ANNEX 10-1

OVERALL DPWH-ARMM INSTITUTIONAL CAPACITY DEVELOPMENT PLAN

ANNEX 10-1. OVERALL DPWH-ARMM INSTITUTIONAL CAPACITY DEVELOPMENT PLAN

ASPECTS/ACTIVITIES	BASELINE, END-2009	EXPECTED RESULTS BY 2012	REQUIRED INPUTS
. **Road Database (Road Bridge and Information Application or RBIA)** Set up system to collect, upload, and access road and bridge inventory and condition data, and traffic volumes, with link to DPWH-National for data processing and storage using RBIA.	a. Weak database – especially road inventory and conditions and traffic counts. b. Database relies mainly on Road Diagram and Bridge Lists (RDBLs) which give incomplete/old/ inaccurate/ unverified data. c. Some data given on road condition but mainly based on old subjective ratings used by DPWH-National. d. Planning/Programming and Infotech Division, with its limited staff, has been unable to adequately check or validate data in the RDBL.	a. Road database operating efficiently at DPWH-ARMM (RO), with access to DPWH-National RBIA, generating info on inventory and conditions of ARMM national roads and bridges, traffic volumes and axle loads, road user costs, construction and maintenance costs, and socio-economic info Data will be used by RO - on systematic basis - in identifying needs for road network development (construction/ improvement) and asset preservation (preventive maintenance and rehabilitation) and priority projects, in preparing long/medium/ annual plans, programs, and budgets for roads, and in monitoring network performance. b. DEOs and RO capable of conducting road and bridge inventory and condition surveys to generate basic data, uploading the data to RBIA, accessing the processed data, and using these in road planning and management	a. Annual road and bridge inventory surveys to be conducted by DEOs, supervised by RO. b. Annual road and bridge visual condition surveys to be conducted by DEOs, supervised by RO. c. Periodic traffic surveys to be conducted by DEOs and RO as part of RTIA. d. RO/DEOs to encode and upload data. e. DPWH-National to conduct Locational Referencing System, centerline, GIS, roughness, deflection, and highway imaging surveys. f. Linkage with DPWH-National to process and store all data in RBIA. g. Orientation and training of DEO and RO staff on RBIA, including surveys, data collection, encoding, and accessing, and interpretation of results. h. Acquisition of computer hardware and software, communication facilities, and road and bridge measuring/surveying equipment.
Traffic Database (Road Traffic Information Application or RTIA) Set up system to collect, upload, and access traffic counts and axle load data, with link to DPWH-National for data processing and storage using RTIA.	a. Reliable traffic data needed for planning are not available. Regular traffic counts have not been made since DPWH-ARMM spun off from DPWH-National in the 1990s, except for JICA special surveys in 2003 and 2009.	a. Road traffic database operating at RO, with access to DPWH-National RTIA, providing info on traffic volumes and forecasts, and axle load data on national roads in ARMM. Data will be integrated into road database (RBIA) and will be usable by RO in identifying present and future road development and asset preservation needs, in project feasibility studies, and	a. Long-duration (monthly), medium-duration (quarterly, once or twice as year), short-duration once in 3 years) manual and automatic traffic counts, and axle load surveys to be conducted by DEOs and RO, supervised by DPWH-National. b. DEOs and RO to encode and upload data. c. Linkage with DPWH-National to process and store data in RTIA.

ASPECTS/ACTIVITIES	BASELINE, END-2009	EXPECTED RESULTS BY 2012	REQUIRED INPUTS
		in preparing road plans, programs, and budgets. b. DEOs and RO capable of conducting the long/medium/short-duration traffic counting and axle load surveys, uploading the data to RTIA, accessing the processed data, and using these in road bridge planning and management.	d. Acquisition of traffic counting equipment, weighbridges/axle load machines. e. Orientation and training of DEO and RO staff on RTIA, including surveys, data collection, encoding, and accessing, and evaluation of results.
3. Bridge Management System (BMS) Set up system to manage national bridges, monitor bridge condition, establish bridge work programs, and maintain national bridges, with link to DPWH-National for data processing and storage in BMS.	a. Insufficient and spotty data on bridge inventory and conditions. As-built plans and records on bridges are scarce. b. Limited skills and resources at DPWH-ARMM to conduct adequate and regular bridge surveys. c. With these, planning for bridge maintenance, rehabilitation, and reconstruction cannot be systematically done.	a. DPWH-ARMM capable of conducting regular bridge inventory and condition inspection surveys using BMS, uploading the data to BMS, accessing the processed data, and using these data in bridge planning and management. b. DPWH-ARMM capable of preparing cost-effective bridge maintenance and rehabilitation programs based on needs, using BMS.	a. Bridge inventory survey and annual bridge condition survey by DEO bridge inspectors, supervised by RO. These include info on bridge elements (span, pier, abutment), attributes (e.g., for span - deck, main members, secondary members, etc; for pier/abutment - main structure, foundation, scour protection, etc.), and condition (degree of deterioration). b. RO to encode and upload data. c. Linkage with DPWH-National to process and store data in BMS. d. Orientation and training of DEO and RO staff on BMS, including surveys, data collection, encoding, and accessing, and interpretation of results. e. Acquisition of bridge survey equipment.
4. Multi-Year Programming and Scheduling (MYPS) Set up system for evaluating and ranking major projects into a programming multi-year program using multi-criteria analysis under different budget levels.	a. Lack of focus in planning on core programs, particularly on multi-year strategic road projects with regional importance. b. Medium-term infra programs essentially consist of a compilation of projects that are not clearly related to each other and to an overall	a. DPWH-ARMM capable of preparing multi-year/medium-term programs for major road development projects of regional significance, prioritized using multi-criteria analysis (MCA), within the budget constraints. b. DPWH-ARMM to be provided assistance in program analyses by	a. Results of project feasibility studies. b. Results of PMS/HDM-4 runs. c. Basis road, traffic, and cost data from RBIA and RTIA. d. Medium-term budget levels under MTEF. e. Determination of multi-criteria and weights in consultation with stakeholders.

ASPECTS/ACTIVITIES	BASELINE, END-2009	EXPECTED RESULTS BY 2012	REQUIRED INPUTS
	development strategy and plan for ARMM.	DPWH-National with the aid of RBIA, RTIA, and PMS/HDM-4 tools.	Criteria would include (a) project preparedness - project status, detailed design, economic feasibility, environmental assessment, and social impact; (b) road network importance - road category and strategic network; and (c) economic and social development policy - access to basic services, development of undeveloped areas, support to law and order, agricultural modernization, traffic decongestion, and industrial and tourism development. e. Linkage with DPWH-National to process and store data in MYPS. f. Orientation and training of RO and DEO staff on MYPS, including data inputs and accessing, and interpretation of results.
5. Pavement Management System/ Highway Development and Manage-ment Version 4 (PMS/HDM-4) Set up system to select and prioritize asset preservation projects (preventive maintenance and rehabilitation) with highest NPV/C values, based on road roughness and condition, traffic volume, pavement strength, road user costs, and road improvement and maintenance costs, at different budget constraints, with link to DPWH-National for program analyses.	a. Insufficient system at DPWH-ARMM to monitor and preserve road pavements. b. Inadequate planning system that would produce long/medium-term and annual plans and programs for the national/regional road network effectively addressing the needs of asset preservation (preventive maintenance and rehabilitation) in conjunction with network development (construction and improvement) within resource constraints.	a. DPWH-ARMM capable of evaluating alternatives to find optimum long and medium-range strategies for planning and maintaining road pavements in a serviceable condition over a given period of time, under different budget scenarios, with the aid of PMS/HDM-4. b. DPWH-ARMM capable of preparing medium-term and annual programs for preventive maintenance and rehabilitation of national roads in ARMM, consisting of projects prioritized according to technical requirements and economic impact on a life-cycle basis, within given budget	a. From RBIA: road inventory, roughness/ condition data, traffic data, pavement data, road user costs, road improvement and maintenance costs, and project data. b. Budget levels for asset preservation. c. Linkage with DPWH-National to process and store data using PMS/HDM-4. d. Orientation and training of RO and DEO staff on PMS/HDM-4, data inputs and access, and interpretation of results.

ASPECTS/ACTIVITIES	BASELINE, END-2009	EXPECTED RESULTS BY 2012	REQUIRED INPUTS
		constraints, based on PMS/HDM-4, with assistance in programming runs by DPWH-National.	
6. Maintenance Planning and Programming Set up system for planning the mainte- nance of national roads thru work programs based on needs and efficient allocation of funds, with link to DPWH-National for data processing and storage using RBIA, PMS/HDM-4, BMS, and RMMS.	a. Limited maintenance funding – programmed Php 220 million is 35% of needs. b. Sub-optimal allocation and use of funds – not adequately based on needs assessment; use of old EMK and judgment in allocating lump sums to road sections. c. Insufficient database – old/ incomplete/inaccurate data; subjective condition ratings; unverified data. d. Inadequate inspection and work programs – no system and manual; most staff lack skills. e. No truck overloading controls – no weighbridges and load data	a. DPWH-ARMM, with DPWH-National, able to fund at least 70 percent of mainte-nance needs for national/regional roads by 2012 (and 100 percent by 2015). b. DPWH-ARMM capable of conducting systematic road maintenance inspections to effectively identify defects and develop countermeasures. c. DPWH-ARMM capable of preparing road maintenance work programs based on needs, using data on road inventory and conditions and traffic from road/ bridge inspections, RBIA, PMS/HDM-4, BMS, and RMMS, with assistance in programming analyses by DPWH-National. c. DPWH-ARMM will be able to maintain at least 70% of national roads in "good' condition by 2012 (and 100% by 2015) with an average IRI of 4.	a. From RBIA, PMS/HDM-4, BMS, and RMMS: road and bridge inventory, rough-ness/condition data, traffic data, pavement data, road user costs, road maintenance costs. b. Regular maintenance inspection surveys based on operating manual.. c. Acquisition of additional weighbridges/ axle load machines and strict enforcement of vehicle load limits. d. Budget levels for maintenance. e. Linkage with DPWH-National to process and store data using RBIA, PMS/HDM-4, BMS, and RMMS. f. Training of DEO and RO staff in maintenance inspection, planning and programming using modern techniques.
7. Road Network Planning System (DPWH Highway Planning Manual or HPM) Institute overall system for highway network planning at ARMM, using above planning tools/applications, with link to DPWH- National for data processing and access.	a. Limited exposure and capability of DPWH-ARMM (Planning/ Program-ming and Infotech Division) in under-taking systematic road planning at the network level. b. Lack of focus on core programs of ARMM with regional significance. Medium-projects not clearly related to each other and to regional	a. DPWH-ARMM capable of undertaking road planning system which is process-based and needs-oriented, using abovementioned planning tools where applicable, and with DPWH-National assistance in data processing. b. These include ability to undertake road strategic analyses, development of	a. Orientation and training of RO and DEO staff on HPM processes. b. Training on various planning applications used in HPM, e.g., RBIA, RTIA, PMS/HDM-4, BMS, MYPS.

ASPECTS/ACTIVITIES	BASELINE, END-2009	EXPECTED RESULTS BY 2012	REQUIRED INPUTS
	development strategy. Annual programs diffused to numerous local projects. b. Preoccupation with project programs of work, thus little attention to broader road network planning. c. Lack of systematic road network planning to produce long/ medium-term and annual plans to meet development and preservation needs within budget constraints.	highway network scenarios, development of long-term plans, formulation of multi-year/medium-term programs, and annual programs for road development and asset preservation, with the aid of the various planning systems and applications.	
8. Computerized Road Design Systems Set up system for improved IT-aided surveys and design of roads, including value engineering techniques, and quality assurance check, with access to DPWH-National Civil3D and STAAD software.	a. Limited staff and equipment – 10 personnel and 1 total station in Survey and Design Division vs hundreds of projects; limited soil investigations b. Uncertain quality of survey data and design – inadequate survey data affects the quality of design; thus, the integrity and performance of the structures is compromised	a. DPWH-ARMM capable of undertaking basic engineering surveys, by contract/ administration, on all proposed national road projects, with =/-5 to 10% accuracy.. b. DPWH-ARMM capable of preparing and appraising designs on major national road projects, to high quality, safety and performance standards, with value engineering, with minimum variation orders, using modern IT systems where feasible.	a. Outsourcing of some surveys and designs to private firms, to be supervised by DEO/ RO. b. Acquisition of surveying equipment, computer hardware and design software. c. Training of RO and DEO staff in IT-aided road surveys and designs, and value engineering. d. Access to DPWH-National design software.
9. Budgeting within Organizational Performance Indicator Framework (OPIF) and)Medium-Term Expenditure Framework (MTEF) Set up system to prepare annual DPWH-ARMM budgets using the logical framework or logframe (OPIF) and forward estimates (MTEF)	a. Lack of focus on core programs/ projects directed to ARMM mandate and with regional/national impact. Budgets diffused to numerous local projects. b. Disconnect between plans/ programs and budgets – plans/ programs not related to medium-term expenditure framework. Projects in medium-term programs not reflected	a. DPWH-ARMM capable of preparing medium-term infrastructure plans and programs for road construction and maintenance that match, and are translat-ed into, MTEF and annual budgets, in terms of spending levels, component projects, and time frames. Programs and budgets incorporate "forward estimates" of existing and approved programs up to completion,	a. Development and adoption of logframe with MFOs, PAPs and PIs for DPWH-ARMM. b. Skills in project identification, evaluation and ranking and programming using above planning tools. c. Forward estimates at alternative budget levels. d. Training of RO and DEO staff on budget preparation using above data.

ASPECTS/ACTIVITIES	BASELINE, END-2009	EXPECTED RESULTS BY 2012	REQUIRED INPUTS
	in annual budgets which have very few national/ regional projects.	plus new prioritized projects within available fiscal space. b. Budget will be based on OPIF (logframe) and focus on the MFOs, with priority to asset preservation of nat roads, followed by construction (rehab, improvement, and new works). Local projects substantially devolved to LGUs.	
10. Project Preparation: Feasibility Studies (FS) Develop skills in FS and appraisal systems and techniques for infrastructure projects.	a. Inadequate system to select, prepare - thru adequate pre-FS/FS - and prioritize road projects for inclusion in medium-term and annual programs, based on objective technical and economic criteria. tion (FS) and prioritization – objective technical and economic criteria. b. Most personnel lacking FS skills.	a. DPWH-ARMM capable of undertaking and appraising FS for new candidate national/regional road projects, especially those identified thru the planning systems mentioned, considering the conformance of projects to regional development plans, economic viability, social and environmental impact, and technical readiness of the projects. b. Favorable FS results will be pre-condition for inclusion and ranking in the road programs and budgets.	a. Identification of priority candidate projects for FS based on MYPS, PMS/ HDM-4, and MTPIP/MTRIP. b. Continuous training of RO and DEO staff on project FS and appraisal techniques, including technical/engineering, economic, social, environmental, financial aspects, and value engineering.

ANNEX 10-2

INVENTORY, ROCOND & CENTERLINE SURVEY EQUIPMENT AND COMPUTER REQUIREMENTS

ANNEX 10-2

INVENTORY, ROCOND & CENTERLINE SURVEY EQUIPMENT AND COMPUTER REQUIREMENTS

I. EQUIPMENT

	ITEM	DESCRIPTION/REFERENCE BRAND	UNIT	QTY	PRICE	AMOUNT	USER	PURPOSE
1	Service Vehicle	**Multi-cab**	Unit	9	250,000	2,250,000	Regional Office & District Offices	ALL (Inventory, ROCOND & Centerline)
2	Video Camcorder	**Sony Handycam HDR - XR100** 80GB Hard Drive Hi-Definition Camcorder	Unit	1	59,360	59,360	Regional Office	ALL (Inventory, ROCOND & Centerline)
3	Geographic Positioning System (GPS)	**High Accuracy GPS Survey System** Magellan ProMark3 (1 Base/1 Rover) 14 Parallel Channels L1 C/A code and carrier Integrated real-time WAAS/EGNOS Update rate: 1Hz, Protocol: NMEA0183 RTC SC-104 version 2.1 1.05 lbs with battery and 1lb antenna Memory: 1 GB SDRAM, 1GB NANO Flash Memory	Set	1	1,200,000	1,200,000	Regional Office	Centerline
4	Geographic Positioning System (GPS)	Handheld Device **SIRF Star III 20 channels, WAAS/EGNOS**	unit	1	27,000	27,000	Regional Office	ALL
5	Battery Charger	Multi Battery Charger (For AA and AAA sizes) 3 sets For AA Battery = Php 1,350 For AAA Battery, 3 pcs. pack of 6 = Php 2,700	Unit	1	14,050	14,050	Regional Office	ALL
6	All in One Printer	Printer, Copier, Scanner, and Fax, Black and Color	Unit	9	15,000	135,000	Regional & Distict	ALL
7	Notebook Computer with Original Software	**Sony Vaio Laptop**, Sangria Red (including Operating System, Microsoft Office and Antivirus) Core Two Quad, 500GB HDD, 667MHz frontside bus 4GB DDR2 memory for multi-tasking power, 2MB L2 cache and 1.83GHz processor speed Built-in A2DP Bluetooth technology; 10Base-T/100Base-TX Fast Ethernet LAN w/ RJ-45 connector; 56 Kbps V.92/V.90 high-speed modem	Unit	9	80,000	720,000	Regional & Distict Offices	ALL
8	Digital Camera	**Sony** DSC-W200 Cybershot	Pcs	9	40,000	360,000	Regional & Distict Offices	ALL

9	Portable External Hard Drive (Compact)	**Fujitsu**, 300GB, Model: RE25U300J	Pcs	9	8,400	75,600	Regional & Distict Offices	ALL
10	Distance Measuring Wheel	Model 400PM **Pro Marker** Combination measuring wheel and marking wand, ideal for use on rough terrain. Steel construction, single English counter, wheel brake to prevent the loss of an existing	Pcs	9	35,000	315,000	Regional & Distict Offices	Inventory and ROCOND
11	Electronic Distance Measuring Device	**Brantz Survey Master 3** (H120 x X170 x D50mm) (includes all sensors and cables) Twin Liquid Crystal Displays, 999.999 Maximum Total Distance, 9.999 Maximum Inter Distance Can be operated accurately at speeds of 100kph	unit	9	192,000	1,728,000	Regional & Distict Offices	ALL
12	Scanner A3 size capable	**HP Scanjet 8270** Document Flatbed Scanner L1975A including 3 sets of ink	Pc	1	50,000	50,000	Regional Office	ALL
13	Desktop Computer	Specification to be provided by MIS	unit	10	105,000	1,050,000	Regional & Distict Offices 2 - RO 1 each DEOs	ALL
14	Colored Printer A3 size	**HP Officejet Pro K8600 series CB015A**	unit	1	25,000	25,000	Regional Office	ALL
	Sub-Total				***Php***	**5,759,010**		

NOTE: Straight Edge and Wedge for usage in the conduct of ROCOND Survey to be fabricated by each DEOs

II. COMPUTER SOFTWARE

	ITEM	DESCRIPTION/REFERENCE BRAND	UNIT	QTY	PRICE	AMOUNT		
1	Mapping Software	Geographic Information System (GIS), ArcView Version 9.3	License	1	220,000	220,000	Regional Office	Centerline GIS Mapping
2	Anti-virus Software	Norton Utilities	License	1	4,800	4,800	Regional Office	Centerline GIS Mapping
3	Anti-virus Software	Kaspersky Anti-Virus 2009	License	1	2,280	2,280	Regional Office	Centerline GIS Mapping
4	Mapping Software	Manifold	License	1	60,000	60,000	Regional Office	Centerline GIS Mapping
5	Software	Adobe Photoshop 7.0 or higher version	License	1	7,000	7,000	Regional Office	Centerline GIS Mapping
	Sub-Total				***Php***	**294,080**		
	TOTAL AMOUNT				***Php***	***6,053,090***		

ANNEX 10-3

IT HARDWARE MINIMUM SPECIFICATIONS FOR SERVER AND WORKSTATION

ANNEX 10-3

IT HARDWARE MINIMUM SPECIFICATIONS FOR SERVER AND WORKSTATION

DPWH-ARMM

July 2009

SERVER

Server for Regional and District Offices

Processor:	Minimum one (1) processor, 2.33 GHz Intel Quad Core Xeon Processor with 1333 MHz Front Side Bus. Must be able to be expandable to two (2) processors minimum.
Chipset:	Intel 5000 or higher
Cache:	Integrated 12 MB Level 2 Cache (2 x 6 MB) minimum
Memory:	8 GB minimum expandable to 16 GB – (2 x 4 GB) DDR-2 667 MHz, ECC SDRAM minimum – 4 memory slots (2 remain empty for future expansion)
Drive Controller:	SATA controller minimum
RAID Controller:	SATA card, Raid 0, 1, 10
Disk Storage:	Minimum, Dual (2) - 160 GB (Total 320 GB) SATA hard drive, 7200 RPM.
Network Interface Cards:	Single 10/100/1000 Base T Gigabit (auto sensing) with RJ45 connector
PCI Interface:	Six PCI Full Height minimum, any type provided at least 1 of each type provided
IO Ports:	6 - USB 2.0, 2 – PS/2 and 1- Serial, video minimum
Video:	Embedded 32MB, supporting 1600 x 1200, 16.7 million colors
CD/DVD drive:	16x SATA DVD Read / Write – (-/+) R and RW Minimum
Chassis:	Tower Style with footings Must be capable of being rack mounted.
Monitor:	15” Color Monitor LCD Flat Screen, analog
Keyboard:	Standard Windows Keyboard
Mouse:	PS/2 – 2 Button with Scroll
Speakers:	Internal Speaker or Buzzer
Power Supply:	Single 200-240 Volt Power Supply
Operating System:	Windows 2008 Server, Standard Edition with 10 CAL, with media
Other:	All necessary cables and connections Network Cat5 Cable, RJ45 both ends, 5 meters minimum, factory made
Software:	Server Management and utilities, fault monitoring, management of drives, server recovery, asset management, remote - with media
Documentation:	Complete Documentation – electronic
Warranty:	3 years on site, parts and labor, 90 days on Software Media
Brand:	Must be an International Brand Name. (Require Notarized Certification from the Manufacturer that the brand being offered is an international brand and is being distributed worldwide)
Components:	All Components must be factory installed. The Supplier is not allowed

	to change or add any components to the equipment. (Require Notarized Certification from the Manufacturer that all components are factory-installed and new)

UPS:	
Voltage Regulation:	Provide surge protection for one (1) server
Backup Power:	Provide backup power for one (1) server for a minimum of twelve (12) minutes at half load
Rating and Specifications (minimum):	Minimum 1000VA/600W, Input 230V/ Output 230V USB Interface with Management Software Data line protection for RJ45 Overload Indicator Replace Battery Indicator Automatic Self Test Automatic Voltage Regulation (AVR) Surge Protection – 180 Joules Output – minimum 4 outlets battery Necessary Power Cables User Manual All necessary cables and connections to connect to Regional/District servers including monitor
Brand:	Must be an International Brand Name. (Require Notarized Certification from the Manufacturer that the brand being offered is an international brand and is being distributed worldwide)
Components:	All Components must be factory installed. The Supplier is not allowed to change or add any components to the equipment. (Require Notarized Certification from the Manufacturer that all components are factory-installed and new)

Workstation

Computer Workstation (Branded)

Processor:	Minimum 2.66 GHz Intel Core 2 Duo with 1333 MHz Front side Bus
Chipset:	Intel Q33 Express or higher
Memory:	Minimum 2 GB DDR2 SDRAM (2 x 1 GB), 800 MHz.
Disk Storage:	Minimum 160 GB SATA hard drive, (single drive) 7200 RPM
Color Monitor:	Minimum 17-inch LCD SVGA Flat Panel screen with 1280 x 1024 resolution, analog (same brand as workstation)
Graphics:	Integrated Intel Graphics Media Accelerator with support for VGA and SVGA
Sound:	Integrated Sound with external Speakers

Case:	Mini Tower. Minimum four (4) expansion slots, and two (2) internal bays and three (3) external bays, at least one of each type PCI Full Height PCIe x1 Full Height PCIe x16 Full Height
IO Ports:	6 USB 2.0 (2 front, 4 rear), serial, parallel, VGA out, audio in, audio out
Network Interface:	Integrated 10/100/1000 Base T Fast Ethernet (auto sensing) with RJ45 connector
Optical Drive:	DVD-ROM 16x minimum
Keyboard:	Standard Windows Keyboard (same brand as workstation)
Mouse:	2 Button Mouse with scroll (same brand as workstation) – with Mouse Pad
Documentation and Recovery:	User Manual Recovery / Resource Media
Operating System:	Licensed Windows Vista Business, downgraded to Windows XP Professional, with media – NTFS File System. Operating System must be activated with Microsoft prior to delivery.
Office Software:	Microsoft Office 2007 (Licensed) (OEM version preferred) With: Word 2007, Excel 2007, PowerPoint 2007, Outlook 2007 Must be activated by supplier
Other:	All necessary cables and connections
Media:	Windows Recovery with Utilities and Drivers to be provided on CD or DVD (burned copy will be accepted)
Warranty:	3 years on site (including speakers), parts and labor, 90 days on Software Media
Brand:	Must be an International Brand Name. (Require Notarized Certification from the Manufacturer that the brand being offered is an international brand and is being distributed worldwide)
Components:	All Components must be factory installed. The Supplier is not allowed to change or add any components to the equipment. (Require Notarized Certification from the Manufacturer that all components are factory-installed and new)
Optional:	
Floppy Drive:	1.44 3.5” Floppy Drive; 3rd party external (via USB) acceptable

UPS:	
Voltage Regulation:	Provide surge protection
Backup Power:	Provide backup power for one (1) workstation for a minimum of twelve (12) minutes at half load
Ratings and Specifications (minimum):	Minimum 1000VA/500W, Input 230V/ Output 230V USB Interface with Management Software Data Line protection for RJ45 Overload Indicator Replace Battery Indicator Automatic Self Test Automatic Voltage Regulation (AVR) Surge Protection 180 Joules

	Output – minimum 4 outlets battery Necessary Power Cables User Manual
Warranty (UPS)	2 year warranty, parts and labor, 1 year warranty on Battery
Brand:	Must be an International Brand Name. (Require Notarized Certification from the Manufacturer that the brand being offered is an international brand and is being distributed worldwide)
Components:	All Components must be factory installed. The Supplier is not allowed to change or add any components to the equipment. (Require Notarized Certification from the Manufacturer that all components are factory-installed and new)

Source: DPWH-National MIS, 24 August 2009

ANNEX 10-3 (continued)

ESTIMATES OF PROPOSED COMMUNICATIONS NETWORK, SERVER, AND WORKSTATIONS FOR DPWH-ARMM, 24 August 2009

REGION/DISTRICT	Number of Nodes (Cabling)	PABX / Telephones	Data	WAN	Cabling	Generator Set	Network Room	UPS	Air Conditioning Units	Electrical	Services (Labor)	Total Estimated Cost ($)	Total Estimated Cost (Peso at 1$ = Php50)
Region ARMM													
Regional Office	100	8,530.00	6,995.00	5,400.00	9,695.00	15,495.00	3,007.00	3,635.00	2,301.00	3,283.00	15,341.00	$ 73,682.00	Php 3,684,100.00

Regional Office Leased Line (1024 kbps) - options	**Monthly Fee (Php)**
ARMM to DPWH Region XI Office	28,000.00
ARMM to Central Office (Direct)	110,000.00

District Office Leased Line (512 kbps)	**Monthly Fee (Php)**
DEO to ARMM Regional Office	24,000.00

Notes:

Cost for the establishment of communications network for the District Offices is the same as that of the Regional Office

200 nodes is the standard number of nodes for a Regional Office. It was assumed that there will not be that many users in ARMM; thus, the number of nodes estimated is 100 (standard for District Offices)

Contact Person:

Engr. Cyrus V. Canto
Section Chief, Network Administration Section, MIS, DPWH-National
304-3162

ANNEX 10-4

DPWH-NATIONAL TECHNICAL ASSISTANCE FOR DPWH-ARMM TRAINING ON TRAFFIC DATA PROCESSING AND COLLECTION

ANNEX 10-4

DPWH-NATIONAL TECHNICAL ASISTANCE FOR DPWH-ARMM
TRAINING ON TRAFFIC DATA PROCESSING AND COLLECTION
Estimated Training Cost

A. Training

1. Meals

a Duration - 5 days

b. Number of participants - 22 + (4 Lecturers and 2 Facilitators)

- Snacks (morning) - 26 x P 60.0 x 5	=	5,200.00
- Lunch - 26 x P 150.0 x 5	=	19,500.00
- Snacks (afternoon) - 26 x P 60.0 x 5	=	7,800.00
		32,500.00

c. Meals for the Lecturers and Facilitators

- Breakfast - 6 x P 120.0 x 6	=	4,320.00
- Dinner - 6 x P 175.0 x 7	=	7,350.00
		11,670.00
Sub-Total, PhP =		**44,170.00**

2. Training Materials

- Training Kit - 22 x P500 .0	=	11,000.00
- Bag - 26 x P 450.0	=	9,900.00
- Clipboard - 22 x P50.0	=	1,100.00
- T-shirts - 30 x P500.0	=	15,000.00
Sub-total, PhP =		**37,000.00**

3. Training Venue and Accommodation (Hotel)

- Functional Room - 5 x P5,000	=	25,000.00
- Accommodation for Participants - 8 rms x P1,500 x 5	=	60,000.00
- Accommodation for Lecturers - 4 rms x P1,500 x 5	=	30,000.00
Sub-total, PhP =		**115,000.00**
4. Reproduction of Training Hand-outs (Lump-sum) Sub-Total, PhP =		**20,000.00**

5. Transportation

- Air Fare (Lecturers, Mla to Davao, b/f) - 4 x P11,000.0	=	44,000.00
- Taxi (Airport to Hotel, b/f) - 1 x P500 x 2	=	1,000.00
- Vehicle Hire for Fieldwork (Van) - 1-day x 5,000 x 2	=	10,000.00
Sub-total, PhP =		**55,000.00**
6. Honoraria (6 x P2,500 x 5) Sub-Total, PhP =		**75,000.00**
7. ContIngencies Sub-Total, PhP =		**23,117.00**
Total (A), PhP =		**369,287.00**
say		**370,000.00**

B. Equipment

- Lap top Computer 7 x P75,000.0	=	525,000.00
- Counter - 7 x P5,000.0	=	35,000.00
- Calculator - 22 x P700.0	=	15,400.00
Total (B), PhP =		575,400.00
say		**576,000.00**
Grand-Total, PhP =		**946,000.00**

ANNEX 10-5

TERMS OF REFERENCE
FOR
CONSULTANCY SERVICES TO UNDERTAKE THE IMPLEMENTATION OF THE ROAD AND BRIDGE INFORMATION APPLICATIONS AND ASSOCIATED ROAD DATA COLLECTION PROCESS IN DPWH

(FOR ILLUSTRATIVE PURPOSES ONLY)

TABLE OF CONTENTS

7 OUTPUTS

7.1 PROJECT REPORTS
7.2 BASELINE REPORTS
7.3 MANUALS
7.4 USER SATISFACTION PROGRAM
7.5 BASELINE SYSTEM SPECIFICATION
7.6 FINAL ACCEPTANCE TEST PLAN
7.7 BASELINE PROJECT PLAN
7.8 KNOWLEDGE TRANSFER PROGRAM
7.9 SYSTEM DOCUMENTATION AND TRAINING
7.10 SYSTEM INSTALLATION PLAN AND MATERIALS
7.11 TEST RESULTS & STATISTICS
7.12 COMPLETE SYSTEM
7.13 PROJECT FINAL REPORT
7.14 TOP MANAGEMENT PRESENTATION
7.15 SYSTEM ENHANCEMENT LOG
7.16 SYSTEM MAINTENANCE LOG
7.17 KEY PERFORMANCE INDICATORS (KPIS)

8 REQUIREMENTS AND CONTENT OF TECHNICAL PROPOSAL

8.1 CONSULTANT'S AGREEMENT WITH PROJECT OBJECTIVES
8.2 QUALIFICATIONS OF PROPOSED KEY STAFF
8.3 COMMENTARY ON TERMS OF REFERENCE
8.4 PROPOSED TECHNICAL SOLUTION
8.5 PROPOSED PROJECT PLAN
8.6 PROPOSED PROJECT MANAGEMENT ARRANGEMENTS
8.7 PROPOSED QUALITY ASSURANCE PROGRAM
8.8 PROPOSED METHODOLOGY
8.9 PROPOSED USER SATISFACTION MANAGEMENT PROGRAM
8.10 PROPOSED CHANGE MANAGEMENT STRATEGY
8.11 PROPOSED CONFIGURATION MANAGEMENT STRATEGY
8.12 PROPOSED KNOWLEDGE TRANSFER PROGRAM
8.13 PROPOSED MAINTENANCE AND SUPPORT PROGRAM
8.14 OPTIONS

ANNEXES

ANNEX A - DPWH ORGANIZATION CHARTS
ANNEX B - ROAD AND BRIDGE INFORMATION QUALITY AND DATA REQUIREMENTS
ANNEX C - ROAD INVENTORY DATA
ANNEX D - VISUAL ROAD CONDITION RATING SYSTEM
ANNEX E - DATA COLLECTED BY BIIPS C02B – ROAD INFRASTRUCTURE SURVEYS
ANNEX F - LOCATIONAL REFERENCING SYSTEM (LRS)
ANNEX G - SOFTWARE APPLICATION FUNCTIONAL REQUIREMENTS
ANNEX H - COMPUTING ENVIRONMENT IN DPWH

FOLLOWING ARE EXTRACTS FROM THE TOR

3 SCOPE OF WORK

OVERVIEW

This project will:

- Establish mechanisms for the coordination of the collection, management and provision of road and bridge information throughout DPWH to improve efficiency and minimize the duplication of activities.

- Establish and implement new standards and procedures for the collection and management of road inventory and road condition information.

- Establish and implement new standards and procedures for the collection and management of bridge inventory and bridge condition information.

- Provide and implement software for Road and Bridge Information Applications to load, organize and distribute road and bridge information.

The scope of the data to be collected and organized will include comprehensive information about all of the roads and bridges that are the responsibility of DPWH throughout the entire national road network of the Philippines.

The extent of the computer applications to be implemented includes providing access to road and bridge information in DPWH Central office, all Regional offices, and on computer systems or on paper in all District offices.

New data collection procedures will be institutionalized and implemented with appropriate quality management procedures to ensure the accuracy and efficiency of future data collection within DPWH.

The new Road and Bridge Information Applications will become the definitive source of information about roads and bridges for DPWH. They will supersede many existing forms of paper and computer based information.

The Services involve the following activities, which are described in following sections:

- General Requirements (TOR 807185881)
- Establishment of Data Coordination Group (TOR 0)
- Design of the Road Information Process (TOR 0)
- Design of the Bridge Information Process (TOR 0)
- Provision of Road Information and Bridge Information Applications (TOR 0)

- Implementation of the Road Information and Bridge Information Processes (TOR 0)

GENERAL REQUIREMENTS

The Services shall include all of the Mandatory Work Processes described in TOR section 6.

All activities shall be achieved in consultation with DPWH.

The Consultant shall incorporate the following policies and procedures recommendations already identified in RIMSS Phase I as a minimum.

- Data Collection Processes shall be integrated for all parts of DPWH at accuracies and collection time intervals in accordance with the actual needs identified.

- All data collected shall be referenced to the common standard Locational Referencing System (LRS). More information about the LRS is given in Annex F.

- As far as possible, data collection shall be defined in terms of standard performance specifications for the data to be collected and shall not be specific to particular data collection equipment or software.

- Attention shall be given to the long-term sustainability of the data collection methods utilized.

The Consultant shall work closely with DPWH to ensure that all new procedures and policies are practical and sustainable.

The requirements for data will be driven by the Network Planning and Multi-Year Programming BIIP, the Pavement Management BIIP, the Routine Maintenance BIIP and the Bridge Management BIIP, as described in 2.11. Data will generally be collected in accordance with Information Quality Level 3 (IQL-3), as described in Annex B, unless a reason is identified for collecting more detailed data.

In consultation with DPWH, the Consultant shall identify Key Performance Indicators (KPIs) which are to be used to monitor the effectiveness and efficiency of the new processes. The Consultant shall establish procedures for measuring the KPIs, and shall measure them to establish the initial benchmark and verify the appropriateness of the procedures.

ESTABLISHMENT OF DATA COLLECTION COORDINATION GROUP

The Consultant shall work with DPWH to establish a permanent central data collection coordination group. This group will be drawn from different parts of DPWH, including the Bureau of Maintenance and the Planning Service, and will have the tasks of:

Recommending responsibilities for road and bridge data collection and quality assurance.
Deciding what road and bridge data needs to be collected and approving data collection schedules.
Ensuring efficient and cost-effective road and bridge data collection.
Monitoring progress to ensure that road and bridge data collection targets are met.
Monitoring the quality assurance program and carrying out audits as required to ensure that data quality is maintained.
Loading data into the data recording application modules and information modules.
Reviewing and publishing the results of road and bridge data collection against the key performance indicators (KPIs).
Specifying procurement requirements for road and bridge specialized data surveys.
Researching the current situation vis-à-vis road and bridge data collection techniques and equipment

The Consultant shall develop job descriptions for the staff who will be working in this central data collection coordination group to facilitate approval by the Department of Budget and Management.

DESIGN OF THE ROAD INFORMATION PROCESS

Road data collection

The Services shall establish processes and procedures that enable DPWH to effectively manage road data collection for the network. The Consultant shall establish an integrated, coordinated and consistent Road Data Collection Process, without duplication of road data collection effort. An integrated process will replace previous localized data collection by different parts of DPWH.

Road data collection is required for all of the national roads which are the responsibility of DPWH, as described in TOR 2.5, including all paved and unpaved roads.

The Consultant shall design policies and procedures for the collection of two types of road data:

- Road inventory – information describing the road assets that DPWH is responsible for managing.

- Road condition – information describing the current state of each of the assets defined in the road inventory.

Road inventory only changes as a result of:

- Construction of a new road asset
- Acquisition of a new road asset from another party outside DPWH
- The intentional demolition or destruction of an existing road asset by DPWH
- Transfer of an existing road asset to another party outside DPWH
- Upgrading or improvement of road assets

Road condition is continually changing, and data describing road condition must be updated at sufficient intervals to support decision making processes.

The Consultant shall develop detailed workflow diagrams for the road data collection function. These models must illustrate activities with information on process performers, cycle times, inputs, outputs, and constraints.

Road Inventory

The initial road inventory information that will be collected by parallel project BIIPs C02b, Road Infrastructure Surveys, is described in Annex C and Annex E. This inventory data is generally in accordance with Information Quality Level 3 (IQL-3) as explained in Annex B. The Consultant will load this inventory data into the Road Inventory Recording module of the Road Information System.

The Consultant shall design procedures for updating the road inventory and specify the formats in which the data will be loaded into the Road Inventory Recording module. It is anticipated that changes in the road inventory will be identified through management procedures for major road improvement projects, or notified by DPWH engineers in the District offices for minor inventory changes. A limited quality audit will be carried out each year to verify that a sample of the inventory data that has been updated recently is correct.

Where significant lengths of road need new inventory data collected, for instance after reconstruction of a road or when existing roads are transferred to DPWH responsibility, it is anticipated that inventory surveys will be carried out by contract, and data will be loaded into the system at Central office.

Visually observed road data

It is likely that the revised data collection procedures prepared by the Consultant will assume that DPWH Regional offices will be responsible for updating and maintaining visual condition data, i.e. the data that is collected by visual observation without the use of specialized survey equipment.

The visual road condition rating system to be implemented by the Consultant will is described in Annex D.

The current convention is to do a visual road condition survey before and after the rainy season and it is anticipated that this will be maintained in the future. This survey is for network monitoring and planning purposes.

The Routine Maintenance BIIP may identify additional requirements for routine road condition inspections. Coordination is likely to be required to prevent duplication of data collection and ensure that any data collected is made available in the Road Information Application.

It is anticipated that visually observed road data will be entered into the road data recording modules of the Road Information Application at the appropriate Regional office. Effects on the workload of staff currently involved in data collection function, and of staff who will have new duties, shall be analyzed to determine the impact of the revised procedures.

Specialized road data surveys

Specialized surveys consist of surveys using specialized equipment, such as roughness meters or falling weight deflectometers (FWDs). Based on the needs of DPWH, the Consultant shall recommend the long term extent and frequency of specialized road data surveys. These recommendations shall take account of factors such as traffic volume (*e.g.* annually surveys on highly trafficked roads, bi-annual surveys on intermediately trafficked roads *etc*)

Two levels of specialized surveys will be needed:

(i) network-level surveys which are intended to have full coverage of the road network with sampling rates that vary according to the type of survey and possibly by the road category (by traffic volume etc), frequencies that range from 1 to 6 years depending on the rate of change of the attributes measured; and

(ii) project-level surveys which are intended to cover selected road segments at more detailed sampling rates purposes such as feasibility studies, engineering design, quality control, or technical audit.

Specialized road survey data will be entered into the Road Information Application through the Road Condition Recording module at Central level.

The Consultant shall design and implement policies and procedures to program and manage all specialized road surveys for DPWH. Specialized data collection must be driven by clearly identified requirements for road data users. Specifically, data

should *not* be collected at predetermined intervals without regular confirmation that data is of an accuracy and quality appropriate to the end users of the data.

All specialized road surveys shall be coordinated through Central DPWH. The Consultant shall recommend whether there are any situations where specialized data surveys should be delegated to the Regional offices. However, great care must be taken not to create additional administrative or production units without a corresponding reallocation of existing responsibilities where refinement and improvements can be achieved.

The main types of specialized data that may be collected each year are listed in Annex B.

The Consultant shall develop contract specifications for specialized surveys for use by DPWH. The contract specification shall be approved by DPWH's Legal Service. Specialized survey specifications shall be defined in performance terms, rather than being specific to any particular commercial make of data collection equipment. The specifications for the specialized surveys shall define the type of data, accuracy and quality requirements, and should utilize international standards, such as ASTM, where relevant.

The Consultant shall establish electronic file standards for specialized surveys. An ASCII, non-proprietary text file format is preferred. Electronic file standards should not be specific to one software or data collection equipment vendor.

Quality assurance procedures

The Consultant shall prepare quality assurance procedures for data collection. Careful attention must be paid to achieving cost effective quality assurance, without unnecessary cross-checking. Rather than special extra checks of all data in great detail, checking shall be based on a random sample of data collected, and wherever possible shall use existing comparative data, such as the most recent video survey. Survey contracts shall incorporate a requirement for the contractor to provide a quality management plan and operate approved quality assurance procedures.

Road network definiton

The Consultant shall refine existing procedures for updating and managing the definition of the road network as part of the implementation of the Road Network Definition module of the Road Information Application. Where new centerline surveys are required as a result of construction work, or as a result of roads being transferred to DPWH responsibility, it is anticipated that the surveys will be carried out by contract.

When changes to the road network occur, there is likely to be a requirement for roughness, highway imaging, and inventory surveys on the same parts of the road network that require new centerline surveys.

Nodes have already been defined at all major road junctions, administrative boundaries and other important locations on the road network, but there are no physical markers for these nodes. The feasibility of installing such markers should be investigated. If this is feasible, physical markers for nodes shall be designed, and an implementation plan for their installation shall be prepared. This project does not include the installation of these markers.

Availability of road data to road information users

The Road Information Application shall be designed to make road data directly available to road data users at Central and Regional offices of DPWH through the computer network connecting all Regional offices to Central office.

A simplified stand-alone read-only module with printing capabilities shall be designed to allow the data relevant to a particular District to be viewed and printed. This simplified version of the road information module must be designed so that it can be both installed and used with minimal training and computer knowledge. Consideration should be given to using web-browser type technologies. Most District offices will not be connected to the DPWH computer network within the duration of the Services, so data will need to be transferred to the Districts on CD or on other removable media.

Some Districts may not have suitable computer systems available, and for these Districts it must be possible to provide all relevant road information in printed and plotted forms on paper.

Transition

The Consultant shall develop the necessary procedures and policies for the transformation from existing data collection procedures to the new data collection procedures. The existing data collection procedures to be addressed include both computer based data storage and data stored on paper/drawings/etc., including the Road Diagram and Bridge List line diagrams of each road.

The Consultant shall deal effectively with change management as it relates to stakeholders during process implementation.

DESIGN OF THE BRIDGE INFORMATION PROCESS

Bridge data collection

The Services will include interaction with the design and implementation of the Bridge Management Process, which will be carried out as part of the Pavement Management/Bridge Management BIIP (under ADB 6th Road Improvement Project).

The design of the Bridge Management Process as part of the BIIP will identify bridge data needs in terms of timing and quality.

The Consultant shall define the Bridge Data Collection Process and establish appropriate responsibilities for bridge data collection.

Bridge data will include both an inventory of what bridge assets exist and appropriate surveys of the condition of each bridge asset.

The Consultant shall develop detailed workflow diagrams for the bridge data collection function. These models must illustrate activities with information on process performers, cycle times, inputs, outputs, and constraints.

Bridge data survey methods

The Consultant, taking note of recommendations from the Bridge Management BIIP, shall determine appropriate bridge data collection methods and procedures.

The Consultant, subject to agreement with DPWH, shall determine whether all or part of this bridge data collection should be carried out by contract. Where contract data collection is required, the Consultant shall develop contract specifications for bridge data collection. These contract specifications must be approved by DPWH's Legal Service.

The Consultant shall establish electronic file standards for bridge surveys. An ASCII, non-proprietary text file format is preferred. Electronic file standards must be defined and agreed with DPWH. Electronic file standards should not be specific to one software or data collection equipment vendor.

Quality assurance procedures

The Consultant shall prepare quality assurance procedures for bridge data collection. Careful attention must be paid to achieving cost effective quality assurance.

Availability of bridge data to bridge information users

The Bridge Information Application shall be designed to make bridge data directly available to bridge data users at Central and Regional offices of DPWH through the computer network connecting all Regional offices to Central office.

A simplified stand-alone read-only module with printing capabilities shall be designed to allow the data relevant to that particular District to be viewed and printed. This simplified version of the bridge information module must be designed so that it can be both installed and used with minimal training and computer knowledge. Consideration should be given to using web-browser type technologies. Most District offices will not be connected to the DPWH computer network within the duration of the Services, so data will need to be transferred to the Districts on CD or on other removable media.

Some Districts may not have suitable computer systems available, and for these Districts it must be possible to provide all relevant bridge information in printed and plotted forms on paper.

Transition

The Consultant shall develop the necessary procedures and policies for the transformation from existing data collection procedures to the new data collection procedures. The existing data collection procedures to be addressed include both computer based data storage and data stored on paper/drawings/etc.

PROVISION OF ROAD INFORMATION AND BRIDGE INFORMATION APPLICATIONS

The Consultant shall provide application software which fulfils the requirements of the Road Network Definition, Road Information, Road Inventory Recording, and Road Condition Recording, Bridge Information, Bridge Inventory Recording and Bridge Condition Recording modules, in accordance with the functional requirements defined in Anne G.

Requirements, architectures and standards

The applications provided shall fulfill the requirements given in Annex G. Their structure and cosing shall be sufficiently flexible to accommodate changes as a result of any redesign of the processes outlined in TOR 2.9.

The applications shall conform to all architectures and standards defined by DPWH. Annex H contains information on the computer infrastructure, environment and standards to be used in deploying the applications. The applications will be fully customized to operate in the DPWH computing environment, which is described in Annex H.

The software provided might be a single software package or it may be a combination of software packages that fulfill the requirements of all of the modules specified. It is assumed that off-the-shelf application software will be used, but that this is likely to require customization to suit the functional requirements.

The software applications shall be implemented in the new DPWH computing environment described in Annex H, which will include a comprehensive communications infrastructure across all DPWH offices in the future. Any application implemented in District offices will need to be able operate in stand-alone mode until the computer network is extended to the Districts in the future.

Database

In particular, it should be noted that SYBASE is the database management system being used by DPWH. PowerBuilder and/or Visual Basic are the preferred tools for application development. Applications are to be implemented in a 3-tier client-server environment.

GIS

A GIS environment will be available to all applications, and it is anticipated that GIS will be embedded into these applications. See Annex H for further information.

Installation locations and licensing

Full Version: The full version of the set of Road Information and Bridge Information Applications shall be licensed and installed in DPWH Central Office (Planning Service, Bureau of Maintenance, plus selected Project Management Offices) and the sixteen (16) DPWH Regional Offices. A total of seventy-five (75) installations should be assumed.

Simplified Version: The simplified, read-only, stand-alone versions should be licensed and installed in approximately one hundred and sixty (160) District Offices. Additional copies may also need to be installed in other offices upon request from DPWH.

Licenses shall be provided (in the name of DPWH) for all proprietary software associated with the Road Information and Bridges Information Applications software on the terms that are most appropriate for DPWH operations, e.g. one or more enterprise license(s), or 75 licenses for the full version and 160 licenses for the simplified version.

Reviews and acceptance testing

Standards and guidelines for each review stage will be made available to the Consultant upon the commencement of the Services.

All applications implemented for DPWH shall undergo Acceptance Testing. Acceptance tests shall be drawn up by the Consultant in conjunction with DPWH

as part of the Test Plan Review. The application will only be considered complete upon formal acceptance by DPWH of the implemented application.

A software testing strategy shall be agreed with DPWH in advance and applied for testing any software application in a pre-production environment, and for subsequent full integration into the production DPWH environment.

Warranty and post-warranty services

The Consultant shall indicate in his financial proposal details of any Warranty Period and an annual cost for Post-Warranty Services. This will be included in the cost evaluation of proposals. However, DPWH is under no obligation to purchase any Post-Warranty Services beyond the Warranty Period.

IMPLEMENTATION OF THE ROAD INFORMATION AND BRIDGE INFORMATION PROCESSES

The Consultant shall implement the necessary procedures and policies for the transformation from existing data collection procedures to the new data collection procedures, in accordance with the Baseline Project Plan.

The implementation of the Road Information and Bridge Information Processes shall include:

- Assisting with the establishment of the central data coordination group
- Assistance with the planning and supervision of road and bridge data collection
- Training of staff in Central and Regional offices in planning road surveys
- Training of staff in Central office in supervising road surveys
- Training of staff in Regional offices to execute visual road surveys
- Training of staff in Central office in the procurement of road surveys
- Training of staff in all aspects of the procedures developed for bridge surveys
- Training of staff in quality management
- An awareness program for all DPWH staff
- Installation of the Road Information and Bridge Information Applications
- Training of staff to support of the Road Information and Bridge Information Applications
- Training of staff at Central and Regional offices in the use of the Road Information and Bridge Information Applications

Implementation shall be carried out in accordance with the Baseline Project Plan, and the requirements of TOR Section Section 6.

Training for DPWH staff involved in collection, quality assurance and management of the data shall include an explanation of the new road and bridge data collection processes. The training program shall include the methods and responsibilities for

collecting the different data and the quality assurance verification of the data and shall be appropriate for the DPWH staff involved. Training shall be provided at Central and Regional level as described in TOR 5.7.

The Consultant shall advise on the setting of performance targets for the key performance indicators (KPIs) described in TOR 0, against which the success of the process changes shall be measured. The RIMSS Integration Team will incorporate the KPIs and targets into the DPWH Executive Information System to enable the DPWH Executive Committee to monitor the new process.

4 BENCHMARK PROJECT SCHEDULE

Project Tasks	Year 1 Quarters 1	2	3	4	Year 2 Quarters 1	2	3	4	Year 3 Quarters 1	2	3	4
Phase I												
Define/Refine Overall Baseline Requirements*	—											
Final Baseline Review & Test Plan Review												
Phase II												
ROAD INFORMATION												
Implement Road Data Collection Processes and Provide, Customize and Implement Road Information Application		—	—	—	—	—	—					
Central Office				▲								
Regional Offices					▲							
District Offices							▲					
Support, monitoring and process refinement				—	—	—	—	—	—	—	—	—
BRIDGE INFORMATION												
Provide Customize and Implement Bridge Information Application		—	—	—	—	—	—					
Central Office				▲								
Regional Offices					▲							
District Offices							▲					
Support, monitoring and process refinement				—	—	—	—	—	—	—	—	—
Project Completion												

* Requirements Review will take place during the definition/refinement of overall Baseline Requirements

Milestone ▲ Acceptance Test Timing depends extent of work required

Parallel Project C02b – Road Infrastructure Surveys	Year 1 Quarters 1	2	3	4	Year 2 Quarters 1	2	3	4	Year 3 Quarters 1	2	3	4
Data collection	—	—	—	—	—	—	—	—	—	—	—	—
Deliver Road Inventory and first year specialized road data		—	—	—								
Deliver second/third year specialized road data						—	—	—		—	—	—

Parallel Project C02c – Bridge Data Collection	Year 1 Quarters 1	2	3	4	Year 2 Quarters 1	2	3	4	Year 3 Quarters 1	2	3	4
Bridge Data collection					—	—	—	—	—	—	—	—
Deliver Bridge inventory and condition data						—	—					
Deliver Bridge condition data updates								—	—	—	—	→

Parallel Project (ADB 6th Road Improvement Project)	Year 1 Quarters 1	2	3	4	Year 2 Quarters 1	2	3	4	Year 3 Quarters 1	2	3	4

7 OUTPUTS

7.1 PROJECT REPORTS

7.1.1 The Consultant shall submit an Inception Report one (1) month after mobilization. This shall include a review of all documents provided and shall include any comments and areas for immediate concern. The Inception Report shall include details of all documents to be submitted to DPWH during the project, proposed requirements and timing of comments from DPWH, and dates for submission of final documents. In particular, this report shall include:

Mobilization information
Review of the Road Data Collection Principles report and any comments and areas for immediate concern
Review of the sections of the Planning Methodology document related to data collection and any comments and areas for immediate concern
Review of requirements to implement Bridge Information Application
Consultation and agreement mechanisms with DPWH
Coordination with other projects

7.1.2 The Consultant shall submit a *Monthly Status Report* on the 5th of each month summarizing the achievements in the previous month. This must include at a minimum the following:

- Detailed description of work accomplished during reporting period
- Cumulative deviation from schedule
- Corrective actions to be taken
- Other issues and outstanding problems
- Important meetings held
- Reports and documents issued
- MS Project plan and schedule

7.2 BASELINE REPORTS

7.2.1 The documentation of the agreed Baseline is critical to Phase II, the customization and implementation phase of the project. Phase II cannot start until the Baseline documents have been agreed

7.2.2 The critical Baseline documents are:

- The Baseline System Specification, which is a refinement of the requirements identified in this TOR
- The Final Acceptance Test Plan, which defines the criteria and method which will be used to decide whether the Baseline System Specification has been fulfilled
- The Baseline Project Plan, which is a refinement of the Proposed Project Plan

7.2.3 More details of these documents are given below. These are an integrated set of documents defining the Baseline of the project, and can only be accepted as a complete set of documents. Other documents are included as part of these three main documents, as detailed below.

7.3 MANUALS

Road Network Definition Manual

7.3.1 The Consultant shall prepare a Road Network Definition Manual. This manual shall clearly set out the procedures to be followed and the responsibilities of the different people involved, including all computer application modules in the data capture process

Road Data Collection, Quality Assurance and Management Manual

7.3.2 The Consultant shall produce a Road Data Collection, Quality Assurance and Management Manual. This process manual shall describe the policies, procedures and work steps, including the use of all computer applications in the data collection process. The Road Data Collection, Quality Assurance and Management Manual shall provide a definitive document and working guide for all DPWH staff involved in road data collection and computerization.

7.3.3 The content of Road Data Collection, Quality Assurance and Management Manual shall be coordinated with the requirements of other processes. In particular, the linkage with the Planning, Pavement Management and Routine Maintenance processes should be clearly explained. Data should only be collected to fulfill specific needs identified in other processes and at appropriate time intervals.

Bridge Data Collection, Quality Assurance and Management Manual

7.3.4 The Consultant shall produce a Bridge Data Collection, Quality Assurance and Management Manual. This process manual shall describe the policies, procedures and work steps, including the use of all computer applications in the data collection process. The Bridge Data Collection, Quality Assurance and

Management Manual shall provide a definitive document and working guide for all DPWH staff involved in bridge data collection and computerization.

7.3.5 The content of Bridge Data Collection, Quality Assurance and Management Manual shall be coordinated with the requirements of other processes. In particular, the linkage with the Bridge Management process should be clearly explained. Data should only be collected to fulfill specific needs identified in other processes and at appropriate time intervals.

Software user information included in process manuals

7.3.6 Rather than preparing separate software application user guides, suitable information should be included in the appropriate process manual.

Training Manuals

7.3.7 The Consultant shall provide training material to every student and instructor's training materials for all DPWH instructors as required to fulfil the requirements in TOR 5.7.

7.3.8 In addition to the requirements of TOR 6.7, the Consultant shall provide 5 copies of the student's and instructor's training material developed as part of the Services for the new processes and associated software to DPWH. The Consultant shall also provide in an electronic format as a Microsoft Word document (latest version).

7.4 USER SATISFACTION PROGRAM

7.4.1 As part of the Baseline Review, the Consultant shall provide a report and slide presentation to the DPWH management describing the consultant project manager's proposal for user satisfaction management.

7.5 BASELINE SYSTEM SPECIFICATION

7.5.1 The Baseline System Specification is a key document for this project, as it replaces the definition of the system requirements given in this TOR and is the basis for all further work after the Baseline has been agreed. Phase II, customization and implementation, cannot start until the Baseline System Specification has been agreed.

The Consultant shall provide a Baseline System Specification that demonstrates how the software applications proposed will fulfil the software application functional requirements described in Annex G, or fully documents any changes and refinements to these requirements agreed during Phase I of this project.

7.5.2 The Baseline System Specification shall include explanations of the process changes to be implemented in detail. This shall include work activity diagrams and detailed data models as applicable. It shall also include recommendations on organization and staffing to manage and maintain the new process.

7.6 FINAL ACCEPTANCE TEST PLAN

7.6.1 This is defined in TOR 5.5. The full details of the Final Acceptance Test Plan must be agreed and fully documented before the Baseline review can be completed and the Baseline has been defined. The Final Acceptance Test Plan must identify of the Systems to be tested, detail specific tests and processes to be performed, and the respective testing schedules

7.7 BASELINE PROJECT PLAN

7.7.1 The Consultant shall provide a Baseline Project Plan that includes the following:

(a) definition of project implementation tasks, and identification of all major Installation, Acceptance and Service deliverables and milestones (Form 1.E);

(b) a detailed, fully integrated Baseline Project Schedule covering system development, training, installation, acceptance, and warranty period support. This includes a graphical representation of task durations and interdependencies (e.g., a GANTT or PERT chart);

(c) a staffing plan showing the organization of project implementation and operational support teams, including identification of specific staff; their roles and responsibilities in the project; and the timing, and duration of their involvement in the project.

(d) a detailed Training and Communications Program, as described in TOR 0;

(f) the progress and impact indicators to be used for project evaluation;

amended procedures, if any, for document and specification review and approval, and for change order management; and

identification of any external dependencies.

7.7.2 In addition, the Baseline Project Plan should address:

- Strategy for the replacement of existing data collection processes
- Approach to change management
- Approach to the execution of specialized road data collection
- Approach to the implementation of each software application module

- Key Performance Indicators and targets for the revised process, plus proposed monitoring procedures.

7.7.3 The Baseline Project Plan will take into account comments on the Inception report received from DPWH.

7.8 KNOWLEDGE TRANSFER PROGRAM

7.8.1 As part of the Baseline Project Plan, the Consultant shall produce a *Training and Communication Program*. This shall include the activities described in TOR 7.7, and give details of how the training and communication plan shall be implemented. This should include:

- The purpose of each activity
- The content of all training and communication activities
- The audience for each training or communication activity
- The minimum qualifications for participants for each training course
- The timing of each training or communication activity
- Details of the integration of this training plan with all other internal DPWH training and training by other DPWH projects.

7.9 SYSTEM DOCUMENTATION AND TRAINING

7.9.1 The Consultant shall provide system documentation in accordance with the requirements of TOR 6.8 and training in accordance with the requirements of TOR 5.7.

7.10 SYSTEM INSTALLATION PLAN AND MATERIALS

7.10.1 The Consultant shall provide a System Installation Plan detailing the timing and sequence of system installations. This plan will be coordinated with the requirements of TOR 5.1, TOR 5.5 and TOR 6.8.

7.11 TEST RESULTS & STATISTICS

7.11.1 The Consultant shall provide an organized, well-documented collection of the test protocols, scripts, data requirements, and test results (both expected, and actual) for all provided applications in accordance with the Acceptance Test Plan described in TOR 5.5.

7.12 COMPLETE SYSTEM

7.12.1 The Consultant shall provide the configuration management database, license agreements (if applicable), installation media in a quantity appropriate with the number of installation sites, the test protocols, and all the computer scripts for administration, backup, recovery, and security of each provided application.

7.13 PROJECT FINAL REPORT

7.13.1 The Consultant shall submit a Final Report summarizing work accomplished, all contract events, and other pertinent information due by the end of the contract.

7.14 TOP MANAGEMENT PRESENTATION

7.14.1 The Consultant shall provide a slide presentation which summarizes the project completion report, lessons learned, future directions for the target system, and user feedback.

7.15 SYSTEM ENHANCEMENT LOG

7.15.1 The Consultant shall provide a list of requested and pending system enhancements, including indication of benefits, costs, and complexity of changes.

7.16 SYSTEM MAINTENANCE LOG

7.16.1 The Consultant shall provide a list of maintenance requests implemented on the target system that indicates the nature of each change made to the system, the reason for it, the administrative data (who, how, when, where), and the tests made to the system to verify correctness.

7.17 KEY PERFORMANCE INDICATORS (KPIS)

7.17.1 The Consultant will regularly monitor and report the Key Performance Indicators described in paragraph 0.

Table 7.1 SUMMARY OF OUTPUTS	
Output	**Section/Paragraph**
PROJECT REPORTS	
Inception Report	TOR 0
Monthly Status Report	TOR 0
Project Final Report	TOR 0
BASELINE REPORTS	
User Satisfaction Program	TOR 0
Baseline System Specification	TOR 0
Final Acceptance Test Plan	TOR 0
Baseline Project Plan	TOR 0
MANUALS	
Road Network Definition Manual	TOR 0
Road Data Collection, Quality Assurance and Management Manual	TOR 0
Bridge Data Collection, Quality Assurance and Management Manual	TOR 0
Training Manuals	TOR 0
KNOWLEDGE TRANSFER	
Training and Communication Program	TOR 0
Top Management Presentation	TOR 0
SYSTEM	
System Documentation	TOR 0
System Installation Plan	TOR 0
Complete System	TOR 0
System Enhancement Log	TOR 0
System Maintenance Log	TOR 0
ACCEPTANCE TESTS	
Test Results & Statistics	TOR 0
PERFORMANCE	
Key Performance Indicators	TOR 0

ANNEX 13-1

PROJECT SCOPING

SUMMARY OF SCOPING

Type of Project		Overall Rating	Project No.		
			ARMM	Region X	Region XII
1-1	• Improvement of existing gravel road to paved road • No ROW acquisition • Outside protected area	B (Some Impact Expected)	SK-8, Mp-3, L1p-1, L_2-4, L_2p-3, SK_{p-2}, SK_{p-3}, SK_{p-4}, SKn-4 (9 projects)	RP-1, RP-2, RS-1, RS-2, RS-5, RS-6, RS-7, RS-8 (8 projects)	RP-2, RP-3, RP-7, RP-8, RP-10, RP-11, RP-13, RS-1, RS-2, RS-3, RS-5, RS-6, RSn-1 (13 projects)
1-2	• Improvement of existing gravel road to paved road • No ROW acquisition • Inside protected area	B (Some Impact Expected)	MP-2, Mn-1, L_{1-5} (3 projects)	-	-
2-1	• Rehabilitation of existing paved road • No ROW acquisition • Outside protected area	D (No Impact Expected)	L1-1, MC-1, L_{2-1}, SK-9, SK-1, SK-7, M-3, Mp-1, MC-3, MC4~MC8, SK11 (14 projects)	PI-1 (1), (2), (3), PI-2, PI-3, PI-4, PI-5, PI-6, PI-7, PI-8 (10 projects)	PI-1, PI-2, PI-3, PI-4, PI-5 (5 projects)
2-2	• Rehabilitation of existing paved road • No ROW acquisition • Inside protected area	B (Some Impact Expected)	L2-2(1), M-4 (2 projects)	-	-
3-1	• Elimination of missing link or new road construction • Outside protected area	A (Serious Impact Expected)	SKn-2, SKn-5, L2p-2, L2n-1, SKn-6, SKp-5 (6 projects)	RS-3 (1 project)	RP-1, RS-4, RS-7, RS-8, RS-11 (5 projects)
3-2	• Elimination of missing link or new road construction • Inside protected area	A (Serious Impact Expected)	L1-4, L2p-1 (2 projects)	-	RP-5, RP-6, RP-10 (3 projects)

PROJECT SCOPING

Type 1-1		**Scoping Matrix for Improvement of Existing Gravel Road to Paved Road With NO Right-of-Way Acquisition Needed Case I – Road alignment does not pass protected area**		
	Item		**Rating**	**Reason**
Social Environment: *Impacts on Gender" and "Children's Rights may be related to all social environment criteria	1	Involuntary Resettlement	D	As long as there is no additional Right-of-Way (R-O-W) needed. Otherwise, rating may become B
	2	Local Economy such as Employment & Livelihood, etc.	C	If there are commercial areas fronting the road to be improved, these may experience temporary decrease in income due to limited access
	3	Land Use and Utilization of Local Resources	B	Alteration of land use from primary agricultural into commercial. Local resources to be tapped include concrete aggregates
	4	Social institutions such as Social Infrastructure and Local decision-making institutions	D	No additional R-O-W necessary
	5	Existing Social Infrastructures and Services	C	If there are social infrastructures along the road to be improved, access to said facilities shall be limited during construction period
	6	The Poor, Indigenous, and Ethnic People	D	No additional R-O-W necessary
	7	Misdistribution of Benefit and Damage	D	No significant damage is expected
	8	Cultural heritage	D	No additional R-O-W necessary
	9	Local Conflicts of Interest	D	No additional R-O-W necessary
	10	Water Usage or Water Rights and Communal Rights	D	Project will not require extensive water usage
	11	Health and Sanitation	D	Not expected
	12	Hazards (risk) Infectious Diseases such as HIV/AIDS	B	From migrant workers
Natural Environment	13	Topography and Geographical Features	D	Project will utilize existing Right-of-Way
	14	Soil Erosion	C	Only at areas with extensive cuts
	15	Groundwater	D	Project will not entail usage of groundwater
	16	Hydrological Situation	C	For road sections that will traverse rivers/creeks, turbidity and level of siltation may increase; Increase in surface run-off due to concrete surfacing
	17	Coastal zone	D	Road is existing with no additional Right-of-Way acquisition
	18	Flora, Fauna, and Biodiversity	D	Road is existing
	19	Meteorology	D	Road is existing
	20	Landscape	D	Road is existing
	21	Global Warming	D	Road is existing
Pollution	22	Air Pollution	D	Road is existing
	23	Water Pollution	B	Temporary and minimal; i.e., only during construction period and in terms of slight increase in level of siltation
	24	Soil Contamination	B	During operation phase, during accidental oil spills only
	25	Waste	B	If temporary stockpiles and other construction debris/spoils are not properly hauled
	26	Noise and Vibration	B	Only during construction phase
	27	Ground Subsidence	B	During operation, particularly when unsuitable materials are not removed prior to filling and paving
	28	Offensive Odor	D	Not applicable
	29	Bottom Sediment	D	Not Applicable
	30	Accidents	C	During operation phase; more on human error, such as reckless driving (e.g., over speeding) due to improved surfacing
		Overall Rating	**B**	**Most road sections falling under this category would only be required to prepare an IEE Checklist prior to issuance of Environmental Compliance Certificate (ECC)**

Rating:
A: Serious impact is expected
B: Some impact is expected
C: Extent of impact is unknown
D or No Mark: No impact is expected. IEE/EIA is not necessary

PROJECT SCOPING

Type 1-2 **Scoping Matrix for Improvement of Existing Gravel Road to Paved Road With NO Right-of-Way Acquisition Needed**
Case II – Road alignment passes through protected area

Item			Rating	Reason
Social Environment: *Impacts on Gender" and "Children's Rights may be related to all social environment criteria	1	Involuntary Resettlement	D	Very minimal, if any. Most protected areas do not allow human settlements to thrive
	2	Local Economy such as Employment & Livelihood, etc.	D	Commercial establishments fronting roadways are not common in protected areas
	3	Land Use and Utilization of Local Resources	D	Construction materials such as concrete aggregates have to be sourced outside protected areas
	4	Social institutions such as Social Infrastructure and Local decision-making institutions	B	Close coordination with Protected Areas Management Board (PAMB) must be strictly observed
	5	Existing Social Infrastructures and Services	D	Not so many within protected areas
	6	The Poor, Indigenous, and Ethnic People	D	No additional R-O-W necessary
	7	Misdistribution of Benefit and Damage	D	No significant damage is expected
	8	Cultural heritage	D	No additional R-O-W necessary
	9	Local Conflicts of Interest	D	No additional R-O-W necessary
	10	Water Usage or Water Rights and Communal Rights	D	Project will not require extensive water usage
	11	Health and Sanitation	D	Not expected
	12	Hazards (risk) Infectious Diseases such as HIV/AIDS	B	From migrant workers
Natural Environment	13	Topography and Geographical Features	D	Project will utilize existing Right-of-Way
	14	Soil Erosion	D	No extensive cuts will be allowed
	15	Groundwater	D	Project will not entail usage of groundwater
	16	Hydrological Situation	C	For road sections that will traverse rivers/creeks, turbidity and level of siltation may increase Increase in surface run-off due to paving
	17	Coastal zone	D	Road is existing with no additional Right-of-Way acquisition
	18	Flora, Fauna, and Biodiversity	B	Influx of equipment and people during construction period may disturb natural wildlife activities such as nesting, roosting, mating, etc.
	19	Meteorology	D	Road is existing
	20	Landscape	D	Road is existing
	21	Global Warming	D	Road is existing
Pollution	22	Air Pollution	D	Road is existing
	23	Water Pollution	B	Temporary and minimal; i.e., only during construction period and in terms of slight increase in level of siltation
	24	Soil Contamination	B	During operation phase, during accidental oil spills only
	25	Waste	B	If temporary stockpiles and other construction debris/spoils are not properly hauled
	26	Noise and Vibration	B	Although significant only during construction phase, it must be kep at the minimum so as not to disrupt natural wildlife activities
	27	Ground Subsidence	B	During operation, particularly when unsuitable materials are not removed prior to filling and paving
	28	Offensive Odor	D	Not applicable
	29	Bottom Sediment	D	Not Applicable
	30	Accidents	C	During operation phase; more on human error, such as reckless driving (e.g., over speeding) due to improved surfacing
		Overall Rating	**B**	**An Environmental Compliance Certificate (ECC) still needs to be secured, considering that the projects are inside protected areas. An IEE Cheklist needs to be prepared.**

Rating:
A: Serious impact is expected
B: Some impact is expected
C: Extent of impact is unknown
D or No Mark: No impact is expected. IEE/EIA is not necessary

PROJECT SCOPING

Type 2-1 **Scoping Matrix for Rehabilitation of Existing Pavement With NO Right-of-Way Acquisition Needed Case I – Road alignment does not pass protected area**

Item			Rating	Reason
Social Environment: *Impacts on Gender" and "Children's Rights may be related to all social environment criteria	1	Involuntary Resettlement	D	No additional R-O-W
	2	Local Economy such as Employment & Livelihood, etc.	C	If there are commercial areas fronting the road to be improved, these may experience temporary decrease in income due to limited access
	3	Land Use and Utilization of Local Resources	D	Existing land use is not expected to change
	4	Social institutions such as Social Infrastructure and Local decision-making institutions	D	No additional R-O-W
	5	Existing Social Infrastructures and Services	C	If there are social infrastructures along the road to be improved, access to said facilities shall be limited during construction period
	6	The Poor, Indigenous, and Ethnic People	D	No additional R-O-W necessary
	7	Misdistribution of Benefit and Damage	D	No significant damage is expected
	8	Cultural heritage	D	No additional R-O-W necessary
	9	Local Conflicts of Interest	D	No additional R-O-W necessary
	10	Water Usage or Water Rights and Communal Rights	D	Project will not require extensive water usage
	11	Health and Sanitation	D	Not expected
	12	Hazards (risk) Infectious Diseases such as HIV/AIDS	D	Only local contractors and labor are expected
Natural Environment	13	Topography and Geographical Features	D	Project will utilize existing Right-of-Way
	14	Soil Erosion	D	Minimal but may increase during the rainy season
	15	Groundwater	D	Project will not entail usage of groundwater
	16	Hydrological Situation	B	For road sections that will traverse rivers/creeks, turbidity and level of siltation may increase;
	17	Coastal zone	D	Road is existing with no additional Right-of-Way acquisition
	18	Flora, Fauna, and Biodiversity	D	Road is existing
	19	Meteorology	D	Road is existing
	20	Landscape	D	Road is existing
	21	Global Warming	D	Road is existing
Pollution	22	Air Pollution	D	Road is existing
	23	Water Pollution	B	Temporary and minimal; i.e., only during construction period and in terms of slight increase in level of siltation
	24	Soil Contamination	D	Not expected
	25	Waste	B	If temporary stockpiles and other construction debris/spoils are not properly hauled
	26	Noise and Vibration	B	Only during construction phase
	27	Ground Subsidence	D	Not expected
	28	Offensive Odor	D	Not applicable
	29	Bottom Sediment	D	Not Applicable
	30	Accidents	D	Not expected
		Overall Rating	**D**	**Most road sections falling under this category would only be required to apply for a Certificate of Non-Coverage (CNC)**

Rating:
A: Serious impact is expected
B: Some impact is expected
C: Extent of impact is unknown
D or No Mark: No impact is expected. IEE/EIA is not necessary

PROJECT SCOPING

Type 2-2		**Scoping Matrix for Rehabilitation of Existing Pavement With NO Right-of-Way Acquisition Needed Case II – Road alignment passes through protected area**		
Item			**Rating**	**Reason**
Social Environment: *Impacts on Gender" and "Children's Rights may be related to all social environment criteria	1	Involuntary Resettlement	D	Very minimal, if any. Most protected areas do not allow human settlements to thrive
	2	Local Economy such as Employment & Livelihood, etc.	D	Commercial establishments fronting roadways are not common in protected areas
	3	Land Use and Utilization of Local Resources	D	Construction materials such as concrete aggregates have to be sourced outside protected areas
	4	Social institutions such as Social Infrastructure and Local decision-making institutions	B	Although adverse impacts are expected to be at minimum, coordination with Protected Areas Management Board (PAMB) still necessary
	5	Existing Social Infrastructures and Services	D	Not so many within protected areas
	6	The Poor, Indigenous, and Ethnic People	D	No additional R-O-W necessary
	7	Misdistribution of Benefit and Damage	D	No significant damage is expected
	8	Cultural heritage	D	No additional R-O-W necessary
	9	Local Conflicts of Interest	D	No additional R-O-W necessary
	10	Water Usage or Water Rights and Communal Rights	D	Project will not require extensive water usage
	11	Health and Sanitation	D	Not expected
	12	Hazards (risk) Infectious Diseases such as HIV/AIDS	D	Most workers are loca
Natural Environment	13	Topography and Geographical Features	D	Project will utilize existing Right-of-Way
	14	Soil Erosion	D	No extensive cuts will be allowed
	15	Groundwater	D	Project will not entail usage of groundwater
	16	Hydrological Situation	C	For road sections that will traverse rivers/creeks, turbidity and level of siltation may increase
	17	Coastal zone	D	Road is existing with no additional Right-of-Way acquisition
	18	Flora, Fauna, and Biodiversity	B	Influx of equipment and people during construction period may disturb natural wildlife activities such as nesting, roosting, mating, etc.
	19	Meteorology	D	Road is existing
	20	Landscape	D	Road is existing
	21	Global Warming	D	Road is existing
Pollution	22	Air Pollution	D	Road is existing
	23	Water Pollution	B	Temporary and minimal; i.e., only during construction period and in terms of slight increase in level of siltation
	24	Soil Contamination	B	During operation phase, during accidental oil spills only
	25	Waste	B	If temporary stockpiles and other construction debris/spoils are not properly hauled
	26	Noise and Vibration	B	Although significant only during construction phase, it must be kept at the minimum so as not to disrupt natural wildlife activities
	27	Ground Subsidence	B	During operation, particularly when unsuitable materials are not removed prior to filling and paving
	28	Offensive Odor	D	Not applicable
	29	Bottom Sediment	D	Not Applicable
	30	Accidents	C	During operation phase; more on human error, such as reckless driving (e.g., over speeding)
		Overall Rating	**B**	**An Environmental Compliance Certificate (ECC) still needs to be secured, considering that the projects are inside protected areas. However the level of study would not be extensive; i.e., an IEE Checklist would suffice**

Rating:
A: Serious impact is expected
B: Some impact is expected
C: Extent of impact is unknown
D or No Mark: No impact is expected. IEE/EIA is not necessary

PROJECT SCOPING

Type 3-1		Scoping Matrix for New Road Construction (Elimination of Missing Link) Right-of-Way Acquisition and Resettlement Necessary Case I – Road alignment does not pass protected area		
Item			**Rating**	**Reason**
Social Environment: *Impacts on Gender" and "Children's Rights may be related to all social environment criteria	1	Involuntary Resettlement	A	Number of human settlements very high for urban and relatively high for urbanizing areas. Resettlement Action Plans (RAPs) need to be prepared
	2	Local Economy such as Employment & Livelihood, etc.	B	Decrease in income from agricultural products in cases where new road will traverse agricultural lands
	3	Land Use and Utilization of Local Resources	A	Alteration of land use from primary agricultural into commercial. Local resources to be tapped include concrete aggregates
	4	Social institutions such as Social Infrastructure and Local decision-making institutions	B	Well studied Information, Education and Communication (IEC) Plan must be carried out
	5	Existing Social Infrastructures and Services	A	Construction of new road would attract inmigration and result in stiffer competition for available social infrastructures and services
	6	The Poor, Indigenous, and Ethnic People	A	An Indigenous People's Action Plan (IPAP) needs to be carefully prepared
	7	Misdistribution of Benefit and Damage	B	A simple Cost-Benefit Analysis must be prepared and incorporated in the EIA document
	8	Cultural heritage	B	Existing cultural places of worship must be respected and preserved to the extent possible
	9	Local Conflicts of Interest	D	May affect conduct of study but outside the Scope of the Philippine EIS System
	10	Water Usage or Water Rights and Communal Rights	D	Project will not require extensive water usage
	11	Health and Sanitation	B	During construction period, workers must be provided with proper waste disposal facilities so as to avoid spread of diseases
	12	Hazards (risk) Infectious Diseases such as HIV/AIDS	B	From migrant workers
Natural Environment	13	Topography and Geographical Features	B	Project may alter existing topography and geographical features
	14	Soil Erosion	A	Particularly at sloping areas with extensive cuts
	15	Groundwater	D	Project will not entail usage of groundwater
	16	Hydrological Situation	B	For road sections that will traverse rivers/creeks, turbidity and level of siltation may increase during the construction period; During operation increase in surface run-off is expected due to concreting of surface (i.e., infiltration of water through the ground would become nil)
	17	Coastal zone	C	If road traverses coastal areas with shallow shelf, extra care must be practiced to avoid too much siltation which may harm organisms in the shelf area (e.g., corals and small fishes)
	18	Flora, Fauna, and Biodiversity	B	If cutting of trees is inevitable, a Permit to Cut from the Forest Management Bureau (FMB) must first be secured by the Contractors
	19	Meteorology	C	No known impact on climate
	20	Landscape	B	Excavated and cut areas must be well stabilized and aesthetically pleasant
	21	Global Warming	B	To minimize contribution to level of greenhouse gases, trees must be planted along the roadside, and if applicable, along center islands.
Pollution	22	Air Pollution	B	Increase in levels of particulate matter (TSP) and gaseous emissions (SO_2, NO_2) from heavy equipment and machineries (during construction) and from vehicular traffic (during operation)
	23	Water Pollution	B	Temporary and minimal; i.e., only during construction period and in terms of slight increase in level of siltation
	24	Soil Contamination	B	During operation phase, during accidental oil spills only
	25	Waste	B	If temporary stockpiles and other construction debris/spoils are not properly hauled
	26	Noise and Vibration	B	Only during construction phase. Contractors must install noise barriers at sensitive areas (church, schools, hospitals)
	27	Ground Subsidence	B	Unsuitable materials must be removed prior to filling and paving
	28	Offensive Odor	D	Not applicable
	29	Bottom Sediment	D	Not Applicable
	30	Accidents	C	During operation phase; more on human error, such as reckless driving (e.g., over speeding) due to improved surfacing
		Overall Rating	**A**	**Most road sections falling under this category would be required to prepare:** **(i) Environmental Impact Statement (EIS) – for new road sections greater than or equal to 20 km (flat terrain) and greater than or equal to 10 km (with slopes greater than 40%)** **(ii) IEE Report – for new road sections exceeding 10 km but less than 20 km** **prior to issuance of Environmental Compliance Certificate (ECC)**

Rating:
A: Serious impact is expected
B: Some impact is expected
C: Extent of impact is unknown
D or No Mark: No impact is expected. IEE/EIA is not necessary

PROJECT SCOPING

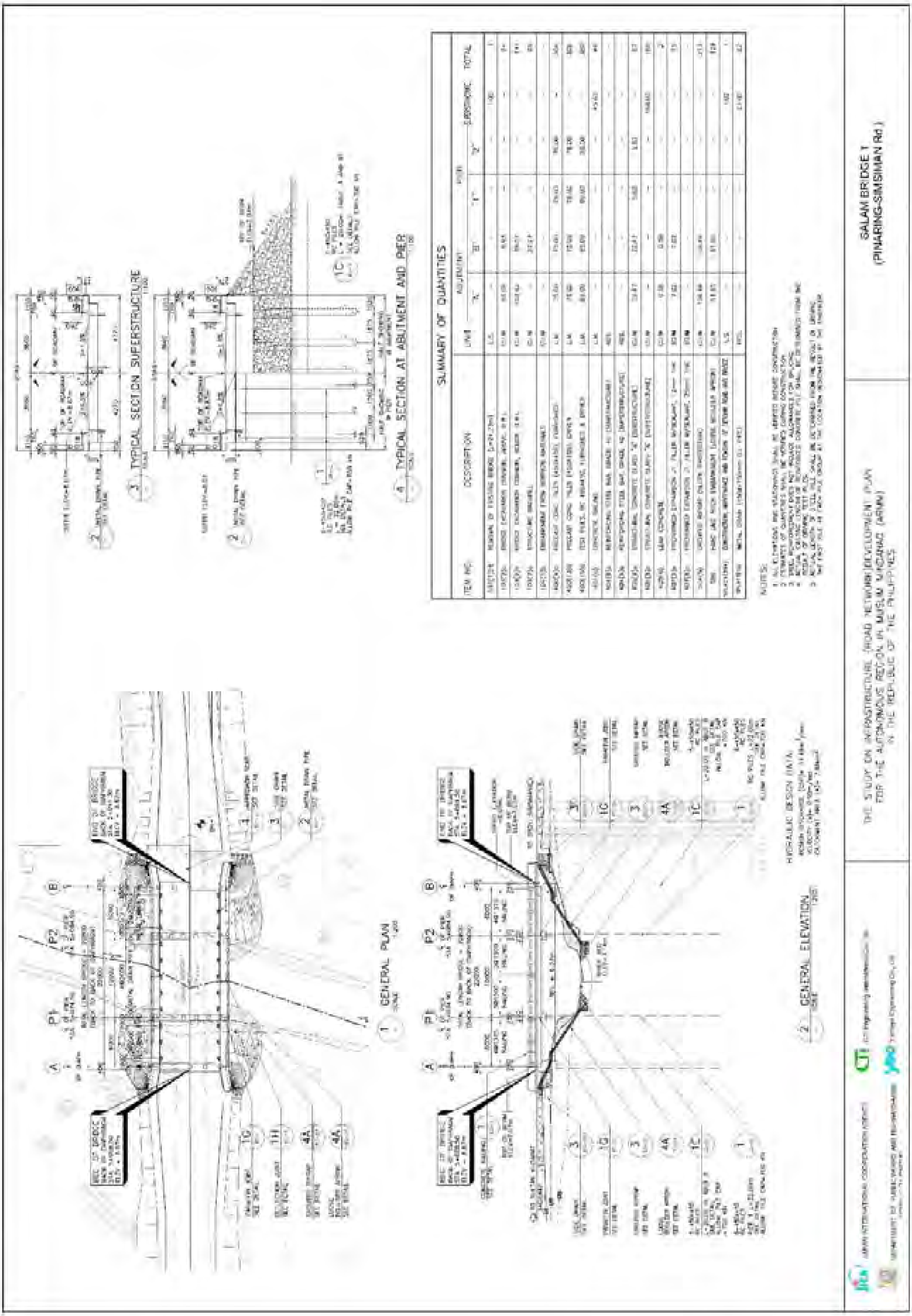
Table 3-2 Scoping Matrix for New Road Construction (Elimination of Missing Link) Right-of-Way Acquisition and Resettlement Necessary
Case I – Road alignment does passes through protected area

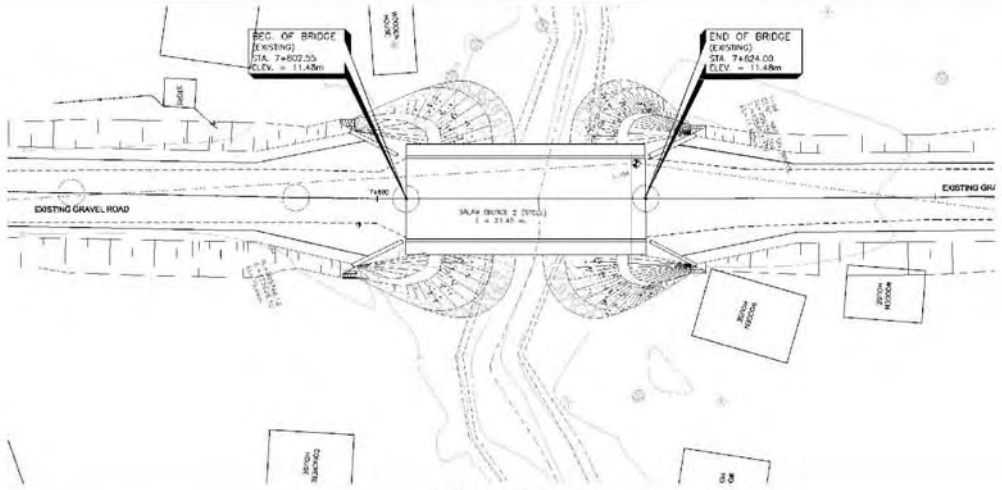
Item			Rating	Reason
Social Environment: *Impacts on Gender" and "Children's Rights may be related to all social environment criteria	1	Involuntary Resettlement	B	Number of human settlements relatively low inside protected areas. Nevertheless abbreviated Resettlement Action Plans (RAPs) still need to be prepared
	2	Local Economy such as Employment & Livelihood, etc.	D	Commercial/business establishments are not commonly allowed in protected areas
	3	Land Use and Utilization of Local Resources	B	If road will cut through potential tourist spots, it may decrease its potential to be fully developed; however it may also be beneficial to tourism if the alignment can provide access to it
	4	Social institutions such as Social Infrastructure and Local decision-making institutions	B	Well studied Information, Education and Communication (IEC) Plan must be carried out
	5	Existing Social Infrastructures and Services	C	Only residents who have been occupying land prior to its declaration as a protected area are allowed to stay; no inmigration is expected as a result of opening of new road. Thus no increase in demand for existing social infrastructures and services is expected
	6	The Poor, Indigenous, and Ethnic People	A	An Indigenous People's Action Plan (IPAP) needs to be carefully prepared
	7	Misdistribution of Benefit and Damage	B	A well studied Cost-Benefit Analysis must be prepared and incorporated in the EIA document
	8	Cultural heritage	B	Existing cultural places of worship must be respected and preserved to the extent possible
	9	Local Conflicts of Interest	D	May affect conduct of study but outside the Scope of the Philippine EIS System
	10	Water Usage or Water Rights and Communal Rights	D	Project will not require extensive water usage
	11	Health and Sanitation	B	During construction period, workers must be provided with proper waste disposal facilities so as to avoid spread of diseases
	12	Hazards (risk) Infectious Diseases such as HIV/AIDS	B	From migrant workers
Natural Environment	13	Topography and Geographical Features	A	Project must preserve, to the extent possible, existing topography and geographical features inside the protected area
	14	Soil Erosion	A	Extensive cuts must be avoided to the extent possible
	15	Groundwater	D	Project will not entail usage of groundwater
	16	Hydrological Situation	B	For road sections that will traverse rivers/creeks, turbidity and level of siltation may increase during the construction period; During operation increase in surface run-off is expected due to concreting of surface (i.e., infiltration of water through the ground would become nil)
	17	Coastal zone	A	If road traverses coastal areas with shallow shelf, extra care must be practiced to avoid too much siltation which may harm organisms in the shelf area (e.g., corals and small fishes)
	18	Flora, Fauna, and Biodiversity	A	Road alignment must be carefully studied so that cutting of trees can be avoided to the extent possible
	19	Meteorology	C	No known impact on climate
	20	Landscape	A	Excavation and cutting must be avoided to the extent possible
	21	Global Warming	B	To minimize contribution to level of greenhouse gases, trees must be planted along the roadside and in reforestation areas assigned by the DENR
Pollution	22	Air Pollution	A	Increase in levels of particulate matter (TSP) and gaseous emissions (SO_2, NO_2) from heavy equipment and machineries (during construction) and from vehicular traffic (during operation)
	23	Water Pollution	A	Temporary and minimal; i.e., only during construction period and in terms of slight increase in level of siltation
	24	Soil Contamination	A	During operation phase, during accidental oil spills only
	25	Waste	A	If temporary stockpiles and other construction debris/spoils are not properly hauled
	26	Noise and Vibration	A	Only during construction phase. Contractors must install noise barriers at sensitive areas (church, schools, hospitals)
	27	Ground Subsidence	B	Unsuitable materials must be removed prior to filling and paving
	28	Offensive Odor	D	Not applicable
	29	Bottom Sediment	D	Not Applicable
	30	Accidents	B	During operation phase; more on human error, such as reckless driving (e.g., over speeding)

		Overall Rating	**A**	**Most road sections falling under this category would be required to prepare:** **(i) Environmental Impact Statement (EIS) – for new road sections greater than or equal to 20 km (flat terrain) and greater than or equal to 10 km (with slopes greater than 40%)** **(ii) IEE Report – for new road sections exceeding 10 km but less than 20 km** **and closely coordinate with the Protected Areas Management Board (PAMB) who has jurisdiction to the protected areas, prior to issuance of Environmental Compliance Certificate (ECC)**
Rating: *A: Serious impact is expected* *B: Some impact is expected* *C: Extent of impact is unknown* *D or No Mark: No impact is expected. IEE/EIA is not necessary*				

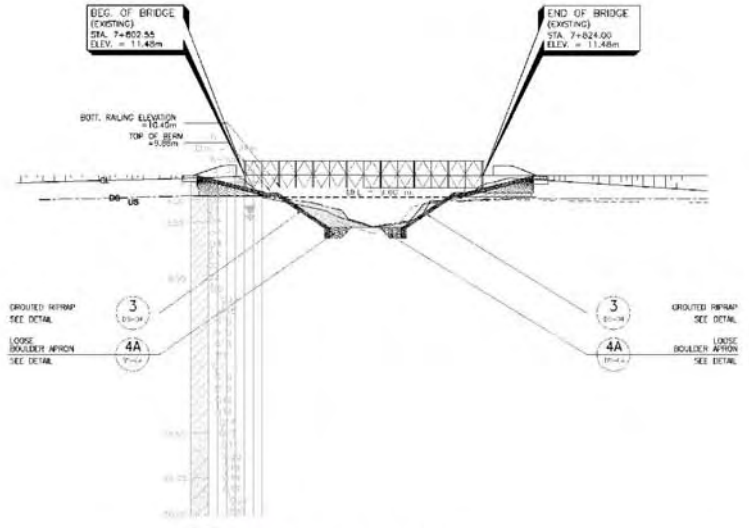
ANNEX 15 – 1

PRELIMINARY DESIGN DRAWING OF BRIDGES


GENERAL PLAN
GENERAL ELEVATION
TYPICAL SECTION SUPERSTRUCTURE
TYPICAL SECTION AT ABUTMENT AND PIER
SUMMARY OF QUANTITIES
HYDRAULIC DESIGN DATA
NOTES:
THE STUDY ON INFRASTRUCTURE (ROAD NETWORK) DEVELOPMENT PLAN FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM) IN THE REPUBLIC OF THE PHILIPPINES
SALAM BRIDGE 1 (PINARING-SIMSIMAN Rd.)



1 GENERAL PLAN
SCALE 1:200



2 GENERAL ELEVATION
SCALE 1:200

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		PIER		SUPERSTRUCTURE	TOTAL
			"A"	"B"	"1"	"2"		
101(1)26	REMOVAL OF EXISTING BRIDGE (L=24.93m)	L.S.	–	–	–	–	–	–
103(2)a	BRIDGE EXCAVATION COMMON, ABOVE, O.W.L.	CU.M.	114.10	106.11	–	–	–	221
103(2)b	BRIDGE EXCAVATION COMMON, BELOW, O.W.L.	CU.M.	108.67	97.31	–	–	–	207
103(7)a	STRUCTURE BACKFILL	CU.M.	2.35	0.27	–	–	–	3
104(1)b	EMBANKMENT FROM BORROW MATERIALS	CU.M.	–	–	–	–	–	–
400(4)b	PRECAST CONC. PILES (450X450), FURNISHED	L.M.	–	–	–	–	–	–
400(13)b	PRECAST CONC. PILES (450X450), DRIVEN	L.M.	–	–	–	–	–	–
400(15)b	TEST PILES, RC 450X450, FURNISHED & DRIVEN	L.M.	–	–	–	–	–	–
401(a)	CONCRETE RAILING	L.M.	–	–	–	–	–	–
404(1)a	REINFORCING STEEL BAR, GRADE 40 (SUBSTRUCTURE)	KGS.	–	–	–	–	–	–
404(1)b	REINFORCING STEEL BAR, GRADE 40 (SUPERSTRUCTURE)	KGS.	–	–	–	–	–	–
405(1)a	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(1)b	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(6)	LEAN CONCRETE	CU.M.	–	–	–	–	–	–
407(1)b	PREFORMED EXPANSION JT. FILLER W/SEALANT, 12mm THK	SQ.M.	–	–	–	–	–	–
407(1)c	PREFORMED EXPANSION JT. FILLER W/SEALANT, 25mm THK	SQ.M.	–	–	–	–	–	–
504(5)	GROUTED RIPRAP (SLOPE PROTECTION)	CU.M.	51.08	51.08	–	–	–	103
506	HAND LAID ROCK EMBANKMENT (LOOSE BOULDER APRON)	CU.M.	60.43	60.43	–	–	–	121
SPL421(314)	CONSTRUCTION, MAINTENANCE AND REMOVAL OF DETOUR ROAD AND BRIDGE	L.S.	–	–	–	–	–	–
SPL417(1)k	METAL DRAIN (1500x750mm C.I. PIPE)	PCS.	–	–	–	–	–	–

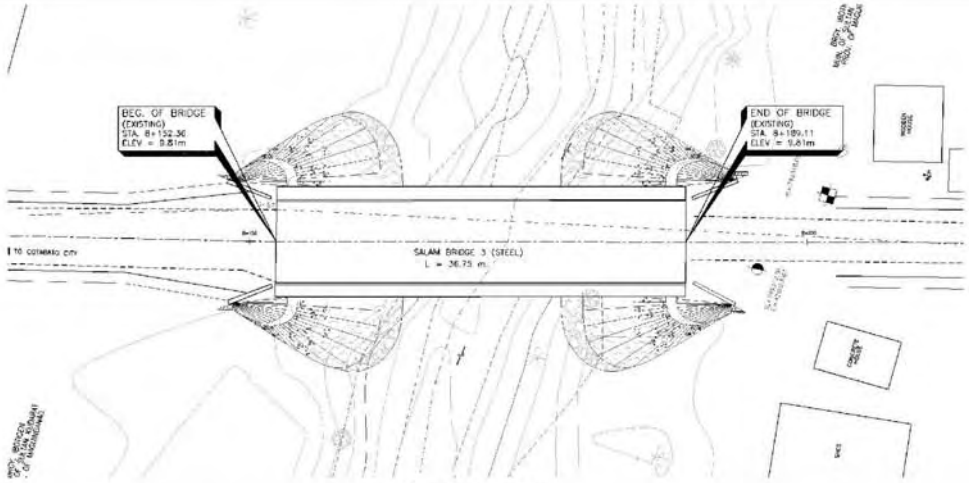
NOTES:
1. ALL ELEVATIONS AND STATIONINGS SHALL BE VERIFIED BEFORE CONSTRUCTION.
2. ESTIMATES OF QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION.
3. STEEL REINFORCEMENT DOES NOT INCLUDE ALLOWANCES FOR SPLICING.
4. ACTUAL CASTING LENGTH OF REINFORCED CONCRETE PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING TEST PILES.
5. ACTUAL LENGTH OF STEEL PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING THE FIRST PILE AT EACH PILE GROUP AT THE LOCATION DESIGNATED BY THE ENGINEER.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS-ARMM
CTI CTI Engineering International Co., Ltd.
YACHIYO Yachiyo Engineering Co., Ltd.

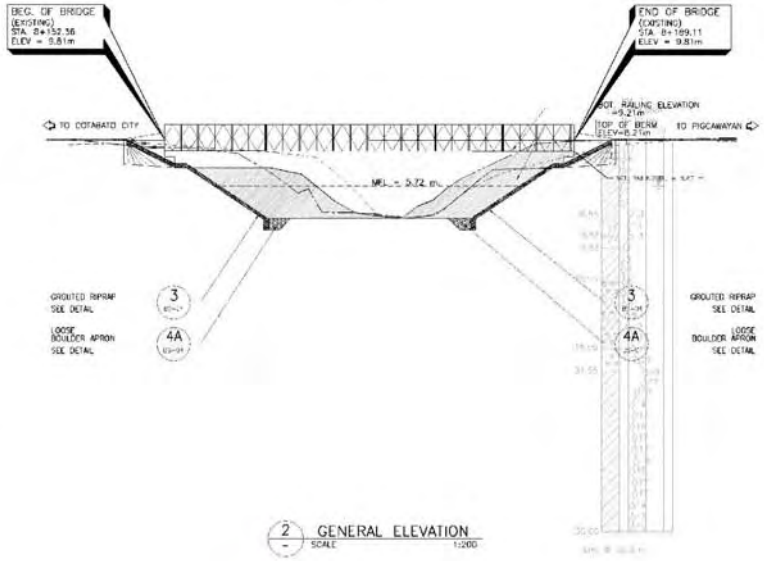
THE STUDY ON INFRASTRUCTURE (ROAD NETWORK)DEVELOPMENT PLAN
FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM)
IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 2
(PINARING-SIMSIMAN Rd.)

A-15-1-2



1 GENERAL PLAN
SCALE 1:200



2 GENERAL ELEVATION
SCALE 1:200

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		PIER		SUPERSTRUCTURE	TOTAL
			"A"	"B"	"1"	"2"		
101(1)26	REMOVAL OF EXISTING BRIDGE (L=24.73m)	L.S.	–	–	–	–	–	–
103(2)a	BRIDGE EXCAVATION COMMON, ABOVE, O.W.L.	CU.M.	310.00	221.59	–	–	–	532
103(2)e	BRIDGE EXCAVATION COMMON, BELOW, O.W.L.	CU.M.	374.41	215.87	–	–	–	551
103(7)a	STRUCTURE BACKFILL	CU.M.	0.00	0.00	–	–	–	–
104(1)a	EMBANKMENT FROM BORROW MATERIALS	CU.M.	–	–	–	–	–	–
400(4)a	PRECAST CONC. PILES (450X450), FURNISHED	L.M.	–	–	–	–	–	–
400(13)a	PRECAST CONC. PILES (450X450), DRIVEN	L.M.	–	–	–	–	–	–
400(15)a	TEST PILES, RC 450X450, FURNISHED & DRIVEN	L.M.	–	–	–	–	–	–
401(a)	CONCRETE RAILING	L.M.	–	–	–	–	–	–
404(1)a	REINFORCING STEEL BAR, GRADE 40 (SUBSTRUCTURE)	KGS.	–	–	–	–	–	–
404(1)b	REINFORCING STEEL BAR, GRADE 40 (SUPERSTRUCTURE)	KGS.	–	–	–	–	–	–
405(1)a	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(1)b	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(6)	LEAN CONCRETE	CU.M.	–	–	–	–	–	–
407(1)a	PREFORMED EXPANSION JT. FILLER W/SEALANT, 12mm THK	SQ.M.	–	–	–	–	–	–
407(1)c	PREFORMED EXPANSION JT. FILLER W/SEALANT, 25mm THK	SQ.M.	–	–	–	–	–	–
504(5)	GROUTED RIPRAP (SLOPE PROTECTION)	CU.M.	54.71	54.71	–	–	–	110
506	HAND LAID ROCK EMBANKMENT (LOOSE BOULDER APRON)	CU.M.	60.43	60.43	–	–	–	121
SPL421(314)	CONSTRUCTION, MAINTENANCE AND REMOVAL OF DETOUR ROAD AND BRIDGE	L.S.	–	–	–	–	–	–
SPL617(1)a	METAL DRAIN (150Wx75Dmm G.I. PIPE)	PCS.	–	–	–	–	–	–

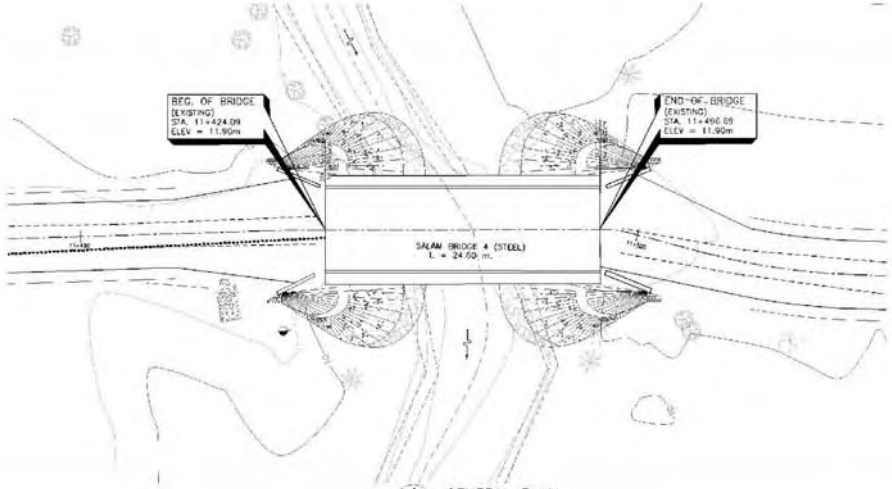
NOTES:
1. ALL ELEVATIONS AND STATIONINGS SHALL BE VERIFIED BEFORE CONSTRUCTION.
2. ESTIMATES OF QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION.
3. STEEL REINFORCEMENT DOES NOT INCLUDE ALLOWANCES FOR SPLICING.
4. ACTUAL CASTING LENGTH OF REINFORCED CONCRETE PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING TEST PILES.
5. ACTUAL LENGTH OF STEEL PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING THE FIRST PILE AT EACH PILE GROUP AT THE LOCATION DESIGNATED BY THE ENGINEER.

JICA JAPAN INTERNATIONAL COOPERATION AGENCY
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS-ARMM
CTI CTI Engineering International Co., Ltd.
YEC Yachiyo Engineering Co., Ltd.

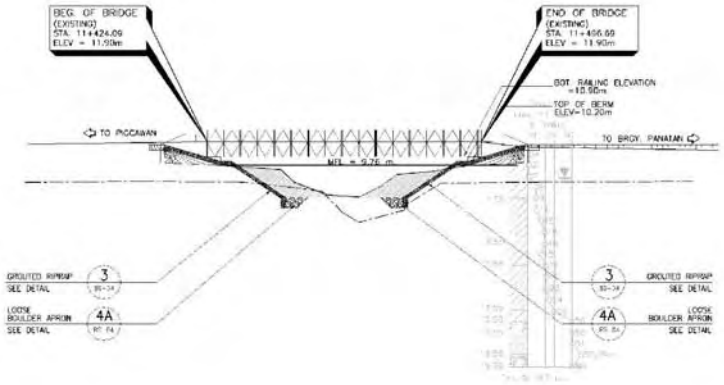
THE STUDY ON INFRASTRUCTURE (ROAD NETWORK)DEVELOPMENT PLAN
FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM)
IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 3
(PINARING-SIMSIMAN Rd.)

A-15-1-3



1 GENERAL PLAN
SCALE 1:200



2 GENERAL ELEVATION
SCALE 1:200

SUMMARY OF QUANTITIES

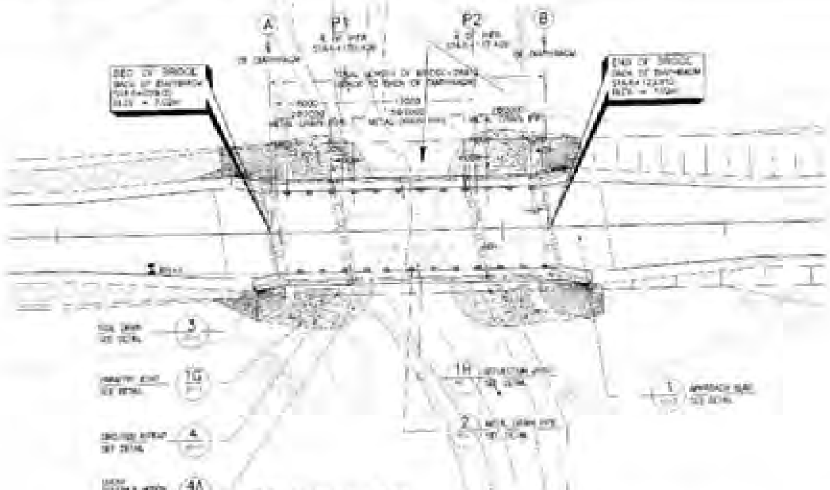
ITEM NO.	DESCRIPTION	UNIT	ABUTMENT "A"	ABUTMENT "B"	PIER "1"	PIER "2"	SUPERSTRUCTURE	TOTAL
101(1)26	REMOVAL OF EXISTING BRIDGE (L=24.95m)	L.S.	–	–	–	–	–	–
103(2)a	BRIDGE EXCAVATION COMMON, ABOVE, O.W.L.	CU.M.	121.34	107.49	–	–	–	229
103(2)b	BRIDGE EXCAVATION COMMON, BELOW, O.W.L.	CU.M.	169.92	147.45	–	–	–	318
103(7)a	STRUCTURE BACKFILL	CU.M.	0.00	0.17	–	–	–	1
104(1)b	EMBANKMENT FROM BORROW MATERIALS	CU.M.	–	–	–	–	–	–
400(4)a	PRECAST CONC. PILES (450X450), FURNISHED	L.M.	–	–	–	–	–	–
400(13)a	PRECAST CONC. PILES (450X450), DRIVEN	L.M.	–	–	–	–	–	–
400(15)b	TEST PILES, RC 450X450, FURNISHED & DRIVEN	L.M.	–	–	–	–	–	–
401(a)	CONCRETE RAILING	L.M.	–	–	–	–	–	–
404(1)a	REINFORCING STEEL BAR, GRADE 40 (SUBSTRUCTURE)	KGS.	–	–	–	–	–	–
404(1)b	REINFORCING STEEL BAR, GRADE 40 (SUPERSTRUCTURE)	KGS.	–	–	–	–	–	–
405(1)a	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(1)b	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(6)	LEAN CONCRETE	CU.M.	–	–	–	–	–	–
407(1)b	PREFORMED EXPANSION JT. FILLER W/SEALANT, 12mm THK	SQ.M.	–	–	–	–	–	–
407(1)c	PREFORMED EXPANSION JT. FILLER W/SEALANT, 25mm THK	SQ.M.	–	–	–	–	–	–
504(5)	GROUTED RIPRAP (SLOPE PROTECTION)	CU.M.	53.31	53.31	–	–	–	107
506	HAND LAID ROCK EMBANKMENT (LOOSE BOULDER APRON)	CU.M.	60.43	60.43	–	–	–	121
SPL421(314)	CONSTRUCTION, MAINTENANCE AND REMOVAL OF DETOUR ROAD AND BRIDGE	L.S.	–	–	–	–	–	–
SPL417(1)c	METAL DRAIN (150Øx750mm C.I. PIPE)	PCS.	–	–	–	–	–	–

NOTES:
1. ALL ELEVATIONS AND STATIONINGS SHALL BE VERIFIED BEFORE CONSTRUCTION.
2. ESTIMATES OF QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION.
3. STEEL REINFORCEMENT DOES NOT INCLUDE ALLOWANCES FOR SPLICING.
4. ACTUAL CASTING LENGTH OF REINFORCED CONCRETE PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING TEST PILES.
5. ACTUAL LENGTH OF STEEL PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING THE FIRST PILE AT EACH PILE GROUP AT THE LOCATION DESIGNATED BY THE ENGINEER.

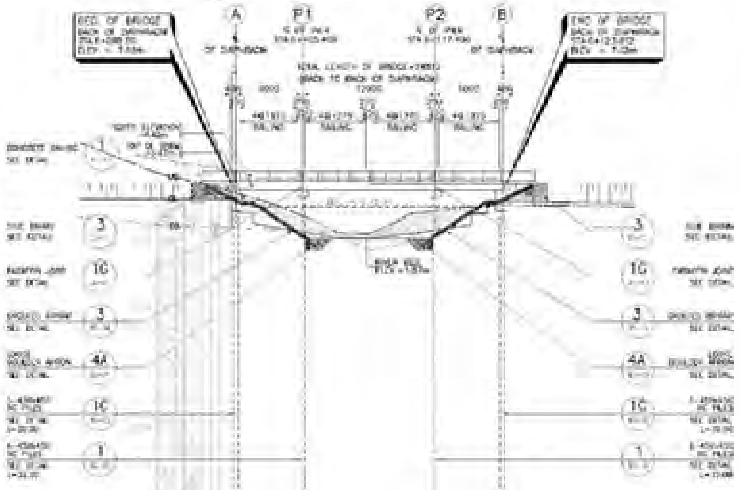
JAPAN INTERNATIONAL COOPERATION AGENCY
CTI Engineering International Co., Ltd.
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS-ARMM
Yachiyo Engineering Co., Ltd.

THE STUDY ON INFRASTRUCTURE (ROAD NETWORK)DEVELOPMENT PLAN
FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM)
IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 4
(PINARING-SIMSIMAN Rd.)

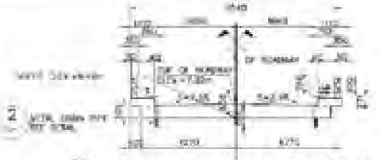


1 GENERAL PLAN
SCALE 1:200

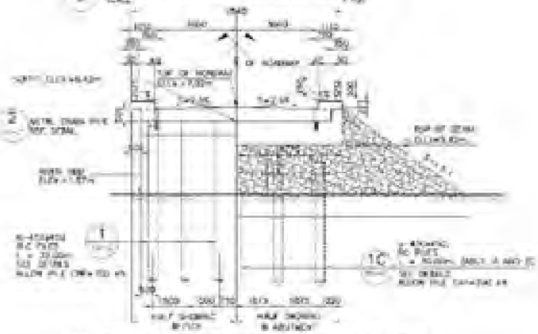


2 GENERAL ELEVATION
SCALE 1:200

HYDRAULIC DESIGN DATA:



3 TYPICAL SECTION SUPERSTRUCTURE
SCALE 1:100



4 TYPICAL SECTION AT ABUTMENT AND PIER
SCALE 1:100

SUMMARY OF QUANTITIES

ITEM NO.	DESCRIPTION	UNIT	ABUTMENT "A"	ABUTMENT "B"	PIER "1"	PIER "2"	SUPERSTRUCTURE	TOTAL
101(3)(b)	REMOVAL OF EXISTING BRIDGE	L.S.	—	—	—	—	1.00	1
103(2)(a)	BRIDGE EXCAVATION COMMON, ABOVE, O.W.L.	CU.M	5.50	11.25	—	—	—	17
103(2)(f)	BRIDGE EXCAVATION COMMON, BELOW, O.W.L.	CU.M	[illegible]	[illegible]	—	—	—	[illegible]
103(7)(a)	STRUCTURE BACKFILL	CU.M	[illegible]	14.70	—	—	—	[illegible]
104(1)(b)	EMBANKMENT FROM BORROW MATERIALS	CU.M	—	—	—	—	—	—
400(4)(a)	PRECAST CONC. PILES (450x450, FURNISHED)	L.M	[illegible]	[illegible]	[illegible]	[illegible]	—	[illegible]
400(12)(a)	PRECAST CONC. PILES (450x450, DRIVEN)	L.M	[illegible]	[illegible]	[illegible]	[illegible]	—	[illegible]
400(17)(a)	TEST PILES, RC 450x450, FURNISHED & DRIVEN	L.M	[illegible]	[illegible]	[illegible]	[illegible]	—	[illegible]
403(4)	CONCRETE RAILING	L.M	—	—	—	—	[illegible]	[illegible]
404(1)(b)	REINFORCING STEEL BAR, GRADE 40 (SUBSTRUCTURE)	KGS.	—	—	—	—	—	—
404(1)(a)	REINFORCING STEEL BAR, GRADE 40 (SUPERSTRUCTURE)	KGS.	—	—	—	—	—	—
405(1)a	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	CU.M	22.43	20.47	5.63	5.63	—	[illegible]
405(1)b	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	CU.M	—	—	—	—	151.00	151
405(4)	LEAN CONCRETE	CU.M	0.58	0.38	—	—	—	[illegible]
407(1)(a)	PREFORMED EXPANSION JT. FILLER W/SEALANT, 13mm THK	SQ.M	6.41	6.80	—	—	—	14
407(1)(b)	PREFORMED EXPANSION JT. FILLER W/SEALANT, 25mm THK	SQ.M	—	—	—	—	—	—
504(5)	GROUTED RIPRAP (SLOPE PROTECTION)	CU.M	53.14	53.14	—	—	—	107
506	HAND LAID ROCK EMBANKMENT (LOOSE BOULDER APRON)	CU.M	60.43	60.43	—	—	—	121
SPL-A01(1)(a)	CONSTRUCTION, MAINTENANCE AND REMOVAL OF DETOUR ROAD AND BRIDGE	L.S.	—	—	—	—	1.00	1
[illegible]	METAL DRAIN ([illegible] TYPE)	PCS	—	—	—	—	22.00	22

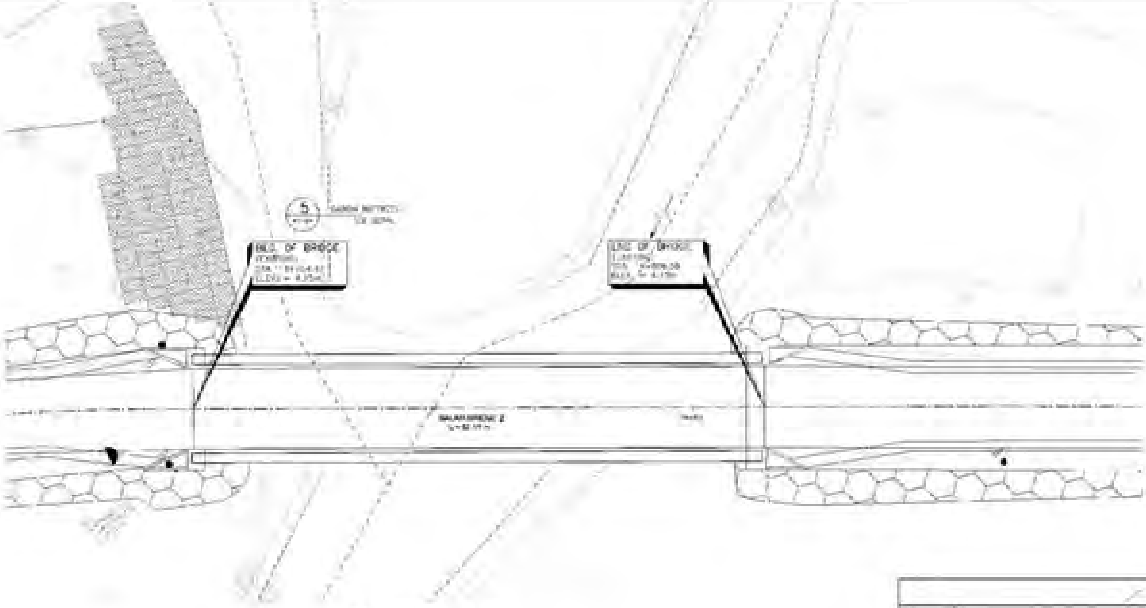
NOTES:

1. ALL ELEVATIONS AND STATIONINGS SHALL BE VERIFIED BEFORE CONSTRUCTION.
2. ESTIMATES OF QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION.
3. STEEL REINFORCEMENT DOES NOT INCLUDE ALLOWANCES FOR SPLICING.
4. ACTUAL CASTING LENGTH OF REINFORCED CONCRETE PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING TEST PILES.
5. ACTUAL LENGTH OF STEEL PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING THE FIRST PILE AT EACH PILE GROUP AT THE LOCATION DESIGNATED BY THE ENGINEER.

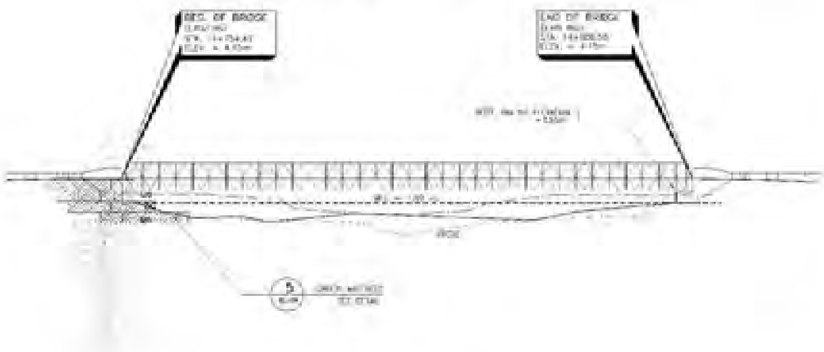
JAPAN INTERNATIONAL COOPERATION AGENCY
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS
CTI Engineering International Co., Ltd.
Yachiyo Engineering Co., Ltd.

THE STUDY ON INFRASTRUCTURE (ROAD NETWORK) DEVELOPMENT PLAN FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM) IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 1
(TAMONTAKA-TAPIAN Rd.)



1 GENERAL PLAN



2 GENERAL ELEVATION

SUMMARY OF QUANTITIES								
ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		PIER		SUPERSTRUCTURE	TOTAL
			"A"	"B"	"1"	"2"		
[illegible]	REMOVAL OF EXISTING BRIDGE [illegible]	L.S.	-	-	-	-	1.00	1
[illegible]	BRIDGE EXCAVATION COMMON ABOVE O.W.L	CU.M	[illegible]	[illegible]	-	-	-	[illegible]
[illegible]	BRIDGE EXCAVATION COMMON BELOW O.W.L	CU.M	[illegible]	[illegible]				[illegible]
[illegible]	STRUCTURAL BACKFILL	CU.M	[illegible]	[illegible]	-	-	-	-
[illegible]	EMBANKMENT FROM BORROW MATERIALS	CU.M	-	-	-	-	-	-
[illegible]	PRECAST CONC. PILES [illegible] FURNISHED	L.M	-	-	-	-	-	-
[illegible]	[illegible]	L.M	-	-	-	-	-	-
[illegible]	TEST PILES [illegible]	L.M	-	-	-	-	-	-
[illegible]	CONCRETE RAILING	L.M	-	-	-	-	-	-
[illegible]	REINFORCING STEEL BAR GRADE 40 (SUBSTRUCTURE)	KGS	-	-	-	-	-	-
[illegible]	REINFORCING STEEL BAR GRADE 40 (SUPERSTRUCTURE)	KGS	-	-	-	-	-	-
[illegible]	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	CU.M	-	-	-	-	-	-
[illegible]	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	CU.M	-	-	-	-	-	-
[illegible]	LEAN CONCRETE	CU.M	-	-	-	-	-	-
[illegible]	PREFORMED EXPANSION JT FILLER [illegible] 12mm THK	SQ.M	-	-	-	-	-	-
[illegible]	PREFORMED EXPANSION JT FILLER [illegible] 25mm THK	SQ.M	-	-	-	-	-	-
[illegible]	GROUTED RIPRAP (SLOPE PROTECTION)	CU.M	[illegible]	[illegible]	-	-	-	-
500	HAND LAID ROCK EMBANKMENT (SLOPE [illegible])	CU.M	[illegible]	[illegible]	-	-	-	-
[illegible]	CONSTRUCTION MAINTENANCE AND REMOVAL OF DETOUR ROAD AND BRIDGE	L.S.	-	-	-	-	-	-
[illegible]	[illegible]	PCS	-	-	-	-	-	-
[illegible]	MATTRESS GABION	CU.M	[illegible]	-	-	-	-	[illegible]

NOTES:

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

JAPAN INTERNATIONAL COOPERATION AGENCY

DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS-ARMM

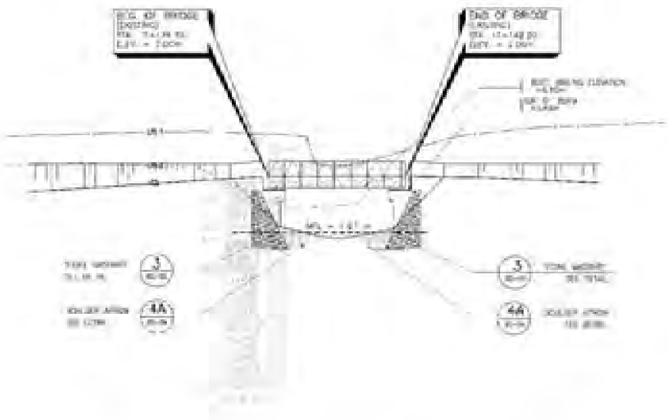
CTI Engineering International Co., Ltd.

Yachiyo Engineering Co., Ltd.

THE STUDY ON INFRASTRUCTURE (ROAD NETWORK)DEVELOPMENT PLAN
FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM)
IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 2
(TAMONTAKA-TAPIAN Rd.)

1 GENERAL PLAN



2 GENERAL ELEVATION

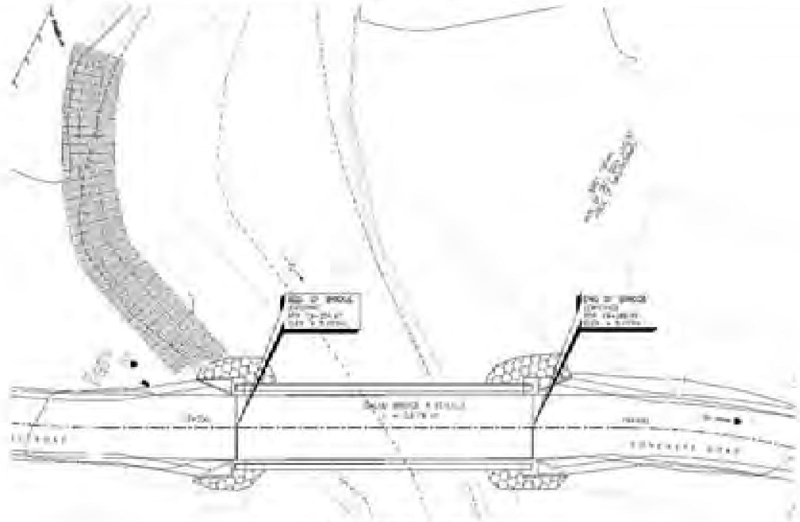
SUMMARY OF QUANTITIES								
ITEM NO.	DESCRIPTION	UNIT	ABUTMENT		PIER		SUPERSTRUCTURE	TOTAL
			"A"	"B"	"1"	"2"		
101(3)(2)b	REMOVAL OF EXISTING BRIDGE (L=21.75m)	L.S.	—	—	—	—	—	—
103(1)b	BRIDGE EXCAVATION (COMMON, ABOVE O.W.L.)	Cu.M.	59.65	121.18	—	—	—	181
103(2)b	BRIDGE EXCAVATION (COMMON, BELOW O.W.L.)	Cu.M.	71.60	115.20	—	—	—	133
103(5)a	STRUCTURAL BACKFILL	Cu.M.	[illegible]	[illegible]	—	—	—	—
104(1)b	EMBANKMENT FROM BORROW [illegible]	Cu.M.	—	—	—	—	—	—
400(4)b	PRECAST CONC. PILES (450x450) FURNISHED	L.M.	—	—	—	—	—	—
400(17)b	PRECAST CONC. PILES (450x450) DRIVEN	L.M.	—	—	—	—	—	—
400(15)a	TEST PILES, RC 450x450 FURNISHED & DRIVEN	L.M.	—	—	—	—	—	—
[illegible]	CONCRETE RAILING	L.M.	—	—	—	—	—	—
404(1)a	REINFORCING STEEL BAR, GRADE 40 (SUBSTRUCTURE)	KGS.	—	—	—	—	—	—
404(1)b	REINFORCING STEEL BAR, GRADE 40 (SUPERSTRUCTURE)	KGS.	—	—	—	—	—	—
405(1)a	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	Cu.M.	—	—	—	—	—	—
405(1)b	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	Cu.M.	—	—	—	—	—	—
405(8)	LEAN CONCRETE	Cu.M.	—	—	—	—	—	—
407(1)a	PREFORMED EXPANSION JT. FILLER W/SEALANT, 19mm THK.	Sq.M.	—	—	—	—	—	—
407(1)c	PREFORMED EXPANSION JT. FILLER W/SEALANT, 25mm THK.	Sq.M.	—	—	—	—	—	—
506	STONE MASONRY	Cu.M.	43.32	43.32	—	—	—	87
508	HAND LAID ROCK EMBANKMENT (GROUTED BOULDER APRON)	Cu.M.	39.53	39.53	—	—	—	79
[illegible]	CONSTRUCTION, MAINTENANCE AND REMOVAL OF DETOUR ROAD AND BRIDGE	L.S.	—	—	—	—	—	—
[illegible]	[illegible]	PCS.						

NOTES:
1. ALL ELEVATIONS AND STATIONINGS SHALL BE VERIFIED BEFORE CONSTRUCTION.
2. ESTIMATES OF QUANTITIES SHALL BE VERIFIED DURING CONSTRUCTION.
3. STEEL REINFORCEMENT DOES NOT INCLUDE ALLOWANCES FOR SPLICING.
4. ACTUAL CASTING LENGTH OF REINFORCED CONCRETE PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING TEST PILES.
5. ACTUAL LENGTH OF STEEL PILE SHALL BE DETERMINED FROM THE RESULT OF DRIVING THE FIRST PILE AT EACH PILE GROUP AT THE LOCATION DESIGNATED BY THE ENGINEER.

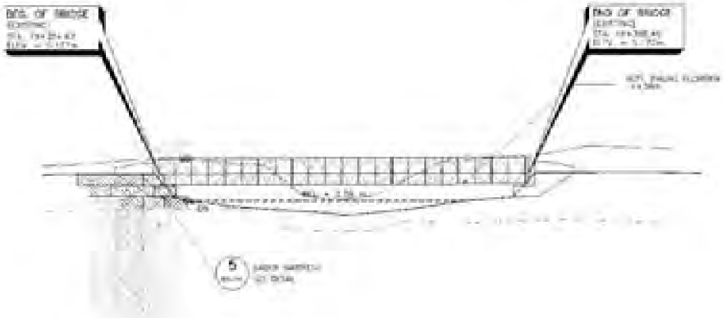
JAPAN INTERNATIONAL COOPERATION AGENCY
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS-ARMM
CTI Engineering International Co., Ltd.
Yachiyo Engineering Co., Ltd.

THE STUDY ON INFRASTRUCTURE (ROAD NETWORK)DEVELOPMENT PLAN FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM) IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 3
(TAMONTAKA-TAPIAN Rd.)



1 GENERAL PLAN



2 GENERAL ELEVATION

SUMMARY OF QUANTITIES								
ITEM NO.	DESCRIPTION	UNIT	ABUTMENT "A"	ABUTMENT "B"	PIER "1"	PIER "2"	SUPERSTRUCTURE	TOTAL
101(1)a	REMOVAL OF EXISTING BRIDGE [illegible]	L.S.	–	–	–	–	–	–
103(1)a	BRIDGE EXCAVATION (COMMON, ABOVE O.W.L.)	CU.M.	850.75	0.00				850
103(2)a	BRIDGE EXCAVATION (COMMON, BELOW O.W.L.)	CU.M.	774.51	0.00	–	–	–	775
104(1)a	STRUCTURE BACKFILL	CU.M.	0.00	0.00	–	–	–	–
104(1)b	EMBANKMENT FROM BORROW MATERIALS	CU.M.	–	–	–	–	–	–
400(2)a	PRECAST CONC. PILE [illegible] FURNISHED	L.M.	–	–	–	–	–	–
400(11)b	PRECAST CONC. PILE [illegible] DRIVEN	L.M.	–	–	–	–	–	–
400(13)b	TEST PILE [illegible] FURNISHED & DRIVEN	L.M.	–	–	–	–	–	–
[illegible]	CONCRETE RAILING	L.M.	–	–	–	–	–	–
404(1)a	REINFORCING STEEL BAR GRADE 40 [illegible]	KGS.	–	–	–	–	–	–
404(1)b	REINFORCING STEEL BAR GRADE 40 (SUPERSTRUCTURE)	KGS.	–	–	–	–	–	–
405(1)a	STRUCTURAL CONCRETE CLASS "A" (SUBSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(2)a	STRUCTURAL CONCRETE CLASS "A" (SUPERSTRUCTURE)	CU.M.	–	–	–	–	–	–
405(4)	LEAN CONCRETE	CU.M.	–	–	–	–	–	–
412(1)a	PREFORMED EXPANSION JT. FILLER W/SEALANT, 10mm THK.	SQ.M.	–	–	–	–	–	–
412(1)b	PREFORMED EXPANSION JT. FILLER W/SEALANT, 20mm THK.	SQ.M.	–	–	–	–	–	–
504(3)	GROUTED RIPRAP (SLOPE PROTECTION)	CU.M.	0.00	0.00	–	–	–	–
506	HAND LAID ROCK EMBANKMENT (LOOSE BOULDER RIPRAP)	CU.M.	0.00	0.00	–	–	–	–
[illegible]	[illegible]	[illegible]	–	–	–	–	–	–
[illegible]	METAL DRAIN [illegible]	PCS.	–	–	–	–	–	–
[illegible]	[illegible]	[illegible]	878.75					[illegible]

NOTES.

1. ALL ELEVATIONS AND DIMENSIONS SHALL BE VERIFIED BEFORE CONSTRUCTION.
2. [illegible]
3. [illegible]
4. [illegible]
5. [illegible]

JAPAN INTERNATIONAL COOPERATION AGENCY
DEPARTMENT OF PUBLIC WORKS AND HIGHWAYS-ARMM
CTI Engineering International Co., Ltd.
Yachiyo Engineering Co., Ltd.

THE STUDY ON INFRASTRUCTURE (ROAD NETWORK)DEVELOPMENT PLAN FOR THE AUTONOMOUS REGION IN MUSLIM MINDANAO (ARMM) IN THE REPUBLIC OF THE PHILIPPINES

SALAM BRIDGE 4
(TAMONTAKA-TAPIAN Rd.)

ANNEX 15 – 2

UNIT PRICE ANALYSIS

ITEM NO.	DESCRIPTION	UNIT	CONPONENTS, (%)			UNIT COST (Php)	CONPONENTS, Php		
			Foreign	Local	Taxes		Foreign	Local	Taxes
	PART A: FACILITIES FOR THE ENGINEER	%	---	---	---	3.00%	---	---	---
	Cost = ratio x total of Part C,D,E,F and G								
	PART B: OTHER GENERAL REQUIREMENT	%	---	---	---	3.00%	---	---	---
	Cost = ratio x total of Part C,D,E,F and G								
	PART C: EARTHWORKS								
100.2.1	Clearing and Grubbing	ha	56.00%	26.00%	18.00%	202,500.00	113,400.00	52,700.00	36,400.00
101.1.1	Removal of Existing Bridge	ls	56.00%	26.00%	18.00%	150,000.00	84,000.00	39,000.00	27,000.00
101.2.2	Removal of Existing Concrete Structure	cum	56.00%	26.00%	18.00%	3,300.00	1,800.00	900.00	600.00
101.2.4	Removal of Existing Concrete Pavement	sqm	56.00%	26.00%	18.00%	710.00	400.00	180.00	130.00
102.2.9	Roadway Excavation and Disposal (Including Section with CBR < 3)	cum	58.00%	16.00%	26.00%	410.00	240.00	70.00	100.00
103.1	Bridge Excavation Common Above O.W.L	cum	52.00%	30.00%	18.00%	490.00	250.00	150.00	90.00
103.2	Bridge Excavation Common Below O.W.L	cum	50.00%	33.00%	17.00%	990.00	500.00	330.00	160.00
103.3	Structural Backfill	cum	53.00%	19.00%	28.00%	790.00	420.00	150.00	220.00
103.4	Excavation for Pipe Culverts and Headwall Type F Inletes/Outlets Including Side Ditch	cum	53.00%	19.00%	28.00%	510.00	270.00	100.00	140.00
104.2.1	Selected Fill from Roadway Excavation	cum	53.00%	19.00%	28.00%	600.00	320.00	110.00	170.00
104.2.2	Selected Fill from Borrow Pit	cum	55.00%	29.00%	16.00%	1,080.00	590.00	310.00	180.00
104.2.4	Selected Fill for Replacement of Span with CBR < 3	cum	55.00%	29.00%	16.00%	1,080.00	590.00	310.00	180.00
105.3	Sub-grade Preparation	sqm	56.00%	26.00%	18.00%	50.00	30.00	10.00	10.00
	PART D: SUBBASE AND BASE COURSE								
200	Aggregate Subbase Course	cum	53.00%	31.00%	16.00%	900.00	480.00	280.00	140.00
202	Crushed Aggregate Base Course	cum	53.00%	31.00%	16.00%	940.00	500.00	290.00	150.00
	PART E: SURFACE COURSE								
311	Portland Cement Concrete Pavement (230mm thick)	sqm	61.00%	22.00%	17.00%	2,150.00	1,300.00	500.00	350.00

ITEM NO.	DESCRIPTION	UNIT	CONPONENTS, (%)			UNIT COST (Php)	CONPONENTS, Php		
			Foreign	Local	Taxes		Foreign	Local	Taxes
	PART F: STRUCTURES								
400.1	Pre-Cast Concrete Piles, 450mm x 450mm, Furnished	lm	51.00%	27.00%	22.00%	11,500.00	5,900.00	3,100.00	2,500.00
400.2	Pre-Cast Concrete Piles, 450mm x 450mm, Driven	lm	51.00%	27.00%	22.00%	300.00	200.00	100.00	0.00
400.3	Test Piles, 450mm x 450mm, Furnished and Driven	lm	51.00%	34.00%	15.00%	19,900.00	10,100.00	6,800.00	3,000.00
401	Concrete Railing	lm	37.00%	48.00%	15.00%	500.00	200.00	200.00	100.00
404	Reinforcing Steel Bars, Grade 40	kg	49.00%	36.00%	15.00%	100.00	50.00	40.00	10.00
405.1	Structural Concrete, 28 MPa	cum	33.00%	49.00%	18.00%	6,700.00	2,200.00	3,300.00	1,200.00
405.2	Structural Concrete, 21 MPa	cum	33.00%	49.00%	18.00%	5,800.00	1,900.00	2,800.00	1,100.00
405.4	Lean Concrete, 17MPa	cum	42.00%	36.00%	22.00%	5,100.00	2,100.00	1,800.00	1,200.00
406	Elastomeric Bearing Pads	each	54.00%	29.00%	17.00%	6,700.00	3,600.00	1,900.00	1,200.00
407	Pre-formed Expansion Joint Filler with Sealant, 12mm thick	lm	54.00%	29.00%	17.00%	10,900.00	5,900.00	3,200.00	1,800.00
	PART G: DRAINAGE AND SLOPE PROTECTION STRUCTURES								
500(1)a	RCPC, 610mm diameter	lm	56.00%	27.00%	17.00%	6,000.00	3,400.00	1,600.00	1,000.00
500(1)b	RCPC, 910mm diameter	lm	56.00%	27.00%	17.00%	10,500.00	5,900.00	2,800.00	1,800.00
500(1)c	RCPC, 1000mm diameter	lm	56.00%	27.00%	17.00%	16,800.00	9,400.00	4,500.00	2,900.00
500(1)e	RCPC, 1220mm diameter	lm	56.00%	27.00%	17.00%	19,700.00	11,000.00	5,300.00	3,400.00
500(2)1	RC Side Ditch, Type Cs-concrete Lined Ditch	lm	37.00%	46.00%	17.00%	3,400.00	1,300.00	1,600.00	500.00
500(2)2	RC Side Ditch, Type Bm-masonry Lined Ditch	lm	37.00%	46.00%	17.00%	1,300.00	480.00	600.00	220.00
500(2)3	RC Side Ditch, Type UD-C Ditch with Cover	lm	37.00%	46.00%	17.00%	9,600.00	3,600.00	4,400.00	1,600.00
500(2)a	Inlet/Outlet Headwall, 610mm diameter, Type F	each	27.00%	56.00%	17.00%	14,400.00	3,900.00	8,100.00	2,400.00
500(2)b	Inlet/Outlet Headwall, 910mm diameter, Type F	each	27.00%	56.00%	17.00%	25,900.00	7,000.00	14,500.00	4,400.00
500(2)c	Inlet/Outlet Headwall, 1000mm diameter, Type F	each	29.00%	54.00%	17.00%	32,200.00	9,300.00	17,400.00	5,500.00
500(2)e	Inlet/Outlet Headwall, 1220mm diameter, Type F	each	30.00%	53.00%	17.00%	38,800.00	11,600.00	20,600.00	6,600.00
504	Grouted Riprap	cum	38.00%	45.00%	17.00%	3,500.00	1,300.00	1,600.00	600.00
506	Hand Laid Rock Embankment (Loose Boulder Apron)	cum	38.00%	45.00%	17.00%	2,300.00	870.00	1,040.00	390.00
508	Stone Masonry	cum	54.00%	29.00%	17.00%	3,000.00	1,600.00	900.00	500.00
509	Gabion Mattress, 1.0m x 2.0m x 0.5m (Including Geotextile)	cum	50.00%	33.00%	17.00%	5,700.00	2,900.00	1,900.00	900.00
	PART H: MISCELLANEOUS	km	57.00%	26.00%	17.00%	1,500,000.00	855,000.00	390,000.00	255,000.00
	PART I: DAYWORKS	%	---	---	---	2.00%	---	---	---
	Cost = ratio x total of Part C,D,E,F and G								
	PART J: PROVISIONAL SUMS	%	---	---	---	2.00%	---	---	---
	Cost = ratio x total of Part C,D,E,F and G								
	PART K: PHISICAL CONTINGENCIES	%	---	---	---	15.00%	---	---	---
	Cost = ratio x total of Part C,D,E,F and G								

UNIT PRICE ANALYSIS
PAY ITEM Clearing and Grubbing

Estimated Quantity	0.050
Output/hour	0.050
Unit	has.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E201	Bulldozer, 180 Hp	1.00	1.00	1.00	3,115.00	3,115.00
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E401	Dump Truck, 6-8.99 cu.m	3.00	3.00	3.00	863.00	2,589.00
	Minor Tools (10% of Laborer)					28.97
	TOTAL A					6,940.97
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L20	Laborer	5.00	1.00	5.00	35.05	175.25
	TOTAL B					289.67
	C. TOTAL A + B					7,230.64
	D. UNIT COST (TOTAL A+B/EST. QTY)					144,612.74
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					144,612.74
	OCM	10%	of EDC			14,461.27
	Profit	15%	of EDC			21,691.91
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			21,691.91
	TOTAL UNIT COST					202,457.84

UNIT PRICE ANALYSIS
PAY ITEM Removal of Existing Concrete Structures

Estimated Quantity	1.500
Output/hour	1.500
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E200	Bulldozer, 140 Hp	1.00	1.00	1.00	1,742.00	1,742.00
E206	Wheel Loader, 1.53 cu.m.	1.00	0.50	0.50	1,208.00	604.00
E215	Backhoe with Hydraulic Breaker, 79 Hp	1.00	0.20	0.20	1,569.00	313.80
E401	Dump Truck, 6-8.99 cu.m	1.00	0.50	0.50	863.00	431.50
	Minor Tools (10% of Laborer)					41.13
	TOTAL A					3,132.43
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	1.00	86.52	86.52
L20	Laborer	6.00	1.00	6.00	35.05	210.31
	TOTAL B					411.25
	C. TOTAL A + B					3,543.68
	D. UNIT COST (TOTAL A+B/EST. QTY)					2,362.45
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					2,362.45
	OCM	10%	of EDC			236.25
	Profit	15%	of EDC			354.37
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			354.37
	TOTAL UNIT COST					3,307.43

UNIT PRICE ANALYSIS
PAY ITEM Removal of Existing Concrete Pavement

Estimated Quantity	7.000
Output/hour	7.000
Unit	sq.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E200	Bulldozer, 140 Hp	1.00	1.00	1.00	1,742.00	1,742.00
E206	Wheel Loader, 1.53 cu.m.	1.00	0.50	0.50	1,208.00	604.00
E215	Backhoe with Hydraulic Breaker, 79 Hp	1.00	0.20	0.20	1,569.00	313.80
E401	Dump Truck, 6-8.99 cu.m	1.00	0.50	0.50	863.00	431.50
	Minor Tools (10% of Laborer)					41.13
	TOTAL A					3,132.43

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	1.00	86.52	86.52
L20	Laborer	6.00	1.00	6.00	35.05	210.31
	TOTAL B					411.25
	C. TOTAL A + B					3,543.68
	D. UNIT COST (TOTAL A+B/EST. QTY)					506.24

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
	TOTAL E				0.00
	F. UNIT COST OF MATERIALS				0.00

	Estimated Direct Cost (EDC), (D+F)			506.24
	OCM	10%	of EDC	50.62
	Profit	15%	of EDC	75.94
	Mobilization/Demobilization		of EDC	0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)	75.94
	TOTAL UNIT COST			708.74

UNIT PRICE ANALYSIS

PAY ITEM Roadway Excavation and Disposal (Including Section with CBR < 3)

Estimated Quantity	20.000
Output/hour	20.000
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E200	Bulldozer, 140 Hp	1.00	1.00	1.00	1,742.00	1,742.00
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E401	Dump Truck, 6-8.99 cu.m	3.00	1.00	3.00	863.00	2,589.00
	Minor Tools (10% of Laborer)					27.10
	TOTAL A					5,566.10
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	1.00	1.00	1.00	86.52	86.52
L20	Laborer	2.00	1.00	2.00	35.05	70.10
	TOTAL B					271.04
	C. TOTAL A + B					5,837.14
	D. UNIT COST (TOTAL A+B/EST. QTY)					291.86
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					291.86
	OCM	10%	of EDC			29.19
	Profit	15%	of EDC			43.78
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			43.78
	TOTAL UNIT COST					408.60

UNIT PRICE ANALYSIS
PAY ITEM Bridge Excavation Above O.W.L.

Estimated Quantity	10.00
Output/hour	10.00
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E212	Hydraulic Excavator, 1.00 cu.m.	1.00	1.00	1.00	2,277.00	2,277.00
E401	Dump Trcuk, 6-8.99 cu.m.	1.00	1.00	1.00	863.00	863.00
	Minor Tools (10 % of Labor)					35.76
	TOTAL A					3,175.76
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	2.00	1.00	2.00	35.05	70.10
	TOTAL B					357.56
	C. TOTAL A + B					3,533.32
	D. UNIT COST (TOTAL A+B/EST. QTY)					353.33
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					353.33
	OCM	10%	of EDC			35.33
	Profit	15%	of EDC			53.00
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			53.00
	TOTAL UNIT COST					494.66

UNIT PRICE ANALYSIS
PAY ITEM Bridge Excavation Below O.W.L.

Estimated Quantity	5.00
Output/hour	5.00
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E212	Hydraulic Excavator, 1.00 cu.m.	1.00	1.00	1.00	2,277.00	2,277.00
E401	Dump Trcuk, 6-8.99 cu.m.	1.00	1.00	1.00	863.00	863.00
	Minor Tools (10 % of Labor)					35.76
	TOTAL A					3,175.76
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	2.00	1.00	2.00	35.05	70.10
	TOTAL B					357.56
	C. TOTAL A + B					3,533.32
	D. UNIT COST (TOTAL A+B/EST. QTY)					706.66
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					706.66
	OCM	10%	of EDC			70.67
	Profit	15%	of EDC			106.00
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			106.00
	TOTAL UNIT COST					989.33

UNIT PRICE ANALYSIS
PAY ITEM Structure Backfill

Estimated Quantity	2.00
Output/hour	2.00
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E326	Vibratory Plate Compactor,6-8Hp	1.00	1.00	1.00	120.54	120.54
	Minor Tools (10 % of Labor)					28.75
	TOTAL A					149.29
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
	TOTAL B					287.46
	C. TOTAL A + B					436.75
	D. UNIT COST (TOTAL A+B/EST. QTY)					218.37
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	Selected Granular Fill Materials, Delivered	1.15	m3	300.00		345.00
	TOTAL E					345.00
	F. UNIT COST OF MATERIALS					345.00
	Estimated Direct Cost (EDC), (D+F)					563.37
	OCM	10%	of EDC			56.34
	Profit	15%	of EDC			84.51
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			84.51
	TOTAL UNIT COST					788.72

UNIT PRICE ANALYSIS
PAY ITEM Excavation for Pipe Culverts and Drainage Inlets/Outlets Inlcuding Side Ditches

Estimated Quantity	15.000
Output/hour	15.000
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E212	Hydraulic Excavator, 1.00 cu.m	1.00	1.00	1.00	2,277.00	2,277.00
E401	Dump Truck, 6-8.99 cu.m	2.00	1.00	2.00	863.00	1,726.00
	Minor Tools (10% of Laborer)					18.45
	TOTAL A					5,229.45

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L20	Laborer	2.00	1.00	2.00	35.05	70.10
	TOTAL B					184.52
	C. TOTAL A + B					5,413.97
	D. UNIT COST (TOTAL A+B/EST. QTY)					360.93

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
	TOTAL E				0.00
	F. UNIT COST OF MATERIALS				0.00
	Estimated Direct Cost (EDC), (D+F)				360.93
	OCM	10%	of EDC		36.09
	Profit	15%	of EDC		54.14
	Mobilization/Demobilization		of EDC		0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		54.14
	TOTAL UNIT COST				505.30

UNIT PRICE ANALYSIS
PAY ITEM Selected Borrow from Roadway Excavation

Estimated Quantity	20.000
Output/hour	20.000
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E221	Motor Grader, 125Hp	2.00	1.00	2.00	1,725.00	3,450.00
E316	Vibratory Tamping Foot roller, 10MT	1.00	1.00	1.00	1,561.00	1,561.00
E325	Pneumatic Tired Roller, 24 MT	1.00	1.00	1.00	1,677.00	1,677.00
E327	Vibratory Plate Compactor, 13.5 Hp	1.00	1.00	1.00	435.71	435.71
E412	Water Tank with Pump, 500-1000gal	1.00	1.00	1.00	968.00	968.00
	Minor Tools (10% of Laborer)					42.77
	TOTAL A					8,134.48
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					8,562.14
	D. UNIT COST (TOTAL A+B/EST. QTY)					428.11
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					428.11
	OCM	10%	of EDC			42.81
	Profit	15%	of EDC			64.22
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			64.22
	TOTAL UNIT COST					599.35

UNIT PRICE ANALYSIS
PAY ITEM Embankment From Borrow Pit (Selected Fill)

Estimated Quantity	20.000
Output/hour	20.000
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E221	Motor Grader, 125Hp	2.00	1.00	2.00	1,725.00	3,450.00
E316	Vibratory Tamping Foot roller, 10MT	1.00	1.00	1.00	1,561.00	1,561.00
E325	Pneumatic Tired Roller, 24 MT	1.00	1.00	1.00	1,677.00	1,677.00
E327	Vibratory Plate Compactor, 13.5 Hp	1.00	1.00	1.00	435.71	435.71
E412	Water Tank with Pump, 500-1000gal	1.00	1.00	1.00	968.00	968.00
	Minor Tools (10% of Laborer)					42.77
	TOTAL A					8,134.48
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					8,562.14
	D. UNIT COST (TOTAL A+B/EST. QTY)					428.11
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M422	Selected Fill Materials, Delivered	1.15	m3	300.00		345.00
	TOTAL E					345.00
	F. UNIT COST OF MATERIALS					345.00
	Estimated Direct Cost (EDC), (D+F)					773.11
	OCM	10%	of EDC			77.31
	Profit	15%	of EDC			115.97
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			115.97
	TOTAL UNIT COST					1,082.35

UNIT PRICE ANALYSIS
PAY ITEM Subgrade Preparation

Estimated Quantity	250.000
Output/hour	250.000
Unit	sq.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E221	Motor Grader, 125Hp	2.00	1.00	2.00	1,725.00	3,450.00
E316	Vibratory Tamping Foot roller, 10MT	1.00	1.00	1.00	1,561.00	1,561.00
E325	Pneumatic Tired Roller, 24 MT	1.00	1.00	1.00	1,677.00	1,677.00
E327	Vibratory Plate Compactor, 13.5 Hp	1.00	1.00	1.00	435.71	435.71
E412	Water Tank with Pump, 500-1000gal	1.00	1.00	1.00	968.00	968.00
	Minor Tools (10% of Laborer)					34.11
	TOTAL A					8,125.82
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	1.00	1.00	1.00	86.52	86.52
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					341.14
	C. TOTAL A + B					8,466.96
	D. UNIT COST (TOTAL A+B/EST. QTY)					33.87
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					33.87
	OCM	10%	of EDC			3.39
	Profit	15%	of EDC			5.08
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			5.08
	TOTAL UNIT COST					47.41

UNIT PRICE ANALYSIS
PAY ITEM Aggregate Sub-Base Course

Estimated Quantity	70.000
Output/hour	70.000
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E221	Motor Grader, 125Hp	2.00	1.00	2.00	1,725.00	3,450.00
E316	Vibratory Tamping Foot roller, 10MT	1.00	1.00	1.00	1,561.00	1,561.00
E325	Pneumatic Tired Roller, 24 MT	1.00	1.00	1.00	1,677.00	1,677.00
E327	Vibratory Plate Compactor, 13.5 Hp	1.00	1.00	1.00	435.71	435.71
E412	Water Tank with Pump, 500-1000gal	1.00	1.00	1.00	968.00	968.00
	Minor Tools (10% of Laborer)					28.04
	TOTAL A					8,119.75
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.67
	C. TOTAL A + B					8,547.42
	D. UNIT COST (TOTAL A+B/EST. QTY)					122.11
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M426	Aggregated Sub-Base Course	1.15	m3	450.00		517.50
	TOTAL E					517.50
	F. UNIT COST OF MATERIALS					517.50
	Estimated Direct Cost (EDC), (D+F)					639.61
	OCM	10%	of EDC			63.96
	Profit	15%	of EDC			95.94
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			95.94
	TOTAL UNIT COST					895.45

UNIT PRICE ANALYSIS
PAY ITEM Crushed Aggregate Base Course

Estimated Quantity	70.000
Output/hour	70.000
Unit	cu.m
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E221	Motor Grader, 125Hp	2.00	1.00	2.00	1,725.00	3,450.00
E316	Vibratory Tamping Foot roller, 10MT	1.00	1.00	1.00	1,561.00	1,561.00
E325	Pneumatic Tired Roller, 24 MT	1.00	1.00	1.00	1,677.00	1,677.00
E327	Vibratory Plate Compactor, 13.5 Hp	1.00	1.00	1.00	435.71	435.71
E412	Water Tank with Pump, 500-1000gal	1.00	1.00	1.00	968.00	968.00
	Minor Tools (10% of Laborer)					42.77
	TOTAL A					8,134.48
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					8,562.14
	D. UNIT COST (TOTAL A+B/EST. QTY)					122.32
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M426	Crushed Aggregated Base Course	1.15	m3	475.00		546.25
	TOTAL E					546.25
	F. UNIT COST OF MATERIALS					546.25
	Estimated Direct Cost (EDC), (D+F)					668.57
	OCM	10%	of EDC			66.86
	Profit	15%	of EDC			100.28
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			100.28
	TOTAL UNIT COST					935.99

UNIT PRICE ANALYSIS
PAY ITEM Portland Cement Concrete Pavement 230mm thick

Estimated Quantity	5.00
Output/hour	5.00
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	200.58	200.58
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					306.00

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,360.15
	D. UNIT COST (TOTAL A+B/EST. QTY)					272.03

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 28Mpa	0.23	cu.m.	3,732.50	858.48
	Forms	0.92	sq.m	375.00	345.00
	Allowance				60.17
	TOTAL E				1,263.65
	F. UNIT COST OF MATERIALS				1,263.65
	Estimated Direct Cost (EDC), (D+F)				1,535.68
	OCM	10%	of EDC		153.57
	Profit	15%	of EDC		230.35
	Mobilization/Demobilization		of EDC		0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		230.35
	TOTAL UNIT COST				2,149.96

		Estimated Quantity	100.00
UNIT PRICE ANALYSIS		Output/hour	100.00
PAY ITEM	450 x 450 x 25000 Pre-cast / Pre-Stressed Pile	Unit	l.m.
	Fabrication and Delivered Cost (Furnished)	Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	200.58	200.58
E427	Specialized Trailer w/ Truck Tractor, 45 MT	1.00	4.00	4.00	3,668.45	14,673.80
E253c	Truck Mounted Crane, 81-90 MT. Cap.	1.00	1.50	1.50	4,268.33	6,402.50
	Minor Tools (10 % of the above)					2,127.69
	TOTAL A					23,404.57

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	4.00	1.00	4.00	86.52	346.08
L20	Laborer	8.00	1.00	8.00	35.05	280.41
	TOTAL B					740.91
	C. TOTAL A + B					24,145.48
	D. UNIT COST (TOTAL A+B/EST. QTY)					241.45

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M406a	Ready Mix Conc., 7,500 psi, 6" slump, 50MPa	0.20	cu.m.	5,585.00	1,130.96
	Reinforcing Steel, Grade 40	72.90	kg	63.13	4,602.18
M084	Post-Tension works and matls	8.10	kgs	122.06	988.69
M013a5	Formworks	1.01	m	866.10	876.93
	Incidentals				379.94
	TOTAL E				7,978.70
	F. UNIT COST OF MATERIALS				7,978.70
	Estimated Direct Cost (EDC), (D+F)				8,220.15
	OCM	10%	of EDC		822.02
	Profit	15%	of EDC		1,233.02
	Mobilization/Demobilization		of EDC		
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		1,233.02
	TOTAL UNIT COST				11,508.21

UNIT PRICE ANALYSIS

PAY ITEM 450 x 450 Pre-cast / Pre-Stressed Pile (Driven)

Estimated Quantity	5.00
Output/hour	5.00
Unit	l.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E270	Crawler Crane, 51-60T	2.00	1.00	2.00	0.00	0.00
E515	Diesel Pile Hammer on Barge	1.00	1.00	1.00	0.00	0.00
E374	Mobil Air Compressor, 701-750 cfm	2.00	1.00	2.00	0.00	0.00
	Air Hose	1.00	1.00	1.00	0.00	0.00
	Minor Tools (10 % of the above)					0.00
	TOTAL A					0.00
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	10.00	1.00	10.00	35.05	350.51
	TOTAL B					984.05
	C. TOTAL A + B					984.05
	D. UNIT COST (TOTAL A+B/EST. QTY)					196.81
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					196.81
	OCM	10%	of EDC			19.68
	Profit	15%	of EDC			29.52
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			29.52
	TOTAL UNIT COST					275.53

		Estimated Quantity	2.50
UNIT PRICE ANALYSIS		Output/hour	2.50
PAY ITEM	450 x 450 x 25000 Pre-cast / Pre-Stressed Pile	Unit	l.m.
	Test Pile (Furnished & Driven)	Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	0.03	1.00	0.03	200.58	5.01
E427	Specialized Trailer w/ Truck Tractor, 45 MT	0.03	4.00	0.10	3,668.45	366.85
E253c	Truck Mounted Crane, 81-90 MT. Cap.	0.03	1.50	0.04	4,268.33	160.06
	Minor Tools (10 % of the above)					53.19
E270	Crawler Crane, 51-60T	2.00	1.00	2.00	3,484.33	6,968.66
E515	Diesel Pile Hammer on Barge	1.00	1.00	1.00	1,448.62	1,448.62
E374	Mobil Air Compressor, 701-750 cfm	2.00	1.00	2.00	2,170.04	4,340.08
	Air Hose	1.00	1.00	1.00	24.00	24.00
	Minor Tools (10 % of the above)					1,278.14
	TOTAL A					14,644.61

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	0.03	1.00	0.03	114.42	2.86
L19	Skilled Laborer	0.10	1.00	0.10	86.52	8.65
L20	Laborer	0.20	1.00	0.20	35.05	7.01
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	10.00	1.00	10.00	35.05	350.51
	TOTAL B					1,002.57
	C. TOTAL A + B					15,647.18
	D. UNIT COST (TOTAL A+B/EST. QTY)					6,258.87

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M406a	Ready Mix Conc., 7,500 psi, 6" slump, 50MPa	0.20	cu.m.	5,585.00	1,130.96
	Reinforcing Steel, Grade 40	72.90	kg	63.13	4,602.18
M084	Post-Tension works and matls	8.10	kgs	122.06	988.69
M013a5	Formworks	1.01	m	866.10	876.93
	Incidentals				379.94
	TOTAL E				7,978.70
	F. UNIT COST OF MATERIALS				7,978.70
	Estimated Direct Cost (EDC), (D+F)				14,237.57
	OCM	10%	of EDC		1,423.76
	Profit	15%	of EDC		2,135.64
	Mobilization/Demobilization		of EDC		
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		2,135.64
	TOTAL UNIT COST				19,932.60

UNIT PRICE ANALYSIS
PAY ITEM Concrete Railing

Estimated Quantity 4.00
Output/hour 4.00
Unit lm
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E342	Welding Machine	1.00	1.00	1.00	337.00	337.00
	Minor Tools (10 % of Labor)					88.11
	TOTAL A					425.11
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	4.00	1.00	4.00	86.52	346.08
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					881.11
	C. TOTAL A + B					1,306.22
	D. UNIT COST (TOTAL A+B/EST. QTY)					326.56
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M404	Ready Mixed Concrete, 21 Mpa	0.11	m3	0.00		0.00
M031	Reinforcing Steel Bar, Grade 40	32.79	kgs	0.00		0.00
M022	G.I. Wire, # 16	0.02	kgs	0.00		0.00
	Formworks	0.85	m2	0.00		0.00
	Wastage, 5% of the Above					0.00
	TOTAL E					0.00
	F. UNIT COST OF MATERIALS					0.00
	Estimated Direct Cost (EDC), (D+F)					326.56
	OCM	10%	of EDC			32.66
	Profit	15%	of EDC			48.98
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			48.98
	TOTAL UNIT COST					457.18

UNIT PRICE ANALYSIS
PAY ITEM Reinforcing Steel Bars, Grade 40

Estimated Quantity	260.00
Output/hour	260.00
Unit	kgs
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E346	Rebar Cutter, 42mm, 3 Phase	1.00	1.00	1.00	344.82	344.82
E347	Rebar Bender, 42mm	1.00	1.00	1.00	401.79	401.79
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					852.03
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,906.18
	D. UNIT COST (TOTAL A+B/EST. QTY)					7.33
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M031	Reinforcing Steel Bar, Grade 40	1.00	kgs	60.00		60.00
M022	G.I. Wire, # 16	0.02	kgs	47.32		0.95
	Wastage, 5% of the Above					3.05
	TOTAL E					63.99
	F. UNIT COST OF MATERIALS					63.99
	Estimated Direct Cost (EDC), (D+F)					71.33
	OCM	10%	of EDC			7.13
	Profit	15%	of EDC			10.70
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			10.70
	TOTAL UNIT COST					99.86

UNIT PRICE ANALYSIS
PAY ITEM Structural Concrete, Class 28Mpa

Estimated Quantity 5.00
Output/hour 5.00
Unit cu.m.
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E304	Pumpcrete, 50 cu.m. per hr.	1.00	1.00	1.00	0.00	0.00
E311	Concrete Vibrator	1.00	1.00	1.00	0.00	0.00
E268a	Crawler Crane, 16-20T	1.00	0.50	0.50	0.00	0.00
	Pontoons	30.00			0.00	0.00
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					105.42
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,159.57
	D. UNIT COST (TOTAL A+B/EST. QTY)					231.91
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M403a	Ready Mix Conc., 4,000 psi, 6" slump, 28Mpa	1.00	cu.m.	4,317.50		4,317.50
	Allowance					215.88
	TOTAL E					4,533.38
	F. UNIT COST OF MATERIALS					4,533.38
	Estimated Direct Cost (EDC), (D+F)					4,765.29
	OCM	10%	of EDC			476.53
	Profit	15%	of EDC			714.79
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			714.79
	TOTAL UNIT COST					6,671.40

UNIT PRICE ANALYSIS
PAY ITEM Structural Concrete, Class 21Mpa

Estimated Quantity	5.00
Output/hour	5.00
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E304	Pumpcrete, 50 cu.m. per hr.	1.00	1.00	1.00	0.00	0.00
E311	Concrete Vibrator	1.00	1.00	1.00	0.00	0.00
E268a	Crawler Crane, 16-20T	1.00	0.50	0.50	0.00	0.00
	Pontoons	30.00			0.00	0.00
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					105.42
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,159.57
	D. UNIT COST (TOTAL A+B/EST. QTY)					231.91
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 21Mpa	1.00	cu.m.	3,732.50		3,732.50
	Allowance					186.63
	TOTAL E					3,919.13
	F. UNIT COST OF MATERIALS					3,919.13
	Estimated Direct Cost (EDC), (D+F)					4,151.04
	OCM	10%	of EDC			415.10
	Profit	15%	of EDC			622.66
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			622.66
	TOTAL UNIT COST					5,811.45

UNIT PRICE ANALYSIS
PAY ITEM Lean Concrete, Class "D", (fc' = 17MPa)

Estimated Quantity	12.00
Output/hour	12.00
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	0.00	0.00
	Minor Tools (10 % of Labor)					42.77
	TOTAL A					42.77
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					470.43
	D. UNIT COST (TOTAL A+B/EST. QTY)					39.20
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M401	Ready Mixed Concrete, 17Mpa	1.00	cu.m.	3,440.00		3,440.00
	Allowance, 5%					172.00
	TOTAL E					3,612.00
	F. UNIT COST OF MATERIALS					3,612.00
	Estimated Direct Cost (EDC), (D+F)					3,651.20
	OCM	10%	of EDC			365.12
	Profit	15%	of EDC			547.68
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			547.68
	TOTAL UNIT COST					5,111.68

UNIT PRICE ANALYSIS
PAY ITEM Elastomeric Bearing Pad, 600 x 400 x 25 (Duro 60)

Estimated Quantity	2.000
Output/hour	2.000
Unit	each
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
	Minor Tools (10% of Laborer)					27.10
	TOTAL A					27.10

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	1.00	1.00	1.00	86.52	86.52
L20	Laborer	2.00	1.00	2.00	35.05	70.10
	TOTAL B					271.05
	C. TOTAL A + B					298.15
	D. UNIT COST (TOTAL A+B/EST. QTY)					149.08

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M426	Elastomeric Bearing Pad, 600 x 400 x 25 (Duro 60)	1.00	pc	4,500.00	4,500.00
	3% of Above				135.00
	TOTAL E				4,635.00
	F. UNIT COST OF MATERIALS				4,635.00

	Estimated Direct Cost (EDC), (D+F)			4,784.08
	OCM	10%	of EDC	478.41
	Profit	15%	of EDC	717.61
	Mobilization/Demobilization		of EDC	0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)	717.61
	TOTAL UNIT COST			6,697.71

UNIT PRICE ANALYSIS
PAY ITEM Expansion Joint Filler with Sealant

Estimated Quantity 1.00
Output/hour 1.00
Unit lm
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E342	Welding Machine	1.00	2.00	2.00	337.00	674.00
E342	Oxy/Acetylene Welding Outfit	1.00	2.00	2.00	30.00	60.00
E500	Generator Set, 6-10KW	1.00	2.00	2.00	87.73	175.46
	Minor Tools (10 % of Labor)					84.39
	TOTAL A					993.85
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	6.00	1.00	6.00	35.05	210.31
	TOTAL B					843.85
	C. TOTAL A + B					1,837.70
	D. UNIT COST (TOTAL A+B/EST. QTY)					1,837.70
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M174	Ready Welding Electrodes	20.00	kgs.	74.55		1,491.00
M031	Steel Plate, 20mm thk	0.15	sq.m.	7,200.00		1,080.00
M022	Steel Plate, 16mm thk	0.075	sq.m.	5,750.00		431.25
	Angle Bar, 100 x 75 x 16	1.00	m	833.33		833.33
	Anchor Bars, 36 x 6 x 250	26.60	kgs.	35.41		941.91
	Misc. & Incidentals (25% of the Above)					1,194.37
	TOTAL E					5,971.86
	F. UNIT COST OF MATERIALS					5,971.86
	Estimated Direct Cost (EDC), (D+F)					7,809.55
	OCM	10%	of EDC			780.96
	Profit	15%	of EDC			1,171.43
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			1,171.43
	TOTAL UNIT COST					10,933.37

UNIT PRICE ANALYSIS

PAY ITEM Reinforced Concrete Pipe Culvert, 610mm dia., Single, Class IV

Estimated Quantity	5.000
Output/hour	5.000
Unit	lm.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E326	Vibratory Plate Compactor, 6-8HP	1.00	1.00	1.00	120.54	120.54
E405	Cargo Truck, 9-10 MT	1.00	0.25	0.25	991.00	247.75
	Minor Tools (10% of Laborer)					379.26
	TOTAL A					1,955.55

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	10.00	10.00	100.00	35.05	3,505.09
	TOTAL B					3,792.56
	C. TOTAL A + B					5,748.10
	D. UNIT COST (TOTAL A+B/EST. QTY)					1,149.62

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M064	RCPC, 610 mm. Dia x 1.00m., Class IV	1.00	m	2,114.00	2,114.00
M422	Selected/Granular Fill Materials, Delivered	1.20	cu.m.	300.00	360.00
M001	Portland Cement, 40 Kg.	0.35	bag	200.00	70.00
M003	Fine Aggregates, S1	0.79	cu.m.	580.00	458.20
	Misc. 5% of above				150.11
	TOTAL E				3,152.31
	F. UNIT COST OF MATERIALS				3,152.31
	Estimated Direct Cost (EDC), (D+F)				4,301.93
	OCM	10%	of EDC		430.19
	Profit	15%	of EDC		645.29
	Mobilization/Demobilization		of EDC		0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		645.29
	TOTAL UNIT COST				6,022.70

UNIT PRICE ANALYSIS
PAY ITEM NO. Reinforced Concrete Pipe Culvert, 910 mm dia., Single, Class IV

Estimated Quantity	3.00
Output/hour	3.00
Unit	lm
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E326	Vibratory Plate Compactor, 6-8HP	1.00	1.00	1.00	120.54	120.54
E405	Cargo Truck, 9-10 MT	1.00	0.25	0.25	991.00	247.75
	Minor Tools (10% of Laborer)					14.02
	TOTAL A					1,590.31
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					2,017.97
	D. UNIT COST (TOTAL A+B/EST. QTY)					672.66
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M067	RCPC, 910mm Dia. x 1.00m., Class IV	lm	1.00	3,147.00		3,147.00
M422	Selected/Granular Fill Materials, Delivered	cu.m.	2.47	300.00		739.91
M001	Cement Mortar Grout (1:2)	cu.m.	0.07	2,892.20		200.61
M003	Fine Aggregates, S1	cu.m.	1.17	580.00		680.71
	Pipe Excavation	cu.m.	6.88	254.67		1,752.42
	Misc. 5% of above					326.03
	TOTAL E					6,846.68
	F. UNIT COST OF MATERIALS					6,846.68
	Estimated Direct Cost (EDC), (D+F)					7,519.33
	OCM	10%	of EDC			751.93
	Profit	15%	of EDC			1,127.90
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			1,127.90
	TOTAL UNIT COST					10,527.06

UNIT PRICE ANALYSIS

PAY ITEM NO. Reinforced Concrete Pipe Culvert, 1000 mm dia., Single, Class IV

Estimated Quantity	3.00
Output/hour	3.00
Unit	lm
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E326	Vibratory Plate Compactor, 6-8HP	1.00	1.00	1.00	120.54	120.54
E405	Cargo Truck, 9-10 MT	1.00	0.25	0.25	991.00	247.75
	Minor Tools (10% of Laborer)					14.02
	TOTAL A					1,590.31
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					2,017.97
	D. UNIT COST (TOTAL A+B/EST. QTY)					672.66
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M067	RCPC, 1000 mm Dia. x 1.00m., Class IV	lm	1.00	6,816.00		6,816.00
M422	Selected/Granular Fill Materials, Delivered	cu.m.	2.90	300.00		870.00
M001	Cement Mortar Grout (1:2)	cu.m.	0.08	2,892.20		235.88
M003	Fine Aggregates, S1	cu.m.	1.38	580.00		800.40
	Pipe Excavation	cu.m.	8.09	254.67		2,060.53
	Misc. 5% of above					539.14
	TOTAL E					11,321.95
	F. UNIT COST OF MATERIALS					11,321.95
	Estimated Direct Cost (EDC), (D+F)					11,994.61
	OCM	10%	of EDC			1,199.46
	Profit	15%	of EDC			1,799.19
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			1,799.19
	TOTAL UNIT COST					16,792.45

UNIT PRICE ANALYSIS

PAY ITEM NO. Reinforced Concrete Pipe Culvert, 1220 mm dia., Single, Class IV

Estimated Quantity	3.00
Output/hour	3.00
Unit	lm
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E206	Wheel Loader, 1.53 cu.m.	1.00	1.00	1.00	1,208.00	1,208.00
E326	Vibratory Plate Compactor, 6-8HP	1.00	1.00	1.00	120.54	120.54
E405	Cargo Truck, 9-10 MT	1.00	0.25	0.25	991.00	247.75
	Minor Tools (10% of Laborer)					14.02
	TOTAL A					1,590.31
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					2,017.97
	D. UNIT COST (TOTAL A+B/EST. QTY)					672.66
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M067	RCPC, 1220 mm Dia. x 1.00m., Class IV	lm	1.00	8,220.00		8,220.00
M422	Selected/Granular Fill Materials, Delivered	cu.m.	3.31	300.00		991.96
M001	Cement Mortar Grout (1:2)	cu.m.	0.09	2,892.20		268.94
M003	Fine Aggregates, S1	cu.m.	1.57	580.00		912.61
	Pipe Excavation	cu.m.	9.23	254.67		2,349.40
	Misc. 5% of above					637.15
	TOTAL E					13,380.05
	F. UNIT COST OF MATERIALS					13,380.05
	Estimated Direct Cost (EDC), (D+F)					14,052.71
	OCM	10%	of EDC			1,405.27
	Profit	15%	of EDC			2,107.91
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			2,107.91
	TOTAL UNIT COST					19,673.79

UNIT PRICE ANALYSIS
PAY ITEM Type Cs-Concrete Lined Ditch

Estimated Quantity	1.00
Output/hour	1.00
Unit	lm
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	0.25	0.25	200.58	50.15
	Minor Tools (10 % of Labor)					42.77
	TOTAL A					92.92
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					520.58
	D. UNIT COST (TOTAL A+B/EST. QTY)					520.58
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 21Mpa	0.17	cu.m.	3,732.50		634.53
	Forms	1.00	sq.m	0.00		0.00
	Reinforcing Bars, Grade 40	11.90	kgs.	99.86		1,188.28
	Granular Bedding	0.05	m3	385.00		19.25
	Allowance					31.73
	TOTAL E					1,873.78
	F. UNIT COST OF MATERIALS					1,873.78
	Estimated Direct Cost (EDC), (D+F)					2,394.36
	OCM	10%	of EDC			239.44
	Profit	15%	of EDC			359.15
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			359.15
	TOTAL UNIT COST					3,352.10

UNIT PRICE ANALYSIS
PAY ITEM Type Bm-Masonry Lined Ditch

Estimated Quantity	1.00
Output/hour	1.00
Unit	lm
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
	TOTAL A					0.00

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					427.66
	D. UNIT COST (TOTAL A+B/EST. QTY)					427.66

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
	Supply of Boulders	0.375	cu.m.	716.62	268.73
	Portland Cement	0.50	bag	200.00	100.00
	Fine Aggregates, S1	0.08	m3	580.00	46.40
	Miscellaneous, 20% of the above				83.03
	TOTAL E				498.16
	F. UNIT COST OF MATERIALS				498.16
	Estimated Direct Cost (EDC), (D+F)				925.82
	OCM	10%	of EDC		92.58
	Profit	15%	of EDC		138.87
	Mobilization/Demobilization		of EDC		0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		138.87
	TOTAL UNIT COST				1,296.15

UNIT PRICE ANALYSIS
PAY ITEM Type UD-C Ditch With Cover

Estimated Quantity 1.00
Output/hour 1.00
Unit lm
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	200.58	200.58
	Minor Tools (10 % of Labor)					42.77
	TOTAL A					243.35
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					671.01
	D. UNIT COST (TOTAL A+B/EST. QTY)					671.01
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 21Mpa	0.45	cu.m.	3,732.50		1,679.63
	Forms	3.00	sq.m	375.00		1,125.00
	Reinforcing Bars, Grade 40	31.50	kgs.	99.86		3,145.44
	Allowance					241.25
	TOTAL E					6,191.32
	F. UNIT COST OF MATERIALS					6,191.32
	Estimated Direct Cost (EDC), (D+F)					6,862.33
	OCM	10%	of EDC			686.23
	Profit	15%	of EDC			1,029.35
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			1,029.35
	TOTAL UNIT COST					9,607.26

UNIT PRICE ANALYSIS
PAY ITEM Inlet/Outlet Headwall, Type F, 610mm dia., Single

Estimated Quantity	1.000
Output/hour	1.000
Unit	each
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E309	Concrete Vibrator	1.00	1.00	1.00	130.20	130.20
	Minor Tools (10% of Laborer)					14.02
	TOTAL A					144.22
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.67
	C. TOTAL A + B					571.89
	D. UNIT COST (TOTAL A+B/EST. QTY)					571.89
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M404	Ready Mix Conc., 3,000 psi, 21MPa @28 days, 3/4"	0.86	cu.m.	8,007.34		6,886.31
M031	Reinforcing Steel Bar, Grade 40,	19.78	kgs	63.61		1,258.21
M001	Formwork for Minor Structures (3 uses)	2.72	sq.m.	419.07		1,139.87
M003	Misc. 5% of above					464.22
	TOTAL E					9,748.61
	F. UNIT COST OF MATERIALS					9,748.61
	Estimated Direct Cost (EDC), (D+F)					10,320.50
	OCM	10%	of EDC			1,032.05
	Profit	15%	of EDC			1,548.07
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			1,548.07
	TOTAL UNIT COST					14,448.70

UNIT PRICE ANALYSIS
PAY ITEM Inlet/Outlet Headwall, Type F, 910mm dia., Single

Estimated Quantity	1.00
Output/hour	1.00
Unit	each
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	200.58	200.58
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					306.00

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,360.15
	D. UNIT COST (TOTAL A+B/EST. QTY)					1,360.15

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 21Mpa	1.84	cu.m.	0.00	0.00
	Forms	9.19	sq.m	0.00	0.00
	Reinforcing Bars, Grade 40	171.48	kgs.	99.86	17,123.17
	Allowance				0.00
	TOTAL E				17,123.17
	F. UNIT COST OF MATERIALS				17,123.17
	Estimated Direct Cost (EDC), (D+F)				18,483.32
	OCM	10%	of EDC		1,848.33
	Profit	15%	of EDC		2,772.50
	Mobilization/Demobilization		of EDC		0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		2,772.50
	TOTAL UNIT COST				25,876.65

UNIT PRICE ANALYSIS
PAY ITEM Inlet/Outlet Headwall, Type F, 1000mm dia., Single

Estimated Quantity 1.00
Output/hour 1.00
Unit each
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	200.58	200.58
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					306.00

Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,360.15
	D. UNIT COST (TOTAL A+B/EST. QTY)					1,360.15

Ref. No.	Description	Quantity	Unit	Unit Cost	Total Amount
	E. MATERIALS				
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 21Mpa	2.32	cu.m.	0.00	0.00
	Forms	11.62	sq.m	0.00	0.00
	Reinforcing Bars, Grade 40	216.60	kgs.	99.86	21,628.64
	Allowance				0.00
	TOTAL E				21,628.64
	F. UNIT COST OF MATERIALS				21,628.64
	Estimated Direct Cost (EDC), (D+F)				22,988.79
	OCM	10%	of EDC		2,298.88
	Profit	15%	of EDC		3,448.32
	Mobilization/Demobilization		of EDC		0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)		3,448.32
	TOTAL UNIT COST				32,184.30

UNIT PRICE ANALYSIS
PAY ITEM Inlet/Outlet Headwall, Type F, 1220mm dia., Single

Estimated Quantity 1.00
Output/hour 1.00
Unit each
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E311	Concrete Vibrator	1.00	1.00	1.00	200.58	200.58
	Minor Tools (10 % of Labor)					105.42
	TOTAL A					306.00
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	6.00	1.00	6.00	86.52	519.12
L20	Laborer	12.00	1.00	12.00	35.05	420.61
	TOTAL B					1,054.15
	C. TOTAL A + B					1,360.15
	D. UNIT COST (TOTAL A+B/EST. QTY)					1,360.15
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M403a	Ready Mix Conc., 3,000 psi, 6" slump, 21Mpa	2.83	cu.m.	0.00		0.00
	Forms	14.17	sq.m	0.00		0.00
	Reinforcing Bars, Grade 40	264.06	kgs.	99.86		26,367.77
	Allowance					0.00
	TOTAL E					26,367.77
	F. UNIT COST OF MATERIALS					26,367.77
	Estimated Direct Cost (EDC), (D+F)					27,727.92
	OCM	10%	of EDC			2,772.79
	Profit	15%	of EDC			4,159.19
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			4,159.19
	TOTAL UNIT COST					38,819.08

UNIT PRICE ANALYSIS
PAY ITEM Grouted Riprap

Estimated Quantity 1.00
Output/hour 1.00
Unit lm
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E305	Concrete Mixer, 1 Bagger	1.00	1.00	1.00	156.00	156.00
E412	Water Tank Truck with Pump, 500 - 1000gal	1.00	0.20	0.20	968.00	193.60
	Minor Tools (10 % of Labor)					65.44
	TOTAL A					415.04
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	3.00	1.00	3.00	86.52	259.56
L20	Laborer	8.00	1.00	8.00	35.05	280.41
	TOTAL B					654.39
	C. TOTAL A + B					1,069.43
	D. UNIT COST (TOTAL A+B/EST. QTY)					1,069.43
Ref. No.	Description	Quantity	Unit		Unit Cost	Total Amount
	E. MATERIALS					
M432	Supply of Boulders	1.10	m3		716.72	788.39
M001	Portland Cement	1.50	sq.m.		200.00	300.00
M003	Fine Aggregates, S1	0.08	sq.m.		580.00	46.40
	Misc. & Incidentals (20% of the Above)					283.70
	TOTAL E					1,418.49
	F. UNIT COST OF MATERIALS					1,418.49
	Estimated Direct Cost (EDC), (D+F)					2,487.92
	OCM	10%	of EDC			248.79
	Profit	15%	of EDC			373.19
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			373.19
	TOTAL UNIT COST					3,483.09

UNIT PRICE ANALYSIS
PAY ITEM Hand Laid Rock Embankment

Estimated Quantity 1.00
Output/hour 1.00
Unit lm
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
	TOTAL A					0.00
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	3.00	1.00	3.00	86.52	259.56
L20	Laborer	8.00	1.00	8.00	35.05	280.41
	TOTAL B					654.39
	C. TOTAL A + B					654.39
	D. UNIT COST (TOTAL A+B/EST. QTY)					654.39
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M432	Supply of Boulders	1.10	m3	716.72		788.39
	Misc. & Incidentals (20% of the Above)					197.10
	TOTAL E					985.49
	F. UNIT COST OF MATERIALS					985.49
	Estimated Direct Cost (EDC), (D+F)					1,639.88
	OCM	10%	of EDC			163.99
	Profit	15%	of EDC			245.98
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			245.98
	TOTAL UNIT COST					2,295.83

UNIT PRICE ANALYSIS
PAY ITEM NO. Stone Masonry

Estimated Quantity 1.00
Output/hour 1.00
Unit cu.m.
Duration 1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E305	Concrete Mixer, 1 Bagger	1.00	1.00	1.00	156.00	156.00
E412	Water Tank Truck with Pump, 500-1000gal	1.00	0.20	0.20	968.00	193.60
	Minor Tools (10% of the Above					34.96
	TOTAL A					384.56
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					812.22
	D. UNIT COST (TOTAL A+B/EST. QTY)					812.22
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
	Supply of Boulders	1.10	cu.m.	716.62		788.28
	Portland Cement	1.50	bag	200.00		300.00
	Fine Aggregates, S1	0.08	m3	580.00		46.40
	Miscellaneous, 20% of the above					226.94
	TOTAL E					1,361.62
	F. UNIT COST OF MATERIALS					1,361.62
	Estimated Direct Cost (EDC), (D+F)					2,173.84
	OCM	10%	of EDC			217.38
	Profit	15%	of EDC			326.08
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			326.08
	TOTAL UNIT COST					3,043.37

UNIT PRICE ANALYSIS
PAY ITEM NO. Gabion Mattress, 1.0m x 2.0m x 0.5m (Including Geotextile)

Estimated Quantity	1.000
Output/hour	1.000
Unit	cu.m.
Duration	1.00

Ref. No.	Description	Quantity	Hrs. Used	Total Est. Hr.	Rate/Hr	Total Amount
	A. EQUIPMENT					
E200	Bulldozer, 140 Hp	1.00	0.50	0.50	1,742.00	871.00
E206	Wheel Loader, 1.53 cu.m.	1.00	0.50	0.50	1,208.00	604.00
E405	Cargo Truck, 9-10 MT	1.00	0.25	0.25	991.00	247.75
	Minor Tools (10% of Laborer)					14.02
	TOTAL A					1,736.77
Ref. No.	Description	Nos.	Hrs. Worked	Total MH	Rate/MH	Total Amount
	B. LABOR					
L13	Foreman	1.00	1.00	1.00	114.42	114.42
L19	Skilled Laborer	2.00	1.00	2.00	86.52	173.04
L20	Laborer	4.00	1.00	4.00	35.05	140.20
	TOTAL B					427.66
	C. TOTAL A + B					2,164.43
	D. UNIT COST (TOTAL A+B/EST. QTY)					2,164.43
Ref. No.	Description	Quantity	Unit	Unit Cost		Total Amount
	E. MATERIALS					
M432	Supply of Boulders	1.15	m3	716.72		824.23
M031	Geotextile	3.00	m2	50.00		150.00
M003	Screen Wire with Special Coating (Anti-Rust)	4.00	m2	185.00		740.00
	Misc. 10% of above					171.42
	TOTAL E					1,885.65
	F. UNIT COST OF MATERIALS					1,885.65
	Estimated Direct Cost (EDC), (D+F)					4,050.08
	OCM	10%	of EDC			405.01
	Profit	15%	of EDC			607.51
	Mobilization/Demobilization		of EDC			0.00
	VAT	12%	of (EDC+OCM+Profit+Mob/Demob.)			607.51
	TOTAL UNIT COST					5,670.11

Pay Item No.	Category	Discription	Unit	Price Unit Analysis	Urgent Bridge Project	Project A	Project B	Project C	Project D	Average	Minimum	Max
100.2.1	EARTHWORKS	Clearing and Grubbing	ha	202,457.84	95,844.35	36,970.67	99,648.78	133,171.53	182,670.40	125,127.26	36,970.67	202,457.84
101.1.1	EARTHWORKS	Removal of Existing Bridge	ls	150,000.00	106,161.88					128,080.94	106,161.88	150,000.00
101.2.2	EARTHWORKS	Removal of Existing Concrete Structure	cum	3,307.43		338.20		603.52		1,416.38	338.20	3,307.43
101.2.4	EARTHWORKS	Removal of Existing Concrete Pavement	sqm	708.74	218.78	244.72	208.24	213.89		318.87	208.24	708.74
102.2.9	EARTHWORKS	Roadway Excavation and Disposal (Including Section with CBR < 3)	cum	408.60	492.21	258.62	200.29	215.75	125.65	283.52	125.65	492.21
103.1	EARTHWORKS	Bridge Excavation Common Above O.W.L	cum	494.66	540.79	354.62	255.59	174.01		363.93	174.01	540.79
103.2	EARTHWORKS	Bridge Excavation Common Below O.W.L	cum	989.33	1,158.05	444.87	269.10	234.50		619.17	234.50	1,158.05
103.3	EARTHWORKS	Structural Backfill	cum	788.72	788.71	665.55	776.31	841.35		772.13	665.55	841.35
103.4	EARTHWORKS	Excavation for Pipe Culverts and Headwall Type F Inletes/Outlets Including Side Ditch	cum	505.30	492.21	310.35	200.29	174.01	263.67	324.31	174.01	505.30
104.2.1	EARTHWORKS	Selected Fill from Roadway Excavation	cum	599.35	936.59	332.38	275.15	339.38	330.04	468.82	275.15	936.59
104.2.2	EARTHWORKS	Selected Fill from Borrow Pit	cum	1,082.35	936.59	483.08	531.05	493.71		705.36	483.08	1,082.35
104.2.4	EARTHWORKS	Selected Fill for Replacement of Span with CBR < 3	cum	1,082.35	936.59	483.08	531.05	493.71		705.36	483.08	1,082.35
105.3	EARTHWORKS	Sub-grade Preparation	sqm	47.41	35.58	23.05	28.76	25.61	24.68	30.85	23.05	47.41
200	SUBBASE AND BASE COURSE	Aggregate Subbase Course	cum	895.45	841.62	578.10	545.13	837.38	1,283.88	830.26	545.13	1,283.88
202	SUBBASE AND BASE COURSE	Crushed Aggregate Base Course	cum	935.99		664.02	640.00	1,113.14		838.29	640.00	1,113.14
311	SURFACE COURSES	Portland Cement Concrete Pavement (230mm thick)	sqm	2,149.96	1,548.94	995.06	991.73	830.88	1,147.93	1,277.42	830.88	2,149.96
400.1	STRUCTURES	Pre-Cast Concrete Piles, 450mm x 450mm, Furnished	lm	11,508.21	11,055.55	3,582.91				8,715.56	3,582.91	11,508.21
400.2	STRUCTURES	Pre-Cast Concrete Piles, 450mm x 450mm, Driven	lm	275.53	3,156.62	2,083.46				1,838.54	275.53	3,156.62
400.3	STRUCTURES	Test Piles, 450mm x 450mm, Furnished and Driven	lm	19,932.60	23,693.40	5,666.37				16,430.79	5,666.37	23,693.40
401	STRUCTURES	Concrete Railing	lm	457.18	9,665.67	3,416.59	1,956.70	2,170.77		3,533.38	457.18	9,665.67
404	STRUCTURES	Reinforcing Steel Bars, Grade 40	kg	99.86	140.06	49.81	43.37	65.48	65.21	77.30	43.37	140.06
405.1	STRUCTURES	Structural Concrete, 28 MPa	cum	6,671.40	7,548.27	8,894.44	8,743.78	10,378.06		8,447.19	6,671.40	10,378.06
405.2	STRUCTURES	Structural Concrete, 21 MPa	cum	5,811.45								
405.4	STRUCTURES	Lean Concrete, 17MPa	cum	5,111.68	4,423.03	3,236.58	3,157.70	2,072.51		3,600.30	2,072.51	5,111.68
406	STRUCTURES	Elastomeric Bearing Pads	each	6,697.71		6,096.88				6,397.30	6,096.88	6,697.71
407	STRUCTURES	Pre-formed Expansion Joint Filler with Sealant, 12mm thick	lm	10,933.37		9,431.58	7,128.12	1,876.73		7,342.45	1,876.73	10,933.37
500(1)a	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 610mm diameter	lm	6,022.70	2,525.73	3,952.94	2,853.79		3,444.27	3,759.89	2,525.73	6,022.70
500(1)b	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 910mm diameter	lm	10,527.06	4,412.78	6,837.14	4,941.01	4,780.22	6,512.81	6,335.17	4,412.78	10,527.06
500(1)c	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 1000mm diameter	lm	16,792.45					8,103.08	12,447.77	8,103.08	16,792.45
500(1)e	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 1220mm diameter	lm	19,673.79	7,773.31	7,327.42	7,925.03	6,750.48	10,486.90	9,989.49	6,750.48	19,673.79
500(2)1	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RC Side Ditch, Type Cs-concrete Lined Ditch	lm	3,352.10						3,352.10	3,352.10	3,352.10
500(2)2	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RC Side Ditch, Type Bm-masonry Lined Ditch	lm	1,296.15						1,296.15	1,296.15	1,296.15
500(2)3	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RC Side Ditch, Type UD-C Ditch with Cover	lm	9,607.26						9,607.26	9,607.26	9,607.26
500(2)a	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 610mm diameter, Type F	each	14,448.70		11,553.91				13,001.31	11,553.91	14,448.70
500(2)b	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 910mm diameter, Type F	each	25,876.65		18,572.84	15,296.23			19,915.24	15,296.23	25,876.65
500(2)c	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 1000mm diameter, Type F	each	32,184.30						32,184.30	32,184.30	32,184.30
500(2)e	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 1220mm diameter, Type F	each	38,819.08		32,819.23	22,706.13	43,171.13		34,378.89	22,706.13	43,171.13
504	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Grouted Riprap	cum	3,483.09	4,090.30	2,165.95	2,365.31	1,911.05	642.89	2,443.10	642.89	4,090.30
506	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Hand Laid Rock Embankment (Loose Boulder Apron)	cum	2,295.83	1,884.59	799.89	1,111.16	860.46		1,390.39	799.89	2,295.83
508	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Stone Masonry	cum	3,043.37	3,018.33		2,661.60	2,189.70	3,558.64	2,894.33	2,189.70	3,558.64
509	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Gabion Mattress, 1.0m x 2.0m x 0.5m (Including Geotextile)	cum	5,670.11	4,363.20	2,862.25	3,278.85	3,508.78	2,909.60	3,765.47	2,862.25	5,670.11

Pay Item No.	Category	Discription	Unit	Total	Foreign	Local	Taxes
100.2.1	EARTHWORKS	Clearing and Grubbing	ha	202,457.84	112,721.30	52,810.59	36,925.95
101.1.1	EARTHWORKS	Removal of Existing Bridge	ls	150,000.00	67,500.00	34,500.00	48,000.00
101.2.2	EARTHWORKS	Removal of Existing Concrete Structure	cum	3,307.43	1,695.69	1,056.26	555.48
101.2.4	EARTHWORKS	Removal of Existing Concrete Pavement	sqm	708.74	363.36	226.34	119.04
102.2.9	EARTHWORKS	Roadway Excavation and Disposal (Including Section with CBR < 3)	cum	408.60	225.98	108.59	74.03
103.1	EARTHWORKS	Bridge Excavation Common Above O.W.L	cum	494.66	257.87	152.32	84.47
103.2	EARTHWORKS	Bridge Excavation Common Below O.W.L	cum	989.33	515.74	304.64	168.95
103.3	EARTHWORKS	Structural Backfill	cum	788.72	229.66	486.08	72.98
103.4	EARTHWORKS	Excavation for Pipe Culverts and Headwall Type F Inletes/Outlets Including Side Ditch	cum	505.30	283.09	129.48	92.73
104.2.1	EARTHWORKS	Selected Fill from Roadway Excavation	cum	599.35	330.26	160.90	108.19
104.2.2	EARTHWORKS	Selected Fill from Borrow Pit	cum	1,082.35	499.31	421.72	161.32
104.2.4	EARTHWORKS	Selected Fill for Replacement of Span with CBR < 3	cum	1,082.35	499.31	421.72	161.32
105.3	EARTHWORKS	Sub-grade Preparation	sqm	47.41	26.39	12.38	8.64
200	SUBBASE AND BASE COURSE	Aggregate Subbase Course	cum	895.45	347.76	437.13	110.56
202	SUBBASE AND BASE COURSE	Crushed Aggregate Base Course	cum	935.99	362.02	458.94	115.03
311	SURFACE COURSES	Portland Cement Concrete Pavement (230mm thick)	sqm	2,149.96	668.88	1,270.19	210.89
400.1	STRUCTURES	Pre-Cast Concrete Piles, 450mm x 450mm, Furnished	lm	11,508.21	4,099.61	6,117.63	1,290.97
400.2	STRUCTURES	Pre-Cast Concrete Piles, 450mm x 450mm, Driven	lm	275.53	0.00	275.53	0.00
400.3	STRUCTURES	Test Piles, 450mm x 450mm, Furnished and Driven	lm	19,932.60	8,666.13	8,479.56	2,786.91
401	STRUCTURES	Concrete Railing	lm	457.18	86.30	342.61	28.27
404	STRUCTURES	Reinforcing Steel Bars, Grade 40	kg	99.86	34.02	55.11	10.73
405.1	STRUCTURES	Structural Concrete, 28 MPa	cum	6,671.40	2,238.47	3,729.18	703.75
405.2	STRUCTURES	Structural Concrete, 21 MPa	cum	5,811.45	1,937.49	3,264.81	609.15
405.4	STRUCTURES	Lean Concrete, 17MPa	cum	5,111.68	1,772.77	2,781.71	557.20
406	STRUCTURES	Elastomeric Bearing Pads	each	6,697.71	2,282.15	3,698.16	717.40
407	STRUCTURES	Pre-formed Expansion Joint Filler with Sealant, 12mm thick	lm	10,933.37	3,733.21	6,016.13	1,184.03
500(1)a	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 610mm diameter	lm	6,022.70	1,862.21	3,571.00	589.49
500(1)b	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 910mm diameter	lm	10,527.06	3,785.31	5,546.35	1,195.40
500(1)c	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 1000mm diameter	lm	16,792.45	5,978.20	8,929.66	1,884.59
500(1)e	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RCPC, 1220mm diameter	lm	19,673.79	6,986.67	10,485.59	2,201.53
500(2)1	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RC Side Ditch, Type Cs-concrete Lined Ditch	lm	3,352.10	993.60	2,045.22	313.28
500(2)2	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RC Side Ditch, Type Bm-masonry Lined Ditch	lm	1,296.15	244.10	975.33	76.72
500(2)3	DRAINAGE AND SLOPE PROTECTION STRUCTURES	RC Side Ditch, Type UD-C Ditch with Cover	lm	9,607.26	3,231.35	5,357.72	1,018.19
500(2)a	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 610mm diameter, Type F	each	14,448.70	4,893.92	8,015.12	1,539.66
500(2)b	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 910mm diameter, Type F	each	25,876.65	8,638.82	14,519.46	2,718.37
500(2)c	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 1000mm diameter, Type F	each	32,184.30	10,846.50	17,925.59	3,412.21
500(2)e	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Inlet/Outlet Headwall, 1220mm diameter, Type F	each	38,819.08	13,168.68	21,508.38	4,142.02
504	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Grouted Riprap	cum	3,483.09	1,032.07	2,122.17	328.85
506	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Hand Laid Rock Embankment (Loose Boulder Apron)	cum	2,295.83	482.89	1,661.18	151.76
508	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Stone Masonry	cum	3,043.37	979.45	1,751.93	311.99
509	DRAINAGE AND SLOPE PROTECTION STRUCTURES	Gabion Mattress, 1.0m x 2.0m x 0.5m (Including Geotextile)	cum	5,670.11	2,334.23	2,583.52	752.36

	Statement of Cost Ratio					Statement of Cost			
Project Name	Proj A	Proj B	Proj C	Proj D	Average	Proj A	Proj B	Proj C	Proj D
Contractor Name	Contractor A	Contractor B	Contractor C	Contractor D		Contractor A	Contractor B	Contractor C	Contractor D
PART A: FACILITIES FOR THE ENGINEER	2.78%	2.63%	2.65%	3.40%	2.87%	39,553,291.92	13,472,496.67	40,336,629.74	30,071,407.95
PART B: OTHER GENERAL REQUIREMENT	1.87%	1.24%	3.95%	0.21%	1.82%	26,584,800.00	6,357,780.00	59,975,456.00	1,887,666.99
TOTAL OF PART A AND B	4.66%	3.88%	6.60%	3.61%	4.69%	66,138,091.92	19,830,276.67	100,312,085.74	31,959,074.94
PART C: EARTHWORKS	9.69%	5.06%	10.59%	5.19%	7.63%	137,683,638.00	25,868,978.28	160,888,143.27	45,948,058.30
PART D: SUBBASE AND BASE COURSE	7.87%	6.50%	18.51%	8.71%	10.40%	111,827,721.60	33,255,445.69	281,260,606.83	77,166,323.52
PART E: SURFACE COURSE	44.95%	51.55%	37.39%	38.56%	43.11%	638,439,107.44	263,715,613.67	568,150,569.02	341,492,170.38
PART F: STRUCTURES	10.85%	12.33%	9.25%	0.00%	8.11%	154,108,372.28	63,089,290.37	140,595,218.22	0.00
PART G: DRAINAGE AND SLOPE PROTECTION STRUCTURES	11.91%	11.18%	9.50%	31.48%	16.02%	169,156,498.78	57,187,549.99	144,310,426.47	278,786,478.60
TOTAL OF PART C, D, E, F AND G	85.28%	86.61%	85.23%	83.94%	85.26%	1,211,215,338.10	443,116,878.00	1,295,204,963.81	743,393,030.80
PART H: MISCELLANEOUS	7.53%	7.01%	5.67%	10.76%	7.74%	106,973,179.85	35,865,987.18	86,173,263.18	95,261,122.50
PART I: DAYWORKS	0.00%	0.00%	0.00%	1.69%	0.42%	0.00	0.00	0.00	15,000,000.00
PART J: PROVISIONAL SUMS	2.53%	2.50%	2.50%	0.00%	1.88%	36,000,000.00	12,800,000.00	38,000,000.00	0.00
TOTAL OF PART C, D, E, F AND G	10.07%	9.51%	8.17%	12.45%	10.05%	142,973,179.85	48,665,987.18	124,173,263.18	110,261,122.50
GRAND TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	1,420,326,609.87	511,613,141.85	1,519,690,312.73	885,613,228.24

	Ratio per Total of Part C, D, E, F and G					Per km				
Project Name	Proj A	Proj B	Proj C	Proj D	Average	Proj A	Proj B	Proj C	Proj D	Average
Contractor Name	Contractor A	Contractor B	Contractor C	Contractor D		Contractor A	Contractor B	Contractor C	Contractor D	
PART A: FACILITIES FOR THE ENGINEER	3.27%	3.04%	3.11%	4.05%	3.37%	618,020.19	210,507.76	630,259.84	469,865.75	482,163.38
PART B: OTHER GENERAL REQUIREMENT	2.19%	1.43%	4.63%	0.25%	2.75%	415,387.50	99,340.31	937,116.50	29,494.80	483,948.10
PART H: MISCELLANEOUS	8.83%	8.09%	6.65%	12.81%	9.10%	1,671,455.94	560,406.05	1,346,457.24	1,488,455.04	1,266,693.57
PART I: DAYWORKS	0.00%	0.00%	0.00%	2.02%	2.02%	0.00	0.00	0.00	234,375.00	234,375.00
PART J: PROVISIONAL SUMS	2.97%	2.89%	2.93%	0.00%	2.93%	562,500.00	200,000.00	593,750.00	0.00	452,083.33
GRAND TOTAL	17.26%	15.46%	17.33%	19.13%	20.17%	3,267,363.62	1,070,254.12	3,507,583.58	2,222,190.59	2,919,263.39

	Ratio per Total of Part C, D, E, F and G					Per km				
Project Name	Proj A	Proj B	Proj C	Proj D	Average	Proj A	Proj B	Proj C	Proj D	Average
Contractor Name	Contractor A	Contractor B	Contractor C	Contractor D		Contractor A	Contractor B	Contractor C	Contractor D	
PART A: FACILITIES FOR THE ENGINEER					3.00%					
PART B: OTHER GENERAL REQUIREMENT					3.00%					
PART H: MISCELLANEOUS										1,500,000.00
PART I: DAYWORKS					2.00%					
PART J: PROVISIONAL SUMS					2.00%					
GRAND TOTAL					10.00%					1,500,000.00

ANNEX 15 – 3

COST ESTIMATE OF ENGINEERING SERVICES

Unit: Thousand PHP

ITEM & DESCRIPTION	Pinaring - Simsiman				Tamontaka - Tapian			
	Total	Detailed Deisign	Tender Assistance	Construction Supervision	Total	Detailed Deisign	Tender Assistance	Construction Supervision
I. REMUNERATION								
1 International Consultant	34,725.0	9,950.0	5,325.0	19,450.0	33,625.0	9,950.0	5,325.0	18,350.0
2 Local Consultant	10,260.0	1,840.0	780.0	7,640.0	9,600.0	1,840.0	780.0	6,980.0
3 Support Staff	9,018.0	1,332.0	528.0	7,158.0	8,374.0	1,332.0	528.0	6,514.0
4 VAT of Local Consultant	1,231.2	220.8	93.6	916.8	1,152.0	220.8	93.6	837.6
5 VAT of Support Staff	1,082.2	159.8	63.4	859.0	1,004.9	159.8	63.4	781.7
TOTAL OF REMUNERATION	56,316.4	13,502.6	6,790.0	36,023.8	53,755.9	13,502.6	6,790.0	33,463.3
II. OUT OF POCKET EXPENSES								
Foreign								
1 International Travel	1,800.0	500.0	300.0	1,000.0	1,800.0	500.0	300.0	1,000.0
2 Miscellaneous Travel Expences	450.0	125.0	75.0	250.0	450.0	125.0	75.0	250.0
3 Per Diem/Allowance	2,250.0	637.5	337.5	1,275.0	2,175.0	637.5	337.5	1,200.0
4 International Communication	225.1	63.8	33.8	127.5	217.6	63.8	33.8	120.0
5 Home Support Cost	750.0	212.5	112.5	425.0	725.0	212.5	112.5	400.0
Local								
1 Cost of Rental Car	5,775.0	825.0	330.0	4,620.0	5,335.0	825.0	330.0	4,180.0
2 Local Travel Cost	630.5	162.5	65.0	403.0	624.0	162.5	65.0	396.5
3 Field Allowance	2,362.5	0.0	0.0	2,362.5	2,025.0	0.0	0.0	2,025.0
4 Local Communications	170.0	30.0	20.0	120.0	155.0	30.0	20.0	105.0
5 Office Space, Equipment, Furniture and Fixtur	3,400.0	600.0	400.0	2,400.0	3,100.0	600.0	400.0	2,100.0
6 Reporting and Reproduction	1,750.0	500.0	250.0	1,000.0	1,750.0	500.0	250.0	1,000.0
7 Cost of Workshops/Seminars	1,250.0	500.0	250.0	500.0	1,250.0	500.0	250.0	500.0
8 Security & Safety	6,800.0	1,200.0	800.0	4,800.0	6,800.0	1,200.0	800.0	4,800.0
TOTAL OF OUT-OF-POCKET EXPENCES	27,613.1	5,356.3	2,973.8	19,283.0	26,406.6	5,356.3	2,973.8	18,076.5
III. SURVEYS								
1 Road Survey	1,800.0	1,800.0	0.0	0.0	1,800.0	1,800.0	0.0	0.0
2 Geotechnical Survey	2,400.0	2,400.0	0.0	0.0	2,400.0	2,400.0	0.0	0.0
TOTAL OF SURVEYS	4,200.0	4,200.0	0.0	0.0	4,200.0	4,200.0	0.0	0.0
IV TOTAL OF I. II. & III.	88,129.4	23,058.9	9,763.7	55,306.8	84,362.4	23,058.9	9,763.7	51,539.8
V CONTINGENCIES (10% OF IV.)	8,813.0	2,305.9	976.4	5,530.7	8,436.3	2,305.9	976.4	5,154.0
Grand Total	96,942.4	25,364.8	10,740.1	60,837.5	92,798.7	25,364.8	10,740.1	56,693.8

Note) Exchange rate of 1 PHP = 2.0 JPY

Proposed Manning Schedule of Engineering Services for Pinaring - Simsiman Road Rehabilitation

Expert	2010						2011												2012												2013				Total M/M			
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A				
	D/D						Tender				S/V																								D/D	Tender	S/V	Total
	1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
A. Foreign Consultants																																						
(1) Project Manager																																			4.0	2.5	5.0	11.5
(2) Senior Highway Engineer																																			1.5	0.0	0.0	1.5
(3) Senior Structural Engineer																																			1.5	0.0	1.0	2.5
(4) Senior Contract Specialist																																			1.5	2.0	0.0	3.5
(5) Senior Construction Engineer																																			0.0	0.0	11.0	11.0
Total of Foreign Consultants	1.0	1.0	1.5	1.0	2.0	2.0	1.0	1.5	0.0	2.0	2.0	0.0	0.0	1.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	1.0	1.0	0.0	0.0	0.0	0.0	2.0	1.0	1.0	0.0	0.0	0.0	2.0	8.5	4.5	17.0	30.0
B. Local Consultants																																						
(1) Deputy Project Manager																																			6.0	4.0	24.0	34.0
(2) Highway Engineer																																			4.0	0.0	6.0	10.0
(3) Structural Engineer																																			3.0	0.0	7.0	10.0
(4) Drainage Engineer																																			2.0	0.0	0.0	2.0
(5) Construction Planer/Cost Estimator																																			2.0	2.0	0.0	4.0
(6) Contract Specialist																																			2.0	3.0	0.0	5.0
(7) Enviromentalist																																			3.0	0.0	0.0	3.0
(8) Construction Engineer																																			0.0	0.0	24.0	24.0
(9) Quality Control Engineer																																			0.0	0.0	21.0	21.0
(10) Quantity Surveyor																																			0.0	0.0	21.0	21.0
Totalof Local Consultants	1.0	1.0	4.0	5.0	7.0	4.0	3.0	3.0	1.0	2.0	2.0	3.0	4.0	4.0	4.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	5.0	4.0	2.0	22.0	9.0	103.0	134.0
C. supporting Staff																																						
(1) Inspector III																																			0.0	0.0	21.0	21.0
(2) Inspector II																																			0.0	0.0	21.0	21.0
(3) Inspector I																																			0.0	0.0	21.0	21.0
(4) Laboratory Aid II																																			0.0	0.0	21.0	21.0
(6) Laboratory Aid I																																			0.0	0.0	21.0	21.0
(7) Administrative Officer																																			6.0	4.0	24.0	34.0
(8) Secretary																																			6.0	4.0	24.0	34.0
(9) Typist/Encorder																																			6.0	4.0	24.0	34.0
(10) Clerk																																			6.0	4.0	24.0	34.0
(11) Utilityman																																			6.0	4.0	24.0	34.0
(12) CAD Operator IV																																			6.0	4.0	24.0	34.0
(13) CAD Operator III																																			6.0	0.0	0.0	6.0
(14) CAD Operator II																																			6.0	0.0	0.0	6.0
(15) CAD Operator I																																			6.0	0.0	0.0	6.0
Total of Supporting Stuff	9.0	9.0	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0	6.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	6.0	54.0	24.0	249.0	327.0

Proposed Manning Schedule of Engineering Services for Tamontaka - Tapian Road Rehabilitation

Expert	2010						2011												2012												2013		Total M/M			
	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F				
	D/D						Tender				S/V																						D/D	Tender	S/V	Total
	1	2	3	4	5	6	1	2	3	4	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22				
A. Foreign Consultants																																				
(1) Project Manager																																	4.0	2.5	5.0	11.5
(2) Senior Highway Engineer																																	1.5	0.0	0.0	1.5
(3) Senior Structural Engineer																																	1.5	0.0	1.0	2.5
(4) Senior Contract Specialist																																	1.5	2.0	0.0	3.5
(5) Senior Construction Engineer																																	0.0	0.0	10.0	10.0
Total of Foreign Consultants	1.0	1.0	1.5	1.0	2.0	2.0	1.0	1.5	0.0	2.0	2.0	0.0	0.0	1.0	2.0	2.0	0.0	0.0	0.0	0.0	2.0	1.0	1.0	0.0	0.0	0.0	2.0	1.0	0.0	0.0	0.0	2.0	8.5	4.5	16.0	29.0
B. Local Consultants																																				
(1) Deputy Project Manager																																	6.0	4.0	22.0	32.0
(2) Highway Engineer																																	4.0	0.0	5.0	9.0
(3) Structural Engineer																																	3.0	0.0	7.0	10.0
(4) Drainage Engineer																																	2.0	0.0	0.0	2.0
(5) Construction Planer/Cost Estimator																																	2.0	2.0	0.0	4.0
(6) Contract Specialist																																	2.0	3.0	0.0	5.0
(7) Envirommentalist																																	3.0	0.0	0.0	3.0
(8) Construction Engineer																																	0.0	0.0	22.0	22.0
(9) Quality Control Engineer																																	0.0	0.0	19.0	19.0
(10) Quantity Surveyor																																	0.0	0.0	19.0	19.0
Totalof Local Consultants	1.0	1.0	4.0	5.0	7.0	4.0	3.0	3.0	1.0	2.0	2.0	3.0	4.0	4.0	4.0	6.0	5.0	5.0	5.0	6.0	5.0	5.0	4.0	5.0	4.0	4.0	4.0	5.0	4.0	4.0	4.0	2.0	22.0	9.0	94.0	125.0
C. supporting Staff																																				
(1) Inspector III																																	0.0	0.0	19.0	19.0
(2) Inspector II																																	0.0	0.0	19.0	19.0
(3) Inspector I																																	0.0	0.0	19.0	19.0
(4) Laboratory Aid II																																	0.0	0.0	19.0	19.0
(6) Laboratory Aid I																																	0.0	0.0	19.0	19.0
(7) Administrative Officer																																	6.0	4.0	22.0	32.0
(8) Secretary																																	6.0	4.0	22.0	32.0
(9) Typist/Encorder																																	6.0	4.0	22.0	32.0
(10) Clerk																																	6.0	4.0	22.0	32.0
(11) Utilityman																																	6.0	4.0	22.0	32.0
(12) CAD Operator IV																																	6.0	4.0	22.0	32.0
(13) CAD Operator III																																	6.0	0.0	0.0	6.0
(14) CAD Operator II																																	6.0	0.0	0.0	6.0
(15) CAD Operator I																																	6.0	0.0	0.0	6.0
Total of Supporting Stuff	9.0	9.0	9.0	9.0	9.0	9.0	6.0	6.0	6.0	6.0	6.0	6.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	6.0	54.0	24.0	227.0	305.0

ANNEX 15-4

RECORDS OF BARANGAY CONSULATION MEETINGS AND SURVEY RESULTS

A) PHOTOS

PHOTOS DURING BARANGAY CONSULTATION MEETING (PINARING – SIMSIMAN ROAD)

Barangay name	Date	Number of Participants	
Limbo	September 15, 2009	15	
Ungap	September 17, 2009	13	
Raguisi	September 9, 2009	20	
Pinaring	September 15, 2009	12	
Maidapa	September 12, 2009	16	
Damaniog	September 10, 2009	15	
Ibotigen	September 13,2009	15	
Narra	September 16, 2009	12	
Katidtuan	September 11,	16	

	2009		
Kakar	September 13, 2009	11	
Banatin	September 16, 2009	14	
Panatan	September 15, 2009	18	
Alamada	September 17, 2009	20	
South Manuangan	September 9, 2009	16	
Banucagen	September 10, 2009	13	
Bulucaon	September 8, 2009	15	
Malagakit	September 10, 2009	13	
Simsiman	September 9, 2009	10	
Datu Binasing	September 18, 2009	12	
Lower Baguer	September 13, 2009	16	
Buricain	September 14, 2009	16	
Balacayon	September 10, 2009	18	
Matilac	September 13,2009	20	
Upper Pangankalan	September 8, 2009	17	
Lower Pangankalan	September 14, 2009	18	
Kadingilan	September 17, 2009	19	
Datu Mantil	September 16, 2009	20	
Libungan Toreta	September 11, 2009	18	

PHOTOS DURING BARANGAY CONSULTATION MEETING (TAMONTAKA - TAPIAN ROAD)

Semba	September 7, 2009	16	
Dinaig Proper (Dimapatoy)	September 8, 2009	17	
Brgy.Mompong	September 13, 2009	13	
Linek	September 12, 2009	11	

Badak	September 11, 2009	19	
Kusiong	September 9, 2009	10	
Tapian	September 10, 2009	11	

B) SUMMARY OF SURVEY RESULTS

(1) CONSULTATION MEETINGS

BARANGAY NEEDS

Road Name	Mun.	Barangay	3 Most Important Needs of the Barangay		
			First	Second	Third
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap	School building	Barangay road	Barangay trading center
		Raguisi	Road improvement	Drinking water system	Foot Bridge
		Pinaring	Road improvement	Drinking water system	Dryer
		Maidapa	Drinking water system	Barangay bridge	Health center with facilities
		Damaniog	Road improvement	School building	Livelihood (farm inputs and equipment)
		Ibotegen	Road improvement	Drinking water system	Solar Dryer
		Narra	Road improvement	Drinking water system	School building (4 units for grade 3 to 6)
		Katidtuan	Drinking water system	Elevated dryer	Barangay pump boat
		Kakar	Dyke – to control the flood	Drinking water system	Boat and fish landing
		Banatin	Road improvement	Barangay bridge in Sitio Udzudan	Irrigation
		Panatan	Road improvement	Health center with facilities	Bridge going to rice pad
		Tula-tula (sitio of Alamada)	Road improvement	Drinking water system	Electricity from Alamada to Barangay Panatan
		Limbo	Road improvement	Day care center	Health center with facilities
	Pigcawayan	South Manuangan	Concreting the road	Dyke for rice field	Drainage
		Banocagen	Road Improvement	Livelihood projects	Warehouse
		Bulocaon	Drinking water system	Road improvement	School building
		Malagakit	Farm to market road	Drainage	
		Simsiman	Concrete road	Drinking water system	Health Center with facilities
		Datu Binasing	School building for Elementary and high school	Barangay road	Drinking water system
		Lower Baguer	Barangay Road	Drinking water system	Health Center with facilities
		Buricain	Road improvement	Drinking water system	Dryer
		Balacayon	Barangay Road (Sitio Kulumpungan to Datu Binasing)	Health center	Covered court
		Matilac	Housing project	Livelihood programs	Solar dryer
		Upper Pangangkalan	Dyke – to control the flood	Irrigation	Livelihood project
		Lower Pangangkalan	Drinking water system	Boat and fish landing	Livelihood project
		Kadingilan	Drinking water system	Madrasah building	Multi-purpose building
		Datu Mantil	Madrasah building	Drinking water system	Drinking water system
		Libungan Torreta	Barangay road (Sitio Minanga)	Multi-purpose building	Health center with facilities
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	Road improvement	Drinking water system	Drainage
		Dimapatoy	Livelihood projects	Drinking water system	Post harvest facilities
		Mompong	Road improvement	Barangay health center	Additional school building
		Linek	Road improvement	Drinking water system	Boat and Fish landing
		Badak	Road improvement	Barangay health center	Madrasah
		Kusiong	Road improvement	Livelihood projects	Livelihood Projects
		Tapian	Road improvement	Public toilet for each sitio	Drinking water system

BARANGAY NEEDS (GROUPING OF BARANGAY NEEDS)

		Barangay Needs		
		1st Priority	2nd Priority	3rd Priority
Barangays in Sultan Kudarat	Road	9	1	0
	School	1	1	1
	Water system	2	6	0
	Health Center	0	1	2
	Irrigation	0	0	1
	Dike (Flood control)	1	0	0
	Dryer	0	1	2
	Livelihood Project	0	0	1
	Others	0	3	6
	Sub-total	13	13	13
Barangays in Pigcawayan	Road	8	2	0
	School	1	0	1
	Water system	3	4	2
	Health Center	0	2	2
	Irrigation	0	0	0
	Dike (Flood control)	1	1	0
	Dryer	0	0	2
	Livelihood Project	0	2	2
	Others	2	4	6
	Sub-total	15	15	15
Barangays in Datu Odin Sinsuat	Road	6	0	0
	School	0	0	1
	Water system	0	3	2
	Health Center	0	2	1
	Irrigation	0	0	0
	Dike (Flood control)	0	0	0
	Dryer	0	0	0
	Livelihood Project	1	1	1
	Others	0	1	2
	Sub-total	7	7	7

**Note: figure is number of barangay*

NEGATIVE IMPACT OF POOR ROAD CONDITIONs (Pinaring – Simsiman Road)

Barangay Name	Difficulty faced by the community due to poor roads		
1. Ungap	Difficult access to school	Delay transportation of products	Difficult access to Madrasah
2. Raguisi	Difficult transportation of farm products	Isolation of barangay	Difficult access to school
3. Pinaring	Difficult transportation of products	Difficult transportation of products	
4. Maidapa	Slow barangay development	High cost of transportation	Poor living condition
5. Damaniog	Difficult transportation of products	Delay transaction	Low income
6. Ibotegen	Difficult transportation of products	Low income for the farmers	Prone to accident
7. Narra	High transportation cost/fare	Difficult access to school	
8. Katidtuan	Difficult transportation of farm products	Slow barangay development	
9. Kakar	No accessible road	Difficult transportation	
10. Banatin	Delay transportation of products	High transportation cost	
11. Panatan	Difficult transportation of farm products	Difficult to bring patients to hospital	Delay transactions
12. Tula-tula	Delay transportation of products		
13. Limbo	Difficult transportation of farm products	Difficult to bring patients to hospital	
14. South Manuangan	Difficult transportation of farm products	Delay transportation of farm products and transactions	
15. Banocagen	Damaged to farm products		
16. Bulocaon	Delay transactions	Prone to accident	Dusty which cause illnesses
17. Malagakit	Difficult transportation of farm products	difficult transportation during rainy season	Damage the vehicles
18. Simsiman	Dusty which cause illnesses	Difficult transportation during rainy season	
19. Datu Binasing	Delay transactions	Difficult to bring patients to hospital	Difficult access to school
20. Lower Baguer	Difficult transportation of farm products	Difficult access to school	
21. Buracain	Dusty which cause illnesses	Slow barangay development	
22. Balacayon	Difficult transportation of farm products	Difficult transportation of farm products	Difficult to buy daily needs
23. Matilac	Difficult transportation of farm products	Delay transportation of products	Difficult to bring patients to hospital
24. Upper Pangangkalan	Slow barangay development	Poor living condition	
25. Lower Pangangkalan	Poor living condition	Isolation of barangay	
26. Kadingilan	Difficult transportation of farm products	Delay transportation of products	High transportation cost/fare
27. Datu Mantil	Difficult to buy daily needs	Slow barangay development	
28. Libungan Torreta	Slow barangay development	Difficult transportation of farm products	Delay transportation of products

PERCEIVED NEGATIVE IMPACT OF POOR ROAD CONDITIONS (Tamontaka - Tapian Road)

Barangay Name	Difficulty faced by the community due to poor roads		
1. Semba	Slow development of the Brgy.	Difficult to deliver the farm products	Delay transportation for the agricultural products
2. Dimapatoy	High cost transportation of farm products	Post-harvest facilities inaccessible	Difficult access to school
3. Mompong	High cost transportation of farm products	Inconvenient for the people and Difficult transportation of farm products	Delay transportation
4. Linek	Delay transportation of products		
5. Badak	Difficult transportation of farm products	Dusty which cause illnesses	Difficult access to school
6. Kusiong	Slow barangay development	High transportation cost	Difficult transportation of farm products
7. Tapian	Difficult transportation of farm products	Difficulties in times of emergency	Accident prone

SUMMARY ON THE PERCEIVED NEGATIVE IMPACT OF POOR ROAD CONDITIONS

Road Name	Negative Impacts of the Poor Road
PINARING - SIMSIMAN ROAD	• Damage on the vehicles serving the barangay • Damaged on farm products of farmers • Delay on the business transactions of our barangay officials • Delay of our transportation and transactions to the market • Delay on transportation of farm products of farmer • Difficult access of students to Madrasah • Difficult access of students to school • Difficult to bring patients to hospital • Difficult to buy our daily needs from the market • Very difficult to transport our farm products during rainy season • Very dusty in the summer which causes illnesses • High transportation cost/fare • Isolation of barangay • Low income for the farmers due to transportation cost • Poor living condition due to lack of business opportunities and high transportation cost • Prone to accident because very slippery during rainy season • Slow development of our barangay
TAMONTAKA - TAPIAN ROAD	• Slow development of our barangay • Prone to accident because very slippery during rainy season • Delay on transportation of agricultural products • Difficult access of students to school • Difficult to deliver farm products • Difficulties to bring patient to hospital in times of emergency • Very dusty which causes illnesses • Very high cost of transportation of people and farm products • Very inconvenient for the people to go to Cotabato City • Poor living condition because of high transport cost and lack of business opportunity

PERCIEVED BENEFITS FROM ROAD IMPROVEMENT (Pinaring – Simsiman Road)

Barangay Name	Benefits if road is improved		
1. Ungap	easy transportation and delivery of farm products	easy transportation during urgent situation (like bringing patients to hospital)	comfortable trip
2. Raguisi	improvement of the barangay	easy delivery of farm products	prompt transactions
3. Pinaring	improve living condition	increase income	easy delivery of farm products
4. Maidapa	healthy community	easy access to other barangays	improve motivation to go to school
5. Damaniog	easy transportation and delivery of farm products	faster transactions	cheaper transportation cost
6. Ibotegen	cheaper transportation cost	fast transactions	improve living condition
7. Narra	business opportunity	easy access in our barangay	easy for the students to attend class
8. Katidtuan	easy transportation and delivery of farm products	cheaper transportation cost	easy access to other barangays
9. Kakar	accessible and easy transportation	easy delivery of products	easy to bring patients to the hospital
10. Banatin	easy transportation and delivery of farm products	easy for the students to attend class	easy access of NGO's to barangay
11. Panatan	increase of income	easy transportation of products	cheaper transportation cost
12. Tula-tula (sitio of Alamada)	transaction of the farmers will be faster	income of the people will double	increase the population of the Brgy.
13. Limbo	easy transportation and delivery of farm products	increase income	encourage children to go to school
14. South Manuangan	easy transportation and delivery of farm products	easy transportation	fast transaction
15. Banocagen	easy transportation and delivery of farm products	cheaper transportation cost/fare	
16. Bulocaon	easy transportation and delivery of farm products	cheaper transportation cost/fare	Increase our income
17. Malagakit	comfortable community		
18. Simsiman	cheaper transportation cost/fare	easy to bring patients to the hospital	more investors will come
19. Datu Binasing	easy transportation and delivery of farm products	prompt transactions	accessibility for any vehicles
20. Lower Baguer	easy transportation and delivery of farm products	easy delivery of products	Motivation to students to go to school
21. Buracain	Barangay improvement	more investors will come	
22. Balacayon	faster delivery of farm products	easy access to our barangay	Lessen damage to vehicles
23. Matilac	faster delivery of farm products	Students are highly motivated to attend class	minimize accidents
24. Upper Pangangkalan	development of barangay		
25. Lower Pangangkalan	development of barangay	Barangay development	Increase population of the barangay
26. Kadingilan	increase income	Brgy. development	easy and fast delivery of products
27. Datu Mantil	improvement of the Barangay		
28. Libungan Torreta	easy access to government and business transactions	more investors will come.	population will increase

PERCIEVED BENEFITS FROM ROAD IMPROVEMENT (Tamontaka - Tapian Road)

Barangay Name	Benefits if road is improved		
1. Semba	Increase income and farm produce	motivate students	Minimize accident
2. Dimapatoy	low cost of transportation	Barangay development	Easy access to our barangay
3. Mompong	fast transportation	more sources of income	
4. Linek	fast and easy transportation of products	Generate employment	
5. Badak	lessen travel time of vehicles	Can promote tourism	Business chance will increase
6. Kusiong	easy transportation	Easy access to tourism sites	Decrease transportation cost
7. Tapian	fast transportation	tourism promotion	Development of Brgy.

SUMMARY ON THE PERCEIVED BENEFITS FROM ROAD IMPROVEMENT

Road Name	Expected Benefits if the Road is Improved
PINARING - SIMSIMAN ROAD	• Provide easy accessibility and easy transportation for barangay people and farm produces • Can motivate students to study well due to easy access to school • Transportation cost will decrease • Transportation fare will also decrease • Very comfortable trip and damage to vehicles will also minimized • Development of barangay will be accelerated due to easy accessibility • More NGO's will come to our barangay due to easy accessibility • There will be easy access to market, government institutions and easy business transactions • Easy transportation during urgent situations • Improve children's awareness of Islam due to easy access to Madrasah • Income of people will increase due to cheap transport cost of farm products and more business opportunities • Barangay population will also increase because people who left the barangay will come back • Accidents will be minimize due to good road
TAMONTAKA - TAPIAN ROAD	• Development of barangay will be accelerated due to easy accessibility • Easy access to many places due to good road • Fast and easy transportation of farm products • Very easy to go to market in Cotabato City • Improve students' safety while going to school • Increase business opportunities due to easy access • Increase income of farmers due to low transport cost • More livelihood opportunities will be developed such as driving, small stores, etc. • It will motivate students to attend classes • Tourism will be developed and people will come to our beaches

ACCEPTABILITY OF THE PROJECT

Road Name	Mun.	Barangay	Agree/Not Agree	Reason(s)
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap	Agree	For comfortable transportation and fast transaction
		Raguisi	Agree	For easy transactions like delivery of farm produce, buying household needs from the market
		Pinaring	Agree	For comfortable transportation of people and farm produce
		Maidapa	Agree	To easily accomplish activities necessary for living and for easy transportation
		Damaniog	Agree	For easy delivery of farm produce
		Ibotegen	Agree	For comfortable transportation
		Narra	Agree	For easy delivery of produce and for easy access of tourists
		Katidtuan	Agree	To improve living condition and easy transportation
		Kakar	Agree	For easy delivery of farm produce
		Banatin	Agree	For easy delivery of farm produce
		Panatan	Agree	For easy delivery of farm produce
		Tula-tula (sitio of Alamada)	Agree	For a comfortable community
		Limbo	Agree	For easy access to city proper
	Pigcawayan	South Manuangan	Agree	For easy transportation of farm produce and people
		Banocagen	Agree	For comfortable life and help increase our income
		Bulocaon	Agree	For easy transportation of farm produce and people
		Malagakit	Agree	For easy and fast delivery of farm produce
		Simsiman	Agree	For the development of our barangay
		Datu Binasing	Agree	For the enhancement of the road, improvement of our barangay, and easy delivery of farm produce
		Lower Baguer	Agree	So we can easily reach Cotabato City anytime we want
		Buricain	Agree	For the development of our barangay, as well as for the attainment of peace and order to the community
		Balacayon	Agree	For the betterment of the community

		Matilac	Agree	For the development of barangay
		Upper Pangangkalan	Agree	For the development of barangay
		Lower Pangangkalan	Agree	For the development of the barangay and it can open up business opportunities
		Kadingilan	Agree	For the development of the barangay
		Datu Mantil	Agree	For the development of the barangay
		Libungan Torreta	Agree	For the development of the barangay
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	Agree	For improvement of living condition
		Dimapatoy	Agree	For improvement of living condition
		Mompong	Agree	For easy access to Cotabato City to deliver farm produce and buy household needs
		Linek	Agree	For easy transportation of farm produce
		Badak	Agree	For more convenient transportation
		Kusiong	Agree	For easy transportation of catches fish and easy access of tourists (beach)
		Tapian	Agree	For the development of our barangay

EMPLOYMENT EXPECTATIONS DURING PROJECT IMPLEMENTATION

Road Name	Mun.		Employment Expectation (from locals)
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap	They want to be hired for any position for smooth implementation of the project
		Raguisi	They want to be hired for additional income
		Pinaring	They want to be hired as the project would generate employment from barangay people
		Maidapa	They want to join in the project if possible for employment
		Damaniog	They want to be hired for additional income
		Ibotegen	They want to be hired for any position for smooth implementation of the project
		Narra	They want to be hired for any position for smooth implementation of the project
		Katidtuan	They want to be hired for community employment and to earn extra income
		Kakar	They want to be hired for any position for smooth implementation of the project
		Banatin	They want to be hired for additional income
		Panatan	Yes, so that we can help also for the implementation of the said project.
		Tula-tula	They want to be hired for additional income
		Limbo	They want to join in the project if possible for employment
	Pigcawayan	South Manuangan	They want to join in the project if possible for employment
		Banocagen	They want to be hired for additional income
		Bulocaon	They want to be hired for additional income
		Malagakit	They want to be hired for additional income
		Simsiman	They want to join in the project if possible for employment
		Datu Binasing	Yes, we want to be hired to help the team and also for their security
		Lower Baguer	Yes, we want to join the project for whatever way we can help
		Buracain	They want to be hired for additional income
		Balacayon	They want to join in the project if possible for employment
		Matilac	They want to be hired for additional income
		Upper Pangangkalan	They want to be hired for additional income
		Lower Pangangkalan	They want to join in the project if possible for employment
		Kadingilan	They want to join in the project if possible for employment
		Datu Mantil	They want to join in the project if possible for employment
		Libungan Torreta	They want to be hired for additional income
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	They want to join in the project if possible for employment
		Dimapatoy	They want to join in the project if possible for employment and earn income
		Mompong	They want to be hired for additional income
		Linek	They want to be hired for additional income
		Badak	They want to join in the project if possible for employment and develop their skills
		Kusiong	They want to join in the project if possible for employment and earn income
		Tapian	They want to join in the project if possible for employment

TYPE OF SUPPORT FROM THE BARANGAY PEOPLE DURING PROJECT IMPLEMENTAATION

Road Name	Mun.		Support from community
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap	Security of materials and equipment
		Raguisi	Security of materials and equipment and assurance for the safety of workers
		Pinaring	Security of equipment and materials
		Maidapa	Assurance for the safety of workers
		Damaniog	Security of materials and equipment
		Ibotegen	Security of materials and equipment
		Narra	Security of materials and equipment and assurance for the safety of workers
		Katidtuan	Security of materials and equipment and assurance for the safety of workers
		Kakar	Security of materials and equipment and assurance for the safety of workers
		Banatin	Security of equipment and materials
		Panatan	Cooperation to the team working on the road
		Tula-tula	Security of materials and equipment
		Limbo	Security of materials and equipment
	Pigcawayan	South Manuangan	Security of materials and equipment and assurance for the safety of workers
		Banocagen	Security of materials and equipment
		Bulocaon	Cooperation to the team working on the road
		Malagakit	Security of materials and equipment and cooperation to the project team
		Simsiman	Security of equipment and materials
		Datu Binasing	Security of materials and equipment and assurance for the safety of workers
		Lower Baguer	Security of materials and equipment and assurance for the safety of workers
		Buracain	Security of materials and equipment and assurance for the safety of workers
		Balacayon	Security of materials and equipment and assurance for the safety of workers
		Matilac	Assurance for the safety of workers
		Upper Pangangkalan	Security of materials and equipment and assurance for the safety of workers
		Lower Pangangkalan	Security of materials and equipment and assurance for the safety of workers
		Kadingilan	Security of materials and equipment and assurance for the safety of workers
		Datu Mantil	Security of materials and equipment and assurance for the safety of workers
		Libungan Torreta	Security of materials and equipment and assurance for the safety of workers
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	Security of materials and equipment and assurance for the safety of workers
		Dimapatoy	Security of materials and equipment
		Mompong	Security of materials and equipment
		Linek	Security of materials and equipment
		Badak	Security of materials and equipment
		Kusiong	Security of materials and equipment
		Tapian	Security of materials and equipment and assurance for the safety of workers

(2) HOUSEHOLD INTERVIEW SURVEY

BARANGAY POPULATION, ANNUAL GROWTH RATE AND NUMBER OF HOUSEHOLD

Road Name	Municipality/Barangay Name	Population		Annual Growth Rate	No. of Household (2000 data)
		2000	2007		
Pinaring - Simsiman	**SULTAN KUDARAT**				
	Limbo	4,173	7,223	8.2	762
	Ungap	1,392	2,017	5.4	231
	Raguisi	1,586	2,430	6.3	261
	Pinaring	1,937	2,779	5.3	299
	Maidapa	1,445	2,137	5.7	265
	Damaniog	1,531	2,019	4.0	247
	Ibotegen	3,179	6,060	9.7	465
	Nara	1,693	2,332	4.7	290
	Katidtuan	4,060	5,544	4.6	603
	Kakar	1,196	2,026	7.8	216
	Banatin	1,294	1,952	6.0	184
	Panatan	1,795	2,731	6.2	263
	Alamada	1,165	2,059	8.5	234
	PIGKAWAYAN				
	South Manuangan	1,675	1,581	(0.8)	332
	Banucagon	1,079	1,131	0.7	212
	Bulucaon	2,505	3,048	2.8	461
	Malagakit	473	606	3.6	100
	Simsiman	1,002	1,847	9.1	213
	Datu Binasing	961	984	0.3	175
	Lower Baguer	516	712	4.7	95
	Buricain	1,244	1,987	6.9	210
	Balacayon	1,017	1,354	4.2	192
	Matilac	1,405	1,433	0.3	264
	Upper Pangangkalan	577	880	6.2	124
	Lower Pangangkalan	485	1,024	11.3	105
	Kadingilan	1,243	1,596	3.6	223
	Datu Mantil	536	706	4.0	102
	Libungan Torreta	790	1,430	8.8	150
Tamontaka - Tapian	**DATU ODIN SINSUAT**				
	Semba	3,508	5,262	6.0	659
	Dinaig Proper	3,153	3,378	1.0	584
	Mompong	1,221	1,369	1.6	241
	Linek	1,219	1,509	3.1	231
	Badak	1,610	2,121	4.0	365
	Kusiong	1,376	1,815	4.0	259
	Tapian	1,871	2,746	5.6	357

Source: NSCB, 2009

OCCUPATION

Occupation	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
Driver	39	7%	9	6%
Farmer	239	43%	29	21%
Barangay Official	90	16%	20	14%
Government Employee	15	3%	1	1%
Owned Business	33	6%	8	6%
Barangay Health Staff	32	6%	4	3%
Fisherman	33	6%	26	19%
Housewife	60	11%	33	24%
Teacher	6	1%	1	1%
Carpenter	5	1%	1	1%
Others	8	1%	8	6%
Total	560	100%	140	100%

HOUSEHOLD MEMBERS

Number	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
1~3	113	20%	20	14%
4~6	287	51%	77	55%
7~9	108	19%	28	20%
Above 10	52	9%	15	11%
Total	560	100%	140	100%

HOUSEHOLD MONTHLY INCOME

Income	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
~3000	145	26%	56	40%
3001~5000	129	23%	42	30%
5001~7000	118	21%	20	14%
7001~9000	68	12%	3	2%
9001~12000	51	9%	6	4%
12001~15000	14	3%	4	3%
Above 15000	34	6%	9	6%
Total	559	100%	140	100%

INCOME SOURCE

Source of Income	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
Salary (gov. employee, barangay official)	99	18%	20	15%
Farming	303	54%	42	30%
Fishing	56	10%	42	30%
Driving	33	6%	13	9%
Others	67	12%	23	16%
Total	558	100%	140	100%

EXPENDITURE

Expenditure	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
~3000	154	28%	36	26%
3001~5000	150	27%	55	40%
5001~7000	122	22%	25	18%
7001~9000	67	12%	8	6%
9001~12000	40	7%	6	4%
12001~15000	11	2%	4	3%
Above 15000	14	3%	5	4%
Total	558	100%	139	100%

BREAKDOWN OF EXPENDITURE

Expenditure	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
Food	313	56%	85	61%
Education	70	13%	25	18%
Medicare	35	6%	10	7%
Electricity & Water	43	8%	8	6%
Farm Inputs	57	10%	5	4%
Others	39	7%	7	5%
Total	558	100%	140	100%

TENANT/LAND OWNER SHARE

Tenad/Owner share	Pinaring - Simsiman		Tamontaka - Tapian	
	Sample size	Share	Sample size	Share
Tenant Farmers	108	27%	20	30%
Farmers Owned Land	289	73%	47	70%
Total	397	100%	67	100%

SIZE OF CULTIVATED LAND PER FARMER

Size of Cultivated Land	Pinaring - Simsiman		Tamontaka - Tapian	
	Hectare	Avg.	Hectare	Avg.
Tenant Farmers	151	1.4	40	2.0
Farmers Owned Land	689	2.4	156	3.3
Total	840		196	

AVERAGE FARM SIZE PER FARMER

Item	Pinaring – Simsiman (ha)	Tamontaka – Tapian (ha)
Palay (Irrigated)	2.20	2.40
Palay (Rainfed)	2.00	1.90
Yellow Corn	1.50	1.70
White Corn	1.50	0.90

FREQUENCEY OF HARVEST (PINARING – SIMSIMAN)

Item	Number of Harvest				Total
	1	2	3	4	
Palay (Irrigated)	5	26	16	0	47
Palay (Rainfed)	30	204	24	0	258
Corn (Yellow)	36	24	11	0	71
Corn (White)	6	8	1	0	15
Coconut	1	6	24	58	89
Mango	8	6	3	0	17
Coffee	9	1	2	0	12

FREQUENCY OF HARVEST (TAMONTAKA - TAPIAN)

Item	Number of Harvest				Total
	1	2	3	4	
Palay (Irrigated)	0	3	2	0	5
Palay (Rainfed)	3	3	2	0	8
Corn (Yellow)	1	14	9	0	24
Corn (White)	1	3	1	0	5
Coconut	0	4	15	7	26
Mango	1	1	1	0	3

TRANSPORTATION COST (PINARING – SIMSIMAN ROAD)

Item	No. of sample	Area (Ha)	Production		Selling Price (Pesos)	Transportation Cost (Pesos)
			In sacks	In Kg		
Palay (Irrigated)	108	59	4693	234625	11.23	0.81
Palay (Rainfed)	289	384	20844	1042200	11.15	0.97
Corn (Yellow)	70	107	6503	325157	9.44	0.81
Corn (White)	14	21	1128	56393	11.79	0.97
Coconut	87	1043	18045	902250	16.98	0.86
Mango	17	11	130	6500	25.82	0.85
Coffee	12	10.5	60	3000	55.53	0.86
Fish	58		240140	12007000	62.61	2.40

TRANSPORTATION COST (TAMONTAKA - PINARING ROAD)

Item	No. of sample	Area (Ha)	Production		Selling Price (Pesos)	Transportation Cost (Pesos)
			In sacks	In Kg		
Palay (Irrigated)	5	8	489	24450	13.50	0.64
Palay (Rainfed)	8	6	280	14000	12.13	0.45
Corn (Yellow)	24	40	2012	100600	9.31	0.75
Corn (White)	5	5	200	10000	10.20	0.60
Coconut	26	101	1562	78100	15.71	0.86
Mango	3	4	40	2000	28.33	0.98
Coffee						
Fish	35		105088		82.46	1.09

(3) BARANGAY CAPTAIN FACE-TO-FACE INTERVIEW

ACTIVE AND INACTIVE COOPERATIVES

Road Name	Mun.	Barangay name	Cooperative	
			Active	Not
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap	-	-
		Raguisi	-	-
		Pinaring	-	-
		Maidapa	2	-
		Damaniog	-	-
		Ibotigen	-	2
		Narra	2	-
		Katidtuan	2	1
		Kakar	-	-
		Banatin	-	-
		Panatan	2	-
		Alamada	1	-
		Limbo	2	-
	Pigcawayan	South Manuangan	-	-
		Banucageon	1	-
		Bulucaon	1	-
		Malagakit	-	-
		Simsiman	2	-
		Datu Binasing	-	1
		Lower Baguer	-	-
		Buricain	-	1
		Balacayon	-	2
		Matilac	3	1
		Upper Pangankalan	-	-
		Lower Pangankalan	-	-
		Kadingilan	-	-
		Datu Mantil	-	1
		Libungan Toreta	1	-
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	2	-
		Dinaig Proper	1	-
		Brgy.Mompong	2	-
		Linek	-	-
		Badak	1	-
		Kusiong	-	-
		Tapian	4	-

AVAILABLE FACILITIES TO EACH BARANGAY

Road Name	Mun.	Barangay Name	Elem. School	High School	Health Center	Barangay Hall/Multi-purpose Hall	Water Supply (not deep well)	Warehouse	Dryer	Daycare Center	Church	Daycare Center	Madrasah	Others
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap				■				■		■	■	
		Raguisi	■			■			■	■	■	■	■	
		Pinaring	■	■										
		Maidapa	■		■				■	■		■	■	
		Damaniog			■	■	■	■	■	■		■	■	
		Ibotigen	■		■	■		■	■	■		■		Irrigation
		Narra		■	■	■				■		■	■	
		Katidtuan	■						■					
		Kakar			■	■		■	■				■	
		Banatin	■		■	■	■	■	■					
		Panatan	■	■	■	■	■	■	■					
		Alamada	■		■	■		■	■	■		■	■	
		Limbo	■				■		■					
	Pigcawayan	South Manuangan	■	■					■	■	■	■		
		Banucageon	■	■	■	■	■	■	■	■	■	■	■	
		Bulucaon	■	■	■		■		■	■	■	■		
		Malagakit	■					■	■	■	■	■		
		Simsiman	■	■		■			■	■		■		
		Datu Binasing	■	■		■	■		■	■		■	■	
		Lower Baguer			■				■				■	
		Buricain	■							■		■	■	
		Balacayon	■		■	■	■		■	■		■	■	
		Matilac	■	■	■	■		■	■	■		■	■	
		Upper Pangankalan	■		■	■			■	■		■	■	
		Lower Pangankalan	■		■				■	■		■	■	
		Kadingilan	■		■	■			■	■		■	■	
		Datu Mantil				■			■	■		■		
		Libungan Toreta	■	■		■	■		■	■		■		Boat Landing
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	■	■	■	■	■	■	■	■	■	■	■	
		Dinaig Proper	■		■				■	■		■		Boat Landing
		Brgy.Mompong	■	■	■	■	■	■	■					
		Linek	■		■	■								
		Badak			■	■			■	■		■	■	
		Kusiong	■	■			■			■		■		Beach Resort
		Tapian	■		■	■				■	■	■		Boat Landing

Note:

■ Available

SIZE OF RICE PADDY

Road Name	Mun.	Barangay name	Total Rice Paddy (Ha)	Irrigated (Ha)	Potential for Irrigation but not yet Irrigated (Ha)
PINARING - SIMSIMAN ROAD	Sultan Kudarat	Ungap	10	0	15
		Raguisi	840	0	800
		Pinaring	300	11	40
		Maidapa	150	0	150
		Damaniog	70	0	70
		Ibotigen	350	350	0
		Narra	170	0	170
		Katidtuan	257	0	257
		Kakar	100	50	50
		Banatin	60	0	60
		Panatan	155	55	100
		Alamada	20	0	20
		Limbo	96	96	0
	Pigcawayan	South Manuangan	50	20	30
		Banucagen	200	150	160
		Bulucaon	300	265	35
		Malagakit	60	0	35
		Simsiman	85	65	30
		Datu Binasing	300	0	300
		Lower Baguer	80	0	80
		Buricain	50	0	30
		Balacayon	50	0	50
		Matilac	500	0	300
		Upper Pangankalan	320	0	320
		Lower Pangankalan	360	0	360
		Kadingilan	450	0	450
		Datu Mantil	120	0	120
		Libungan Toreta	80	0	80
		Sub-Total	5,583	1,062	4,112
TAMONTAKA - TAPIAN ROAD	Datu Odin Sinsuat	Semba	30	0	80
		Dinaig Proper	160	0	160
		Brgy.Mompong	20	0	50
		Linek	53	33	20
		Badak	0	0	0
		Kusiong	200	5	3
		Tapian	3	0	3
		Sub - Total	466	38	316

ANNEX 17-1

PROJECT DESCRIPTION FORMAT

CERTIFICATE OF NON-COVERAGE (CNC)

1-Page Application Form

1. Name of the Project			
2. Project Location	Street/Sitio/Barangay		Zone/Classification (i.e. industrial, residential)
	City/Municipality	Province	Region
3. Proponent Name			
4. Proponent Address			
5. Contact Person	Name		Designation
6. Proponent Means of Contact	Landline No		Fax No.
	Mobile No		Email
7. Project Type/ Undertaking			
8. Project Size	*Fill up only relevant parameters.*		
	Capacity/Others *(i.e. MW, m³, heads)*		Space Allocation /Area *(i.e. km, ha, sqm)*
	Quantity to be Processed *(i.e. MT of raw material)*		Others:
	Production Rate *(i.e. MT/year)*		
9. Description of Project Activities *(i.e. during pre-construction, construction, operation and abandonment)*			
	Prepared/Submitted by:		Concurred/Approved by:
	Signature over Printed Name		Owner's/Proponent's Signature over Printed Name

** The only requirement for CNC Applications is to fill-up this form. No attachments are necessary. If additional space is needed for the "Description of Project Activities," a maximum of 1 page may be attached.*

*** As a general rule, DENR-EMB will process CNC Applications within the same day of receipt at the designated office.*

**** Be sure to secure your **tracking code no.** upon submission of the application form. An acknowledgement letter shall be issued to you upon presentation of proof of payment for the application fee. It will serve as an assurance that your application has already been inputted into the DENR-EMB's CNC Automated Processing System and will be decided upon immediately.*

ANNEX 17-2

TYPICAL TOR FOR EIA STUDY

Preparation of
Environmental Impact Statement (EIS)

Terms of Reference

1 Background

The general Scope of Work includes the following:

(i) ***Conduct of Environmental Impact Assessment (EIA)***
- Generation of baseline information to establish the present state of the environment
- Impact prediction and assessment
- Aggregation of impact information

(ii) ***Preparation of the Environmental Impact Statement (EIS)***
- Preparation of the EIS in accordance with the DENR- Administrative Order 2003-30 guidelines

(iii) ***Identification of Potential Effects***
- Assessment of possible adverse effects occurring with certain magnitude
- Recommendation of necessary mitigation measures to avert/address adverse effects

(iv) ***Assistance in Securing Environmental Clearance Certificate (ECC) from the DENR-ARMM***

2 Objectives

The main objectives of the EIA Project are to: (i) prepare and submit an Environmental Impact Statement following the DENR Administrative Order No. 2003-30 at the end of six (6) months; and (ii) prepare and submit additional information required by the DENR.

3 Scope of Work and Expected Outputs

In undertaking the EIA, the Consultant's tasks include, but are not limited to the following:

3.1 State Project's objectives, needs for which the Project is being proposed, alternatives considered, and associated projects

The project's objectives must be presented in terms of socio-economic (i.e., cost, benefits, beneficiaries, social costs, etc.) and environmental (type and extent of pollution generated) parameters. Trade-off between the benefits of the project and its adverse environmental consequences must be exhaustively discussed.

The needs for which the project is being proposed, the alternatives considered, and associated projects (e.g., site development) must be thoroughly discussed.

3.2 Describe the Project

The Project, particularly in terms of **pre-construction**, **construction**, and **operational activities**, will be described in the EIS.

3.2.1 Pre-construction Stage

Description of **pre-construction** (**design stage**) **activities** include, among others, the following:

(i) area to be traversed by the construction of the new road sections;

(ii) orientation with respect to surrounding areas, e.g., proximity to human settlement areas and social service facilities such as schools, hospitals, churches, and institutional/ historical monuments;

3.2.2 Construction Stage

Construction activities will be described in terms of:

(i) site preparation activities such as site clearing and stripping, excavation, removal of existing structures, cutting and filling, etc.;

(ii) installation of temporary erosion and flood control structures; placement of foundations and footings, laying of roadbed, drainage systems;

(iii) handling and nature of construction materials and method to be used; safety features such as lighting, alarms, road signs, water sprinklers, etc.;

(iv) manpower requirements

(v) construction support systems---number, sources, and housing needs of work force, including size, location and duration of temporary construction camps (if any);

(vi) safety measures, particularly for construction workers

3.2.3 Operation Stage

Operational activities consist of a description of the following:

(i) expected air and noise pollution generated;

(ii) slope stabilization measures

(iii) projected traffic, economic and financial viability;

(iv) associated projects (if any)

Timing and duration of abovementioned pre-construction and construction activities, must be described and illustrated by **process flow** and **activity charts.**

3.3 Discuss Contingency Plans

Identify significant environmental hazards that may arise during the construction and operation of the project through accident or design failure. The probability of such events occurring and the preventive and remedial measures to be taken shall be fully discussed. Methods for detecting such accidents or natural events, including a description of the procedures shall also be included.

3.4 Conduct Project Scoping

Scoping is the first and most critical step in the EIS process since it is during this activity wherein most of the key issues and concerns in the EIA are discussed, clarified, and agreed upon among the key actors (i.e., the Proponent (DPWH), Preparer (EIA Consultant), the Environmental Management Bureau (EMB), the DENR-ARMM, the concerned Provincial Environment and Natural Resources Office (PENRO), the Community Environment and Natural Resources Offices (CENRO) of the host municipalities, the concerned Local Government Units (LGUs), National Government Agencies (NGAs), the EIA Review Committee (EIARC), and the stakeholders. However it is important to note that based on the latest DENR guideline particularly the October 2009 Memorandum from the Secretary of the DENR (Central Office), entitled, "***New Processing Periods for the Environmental Impact Statement (EIS) System & Corresponding Guidelines***", involvement of DENR personnel and representatives is optional during the conduct of scoping.

3.5 Describe existing environmental condition

Describe historical trends and establish existing condition of the natural environment and socio-economic setting of the project area. Data to be gathered are of two types, namely, (i) primary, and (ii) secondary. Parameters to be considered are:

Climate

- The nature and duration of climatic records and conditions in the vicinity of the proposed project, including mean values of precipitation, occurrence of thunderstorms, typhoons, etc.

Terrain

- Geologic features within the project area, including seismic hazards (e.g., faults, liquefaction and subsidence potential), rock and soil classification, conditions, and suitability in relation to foundation;

Atmosphere

- Existing ambient air quality, and types and levels of existing air pollutants. Sampling techniques (i.e., duration and methodology) and parameters must be in accordance with DENR Administrative Order No.14.

Specifically the pollutants to be sampled consist of TSP (Total Suspended Particulates), Sulfur Dioxide (SO_2), and Nitrogen Dioxide (NO_2).

Hydrology and River Morphology

Describe existing drainage system in terms of catchment areas, flow rates, erosional and depositional patterns/areas, and other pertinent hydrological parameters

Water Quality

Establish existing water quality in terms of ph, temperature, Oil and Grease, and Total Suspended Solids (TSS).

Flora and Fauna

- Major types and distribution of flora and fauna

Land and resource use

- Describe the existing land uses in the project area and immediate vicinities, including present zoning classification, use of transportation facilities, structures, etc.

Determine if project is inconsistent or will conflict with existing land use and activities.

Socio-economic Aspects

- Existing lifestyles in the community within the area of concern, demographic data, employment situation, existing housing facilities, utilities (electricity and water), etc. Establish existing transportation facilities, particularly in terms of road reliability and accessibility.

3.6 Describe future environmental conditions without the project

Discuss the future condition of the various environmental aspects enumerated in 3.5 if the project will not be implemented.

3.7 Conduct environmental impact assessment

Based on the baseline data collected, identify and describe possible environmental impacts of the project, emphasizing on project stages most likely to cause environmental disturbances.

3.8 Review and assess project alternatives or mitigating measures to be adopted

Based on the environmental impacts identified, review and assess project alternatives or mitigating measures to be adopted to reduce, if not eliminate severity of adverse impacts.

3.9 Identify unavoidable impacts and data gaps

Describe unavoidable impacts, i.e., environmental impacts that are most likely to remain after all possible mitigating measures have been identified. Information deficiencies encountered and their importance during the preparation of the EIS must also be discussed in the report.

3.10 Write and submit draft environmental impact statement

Write and submit the Environmental Impact Statement (EIS) to the DENR-Environmental Management Bureau (EMB).

3.11 Assist the DPWH-ARMM in conducting Public Hearing (if required by DENR)

3.12 Provide Additional Information on the Project

After submitting the EIS, the Review Committee of the EMB normally requires additional information from the project proponent, particularly in cases wherein clarifications have to be made. The EIA Consultant must prepare and submit said information and attend meetings or hearings initiated by EMB.

3.13 Secure Environmental Compliance Certificate from the EMB, DENR.

Assist the DPWH-ARMM in securing the Environmental Compliance Certificate (ECC) from the Environmental Management Bureau of the DENR.

4 Staff Requirements

Provide adequate and qualified key staff to perform the services described previously. The general qualifications are as follows:

4.1 Environmental Specialist/Team Leader

Must have extensive experience in the supervision and direction of EIA activities, with at least a Master of Science Degree in any pure or applied science course.

4.2 Hydrologist

Must have at least a Bachelor of Science Degree in either Civil Engineering or Geology, and has been involved as a Hydrologist in an EIA project.

4.3 Ecologist

Must have at least a Bachelor of Science Degree in either Biology, Ecology, or Forestry, and has been involved in EIA projects.

4.4 Air Quality Specialist

Must be well versed in air quality analysis, including capability to develop/use simulation models, modern sampling techniques, with at least a Bachelor of Science Degree in either Chemistry or Meteorology. Must have track record in similar type of work.

4.5 Water Quality Specialist

Must be well versed in water quality analysis, including capability to use modern sampling techniques, with at least a Bachelor of Science Degree in either Chemistry or other related sciences. Must have track record in similar type of work.

4.6 Sociologist/Socioeconomist

Must have vast experience in the field of social preparation, community organizing, conduct of socioeconomic survey, and analysis. Must have at least a Bachelor of Science/Arts in Sociology, Psychology, Anthropology, or other related social sciences.

5 Output of the EIA Consultant:

5.1. Environmental Impact Statement (EIS), including the following:

- Location and Vicinity Map
- Topographic Map
- Land Use Map
- Geologic Map
- Color photographs
- Color process flow/activity charts

5.2. Environmental Compliance Certificate (ECC), secured from the EMB, DENR.

6 Role of the Detailed Engineering Design Consultants and DPWH:

- Provide the EIA Consultant with pertinent and available data on the project such as maps and reports, particularly in terms of the Project's **main goals** and objectives, the **needs** for which the project is proposed, the **alternatives**, and the relationship of the proposed project with other existing and proposed projects in the area of concern and immediate vicinities;
- Assist the EIA Consultant in securing access to aerial photographs (if available) of the project area;
- Provide the EIA Consultant access to Feasibility Study and Detailed Engineering Design Report on the Project
- Detailed description and schedule of activities for all stages of the project; i.e., from pre-construction, to construction, to operation phases
- Flow diagram of all the processes (pre-construction and construction phases) involved in the Project
- Survey Plan of the Project areas
- A list, including specifications of all equipment and materials to be utilized in the project


JICA