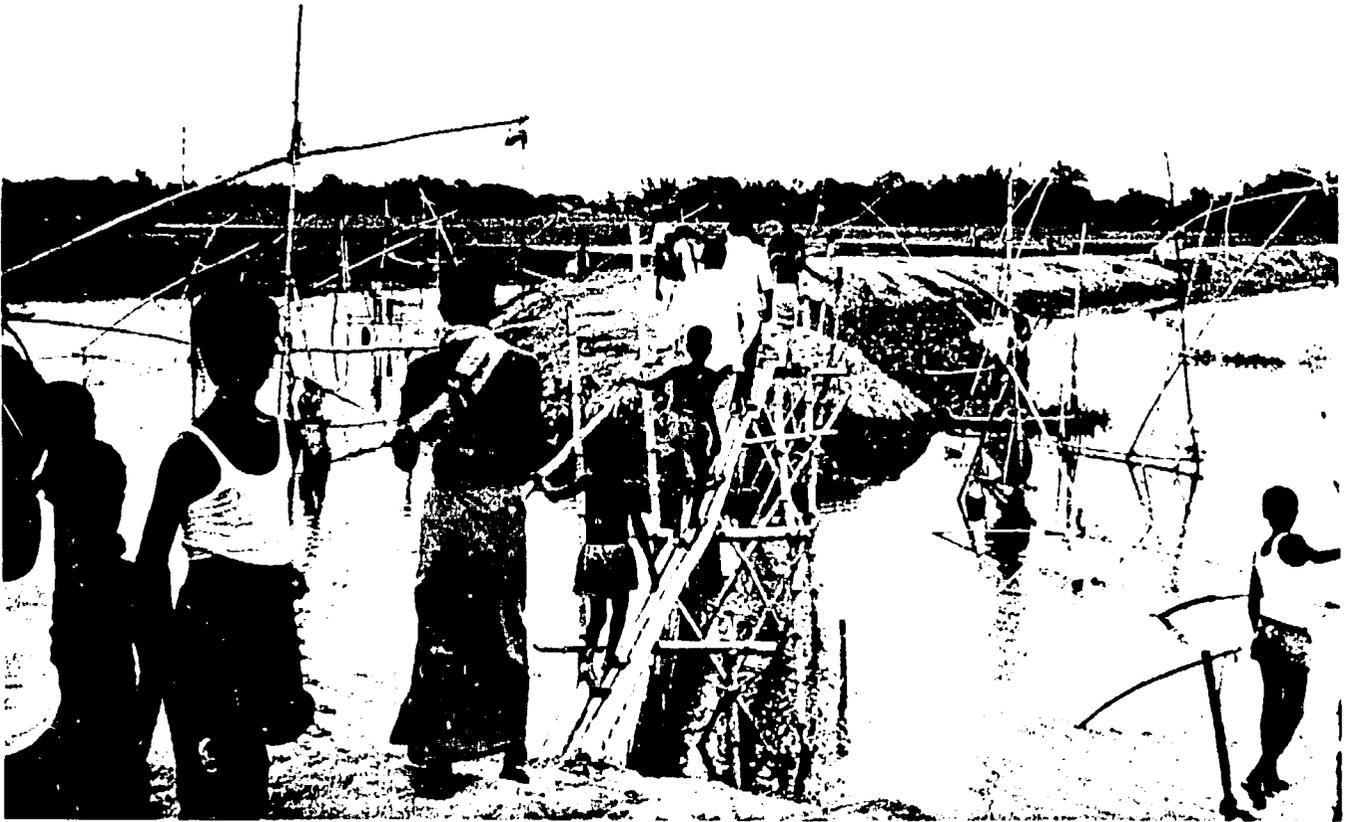
Sarsa Thana Site 2. Road damage caused by heavy bullock cart traffic combined with sandy soil and heavy rain.



Ishwardi Thana Site 1. Road damage caused by absence of bridge or culvert. Farmers cut the road with approval from thana officials to provide proper drainage of seasonal floodwaters.



Daulatpur Thana Site 2. Bamboo bridge prevents further access to road for all vehicles except bicycles.



Gopalpur Thana Site 2. Replacing this bamboo bridge with a wooden bridge passable by rickshaw would enhance the development impact of this 1981-1982 Food for Work road.

APPENDIX B: SURVEY FORMS

Section 1 (Project and Control Sites)

1. What is your position in the Union Parishad?

17

- Chairman 1
- Secretary 2
- Treasurer 3
- Other Member 4

2. How long have you been in this position?

18

- Less than 1 year 1
- 1 to 3 years 2
- 3 to 5 years 3
- More than 5 years 4

3.(a) Is the Union Parishad involved in the maintenance of public roads in this Union?

19

- Yes 1
- No 2

3.(b) (If yes) What was the budget for road maintenance in 1983?

20 21 22 23 24

3.(c) (If yes) How are the roads selected for maintenance every year?

25 26

4. Why was this road selected for reconstruction under Food For Work program?

(Probe for economic or other development related answers)

1. _____

27 28

2. _____

29 30

31, 32 Blank.

ABT ASSOCIATES INC.

ROAD USAGE FORM

BANGLADESH

Thana No. _____ Thana Name _____
 RO No. _____ RO Name _____

Site No. 1 2 3 _____ Segment 1 2 _____
 Road Name _____

Union _____
 Village _____

TRAFFIC TYPE	Date _____ Market Day: Yes _____ No _____ Direction _____				Date _____ Market Day: Yes _____ No _____ Direction _____			
	FIRST COUNT _____ to _____	AM PM	No. 1	No. P	SECOND COUNT _____ to _____	AM PM	No. 1	No. P
Truck/Bus								
Car/Jeep								
Baby Taxi								
Cycle-rickshaw								
Motorcycle								
Bicycle								
Cart								
Pedestrian (M)								
Pedestrian (F)								

1 = not transporting food/produce

P = transporting food/produce

Abt Associates Inc.
Development Impact Study
of Food For Work Roads

Card 1

QUESTIONNAIRE A: UNION PARISHAD*

Thana _____ Site Number _____ 2

Union _____ Village _____ 3 4 5

Name of Interviewer _____ Code 6 7 8 9

Date of Interview Month _____ Week _____ Code 10 11

Place of Interview 12 13 14

15

Own residence 1

In the village 2

In the market 3

In the field 4

Other (specify) 5

Time Interview began: _____

Time Interview ended: _____

Introduction:

Hello, my name is _____ .

I would like to talk with you today. I am not a government employee and I am not an employee of CARE. I work for an independent American research firm called Abt Associates (show letter). They have sent me here to learn about some characteristics of village life near (proposed) Food For Work road projects. I would like to talk with you individually and would like you to answer my questions as briefly as you can. Most of my questions will be about the _____ road or the area near that road. What I learn from you may help improve the benefits of future road building projects under the Food For Work program. Even before we start, I want to thank you for helping us.

16 Blank.

*Note: English translation from Bangla questionnaire. Includes modules for Health Worker(B), Teacher(C), Businessman(D), and Farmer(E) in Section I.

5. Who are involved in project selection? (Circle all that apply)

Chairman 1

<input type="checkbox"/>
33

Union Parishad Member 2

<input type="checkbox"/>
34

PIO 3

<input type="checkbox"/>
35

Other (specify) 4

<input type="checkbox"/>
36

6. Who was/will be involved in the technical design of this project? (Probe for thana technical assistance)

<input type="checkbox"/>	<input type="checkbox"/>
37	38

<input type="checkbox"/>	<input type="checkbox"/>
39	40

7. How was/will the construction of this road supervised?(Probe for number of visits and specific work)

<input type="checkbox"/>	<input type="checkbox"/>
41	42

<input type="checkbox"/>	<input type="checkbox"/>
43	44

8. Other than wheat what are the other contributions to this project and by whom? (Probe for contribution by CARE, Thana, Union)

Contributor Inputs

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
45	46	47	48

<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
49	50	51	52

9. What is your main occupation?

_____ Code

<input type="checkbox"/>
53

54, 55 Blank.

Section 1 (Project and Control Sites)

1. Please help us obtain the following Union Statistics for 1980 and 1983 (Latest data)

Union Statistics

	<u>1980</u>	<u>1983</u>	<u>Unit</u>									
(a) Population	-	-	Person	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> </table>					2	3	4	5
2	3	4	5									
(b) Total area	-	-	Sq.Mile	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>6</td> <td>7</td> <td>8</td> <td>9</td> </tr> </table>					6	7	8	9
6	7	8	9									
(c) Cultivable land	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>10</td> <td>11</td> <td>12</td> <td>13</td> </tr> </table>					10	11	12	13
10	11	12	13									
(d) Area Under:												
Aus	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>14</td> <td>15</td> <td>16</td> <td>17</td> </tr> </table>					14	15	16	17
14	15	16	17									
Aman	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>18</td> <td>19</td> <td>20</td> <td>21</td> </tr> </table>					18	19	20	21
18	19	20	21									
Boro	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>22</td> <td>23</td> <td>24</td> <td>25</td> </tr> </table>					22	23	24	25
22	23	24	25									
Wheat	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>26</td> <td>27</td> <td>28</td> <td>29</td> </tr> </table>					26	27	28	29
26	27	28	29									
Jute	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>30</td> <td>31</td> <td>32</td> <td>33</td> </tr> </table>					30	31	32	33
30	31	32	33									
Others (specify)	-	-	Acre	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>34</td> <td>35</td> <td>36</td> <td>37</td> </tr> </table>					34	35	36	37
34	35	36	37									
(e) Number of household by size of land holding:												
Households owning less than 1/4 acre -	-	-	Households	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>38</td> <td>39</td> <td>40</td> <td>41</td> </tr> </table>					38	39	40	41
38	39	40	41									
Households owning 1/4 to 1 acre -	-	-	Households	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>42</td> <td>43</td> <td>44</td> <td>45</td> </tr> </table>					42	43	44	45
42	43	44	45									
Households owning 1 to 5 acres -	-	-	Households	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>46</td> <td>47</td> <td>48</td> <td>49</td> </tr> </table>					46	47	48	49
46	47	48	49									
Households owning more than 5 acres -	-	-	Households	<table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> <td style="width: 25%;"> </td> </tr> <tr> <td>50</td> <td>51</td> <td>52</td> <td>53</td> </tr> </table>					50	51	52	53
50	51	52	53									

Card 2
For Local Officials

	<u>1980</u>	<u>1983</u>	<u>Unit</u>									
(f) Bazar or Hats	-	-	Number	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">54</td><td style="text-align: center;">55</td></tr></table>			54	55				
54	55											
(g) Primary Schools	-	-	Number	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">56</td><td style="text-align: center;">57</td></tr></table>			56	57				
56	57											
(h) Other Schools	-	-	Number	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">58</td><td style="text-align: center;">59</td></tr></table>			58	59				
58	59											
(i) Deep Tubewells	-	-	Number	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">60</td><td style="text-align: center;">61</td><td style="text-align: center;">62</td><td style="text-align: center;">63</td></tr></table>					60	61	62	63
60	61	62	63									
(j) Power Pumps	-	-	Number	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">64</td><td style="text-align: center;">65</td><td style="text-align: center;">66</td><td style="text-align: center;">67</td></tr></table>					64	65	66	67
64	65	66	67									
(k) % of households with electricity	-	-	Percent	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">68</td><td style="text-align: center;">69</td><td style="text-align: center;">70</td><td style="text-align: center;">71</td></tr></table>					68	69	70	71
68	69	70	71									
(l) % of population who are literate	-	-	Percent	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">72</td><td style="text-align: center;">73</td><td style="text-align: center;">74</td><td style="text-align: center;">75</td></tr></table>					72	73	74	75
72	73	74	75									
(m) Price of land per bigha near the road	-	-	Taka	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr><tr><td style="text-align: center;">76</td><td style="text-align: center;">77</td><td style="text-align: center;">78</td><td style="text-align: center;">79</td></tr></table>					76	77	78	79
76	77	78	79									

80 Blank

Section 1 (Project and Control Sites)

1. What is your position or title?

17

- Doctor 1
- Medic or Compounder 2
- Nurse or midwife 3
- Family Planning Assistant 4
- Other _____ 5

2. How long have you held this position or title?

18

- Less than 1 year 1
- 1 to 3 years 2
- 3 to 5 years 3
- More than 5 years 4

3. How large is this Clinic in terms of the

(a) Number of male patients examined per month _____

19 20 21

(b) Number of female patients examined per month _____

22 23 24

(c) Number of villages served by this clinic _____

25 26

4.(a) Are family planning services provided by this Clinic?

27

- Yes 1
- No 2

4.(b) (If yes) In August of this year, how many family planning visits were made to this Clinic?

_____ Code

28, 29 Blank.

5.(a) Since 1980 has there been a change in the proportion of households in this Union who receive family planning services?

30

- Yes 1
- No 2
- Don 't know 7

5.(b) (If yes) About how much change?

Increased _____%

31 32 33

Decreased _____%

34 35 36

5.(c) What are the reasons for this change? (Probe: Anything else)

1) _____

37 38

2) _____

39 40

6.(a) Since 1980 has there been a change in the proportion of households in this Union who receive other health services?

41

- Yes 1
- No 2
- Don't know 7

6.(b) (If yes) About how much change?

Increased _____%

42 43 44

Decreased _____%

45 46 47

6.(c) (If yes) What are the reasons for this Change? (Probe: Anything else)

1) _____

48 49

2) _____

50 51

Section 1 (Project and Control Sites)

1. What is your position at this school?

--

Head Master	1
Assistant Head Master	2
Teacher	3

17

2. How long have you held this position or title?

--

Less than 1 year	1
1 to 3 years	2
3 to 5 years	3
More than 5 years	4

18

3. How large is this school in terms of:
 - (a) Number of classes _____

19	20

 - (b) Total number of boys _____

21	22	23

 - (c) Total number of girls _____

24	25	26

 - (d) Number of villages served _____

27	28

4. During last February, about what percentage of boys were absent on a typical day?

Boys _____%

29	30

What percentage of girls _____%

31	32

5. During this August, about what percentage of boys have been absent on a typical day?

Boys _____%

33	34

What percentage of Girls _____%

35	36

37, 38 Blank.

Teacher

6.(a) Since 1980, has there been a change in the attendance rate for boys in this school?

39

- Yes 1
- No 2
- Don't know 7

6.(b) (If yes) About how much Change?

Increased _____ %

40 41 42

Decreased _____ %

43 44 45

6.(c) (If yes) What do you think caused this change? (Probe: Anything else)

46 47

48 49

7.(a) Since 1980, has there been a change in the attendance rate for girls in this school?

50

- Yes 1
- No 2
- Don't know 7

7.(b) (If yes) About how much change?

Increased _____ %

51 52 53

Decreased _____ %

54 55 56

7.(c) (If yes) What do you think caused this change? (Probe: Anything else)

57 58

59 60

61 to 80 Blank.

Section 1 (Project and Control Sites)

1. What is your position or title?

17

Shopkeeper 1

Factory or mill owner 2

Business manager but not owner 3

Others _____ 4

2. How long have you owned or managed this Business?

18

Less than 1 year 1

1 to 3 years 2

3 to 5 years 3

More than 5 years 4

3.(a) What is your business' principal product?

Product _____

19 20

3.(b) What is the unit of measure for that product?

21

Unit

Maund 1

Seer 2

Others (specify) _____ 3

4. How large is your business in terms of the

(a) Amount of product produced per month

22 23 24 25 26

(b) Amount of product sold per month

27 28 29 30 31

(c) Number of permanent or full time employees

32 33

(d) Number of casual or part-time employees

34 35

36, 37 Blank.

Businessman

5.(a) During your peak production or sales month
this year, how many (unit) of (product) did
you produce process or sell?

-----Code

38	39	40	41

5.(b) Is this more or less than your peak month
in 1980?

- More 1
- Same 2
- Less 3

42

5.(c) (If more or less) What are the reasons
for this change?

43	44

Any other reason? _____

45	46

47 to 80 Blank.

Farmer

Section 1 (Project and Control Sites)

1. How many bighas of land do you own? Bigha

--	--	--

17 18 19

2. How many bighas of land do you

	<u>Now</u>	<u>1980</u>	<u>Unit</u>							
(a) Cultivate yourself -----	-----	-----	Bigha	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 20 21 22 23 24 25						
(b) Share crop out -----	-----	-----	Bigha	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 26 27 28 29						
(c) Share crop in -----	-----	-----	Bigha	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 30 31 32 33						
(d) Rent out -----	-----	-----	Bigha	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 34 35 36 37						
(e) Rent -----	-----	-----	Bigha	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 38 39 40 41						
(f) Fallow/use for homestead -----	-----	-----	Bigha	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 42 43						

3. Of your own cultivated land how many many bighas of land are used for:

(a) Aus	-	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 44 45		
(b) Aman	-	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 46 47		
(c) Boro	-	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 48 49		
(d) Jute	-	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 50 51		
(e) Wheat	-	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 52 53		
(f) Others (specify)	-	<table border="1" style="display: inline-table; vertical-align: middle;"><tr><td style="width: 20px; height: 15px;"></td><td style="width: 20px; height: 15px;"></td></tr></table> 54 55		

Number of decimals per bigha

--	--	--

56 57 58

4. What percentage of the following does the tenant share now and in 1980?

	<u>Now</u>	<u>1980</u>	
(a) Output	%	%	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 59 60 61 62
(b) Seed	%	%	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 63 64 65 66 67 68
(c) Fertilizer	%	%	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 69 70 71 72 73 74
(d) Cost of irrigation	%	%	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 75 76 77 78 79 80
(e) Pesticides	%	%	<input type="text"/> <input type="text"/> 2 3 4 5 6 7
(f) Others (specify)	%	%	<input type="text"/> <input type="text"/> 8 9 10 11 12 13

Card
2

5. (a) Do you sell some of your own crops at the local market?

14

- Yes 1
No 2

5. (b) (If yes) What is the cost of transportation to and from the local market now and in 1980?

	<u>Now</u>	<u>1980</u>	
Per maund Taka	-	-	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 15 16 17 18

6. (a) How much did you pay for a maund of urea now and in 1980?

	<u>Now</u>	<u>1980</u>	
Taka	Taka		<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> 19 20 21 22 23 24

6. (b) How much fertilizer did you use in 1983?

_____ Maund

25 26

6. (c) How much fertilizer did you use in 1980?

_____ Maund

27 28

6. (d) (If unable to say the 1980 amount) Was it more or less compared to amount used in 1983?

29

- Less 1
More 2
Same amount 3

6. (e) (If more or less) What are the reasons for this change?

30 31

Any other reason-----

32 33

7.(a) What was the price of jute now in the local market?

Per maund _____ Taka

34	35	36

7.(b) What was the price of jute in 1980?

Per maund _____ Taka

37	38	39

7.(c) (If jute cultivated) How many maunds of jute did you sell in the local market last year?

_____ Maund

40	41	42

43, 44, Blank.

7.(d) How many maunds of jute did you sell in the local market in 1980?

_____ Maund

45	46	47

7.(e) (If unable to say the amount) Was it more or less compared to the amount sold last year?

- Less 1
- More 2
- Same amount 3

48

7.(f) What are the reasons for this change?

1. _____

49	50

(Any other reasons) 2. _____

51	52

8. How many times in the last three months have been visited by an agricultural extension agent?

_____ Code

53	54

9. How many times in the last three months have you or members of your family been visited by a health or family planning worker?

_____ Code

55	56

Section II: (Project and Control Sites)

1.a) Since this time last year, in other words in the last 12 months, would you say that the condition of the _____ road has deteriorated slightly or not at all, moderately, or severely? 2

- Slightly or not at all 1
- Moderately 2
- Severely 3
- Don't know 7

b) (If severely) in what way?

- 1. _____ 3 4
- 2. _____ 5 6

2.a) As far as you know, has there been any repair or maintenance work performed on the road since this time last year? 7

- Yes 1
- No 2
- Don't know 7

2.b) (If yes)-What repair or maintenance work was done?

- 1. _____ 8 9
- 2. _____ 10 11

3.a) In your opinion, is major repair or maintenance work needed on the road? 12

- Yes 1
- No 2
- Don't know 7

3.b) (If yes) What kind of repair or maintenance work is needed?

- 1. _____ 13 14
- 2. _____ 15 16

17, 18 Blank.

Section III: (Project and Control Sites)

1. Now I am going to read you a list of characteristics of village life near the _____ road that may or may not have changed in the last few years. For each characteristic I read, please tell me whether you think there has been an increase, decrease, or no change in that characteristic since 1980. If you are not sure or don't know, just tell me so. That is a good answer, too. First of all, how about the value of land near the road? Would you say it has increased, decreased, or stayed pretty much the same since 1980?

	<u>Increased Since 1980</u>	<u>Stayed the Same</u>	<u>Decreased Since 1980</u>	<u>Uncertain or Don't Know</u>	
a) The value of land near the road?	1	2	3	7	19
b) The number of rickshaws using the road?	1	2	3	7	20
c) The time it takes to get from here to the local market?	1	2	3	7	21
d) The time it takes to get from here to the nearest health clinic?	1	2	3	7	22
e) The number of bazars or hats near the road?	1	2	3	7	23
f) The number of rice and wheat mills near the road?	1	2	3	7	24
g) The number of other mills and businesses near the road?	1	2	3	7	25
h) Attendance at primary school by boys?	1	2	3	7	26
i) Attendance at primary school by girls?	1	2	3	7	27
j) Agricultural production near the road?	1	2	3	7	28
k) Annual fishing near the road?	1	2	3	7	29
l) Annual flooding near the road?	1	2	3	7	30
m) The number of women using the road?	1	2	3	7	31
n) The quality of communication between villages here?	1	2	3	7	32

33, 34 Blank.

Section IV: (Project Sites only)

1. a) What do you think is the most important good effect of the improvements made in the road in 19__ on the people who live near the road? 35 36
- b) What do you think is the next most important good effect of the changes in the road? 37 38
2. a) What do you think is the most important bad effect of the improvements made in the road in 19__ on the people who live near the road? 39 40
- b) What do you think is the next most important bad effect of the changes in the road? 41 42
3. Overall, would you say that the changes and construction work done on the road in 19__ have had all good effects, no effects, mostly bad effects, or all bad effects on the people who live near the road? 43

All good effects	1
Mostly good effects	2
No effects	3
Mostly bad effects	4
All bad effects	5
Don't know	7

44 Blank.

Section IV: (Project Sites only)

4. Now I am going to read you some statements about _____ road and about the changes made to the road in 19__ under the Food For Work program. For each statement I read, please tell me whether you would definitely agree, tend to agree, tend to disagree, or definitely disagree with that statement. If you are not sure or do not know, just tell me that you don't know. That is a good answer also. The first statement is _____.

The improvement of the road.....	<u>Definitely Agree</u>	<u>Tend to Agree</u>	<u>Tend to Disagree</u>	<u>Definitely Disagree</u>	<u>Don't Know</u>	
a) Has led to increased agricultural production near the road?	1	2	3	4	7	45
b) Has increased the communication among villages near the road?	1	2	3	4	7	46
c) Has led to increased robbery and theft near the road?	1	2	3	4	7	47
d) Has decreased the time it takes to get to the nearest market?	1	2	3	4	7	48
e) Did not allow for proper drainage and irrigation	1	2	3	4	7	49
f) Has led to an increase in the value of land near the road?	1	2	3	4	7	50
g) Has led to more frequent visits by Thana Officials to this area?	1	2	3	4	7	51
h) Has led to a decrease in the amount of flooding near the road?	1	2	3	4	7	52
i) Has led to increased attendance rates at local primary schools?	1	2	3	4	7	53
j) Has mostly benefited the large landholders and mills owners?	1	2	3	4	7	54
k) Has had fewer benefits each year because of poor maintenance?	1	2	3	4	7	55
l) Has led to increased use of the road for drying jute and paddy?	1	2	3	4	7	56
m) Has led to an increased use of health services by local villagers?	1	2	3	4	7	57
n) Has led to increased use of the road by local women?	1	2	3	4	7	58
o) Has led to increased use of fertilizer & better seeds by local farmers?	1	2	3	4	7	59
p) Has led to decreased agricultural production near the road?	1	2	3	4	7	60

Section V: (Project and Control Sites)

1. What is your age?
64

10 - 19 years	1
20 - 29 years	2
30 - 39 years	3
40 - 49 years	4
50 - 59 years	5
60 years or more	6

2. What is your religion?
65

Muslin	1
Hindu	2
Buddhist	3
Christian	4

3. Are you married?
66

Yes	1
No	2

4. a) What is the highest level of education that you have completed?
67 68

b) (If none) Can you read and write Bengali?
69

Yes	1
No	2

5. May we include your name? _____ (Optional)

Record time interview ended _____

Rate the respondent's cooperativeness:
70

Very good	1
Good	2
Fair	3
Not good	4

Rate the respondent's: Reliability:
71

Very good	1
Good	2
Fair	3
Doubtful	4

Thank Respondent For His Cooperation.

72 to 80 Blank.

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AAI #84-20

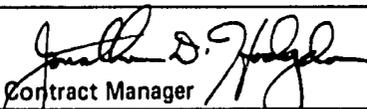
THE DEVELOPMENT IMPACT OF TITLE II (CARE)
FOOD FOR WORK ROADS IN RURAL BANGLADESH

Final Report
May 1984

Volume II: Case Study Descriptions

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James T. Riordan
Samiruz Zaman

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 Contract Manager	 Quality Control Reviewer	 Management Reviewer
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Figure 1
Country Map Showing Selected Study Thanas



THANA REPORT NO. 1: BEGUMGANJ THANA

DISTRICT: Noakhali
 DATES VISITED: September 25 - October 1, 1983
 FIELD STAFF: Md. Shamsul Alam Bhuiyan, SRO
 Md. Mozibur Rahman, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	1030	Road	100
2	1981-1982	1132	Rd/Emb.	100
3	1983-1984	Proposed Sl. No.9	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	3	2	1
Health Workers	2	2	2
Teachers	2	2	2
Businessmen	4	4	4
Farmers	10	9	10
TOTAL	21	19	19

SITE OBSERVATIONS -- BEGUMGANJ

SITE NO. 1: 1979-1980 reconstruction of the Bazra-Khilpara road starting from BSR road to Bazra towards the west up to the border of Amishapara.

Estimated Positive Development Impact: Above Average Ranking: (1 to 35): 13

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 6.2 Wheat allocated (maunds): 3917

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	7	b) Bazar:	Yes
c) Primary schools:	14	c) High schools:	Yes
d) Rice mills:	8	d) Health clinic:	Yes
e) Other mills:	1	e) Fertilizer shop:	Yes
f) Access roads:	24	f) Electric lines:	Yes

Road Condition (as observed on September 26-27, 1983)

Suitability of road for cycle-rickshaw: One-half passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	2	a) Under water: (passable by foot)	0
b) Concrete bridges:	8	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	1
d) Bamboo bridges:	2		
e) Other bridges:	0		

<u>Road Quarter</u>	(<u>1</u>)	(<u>2</u>)	(<u>3</u>)	(<u>4</u>)
a) Height (top):	4.5 ft.	4.5 ft.	5.5 ft.	5.0 ft.
b) Width (top):	15.0 ft.	15.0 ft.	15.0 ft.	14.0 ft.
c) Width (bottom):	21.0 ft.	20.0 ft.	21.0 ft.	20.0 ft.
d) Surface rating:	F	G	G	F

SITE OBSERVATIONS -- BEGUMGANJ

SITE NO. 2: 1981-1982 reconstruction of the Miapur-Sadari Road

Estimated Positive

Development Impact: Above Average Ranking (1 to 35): 17

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 6 Wheat allocated (maunds): 2851

Number of:

- a) Deep tubewells: 0
- b) Hats: 1
- c) Primary schools: 8
- d) Rice mills: 0
- e) Other mills: 0
- f) Access roads: 14

Presence of:

- a) Union Council Office: No
- b) Bazar: Yes
- c) High schools: Yes
- d) Health clinic: Yes
- e) Fertilizer shop: Yes
- f) Electric lines: Yes

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

- a) Culverts: 1
- b) Concrete bridges: 3
- c) Wooden bridges: 2
- d) Bamboo bridges: 3
- e) Other bridges: 0

Unbridged gaps:

- a) Under water: 0
(passable by foot)
- b) Under water: 0
(passable by boat)
- c) Cuts for drainage: 0

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	4.5 ft.	2.0 ft.	3.5 ft.	3.5 ft.
b) Width (top):	10.0 ft.	8.0 ft.	8.0 ft.	12.0 ft.
c) Width (bottom):	15.0 ft.	14.0 ft.	15.0 ft.	18.0 ft.
d) Surface rating:	F	F	G	G

SITE OBSERVATIONS -- BEGUMGANJ

SITE NO. 3: Proposed 1983-1984 reconstruction of the Rasulpur -
Shibpur - Rafiquepur - Lautali Road.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 8.1 Wheat allocated (maunds): 3260

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	9	c) High schools:	Yes
d) Rice mills:	13	d) Health clinic:	Yes
e) Other mills:	4	e) Fertilizer shop:	Yes
f) Access roads:	17	f) Electric lines:	Yes

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	1	a) Under water:	8
b) Concrete bridges:	3	(passable by foot)	
c) Wooden bridges:	4	b) Under water:	8
d) Bamboo bridges:	6	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	0

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	2.0 ft.	2.0 ft.	0.5 ft.	1.0 ft.
b) Width (top):	4.5 ft.	5.0 ft.	4.0 ft.	4.5 ft.
c) Width (bottom):	7.0 ft.	7.0 ft.	4.5 ft.	6.0 ft.
d) Surface rating:	F	P	P	P

BEGUMGANJ THANA

Site 1 is the 1979-1980 reconstruction of the Bazra-Khilpara Road starting from the BSR road to Bazra and running west to the border of Amishapara. The road is six miles long and crosses three union parishads. The first 4-1/2 miles were passable by rickshaw, though the first 3/4 mile was poorly laid with brick. Within 100 yds. from the BSR road there is a 30 ft. long concrete bridge.*. The height and width of the road were adequate, though problems occur in rainy season. Roadside lands were low, and the water level was 2 or 2-1/2 feet. Rickshaw pullers had a harder time on the last half mile of the road, because the rainfall and soil condition makes it muddy and extremely slippery, though local people say that during seven or eight months of the year this problem does not occur. The road starts from Bazra, which has some grocery shops and ten stalls. The Bazra hospital is situated within the first 1/2 mile of the road's start, and the Shempur bazar primary school and union council office are within the next mile or so. The Shempur bazar, a medium-size market, has a rice mill, fertilizer dealers, and other shops. A weekly hat also meets there.

The village of Amishapara, located four miles away, on the second half of the road, has a college, a high school, primary schools, a high madrasha, a bank, a union parishad office, a family planning clinic, five rice mills, fertilizer dealers, and other types of shops. The entire area has a larger number of educational institutions than other areas, and the literacy rate here is higher. It is also more affluent and as understood from local people, the residents of this area have relatives who have settled in the United Kingdom and who send them large amounts of money every year. This also resulted in a high degree of absentee ownership of land and high land value. A rickshaw ride here is also very expensive.

Because roadside lands are low, and because of the lack of fertilizer and modern irrigation methods, production of aman rice is not high.

*It is an impressive, well built bridge, but its approaches are very steep and in poor condition. As a result, motorized transport cannot use it and rickshaw-pullers need another person to push their vehicles across the bridge.

This road is important to farmers, merchants, educational institutions, and local government establishments. The usefulness of the road would increase if the two existing bamboo bridges on the last part of the road were replaced with concrete bridges.

Site 2 is the 1981-1982 reconstruction of the Miapur-Sadari road. The road starts from Feni Raipur main road at the village of Miapur. Miapur has over ten tea stalls, plus grocery shops, rice mills, and five wood product shops.

After the first one or two miles, there is a medium-size bazar that has medicine shops, rice shops, grocery shops, and clothing shops. There is also a primary school and a junior high school in this area. There is no government health center near the market or at the roadside, though a ten-bed mental health clinic is located on the road. The clinic is run by a doctor and two nurses, who treat all kinds of ailments though the doctor is regarded as a specialist in mental diseases. The doctor also treats patients all over the country through postal communication, and has manufactured many medicines for his treatments. Local people spoke of his success in treating mentally ill people.

Farmers in this area depend mostly on aman rice, though jute is cultivated on a small scale. Coconuts and betelnuts grow well, and almost every house has a coconut and betelnut garden. Roadside lands are very low.

This road was in fair to poor condition. Rickshaws could ply on the first two miles, up to the bazar. A bridge located 400-500 yards beyond the bazar had two broken wing walls, which has caused much difficulty, particularly for the old people and the children. One coconut tree has been placed to partially alleviate the situation. The other three bridges on the road are all of bamboo. As a result, people who use the road, particularly the last 4-1/2 miles, had to depend exclusively on walking. If concrete bridges were built, more people would benefit by this road.

Site 3 is the proposed 1983-1984 reconstruction of the Rasulpur-Shibpur-Rafiquepur-Lautali Road. The road runs through one union and is located six or seven miles from Begumganj, from where the bus trip to the road takes 20-25 minutes along the Feni-Begumganj Road. The road is near Jamiderhat, which is noteworthy as a business center, with 11 rice mills, saw

mills, and rice boiling mills. A weekly cattle hat also meets here. The two other bazars on this comparison road are small, with several shops containing no sizeable stock.

Half the road was lying under water at the time of the site visit; at 16 points there were unbridged gaps, and at one place the road was broken for a half-mile stretch. Also, three miles away from the start of the road was an old, broken concrete bridge.

THANA REPORT NO. 2: MATLAB THANA

DISTRICT: Comilla

DATES VISITED: September 25 - October 1, 1983

FIELD STAFF: Ms. Sayeda Hasina Begum, SRO
Md. Sohrab Hossain, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	766	Road	90
2	1981-1982	1075	Rd/Emb.	93
3	1983-1984	Proposed Sl. No. 3	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	2	2	1
Health Workers	0	2	1
Teachers	2	2	1
Businessmen	4	4	4
Farmers	9	10	9
TOTAL	17	20	16

SITE OBSERVATIONS -- MATLAB

SITE NO. 1: 1978-1979 reconstruction of Matlab - Pitambari road starting from Matlab Bazar under Matlab U.P.

Estimated Positive

Development Impact: Moderate

Ranking (1 to 35): 21

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 6.4 Wheat allocated (maunds): 9193

Number of:

Presence of:

a) Deep tubewells:	1	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	4	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	4	f) Electric lines:	Yes

Road Condition (as observed on September 26-27, 1983)

Suitability of road for cycle-rickshaw: Passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	4	a) Under water:	0
		(passable by foot)	
b) Concrete bridges:	10	b) Under water:	0
		(passable by boat)	
c) Wooden bridges:	3		
d) Bamboo bridges:	0	c) Cuts for drainage:	0
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	6.5 ft.	5.0 ft.	0.5 ft.	0.5 ft.
b) Width (top):	12.0 ft.	12.0 ft.	12.0 ft.	12.0 ft.
c) Width (bottom):	18.0 ft	20.0 ft.	OK	OK
d) Surface rating:	G	F	F	F

SITE OBSERVATIONS -- MATLAB

SITE NO. 2: 1981-1982 reconstruction of Veduria to Sengarchar Road.

Estimated Positive

Development Impact: Low

Ranking (1 to 35): 35

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 7.2 Wheat allocated (maunds): 4019

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	4	b) Bazar:	Yes
c) Primary schools:	13	c) High schools:	Yes
d) Rice mills:	5	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	7	f) Electric lines:	Yes

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	3	a) Under water:	6
b) Concrete bridges:	6	(passable by foot)	
c) Wooden bridges:	1	b) Under water:	9
d) Bamboo bridges:	0	(passable by boat)	
e) Other bridges:		c) Cuts for drainage:	3
		d) Caused by erosion:	1

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	7.0 ft.	5.5 ft.	4.5 ft.	5.0 ft.
b) Width (top):	12.0 ft.	8.0 ft.	8.0 ft.	8.0 ft.
c) Width (bottom):	20.0 ft.	20.0 ft.	18.0 ft.	20.0 ft.
d) Surface rating:	E	P	P	P

SITE OBSERVATIONS -- MATLAB

SITE NO. 3: Proposed 1983-1984 reconstruction of a road from Eklashpur Launchghat to WAPDA embankment.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 6.0 Wheat allocated (maunds): 3426

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	2	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	3	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	2	f) Electric lines:	Yes

Road Condition (as observed on September 30, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	3	a) Under water:	10
		(passable by foot)	
b) Concrete bridges:	2	b) Under water:	10
		(passable by boat)	
c) Wooden bridges:	1		
d) Bamboo bridges:	2	c) Cuts for drainage:	0
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	6.0 ft.	6.0 ft.	0 ft.	0 ft.
b) Width (top):	3.0 ft.	3.5 ft.	0 ft.	0 ft.
c) Width (bottom):	10.0 ft.	12.0 ft.	0 ft.	0 ft.
d) Surface rating:	F	F	P	P

MATLAB THANA

Site 1 is the 1979-1980 reconstruction of the Matlab-Pitambari Road starting from Matlab Bazar under the Matlab Union Parishad. The road is 6.4 miles long, and passes through two unions. It is completely passable by rickshaw, though when it rains some sections of the road are hazardous-- rickshaws can pass through but passengers must walk and even risk injury at certain sections.

The road is important for business and communication. The beginning of the road is adjacent to the Matlab local market. The end of the road, where there is another market, joins to an access road from Launch Ghat. Another access road goes toward the Matlab main road. There were new shops along the road.

The first half of the road did not need much earthwork, though all of the bridges needed reconstruction. The need for maintenance was also low on the second half of the road, though in some places the water level was such that earthwork and sufficient drainage were needed. Some sections of the road were repaired last year through the union parishad fund.

Site 2 is the 1981-1982 reconstruction of the Veduria to Sengarchar Road. It is eight miles long, and crosses five unions. In the dry season the first half of the road may have been passable by rickshaw, but in the rainy season, people travel to thana headquarters only by boat. Along this road are a large market, a madrasha, an orphanage, a child care center, a women's development program, a primary school, and a family planning clinic.

The first portion of the road was in good condition. People use this road for marketing and business, and students and women from several villages use it for getting both to work in the local cottage industry and to health services at the family planning clinic. The condition of the second part of the road was very bad. In some areas, half the width of the road has been washed away by rainfall, and near the canal, the road has vanished. Sangerchar, a market village at the end of the road, becomes an island when the

road is not passable. At the time of the road construction, earth was dug up from both sides of the road. Those points have become so deep that they are now useless.

Site 3 is the proposed 1983-1984 reconstruction of a road from Eklashpur Launchghat to the WAPDA embankment. From the thana office to this site takes 1-1/2 hours by boat. In rainy season, this road is under water and people cannot use the road. During the site visit, a quarter-mile of road could be seen, just before the end point. The road has had no significant maintenance by the union parishad, and no previous FFW work. Within half a mile of the roadside are a primary school and markets. The villagers here can communicate more easily with Dhaka than with Matlab. In the rainy season, they go by boat, taking 3 to 3-1/2 hours, and in dry season they come by the road.

THANA REPORT NO. 3: BRAHMANPARA THANA

DISTRICT: Comilla

DATES VISITED: September 25 - October 1, 1983

FIELD STAFF: Md. Abdur Rashid, S.R.O.
Md. Mahtabur Rahman, R.O.

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	980	Road	91
2	1981-1982	794	Rd/Emb.	74
3	1983-1984	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1	1
Health Workers	3	1	2
Teachers	2	2	2
Businessmen	2	2	3
Farmers	9	9	10
	—	—	—
TOTAL	17	15	18

SITE OBSERVATIONS -- BRAHMANPARA

SITE NO. 1: 1980-1981 reconstruction of the Dhirghabhumi to Dulalpur Road.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 3

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 2.2 Wheat allocated (maunds): 1645

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	2	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	6	f) Electric lines:	No

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water: (passable by foot)	6
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	1	c) Cuts for drainage:	1
d) Bamboo bridges:	3		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	2.5 ft.	2.0 ft.	0 ft.	0 ft.
b) Width (top):	6.0 ft.	5.0 ft.	0 ft.	0 ft.
c) Width (bottom):	12.0 ft.	11.0 ft.	0 ft.	0 ft.
d) Surface rating:	F	F	P	P

SITE OBSERVATIONS -- BRAHMANPARA

SITE NO. 2: 1981-1982 reconstruction of the Harimongal to Jafarganj Road.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 7

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 7.4 Wheat allocated (maunds): 5866

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	5	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	11	f) Electric lines:	Yes

Road Condition (as observed on September 26-27, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	1	a) Under water: (passable by foot)	0
b) Concrete bridges:	2	b) Under water: (passable by boat)	3
c) Wooden bridges:	4	c) Cuts for drainage:	0
d) Bamboo bridges:	8		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	13.0 ft.	7.0 ft.	5.0 ft.	9.0 ft.
b) Width (top):	11.0 ft.	12.0 ft.	9.0 ft.	9.0 ft.
c) Width (bottom):	17.0 ft.	22.0 ft.	22.0 ft.	21.0 ft.
d) Surface rating:	F	F	F	F

SITE OBSERVATIONS -- BRAHMANPARA

SITE NO. 3: Proposed 1983-1984 reconstructin of the road from Maudubag to Berakhola, ending at the border of Debidwar P.S.

Road Environment (within 1/2 mile of either side of road)

Road length (miles):	6.3	Wheat allocated (maunds):	5301
<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	4	f) Electric lines:	No

Road Condition (as observed on September 30, 1983)

Suitability of road for cycle-rickshaw: Not passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	1	a) Under water: (passable by foot)	4
b) Concrete bridges:	0	b) Under water: (passable by boat)	10
c) Wooden bridges:	0	c) Cuts for drainage:	0
d) Bamboo bridges:	2		
e) Other bridges:	0		

<u>Road Quarter</u>	(<u>1</u>)	(<u>2</u>)	(<u>3</u>)	(<u>4</u>)
a) Height (top):	8.0 ft.	4.0 ft.	0 ft.	0 ft.
b) Width (top):	4.0 ft.	4.0 ft.	0 ft.	0 ft.
c) Width (bottom):	14.0 ft.	16.0 ft.	0 ft.	0 ft.
d) Surface rating:	P	P	P	P

BRAHMANPARA THANA

Brahmanpara Thana is part of the Comilla district, and is situated at the northern side of the Gumthi River. Only one road connects Brahmanpara Thana with Comilla district headquarters; this road passes first through Burichang Thana. This thana consists of the union parishads of Brahmanpara, Shashidal, Dulalpur, Chaula (east), and Chaula (west). Agriculture, mainly traditional agriculture, is the occupation of 80 percent of the people. The others are engaged in business and various services, both within and without the thana.

Site 1 is the 1980-1981 reconstruction of the Dhirghabhumi to Dulalpur road. The road, which is called the Dhirghobomi diversion road, is 2.3 miles long. It starts from the village of Dirghobumi, passes through Dulalpur Union, and ends at the Dulalpur Bazar.

Though this road was not passable by rickshaw during the site visit, it may be passable in the dry season, particularly if bridges are reconstructed and gaps in the road are filled. Two thirds of the road was in good condition and easily passable by foot, with two or three minor gaps. The western third of the road was under water, as were the villages and the paddy field it passes through, due to a recent major flood that overran the Gumthi River Embankment in three places.

The road is urgently in need of repair and may need to be expanded both in height and in width. Also, gaps in the road that are passable by foot could be selected as sites for new bridges, and old bridges destroyed by the flood should be reconstructed as soon as possible. A number of trees could be planted on both sides of the road to prevent soil erosion.

This road has brought important improvements to the area, according to the local villagers. The communication network within and between the unions has been widened; agricultural production has increased, as the road helps protect the area from minor floods. The road also permits the labor classes and semi-skilled workers to search more easily for work throughout the thana. Fishing has increased along the roadside, as have irrigation facilities. Business activities have also increased. Overall, the road has made people's journeys shorter and less tiresome.

Site 2 is the 1981-1982 reconstruction of the Harimongal to Jafarganj road. The road is 7.4 miles long. It starts from the Harimongal Bazar, crosses the Dhaka-Chittagong Railway line, and continues up to Jafarganj on the Gumthi River, passing by the Brahmanpara Bazar and through a number of villages. For the benefit of the local people, this road has been extended up to the north embankment of the river at the ferryghat.

The first section of this road, up to the Brahmanpara Bazar and then to the Dhirgobumi, was in good condition, though the concrete and brick bridges were destroyed by the recent flood and need reconstruction. More than three quarters of this portion of the road was passable by rickshaw. From Dhirgombumi to Gopal Nagar, the road was in poor condition, as most of the road was under water and there were many gaps. The final part of the road, from Gopal Nagar to the broken bridge at Jafarganj, was passable by rickshaw, though the road from the bridge to the Gumthi embankment was in poor condition and was not passable by rickshaw. This part of the road is especially poor, having been destroyed by the recent flood caused by the damage to the Gumthi embankment.

The road environment was good, though at the time of the site visit, due to the recent flood, most of the villages were under water. People did not move, and were not able to do their normal work.

The road needs repair. Earthwork should be done to extend the road in both height and width. Old, broken bridges should be reconstructed, and a number of new bridges should be constructed. This road has brought about the same benefits as were mentioned for Site 1.

Site 3 is the proposed 1983-1984 reconstruction of the road from Maudubag to Berakhola, ending at the border of Debidwar P.S. It passes through the unions of Shashidal, Chaula East, and Chaula West, and is the only road in these unions. It also passes through many villages, and therefore is very important to the people in the area. On both sides of the road are paddy fields.

The major portion of the road (90 percent) was, on average, five feet under water at the time of the site visit. There appeared to be no recent repairs or maintenance performed on the road, although some earthwork may have been done at the west end of the road through the FFW program.

THANA REPORT NO.4: GOPALPUR THANA

DISTRICT: Tangail
 DATES VISITED: September 13-14, 1983
 FIELD STAFF: All Staff (Pretest Thana)

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	1791	Rd/Emb	100
2	1981-1982	TGLO201	Rd/Emb.	95
3	1983-1984	Proposed Sl. No. 2	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1	1
Health Workers	1	2	3
Teachers	3	1	2
Businessmen	3	3	1
Farmers	8	8	7
TOTAL	16	15	14

SELECTED THANA STATISTICS

GOPALPUR THANA

Total Land Area (in square miles)		100
Number of Households 1981		36,776
Number of Unions 1981		8
Population Density 1981 (per square mile)		1,194
1981-1982 production (in maunds) of	Aus	191,741
	Aman	346,285
	Boro	798,070
	Wheat	159,787
	Jute	197,330
	Sugar Cane	197,993
Number of Primary Schools 1982		81
Number of Family Welfare Clinics 1982		1
Percentage of Households Electrified 1982		1%
Miles of Road 1982	Pucca	10
	Semi-Pucca	7
	Kutchha	139
Number of Auto-Rickshaws 1982		-
Number of Cycle-Rickshaws 1982		250
Percentage of Soil Types 1982	Doash	80%
	Sandy	5%
	Etel	15%

SITE OBSERVATIONS -- GOPALPUR

SITE NO. 1: 1979-1980 reconstruction of a road-cum-embankment from Baiskail Mosque to Uttar Pathalia Bazar via Rampur Chatila and Laxmipur under Nagda Simla Union Parishad.

Estimated Positive Development Impact: Moderate

Ranking (1 to 35): 19

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.0 Wheat allocated (maunds): 2778

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	No
b) Hats:	2	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	4	f) Electric lines:	No

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	2
b) Concrete bridges:	0	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	0
d) Bamboo bridges:	3	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	2

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	5.0 ft.	6.0 ft.	5.0 ft.	2.0 ft.
b) Width (top):	6.0 ft.	8.0 ft.	12.0 ft.	4.0 ft.
c) Width (bottom):	12.0 ft.	18.0 ft.	16.0 ft.	7.0 ft.
d) Surface rating:	F	G	G	P

SITE OBSERVATIONS -- GOPALPUR

SITE NO. 2: 1981-1982 reconstruction of the Ramjibanpur Deolabari Road starting from Kamdevbari to Deolabari.

Estimated Positive

Development Impact: Moderate

Ranking (1 to 35): 27

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 3.5 Wheat allocated (maunds): 2464

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	No
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	7	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	6	f) Electric lines:	Yes

Road Condition (as observed on September 13-14, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	0
b) Concrete bridges:	0	(passable by foot)	
c) Wooden bridges:	1	b) Under water:	0
d) Bamboo bridges:	2	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	0

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	4.0 ft.	5.0 ft.	5.0 ft.	4.5 ft.
b) Width (top):	17.0 ft.	10.0 ft.	12.0 ft.	11.0 ft.
c) Width (bottom):	31.0 ft.	25.0 ft.	27.0 ft.	24.0 ft.
d) Surface rating:	F	P	F	G

SITE OBSERVATIONS -- GOPALPUR

SITE NO. 3: Proposed 1983-1984 reconstruction of the road from Balata Ferry Ghat to Mirzapur Shahapara under Gopalpur and Mirzapur Unions.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.0 Wheat allocated (maunds): 3572

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	2	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	7	f) Electric lines:	Yes

Road Condition (as observed on September 13-14, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water: (passable by foot)	2
b) Concrete bridges:	2	b) Under water: (passable by boat)	2
c) Wooden bridges:	0	c) Cuts for drainage:	2
d) Bamboo bridges:	1		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	2.0 ft.	2.0 ft.	1.0 ft.	0 ft.
b) Width (top):	7.0 ft.	5.0 ft.	8.0 ft.	0 ft.
c) Width (bottom):	10.0 ft.	7.0 ft.	8.5 ft.	0 ft.
d) Surface rating:	F	P	P	P

GOPALPUR THANA

Site 1 is 1979-1980 reconstruction of a road-cum-embankment from Baiskail Mosque to Uttar Pathalia Bazar through the villages of Rampur, Chatila and Laxmipur; all are under Nagda Simla Union Parishad. The road is four miles long.

The road was in quite good condition, and apart from the bamboo foot bridge at the start of the second half of the road, is almost completely passable by rickshaw. The last 1/4 mile of the road was low, and goes in and out of water. The first half of the road may even be passable by jeep. Soil condition and good compacting have made this road very resistant to adverse weather, and except for a few minor ditches and cuts for drainage, this road had no surface damage. At certain points, where the road goes by villages, it narrows to about four feet and rickshaw drivers have to get down and pull their rickshaws to negotiate the narrow passes. Some parts of the road had grass surfaces which may also explain its good condition.

The second half of the road begins with a one hundred foot bamboo bridge passable only by foot. This place was very busy with fishermen and their clients.

The last quarter of a mile of the road runs through a swamp land and its condition was very poor. It goes in and out of water and was often quite muddy. Farmers wash jute by the roadside and use the road to lay out their jute for drying.

Local people have said that this road has affected their lives in many ways. It has made it very easy to go to various villages, to the thana headquarters and to the local hats. They also cited the increase of robbery and theft, and hassle by government officials in this area after the road was reconstructed. Some of the conservative ones mentioned that too many females use the road now.

Site 2 is the 1981-1982 reconstruction of the Ramjibanpur Deolabari Road. It starts from the village of Kamdevbari near the hat about seven miles from the Gopalpur Thana Headquarters and ends in Deolabari near the Tangail Jamalpur highway at the border of Ghatail Thana.

This road is characterized by sandy soil and bad surface condition. Although there were no major breaks or cuts on this road the surface and the sides have eroded very badly at a number of places, which explains the large variations in widths at various points of the road. Within one hundred yards of the starting point, the road narrows down to about five feet at one point. Here a small pipe culvert was covered up when the road was being reconstructed. Local people have now cut the road back to the old dimension to expose the two ends of the pipe, so that water can freely flow from one side to the other. This suggests the importance of taking the drainage factor into account when constructing roads. Except for a small wooden bridge and two bamboo bridges there were no other bridged or unbridged gaps on this road.

This road is not passable by rickshaw and although no bullock cart was seen during the site visit, local people said that at times it was used by them. It was quite busy with pedestrian traffic.

An interesting aspect of this road is its direction and shape. Near its mid-point, the road continues for about a mile to form a U-shape with the ends coming to less than 200 yards from each other. There is a shorter road connecting those two points almost diagonally and continuing towards Deolabari. Even though its condition was poor, standing not much higher than field level, it was well traveled because people could save about a mile when traveling to Deolabari. Local people explained that the original road was rerouted past the houses of three Union Parishad members when it was taken up for reconstruction.

Site 3 is the proposed 1983-1984 reconstruction of the road from Balata ferryghat to Mirzapur Shahapara in Gopalpur and Mirzapur unions. The road starts within a short distance from Gopalpur Thana Health Center and continues for four miles. The first mile of the road was in good condition and rickshaws can run through it. After that point, it gets lower and its surface condition becomes very poor.

The second half of the road was in poor condition and was not used much. The first part was nearly at water level with some parts of it under water. The last quarter of the road was completely under water.

Although the condition of this road was very poor, due to its proximity to the thana headquarters, people still use it for various economic and social pursuits. Significant activity was noticed during the site visit, especially along the first section of the road.

THANA REPORT NO.5: NARSINGDI - ARAHAZAR THANAS

DISTRICT: Dhaka

DATES VISITED: September 25 - October 1, 1983

FIELD STAFF: Nazrul Islam Howladar, SRO
Md. Sekandar Ali Chowdhury, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	1448	Rd/Emb	100
2	1981-1982	NGJ0500	Rd/Emb.	82
3	1983-1984	Proposed Sl. No. 2	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	0	3	2
Health Workers	3	2	0
Teachers	2	2	2
Businessmen	2	1	2
Farmers	10	11	8
	—	—	—
TOTAL	17	19	14

SELECTED THANA STATISTICS

NARSINGDI - ARAHAZAR THANA

Total Land Area (in square miles)		151
Number of Households 1981		98,291
Number of Unions 1981		26
Population Density 1981 (per square mile)		3,686
1981-1982 production (in maunds) of	Aus	199,920
	Aman	642,382
	Boro	470,525
	Wheat	68,500
	Jute	142,260
	Sugar Cane	288,742
Number of Primary Schools 1982		195
Number of Family Welfare Clinics 1982		-
Percentage of Households Electrified 1982		23%
Miles of Road 1982	Pucca	31
	Semi-Pucca	10
	Kutchha	61
Number of Auto-Rickshaws 1982		28
Number of Cycle-Rickshaws 1982		3,059
Percentage of Soil Types 1982	Doash	50%
	Sandy	15%
	Etel	30%

SITE OBSERVATIONS -- NARSINGDI/ARIHAZAR

SITE NO. 1: 1978-1979 reconstruction of a road-cum-embankment from Puranchar to Balupur [via Bhangar Char].

Estimated Positive

Development Impact: Moderate

Ranking (1 to 35): 21

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 3.5 Wheat allocated (maunds): 7012

Number of:

- a) Deep tubewells: 4
- b) Hats: 2
- c) Primary schools: 9
- d) Rice mills: 21
- e) Other mills: 29
- f) Access roads: 4

Presence of:

- a) Union Council Office: Yes
- b) Bazar: Yes
- c) High schools: Yes
- d) Health clinic: No
- e) Fertilizer shop: No
- f) Electric lines: No

Road Condition (as observed on September 26-27, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

- a) Culverts: 0
- b) Concrete bridges: 0
- c) Wooden bridges: 0
- d) Bamboo bridges: 3
- e) Other bridges: 0

Unbridged gaps:

- a) Under water: 1
(passable by foot)
- b) Under water: 2
(passable by boat)
- c) Cuts for drainage: 1

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	2.5 ft.	3.0 ft.	4.0 ft.	6.0 ft.
b) Width (top):	7.0 ft.	8.0 ft.	5.0 ft.	9.0 ft.
c) Width (bottom):	15.0 ft.	18.0 ft.	12.0 ft.	26.0 ft.
d) Surface rating:	P	P	P	P

SITE OBSERVATIONS -- NARSINGDI/ARIHAZAR

SITE NO. 2: 1981-1982 reconstruction of the Ujan Gobindi Kamrani Char Bazar Road.

Estimated Positive

Development Impact: Moderate

Ranking (1 to 35): 28

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 2.4 Wheat allocated (maunds): 1400

Number of:

Presence of:

a) Deep tubewells:	1	a) Union Council Office:	No
b) Hats:	1	b) Bazar:	No
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	2	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	6	f) Electric lines:	Yes

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water: (passable by foot)	3
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	1	c) Cuts for drainage:	1
d) Bamboo bridges:	5		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	4.0 ft.	3.5 ft.	2.0 ft.	3.0 ft.
b) Width (top):	9.0 ft.	11.0 ft	7.5 ft.	10.0 ft.
c) Width (bottom):	16.0 ft.	15.0 ft.	DK	DK
d) Surface rating:	P	G	P	P

SITE OBSERVATIONS -- NARSINGDI/ARIHAZAR

SITE NO. 3: Proposed 1983-1984 reconstruction of the road from Mukundi T.C. Road near Madrasha to Dighaldi Sadar Ali Molah's at Dighaldi.

Road Environment (within 1/2 mile of either side of road)

Road length (miles):	2.2	Wheat allocated (maunds):	1456
<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	2	a) Union Council Office:	No
b) Hats:	0	b) Bazar:	No
c) Primary schools:	3	c) High schools:	No
d) Rice mills:	1	d) Health clinic:	No
e) Other mills:	10	e) Fertilizer shop:	No
f) Access roads:	5	f) Electric lines:	Yes

Road Condition (as observed on September 30, 1983)

Suitability of road for cycle-rickshaw: One-half passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	0	a) Under water: (passable by foot)	1
b) Concrete bridges:	0	b) Under water: (passable by boat)	10
c) Wooden bridges:	1	c) Cuts for drainage:	0
d) Bamboo bridges:	1		
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	2.5 ft.	2.5 ft.	3.0 ft.	0 ft.
b) Width (top):	6.5 ft.	7.5 ft.	7.5 ft.	0 ft.
c) Width (bottom):	16.0 ft.	17.0 ft.	9.0 ft.	0 ft.
d) Surface rating:	G	G	P	P

NARSINGDI/ARAIHAZAR THANAS

Site 1 is the 1979-1980 reconstruction of a road cum embankment from Puranchar to Balupur via Bhangar Char. The project is 3.5 miles long. Across the canal on the Puranchur end of the road is a business center called Gopaldee.

This road was in good condition before the flood this year, which caused some large cracks in the road. Usually with the onset of rainy season, rickshaws cannot ply between Bhangar Char and Balupur, but in dry season, they are available between those two points of the road. The one third of the road that lies between Balupur and Puranchar had several old and large cracks, mainly near Puranchur. This inhibits any transport on that part of the road. Plans were made this year to construct a culvert there.

Only one house has been constructed on the roadside. On the other side of the road flows a tributary of the Padma. This road is important to business activities and communications, it also prevents soil erosion and crop damage by water hyacinths. If the necessary bridges are constructed on this road, a positive change will emerge in agriculture and trade.

Site 2 is the 1981-1982 reconstruction of the Ujan Gobindi-Kamrani Char Bazar Road. This road passes through two unions. The first part is in Ujan Gobindi Union, and the second is in Brahmandi Union. The road is 2.4 miles long, and is intersected by the Thana Council Road at mid-point, which connects Araihaazar Upazilla with a motorable metalled road seven miles away.

The first portion of this road was in better condition than the second, although the conditions of all the bridges were poor. With the high water level, the movement of people in the area had increased and the number of broken places in turn increased. In this first portion of the road, road and bridge repair and development is needed. Nevertheless, one wooden bridge was in good condition. This road was not usable by rickshaw because of the five bamboo bridges. Development of this road will help the movement of the general public and will bring about improvements in the field of trade. There is a bazar on this road.

Site 3 is the proposed 1983-1984 reconstruction of the road from Mukundi T.C. Road near Madrasha to Dighaldi Sada Ali Molah's at Dighaldi. The road is 2.2 miles long and crosses two unions. The first half lies in Arihazar Union and the second half lies in Barhmandi Union. The Thana Council Road intersects this road.

Although the first portion of the road was in good condition (no breaks in the road), and was fit for the movement of rickshaws, rickshaws were not available. Only one quarter of the second portion of the road was dry. The second portion of the road and its bridges were in very bad condition.

THANA REPORT NO.6: BHALUKA THANA

DISTRICT: Mymensingh

DATES VISITED: September 25 - October 1, 1983

FIELD STAFF: Md. Afser Ali, SRO
Md. Asmot Ali, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	1159	Road	100
2	1981-1982	MYMS0402	Rd/Emb.	98
3	1983-1984	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1	2
Health Workers	2	2	2
Teachers	2	2	2
Businessmen	4	4	4
Farmers	8	9	10
	<hr/>	<hr/>	<hr/>
TOTAL	17	18	20

SITE OBSERVATIONS -- BHALUKA

SITE NO. 1: 1979-1980 reconstruction of the road starting from Hossainpur Kachina Kacharigata.

Estimated Positive Development Impact: Moderate Ranking (1 to 35): 27

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.9 Wheat allocated (maunds): 3400

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	3	a) Union Council Office:	Yes
b) Hats:	4	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	3	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	10	f) Electric lines:	No

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	3	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	1
c) Wooden bridges:	0	c) Cuts for drainage:	13
d) Bamboo bridges:	4		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	3.5 ft.	3.5 ft.	3.0 ft.	3.5 ft.
b) Width (top):	13.0 ft.	11.0 ft.	12.0 ft.	11.0 ft.
c) Width (bottom):	24.0 ft.	20.0 ft.	18.0 ft.	21.0 ft.
d) Surface rating:	P	F	F	P

SITE OBSERVATIONS -- BHALUKA

SITE NO. 2: 1981-1982 reconstruction of the road from Asian Highway to Battajore Bazar.

Estimated Positive Development Impact: Low

Ranking (1 to 35): 31

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.0 Wheat allocated (maunds): 2475

Number of:

Presence of:

a) Deep tubewells:	2	a) Union Council Office:	Yes
b) Hats:	5	b) Bazar:	Yes
c) Primary schools:	6	c) High schools:	Yes
d) Rice mills:	5	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	7	f) Electric lines:	No

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	4	a) Under water: (passable by foot)	0
b) Concrete bridges:	2	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	5
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	3.5 ft.	4.5 ft.	4.0 ft.	3.5 ft.
b) Width (top):	20.0 ft.	18.0 ft.	16.5 ft.	16.0 ft.
c) Width (bottom):	30.0 ft.	36.0 ft.	30.0 ft.	25.0 ft.
d) Surface rating:	F	P	P	P

SITE OBSERVATIONS -- BHALUKA

SITE NO. 3: Proposed 1983-1984 reconstruction of the Purabari -
Mallikbari Road starting from Mallikbari to Baraid bazar.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.9 Wheat allocated (maunds): 5028

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	5	f) Electric lines:	No

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	2
		(passable by foot)	
b) Concrete bridges:	1	b) Under water:	6
		(passable by boat)	
c) Wooden bridges:	2		
d) Bamboo bridges:	0	c) Cuts for drainage:	0
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	0.5 ft.	0 ft.	2.0 ft.	0 ft.
b) Width (top):	10.0 ft.	0 ft.	8.0 ft.	0 ft.
c) Width (bottom):	12.0 ft.	0 ft.	11.0 ft.	0 ft.
d) Surface rating:	F	P	P	P

BHALUKA THANA

Site 1 is the 1979-1980 reconstruction of the road starting from Hossainpur Kachina Kacharigata. The road is 4.9 miles long, and lies in Kacina Union Parishad. In 1979 and 1980, FFW did only the earthwork for this road. Bullock carts cannot ply throughout the road because it is intersected by a canal over which there is no bridge.

Due to lack of maintenance, this road has become impassable by bull and buffalo carts. As this road runs through Battajore, people of this area now find it easier to maintain communication with Dhaka and Mymensingh. There is no other alternative but to go through Site 2 to reach Site 1 from Bhaluka. From Bhaluka Upazila headquarters to a place called Seed Store, one can go by bus or by rickshaw. In dry season, rickshaws ply from Seed Store, Paragati, and Gatee Bazar, but otherwise rain prevents them from plying. In rainy season, people can go only by foot from Seed Store to Kachina and Battajore Bazar.

Site 2 is the 1981-1982 reconstruction of the road from the Asian Highway to the Battajore Bazar. The road is about four miles long, and runs through Habib Bari and Kachina unions. The economic condition of the people of these two unions is reasonably good, because both aus and Aman rice are produced. In many areas a high-yielding variety of rice is also produced, in boro season.

In rainy season, the suffering of the people living on this road knows no bounds. The road is damaged in many places, hindering movement of buffalo and bull carts. At the time of the site visit, the mud was knee-deep in those damaged places. In the years 1981-1982, only the earthwork of the road and the construction of one bridge and one culvert had been completed. Due to inadequate drainage facilities, the people have cut drains across the road in various places. The area is very plain, and is rarely flooded.

Thousands of people travel to the Asian Highway from Battajore by this road, and from there go to Dhaka and Mymensingh. The road is very important, and the people here feel that the road should be metalled. It is certain

that the road will be fully damaged in the near future if it is not metalled, and if culverts are not constructed on the drains that were made by the local people.

Site 3 is the proposed 1983-1984 reconstruction of the Purabari-Mallikbari Road starting from Mallikbari to Baraid Bazar. The road is approximately five miles long. Mallikbari is situated about five miles west of Bhaluka, and Baraid Bazar is about ten miles west of Bhaluka Upazila headquarters. A river flows by the northern side of the Mallikbari Bazar. Mallikbari Bazar is a good business center. One can go to Mallikbari Bazar from the Upazila headquarters by boat or on foot; from Mallikbari to Pani Bhanoda on this road, boat is the only means of transportation. To go by foot involves a long journey.

Approximately two miles of the road runs through a swamp and was under water. The people of Baraidbari were traveling to Mallikbari Bazar and the health center by a diversion road. In 1962, the then-Pakistan government constructed this road. Due to lack of proper maintenance, this road has since become unfit for the movement of people. At some places the road runs over some high land. If this road is reconstructed, the problems of the people in this area, to some extent, will be solved.

THANA REPORT NO. 7: MADARGANJ THANA

DISTRICT: Jamalpur
 DATES VISITED: October 6-14, 1983
 FIELD STAFF: Mr. Nazrul Islam Howladar, SRO
 Md. Nurul Islam, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	1085	Rd/Emb	90
2	1980-1981	373	Rd/Emb	97
3	(No suitable Site 3 identified)			

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>
Union Officials	2	4
Health Workers	0	2
Teachers	2	1
Businessmen	4	4
Farmers	10	10
TOTAL	18	21

SITE OBSERVATIONS -- MADARGANJ

SITE NO. 1: 1979-1980 reconstruction of road cum embankment from Jonail Mouza to Karaicura via Amilita under Gunaritala and Karaicura U. P.

Estimated Positive Development Impact: Moderate Ranking (1 to 35): 22

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.1 Wheat allocated (maunds): 4363

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	No
f) Access roads:	8	f) Electric lines:	No

Road Condition (as observed on October 8-9, 1983)

Suitability of road for cycle-rickshaw: 1/2 Passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	0	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	1
c) Wooden bridges:	0	c) Cuts for drainage:	1
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	2'	4 1/2'	3'	4 1/2'
b) Width (top):	9'	12'	12'	16'
c) Width (bottom):	14'	26'	23'	26'
d) Surface rating:	G	G	G	G

SITE OBSERVATIONS -- MADARGANJ

SITE NO. 2: 1980-1981 reconstruction of the Madarganj Baushi Road cum embankment from Jamalpur Madarganj C&D road to Baushi Taltala R.C.C. Bridge to Gopinathpur road.

Estimated Positive Development Impact: Low

Ranking (1 to 35): 29

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 14.2 Wheat allocated (maunds): 9466

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	9	c) High schools:	Yes
d) Rice mills:	2	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	22	f) Electric lines:	No

Road Condition (as observed on October 11-12, 1983)

Suitability of road for cycle-rickshaw: Not Passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	4	a) Under water:	3
b) Concrete bridges:	12	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	1
d) Bamboo bridges:	1	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	0
		d) Created by erosion:	7

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	3 1/2'	4'	3 1/2'	1 1/2'
b) Width (top):	10 1/2'	7'	7'	9'
c) Width (bottom):	24'	25'	17'	12'
d) Surface rating:	P	P	P	P

MADARGANJ THANA

Site 1 is the 1979-1980 reconstruction of the road cum embankment from Jonail Mouza to Karaicura via Amilita under Gunaritala and Karaicura union parishads. This is also Site 3, the comparison site, which is proposed for reconstruction in 1983-1984. This road is about 4.1 miles long. It crosses two unions. At the time of the site visit, there were heavy storms, which according to the people of Matherganj were unprecedented. The rain and winds affected the road, as portions of it had been washed away, creating gaps. The road is used primarily by pedestrians and bullock carts. Rickshaws could ply on this road but there were no rickshaws in that thana.

Site 2 is the 1980-1981 reconstruction of the Madarganj Baushi Road cum embankment from Jamalpur Madarganj C&B Road to Baushi Taltala R.C.C. Bridge to Gopinathpur Road. This road is 14.2 miles long and crosses four unions. Reconstruction has also been proposed for this road for the coming season.

The first part of the road had less damage than the second portion. Despite a wheat allocation of nearly 10,000 maunds in 1980-1981 and the presence of 4 culverts and 12 concrete bridges, many of which were recently constructed using USAID funds, the road was in poor condition and completely impassable in places. There are no rickshaws, electricity, or pucca roads within this thana. Transport is by either cow van, buffalo van, bicycle, or motorcycle, though since the floods, cow vans and buffalo vans were not able to run. In the opinion of local villagers and officials, it is very necessary to repair this road and the bridge, for the betterment of the people of Madarganj Upazila. Both road sites, 1 and 2, are important for communication outside of this thana.

THANA REPORT NO. 8: NAKLA THANA

DISTRICT: Jamalpur
 DATES VISITED: September 25 - October 1, 1983
 FIELD STAFF: Md. Hafizuddin, SRO
 A.K.M. Fazlul Hoque, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	1605	Road	62
2	1931-1982	SRPO206	Rd/Emb	62
3	1983-1984	Proposed Sl. No. 3	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	2	1
Health Workers	4	2	3
Teachers	0	3	3
Businessmen	1	3	4
Farmers	10	9	9
TOTAL	16	19	20

SITE OBSERVATIONS -- NAKLA

SITE NO. 1: 1979-1980 reconstruction of the road from Muzakanda to Kazaikata via Daskahania, Kayakuri, and Jangirarpar.

Estimated Positive Development Impact: Low

Ranking (1 to 35): 34

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 2 Wheat allocated (maunds): 2328

Number of:

Presence of:

a) Deep tubewells:	3	a) Union Council Office:	No
b) Hats:	0	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	5	f) Electric lines:	No

Road Condition (as observed on September 26-27, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water: (passable by foot)	0
b) Concrete bridges:	1	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	0
d) Bamboo bridges:	2		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	7'	3 1/2'	5'	6'
b) Width (top):	13'	11'	10'	12'
c) Width (bottom):	25'	19'	19'	24'
d) Surface rating:	F	F	F	F

SITE OBSERVATIONS -- NAKLA

SITE NO. 2: 1981-1982 reconstruction of the road cum embankment from east of Bhotkandi to the south side of Rehai Astadhar.

Estimated Positive

Development Impact: Low

Ranking (1 to 35): 34

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5.9 Wheat allocated (maunds): 5190

Number of:

Presence of:

a) Deep tubewells:	1	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	6	c) High schools:	No
d) Rice mills:	2	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	8	f) Electric lines:	No

Road Condition (as observed on September 28-29, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	2
c) Wooden bridges:	0	c) Cuts for drainage:	8
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	4 1/2'	5'	5'	8'
b) Width (top):	12'	11'	11'	7'
c) Width (bottom):	20'	20'	18'	21'
d) Surface rating:	F	F	F	P

SITE OBSERVATIONS -- NAKLA

SITE NO. 3: Proposed 1983-1984 reconstruction of a road from Nakla - Nalitabari D.C. Road at Gorargaon to Nakla - Phulpur D.C. Road at Hatpagla.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.0 Wheat allocated (maunds): 1980

Number of:

Presence of:

a) Deep tubewells:	5	a) Union Council Office:	No
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	No
d) Rice mills:	4	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	10	f) Electric lines:	Yes

Road Condition (as observed on September 30, 1983)

Suitability of road for cycle-rickshaw: 1/2 Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	2	a) Under water: (passable by foot)	0
b) Concrete bridges:	1	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	8
d) Bamboo bridges:	2		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	3 1/2'	2'	4 1/2'	4'
b) Width (top):	13 1/2'	9'	13'	15'
c) Width (bottom):	21'	10'	20'	20'
d) Surface rating:	G	F	G	G

NAKLA THANA

Site 1 is the 1979-1980 reconstruction of the road from Muzakanda to Kazaikata via Daskahania, Kayakuri and Jangirarpar. The road is about two miles long, with about 200 yards at the starting point that are not yet complete. This length was not completed because it passes too close to people's residences and the people wanted to protect their homes against the reconstruction. This road is on the border of the Patakhata Union Parishad. The road crosses seven villages, four in Patakhata Union Parishad and three in Chandrakuna Union Parishad. It starts from Muzakanda and meets with the District Board road at Kazaikata, completely crossing Patakhata U.P. Rickshaws use this road from other access roads, but cannot pass along the entire road; people have cut drains, one at the beginning of the road and one at the end, so that rains will not ruin croplands.

This road links the Pairpur Station and Nakla Thana. Bullock carts and rickshaws cannot pass on this road completely. This road is important for joining places such as the Chandrakuna Bazar, Narayankata Bazar, Pairpur Station, and Nakla Thana (some by access roads), and thus is always busy with the transport of agricultural goods and with people traveling to other points on the road.

The road surface gets damaged during the rainy season by the many bullock carts that pass by. Because the road surface is not smooth, only a few rickshaw use the road.

After reconstruction of the road, many croplands were damaged by the rains due to insufficient drainage. For this reason, neighboring people one night cut the road to form a rainwater drain to save the croplands. At that time, people also wanted to form drainage to pass the deep tubewell water for irrigation. After harvesting, they again filled up the drain by cutting the earth. Now, the lack of two bridges where the road was cut means that travel is curtailed.

Two bamboo bridges were built at the drainage cuts by the neighboring people, but it is important to have bridges sufficient to transport agricultural goods and to assure the easiest travel possible. It is also important that conditions do not return to the way they were before the road. Since the road, land fertility and the standard of living have increased.

Site 2 is the 1981-1982 reconstruction of a road cum embankment from east of Bhotkandi to the south side of Rehai Astadhar. The road is 5.9 miles long, and it crosses eight villages in the Charastadar Union Parishad. This embankment/road is important in that it connects Narayankhala Bazar, L.S.D., the Chandrakuna Bazar, and Pairpur Station and it also links to other access roads. This road is always busy with transport and people. Its presence has also saved about 700 acres of cropland from the surrounding water, thus helping to increase crop production. In the rainy season, people dry jute and rice on this embankment/road.

The Bhotkandi portion of the project is only embankment. This portion extends about one mile and crosses the village of Dadiyarchar. Except for this mile, rickshaws use all of the road. At this mile, where the embankment is in a U design, it is quite impossible for rickshaws and bullock carts to pass. Also, the Mirki River creates two big gaps, both of which are connected by two ferryghats to transport people by boat. People have cut several places in the road for rain water and power pump irrigation drainage.

At the time of the site visit, places on both sides of the road had been affected by heavy rainfall; the sandy soil that forms a major part of the road was eroded by the rain. The soil had also been cut by the water current. This embankment/road has also been damaged by rats.

This site was badly damaged within one year. If maintenance is not done within another year, 700 acres of cropland will be affected, the crop production will again decrease. A sluice gate and sufficient bridges and culverts are also very much needed.

People always traveled by boat in the rainy season before reconstruction of this road. The attendance of the Dadiyarchar primary school has increased due to this road. The road has helped to increase both communication and land fertility.

Site 3 is the proposed 1983-1984 reconstruction of a road from the Nakla-Nalitabari D.C. road at Gorargaon to the Nakla-Pjulpur D.C. road at Hatpagla. The road is four miles long, and crosses one union and eight villages. Rickshaws can use about 1.5 miles of this road.

Bullock cart is the most important means of transport for carrying paddy, jute, and other agricultural goods to market along this road. The road surface up to the bamboo bridge (1.5 miles from the road's beginning) has been affected by the cart wheels. Bullock carts cannot transverse the bamboo bridge, and therefore cannot use the entire length of the road. The soil of the road had been eroded by heavy rainfall and by lack of sufficient drainage. On the first half of the road, several small places have been cut to allow drainage. The land level on one side of the road is very high compared with the other side of the road, so the rain water cannot pass to the lower level of the road. For this reason, the cuts were made only as large as was necessary to allow water to pass through to the dry croplands.

The first half of the road joins with a union parishad road for 800 yards and then divides again. The 800 yards were reconstructed by test relief last year and their condition is good. After 800 yards, the comparison road comes in again for about 500 yards. This stretch had no repair last year. After this portion, the road again meets with the district board road for about 700 yards. After that it divides again, and this last portion, nearly 500 yards, is in very bad condition, it too had not received any maintenance.

The road overall, is now not suitable for passage of bullock carts or rickshaws. When repairing by earthwork, height will be necessary, and sufficient bridges and culverts will also be needed.

THANA REPORT NO.9: DACOPE THANA

DISTRICT: Khulna
 DATES VISITED: October 20-28, 1983
 FIELD STAFF: Md. Afser Ali, SRO
 Md. Asmot Ali, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	(No available Site 1 road)			
2	1981-1982	KLNO601	Rd/Emb	96
3	1983-1984	Proposed Sl. No. 1	Rd/Emb	0

INTERVIEWS COMPLETED:

RESPONDENT GROUP	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1
Health Workers	2	2
Teachers	2	2
Businessmen	4	2
Farmers	10	4
TOTAL	19	11

SELECTED THANA STATISTICS

DACOPE THANA

Total Land Area (in square miles)		147
Number of Households 1981		19657
Number of Unions 1981		8
Population Density 1981 (per square mile)		639
1981-1982 Production (in maunds) of	Aus	1200
	Aman	585713
	Boro	-
	Wheat	-
	Jute	145
	Sugar Cane	9014
Number of Primary Schools 1982		54
Number of Family Welfare Clinics 1982		4
Percentage of Households Electrified 1982		3%
Miles of Road 1982	Pucca	-
	Semi-Pucca	6
	Kutchha	32
Number of Auto-Rickshaws 1982		-
Number of Cycle-Rickshaws 1982		2
Percentage of Soil Types 1982	Doash	23%
	Sandy	21%
	Etel	56%

SITE OBSERVATIONS -- DACOPE

SITE NO. 2: 1979-1980 reconstruction of a road cum embankment from
Dacope High School to Shingtora Primary School.

Estimated Positive
Development Impact: Above Average Ranking (1 to 35): 16

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5.2 Wheat allocated (maunds): 2595

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	No
f) Access roads:	6	f) Electric lines:	No

Road Condition (as observed on October 21-22, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	2	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	1	c) Cuts for drainage:	8
d) Bamboo bridges:	2		
e) Other bridges:	0		

<u>Road Quarter</u>	(<u>1</u>)	(<u>2</u>)	(<u>3</u>)	(<u>4</u>)
a) Height (top):	4'	3 1/2'	4'	5'
b) Width (top):	12'	11'	11'	9'
c) Width (bottom):	24'	20'	23'	24'
d) Surface rating:	P	P	P	P

SITE OBSERVATIONS -- DACOPE

SITE NO. 3: Proposed 1983-1984 reconstruction of a road Harintana to the Burirdaber WAPDA embankment.

Road Environment (within 1/2 mile of either side of road)

Road lengthn (miles): 4.8 Wheat allocated (maunds): 2845

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	0	a) Union Council Office:	No
b) Hats:	2	b) Bazar:	Yes
c) Primary schools:	2	c) High schools:	Yes
d) Rice mills:	7	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	3	f) Electric lines:	No

Road Condition (as observed on September 23-24, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	1	a) Under water: (passable by foot)	16
b) Concrete bridges:	0	b) Under water: (passable by boat)	5
c) Wooden bridges:	4	c) Cuts for drainage:	0
d) Bamboo bridges:	3		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	1/2'	1/2'	0	1'
b) Width (top):	6'	6'	0'	3'
c) Width (bottom):	6'	6 1/2'	0'	4'
d) Surface rating:	P	P	P	P

DACOPE THANA

Site 2 is a road cum embankment that runs from Dacope High School to Shingtora Primary School through Setabunia village. The road is about 5 miles long and damaged in many places due to movement of bullock, buffalos, and cattle. During the site visit, there was knee-deep mud in those damaged places of the road. Most of the people who live near the roadside are cultivators. They grow only crops, and due to high fertility of soil they do not use fertilizer.

In the year 1981-1982 only the earthwork of the road was completed, and only one culvert was constructed. Otherwise, there are 4 bridged gaps, one culvert, one wooden bridge, and two wooden box culverts. Eight unbridged gaps were created by the local people for the purpose of drainage. Three other gaps were spanned by bamboo bridges.

A portion at the end of this road was in very good condition, because the Union Parishad has planted grass on the surface. Overall, about 30% of the road is pliable by rickshaw, though no rickshaw transport is available throughout the Dacope Thana. Also, at two points in the road, the surface was less than 8 feet wide, making these segments completely impassable by carts.

People near the roadside would like for earthwork to be performed to increase the width of the road, both at the top and bottom, for the purpose of carrying carts and people. Additionally they would like culverts in at least three different positions on the road. Soil characteristic of this area is such that a little rain makes it very muddy and slippery. Local people suggested that sand be mixed with local soil when constructing the roads otherwise all the roads would need brick soling to make it more useful.

DACOPE UNION

	<u>1983</u>	<u>1980</u>
Total Population	5674	6110
Total Area	9 Sq. miles	9 Sq. miles
Total Cultivable Land	4330 Acres	4330 Acres
Primary Schools	3	3
Percentage Literate	35	28
Price of Land per Bigha (in Taka)	6000	4000

Site 3 runs from Harintana to the Burirdaber WAPDA embankment.

The road is about 4.8 miles long, and starts near Bajua bazar on the bank of the Poshur River (which is about 5 miles from Mongla Port to the north and 6 miles from Chalna bazar to the south). The road goes by a number of villages under Kailashganj union and also crosses four khals. The road has had no recent repair or maintenance, nor any previous FFW attention. About 40% of the road, at different places, is under water. The road is primarily a foot path, with some portions only 3 feet wide, and is no higher than the surrounding fields. Some portions are in a condition such that they have become impassable by foot. Earthwork is essential, and the local villagers who lived contiguous to the road are also interested in brick soling and the construction of at least four culverts, so that flood protection, as well as road conditions, are maintained.

This road is the only one that serves this area and also leads to Bajua Bazar, a very important trading center and in addition, the large fish processing center near there. As such the local people feel that development of this large road is essential for them. However, they mentioned that a 16 foot wide road surface as proposed by local officials is not necessary and will also take away too much of their cultivatable land.

KAILASHGANJ UNION

	<u>1980</u>	<u>1983</u>
Total Population	10833	12073
Total Area	10 Sq. Miles	10 Sq. Miles
Total Cultivable Land	6974 Acres	6074 Acres

THANA REPORT NO.10: SATKHIRA THANA

DISTRICT: Khulna
 DATES VISITED: October 20-28, 1983
 FIELD STAFF: Md. Shamsul Alam Bhuiyan, SRO
 Md. Mozibur Rahman, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	764	Rd/Emb	100
2	1981-1982	STK0102	Rd/Emb	100
3	1983-1984	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1	1
Health Workers	2	2	2
Teachers	1	2	3
Businessmen	5	4	1
Farmers	10	10	5
TOTAL	19	19	12

SELECTED THANA STATISTICS

SATKHIRA THANA

Total Land Area (in square miles)		145
Number of Households 1981		41668
Number of Unions 1981		13
Population Density 1981 (per square mile)		1736
1981-1982 Production (in maunds) of	Aus	91655
	Aman	704957
	Boro	111898
	Wheat	114017
	Jute	107550
	Sugar Cane	75118
Number of Primary Schools 1982		124
Number of Family Welfare Clinics 1982		5
Percentage of Households Electrified 1982		1%
Miles of Road 1982	Pucca	37
	Semi-Pucca	29
	Kutchha	246
Number of Auto-Rickshaws 1982		26
Number of Cycle-Rickshaws 1982		650
Percentage of Soil Types 1982	Doash	50%
	Sandy	10%
	Etel	38%

SITE OBSERVATIONS -- SATKHIRA

SITE NO. 1: 1979-1980 reconstruction of a road cum embankment from Jhowdanga T.C. road to Akra Khola Wooden Bridge under Jhowdanga and Bali U.P.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 5

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5

Wheat allocated (maunds): 3430

Number of:

a) Deep tubewells: 0
 b) Hats: 3
 c) Primary schools: 9
 d) Rice mills: 14
 e) Other mills: 0
 f) Access roads: 7

Presence of:

a) Union Council Office: Yes
 b) Bazar: Yes
 c) High schools: Yes
 d) Health clinic: Yes
 e) Fertilizer shop: Yes
 f) Electric lines: Yes

Road Condition (as observed on October 22-23, 1983)

Suitability of road for cycle-rickshaw: 1/2 Passable.

Bridged gaps:

a) Culverts: 9
 b) Concrete bridges: 3
 c) Wooden bridges: 1
 d) Bamboo bridges: 0
 e) Other bridges: 0

Unbridged gaps:

a) Under water: 0
 (passable by foot)
 b) Under water: 0
 (passable by boat)
 c) Cuts for drainage: 8

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	2 1/2'	4'	4 1/2'	3'
b) Width (top):	10'	12'	12'	11 1/2'
c) Width (bottom):	14'	19'	22'	17'
d) Surface rating:	F	G	G	G

SITE OBSERVATIONS -- SATKHIRA

SITE NO. 2: 1981-1982 reconstruction of a road cum embankment from Machkola Hat to Brammarajapur village.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 2

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 2.5 Wheat allocated (maunds): 9725

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	2	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	3	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	4	f) Electric lines:	Yes

Road Condition (as observed on October 20-21, 1983)

Suitability of road for cycle-rickshaw: Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	2	a) Under water:	0
b) Concrete bridges:	0	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	0
d) Bamboo bridges:	0	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	0

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	4'	4'	3 1/2'	3 1/2'
b) Width (top):	14'	13'	13'	13'
c) Width (bottom):	20'	18'	19'	19'
d) Surface rating:	G	G	G	G

SITE OBSERVATIONS --- SATKHIRA

SITE NO. 3: Proposed 1983-1984 reconstruction of road from Patherghata Maldari Math to Gobindakati Primary School

Road Environment (within 1/2 mile of either side of road)

Road length (miles):	6	Wheat allocated (maunds):	2500
<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	1	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	9	c) High schools:	Yes
d) Rice mills:	0	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	5	f) Electric lines:	Yes

Road Condition (as observed on October 25-26, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>		
a) Culverts:	7	a) Under water: (passable by foot)	5	
b) Concrete bridges:	0	b) Under water: (passable by boat)	1	
c) Wooden bridges:	0	c) Cuts for drainage:	10	
d) Bamboo bridges:	0			
e) Other bridges:	0			
<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	1/2'	1/2'	3	1/2'
b) Width (top):	19'	18'	18'	12'
c) Width (bottom):	20'	19'	22'	12 1/2'
d) Surface rating:	P	P	G	P

SATKHIRA - KHULNA

Site 1 is the 1979-1980 reconstruction of a road cum embankment from Jhowdanaga T.C. Road to Akra Kola Wooden Bridge under Jhowdanaga and Bali Union Parishads. The road is 5 miles long, and begins almost seven miles from Satkhira, at Jhowdanaga. Jhowdanaga is famous for its textile trade. The border is only seven or eight miles away, so smuggling is rampant. Indian Sarees and Biri leaves are available when the weekly hats take place. Traders here fare better than those in other areas. Jhowdanaga also has many businesses as well as a BDR camp, a high school, two practicing MBBS doctors, two family planning clinics, a V.P. office, and a residential hotel. Akra Kola is also a big trade center, where shops, rice mills, rice and jute trading, and a V.P. office are located. The literacy rate in this area is not high.

This road is built of compound soil. At the end of the first two miles, a broken sluice gate is hampering transportation. Local people have begun the repair of this broken section of road by collecting subscriptions; WAPDA has brought the necessary materials to start its reconstruction very soon. In the second segment, about a mile of the road is comparatively low because no work has been done here as the older portion of the road is brick laid. On the last half or 3/4 miles of the road, WAPDA has raised the road height by doing earthwork. A good number of shallow tubewells are in the roadside areas, which implies improved agriculture.

The first portion of the road seems to be higher than what it should be, considering the flood situation here. People have benefited from this road with improved travel and communication. Utility of this road would be increased if culverts were maintained.

Site 2 is the 1981-1982 reconstruction of a road cum embankment from Machkola Hat to Brammarajapur village. This road lead to Brahmanpara bazar, where important institutions are located, such as a bank, a jute trading organization, a primary school, a junior high school, the union council, fertilizer dealers, rice mills and shops of different types. The road starts at Malikular Hat, which has 5 or 6 permanent shops and a weekly

hat. The road is not more than 2.5 miles long. Being adequate in height, width, and the number of bridges and culverts on it, the road is generally fit for the movement of people and light transports. In rainy season, nonetheless, the road becomes muddy and slippery, and bad for the movement of rickshaws and helicopters (bicycles with platforms for passengers). After rainy season, the mud in the road dries in the sun and becomes permanent, making the surface uneven and somewhat unsafe.

The river Buthna flows nearby the road, and an embankment has been constructed to control the water. Local farmers use high-yielding variety of seeds and the production is satisfactory. The embankment also helps irrigation. Some shallow tubewells are in the field by the side of the road. At the beginning of the second segment is a bamboo culvert. If this culvert were concreted, this road could be made flawless. Improvement of this road has played a major role in the improvement of agriculture, trade, and health of this locality.

Site 3, the comparison road, is the proposed reconstruction of a road from Pathergata Maldari Math to the Gobindakati Primary School. This road crosses the village of Jhowdanaga, and is a relatively complex project. It first crosses the district council road, and after one mile takes left turn and then meets the Satkhira-Jessore road through the village. This part of the project ends here. Another part of this project starts from a place 1/2 mile away from the first part, one mile east of Jhowdanga. This 3/4 miles road from Jhowdanaga has been excluded from the project as this portion is good, but the condition of the road at the beginning point of project is very bad. People face great trouble in moving with goods. This portion is about 2 miles long.

There is no alternative road to Jhowdanaga. Pedestrian traffic on the road is very crowded, especially on hat days. There are a good number of shallow tubewells along this portion of the road.

The District Board portion of the road at the beginning of the project is busier than is usually found on a village road, though this is the busiest portion. The land in this area is high, and there are many date trees. Production of rice is not very good, and no irrigation facilities are available. The condition of the road is also bad; it has been cut in many

places. The road is about one foot high from the ground. This condition exists for 1.5 miles, and the rest is fit for the movement of rickshaw. The literacy rate is low in this area and agriculture is also not advanced. This road is important because it is connected with Jhowdanaga.

THANA REPORT NO.11: DAULATPUR THANA

DISTRICT: Khulna
 DATES VISITED: October 20-28, 1983
 FIELD STAFF: Md. Abdur Rashid, SRO
 Md. Mahtabur Rahman, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	735	Road	100
2	1981-1982	KLNO200	Rd/Emb	71
3	1983-1984	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	2	1
Health Workers	2	2	2
Teachers	2	2	1
Businessmen	4	4	2
Farmers	10	10	5
	—	—	—
TOTAL	19	20	11

SELECTED THANA STATISTICS

DAULATPUR THANA

Total Land Area (in square miles)		45
Number of Households 1981		72457
Number of Unions 1981		6
Population Density 1981 (per square mile)		8258
1981-1982 Production (in maunds) of	Aus	27235
	Aman	63314
	Boro	10046
	Wheat	571
	Jute	300
	Sugar Cane	24038
Number of Primary Schools 1982		79
Number of Family Welfare Clinics 1982		6
Percentage of Households Electrified 1982		7%
Miles of Road 1982	Pucca	40
	Semi-Pucca	26
	Kutchha	42
Number of Auto-Rickshaws 1982		100
Number of Cycle-Rickshaws 1982		3200
Percentage of Soil Types 1982	Doash	60%
	Sandy	10%
	Etel	30%

SITE OBSERVATIONS -- DAULATPUR

SITE NO. 1: 1979-1980 reconstruction of Gazirhat Bamandanga road under Gazirhat Union Parishad.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 6

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.9 Wheat allocated (maunds): 5880

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	4	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	14	f) Electric lines:	Yes

Road Condition (as observed on October 25-26, 1983)

Suitability of road for cycle-rickshaw: 1/2 Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	2
b) Concrete bridges:	3	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	0
d) Bamboo bridges:	2	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	0

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	4 1/2'	6'	6'	6'
b) Width (top):	15 1/2'	11 1/2'	10 1/2'	12'
c) Width (bottom):	35'	35'	25'	25'
d) Surface rating:	E	E	E	E

SITE OBSERVATIONS -- DAULATPUR

SITE NO. 2: 1981-1982 reconstruction of Adhikram road cum embankment from Radhamadabpur to Bashirmar Ghat.

Estimated Positive

Development Impact: Above Average Ranking (1 to 35): 14

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.0 Wheat allocated (maunds): 3901

Number of:

Presence of:

a) Deep tubewells:	1	a) Union Council Office:	No
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	2	c) High schools:	Yes
d) Rice mills:	3	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	7	f) Electric lines:	Yes

Road Condition (as observed on October 23-24, 1983)

Suitability of road for cycle-rickshaw: 1/2 Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water: (passable by foot)	2
b) Concrete bridges:	0	b) Under water: (passable by boat)	3
c) Wooden bridges:	0	c) Cuts for drainage:	3
d) Bamboo bridges:	7	d) Caused by erosion:	2
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	5'	5 1/2'	5'	4 1/2'
b) Width (top):	12'	14'	10'	10 1/2'
c) Width (bottom):	22'	24'	27'	28'
d) Surface rating:	E	G	G	G

SITE OBSERVATIONS -- DAULATPUR

SITE NO. 3: Proposed 1983-1984 reconstruction to Hazigram Chandanimahal Mollickpara road from Hazigram Mathabhanga Khal to Chandnimahal Mollickpara.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 2.5 Wheat allocated (maunds): 1612

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	0	b) Bazar:	Yes
c) Primary schools:	1	c) High schools:	No
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	No
f) Access roads:	11	f) Electric lines:	Yes

Road Condition (as observed on October 21-22, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	7	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	12
d) Bamboo bridges:	0		
e) Other bridges:	0		

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	1 1/2'	1'	1'	1 1/2'
b) Width (top):	12'	11'	9'	8'
c) Width (bottom):	16'	14'	11'	12 1/2'
d) Surface rating:	G	G	P	P

DAULATPUR THANA

Daulatpur Thana is located five miles north of the Khulna District headquarters. The Jessore-Khulna C&B Road passes through this thana and connects it with Khulna in the south and Jessore in the north. Jessore District headquarters is situated to its north and northwest, Phultala P.S. and Dumuria P.S. in the Khulna District, are west and southwest, respectively, and Terokhada P.S. and Khula Sadar P.S. are situated to the east and southeast, respectively.

Jessore-Khulna C&B Road and Ullah para-Khulna Rail pass through this Daulatpur P.S. Two rivers, Bhairab and Atai (locally named) also cross this thana. Different water transports with various business goods pass daily through these rivers. Besides these larger roads and rivers, a number of small and local roads and canals cross this thana, making communication easier amongst the villages.

About 140,323 people are living in this thana, and the total cultivated land is 40,292 acres. Cultivated land per individual in the thana equals nearly 1/3 acre. The literacy rate of this thana is about 19% of the total population.

Traditional agriculture is the main occupation of about 65 % of the people. At least 25% are engaged in various businesses, and the rest are in different services, mainly jute baling and shipping.

This thana consists of 5 Unions:

1. Dhigolia Union
2. Senhati Union
3. Barakpur Union
4. Gazirhat Union
5. Deana Union

About 40% of the Deana Union is under Daulatpur Municipality.

Site 1 is the 1979-1980 reconstruction of Gazirhat Bamandanga road under Gazirhat Union Parishad from Bazirhat to Bamandanga. The road starts from Gazirhat High School at Gazirhat bazar and runs eastward, crossing an embankment at the outset. Then the road crosses the villages of Permo-chandapur, Bagmara, Jangusia, Mohisdia, Dori Mohisdia, and Bamandanga.

General Characteristics: Project: Daulatpur 735; Length (from Gazirhat to Bamandanga): 4.92 miles; Wheat allocated: 5880 maunds; Wheat used: 5880 maunds; Earthwork done: 432,0200 cft.; Proposed by: Project Implementation Officer, Circle Officer, Thana Engineer and the Chairman of Gazir U.P.; Union Crossed: Gazirhat Union.

For purposes of examination, this road, which is 4.9 miles long, is divided into two parts -- the first from Gazirhat High School to the Madrasha, and the second part from Madrasha to Bamandanga. In the first part, the road is in excellent condition, easily passable by any kind of vehicle. (rickshaw, van, cart, taxi, motor car). A concrete bridge is now under construction on the road.

The reason the road is in such good condition is that WAPDA has done the brick soling, the width of which is 10'-6" in all parts of the road.

Besides the bridge that is under construction, another concrete bridge exists constructed in 1981-1982, when the brick soling was done.

In the second part, from Madrasha to Bamandanga, the road is also excellent. There are 2 concrete bridges, 2 big gaps in which bamboo bridges now exist, and 1 half-filled gap.

This portion is also brick soled and passable by any kind of vehicle. The brick soled surface is 10'-6". A number of access roads started from this road and a CARE monitored road named Bamandanga - Katla road was reconstructed in 1981-1982.

Though this road is in excellent condition, some earthwork could be done on this road, because in some places ditches exist at the roadside. In the first part there may be insufficient drainage, as the road runs from west to east, and any excess of water would create pressure and a breakthrough of the road. This would also cause difficulties with cultivation and with existing crops. Conversely, in the southern side, the paddy field is dried because of the lack of sufficient water. In this case a number of culverts might be constructed.

There are several positive impacts due to the construction of this road. First, the reconstruction and recent brick soling makes traveling in this Gazirhat U.P. comparatively easier, more comfortable, and shorter. The road is the only main road that connects the Gazirhat Bazar with the villages of this U.P., and it also connects indirectly the Daulatpur business center

via the river. The road also connects with the Terakhada P.S. in the east. Agricultural production increased rapidly after completing the reconstruction of this road, as it protected crops from unexpected flood flow from the Atai River. School attendance has increased since the construction of the road.

Site 2 is the 1981-1982 reconstruction of Adhikram road cum embankment from Radhamadabpur to Bashirmar Ghat. The road starts from the Kamargathi village of Barakpur U.P. at the west bank of the Atai River, passes through Kamargathi, Mominpur, and Hazigram villages, and ends at Bashirmar Ghat at the west bank of the Atai River in Senhati Union Parishad.

General Characteristics: Project: KLN0200; Length: 4.04 miles; Project Serial No. X/CARE/1408/R/KLN; Government Order No.: Sec-X1/1345/F.R.29112181; Total wheat allocated: Baraekpur U.P.: 1791 maunds, Senhati U.P.: 2110 maunds, Total: 3901 maunds; Total wheat used: 3591 maunds. (remaining 310 maunds wheat were not delivered properly in time); Proposed by: P.I.O., C.O., U.P. Chairmen, thana engineer, and CARE; U.P. Crossed: This (road) embankment crossed 1 U.P. viz. (1) Baraekpur; (2) Senhati U.P.

For purposes of examination, this road, which is 4 miles long, is divided here into two parts, the first from Radhamadappur to the border of Barajoyr Union, the second from the starting point of Senhati Union to the Bashirmar Ghat. In the first segment, the embankment is in fair condition, both in height and width, and its surface is excellent and easily passable by rickshaw and other carts. The second segment of the embankment was also in good condition, though in need of repair in some places. Repair is needed where there are 3 or 4 temporary half-filled gaps created perhaps by heavy rainfall or by people cutting away the soil (illegally) for personal use (for plastering walls).

Within a half mile of the first part of embankment, people seem to be more or less happy with the road. On both sides of the road a large number of the residents have as their main occupation agriculture and fishing. The fishermen do their fishing from the Atai River.

In the second part of the road the embankment is in bad condition. There are 10 unbridged gaps, 2 which remain without any earthwork. Besides these, 6 temporary bamboo bridges have been made on the road, and more 3' cuts for drainage were seen in the embankment, which indicates poor drainage.

A major part of the road has many small ditches created by a flood of Atai River and heavy rainfall during the rainy season. There is a large gap of about 400 ft. where no earthwork was apparently done. This gap is at field level, and flood waters from the river have overflowed through it and destroyed the paddy in the field on the west side of the embankment. After this gap, the rest of this portion is in fair condition, and vans and rickshaws can easily be run.

The first portion of the road is about 2 miles in length. In this portion the average measurements are 5' in height, 19' in width at the top and 22' in width at the bottom. Since the road is an embankment, and since it was constructed with a view to stop flood waters, it is possible that it can again, with earthwork, protect against floods successfully. Also, besides considering a new culvert, a new concrete bridge (sluice gate) could be constructed at the end of the first part, near the Mominpur of Senhati U.P., where at present a temporary bamboo bridge exist.

In the second portion, the embankment (from Mominpur to Bashirmar Ghat) is seriously deteriorated, the average measurements (excluding the gaps) being 5' in height, 13' in width at the top, and 23' in width at the bottom.

In this part, both unbridged and temporary bamboo bridged gaps exist. This part urgently needs repair, both extensive earthwork and construction of sluice gates, to protect against flood waters and to save the embankment from destruction. The road should be fixed as well for the sake of increased communication, as it is the only road that passes through and is used by the people of the Barakpur and Senhati Unions.

There are several positive impacts of the construction of this road. First, the communication of this area has improved, and the number of facilities has increased. This road connects not only the Barakpur U.P. with Senhati U.P., but also connects the thana headquarters, Daulatpur Business Center, and other unions with one another. It again connects the Senhati bazar and Khulna District with the Daulatpur thana. Previously, there was no major road to use. Now, the new road shortens travel and makes walking comparatively easier and more comfortable. This embankment, nevertheless, might have a greater benefit if culverts and concrete bridges were constructed.

Site 3 is the reconstruction of Goalpara road from Brahmagathi Primary School to Senhati pucca road via the D.C. tank. The road is 2.5 miles long, passes through the villages of Bramagathi and Goalpara, starting from the Brahmagathi Primary School and ending at the nearest southern section of the thana headquarter. The first part of the road begins at the Brahmagathir Primary School and goes south through the Brahmagathi village, for half a mile, and then turns east to join the Senhati pucca road.

The second part of the road starts from the north Goalpara about half a mile distance from the turning point of the first part. Having started from that point, a segment of the second part goes toward the south and ended at the Senhati pucca road, and the other segment goes towards the west and passes more than half a mile through the Goalpara west and ends at the nearest end of the Daultpur thana headquarter.

This road does not appear to be in good condition. The beginning is in fair condition but after 1200 ft. the road is not easily identifiable, as it is at paddy field level. This portion also has ditches and gaps with mud in a number of places, but as there is no other road passing through this village to the paddy field, the people of the area have to use this road.

Some places have signs reading "cut for drainage," which indicates the insufficiency of drainage during the rainy season.

The second part of the road, which starts from north Goalpara and ends at the Senhati pucca road, is good for pedestrian passage only. The number of ditches and gaps in the road may be the cause of heavy rainfall and soil-slides. The last segment of the second part of the road runs through the Goalpara west. There are houses on both sides of the road, and the road is at field level.

The first portion of the road is about one mile long. In this portion there were at least 8 measurable gaps cut by the people on both sides of the road. During the rainy season, it has become necessary to cut the road to let the water drain from the fields and homesteads. This has produced a number of ditches due to landslides.

The second part is also in bad condition, with the average height and surface area 1' and 8' respectively, and many ditches on the side of the road. The road is urgently in need of repair for the greater benefit of the people of that locality.

Local people state that the road is the only one that connects the Brahmagathi and Goalpara villages to the thana headquarters and then to the business center of Daulatpur, and therefore is very important to them. In addition, the road is used to transport paddy and other agricultural goods from the fields and hats.

When the reconstruction takes place, rickshaws, cycles, riskshaw vans, and carts will be able to run easily, and may be able to carry agricultural and other goods from the nearest markets. This will ultimately result in the proper and timely distribution of goods, with fair prices, and will enable farmers to easily supply their produce to Daulatpur and Khulna. Besides these benefits, a number of people might be able to earn money by pulling rickshaws, vans and carts.

THANA REPORT NO.12: SARSHA THANA

DISTRICT: Jessore
 DATES VISITED: October 20-28, 1983
 FIELD STAFF: Md. Hafizuddin, SRO
 A.K.M. Fazlul Hogue, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	294	Road	100
2	1981-1982	JSR0302	Rd/Emb	100
3	1979-1980	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	2	0	1
Health Workers	2	2	2
Teachers	1	2	1
Businessmen	4	4	2
Farmers	11	10	5
TOTAL	20	18	11

SELECTED THANA STATISTICS

SARSHA THANA

Total Land Area (in square miles)		130
Number of Households 1981		30373
Number of Unions 1981		11
Population Density 1981 (per square mile)		1451
1981-1982 Production (in maunds) of	Aus	630020
	Aman	583516
	Boro	321323
	Wheat	-
	Jute	202625
	Sugar Cane	137615
Number of Primary Schools 1982		69
Number of Family Welfare Clinics 1982		11
Percentage of Households Electrified 1982		1%
Miles of Road 1982	Pucca	17
	Semi-Pucca	20
	Kutchra	252
Number of Auto-Rickshaws 1982		10
Number of Cycle-Rickshaws 1982		150
Percentage of Soil Types 1982	Donash	30%
	Sandy	20%
	Etel	50%

SITE OBSERVATIONS -- SARSHA

SITE NO. 1: 1979-1980 reconstruction of a road from Benapole C.P. to Roghunathpur (Border Belt).

Estimated Positive Development Impact: Moderate Ranking (1 to 35): 24

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 2.8 Wheat allocated (maunds): 1478

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	3	a) Union Council Office:	No
b) Hats:	0	b) Bazar:	No
c) Primary schools:	2	c) High schools:	No
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	3	f) Electric lines:	Yes

Road Condition (as observed on October 20-21, 1983)

Suitability of road for cycle-rickshaw: Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	6	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	0
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	3 1/2'	3'	3'	3 1/2'
b) Width (top):	12'	11 1/2'	14'	12'
c) Width (bottom):	19'	18'	20'	19'
d) Surface rating:	F	F	F	F

SITE OBSERVATIONS -- SARSHA

SITE NO. 2: 1979-1980 reconstruction of a road cum embankment from Benapole C&B Road to Rudrapur.

Estimated Positive Development Impact: Above Average Ranking (1 to 35): 11

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 8.6 Wheat allocated (maunds): 3661

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	6	a) Union Council Office:	Yes
b) Hats:	4	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	11	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	18	f) Electric lines:	Yes

Road Condition (as observed on October 22-23, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	10	a) Under water: (passable by foot)	1
b) Concrete bridges:	4	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	3
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	5'	3'	2'	1 1/2'
b) Width (top):	19'	16'	15 1/2'	16'
c) Width (bottom):	34'	28'	25'	21'
d) Surface rating:	P	P	P	P

SITE OBSERVATIONS -- SARSHA

SITE NO. 3: Proposed 1983-1984 reconstruction of a road from Samta to Putkhali via Jamtala Road.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5.6 Wheat allocated (maunds): 2794

Number of:

Presence of:

a) Deep tubewells:	4	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	2	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	8	f) Electric lines:	No

Road Condition (as observed on October 24-25, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	9	a) Under water: (passable by foot)	4
b) Concrete bridges:	3	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	0 [3]
d) Bamboo bridges:	0		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	1'	1 1/2'	1'	3'
b) Width (top):	21'	21 1/2'	19'	20'
c) Width (bottom):	21 1/2'	22'	19 1/2'	22'
d) Surface rating:	P	P	P	G

SARSHA THANA

Site 1 is the 1979-1980 reconstruction of a road from Benapole C.P. to the Ragunatpur T.C. road at Giba village. The road is 2.8 miles long, and crosses only the Benapole Union, near the border of Bangladesh. It passes through one big field and two villages. There are two B.D.R. camps at the road side, one near the starting point and the other at the end; the checkpoint office is also near the starting point of the road. There are three deep tubewells and two primary schools within a half mile of either side of the road. This road has only three access roads. Because it is a border belt road, there are no hats, bazars or mills by its side. This road is well used by rickshaw, motorcycle, and other vehicle traffic. It is also used by the B.D.R. and smugglers.

This road has two concrete culverts, three bamboo culverts, and one concrete pipe culvert. There are no unbridged gaps on the road.

Some earthwork road maintenance occurred this year, funded by test relief.

This road surface is fair although at places cart wheels have dug deep into the soil making it very difficult for mechanized vehicles. According to the Benapul U.P. Chairman, the maintenance fund of U.P. is too low to contribute to care of the road, as is the rainy season test relief. Due to lack of funds, U.P. members proposed that CARE do the reconstruction. They additionally mentioned that the CARE proposal was also made in the interest of the labor class, who could benefit by having employment through CARE.

The people on this road benefit in various ways, such as being able to communicate with the thana by access roads and with the C.P. by the main road. Also, crop production has increased, attendance at the schools has increased, and local people can get medical attention more easily. Visits by thana officials have increased, and businessmen can carry their goods more easily by using bullock carts and other transport.

Due to the improvement of this road, however, smuggling has also increased.

Site 2 is the 1981-1982 reconstruction of a road cum embankment from Benapole C.B. road to Rudrapur. This road/embankment is 8.6 miles long and crosses four unions -- Benapole, Putkhali, Goga, and Rudrapur. It also crosses three large fields and 12 villages. It is located near the border of Bangladesh.

There are four B.D.R. camps along the roads as well as three Union Parishad offices, four markets, two high schools, six deep tubewells, eleven rice mills, a bank, a post office, and an F.W.C. As this road/embankment crosses four markets and also has 18 access roads, it is important that the road be passable by bullock carts, which carry agricultural goods. On market days, this road is extremely busy with bullock carts.

The road has two concrete culverts, four concrete bridges, and five concrete pipe culverts. It has one unbridged gap, where it crosses a canal. Most of the year this gap is passable by foot. In the rainy season, however, when the water level increases, it is impossible to pass the canal by foot. Of the three drainage cuts, one is a concrete culvert cut for construction and two are cuts to pass rain water to save the crop land.

Though this road has been through several repairs -- most recently earthwork -- leveling and dressing were not done, and the road surface is not in good condition. Particularly at the repaired portion of the road it is difficult for transports and people to pass, and during the rainy season the road surface is worsened by the quick passage of many carts.

This road helps the businessmen since it provides a means for transporting goods from the local market to important places. Although bullock carts can not pass the whole road due to the gap, they can use the entire road by using an access road to bypass the gap.

This road has also helped to increase the fertility of the lands at its side and therefore to increase crop production. Because this road connects important places, local people have benefited in various ways, such as in improved health care, increased attendance at schools, and increased visits by Government service workers. People would further benefit if the road surface were improved. The usefulness of this road is lessened due to the poor surface and insufficient number of bridges and culverts.

Because the road is so close to the border, its construction has increased smuggling in the area.

Site 3 is the proposed 1983-1984 reconstruction of a road from Samta to Putkhali via the Jamtala road. The road is about 5.6 miles long, and crosses the two unions of Daluabari and Putkhali, through one big field and seven villages. It has three markets, two high schools, four deep tubewells, and two mills within 1/2 mile of either side of the road. This road has seven concrete culverts, three concrete bridges, four concrete pipes, and one tin pipe culvert. There are three places cut for drainages and four places under water, but passable by foot.

On the part of the road in the Daluabari U.P., no maintenance or repair has been done. Here, the road is mostly very old, and is nearly at field level. It passes through the middle of the big field, and in rainy season the soil of the road is carried by the current of flood water. At this time, it is very difficult for people to use the road. Drainages have already been formed by the flood waters at several places. If maintenance is not performed soon, three concrete bridges and a culvert will be fully damaged or will break down, because the soil of the road near the bridge has shifted from the road. Road repair is necessary as early as possible.

The last half of the road, in the Patkhali U.P., had partial repairs completed through test relief and also passes another T.C. road. Within this portion, CARE completed about 800 yards last year. Putkhali U.P. chairman says that test relief wheat could not be budgeted for this road, but maintenance did occur: about one third of the road surface is smooth and in good condition. Nevertheless, this road still needs some maintenance in that it needs height. Due to insufficient drainage, people have cut several places across the roads so bridges and culverts are needed.

THANA REPORT NO.13: PIRGACHA THANA

DISTRICT: Rangpur
 DATES VISITED: October 6-14, 1983
 FIELD STAFF: Md. Hafizuddin, SRO
 Md. Sohrab Hossain, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1980-1981	713	Rd/Emb	100
2	1981-1982	RGPO501	Rd/Emb	100
3	1979-1980	510	Rd/Emb	16

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	2	2	1
Health Workers	2	2	2
Teachers	2	2	2
Businessmen	4	4	2
Farmers	9	9	6
	—	—	—
TOTAL	19	19	13

SELECTED THANA STATISTICS

PIRGACHA THANA

Total Land Area (in square miles)		103
Number of Households 1981		39514
Number of Unions 1981		9
Population Density 1981 (per square mile)		2040
1981-1982 Production (in maunds) of	Aus	296425
	Aman	767133
	Boro	111601
	Wheat	201875
	Jute	136240
	Sugar Cane	473741
Number of Primary Schools 1982		70
Number of Family Welfare Clinics 1982		-
Percentage of Households Electrified 1982		2%
Miles of Road 1982	Pucca	3
	Semi-Pucca	1
	Kutchha	483
Number of Auto-Rickshaws 1982		-
Number of Cycle-Rickshaws 1982		56
Percentage of Soil Types 1982	Doash	87%
	Sandy	10%
	Etel	3%

SITE OBSERVATIONS -- PIRGACHA

SITE NO. 1: 1980-1981 reconstruction of a road cum embankment from Kandirhat to Annandanagar under Kandirhat, Kaikuri, Pirgacha, and Annandanagar Unions

Estimated Positive Development Impact: High Ranking (1 to 35): 9

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 11.2 Wheat allocated (maunds): 5694

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	9	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	7	c) High schools:	Yes
d) Rice mills:	9	d) Health clinic:	Yes
e) Other mills:	2	e) Fertilizer shop:	Yes
f) Access roads:	37	f) Electric lines:	Yes

Road Condition (as observed on October 11-12, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	19	a) Under water: (passable by foot)	0
b) Concrete bridges:	5	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	1
d) Bamboo bridges:	3		
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	5'	4'	4'	5'
b) Width (top):	14'	12'	13'	14'
c) Width (bottom):	22'	21'	22'	23'
d) Surface rating:	G	F	F	G

SITE OBSERVATIONS -- PIRGACHA

SITE NO. 2: 1981-1982 reconstruction of a road from Brammani Kuda Solaiman's house to Dadon.

Estimated Positive Development Impact: Moderate Ranking (1 to 35): 25

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5.3 Wheat allocated (maunds): 2686

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	4	a) Union Council Office:	No
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	5	c) High schools:	No
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	10	f) Electric lines:	No

Road Condition (as observed on October 9-10, 1983)

Suitability of road for cycle-rickshaw: Not passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	13	a) Under water: (passable by foot)	0
b) Concrete bridges:	2	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	5
d) Bamboo bridges:	1		
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	6'	4'	8'	6 1/2'
b) Width (top):	10'	13'	14'	13 1/2'
c) Width (bottom):	15'	17'	26'	25'
d) Surface rating:	P	P	G	G

SITE OBSERVATIONS -- PIRGACHA

SITE NO. 3: 1979-1980 abandoned reconstruction of a road cum embankment from the border of Pirgacha U.P. to Kaikuri U.P.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 7 Wheat allocated (maunds): 5408

Number of:

Presence of:

a) Deep tubewells:	0 [1]	a) Union Council Office:	No
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	5 [6]	c) High schools:	No
d) Rice mills:	1	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	11	f) Electric lines:	No

Road Condition (as observed on October 7-8, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	0
b) Concrete bridges:	0	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	1
d) Bamboo bridges:	0	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	15

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	1'	1/2'	7'	1 1/2'
b) Width (top):	7'	6'	9'	10'
c) Width (bottom):	8'	6'	19'	11'
d) Surface rating:	P	P	P	P

PIRGACHA THANA

Site 1 is the reconstruction of road from Kandirhat to Annandanagar under Kandirhat, Kaikuri, Pirgacha and Annandanagar U.P.s, ending near the Pirgacha thana border by Kawmia Union. The road is 11.2 miles long, and crosses the unions of Kandi, Kaikuri, Pirgacha, and Annandanagar, including three markets and 26 villages. It crosses four D.B. roads, and links to 33 access roads. On the road are nine deep tubewells, three hats, a bazar, seven primary school, nine rice mills, and two biscuit factories. There are also two Union Parishad offices, two F.W.C.s under construction, three high schools, three post offices, two banks, and many fertilizer shops. This road cum embankment has nine concrete culverts, five concrete bridges, three bamboo bridges, three concrete pipe culverts, and six improvised pipe culverts. Due to insufficient drainage, people recently cut this road to release rain water. Local people have put some banana plants across the gap so that they can cross the gap. People have also cut another small gap into the road, small enough to still allow people to pass easily.

After CARE reconstruction of this road, it was again repaired by the W.F.P. last year. On the first portion of the road, the surface is good and is passable by rickshaws, jeeps, cars and bullock carts. The middle portion of the surface is fair, but because of insufficient bridges and culverts rickshaws cannot pass. The last portion of the road surface is again good and all kind of vehicles can pass through it.

This road has improved communication and travel so that market quality is now improved, and some rice mills are newly constructed since reconstruction of the road. As market quality improved, so have businesses. Businessmen can now more easily transport their goods from one place to another. Merchants of three markets and the people of 26 villages communicate to the thana office by the other access D.B. road. Because this road links to J.M.C., T.P.C. & L.S.D. at the important Annandanagar market, merchants can purchase goods from the villages and transport them easily by local transport such as rickshaw and bullock cart. Also, enrollment in the primary schools near the road has increased due to the improvement of the road.

Farmers can now easily carry production crops to the local market for sale. Crop production has increased since the farmers can get fertilizer to their land. Some landless people were given one banana garden at the road side. They also benefited by selling bananas. Health care has improved, because doctors can be easily fetched when a person is ill, and treatment can begin sooner. Health Assistance and family planning workers can also take their services door to door in less time. Visits from thana officials has also increased; they use local transport or motorcycles. All of these benefits were created by better communication after reconstruction of the road.

This road is important to the people of this area for communication to important places. It could be improved by added bridges and culverts so that vehicles and transports can use the whole road.

Site 2 is the 1981-1982 reconstruction of a road from Brammani Kunda Solaiman's house to Dadon. It is 5.3 miles long, and crosses the three unions of Sawla, Annandanagar, and Pirgacha, including nine villages and two big fields. The road also crosses one D.B. road and passes one market.

According to the proposal this road begins at Brammani Kunda Solaiman's house and goes to Dadon. Actually, the road was reconstructed from the Zigabar Karimbox house, which is about 3/4 miles before Brammani Kunda Solaiman's house, and meets CARE road No. 713 at Pirgacha. Dadon is about 2 1/2 miles further than the actual point of the road. The portion at the beginning is not used much by the local people. In the first 1 3/4 miles, some of the road curves and some zigzags, to meet with the D.B. road. Another shorter road also meet with the D.B. road at Brammani Kunda bazar, which is used more by the local people than the completed reconstruction. After meeting with D.B. road, this road goes from Brammani Kunda Solaiman's house and meets with other T.C. road at Kakuan Nabu village. This distance is about one mile, which is a curve. This portion also less important for the local people. The distance from Kakuan Nabu village where the CARE reconstruction road meets with T.C. road to the D.B. road is about 400 yards, so transport and people do not use the total length (3/4 miles) very much. Because it is used infrequently, and because of insufficient drainage on the crop lands, this portion of the road has been cut in five places. Its

surface is poor, and local transport such as bullock carts and rickshaws cannot pass. At the start of this portion is one bamboo bridge, one concrete culvert, one concrete pipe culvert, and three nut pipes. There are two deep tubewells, one primary school and four access roads (including one D.B. road) within this said portion.

The last portion, from Kakuan Nabu village to CARE road No. 713 at Pirgacha, is very busy with traffic by the bullock carts, rickshaws and other vehicles. Bullock carts carrying goods from the Pirgacha market to the Brammani Kunda bazar and other important places use this road and its access roads. This last portion is therefore important for merchants and other businessmen. Its surface is good, except for the 2 3/4 miles at the start, and there are no gaps. Within this last portion are four concrete culverts, two concrete bridges and two concrete pipe culverts and six access roads. There were two deep tubewells, one hat and bazar and four primary schools along the road.

After reconstruction, this road was repaired by W.F.P. last year.

Local people benefit from this road in various ways, such as through improved health care, crop production increases (by having access to necessary fertilizer), increased visits by thana officials, and visits by family planning workers.

Site 3 is the 1979-1980 abandoned reconstruction of a road cum embankment from the border of Pirgacha U.P. to Kaikuri U.P. The road is about seven miles long and crosses the entire Kaikuri Union.

According to the Kaikuri U.P. Chairman, the U.P. maintenance fund is very low so they do not do much maintenance on the road. He also said that the proposed CARE road or embankment would benefit the labor class by providing work.

Approximately 50% of the embankment is fully damaged at the starting point. This damaged portion was cut by the people for irrigation and drainage. There are eleven power pumps providing water for irrigation from the Gorail river. The first portion of the embankment was also broken by the Gorail river at some places, so some parts of this embankment are now river. Within 1.5 miles of the ending point, some earthwork was done earlier, but leveling

and dressing was not completed. Following the reconstruction of that portion of the embankment, because it was incomplete, land holders cut both sides of the bank in competition with one another, to increase their land. People are not interested in the reconstruction of the embankment because they believe that it will create an obstacle to irrigation, due to insufficient drainage, and will mean decreases in production and land loss for the land holders.

The embankment is not vital to transport and vehicle movement. Five villages cross this embankment, but another D.B. road parallel to the embankment is about 200 yards away. People also use eleven other roads to go to important places. There are six primary schools within the half distance from either side of this embankments. There is one deep tubewell, one hat and bazar and also one rice mill within the half mile distance from either side of this embankment.

Because this embankment is not so important to traffic, people have made 15 drainage cuts to disperse power pump irrigation water from the Gorail river and to pass rain-water to the river. The surface of this embankment is poor. According to local people, the D.B. road is used as an embankment and is also suitable for transport and foot traffic.

It may be mentioned here that this road has not been proposed for reconstruction for 1984.

THANA REPORT NO.14: SINGRA THANA

DISTRICT: Rajshahi
 DATES VISITED: October 6-14, 1983
 FIELD STAFF: Md. Afser Ali, SRO
 Md. Asmot Ali, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	204	Road	100
2	1981-1982	NTR0401	Rd/Emb	86
3	1983-1984	Proposed Sl. No.		0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1	2
Health Workers	2	2	2
Teachers	2	2	2
Businessmen	4	4	2
Farmers	10	11	5
	—	—	—
TOTAL	19	20	13

SELECTED THANA STATISTICS

SINGRA THANA

Total Land Area (in square miles)		204
Number of Households 1981		35,456
Number of Unions 1981		11
Population Density 1981 (per square mile)		1,098
1981-1982 production (in maunds) of		
	Aus	55,050
	Aman	722,660
	Boro	467,680
	Wheat	23,135
	Jute	2,250
	Sugar Cane	15,300
Number of Primary Schools 1982		123
Number of Family Welfare Clinics 1982		1
Percentage of Households Electrified 1982		1%
Miles of Road 1982		
	Pucca	16
	Semi-Pucca	3
	Kutcha	349
Number of Auto-Rickshaws 1982		-
Number of Cycle-Rickshaws 1982		13
Percentage of Soil Types 1982		
	Doash	15%
	Sandy	20%
	Etel	30%

SITE OBSERVATIONS -- SINGRA

SITE NO. 1: 1980-1981 reconstruction of the road from Dackmondab to Borobari Ghat under Lalore Union.

Estimated Positive Development Impact: Above Average Ranking (1 to 35): 15

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5.0 Wheat allocated (maunds): 7595

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	No
c) Primary schools:	5	c) High schools:	Yes
d) Rice mills:	6	d) Health clinic:	Yes
e) Other mills:	1	e) Fertilizer shop:	Yes
f) Access roads:	4	f) Electric lines:	Yes

Road Condition (as observed on October 9-10, 1983)

Suitability of road for cycle-rickshaw: Not passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	4	a) Under water: (passable by foot)	3
b) Concrete bridges:	4	b) Under water: (passable by boat)	1
c) Wooden bridges:	0	c) Cuts for drainage:	0
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	(<u>1</u>)	(<u>2</u>)	(<u>3</u>)	(<u>4</u>)
a) Height (top):	6.0 ft.	5.5 ft.	4.5 ft.	5.0 ft.
b) Width (top):	18.0 ft.	16.0 ft.	15.0 ft.	18.0 ft.
c) Width (bottom):	30.0 ft.	28.0 ft.	24.0 ft.	28.0 ft.
d) Surface rating:	P	P	P	P

SITE OBSERVATIONS -- SINGRA

SITE NO. 2: 1981-1982 reconstruction of the road from Sherkole Raninagar to Bhagnagorkandi.

Estimated Positive

Development Impact: Moderate

Ranking (1 to 35): 23

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 3.5 Wheat allocated (maunds): 4917

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	3	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	3	f) Electric lines:	Yes

Road Condition (as observed on October 7-8, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	0
b) Concrete bridges:	0	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	0
d) Bamboo bridges:	0	(passable by boat)	
e) Other bridges:	0	c) Cuts for drainage:	0

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	4.5 ft.	5.0 ft.	5.0 ft.	5.5 ft.
b) Width (top):	16.5 ft.	15.0 ft.	18.0 ft.	18.0 ft.
c) Width (bottom):	28.0 ft.	32.0 ft.	35.0 ft.	36.0 ft.
d) Surface rating:	P	P	P	P

SITE OBSERVATIONS -- SINGRA

SITE NO. 3: Proposed 1983-1984 reconstruction of the Ranir Zangal Road from Amzamtali to Durgapur.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 9.0 Wheat allocated (maunds): 3617

Number of:

Presence of:

a) Deep tubewells:	1	a) Union Council Office:	Yes
b) Hats:	4	b) Bazar:	Yes
c) Primary schools:	6	c) High schools:	Yes
d) Rice mills:	8	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	8	f) Electric lines:	Yes

Road Condition (as observed on October 7-8, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	1	a) Under water: (passable by foot)	4
b) Concrete bridges:	4	b) Under water: (passable by boat)	2
c) Wooden bridges:	0	c) Cuts for drainage:	6
d) Bamboo bridges:	0		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	4.0 ft.	4.0 ft.	3.5 ft.	3.0 ft.
b) Width (top):	21.0 ft.	17.0 ft.	16.0 ft.	15.0 ft.
c) Width (bottom):	42.0 ft.	30.0 ft.	28.0 ft.	27.0 ft.
d) Surface rating:	P	P	P	P

SINGRA THANA

Site 1 is the 1980-1981 reconstruction of a road from Dackmondab to Borobari Ghat under Lalore Union. It is about five miles long. Some portions of the road are in fair condition due to planting done by the Union Parishad. About 25% of the road is pliable by rickshaw in a day of normal weather. From the thana office to Site 1, it is either about three miles by rickshaw or bus or about five miles by boat (in the rainy season). A major portion of this road is not protected and has been badly damaged by rain and soil erosion. Without dressing, it is impossible to pass a transport through after rainy season.

A small river passes through the road at Dhakolore. People near the roadside here want a bridge over this river. This area was fully flood controlled by two embankments. This year, however, the Atrai River embankment broke and the area of Sutkigadea near Atrai P.S. became flooded. The water pressure thus created caused considerable damage to the road.

Most of the people near the roadside are farmers. They mention a need for three culverts, and brick soling throughout the road. People near the roadside are also very happy due to improvement of this road.

Site 2 is the 1981-1982 reconstruction of a road from Sherkole Raninagar to Bhagnagorkandi. It runs north to south for about 3-1/2 miles over Sherkole Union, and connects two embankments at the points of Sherkole Raninagar and Bhagnagorkandi. Due to these embankments, the area it covered was fully flood controlled. Then there was a sudden breakage of the embankment at Sutkigadia near Atrai P.S., which brought on a tremendous flood that hit upon the west side of this road and badly damaged it in some portions. Four different parts of the road have suffered from extreme breakage, which the local people have tried to protect with bamboo sticks. During the time of the visit, there was a difference of 3 feet in the water levels of east and west side of the road. This was the result of the absence of any bridge or culvert on this road.

The road condition at present is not good. The road plays a significant part in the development of this area and its people, who were interested in obtaining at least three culverts at the appropriate positions, so that flood control and road protection are maintained.

Site 3 is the proposed 1983-1984 reconstruction of Ranir Zangal Road from Amzamtali to Durgapur. It is nine miles long, and is mostly passable by rickshaw. This road was built during the administration of Rani-Bhobani. It starts from a point on the Bogra-Natore highway near Amzamtali and runs up to Durgapur. If the road were extended another three miles, it could meet with the Bogra-Dhaka highway and thus ensure better communication with Dhaka. The road crosses three unions, namely Ramanenda Khajara, Italy, and Sukash.

The difference in the water level on either of the sides of the road is one foot, and drainage is insufficient due to the lack of proper culverts and bridges, particularly in rainy season. Also, some portions of the road have been damaged to such a point that it has become impassable by foot, indicating a need for earthwork. The local villagers are interested in having brick soling.

THANA REPORT NO.15: ISHWARDI THANA

DISTRICT: Pabna

DATES VISITED: October 20-28, 1983

FIELD STAFF: Ms. Sayeda Hassina Begum, SRO
Mr. Md. Sohrab Hossain, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	10	Road	100
2	1981-1982	PBN0202	Rd/Emb	100
3	1983-1984	Proposed Sl. No.		0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	3	1	1
Health Workers	2	2	2
Teachers	2	2	1
Businessmen	4	4	2
Farmers	9	10	5
	—	—	—
TOTAL	20	19	11

SELECTED THANA STATISTICS

ISHWARDI THANA

Total Land Area (in square miles)		104
Number of Households 1981		31,961
Number of Unions 1981		8
Population Density 1981 (per square mile)		2,033
1981-1982 Production (in maunds) of		
	Aus	345,000
	Aman	139,100
	Boro	13,910
	Wheat	97,484
	Jute	9,065
	Sugar Cane	815,868
Number of Primary Schools 1982		70
Number of Family Welfare Clinics 1982		-
Percentage of Households Electrified 1982		33%
Miles of Road 1982		
	Pucca	20
	Semi-Pucca	15
	Kutchha	450
Number of Auto-Rickshaws 1982		621
Number of Cycle-Rickshaws 1982		25
Percentage of Soil Types 1982		
	Doash	25%
	Sandy	25%
	Etel	45%

SITE OBSERVATIONS -- ISHWARDI

SITE NO. 1: 1979-1980 reconstruction of the Dasuria-Dadapur Road under Dasuria, Salimpur, Shahapur, and Lakmikunda U.P.

Estimated Positive

Development Impact: Above Average Ranking (1 to 35): 18

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 8.6 Wheat allocated (maunds): 5795

Number of:

a) Deep tubewells: 4
 b) Hats: 5
 c) Primary schools: 5
 d) Rice mills: 6
 e) Other mills: 0
 f) Access roads: 12

Presence of:

a) Union Council Office: Yes
 b) Bazar: Yes
 c) High schools: Yes
 d) Health clinic: Yes
 e) Fertilizer shop: Yes
 f) Electric lines: Yes

Road Condition (as observed on October 20-21, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

a) Culverts: 10
 b) Concrete bridges: 2
 c) Wooden bridges: 0
 d) Bamboe bridges: 0
 e) Other bridges: 0

Unbridged gaps:

a) Under water: 1
 (passable by foot)
 b) Under water: 1
 (passable by boat)
 c) Cuts for drainage: 1

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	4.0 ft.	5.0 ft.	3.0 ft.	3.0 ft.
b) Width (top):	18.0 ft.	12.0 ft.	23.0 ft.	17.0 ft.
c) Width (bottom):	30.0 ft.	20.0 ft.	30.0 ft.	30.0 ft.
d) Surface rating:	G	G	G	G

SITE OBSERVATIONS -- ISHWARDI

SITE NO. 2: 1981-1982 reconstruction of the road from Dasuria -
Dadapur Road to Mirkamanri Koal.

Estimated Positive
Development Impact: Low

Ranking (1 to 35): 32

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.5 Wheat allocated (maunds): _____

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	1	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	1	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	No
f) Access roads:	7	f) Electric lines:	Yes

Road Condition (as observed on October 20-21, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	3	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	6
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	(<u>1</u>)	(<u>2</u>)	(<u>3</u>)	(<u>4</u>)
a) Height (top):	3.0 ft.	3.0 ft.	2.5 ft.	4.0 ft.
b) Width (top):	16.0 ft.	15.0 ft.	16.5 ft.	14.0 ft.
c) Width (bottom):	27.0 ft.	26.5 ft.	25.0 ft.	23.0 ft.
d) Surface rating:	E	G	G	G

SITE OBSERVATIONS -- ISHWARDI

SITE NO. 3: Proposed 1983-1984 reconstruction of a road from Mulabholi U.P. Rest House on Pabna-Rajshahi Road through Shaklipara village.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.5 Wheat allocated (maunds): _____

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	5	a) Union Council Office:	No
b) Hats:	0	b) Bazar:	No
c) Primary schools:	2	c) High schools:	No
d) Rice mills:	0	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	No
f) Access roads:	5	f) Electric lines:	Yes

Road Condition (as observed on October 24-25, 1983)

Suitability of road for cycle-rickshaw: Not passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	4	a) Under water: (passable by foot)	2
b) Concrete bridges:	0	b) Under water: (passable by boat)	2
c) Wooden bridges:	0	c) Cuts for drainage:	21
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	1.5 ft.	1.0 ft.	1.5 ft.	1.5 ft.
b) Width (top):	15.0 ft.	16.0 ft.	12.0 ft.	7.0 ft.
c) Width (bottom):	21.0 ft.	20.0 ft.	14.0 ft.	8.0 ft.
d) Surface rating:	G	G	G	G

ISHWARDI THANA

Site 1 is the 1979-1980 reconstruction of Dasuria-Dadpur Road. It begins at the main Dhaka Ishwardi Highway and continues for 8.6 miles across the unions of Dasuria, Salimpur, Sahapur and Laxmikunda. It joins another Food for Work road at the bank of Padma and is joined with the Pakshey Ishwardi road. Local people at that point, recalled that there was a plan to build a ferryghat, so that people and transport could be ferried across the Padma to the District of Kushtia.

The first three quarters of the road were in good condition. Nevertheless, at some places where the road had not been campered well, water had stagnated, and the movement of bullock cart made the surface uneven and very muddy. All transport have to go around them or risk being stuck. These type of conditions were most noticeable at places where the road went by homesteads and the road surface was either at the same or at a lower level than the houses. At those places, rainwater would flow on to the road rather than flow away from it. There were no rickshaw on this road although it was passable.

There were ten concrete culverts and two concrete bridges on this road. These were constructed with USAID funding in May 1983, and had noticeable impact in terms of accessibility and drainage. One obvious design error (in terms of drainage) was discovered towards the end of the road where a thirty foot section of road was cut away (with TNO's approval) to allow excess rainwater to cross over to the other side. Abt Associates recommends that this gap be assigned high priority by USAID for culvert construction.

The two bridges on this road may be especially noted. Both of those bridges were located within the first half of the road. The first one is a recently completed, USAID-funded, 40 foot span with a pillar in the middle. The approaches to the bridge were not complete at the time of the site visit. As a result only a four wheel drive vehicle could go over it and with great difficulty. The TNO and also some local people have said that they could not complete the approaches before the rainy season. They said it would require earth to be moved for a good distance, and high

expense. They did not contemplate working on it until the monsoon was over and the water level dropped significantly. In the meantime the bridge had to withstand the water pressure without the earth support on its wing walls.

The second bridge, which was 20 feet wide and box shaped, had better approach roads. Both those bridges were wider than the width of the road surface. This suggests that their design took into account the possibility of a road extension laterally, to accommodate the traffic. Several of the box culverts showed signs of premature erosion from only a single rainy season.

The last quarter of the road begins from a big embankment which circumvents this area. The beginning of this section is marked by the big gap described above. The rest of the road runs along the bank of the river Padma, and is sandy. Wind and tide in addition to rain have caused soil erosion and landslides, creating many ditches and gaps in this area. Rats have also damaged the road in several places. The road ends at a hat along the banks of the Padma River.

Site 2 is the 1981-1982 reconstruction of the road from the Dasuria Dadapur Road to Mirkamanri Koal. The road is 4 1/2 miles long, starting from the Site 1 road at a point about 1 1/2 miles from the beginning of that road. The entire road passes Salimpur Union.

The first part of the road is quite monotonous moving along some cropland and villages. The height of the road would vary from 2 to 3 feet, and much of the surface was good. Apart from a few small ditches this part of the road is easily passible by rickshaw and motor vehicles. A Family Welfare Clinic was recently constructed towards the end of this section of the road. A doctor would come from Pakshay every week to render family planning and health services there. Apart from that, there was a full time Family Welfare Assistant whose living quarter was built adjacent to the clinic.

The second portion of the road is curved almost like a loop ending into the Mirkamanri Koal (lake). Within a couple of hundred yards from the start of the second half the road, another road crosses, coming from the Pakshey Ishwardi main road only about 1 1/2 miles away. This road is well

constructed, brick soled and had a smooth and even surface. It is passable by both rickshaw and motor vehicles. There was a handicraft workshop near the intersection where people were seen making baskets and other bamboo products. There is a primary school further down the road.

The condition of the second portion of the road was nearly as good as the first part, and the last one quarter was particularly in bad shape. This part of the road goes by homesteads, as such, when the road was being constructed, soil was dug up from only one side of the road. As a result that side of the road was left very steep and deep. Moreover, as the soil here is sandy there were big landslides during rainy season, leaving the road with big trenches and gaps. This area is passable only by foot; occasionally a cyclist could be seen spending more time walking with the cycle than riding it.

Site 3 is the proposed 1983-84 reconstruction of a road from Muladhuli U.P. Rest House on Padma-Rajshahi Road through Shakhpara village. The road is 4.5 miles long. A major portion of the road lies almost at the field level; in places where it is higher, the road is less than three feet above field level. The surface condition of the road was good although the road has been cut in some places to facilitate water drainage after this year's heavy rains. This road is not used by any wheeled transport.

Reconstruction of this road is expected to improve communication with Dasuria and Muladhuli, which are important business centers. Furthermore, Shakhpara village has been selected to become a model village this year; therefore, the government will emphasize developmental activities here. Under this perspective, the proposed road may be expected to play an important role in the socioeconomic development of the area.

THANA REPORT NO.16: KHANSAMA THANA

DISTRICT: Dinajpur

DATES VISITED: October 6-14, 1983

FIELD STAFF: Md. Shamsul Alam Rhuiyan, SRO
Md. Mozibur Rahman, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	600	Road	100
2	1981-1982	DNJ0901	Rd/Emb	100
3	1983-1984	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	1	2
Health Workers	2	2	2
Teachers	2	2	2
Businessmen	5	3	2
Farmers	10	10	5
TOTAL	20	18	13

SITE OBSERVATIONS -- KHANSAMA

SITE NO. 1: 1979-1980 reconstruction of the Khansama - Dharmapur Road via Joyganj under Alockjhari U.P. No. 1

Estimated Positive Development Impact: Above Average Ranking (1 to 35): 12

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 7.0 [6] Wheat allocated (maunds): 4729

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	1	a) Union Council Office:	Yes
b) Hats:	2	b) Bazar:	Yes
c) Primary schools:	6	c) High schools:	Yes
d) Rice mills:	6	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	18	f) Electric lines:	Yes

Road Condition (as observed on October 8, 1983)

Suitability of road for cycle-rickshaw: Not passable

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	0	a) Under water: (passable by foot)	3
b) Concrete bridges:	4	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	5
d) Bamboo bridges:	0		
e) Other bridges:	0		

<u>Road Quarter</u>	(1)	(2)	(3)	(4)
a) Height (top):	5.0 ft.	6.0 ft.	5.5 ft.	5.0 ft.
b) Width (top):	13.0 ft.	15.0 ft.	14.0 ft.	15.0 ft.
c) Width (bottom):	19.0 ft.	22.0 ft.	20.0 ft.	21.0 ft.
d) Surface rating:	G	G	G	G

SITE OBSERVATIONS -- KHANSAMA

SITE NO. 2: 1981-1982 reconstruction of the Khansama - Bhushirbandar road from Tati Para to Kaimpur.

Estimated Positive Development Impact: High

Ranking (1 to 35): 10

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 5.5 Wheat allocated (maunds): 3460

Number of:

Presence of:

a) Deep tubewells:	0	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	6	c) High schools:	Yes
d) Rice mills:	7	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	15	f) Electric lines:	Yes

Road Condition (as observed on October 10-11, 1983)

Suitability of road for cycle-rickshaw: Passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	0	a) Under water:	0
b) Concrete bridges:	3	(passable by foot)	
c) Wooden bridges:	0	b) Under water:	0
d) Bamboo bridges:	0	(passable by boat)	
e) Other bridges:	2	c) Cuts for drainage:	0

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	4.0 ft.	5.0 ft.	5.5 ft.	5.0 ft.
b) Width (top):	14.0 ft.	15.0 ft.	14.0 ft.	13.0 ft.
c) Width (bottom):	19.0 ft.	22.0 ft.	21.0 ft.	20.0 ft.
d) Surface rating:	G	G	G	G

SITE OBSERVATIONS -- KHANSAMA

SITE NO. 3: Proposed 1983-1984 reconstruction of the road from Ramkolabat to Alokdihi via Tanguna and Pakerhat.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 9.5 Wheat allocated (maunds): 3120

Number of:

- a) Deep tubewells: 0
- b) Hats: 6
- c) Primary schools: 9
- d) Rice mills: 7
- e) Other mills: 0
- f) Access roads: 10

Presence of:

- a) Union Council Office: Yes
- b) Bazar: Yes
- c) High schools: Yes
- d) Health clinic: Yes
- e) Fertilizer shop: Yes
- f) Electric lines: Yes

Road Condition (as observed on October 10-11, 1983)

Suitability of road for cycle-rickshaw: Not passable

Bridged gaps:

- a) Culverts: 9
- b) Concrete bridges: 1
- c) Wooden bridges: 0
- d) Bamboo bridges: 0
- e) Other bridges: 0

Unbridged gaps:

- a) Under water: 0
 (passable by foot)
- b) Under water: 0
 (passable by boat)
- c) Cuts for drainage: 3

Road Quarter

	(1)	(2)	(3)	(4)
a) Height (top):	1.5 ft.	2.0 ft.	2.5 ft.	2.0 ft.
b) Width (top):	9.0 ft.	8.0 ft.	9.0 ft.	8.0 ft.
c) Width (bottom):	12.0 ft.	12.0 ft.	15.0 ft.	13.0 ft.
d) Surface rating:	F	G	G	F

KHANSHAMA THANA

Site 1 is the 1979-1980 reconstruction of the Khansama - Dharmapur Road via Joyganj under Alockjhari U.P. (No. 1). The road is about seven miles long, and has on it no means of transport except bullock carts. Even rickshaws are not available in the whole Upazilla.

The whole road is made of sandy soil which prevents it from being muddy in the rainy season, but it makes it more susceptible to erosion and landslides. The first four miles of the road runs along the bank of a river. Heavy rains had damaged the road in many places. The necessary number of bridges and culverts are not there, and, as a result, water drainage problems occur during heavy rain. Some drainage has been made possible by making tunnels under the road. Bicycles and bullock carts are facing problems as the height of the first portion of the road has decreased. In the middle portion of the road is a 15-year-old, 60-foot metal bridge. The road has become full of dust because of the movement of bullock carts and because sunshine has dried the soil.

The roadside river is not very deep and has a lot of water only in the rainy season. In dry weather, the level goes down, sometimes to only knee-deep water in the middle of the river. People cannot derive full benefit from the river for economic activities and transportation, but they get seasonal benefit, and fishermen catch fish there.

Population density seems to be lower here than the national average. People employ traditional methods of agriculture, and high-yielding seed varieties are not widely used. The literacy rate is low. People use open well water in place of tubewell water for drinking.

Absence of any kind of transportation other than bullock cart is noticeable in this thana, although there are a number of roads pliable by rickshaw and other similar means of transport.

There is no major business center or market on the road, except Khansama, and only one notable business, a jute business owned by the U.P. Chairman. There is a godown with capacity for 25 to 30 thousand maunds of jute, and a jute baling machine. The owner is helped by his sons and by a

number of permanent and temporary employees. Although his main business is located at Nilfamary, the major means of movement of his goods is by bullock cart. There were no institutions in the roadside except a few primary schools. People benefit from this road because they can reach Khansama and the Nilphamari road. The need and benefit would have been increased if some further work could be done on this road.

Site 2 is the 1981-1982 reconstruction of the Khansama-Bhushirbandar Road from Tati Para to Kaimpur. The road is 5.5 miles long and is relatively straight. It is built with sandy soil, which has both advantages and disadvantages. In the middle portion of the road is a steel bridge, which stands on steel poles and the surface of which is concrete. Although the bridge is strong, one of the wing walls at the beginning of the bridge has broken down. As a result, soil at the approach of the bridge has given way and the road has narrowed to a couple of feet, making it impossible for any four-wheeled transport to use the bridge.

Generally speaking, the road is in very good condition, though if more repairs were done, its usefulness would increase. At some places along the roadside, bananas have been cultivated, which has benefitted some people without causing damage to the road. The output of crops, especially rice from the roadside lands, is not high because the soil is so sandy, but vegetable and other Raki crops seem to grow very well here. Different varieties of dal, oilseeds, and vegetables like eggplant, cabbage, sweet peas, etc. are grown in abundance. The harvested crops are usually head carried to the Nilphamari road 10 miles away or the Rangpur-Dinajpur road 14 miles away, where from there they are shipped by trucks and buses to the bigger towns and business centers. Some people were cultivating vegetables. The backwardness of people's education was noticeable. There is a primary school near the road. Khansama is the only business center near the road. People do not use the road much, though it is needed for maintaining communications and a link with the thana. A portion of this road runs alongside the earlier stated river. It is not affected by the river, because it is a bit removed from the river. One hat sits on the roadside which existed before the road. Given the absence of rickshaws and other major transportation means throughout Khansama, as well as the lack of

commercial activity along the river, this road appears to be overdesigned -- a high-quality road in a low density, scarcely travelled area.

Site 3 is the proposed 1983-1984 reconstruction of the road from Ramkolabat to Alokdihi via Tangara and Pakerhat. The road is about 9.5 miles long, and begins about six miles from Khansama. Bullock cart is the only means of transport.

As expected, the condition of the control road is inferior to the others. The road is composed of compound, not sandy soil, and the height and width of the road is comparatively low. It is an important road, as it touches important hat-bazars, business centers, a health complex, and a Union Parishad office. The importance of Paker hat as a business center is more than that of the thana center. The condition of the culverts are poor. Although bullock cart move on the road, it is with difficulty, since the roadside is broken at some places. This road is important, but it should be noted that there is an alternative road. Some of the persons interviewed recommended the improvement of the alternative road. There is not much difference from the other two roads with respect to agriculture, trade, and education, though agriculture seems to be better in this area.

THANA REPORT NO.17: THAKURGAON THANA

DISTRICT: Dinajpur
 DATES VISITED: October 6-14, 1983
 FIELD STAFF: Ms. Sayeda Hassina Begum, SRO
 Md. A.K.M. Fazlul Hoque, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	555	Road	100
2	1981-1982	TKG0101	Rd/Emb	100
3	1983-1984	Proposed Sl. No. 1	Road	0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	1	3	2
Health Workers	2	1	0
Teachers	2	2	2
Businessmen	3	4	2
Farmers	10	9	6
	—	—	—
TOTAL	18	19	12

SITE OBSERVATIONS -- THAKURGAON

SITE NO. 1: 1979-1980 reconstruction of the road running from Shibganj to Gogor River under Jamalpur U.P.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 4

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 4.5 Wheat allocated (maunds): 3208

Number of:

Presence of:

a) Deep tubewells:	3	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	3	c) High schools:	Yes
d) Rice mills:	3	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	8	f) Electric lines:	Yes

Road Condition (as observed on October 8-9, 1983)

Suitability of road for cycle-rickshaw: One-half passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	4	a) Under water: (passable by foot)	0
b) Concrete bridges:	2	b) Under water: (passable by boat)	1
c) Wooden bridges:	0	c) Cuts for drainage:	2
d) Bamboo bridges:	0		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	3.0 ft.	4.0 ft.	3.0 ft.	4.0 ft.
b) Width (top):	17.0 ft.	17.0 ft.	17.0 ft.	22.0 ft.
c) Width (bottom):	26.0 ft.	24.0 ft.	26.0 ft.	26.0 ft.
d) Surface rating:	E	E	G	G

SITE OBSERVATIONS -- THAKURGAON

SITE NO. 2: 1981-1982 reconstruction of the road from Notun Hat Laximpur to Tangaon River at Matrigan.

Estimated Positive Development Impact: Low

Ranking (1 to 35): 30

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 11.9 Wheat allocated (maunds): 8634

Number of:

Presence of:

a) Deep tubewells:	3	a) Union Council Office:	Yes
b) Hats:	4	b) Bazar:	Yes
c) Primary schools:	9	c) High schools:	Yes
d) Rice mills:	6	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	10	f) Electric lines:	Yes

Road Condition (as observed on October 10-11, 1983)

Suitability of road for cycle-rickshaw: Passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	4	a) Under water: (passable by foot)	0
b) Concrete bridges:	5	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	15
d) Bamboo bridges:	1		
e) Other bridges:	0		

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):	4.5 ft.	4.0 ft.	3.0 ft.	4.0 ft.
b) Width (top):	16.0 ft.	16.0 ft.	15.0 ft.	16.0 ft.
c) Width (bottom):	30.0 ft.	32.0 ft.	32.0 ft.	32.0 ft.
d) Surface rating:	G	F	F	F

SITE OBSERVATIONS -- THAKURGAON

SITE NO. 3: Proposed 1983-1984 reconstruction of the road from Shibganj Biman Ghati to Molani via Tatepur and Bhouler Hat.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 11.8 Wheat allocated (maunds): Unknown

Number of:

Presence of:

a) Deep tubewells:	4	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	Yes
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	9	d) Health clinic:	Yes
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	7	f) Electric lines:	Yes

Road Condition (as observed on October 10-11, 1983)

Suitability of road for cycle-rickshaw: Passable

Bridged gaps:

Unbridged gaps:

a) Culverts:	3	a) Under water: (passable by foot)	0
b) Concrete bridges:	0	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	0
d) Bamboo bridges:	1		
e) Other bridges:	0		

<u>Road Quarter</u>	(<u>1</u>)	(<u>2</u>)	(<u>3</u>)	(<u>4</u>)
a) Height (top):	1.0 ft.	1.0 ft.	1.5 ft.	0.5 ft.
b) Width (top):	3.5 ft.	3.0 ft.	10.0 ft.	12.0 ft.
c) Width (bottom):	6.0 ft.	4.0 ft.	13.0 ft.	12.0 ft.
d) Surface rating:	F	P	F	F

THAKURGAON THANA

Site 1 is the 1979-1980 reconstruction of the road from Shibganj to Gogor River under Jamalpur U.P. It is 4.5 miles long, and crosses five villages. Overall, the road is in good condition. The surface is as smooth as a kutchra road can be particularly the first two miles, which was recently maintained using 35,000 taka from the Jamalpur U.P. budget. The drainage system is not sufficient; existing culverts need to be wider, and more culverts and bridges are needed. The starting point of the road is at the center of a jute and sugar cane purchasing center that also has a foodgrain godown. Local people come here by this road to do business, and farmers come here with their agricultural production.

This area is high land so in both dry and rainy season, the soil cannot reserve water for cultivation. Reconstruction and recent maintenance of the road has helped this condition, which has helped production.* Unfortunately, only the portion of the road that borders the U.P. Chairman's land has been maintained.

Towards the end point of the road, a canal about 100 feet wide cuts across the road. One needs to cross this canal on a bhela (banana plant raft) to continue on the road. About 150 feet downstream from that point a partially completed bridge stands isolated in the water. There were no signs of any road on either side of it. Local people said that the bridge was being built by the sugar cane industry when the area was being brought under sugar cane cultivation, and was not completed because the road connecting it could not be built. Abt Associates recommends that this gap be assigned high priority for bridge construction by USAID, since such a structure would link this road with a neighboring thana road.

*This area is also a good sugar-cane growing area and people use this road to transport their produce by bullock cart to the sugar cane purchasing center at the beginning of the road. People have said that during harvest time sugar mills would send tractors along this road to help the farmers convey their sugar cane to the purchasing center.

Site 2 is the 1981-1982 reconstruction of a road from Notun Hat Lanimpur to Tangaon River at Matrigaon. The road is 11.9 miles long. It runs through three unions and stops near a river. Much of the road is passable by rickshaw under normal conditions, though cuts in the road make continuous passage very difficult. In rainy weather, only pedestrian traffic is possible.

For a new road, the general condition is not so good. Top surface width is 16 feet, so after the portions of the road that have been cut, rickshaws or carts can pass. Within one year, nevertheless, the road is more damaged than before the reconstruction. There is evidence of insufficient drainage on most parts of the road. Because of the road, earth-wall houses along the road were broken by rain waters and mud slides from the road. It seems that the bottom width is not proportionate to the top width. This road needs construction work soon, such as construction of a new culvert; otherwise, in one year the earthwork program will become useless. If the work is designed carefully and if technical staff are conscious of the use of a culvert, the road will not have to return to this condition.

The road has impacts for cultivation. Farmers with large blocks of land get irrigation facilities, and agricultural extension staff help small land owners. The access roads on this half are those roads connected to the sugar mill bazar. Many carts on the road carry rice and sugar cane. Health professionals said the road is helpful for doctors and patients, but a school teacher said that it is not so effective for education.

Site 3 is the proposed 1983-1984 reconstruction of the road from Shibganj Biman Ghati to Molani via Fatepur and Bhouler Hat. It crosses two unions, Jamalpur and Roypur. No previous FFW has been done, and no repair or maintenance has recently been performed. The first 1.5 miles of the road has rice fields. In some places, the road is six inches high. Some of it is at ground level, and some is under ground level (under water). Carts can move on this road. A bazar and other important places are at the two end points of the road. The villagers near the mid-point suffer in rainy season because moving is difficult and there is no alternative road. There are no primary schools near the roadside. Agriculture workers and family planning people don't go there regularly, but that is not only because of the road.

This road crosses the Shibganj Bazar which is an important commercial center. There is no clinic near this road, only one charitable dispensary. There is no doctor; one compounder is on leave.

THANA REPORT NO.18: NANDIGRAM THANA

DISTRICT: Bogra
 DATES VISITED: October 6-14, 1983
 FIELD STAFF: Md. Abdur Rashid, SRO
 Md. Mahtabur Rahman, RO

FFW SITES VISITED:

<u>SITE NO.</u>	<u>YEAR</u>	<u>CARE NO.</u>	<u>TYPE</u>	<u>PERCENTAGE COMPLETED</u>
1	1979-1980	251	Road	100
2	1981-1982	BGR0402	Rd/Emb	100
3	1983-1984	Proposed Sl. No. 1		0

INTERVIEWS COMPLETED:

<u>RESPONDENT GROUP</u>	<u>SITE 1</u>	<u>SITE 2</u>	<u>SITE 3</u>
Union Officials	3	1	1
Health Workers	2	2	3
Teachers	2	2	2
Businessmen	4	4	2
Farmers	9	9	4
	—	—	—
TOTAL	20	18	12

SITE OBSERVATIONS --- NANDIGRAM

SITE NO. 1: 1979-1980 reconstruction of the Omarpur Tolora Road under Nandigram, Bhatra, Bhatgram, and Thaltamazgram U.Ps.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 1

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 12

Wheat allocated (maunds): 7819

Number of:

Presence of:

a) Deep tubewells: 7
 b) Hats: 4
 c) Primary schools: 5
 d) Rice mills: 3
 e) Other mills: 0
 f) Access roads: 20

a) Union Council Office: Yes
 b) Bazar: Yes
 c) High schools: Yes
 d) Health clinic: No
 e) Fertilizer shop: Yes
 f) Electric lines: Yes

Road Condition (as observed on October 7-8, 1983)

Suitability of road for cycle-rickshaw: 1/2 Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts: 13
 b) Concrete bridges: 0
 c) Wooden bridges: 0
 d) Bamboo bridges: 0
 e) Other bridges: 0

a) Under water: 0
 (passable by foot)
 b) Under water: 0
 (passable by boat)
 c) Cuts for drainage: 2
 d) Caused by erosion: 4

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top): 4' 4 1/2' 4' 3 1/2'
 b) Width (top): 19' 15' 17' 15'
 c) Width (bottom): 26' 22' 28' 24'
 d) Surface rating: F F F F

SITE OBSERVATIONS -- NANDIGRAM

SITE NO. 2: 1981-1982 reconstruction of the Pathantayapur - Simla Road.

Estimated Positive

Development Impact: High

Ranking (1 to 35): 8

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 11.3

Wheat allocated (maunds): 6148

Number of:

Presence of:

a) Deep tubewells: 6

a) Union Council Office: Yes

b) Hats: 3

b) Bazar: No

c) Primary schools: 3

c) High schools: Yes

d) Rice mills: 3

d) Health clinic: No

e) Other mills: 0

e) Fertilizer shop: Yes

f) Access roads: 9

f) Electric lines: No

Road Condition (as observed on October 9-10, 1983)

Suitability of road for cycle-rickshaw: Passable.

Bridged gaps:

Unbridged gaps:

a) Culverts: 8

a) Under water: 1
(passable by foot)

b) Concrete bridges: 4

b) Under water: 0
(passable by boat)

c) Wooden bridges: 0

c) Cuts for drainage: 5

d) Bamboo bridges: 0

d) Caused by erosion: 1

e) Other bridges: 0

Road Quarter

(1)

(2)

(3)

(4)

a) Height (top):

4'

4 1/2'

4'

3 1/2'

b) Width (top):

18'

19'

19'

18'

c) Width (bottom):

28'

29'

31'

25 1/2'

d) Surface rating:

F

F

F

F

SITE OBSERVATIONS -- NANDIGRAM

SITE NO. 3: Proposed 1983-1984 reconstruction of the road from Fokpal to Dhadari River at Dowalsara hat via Dashgram.

Road Environment (within 1/2 mile of either side of road)

Road length (miles): 8.05 Wheat allocated (maunds): 3868

<u>Number of:</u>		<u>Presence of:</u>	
a) Deep tubewells:	3	a) Union Council Office:	Yes
b) Hats:	3	b) Bazar:	No
c) Primary schools:	4	c) High schools:	Yes
d) Rice mills:	2	d) Health clinic:	No
e) Other mills:	0	e) Fertilizer shop:	Yes
f) Access roads:	10	f) Electric lines:	Yes

Road Condition (as observed on October 12-13, 1983)

Suitability of road for cycle-rickshaw: Not Passable.

<u>Bridged gaps:</u>		<u>Unbridged gaps:</u>	
a) Culverts:	6	a) Under water: (passable by foot)	0
b) Concrete bridges:	1	b) Under water: (passable by boat)	0
c) Wooden bridges:	0	c) Cuts for drainage:	6
d) Bamboo bridges:	0	d) Caused by erosion:	3
e) Other bridges:	0		

<u>Road Quarter</u>	<u>(1)</u>	<u>(2)</u>	<u>(3)</u>	<u>(4)</u>
a) Height (top):	2 1/2'	2'	2'	2'
b) Width (top):	12'	18'	12'	14'
c) Width (bottom):	17'	26'	19'	20 1/2'
d) Surface rating:	G	P	P	P

NANDIGRAM THANA

Nandigram Thana is situated at the southern side of the Bogra District 18 miles (by road) from the Bogra District headquarters. Thana headquarter is connected with Bogra by the Bogra - Natore (Rajshahi) Road.

Nandigram Thana is located with Kahalu at the north, Adamdighi at the west, Singra Thana of Rajshahi District at the southwest, and, at the east and southeast, Bogra Sadar and Seerpur P.S., respectively.

Two District Board roads, namely Katham-Kaliganj and Sultanganj - Adamdighi pass through this thana from east to west.

Thana Statistics

1. Total area	103 Sq. Miles
2. Total Population	111,906
a. Male	56,335
b. Female	55,571
3. Total Household	18,829
4. Total Land	65,920 Acres
5. Total Cultivable Land	60,066 Acres
6. Total Cultivated	49,660 Acres
7. Villages	212
8. Literacy Rate	16%
9. Deep Tubewells	126
10. Educational facilities	a) Primary 74, b) High 18, College 1
11. Pucca Road	8 miles
12. Kutcha Road	217 miles
13. Brick Soling	3 miles
14. Occupation	Agriculture - 90%, Business, 6%, Service, 4%

Site 1 is the 1979-1980 reconstruction of the Omarpur Tolora Road under Nandigram, Bhatra, Bhatgram and Thaltamazgram U.Ps.

The road is 12 miles long, and starts from the Dhaka-Natore road in Nandigram Union, and goes to Aghpur and Tolora, via Nomothat. At the very beginning, it crosses the Omarpur hat and passes towards the west and north-

west through the Omarpur village. After about three miles, it passes the Nomithat and then crosses the pucca bridge on the Katham-Kaliganj road. Then again it runs towards the north, and crosses into Bhatra Union. After about 2 miles, the road then enters Bhatgram Union, and then, after a long distance, enters into the Thaltamazgram Union, passing the Hatkorihat on the way to Tolora, to the north. From its starting to its end the road crosses at least 15 villages of the four Unions. The villages crossed are: Amarpur, Belgoria, Bhulgram, Nomit, Chowdighi, Ponail, Tagore, and Pakirta Para in Nandigram Union; Hatdoma and Gramdoma in Bhatra Union; and Hatkori, Palpara, Musalman Para, Gohail, and Aghapur in Taltamazgram Union.

From the beginning point of the road to just before the bridge, the road is in fair condition. The average measurement of this portion is 4', 17', and 24' height, top width, and bottom width respectively. Though it is fair, this part of the road was passable only by buffalo and bullock carts, because of small gaps created by soil erosion and landslides due to the heavy rainfall. Also, the surface of the road was mostly muddy and not smooth, with a number of long horizontal, deep gaps and ditches created by cart wheels. Even passage by foot was difficult. There are no bridges on this portion of the road excepting the pucca bridge at the crossing point of the Katham-Koliganj road.

The second segment from the length of this Nomithat to Aghapur (Tolora), is about 8 miles. The road here is in more or less good condition, though the surface of the road at the time of the site visit was poor in most places, and in at least six places the mud was 4 feet deep. Also here were a number of horizontal deep ditches that had occurred due to the riding of carts on the muddy road.

In some places, there are signs of some drainage congestion, as there was water in the east side of the road and none on the west side. At the northern side of the Hatkorihat the water was at road level.

Because of the conditions reported here, it appears that the first part of the road will need the following repairs:

- a. Levelling of the road surface;
- b. Earthwork along the first segment of the road, where gaps exist;
- c. Construction of at least three culverts for better drainage;
- d. Brick soling, which will help passersby to use the road and to carry goods comparatively easy; and

- e. Planting of trees in both sides of the road, to save the road from soil erosion and landslides.

On the second segment of the road, from Nomithat to Aghapur, these repairs are needed:

- a. Filling in the ditches on the road with soil;
- b. Construction of a number of culverts,
- c. Brick soling, to allow carts to pass easily without damaging the road
- d. Construction of at least 2 concrete or pucca bridges, one between Nomithat and Hatkorihat and the other within the northern side of Hatkorihat and Aghapur (Tolora); and
- e. Possible upgrading of drainages since there was some flood water on east side of the road, which may account for destruction of the corn crop.

As the present road is the only road among the four unions, it has had positive effects on the socio-economic condition of the people in the area. The road has improved the communication of the area, as it connects the 4 unions and the 15 villages with each other and it also connects Rajshahi with the Bogra District. It has produced a number of access roads that pass through the unions and make traveling short and comfortable for the people.

The road has also connected the three markets of Omarpurhat, Nomithat, and Katkorihat directly and at least three more hats through its access roads. Due to this interconnection, business activities have increased, as people can come long distances and carry goods to and from the markets with less toil and less cost. Businessmen can easily and regularly supply the essential goods according to the demand, from different markets. At the same time they can charge prices that are fair and make an attractive profit for themselves. Businessmen have also gotten the inspiration to set up various mills (such as a rice husking mill), and hope to do more if electricity is extended there.

Since reconstruction of the road, agricultural production has increased and cultivation has been inspired, as people can easily bring supplies and fertilizer from the nearest market. People also use the road to get to work and to carry the paddy, since the fields are located a far distance from their homes.

Site 2 is the 1981-1982 reconstruction of the Pathamtayapur-Simla road. This road starts from Pathan, on the northern side of Nandigram Thana, runs through the Tayapur towards the south, turns to the west and then south again after two miles, and then enters the Bhatra Union after another three miles having left Taltamazgram U.P. At the beginning of the Bhatra Union, the road goes east and then crosses the Pandithpukur village and hat, after which it turns south and enters Takore village in the southeast of the Bhatra Union. There it passes by a hat, three banks, two high schools, and two primary schools. Then the road goes south to join the Katham-Kaliganj road at Simla in Nandigram Union.

General Statistics

The first segment of this road, the six miles from Pathantayapur to Pandithpukur, was completely passable by rickshaw except for a number of gaps due to damage of culverts or due to soil erosion and landslides because of heavy rainfall. At this time, the road was very muddy, and only bullock and buffalo carts can run over the road. The following repairs are needed:

1. Earthwork to fill gaps;
2. Reconstruction of old culverts and construction of new culverts;
3. Dressing and soil leveling; and
4. Brick soling.

The second segment of the road, the 5 miles from Pandithpukur Simla, is full of clay and the road is knee-deep with mud. Bullock and buffalo cart wheels have created a number of deep, horizontal ditches on the culverts.

Repairs needed on this last segment of the road are:

1. Reconstruction of three broken culverts;
2. Construction of new culverts;
3. Filling horizontal gaps with concrete;
4. Earthwork; and
5. Expansion of the height of the road.

Throughout this segment there are signs of insufficient drainage, indicating a need for culverts. The worst places are on the southern side of the Pandithpukur, as this portion is comparatively low. After the clay house at Bhatra, the road now becomes very poor due to the recent unexpected flood caused by the rainfall of early October. Where the drainage system was poor,

flood waters have overflowed and flooded the paddy, and the road is about to be destroyed, by the pressure of flood water. So there is a need for some culverts to be constructed in a planned way.

The road has had several impacts upon the area and upon the lives of the people around it. The Pathantayabpur-Simla road has connected the three Unions and their villages, and has thus improved communication between them and has shortened travel. The road has also stimulated the making of a number of by-pass roads. The road also connects two hats, directly and Omarpurhat and Kaliganj hat indirectly, which has helped to increase business activities in these U.Ps. Kaliganj and Omarpur are famous hats of the Nandigram Thana, and now people of the Taltamazgram (west), Bhatra, and Nandigram (west) can easily bear goods to and from the markets as well as sell their goods to the local small hats in villages along the road.

Agricultural labor force has been able to search for seasonal work easily, which is indicated by the increasing employment rate. In addition both agricultural production and agricultural marketing have increased, as has fishing by the side of the road. The road also provides a barrier against floods.

Site 3 is the proposed 1983-1984 reconstruction of the road from Fokpal to the Bhadari River at Dowalsara hat via Dashgram.

This proposed site has two parts, one in Nandigram Union and the other in Boroil Union. The first road starts from the village of Fokpal under Nandigram Union near the house of AFEM and the tank of Mujibur Rahman and forms a loop back to the Bogra-Natore Road. The second begins at another point on the Bogra-Natore Road and ends at a bridge over Badai river near Doalsara hat of Buroil Union. It forms the Border of Sherpur and Nandigram Upazila.

The road crosses at least nine villages: Fokpar, Hazarkipara, Peing, Doundar, Maria, Talason, Dasgram, Dohar, and Redhoi.

The first segment of the road is near the Bogra-Natore highway and is about 2 miles long. In this part of the road the average measurements are 2', 15', and 22' height, top width, and bottom width, respectively. The height of most of the road is at field level and not passable by any vehicle. A number of gaps exist, and many parts of the road are muddy.

The second segment of this road starts near to the Bogra-Natore road and ends at the pucca bridge on the Badai river. The length is about 7 miles. The average measurement are 2', 13', 20'; height, width (top), width (bottom), respectively. The road is now in very poor condition. People pass on this road only on foot and it is not easy even to walk as a number of gaps exist and heavy mud. The road is mostly at field level. To repair the road the following could be done:

1. Earthwork all through the road to expand it up to 6', 20', and 32' height, width (top), width (bottom), respectively.
2. Construction of at least 15 culverts
3. Planting of trees for further protection from soil erosion.

This road connects the Nandigram Thana Headquarter, the Bogra Natore Road, and three markets with U.P. offices and other institutions within this area, and as such, its reconstruction is expected to bring some positive impact on the lives of the local people.